HOMELAND TOWERS

Homeland Towers, LLC

22 Shelter Rock Lane
Danbury CT 06810
Phone 203-297-6345
Fax 203-797-1137

November 25, 2014

Honorable Robert Stein, Chairman
and Members of the Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Re: Docket No. 445 – Homeland Towers LLC (HT) and New Cingular Wireless PCS, LLC (AT&T) Application for Certificate of Environmental Compatibility and Public Need For A Tower Facility at intersection of Old Stagecoach Road and Aspen Ledges Road, Ridgefield, CT

Dear Chairman Stein and Members of the Siting Council,

As co-applicant, Homeland Towers ("HT") requests that you please accept for review and Council approval this Development Management Plan ("D&M Plan") filing for the Facility as approved in Docket No. 445.

Tower, Compound & Other Equipment

Enclosed are fifteen (15) sets of 11"x17" construction drawings being filed in accordance with the Council's Decision and Order dated September 4, 2014 ("Decision and Order"). Two full-sized sets of the construction drawings are being sent to the Council under separate cover. The D&M Plan incorporates a 150' two tone color monopole as provided for in the Siting Council's Order No. 1 in this Docket. AT&T will mount twelve (12) panel antennas, twenty-one (21) RRH's, six (6) A2 modules and four (4) Squid boxes at a centerline of 146'. The Town of Ridgefield will place one (1) omnidirectional antenna at top of tower at a mounting elevation of 150', one (1) omnidirectional antenna at a mounting elevation of 70', one (1) 2' microwave dish at a mounting height of 80'. Since the September 4, 2014 Decision and Order, The Town of Ridgefield has requested to add one (1) additional 2' microwave dish at a mounting height of 65' and AT&T has changed their shelter size from 11'-6" x 20' to 11'-6" x 16'. All of the above mentioned equipment is depicted on the drawings prepared by All Points Technology. Attached please also find a geotechnical study as well as a structural design report for the tower and foundation. Specifications for the antennas and generator are also provided.

The proposed D&M Plan also includes: (a) Final site plans including yield point, tower foundation, antennas, equipment compound, radio equipment, access road, utility line, emergency generator backup and landscaping (b) construction plans for the site clearing, grading, landscaping, water drainage, and erosion and sedimentation control measures consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control as amended, (c) a box turtle protection plan, (d) a diagram showing the tower's two color scheme; (e) provisions for a potential shared generator capable of being used by all facility tenants.

Required Notifications

In accordance with the provisions of RCSA Section 16-50j-77, Homeland Towers hereby notifies the Council of its intention to begin site work immediately after Council approval of the D&M Plan. Construction of the tower and other site improvements will commence upon issuance of a local building permit. The supervisor for all construction related matters on this project is Christian Carmody, located at InSite Towers, 1199 North Fairfax Street, Suite 700, Alexandria, VA 22314 and can be reached by telephone at 617-595-7254.

We respectfully request that this matter be included on the Council's next available agenda scheduled for December 11th, 2014 for review and approval. Thank you for your consideration of the enclosed.

Sincerely,
Raymond Vergati
rv@homelandtowers.us

Enclosures

cc: Honorable Rudy Marconi, First Selectman, Town of Ridgefield
Manny Vicente, Homeland Towers LLC
Michele Briggs, AT&T
Scott Chasse, P.E., APT
Christopher B. Fisher, Esq., Cuddy & Feder LLP
Robert Mansfield, Utility Communications Inc.

Certificate of Service

I hereby certify that on this day, an original and fifteen copies of the foregoing was sent electronically and by overnight delivery to the Connecticut Siting Council with a copy to:

Town of Ridgefield
The Honorable Rudy Marconi
First Selectman
400 Main Street
Ridgefield, CT 06877

Keith R. Ainsworth, Esq
Evans, Feldman & Ainsworth, LLC
261 Bradley St., P.O. Box 1694
New Haven, CT 06407-1694

Robert Mansfield
Utility Communications Inc.
920 Sherman Avenue
Hamden, CT 06514

InSite Towers LLC
1199 North Fairfax Street
Suite 700
Alexandria, VA 22314

Dated: November 25, 2014

Raymond M. Vergati

ATTACHMENT 1

Geotechnical Engineering Report

Geotechnical Engineering Report

Proposed Homeland Towers: CT-897

Ridgefield, Connecticut

October 7, 2014

Terracon Project No. J2145173

Prepared for:

All-Points Technology Corporation, P.C.
Killingworth, Connecticut

Prepared by:

Terracon Consultants, Inc.
Rocky Hill, Connecticut

October 7, 2014

Terracon

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

Attn: Mr. Scott M. Chasse, P.E., Principal
P: (860) 663 1697
F: (860) 663 0935
E: schasse@allpointstech.com

Re: Geotechnical Engineering Report
Proposed Homeland Towers: CT-897
Ridgefield, Connecticut
Terracon Project No. J2145173

Dear Mr. Chasse:

Terracon Consultants, Inc. (Terracon) has completed the geotechnical engineering services for the above referenced project. This study was performed in general accordance with the Authorization to Proceed, dated September 16, 2014. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design of foundations for the proposed communications tower and accompanying equipment cabinets.

We appreciate the opportunity to be of service to you on this project. If you have questions concerning this report, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Brian D. Opp, P.E.
Senior Staff Geotechnical Engineer

Richard W.M. McLaren, P.E.
Senior Associate
Geotechnical Department Manager

/bdo/J2145173
Attachment

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GEOTECHNICAL ENGINEERING REPORT
PROPOSED HOMELAND TOWERS: CT-897
RIDGEFIELD, CONNECTICUT

Terracon Project No. J2145173
October 7, 2014

1.0 INTRODUCTION

A geotechnical engineering report has been completed for the proposed 150-foot high steel monopole communications tower to be located near the intersection of Old Stagecoach Road and Aspen Ledges Road in Ridgefield, Connecticut. A single test boring was advanced to a depth of about 30 feet below existing ground surface close to the proposed tower center location. Three test probes were advanced within the proposed 62-foot by 75-foot leased compound area to a depth of about 10 feet. Logs of the test boring and probes, along with a Site Location Map (Exhibit A-1) and an Exploration Location Diagram (Exhibit A-2) are included in Appendix A of this report.

The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- subsurface soil conditions
- groundwater conditions
- earthwork
- foundation design and construction
- seismic considerations
- slab design and construction

2.0 PROJECT INFORMATION

The project consists of the construction of an approximately 150-foot high steel monopole communications tower with associated equipment cabinets within a 62-foot by 75-foot fenced in compound area. Access to the site will be from a gravel/bituminous road from Aspen Ledges Road to the northeast of the site.

2.1 Project Description

Our knowledge of the project is based on review of the Drawing Set: *Homeland Towers CT-897, Ridgefield Ledges – Ledges Road, Ridgefield, CT 06877*, APT Filing No. CT-283-120, dated August 29, 2013, by All-Points Technology Corporation of Killingworth, Connecticut. A summary description of the project is presented below:

Item	Description
Site layout	Exploration Location Diagram on Exhibit A-2, Appendix A
Tower	A 150-foot high steel monopole communications tower.
Estimated maximum loads	Tower dead load - 60 kips Equipment pad - 150 pounds per square foot (psf)
Grading	Cuts on the order of 3 feet and fill up to about 7 feet are expected.
Permanent Slopes	2 Horizontal to 1 Vertical (2H:1V) max. are anticipated to the south and west of compound area.

2.2 Site Location and Description

Item	Description
Location	Latitude 41.3303N / Longitude 73.5168W. Approximately 300 to 400 feet southwest of the intersection of Old Stagecoach Road and Aspen Ledges Road in Ridgefield, Connecticut.
Existing improvements	None
Current ground cover	Trees/vegetation
Existing topography	Slopes gradually downward to the west from approximately Elevations (El) 810 to 796 feet within the proposed compound, then sloping downward more steeply further to the west.

3.0 SUBSURFACE EXPLORATIONS AND CONDITIONS

3.1 Typical Profile

Based on the results of the exploration and observations at the time of drilling, subsurface conditions on the project site can be generalized as follows:

Description	Approximate Depth to Bottom of Stratum (feet)	Material Encountered [1]	Consistency / Relative Density
Glacial Till	>30.5	Silty sand (SM) with gravel, frequent cobbles and boulders, gray to brown	Very dense

1. Forest mat, (about 4 inches thick) was encountered at the ground surface of the explorations. Subsoil (about 4 inches thick) was encountered below the forest mat in B-1.

The *Surficial Materials Map of Connecticut, 1992*, identifies native soils in the vicinity of the site as glacial till. The *Bedrock Geological Map of Connecticut, 1985*, indicates that bedrock at depth in the vicinity of the site consists of schistose marble and Manhattan Schist. However, the explorations terminated without refusal in the glacial till. Bedrock was not encountered in the explorations.

Conditions encountered at the exploration locations are indicated on the exploration logs in Appendix A of this report. Stratification boundaries on the exploration logs represent the approximate location of changes in soil types; *in situ*, the transition between materials may be gradual. Further details of the exploration can be found on the exploration logs.

3.2 In-situ Resistivity

On September 30, 2014, *in-situ* soil resistivity testing was completed by a Terracon field engineer. Resistivity testing was performed in general accordance with ASTM G57 by the Wenner Four Probe Method using a Megger DET5/4R Digital Earth Tester. Two resistivity lines were completed with electrodes spaced at 5, 10, 20, 30, and 40 feet. The location and orientation of the resistivity lines are shown on Exhibit A-2. The resistivity test results are tabulated below:

	Resistivity (ohm-cm)	
Electrode Spacing (ft)	**Line 1**	**Line 2**
5	150,710	89,430
10	105,710	72,195
20	59,365	62,045
30	112,030	57,450
40	337,040	64,345

3.3 Groundwater

Groundwater was not encountered at the time of the explorations. However, fluctuations in groundwater level may occur because of seasonal variations in the amount of rainfall, runoff and other factors. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

4.0 RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION

4.1 Geotechnical Considerations

The proposed monopole steel communications tower may be supported on a monolithic mat or a pier-and-pad foundation bearing on the glacial till or on compacted structural fill placed over the glacial till. Minus ¾-inch crushed stone may be used in place of structural fill. Alternatively, the proposed communications tower may be supported on a drilled shaft foundation. The proposed equipment platform and other ancillary structures may derive support from the glacial till. Design recommendations are presented in the following sections.

We recommend that the exposed subgrades be thoroughly evaluated after excavation to proposed grade. We recommend that the geotechnical engineer be retained to evaluate the bearing material for the foundation subgrade. We recommend that the geotechnical engineer review the construction of the drilled shaft, if selected as the foundation system.

4.2 Earthwork

Preparation of the site should include removal of topsoil, organic subsoil (subsoil with visible roots), or otherwise unsuitable materials. The soil subgrade should be proofrolled with a walk-behind vibratory roller or heavy plate compactor. Unstable subgrades should be removed and replaced with compacted structural fill. Minus ¾-inch crushed stone may be used in place of structural fill. If required, structural fill may then be placed within the compound area to attain the required grade.

Fill and backfill materials should meet the following material requirements:

Fill Type [1]	USCS Classification	Acceptable Location for Placement
Structural Fill [2,3]	GW	All locations and elevations. Based on observations, the glacial till may be selectively re-used as structural fill, provided it is free of organic and closely meets the gradation requirements in Note 2, below. Cobbles and boulders should be culled prior to re-use.
Common Fill [4]	Varies	Common fill may be used for general site grading to within 12 inches of finished grade. Common fill should not be used below sensitive structures. The glacial till may be re-used as common fill, provided it is free of organics and can be adequately compacted. Cobbles and boulders should be culled prior to re-use.

1. Compacted fill should consist of approved materials that are free of organic matter and debris. Frozen material should not be used. Fill should not be placed on a frozen subgrade.
2. Imported structural fill should meet the following gradation:

Percent Passing by Weight	
Sieve Size	**Structural Fill**
6″	100
3″	70 – 100
2″	(100)*
¾″	45 – 95
No. 4	30 – 90
No. 10	25 – 80
No. 40	10 – 50
No. 200	0 – 12

* Maximum 2-inch particle size within 12 inches of the underside of concrete elements

3. Recommendation for re-use of site soils as Structural Fill applies only to re-use on this site and only if Terracon is monitoring construction.
4. Imported common fill should have a maximum particle size of 6 inches and no more than 25 percent by weight passing the US No. 200 sieve.

4.2.1 Compaction Requirements

Item	Description
Fill Lift Thickness	8 inches or less in loose thickness
Compaction Requirements [1]	95 percent maximum modified Proctor dry density (ASTM D1557, Method C)
Moisture Content – Granular Material	Workable moisture levels

1. We recommend that fill be tested for moisture content and compaction during placement. Should the results of the in-place density tests indicate the specified moisture or compaction limits have not been met, the area represented by the test should be reworked and retested, as required, until the specified moisture and compaction requirements are achieved.

4.2.2 Grading and Drainage

We understand that the area west of the compound area will be graded to slope downward from about El 807 to 790. Similary, the area south of the proposed access way will be graded to slope downward from about El 816 to 794. Permanent fill slopes will therefore be required to develop the site.

We recommend fill slopes be constructed no steeper than 2 Horizontal : 1 Vertical (2H:1V). This is based on a granular fill with a gradation close to our structural fill being placed to create the fill slopes. Should siltier soil be used, a flatter slope, 3H:1V, may be warranted. Topsoil, other organic material, and loose soil should be removed before placing fill for slopes. Soil placed to create fill slopes should be compacted to at least 92 percent of the maximum dry density, as determined by ASTM D1557, Method C.

We recommend that permanent soil slope surfaces be vegetated or covered with riprap stone underlain by a geotextile separation fabric (Mirafi 140N, or equivalent) to reduce erosion. Erosion control blankets could also be used; however, rip rap may provide more stability. Temporary sedimentation and erosion control methods should be implemented during construction and left in place until the slope surfaces have become stabilized.

Adequate drainage should be provided at the site to reduce the likelihood of an increase in moisture content of the foundation soils. Final site grading should be away from the tower to reduce the likelihood of water ponding near the structure.

4.2.3 Earthwork Construction Considerations

Although the exposed subgrade is anticipated to be relatively stable upon initial exposure, unstable subgrade conditions could develop during general construction operations, particularly if the soils are wetted and/or subjected to repetitive construction traffic. Should unstable subgrade conditions develop, stabilization measures will need to be employed.

Construction traffic over the completed soil subgrade should be avoided to the extent practical. The site should also be graded to prevent ponding of surface water on the prepared soil subgrades or in excavations. If the soil subgrade should become frozen, wet, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and recompacted.

As a minimum, temporary excavations should be sloped or braced as required by Occupational Health and Safety Administration (OSHA) regulations to provide stability and safe working conditions. Temporary excavations may be required during grading operations. The contractor, by his contract, is usually responsible for designing and constructing stable, temporary excavations and should shore, slope or bench the sides of the excavations, as required, to maintain stability of both the excavation sides and bottom. All excavations should comply with applicable local, State, and federal safety regulations, including the current OSHA Excavation and Trench Safety Standards.

The geotechnical engineer should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation; proofrolling; placement and compaction of controlled compacted fills; backfilling of excavations into the completed subgrade, and just prior to construction of foundations.

4.3 Foundation Recommendations

4.3.1 Tower Foundations

We recommend that the proposed monopole communications tower be supported on either a monolithic mat or a pier-and-pad foundation placed on the glacial till or on compacted structural fill placed over the glacial till. Minus ¾-inch crushed stone may be used in place of structural fill. Alternatively, the proposed communications tower may be supported on a drilled shaft foundation extending into the glacial till. Design recommendations and construction considerations for the recommended foundation systems are presented in the following tables and paragraphs.

4.3.1.1 Mat/Pad Foundation Design Recommendations

Description	Value
Net allowable bearing pressure [1]	8,000 psf
Minimum embedment below finished grade for frost protection	42 inches
Approximate total settlement [2]	1 inch
Estimated differential settlement [2]	½ inch
Total soil unit weight (γ)	125 pcf
Passive pressure coefficient, K_p [3]	3.0 (ultimate)
Coefficient of sliding friction [4]	0.5 (ultimate)

1. The recommended net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the mat/pad base elevation.
2. Foundation settlement will depend upon the variations within the subsurface soil profile, the

Description	Value

structural loading conditions, the embedment depth of the mat/pad the thickness of compacted fill, and the quality of the earthwork operations.

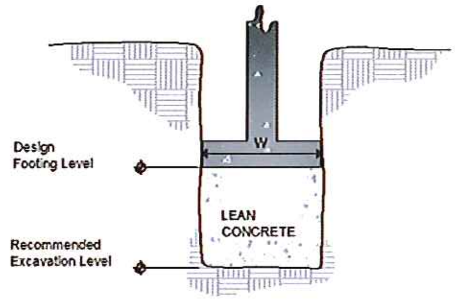
3. Passive pressure calculated with this parameter should be reduced by at least a factor of safety of 3, to reflect the amount of movement required to mobilize the passive resistance.
4. A factor of safety of at least 1.5 should be applied to the sliding resistance.

Uplift resistance for the tower foundation may be computed as the sum of the weight of the foundation element and the weight of the soil overlying the foundation. For this computation, we recommend using a soil unit weight of 100 pounds per cubic foot (pcf) for engineered fill overlying the footing placed as described in this section of this report. A unit weight of 150 pcf may be used for reinforced foundation concrete. A factor of safety of 1.0 may be applied to calculations of dead load; a higher factor of safety may be appropriate for loadings resisted by dead load.

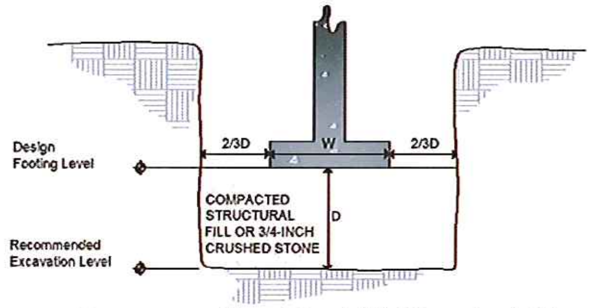
4.3.1.2 Mat/Pad Foundation Construction Considerations

The base of foundation excavations should be free of water and loose soil prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing disturbance. Should the soils at bearing level become wet, disturbed or frozen, the affected soil should be removed prior to placing concrete. The geotechnical engineer should be retained to observe and test the foundation bearing materials.

If unsuitable bearing soils are encountered in footing excavations, the excavation could be extended deeper to suitable soils and the footing could bear directly on these soils at the lower level. As an alternative, the footings could also bear on properly compacted structural fill. Minus ¾-inch crushed stone may be used in place of structural fill extending down to the suitable soils. Overexcavation for compacted structural fill placement below footings should extend laterally beyond all edges of the footings at least 8 inches per foot of overexcavation depth below footing base elevation. The overexcavation should then be backfilled up to the footing base elevation with well graded granular material placed in lifts of 8 inches or less in loose thickness and compacted to at least 95 percent of the modified Proctor maximum dry density (ASTM D1557, Method C). The overexcavation and backfill procedure is described in the following figure:



Lean Concrete Backfill



Overexcavation / Backfill / Crushed Stone

NOTE: Excavations in sketches shown vertical for convenience. Excavations should be sloped as necessary for safety.

The contractor should prevent groundwater, if encountered, and surface water runoff from collecting in the excavation. Subgrade soils that become unstable because of water and/or reworking by construction activity should be replaced with compacted structural, as necessary.

The predominant soil type at the recommended subgrade level will be the glacial till, portions of which have an elevated silt content. Soils with a higher silt content will be sensitive to excess moisture and lose strength quickly during wet periods. Contractors experienced in earthwork construction in this region should be aware of the silty soil behavior and the effect that moisture and inclement weather can have on its workability. If a contractor bids construction knowing that earthwork must begin during the winter or wet months, the contractor should include a contingency in his bid to use off-site suitable fill, and to remove and dispose of on-site soils that become unsuitable.

4.3.1.3 Drilled Shaft Design Recommendations

Description	Value
Net Allowable Bearing Capacity [1]	
Glacial Till (>15 feet)	10 ksf
Ultimate Side Friction [2]	
Glacial Till (>3.5 feet)	3 ksf
Coefficient Lateral Subgrade Reaction [3]	
Glacial Till	100 (z/D) kcf
Angle of Internal Friction	
Glacial Till	36 degrees
Estimated In-situ Soil Unit Weight	
Glacial Till	125 pcf
Approximate Groundwater Depth	Not Encountered
Concrete minimum 28-day unconfined compressive strength [4]	4,000 psi

Description	Value
Minimum drilled shaft diameter	Diameter of monopole base
Allowable deflection at top of shaft	0.5 inch

1. The allowable end bearing pressure assumes that loose soil at the base of the shaft has been removed and the base of the shaft has not been made unstable while excavating the shaft.
2. Contribution to shaft capacity from soil above a depth of 3.5 feet should be ignored. The uplift capacity of the shaft will be based on side friction and the dead weight of the shaft.
3. z is depth below the ground surface and D is diameter of shaft, both in feet.
4. Use air entrained concrete.

We anticipate that the design length of the shaft will be primarily dependent on the embedment/lateral capacity required to resist live loading, such as the combination of wind and ice loads. However, the base of the drilled shaft should be at least 15 feet below ground surface. The drilled shaft will be designed to resist tension loads and therefore should have reinforcing steel installed throughout the entire length of the shaft. Technical specifications should be prepared that require material and installation detail submittals, proof of experience in drilled shaft installation, concrete placement methods, and hole stabilization methods.

4.3.1.4 Drilled Shaft Construction Recommendations

The drilled shaft should be aligned vertically. The drilling method or combination of methods selected by the contractor should be submitted for review by the geotechnical engineer, prior to mobilization of drilling equipment. Bedrock was not encountered in the boring within the likely depth of the drilled shaft, i.e., less than about 30 feet.

As described in the subsurface conditions cobbles and boulders will likely be encountered within the glacial till. Obstructions such as boulders, and sometimes cobbles, can slow shaft installation progress substantially. We would recommend that the specifications include payment provisions for removing boulders, and similar obstructions. For example, the contractor could be paid based on time and materials or by the cubic yard for obstruction removal.

A section of temporary casing may be required to reduce the likelihood of caving of the side walls of the shaft hole. Concrete should be placed by tremie methods. The contractor should take these aspects into account in his proposed drilling method(s).

4.3.2 Equipment Cabinet Foundations

Equipment cabinets and ancillary structures may be supported on slabs underlain by at least a 12-inch thickness of compacted structural fill. Minus ¾-inch crushed stone may be used in place of structural fill placed over the existing fill. Design recommendations for the proposed structures are presented in the following table:

4.3.2.1 Slab Design Recommendations

Description	Value
Slab support (compacted structural fill or minus ¾-inch crushed stone)	12-inch thick layer
Net allowable bearing pressure [1]	2,500 psf
Modulus of subgrade reaction	250 pounds per square inch per in (psi/in) for point loading
Minimum embedment below finished grade for frost protection [2,3]	42 inches
Approximate total settlement [4]	1 inch
Estimated differential settlement [4]	½ inch
Coefficient of sliding friction [5,6]	0.5 (ultimate)

1. The recommended net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the slab base elevation.
2. Consideration should be given to using dense insulation boards (Dow Styrofoam Highload, or similar) under and adjacent to lightly loaded slabs-on-grade, to provide the equivalent of 42 inches of earth cover, thus reducing frost penetration.
3. Air entraining admixtures should be used for concrete exposed to freezing.
4. Settlement will depend upon the variations within the subsurface soil profile, the structural loading conditions, the thickness of compacted fill, and the quality of the earthwork operations.
5. A factor of safety of at least 1.5 should be applied to the sliding resistance.
6. If rigid insulation is used beneath the slab for frost protection, the coefficient of sliding friction between the concrete and the insulation should be based on the manufacturer's recommendation.

4.3.2.2 Slab Construction Considerations

On most tower sites, the site grading is generally accomplished early in the construction phase. However, as construction proceeds, the subgrade may be disturbed by foundation excavations, construction traffic, rainfall, etc. As a result, the slab subgrade may not be suitable for placement of structural fill and corrective action will be required.

We recommend the area underlying the slabs be rough graded and then thoroughly compacted with a heavy plate compactor or vibratory roller prior to final grading and placement of structural fill. Minus ¾-inch crushed stone may be used in place of structural fill. Particular attention should be paid to high traffic areas that were rutted and disturbed earlier and to areas previously filled or backfilled. Areas where unsuitable or unstable conditions are located should be repaired by removing and replacing the affected material with properly compacted structural fill or minus ¾-inch crushed stone, as necessary.

4.4 Seismic Considerations

Description	Value
Code Used [1]	Connecticut State Building Code (CBC)
Site Class [2]	C
Maximum considered earthquake ground motions (5 percent damping)	0.067g (1.0 second spectral response acceleration)
	0.301g (0.2 second spectral response acceleration)
Liquefaction potential in event of an earthquake	Not susceptible

1. The CBC incorporates the Seismic Design Category approach of the 2003 International Building Code (IBC).
2. The CBC uses a site soil profile determination extending a depth of 100 feet for seismic site classification. The current scope requested does not include a 100-foot soil profile determination; the boring performed for this report extended to a maximum depth of 30 feet. However, we expect soil as dense as that encountered above a depth of 30 feet will extend to at least 100 feet.

5.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications, so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, foundation construction, and other earth-related construction phases of the project.

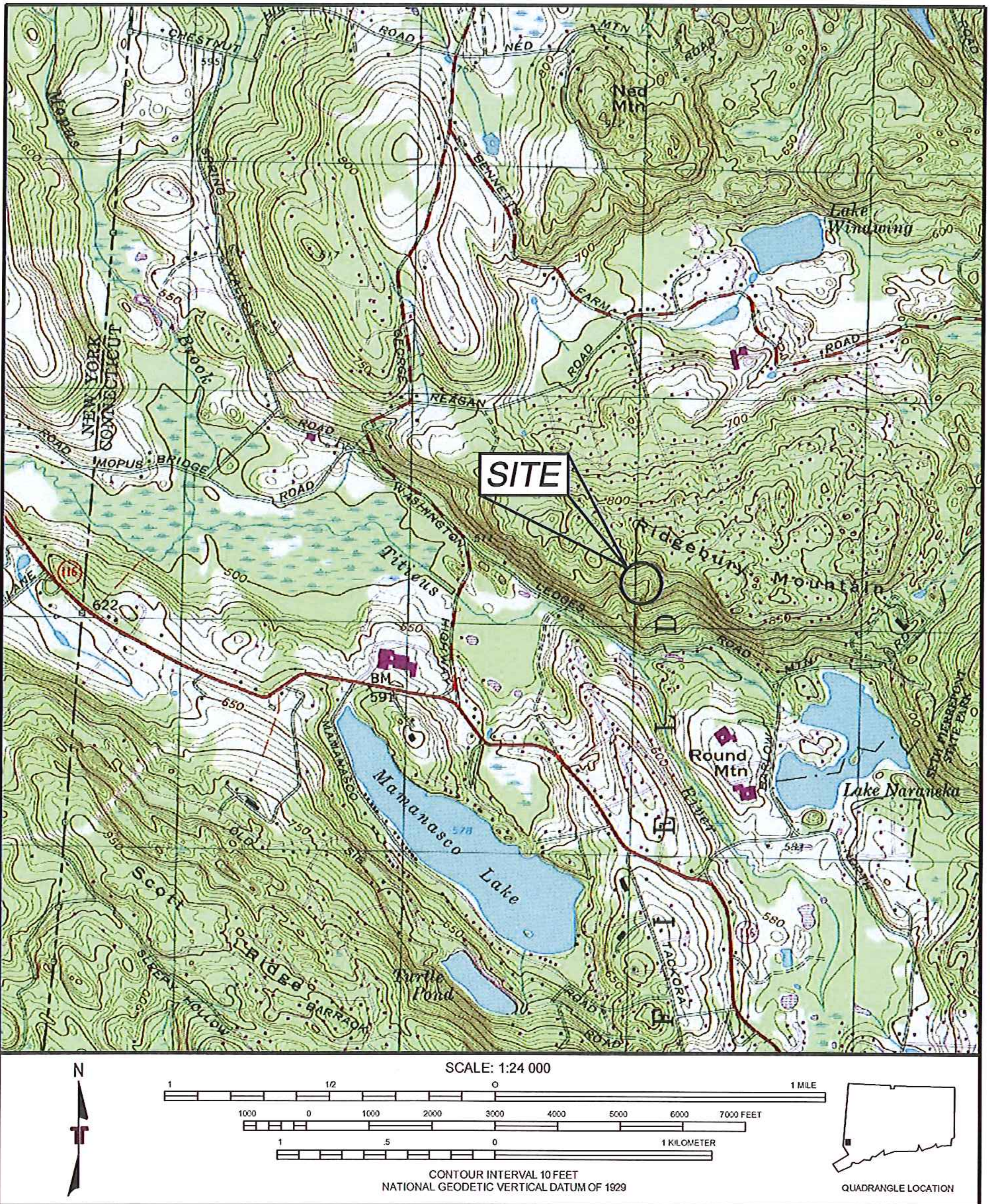
The analysis and recommendations presented in this report are based upon the data obtained from the exploration performed at the indicated location and from other information discussed in this report. This report does not reflect variations that may occur between the explorations, across the site, or due to the modifying effects of weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified, so that further evaluation and supplemental recommendations can be provided.

Resistivity testing may be influenced by the presence of boulders or other anomalies within the test area. Resistivity results will also fluctuate depending on the degree of compaction, moisture content, soil constituent solubility, and temperature. Field resistivity values may vary depending upon season, precipitation, and other conditions, which may be different from those at the time of testing.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

APPENDIX A
FIELD EXPLORATION



Project Mngr: BDO	Project No. J2145173	**Terracon** Consulting Engineers and Scientists	SITE LOCATION MAP	EXHIBIT
Drawn By: BDO	Quadrangle: PEACH LAKE NY-CT 1998	201 Hammer Mill Road, Rocky Hill, CT 06067	PROPOSED HOMELAND TOWERS: CT-897	A-1
Checked By: RWM	File No. J2145173	PH. (860)721 1900 FAX (860)721 1939	LEDGES ROAD	
Approved By: RWM	Date: October 2014		RIDGEFIELD, CONNECTICUT	

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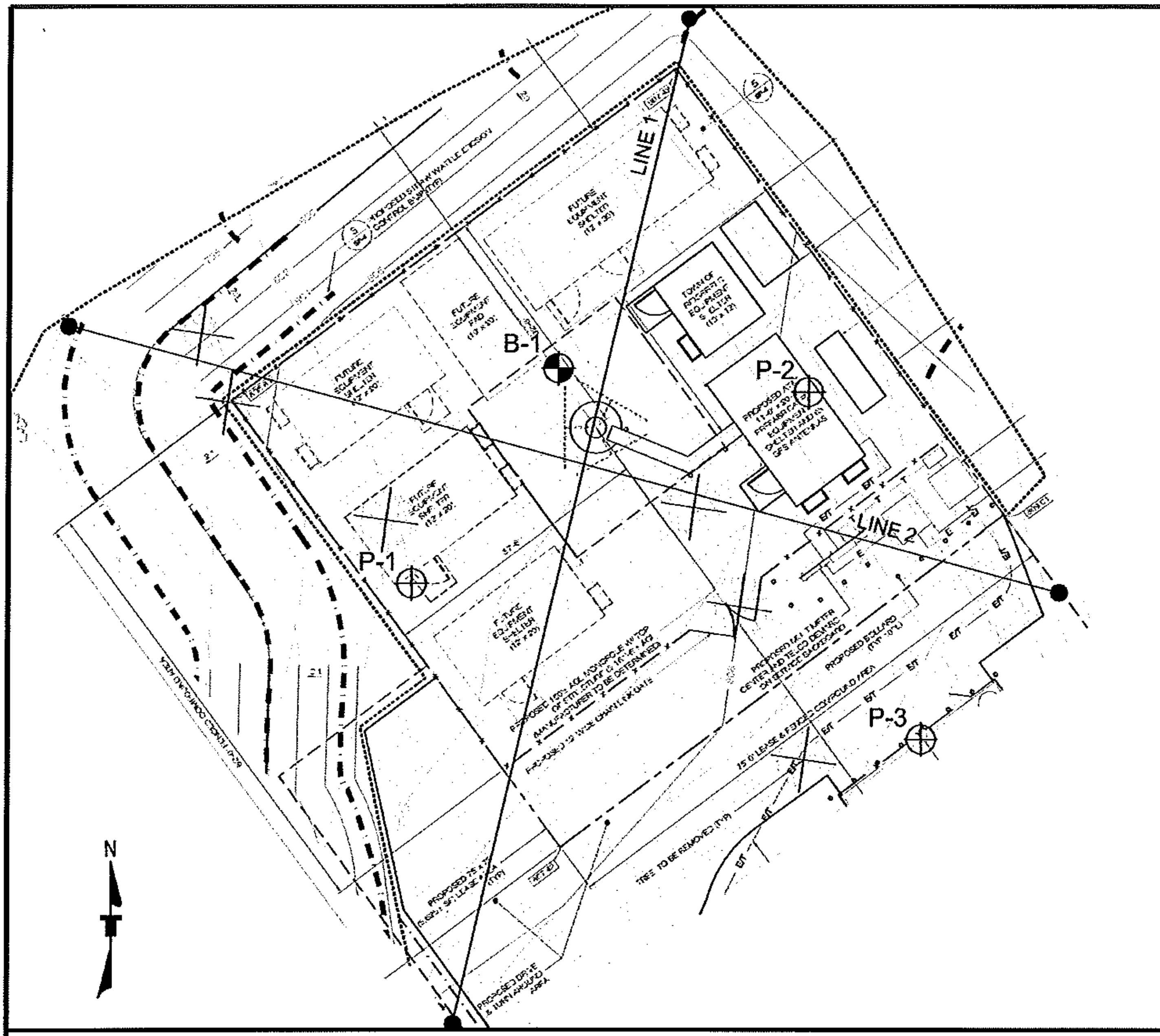


20 0 10 20

APPROXIMATE SCALE IN FEET

LEGEND

B-1 TEST BORING LOCATION

P-1 TEST PROBE LOCATION (TYP)

LINE 1 RESISTIVITY TEST LOCATION (TYP)

NOTES:

1. THIS DIAGRAM WAS PREPARED BASED ON A PLAN BY ALL-POINTS TECHNOLOGY CORPORATION OF KILLINGWORTH, CONNECTICUT, APT FILING NUMBER No. CT-283-120, SHEET No. SP-2, DATED: AUGUST 29, 2013.
2. THE TEST BORING B-1 AND TEST PROBES P-1 THROUGH P-3 WERE ADVANCED ON SEPTEMBER 30, 2014 UNDER THE DIRECTION OF TERRACON WITH EQUIPMENT OWNED AND OPERATED BY NEW ENGLAND BORING CONTRACTORS, INC. OF GLASTONBURY, CONNECTICUT.
3. RESISTIVITY TESTING WAS PERFORMED ON SEPTEMBER 30, 2014 BY A TERRACON FIELD ENGINEER.
4. THE APPROXIMATE LOCATIONS OF THE TEST BORING, TEST PROBES, AND RESISITIVITY TESTS WERE TAPED FROM SITE FEATURES. THE LOCATIONS SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.
5. USE OF THIS DIAGRAM IS LIMITED TO THE ILLUSTRATION OF THE APPROXIMATE LOCATIONS OF THE TEST BORING, TEST PROBES, RESISTIVITY TESTS, AND OTHER PERTINENT SITE FEATURES. ANY OTHER USE OF THIS DIAGRAM WITHOUT PERMISSION FROM TERRACON IS PROHIBITED.

Project Mngr: BDO	Project No. J2145173	Terracon Consulting Engineers and Scientists	EXPLORATION LOCATION DIAGRAM	EXHIBIT
Drawn By: BDO	Scale: 1" = 20'		PROPOSED HOMELAND TOWERS: CT-897	
Checked By: RWM	File No. J2145173		LEDGES ROAD	A-2
Approved By: RWM	Date: October 2014	201 Hammer Mill Road Rocky Hill, CT 06067 PH. (860)721 1900 FAX (860)721 1939	RIDGEFIELD, CONNECTICUT	

n:\projects\2014\j2145173\working files\diagrams-drawings-figures\j2145173 homeland tower ridgefield, ct.dwg

Field Exploration Description

The approximate test boring and probe locations, which are shown on Exhibit A-2, was measured by taping from existing features in the field and by estimating right angles. . The locations of the explorations should be considered accurate only to the degree implied by the method used to define them. The ground elevation at the exploration locations were estimated by interpolating between contours of existing grade elevations shown on the provided *"Compound Site Plan and Tower Elevation"*, dated August 29, 2013, which includes contours at 1-foot intervals.

Terracon observed the advancement of one test boring (B-1) and three test probes (P-1, P-2, and P-3) within the proposed tower compound on September 30, 2014 using a ATV-mounted rotary Mobile B-53 drill rig, owned and operated by New England Boring Contractors, Inc. of Glastonbury, Connecticut. B-1 was advanced using 3¼-inch inside diameter hollow stem augers to a depth of 30.5 feet and terminated without refusal in the glacial till.

In the split-barrel sampling procedure utilized in B-1, the number of blows required to advance a standard 2-inch O.D. split-barrel sampler typically the middle 12 inches of the total 24-inch penetration by means of a 140-pound safety hammer with a free fall of 30 inches is the Standard Penetration Test (SPT) resistance value "N". This "N" value is used to estimate the *in-situ* relative density of cohesionless soils and consistency of cohesive soils.

The soil samples were placed in labeled glass jars and transit to our office for further review and classification by a Terracon geotechnical engineer. Information provided on the boring log attached to this report includes soil descriptions, relative density and/or consistency evaluations, boring depths, sampling intervals, and groundwater conditions. The boring was backfilled with auger cuttings prior to the drill crew leaving the site.

P-1, P-2, and P-3 were advanced with 4-inch diameter solid stem augers to further evaluate the subsurface conditions within the proposed tower compound and underground electrical and telecommunication conduits areas. The probes terminated at a depth of 10 feet in the glacial till. The probes were backfilled with auger cuttings prior to the drill crew leaving the site.

Field logs of the explorations were prepared during drilling, including visual classification of the materials encountered as well as interpretation of the subsurface conditions between samples. The final exploration logs included with this report represents further interpretation by the geotechnical engineer of the field logs.

BORING LOG NO. B-1

PROJECT: Proposed Homeland Towers: CT-897

CLIENT: All-Points Technology Corporation, P.C. Killingworth, Connecticut

SITE: Ledges Road Ridgefield, Connecticut

LOCATION See Exhibit A-2

GRAPHIC LOG	DEPTH	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS
	0.4	**FOREST MAT**			X	6	6-12-12-28 N=24
	0.8	**SUBSOIL**					
		SILTY SAND, with gravel, frequent cobbles and boulders, gray to brown, very dense, **(GLACIAL TILL)**			X	12	12-16-50-50/4" N>50
			5		X	12	22-33-48-45 N=81
			10		X	5	50/5"
			15		X	4	50/4"
			20		X	3	50/3"
			25		X	5	50/6"
	30.5		30		X	6	50/6"
		Boring Terminated at 30.5 Feet					

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples taken with a 2" O.D. split spoon sampler driven by a hammer operated by winch and cable.

Advancement Method:
3 1/4-inch inside diameter hollow stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS
No free water observed

Terracon
201 Hammer Mill Road
Rocky Hill, Connecticut

Boring Started: 9/30/2014	Boring Completed: 9/30/2014
Drill Rig: Mobile B-53	Driller: O. Cone
Project No.: J2145173	Exhibit: A-4

PROBE LOG NO. P-1

PROJECT: Proposed Homeland Towers: CT-897

CLIENT: All-Points Technology Corporation, P.C.
Killingworth, Connecticut

SITE: Ledges Road
Ridgefield, Connecticut

GRAPHIC LOG	LOCATION See Exhibit A-2 DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS
	0.4 **FOREST MAT**					
	SILTY SAND, with gravel, occasional cobbles and boulders, gray to brown, estimated to be very dense, **(GLACIAL TILL)**	5				
	10.0	10				
	Probe Terminated at 10 Feet					

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method: 4-inch diameter solid stem augers	See Exhibit A-3 for description of field procedures. See Appendix B for description of laboratory procedures and additional data (if any).	Notes:
Abandonment Method: Boring backfilled with soil cuttings upon completion.	See Appendix C for explanation of symbols and abbreviations.	

WATER LEVEL OBSERVATIONS			
No free water observed	Terracon 201 Hammer Mill Road Rocky Hill, Connecticut	Probe Started: 9/30/2014	Probe Completed: 9/30/2014
		Drill Rig: Mobile B-53	Driller: O. Cone
		Project No.: J2145173	Exhibit: A-5

PROBE LOG NO. P-2

PROJECT: Proposed Homeland Towers: CT-897

CLIENT: All-Points Technology Corporation, P.C.
Killingworth, Connecticut

SITE: Ledges Road
Ridgefield, Connecticut

GRAPHIC LOG	LOCATION See Exhibit A-2 / DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS
	0.4 **FOREST MAT**					
	SILTY SAND, with gravel, occasional cobbles and boulders, gray to brown, estimated to be very dense, **(GLACIAL TILL)**	5				
	10.0	10				
	Probe Terminated at 10 Feet					

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method: 4-inch diameter solid stem augers Abandonment Method: Boring backfilled with soil cuttings upon completion.	See Exhibit A-3 for description of field procedures. See Appendix B for description of laboratory procedures and additional data (if any). See Appendix C for explanation of symbols and abbreviations.	Notes:

WATER LEVEL OBSERVATIONS	Terracon	Probe Started: 9/30/2014	Probe Completed: 9/30/2014
No free water observed	201 Hammer Mill Road	Drill Rig: Mobile B-53	Driller: O. Cone
	Rocky Hill, Connecticut	Project No.: J2145173	Exhibit: A-6

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL J2145173 HOMELAND TOWERS - CT897.GPJ

PROBE LOG NO. P-3

PROJECT: Proposed Homeland Towers: CT-897

**CLIENT: All-Points Technology Corporation, P.C.
Killingworth, Connecticut**

**SITE: Ledges Road
Ridgefield, Connecticut**

GRAPHIC LOG	LOCATION See Exhibit A-2 DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS
	0.4 **FOREST MAT**					
	SILTY SAND, with gravel, occasional cobbles and boulders, gray to brown, estimated to be very dense, **(GLACIAL TILL)**	5				
	10.0	10				
	Probe Terminated at 10 Feet					

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
4-inch diameter solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Road
Rocky Hill, Connecticut

Probe Started: 9/30/2014	Probe Completed: 9/30/2014
Drill Rig: Mobile B-53	Driller: O. Cone
Project No.: J2145173	Exhibit: A-7

APPENDIX B
LABORATORY TESTING

Laboratory Testing

Descriptive classifications of the soils indicated on the Terracon boring log are in accordance with the enclosed General Notes and the Unified Soil Classification System (USCS). USCS symbols are also shown. A brief description of the USCS is attached to this report. Classification was by visual/manual procedures.

