HOMELAND TOWERS

Homeland Towers, LLC

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

May 27, 2015

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

Re: Docket No. 451 – Homeland Towers LLC ("Homeland") and New Cingular Wireless PCS, LLC ("AT&T") application for Certificate of Environmental Compatibility and Public Need for a Telecommunications Tower Facility in Cheshire, Connecticut

Dear Chairman Stein and Members of the Siting Council,

As the certificate holder, 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. 451.

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 January 8, 2015 ("Decision and Order"). Two full-sized sets of the construction drawings are also enclosed. The D&M Plan incorporates a 170' 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 155'. The Town of Cheshire will place two (2) omnidirectional antenna at an approx. 168' mounting elevation and (2) two omnidirectional antenna and two (2) microwave antennas at a mounting elevation of 170ft. The height at the top of any antennas shall not exceed 190' above ground level.

All of the above mentioned equipment is depicted on the drawings prepared by All Points Technology Corporation. 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 construction plans for the site clearing, drainage, and erosion and sedimentation control measures consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control as amended.

Required Notifications

In accordance with the provisions of RCSA Section 16-50j-77, AT&T 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 for review and approval. Thank you for your consideration of the enclosed.

Sincerely,

Vincent Xavier
vlx@homelandtowers.us

Enclosures

CC: Daniel laub, Esq., Cuddy and Feder LLP

Burton B. Cohen, Esq.

Michael A. Milone, Town of Cheshire Town Manager

Neil Dryfe, Chief of Police

Ms. Jennifer Arcesi

Gary Wassmer

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 copy to:

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Dated: May 29, 2015

Vincent Xavier

ATTACHMENT 1
Geotechnical Report

Geotechnical Engineering Report

Proposed Homeland Towers: CT005
Cheshire, Connecticut
March 18, 2014
Terracon Project No. J2145102

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

Prepared by:
Terracon Consultants, Inc.
Rocky Hill, Connecticut

March 18, 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: CT005
Cheshire, Connecticut
Terracon Project No. J2145102

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 March 3, 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.

Thiet K. Ta
Staff Engineer

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

/tkt/J2145102
Attachment

TABLE OF CONTENTS

GEOTECHNICAL ENGINEERING REPORT
PROPOSED HOMELAND TOWERS: CT005
CHESHIRE, CONNECTICUT

Terracon Project No. J2145102
March 18, 2014

1.0 INTRODUCTION

A geotechnical engineering report has been completed for the proposed 170-foot high steel monopole communications tower to be located north of the existing Water Pollution Control Plant at 1325 Cheshire Street in Cheshire, Connecticut. A single test boring was advanced to a depth of about 37 feet below existing ground surface close to the proposed tower center location. Three test probes were advanced within the proposed 75-foot by 75-foot leased compound area to a depth of about 10 feet. Two test probes were advanced outside the compound area, for underground telecommunications and electrical utilities, to a depth of about 5 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 170-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 the paved parking area to the north of the existing Water Pollution Control Plant.

2.1 Project Description

Our knowledge of the project is based on review of the drawing titled "*Site Plan*", dated December 12, 2012, 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 170-foot high steel monopole communications tower
Estimated loads	Tower: 20 kips Slabs: 150 pounds per square foot (psf)
Grading	Site will remain close to current grades; only minor site grading expected

2.2 Site Location and Description

Item	Description
Location	1325 Cheshire Street, Cheshire, Connecticut
Existing improvements	Existing fence with a gate approximately 60 feet south of the proposed area that encompasses various buildings for the Water Pollution Control Plant
Current ground cover	Grass
Existing topography	Relatively flat within the proposed compound, then sloping down gently towards the east.

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
Fill	10	Silty sand, trace gravel, occasional cobbles, brown	Very dense
Glaciofluvial Deposit	>37	Silty sand (SM) to poorly graded sand (SP), brown	Medium dense to dense

1. Approximately 3 to 5 inches of topsoil was encountered at the ground surface of the explorations.
2. P.I.D. readings of 223 and 176 parts per million (ppm) were measured in B-1 and P-4, respectively.

The *Surficial Materials Map of Connecticut, 1992*, identifies native soils in the vicinity of the site as a glaciofluvial deposit. The *Bedrock Geological Map of Connecticut, 1985*, indicates that bedrock at depth in the vicinity of the site consists of New Haven Arkose. However, 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 March 4, 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	1,091,550 [1]	9,642
10	7,985	24,665
20	19,610	81,195
30	41,250	256,230
40	96,439	752,210

1. Reading likely affected by site anomaly.

3.3 Groundwater

Groundwater was encountered at depths of approximately 11 to 17.5 feet below existing grade at the time of the exploration.

Boring Number	Depth to groundwater while drilling (feet)	Depth to groundwater after drilling (feet)
B-1	11	17.5

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

Existing fill was encountered within the proposed tower compound area to a depth of about 10 feet below the existing ground surface. The fill consists of silty sand trace gravel, and occasional cobbles.

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

Support of slabs on or above existing fill soils is discussed in this report. Even with the recommended construction testing services, there is an inherent risk for the owner that compressible fill or unsuitable material within or buried by the fill will not be discovered. This risk of unforeseen conditions cannot be eliminated without completely removing the existing fill, but can be reduced by performing additional testing and evaluation.

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.

4.2 Earthwork

Preparation of the site should include removal of topsoil 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 wrapped in geotextile separation fabric 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 existing fill may be selectively re-used as structural fill, provided it is free of organic and closely meets the gradation requirements in Note 2, below.
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 existing fill may be re-used as common fill, provided it is free of organics and can be adequately compacted.

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

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 glaciofluvial deposit or on compacted structural fill placed over the glaciofluvial deposit. Minus ¾-inch crushed stone wrapped in geotextile separation fabric may be used in place of structural fill. Alternatively, the proposed communications tower may be supported on a drilled shaft foundation extending into the glaciofluvial deposit. 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]	5,000 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 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.

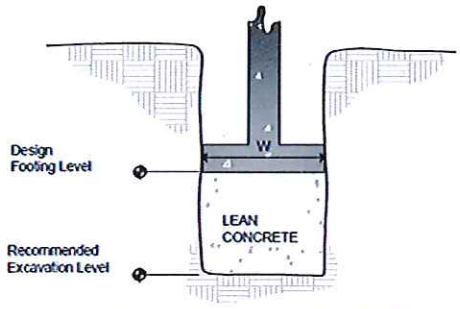
Uplift resistance for the tower foundation may be computed as the sum of the weight of the foundation element and the weight of the soil overlying the foundation. For this computation, we recommend using a soil unit weight of 100 pounds per cubic foot (pcf) for engineered fill overlying the footing placed 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

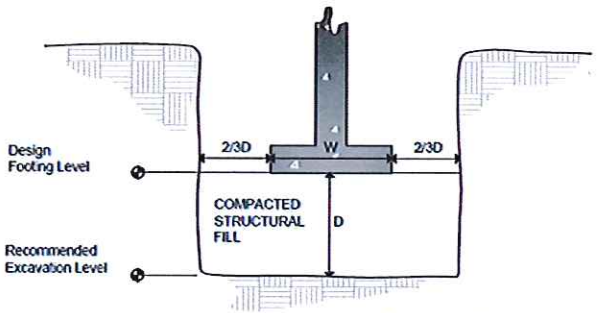
The base of foundation excavations should be free of water and loose soil prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing disturbance. Should the soils at bearing level become wet, disturbed or frozen, the affected soil should be

removed prior to placing concrete. The geotechnical engineer should be retained to observe and test the foundation bearing materials.

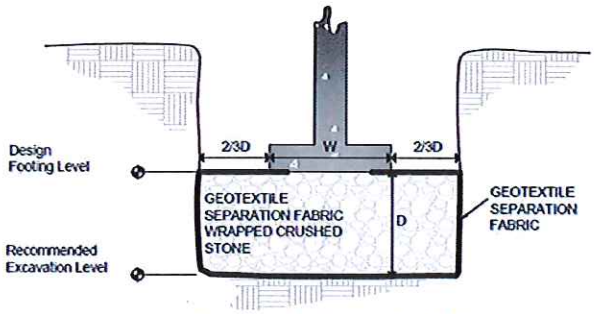
If unsuitable bearing soils are encountered in footing excavations, the excavation could be extended deeper to suitable soils and the footing could bear directly on these soils at the lower level. As an alternative, the footings could also bear on properly compacted structural fill. Minus ¾-inch crushed stone wrapped in geotextile separation fabric 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 Backfill

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 glaciofluvial deposit, 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]	
Glaciofluvial Deposit (>20 feet)	8 ksf
Ultimate Side Friction [2]	
Fill (3.5 to 10 feet)	2 ksf
Glaciofluvial Deposit (>10 feet)	3 ksf
Coefficient Lateral Subgrade Reaction [3]	
Fill (0 to 10 feet)	60 (z/D) kcf
Glaciofluvial Deposit (>10 feet)	80 (z/D) kcf
Angle of Internal Friction	
Fill (0 to 10 feet)	34degrees
Glaciofluvial Deposit (>10 feet)	34 degrees
Estimated In-situ Soil Unit Weight	
Fill (0 to 10 feet)	125 pcf
Glaciofluvial Deposit (>10 feet)	125 pcf
Approximate Groundwater Depth (3/4/2014)	11 feet
Concrete minimum 28-day unconfined compressive strength [4]	4,000 psi
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 20 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 37 feet. The contractor should take these aspects into account in his proposed drilling method(s).

A section of temporary casing may be required to reduce the likelihood of caving of the side walls of the shaft hole. The groundwater table was encountered at a depth of approximately 11 feet below existing ground surface in the boring; a bentonite slurry or other suitable drilling fluid may be required to support the side walls. Concrete should be placed by tremie methods.

4.3.2 Equipment Cabinet Foundations

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

4.3.2.1 Slab-on-Grade Design Recommendations

Description	Value
Slab support (compacted structural fill or minus ¾-inch crushed stone)	12-inch thick layer
Net allowable bearing pressure [1]	1,500 psf
Modulus of subgrade reaction	200 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 to ¾ of total settlement
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-on-Grade 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 roller prior to final grading and placement of structural fill. Minus ¾-inch crushed stone wrapped in geotextile separation fabric 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]	D
Maximum considered earthquake ground motions (5 percent damping)	0.063g (1.0 second spectral response acceleration)
	0.225g (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 37 feet. However, we expect soil as dense as that encountered above a depth of 37 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

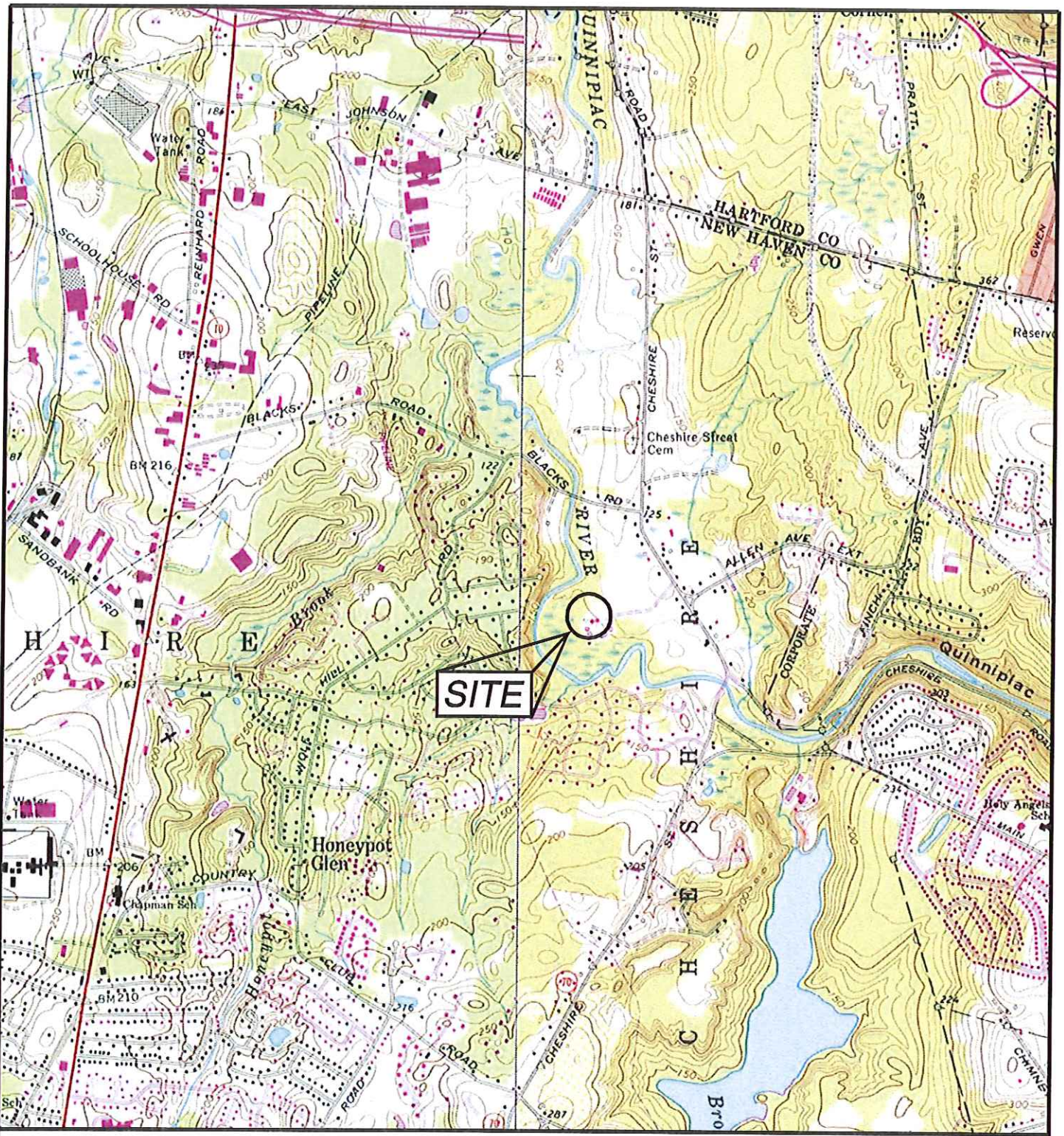
this report. This report does not reflect variations that may occur between the explorations, across the site, or due to the modifying effects of weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified, so that further evaluation and supplemental recommendations can be provided.

Resistivity testing may be influenced by the presence of boulders, chain-link fences, existing utilities, 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:	TKT
Drawn By:	TKT
Checked By:	RWK
Approved By:	RWM

Project No.	J2145102
Quadrangle:	MERIDEN, CT - 1968 SOUTHINGTON, CT - 1993
File No.	J2145102
Date:	March 2014

Terracon
Consulting Engineers and Scientists
201 Hammer Mill Road Rocky Hill, CT 06067
PH. (860)721 1900 FAX (860)721 1939

SITE LOCATION MAP

PROPOSED HOMELAND TOWERS: CT005

1325 CHESHIRE STREET
CHESHIRE, CONNECTICUT

EXHIBIT
A-1

projects\2014\J2145102\working files\diagrams-drawings-figures\J2145102 cheshire apt tower.dwg

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-283-250, SHEET No. LE-2, DATED: DECEMBER 12, 2012.
2. THE TEST BORING B-1 AND TEST PROBES P-1 THROUGH P-5 WERE ADVANCED ON MARCH 4, 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 MARCH 4, 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:	TKT
Drawn By:	TKT
Checked By:	RWM
Approved By:	RWM
Project No.	J2145102
Scale:	1" = 20'
File No.	J2145102
Date:	March 2014

Terracon
Consulting Engineers and Scientists
201 Hammer Mill Road Rocky Hill, CT 06067
PH. (860)721 1900 FAX (860)721 1939

EXPLORATION LOCATION DIAGRAM

PROPOSED HOMELAND TOWERS: CT005
1325 CHESHIRE STREET
CHESHIRE, CONNECTICUT

EXHIBIT A-2

n:\projects\2014\2145102\working files\diagrams-drawings-figures\2145102 cheshire apt tower.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. Ground surface elevations were not provided prior to the preparation of this report.