APPENDIX C
SUPPORTING DOCUMENTS

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING

Auger	Split Spoon
Shelby Tube	Macro Core
Ring Sampler	Rock Core
Grab Sample	No Recovery

WATER LEVEL

- Water Initially Encountered
- Water Level After a Specified Period of Time
- Water Level After a Specified Period of Time

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

(HP)	Hand Penetrometer
(T)	Torvane
(b/f)	Standard Penetration Test (blows per foot)
(PID)	Photo-Ionization Detector
(OVA)	Organic Vapor Analyzer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels, sands and silts.			CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance			
Descriptive Term (Density)	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.	Descriptive Term (Consistency)	Unconfined Compressive Strength, Qu, tsf	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.
Very Loose	0 - 3	0 - 6	Very Soft	less than 0.25	0 - 1	< 3
Loose	4 - 9	7 - 18	Soft	0.25 to 0.50	2 - 4	3 - 4
Medium Dense	10 - 29	19 - 58	Medium-Stiff	0.50 to 1.00	4 - 8	5 - 9
Dense	30 - 50	59 - 98	Stiff	1.00 to 2.00	8 - 15	10 - 18
Very Dense	> 50	≥ 99	Very Stiff	2.00 to 4.00	15 - 30	19 - 42
			Hard	> 4.00	> 30	> 42

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

Terracon

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]				Soil Classification: Group Symbol	Soil Classification: Group Name [B]
Coarse Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]	GW	Well-graded gravel [F]
			$Cu < 4$ and/or $1 > Cc > 3$ [E]	GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH	GM	Silty gravel [F,G,H]
			Fines classify as CL or CH	GC	Clayey gravel [F,G,H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]	SW	Well-graded sand [I]
			$Cu < 6$ and/or $1 > Cc > 3$ [E]	SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH	SM	Silty sand [G,H,I]
			Fines classify as CL or CH	SC	Clayey sand [G,H,I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A" line [J]	CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]	ML	Silt [K,L,M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried < 0.75	OL	Organic clay [K,L,M,N]
					Organic silt [K,L,M,O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line	CH	Fat clay [K,L,M]
			PI plots below "A" line	MH	Elastic Silt [K,L,M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried < 0.75	OH	Organic clay [K,L,M,P]
					Organic silt [K,L,M,Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor			PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10} \quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

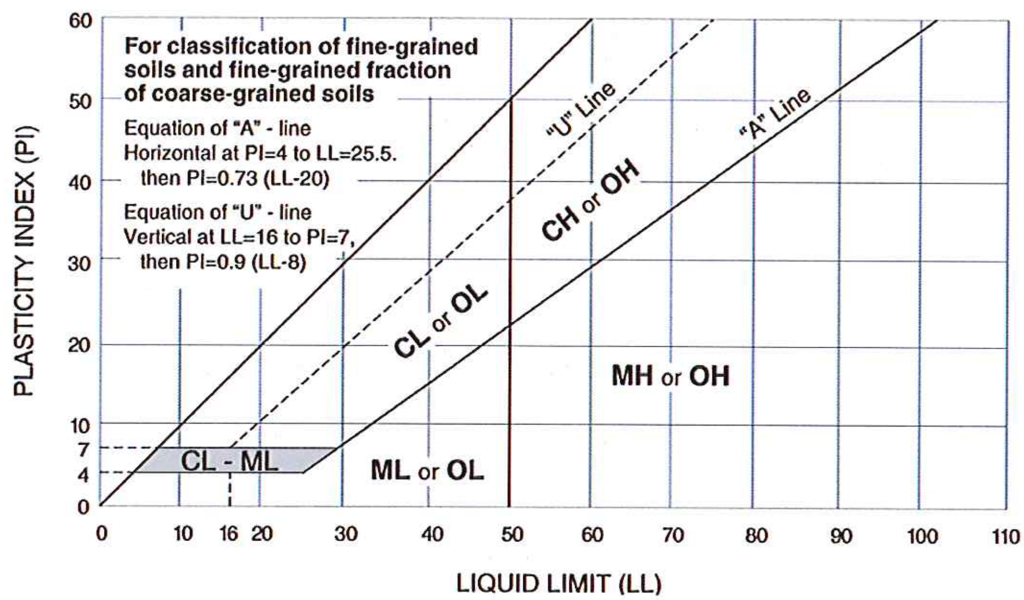
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



Terracon

Exhibit C-2

ATTACHMENT 2

Structural Design Report

valmont STRUCTURES

VALMONT MICROFLECT
3575 25th St. SE
Salem, OR 97302
PHONE: 1-800-547-2151
ENGINEER: Jonathon Neumann
Reviewed by: JDN

COMMUNICATION POLE DESIGN CALCULATIONS

Insite Towers
VALMONT ORDER# 273806
SITE NAME: RIDGEFIELD, CT897, CT
POLE HEIGHT: 149FT (150 FT AGL)

valmont STRUCTURES

11/18/14

ENGINEERING DATA
for
Insite Towers
RIDGEFIELD, CT897, CT
VALMONT QUOTATION 273806

1) STRUCTURE DESIGN CONFORMS TO EIA/TIA-222-G INCLUDING:
100.0 MPH WIND (3 SECOND GUST, 50 YR. RETURN PERIOD)
50.0 MPH ICE WIND (50 YR. RETURN PERIOD)
DESIGN ICE THICKNESS = 0.75 INCHES
EXPOSURE CATEGORY C
STRUCTURE CLASSIFICATION II
TOPOGRAPHIC CATEGORY 1
60.0 MPH BASIC WIND SPEED WITH NO ICE FOR TWIST AND SWAY
2) FEEDLINES ARE ASSUMED TO BE PLACED INTERIOR TO THE POLE.
3) ALL MICROWAVE ASSUMED TO BE 6 GHz UNLESS OTHERWISE NOTED.
4) TOTAL POLE HEIGHT IS 150 FT AGL.
5) ELEVATIONS ARE MEASURED FROM TOP OF BASE PLATE (APPROX. 1 FT AGL).
6) POLE IS TO BE PAINTED.
7) POLE HAS A THEORETICAL FALL ZONE RADIUS OF 66 FT OR LESS.
8) LOADING AS FOLLOWS:
149.0' POLE
1 - BA40-41-DIN (w/PM) @ 149.0
12 - HPA-65R-BUU-H8 (w/PM) @ 145.0
24 - Ericsson RRUS-11 (19.7"x17"x7.2") @ 145.0
4 - Raycap DC6-48-60-18-F (24"x11") @ 145.0
1 - 12' SP1 LP Platform @ 145.0
12 - PANEL (8' X 1' X 7") (w/PM) @ 135.0
4 - TMA (6"x6"x4") @ 135.0
6 - Diplexer (8" x 8" x 3" - 8#) @ 135.0
12 - Ericsson RRUS-11 (19.7"x17"x7.2") @ 135.0
3 - Raycap DC6-48-60-18-F (24"x11") @ 135.0
1 - 12' SP1 LP Platform @ 135.0
12 - PANEL (8' X 1' X 7") (w/PM) @ 125.0
12 - Alcatel-Lucent RRH2x40-AWS 1700/2100 MHz @ 125.0
12 - Andrew E15S09P80 @ 125.0
3 - Raycap DC6-48-60-18-F (24"x11") @ 125.0
1 - 12' SP1 LP Platform @ 125.0
12 - PANEL (8' X 1' X 7") (w/PM) @ 115.0
12 - Alcatel-Lucent RRH2x40-AWS 1700/2100 MHz @ 115.0
1 - 12' SP1 LP Platform @ 115.0
12 - PANEL (8' X 1' X 7") (w/PM) @ 105.0
12 - Alcatel-Lucent RRH2x40-AWS 1700/2100 MHz @ 105.0
1 - 12' SP1 LP Platform @ 105.0
1 - 2' HIGH PERFORMANCE (w/PM) (11.7 GHz) @ 79.0
1 - WHIP (2.5" X 20') (w/PM) @ 69.0
1 - 2' HIGH PERFORMANCE (w/PM) (11.7 GHz) @ 64.0

STRUCTURE

POLE HEIGHT(FT):	149	NUMBER OF A.B.'s:	22
BOLT CIRCLE(IN):	64.25	DIA. OF A.B.'s(IN):	2.25
BASE VERTICAL(K):	57.63	LENGTH OF A.B.'s(IN):	66.00
BASE SHEAR(K):	58.96	PROJECTION LENGTH(IN):	12.50
BASE MOMENT(FT-K):	6846	TEMPLATE OD(IN):	67.75

valmont STRUCTURES

BY__________ DATE ________
CHKD. BY ________ DATE ________ SHEET NO. ________________

11/18/14

ENGINEERING DATA

for

Insite Towers
RIDGEFIELD, CT897, CT
VALMONT QUOTATION 273806
EIA/TIA-222-G

BASIC WIND:	100.0 MPH	DESIGN ICE THICKNESS:	0.75 IN.
WIND & ICE:	50.0 MPH	EXPOSURE CATEGORY:	C
TWIST & SWAY:	60.0 MPH	STRUCTURE CLASS.:	II
S_S:	N/A	TOPOGRAPHIC CATEGORY:	1
S_1:	N/A		

QTY	DESCRIPTION	HEIGHT	DATA W.O. ICE EPA	WT	DATA W/ ICE EPA	WT
1	BA40-41-DIN (w/PM)	@ 149.0 '	6.88	69	16.29	202
12	HPA-65R-BUU-H8 (w/PM)	@ 145.0 '	107.64	1188	132.84	5400
24	Ericsson RRUS-11 (19.7"x17"x7.2")	@ 145.0 '	38.16	1224	49.68	3192
4	Raycap DC6-48-60-18-F (24"x11")	@ 145.0 '	3.84	100	5.08	348
1	12' SP1 LP Platform	@ 145.0 '	31.42	1143	51.04	2083
12	PANEL (8' X 1' X 7") (w/PM)	@ 135.0 '	109.68	1308	144.36	5148
4	TMA (6"x6"x4")	@ 135.0 '	0.76	60	1.48	120
6	Diplexer (8" x 8" x 3" - 8#)	@ 135.0 '	1.74	48	3.12	162
12	Ericsson RRUS-11 (19.7"x17"x7.2")	@ 135.0 '	19.08	612	24.72	1584
3	Raycap DC6-48-60-18-F (24"x11")	@ 135.0 '	3.84	75	5.07	261
1	12' SP1 LP Platform	@ 135.0 '	31.42	1143	50.91	2074
12	PANEL (8' X 1' X 7") (w/PM)	@ 125.0 '	100.56	1308	125.28	5112
12	Alcatel-Lucent RRH2x40-AWS 1700/210	@ 125.0 '	17.16	528	22.80	1344
12	Andrew E15S09P80	@ 125.0 '	3.72	108	6.60	336
3	Raycap DC6-48-60-18-F (24"x11")	@ 125.0 '	3.84	75	5.04	258
1	12' SP1 LP Platform	@ 125.0 '	15.71	1143	25.38	2066
12	PANEL (8' X 1' X 7") (w/PM)	@ 115.0 '	100.56	1308	125.16	5076
12	Alcatel-Lucent RRH2x40-AWS 1700/210	@ 115.0 '	17.16	528	22.80	1344
1	12' SP1 LP Platform	@ 115.0 '	15.71	1143	25.31	2056
1	2' HIGH PERFORMANCE (w/PM)	@ 79.0 '	4.71	67	6.30	146
1	WHIP (2.5" X 20') (w/PM)	@ 69.0 '	7.38	79	16.81	328
1	2' HIGH PERFORMANCE (w/PM)	@ 64.0 '	4.71	67	6.27	144

*** SUMMARY ***

Design Code: TIA-222-G Addendum 2

DESIGN SUMMARY

Height Above Base Plate (ft) 149.00	Ground Line Diameter (in) 56.875	Pole Shaft Weight (lbs)	28240
	Top Diameter (in) 20.500		
	Pole Taper (in/ft) 0.25713	Shape:	18 Sides

Connections Between Sections	/First/	/Second/	/Third/
Height Above Ground (ft)	52.67	94.50	121.00
Type	Slip Joint	Slip Joint	Slip Joint
Overlap Length (in)	77	63	52
Maximum Axial Force (lbs)	78625	64389	38697

Section Characteristics	/First/	/Second/	/Third/	/Fourth/
Base Diameter (in)	56.875	45.858	35.426	28.814
Top Diameter (in)	43.333	33.451	27.262	20.500
Thickness (in)	0.50000	0.43750	0.31250	0.21875
Length (ft)	52.667	48.250	31.750	32.333
Weight (lbs)	14107	8941	3325	1867
Yield Strength (ksi)	65.00	65.00	65.00	65.00

ANALYSIS SUMMARY

	Pt. of Fixity	Governing Level Sec.1	Governing Level Sec.2	Governing Level Sec.3	Governing Level Sec.4	Pole Top
Governing Load Case	WIND	WIND	WIND	WIND	WIND	WIND
Height (ft)	0.00	0.00	52.67	94.50	121.00	149.00
Resultant Moment (in-kips)	82148	82148	45999	19489	5870	29
Shear Force (lbs)	59061	59061	55093	50448	32491	417
Axial Force (lbs)	54510	54510	32791	19732	9609	14
Effective Yield Strength (ksi)	79.88	79.88	82.52	80.86	77.21	82.55
Combined Interaction Value	0.93	0.93	0.96	0.98	0.67	0.01
Total Deflection (in)	0.00	0.00	17.22	59.65	101.56	155.25

Note: Diameters are outside, measured across the flats
Forces and moments are reported in the local element coordinate system

*** POLE SHAFT POINT OF FIXITY REACTIONS ***

Loading Case Identifier	Moments About X-Axis (in-kips)	Moments About Y-Axis (in-kips)	Moments Resultant (X & Y) (in-kips)	Moments Torsional (in-kips)	Vertical Force (lbs)	Shear In X-Direction (lbs)	Shear In Y-Direction (lbs)	Shear Resultant (X & Y) (lbs)	Notes
WIND	62929	-52804	82148	0	54623	37897	45164	58957	
ICE + WIND	15265	-12809	19927	0	102438	8961	10680	13941	
T+S	12643	-10609	16504	0	44591	7646	9112	11895	

Note: Positive vertical force is downward.
Reactions are considered in the global coordinate system.

*** INPUT LOADS ***

Design Code TIA-222-G Addendum 2
Loading Case WIND

Basic Wind Velocity is 100.00 mph Ice Thickness 0.00
Wind Orientation is 50.0 Degrees Clockwise From +X Axis
Elevation of structure base above surrounding terrain = 1.00 ft
Structure Weight Overload Factor is 1.200
Exposure C, Gust Factor 1.10
Structure Category 2, Topographic Category 1, Crest Height 0.00 ft
Orientations are Measured Clockwise From +X Axis
Positive Y Axis is 90 Degrees Clockwise From +X Axis
Foundation Rotation of 0.00 Degrees
Elevation of structure base above surrounding terrain = 1.00 ft

```
            Orientation of System
                  +******* +X-Axis
                 * *       (Transverse)
                *  *
               *   *
(Longitudinal) *   * (Vertical)
    +Y-Axis   *    * +Z-Axis
```

Load Number	Mounting Height (ft)	Load Height (ft)	Load Eccentricity (ft)	Orientation in XY Plane (Degrees)	Force-X (lbs)	Force-Y (lbs)	Force-Z (lbs)	EPA (ft^2)	
1	149.00	154.75	0.00	50.00	263	313	83	6.88	1-BA40-41-DIN
2	145.00	145.00	0.00	50.00	4059	4837	1426	107.64	12-HPA-65R-BUU
3	145.00	145.00	0.00	50.00	1439	1715	1469	38.16	24-Ericsson RR
4	145.00	145.00	0.00	50.00	145	173	120	3.84	4-Raycap DC6-
5	145.00	145.00	0.00	50.00	1185	1412	1372	31.42	1-12' SP1 LP
6	135.00	135.00	0.00	50.00	4075	4856	1570	109.68	12-PANEL [8'
7	135.00	135.00	0.00	50.00	28	34	72	0.76	4-TMA [6"x6"x
8	135.00	135.00	0.00	50.00	65	77	58	1.74	6-Diplexer [8
9	135.00	135.00	0.00	50.00	709	845	734	19.08	12-Ericsson RR
10	135.00	135.00	0.00	50.00	143	170	90	3.84	3-Raycap DC6-
11	135.00	135.00	0.00	50.00	1167	1391	1372	31.42	1-12' SP1 LP
12	125.00	125.00	0.00	50.00	3676	4381	1570	100.56	12-PANEL [8'
13	125.00	125.00	0.00	50.00	627	748	634	17.16	12-Alcatel-Luc
14	125.00	125.00	0.00	50.00	136	162	130	3.72	12-Andrew E15S
15	125.00	125.00	0.00	50.00	140	167	90	3.84	3-Raycap DC6-
16	125.00	125.00	0.00	50.00	574	684	1372	15.71	1-12' SP1 LP
17	115.00	115.00	0.00	50.00	3613	4306	1570	100.56	12-PANEL [8'

*** INPUT LOADS ***

Loading Case WIND - Continued

Load Number	Mounting Height [ft]	Load Height [ft]	Load Eccentricity [ft]	Orientation in XY Plane [Degrees]	Force-X [lbs]	Force-Y [lbs]	Force-Z [lbs]	EPA [ft^2]	Orientation of System
									12-PANEL [8' 12-PANEL [8' 12-PANEL [8'
18	115.00	115.00	0.00	50.00	617	735	634	17.16	12-Alcatel-Luc
19	115.00	115.00	0.00	50.00	564	673	1372	15.71	1-12' SP1 LP
20	105.00	105.00	0.00	50.00	3545	4225	1570	100.56	12-PANEL [8'
21	105.00	105.00	0.00	50.00	605	721	634	17.16	12-Alcatel-Luc
22	105.00	105.00	0.00	50.00	554	660	1372	15.71	1-12' SP1 LP
23	79.00	79.00	0.00	50.00	156	186	80	4.71	1-2' HIGH PER
24	69.00	79.00	0.00	50.00	245	292	95	7.38	1-WHIP [2.5"
25	64.00	64.00	0.00	50.00	150	179	80	4.71	1-2' HIGH PER

*** INPUT LOADS ***

Design Code TIA-222-G Addendum 2
Loading Case ICE + WIND

Basic Wind Velocity is 50.00 mph Ice Thickness 0.75
Wind Orientation is 50.0 Degrees Clockwise From +X Axis
Elevation of structure base above surrounding terrain = 1.00 ft
Structure Weight Overload Factor is 1.200
Exposure C, Gust Factor 1.10
Structure Category 2, Topographic Category 1, Crest Height 0.00 ft
Orientations are Measured Clockwise From +X Axis
Positive Y Axis is 90 Degrees Clockwise From +X Axis
Foundation Rotation of 0.00 Degrees
Elevation of structure base above surrounding terrain = 1.00 ft

```
         Orientation of System
                +******* +X-Axis
               * *       (Transverse)
              *  *
             *   *
(Longitudinal) *     * (Vertical)
  +Y-Axis  *     * +Z-Axis
```

Load Number	Mounting Height (ft)	Load Height (ft)	Load Eccentricity (ft)	Orientation in XY Plane (Degrees)	Force-X (lbs)	Force-Y (lbs)	Force-Z (lbs)	EPA (ft^2)	
1	149.00	154.75	0.00	50.00	97	116	242	16.29	1-BA40-41-DIN
2	145.00	145.00	0.00	50.00	783	933	6480	132.84	12-HPA-65R-BUU
3	145.00	145.00	0.00	50.00	293	349	3830	49.68	24-Ericsson RR
4	145.00	145.00	0.00	50.00	30	36	418	5.08	4-Raycap DC6-
5	145.00	145.00	0.00	50.00	301	358	2500	51.04	1-12' SP1 LP
6	135.00	135.00	0.00	50.00	838	999	6178	144.36	12-PANEL [8'
7	135.00	135.00	0.00	50.00	9	10	144	1.48	4-TMA [6"x6"x
8	135.00	135.00	0.00	50.00	18	22	194	3.12	6-Diplexer [8
9	135.00	135.00	0.00	50.00	143	171	1901	24.72	12-Ericsson RR
10	135.00	135.00	0.00	50.00	29	35	313	5.07	3-Raycap DC6-
11	135.00	135.00	0.00	50.00	296	352	2489	50.91	1-12' SP1 LP
12	125.00	125.00	0.00	50.00	716	853	6134	125.28	12-PANEL [8'
13	125.00	125.00	0.00	50.00	130	155	1613	22.80	12-Alcatel-Luc
14	125.00	125.00	0.00	50.00	38	45	403	6.60	12-Andrew E15S
15	125.00	125.00	0.00	50.00	29	34	310	5.04	3-Raycap DC6-
16	125.00	125.00	0.00	50.00	145	173	2479	25.38	1-12' SP1 LP
17	115.00	115.00	0.00	50.00	703	837	6091	125.16	12-PANEL [8'

*** INPUT LOADS ***

Loading Case ICE + WIND - Continued

Load Number	Mounting Height [ft]	Load Height [ft]	Load Eccentricity [ft]	Orientation in XY Plane [Degrees]	Force-X [lbs]	Force-Y [lbs]	Force-Z [lbs]	EPA [ft^2]	Orientation of System 12-PANEL [8' 12-PANEL [8' 12-PANEL [8'
18	115.00	115.00	0.00	50.00	128	153	1613	22.80	12-Alcatel-Luc
19	115.00	115.00	0.00	50.00	142	169	2467	25.31	1-12' SPl LP
20	105.00	105.00	0.00	50.00	688	820	6034	124.92	12-PANEL [8'
21	105.00	105.00	0.00	50.00	126	150	1598	22.80	12-Alcatel-Luc
22	105.00	105.00	0.00	50.00	139	166	2455	25.22	1-12' SPl LP
23	79.00	79.00	0.00	50.00	33	39	175	6.30	1-2' HIGH PER
24	69.00	79.00	0.00	50.00	87	104	394	16.81	1-WHIP [2.5"
25	64.00	64.00	0.00	50.00	31	37	173	6.27	1-2' HIGH PER

*** INPUT LOADS ***

Design Code TIA-222-G Addendum 2
Loading Case T+S

Basic Wind Velocity is 60.00 mph Ice Thickness 0.00
Wind Orientation is 50.0 Degrees Clockwise From +X Axis
Elevation of structure base above surrounding terrain = 1.00 ft
Structure Weight Overload Factor is 1.000
Exposure C, Gust Factor 1.10
Structure Category 2, Topographic Category 1, Crest Height 0.00 ft
Orientations are Measured Clockwise From +X Axis
Positive Y Axis is 90 Degrees Clockwise From +X Axis
Foundation Rotation of 0.00 Degrees
Elevation of structure base above surrounding terrain = 1.00 ft

```
         Orientation of System
             +******* +X-Axis
            * *       (Transverse)
           *  *
          *   *
(Longitudinal) *    * (Vertical)
   +Y-Axis  *       * +Z-Axis
```

Load Number	Mounting Height (ft)	Load Height (ft)	Load Eccentricity (ft)	Orientation in XY Plane (Degrees)	Force-X (lbs)	Force-Y (lbs)	Force-Z (lbs)	EPA (ft^2)	
1	149.00	154.75	0.00	50.00	53	63	69	6.88	1-BA40-41-DIN
2	145.00	145.00	0.00	50.00	817	974	1188	107.64	12-HPA-65R-BUU
3	145.00	145.00	0.00	50.00	290	345	1224	38.16	24-Ericsson RR
4	145.00	145.00	0.00	50.00	29	35	100	3.84	4-Raycap DC6-
5	145.00	145.00	0.00	50.00	239	284	1143	31.42	1-12' SP1 LP
6	135.00	135.00	0.00	50.00	820	978	1308	109.68	12-PANEL [8'
7	135.00	135.00	0.00	50.00	6	7	60	0.76	4-TMA [6"x6"x
8	135.00	135.00	0.00	50.00	13	16	48	1.74	6-Diplexer [8
9	135.00	135.00	0.00	50.00	143	170	612	19.08	12-Ericsson RR
10	135.00	135.00	0.00	50.00	29	34	75	3.84	3-Raycap DC6-
11	135.00	135.00	0.00	50.00	235	280	1143	31.42	1-12' SP1 LP
12	125.00	125.00	0.00	50.00	740	882	1308	100.56	12-PANEL [8'
13	125.00	125.00	0.00	50.00	126	151	528	17.16	12-Alcatel-Luc
14	125.00	125.00	0.00	50.00	27	33	108	3.72	12-Andrew E15S
15	125.00	125.00	0.00	50.00	28	34	75	3.84	3-Raycap DC6-
16	125.00	125.00	0.00	50.00	116	138	1143	15.71	1-12' SP1 LP
17	115.00	115.00	0.00	50.00	727	867	1308	100.56	12-PANEL [8'

*** INPUT LOADS ***

Loading Case T+S - Continued

Load Number	Mounting Height [ft]	Load Height [ft]	Load Eccentricity [ft]	Orientation in XY Plane [Degrees]	Force-X [lbs]	Force-Y [lbs]	Force-Z [lbs]	EPA [ft^2]	Orientation of System 12-PANEL [8' 12-PANEL [8' 12-PANEL [8'
18	115.00	115.00	0.00	50.00	124	148	528	17.16	12-Alcatel-Luc
19	115.00	115.00	0.00	50.00	114	135	1143	15.71	1-12' SP1 LP
20	105.00	105.00	0.00	50.00	714	850	1308	100.56	12-PANEL [8'
21	105.00	105.00	0.00	50.00	122	145	528	17.16	12-Alcatel-Luc
22	105.00	105.00	0.00	50.00	111	133	1143	15.71	1-12' SP1 LP
23	79.00	79.00	0.00	50.00	32	38	67	4.71	1-2' HIGH PER
24	69.00	79.00	0.00	50.00	49	59	79	7.38	1-WHIP [2.5"
25	64.00	64.00	0.00	50.00	30	36	67	4.71	1-2' HIGH PER

*** Properties ***

Connection Locations	Distance From Base (ft)	Diameter Across Flats (in)	Wall Thickness (in)	D/t Across Flats	w/t Across Flats	Moments of Inertia (in^4)	Area (in^2)
Top of Sect 4	149.00	20.500	0.2188	93.71	14.76	732	14.08
EPA 2	145.00	21.529	0.2188	98.42	15.59	849	14.80
	144.00	21.786	0.2188	99.59	15.80	880	14.97
	139.00	23.071	0.2188	105.47	16.83	1047	15.87
EPA 6	135.00	24.100	0.2188	110.17	17.66	1194	16.58
	134.00	24.357	0.2188	111.35	17.87	1233	16.76
	129.00	25.643	0.2188	117.22	18.91	1441	17.65
EPA 12	125.00	26.671	0.2188	121.93	19.74	1623	18.37
	124.00	26.928	0.2188	123.10	19.94	1671	18.54
	121.00	27.700	0.2188	126.63	20.56	1820	19.08
Top of Sect 3	121.00	27.262	0.3125	87.24	13.62	2452	26.73
	119.00	27.776	0.3125	88.88	13.91	2595	27.24
Base of Sect 4	116.67	28.376	0.3125	90.80	14.25	2769	27.83
EPA 17	115.00	28.805	0.3125	92.18	14.49	2898	28.26
	114.00	29.062	0.3125	93.00	14.63	2977	28.52
	109.00	30.348	0.3125	97.11	15.36	3394	29.79
EPA 20	105.00	31.376	0.3125	100.40	15.94	3755	30.81
	104.00	31.633	0.3125	101.23	16.09	3849	31.07
	99.00	32.919	0.3125	105.34	16.81	4343	32.34
	94.50	34.076	0.3125	109.04	17.46	4822	33.49
Top of Sect 2	94.50	33.451	0.4375	76.46	11.72	6311	45.84
	94.00	33.580	0.4375	76.75	11.77	6385	46.02
Base of Sect 3	89.25	34.801	0.4375	79.55	12.26	7117	47.72
	89.00	34.865	0.4375	79.69	12.29	7157	47.81
	84.00	36.151	0.4375	82.63	12.81	7989	49.59
EPA 23	79.00	37.437	0.4375	85.57	13.32	8883	51.38
	74.00	38.722	0.4375	88.51	13.84	9841	53.16
EPA 24	69.00	40.008	0.4375	91.45	14.36	10866	54.95
EPA 25	64.00	41.294	0.4375	94.39	14.88	11960	56.73
	59.00	42.579	0.4375	97.32	15.40	13125	58.52
	54.00	43.865	0.4375	100.26	15.92	14364	60.30
	52.67	44.208	0.4375	101.05	16.05	14707	60.78
Top of Sect 1	52.67	43.333	0.5000	86.67	13.52	15751	67.97
	49.00	44.276	0.5000	88.55	13.85	16814	69.47
Base of Sect 2	46.25	44.983	0.5000	89.97	14.10	17642	70.59
	44.00	45.561	0.5000	91.12	14.30	18339	71.51
	39.00	46.847	0.5000	93.69	14.76	19954	73.55

*** Properties ***

Connection Locations	Distance From Base (ft)	Diameter Across Flats (in)	Wall Thickness (in)	D/t Across Flats	w/t Across Flats	Moments of Inertia (in^4)	Area (in^2)
	34.00	48.133	0.5000	96.27	15.21	21661	75.59
	29.00	49.418	0.5000	98.84	15.66	23463	77.63
	24.00	50.704	0.5000	101.41	16.12	25361	79.67
	19.00	51.990	0.5000	103.98	16.57	27360	81.71
	14.00	53.275	0.5000	106.55	17.02	29461	83.75
	9.00	54.561	0.5000	109.12	17.48	31667	85.79
	4.00	55.846	0.5000	111.69	17.93	33981	87.83
Pt of Fixity	0.00	56.875	0.5000	113.75	18.29	35910	89.46

Forces and Moments for Pole in the Local Element Coordinate System

Loading Case WIND

Dist. From Base (ft)	Mx (in-kips)	My (in-kips)	Resultant Mx & My (in-kips)	Torsion (in-kips)	Shear X-Dir. (lbs)	Shear Y-Dir. (lbs)	Resultant Shear (lbs)	Axial (lbs)
149.00	22	-19	29	0	268	320	417	14
145.00	43	-36	56	0	457	545	711	247
145.00	43	-36	56	0	7655	9123	11910	2826
144.00	153	-128	199	0	7703	9180	11983	2893
139.00	712	-598	930	0	7951	9476	12370	3223
135.00	1173	-984	1532	0	8162	9727	12698	3484
135.00	1173	-984	1532	0	14668	17481	22820	5792
134.00	1383	-1161	1806	0	14714	17535	22890	5910
129.00	2445	-2052	3192	0	14975	17847	23298	6349
125.00	3309	-2776	4319	0	15206	18122	23657	6640
125.00	3309	-2776	4319	0	20661	24623	32143	9228
124.00	3605	-3025	4705	0	20705	24676	32212	9381
121.00	4497	-3773	5870	0	20885	24890	32491	9609
121.00	4497	-3773	5870	0	20867	24868	32463	9703
119.00	5096	-4276	6652	0	20995	25021	32662	10152
116.67	5799	-4866	7570	0	21148	25204	32901	10671
115.00	6304	-5290	8230	0	21257	25333	33069	10860
115.00	6304	-5290	8230	0	26316	31362	40940	13397
114.00	6681	-5606	8722	0	26348	31400	40990	13669
109.00	8577	-7197	11197	0	26626	31731	41422	14510
105.00	10108	-8482	13195	0	26900	32058	41849	15000
105.00	10108	-8482	13195	0	31824	37927	49510	17759
104.00	10564	-8864	13790	0	31841	37946	49536	18112
99.00	12853	-10785	16779	0	32102	38258	49942	19131
94.50	14930	-12527	19489	0	32427	38645	50448	19732
94.50	14930	-12527	19489	0	32376	38584	50368	19934
94.00	15161	-12722	19792	0	32375	38583	50367	20267
89.25	17374	-14579	22681	0	32743	39021	50939	21997
89.00	17492	-14677	22834	0	32712	38985	50891	22223
84.00	19845	-16652	25905	0	33000	39328	51339	23556
79.00	22218	-18643	29004	0	33395	39798	51953	24582
79.00	22218	-18643	29004	0	33448	39861	52035	24991
74.00	24624	-20662	32145	0	33734	40202	52480	26408
69.00	27051	-22698	35312	0	34137	40683	53108	27508
69.00	27086	-22728	35359	0	34267	40837	53309	27931
64.00	29551	-24796	38576	0	34674	41322	53942	29067
64.00	29551	-24796	38576	0	34701	41355	53985	29491
59.00	32047	-26891	41835	0	34980	41687	54419	31024
54.00	34563	-29002	45119	0	35304	42074	54923	32462
52.67	35237	-29568	45999	0	35413	42204	55093	32791

Forces and Moments for Pole in the Local Element Coordinate System

Loading Case WIND

Dist. From Base (ft)	Mx (in-kips)	My (in-kips)	Resultant Mx & My (in-kips)	Torsion (in-kips)	Shear X-Dir. (lbs)	Shear Y-Dir. (lbs)	Resultant Shear (lbs)	Axial (lbs)
52.67	35237	-29568	45999	0	35349	42127	54993	32959
49.00	37100	-31130	48430	0	35599	42426	55383	35118
46.25	38505	-32309	50264	0	35781	42642	55665	36769
44.00	39659	-33278	51771	0	35862	42739	55792	37656
39.00	42238	-35442	55138	0	36123	43050	56198	39457
34.00	44835	-37621	58528	0	36377	43352	56592	41296
29.00	47450	-39816	61942	0	36621	43643	56972	43171
24.00	50083	-42025	65379	0	36854	43921	57335	45082
19.00	52732	-44247	68836	0	37074	44183	57677	47030
14.00	55396	-46482	72314	0	37276	44424	57991	49014
9.00	58074	-48730	75810	0	37468	44653	58290	51034
4.00	60766	-50988	79324	0	37677	44901	58614	53062
0.00	62929	-52804	82148	0	37964	45244	59061	54510

Deflections and Stresses for Pole

Loading Case WIND

*** Deflections and Stresses ***

Distance From Base (ft)	Defl. X-Dir (in)	Defl. Y-Dir (in)	Defl. Resultant X & Y (in)	Defl. Z-Dir (in)	Rotation (deg.)	Axial Interaction Term	Flexural Interaction Term	Shear Interaction Term	Torsion Interaction Term	Combined Stress Interaction	Effective Yield Strength (ksi)
149.00	99.8	118.9	155.3	9.3	9.48	0.00	0.01	0.00	0.00	0.01	82.55
145.00	94.7	112.9	147.4	8.7	9.47	0.00	0.01	0.00	0.00	0.01	82.55
145.00	94.7	112.9	147.4	8.7	9.47	0.00	0.01	0.06	0.00	0.02	82.55
144.00	93.4	111.4	145.4	8.5	9.47	0.00	0.03	0.06	0.00	0.04	82.55
139.00	87.1	103.8	135.5	7.7	9.40	0.00	0.14	0.05	0.00	0.15	81.60
135.00	82.1	97.9	127.7	7.1	9.29	0.00	0.22	0.05	0.00	0.22	80.63
135.00	82.1	97.9	127.7	7.1	9.29	0.01	0.22	0.09	0.00	0.23	80.63
134.00	80.9	96.4	125.8	6.9	9.26	0.01	0.25	0.09	0.00	0.26	80.38
129.00	74.7	89.1	116.3	6.1	9.04	0.01	0.40	0.09	0.00	0.42	79.16
125.00	69.9	83.3	108.8	5.5	8.81	0.01	0.51	0.09	0.00	0.53	78.19
125.00	69.9	83.3	108.8	5.5	8.81	0.01	0.51	0.12	0.00	0.53	78.19
124.00	68.8	81.9	107.0	5.4	8.74	0.01	0.55	0.12	0.00	0.57	77.94
121.00	65.3	77.8	101.6	5.0	8.53	0.01	0.65	0.12	0.00	0.67	77.21
121.00	65.3	77.8	101.6	5.0	8.53	0.01	0.45	0.08	0.00	0.46	82.55
119.00	63.0	75.1	98.0	4.7	8.41	0.01	0.49	0.08	0.00	0.50	82.55
116.67	60.4	72.0	94.0	4.4	8.26	0.01	0.53	0.08	0.00	0.54	82.55
115.00	58.6	69.8	91.1	4.2	8.15	0.01	0.56	0.08	0.00	0.57	82.55
115.00	58.6	69.8	91.1	4.2	8.15	0.01	0.56	0.10	0.00	0.58	82.55
114.00	57.5	68.5	89.4	4.1	8.08	0.01	0.58	0.10	0.00	0.60	82.55
109.00	52.2	62.2	81.2	3.5	7.71	0.01	0.68	0.10	0.00	0.70	82.55
105.00	48.1	57.3	74.9	3.1	7.39	0.01	0.75	0.09	0.00	0.77	82.55
105.00	48.1	57.3	74.9	3.1	7.39	0.01	0.75	0.11	0.00	0.77	82.55
104.00	47.1	56.2	73.3	3.0	7.31	0.01	0.78	0.11	0.00	0.80	82.48
99.00	42.4	50.5	65.9	2.6	6.86	0.01	0.88	0.11	0.00	0.90	81.63
94.50	38.3	45.7	59.7	2.2	6.44	0.01	0.96	0.10	0.00	0.98	80.86
94.50	38.3	45.7	59.7	2.2	6.44	0.01	0.71	0.08	0.00	0.72	82.55
94.00	37.9	45.2	59.0	2.2	6.40	0.01	0.71	0.08	0.00	0.72	82.55
89.25	33.9	40.4	52.8	1.8	6.05	0.01	0.76	0.07	0.00	0.77	82.55
89.00	33.7	40.2	52.5	1.8	6.03	0.01	0.76	0.07	0.00	0.77	82.55
84.00	29.8	35.5	46.4	1.5	5.65	0.01	0.80	0.07	0.00	0.81	82.55
79.00	26.1	31.1	40.7	1.2	5.26	0.01	0.84	0.07	0.00	0.85	82.55
79.00	26.1	31.1	40.7	1.2	5.26	0.01	0.84	0.07	0.00	0.85	82.55
74.00	22.7	27.1	35.4	1.0	4.88	0.01	0.86	0.07	0.00	0.88	82.55
69.00	19.6	23.3	30.4	0.8	4.49	0.01	0.89	0.07	0.00	0.90	82.55
69.00	19.6	23.3	30.4	0.8	4.49	0.01	0.89	0.07	0.00	0.90	82.55
64.00	16.7	19.9	25.9	0.6	4.11	0.01	0.91	0.07	0.00	0.92	82.55
64.00	16.7	19.9	25.9	0.6	4.11	0.01	0.91	0.07	0.00	0.92	82.55
59.00	14.0	16.7	21.8	0.5	3.73	0.01	0.93	0.06	0.00	0.94	82.55
54.00	11.7	13.9	18.1	0.4	3.35	0.01	0.94	0.06	0.00	0.95	82.55

Deflections and Stresses for Pole

Loading Case WIND

*** Deflections and Stresses ***

Distance From Base (ft)	Defl. X-Dir (in)	Defl. Y-Dir (in)	Defl. Resultant X & Y (in)	Defl. Z-Dir (in)	Rotation (deg.)	Axial Interaction Term	Flexural Interaction Term	Shear Interaction Term	Torsion Interaction Term	Combined Stress Interaction	Effective Yield Strength (ksi)
52.67	11.1	13.2	17.2	0.3	3.25	0.01	0.95	0.06	0.00	0.96	82.52
52.67	11.1	13.2	17.2	0.3	3.25	0.01	0.86	0.06	0.00	0.87	82.55
49.00	9.5	11.4	14.8	0.3	3.00	0.01	0.87	0.05	0.00	0.88	82.55
46.25	8.4	10.1	13.1	0.2	2.81	0.01	0.88	0.05	0.00	0.89	82.55
44.00	7.6	9.1	11.9	0.2	2.66	0.01	0.88	0.05	0.00	0.89	82.55
39.00	5.9	7.1	9.2	0.1	2.33	0.01	0.88	0.05	0.00	0.90	82.55
34.00	4.5	5.3	7.0	0.1	2.01	0.01	0.89	0.05	0.00	0.90	82.55
29.00	3.2	3.8	5.0	0.1	1.69	0.01	0.89	0.05	0.00	0.90	82.55
24.00	2.2	2.6	3.4	0.0	1.38	0.01	0.89	0.05	0.00	0.90	82.44
19.00	1.4	1.6	2.1	0.0	1.08	0.01	0.90	0.05	0.00	0.91	81.91
14.00	0.7	0.9	1.1	0.0	0.79	0.01	0.91	0.05	0.00	0.92	81.38
9.00	0.3	0.4	0.5	0.0	0.50	0.01	0.91	0.05	0.00	0.92	80.84
4.00	0.1	0.1	0.1	0.0	0.22	0.01	0.92	0.05	0.00	0.93	80.31
0.00	0.0	0.0	0.0	0.0	0.00	0.01	0.92	0.05	0.00	0.93	79.88

Forces and Moments for Pole in the Local Element Coordinate System

Loading Case ICE + WIND

Dist. From Base (ft)	Mx (in-kips)	My (in-kips)	Resultant Mx & My (in-kips)	Torsion (in-kips)	Shear X-Dir. (lbs)	Shear Y-Dir. (lbs)	Resultant Shear (lbs)	Axial (lbs)
149.00	9	-7	11	0	104	123	161	236
145.00	16	-14	21	0	172	205	268	650
145.00	16	-14	21	0	1926	2296	2997	13777
144.00	44	-37	58	0	1942	2315	3022	13884
139.00	186	-156	243	0	2029	2418	3157	14438
135.00	304	-255	397	0	2104	2508	3274	14902
135.00	304	-255	397	0	3723	4437	5792	26029
134.00	358	-300	467	0	3742	4460	5822	26148
129.00	628	-527	820	0	3813	4544	5931	26772
125.00	849	-712	1108	0	3893	4640	6057	27285
125.00	849	-712	1108	0	5205	6203	8097	38158
124.00	923	-775	1205	0	5225	6227	8129	38290
121.00	1148	-963	1499	0	5272	6283	8202	38697
121.00	1148	-963	1499	0	5253	6261	8173	38703
119.00	1299	-1090	1696	0	5288	6301	8226	39281
116.67	1476	-1239	1927	0	5331	6353	8293	39969
115.00	1604	-1346	2094	0	5367	6396	8350	40258
115.00	1604	-1346	2094	0	6558	7815	10202	50373
114.00	1698	-1425	2216	0	6580	7842	10237	50549
109.00	2170	-1821	2833	0	6660	7938	10362	51461
105.00	2551	-2140	3330	0	6701	7986	10425	52226
105.00	2551	-2140	3330	0	7828	9329	12178	62271
104.00	2663	-2234	3476	0	7851	9356	12214	62462
99.00	3225	-2706	4210	0	7921	9440	12323	63454
94.50	3733	-3133	4874	0	7950	9475	12368	64389
94.50	3733	-3133	4874	0	7909	9425	12304	64402
94.00	3790	-3180	4947	0	7887	9400	12271	64633
89.25	4330	-3634	5653	0	7986	9518	12425	66784
89.00	4359	-3658	5690	0	7955	9480	12376	66861
84.00	4932	-4139	6438	0	8006	9542	12456	68233
79.00	5509	-4623	7192	0	8132	9692	12651	69632
79.00	5509	-4623	7192	0	8092	9644	12590	69827
74.00	6092	-5112	7953	0	8143	9704	12668	71294
69.00	6679	-5604	8719	0	8270	9856	12866	72787
69.00	6692	-5615	8736	0	8284	9873	12888	73199
64.00	7289	-6116	9515	0	8412	10026	13087	74738
64.00	7289	-6116	9515	0	8366	9971	13016	74932
59.00	7892	-6622	10302	0	8415	10028	13091	76538
54.00	8498	-7131	11094	0	8492	10120	13211	78182
52.67	8661	-7267	11306	0	8526	10161	13264	78625