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, and two test probes (P-4 and P-5) outside the compound for underground electrical and telecommunication conduits on March 4, 2013 using a track-mounted rotary 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 37 feet and terminated without refusal in the glaciofluvial deposit.

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 through P-5 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. P-1, P-2, and P-3 terminated at a depth of 10 feet and P-4 and P-5 terminated at a depth of 5 feet in the glaciofluvial deposit. 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: CT005

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

SITE: 1325 Cheshire Street
Cheshire, Connecticut

LOCATION See Exhibit A-2

DEPTH	GRAPHIC LOG		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS
0.4		**TOPSOIL**					
		FILL - SILTY SAND, trace gravel, occasional cobbles, brown, very dense			X	14	13-28-30-52 N=58
					X	6	38-66-32-42 N=98
			5		X	52	17-26-50-52 N=76
					X	0	7-54-35-25 N=89
10.0							
		SILTY SAND (SM) to POORLY GRADED SAND (SP), brown, medium dense to dense, **(GLACIOFLUVIAL DEPOSIT)**	10	▽	X	18	11-14-15-15 N=29
			15	▽	X	18	4-7-10-7 N=17
			20		X	16	7-11-13-17 N=24
			25		X	20	7-10-14-18 N=24
			30		X	20	11-13-21-42 N=34
			35		X	16	12-10-12-19 N=22
37.0		***Boring Terminated at 37 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:
Note: 1 to 12 feet composite sample was observed to have a P.I.D. of 223 ppm.

WATER LEVEL OBSERVATIONS
▽ *While Sampling*
▽ *After Drilling*

Terracon
201 Hammer Mill Road
Rocky Hill, Connecticut

Boring Started: 3/4/2014 | Boring Completed: 3/4/2014
Drill Rig: Mobile B-53 | Driller: O. Cone
Project No.: J2145102 | Exhibit: A-4

PROBE LOG NO. P-1

PROJECT: Proposed Homeland Towers: CT005

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

SITE: 1325 Cheshire Street
Cheshire, Connecticut

GRAPHIC LOG	LOCATION See Exhibit A-2 / DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS
	0.3 **TOPSOIL** **FILL - SILTY SAND**, trace gravel, occasional cobbles, brown	5				
	10.0 ***Probe Terminated at 10 Feet***	10				

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:
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: 3/4/2014 | Probe Completed: 3/4/2014
Drill Rig: Mobile B-53 | Driller: O. Cone
Project No.: J2145102 | Exhibit: A-5

PROBE LOG NO. P-2

PROJECT: Proposed Homeland Towers: CT005

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

SITE: 1325 Cheshire Street
Cheshire, Connecticut

GRAPHIC LOG	LOCATION See Exhibit A-2 / DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS
	0.4 **TOPSOIL**					
	FILL - SILTY SAND, trace gravel, occasional cobbles, brown	5				
	10.0	10				
	Probe Terminated at 10 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:
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: 3/4/2014	Probe Completed: 3/4/2014
Drill Rig: Mobile B-53	Driller: O. Cone
Project No.: J2145102	Exhibit: A-6

PROBE LOG NO. P-3

PROJECT: Proposed Homeland Towers: CT005

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

SITE: 1325 Cheshire Street
Cheshire, Connecticut

GRAPHIC LOG	LOCATION See Exhibit A-2 / DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS
	0.3 **TOPSOIL** **FILL - SILTY SAND**, trace gravel, occasional cobbles, brown	5				
	10.0 ***Probe Terminated at 10 Feet***	10				

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:
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: 3/4/2014 | Probe Completed: 3/4/2014
Drill Rig: Mobile B-53 | Driller: O. Cone
Project No.: J2145102 | Exhibit: A-7

PROBE LOG NO. P-4

PROJECT: Proposed Homeland Towers: CT005

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

SITE: 1325 Cheshire Street
Cheshire, Connecticut

GRAPHIC LOG	LOCATION See Exhibit A-2 / DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS
	0.3 **TOPSOIL**					
	FILL - SILTY SAND, trace gravel, occasional cobbles, brown					
	5.0	5				
	Probe Terminated at 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:
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:
Note: 1 to 5 feet composite sample was observed to have a P.I.D. of 176 ppm.

WATER LEVEL OBSERVATIONS
No free water observed

Terracon
201 Hammer Mill Road
Rocky Hill, Connecticut

Probe Started: 3/4/2014	Probe Completed: 3/4/2014
Drill Rig: Mobile B-53	Driller: O. Cone
Project No.: J2145102	Exhibit: A-8

PROBE LOG NO. P-5

PROJECT: Proposed Homeland Towers: CT005

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

SITE: 1325 Cheshire Street
Cheshire, Connecticut

GRAPHIC LOG	LOCATION See Exhibit A-2 DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS
	0.3 **TOPSOIL** **FILL - SILTY SAND**, trace gravel, occasional cobbles, brown 5.0					
	Probe Terminated at 5 Feet	5				

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:
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: 3/4/2014	Probe Completed: 3/4/2014
Drill Rig: Mobile B-53	Driller: O. Cone
Project No.: J2145102	Exhibit: A-9

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

Exhibit C-1

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	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	< 0.75	OL	Organic clay [K,L,M,N]
			Liquid limit - not dried			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	< 0.75	OH	Organic clay [K,L,M,P]
			Liquid limit - not dried			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.

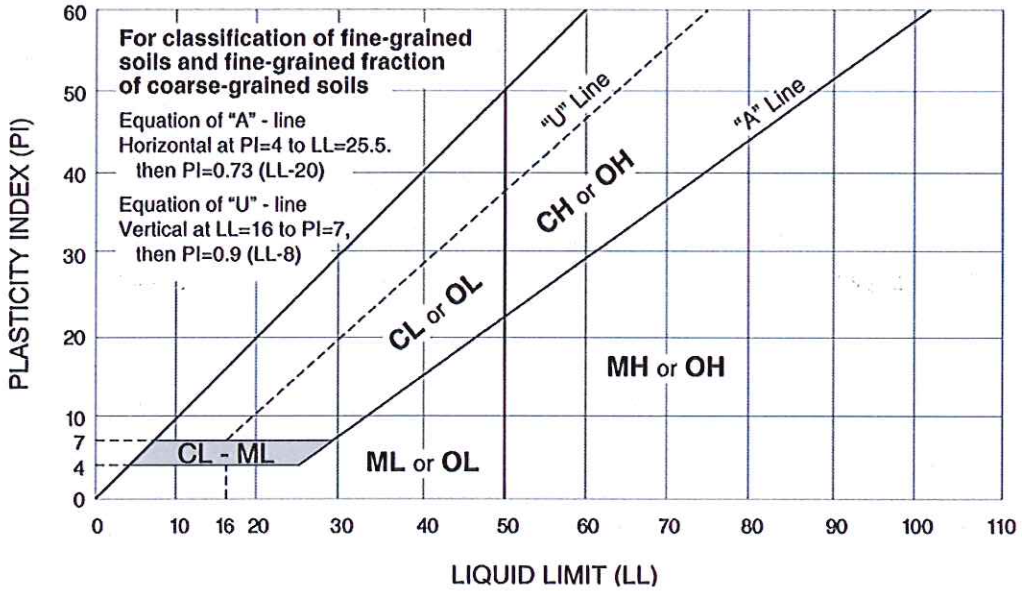
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[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

Sabre Industries™
Towers and Poles

Structural Design Report

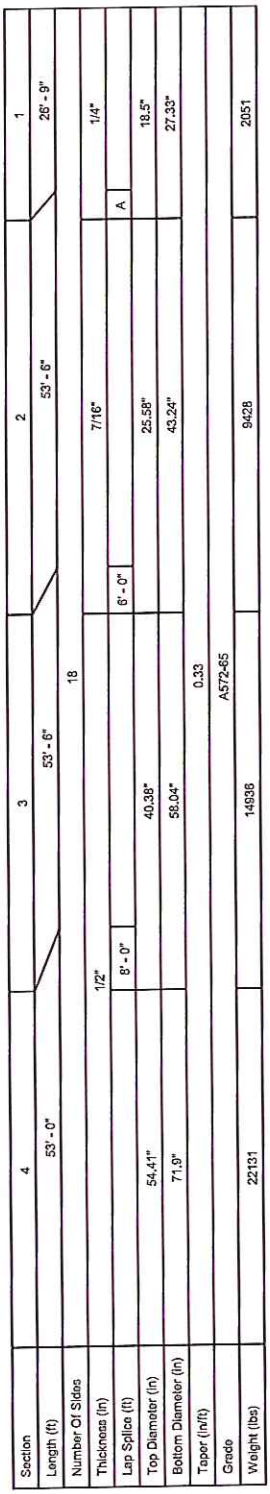
170' Monopole
Site: Cheshire, CT
Site Number: CT005

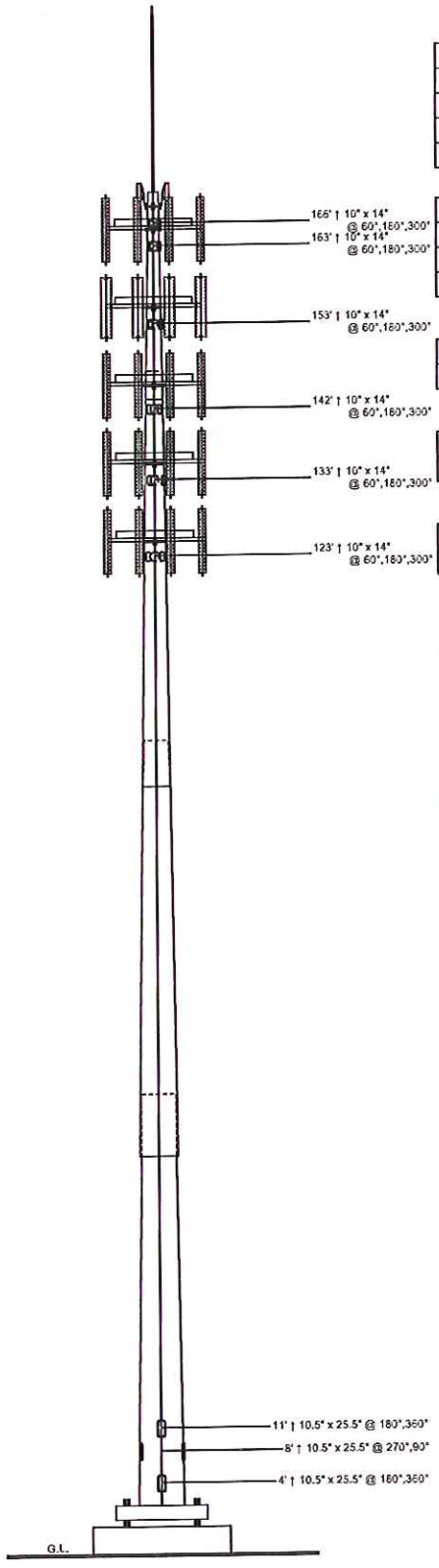
Prepared for: INSITE TOWERS LLC
by: Sabre Towers & Poles ™

Job Number: 119563
Revision B

April 20, 2015

4/20/15





Load Case Reactions - ANSI/TIA-222-G

Description	Axial (kips)	Shear (kips)	Moment (ft-k)	Deflection (ft)	Sway (deg)
3s Gusted Wind	84.7	79.6	10483	14	9.57
3s Gusted Wind 0.9 Dead	63.9	79.6	10358	13.8	9.4
3s Gusted Wind&Ice	130.5	17.8	2344	3.2	2.16
Service Loads	69.4	14.6	1909	2.6	1.74

Load Case Reactions - EIA/TIA-222-F

Description	Axial (kips)	Shear (kips)	Moment (ft-k)	Deflection (ft)	Sway (deg)
Max Wind	69.2	59.5	7953	10.8	7.39
Max Wind Load x.75	80.3	49.3	6728	9.2	6.36
Everyday Operating	68.5	20.6	2760	3.7	2.57

Base Plate Dimensions

Shape	Width	Thickness	Bolt Circle	Bolt Qty	Bolt Diameter
Square	81"	3.25"	79"	28	2.25"

Anchor Bolt Dimensions

Length	Diameter	Hole Diameter	Weight	Type	Finish
84"	2.25"	2.625"	3797	A615-75	Galv-18"

Material List

Display	Value
A	3' - 9"

Notes

1) Antenna Feed Lines Run Inside Pole
2) All dimensions are above ground level, unless otherwise specified.
3) Weights shown are estimates. Final weights may vary.
4) The Monopole was designed for a basic wind speed of 105 mph with 0" of radial ice, and 50 mph with 3/4" of radial ice, in accordance with ANSI/TIA-222-G, Structure Class III, Exposure Category C, Topographic Category 1.
5) The Monopole was designed for a basic wind speed of 85 mph with 1/2" radial ice with reduction, in accordance with EIA/TIA-222-F.
6) Full Height Step Bolts

Sabre Industries
Towers and Poles

Sabre Communications Corporation
7101 Southbridge Drive
P.O. Box 658
Sioux City, IA 51102-0658
Phone: (712) 258-6690
Fax: (712) 279-0814

Job:	119563B
Customer:	INSITE TOWERS LLC
Site Name:	Cheshire, CT CT005
Description:	170' Monopole
Date:	4/20/2015 By: TTW

Designed Appurtenance Loading

Elev	Description	Tx-Line
181.25	(2) DS1F03F36D-Ns	(4) 7/8"
173.1	(2) DS4C00F36D-Ds	(4) 7/8"
170	Flush Mount (Monopole Only)	
170	(2) Dish Mount (Monopole Only) - Pipe Mount (up to 6' Dish)	
170	Flush Mount (Monopole Only)	
170	(2) 2' H.P. Dishes	(2) 7/8"
165	L.P. Platform (Monopole Only) - 12' w/ Handrail	
165	(3) DC6-48-60-18-8Fs	
165	(4) GPS-TMG-HR-26Ns	(4) 1/2"
165	(6) FD9R6004s	
165	(12) 8' x 1' x 7in Panels	(18) 1 5/8"
165	(12) RRUS 11s	
155	L.P. Platform (Monopole Only) - 12' w/ Handrail	
155	(6) RRU 22 XX20s	
155	(2) 24" x 24" x 10"s	
155	(9) RRUS 11s	(3) 3/8"
155	(6) RRUS A2 Modules	(2) 1/2"