Forces and Moments for Pole in the Local Element Coordinate System

Loading Case ICE + WIND

Dist. From Base (ft)	Mx (in-kips)	My (in-kips)	Resultant Mx & My (in-kips)	Torsion (in-kips)	Shear X-Dir. (lbs)	Shear Y-Dir. (lbs)	Resultant Shear (lbs)	Axial (lbs)
52.67	8661	-7267	11306	0	8488	10115	13205	78635
49.00	9108	-7643	11890	0	8544	10182	13291	81177
46.25	9446	-7926	12331	0	8583	10228	13352	83117
44.00	9723	-8159	12693	0	8584	10230	13354	83976
39.00	10341	-8677	13500	0	8631	10287	13428	85909
34.00	10963	-9199	14311	0	8678	10342	13500	87889
29.00	11588	-9723	15127	0	8722	10394	13569	89916
24.00	12216	-10250	15946	0	8764	10444	13634	91988
19.00	12846	-10779	16770	0	8802	10489	13693	94104
14.00	13480	-11311	17596	0	8835	10529	13745	96261
9.00	14115	-11844	18426	0	8866	10566	13794	98453
4.00	14753	-12379	19259	0	8906	10613	13855	100671
0.00	15265	-12809	19927	0	8992	10716	13989	102431

Deflections and Stresses for Pole

Loading Case ICE + WIND

*** Deflections and Stresses ***

Distance From Base (ft)	Defl. X-Dir (in)	Defl. Y-Dir (in)	Defl. Resultant X & Y (in)	Defl. Z-Dir (in)	Rotation (deg.)	Axial Interaction Term	Flexural Interaction Term	Shear Interaction Term	Torsion Interaction Term	Combined Stress Interaction	Effective Yield Strength (ksi)
149.00	24.7	29.4	38.4	0.6	2.36	0.00	0.00	0.00	0.00	0.01	82.55
145.00	23.4	27.9	36.4	0.6	2.35	0.00	0.00	0.00	0.00	0.01	82.55
145.00	23.4	27.9	36.4	0.6	2.35	0.01	0.00	0.01	0.00	0.02	82.55
144.00	23.1	27.5	35.9	0.6	2.35	0.01	0.01	0.01	0.00	0.02	82.55
139.00	21.5	25.6	33.4	0.5	2.33	0.01	0.04	0.01	0.00	0.05	81.60
135.00	20.2	24.1	31.5	0.5	2.31	0.01	0.06	0.01	0.00	0.07	80.63
135.00	20.2	24.1	31.5	0.5	2.31	0.02	0.06	0.02	0.00	0.08	80.63
134.00	19.9	23.8	31.0	0.5	2.30	0.02	0.06	0.02	0.00	0.09	80.38
129.00	18.4	21.9	28.6	0.4	2.24	0.02	0.10	0.02	0.00	0.13	79.16
125.00	17.2	20.5	26.8	0.4	2.18	0.02	0.13	0.02	0.00	0.15	78.19
125.00	17.2	20.5	26.8	0.4	2.18	0.03	0.13	0.03	0.00	0.16	78.19
124.00	16.9	20.2	26.3	0.4	2.17	0.03	0.14	0.03	0.00	0.17	77.94
121.00	16.1	19.1	25.0	0.4	2.11	0.03	0.17	0.03	0.00	0.20	77.21
121.00	16.1	19.1	25.0	0.4	2.11	0.02	0.11	0.02	0.00	0.13	82.55
119.00	15.5	18.5	24.1	0.4	2.08	0.02	0.12	0.02	0.00	0.15	82.55
116.67	14.8	17.7	23.1	0.3	2.04	0.02	0.13	0.02	0.00	0.16	82.55
115.00	14.4	17.1	22.4	0.3	2.01	0.02	0.14	0.02	0.00	0.16	82.55
115.00	14.4	17.1	22.4	0.3	2.01	0.03	0.14	0.02	0.00	0.17	82.55
114.00	14.1	16.8	22.0	0.3	2.00	0.03	0.15	0.02	0.00	0.17	82.55
109.00	12.8	15.3	19.9	0.3	1.90	0.02	0.17	0.02	0.00	0.20	82.55
105.00	11.8	14.1	18.4	0.2	1.82	0.02	0.19	0.02	0.00	0.21	82.55
105.00	11.8	14.1	18.4	0.2	1.82	0.03	0.19	0.03	0.00	0.22	82.55
104.00	11.6	13.8	18.0	0.2	1.80	0.03	0.20	0.03	0.00	0.22	82.48
99.00	10.4	12.4	16.1	0.2	1.69	0.03	0.22	0.03	0.00	0.25	81.63
94.50	9.4	11.2	14.6	0.2	1.58	0.03	0.24	0.03	0.00	0.27	80.86
94.50	9.4	11.2	14.6	0.2	1.58	0.02	0.18	0.02	0.00	0.20	82.55
94.00	9.3	11.1	14.4	0.2	1.57	0.02	0.18	0.02	0.00	0.20	82.55
89.25	8.3	9.9	12.9	0.2	1.49	0.02	0.19	0.02	0.00	0.21	82.55
89.00	8.3	9.8	12.8	0.2	1.48	0.02	0.19	0.02	0.00	0.21	82.55
84.00	7.3	8.7	11.3	0.1	1.39	0.02	0.20	0.02	0.00	0.22	82.55
79.00	6.4	7.6	9.9	0.1	1.29	0.02	0.21	0.02	0.00	0.23	82.55
79.00	6.4	7.6	9.9	0.1	1.29	0.02	0.21	0.02	0.00	0.23	82.55
74.00	5.5	6.6	8.6	0.1	1.19	0.02	0.21	0.02	0.00	0.23	82.55
69.00	4.8	5.7	7.4	0.1	1.10	0.02	0.22	0.02	0.00	0.24	82.55
69.00	4.8	5.7	7.4	0.1	1.10	0.02	0.22	0.02	0.00	0.24	82.55
64.00	4.1	4.8	6.3	0.1	1.00	0.02	0.22	0.02	0.00	0.24	82.55
64.00	4.1	4.8	6.3	0.1	1.00	0.02	0.22	0.02	0.00	0.24	82.55
59.00	3.4	4.1	5.3	0.1	0.91	0.02	0.23	0.02	0.00	0.25	82.55
54.00	2.8	3.4	4.4	0.0	0.82	0.02	0.23	0.02	0.00	0.25	82.55

Deflections and Stresses for Pole

Loading Case ICE + WIND

*** Deflections and Stresses ***

Distance From Base (ft)	Defl. X-Dir (in)	Defl. Y-Dir (in)	Defl. Resultant X & Y (in)	Defl. Z-Dir (in)	Rotation (deg.)	Axial Interaction Term	Flexural Interaction Term	Shear Interaction Term	Torsion Interaction Term	Combined Stress Interaction	Effective Yield Strength (ksi)
52.67	2.7	3.2	4.2	0.0	0.79	0.02	0.23	0.01	0.00	0.25	82.52
52.67	2.7	3.2	4.2	0.0	0.79	0.02	0.21	0.01	0.00	0.23	82.55
49.00	2.3	2.8	3.6	0.0	0.73	0.02	0.21	0.01	0.00	0.23	82.55
46.25	2.1	2.5	3.2	0.0	0.69	0.02	0.21	0.01	0.00	0.23	82.55
44.00	1.9	2.2	2.9	0.0	0.65	0.02	0.22	0.01	0.00	0.23	82.55
39.00	1.4	1.7	2.2	0.0	0.57	0.02	0.22	0.01	0.00	0.23	82.55
34.00	1.1	1.3	1.7	0.0	0.49	0.02	0.22	0.01	0.00	0.23	82.55
29.00	0.8	0.9	1.2	0.0	0.41	0.02	0.22	0.01	0.00	0.23	82.55
24.00	0.5	0.6	0.8	0.0	0.34	0.02	0.22	0.01	0.00	0.23	82.44
19.00	0.3	0.4	0.5	0.0	0.26	0.02	0.22	0.01	0.00	0.24	81.91
14.00	0.2	0.2	0.3	0.0	0.19	0.02	0.22	0.01	0.00	0.24	81.38
9.00	0.1	0.1	0.1	0.0	0.12	0.02	0.22	0.01	0.00	0.24	80.84
4.00	0.0	0.0	0.0	0.0	0.05	0.02	0.22	0.01	0.00	0.24	80.31
0.00	0.0	0.0	0.0	0.0	0.00	0.02	0.22	0.01	0.00	0.24	79.88

Forces and Moments for Pole in the Local Element Coordinate System

Loading Case T+S

Dist. From Base (ft)	Mx (in-kips)	My (in-kips)	Resultant Mx & My (in-kips)	Torsion (in-kips)	Shear X-Dir. (lbs)	Shear Y-Dir. (lbs)	Resultant Shear (lbs)	Axial (lbs)
149.00	4	-4	6	0	54	65	85	66
145.00	9	-7	11	0	92	110	143	263
145.00	9	-7	11	0	1544	1840	2402	3845
144.00	31	-26	40	0	1553	1851	2416	3896
139.00	144	-121	188	0	1602	1910	2493	4159
135.00	237	-198	309	0	1644	1960	2558	4379
135.00	237	-198	309	0	2956	3523	4599	7561
134.00	279	-234	364	0	2965	3533	4613	7620
129.00	493	-414	643	0	3016	3595	4692	7916
125.00	667	-559	870	0	3062	3649	4764	8161
125.00	667	-559	870	0	4159	4957	6470	11274
124.00	726	-609	948	0	4167	4966	6483	11340
121.00	906	-760	1182	0	4203	5009	6539	11532
121.00	906	-760	1182	0	4199	5004	6532	11536
119.00	1026	-861	1340	0	4223	5033	6570	11854
116.67	1168	-980	1524	0	4252	5068	6615	12231
115.00	1269	-1065	1657	0	4274	5093	6649	12390
115.00	1269	-1065	1657	0	5290	6305	8230	15327
114.00	1345	-1129	1756	0	5296	6311	8238	15430
109.00	1726	-1448	2253	0	5349	6375	8322	15936
105.00	2034	-1706	2655	0	5403	6439	8406	16349
105.00	2034	-1706	2655	0	6392	7617	9944	19295
104.00	2125	-1783	2774	0	6394	7620	9947	19409
99.00	2585	-2169	3374	0	6444	7680	10026	19964
94.50	3002	-2519	3918	0	6509	7757	10126	20467
94.50	3002	-2519	3918	0	6498	7744	10109	20476
94.00	3048	-2558	3979	0	6497	7743	10108	20618
89.25	3492	-2930	4559	0	6568	7828	10218	21935
89.00	3516	-2950	4589	0	6562	7820	10208	21983
84.00	3988	-3346	5206	0	6618	7887	10296	22825
79.00	4464	-3745	5827	0	6696	7980	10417	23684
79.00	4464	-3745	5827	0	6708	7994	10435	23764
74.00	4946	-4150	6457	0	6765	8062	10524	24667
69.00	5433	-4559	7092	0	6844	8157	10648	25587
69.00	5440	-4565	7101	0	6872	8190	10691	25679
64.00	5934	-4979	7746	0	6952	8286	10816	26629
64.00	5934	-4979	7746	0	6960	8295	10828	26710
59.00	6435	-5399	8400	0	7017	8363	10917	27704
54.00	6939	-5823	9059	0	7083	8441	11020	28724
52.67	7075	-5936	9235	0	7105	8467	11053	28999

Forces and Moments for Pole in the Local Element Coordinate System

Loading Case T+S

Dist. From Base (ft)	Mx (in-kips)	My (in-kips)	Resultant Mx & My (in-kips)	Torsion (in-kips)	Shear X-Dir. (lbs)	Shear Y-Dir. (lbs)	Resultant Shear (lbs)	Axial (lbs)
52.67	7075	-5936	9235	0	7093	8454	11035	29006
49.00	7448	-6250	9723	0	7144	8514	11114	30638
46.25	7730	-6486	10091	0	7181	8558	11171	31886
44.00	7962	-6681	10394	0	7199	8580	11200	32439
39.00	8480	-7115	11069	0	7255	8646	11286	33686
34.00	9001	-7553	11750	0	7309	8711	11371	34967
29.00	9527	-7994	12436	0	7362	8774	11453	36283
24.00	10056	-8438	13127	0	7413	8835	11533	37634
19.00	10589	-8885	13822	0	7462	8893	11609	39019
14.00	11125	-9335	14522	0	7508	8947	11680	40438
9.00	11664	-9787	15226	0	7552	9000	11748	41892
4.00	12207	-10243	15935	0	7599	9056	11822	43380
0.00	12643	-10609	16504	0	7657	9125	11912	44586

Deflections and Stresses for Pole

Loading Case T+S

*** Deflections and Stresses ***

Distance From Base (ft)	Defl. X-Dir (in)	Defl. Y-Dir (in)	Defl. Resultant X & Y (in)	Defl. Z-Dir (in)	Rotation (deg.)	Axial Interaction Term	Flexural Interaction Term	Shear Interaction Term	Torsion Interaction Term	Combined Stress Interaction	Effective Yield Strength (ksi)
149.00	20.1	24.0	31.3	0.4	1.90	0.00	0.00	0.00	0.00	0.01	82.55
145.00	19.1	22.7	29.7	0.4	1.90	0.00	0.00	0.00	0.00	0.01	82.55
145.00	19.1	22.7	29.7	0.4	1.90	0.00	0.00	0.01	0.00	0.01	82.55
144.00	18.8	22.4	29.3	0.4	1.90	0.00	0.01	0.01	0.00	0.01	82.55
139.00	17.5	20.9	27.3	0.3	1.89	0.00	0.03	0.01	0.00	0.03	81.60
135.00	16.5	19.7	25.7	0.3	1.87	0.00	0.04	0.01	0.00	0.05	80.63
135.00	16.5	19.7	25.7	0.3	1.87	0.01	0.04	0.02	0.00	0.05	80.63
134.00	16.3	19.4	25.3	0.3	1.86	0.01	0.05	0.02	0.00	0.06	80.38
129.00	15.0	17.9	23.4	0.3	1.82	0.01	0.08	0.02	0.00	0.09	79.16
125.00	14.1	16.8	21.9	0.2	1.77	0.01	0.10	0.02	0.00	0.11	78.19
125.00	14.1	16.8	21.9	0.2	1.77	0.01	0.10	0.02	0.00	0.11	78.19
124.00	13.8	16.5	21.5	0.2	1.76	0.01	0.11	0.02	0.00	0.12	77.94
121.00	13.1	15.7	20.4	0.2	1.71	0.01	0.13	0.02	0.00	0.14	77.21
121.00	13.1	15.7	20.4	0.2	1.71	0.01	0.09	0.02	0.00	0.10	82.55
119.00	12.7	15.1	19.7	0.2	1.69	0.01	0.10	0.02	0.00	0.10	82.55
116.67	12.2	14.5	18.9	0.2	1.66	0.01	0.11	0.02	0.00	0.11	82.55
115.00	11.8	14.0	18.3	0.2	1.64	0.01	0.11	0.02	0.00	0.12	82.55
115.00	11.8	14.0	18.3	0.2	1.64	0.01	0.11	0.02	0.00	0.12	82.55
114.00	11.6	13.8	18.0	0.2	1.62	0.01	0.12	0.02	0.00	0.13	82.55
109.00	10.5	12.5	16.3	0.2	1.55	0.01	0.14	0.02	0.00	0.15	82.55
105.00	9.7	11.5	15.1	0.1	1.48	0.01	0.15	0.02	0.00	0.16	82.55
105.00	9.7	11.5	15.1	0.1	1.48	0.01	0.15	0.02	0.00	0.16	82.55
104.00	9.5	11.3	14.7	0.1	1.47	0.01	0.16	0.02	0.00	0.17	82.48
99.00	8.5	10.2	13.3	0.1	1.38	0.01	0.18	0.02	0.00	0.19	81.63
94.50	7.7	9.2	12.0	0.1	1.29	0.01	0.19	0.02	0.00	0.20	80.86
94.50	7.7	9.2	12.0	0.1	1.29	0.01	0.14	0.02	0.00	0.15	82.55
94.00	7.6	9.1	11.9	0.1	1.29	0.01	0.14	0.02	0.00	0.15	82.55
89.25	6.8	8.1	10.6	0.1	1.22	0.01	0.15	0.01	0.00	0.16	82.55
89.00	6.8	8.1	10.5	0.1	1.21	0.01	0.15	0.01	0.00	0.16	82.55
84.00	6.0	7.1	9.3	0.1	1.13	0.01	0.16	0.01	0.00	0.17	82.55
79.00	5.3	6.3	8.2	0.1	1.06	0.01	0.17	0.01	0.00	0.17	82.55
79.00	5.3	6.3	8.2	0.1	1.06	0.01	0.17	0.01	0.00	0.17	82.55
74.00	4.6	5.4	7.1	0.1	0.98	0.01	0.17	0.01	0.00	0.18	82.55
69.00	3.9	4.7	6.1	0.0	0.90	0.01	0.18	0.01	0.00	0.19	82.55
69.00	3.9	4.7	6.1	0.0	0.90	0.01	0.18	0.01	0.00	0.19	82.55
64.00	3.4	4.0	5.2	0.0	0.82	0.01	0.18	0.01	0.00	0.19	82.55
64.00	3.4	4.0	5.2	0.0	0.82	0.01	0.18	0.01	0.00	0.19	82.55
59.00	2.8	3.4	4.4	0.0	0.75	0.01	0.19	0.01	0.00	0.19	82.55
54.00	2.3	2.8	3.6	0.0	0.67	0.01	0.19	0.01	0.00	0.20	82.55

Deflections and Stresses for Pole

Loading Case T+S

*** Deflections and Stresses ***

Distance From Base (ft)	Defl. X-Dir (in)	Defl. Y-Dir (in)	Defl. Resultant X & Y (in)	Defl. Z-Dir (in)	Rotation (deg.)	Axial Interaction Term	Flexural Interaction Term	Shear Interaction Term	Torsion Interaction Term	Combined Stress Interaction	Effective Yield Strength (ksi)
52.67	2.2	2.6	3.5	0.0	0.65	0.01	0.19	0.01	0.00	0.20	82.52
52.67	2.2	2.6	3.5	0.0	0.65	0.01	0.17	0.01	0.00	0.18	82.55
49.00	1.9	2.3	3.0	0.0	0.60	0.01	0.17	0.01	0.00	0.18	82.55
46.25	1.7	2.0	2.6	0.0	0.57	0.01	0.18	0.01	0.00	0.18	82.55
44.00	1.5	1.8	2.4	0.0	0.53	0.01	0.18	0.01	0.00	0.18	82.55
39.00	1.2	1.4	1.9	0.0	0.47	0.01	0.18	0.01	0.00	0.18	82.55
34.00	0.9	1.1	1.4	0.0	0.40	0.01	0.18	0.01	0.00	0.19	82.55
29.00	0.6	0.8	1.0	0.0	0.34	0.01	0.18	0.01	0.00	0.19	82.55
24.00	0.4	0.5	0.7	0.0	0.28	0.01	0.18	0.01	0.00	0.19	82.44
19.00	0.3	0.3	0.4	0.0	0.22	0.01	0.18	0.01	0.00	0.19	81.91
14.00	0.1	0.2	0.2	0.0	0.16	0.01	0.18	0.01	0.00	0.19	81.38
9.00	0.1	0.1	0.1	0.0	0.10	0.01	0.18	0.01	0.00	0.19	80.84
4.00	0.0	0.0	0.0	0.0	0.04	0.01	0.18	0.01	0.00	0.19	80.31
0.00	0.0	0.0	0.0	0.0	0.00	0.01	0.18	0.01	0.00	0.19	79.88

MINIMUM DEFLECTION RATIO // DEFLECTION LIMIT / DEFLECTION // IS

*** ANCHOR BOLT CHARACTERISTICS GOVERNED BY LOADING CASE WIND ***

NUMBER OF BOLTS	DIAMETER (IN.)	LENGTH (IN.)	WEIGHT (LB.)	SHIPPED AS	PROJECTION LENGTH (IN.)	GALVANIZED LENGTH (IN.)	THREAD SIZE
22	2.250	66	2433	BOLTS, TEMPLATES	12.50	66.00	4.5-UNC-2A

STEEL SPECIF.	MAXIMUM BOLT FORCE (LB.)	MAXIMUM BOLT SHEAR FORCE (LB.)	FACTORED NOMINAL TENS. STRENGTH (LB.)	STRESS AREA (SQ. IN.)	INTERACTION VALUE	CONFIGURATION OF BOTTOM END
A615	234945	2680	260004	3.250	0.92	THREADED WITH HEAVY HEX HEAD NUT

NOTE: BOLT INTERACTION VALUE WAS CALCULATED BY DIVIDING SHEAR FORCE BY FACTOR RELATED TO DETAIL TYPE d] IN EIA-G SPECS.

*** BOLT COORDINATES AND FORCES ***

BOLT NO.	X-COORD	Y-COORD	MAX TENSION-LB	MAX FORCE-LB	*	BOLT NO.	X-COORD	Y-COORD	MAX TENSION-LB	MAX FORCE-LB
1	32.126	0.00	37883	42849	*	2	30.825	9.051	100748	105714
3	27.026	17.369	155246	160212	*	4	21.038	24.279	196966	201932
5	13.346	29.223	222529	227494	*	6	4.572	31.799	229862	234828

MAX. BOLT CIRCLE = 64.25 IN. TEMPLATE DIAMETER = 70.25 IN.

*** BASE PLATE CHARACTERISTICS GOVERNED BY LOADING CASE WIND ***

DRAWING NUMBER	OVERALL LENGTH (IN.)	OVERALL WIDTH (IN.)	THICKNESS (IN.)	ACTUAL WEIGHT (LB.)	RAW MATERIAL WEIGHT (LB.)	SIDE LENGTH (IN.)
SD18-99	70.25	71.34	3.5000	3007	4969	12.39

TOP WIDTH (IN.)	POLE DIAM. (MAJOR DIAM.) (IN.)	CRITICAL FAILURE MODE	TOTAL LENGTH OF FAIL MODE LINE (IN.)	EFFECTIVE LENGTH (IN.)	TOTAL MOMENT ALONG FAIL LINE (IN.-LB.)
12.39	56.87	2	81.66	69.76	5291726

STEEL SPECIF. VALMONT	OTHER	BENDING STRESS (PSI)	EFFECTIVE YIELD STRESS (PSI)	MAX. VERTICAL SHEAR STRESS (PSI)
S56	A572	37155	50000	10079

** LOADS AT POLE BASE IN THE GLOBAL COORDINATE SYSTEM ************************ LOADING CASES ************************

LOADING CASE IDENTIFICATION	WIND	ICE	T+S
MOMENT ABT. X-AXIS (IN-KIP)	62929	15265	12643
MOMENT ABT. Y-AXIS (IN-KIP)	- 52804	- 12809	- 10609
SHEAR FORCE (LB.)	58957	13941	11895
VERTICAL FORCE (LB.)	54623	102442	44591

]MAX CRITERION-	LOAD CASE
]MOMENT ABT. X	WIND
]MOMENT ABT. Y	WIND
]RES. MOMENT	WIND
]SHEAR FORCE	WIND
]BOLT FORCE	WIND
]BOLT TENSION	WIND

valmont STRUCTURES

November 18, 2014

Ref: Design and Failure Modes for a 150-ft AGL Cellsilo Monopole
Quality of Steel and Fabrication of a Monopole Structure
Valmont Project No. 273806
Site: Ridgefield, CT897, CT
Pole Designed with a maximum Theoretical Fall Radius of 66'.

In order to assure you of the high quality of all Valmont products, we would like to offer the following comments:

- Communications monopole structures designed by Valmont are sized in accordance with the latest governing revision of the ANSI/TIA 222 standard unless otherwise requested by our customer. This standard has been approved by ANSI/ASCE-7, which has dealt with the design of antenna support structures for over 40 years. The TIA standard, based on provisions of this nationally known specification, has a long history of reliability. At its core philosophy is its first and foremost priority to safeguard and maintain the health and welfare of the public.
- The TIA standard designates a minimum wind loading for each county in the United States. Valmont uses the wind loading listed in the TIA standard unless a greater value is specified by our customer. Structures are also designed for radial ice at a code specified reduced design wind loading. Code designated coefficients are used to ensure that the structure will survive the designed wind speed. The structure can usually survive even a greater wind load than the basic design wind speed because of these conservative coefficients.
- Design and loading assumptions that are used for the analyses of these structures are very conservative in nature when compared to other codes, which makes structural failure highly improbable.
- Failure of a steel monopole occurs when a point is reached where the induced stresses exceed the yield strength of the material. At this point, the deflections induced in the material are no longer temporary. Hence, a permanent deflection in the monopole would exist.
- The term failure above refers to local buckling at a designated point on the pole. Local buckling does not cause a free falling pole; rather it relieves the stresses from the pole at this location. Monopoles are flexible, forgiving structures, which are not generally susceptible to damage by impact loads such as wind gust or earthquake shocks.
- When local buckling occurs, a relatively small portion of the shaft distorts and "kinks" the steel. When the pole begins to bend the exposure area is reduced and therefore, the force due to wind is decreased as well. Even though buckling exists, the cross section of the pole is capable of carrying the entire vertical load. Therefore, wind induced loads could not conceivably bring this type of structure to the ground due to the excellent ductile properties, design criteria, and failure mode.
- Valmont's communication poles have proven to be very reliable products. Valmont has provided structures that have performed well during earthquakes in California, hurricanes in the South (including Hugo, Andrew, Opal and Katrina), and a number of tornadoes. In over 25 years of engineering and fabricating thousands of monopoles, to our knowledge Valmont has never experienced an in service failure of a communication pole due to weather induced overloading, even though, as in the cases of Hurricanes Hugo, Andrew and Katrina, the wind speeds exceeded the design wind speed. We use the latest standards, wind speed information, and sophisticated analytical tools to ensure that we maintain our unblemished record for quality.

valmont STRUCTURES

Valmont Quality of Steel and Manufacturing:

- Monopoles are fabricated from ASTM A572 Grade 65 material with a controlled silicon content of 0.06% maximum to ensure a uniform galvanized coating. The base material is fabricated from Grade 50 material. All plate material meets a V-Notch toughness requirement of 15 ft-lbs. @ -20 degrees Fahrenheit. By meeting the strict toughness requirement, monopoles are best suited to resist the cyclic/fatigue type loading (i.e. wind induced loading) these structures exhibit.
- Valmont's anchor bolts are fabricated from A615 Grade 75 material. The bolts are 2 ¼ in diameter, made from #18J bar stock. Anchor bolts come complete with five (5) A194 Grade 2H hex nuts.
- For the past 40 years, our company has always guaranteed the quality of the steel used in building our structures. Material Certifications are available on all material at the time of fabrication. Fabrication of the monopole is performed in accordance with the provisions of the AISC Manual of Steel Construction and ASCE Design of steel Transmission Pole Structures. All welding and inspection is in accordance with the American Welding Society's Specification D1.1-latest revision. Testing and inspection reports are available upon request at the time of fabrication.

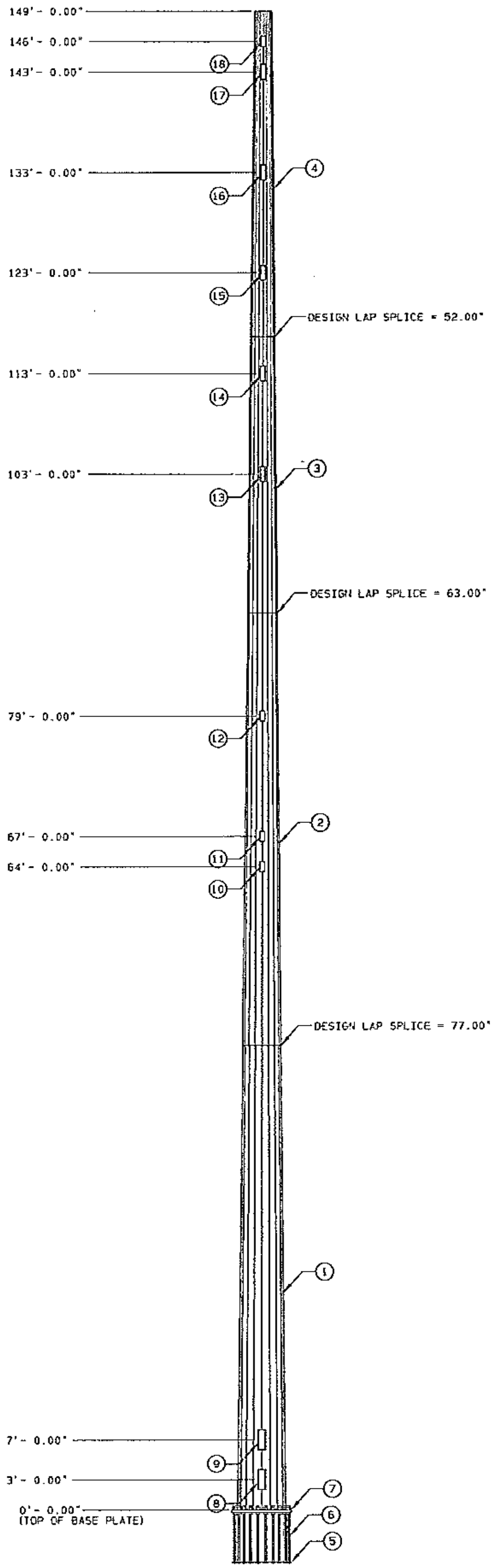
In addition, we have designed this cellsilo monopole with a theoretical break point at approximately 95.5-ft elevation, by purposely over designing the pole sections below this point. In the unlikely event the pole were to fail at this point, the significant loading reduction caused by the removal of the tower wind area and weight above would greatly reduce any chance that the remaining tower would have any structural damage, thereby providing a theoretical failure zone of 54.5-ft for the 150-ft AGL monopole.

I hope these comments address any issues that you might encounter relative to the anticipated performance of monopole structures and quality of steel fabrication. If you have additional questions or comments, I may be reached at 503-589-6626.

Sincerely,

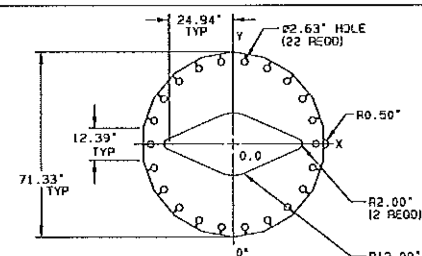
Jonathon Neumann
Associate Engineer, EIT
Valmont Microflect

Valmont Microflect, LTCS, Valmont Industries, Inc.
3575 25th Street Salem, OR 97302-1123 USA
Toll Free: 800-547-2151 Fax: 503-316-2040 www.valmont.com



ITEM ID	NO. REQD	FEATURES	UNIT WEIGHT (LBS)	WEIGHT (LBS)
1	1	SECTION A VALMONT S-22 0.500" THK (A572 GR65)	14,107	14,107
2	1	SECTION B VALMONT S-22 0.438" THK (A572 GR65)	8,941	8,941
3	1	SECTION C VALMONT S-22 0.313" THK (A572 GR65)	3,325	3,325
4	1	SECTION D VALMONT S-22 0.219" THK (A572 GR65)	1,867	1,867
5	1	BOTTOM CAGE PLATE	125	125
6	22	2.25" ANCHOR BOLT, LENGTH=5.50' A615 GR75	96	2,104
7	1	BASE PLATE VALMONT S-56 3.500" THK (A572 GR50)	3,007	3,007
	1	TOP CAGE PLATE (REMOVE BEFORE SETTING POLE)	165	165
	1	SAFETY CLIMBING CABLE (LENGTH = 139.00')	108	108
	3	GROUNDING LUG	2	6
		GALVANIZING	484	484
	110	STEP AND CLIP (VALMONT STANDARD)	1	55
8	3	HAND HOLE HVY (9" x 24")	66	198
9	3	HAND HOLE HVY (9" x 24")	66	198
10	2	HAND HOLE HVY (6" x 12")	26	52
11	2	HAND HOLE HVY (6" x 12")	26	52
12	2	HAND HOLE HVY (6" x 12")	26	52
13	3	HAND HOLE STD (6" x 18")	18	54
14	3	HAND HOLE STD (6" x 18")	18	54
15	3	HAND HOLE STD (6" x 18")	18	54
16	3	HAND HOLE STD (6" x 18")	18	54
17	3	HAND HOLE STD (6" x 18")	18	54
18	1	HAND HOLE STD (6" x 12")	22	22
	1	POLE CAP	23	23

HOLE COORDS (INCHES)	
X-COORD	Y-COORD
32.13	0.00
30.83	9.05
27.03	17.37
21.04	24.28
13.35	29.22
4.57	31.80



NOTES:
1. BASE PLATE THICKNESS = 3.500"
2. BASE PLATE ALLOWABLE STRESS (KSI) = 50
3. ANGLES ARE MEASURED CLOCKWISE FROM 0 DEGREES
4. MAXIMUM BOLT CIRCLE DIAMETER = 64.25"
5. MAXIMUM CAGE TEMPLATE DIAMETER = 70.25"

BASE PLATE / ANCHORAGE CHARACTERISTICS

NOTES:

1. FACTORED REACTIONS FOR FOUNDATION DESIGN.
   MOMENT = 82,148 IN-KIPS
   SHEAR = 58,957 #
   VERTICAL = 57,630 #
2. GALVANIZED PER ASTM A-123.
3. DESIGN CRITERIA: ANSI/TIA 222-G ADDENDUM 2
4. THIS STRUCTURE HAS BEEN DESIGNED FOR THE FOLLOWING LOADING:
   EXPOSURE CATEGORY = C
   STRUCTURE CLASSIFICATION = 2
   TOPOGRAPHY CATEGORY = 1
   WIND LOAD CASES ARE BASED ON 3 SECOND GUST AND 50 YEAR WIND RETURN PERIOD
   A. CASE 1: WIND = 100 MPH WIND SPEED
   B. CASE 2: WIND = 50 MPH ICE AND WIND SPEED
      DESIGN ICE THICKNESS = 0.75 INCH
   C. CASE 3: WIND = 60 MPH WIND SPEED
   D. EQUIPMENT

DESCRIPTION	MTG HT. (FT)	CENTROID HT. (FT)	WITHOUT ICE EPA (FT**2)	WITHOUT ICE WT (LBS)	WITH ICE EPA (FT**2)	WITH ICE WT (LBS)
1-BA40-41-DIN	149.00	154.75	6.88	69	16.29	202
12-HPA-65R-BUU-H8	145.00	145.00	107.64	1188	132.84	5400
24-ERICSSON RRUS-11 (19.7"X17"	145.00	145.00	38.16	1224	49.68	3192
4-RAYCAP DC6-48-60-18-F (24"X	145.00	145.00	3.84	100	5.08	348
1-12' SPI LP PLATFORM	145.00	145.00	31.42	1143	51.04	2083
12-PANEL (8' X 1' X 7")	135.00	135.00	109.68	1308	144.36	5148
4-TMA (6"X6"X4")	135.00	135.00	0.76	60	1.48	120
6-DIPLEXER (8" X 8" X 3" - 8#	135.00	135.00	1.74	48	3.12	162
12-ERICSSON RRUS-11 (19.7"X17"	135.00	135.00	19.08	612	24.72	1584
3-RAYCAP DC6-48-60-18-F (24"X	135.00	135.00	3.84	75	5.07	261
1-12' SPI LP PLATFORM	135.00	135.00	31.42	1143	50.91	2074
12-PANEL (8' X 1' X 7")	125.00	125.00	100.56	1308	125.28	5112
12-ALCATEL-LUCENT RRH2X40-AWS	125.00	125.00	17.16	528	22.80	1344
12-ANDREW E15S09P80	125.00	125.00	3.72	108	6.60	336
3-RAYCAP DC6-48-60-18-F (24"X	125.00	125.00	3.84	75	5.04	259
1-12' SPI LP PLATFORM	125.00	125.00	15.71	1143	25.38	2066
12-PANEL (8' X 1' X 7")	115.00	115.00	100.56	1308	125.16	5076
12-ALCATEL-LUCENT RRH2X40-AWS	115.00	115.00	17.16	528	22.80	1344
1-12' SPI LP PLATFORM	115.00	115.00	15.71	1143	25.31	2056
12-PANEL (8' X 1' X 7")	105.00	105.00	100.56	1308	124.92	5028
12-ALCATEL-LUCENT RRH2X40-AWS	105.00	105.00	17.16	528	22.80	1332
1-12' SPI LP PLATFORM	105.00	105.00	15.71	1143	25.22	2046
1-2' HIGH PERFORMANCE (12GHZ)	79.00	79.00	4.71	67	6.30	146
1-WHIP (2.5" X 20')	69.00	79.00	7.38	79	16.81	328
1-2' HIGH PERFORMANCE (12GHZ)	64.00	64.00	4.71	67	6.27	144

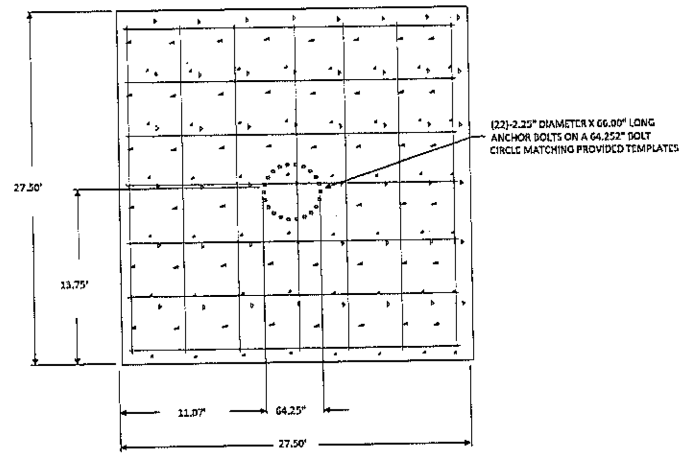
5. FEEDLINES ARE PLACED INTERIOR TO POLE SHAFT (UNLESS NOTED OTHERWISE).
6. TOTAL POLE HEIGHT IS 150 FT AGL.
7. ELEVATIONS ARE MEASURED FROM TOP OF BASE PLATE (APPROX. 1 FT AGL).
8. POLE IS TO BE PAINTED.
9. POLE HAS A THEORETICAL FALL ZONE RADIUS OF 65 FT OR LESS.

SECTION INFORMATION					
ITEM ID	LENGTH	BASE OD	TOP OD	THK	MATL
1	52' - 8.00"	56.88"	43.33"	0.500"	A572 65 KSI
2	48' - 3.00"	45.86"	33.45"	0.438"	A572 65 KSI
3	31' - 9.00"	35.43"	27.26"	0.313"	A572 65 KSI
4	32' - 4.00"	28.81"	20.50"	0.219"	A572 65 KSI

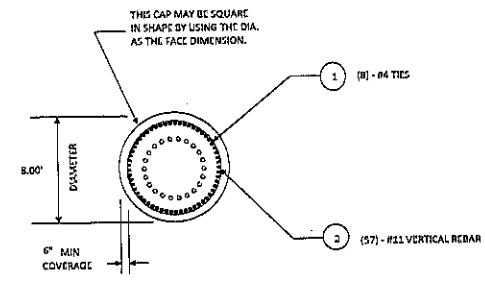
ORDER	PROJECT	FILE ID	SCALE	DATE	ENGR
273806	273806	273806	NONE	11/18/14	JDN4

DESCRIPTION
INSITE TOWERS 150.0' POLE, SITE: RIDGEFIELD, CT897, CT, VALMONT

valmont



SECTION A-A
No Scale



SECTION B-B
No Scale

GENERAL NOTES: SLAB FOUNDATION

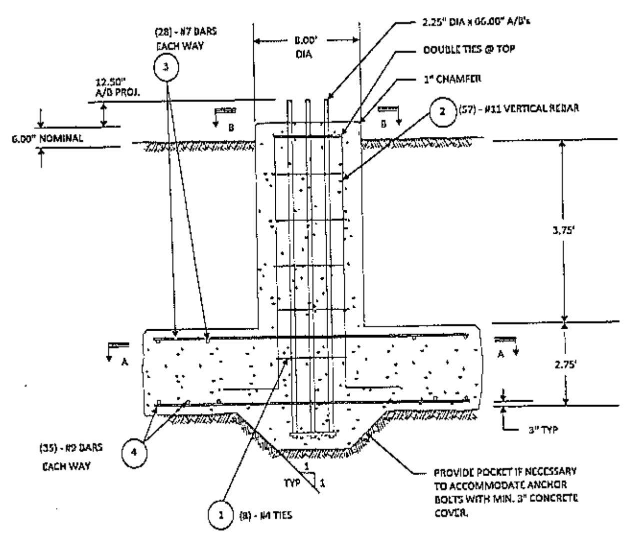
1.Prior to excavation, check the area for underground facilities.
2.All reinforcing shall be deformed bars conforming to ASTM A615 Grade 60 (60,000 psi min. yield) and shall be provided by the foundation contractor.
3.All concrete shall have a minimum compressive strength of 3000 psi @ 28 days. The requirement for the concrete shall be as given in the ACI "Building Code Requirements for Reinforced Concrete", ACI 318, the latest edition.
4.Trowel top of foundation smooth.
5.Concrete shall be placed against undisturbed soil to the depth indicated on the foundation drawing. The portion above grade shall be formed. If an area is excavated beyond the limits shown, this volume shall be filled with concrete or formed. After the forms are removed, the excess excavation shall be replaced and compacted.
6.Ground water was not encountered below grade during boring.
7.Foundation design based on vert. bearing pressure of 16000 psf.
8.Concrete is assumed to weigh 150 pcf.
9.Estimated concrete volume = 87.10 cubic yards total.
10.Design Based on the following loads from installation drawing for order No: 273806.

Factored Moment = 6846 FT-KIPS
Factored Download = 43.2 KIPS
Factored Shear = 59.0 KIPS

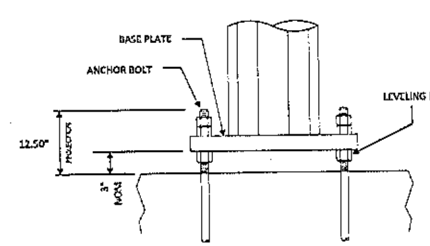
Overturning Safety Factor = 1.13
Max. Toe Bearing Pressure = 3.55 ksf

11. Backfill should be compacted to a density of 100 pcf.
12. Anchor bolts to be ASTM A615, Gr. 75 ksi.
13. Reference: Terracon Project No. J2145173, Dated: October 7th, 2014

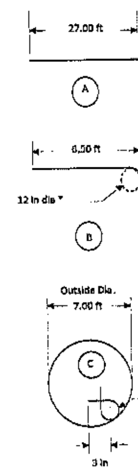
14. Ref Soils Report for installation recommendations.