Elev	Description	Tx-Line
155	(2) DC12-48-60-RMs	
155	(12) HPA-65R-BUU-H8-Ks	(8) 3/4"
155	(6) RRUS 12s	
155	(3) FC12-PC6-10Es	
145	L.P. Platform (Monopole Only) - 12' w/ Handrail	
145	(1) DC6-48-60-18-8F	
145	(12) 9442 RRHXs	(4) 1/2"
145	(12) 8' x 1' x 7in Panels	(12) 1 5/8"
145	(12) E15S09P80s	
135	L.P. Platform (Monopole Only) - 12' w/ Handrail	
135	(1) DC6-48-60-18-8F	
135	(12) 9442 RRHXs	(4) 1/2"
135	(12) 8' x 1' x 7in Panels	(12) 1 5/8"
125	L.P. Platform (Monopole Only) - 12' w/ Handrail	
125	(1) DC6-48-60-18-8F	
125	(12) 9442 RRHXs	(4) 1/2"
125	(12) 8' x 1' x 7in Panels	(12) 1 5/8"

Sabre Industries
Towers and Poles

Sabre Communications Corporation
7101 Southbridge Drive
P.O. Box 658
Sioux City, IA 51102-0658
Phone: (712) 258-6690
Fax: (712) 279-0814

Job:	119563B
Customer:	INSITE TOWERS LLC
Site Name:	Cheshire, CT CT005
Description:	170' Monopole
Date:	4/20/2015 By: TTW

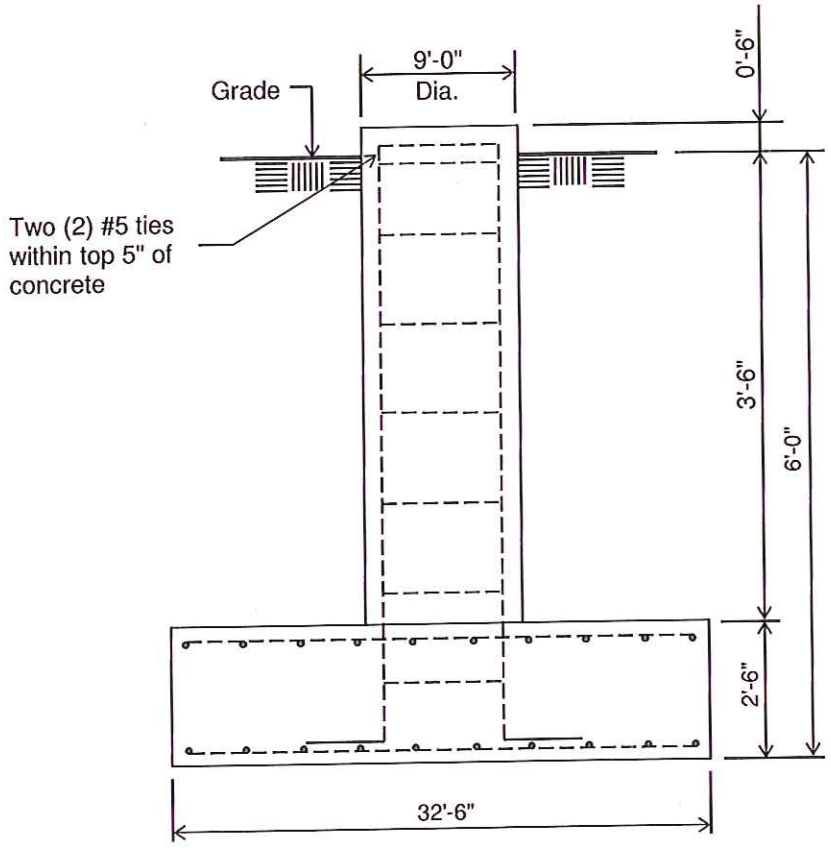
Sabre Industries™
Towers and Poles

No.: 119563

Date: 4/20/15
By: TTW
Revision B

Customer: INSITE TOWERS LLC
Site: Cheshire, CT CT005

170' Monopole at
105 mph Wind with no ice and 50 mph Wind with 0.75 in. Ice per ANSI/TIA-222-G
and 85 mph Wind + 0.5 in. Ice per ANSI/TIA/EIA-222-F-1996.
Antenna Loading per Page 1



ELEVATION VIEW
(107.23 Cu. Yds. each)
(1 REQUIRED; NOT TO SCALE)

Notes:

1). Concrete shall have a minimum 28-day compressive strength of 4000 PSI, in accordance with ACI 318-05

2). Rebar to conform to ASTM specification A615 Grade 60.

3). All rebar to have a minimum of 3" concrete cover.

4). All exposed concrete corners to be chamfered 3/4".

5). The foundation design is based on the geotechnical report by Terracon, Project No. J2145102, dated March 18, 2014.

6). See the geotechnical report for compaction requirements, if specified.

7). The foundation is based on the following factored loads:
Moment (kip-ft) = 10483
Axial (kips) = 84.7
Shear (kips) = 79.6

Rebar Schedule per Pad and Pier	
Pier	(52) #9 vertical rebar w/hooks at bottom w/#5 ties, two within top 5" of top of pier then 12" C/C
Pad	(56) #9 horizontal rebar evenly spaced each way top and bottom (224 Total)

8). This is a design drawing only. Please see final construction drawings for al installation details.

7101 Southbridge Drive - P.O. Box 658 - Sioux City, IA 51102-0658 - Phone 712.258.6690 - Fax 712.279.0814

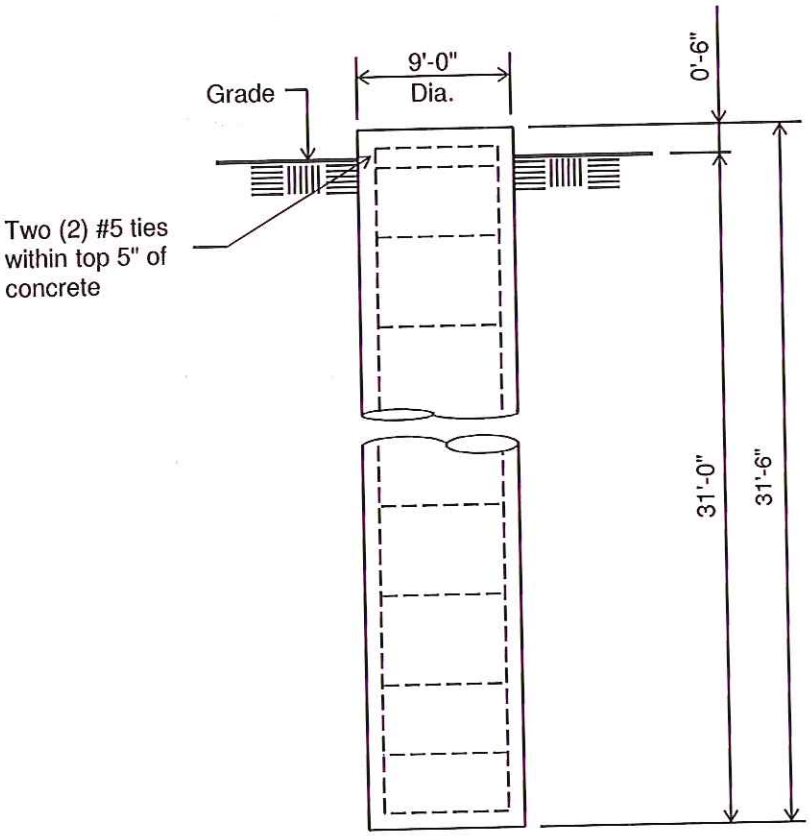
Sabre Industries™
Towers and Poles

No.: 119563

Date: 4/20/15
By: TTW
Revision B

Customer: INSITE TOWERS LLC
Site: Cheshire, CT CT005

170' Monopole at
105 mph Wind with no ice and 50 mph Wind with 0.75 in. Ice per ANSI/TIA-222-G
and 85 mph Wind + 0.5 in. Ice per ANSI/TIA/EIA-222-F-1996.
Antenna Loading per Page 1



ELEVATION VIEW
(74.22 Cu. Yds. each)
(1 REQUIRED; NOT TO SCALE)

Notes:

1). Concrete shall have a minimum 28-day compressive strength of 4000 PSI, in accordance with ACI 318-05.

2). Rebars to conform to ASTM specification A615 Grade 60.

3). All rebar to have a minimum of 3" concrete cover.

4). All exposed concrete corners to be chamfered 3/4".

5). The foundation design is based on the geotechnical report by Terracon, Project No. J2145102, dated March 18, 2014.

6). See the geotechnical report for drilled pier installation requirements, if specified.

7). The foundation is based on the following factored loads:
Moment (kip-ft) = 10483
Axial (kips) = 84.7
Shear (kips) = 79.6

Rebar Schedule per Pier	
Pier	(40) #11 vertical rebar w/#5 ties, two within top 5" of pier then 6" C/C

8). This is a design drawing only. Please see final construction drawings for all installation details.

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TOP	DIAMETER	18.50 in.	[18.79 in. Point-Point]
BOTTOM	DIAMETER	71.90 in.	[73.00 in. Point-Point]
POLE	HEIGHT	169.00 ft.	18 SIDED FLAT ORIENTATION
BASE	HEIGHT	1.00 ft.	ABOVE GROUND
E-MODULUS		29000 ksi	[12000 ksi SHEAR MODULUS]

APPURTENANCES

ATTACH POINTS:

NO.	X,ft	Qty	Description	Status
1	167.00	1	Tri-Collar Mount 12"-18" Pole Di	Future Appurt
2	167.00	1	Tri-Collar Mount 12"-18" Pole Di	Future Appurt
3	167.00	2	Pipe Mount (up to 6' Dish)	Future Appurt
4	164.00	1	12' LP Platform with Handrail (R	Future Appurt
5	163.90	1	User Defined Loading	Future Appurt
6	154.00	1	12' LP Platform with Handrail (R	Future Appurt
7	153.90	1	User Defined Loading	Future Appurt
8	153.90	1	User Defined Loading	Future Appurt
9	144.00	1	12' LP Platform with Handrail (R	Future Appurt
10	143.90	1	User Defined Loading	Future Appurt
11	134.00	1	12' LP Platform with Handrail (R	Future Appurt
12	124.00	1	12' LP Platform with Handrail (R	Future Appurt

Pole Section	Bottom X,ft.	Thick in.	Connect Type	LAP in.	Taper in/ft	Length ft.	Weight lbs	Steel Spec	Pole Finish
1	26.75	.25000	SLIP-JNT	45.	.3300	26.75	1636	A572-65	GALVANIZE
2	76.50	.43750	SLIP-JNT	72.	.3300	53.50	8589	A572-65	GALVANIZE
3	124.00	.50000	SLIP-JNT	96.	.3300	53.50	14074	A572-65	GALVANIZE
4	169.00	.50000	C-WELD		.3300	53.00	17930	A572-65	GALVANIZE

SECTION PROPERTIES

X,ft	UP,ft	D,in	T,in	Area in^2	Iz in^4	IxIy in^4	SxSy in^3	w/t	d/t	F_y(ksi)	
169.00	.00	18.50	.2500	14.48	1220	610	64.9	11.28	74.0	65.00	TOP
167.00	2.00	19.16	.2500	15.00	1356	678	69.7	11.75	76.6	65.00	P01
167.00	2.00	19.16	.2500	15.00	1356	678	69.7	11.75	76.6	65.00	P02
167.00	2.00	19.16	.2500	15.00	1356	678	69.7	11.75	76.6	65.00	P03
164.00	5.00	20.15	.2500	15.79	1580	790	77.2	12.45	80.6	65.00	P04
163.90	5.10	20.18	.2500	15.82	1588	794	77.5	12.47	80.7	65.00	P05
158.90	10.10	21.83	.2500	17.13	2016	1008	90.9	13.64	87.3	65.00	
154.00	15.00	23.45	.2500	18.41	2502	1251	105.1	14.78	93.8	65.00	P06
153.90	15.10	23.48	.2500	18.43	2514	1257	105.4	14.80	93.9	65.00	P07
153.90	15.10	23.48	.2500	18.43	2514	1257	105.4	14.80	93.9	65.00	P08
148.90	20.10	25.13	.2500	19.74	3088	1544	121.0	15.96	100.5	65.00	
146.00	23.00	26.09	.2500	20.50	3458	1729	130.5	16.64	104.4	65.00	Slip-B01
144.00	25.00	26.25	.4375	35.84	6034	3017	226.4	8.82	60.0	65.00	P09
143.90	25.10	26.28	.4375	35.89	6058	3029	227.0	8.83	60.1	65.00	P10
142.25	26.75	26.83	.4375	36.64	6448	3224	236.7	9.05	61.3	65.00	Slip-T02
137.25	31.75	28.48	.4375	38.94	7736	3868	267.5	9.71	65.1	65.00	
134.00	35.00	29.55	.4375	40.42	8656	4328	288.5	10.15	67.5	65.00	P11
129.00	40.00	31.20	.4375	42.72	10212	5106	322.3	10.81	71.3	65.00	
124.00	45.00	32.85	.4375	45.01	11946	5973	358.1	11.48	75.1	65.00	P12
119.00	50.00	34.50	.4375	47.30	13864	6932	395.7	12.14	78.9	65.00	
114.00	55.00	36.15	.4375	49.59	15978	7989	435.3	12.81	82.6	65.00	
109.00	60.00	37.80	.4375	51.88	18296	9148	476.7	13.47	86.4	65.00	
104.00	65.00	39.45	.4375	54.17	20828	10414	519.9	14.14	90.2	65.00	
99.00	70.00	41.10	.4375	56.46	23584	11792	565.1	14.80	93.9	65.00	
98.50	70.50	41.27	.4375	56.69	23872	11936	569.7	14.87	94.3	65.00	Slip-B02
93.50	75.50	42.04	.5000	65.92	28738	14369	673.2	13.06	84.1	65.00	
92.50	76.50	42.37	.5000	66.45	29426	14713	683.9	13.18	84.7	65.00	Slip-T03
87.50	81.50	44.02	.5000	69.06	33044	16522	739.3	13.76	88.0	65.00	
82.50	86.50	45.67	.5000	71.68	36948	18474	796.7	14.34	91.3	65.00	
77.50	91.50	47.32	.5000	74.30	41146	20573	856.3	14.92	94.6	65.00	
72.50	96.50	48.97	.5000	76.92	45652	22826	918.1	15.51	97.9	65.00	
67.50	101.50	50.62	.5000	79.54	50472	25236	981.9	16.09	101.2	65.00	
62.50	106.50	52.27	.5000	82.16	55624	27812	1048.0	16.67	104.5	65.00	
57.50	111.50	53.92	.5000	84.77	61112	30556	1116.2	17.25	107.8	65.00	
53.00	116.00	55.41	.5000	87.13	66350	33175	1179.4	17.78	110.8	65.00	Slip-B03
48.00	121.00	56.06	.5000	88.16	68736	34368	1207.6	18.00	112.1	65.00	
45.00	124.00	57.05	.5000	89.73	72478	36239	1251.2	18.35	114.1	65.00	Slip-T04
40.00	129.00	58.70	.5000	92.35	79008	39504	1325.6	18.94	117.4	65.00	
35.00	134.00	60.35	.5000	94.97	85920	42960	1402.2	19.52	120.7	65.00	
30.00	139.00	62.00	.5000	97.59	93224	46612	1480.9	20.10	124.0	65.00	
25.00	144.00	63.65	.5000	100.21	100930	50465	1561.7	20.68	127.3	65.00	