ELEVATION
No Scale



ANCHOR BOLT INSTALLATION
N.T.S.
EXTREME CARE SHOULD BE TAKEN TO ASSURE THAT ALL LEVELING NUTS ARE LEVEL WITH RESPECT TO EACH OTHER PRIOR TO ERECTION OF THE STRUCTURE



REINFORCEMENT STEEL SCHEDULE

	Sym	Type	Rebar Size	Rebar Spacing	Weight (lbs)	Qty
CAP TIES	1	C	#4	EQUAL	118	8
CAP VERTICAL REBAR	2	B	#11	—	2547	57
SLAB TOP STEEL	3	A	#7	12.00 in	3091	56
SLAB BOTTOM STEEL	4	A	#9	9.53 in	6426	70
TOTAL STEEL WEIGHT FOR COMPLETE FOUNDATION INSTALLATION =					12181	

Grade 60 Rebar

Size	Ask #	Wt/ft	6db (in)	d* (in)	d** (in)
#3	11-07203	0.38	2.25	2.25	1.50
#4	11-07204	0.67	3.00	3.00	2.00
#5	11-07205	1.04	3.75	3.75	2.50
#6	11-07206	1.50	4.50	4.50	4.50
#7	11-07207	2.04	5.25	5.25	4.25
#8	11-07208	2.67	6.00	6.00	6.00
#9	11-07209	3.40	6.77	9.50	-
#10	11-07210	4.30	7.62	10.75	-
#11	11-07211	5.31	8.46	12.00	-

* Refers to ACI standard hook detail chart
** Refers to ACI stirrup hook detail chart

Rebar Lap Splice

Rebar Size	Rebar Grade	Specified Concrete Strength	Overlap (inches) Vert & Ties	Bottom Horiz	Top Horiz
#3	60	3000 psi	15	15	21
#4	60	3000 psi	18	20	29
#5	60	3000 psi	22	26	36
#6	60	3000 psi	26	33	46
#7	60	3000 psi	38	45	62
#8	60	3000 psi	43	59	82
#9	60	3000 psi	49	74	104
#10	60	3000 psi	58	95	132
#11	60	3000 psi	71	116	163

Splicing is an alternative to specified material listed in rebar schedule.
Lap Splice may be used on ties when Seismic Hook not required.

Rev	Description	Date	By/Ck

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCES ARE-

valmont MICROFLECT
3575 25TH STREET SE SALEM, OR 97302
MAIN (503) 363-9267
FAX (503) 363-4613

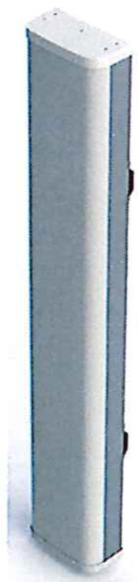
By: JDN | SLAB FOUNDATION LAYOUT
Check: MF | Customer Insite Towers
Date: 11/19/14 | Site RIDGEFIELD
S.O. 273806 | SIZE - B | Dwg No. B-140570 | Sheet 1 of 1

ATTACHMENT 3

AT&T Antenna Specs

HEXPORT Multi-Band ANTENNA

Model HPA-65R-BUU-H8



Hexport Multi-Band Antenna Array

The CCI Hexport Multi-Band Antenna Array is an industry first 6-port antenna with full WCS Band Coverage. With four high band ports and two low band ports, our hexport antenna is ready for 4X4 high band MIMO.

Modern networks demand high performance, consequently CCI has incorporated several new and innovative design techniques to provide an antenna with excellent side-lobe performance, sharp elevation beams, and high front to back ratio.

Multiple networks can now be connected to a single antenna, reducing tower loading and leasing expense, while decreasing deployment time and installation cost.

Full band capability for 700 MHz , Cellular 850 MHz, PCS 1900 MHz, AWS 1710/2170 MHz and WCS 2300 MHz coverage in a single enclosure.

Benefits

- Includes WCS Band
- Reduces tower loading
- Frees up space for tower mounted E-nodes
- Single radome with six ports
- All Band design simplifies radio assignments
- Sharp elevation beam eases network planning

Features

- High Band Ports include WCS Band
- Four High Band ports with two Low Band ports in one antenna
- Sharp elevation beam
- Excellent elevation side-lobe performance
- Excellent MIMO performance due to array spacing
- Excellent PIM Performance
- A multi-network solution in one radome

Applications

- 4x4 MIMO on High Band and 2x2 MIMO on Low Band
- Adding additional capacity without adding additional antennas
- Adding WCS Band without increasing antenna count

ISO 9001:2008
Quality Management Systems
Système de Qualité
www.ca.sgs.com

CCI antennas
EXTENDING WIRELESS PERFORMANCE

HEXPORT Multi-Band ANTENNA

Model HPA-65R-BUU-H8

HPA-65R Multi-Band Antenna

Electrical Specifications

	2 X Low Band Ports which cover the full range from 698-894 MHz		4 X High Band Ports which cover the full range from 1710-2360 MHz		
Frequency Range	698-806 MHz	824-894 MHz	1850-1990 MHz	1710-1755/2110-2170 MHz	2305-2360 MHz
Gain	15.3 dBi	16.2 dBi	17.1 dBi	16.3 dBi	17.4 dBi	17.7 dBi
Azimuth Beamwidth (-3dB)	65°	61°	62°	68°	64°	60°
Elevation Beamwidth (-3dB)	10.1°	8.4°	5.6°	6.2°	5.0°	4.5°
Electrical Downtilt	2° to 10°	2° to 10°	0° to 8°	0° to 8°	0° to 8°	0° to 8°
Elevation Sidelobes (1st Upper)	< -17 dB	< -17 dB	< -19 dB	< -18 dB	< -18 dB	< -17 dB
Front-to-Back Ratio @180°	> 29 dB	> 28 dB	> 35 dB	> 35 dB	> 35 dB	> 35 dB
Front-to-Back Ratio over ± 20°	> 28 dB	> 27 dB	> 28 dB	> 27 dB	> 28 dB	> 28 dB
Cross-Polar Discrimination (at Peak)	> 24 dB	> 20 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Cross-Polar Discrimination (at ± 60°)	> 16 dB	> 14 dB	> 18 dB	> 18 dB	> 18 dB	> 18 dB
Cross-Polar Port-to-Port Isolation	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB
VSWR	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1
Passive Intermodulation (2x20W)	≤ -150dBc	≤ -150dBc	≤ -150dBc	≤ -150dBc	≤ -150dBc	≤ -150dBc
Input Power	500 Watts CW	500 Watts CW	300 Watts CW	300 Watts CW	300 Watts CW	300 Watts CW
Polarization	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°
Input Impedance	50 Ohms	50 Ohms	50 Ohms	50 Ohms	50 Ohms	50 Ohms
Lightning Protection	DC Ground	DC Ground	DC Ground	DC Ground	DC Ground	DC Ground

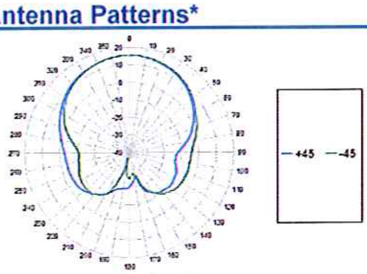
Mechanical Specifications

Dimensions (LxWxD)	92.4 x 14.8 x 7.4 inches (2348 x 376 x 189 mm)
Survival Wind Speed	> 150 mph
Front Wind Load	332 lbs (1479 N) @ 100 mph (161 kph)
Side Wind Load	193 lbs (860 N) @ 100 mph (161 kph)
Equivalent Flat Plate Area	13.0 ft^2 (1.2 m^2)
Weight (without Mounting)	68 lbs (31 kg)
RET System Weight	5.0 lbs (2.25 kg)
Connector	6; 7-16 DIN female long neck
Mounting Pole	2-5 inches (5-12 cm)

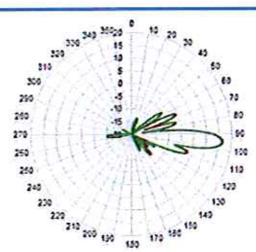
Bottom View

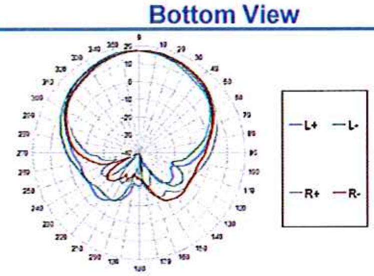

Rear View

Antenna Patterns*

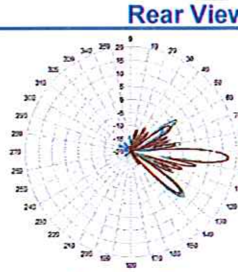


894 MHz Azimuth


Elevation 5°



1920 MHz Azimuth


Elevation 4°

*Typical antenna patterns. For detail information on antenna pattern, please contact us at info@cciproducts.com. All specifications are subject to change without notice.

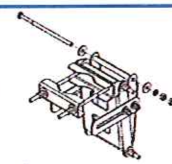
HexPort Multi-Band Antenna

Model HPA-65R-BUU-H8

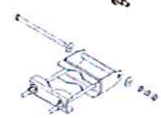
Ordering Information:

HPA-65R-BUU-H8	8 Foot Hexport Antenna with 65° Azimuth Beamwidth with Factory Installed Actuators (\3)
HPA-65R-BUU-H8-K	Complete Kit with Antenna, Factory Installed Actuators (3) and M03 Mounting Bracket
BSA-RET200	RET Actuator
BSA-M03	Mounting Bracket (Top & Bottom) with 0° through 10° Mechanical tilt Adjustment

M03 Top Mounting Bracket



M03 Bottom Mounting Bracket



RET [Remote Electrical Tilt] System

General Specification

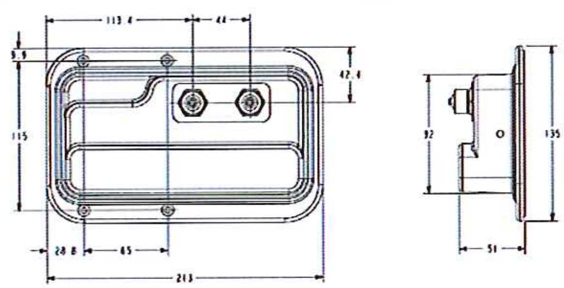
Part Number	BSA-RET200
Protocols	AISG 2.0
Adjustment Cycles	>10,000 cycles
Tilt Accuracy	±0.1°
Temperature Range	-40°C to +70°C

Electrical Specification

Interface Signal	Data | dc
Input Voltage Range	10-30 Vdc, Specifications at +24 VDC
Current consumption during tilting	120mA at Vin = 24V
Current consumption idle	55mA at Vin=24V
Hardware Interface	AISG - RS 485 A/B
Input Connector	1x8-pin Daisy Chain In Male
Output Connector	1x8-pin Daisy Chain Out Female

Mechanical Specification and Dimensions

Housing Material	ASA / ABS / Aluminum
Dimensions (H x W x D)	8 x 5 x 2 inches (213 x 135 x 51 mm)
Weight	1.5 lbs (0.68 kg)



Standards Compliance

Safety	EN 60950-1, UL 60950-1
Emission	EN 55022
Immunity	EN 55024
Environmental	IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-5, IEC 60068-2-6, IEC 60068-2-11, IEC 60068-2-14, IEC 60068-2-18, IEC 60068-2-27, IEC 60068-2-29, IEC 60068-2-30, IEC 60068-2-52, IEC 60068-2-64, GR-63-CORE 4.3.1, EN60529 IP24

Regulatory Certification

AISG, FCC Part 15 Class B, CE, CSA US

USA HQ: 89 Leuning Street, South Hackensack, NJ 07606 Telephone: 201-342-3338,
Canada: 411 Legget Drive, Suite 104, Ottawa, ON, Canada K2K 3C9 Telephone: 613-591-6696

Description	Value
Dimensions with Solar Shield and Handle	
Height	500 mm
Width	431 mm
Depth	182 mm
Weight	
RRUS 11	23 kg
Color	
Gray	

(1) For RRUS 11 B7, 2x30W is guaranteed for operating ambient temperatures < +50 °C. For higher temperatures, 2x20W is guaranteed.
(2) Detailed information about LTE licences can be found in Licensing. *Detailed information about WCDMA licences can be found in* Licenses and Hardware Activation Codes.
(3) RRUS 11 for B12 has a bandwidth that is 2 MHz narrower than 3GPP. The supported frequency corresponds to EARFCN (Channel Numbers) of 5010-5169 in downlink and 23010-23169 in uplink.

The RRUS 11 size, height, width, and depth with solar shield, is shown in Figure 2.

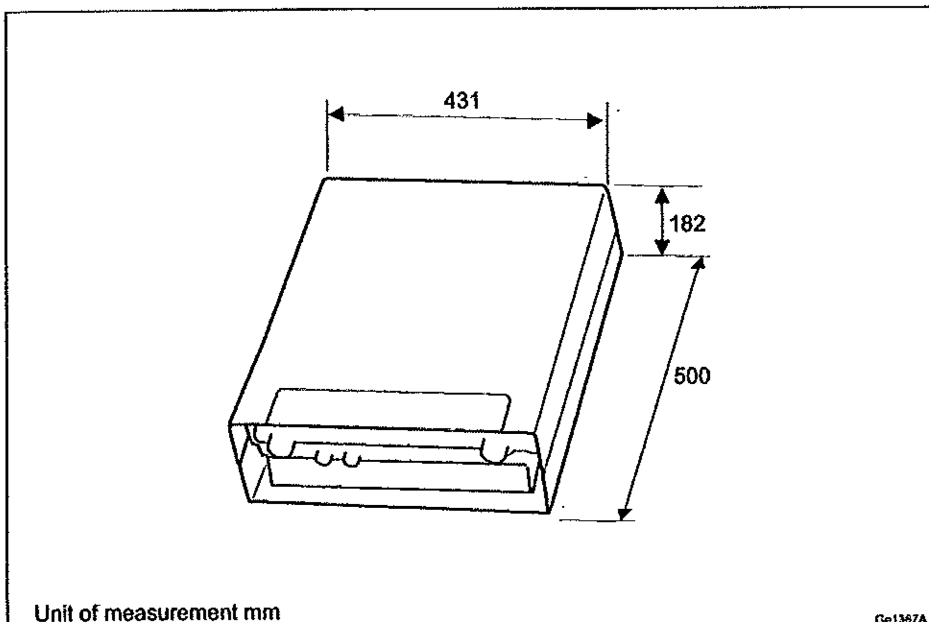


Figure 2 RRUS 11 Height, Width, and Depth with Solar Shield

Description	Value
Frequency	*1,710 to 1,785 MHz uplink* 1,805 to 1,880 MHz downlink IBW 25 MHz B3 for WCDMA and LTE (Type B)
Dimensions with Solar Shield and Handle and Feet	
Height	518 mm
Width	470 mm
Depth Type B	187 mm
Dimensions without Solar Shield and without Handle or Feet	
Height	418 mm
Width	458 mm
Depth Type B	159 mm
Weight	
RRUS 12 Type B	26.3 kg
Color	
Gray	

The RRUS 12 size, height, width, and depth with solar shield, is shown in Figure 2.

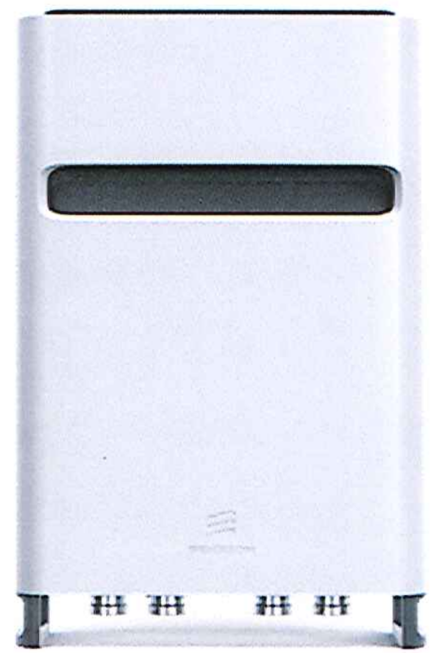
ERICSSON

RRUS 32 B30 Data Sheet

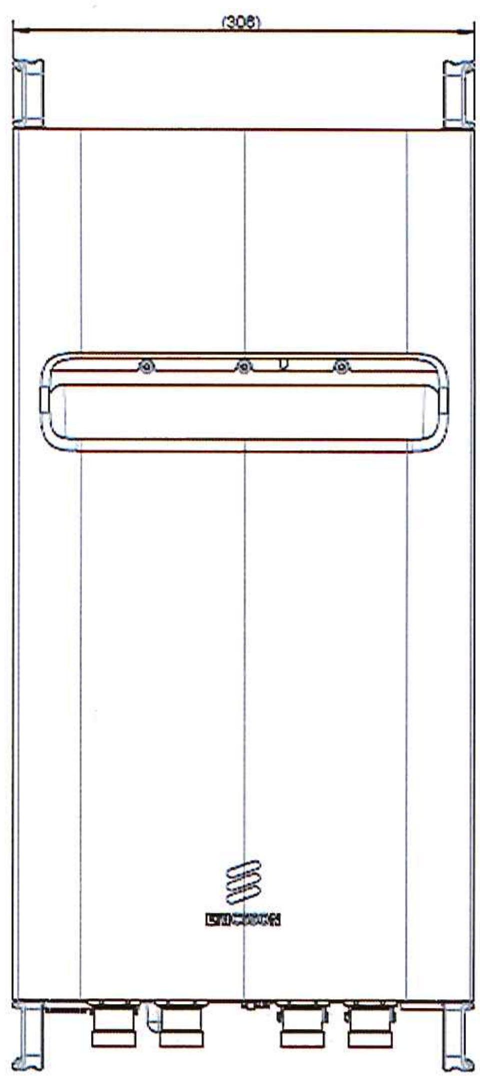
RRUS 32 B30

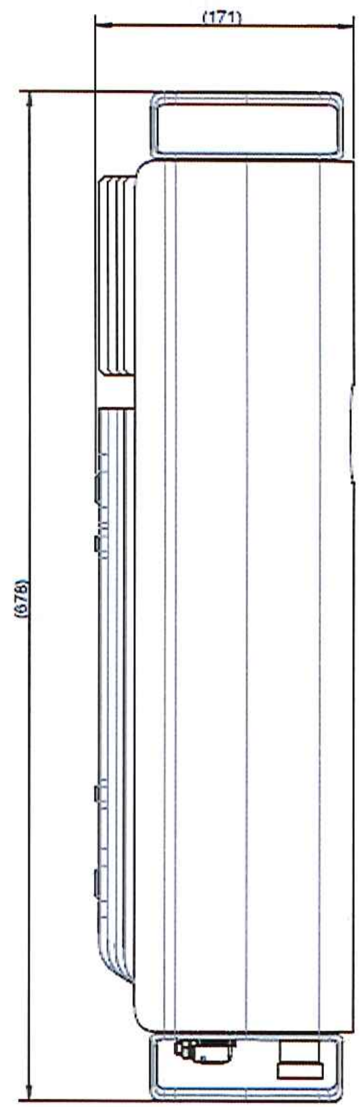
PRELIMINARY

- WCS A+B blocks
  - TX = 2350 – 2360 MHz
  - RX = 2305 – 2315 MHz
- RF output 4 x 25 Watts
- 4T4R FDD
- 10 MHz IBW for LTE
- CPRI 2 ports x 10 Gbps
- Dimensions (incl. feet and sunshield)
  - Height: 26.7" (678 mm)
  - Width: 12.1" (306 mm)
  - Depth: 6.7" (171 mm)
- Weight, excl. mounting hardware
  - 60 lbs (23 kg)



Mechanical Outline





(millimeters)

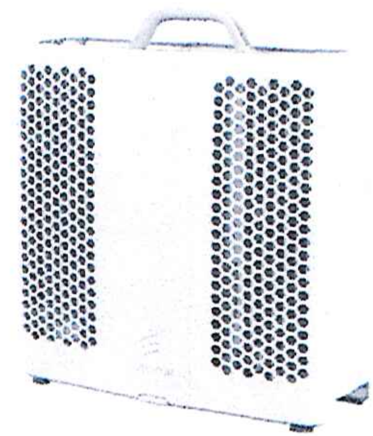
PRELIMINARY

ERICSSON

RRUS E2 B29

OVERVIEW

- Built on RRUS 12 platform
- RF Power 2x40 Watts
- Improved TX filter, to reduce spurious emissions into B17 (12) uplink
- LTE – DL only. Up to 10 MHz
- Type B chassi:
  - HxWxD = 20.4"x18.5"x7.5" (including sun shield and handle)
  - Weight: Less than 60 lbs



PRA: February, 2014

Frequency plan:

POWER

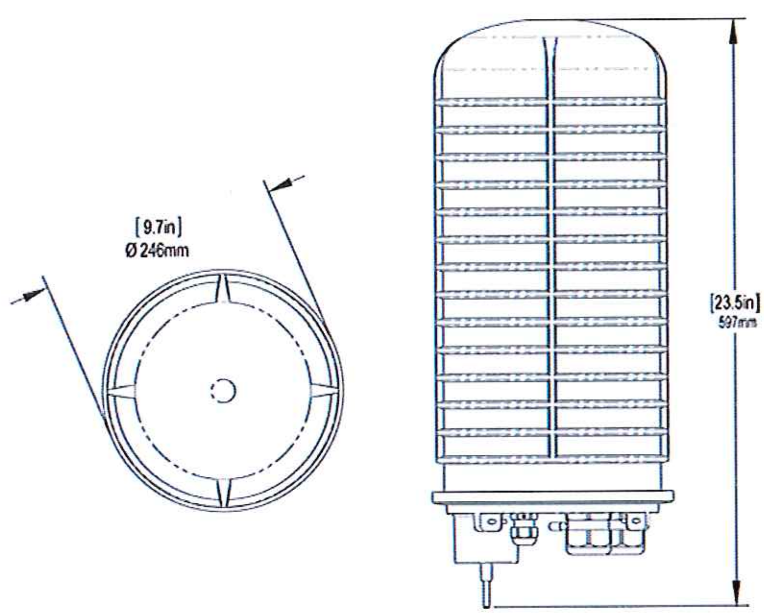
DC6-48-60-18-8F

DC Surge Suppression Solution

The DC6-48-60-18 is a dual chambered, DC surge suppression system for use in multi-circuit, Distributed Antenna Systems. The system will protect up to 6 Remote Radio Heads from voltage surges and lightning, and connect up to 18 fiber pairs. The system is enclosed in a NEMA 4 rated, waterproof enclosure.

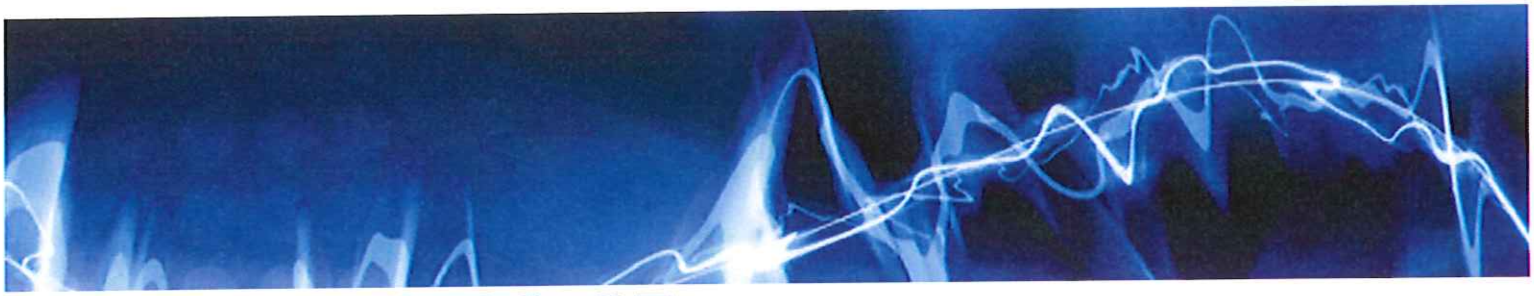
FEATURES

- Protects up to 6 Remote Radio Heads, each with its own protection circuit.
- Flexible design allows for installation at the top of a tower for Remote Radio Head protection.
- Includes fiber connections for up to 18 pairs of fiber.
- LED indicators on individual circuits provide visual indication of suppressor status.
- Form 'C' relays allow for remote monitoring of the suppressor status.
- Patented Strikesorb technology provides over 60 kA of surge current capacity per circuit.
- Strikesorb suppression modules are fully recognized to UL 1449-3rd Edition Safety Standard, meeting all intermediate and high current fault requirements to facilitate use in OEM applications.
- Raycap recommends that DC protection system be installed within 2 meters or 6 feet of the radio.
- Dome design is lightweight and aerodynamic providing maximum flexibility for installation on top of towers.



Raycap

Phone 208.777.1166 Toll Free 800.890.2569 Fax 208.777.4466 www.raycapsurgeprotection.com



DC6-48-60-18-8F

DC Power Surge Protection

Electrical Specifications	
Model Number	DC6-48-60-18-8F
Nominal Operating Voltage	48 VDC
Nominal Discharge Current (I_n)	20 kA 8/20 µs
Maximum Discharge Current (I_{max}) per NEMA LS-1	60 kA 8/20 µs
Maximum Continuous Operating Voltage (U_c)	75 VDC
Voltage Protection Rating	400 V

Mechanical Specifications	
Suppression Connection Method	Compression lug, #2-#14 AWG Copper, #2-#12 Aluminum
Fiber Connection Method	LC-LC Single mode duplex
Environmental Rating	IP 68, 7m 72hrs
Operating Temperature	-40° C to + 80° C
Storage Temperature	-70° C to + 80° C
Cold Temperature Cycling	IEC 61300-2-22e -30° C to + 60° C 200 hrs @ 5 psi
Resistance to Aggressive Materials	CEI IEC 61073-2 including acids and bases
UV Protection	ISO 4892-2 Method A Xenon-Arc 2160 hrs
Weight	20 lbs without Mounting Bracket

STANDARDS

Strikesorb modules are compliant to the following Surge Protection Device (SPD) Standards:

- ANSI/UL 1449 – 3rd Edition
- IEEE C62.41
- NEMA LS-1, IEC 61643-1:2005 2nd Edition:2005
- IEC 61643-12
- EN 61643-11:2002 (including A11:2007)

GSA
GS-07F-0435V

ANAB
Certified to ISO 9001:2000

TÜV
TUV Rheinland of North America

Raycap, Inc. 806 W. Clearwater Loop • Post Falls • Idaho • 83854 • USA
Phone 208.777.1166 • Toll Free 800.890.2569 • Fax 208.777.4466 • www.raycapsurgeprotection.com

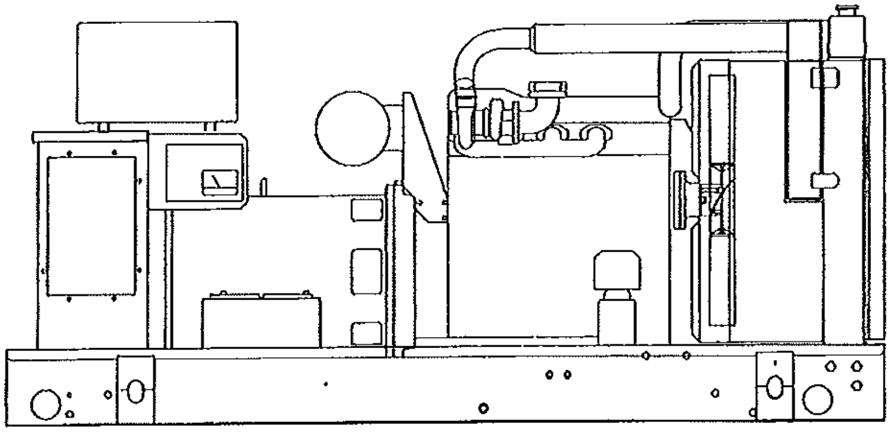
ATTACHMENT 4

AT&T Generator Spec

SD050 Liquid Cooled Diesel Engine Generator Sets

Standby Power Rating
50KW 60 Hz / 50KVA 50 Hz

Prime Power Rating
44KW 60 Hz / 44KVA 50 Hz



Power Matched
GENERAC 2.4DTA ENGINE
Turbocharged/Aftercooled
Tier III Compliant

FEATURES

- **INNOVATIVE DESIGN & PROTOTYPE TESTING** are key components of GENERAC'S success in 'IMPROVING POWER BY DESIGN.' But it doesn't stop there. Total commitment to component testing, reliability testing, environmental testing, destruction and life testing, plus testing to applicable CSA, NEMA, EGSA, and other standards, allows you to choose GENERAC POWER SYSTEMS with the confidence that these systems will provide superior performance.
- **TEST CRITERIA:**
  - ✓ PROTOTYPE TESTED
  - ✓ SYSTEM TORSIONAL TESTED
  - ✓ ELECTRO-MAGNETIC INTERFERENCE
  - ✓ NEMA MG1 EVALUATION
  - ✓ MOTOR STARTING ABILITY
  - ✓ SHORT CIRCUIT TESTING
  - ✓ UL COMPLIANCE AVAILABLE
- **SOLID-STATE, FREQUENCY COMPENSATED DIGITAL VOLTAGE REGULATION.** This state-of-the-art power maximizing regulation system is standard on all Generac models. It provides optimized FAST RESPONSE to changing load conditions and MAXIMUM MOTOR STARTING CAPABILITY by electronically torque-matching the surge loads to the engine.
- **SINGLE SOURCE SERVICE RESPONSE** from Generac's dealer network provides parts and service know-how for the entire unit, from the engine to the smallest electronic component. You are never on your own when you own a GENERAC POWER SYSTEM.
- **ECONOMICAL DIESEL POWER.** Low cost operation due to modern diesel engine technology. Better fuel utilization plus lower cost per gallon provide real savings.
- **LONGER ENGINE LIFE.** Generac heavy-duty diesels provide long and reliable operating life.
- **GENERAC TRANSFER SWITCHES, SWITCHGEAR AND ACCESSORIES.** Long life and reliability is synonymous with GENERAC POWER SYSTEMS. One reason for this confidence is that the GENERAC product line includes its own transfer systems, accessories, switchgear and controls for total system compatibility.

GENERAC®
POWER SYSTEMS, INC.

APPLICATION
& ENGINEERING DATA

SD050

GENERATOR SPECIFICATIONS

TYPE .... Four-pole, revolving field
ROTOR INSULATION .... Class H
STATOR INSULATION .... Class H
TOTAL HARMONIC DISTORTION .... <3%
TELEPHONE INTERFERENCE FACTOR (TIF) .... <50
ALTERNATOR .... Self-ventilated and drip-proof
BEARINGS (PRE-LUBED & SEALED) 1
COUPLING .... Direct, Flexible Disc
LOAD CAPACITY (STANDBY) 100%
LOAD CAPACITY (PRIME) 110%

NOTE: Emergency loading in compliance with NFPA 99, NFPA 110. Generator rating and performance in accordance with ISO8528-5, BS5514, SAE J1349, ISO3046 and DIN6271 standards.

VOLTAGE REGULATOR

TYPE .... Full Digital
SENSING .... 3 Phase
REGULATION .... ± 1/4%
FEATURES .... Built into H-100 Control Panel, V/F Adjustable
Adjustable Voltage and Gain

GENERATOR FEATURES

- Revolving field heavy duty generator
- Quiet drive coupling
- Operating temperature rise 120°C above a 40°C ambient
- Insulation is Class H rated at 150°C rise
- All prototype models have passed three phase short circuit testing

CONTROL PANEL FEATURES

- TWO FOUR LINE LCD DISPLAYS READ:
  - Voltage (all phases)
  - Power factor
  - kVAR
  - Engine speed
  - Run hours
  - Fault history
  - Coolant temperature
  - Low oil pressure shutdown
  - Overvoltage
  - Low coolant level
  - Exercise speed
  - Not in auto position (flashing light)
  - Current (all phases)
  - kW
  - Transfer switch status
  - Low fuel pressure
  - Service reminders
  - Oil pressure
  - Time and date
  - High coolant temp shutdown
  - Overspeed
  - Low coolant level
  - ATS selection
- INTERNAL FUNCTIONS:
  - I^2T function for alternator protection from line to neutral and line to line short circuits
  - Emergency stop
  - Programmable auto crank function
  - 2 wire start for any transfer switch
  - Communicates with the Generac HTS transfer switch
  - Built-in 7 day exerciser
  - Adjustable engine speed at exerciser
  - RS232 port for GenLink® control
  - RS485 port remote communication
  - Canbus addressable
  - Governor controller and voltage regulator are built into the master control board
  - Temperature range -40°C to 70°C

ENGINE SPECIFICATIONS

MAKE .... GENERAC/DEERE
MODEL 4024HF285B
ENGINE FAMILY 8JDXL03.0113
CYLINDERS 4
DISPLACEMENT .... 2.4 Liter (149 cu.in.)
BORE .... 86 mm (3.4 in.)
STROKE .... 105 mm (4.1 in.)
COMPRESSION RATIO 18:1
INTAKE AIR .... Turbocharged/Aftercooled
NUMBER OF MAIN BEARINGS 5
CONNECTING RODS .... 4-Drop Forged Steel
CYLINDER HEAD .... Cast Iron
PISTONS .... 4-Aluminum Alloy
CRANKSHAFT .... Die Forged, Induction Hardened Steel

VALVE TRAIN

LIFTER TYPE .... Solid
INTAKE VALVE MATERIAL .... Heat Resistant Steel
EXHAUST VALVE MATERIAL .... Heat Resistant Steel
HARDENED VALVE SEATS .... Replaceable

ENGINE GOVERNOR

☐ ELECTRONIC .... Standard
FREQUENCY REGULATION, NO-LOAD TO FULL LOAD .... Isochronous
STEADY STATE REGULATION .... ±0.25%

LUBRICATION SYSTEM

TYPE OF OIL PUMP .... Gear
OIL FILTER .... Full flow, Cartridge
CRANKCASE CAPACITY .... 7.5 qts.

COOLING SYSTEM

TYPE OF SYSTEM .... Pressurized, Closed Recovery
WATER PUMP .... Pre-Lubed, Self-Sealing
TYPE OF FAN .... Pusher
NUMBER OF FAN BLADES 6
DIAMETER OF FAN .... 560 mm (22 in.)
COOLANT HEATER .... 120V, 1000 W

FUEL SYSTEM

FUEL .... #2D Fuel (Min Cetane #40)
(Fuel should conform to ASTM Spec.)
FUEL FILTER .... 5 Micron
FUEL INJECTION PUMP .... Bosch
FUEL PUMP .... Mechanical
INJECTORS .... Unit Type Multi-Hole, Nozzle
ENGINE TYPE .... Pre-combustion
FUEL LINE (Supply) .... 6.35 mm (0.25 in.)
FUEL RETURN LINE .... 6.35 mm (0.25 in.)

ELECTRICAL SYSTEM

BATTERY CHARGE ALTERNATOR .... 20 Amps at 12 V
STARTER MOTOR .... 12 V
RECOMMENDED BATTERY .... 12 Volt, 90 A.H., 27F
GROUND POLARITY .... Negative

Rating definitions - Standby: Applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. (All ratings in accordance with BS5514, ISO3046 and DIN6271). Prime (Unlimited Running Time): Applicable for supplying electric power in lieu of commercially purchased power. Prime power is the maximum power available at variable load. A 10% overload capacity is available for 1 hour in 12 hours. (All ratings in accordance with BS5514, ISO3046, ISO8528 and DIN6271).

GENERAC
POWER SYSTEMS, INC.

SD050

OPERATING DATA

	STANDBY SD050				PRIME SD050			
GENERATOR OUTPUT VOLTAGE/KW-60Hz		Rated AMP				Rated AMP		
120/240V, 1-phase, 1.0 pf	50	208			44	183		
120/208V, 3-phase, 0.8 pf (NOTE: Consult your Generac dealer for additional voltages.)	50	173			44	153		
120/240V, 3-phase, 0.8 pf	50	150			44	133		
277/480V, 3-phase, 0.8 pf	50	75			44	66		
600V, 3-phase, 0.8 pf	50	60			44	53		
GENERATOR OUTPUT VOLTAGE/KVA-50Hz		Rated AMP				Rated AMP		
110/220V, 1-phase, 1.0 pf	40	182			35	159		
115/200V, 3-phase, 0.8 pf (NOTE: Consult your Generac dealer for additional voltage)	50	144			44	127		
100/200V, 3-phase, 0.8 pf	50	144			44	127		
231/400V, 3-phase, 0.8 pf	50	72			44	63		
MOTOR STARTING KVA								
Maximum at 35% instantaneous voltage dip with standard alternator; 50/60 Hz	208/240/416V	480V			208/240/416V	480V		
	82/100	93/113			82/100	93/113		
FUEL								
Fuel consumption—60 Hz Load	25%	50%	75%	100%	25%	50%	75%	100%
gal./hr.	1.12	2.19	3.21	4.16	0.99	1.93	2.82	3.66
liters/hr.	4.25	8.3	12.13	15.76	3.74	7.3	10.68	13.87
Fuel consumption—50 Hz gal./hr.	0.9	1.75	2.56	3.33	0.79	1.54	2.26	2.93
liters/hr.	3.4	6.64	9.71	12.61	2.99	5.84	8.54	11.1
Fuel pump lift	40"				40"			
COOLING								
Coolant capacity System - US gal. (lit.)	4.5 (17.0)				4.5 (17.0)			
Engine - US gal. (lit.)	2.75 (10.4)				2.75 (10.4)			
Coolant flow/min. 60 Hz - US gal. (lit.)	28 (106)				28 (106)			
50 Hz - US gal. (lit.)	23 (87)				23 (87)			
Heat rejection to coolant 60 Hz full load BTU/hr.	135,900				109,000			
Heat rejection to coolant 50 Hz full load BTU/hr.	115,500				92,600			
Inlet air 60 Hz - cfm (m³/min.)	7500 (212.4)				7500 (212.4)			
50 Hz - cfm (m³/min.)	6225 (176.3)				6225 (176.3)			
Max. air temperature to radiator °C (°F)	60 (140)				60 (140)			
Max. ambient temperature °C (°F)	50 (122)				50 (122)			
COMBUSTION AIR REQUIREMENTS								
Flow at rated power 60 Hz - cfm (m³/min.)	166 (4.7)				140 (4.0)			
50 Hz - cfm (m³/min.)	140 (4.0)				120 (3.4)			
EXHAUST								
Exhaust flow at rated output 60 Hz - cfm (m³/min.)	448 (12.7)				380 (10.8)			
50 Hz - cfm (m³/min.)	380 (10.8)				320 (9.1)			
Max recommended back pressure Inches Hg	2.2				2.2			
Exhaust temperature 60 Hz (full load) °F (°C)	1044 (562)				925 (496)			
Exhaust outlet size	2.5" O.D. Turbo				2.5" O.D. Muffler			
ENGINE								
Rated RPM 60 Hz / 50 Hz	1800 / 1500				1800			
HP at rated KW 60 Hz / 50 Hz	79 / 64				64 / 52			
Piston speed 60 Hz - ft./min. (m/min.)	1536 (1230)				1536 (1230)			
50 Hz - ft./min. (m/min.)	1279 (1025)				1279 (1025)			
BMEP 60 Hz / 50 Hz - psi	189 / 181				151 / 147			
DERATION FACTORS								
Temperature								
6.7% for every 10°C above - °C	25				25			
4.0% for every 10°F above - °F	77				77			
Altitude								
0.8% for every 100 m above - m	1067				1067			
2.6% for every 1000 ft. above - ft.	3500				3500			

STANDARD ENGINE & SAFETY FEATURES

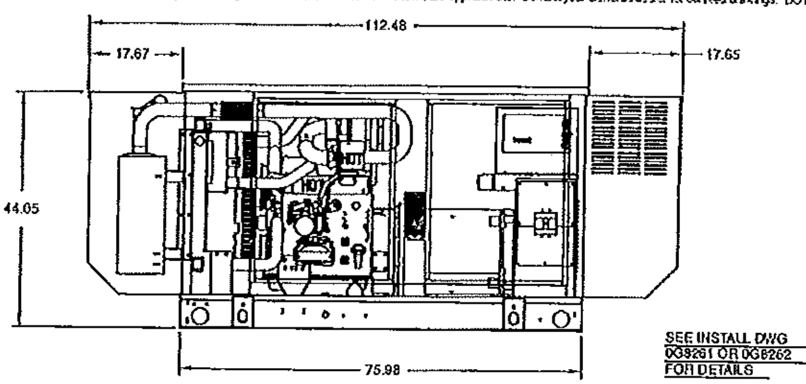
- High Coolant Temperature Automatic Shutdown
- Low Coolant Level Automatic Shutdown
- Low Oil Pressure Automatic Shutdown
- Overspeed Automatic Shutdown (Solid-state)
- Crank Limiter (Solid-state)
- Oil Drain Extension
- Radiator Drain Extension
- Factory-Installed Cool Flow Radiator
- Closed Coolant Recovery System
- UV/Ozone Resistant Hoses
- Rubber-Booted Engine Electrical Connections
- Coolant Heater
- Secondary Fuel Filter
- Fuel Lockoff Solenoid
- Stainless Steel Flexible Exhaust Connection
- Battery Charge Alternator
- Battery Cables
- Battery Tray
- Vibration Isolation of Unit to Mounting Base
- 12 Volt, Solenoid-activated Starter Motor
- Air Cleaner
- Fan Guard
- Control Console
- Radiator Duct Adaptor
- Ischronous Governor

OPTIONS

- **OPTIONAL COOLING SYSTEM ACCESSORIES**
  - 208/240V Coolant Heater
- **OPTIONAL FUEL ACCESSORIES**
  - Flexible Fuel Lines
  - UL Listed Fuel Tanks
  - Base Tank Low Fuel Alarm
  - Primary Fuel Filters
- **OPTIONAL EXHAUST ACCESSORIES**
  - Critical Exhaust Silencer
- **OPTIONAL ELECTRICAL ACCESSORIES**
  - 2A Battery Charger
  - 10A Dual Rate Battery Charger
  - Battery, 12 Volt, 135 A.H.
- **OPTIONAL ALTERNATOR ACCESSORIES**
  - Alternator Upsizing
  - Alternator Strip Heater
  - Alternator Tropicalization
  - Voltage Changeover Switch
  - Main Line Circuit Breaker
- **CONTROL CONSOLE OPTIONS**
  - Digital Controller H100 (Bulletin 0172110SBY)
- **ADDITIONAL OPTIONAL EQUIPMENT**
  - Automatic Transfer Switch
  - Remote Relay Panels
  - Unit Vibration Isolators
  - Oil Make-Up System
  - Oil Heater
  - 5 Year Warranties
  - Export Boxing
  - GenLink® Communications Software
- **OPTIONAL ENCLOSURE**
  - Weather Protective
  - Sound Attenuated
  - Aluminum and Stainless Steel
  - Enclosed Muffler

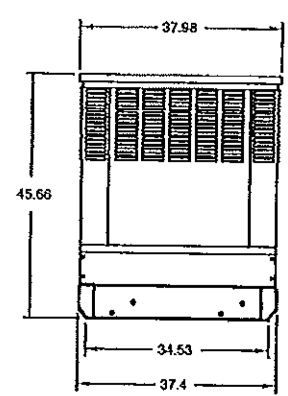
Distributed by:

Design and specifications subject to change without notice. Dimensions shown are approximate. Contact your Generac dealer for certified drawings. DO NOT USE THESE DIMENSIONS FOR INSTALLATION PURPOSES.



APPLICABLE TO 2.4L G4 35 KW, 40 KW, 50 KW

LEFT SIDE VIEW, SOUND ATTENUATED ENCLOSURE.



REAR VIEW

mm [in]

WEIGHT: 2900 lbs.