20.00	149.00	65.30	.5000	102.83	109052	54526	1644.8	21.26	130.6	65.00	
15.00	154.00	66.95	.5000	105.44	117596	58798	1729.9	21.85	133.9	65.00	
10.00	159.00	68.60	.5000	108.06	126574	63287	1817.2	22.43	137.2	65.00	
5.00	164.00	70.25	.5000	110.68	136002	68001	1906.7	23.01	140.5	65.00	
.00	169.00	71.90	.5000	113.30	145882	72941	1998.3	23.59	143.8	65.00	BASE

SABRE COMMUNICATIONS CORP
2101 Murray Street
Sioux City, IA 51101

JOB: 00-11956
INSITE TOWERS LLC
Cheshire, CT

20-Apr-15 16:29
Ph 712.258.6690
Fx 712.258.8250

CASE - 1: 3s Gusted Wind — **ANSI-TIA-222-G**

WIND OLF		1.60	GUSTED WIND (3sec)	105.0 mph	169.0 kph
VERTICAL OLF		1.20	EXP-CAT/STRUC_CLASS	C-II	
DESIGN ICE		.00 in	EXP-POWER COEFF.	.2105	
GUST FACTOR	(Gh)	1.10	REFERENCE HEIGHT	900.0 ft	
FORCE COEFF	(Cf)	.65	PRESSURE @ 32.7 ft	47.2 psf	2258.1 Pa
IMPORTANCE FAC	(I)	1.00	BASE ABOVE Grd	1.0	
DIRECTION FAC	(Kd)	.95	CREST HEIGHT	.0 ft	
TOPOGRAPHIC CAT		1			

APPURTENANCE LOADS

#	Qty	Description	Center Line Elev-Ft	WEIGHT each Lbs	AREA each Ft^2	Tx-CABLE Type	Qty	#/Ft	WIND Psf	FORCES Tra-Y Kips	Ax-Z Kips	MOM. Lg-X Ft-K
_ 1	1	Tri-Collar Mount 12"-18" Pole Di	167.0	193	6.8				66.6	.45	-.2	-.2
	2	DS4C00F36D-D	172.1	13		7/8"	4	.54	67.0		-.5	
_ 2	1	Tri-Collar Mount 12"-18" Pole Di	167.0	193	16.3				66.6	1.08	-.2	-.4
	2	DS1F03F36D-N	180.3	71		7/8"	4	.54	67.7		-.6	
3	2	Pipe Mount (up to 6' Dish)	167.0	49	.1				66.6	.01	-.1	.0
	2	2' H.P. DISH	169.0	150	4.0	7/8"	2	.54	66.8	.53	-.6	-1.1
_ 4	1	12' LP Platform with Handrail (R	164.0	1491	152.0				66.5	10.11	-1.8	-15.2
	12	8' X 1' X 7IN PANEL	164.0	51		1 5/8"	18	1.04	66.4		-4.4	
	12	RRUS 11	164.0	55		None	1	.00	66.4		-.8	
	6	FD9R6004	164.0	10		None	1	.00	66.4		-.1	
5	1	User Defined Loading	163.9	5	.1				66.4	.01	.0	.0
	3	DC6-48-60-18-8F	164.0	20	1.3	None	1	.00	66.4	.25	-.1	.0
	4	GPS-TMG-HR-26N	164.0	0	.2	1/2"	4	.40	66.4	.05	-.3	
_ 6	1	12' LP Platform with Handrail (R	154.0	1491	141.3				65.6	9.27	-1.8	-13.9
	12	HPA-65R-BUU-H8-K	154.0	68		3/4"	8	.50	65.5		-1.7	
	2	DC12-48-60-RM	154.0	0		None	1	.00	65.5		.0	
	3	FC12-PC6-10E	154.0	25		None	1	.00	65.5		-.1	
7	1	User Defined Loading	153.9	5	.1				65.5	.01	.0	.0
	6	RRUS 12	154.0	58	3.7	None	1	.00	65.5	1.45	-.4	-.1
	2	24" X 24" X 10" DISTRIBU	154.0	50	5.6	None	1	.00	65.5	.73	-.1	-.1
	6	RRU 22 XX20	154.0	51	2.6	None	1	.00	65.5	1.01	-.4	-.1
8	1	User Defined Loading	153.9	5	.1				65.5	.01	.0	.0
	6	RRUS A2 MODULE	154.0	22	1.9	1/2"	2	.40	65.5	.73	-.3	-.1
	9	RRUS 11	154.0	55	2.9	7/16"	3	.27	65.5	1.73	-.7	-.2
_ 9	1	12' LP Platform with Handrail (R	144.0	1491	137.2				64.7	8.88	-1.8	-13.3
	12	8' X 1' X 7IN PANEL	144.0	51		1 5/8"	12	1.04	64.6		-2.9	
	12	E15S09P80	144.0	9		None	1	.00	64.6		-.1	
	1	DC6-48-60-18-8F	144.0	20		None	1	.00	64.6		.0	
10	1	User Defined Loading	143.9	5	.1				64.6	.01	.0	.0
	12	9442 RRHX	144.0	50	2.2	1/2"	4	.40	64.6	1.74	-1.0	-.2
_11	1	12' LP Platform with Handrail (R	134.0	1491	148.3				63.8	9.46	-1.8	-14.2
	12	8' X 1' X 7IN PANEL	134.0	51		1 5/8"	12	1.04	63.6		-2.7	
	12	9442 RRHX	134.0	50		1/2"	4	.40	63.6		-1.0	
	1	DC6-48-60-18-8F	134.0	20		None	1	.00	63.6		.0	
_12	1	12' LP Platform with Handrail (R	124.0	1491	148.3				62.8	9.31	-1.8	-14.0
	12	8' X 1' X 7IN PANEL	124.0	51		1 5/8"	12	1.04	62.6		-2.6	
	12	9442 RRHX	124.0	50		1/2"	4	.40	62.6		-1.0	
	1	DC6-48-60-18-8F	124.0	20		None	1	.00	62.6		.0	

RESULTS

X, ft	Kzt	WIND psf	ICE in	FORCES,kips ShearX	ShearY	AxiaZ	MOMENTS,ft-kips BendX	BendY	TorqZ	F'y ksi	Inter 4.8.2
169.00	1.00	43.41	.00	.0	.01	-.1	.0	.0	.0	82.55	.000
167.00	1.00	43.30	.00	.0	.65	-.7	-.3	.0	.0	82.55	.001
167.00	1.00	43.30	.00	.0	1.93	1.4	.7	.0	.0	82.55	.003
167.00	1.00	43.30	.00	.0	2.70	-2.1	-1.7	.0	.0	82.55	.006
164.00	1.00	43.14	.00	.0	13.97	-7.4	-25.0	.0	.0	82.55	.059
163.90	1.00	43.13	.00	.0	14.55	-8.0	-26.4	.0	.0	82.55	.062
158.90	1.00	42.85	.00	.0	14.97	-8.3	-99.2	.0	.0	82.55	.183
154.00	1.00	42.57	.00	.0	24.92	-10.6	-186.4	.0	.0	82.55	.296
153.90	1.00	42.57	.00	.0	28.23	-11.0	-189.3	.0	.0	82.55	.300
153.90	1.00	42.57	.00	.0	31.06	-11.9	-189.6	.0	.0	82.55	.301
148.90	1.00	42.27	.00	.0	31.41	-12.4	-344.8	.0	.0	82.55	.470
146.00	1.00	42.10	.00	.0	31.65	-12.8	-435.8	.0	.0	81.81	.554
144.00	1.00	41.98	.00	.0	41.27	-16.4	-512.5	.0	.0	82.55	.373
143.90	1.00	41.97	.00	.0	43.24	-17.4	-516.8	.0	.0	82.55	.375
142.25	1.00	41.87	.00	.0	43.62	-18.3	-588.1	.0	.0	82.55	.409
137.25	1.00	41.56	.00	.0	44.06	-19.3	-806.2	.0	.0	82.55	.494
134.00	1.00	41.35	.00	.0	54.62	-24.4	-963.3	.0	.0	82.55	.549
129.00	1.00	41.03	.00	.0	55.12	-25.5	-1236.7	.0	.0	82.55	.629
124.00	1.00	40.69	.00	.0	65.55	-31.0	-1526.7	.0	.0	82.55	.699

119.00	1.00	40.34	.00	.0	66.04	-32.3	-1854.2	.0	.0	82.55	.767
114.00	1.00	39.98	.00	.0	66.53	-33.8	-2184.2	-.1	.0	82.55	.821
109.00	1.00	39.61	.00	.0	67.04	-35.3	-2516.7	-.1	.0	82.55	.863
104.00	1.00	39.22	.00	.0	67.56	-36.9	-2851.7	-.1	.0	82.55	.896
99.00	1.00	38.82	.00	.0	67.84	-37.8	-3190.0	-.1	.0	82.55	.922
98.50	1.00	38.78	.00	.0	68.17	-39.0	-3223.3	-.1	.0	82.55	.924
93.50	1.00	38.36	.00	.0	68.53	-40.4	-3565.0	-.1	.0	82.55	.864
92.50	1.00	38.28	.00	.0	68.90	-41.9	-3633.3	-.1	.0	82.55	.867
87.50	1.00	37.84	.00	.0	69.49	-44.0	-3977.5	-.1	.0	82.55	.878
82.50	1.00	37.38	.00	.0	70.06	-45.9	-4325.0	-.1	.0	82.55	.886
77.50	1.00	36.89	.00	.0	70.63	-47.8	-4675.0	-.1	.0	82.55	.891
72.50	1.00	36.38	.00	.0	71.22	-49.8	-5028.3	-.1	.0	82.55	.894
67.50	1.00	35.85	.00	.0	71.81	-51.8	-5384.2	-.1	.0	82.46	.896
62.50	1.00	35.28	.00	.0	72.41	-53.8	-5743.3	-.1	.0	81.78	.903
57.50	1.00	34.68	.00	.0	73.00	-56.2	-6105.8	-.1	.0	81.09	.909
53.00	1.00	34.10	.00	.0	73.60	-59.0	-6434.2	-.1	.0	80.47	.914
48.00	1.00	33.41	.00	.0	74.09	-61.5	-6802.5	-.2	.0	80.20	.947
45.00	1.00	32.97	.00	.0	74.57	-64.0	-7024.2	-.2	.0	79.79	.949
40.00	1.00	32.18	.00	.0	75.14	-66.7	-7397.5	-.2	.0	79.11	.951
35.00	1.00	31.31	.00	.0	75.69	-69.0	-7773.3	-.2	.0	78.42	.953
30.00	1.00	30.34	.00	.0	76.24	-71.3	-8151.7	-.2	.0	77.74	.955
25.00	1.00	29.24	.00	.0	76.80	-73.6	-8533.3	-.2	.0	77.05	.957
20.00	1.00	27.95	.00	.0	77.38	-76.1	-8916.7	-.2	.0	76.37	.958
15.00	1.00	26.39	.00	.0	77.97	-78.5	-9300.0	-.2	.0	75.68	.959
10.00	1.00	26.07	.00	.0	78.57	-81.0	-9691.7	-.2	.0	75.00	.960
5.00	1.00	26.07	.00	.0	79.19	-83.6	-10083.3	-.2	.0	74.31	.961
.00	1.00	26.07	.00	.0	79.58	-84.7	10483.3	.2	.0	73.63	.962

DISPLACEMENTS

ELEV	DEFLECTION feet				ROTATION, degrees			
X, ft	X	Y	Z	XY-Result	X	Y	Z	XY-Result
169.00	.00	14.05	-.83	14.05< 8.31%>	-9.57	.00	.00	9.57

SABRE COMMUNICATIONS CORP
2101 Murray Street
Sioux City, IA 51101

JOB: 00-11956
INSITE TOWERS LLC
Cheshire, CT

20-Apr-15 16:29
Ph 712.258.6690
Fx 712.258.8250

CASE - 2: 3s Gusted Wind 0.9 Dead — ANSI-TIA-222-G

WIND OLF		1.60	GUSTED WIND (3sec)	105.0 mph	169.0 kph
VERTICAL OLF		.90	EXP-CAT/STRUC_CLASS	C-II	
DESIGN ICE		.00 in	EXP-POWER COEFF.	.2105	
GUST FACTOR	(Gh)	1.10	REFERENCE HEIGHT	900.0 ft	
FORCE COEFF	(Cf)	.65	PRESSURE @ 32.7 ft	47.2 psf	2258.1 Pa
IMPORTANCE FAC	(I)	1.00	BASE ABOVE Grd	1.0	
DIRECTION FAC	(Kd)	.95	CREST HEIGHT	.0 ft	
TOPOGRAPHIC CAT		1			

APPURTENANCE LOADS

#	Qty	Description	Center Line Elev-Ft	WEIGHT each Lbs	AREA each Ft^2	Tx-CABLE Type	Qty	#/Ft	WIND Psf	FORCES Tra-Y Kips	Ax-Z Kips	MOM. Lg-X Ft-K
_	1	1 Tri-Collar Mount 12"-18" Pole Di	167.0	193	6.8				66.6	.45	-.2	-.2
		2 DS4C00F36D-D	172.1	13		7/8"	4	.54	67.0		-.3	
_	2	1 Tri-Collar Mount 12"-18" Pole Di	167.0	193	16.3				66.6	1.08	-.2	-.4
		2 DS1F03F36D-N	180.3	71		7/8"	4	.54	67.7		-.5	
	3	2 Pipe Mount (up to 6' Dish)	167.0	49	.1				66.6	.01	-.1	.0
		2 2' H.P. DISH	169.0	150	4.0	7/8"	2	.54	66.8	.53	-.4	-1.1
_	4	1 12' LP Platform with Handrail (R	164.0	1491	152.0				66.5	10.11	-1.3	-15.2
		12 8' X 1' X 7IN PANEL	164.0	51		1 5/8"	18	1.04	66.4		-3.3	
		12 RRUS 11	164.0	55		None	1	.00	66.4		-.6	
		6 FD9R6004	164.0	10		None	1	.00	66.4		-.1	
	5	1 User Defined Loading	163.9	5	.1				66.4	.01	.0	.0
		3 DC6-48-60-18-8F	164.0	20	1.3	None	1	.00	66.4	.25	-.1	.0
		4 GPS-TMG-HR-26N	164.0	0	.2	1/2"	4	.40	66.4	.05	-.2	
_	6	1 12' LP Platform with Handrail (R	154.0	1491	141.3				65.6	9.27	-1.3	-13.9
		12 HPA-65R-BUU-H8-K	154.0	68		3/4"	8	.50	65.5		-1.3	
		2 DC12-48-60-RM	154.0	0		None	1	.00	65.5		.0	
		3 FC12-PC6-10E	154.0	25		None	1	.00	65.5		-.1	
	7	1 User Defined Loading	153.9	5	.1				65.5	.01	.0	.0
		6 RRUS 12	154.0	58	3.7	None	1	.00	65.5	1.45	-.3	-.1
		2 24" X 24" X 10" DISTRIBU	154.0	50	5.6	None	1	.00	65.5	.73	-.1	-.1
		6 RRU 22 XX20	154.0	51	2.6	None	1	.00	65.5	1.01	-.3	-.1
	8	1 User Defined Loading	153.9	5	.1				65.5	.01	.0	.0
		6 RRUS A2 MODULE	154.0	22	1.9	1/2"	2	.40	65.5	.73	-.2	-.1
		9 RRUS 11	154.0	55	2.9	7/16"	3	.27	65.5	1.73	-.6	-.2
_	9	1 12' LP Platform with Handrail (R	144.0	1491	137.2				64.7	8.88	-1.3	-13.3
		12 8' X 1' X 7IN PANEL	144.0	51		1 5/8"	12	1.04	64.6		-2.2	
		12 E15S09P80	144.0	9		None	1	.00	64.6		-.1	
		1 DC6-48-60-18-8F	144.0	20		None	1	.00	64.6		.0	
	10	1 User Defined Loading	143.9	5	.1				64.6	.01	.0	.0
		12 9442 RRHX	144.0	50	2.2	1/2"	4	.40	64.6	1.74	-.8	-.2
_	11	1 12' LP Platform with Handrail (R	134.0	1491	148.3				63.8	9.46	-1.3	-14.2
		12 8' X 1' X 7IN PANEL	134.0	51		1 5/8"	12	1.04	63.6		-2.1	
		12 9442 RRHX	134.0	50		1/2"	4	.40	63.6		-.7	
		1 DC6-48-60-18-8F	134.0	20		None	1	.00	63.6		.0	
_	12	1 12' LP Platform with Handrail (R	124.0	1491	148.3				62.8	9.31	-1.3	-14.0
		12 8' X 1' X 7IN PANEL	124.0	51		1 5/8"	12	1.04	62.6		-1.9	
		12 9442 RRHX	124.0	50		1/2"	4	.40	62.6		-.7	
		1 DC6-48-60-18-8F	124.0	20		None	1	.00	62.6		.0	

RESULTS

X, ft	Kzt	WIND psf	ICE in	:--- FORCES,kips ---: ShearX	ShearY	AxiaZ	:---MOMENTS,ft-kips---: BendX	BendY	TorqZ	F'y ksi	Inter 4.8.2
169.00	1.00	43.41	.00	.0	.01	.0	.0	.0	.0	82.55	.000
167.00	1.00	43.30	.00	.0	.61	-.5	-.3	.0	.0	82.55	.001
167.00	1.00	43.30	.00	.0	1.86	1.0	.7	.0	.0	82.55	.002
167.00	1.00	43.30	.00	.0	2.59	-1.5	-1.7	.0	.0	82.55	.005
164.00	1.00	43.14	.00	.0	13.55	-5.1	-24.7	.0	.0	82.55	.056
163.90	1.00	43.13	.00	.0	14.11	-5.5	-26.0	.0	.0	82.55	.060
158.90	1.00	42.85	.00	.0	14.52	-5.8	-96.6	.0	.0	82.55	.177
154.00	1.00	42.57	.00	.0	24.32	-7.1	-181.7	.0	.0	82.55	.286
153.90	1.00	42.57	.00	.0	27.59	-7.3	-184.4	.0	.0	82.55	.289
153.90	1.00	42.57	.00	.0	30.38	-7.9	-184.8	.0	.0	82.55	.291
148.90	1.00	42.27	.00	.0	30.73	-8.3	-336.6	.0	.0	82.55	.457
146.00	1.00	42.10	.00	.0	30.97	-8.6	-425.8	.0	.0	81.81	.539
144.00	1.00	41.98	.00	.0	40.40	-11.1	-501.0	.0	.0	82.55	.363
143.90	1.00	41.97	.00	.0	42.33	-11.7	-505.2	.0	.0	82.55	.365
142.25	1.00	41.87	.00	.0	42.69	-12.4	-575.0	.0	.0	82.55	.398
137.25	1.00	41.56	.00	.0	43.13	-13.2	-788.5	.0	.0	82.55	.482
134.00	1.00	41.35	.00	.0	53.50	-16.7	-942.5	.0	.0	82.55	.535
129.00	1.00	41.03	.00	.0	54.02	-17.7	-1210.0	.0	.0	82.55	.613
124.00	1.00	40.69	.00	.0	64.29	-21.6	-1494.2	.0	.0	82.55	.682

119.00	1.00	40.34	.00	.0	64.81	-22.7	-1815.8	.0	.0	82.55	.749
114.00	1.00	39.98	.00	.0	65.35	-23.9	-2140.0	-.1	.0	82.55	.802
109.00	1.00	39.61	.00	.0	65.90	-25.1	-2466.7	-.1	.0	82.55	.844
104.00	1.00	39.22	.00	.0	66.46	-26.4	-2795.8	-.1	.0	82.55	.876
99.00	1.00	38.82	.00	.0	66.77	-27.1	-3128.3	-.1	.0	82.55	.902
98.50	1.00	38.78	.00	.0	67.11	-28.1	-3161.7	-.1	.0	82.55	.904
93.50	1.00	38.36	.00	.0	67.49	-29.2	-3497.5	-.1	.0	82.55	.846
92.50	1.00	38.28	.00	.0	67.87	-30.3	-3565.0	-.1	.0	82.55	.849
87.50	1.00	37.84	.00	.0	68.50	-32.1	-3904.2	-.1	.0	82.55	.860
82.50	1.00	37.38	.00	.0	69.11	-33.5	-4246.7	-.1	.0	82.55	.868
77.50	1.00	36.89	.00	.0	69.73	-35.1	-4592.5	-.1	.0	82.55	.873
72.50	1.00	36.38	.00	.0	70.37	-36.6	-4940.8	-.1	.0	82.55	.876
67.50	1.00	35.85	.00	.0	71.01	-38.2	-5292.5	-.1	.0	82.46	.879
62.50	1.00	35.28	.00	.0	71.66	-39.8	-5647.5	-.1	.0	81.78	.886
57.50	1.00	34.68	.00	.0	72.29	-41.7	-6005.8	-.1	.0	81.09	.892
53.00	1.00	34.10	.00	.0	72.94	-43.9	-6331.7	-.1	.0	80.47	.897
48.00	1.00	33.41	.00	.0	73.47	-45.8	-6695.8	-.2	.0	80.20	.930
45.00	1.00	32.97	.00	.0	73.99	-47.7	-6916.7	-.2	.0	79.79	.932
40.00	1.00	32.18	.00	.0	74.62	-49.8	-7286.7	-.2	.0	79.11	.935
35.00	1.00	31.31	.00	.0	75.23	-51.6	-7659.2	-.2	.0	78.42	.937
30.00	1.00	30.34	.00	.0	75.85	-53.4	-8035.8	-.2	.0	77.74	.939
25.00	1.00	29.24	.00	.0	76.48	-55.3	-8416.7	-.2	.0	77.05	.941
20.00	1.00	27.95	.00	.0	77.12	-57.2	-8800.0	-.2	.0	76.37	.943
15.00	1.00	26.39	.00	.0	77.79	-59.1	-9183.3	-.2	.0	75.68	.944
10.00	1.00	26.07	.00	.0	78.46	-61.0	-9575.0	-.2	.0	75.00	.946
5.00	1.00	26.07	.00	.0	79.16	-63.0	-9966.7	-.2	.0	74.31	.947
.00	1.00	26.07	.00	.0	79.55	-63.9	10358.3	.2	.0	73.63	.948

DISPLACEMENTS

ELEV	DEFLECTION feet				ROTATION, degrees			
X, ft	X	Y	Z	XY-Result	X	Y	Z	XY-Result
169.00	.00	13.82	-.80	13.82< 8.18%>	-9.40	.00	.00	9.40

SABRE COMMUNICATIONS CORP
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Cheshire, CT

20-Apr-15 16:29
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ANSI-TIA-222-G

CASE - 3: 3s Gusted Wind&Ice

WIND OLF		1.00	GUSTED WIND (3sec)	50.0 mph	80.5 kph
VERTICAL OLF		1.20	EXP-CAT/STRUC_CLASS	C-II	
DESIGN ICE		.75 in	EXP-POWER COEFF.	.2105	
GUST FACTOR	(Gh)	1.10	REFERENCE HEIGHT	900.0 ft	
FORCE COEFF	(Cf)	1.20	PRESSURE @ 32.7 ft	6.7 psf	320.0 Pa
IMPORTANCE FAC	(I)	1.00	BASE ABOVE Grd	1.0	
DIRECTION FAC	(Kd)	.95	CREST HEIGHT	.0 ft	
TOPOGRAPHIC CAT		1			

APPURTENANCE LOADS

#	Qty	Description	Center Line Elev-Ft	WEIGHT each Lbs	AREA each Ft^2	Tx-CABLE Type	Qty	#/Ft	WIND Psf	FORCES Tra-Y Kips	Ax-Z Kips	MOM. Lg-X Ft-K
	1	Tri-Collar Mount 12"-18" Pole Di	167.0	212	13.8				9.4	.13	-.3	.0
	2	DS4C00F36D-D	172.1	27		7/8"	4	.54	9.5		-.8	
	1	Tri-Collar Mount 12"-18" Pole Di	167.0	212	35.1				9.4	.33	-.3	-.1
	2	DS1F03F36D-N	180.3	132		7/8"	4	.54	9.6		-1.4	
3	2	Pipe Mount (up to 6' Dish)	167.0	53	.1				9.4	.00	-.1	.0
	2	2' H.P. DISH	169.0	208	4.3	7/8"	2	.54	9.5	.08	-.6	-.2
	1	12' LP Platform with Handrail (R	164.0	1640	218.8				9.4	2.06	-6.9	-3.1
	12	8' X 1' X 7IN PANEL	164.0	116		1 5/8"	18	1.04	9.4		-9.3	
	12	RRUS 11	164.0	74		None	1	.00	9.4		-2.3	
	6	FD9R6004	164.0	12		None	1	.00	9.4		-.3	
5	1	User Defined Loading	163.9	5	.1				9.4	.00	.0	.0
	3	DC6-48-60-18-8F	164.0	39	1.5	None	1	.00	9.4	.04	-.1	
	4	GPS-TMG-HR-26N	164.0	0	.3	1/2"	4	.40	9.4	.01	-.3	
	1	12' LP Platform with Handrail (R	154.0	1640	199.0				9.3	1.85	-6.8	-2.8
	12	HPA-65R-BUU-H8-K	154.0	141		3/4"	8	.50	9.3		-7.0	
	2	DC12-48-60-RM	154.0	1		None	1	.00	9.3		.0	
	3	FC12-PC6-10E	154.0	41		None	1	.00	9.3		-.4	
7	1	User Defined Loading	153.9	5	.1				9.3	.00	.0	.0
	6	RRUS 12	154.0	81	4.1	None	1	.00	9.3	.23	-.4	.0
	2	24" X 24" X 10" DISTRIBU	154.0	85	6.1	None	1	.00	9.3	.11	-.1	.0
	6	RRU 22 XX20	154.0	72	2.9	None	1	.00	9.3	.16	-.4	.0
8	1	User Defined Loading	153.9	5	.1				9.3	.00	.0	.0
	6	RRUS A2 MODULE	154.0	32	2.1	1/2"	2	.40	9.3	.12	-.3	.0
	9	RRUS 11	154.0	74	3.3	7/16"	3	.27	9.3	.27	-.7	.0
	1	12' LP Platform with Handrail (R	144.0	1640	198.8				9.2	1.82	-6.8	-2.7
	12	8' X 1' X 7IN PANEL	144.0	116		1 5/8"	12	1.04	9.2		-7.7	
	12	E15S09P80	144.0	13		None	1	.00	9.2		-.7	
	1	DC6-48-60-18-8F	144.0	39		None	1	.00	9.2		-.1	
10	1	User Defined Loading	143.9	5	.1				9.2	.00	.0	.0
	12	9442 RRHX	144.0	67	2.7	1/2"	4	.40	9.2	.29	-1.0	.0
11	1	12' LP Platform with Handrail (R	134.0	1640	212.0				9.0	1.92	-6.7	-2.9
	12	8' X 1' X 7IN PANEL	134.0	116		1 5/8"	12	1.04	9.0		-7.5	
	12	9442 RRHX	134.0	67		1/2"	4	.40	9.0		-2.3	
	1	DC6-48-60-18-8F	134.0	39		None	1	.00	9.0		-.1	
12	1	12' LP Platform with Handrail (R	124.0	1640	211.5				8.9	1.88	-6.7	-2.8
	12	8' X 1' X 7IN PANEL	124.0	116		1 5/8"	12	1.04	8.9		-7.3	
	12	9442 RRHX	124.0	67		1/2"	4	.40	8.9		-2.3	
	1	DC6-48-60-18-8F	124.0	39		None	1	.00	8.9		-.1	

RESULTS

X, ft	Kzt	WIND psf	ICE in	FORCES,kips ShearX	ShearY	AxiaZ	MOMENTS,ft-kips BendX	BendY	TorqZ	F'y ksi	Inter 4.8.2
169.00	1.00	11.36	1.77	.0	.01	-.1	.0	.0	.0	82.55	.000
167.00	1.00	11.33	1.77	.0	.20	-1.3	-.1	.0	.0	82.55	.001
167.00	1.00	11.33	1.77	.0	.62	2.9	.2	.0	.0	82.55	.003
167.00	1.00	11.33	1.77	.0	.76	-3.8	-.4	.0	.0	82.55	.004
164.00	1.00	11.29	1.76	.0	3.39	-17.7	-5.8	.0	.0	82.55	.027
163.90	1.00	11.29	1.76	.0	3.52	-18.4	-6.1	.0	.0	82.55	.028
158.90	1.00	11.21	1.76	.0	3.65	-19.0	-23.7	.0	.0	82.55	.057
154.00	1.00	11.14	1.75	.0	5.91	-28.7	-44.4	.0	.0	82.55	.089
153.90	1.00	11.14	1.75	.0	6.45	-29.6	-45.0	.0	.0	82.55	.091
153.90	1.00	11.14	1.75	.0	6.94	-30.9	-45.1	.0	.0	82.55	.092
148.90	1.00	11.06	1.75	.0	7.04	-31.5	-79.8	.0	.0	82.55	.128
146.00	1.00	11.02	1.74	.0	7.10	-32.0	-100.2	.0	.0	81.81	.146
144.00	1.00	10.98	1.74	.0	9.31	-42.7	-117.1	.0	.0	82.55	.100
143.90	1.00	10.98	1.74	.0	9.67	-43.9	-118.1	.0	.0	82.55	.101
142.25	1.00	10.96	1.74	.0	9.76	-44.9	-134.0	.0	.0	82.55	.108
137.25	1.00	10.87	1.73	.0	9.88	-46.0	-182.8	.0	.0	82.55	.126
134.00	1.00	10.82	1.73	.0	12.27	-58.8	-217.8	.0	.0	82.55	.142
129.00	1.00	10.73	1.72	.0	12.38	-60.1	-279.2	.0	.0	82.55	.159
124.00	1.00	10.65	1.71	.0	14.71	-73.0	-343.9	.0	.0	82.55	.177