GENERAC® POWER SYSTEMS, INC. • P.O. BOX 8 • WAUKESHA, WI 53187
262/544-4811 • FAX 262/544-4851

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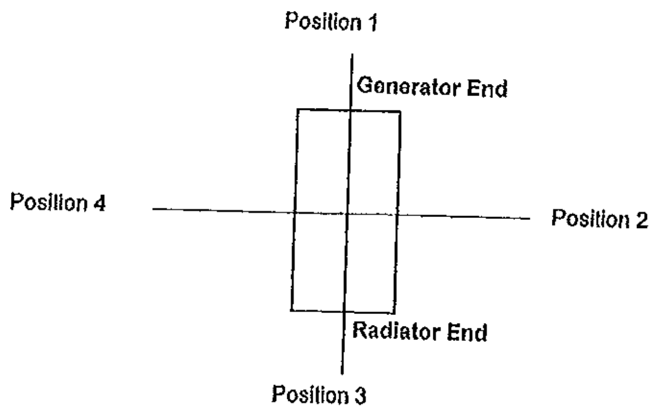
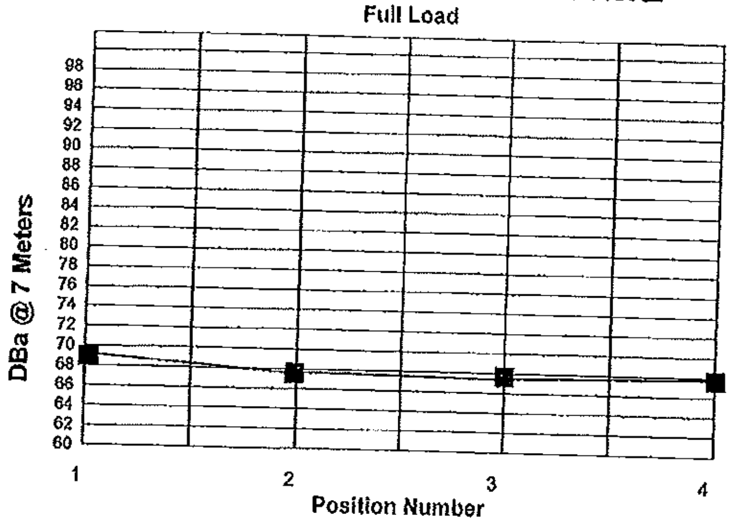
GENERAC®
POWER SYSTEMS, INC.

Measured Sound Performance
2.4 Liter Diesel Engine. SD50 with Level IIA Enclosure
Full Load Data



Measured Sound Levels – 60 Hertz
Full Load



Data Table

Pos #	DBa
1	68.9
2	66.4
3	66.7
4	66.6

Notes:

1. All positions 23 ft. (7 meters) from center of generator
2. Generator operating at **Rated Load**
3. Test conducted on a 100 foot diameter Blacktop Surface
4. Ambient Temperature 22° F 38% Rel Hum.
5. Ref Test No. B4168-T123

ATTACHMENT 5

Town of Ridgefield Equipment Spec

Product Specifications

COMMSCOPE®

POWERED BY ANDREW.

VHLP2-11W-4WH

0.6 m | 2 ft ValuLine® High Performance Low Profile Antenna, single-polarized, 10.125–11.700 GHz, PDR100, white antenna, polymer white radome without flash, standard pack—one-piece reflector

General Specifications

Antenna Type	VHLP - ValuLine® High Performance Low Profile Antenna, single-polarized
Diameter, nominal	0.6 m | 2 ft
Packing	Compact pack
Radome Color	White
Radome Material	Polymer
Reflector Construction	One-piece reflector
Antenna Input	PDR100
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

Operating Frequency Band	10.125 – 11.700 GHz
Beamwidth, Horizontal	3.3 °
Beamwidth, Vertical	3.3 °
Cross Polarization Discrimination (XPD)	30 dB
Electrical Compliance	Brazil Anatel Class 2 | ETSI 302 217 Class 3 | US FCC Part 101A @ 10.55–10.7 GHz | US FCC Part 101B @ 10.7–11.7 GHz
Front-to-Back Ratio	60 dB
Gain, Low Band	33.8 dBi
Gain, Mid Band	34.5 dBi
Gain, Top Band	35.2 dBi
Operating Frequency Band	10.125 – 11.700 GHz
Radiation Pattern Envelope Reference (RPE)	7200 | 7201
Return Loss	17.7 dB
VSWR	1.30

Mechanical Specifications

Fine Azimuth Adjustment	±15°
Fine Elevation Adjustment	±15°
Mounting Pipe Diameter	48 mm–115 mm | 1.9 in–4.5 in
Net Weight	11 kg | 25 lb

Product Specifications

COMMSCOPE®

POWERED BY ANDREW.

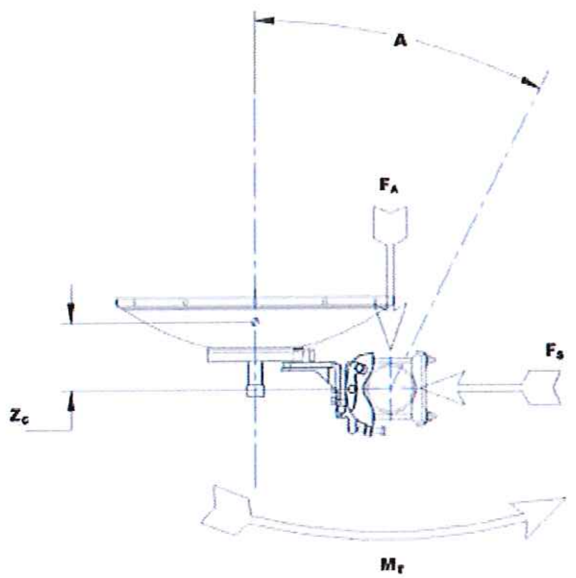
VHLP2-11W-4WH

Side Struts, Included	0
Side Struts, Optional	0
Wind Velocity Operational	200 km/h | 124 mph
Wind Velocity Survival Rating	250 km/h | 155 mph

Wind Forces At Wind Velocity Survival Rating

Axial Force (FA)	1272 N | 286 lbf
Side Force (FS)	630 N | 142 lbf
Twisting Moment (MT)	473 N•m
Weight with 1/2 in (12 mm) Radial Ice	17 kg | 37 lb
Zcg with 1/2 in (12 mm) Radial Ice	162 mm | 6 in
Zcg without Ice	157 mm | 6 in

Wind Forces At Wind Velocity Survival Rating Image



Packed Dimensions

Gross Weight, Packed Antenna	16.0 kg | 35.3 lb
Height	330.0 mm | 13.0 in
Length	706.0 mm | 27.8 in
Volume	0.2 m³
Width	798.0 mm | 31.4 in

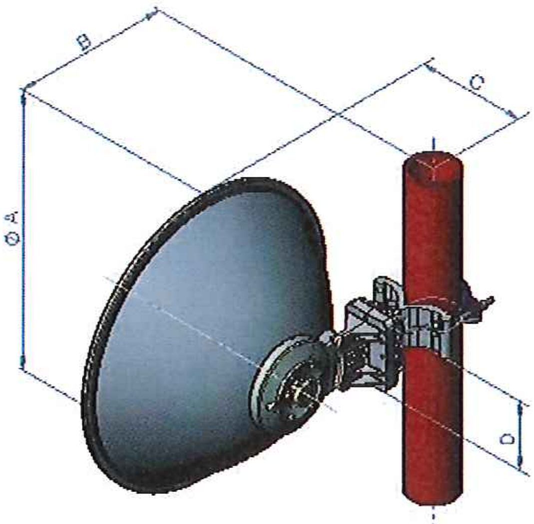
Product Specifications

COMMSCOPE®

POWERED BY ANDREW.

VHLP2-11W-4WH

Antenna Dimensions And Mounting Information



Dimensions in Inches (mm)				
Antenna Size, ft (m)	A	B	C	D
2(0.6)	25.9 (658)	14.6 (372)	10.2 (259)	6.4 (162)

Regulatory Compliance/Certifications

Agency	Classification
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system

* Footnotes

Axial Force (FA)	Maximum forces exerted on a supporting structure as a result of wind from the most critical direction for this parameter. The individual maximums specified may not occur simultaneously. All forces are referenced to the mounting pipe.
Cross Polarization Discrimination (XPD)	The difference between the peak of the co-polarized main beam and the maximum cross-polarized signal over an angle twice the 3 dB beamwidth of the co-polarized main beam.
Front-to-Back Ratio	Denotes highest radiation relative to the main beam, at 180° ±40°, across the band. Production antennas do not exceed rated values by more than 2 dB unless stated otherwise.
Gain, Mid Band	For a given frequency band, gain is primarily a function of antenna size. The gain of Andrew antennas is determined by either gain by comparison or by computer integration of the measured antenna patterns.
Operating Frequency Band	Bands correspond with CCIR recommendations or common allocations used throughout the world. Other ranges can be accommodated on special order.
Packing	Andrew standard packing is suitable for export. Antennas are shipped as standard in totally recyclable cardboard or wire-bound crates (dependent on

	product). For your convenience, Andrew offers heavy duty export packing options.
Radiation Pattern Envelope Reference (RPE)	Radiation patterns determine an antenna's ability to discriminate against unwanted signals under conditions of radio congestion. Radiation patterns are dependent on antenna series, size, and frequency.
Return Loss	The figure that indicates the proportion of radio waves incident upon the antenna that are rejected as a ratio of those that are accepted.
Side Force (FS)	Maximum side force exerted on the mounting pipe as a result of wind from the most critical direction for this parameter. The individual maximums specified may not occur simultaneously. All forces are referenced to the mounting pipe.
Twisting Moment (MT)	Maximum forces exerted on a supporting structure as a result of wind from the most critical direction for this parameter. The individual maximums specified may not occur simultaneously. All forces are referenced to the mounting pipe.
VSWR	Maximum; is the guaranteed Peak Voltage-Standing-Wave-Ratio within the operating band.
Wind Velocity Operational	The wind speed where the antenna deflection is equal to or less than 0.1 degrees. In the case of ValuLine antennas, it is defined as a maximum deflection of 0.3 x the 3 dB beam width of the antenna.
Wind Velocity Survival Rating	The maximum wind speed the antenna, including mounts and radomes, where applicable, will withstand without permanent deformation. Realignment may be required. This wind speed is applicable to antenna with the specified amount of radial ice.

Cambium Networks™

PTP 800 SPLIT-MOUNT SOLUTION

LICENSED ETHERNET MICROWAVE FOR MULTI-SERVICE NETWORKS

Cambium Point-to-Point (PTP) 800 Licensed Ethernet Microwave Solutions can efficiently and affordably transport the data, voice and video that your bandwidth-intensive applications require without having to contend with other communicators in your radio-frequency (RF) band.

SPLIT-MOUNT ARCHITECTURE

Within our PTP 800 family of products, we offer two architectures, a split-mount architecture and an all-indoor architecture. In this Specification Sheet, we detail the specifics of our Split-Mount systems. Information on our PTP 800i All-Indoor system is available at PTP 800.

Our PTP 800 Split-Mount systems operate in the 6 to 38 GHz licensed bands, at up to 368 Mbps throughput[1] (full duplex), and with user-configured channel bandwidths from 7 to 56 MHz. When deployed, the outdoor radio unit (ODU) and antenna are mounted on a tower or rooftop and connected via cable to the Compact Modem Unit (CMU) located inside your building or equipment housing unit.

Within the split-mount platform, you can choose between our Standard ODU-A or our High Performance ODU-B. ODU-A is available in 6 to 38 GHz frequencies, while the High Performance ODU-B is available in the 11, 18 and 23 GHz bands. The ODU-B offers higher transmit power, lower power consumption, and lighter weight when compared with the ODU-A. In addition, our NTIA-compliant 7 and 8 GHz models support DoD and non-DoD applications within the U.S. Federal Government.

COST-EFFICIENT SCALABILITY

With upgradeable capacity from 10 Mbps to full capacity via software key, PTP 800 systems offer exceptional cost efficiency and scalability, allowing you to purchase only the capacity you need today and add capacity as your needs grow. Whether your organization is a carrier, service provider, utility company, municipality, public safety organization, government agency or corporate enterprise, PTP 800 radios will provide you with high-performance, ultra-reliable connectivity and backhaul.

RADIO TECHNOLOGY

ODU-A RF bands[2]	L6 GHz Band: 5.925 – 6.425 GHz U6 GHz Band: 6.425 – 7.100 GHz 7 GHz Band: 7.125 – 7.9 GHz 8 GHz Band: 7.725 – 8.5 GHz 11 GHz Band: 10.7 – 11.7 GHz 13 GHz Band: 12.75 – 13.25 GHz 15 GHz Band: 14.4 – 15.35 GHz 18 GHz Band: 17.7 – 19.7 GHz 23 GHz Band: 21.2 – 23.6 GHz 26 GHz Band: 24.25 – 26.5 GHz 28 GHz Band: 27.5 – 29.5 GHz 32 GHz Band: 31.8 – 33.4 GHz 38 GHz Band: 37.0 – 40.0 GHz
ODU-B RF bands[2]	11 GHz Band: 10.7 – 11.7 GHz 18 GHz Band: 17.7 – 19.7 GHz 23 GHz Band: 21.2 – 23.6 GHz
Channel size	Configurable from 7 to 56 MHz
Maximum Tx power[3]	30 dBm
Best Rx sensitivity[4]	-90.9 dBm
Modulation	QPSK to 256 QAM Fixed mode or Adaptive Coding and Modulation (ACM)
Error correction	Low Density Parity Check (LDPC) code
Duplex scheme	FDD
Security and encryption	Proprietary air interface Optional FIPS-197 compliant 128/256-Bit AES Encryption Optional FIPS 140-2[5] Authenticated SNTP

ETHERNET BRIDGING

Protocol	IEEE 802.3 802.1p/1Q (served by 8 queues) 802.1ad (Q-in-Q)
Frame size	Up to 9600 bytes
User data throughput[6]	10 to 368 Mbps at the Ethernet (full duplex); use our Cambium PTP LINKPlanner to determine actual throughput for the deployment
QoS	8 Queues by VLAN tag, Layer 3 DSCP and TC
Latency	To < 115 µs @ full capacity with 64 bytes
User traffic interface	100 / 1000 Base T (RJ-45) – auto MDI/MDIX, 1000 Base SX and LX options

MANAGEMENT & INSTALLATION

Network management	Inband and out-of-band
Protocol	SNMP v1, v2c, v3
EMS	Web access via browser using HTTP or HTTPS/TLS[7] Cambium Wireless Manager, release 3.0 or higher Your existing network management system Motorola ASTRO® Unified Event Manager (UEM) Remote authentication using RADIUS
Out-of-band interface	10 / 100 Base T (RJ-45)
Installation	ODU – RSSI output assistance for link alignment
Connection	IF cable between outdoor unit (ODU) and compact modem unit (CMU); distance up to 1000 ft. (300 meters) using the LMR600 cable; 630 ft. (190 meters) is achievable with the CNT400 IF cable

PHYSICAL

Physical configuration	Split mount – Compact Modem Unit (CMU) and Outdoor Unit (ODU)	
Dimensions	ODU: Diameter 10.5" (26.7 cm), Depth 3.5" (8.9 cm) CMU: Width 7.1" (18.0 cm), Height 1.4" (3.5 cm), Depth 8.7" (22.0 cm)	
Weight	ODU-A: 10.1 lbs (4.6 kg) ODU-B: 8.6 lbs (3.9 kg CMU: 2.4 lbs (1.1 kg)	
Wind speed survival	ODU: 150 mph (242 kph)	
Power source	-48V DC (-40.5V DC to -60V DC)	
Power consumption	ODU-A – 1+0 Configuration (per end) 6 ~ 11 GHz: 71 Watts maximum 13 ~ 38 GHz: 62 Watts maximum	ODU-B – 1+0 Configuration (per end) 11 GHz: 58 Watts maximum 18, 23 GHz: 56 Watts maximum
	ODU-A – 1+1 Configuration (2 ODUs + 2 CMUs per end) 6 ~ 11 GHz: 122 Watts maximum 13 ~ 38 GHz 114 Watts maximum	ODU-B – 1+1 Configuration (2-ODUs + 2-CMUs per end) 11 GHz: 98 Watts maximum 18, 23 GHz: 98 Watts maximum

ENVIRONMENTAL & REGULATORY

Operating temperature	Outdoor Unit: -27° to +131° F (-33° to +55° C) – EN 300 019-1-4 Compact Modem Unit: -27° to +131° F (-33° to +55° C) – EN 300 019-1-3
Humidity	Outdoor Unit: Up to 100% Compact Modem Unit: Up to 95%, non-condensing
Safety	UL 60950; IEC 60950; EN 60950; CSA 22.2 No. 60950
EMC	USA: FCC Part 15, Class B Europe: EN 301 489-1 and EN 301 489-4
Radio standard	ETSI Harmonized Standard EN 302 217-2-2 FCC Regulation Title 47, Part 101 Industry Canada Specification RSS-GEN and relevant SRSP Specifications

[1] 368 Mbps maximum throughput requires a 56 MHz channel and 256 QAM which may not be available in certain regions due to regulatory restrictions.

[2] Regulatory conditions for RF bands may vary by geographic location and should be confirmed prior to system purchase.

[3] Transmit power depends on frequency, modulation and regulations (ETSI/FCC).

[4] Receive sensitivity depends on frequency, channel bandwidth and modulation (-90.9 dBm is based on an 11 GHz model with 7 MHz channel bandwidth and the QPSK mode).

[5] FIPS 140-2 certification status may be confirmed at: http://csrc.nist.gov/groups/STM/cmvp/inprocess.html

[6] User throughput depends on the configuration of channel bandwidth, modulation and capacity license key. Radios ship with factory-set 10 Mbps throughput capacity cap; additional capacity may be purchased at time of order or anytime after deployment. Full capacity is not available for all combinations of bands and regulations.

[7] Web access via HTTPS/TLS is available on AES-enabled radios.

Radio Configuration

	Frequency (GHz)	L6	U6	7	8	11	13	15	18	23	26	28	32	38
	Standard	ETSI / FCC	ETSI / FCC	ETSI / NTIA	ETSI / NTIA	ETSI / FCC	ETSI	ETSI	ETSI / FCC	ETSI / FCC	ETSI / FCC	ETSI	ETSI	ETSI / FCC
	Frequency Range (GHz)	5.925 – 6.425	6.425 – 7.100	7.125 – 7.9	7.725 – 8.50	10.7 – 11.7	12.75 – 13.25	14.4 – 15.35	17.7 – 19.7	21.2 – 23.6	24.25 – 26.5	27.5 – 29.5	31.8 – 33.4	37.0 – 40.0
FCC	T/R Spacing (MHz)	252.04	160 170	300	360	490 500			1560	1200	800			700
FCC	Channel Bandwidth (MHz)	10 30	10 30	10 20 30 40 50	10 20 30 40 50	10 30 40			10 20 30 40 50 80[8]	10 20 30 40 50	10 20 40			10 50
ETSI	T/R Spacing (MHz)	252.04	340	154 161 168 196 245	119 126 208 266 311.32	490 530	266	420 490 728 315 322 644	1008 1010	1008 1232	1008	1008	812	1260
ETSI	Channel Bandwidth (MHz)	29.65	7 14 30 40 60	7 14 28	7 14 28 29.65	40	7 14 28	7 14 28 56	7 13.75 27.5 55	7 14 28 56	7 14 28 56	7 14 28 56	7 14 28 56	7 14 28 56
	RF Channel Selection	Via Web GUI												
	System Configuration	1 + 0, 1+1 HSB, 1+1 HSB/SD and 2+0												
	ATPC Range (dB)	Transmit Power Control – Adaptive, lower power limit varies with RF band down to 1dBm minimum.												

PTP 800 Family of Products

PTP L6800	L6 GHz
PTP U6800	U6 GHz
PTP 07800	7 GHz
PTP 08800	8 GHz
PTP 11800	11 GHz
PTP 13800	13 GHz
PTP 15800	15 GHz
PTP 18800	18 GHz
PTP 23800	23 GHz
PTP 26800	26 GHz
PTP 28800	28 GHz
PTP 32800	32 GHz
PTP 38800	38 GHz

User Ethernet Data Throughput – ODU-A and ODU-B

Modulation	Maximum Throughput – Mbps (1518 Bytes/Frame)											
	Channel Bandwidth (MHz)											
	7	13.75	14	27.5	28/ 29.65[9]	55	56/60/80	10	20	30	40	50
256 QAM-H	N/A	N/A	N/A	N/A	N/A	364.9	368.6	N/A	N/A	N/A	N/A	N/A
256 QAM-L	N/A	N/A	N/A	166.9	170.4	343.6	347.2	N/A	113.6	177.4	236.7	301.6
128 QAM	34.4	69.8	71.0	148.0	151.1	300.4	303.5	50.9	102.2	155.1	206.9	258.6
64 QAM	30.0	60.7	61.8	122.7	125.3	252.6	255.2	42.8	84.9	130.4 / 135.5[10]	181.9	217.4
32 QAM	24.6	49.9	50.7	99.1	101.2	200.7	202.8	33.7	67.8	103.6	150.7	178.6
16 QAM	20.0	40.6	41.3	73.3	74.8	150.9	152.4	29.1	58.5	77.9	103.9	150.5
8PSK	14.7	29.9	30.4	55.7	56.8	114.6	115.8	20.4	40.3	59.1	78.9	103.7
QPSK	10.1	20.0	20.3	37.0	37.8	76.3	77.1	13.8	28.5	39.4	52.6	65.7

Transmit Power – ODU-A

Modulation	Maximum Transmit Power – ETSI (dBm)								Maximum Transmit Power – FCC (dBm)					
	Frequency (GHz)								Frequency (GHz)					
	6, 7, 8	11	13, 15	18	23, 26	28	32	38	L6	7, 8	11	18	23, 26	38
QPSK	30.0	28.0	26.0	25.5	25.0	25.0	23.0	23.0	22.0	22.0	19.0	23.0	23.0	20.0
8PSK	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	22.0	22.0	19.0	22.0	22.0	19.0
16 QAM	28.0	26.0	23.0	22.0	22.0	22.0	21.0	20.0	22.0	22.0	19.0	22.0	22.0	19.0
32 QAM	28.0	26.0	23.0	22.0	22.0	20.0	19.0	20.0	22.0	22.0	19.0	22.0	22.0	19.0
64 QAM	24.0	21.0	18.0	17.0	17.0	17.0	16.0	16.0	22.0	22.0	19.0	17.0	17.0	15.0
128 QAM	24.0	21.0	18.0	17.0	17.0	17.0	16.0	16.0	22.0	22.0	19.0	17.0	17.0	15.0
256 QAM	22.0	19.0	16.0	15.0	15.0	15.0	14.0	14.0	22.0	22.0	19.0	15.0	15.0	13.0

[8] The 80 MHz channel width is available only on the 18 GHz ODU-B.

[9] For Upper 6 GHz only, 30 MHz capacity is equal to 28 MHz capacity.

[10] 135.5 Mbps is available in Lower 6 GHz.

Receive Sensitivity – ODU-A

BER = 1e-6	Modulation	Frequency (GHz)							
		6, 7, 8	11	13, 15	18	23, 26	28	32	38
Receive Sensitivity @ 56/60 MHz channel (dBm)	256 QAM-H	-63.2	N/A	-63.7	N/A	-63.2	-62.7	-62.2	-61.2
	256 QAM-L	-65.1	N/A	-65.6	N/A	-65.1	-64.6	-64.1	-63.1
	128 QAM	-67.8	N/A	-68.3	N/A	-67.8	-67.3	-66.8	-65.8
	64 QAM	-70.8	N/A	-71.3	N/A	-70.8	-70.3	-69.8	-68.8
	32 QAM	A	N/A	A	N/A	A	-72.9	-72.4	A
	16 QAM	A	N/A	-77.7	N/A	-77.2	-76.7	-76.2	-75.2
	8PSK	A	N/A	A	N/A	A	A	A	A
	QPSK	A	N/A	-83.5	N/A	-83.0	-82.5	-82.0	-81.0
Receive Sensitivity @ 55 MHz channel (dBm)	256 QAM-H	N/A	N/A	N/A	-63.8	N/A	N/A	N/A	N/A
	256 QAM-L	N/A	N/A	N/A	-65.7	N/A	N/A	N/A	N/A
	128 QAM	N/A	N/A	N/A	-68.4	N/A	N/A	N/A	N/A
	64 QAM	N/A	N/A	N/A	-71.4	N/A	N/A	N/A	N/A
	32 QAM	N/A	N/A	N/A	A	N/A	N/A	N/A	N/A
	16 QAM	N/A	N/A	N/A	-77.8	N/A	N/A	N/A	N/A
	8PSK	N/A	N/A	N/A	A	N/A	N/A	N/A	N/A
	QPSK	N/A	N/A	N/A	-83.6	N/A	N/A	N/A	N/A
Receive Sensitivity @ 50 MHz channel (dBm)	256 QAM	-65.3	N/A	N/A	-65.8	-65.3	N/A	N/A	-62.3
	128 QAM	-68.5	N/A	N/A	-69.0	-68.5	N/A	N/A	-65.5
	64 QAM	-71.5	N/A	N/A	-72.0	-71.5	N/A	N/A	-68.5
	32 QAM	-73.8	N/A	N/A	-74.3	-73.8	N/A	N/A	-70.8
	16 QAM	-75.8	N/A	N/A	-76.3	-75.8	N/A	N/A	-72.8
	8PSK	-79.1	N/A	N/A	-79.6	-79.1	N/A	N/A	-76.1
	QPSK	-83.7	N/A	N/A	-84.2	-83.7	N/A	N/A	-80.7
Receive Sensitivity @ 40 MHz channel (dBm)	256 QAM	-66.8	-67.3	N/A	-67.3	-66.8	N/A	N/A	N/A
	128 QAM	-69.5	-70.0	N/A	-70.0	-69.5	N/A	N/A	N/A
	64 QAM	-71.9	-72.4	N/A	-72.4	-71.9	N/A	N/A	N/A
	32 QAM	-74.0	-74.5	N/A	-74.5	-74.0	N/A	N/A	N/A
	16 QAM	-78.9	-79.4	N/A	-79.4	-78.9	N/A	N/A	N/A
	8PSK	-81.1	-81.6	N/A	-81.6	-81.1	N/A	N/A	N/A
	QPSK	-84.7	-85.2	N/A	-85.2	-84.7	N/A	N/A	N/A
Receive Sensitivity @ 30 MHz channel (dBm)	256 QAM	-67.8	-68.5	N/A	-68.5	-68.0	N/A	N/A	N/A
	128 QAM	-70.7	-71.2	N/A	-71.2	-70.7	N/A	N/A	N/A
	64 QAM	-73.0	-74.2	N/A	-74.2	-73.7	N/A	N/A	N/A
	32 QAM	-76.3	-76.8	N/A	-76.8	-76.3	N/A	N/A	N/A
	16 QAM	-80.1	-80.6	N/A	-80.6	-80.1	N/A	N/A	N/A
	8PSK	-82.3	-82.8	N/A	-82.8	-82.3	N/A	N/A	N/A
	QPSK	-85.9	-86.4	N/A	-86.4	-85.9	N/A	N/A	N/A
Receive Sensitivity @ 28/29.65[11] MHz channel (dBm)	256 QAM	-68.2	N/A	-68.7	N/A	-68.2	-67.7	-67.2	-66.2
	128 QAM	-70.9	N/A	-71.4	N/A	-70.9	-70.4	-69.9	-68.9
	64 QAM	-73.9	N/A	-74.4	N/A	-73.9	-73.4	-72.9	-71.9
	32 QAM	-76.4	N/A	-76.9	N/A	-76.4	-75.9	-75.4	-74.4
	16 QAM	-80.3	N/A	-80.8	N/A	-80.3	-79.8	-79.3	-78.3
	8PSK	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	QPSK	-86.1	N/A	-86.6	N/A	-86.1	-85.6	-85.1	-84.1

NOTE:
"A" indicates frequencies that are supported only in the ACM mode.

[11] For Upper 6 GHz only, 30 MHz capacity is equal to 28 MHz capacity.

Receive Sensitivity – ODU-A (continued)									
BER = 1e-6	Modulation	Frequency (GHz)							
		6, 7, 8	11	13, 15	18	23, 26	28	32	38
Receive Sensitivity @ 27.5 MHz channel (dBm)	256 QAM	N/A	N/A	N/A	-68.8	N/A	N/A	N/A	N/A
	128 QAM	N/A	N/A	N/A	-71.5	N/A	N/A	N/A	N/A
	64 QAM	N/A	N/A	N/A	-74.5	N/A	N/A	N/A	N/A
	32 QAM	N/A	N/A	N/A	-77.0	N/A	N/A	N/A	N/A
	16 QAM	N/A	N/A	N/A	-80.9	N/A	N/A	N/A	N/A
	8PSK	N/A	N/A	N/A	A	N/A	N/A	N/A	N/A
	QPSK	N/A	N/A	N/A	-86.7	N/A	N/A	N/A	N/A
Receive Sensitivity @ 20 MHz channel (dBm)	256 QAM	-69.9	N/A	N/A	-70.4	-69.9	N/A	N/A	N/A
	128 QAM	-72.0	N/A	N/A	-72.5	-72.0	N/A	N/A	N/A
	64 QAM	-75.4	N/A	N/A	-75.9	-75.4	N/A	N/A	N/A
	32 QAM	-77.8	N/A	N/A	-78.3	-77.8	N/A	N/A	N/A
	16 QAM	-80.1	N/A	N/A	-80.6	-80.1	N/A	N/A	N/A
	8PSK	-83.1	N/A	N/A	-83.6	-83.1	N/A	N/A	N/A
	QPSK	-87.1	N/A	N/A	-87.6	-87.1	N/A	N/A	N/A
Receive Sensitivity @ 14 MHz channel (dBm)	128 QAM	-73.5	N/A	-74.0	N/A	-73.5	-73.0	-72.5	-71.5
	64 QAM	-75.8	N/A	-76.3	N/A	-75.8	-75.3	-74.8	-73.8
	32 QAM	-77.8	N/A	-78.3	N/A	A	-77.3	-76.8	A
	16 QAM	-80.7	N/A	-81.2	N/A	-80.7	-80.2	-79.7	-78.7
	8PSK	A	A	A	N/A	A	A	A	A
	QPSK	-87.4	N/A	-87.9	N/A	-87.4	-86.9	-86.4	-85.4
Receive Sensitivity @ 13.75 MHz channel (dBm)	128 QAM	N/A	N/A	N/A	-74.0	N/A	N/A	N/A	N/A
	64 QAM	N/A	N/A	N/A	-76.4	N/A	N/A	N/A	N/A
	32 QAM	N/A	N/A	N/A	-78.4	N/A	N/A	N/A	N/A
	16 QAM	N/A	N/A	N/A	-81.3	N/A	N/A	N/A	N/A
	8PSK	N/A	N/A	N/A	A	N/A	N/A	N/A	N/A
	QPSK	N/A	N/A	N/A	-88.0	N/A	N/A	N/A	N/A
Receive Sensitivity @ 10 MHz channel (dBm)	128 QAM	-74.2	-74.6	N/A	-74.6	-74.1	N/A	N/A	-71.2
	64 QAM	-77.4	-77.9	N/A	-77.9	-77.4	N/A	N/A	-74.4
	32 QAM	-80.0	-79.9	N/A	-79.8	-79.4	N/A	N/A	-77.0
	16 QAM	-82.5	-82.8	N/A	-82.8	-82.3	N/A	N/A	-79.5
	8PSK	-85.1	-85.1	N/A	-85.1	-84.6	N/A	N/A	-82.1
	QPSK	-90.0	-89.5	N/A	-89.5	-89.0	N/A	N/A	-87.0
Receive Sensitivity @ 7 MHz channel (dBm)	128 QAM	-76.5	N/A	-77.0	-77.0	-76.5	-76.0	-75.5	-74.5
	64 QAM	-78.8	N/A	-79.3	-79.3	-78.8	-78.3	-77.8	-76.8
	32 QAM	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	16 QAM	-83.7	N/A	-84.2	-84.2	-83.7	-83.2	-82.7	-81.7
	8PSK	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	QPSK	-90.4	N/A	-90.9	-90.9	-90.4	-89.9	-89.4	-88.4

Transmit Power – ODU-B			
Modulation	Maximum Transmit Power – FCC (dBm)		
	Frequency (GHz)		
	11	18	23
QPSK	20.0	24.0	23.0
8PSK	20.0	23.0	23.0
16 QAM	20.0	23.0	23.0
32 QAM	20.0	23.0	23.0
64 QAM	20.0	19.0	19.0
128 QAM	20.0	19.0	19.0
256 QAM	20.0	17.0	17.0

Receive Sensitivity – ODU-B				
BER = 1e-6	Modulation	Frequency (GHz)		
		11	18	23
Receive Sensitivity @ 80 MHz channel (dBm)	256 QAM-H	N/A	-63.7	N/A
	256 QAM-L	N/A	-65.6	N/A
	128 QAM	N/A	-68.3	N/A
	64 QAM	N/A	-71.3	N/A
	32 QAM	N/A	-74.1	N/A
	16 QAM	N/A	-77.3	N/A
	8PSK	N/A	-79.9	N/A
	QPSK	N/A	-83.5	N/A
Receive Sensitivity @ 50 MHz channel (dBm)	256 QAM	N/A	-65.8	-65.3
	128 QAM	N/A	-69.1	-68.6
	64 QAM	N/A	-72.1	-71.6
	32 QAM	N/A	-74.5	-74.0
	16 QAM	N/A	-76.7	-76.2
	8PSK	N/A	-79.9	-79.4
	QPSK	N/A	-83.9	-83.4
Receive Sensitivity @ 40 MHz channel (dBm)	256 QAM	-67.1	-67.1	-66.6
	128 QAM	-70.1	-70.1	-69.6
	64 QAM	-72.6	-72.6	-72.1
	32 QAM	-74.5	-74.5	-74.0
	16 QAM	-79.1	-79.1	-78.6
	8PSK	-81.4	-81.4	-80.9
	QPSK	-85.2	-85.2	-84.7
Receive Sensitivity @ 30 MHz channel (dBm)	256 QAM	-68.2	-68.2	-67.7
	128 QAM	-71.4	-71.4	-70.9
	64 QAM	-73.6	-73.6	-73.1
	32 QAM	-77.2	-77.2	-76.7
	16 QAM	-80.3	-80.3	-79.8
	8PSK	-82.6	-82.6	-82.1
	QPSK	-86.3	-86.3	-85.8
Receive Sensitivity @ 20 MHz channel (dBm)	256 QAM	N/A	-70.2	-69.7
	128 QAM	N/A	-72.7	-72.2
	64 QAM	N/A	-75.9	-75.4
	32 QAM	N/A	-78.4	-77.9
	16 QAM	N/A	-80.6	-80.1
	8PSK	N/A	-83.7	-83.2
	QPSK	N/A	-88.0	-87.5
Receive Sensitivity @ 10 MHz channel (dBm)	128 QAM	-74.7	-74.7	-74.2
	64 QAM	-77.9	-77.9	-77.4
	32 QAM	-80.5	-80.5	-80.0
	16 QAM	-83.0	-83.0	-82.5
	8PSK	-85.6	-85.6	-85.1
	QPSK	-90.5	-90.5	-90.0

NOTE:
While the information presented herein is, to the best of our knowledge, true and accurate, the information provided in this document is subject to change without notice.

For more information, refer to the Cambium PTP 800 Series Brochure or visit cambiumnetworks.com.

PTP 800 05-00 SS 022012

Omni Directional

VHF Dipole Array and Collinear Antennas

136 - 174 MHz





Electrical Specifications

	DIPOLE ARAYS			MEANDER COLLINEARS	
Model Number	BA80-41-DIN	BA4040-41-DIN	BA40-41-DIN	COL53-140	COL53-150
Nominal Gain *dBd (dBi)*	6 (8.1)	2 x 3 (5.1)	3 (5.1)	4 (6.1)	4 (6.1)
Frequency *MHz*	136-174	136-174	136-174	130-140	140-150
Tuned Bandwidth *MHz*	38	38	38	10	10
VSWR	<1.5 :1	<1.5 :1	<1.5 :1	<1.5:1	<1.5:1
Nominal Impedance Ω	50	50	50	50	50
Downtilt	0° Std, -3°. See note (1)	NA	NA	NA	NA
Vertical Beamwidth°	18	2 x 35	35	23.4	23.4
Horizontal Beamwidth°	Omni +/-0.5dB	Omni +/-0.5dB	Omni +/-0.5dB	Omni +/-0.5dB	Omni +/-0.5dB
Input Power *Watts*	750	750	750	350	350
Passive IM 3rd order *(2x20W) dBc*	<-140	<-140	<-150	<-150	<-150

Mechanical Specifications

		BA80-41-DIN	BA4040-41-DIN	BA40-41-DIN	COL53-140	COL53-150
Model Number		BA80-41-DIN	BA4040-41-DIN	BA40-41-DIN	COL53-140	COL53-150
Construction & Configuration		8 dipoles (4 bays) Turnstile stacked Dual section support	2 x 4 dipoles (2 bays) Turnstile stacked Dual section support	4 dipoles (2 bays) Turnstile stacked Single section support	Composite fiberglass sky blue radome, aluminum mounting tube	
Length *inches*		248	248	138	215	204
Weight *lbs*		68	68	32	40	38
Shipping Weight *lbs*		288	288	192	93	90
Shipping Dimensions *inches*	H	26	26	26	6	6
	W	32	32	26	6	6
	L	146	146	146	223	211
Termination		7/16" DIN female on cable tail			7/16" DIN fixed female	
Mounting Area		20" x 3" diam. aluminum		20" x 2.5" diam. aluminum	30" x 3.5" diam. aluminum	
Suggested Clamps (not included)		UC13		UC12	UC1143	
Projected Area *ft²*	No ice	8.9	8.9	4.5	5.3	5.0
	With ice	14.3	14.3	7.7	6.6	6.3
Lateral Thrust @ 100mph *lbs*		221	221	111	130	123
Wind Gust Rating *mph*	No ice	114	114	>150	>150	>150
	With ice	89	89	115	139	139
Torque @100mph *ft-lbs*		1921	1921	455	866	759

(1) Factory pre-set downtilt of 3° may be specified on BA80-41-DIN antennas by adding -T3 to the part number ordered e.g. BA80-41-DIN-T3

RFI
2023 Case Parkway North
Twinsburg, OH 44087
Phone: 330 486 0706
Fax: 330 486 0705

MEANDER COLLINEARS

Electrical Specifications

						
Model Number	COL53-160	COL53-166	COL53-174	COL54-160	COL54-166	COL54-174
Nominal Gain *dBd (dBi)*	4 (6.1)	4 (6.1)	4 (6.1)	6 (8.1)	6 (8.1)	6 (8.1)
Frequency *MHz*	150-160	156-166	162-174	150-160	156-166	162-174
Tuned Bandwidth *MHz*	10	10	12	10	10	12
VSWR	<1.5 :1	<1.5 :1	<1.5 :1	<1.5:1	<1.5:1	<1.5:1
Nominal Impedance Ω	50	50	50	50	50	50
Downtilt	NA	NA	NA	NA	NA	NA
Vertical Beamwidth°	23.4	23.4	23.4	17	17	17
Horizontal Beamwidth°	Omni +/-0.5dB	Omni +/-0.5dB	Omni +/-0.5dB	Omni +/-0.5dB	Omni +/-0.5dB	Omni +/-0.5dB
Input Power *Watts*	350	350	350	350	350	350
Passive IM 3rd order (2x20W) *dBc*	<-150	<-150	<-150	<-150	<-150	<-150

Mechanical Specifications

Model Number	COL53-160	COL53-166	COL53-174	COL54-160	COL54-166	COL54-174
Construction & Configuration	Composite fiberglass sky blue radome, aluminum mounting tube					
Length *inches*	197.6	192.6	187.2	256	249	239
Weight *lbs*	39.7	37.5	37.5	46	44	42
Shipping Weight *lbs*	57.3	55.1	55.1	99	97	95
Shipping Dimensions *inches* H	6	6	6	6	6	6
Shipping Dimensions *inches* W	6	6	6	6	6	6
Shipping Dimensions *inches* L	212.6	206.1	200.8	261	256	247
Termination	7/16"DIN fixed female					
Mounting Area	30" x 3.5" diam. aluminum					
Suggested Clamps (not included)	UC1143					
Projected Area *ft²* No ice	4.79	4.67	4.53	6.3	6.1	5.8
Projected Area *ft²* With ice	6.06	5.90	5.71	7.9	7.7	7.4
Lateral Thrust @ 100mph *lbs*	118.9	115.8	112.4	155	151	145
Wind Gust Rating *mph* No ice	>150	>150	>150	>150	>150	>150
Wind Gust Rating *mph* With ice	139	139	139	139	139	139
Torque @100mph *ft-lbs*	706	662	619	1296	1212	1105

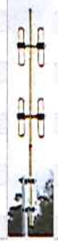
DIGITAL READY -150dBc PIM RATING

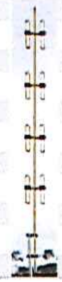
RFI
2023 Case Parkway North
Twinsburg, OH 44087
Phone: 330 486 0706
Fax: 330 486 0705

VHF Dipole Array Antennas

136 - 174 MHz

DIPOLE ARAYS





Electrical Specifications

Model Number	EA40-41-DIN	EA80-41-DIN	OA20-41-DIN	OA40-41-DIN
Nominal Gain *dBd (dBi)*	5 (7.1)	8 (10.1)	5 (7.1)	9 (11.1)
Frequency *MHz*	136-174	136-174	136-174	136-174
Tuned Bandwidth *MHz*	38	38	38	38
VSWR	<1.5 :1	<1.5 :1	<1.5 :1	<1.5 :1
Nominal Impedance Ω	50	50	50	50
Downtilt	NA	0° Std, -3° See note (1)	NA	0° Std, -3° See note (2)
Vertical Beamwidth°	35	17	35	17
Horizontal Beamwidth°	104	128	178	176
Input Power *Watts*	750	750	750	750
Passive IM 3rd order *(2x20W) dBc*	<-150	<-140	<-150	<-140

Mechanical Specifications

Model Number		EA40-41-DIN	EA80-41-DIN	OA20-41-DIN	OA40-41-DIN
Construction & Configuration		4 dipoles (2 bays) In-line stacked Single section support	8 dipoles (4 bays) In-line stacked Dual section support	2 dipoles Single sided Single section support	4 dipoles Single sided Dual section support
Length *Inches*		138	248	138	248
Weight *lbs*		32	68	28	64
Shipping Weight *lbs*		192	288	188	282
Shipping Dimensions *Inches*	H	26	26	21	21
	W	26	32	8	12
	L	146	146	146	146
Termination		7/16" DIN female on cable tail			
Mounting Area		20" x 2.5" diam. aluminum	20" x 3" diam. aluminum	20" x 2.5" diam. aluminum	20" x 3" diam. aluminum
Suggested Clamps (not included)		UC12	UC13	UC12	UC13
Projected Area *ft²*	No ice	5.2	10.2	4.0	8.0
	With ice	9.4	17.7	6.7	12.4
Lateral Thrust @ 100mph *lbs*		128	253	99	197
Wind Gust Rating *mph*	No ice	>150	109	>150	119
	With ice	111	82	117	95
Torque @100mph *ft-lbs*		522	2204	406	1713

(1) Factory pre-set downtilt of 3° may be specified on EA80-41-DIN antennas by adding -T3 to the part number ordered e.g. EA80-41-DIN-T3
(2) Factory pre-set downtilt of 3° may be specified on OA40-41-DIN antennas by adding -T3 to the part number ordered e.g. OA40-41-DIN-T3

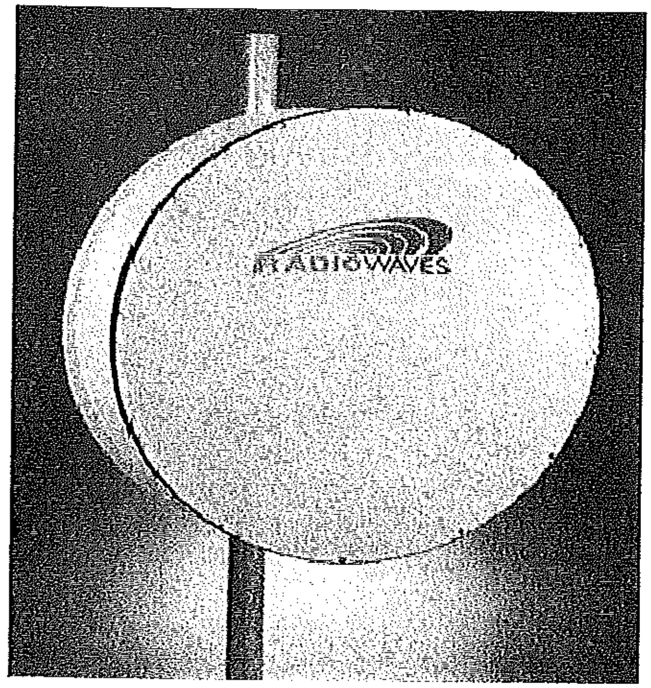
RFI
2023 Case Parkway North
Twinsburg, OH 44087
Phone: 330 486 0706
Fax: 330 486 0705