119.00	1.00	10.55	1.71	.0	14.81	-74.3	-417.5	.0	.0	82.55	.192
114.00	1.00	10.46	1.70	.0	14.91	-75.8	-491.5	.0	.0	82.55	.203
109.00	1.00	10.36	1.69	.0	15.01	-77.3	-566.0	.0	.0	82.55	.212
104.00	1.00	10.26	1.68	.0	15.11	-78.8	-641.1	.0	.0	82.55	.219
99.00	1.00	10.16	1.68	.0	15.16	-79.7	-716.6	.0	.0	82.55	.224
98.50	1.00	10.15	1.68	.0	15.23	-81.0	-724.2	.0	.0	82.55	.225
93.50	1.00	10.04	1.67	.0	15.30	-82.4	-800.3	.0	.0	82.55	.209
92.50	1.00	10.01	1.66	.0	15.38	-83.9	-815.6	.0	.0	82.55	.210
87.50	1.00	9.90	1.66	.0	15.51	-86.1	-892.5	.0	.0	82.55	.212
82.50	1.00	9.78	1.65	.0	15.63	-88.1	-970.0	.0	.0	82.55	.213
77.50	1.00	9.65	1.64	.0	15.76	-90.1	-1048.3	.0	.0	82.55	.214
72.50	1.00	9.52	1.63	.0	15.89	-92.2	-1126.7	.0	.0	82.55	.214
67.50	1.00	9.38	1.61	.0	16.02	-94.4	-1206.7	.0	.0	82.46	.215
62.50	1.00	9.23	1.60	.0	16.15	-96.6	-1286.7	.0	.0	81.78	.216
57.50	1.00	9.07	1.59	.0	16.28	-99.2	-1367.5	.0	.0	81.09	.218
53.00	1.00	8.92	1.58	.0	16.42	-102.2	-1440.8	.0	.0	80.47	.219
48.00	1.00	8.74	1.56	.0	16.53	-104.9	-1522.5	.0	.0	80.20	.226
45.00	1.00	8.63	1.55	.0	16.63	-107.5	-1572.5	.0	.0	79.79	.227
40.00	1.00	8.42	1.53	.0	16.76	-110.5	-1655.0	.0	.0	79.11	.227
35.00	1.00	8.19	1.51	.0	16.89	-113.0	-1739.2	.0	.0	78.42	.228
30.00	1.00	7.94	1.49	.0	17.01	-115.6	-1823.3	.0	.0	77.74	.228
25.00	1.00	7.65	1.46	.0	17.14	-118.2	-1908.3	.0	.0	77.05	.228
20.00	1.00	7.31	1.43	.0	17.27	-120.9	-1994.2	.0	.0	76.37	.229
15.00	1.00	6.91	1.40	.0	17.40	-123.7	-2080.8	.0	.0	75.68	.229
10.00	1.00	6.82	1.34	.0	17.55	-126.5	-2167.5	.0	.0	75.00	.229
5.00	1.00	6.82	1.26	.0	17.69	-129.4	-2255.0	.0	.0	74.31	.230
.00	1.00	6.82	1.06	.0	17.79	-130.5	2344.2	.0	.0	73.63	.230

DISPLACEMENTS

ELEV	DEFLECTION feet				ROTATION, degrees			
X, ft	X	Y	Z	XY-Result	X	Y	Z	XY-Result
169.00	.00	3.16	-.05	3.16< 1.87%>	-2.16	.00	.00	2.16

SABRE COMMUNICATIONS CORP
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Sioux City, IA 51101

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INSITE TOWERS LLC
Cheshire, CT

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ANSI-TIA-222-G

CASE - 4: Service Loads

WIND OLF		1.00	GUSTED WIND (3sec)	60.0 mph	96.6 kph
VERTICAL OLF		1.00	EXP-CAT/STRUC_CLASS	C-II	
DESIGN ICE		.00 in	EXP-POWER COEFF.	.2105	
GUST FACTOR	(Gh)	1.10	REFERENCE HEIGHT	900.0 ft	
FORCE COEFF	(Cf)	.65	PRESSURE @ 32.7 ft	8.6 psf	412.3 Pa
IMPORTANCE FAC	(I)	1.00	BASE ABOVE Grd	1.0	
DIRECTION FAC	(Kd)	.85	CREST HEIGHT	.0 ft	
TOPOGRAPHIC CAT		1			

APPURTENANCE LOADS

#	Qty	Description	Center Line Elev-Ft	WEIGHT each Lbs	AREA each Ft^2	Tx-CABLE Type	Qty	#/Ft	WIND Psf	FORCES Tra-Y Kips	Ax-Z Kips	MOM. Lg-X Ft-K
_ 1	1	Tri-Collar Mount 12"-18" Pole Di	167.0	193	6.8				12.2	.08	-.2	.0
	2	DS4C00F36D-D	172.1	13		7/8"	4	.54	12.2		-.4	
_ 2	1	Tri-Collar Mount 12"-18" Pole Di	167.0	193	16.3				12.2	.20	-.2	-.1
	2	DS1F03F36D-N	180.3	71		7/8"	4	.54	12.4		-.5	
3	2	Pipe Mount (up to 6' Dish)	167.0	49	.1				12.2	.00	-.1	.0
	2	2' H.P. DISH	169.0	150	4.0	7/8"	2	.54	12.2	.10	-.5	-.2
_ 4	1	12' LP Platform with Handrail (R	164.0	1491	152.0				12.1	1.85	-1.5	-2.8
	12	8' X 1' X 7IN PANEL	164.0	51		1 5/8"	18	1.04	12.1		-3.7	
	12	RRUS 11	164.0	55		None	1	.00	12.1		-.7	
	6	FD9R6004	164.0	10		None	1	.00	12.1		-.1	
5	1	User Defined Loading	163.9	5	.1				12.1	.00	.0	.0
	3	DC6-48-60-18-8F	164.0	20	1.3	None	1	.00	12.1	.05	-.1	
	4	GPS-TMG-HR-26N	164.0	0	.2	1/2"	4	.40	12.1	.01	-.3	
_ 6	1	12' LP Platform with Handrail (R	154.0	1491	141.3				12.0	1.69	-1.5	-2.5
	12	HPA-65R-BUU-H8-K	154.0	68		3/4"	8	.50	12.0		-1.4	
	2	DC12-48-60-RM	154.0	0		None	1	.00	12.0		.0	
	3	FC12-PC6-10E	154.0	25		None	1	.00	12.0		-.1	
7	1	User Defined Loading	153.9	5	.1				12.0	.00	.0	.0
	6	RRUS 12	154.0	58	3.7	None	1	.00	12.0	.26	-.3	.0
	2	24" X 24" X 10" DISTRIBU	154.0	50	5.6	None	1	.00	12.0	.13	-.1	.0
	6	RRU 22 XX20	154.0	51	2.6	None	1	.00	12.0	.18	-.3	.0
8	1	User Defined Loading	153.9	5	.1				12.0	.00	.0	.0
	6	RRUS A2 MODULE	154.0	22	1.9	1/2"	2	.40	12.0	.13	-.3	.0
	9	RRUS 11	154.0	55	2.9	7/16"	3	.27	12.0	.32	-.6	.0
_ 9	1	12' LP Platform with Handrail (R	144.0	1491	137.2				11.8	1.62	-1.5	-2.4
	12	8' X 1' X 7IN PANEL	144.0	51		1 5/8"	12	1.04	11.8		-2.4	
	12	E15S09P80	144.0	9		None	1	.00	11.8		-.1	
	1	DC6-48-60-18-8F	144.0	20		None	1	.00	11.8		.0	
10	1	User Defined Loading	143.9	5	.1				11.8	.00	.0	.0
	12	9442 RRHX	144.0	50	2.2	1/2"	4	.40	11.8	.32	-.8	.0
_11	1	12' LP Platform with Handrail (R	134.0	1491	148.3				11.6	1.73	-1.5	-2.6
	12	8' X 1' X 7IN PANEL	134.0	51		1 5/8"	12	1.04	11.6		-2.3	
	12	9442 RRHX	134.0	50		1/2"	4	.40	11.6		-.8	
	1	DC6-48-60-18-8F	134.0	20		None	1	.00	11.6		.0	
_12	1	12' LP Platform with Handrail (R	124.0	1491	148.3				11.5	1.70	-1.5	-2.5
	12	8' X 1' X 7IN PANEL	124.0	51		1 5/8"	12	1.04	11.4		-2.2	
	12	9442 RRHX	124.0	50		1/2"	4	.40	11.4		-.8	
	1	DC6-48-60-18-8F	124.0	20		None	1	.00	11.4		.0	

RESULTS

X, ft	Kzt	WIND psf	ICE in	:--- FORCES,kips ---: ShearX	ShearY	AxiaZ	:---MOMENTS,ft-kips---: BendX	BendY	TorqZ	F'y ksi	Inter 4.8.2
169.00	1.00	7.93	.00	.0	.00	-.1	.0	.0	.0	82.55	.000
167.00	1.00	7.91	.00	.0	.12	-.7	-.1	.0	.0	82.55	.001
167.00	1.00	7.91	.00	.0	.35	1.4	.1	.0	.0	82.55	.002
167.00	1.00	7.91	.00	.0	.49	-2.0	-.3	.0	.0	82.55	.003
164.00	1.00	7.88	.00	.0	2.53	-7.9	-4.5	.0	.0	82.55	.016
163.90	1.00	7.88	.00	.0	2.64	-8.4	-4.8	.0	.0	82.55	.017
158.90	1.00	7.83	.00	.0	2.72	-8.7	-18.0	.0	.0	82.55	.039
154.00	1.00	7.77	.00	.0	4.54	-11.8	-33.8	.0	.0	82.55	.061
153.90	1.00	7.77	.00	.0	5.14	-12.6	-34.3	.0	.0	82.55	.062
153.90	1.00	7.77	.00	.0	5.66	-13.6	-34.4	.0	.0	82.55	.063
148.90	1.00	7.72	.00	.0	5.72	-13.9	-62.7	.0	.0	82.55	.093
146.00	1.00	7.69	.00	.0	5.76	-14.2	-79.3	.0	.0	81.81	.108
144.00	1.00	7.67	.00	.0	7.52	-18.3	-93.3	.0	.0	82.55	.073
143.90	1.00	7.66	.00	.0	7.88	-19.3	-94.0	.0	.0	82.55	.074
142.25	1.00	7.65	.00	.0	7.94	-19.9	-107.0	.0	.0	82.55	.080
137.25	1.00	7.59	.00	.0	8.02	-20.6	-146.8	.0	.0	82.55	.096
134.00	1.00	7.55	.00	.0	9.94	-25.8	-175.4	.0	.0	82.55	.107
129.00	1.00	7.49	.00	.0	10.03	-26.5	-225.1	.0	.0	82.55	.121
124.00	1.00	7.43	.00	.0	11.92	-31.7	-277.8	.0	.0	82.55	.135

119.00	1.00	7.37	.00	.0	12.01	-32.6	-337.3	.0	.0	82.55	.147	
114.00	1.00	7.30	.00	.0	12.09	-33.4	-397.3	.0	.0	82.55	.157	
109.00	1.00	7.23	.00	.0	12.19	-34.3	-457.8	.0	.0	82.55	.164	
104.00	1.00	7.16	.00	.0	12.28	-35.3	-518.8	.0	.0	82.55	.170	
99.00	1.00	7.09	.00	.0	12.33	-35.8	-580.2	.0	.0	82.55	.174	
98.50	1.00	7.08	.00	.0	12.39	-36.6	-586.3	.0	.0	82.55	.175	
93.50	1.00	7.00	.00	.0	12.46	-37.6	-648.3	.0	.0	82.55	.163	
92.50	1.00	6.99	.00	.0	12.52	-38.6	-660.8	.0	.0	82.55	.164	
87.50	1.00	6.91	.00	.0	12.63	-40.1	-723.3	.0	.0	82.55	.166	
82.50	1.00	6.82	.00	.0	12.74	-41.3	-786.5	.0	.0	82.55	.167	
77.50	1.00	6.74	.00	.0	12.84	-42.6	-850.0	.0	.0	82.55	.168	
72.50	1.00	6.64	.00	.0	12.95	-43.9	-914.2	.0	.0	82.55	.169	
67.50	1.00	6.55	.00	.0	13.07	-45.3	-979.2	.0	.0	82.46	.169	
62.50	1.00	6.44	.00	.0	13.18	-46.7	-1044.2	.0	.0	81.78	.170	
57.50	1.00	6.33	.00	.0	13.29	-48.4	-1110.0	.0	.0	81.09	.171	
53.00	1.00	6.23	.00	.0	13.41	-50.5	-1170.0	.0	.0	80.47	.172	
48.00	1.00	6.10	.00	.0	13.50	-52.3	-1237.5	.0	.0	80.20	.179	
45.00	1.00	6.02	.00	.0	13.59	-54.2	-1277.5	.0	.0	79.79	.179	
40.00	1.00	5.88	.00	.0	13.70	-56.2	-1345.8	.0	.0	79.11	.180	
35.00	1.00	5.72	.00	.0	13.81	-57.8	-1414.2	.0	.0	78.42	.180	
30.00	1.00	5.54	.00	.0	13.92	-59.5	-1483.3	.0	.0	77.74	.181	
25.00	1.00	5.34	.00	.0	14.03	-61.2	-1552.5	.0	.0	77.05	.181	
20.00	1.00	5.10	.00	.0	14.14	-62.9	-1623.3	.0	.0	76.37	.181	
15.00	1.00	4.82	.00	.0	14.26	-64.7	-1693.3	.0	.0	75.68	.181	
10.00	1.00	4.76	.00	.0	14.38	-66.6	-1765.0	.0	.0	75.00	.182	
5.00	1.00	4.76	.00	.0	14.50	-68.5	-1836.7	.0	.0	74.31	.182	
.00	1.00	4.76	.00	.0	14.57	-69.4	1909.2	.0	.0	73.63	.182	

DISPLACEMENTS

ELEV	DEFLECTION feet				ROTATION, degrees				MicroW
X, ft	X	Y	Z	XY-Result	X	Y	Z	XY-Result	AlloW
169.00	.00	2.56	-.03	2.56< 1.52%>	-1.74	.00	.00	1.74	

SHAPE: 18 SIDED POLYGON with FLAT-FLAT ORIENTATION
BOLTS: QUADRANT SPACED BOLTS 6.00 in. ON CENTER
LOCATE:

POLE DATA

DIAMETER	= 71.90 in.	BASE	AXIAL FORCE	= -84.7 kips	Vert
PLATE	= .5000 in.	ACTIONS	SHEAR X	= 56.3 kips	Long
TAPER	= .3300 in/ft		SHEAR Y	= 56.3 kips	Tran
POLE Fy	= 65.00 ksi		X-AXIS MOM	= 7411.7 ft-kips	Tran
			Y-Axis MOM	= 7411.7 ft-kips	Long
			Z-Axis MOM	= .0 ft-kips	Vert

DESIGN CASE = 1 3s Gusted Wind

Design: ANY Orientation Reactions at 45.00 deg to X-AXIS

BOLT LOADS

	AXIAL - COMPRESSION	= 230.51 kips		
	AXIAL - TENSION	= 224.46 kips		
	SHEAR	= 4.02 kips		
AXIAL	STRESS	= 70.93 ksi		
SHEAR	STRESS	= 1.31 ksi		
YIELD	STRENGTH Fy	= 75.00 ksi		
ULT.	STRENGTH Fu	= 100.00 ksi		Interaction
ALLOW	STRESS Fa [.80 x 1.00]	= 80.00 ksi	.919	TIA-G
	SHEAR Fv [.80 x .40]	= 32.00 ksi		
	TENSION AREA REQUIRED	= 2.88 in^2		
	TENSION AREA FURNISHED	= 3.25 in^2		
	ROOT AREA FURNISHED	= 3.07 in^2		

A615 ::: ANCHOR BOLT DESIGN USED

28	Bolts on a	79.000 in.	Bolt Circle	SHIP
2.250	in. Diameter	67.13 in.	Embedded	(lbs)
12.00	in. Exposed	84.00 in.	Total Length	3722

CONCRETE - Fc= 4000 psi

ANCHOR BOLTS are STRAIGHT w\ UPLIFT NUT

BASE PLATE

[Bend Model: 1/4 Circ]
YIELD STRENGTH = 50.0 ksi
BEND LINE WIDTH = 57.0 in.
PLATE MOMENT = 5183.4 in-k
THICKNESS REQD = 2.842 in.
BENDING STRESS = 34.4 ksi
ALLOWABLE STRESS = 45.0 ksi
[Fy x .90 x 1.00]

BASE PLATE USED

3.25	in.	THICK	SHIP
81.00	in.	SQUARE	(lbs)
59.50	in.	CENTER HOLE	2597
20.00	in.	CORNER CLIP	

LOAD CASE SUMMARY

	FORCES-(kips)			MOMENTS-(ft-k)			ABolt-Str	Plate-Str		
							Allow	Actual	Allow	Design
LC	Axial	ShearX	ShearY	X-axis	Y-axis	TorQ	CSR	ksi	ksi	ksi	Code
1	84.7	56.3	56.3	7412	7412	0	.919	75.00	34.41	45.00	TIA-G
2	63.9	56.3	56.3	7324	7324	0	.906	75.00	33.89	45.00	TIA-G
3	130.5	12.6	12.6	1657	1657	0	.221	75.00	8.32	45.00	TIA-G
4	69.4	10.3	10.3	1349	1349	0	.175	75.00	6.57	45.00	TIA-G

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TOP	DIAMETER	18.50 in.	[18.79 in. Point-Point]
BOTTOM	DIAMETER	71.90 in.	[73.00 in. Point-Point]
POLE	HEIGHT	169.00 ft.	18 SIDED FLAT ORIENTATION
BASE	HEIGHT	1.00 ft.	ABOVE GROUND
E-MODULUS		29000 ksi	[12000 ksi SHEAR MODULUS]

APPURTENANCES

ATTACH POINTS:

NO.	X,ft	Qty	Description	Status
1	167.00	1	Tri-Collar Mount 12"-18" Pole Di	Future Appurt
2	167.00	1	Tri-Collar Mount 12"-18" Pole Di	Future Appurt
3	167.00	2	Pipe Mount (up to 6' Dish)	Future Appurt
4	164.00	1	12' LP Platform with Handrail (R	Future Appurt
5	163.90	1	User Defined Loading	Future Appurt
6	154.00	1	12' LP Platform with Handrail (R	Future Appurt
7	153.90	1	User Defined Loading	Future Appurt
8	153.90	1	User Defined Loading	Future Appurt
9	144.00	1	12' LP Platform with Handrail (R	Future Appurt
10	143.90	1	User Defined Loading	Future Appurt
11	134.00	1	12' LP Platform with Handrail (R	Future Appurt
12	124.00	1	12' LP Platform with Handrail (R	Future Appurt

Pole Section	Bottom X,ft.	Thick in.	Connect Type	LAP in.	Taper in/ft	Length ft.	Weight lbs	Steel Spec	Pole Finish
1	26.75	.25000	SLIP-JNT	45.	.3300	26.75	1636	A572-65	GALVANIZE
2	76.50	.43750	SLIP-JNT	72.	.3300	53.50	8589	A572-65	GALVANIZE
3	124.00	.50000	SLIP-JNT	96.	.3300	53.50	14074	A572-65	GALVANIZE
4	169.00	.50000	C-WELD		.3300	53.00	17930	A572-65	GALVANIZE

SECTION PROPERTIES

X,ft	UP,ft	D,in	T,in	Area in^2	Iz in^4	IxIy in^4	SxSy in^3	w/t	d/t	F_y(ksi)	
169.00	.00	18.50	.2500	14.48	1220	610	64.9	11.28	74.0	65.00	TOP
167.00	2.00	19.16	.2500	15.00	1356	678	69.7	11.75	76.6	65.00	P01
167.00	2.00	19.16	.2500	15.00	1356	678	69.7	11.75	76.6	65.00	P02
167.00	2.00	19.16	.2500	15.00	1356	678	69.7	11.75	76.6	65.00	P03
164.00	5.00	20.15	.2500	15.79	1580	790	77.2	12.45	80.6	65.00	P04
163.90	5.10	20.18	.2500	15.82	1588	794	77.5	12.47	80.7	65.00	P05
158.90	10.10	21.83	.2500	17.13	2016	1008	90.9	13.64	87.3	65.00	
154.00	15.00	23.45	.2500	18.41	2502	1251	105.1	14.78	93.8	65.00	P06
153.90	15.10	23.48	.2500	18.43	2514	1257	105.4	14.80	93.9	65.00	P07
153.90	15.10	23.48	.2500	18.43	2514	1257	105.4	14.80	93.9	65.00	P08
148.90	20.10	25.13	.2500	19.74	3088	1544	121.0	15.96	100.5	65.00	
146.00	23.00	26.09	.2500	20.50	3458	1729	130.5	16.64	104.4	65.00	Slip-B01
144.00	25.00	26.25	.4375	35.84	6034	3017	226.4	8.82	60.0	65.00	P09
143.90	25.10	26.28	.4375	35.89	6058	3029	227.0	8.83	60.1	65.00	P10
142.25	26.75	26.83	.4375	36.64	6448	3224	236.7	9.05	61.3	65.00	Slip-T02
137.25	31.75	28.48	.4375	38.94	7736	3868	267.5	9.71	65.1	65.00	
134.00	35.00	29.55	.4375	40.42	8656	4328	288.5	10.15	67.5	65.00	P11
129.00	40.00	31.20	.4375	42.72	10212	5106	322.3	10.81	71.3	65.00	
124.00	45.00	32.85	.4375	45.01	11946	5973	358.1	11.48	75.1	65.00	P12
119.00	50.00	34.50	.4375	47.30	13864	6932	395.7	12.14	78.9	65.00	
114.00	55.00	36.15	.4375	49.59	15978	7989	435.3	12.81	82.6	65.00	
109.00	60.00	37.80	.4375	51.88	18296	9148	476.7	13.47	86.4	65.00	
104.00	65.00	39.45	.4375	54.17	20828	10414	519.9	14.14	90.2	65.00	
99.00	70.00	41.10	.4375	56.46	23584	11792	565.1	14.80	93.9	65.00	
98.50	70.50	41.27	.4375	56.69	23872	11936	569.7	14.87	94.3	65.00	Slip-B02
93.50	75.50	42.04	.5000	65.92	28738	14369	673.2	13.06	84.1	65.00	
92.50	76.50	42.37	.5000	66.45	29426	14713	683.9	13.18	84.7	65.00	Slip-T03
87.50	81.50	44.02	.5000	69.06	33044	16522	739.3	13.76	88.0	65.00	
82.50	86.50	45.67	.5000	71.68	36948	18474	796.7	14.34	91.3	65.00	
77.50	91.50	47.32	.5000	74.30	41146	20573	856.3	14.92	94.6	65.00	
72.50	96.50	48.97	.5000	76.92	45652	22826	918.1	15.51	97.9	65.00	
67.50	101.50	50.62	.5000	79.54	50472	25236	981.9	16.09	101.2	65.00	
62.50	106.50	52.27	.5000	82.16	55624	27812	1048.0	16.67	104.5	65.00	
57.50	111.50	53.92	.5000	84.77	61112	30556	1116.2	17.25	107.8	65.00	
53.00	116.00	55.41	.5000	87.13	66350	33175	1179.4	17.78	110.8	65.00	Slip-B03
48.00	121.00	56.06	.5000	88.16	68736	34368	1207.6	18.00	112.1	65.00	
45.00	124.00	57.05	.5000	89.73	72478	36239	1251.2	18.35	114.1	65.00	Slip-T04
40.00	129.00	58.70	.5000	92.35	79008	39504	1325.6	18.94	117.4	65.00	
35.00	134.00	60.35	.5000	94.97	85920	42960	1402.2	19.52	120.7	65.00	
30.00	139.00	62.00	.5000	97.59	93224	46612	1480.9	20.10	124.0	65.00	
25.00	144.00	63.65	.5000	100.21	100930	50465	1561.7	20.68	127.3	65.00	

20.00	149.00	65.30	.5000	102.83	109052	54526	1644.8	21.26	130.6	65.00	
15.00	154.00	66.95	.5000	105.44	117596	58798	1729.9	21.85	133.9	65.00	
10.00	159.00	68.60	.5000	108.06	126574	63287	1817.2	22.43	137.2	65.00	
5.00	164.00	70.25	.5000	110.68	136002	68001	1906.7	23.01	140.5	65.00	
.00	169.00	71.90	.5000	113.30	145882	72941	1998.3	23.59	143.8	65.00	BASE

SABRE COMMUNICATIONS CORP
2101 Murray Street
Sioux City, IA 51101

JOB: 00-11956
INSITE TOWERS LLC
Cheshire, CT

20-Apr-15 16:30
Ph 712.258.6690
Fx 712.258.8250

CASE - 1: Max Wind — TIA/EIA-222-F

VERTICAL OLF	1.00	WIND SPEED	85.0 mph 136.8 kph
ICE COVER	.00 in	GUST FACTOR	1.69
STRESS REDUCTION	.60	EXPOSURE COEFF.	.2857
STRESS AMPLIFY	1.33	Cf	.650
BASE ABOVE Grd	1.00 ft	REFERENCE HEIGHT	33.0 ft
		PRESSURE @Ref.Ht	31.3 psf 1496.Pa

APPURTENANCE LOADS

#	Qty	Description	Center Line Elev-Ft	WEIGHT each Lbs	AREA each Ft^2	Tx-CABLE Type	Tx-CABLE Qty	Tx-CABLE #/Ft	WIND Psf	FORCES Tra-Y Kips	FORCES Ax-Z Kips	MOM. Lg-X Ft-K
1	1	Tri-Collar Mount 12"-18" Pole Di	167.0	193	2.0				49.7	.10	-.2	.0
	2	DS4C00F36D-D	172.1	13	1.5	7/8"	4	.54	50.2	.16	-.4	-.8
2	1	Tri-Collar Mount 12"-18" Pole Di	167.0	193	2.0				49.7	.10	-.2	.0
	2	DS1F03F36D-N	180.3	71	6.8	7/8"	4	.54	50.9	.69	-.5	-9.1
3	2	Pipe Mount (up to 6' Dish)	167.0	49	.1				49.7	.01	-.1	.0
	2	2' H.P. DISH	169.0	150	4.0	7/8"	2	.54	49.9	.40	-.5	-.8
_ 4	1	12' LP Platform with Handrail (R	164.0	1491	165.5				49.6	8.20	-1.5	-12.3
	12	8' X 1' X 7IN PANEL	164.0	51		1 5/8"	18	1.04	49.5		-3.7	
	12	RRUS 11	164.0	55		None	1	.00	49.5		-.7	
	6	FD9R6004	164.0	10		None	1	.00	49.5		-.1	
5	1	User Defined Loading	163.9	5	.1				49.4	.00	.0	.0
	3	DC6-48-60-18-8F	164.0	20	1.3	None	1	.00	49.5	.19	-.1	.0
	4	GPS-TMG-HR-26N	164.0	0	.2	1/2"	4	.40	49.5	.04	-.3	
_ 6	1	12' LP Platform with Handrail (R	154.0	1491	144.7				48.7	7.04	-1.5	-10.6
	12	HPA-65R-BUU-H8-K	154.0	68		3/4"	8	.50	48.6		-1.4	
	2	DC12-48-60-RM	154.0	0		None	1	.00	48.6		.0	
	3	FC12-PC6-10E	154.0	25		None	1	.00	48.6		-.1	
7	1	User Defined Loading	153.9	5	.1				48.5	.00	.0	.0
	6	RRUS 12	154.0	58	3.7	None	1	.00	48.6	1.08	-.3	-.1
	2	24" X 24" X 10" DISTRIBU	154.0	50	5.6	None	1	.00	48.6	.54	-.1	-.1
	6	RRU 22 XX20	154.0	51	2.6	None	1	.00	48.6	.75	-.3	-.1
8	1	User Defined Loading	153.9	5	.1				48.5	.00	.0	.0
	6	RRUS A2 MODULE	154.0	22	1.9	1/2"	2	.40	48.6	.54	-.3	-.1
	9	RRUS 11	154.0	55	2.9	7/16"	3	.27	48.6	1.29	-.6	-.1
_ 9	1	12' LP Platform with Handrail (R	144.0	1491	147.3				47.8	7.04	-1.5	-10.6
	12	8' X 1' X 7IN PANEL	144.0	51		1 5/8"	12	1.04	47.7		-2.4	
	12	E15S09P80	144.0	9		None	1	.00	47.7		-.1	
	1	DC6-48-60-18-8F	144.0	20		None	1	.00	47.7		.0	
10	1	User Defined Loading	143.9	5	.1				47.6	.00	.0	.0
	12	9442 RRHX	144.0	50	2.2	1/2"	4	.40	47.7	1.29	-.8	-.1
_11	1	12' LP Platform with Handrail (R	134.0	1491	154.7				46.8	7.24	-1.5	-10.9
	12	8' X 1' X 7IN PANEL	134.0	51		1 5/8"	12	1.04	46.7		-2.3	
	12	9442 RRHX	134.0	50		1/2"	4	.40	46.7		-.8	
	1	DC6-48-60-18-8F	134.0	20		None	1	.00	46.7		.0	
_12	1	12' LP Platform with Handrail (R	124.0	1491	154.7				45.8	7.08	-1.5	-10.6
	12	8' X 1' X 7IN PANEL	124.0	51		1 5/8"	12	1.04	45.7		-2.2	
	12	9442 RRHX	124.0	50		1/2"	4	.40	45.7		-.8	
	1	DC6-48-60-18-8F	124.0	20		None	1	.00	45.7		.0	