RADIOWAVES
THE LEADER IN MICROWAVE ANTENNA INNOVATION

High Performance Series for 10.7-11.7 GHz Frequencies

Key Features

- **High Performance antennas minimize interference as they have more stringent radiation side lobe and front-to-back suppression characteristics**
- **Lightweight and rugged design**
- **Easily installed with our superior mounting system included with the antenna**
- **RF connector: CPR90G flange. Some models are available with a type "N" female connector. Please call the factory for availability**
- **Our industry leading 5-year warranty**
- **Radome is included**
- **Single (HP) and Dual (HPD) polarization are available**



Antenna Specifications, Electrical **(typical)**

Model Number	Diameter ft. (m)	Frequency GHz	Gain (dBi) Low	Mid	High	3dB BW degs	X-Pol Rejection. dB	F/B Ratio dB	VSWR, Max (R.L., dB)	Antenna Weight
HPLP1-1011	1 (0.3)	10.5-11.7	26.8	27.3	27.8	7.0 deg.	25 dB	43 dB	1.37:1 (16.1)	17 lbs. (7.7kg)
HP2-1011	2 (0.6)	10.5-11.7	33.8	34.3	34.8	3.4 deg.	30 dB	54 dB	1.37:1 (16.1)	27 lbs. (12.3 kg)
HPD2-1011	2 (0.6)	10.5-11.7	33.6	34.1	34.6	3.4 deg.	30 dB	54 dB	1.37:1 (16.1)	27 lbs. (12.3 kg)
HP3-1011	3 (0.9)	10.5-11.7	36.6	37.1	37.8	2.6 deg.	30 dB	56 dB	1.37:1 (16.1)	50 lbs. (22.7 kg)
HPD3-1011	3 (0.9)	10.5-10.7	36.4	36.9	37.6	2.6 deg.	30 dB	56 dB	1.37:1 (16.1)	50 lbs. (22.7 kg)
HP4-1011	4 (1.2)	10.5-11.7	40.0	40.4	40.8	1.7 deg.	30 dB	60 dB	1.37:1 (16.1)	85 lbs. (38.3 kg)
HPD4-1011	4 (1.2)	10.5-11.7	39.8	40.2	40.6	1.7 deg.	30 dB	60 dB	1.37:1 (16.1)	85 lbs. (38.3 kg)
HP6-1011	6 (1.8)	10.5-11.7	43.4	43.8	44.2	1.1 deg.	30 dB	67 dB	1.37:1 (16.1)	251 lbs. (113.0kg)
HPD6-1011	6 (1.8)	10.5-11.7	43.2	43.6	44.0	1.1deg.	30 dB	67 dB	1.37:1 (16.1)	251 lbs. (113.0kg)
HP8-1011	8 (2.4)	10.5-11.7	45.7	46.2	46.7	0.8 deg.	30 dB	70 dB	1.37:1 (16.1)	424 lbs. (194.5kg)
HPD8-1011	8 (2.4)	10.5-11.7	45.5	46.0	46.5	0.8 deg.	30 dB	70 dB	1.37:1 (16.1)	424 lbs. (194.5kg)

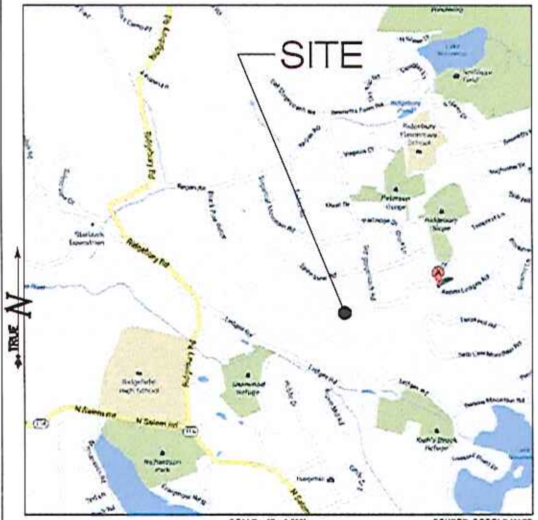
Note: Flex Twist jumpers and Side Struts available from Radio Waves

Radio Waves, Inc. • 495 R Billerica Avenue • N. Billerica, MA 01862 USA • Tel: (978) 459-8800 • Fax: (978) 459-3310 / 8810
www.radiowavesinc.com

ATTACHMENT 6

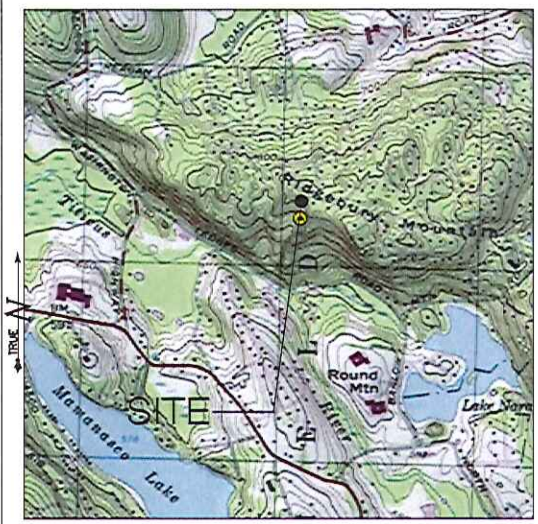
D&M Plans

LOCATION MAP



SCALE: 1" = 1,000' SOURCE: GOOGLE MAPS

USGS TOPOGRAPHIC MAP



SCALE: 1" = 2000'± SOURCE: USGS 7.5 QUADRANGLE FOR NEW PRESTON

NEW CINGULAR WIRELESS PCS, LLC (AT&T)
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

HOMELAND TOWERS

22 SHELTER ROCK LANE
BUILDING C
DANBURY, CT 06810
(203) 297-6345

DEVELOPMENT & MANAGEMENT PLAN DRAWING INDEX

*SITE INFORMATION:

-SITE NAME:	RIDGEFIELD LEDGES	-ZONE:	RAAA
-SITE ID NUMBER:	CT-897	-LATITUDE -	41° 19' 40.11" N
-SITE ADDRESS:	LEDGES ROAD RIDGEFIELD, CT 06877	-LONGITUDE -	73° 31' 00.55" W
		-ELEVATION -	807'± AMSL
-MAP:	D-08	-FEMA/FIRM DESIGNATION:	PANEL#09001C0209F - ZONE X
-LOTS:	124	-ACREAGE:	3.19± Ac (VOL. 881, PAGE 940)

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

CONTACT PERSONNEL

APPLICANTS:
HOMELAND TOWERS
22 SHELTER ROCK LANE
BUILDING C
DANBURY, CONNECTICUT 06810

CO-APPLICANTS:
AT&T MOBILITY
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

LANDLORD:
INSITE TOWERS LLC
301 N FAIRFAX STREET
SUITE 101
ALEXANDRIA, VA 22314

HOMELAND PROJECT MANAGER:
RAYMOND VERGATI
(203) 297-6345

HOMELAND PROJECT ATTORNEY:
CUDDY & FEDER, LLP
445 HAMILTON AVENUE
14TH FLOOR
WHITE PLAINS, NY 10601

POWER PROVIDER:
NU (203) 270-5835
MIKE THERIAULT

TELCO PROVIDER:
FRONTIER (800) 921-8102

CALL BEFORE YOU DIG:
(800) 922-4455

GOVERNING CODES:
2009 CONNECTICUT BUILDING CODE (2003 IBC BASIS)
2011 NATIONAL ELECTRIC CODE
IA/TIA 222F

SITE INFORMATION

RIDGEFIELD LEDGES
LEDGES ROAD
RIDGEFIELD, CT 06877

DEVELOPMENT & MANAGEMENT DOCUMENTS

RIDGEFIELD LEDGES
LEDGES ROAD
RIDGEFIELD, CT 06877

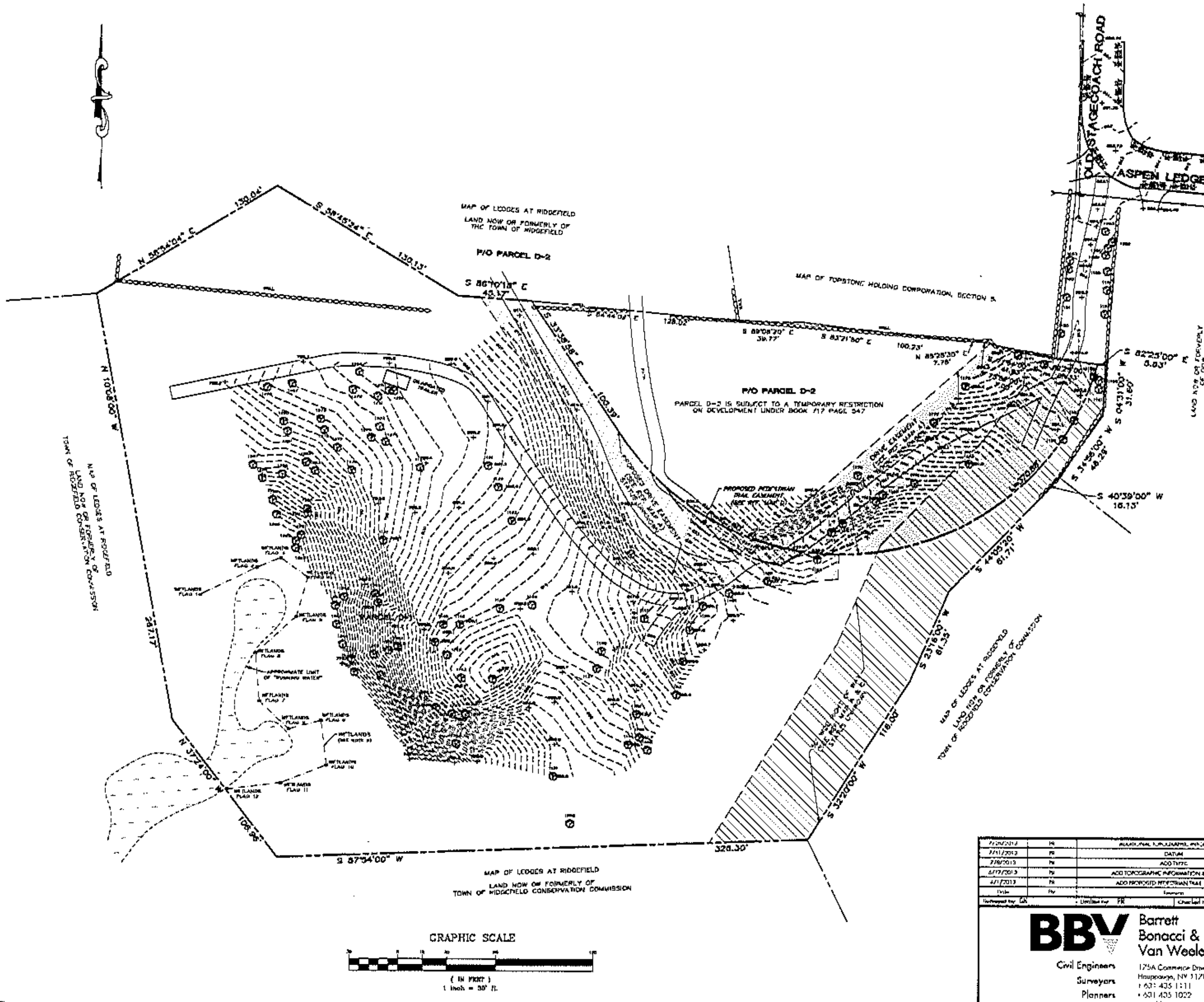
TITLE SHEET & INDEX

DESIGN TYPE:
RAW LAND
DEVELOPMENT SITE

APT FILING NUMBER: CT-283-120
APT DRAWING NUMBER: T-1
DRAWN BY: JWG
SCALE: AS NOTED
CHECKED BY: SMC
DATE: 11/25/14

REVISIONS:
REV 0: 11/25/14: FOR REVIEW: SMC
REV 1:
REV 2:
REV 3:
REV 4:
REV 5:

SHEET NUMBER:
T-1



TREE LIST

1098 14" OAK	1191 8" MAPLE
1099 12" OAK	1193 14" OAK
1100 12" OAK	1194 18" OAK
1101 10" OAK	1200 8" MAPLE
1102 8" BIRCH	1201 8" MAPLE
1103 14" OAK	1202 10"/8" MAPLE TWIN
1104 8" OAK	1203 18" MAPLE
1105 18" OAK	1235 8" OAK
1108 36" OAK	1236 8" MAPLE
1109 8" MAPLE	1239 14" OAK
1110 18" OAK TWIN	1240 18" OAK
1113 18" OAK	1245 14/18" OAK TWIN
1121 16" OAK	1246 8" OAK
1122 16" BIRCH	1247 8" BIRCH
1123 30" OAK	1248 12" OAK
1126 12" PINE	1249 20" OAK
1127 8" BIRCH	1250 8" OAK
1131 14" OAK	1251 24" OAK TWIN
1141 14" OAK	1254 10" PINE
1142 18" OAK	1255 14" MAPLE
1143 8" BIRCH	1256 26" OAK
1144 8" MAPLE	1257 20"/24" OAK TWIN
1145 10" MAPLE	1258 10" MAPLE
1146 26" OAK	1266 20" MAPLE
1147 30" OAK	1267 28" OAK
1148 28" OAK	1268 24" OAK
1151 30" OAK	1269 12" OAK
1155 30" OAK	1270 18" OAK
1160 8" MAPLE	1271 8" MAPLE
1161 8" OAK	1272 30" OAK
1163 20" OAK	1273 18" OAK
1164 12" OAK	1274 26" MAPLE
1166 20" OAK	1275 18" OAK
1168 12" OAK	1276 18" OAK
1169 12" OAK	1277 8" MAPLE
1170 8" MAPLE	1278 8" MAPLE
1171 12" MAPLE	1279 12" MAPLE
1172 12" MAPLE	1280 10" OAK
1173 22" MAPLE	1281 8" OAK
1175 22" OAK	1282 10" OAK
1177 24" MAPLE	1283 8" MAPLE
1178 8" MAPLE	1284 26" MAPLE
1180 8" MAPLE	1285 10" OAK
1181 8" MAPLE	1286 8" MAPLE
1182 18" OAK	1287 22" OAK
1183 14" OAK	1288 12" MAPLE
1185 10" MAPLE	1289 10" OAK
1186 8" MAPLE	1290 8" OAK
1188 38"/10" OAK TWIN	1291 8" MAPLE
1189 18" OAK	1292 8" MAPLE
1190 14" OAK	1293 8" PINE

NOTES

1. THIS MAP AND SURVEY HAVE BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300b-1 THROUGH 20-300b-20 AND THE "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT," AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996.
2. MAPPING INFORMATION

   SURVEY TYPE: DEPENDENT RESURVEY
   CATEGORY:
   HORIZONTAL CLASS: A-2
   TOPOGRAPHIC CLASS: T-2
3. BEARINGS REFER TO REFERENCE MAP (A).
4. REFERENCE MAPS:
   (A) RESUBDIVISION MAP SECTION 8, THE LEDGE OF RIDGEFIELD. FILED MAY 14, 2008, FILE No. 8830.
   (B) MAP OF THE LEDGES OF RIDGEFIELD, FILED JANUARY 23, 1995, FILE No. 8130.
   (C) MAP SHOWING EXCHANGE OF PROPERTY BETWEEN DAVID G. BRIDGMAN AND STANLEY E. JACKE & ELLEN C. JACKE, FILE No. 8138.
   (D) MAP SHOWING PARCEL D-2 – THE LEDGES OF RIDGEFIELD, PREPARED BY NEW ENGLAND LAND SURVEYING, P.C., JOB No. 888, LAST DATED MARCH 22, 2013.
5. PARCEL OWNER OF RECORD: THE WILTON BANK.
6. SUBSURFACE AND ENVIRONMENTAL CONDITIONS WERE NOT EXAMINED OR CONSIDERED AS PART OF THIS SURVEY.
7. PARCEL D-1 AREA = 138,806 SQ. FT OR 3.19 ACRES.
8. WETLAND FLAGS SET BY ALL POINTS TECHNOLOGY CORP, DEAN GUSTAFSON, SENIOR WETLAND SCIENTIST 6/22/2013.
9. ELEVATIONS REFER TO N.A.V.D. 1988 DATUM.
10. SUBSURFACE UTILITIES, IF ANY, ARE NOT SHOWN OR ADDRESSED.

Date	By	Revision
7/20/2013	FR	ADDITIONAL TOPOGRAPHIC INFORMATION
7/11/2013	FR	DATUM
7/8/2013	FR	ADD TREES
6/17/2013	FR	ADD TOPOGRAPHIC INFORMATION & WETLANDS
4/1/2013	FR	ADD PROPOSED PEDESTRIAN TRAIL EASEMENT

Surveyed by: GA | Drafted by: FR | Checked by: GJB

BBV Barrett Bonacci & Van Weele, PC
Civil Engineers
Surveyors
Planners
175A Commerce Drive
Hauppauge, NY 11788
t 631 435 1111
f 631 435 1022
www.bbvpc.com

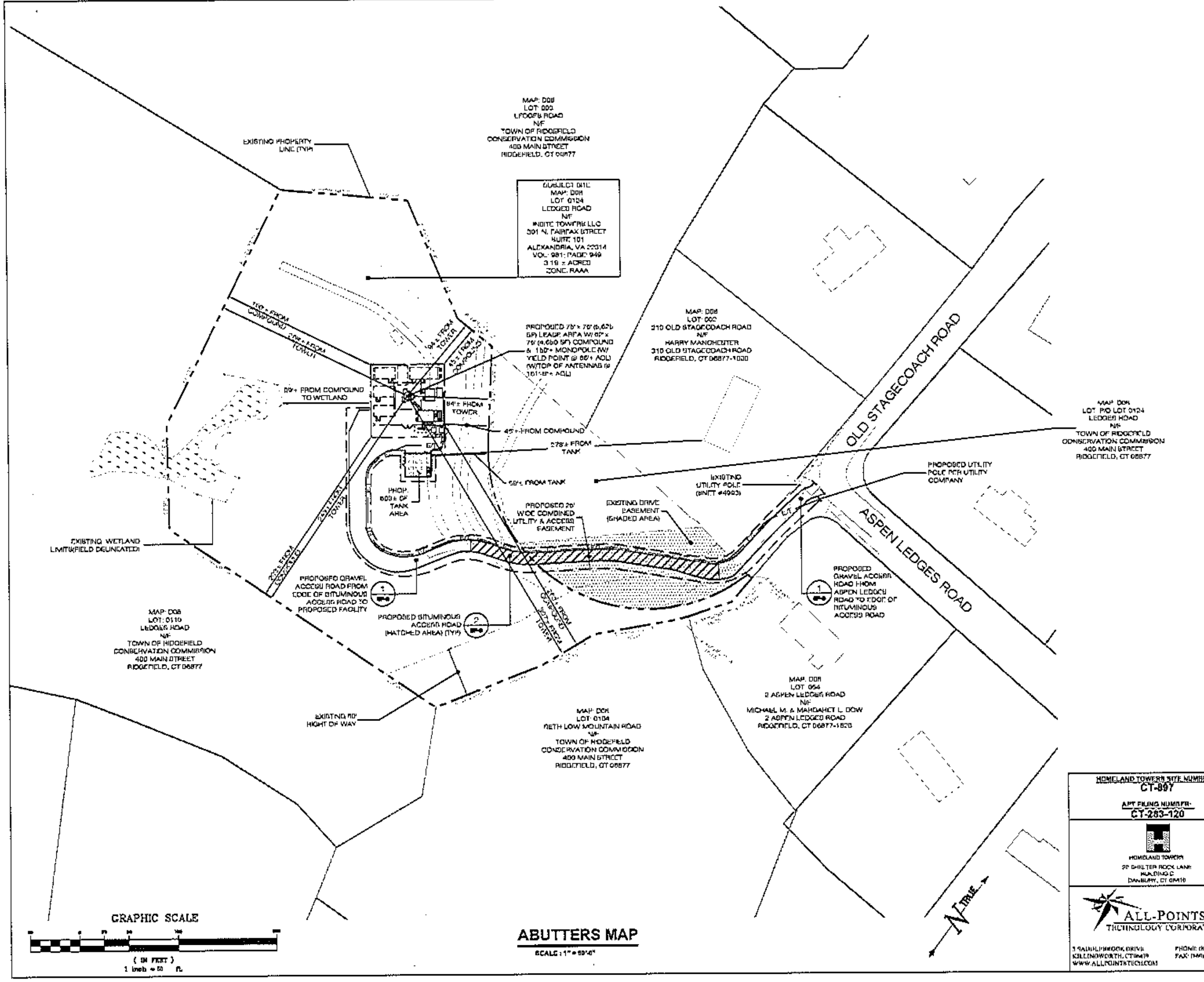
Tax Map: MAP D-08 P/O LOT 124

Date
FEBRUARY 7, 2013

PROPERTY
SITUATE
THE LEDGES OF RIDGEFIELD
RIDGEFIELD CONNECTICUT

PROPERTY SURVEY

Scale	Project No.	Sheet No.
1" = 30'	C130002	1 of 1



ABUTTERS MAP

SCALE: 1" = 50'-0"

SITE AREAS & VOLUMES OF EARTHWORK
SITEWORK SHALL ENTAIL APPROXIMATELY 100 CUBIC YARDS OF CUT (100 CY TRENCH EXCAVATION) AND 4,500 CY FILL (2,000 CY COMPOUND, 2,500 CY DRIVEWAY). APPROXIMATELY 385 CUBIC YARDS OF CRUSHED STONE SHALL BE IMPORTED TO CONSTRUCT THE COMPOUND AND ACCESS ROAD
COMPOUND AREA SLOPES EXISTING - 12.0% PROPOSED - 3.0%
TOTAL AREA OF DISTURBANCE = 36,600± SF
STORMWATER VELOCITY: PRIOR TO GROUND COVER < 3.0 FT/SEC FOLLOWING GROUND COVER < 3.0 FT/SEC
STORMWATER QUALITY: IMPERVIOUS COVERAGE ADDED 17,400 SF 1" OF RAIN ON NEW IMPERVIOUS 1,400 CF RETENTION BASIN STORAGE VOL. 1,020 CF
GROUND COVER TO BE ESTABLISHED AS FOLLOWS (U.O.N): - WHITE CLOVER @ 0.20#/- SF - TALL FESCUE @ 0.45#/- SF - RYEGRASS @ 0.10#/- SF

BASE MAPPING FOR SHEETS A-1, SP-1 AND SP-2 FROM

1. PLAN ENTITLED "PROPERTY SURVEY - PROPERTY SITUATE THE LEDGES OF RIDGEFIELD, RIDGEFIELD, CONNECTICUT "PREPARED BY BARRETT, BONACCI, AND VAN WEELE OF HAUPPAUGE, NY DATED FEBRUARY 7, 2010 WITH THE LATEST REVISION DATED JULY 20, 2013

2. TOWN OF RIDGEFIELD ASSESSORS MAPS D08.

3. TOWN OF RIDGEFIELD "ZONING MAP"

4. DIGITAL GLOBAL 2008 DIGITAL ORTHOPHOTOGRAPHS.

HOMELAND TOWERS SITE NUMBER: CT-897 APT FILING NUMBER: CT-283-120	DEVELOPMENT & MANAGEMENT DOCUMENTS RIDGEFIELD LEDGES LEDGES ROAD RIDGEFIELD, CT 06877	ABUTTERS MAP
HOMELAND TOWERS 22 SHELTER ROCK LANE BUILDING C DANBURY, CT 06810	DESIGN TYPE: RAW LAND DEVELOPMENT SITE	APT FILING NUMBER: CT-283-120 APT DRAWING NUMBER: R-1 DRAWN BY: RCK — SCALE: AS NOTED CHECKED BY: BMC — DATE: 11/25/14
ALL-POINTS TECHNOLOGY CORPORATION 3 SADDLEBROOK DRIVE KILLINGWORTH, CT 06419 WWW.ALLPOINTSTECH.COM PHONE: (860) 663-1697 FAX: (860) 663-0935	REVISIONS: REV 0: 11/25/14: FOR REVIEW: BMC REV 1: REV 2: REV 3: REV 4: REV 5:	SHEET NUMBER: R-1

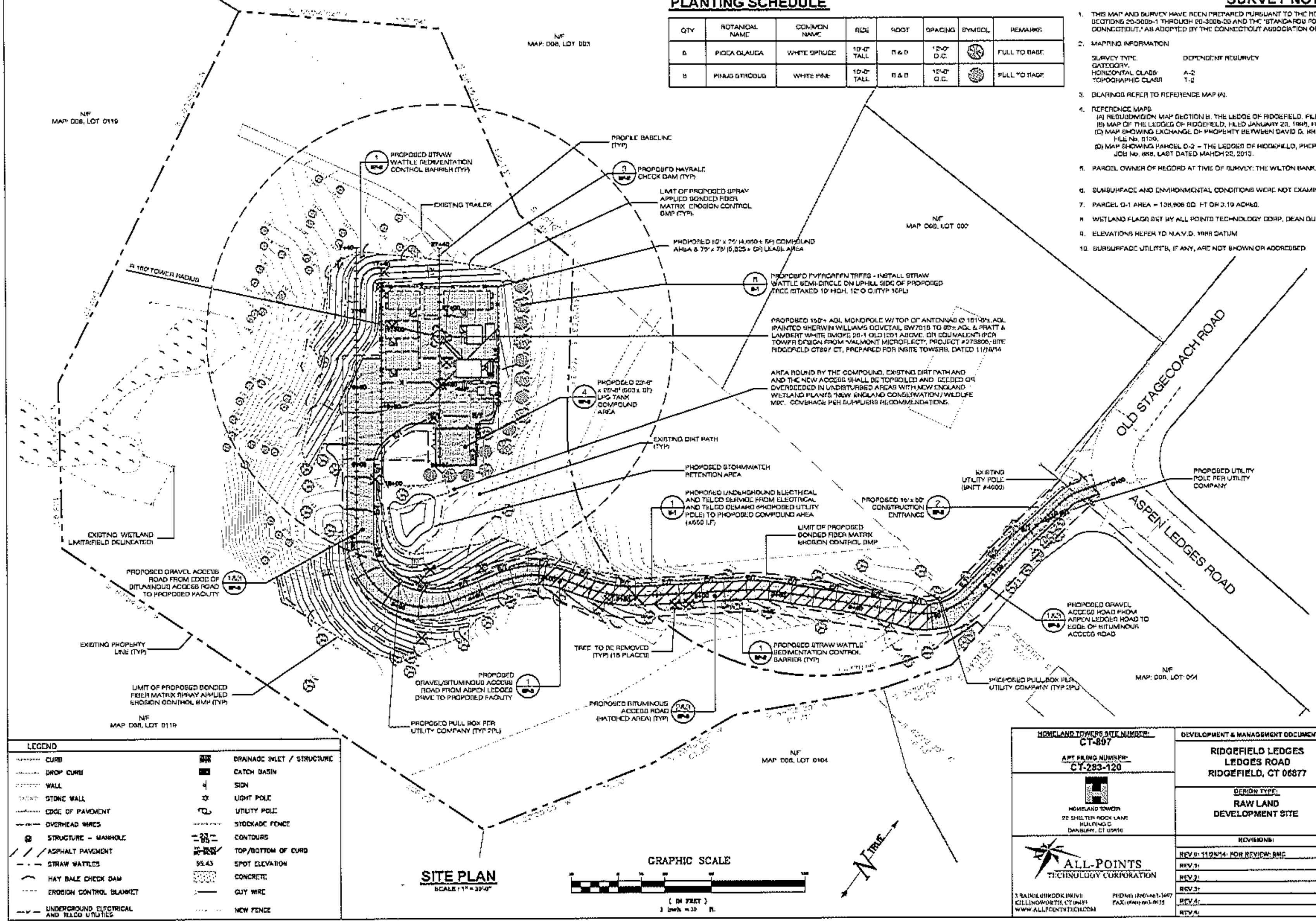
PLANTING SCHEDULE

QTY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	SYMBOL	REMARKS
6	PICEA GLAUCA	WHITE SPRUCE	10'-0" TALL	B & B	12'-0" O.C.		FULL TO BASE
8	PINUS STROBUS	WHITE PINE	10'-0" TALL	B & B	12'-0" O.C.		FULL TO BASE

SURVEY NOTES

1. THIS MAP AND SURVEY HAVE BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300b-1 THROUGH 20-300b-20 AND THE "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT," AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996.
2. MAPPING INFORMATION

   SURVEY TYPE: DEPENDENT RESURVEY
   CATEGORY:
   HORIZONTAL CLASS: A-2
   TOPOGRAPHIC CLASS: T-2
3. BEARINGS REFER TO REFERENCE MAP (A).
4. REFERENCE MAPS
   (A) RESUBDIVISION MAP SECTION B, THE LEDGE OF RIDGEFIELD, FILED MAY 14, 2008, FILE No. 8800.
   (B) MAP OF THE LEDGES OF RIDGEFIELD, FILED JANUARY 23, 1995, FILE No. 6130.
   (C) MAP SHOWING EXCHANGE OF PROPERTY BETWEEN DAVID G. BRIDGMAN AND STANLEY E. JACKE & ELLEN C. JACKE, FILE No. 6130.
   (D) MAP SHOWING PARCEL G-2 – THE LEDGES OF RIDGEFIELD, PREPARED BY NEW ENGLAND LAND SURVEYING, P.C., JOB No. 868, LAST DATED MARCH 22, 2013.
5. PARCEL OWNER OF RECORD AT TIME OF SURVEY: THE WILTON BANK.
6. SUBSURFACE AND ENVIRONMENTAL CONDITIONS WERE NOT EXAMINED OR CONSIDERED AS PART OF THIS SURVEY
7. PARCEL G-1 AREA = 138,906 SQ. FT OR 3.19 ACRES.
8. WETLAND FLAGS SET BY ALL POINTS TECHNOLOGY CORP, DEAN GUSTAFSON, SENIOR WETLAND SCIENTIST 6/22/2013.
9. ELEVATIONS REFER TO N.A.V.D. 1988 DATUM
10. SUBSURFACE UTILITIES, IF ANY, ARE NOT SHOWN OR ADDRESSED



TREE REGISTER

1098 14" OAK	1193 14" OAK
1099 12" OAK	1194 18" OAK
1100 12" OAK	1200 8" MAPLE
1101 10" OAK	1201 6" MAPLE
1102 8" BIRCH	1202 10/8" MAPLE TWIN
1103 14" OAK	1203 18" MAPLE
1104 8" OAK	1235 6" OAK
1105 18" OAK	1236 8" MAPLE
1106 30" OAK	1239 14" OAK
1109 8" MAPLE	1240 18" OAK
1110 18" OAK TWIN	1245 14/18" OAK TWIN
1113 18" OAK	1246 8" OAK
1121 18" OAK	1247 8" BIRCH
1122 16" BIRCH	1248 12" OAK
1123 30" OAK	1249 20" OAK
1126 12" PINE	1250 8" OAK
1127 8" BIRCH	1251 24" OAK TWIN
1131 14" OAK	1254 10" PINE
1141 14" OAK	1255 14" MAPLE
1142 18" OAK	1256 28" OAK
1143 8" BIRCH	1257 20/24" OAK TWIN
1144 8" MAPLE	1258 10" MAPLE
1145 10" MAPLE	1266 20" MAPLE
1146 20" OAK	1267 20" OAK
1147 30" OAK	1268 24" OAK
1148 28" OAK	1269 12" OAK
1151 30" OAK	1270 18" OAK
1155 30" OAK	1271 8" MAPLE
1160 8" MAPLE	1272 30" OAK
1161 8" OAK	1273 18" OAK
1163 20" OAK	1274 20" MAPLE
1164 12" OAK	1275 18" OAK
1166 20" OAK	1276 18" OAK
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1170 8" MAPLE	1279 12" MAPLE
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1172 12" MAPLE	1281 8" OAK
1173 22" MAPLE	1282 10" OAK
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1177 24" MAPLE	1284 20" MAPLE
1178 8" MAPLE	1285 10" OAK
1180 8" MAPLE	1286 8" MAPLE
1181 8" MAPLE	1287 22" OAK
1182 12" OAK	1288 12" MAPLE
1183 14" OAK	1289 10" OAK
1185 10" MAPLE	1290 8" OAK
1186 8" MAPLE	1291 8" MAPLE
1188 36/10" OAK TWIN	1292 8" MAPLE
1189 18" OAK	1293 8" PINE
1190 14" OAK	
1191 8" MAPLE	

TREES #1166, 1164, 1161, 1160, 1110, 1126, 1127, 1102, 1147, 1123, 1122, 1121, 1165, 1274 AND #1275 ARE TO BE REMOVED AND STUMPS REMOVED. A TOTAL OF 15 TREES ARE TO BE REMOVED.

HOMELAND TOWERS SITE NUMBER:
CT-897

APT FILING NUMBER:
CT-283-120

HOMELAND TOWERS
22 SHELTER ROCK LANE
BUILDING C
DANBURY, CT 06810

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

DEVELOPMENT & MANAGEMENT DOCUMENTS

RIDGEFIELD LEDGES
LEDGES ROAD
RIDGEFIELD, CT 06877

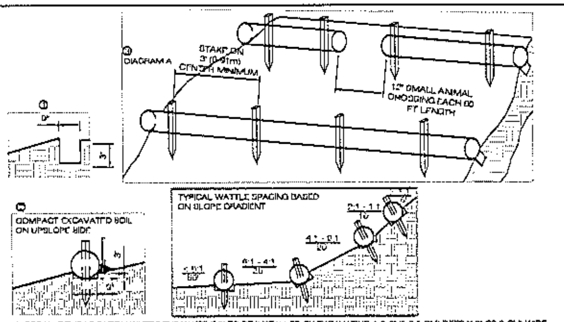
DESIGN TYPE:
RAW LAND
DEVELOPMENT SITE

REVISIONS:
REV 0: 11/25/14: FOR REVIEW: SMC
REV 1:
REV 2:
REV 3:
REV 4:
REV 5:

SITE PLAN

APT FILING NUMBER: CT-283-120
APT DRAWING NUMBER: SP-1
DRAWN BY: RCB | SCALE: 1"= 30'
CHECKED BY: SMC | DATE: 11/25/14

SHEET NUMBER:
SP-1



1. BEGIN AT THE LOCATION WHERE THE WATTLE IS TO BE INSTALLED BY EXCAVATING A 2-3" (5-7.5 CM) DEEP X 9" (22.9 CM) WIDE TRENCH ALONG THE CONTOUR OF THE SLOPE. EXCAVATED SOIL SHOULD BE PLACED UPSLOPE FROM THE ANCHOR TRENCH.
2. PLACE THE WATTLE IN THE TRENCH SO THAT IT CONTOURS TO THE SOIL SURFACE. COMPACT SOIL FROM THE EXCAVATED TRENCH AGAINST THE WATTLE ON THE UPHILL SIDE. WATTLES SHALL BE INSTALLED IN 60 FT CONTINUOUS LENGTHS WITH ADJACENT WATTLES TIGHTLY ABUT. EVERY 60 FT THE WATTLE ROW SHALL BE SPACED 12 INCHES CLEAR, END TO END, FOR AMPHIBIAN AND REPTILE TRAVEL. THE OPEN SPACES SHALL BE STAGGERED MID LENGTH OF THE NEXT DOWN GRADIENT WATTLE.
3. SECURE THE WATTLE WITH 18-24" (45.7-61 CM) STAKES EVERY 3-4' (0.9 - 1.2 M) AND WITH A STAKE ON EACH END. STAKES SHOULD BE DRIVEN THROUGH THE MIDDLE OF THE WATTLE LEAVING AT LEAST 2-3" (5-7.5 CM) OF STAKE EXTENDING ABOVE THE WATTLE. STAKES SHOULD BE DRIVEN PERPENDICULAR TO THE SLOPE FACE.

1 SP-2 STRAW WATTLE SEDIMENTATION CONTROL BARRIER

SCALE : NTS

ENVIRONMENTAL NOTES

EASTERN BOX TURTLE AND WETLAND Protection Program

State special concern eastern box turtle (*Terrapene carolina carolina*), afforded protection under the Connecticut Endangered Species Acts, are known to occur in the vicinity of the project. The following protective measures shall be followed to help avoid degradation of habitat or unintentional mortality as a result of construction activities for the site improvements proposed. These protective measures satisfy recommendations from the Connecticut Department of Energy & Environmental Protection ("CTDEEP") Wildlife Division as specified in a January 10, 2014 letter and March 25, 2014 email and follow protocols developed from previous rare species consultations and state-approved protection plans. This protection plan is valid until January 10, 2015, at which point if construction has not been initiated, a new Natural Diversity Data Base review request from CTDEEP is required.

It is of the utmost importance that the Contractor complies with the requirement for the installation of protective measures and the education of its employees and subcontractors performing work on the project site. These measures will also provide protection to a nearby wetland system. This protection program shall be implemented regardless of time of year the construction activities occur. However, sections of this protection plan specific to protection of eastern box turtle shall be implemented during the turtle's active period of April 1 to November 15. All-Points Technology Corporation, P.C. ("APT") will serve as the Environmental Monitor for this project to ensure that eastern box turtle protection measures are implemented properly and will provide an education session on eastern box turtle prior to the start of construction activities. The Contractor shall contact Dean Gustafson, Senior Environmental Scientist at APT, at least 5 business days prior to the pre-construction meeting. Mr. Gustafson can be reached by phone at (860) 663-1697 ext. 201 or via email at dgustafson@allpointstech.com.

The proposed project will not result in direct impact to wetlands or watercourses. The Contractor is strictly prohibited from placing fill in wetlands or watercourse or temporarily storing equipment or materials in wetlands or watercourses or in areas that could result in a discharge into nearby wetlands.

The eastern box turtle and wetland protection program consists of several components: isolation of the project perimeter; use of appropriate erosion control measures to control and contain erosion while avoiding/minimizing wildlife entanglement; periodic inspection and maintenance of isolation structures and erosion control measures; education of all contractors and sub-contractors prior to initiation of work on the site; protective measures; and, reporting.

1. Isolation Measures & Erosion and Sedimentation Controls

a. Plastic netting used in a variety of erosion control products (i.e., erosion control blankets, fiber rolls [wattles], reinforced silt fence) has been found to entangle wildlife, including reptiles, amphibians, birds and small mammals. No permanent erosion control products or reinforced silt fence will be used on the Homeland Tower project. Temporary Erosion control products will use either erosion control blankets and fiber rolls composed of processed fibers mechanically bound together to form a continuous matrix (net less) or netting composed of planar woven natural biodegradable fiber to avoid/minimize wildlife entanglement.

b. Installation of erosion and sedimentation controls, required for erosion control compliance and creation of a barrier to possible migrating/dispersing herpetofauna, shall be performed by the Contractor following clearing activities and prior to any earthwork. The Environmental Monitor will inspect the work zone area prior to and following erosion control barrier installation to ensure the area is free of herpetofauna and satisfactorily installed. The intent of the barrier is to segregate the majority of the work zone from migrating/dispersing herpetofauna. Oftentimes complete isolation of a work zone is not feasible due to accessibility needs and locations of staging/material storage areas, etc. In those circumstances, the barriers will be positioned to deflect migrating/dispersal routes away from the work zone to minimize potential encounters with herpetofauna.

c. The fencing will consist of non-reinforced conventional erosion control woven fabric, installed approximately six inches below surface grade and staked at seven to ten-foot intervals using four-foot oak stakes or approved equivalent. In addition to required daily inspection by the Contractor, the fencing will be periodically inspected for tears or breeches in the fabric following installation by APT throughout the course of the construction project.

d. The extent of the barrier fencing will be as shown on the site plans. The Contractor shall have additional barrier fencing should field conditions warrant extending the fencing as directed by APT.

e. No equipment, vehicles or construction materials shall be stored outside of barrier fencing.

f. All silt fencing and other erosion control devices shall be removed within 30 days of completion of work and permanent stabilization of site soils so that reptile and amphibian movement between uplands and wetlands is not restricted. If fiber rolls/wattles, straw bales, or other natural material erosion control products are used, such devices will not be left in place to biodegrade and shall be promptly removed after soils are stable so as not to create a barrier to migrating wildlife. Seed from seeding of soils should not spread over fiber rolls/wattles as it makes them harder to remove once soils are stabilized by vegetation.

2. Contractor Education

a. Prior to work on site, the Contractor shall attend an educational session at the pre-construction meeting with APT. This orientation and educational session will consist of an introductory meeting with APT providing photos of Eastern Box Turtles and emphasizing the non-aggressive nature of Eastern Box Turtles, the absence of need to destroy animals that might be encountered and the need to follow Protective Measures as described in Section 4 below. The environmental sensitivity of the project due to its proximity to wetland resources will also be stressed. Workers will also be provided information regarding the identification of other turtle species that could be encountered.

b. The education session will also focus on means to discriminate between the species of concern and other native species to avoid unnecessary "false alarms". Encounters with any species of turtles will be documented.

c. The Contractor will be provided with cell phone and email contacts for APT personnel to immediately report any encounters with Eastern Box Turtle or other turtle species. Educational poster materials will be provided by APT and displayed on the job site to maintain worker awareness as the project progresses.

3. Petroleum Materials Storage and Spill Prevention

a. Certain precautions are necessary to store petroleum materials, refuel and contain and properly clean up any inadvertent fuel or petroleum (i.e., oil, hydraulic fluid, etc.) spill due to the project's location in proximity to sensitive wetlands.

b. A spill containment kit consisting of a sufficient supply of absorbent pads and absorbent material will be maintained by the Contractor at the construction site throughout the duration of the project. In addition, a waste drum will be kept on site to contain any used absorbent pads/material for proper and timely disposal off site in accordance with applicable local, state and federal laws.

c. The following petroleum and hazardous materials storage and refueling restrictions and spill response procedures will be adhered to by the Contractor.

I. Petroleum and Hazardous Materials Storage and Refueling

1. Refueling of vehicles or machinery shall occur a minimum of 100 feet from wetlands or watercourses and shall take place on an impervious pad with secondary containment designed to contain fuels.
2. Any fuel or hazardous materials that must be kept on site shall be stored on an impervious surface utilizing secondary containment a minimum of 100 feet from wetlands or watercourses.

II. Initial Spill Response Procedures

1. Stop operations and shut off equipment.
2. Remove any sources of spark or flame.
3. Contain the source of the spill.
4. Determine the approximate volume of the spill.
5. Identify the location of natural flow paths to prevent the release of the spill to sensitive nearby waterways or wetlands.
6. Ensure that fellow workers are notified of the spill.

III. Spill Clean Up & Containment

1. Obtain spill response materials from the on-site spill response kit. Place absorbent materials directly on the release area.
2. Limit the spread of the spill by placing absorbent materials around the perimeter of the spill.
3. Isolate and eliminate the spill source.
4. Contact the appropriate local, state and/or federal agencies, as necessary.
5. Contact a disposal company to properly dispose of contaminated materials.

IV. Reporting

1. Complete an incident report.
2. Submit a completed incident report to the Connecticut Siting Council.

4. Turtle Protective Measures

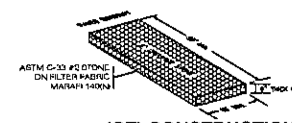
a. Prior to the start of construction each day, the Contractor shall search the entire work area for turtles.
b. If a turtle is found, it shall be immediately moved, unharmed, by carefully grasped in both hands, one on each side of the shell, between the turtle's forelimbs and the hind limbs, and placed just outside of the isolation barrier in the approximate direction it was walking.
c. Special care shall be taken by the Contractor during early morning and evening hours so that possible basking or foraging turtles are not harmed by construction activities.

5. Herbicide and Pesticide Restrictions

a. The use of herbicides and pesticides at the proposed wireless telecommunications facility and along the proposed access drive are strictly prohibited.

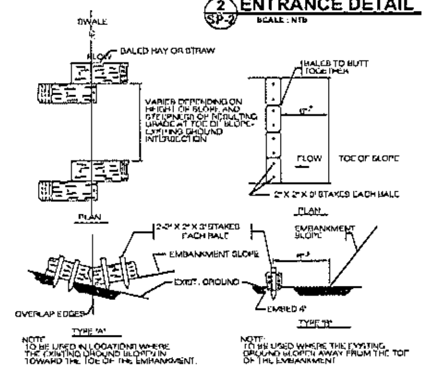
6. Reporting

a. Following completion of the construction project, APT will provide a summary report to Connecticut Siting Council for compliance verification documenting any observations of eastern box turtle and the monitoring and maintenance of the barrier fence and erosion control measures.
b. Any observations of eastern box turtle will be reported to CTDEEP by APT, with photo-documentation (if possible) and with specific information on the location and disposition of the animal.



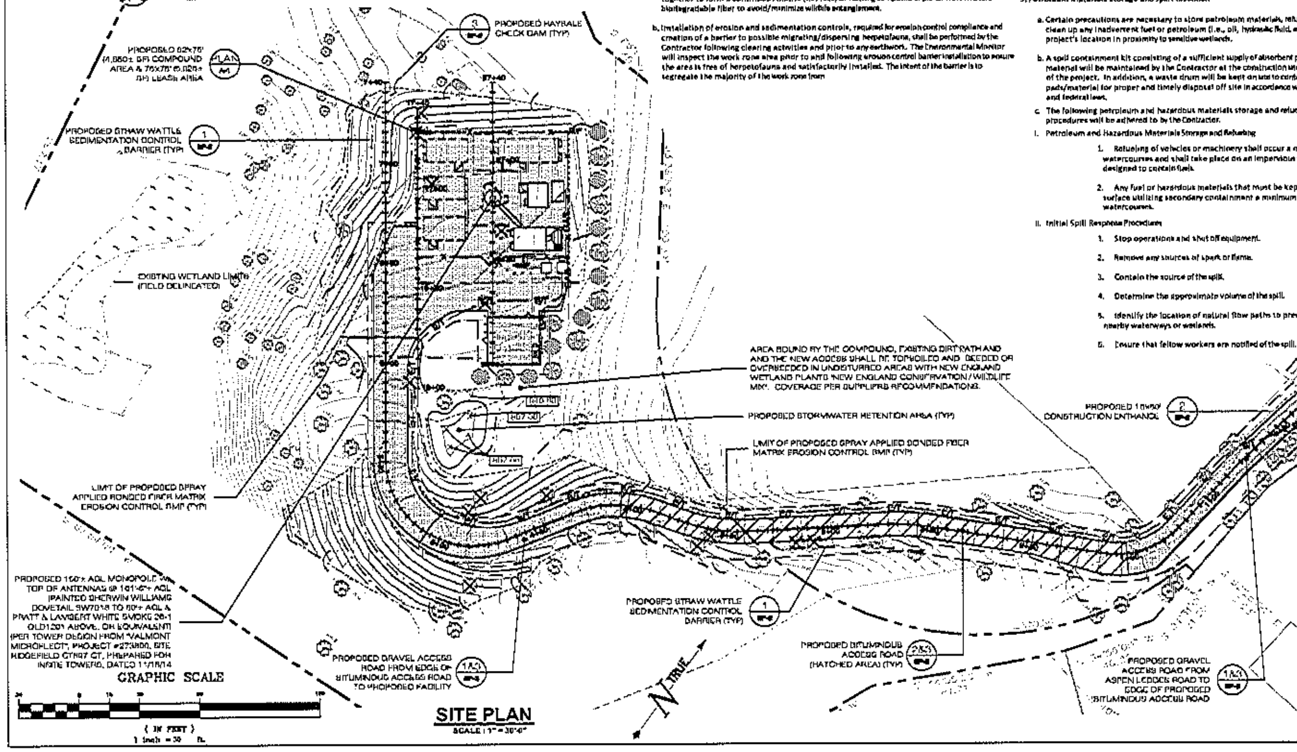
2 SP-2 (CE) CONSTRUCTION ENTRANCE DETAIL

SCALE : NTS



3 SP-2 HAYBALE CHECK DAM SEDIMENTATION CONTROL BARRIER

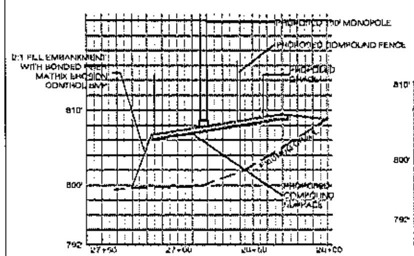
SCALE : NTS



SITE PLAN

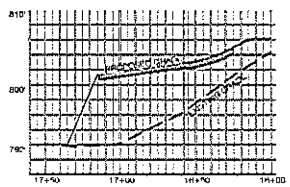
SCALE: 1" = 30'-0"

HOMELAND TOWERS SITE NUMBER: CT-897 APT FILING NUMBER: CT-283-120	DEVELOPMENT & MANAGEMENT DOCUMENTS RIDGEFIELD LEDGES LEDGES ROAD RIDGEFIELD, CT 06877	SEDIMENTATION AND EROSION CONTROL PLAN
HOMELAND TOWERS 22 SHELTER ROCK LANE BUILDING C DANBURY, CT 06810	DESIGN TYPE: RAW LAND DEVELOPMENT SITE	APT FILING NUMBER: CT-283-120 APT DRAWING NUMBER: SP-2 DRAWN BY: RCB — SCALE: AS NOTED CHECKED BY: BMC — DATE: 11/26/14
ALL-POINTS TECHNOLOGY CORPORATION 3 SADDLEBROOK DRIVE KILLINGWORTH, CT 06419 WWW.ALLPOINTSTECH.COM PHONE: (860)-663-1697 FAX: (860)-663-0935	REVISIONS: REV.0: 11/21/14: FOR REVIEW: BMC REV.1: REV.2: REV.3: REV.4: REV.5:	SHEET NUMBER: SP-2



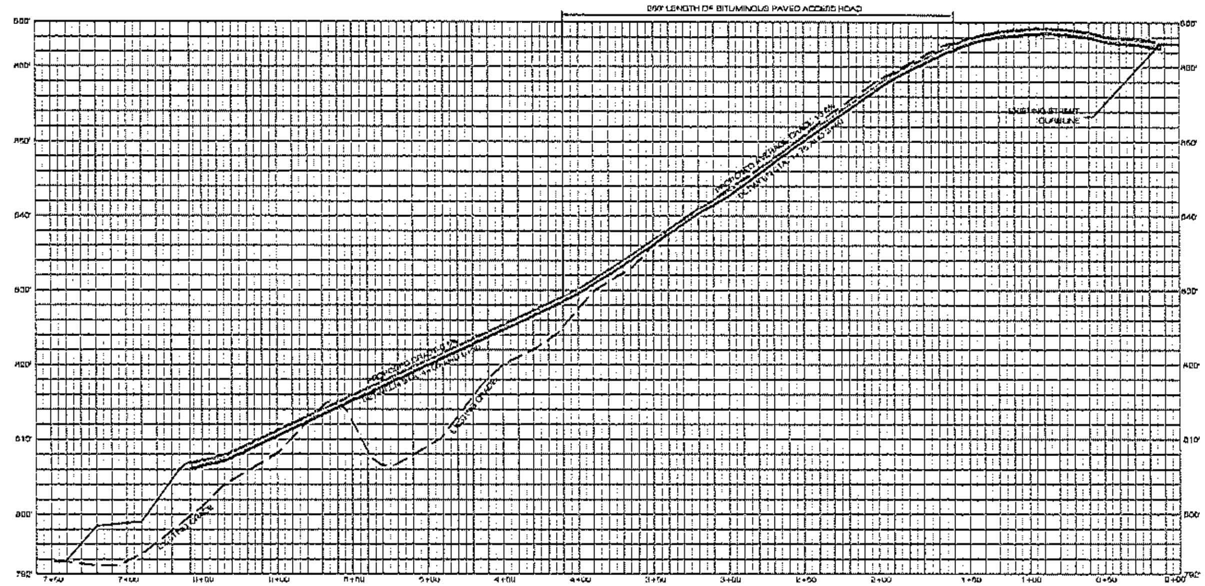
COMPOUND PROFILE
STA. 26+00 TO 27+60

SCALE: 1" = 40' HORIZONTAL, 1" = 8' VERTICAL



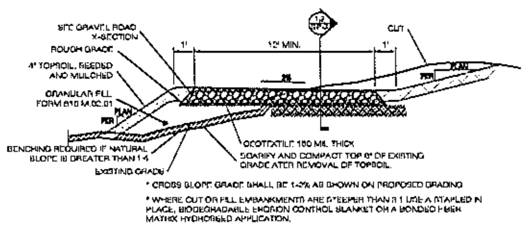
PARTIAL ROADWAY PROFILE
STA. 16+00 TO 17+60

SCALE: 1" = 40' HORIZONTAL, 1" = 8' VERTICAL



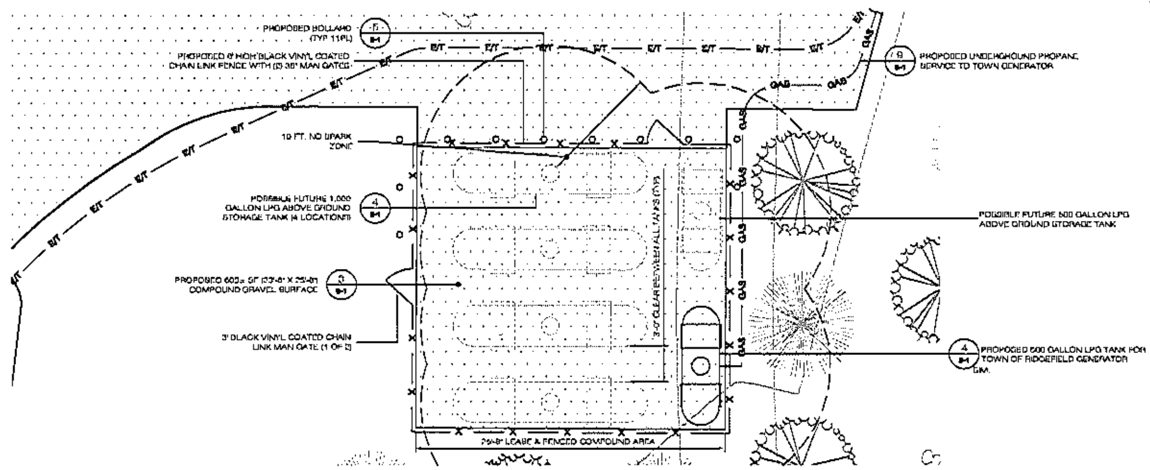
PARTIAL ROADWAY PROFILE
STA. 0+00 TO 7+60

SCALE: 1" = 40' HORIZONTAL, 1" = 8' VERTICAL



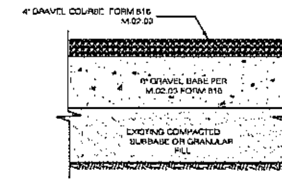
3 SP-3 TYPICAL ROAD CROSS SECTION

SCALE: NTS



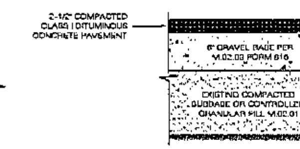
4 SP-3 LPG STORAGE AREA

SCALE: 1" = 5'



1 SP-3 GRAVEL ROAD SECTION

SCALE: NTS

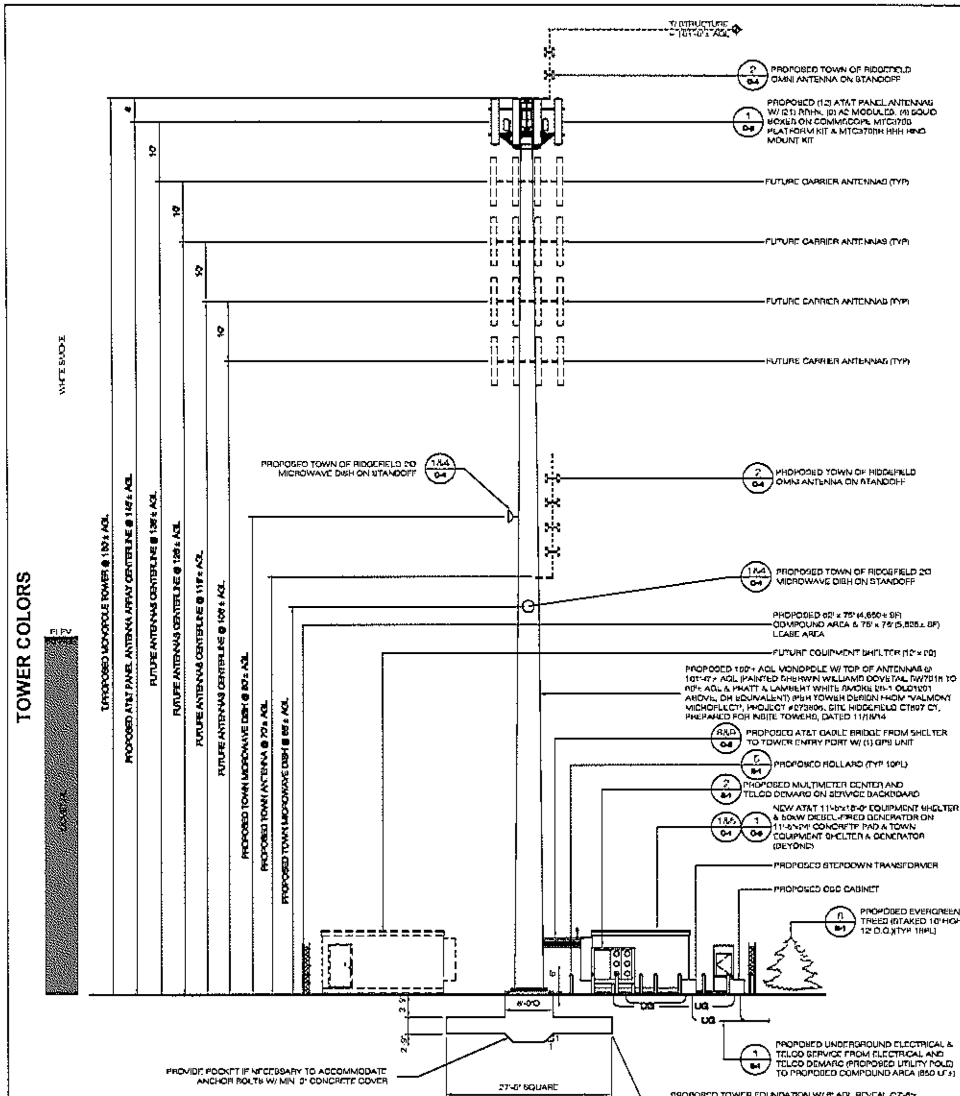


2 SP-3 BITUMINOUS DRIVEWAY SECTION

SCALE: NTS

HOMELAND TOWERS SITE NUMBER: CT-897 APT FILING NUMBER: CT-283-120 HOMELAND TOWERS, 22 SHELTER ROCK LANE, BUILDING C, DANBURY, CT 06810	DEVELOPMENT & MANAGEMENT DOCUMENTS RIDGEFIELD LEDGES LEDGES ROAD RIDGEFIELD, CT 06877 DESIGN TYPE: RAW LAND DEVELOPMENT SITE	ACCESS DRIVE PROFILE & DETAILS APT FILING NUMBER: CT-283-120 APT DRAWING NUMBER: SP-3 DRAWN BY: RCB — SCALE: AS SHOWN CHECKED BY: BMC — DATE: 11/25/14
ALL-POINTS TECHNOLOGY CORPORATION 3 SADDLEBROOK DRIVE, KILLINGWORTH, CT 06419 PHONE: (860)-663-1697 FAX: (860)-663-0935 WWW.ALLPOINTSTECH.COM	REVISIONS: REV.0: 11/25/14: FOR REVIEW: BMC REV.1: REV.2: REV.3: REV.4: REV.5:	SHEET NUMBER: SP-3

TOWER COLORS



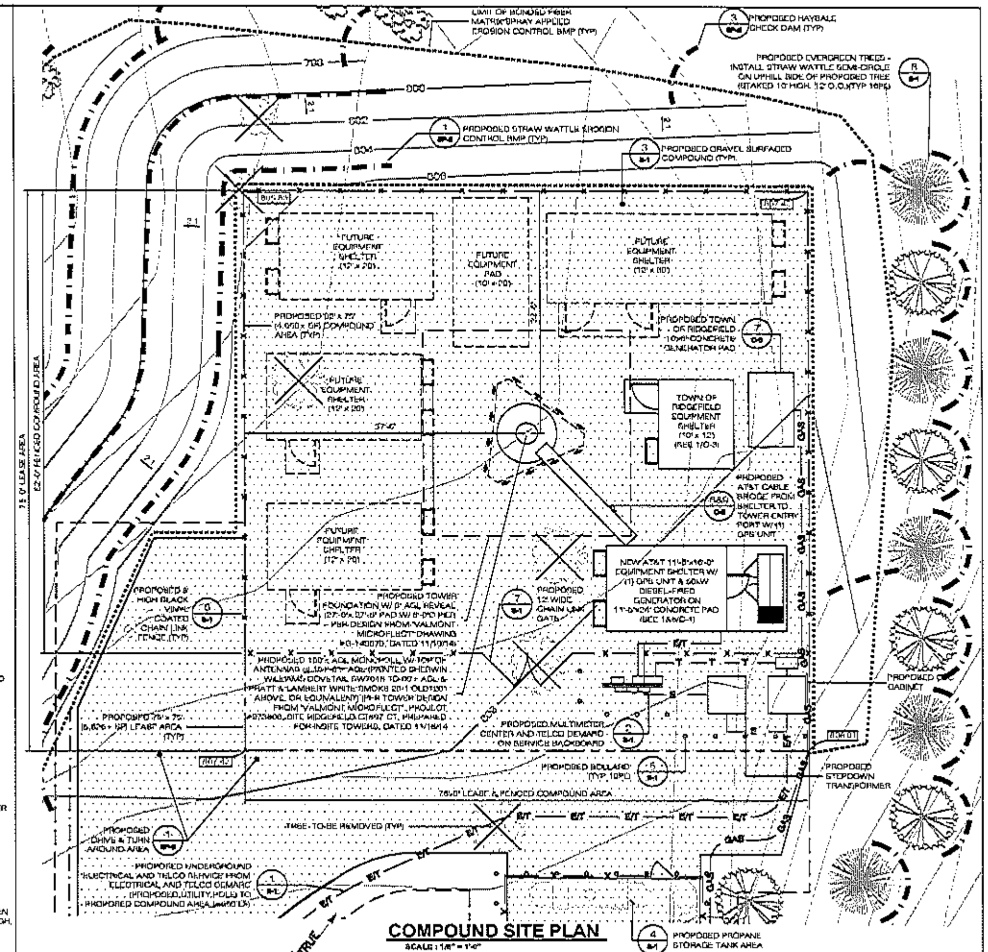
SOUTHERN ELEVATION

SCALE: 1" = 10'-0"

GRAPHIC SCALE

(IN FEET)
1 inch = 10 ft.

NOTE: ALL FINAL HEIGHTS AND EQUIPMENT SPECIFICATIONS FOR THE TOWN OF RIDGEFIELD SHALL BE DETERMINED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.



COMPOUND SITE PLAN

SCALE: 1/8" = 1'-0"

GRAPHIC SCALE

(IN FEET)
1 inch = 16 ft.

ENGINEERING ANALYSIS AND CERTIFICATION

IN ACCORDANCE WITH THE 2009 CONNECTICUT STATE BUILDING CODE AND THE ELECTRONIC INDUSTRIES ASSOCIATION STANDARD TIA/EIA-222-F "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORT STRUCTURES" FOR FAIRFIELD COUNTY, THE TOWER WOULD BE DESIGNED TO WITHSTAND PRESSURES EQUIVALENT TO A MAXIMUM 85 MPH FASTEST MILE WIND SPEED. THE FOUNDATION DESIGN WOULD BE BASED ON SOIL CONDITIONS AT THE SITE.

HOMELAND TOWERS SITE NUMBER: CT-897

APT FILING NUMBER: CT-283-120

HOMELAND TOWERS
22 SHELTER ROCK LANE
BUILDING C
DANBURY, CT 06810

ALL-POINTS TECHNOLOGY CORPORATION

DEVELOPMENT & MANAGEMENT DOCUMENTS

RIDGEFIELD LEDGES
LEDGES ROAD
RIDGEFIELD, CT 06877

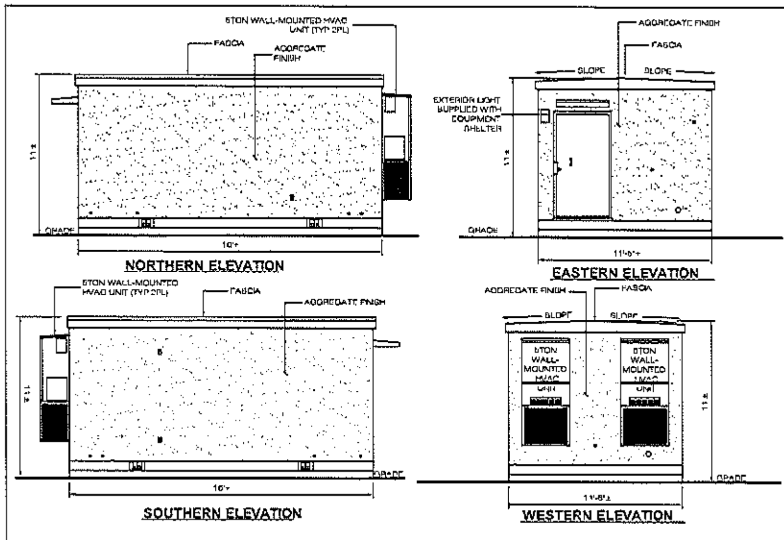
DESIGN TYPE:
RAW LAND
DEVELOPMENT SITE

REVISIONS:
REV.0: 11/25/14: FOR REVIEW: BMC
REV.1:
REV.2:
REV.3:
REV.4:
REV.5:

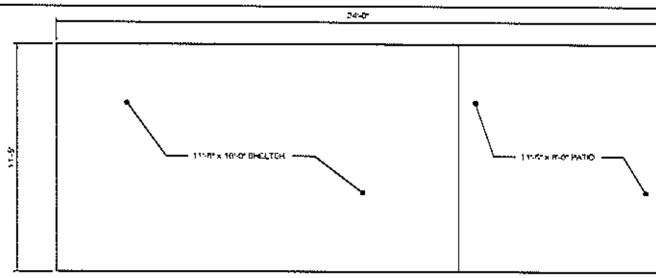
COMPOUND PLAN
& TOWER ELEVATION

APT FILING NUMBER: CT-283-120
APT DRAWING NUMBER: A-1
DRAWN BY: KCB
SCALE: AS SHOWN
CHECKED BY: BMC
DATE: 11/25/14

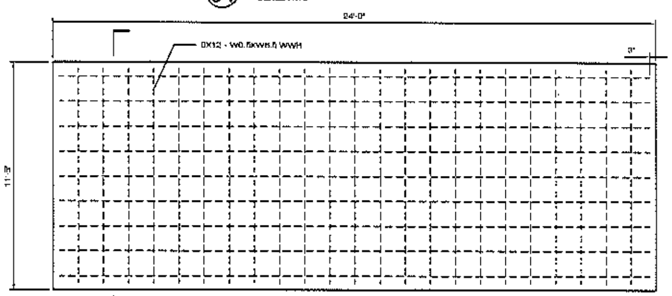
SHEET NUMBER:
A-1



1 C-1 11'-5" X 16' EQUIPMENT SHELTER
SCALE: NTS



2 C-1 CONCRETE PAD PLAN
SCALE: NTS



3 C-1 FOUNDATION PLAN
SCALE: NTS

CONCRETE PAD NOTES

1. FOUNDATION AREA SHALL BE EXCAVATED TO THE DEPTH AND DIMENSIONS SHOWN ON THE PLANS. EXISTING LEDGE AND ALL OTHER EXISTING UNSUITABLE MATERIAL SHALL BE REMOVED AND LEGALLY DISPOSED OF OFF-SITE. THE SUBGRADE SHALL BE ROLLED WITH A 1-TON, VIBRATORY, WALK-BEHIND ROLLER AT A SPEED OF LESS THAN 2 FPS, 6 PASSES MINIMUM, TO PROVIDE UNYIELDING SURFACE.

2. UNDERCUT SOFT OR "WEAVING" AREAS A MINIMUM OF 12 INCHES DEEP. BACKFILL UNDERCUT AREA WITH FILL MEETING THE SPECIFICATIONS OF STRUCTURAL FILL.

3. CONCRETE TO HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH (f'c)=3000 psi. CONCRETE TO BE AIR ENTRAINED, DESIRED AIR CONTENT TO BE 6% (PLUS OR MINUS 2%)

4. BAR REINFORCING TO BE ASTM A615 GRADE 60.

5. WELDED WIRE FABRIC TO CONFORM TO THE REQUIREMENTS OF ASTM A185. WIRES FOR FABRIC TO CONFORM TO THE REQUIREMENTS A82.

6. COORDINATE WITH MANUFACTURER OF PREFABRICATED SHELTER FOR LOCATION OF ATTACHMENTS TO BASE SLAB.

7. ALL REINFORCING TO HAVE 2" MINIMUM CONCRETE COVER.

8. ALL CONCRETE MATERIALS AND WORKMANSHIP SHALL CONFORM TO LATEST EDITION OF ACI 318 BUILDING CODE, AND IBC 2000

9. SLAB TO BE LEVEL ⅛"±.

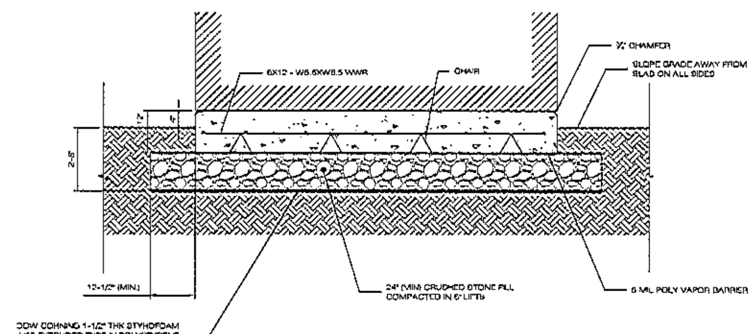
10. SLAB FOUNDATION DESIGNED ASSUMING ALLOWABLE SOIL BEARING PRESSURE OF 2000 PSF.

11. SLAB FOUNDATION DESIGN ASSUMING MAXIMUM SOIL PLASTICITY OF 27.

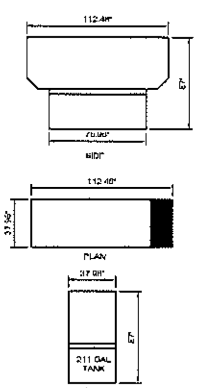
12. CONTRACTOR TO VERIFY FINAL SHELTER DIMENSIONS PRIOR TO CONSTRUCTION OF FOUNDATION.

13. GRADE SHALL SLOPE AWAY FROM THE CONCRETE PAD TO ALLOW FOR PROPER WATER RUN OFF.

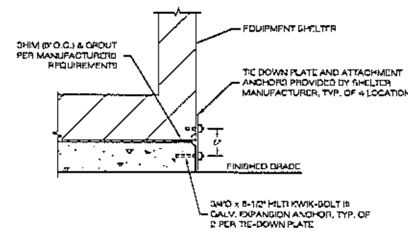
14. ANCHOR SHELTER TO FOUNDATION PER SHELTER MANUFACTURERS RECOMMENDATIONS.



4 C-1 CONCRETE PAD SECTION
SCALE: NTS



5 C-1 GENERAC 50kW DIESEL GENERATOR
SCALE: 1/4" = 1'-0"



6 C-1 TIE - DOWN DETAIL
SCALE: NTS

DESIGN LOAD CRITERIA

EQUIPMENT SHELTER SHALL BE DESIGNED AND MANUFACTURED TO MEET ALL STATE AND LOCAL CODES. ITS LAYOUT SHALL BE COORDINATED WITH CARRIERS.

DESIGN BASIS:	
GOVERNING CODE	CONNECTICUT STATE BUILDING CODE
DESIGN LIVE LOADS	40 PSF (ASCE 7-05)
IMPORTANCE CATEGORY	IV
SNOW LOAD:	
GROUND SNOW LOAD (Pg)	30 PSF
IMPORTANCE FACTOR	1.2
EXPOSURE FACTOR (Ce)	0.9
THERMAL FACTOR (Ct)	1.0
WIND LOAD:	
BASIC WIND LOAD	95 MPH (3 SEC. GUST)
EXPOSURE GROUP	B
IMPORTANCE FACTOR	1.15
SHELTER LOAD	
FLOOR LIVE LOAD INCLUDING EQUIPMENT	200 PSF
EQUIPMENT SHELTER DL	20,000 LBS
SEISMIC DESIGN PARAMETERS:	
SEISMIC USE GROUP	III
MCE SPECTRAL ACCELERATION SHORT (Ss)	0.201
MCE SPECTRAL ACCELERATION SHORT (S1)	0.067
SITE CLASS	D FOR UNKNOWN SOIL PROPERTIES
IMPORTANCE FACTOR	1.5

HOMELAND TOWERS SITE NUMBER: CT-897
APT FILING NUMBER: CT-283-120

HOMELAND TOWERS
22 SHELTER ROCK LANE
BUILDING C
DANBURY, CT 06810

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

DEVELOPMENT & MANAGEMENT DOCUMENTS

RIDGEFIELD LEDGES
LEDGES ROAD
RIDGEFIELD, CT 06877

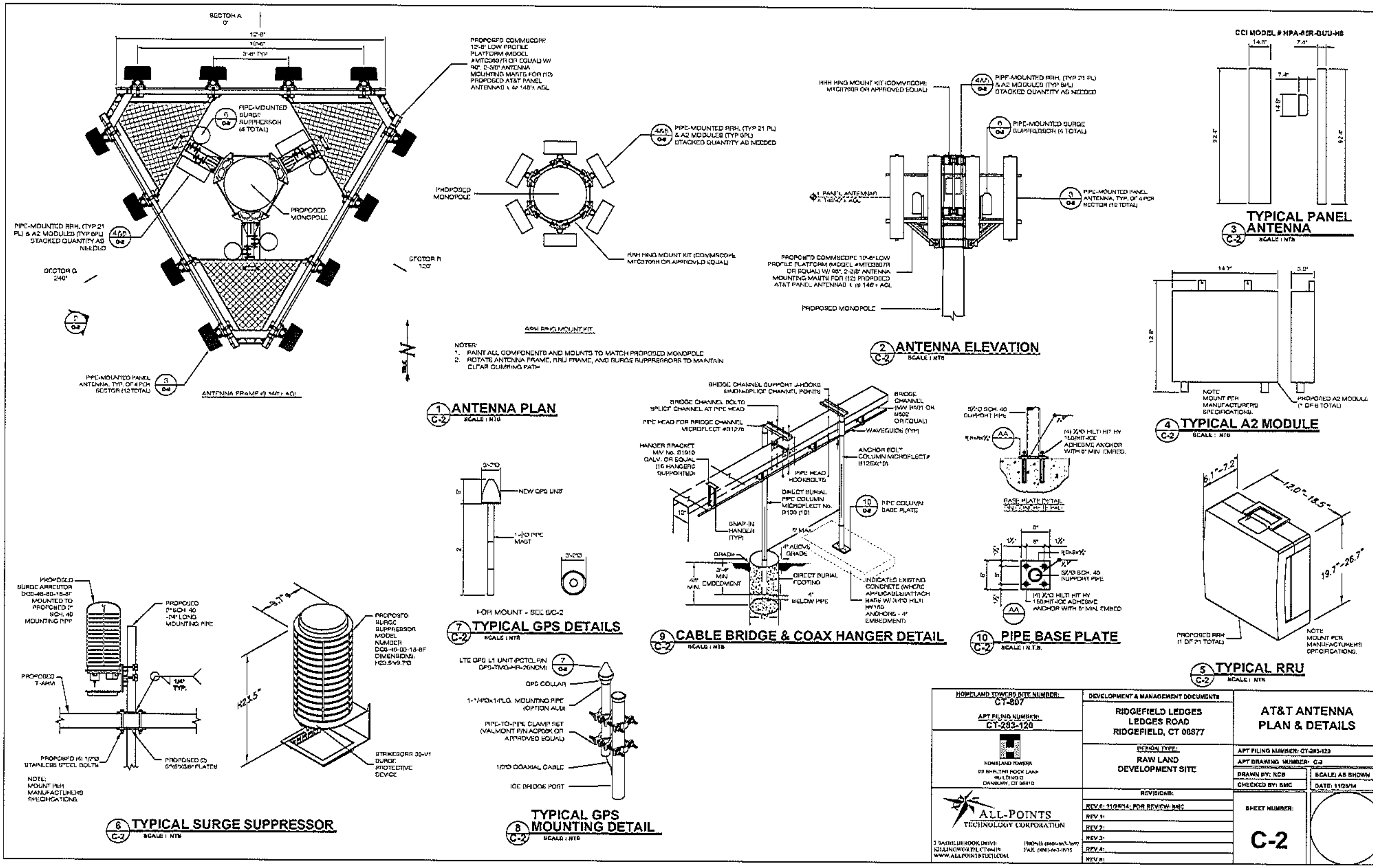
DESIGN TYPE:
RAW LAND
DEVELOPMENT SITE

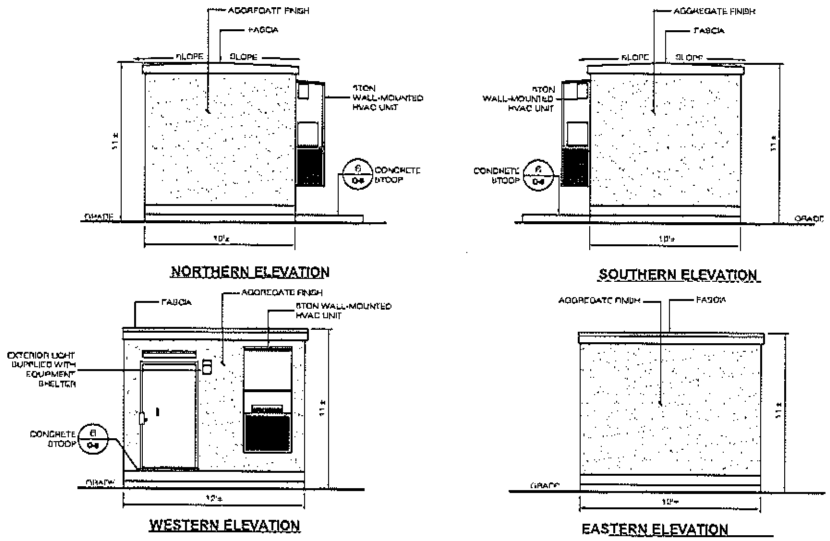
REVISIONS:
REV.0: 11/25/14: FOR REVIEW: SMC
REV.1:
REV.2:
REV.3:
REV.4:
REV.5:

AT&T EQUIP. SHELTER PLAN & DETAILS

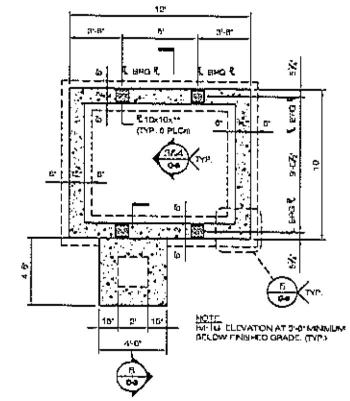
APT FILING NUMBER: CT-283-120
APT DRAWING NUMBER: C-1
DRAWN BY: RCB
SCALE: AS SHOWN
CHECKED BY: SMC
DATE: 11/25/14

SHEET NUMBER:
C-1


SECTOR A 0°
12'-6"
10'-6"
3'-6" TYP
PROPOSED COMMSCOPE 12'-6" LOW PROFILE PLATFORM (MODEL #MTC3807R OR EQUAL) W/ 96", 2-3/8" ANTENNA MOUNTING MASTS FOR (12) PROPOSED AT&T PANEL ANTENNAS ℄ @ 146'± AGL
PIPE-MOUNTED SURGE SUPPRESSOR (4 TOTAL)
PROPOSED MONOPOLE
PIPE-MOUNTED RRH, (TYP 21 PL) & A2 MODULES (TYP 6PL) STACKED QUANTITY AS NEEDED
SECTOR C 240°
SECTOR B 120°
PIPE-MOUNTED PANEL ANTENNA, TYP. OF 4 PER SECTOR (12 TOTAL)
ANTENNA FRAME @ 146'± AGL
RRH RING MOUNT KIT (COMMSCOPE MTC3709R OR APPROVED EQUAL)
RRH RING MOUNT KIT
NOTES:
1. PAINT ALL COMPONENTS AND MOUNTS TO MATCH PROPOSED MONOPOLE
2. ROTATE ANTENNA FRAME, RRU FRAME, AND SURGE SUPPRESSORS TO MAINTAIN CLEAR CLIMBING PATH
1 C-2 ANTENNA PLAN SCALE: NTS
℄ PANEL ANTENNAS @ 146'± AGL
PIPE-MOUNTED SURGE SUPPRESSOR (4 TOTAL)
PIPE-MOUNTED PANEL ANTENNA, TYP. OF 4 PER SECTOR (12 TOTAL)
PROPOSED COMMSCOPE 12'-6" LOW PROFILE PLATFORM (MODEL #MTC3807R OR EQUAL) W/ 96", 2-3/8" ANTENNA MOUNTING MASTS FOR (12) PROPOSED AT&T PANEL ANTENNAS ℄ @ 146'± AGL
PROPOSED MONOPOLE
2 C-2 ANTENNA ELEVATION SCALE: NTS
CCI MODEL # HPA-65R-BUU-H6
14.8"
7.4"
92.4"
3 C-2 TYPICAL PANEL ANTENNA SCALE: NTS
14.7"
3.0"
12.8"
NOTE: MOUNT PER MANUFACTURERS SPECIFICATIONS.
PROPOSED A2 MODULE (1 OF 6 TOTAL)
4 C-2 TYPICAL A2 MODULE SCALE: NTS
6.1"-7.2"
12.0"-18.5"
19.7"-26.7"
PROPOSED RRH (1 OF 21 TOTAL)
NOTE: MOUNT PER MANUFACTURERS SPECIFICATIONS.
5 C-2 TYPICAL RRU SCALE: NTS
NEW GPS UNIT
1-1/2"Ø PIPE MAST
FOR MOUNT - SEE 8/C-2
7 C-2 TYPICAL GPS DETAILS SCALE: NTS
LTE GPS L1 UNIT (PCTEL P/N GPS-TMG-HR-26NCM)
GPS COLLAR
1-1/4"Øx14"LG. MOUNTING PIPE (OPTION AUX)
PIPE-TO-PIPE CLAMP SET (VALMONT P/N ACP00K OR APPROVED EQUAL)
1/2"Ø COAXIAL CABLE
ICE BRIDGE POST
8 C-2 TYPICAL GPS MOUNTING DETAIL SCALE: NTS
BRIDGE CHANNEL SUPPORT J-HOOKS (NON-SPLICE CHANNEL POINTS)
BRIDGE CHANNEL BOLTS SPLICT CHANNEL AT PIPE HEAD
PIPE HEAD FOR BRIDGE CHANNEL MICROFLECT #01276
HANGER BRACKET MV No. 01910 GALV. OR EQUAL (10 HANGERS SUPPORTED)
BRIDGE CHANNEL (MV 8801 OR 8502 OR EQUAL)
WAVEGUIDE (TYP)
ANCHOR BOLT COLUMN MICROFLECT# 8126X(1D)
PIPE HEAD HOOKBOLTS
DIRECT BURIAL PIPE COLUMN MICROFLECT No. 8130 (1D)
PIPE COLUMN BASE PLATE
SNAP-IN HANGER (TYP)
GRADE
4" ABOVE GRADE
3'-6" MIN EMBEDMENT
48" MIN.
DIRECT BURIAL FOOTING
4" BELOW PIPE
INDICATES EXISTING CONCRETE (WHERE APPLICABLE)(ATTACH BASE W/ 3/4"Ø HILTI HY150 ANCHORS - 4" EMBEDMENT)
9 C-2 CABLE BRIDGE & COAX HANGER DETAIL SCALE: NTS
5"Ø SCH. 40 SUPPORT PIPE
(4) 3/4"Ø HILTI HIT HY 150/HIT-ICE ADHESIVE ANCHOR WITH 6" MIN. EMBED.
BASE PLATE DETAIL ON CONCRETE PAD
10 C-2 PIPE BASE PLATE SCALE: N.T.S.
PROPOSED SURGE ARRESTOR MOUNTED TO PROPOSED 2" SCH. 40 MOUNTING PIPE
PROPOSED 2" SCH 40 ~24" LONG MOUNTING PIPE
PROPOSED T-ARM
PROPOSED (4) 1/2"Ø STAINLESS STEEL BOLTS
PROPOSED (2) 6"x6"x3/8" PLATES
NOTE: MOUNT PER MANUFACTURERS SPECIFICATIONS.
PROPOSED SURGE SUPPRESSOR MODEL NUMBER DC6-48-60-18-8F DIMENSIONS: H23.5"x9.7"Ø
H23.5"
STRIKESORB 30-V1 SURGE PROTECTIVE DEVICE
6 C-2 TYPICAL SURGE SUPPRESSOR SCALE: NTS
HOMELAND TOWERS SITE NUMBER: CT-807
APT FILING NUMBER: CT-283-120
HOMELAND TOWERS
ALL-POINTS TECHNOLOGY CORPORATION
DEVELOPMENT & MANAGEMENT DOCUMENTS
RIDGEFIELD LEDGES
LEDGES ROAD
RIDGEFIELD, CT 06877
DESIGN TYPE: RAW LAND DEVELOPMENT SITE
REVISIONS:
REV 0: 11/25/14: FOR REVIEW: BMC
AT&T ANTENNA PLAN & DETAILS
APT FILING NUMBER: CT-283-120
APT DRAWING NUMBER: C-2
DRAWN BY: RCB
SCALE: AS SHOWN
CHECKED BY: BMC
DATE: 11/25/14
SHEET NUMBER:
C-2



1 C-3 TYPICAL 12' X 20' EQUIPMENT SHELTER
SCALE: 1/4" = 1'-0"

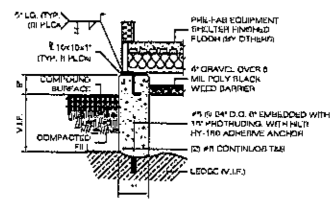


2 C-3 TYPICAL FOUNDATION PLAN
SCALE: 1/4" = 1'-0"

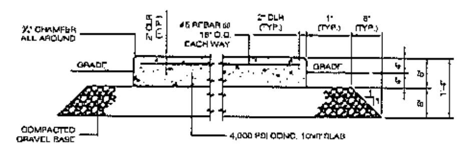
DESIGN LOAD CRITERIA

EQUIPMENT SHELTER SHALL BE DESIGNED AND MANUFACTURED TO MEET ALL STATE AND LOCAL CODES. STD LAYOUT SHALL BE COORDINATED WITH OWNER.

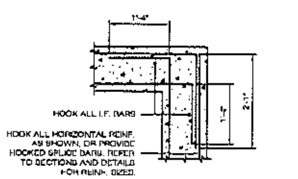
DESIGN BASIS	
GOVERNING CODE	CONNECTICUT STATE BUILDING CODE
DESIGN LIVE LOADS	40 PSF (ASCE 7-02)
IMPORTANCE CATEGORY	IV
SNOW LOAD:	
GROUND SNOW LOAD (Pg)	30 PSF
IMPORTANCE FACTOR	1.2
EXPOSURE FACTOR (Ce)	0.9
THERMAL FACTOR (Ct)	1.0
WIND LOAD	
BASIC WIND LOAD	95 MPH (3 SEC. GUST)
EXPOSURE GROUP	B
IMPORTANCE FACTOR	1.15
SHELTER LOAD	
FLOOR LIVE LOAD INCLUDING EQUIPMENT	250 PSF
EQUIPMENT SHELTER DL	24,600 LBS
SEISMIC DESIGN PARAMETERS:	
SEISMIC USE GROUP	III
MCE SPECTRAL ACCELERATION SHORT (Ss)	0.301
MCE SPECTRAL ACCELERATION SHORT (S1)	0.067
SITE CLASS	D FOR UNKNOWN SOIL PROPERTIES
IMPORTANCE FACTOR	1.5



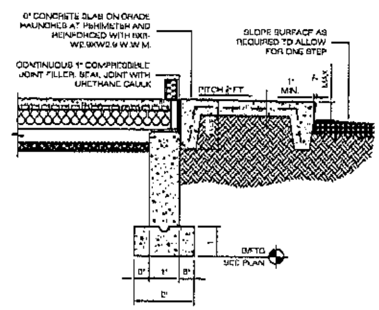
4 C-3 FOUNDATION OVER LEDGE OR TOWER FOUNDATION
SCALE: 1/2" = 1'-0"



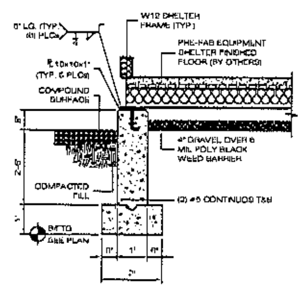
7 C-3 EQUIPMENT/ GENERATOR SLAB DETAIL
SCALE: NTS



5 C-3 DETAIL CORNER RIEFORCEMENT
SCALE: 3/4" = 1'-0"



6 C-3 SECTION @ STOOP
SCALE: 1/2" = 1'-0"



3 C-3 FOUNDATION SECTION
SCALE: 1/2" = 1'-0"

HOMELAND TOWERS SITE NUMBER: CT-897

APT FILING NUMBER: CT-283-120

HOMELAND TOWERS
22 SHELTER ROCK LANE
BUILDING C
DANBURY, CT 06810

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

DEVELOPMENT & MANAGEMENT DOCUMENTS

RIDGEFIELD LEDGES
LEDGES ROAD
RIDGEFIELD, CT 06877

DESIGN TYPE:
RAW LAND
DEVELOPMENT SITE

REVISIONS:

REV 0: 11/25/14 - FOR REVIEW: BMC
REV 1:
REV 2:
REV 3:
REV 4:
REV 5:

TOWN EQUIPMENT PLAN & DETAILS

APT FILING NUMBER: CT-283-120
APT DRAWING NUMBER: C-3
DRAWN BY: RCD | SCALE: AS SHOWN
CHECKED BY: BMC | DATE: 11/25/14

SHEET NUMBER:

C-3

Product Specifications

COMMSCOPE

VHLP2-11W-4WH

0.6 m | 2 ft ValuLine® High Performance Low Profile Antenna, single-polarized, 10.125–11.700 GHz, PDR100, white antenna, polymer white radome without flash, standard pack—one-piece reflector

General Specifications

Antenna Type	VHLP - ValuLine® High Performance Low Profile Antenna, single-polarized
Diameter, nominal	0.6 m | 2 ft
Packing	Compact pack
Radome Color	White
Radome Material	Polymer
Reflector Construction	One-piece reflector
Antenna Input	PDR100
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

Operating Frequency Band	10.125 – 11.700 GHz
Beamwidth, Horizontal	3.3 °
Beamwidth, Vertical	3.3 °
Cross Polarization Discrimination (XPD)	30 dB
Electrical Compliance	Brazil Anatel Class 2 | ETSI 302 217 Class 3 | US FCC Part 101A @ 10.55–10.7 GHz | US FCC Part 101B @ 10.7–11.7 GHz
Front-to-Back Ratio	60 dB
Gain, Low Band	33.8 dBi
Gain, Mid Band	34.5 dBi
Gain, Top Band	35.2 dBi
Operating Frequency Band	10.125 – 11.700 GHz
Radiation Pattern Envelope Reference (RPE)	7200 | 7201
Return Loss	17.7 dB
VSWR	1.30

Mechanical Specifications

Fine Azimuth Adjustment	±15°
Fine Elevation Adjustment	±15°
Mounting Pipe Diameter	48 mm–115 mm | 1.9 in–4.5 in
Net Weight	11 kg | 25 lb

Product Specifications

COMMSCOPE

VHLP2-11W-4WH

Side Struts, Included	0
Side Struts, Optional	0
Wind Velocity Operational	200 km/h | 124 mph
Wind Velocity Survival Rating	250 km/h | 155 mph

Wind Forces At Wind Velocity Survival Rating

Axial Force (FA)	1272 N | 286 lbf
Side Force (FS)	630 N | 142 lbf
Twisting Moment (MT)	473 N•m
Weight with 1/2 in (12 mm) Radial Ice	17 kg | 37 lb
Zcg with 1/2 in (12 mm) Radial Ice	162 mm | 6 in
Zcg without Ice	157 mm | 6 in

1/C-4 **CAMBIUM PTP 800 ANTENNA**
SCALE : NTS

BA Series

VHF Omnidirectional Dipole Arrays

138 - 174 MHz

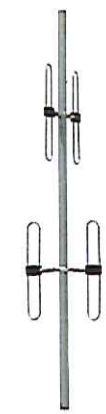
These high performance VHF dipole omnidirectional arrays are for use in highly populated radio sites requiring long haul omnidirectional coverage. The arrays feature high gain, low noise performance and enhanced null fill coverage with omnidirectional coverage characteristics.

These antennas offer industry leading PIM ratings, essential for the latest digital radio systems. With all welded construction and superior internal harness construction, these antennas provide not only excellent pattern characteristics but also defined, high levels of intermodulation and noise suppression. The entire array rests at ground potential and offers the ultimate in lightning resistant antennas.

Each of the dipoles are fed via an internal phasing harness with stable, PTFE based double-shielded coaxial cable with PE jacket for optimum weatherproofing. These omnidirectional arrays incorporate extensive side lobe suppression and null fill, and the binary phasing arrangement ensures consistent omnidirectional coverage and vertical pattern control.

These arrays provide unparalleled bandwidth, covering the entire 138-174 MHz band and offer gain of 3 or 5 dBd over that band with a VSWR of less than 1.5:1. Capable of accepting input power levels of 750 Watts, the antennas are suitable for high power paging sites or high density, multichannel installations requiring maximum performance and service life.

- High gain omnidirectional patterns
- Operate over entire 138-174 MHz VHF band without tuning or adjustment
- BA80-41-DIN can be ordered as 2 x 3dBd arrays. Specify model BA4040-41-DIN. Typical electrical isolation between antennas is 25dB.
- Industry leading PIM ratings (-150dBc) providing low IM and low noise characteristics for optimum performance



BA40-41-DIN

BA Series

VHF Omnidirectional Dipole Arrays

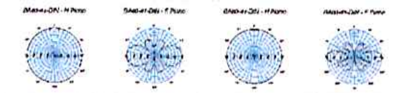
138 - 174 MHz

Electrical Specifications

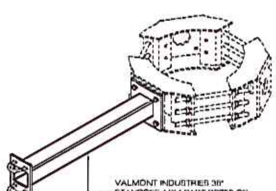
[illegible]

Mechanical Specifications

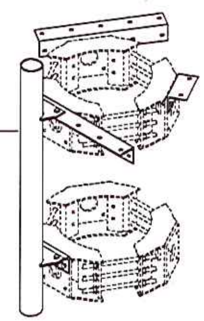
[illegible]



2/C-4 **RFI BA40-41-DIN ANTENNA**
SCALE : NTS

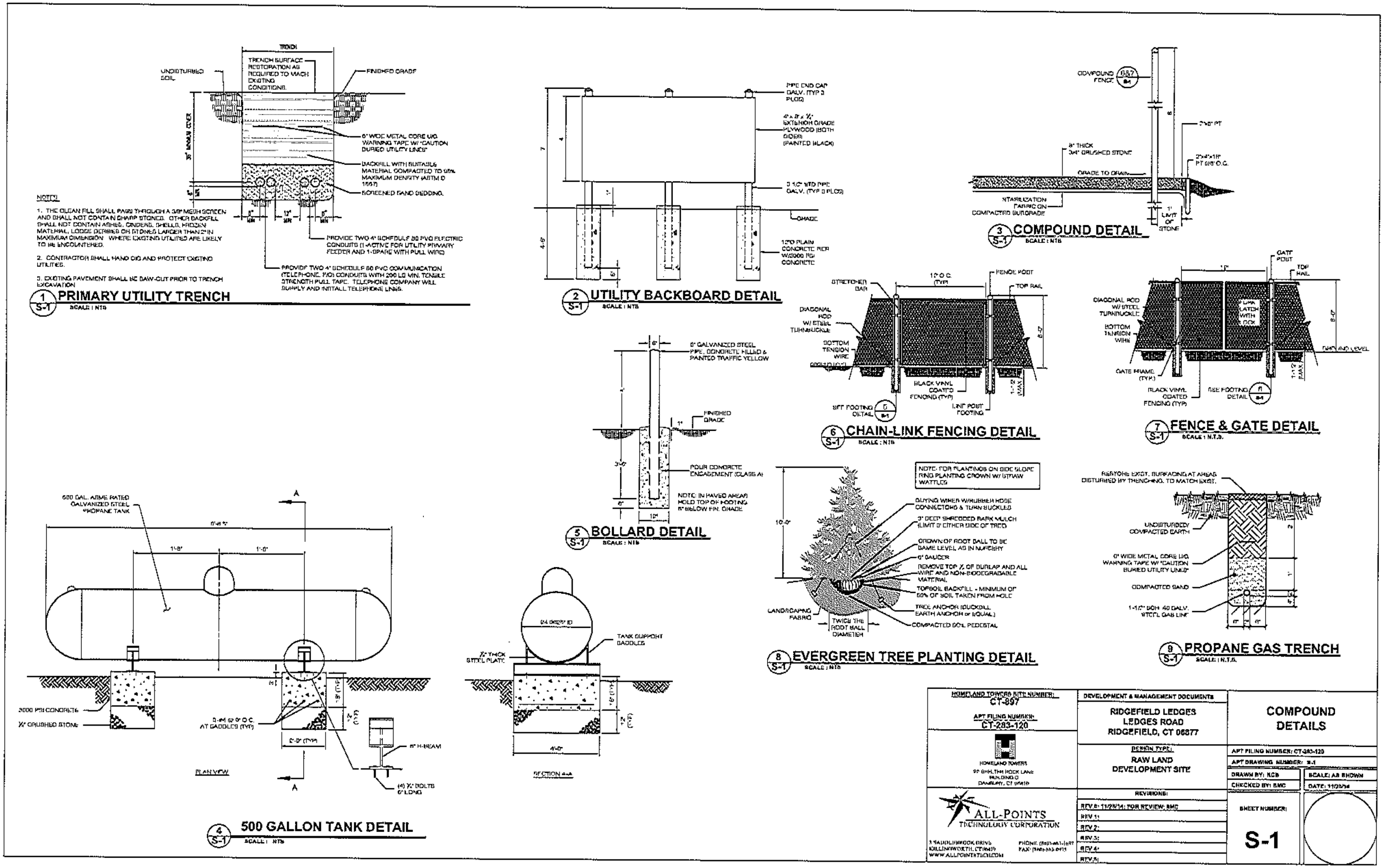


3/C-4 **3' SIDEARM ANTENNA MOUNT**
SCALE : NTS



4/C-4 **MICROWAVE DISH MOUNT**
SCALE : NTS

HOMELAND TOWERS SITE NUMBER: CT-897 APT FILING NUMBER: CT-283-120 HOMELAND TOWERS 22 SHELTER ROCK LANE BUILDING C DANBURY, CT 06810	DEVELOPMENT & MANAGEMENT DOCUMENTS RIDGEFIELD LEDGES LEDGES ROAD RIDGEFIELD, CT 06877 DESIGN TYPE: RAW LAND DEVELOPMENT SITE	TOWN ANTENNA PLAN & DETAILS
ALL-POINTS TECHNOLOGY CORPORATION 3 SADDLEBROOK DRIVE KILLINGWORTH, CT 06419 WWW.ALLPOINTSTECH.COM PHONE: (860)-663-1697 FAX: (860)-663-0935	REVISIONS: REV.0: 11/25/14: FOR REVIEW: SMC REV.1: REV.2: REV.3: REV.4: REV.5:	APT FILING NUMBER: CT-283-120 APT DRAWING NUMBER: C-4 DRAWN BY: RCB | SCALE: AS SHOWN CHECKED BY: SMC | DATE: 11/25/14 SHEET NUMBER: C-4



TRENCH
TRENCH SURFACE RESTORATION AS REQUIRED TO MATCH EXISTING CONDITIONS.
UNDISTURBED SOIL
FINISHED GRADE
6" WIDE METAL CORE U/G WARNING TAPE W/ "CAUTION BURIED UTILITY LINES"
BACKFILL WITH SUITABLE MATERIAL COMPACTED TO 95% MAXIMUM DENSITY (ASTM D 1557)
SCREENED SAND BEDDING.
PROVIDE TWO 4" SCHEDULE 80 PVC ELECTRIC CONDUITS (1-ACTIVE FOR UTILITY PRIMARY FEEDER AND 1-SPARE WITH PULL WIRE)
PROVIDE TWO 4" SCHEDULE 80 PVC COMMUNICATION (TELEPHONE, F/O) CONDUITS WITH 200 LB MIN. TENSILE STRENGTH PULL TAPE. TELEPHONE COMPANY WILL SUPPLY AND INSTALL TELEPHONE LINES.
NOTES:
1. 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. WHERE EXISTING UTILITIES ARE LIKELY TO BE ENCOUNTERED.
2. CONTRACTOR SHALL HAND DIG AND PROTECT EXISTING UTILITIES.
3. EXISTING PAVEMENT SHALL BE SAW-CUT PRIOR TO TRENCH EXCAVATION
1 S-1 PRIMARY UTILITY TRENCH
SCALE: NTS
2 S-1 UTILITY BACKBOARD DETAIL
SCALE: NTS
3 S-1 COMPOUND DETAIL
SCALE: NTS
4 S-1 500 GALLON TANK DETAIL
SCALE: NTS
PLAN VIEW
SECTION A-A
5 S-1 BOLLARD DETAIL
SCALE: NTS
6 S-1 CHAIN-LINK FENCING DETAIL
SCALE: NTS
7 S-1 FENCE & GATE DETAIL
SCALE: N.T.S.
8 S-1 EVERGREEN TREE PLANTING DETAIL
SCALE: NTS
9 S-1 PROPANE GAS TRENCH
SCALE: N.T.S.
HOMELAND TOWERS SITE NUMBER:
CT-897
APT FILING NUMBER:
CT-283-120
HOMELAND TOWERS
ALL-POINTS TECHNOLOGY CORPORATION
DEVELOPMENT & MANAGEMENT DOCUMENTS
RIDGEFIELD LEDGES
LEDGES ROAD
RIDGEFIELD, CT 06877
DESIGN TYPE:
RAW LAND
DEVELOPMENT SITE
REVISIONS:
REV 1:
REV 2:
REV 3:
REV 4:
REV 5:
COMPOUND
DETAILS
SCALE: AS SHOWN
SHEET NUMBER:
S-1

GENERAL NOTES:

1. ALL WORK SHALL BE PERFORMED IN CONFORMANCE WITH THE EASTERN BOX TURTLE AND WETLAND PROTECTION PLAN AS SHOWN ON DRAWING SP-2.

2. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL COMPLY WITH THE STANDARDS AND SPECIFICATIONS OF THE TOWN OF RIDGEFIELD, AND OTHER GOVERNMENTAL AGENCIES, AS APPLICABLE.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING ALL NECESSARY PERMITS BEFORE COMMENCING WORK. THE CONTRACTOR SHALL FOLLOW CONDITIONS OF ALL APPLICABLE PERMITS AND WORK IN ACCORD WITH OSHA REGULATIONS.

3. UTILITY INFORMATION SHOWN ON THE PLAN IS BASED ON VISIBLE FIELD EVIDENCE AND AVAILABLE RECORDS. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR IS ADVISED THAT THESE DRAWINGS MAY NOT ACCURATELY DEPICT AS-BUILT LOCATIONS AND OTHER UNKNOWN STRUCTURES. THE CONTRACTOR SHALL THEREFORE DETERMINE THE EXACT LOCATION OF EXISTING UNDERGROUND ELEMENTS AND EXCAVATE WITH CARE AFTER CALLING MARKOUT SERVICE AT 1-800-922-4455 (72) HOURS BEFORE DIGGING, DRILLING OR BLASTING. CARE SHALL BE TAKEN NOT TO DISTURB EXISTING UTILITIES AND SERVICE CONNECTIONS (OR PORTIONS THEREOF) TO REMAIN. CONTRACTOR IS RESPONSIBLE FOR REPAIRING OR REPLACING STRUCTURES OR UTILITIES DAMAGED BY HIS OPERATIONS.

4. THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF NEW SERVICE CONNECTIONS AND SHALL COORDINATE WORK WITH THE APPROPRIATE UTILITY COMPANY.

5. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, FIBER OPTIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY THE ENGINEER.

6. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PIER DRILLING AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE, BUT NOT BE LIMITED TO:
A) FALL PROTECTION,
B) CONFINED SPACE ENTRY,
C) ELECTRICAL SAFETY, AND
D) TRENCHING & EXCAVATION.

7. ELECTRIC SERVICE SHALL BE COORDINATED WITH CONNECTICUT LIGHT & POWER (CL & P).

8. ALL ELEVATIONS SHOWN ARE IN N.G.V. DATUM 1929.

9. ALL RUBBISH, STUMPS, DEBRIS, STICKS, STONES, AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.

10. CONTRACTOR SHALL PROTECT EXISTING PAVED AND GRAVEL SURFACES, CURBS, LANDSCAPE AND STRUCTURES AND RESTORE SITE TO PRECONSTRUCTION CONDITION WITH AS GOOD, OR BETTER, MATERIALS. NEW MATERIALS SHALL MATCH EXISTING THICKNESS AND TYPE.

11. THE CONTRACTOR SHALL SHORE ALL TRENCH EXCAVATION GREATER THAN 5 FEET IN DEPTH OR LESS WHERE SOIL CONDITIONS ARE DEEMED UNSTABLE. ALL SHEETING AND/OR SHORING METHODS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER.

12. THE CONTRACTOR IS RESPONSIBLE FOR MANAGING GROUNDWATER LEVELS IN THE VICINITY OF EXCAVATIONS TO PROTECT ADJACENT PROPERTIES AND NEW WORK. GROUNDWATER SHALL BE DRAINED IN ACCORDANCE WITH LOCAL SEDIMENTATION & EROSION CONTROL GUIDELINES.

13. THE CONTRACTOR IS REQUIRED TO REVIEW THE STATEMENT OF SPECIAL INSPECTION PRIOR TO THE START OF WORK. THE CONTRACTOR TO PROVIDE E-MAIL REQUEST TO THE PROJECT ENGINEER FOR INSPECTION 72 HOURS IN ADVANCE OF INSPECTION.

14. EXCAVATION
CONTRACTOR SHALL GRADE ONLY AREAS SHOWN TO BE MODIFIED HEREIN AND ONLY TO THE EXTENT REQUIRED TO SHED OVERLAND WATER FLOW AWAY FROM SITE. ALL SLOPES SHALL NOT BE STEEPER THAN 3:1 (HORIZ:VERT).

BEDROCK SUBGRADE SHOULD NOT BE STEEPER THAN 4H:1V. HIGH SPOTS IN BEDROCK SUBGRADES MAY NEED TO BE REMOVED AND LOW SPOTS MAY BE FILLED WITH LEAN CONCRETE OR MINUS ¾" CRUSHED STONE TO PROVIDE A LEVEL SURFACE. BEDROCK SUBGRADES DO NOT REQUIRE PROOFROLLING.

SEDIMENTATION AND EROSION CONTROLS SHOWN AND SPECIFIED SHALL BE ESTABLISHED BEFORE STRIPPING EXISTING VEGETATION.

ORGANIC MATERIAL AND DEBRIS SHALL BE STRIPPED AND STOCKPILED BEFORE ADDING FILL MATERIAL.

NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

ALL FILL SHALL BE PLACED IN EIGHT INCH LIFTS AND COMPACTED IN PLACE. STRUCTURAL FILL SHALL BE COMPACTED TO 95% MAXIMUM MODIFIED PROCTOR DRY DENSITY TESTED IN ACCORDANCE WITH ASTM D1557, METHOD C.

EXCAVATIONS FOR FOOTINGS SHALL BE CUT LEVEL TO THE REQUIRED DEPTH AND TO UNDISTURBED SOIL. REPORT UNSUITABLE SOIL CONDITIONS TO THE ENGINEER.

STRUCTURAL FILL SHALL BE TESTED FOR MOISTURE CONTENT AND COMPACTION DURING PLACEMENT. SHOULD THE RESULTS OF THE IN-PLACE DENSITY TESTS INDICATE THE SPECIFIED MOISTURE OR COMPACTION LIMITS HAVE NOT BEEN MET, THE AREA REPRESENTED BY THE TEST SHOULD BE REWORKED AND RETESTED, AS REQUIRED, UNTIL THE SPECIFIED MOISTURE AND COMPACTION REQUIREMENTS ARE ACHIEVED.

EQUIPMENT CABINETS MAY BE SUPPORTED ON SLABS-ON-GRADE UNDERLAIN BY AT LEAST A 12-INCH THICKNESS OF COMPACTED STRUCTURAL FILL OR MINUS ¾-INCH CRUSHED STONE PLACED ON THE EXISTING FILL, THE SURFACE OF WHICH SHOULD BE THOROUGHLY COMPACTED AND CLEAR OF ORGANIC MATTER.

THE AREA UNDERLYING THE SLABS SHOULD BE ROUGH GRADED AND THEN THOROUGHLY PROOFROLLED WITH A VIBRATORY ROLLER OR HEAVY PLATE COMPACTOR PRIOR TO FINAL GRADING AND PLACEMENT OF STRUCTURAL FILL OR MINUS ¾-INCH CRUSHED STONE.

A SOIL UNIT WEIGHT OF 100 LBS PER CUBIC FOOT (PCF) SHOULD BE USED FOR ENGINEERED FILL OVERLYING THE FOOTINGS.

TRENCH EXCAVATIONS SHALL BE BACKFILLED AT THE END OF EACH DAY.

SURPLUS MATERIAL SHALL BE REMOVED FROM THE SITE.

TOWER FOUNDATION EXCAVATION, BACKFILL AND COMPACTION SHALL BE IN ACCORD WITH TOWER MANUFACTURERS DESIGNS AND SPECIFICATIONS.

CONTRACTOR TO VERIFY THAT FOOTING ELEVATIONS AND PIER ELEVATION PROVIDED HEREIN ARE CONSISTENT WITH THE TOWER DESIGN REQUIREMENTS.

14. MATERIALS
NATIVE GRAVEL MATERIAL MAY BE USED FOR TRENCH BACKFILL WHERE SELECT MATERIAL IS NOT SPECIFIED. GRAVEL MATERIAL FOR CONDUIT TRENCH BACKFILL SHALL NOT CONTAIN ROCK GREATER THAN 2 INCHES IN DIAMETER.

BANK OR CRUSHED GRAVEL SHALL CONSIST OF TOUGH, DURABLE PARTICLES OF CRUSHED OR UNCRUSHED GRAVEL FREE OF SOFT, THIN, ELONGATED OR LAMINATED PIECES AND MEET THE GRADATION.

FILL SHOULD MEET THE FOLLOWING MATERIAL PROPERTY REQUIREMENTS.

FILL TYPE (1)	USCS CLASSIFICATION	ACCEPTABLE LOCATION FOR PLACEMENT
STRUCTURAL FILL	GW (2)	ALL LOCATIONS AND ELEVATIONS. THE GLACIAL TILL MAY BE SELECTIVELY RE-USED AS STRUCTURAL FILL, PROVIDED IT IS FREE OF ORGANIC AND CLOSELY MEETS THE GRADATION REQUIREMENT IN NOTE 2, BELOW. COBBLES AND BOULDERS SHOULD BE CULLED PRIOR TO RE-USE.
COMMON FILL	VARIES	COMMON FILL MAY BE USED FOR GENERAL SITE GRADING TO WITHIN 12 INCHES OF FINISHED GRADE. COMMON FILL SHOULD NOT BE USED BELOW SENSITIVE STRUCTURES. THE GLACIAL TILL MAY BE RE-USED AS COMMON FILL, PROVIDED IT IS FREE OF ORGANICS AND CAN BE ADEQUATELY COMPACTED. COBBLES AND BOULDERS SHOULD BE CULLED PRIOR TO RE-USE.

1. COMPACTED FILL SHOULD CONSIST OF APPROVED MATERIALS THAT ARE FREE OF ORGANIC MATTER AND DEBRIS. FROZEN MATERIAL SHOULD NOT BE USED. FILL SHOULD NOT BE PLACED ON A FROZEN SUBGRADE.
2. IMPORTED STRUCTURAL FILL SHOULD MEET THE FOLLOWING GRADATION:

PERCENT PASSING BY WEIGHT

SIEVE SIZE	STRUCTURAL FILL
6"	100
3"	70-100
2"	(100)*
¾"	45-95
NO. 4	30-90
NO. 10	25-80
NO. 40	10-50
NO. 200	0-12

* MAXIMUM 2-INCH PARTICLE SIZE WITHIN 12 INCHES OF THE UNDERSIDE OF CONCRETE ELEMENTS
3. RECOMMENDATION FOR RE-USE OF SITE SOILS AS STRUCTURAL FILL APPLIES ONLY TO RE-USE ON THIS SITE AND ONLY IF THE GEOTECHNICAL ENGINEER IS MONITORING CONSTRUCTION.
4. IMPORTED COMMON FILL SHOULD HAVE A MAXIMUM PARTICLE SIZE OF 6 INCHES AND NO MORE THAN 25 PERCENT BY WEIGHT PASSING THE US NO. 200 SIEVE.

SEDIMENTATION/EROSION

1. THE CONTRACTOR SHALL MINIMIZE DISTURBANCE TO THE EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES SHALL BE IN CONFORMANCE WITH THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL.

2. CONTRACTOR SHALL PERFORM CONSTRUCTION SEQUENCING SUCH THAT EARTH MATERIALS ARE EXPOSED FOR A MINIMUM OF TIME BEFORE THEY ARE COVERED, SEEDED, OR OTHERWISE STABILIZED TO PREVENT EROSION. THE FOLLOWING GENERAL CONDITIONS SHALL BE OBSERVED.

A. LIMITS OF CLEARING AND GRUBBING SHALL BE CLEARLY MARKED BEFORE COMMENCING WITH SUCH WORK.

B. EXISTING VEGETATION TO REMAIN SHALL BE PROTECTED AND REMAIN UNDISTURBED.

C. CLEARING AND GRADING SHALL BE SCHEDULED SO AS TO MINIMIZE THE SIZE OF EXPOSED AREAS AND THE LENGTH OF TIME THAT AREAS ARE EXPOSED.

D. TOPSOIL SHALL BE SPREAD TO FINISH GRADES AND SEEDED AS SOON AS FINISHED GRADES ARE ESTABLISHED. STRAW MULCH, JUTE NETTING OR MATS SHALL BE USED WHERE THE NEW SEED IS PLACED.

E. THE LENGTH AND STEEPNESS OF CLEARED SLOPES SHALL BE MINIMIZED TO REDUCE RUNOFF VELOCITIES.

F. RUNOFF SHALL BE DIVERTED AWAY FROM CLEARED SLOPES.

G. ALL SEDIMENT SHALL BE TRAPPED ON THE SITE.

3. SEDIMENTATION AND EROSION CONTROL (SEC) MEASURES SHOWN SHALL BE INSTALLED PRIOR TO LAND CLEARING, EXCAVATION OR GRADING OPERATIONS. REQUIREMENTS SPECIFIED SHALL BE MET PRIOR TO COMMENCING EARTHWORK OPERATIONS.

4. IT IS THE CONTRACTORS RESPONSIBILITY TO MAINTAIN SEC MEASURES THROUGHOUT DURATION OF PROJECT UNTIL DISTURBED LAND IS THOROUGHLY VEGETATED.

5. FAILURE OF THE SEC SYSTEMS SHALL BE CORRECTED IMMEDIATELY AND SUPPLEMENTED WITH ADDITIONAL MEASURES AS NEEDED.

6. VEGETATIVE SEEDING. UPON AREA TO BE SEEDED SHALL BE LOOSE AND FRIABLE TO A DEPTH OF 3". TOPSOIL SHALL BE LOOSENED BY RAKING OR DISKING BEFORE SEEDING. APPLY 50 Lbs. OF DOLOMITIC LIMESTONE AND 25 Lbs. OF 10-10-10 FERTILIZER PER 1000 SF. HARROW LIME AND FERTILIZER INTO LOOSE SOIL. APPLY COMMON BERMUDA AND RYE GRASS AT 50 Lbs/ACRE. USE CYCLONE SEED DRILL, CULTIPACKER SEEDER OR HYDROSEEDER (SEED & FERTILIZER SLURRY) FOR STEEP SLOPES. IRRIGATE UNTIL VEGETATION IS COMPLETELY ESTABLISHED.

7. PRIOR TO STARTING ANY OTHER WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN FEDERAL, STATE, AND LOCAL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT.

8. INSPECT AND MAINTAIN EROSION CONTROL MEASURES, AND REMOVE SEDIMENT THEREFROM ON A WEEKLY BASIS AND WITHIN TWELVE HOURS AFTER EACH STORM EVENT AND DISPOSE OF SEDIMENTS IN AN UPLAND AREA SUCH THAT THEY DO NOT ENCUMBER OTHER DRAINAGE STRUCTURES AND PROTECTED AREAS.

9. CONTRACTOR SHALL BE FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT REGULATORY PROTECTED AREAS, WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND, OR DIRECT DEPOSIT.

10. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, CONTRACTOR SHALL REMOVE AND DISPOSE OF EROSION CONTROL MEASURES AND CLEAN SEDIMENT AND DEBRIS FROM ENTIRE DRAINAGE SYSTEMS LOCATED ON SITE.

11. APPROPRIATE MEANS SHALL BE USED TO CONTROL DUST DURING CONSTRUCTION.

12. A STABILIZED CONSTRUCTION ENTRANCE SHALL BE MAINTAINED TO PREVENT SOIL AND LOOSE DEBRIS FROM BEING TRACKED ONTO LOCAL ROADS. THE CONSTRUCTION ENTRANCE SHALL BE MAINTAINED UNTIL THE SITE IS PERMANENTLY STABILIZED.

13. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES SHALL BE IN CONFORMANCE WITH THE STATE OF CONNECTICUT GUIDELINES FOR EROSION AND SEDIMENT CONTROL, AS AMENDED.

14. TEMPORARY SILT FENCE EROSION CONTROL BARRIER SHALL BE MAINTAINED THROUGHOUT SITE CONSTRUCTION. STOCKPILE ON SITE 100 FT. OF SILT FENCE FOR EMERGENCY USE. TEMPORARY EROSION BARRIERS SHALL REMAIN IN PLACE UNTIL PERMANENT VEGETATIVE GROUND COVER IS ESTABLISHED.

15. ALL DISTURBED AREAS OUTSIDE THE LIMITS OF THE EQUIPMENT LEASE AREA SHALL BE PERMANENTLY ESTABLISHED WITH A VEGETATIVE GROUND COVER.

16. STILLING BASIN SHALL BE UTILIZED FOR ANY DE-WATERING DISCHARGE WHICH MAY OCCUR DURING CONSTRUCTION OPERATIONS.

17. PROPOSED CONSTRUCTION IMPACTS AND PERMANENT IMPROVEMENTS SHALL NOT SIGNIFICANTLY IMPACT STORM WATER RUNOFF PATTERNS, VOLUME OR PEAK FLOW RATES. THE FLAT GRADE OF THE EQUIPMENT COMPOUND AND STONE SURFACE WILL PROMOTE STORM WATER INFILTRATION.

18. CONTRACTOR SHALL INSTALL ALL EROSION AND SEDIMENTATION CONTROL MEASURES PRIOR TO ANY GRADING ACTIVITIES IN LOCATIONS SHOWN ON THESE DRAWINGS.

19. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.

20. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.

21. SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.

22. SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATION.

23. NO GREATER THAN 50,000 SQUARE FEET OF LAND SHALL BE EXPOSED AT ANY ONE TIME DURING DEVELOPMENT. WHEN LAND IS EXPOSED DURING DEVELOPMENT, THE EXPOSURE SHOULD BE KEPT TO THE SHORTEST PRACTICAL PERIOD OF TIME AND SHALL NOT EXCEED 10 DAYS. LAND SHOULD NOT BE LEFT EXPOSED DURING THE WINTER MONTHS.

24. ANY DISTURBED AREAS WHICH ARE TO BE LEFT TEMPORARILY, AND WHICH WILL BE REGRADED LATER DURING CONSTRUCTION SHALL BE MACHINE HAY MULCHED AND SEEDED WITH RYE GRASS TO PREVENT EROSION. HAY OR STRAW MULCH SHALL BE APPLIED TO ALL FRESHLY SEEDED AREAS AT A RATE OF 2 TONS PER ACRE. BALED SHALL BE UNSPOILED, AIR-DRIED, AND FREE FROM WEED, SEEDS, AND ANY COARSE MATERIAL.

STRUCTURAL NOTES & SPECIFICATIONS

STEEL

1. CONTRACTORS SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. THE ENGINEER SHALL BE NOTIFIED OF ANY CONDITIONS WHICH PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

2. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO LATEST EDITION OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".

3. STRUCTURAL AND MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A992 (FY=50 KSI), UNLESS OTHERWISE NOTED.

4. STEEL PIPE SHALL CONFORM TO ASTM A500, GRADE B, STEEL PIPE DIAMETERS NOTED ON THE DRAWINGS ARE NOMINAL.

5. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE MINIMUM OF TWO BOLTS, UNLESS NOTED OTHERWISE ON THE DRAWINGS. LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.

6. NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIAMETER GALVANIZED ASTM A 307 BOLTS UNLESS OTHERWISE NOTED.

7. ALL STEEL MATERIAL EXPOSED TO WEATHER SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIPPED GALVANIZED) COATINGS" ON IRON AND STEEL PRODUCTS.

8. ALL BOLTS ANCHORS AND MISCELLANEOUS HARDWARE EXPOSED TO WEATHER SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE."

9. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY UP ALL DAMAGED GALVANIZED STEEL WITH COLD ZINC "GALVANOX", "DRY GALV", "ZINC IT", OR APPROVED EQUIVALENT, IN ACCORDANCE WITH MANUFACTURERS GUIDELINES. TOUCH UP DAMAGED NON GALVANIZED STEEL WITH SAME PAINT APPLIED IN SHOP OR FIELD.

10. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D1.1. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION" 9TH EDITION. AT THE COMPLETION OF WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED. SEE NOTE 9.

11. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.

SITE NOTES

1. ALL DIMENSIONS, ELEVATIONS AND EXISTING CONDITIONS SHOWN ON THE DRAWINGS SHALL BE VERIFIED BY THE CONTRACTOR AND THE TESTING AGENCY PRIOR TO BEGINNING ANY MATERIAL ORDERING, FABRICATION OR CONSTRUCTION WORK ON THIS PROJECT. ANY DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER AND THE OWNERS ENGINEER. THE DISCREPANCIES MUST BE RESOLVED BEFORE THE CONTRACTOR IS TO PROCEED WITH THE WORK. THE CONTRACT DOCUMENTS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES. OBSERVATION VISITS TO THE SITE BY THE OWNER AND/OR THE ENGINEER SHALL NOT INCLUDE INSPECTION OF THE PROTECTIVE MEASURES OR THE CONSTRUCTION PROCEDURES.

2. DAMAGE BY THE CONTRACTOR TO UTILITIES OR PROPERTY OF OTHERS, INCLUDING EXISTING PAVEMENT AND OTHER SURFACES DISTURBED BY THE CONTRACTOR DURING CONSTRUCTION SHALL BE REPAIRED TO PRE-CONSTRUCTION CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CLIENT. FOR GRASSED AREAS, SEED AND MULCH SHALL BE ACCEPTABLE.

3. THE CONTRACTOR SHALL REWORK (DRY, SCARIFY, ETC.) ALL MATERIAL NOT SUITABLE FOR SUBGRADE IN ITS PRESENT STATE. IF THE MATERIAL, AFTER REWORKING, REMAINS UNSUITABLE THEN THE CONTRACTOR SHALL UNDERCUT THIS MATERIAL AND REPLACED WITH APPROVED MATERIAL AT HIS EXPENSE. ALL SUBGRADES SHALL BE PROOF ROLLED WITH A FULLY LOADED TANDEM AXLE DUMP TRUCK PRIOR TO PAVING. ANY SOFT MATERIAL SHALL BE REWORKED AND REPLACED.

4. THE CONTRACTOR IS REQUIRED TO MAINTAIN ALL DITCHES, PIPES, AND OTHER DRAINAGE STRUCTURES FREE FROM OBSTRUCTION UNTIL WORK IS ACCEPTABLE BY THE OWNER. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGES CAUSED BY FAILURE TO MAINTAIN DRAINAGE STRUCTURES IN OPERABLE CONDITION.

5. ALL DIMENSIONS SHALL BE VERIFIED WITH THE PLANS (LATEST REVISION) PRIOR TO COMMENCING CONSTRUCTION. NOTIFY THE OWNER IMMEDIATELY IF DISCREPANCIES ARE DISCOVERED. THE CONTRACTOR SHALL HAVE A SET OF APPROVED PLANS AVAILABLE AT THE SITE AT ALL TIMES WHEN WORK IS BEING PERFORMED. A DESIGNATED RESPONSIBLE EMPLOYEE SHALL BE AVAILABLE FOR CONTACT BY GOVERNING AGENCY INSPECTORS.

6. CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS FOR THIS PROJECT FROM ALL APPLICABLE GOVERNMENTAL AGENCIES (NOT SUPPLIED BY OWNER).

7. ANY PERMITS WHICH MUST BE OBTAINED SHALL BE THE CONTRACTORS RESPONSIBILITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ABIDING BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS (NOT SUPPLIED BY OWNER).

8. ALL WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES AND THE LATEST APPLICABLE CODES AND STANDARDS.

9. THE CONTRACTOR SHALL NOTIFY THE APPLICABLE JURISDICTIONAL (STATE, COUNTY, OR CITY) ENGINEER 24 HOURS PRIOR TO BEGINNING OF CONSTRUCTION.

10. CONTRACTOR RESPONSIBLE FOR CLOSING AND FILING ALL PERMITS ASSOCIATED WITH THE SITE.

11. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE EQUIPMENT AND TOWER AREAS.

12. ALL EXISTING AREAS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO MATCH PRECONSTRUCTION CONDITIONS.

13. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITIES COMMENCING.

CONCRETE NOTES

1. ALL CONCRETE CONSTRUCTION SHALL BE DONE IN ACCORD WITH AMERICAN CONCRETE INSTITUTE (ACI) CODES 301 & 318, LATEST REVISION.

2. TOWER FOUNDATION WORK SHALL BE IN ACCORDANCE WITH TOWER MANUFACTURERS DESIGNS AND SPECIFICATIONS.

3. ALL CONCRETE USED SHALL BE 4000 PSI (28 DAY COMP STRENGTH). THE CONCRETE MIX SHALL BE BASED ON USING THE FOLLOWING MATERIALS AND PARAMETERS:

PORTLAND CEMENT	ASTM C150, 71
AGGREGATE	ASTM C33, 1 INCH MAX
WATER	POTABLE
ADMIXTURE	NON-CHLORIDE
AIR	6%*
SLUMP	4 INCH

UNLESS NOTED OTHERWISE
*ALL CONCRETE EXPOSED TO FREEZING WEATHER SHALL CONTAIN ENTRAINED AIR PER ACI 211 TABLE 4.2.1 OF ACI 318-95.

4. ALL REINFORCING STEEL SHALL BE ASTM A615, GR 60 (DEFORMED) UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE ACI STANDARD UNO. REINFORCING BARS SHALL BE COLD BENT WHERE REQUIRED AND TIED (NOT WELDED).

5. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS.
CONCRETE CAST AGAINST EARTH = 3 IN.
CONCRETE EXPOSED TO EARTH OR WEATHER
#6 AND LARGER = 2 IN.
#5 AND SMALLER = 1 1/2 IN.
CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
SLAB AND WALL = 3/4 IN
BEAMS AND COLUMNS = 1 1/2 IN

6. A 3/4 IN. CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

7. CONCRETE SHALL BE PLACED IN A UNIFORM MANNER AND CONSOLIDATED IN PLACE.

8. CONCRETE FOOTINGS SHALL BE CAST AGAINST LEVEL, COMPACTED, NON-FROZEN BASE SOIL FREE OF STANDING WATER.

9. APPLY A QUALITY CONCRETE SEALER SUCH AS THOROSEAL TO EXPOSED CONCRETE IN ACCORDANCE WITH MANUFACTURERS APPLICATIONS DIRECTIONS.

HOMELAND TOWERS SITE NUMBER: CT-897

APT FILING NUMBER: CT-283-120

HOMELAND TOWERS
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DEVELOPMENT & MANAGEMENT DOCUMENTS

RIDGEFIELD LEDGES
LEDGES ROAD
RIDGEFIELD, CT 06877

DESIGN TYPE:
RAW LAND
DEVELOPMENT SITE

REVISIONS:
REV.0: 11/25/14: FOR REVIEW: SMC
REV.1:
REV.2:
REV.3:
REV.4:
REV.5:

NOTES & SPECIFICATIONS

APT FILING NUMBER: CT-283-120
APT DRAWING NUMBER: N-1
DRAWN BY: RCB
SCALE: AS SHOWN
CHECKED BY: SMC
DATE: 11/25/14

SHEET NUMBER:
N-1