RESULTS

ELEV. X, ft	POLE X, ft	WIND psf	FORCES,kips ShearX	ShearY	AxiaZ	MOMENTS,ft-kips BendX	BendY	TorqZ	STRESS ksi	ALLOW ksi	CSR
170.00	169.00	32.5	.0	.1	.0	.0	.0	.0	.01	51.87	.000
168.00	167.00	32.3	.0	.4	-.6	-.9	.0	.0	.21	51.87	.004
168.00	167.00	32.3	.0	1.3	1.2	10.1	.0	.0	1.80	51.87	.035
168.00	167.00	32.3	.0	1.9	-1.8	-10.9	.0	.0	1.98	51.87	.038
165.00	164.00	32.2	.0	10.9	-6.7	-28.8	.0	.0	4.98	51.87	.096
164.90	163.90	32.2	.0	11.3	-7.2	-29.9	.0	.0	5.16	51.87	.100
159.90	158.90	31.9	.0	11.6	-7.5	-86.3	.0	.0	11.71	51.87	.226
155.00	154.00	31.6	.0	19.1	-9.7	-153.8	.0	.0	17.91	51.87	.345
154.90	153.90	31.6	.0	21.6	-10.2	-155.8	.0	.0	18.13	51.87	.350
154.90	153.90	31.6	.0	23.7	-11.0	-156.2	.0	.0	18.24	51.87	.352
149.90	148.90	31.3	.0	23.9	-11.4	-274.3	.0	.0	27.45	51.87	.529
147.00	146.00	31.1	.0	24.1	-11.8	-343.8	.0	.0	31.76	51.87	.612
145.00	144.00	31.0	.0	31.6	-15.1	-402.5	.0	.0	21.49	51.87	.414
144.90	143.90	31.0	.0	33.1	-16.0	-405.8	.0	.0	21.63	51.87	.417
143.25	142.25	30.9	.0	33.3	-16.7	-460.3	.0	.0	23.49	51.87	.453
138.25	137.25	30.6	.0	33.7	-17.5	-627.1	.0	.0	28.19	51.87	.543
135.00	134.00	30.4	.0	41.7	-22.0	-747.3	.0	.0	31.21	51.87	.602
130.00	129.00	30.1	.0	42.0	-22.9	-955.8	.0	.0	35.62	51.87	.687

125.00	124.00	29.7	.0	49.9	-27.6	-1176.7	.0	.0	39.49	51.87	.761	
120.00	119.00	29.4	.0	50.2	-28.7	-1425.8	.0	.0	43.22	51.87	.833	
115.00	114.00	29.0	.0	50.6	-29.8	-1677.5	.0	.0	46.18	51.87	.890	
110.00	109.00	28.7	.0	51.0	-30.9	-1930.0	.0	.0	48.48	51.87	.935	
105.00	104.00	28.3	.0	51.4	-32.1	-2185.0	-.1	.0	50.28	51.87	.969	
100.00	99.00	27.9	.0	51.6	-32.8	-2441.7	-.1	.0	51.67	51.87	.996	
99.50	98.50	27.8	.0	51.8	-33.8	-2467.5	-.1	.0	51.80	51.87	.999	
94.50	93.50	27.4	.0	52.1	-34.9	-2726.7	-.1	.0	48.41	51.87	.933	
93.50	92.50	27.4	.0	52.3	-36.0	-2778.3	-.1	.0	48.57	51.87	.936	
88.50	87.50	26.9	.0	52.8	-37.7	-3040.0	-.1	.0	49.16	51.87	.948	
83.50	82.50	26.5	.0	53.2	-39.2	-3304.2	-.1	.0	49.57	51.87	.956	
78.50	77.50	26.0	.0	53.6	-40.7	-3570.0	-.1	.0	49.83	51.87	.961	
73.50	72.50	25.5	.0	54.0	-42.2	-3837.5	-.1	.0	49.96	51.87	.963	
68.50	67.50	25.0	.0	54.4	-43.8	-4107.5	-.1	.0	50.00	51.87	.964	
63.50	62.50	24.5	.0	54.8	-45.4	-4379.2	-.1	.0	49.95	51.87	.963	
58.50	57.50	23.9	.0	55.3	-47.3	-4654.2	-.1	.0	49.85	51.87	.961	
54.00	53.00	23.4	.0	55.7	-49.6	-4902.5	-.1	.0	49.71	51.87	.958	
49.00	48.00	22.7	.0	56.0	-51.6	-5180.8	-.1	.0	51.30	51.87	.989	
46.00	45.00	22.3	.0	56.3	-53.6	-5349.2	-.1	.0	51.13	51.87	.986	
41.00	40.00	21.6	.0	56.7	-55.7	-5630.8	-.1	.0	50.81	51.87	.980	
36.00	35.00	20.8	.0	57.1	-57.5	-5914.2	-.1	.0	50.46	51.87	.973	
31.00	30.00	20.3	.0	57.5	-59.4	-6200.0	-.1	.0	50.10	51.87	.966	
26.00	25.00	20.3	.0	57.9	-61.3	-6486.7	-.1	.0	49.71	51.87	.958	
21.00	20.00	20.3	.0	58.2	-63.2	-6776.7	-.2	.0	49.32	51.87	.951	
16.00	15.00	20.3	.0	58.6	-65.2	-7067.5	-.2	.0	48.91	51.87	.943	
11.00	10.00	20.3	.0	59.1	-67.2	-7360.8	-.2	.0	48.50	51.87	.935	
6.00	5.00	20.3	.0	59.5	-69.2	-7655.8	-.2	.0	48.09	51.87	.927	
1.00	.00	20.3	.0	59.5	-69.2	7953.3	.2	.0	47.66	51.87	.919	BASE

DISPLACEMENTS

ELEV	DEFLECTION feet				ROTATION, degrees			
X, ft	X	Y	Z	XY-Result	X	Y	Z	XY-Result
169.00	.00	10.75	-.49	10.75< 6.36%>	-7.39	.00	.00	7.39

SABRE COMMUNICATIONS CORP
2101 Murray Street
Sioux City, IA 51101

JOB: 00-11956
INSITE TOWERS LLC
Cheshire, CT

20-Apr-15 16:30
Ph 712.258.6690
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CASE - 2: Max Wind Load x.75

TIA/EIA-222-F

VERTICAL OLF	1.00	WIND SPEED	73.6 mph 118.4 kph
ICE COVER	.50 in	GUST FACTOR	1.69
STRESS REDUCTION	.60	EXPOSURE COEFF.	.2857
STRESS AMPLIFY	1.33	Cf	.650
BASE ABOVE Grd	1.00 ft	REFERENCE HEIGHT	33.0 ft
		PRESSURE @Ref.Ht	23.4 psf 1121.Pa

APPURTENANCE LOADS

#	Qty	Description	Center Line Elev-Ft	WEIGHT each Lbs	AREA each Ft^2	Tx-CABLE Type	Tx-CABLE Qty	Tx-CABLE #/Ft	WIND Psf	FORCES Tra-Y Kips	FORCES Ax-Z Kips	MOM. Lg-X Ft-K
1	1	Tri-Collar Mount 12"-18" Pole Di	167.0	212	2.2				37.3	.08	-.2	.0
	2	DS4C00F36D-D	172.1	27	2.2	7/8"	4	.54	37.6	.17	-.4	-.8
2	1	Tri-Collar Mount 12"-18" Pole Di	167.0	212	2.2				37.3	.08	-.2	.0
	2	DS1F03F36D-N	180.3	132	9.0	7/8"	4	.54	38.1	.69	-.6	-9.1
3	2	Pipe Mount (up to 6' Dish)	167.0	53	.1				37.2	.01	-.1	.0
	2	2' H.P. DISH	169.0	208	4.3	7/8"	2	.54	37.4	.32	-.6	-.6
_ 4	1	12' LP Platform with Handrail (R	164.0	1640	189.8				37.2	7.05	-1.6	-10.6
	12	8' X 1' X 7IN PANEL	164.0	116		1 5/8"	18	1.04	37.1		-4.5	
	12	RRUS 11	164.0	74		None	1	.00	37.1		-.9	
	6	FD9R6004	164.0	12		None	1	.00	37.1		-.1	
5	1	User Defined Loading	163.9	5	.1				37.1	.00	.0	.0
	3	DC6-48-60-18-8F	164.0	39	1.5	None	1	.00	37.1	.16	-.1	.0
	4	GPS-TMG-HR-26N	164.0	0	.3	1/2"	4	.40	37.1	.05	-.3	
_ 6	1	12' LP Platform with Handrail (R	154.0	1640	160.4				36.5	5.86	-1.6	-8.8
	12	HPA-65R-BUU-H8-K	154.0	141		3/4"	8	.50	36.5		-2.3	
	2	DC12-48-60-RM	154.0	1		None	1	.00	36.5		.0	
	3	FC12-PC6-10E	154.0	41		None	1	.00	36.5		-.1	
7	1	User Defined Loading	153.9	5	.1				36.4	.00	.0	.0
	6	RRUS 12	154.0	81	4.1	None	1	.00	36.5	.89	-.5	-.1
	2	24" X 24" X 10" DISTRIBU	154.0	85	6.1	None	1	.00	36.5	.44	-.2	.0
	6	RRU 22 XX20	154.0	72	2.9	None	1	.00	36.5	.64	-.4	-.1
8	1	User Defined Loading	153.9	5	.1				36.4	.00	.0	.0
	6	RRUS A2 MODULE	154.0	32	2.1	1/2"	2	.40	36.5	.47	-.3	.0
	9	RRUS 11	154.0	74	3.3	7/16"	3	.27	36.5	1.08	-.8	-.1
_ 9	1	12' LP Platform with Handrail (R	144.0	1640	168.1				35.8	6.02	-1.6	-9.0
	12	8' X 1' X 7IN PANEL	144.0	116		1 5/8"	12	1.04	35.8		-3.2	
	12	E15S09P80	144.0	13		None	1	.00	35.8		-.2	
	1	DC6-48-60-18-8F	144.0	39		None	1	.00	35.8		.0	
10	1	User Defined Loading	143.9	5	.1				35.7	.00	.0	.0
	12	9442 RRHX	144.0	67	2.7	1/2"	4	.40	35.8	1.15	-1.0	-.1
_11	1	12' LP Platform with Handrail (R	134.0	1640	173.2				35.1	6.08	-1.6	-9.1
	12	8' X 1' X 7IN PANEL	134.0	116		1 5/8"	12	1.04	35.0		-3.1	
	12	9442 RRHX	134.0	67		1/2"	4	.40	35.0		-1.0	
	1	DC6-48-60-18-8F	134.0	39		None	1	.00	35.0		.0	
_12	1	12' LP Platform with Handrail (R	124.0	1640	173.2				34.3	5.95	-1.6	-8.9
	12	8' X 1' X 7IN PANEL	124.0	116		1 5/8"	12	1.04	34.3		-2.9	
	12	9442 RRHX	124.0	67		1/2"	4	.40	34.3		-1.0	
	1	DC6-48-60-18-8F	124.0	39		None	1	.00	34.3		.0	

RESULTS

ELEV. X, ft	POLE X, ft	WIND psf	FORCES,kips ShearX	ShearY	AxiaZ	MOMENTS,ft-kips BendX	BendY	TorqZ	STRESS ksi	ALLOW ksi	CSR
170.00	169.00	24.3	.0	.0	-.1	.0	.0	.0	.01	51.87	.000
168.00	167.00	24.3	.0	.4	-.7	-1.0	.0	.0	.22	51.87	.004
168.00	167.00	24.3	.0	1.3	1.5	10.1	.0	.0	1.82	51.87	.035
168.00	167.00	24.3	.0	1.7	-2.2	-10.8	.0	.0	1.98	51.87	.038
165.00	164.00	24.1	.0	9.6	-8.6	-26.6	.0	.0	4.73	51.87	.091
164.90	163.90	24.1	.0	10.0	-9.1	-27.5	.0	.0	4.90	51.87	.095
159.90	158.90	23.9	.0	10.2	-9.5	-77.5	.0	.0	10.68	51.87	.206
155.00	154.00	23.7	.0	16.6	-13.1	-136.4	.0	.0	16.13	51.87	.311
154.90	153.90	23.7	.0	18.7	-14.0	-138.3	.0	.0	16.36	51.87	.315
154.90	153.90	23.7	.0	20.5	-15.2	-138.6	.0	.0	16.47	51.87	.318
149.90	148.90	23.5	.0	20.7	-15.6	-240.9	.0	.0	24.39	51.87	.470
147.00	146.00	23.3	.0	20.8	-16.0	-300.9	.0	.0	28.08	51.87	.541
145.00	144.00	23.3	.0	27.4	-20.5	-351.5	.0	.0	18.97	51.87	.366
144.90	143.90	23.2	.0	28.7	-21.7	-354.4	.0	.0	19.11	51.87	.368
143.25	142.25	23.2	.0	28.9	-22.4	-401.7	.0	.0	20.71	51.87	.399
138.25	137.25	22.9	.0	29.1	-23.2	-546.1	.0	.0	24.75	51.87	.477
135.00	134.00	22.8	.0	35.9	-29.2	-649.8	.0	.0	27.39	51.87	.528
130.00	129.00	22.5	.0	36.2	-30.1	-829.4	.0	.0	31.15	51.87	.601

125.00	124.00	22.3	.0	42.8	-36.3	-1019.2	.0	.0	34.48	51.87	.665	
120.00	119.00	22.0	.0	43.1	-37.4	-1233.3	.0	.0	37.65	51.87	.726	
115.00	114.00	21.8	.0	43.3	-38.5	-1449.2	.0	.0	40.15	51.87	.774	
110.00	109.00	21.5	.0	43.6	-39.7	-1665.0	.0	.0	42.07	51.87	.811	
105.00	104.00	21.2	.0	43.8	-41.0	-1883.3	.0	.0	43.58	51.87	.840	
100.00	99.00	20.9	.0	44.0	-41.7	-2102.5	-.1	.0	44.73	51.87	.862	
99.50	98.50	20.9	.0	44.1	-42.7	-2124.2	-.1	.0	44.83	51.87	.864	
94.50	93.50	20.6	.0	44.3	-43.8	-2345.0	-.1	.0	41.85	51.87	.807	
93.50	92.50	20.5	.0	44.5	-45.0	-2389.2	-.1	.0	41.97	51.87	.809	
88.50	87.50	20.2	.0	44.8	-46.8	-2611.7	-.1	.0	42.44	51.87	.818	
83.50	82.50	19.9	.0	45.0	-48.3	-2835.0	-.1	.0	42.74	51.87	.824	
78.50	77.50	19.5	.0	45.3	-49.9	-3060.8	-.1	.0	42.93	51.87	.828	
73.50	72.50	19.1	.0	45.6	-51.5	-3287.5	-.1	.0	43.00	51.87	.829	
68.50	67.50	18.8	.0	45.9	-53.2	-3515.0	-.1	.0	42.98	51.87	.829	
63.50	62.50	18.4	.0	46.2	-54.9	-3745.0	-.1	.0	42.91	51.87	.827	
58.50	57.50	17.9	.0	46.5	-56.9	-3975.8	-.1	.0	42.78	51.87	.825	
54.00	53.00	17.5	.0	46.8	-59.3	-4184.2	-.1	.0	42.62	51.87	.822	
49.00	48.00	17.1	.0	47.0	-61.4	-4418.3	-.1	.0	43.94	51.87	.847	
46.00	45.00	16.7	.0	47.2	-63.4	-4559.2	-.1	.0	43.78	51.87	.844	
41.00	40.00	16.2	.0	47.5	-65.7	-4795.0	-.1	.0	43.47	51.87	.838	
36.00	35.00	15.6	.0	47.7	-67.7	-5032.5	-.1	.0	43.14	51.87	.832	
31.00	30.00	15.2	.0	48.0	-69.7	-5270.8	-.1	.0	42.78	51.87	.825	
26.00	25.00	15.2	.0	48.2	-71.7	-5510.8	-.1	.0	42.42	51.87	.818	
21.00	20.00	15.2	.0	48.5	-73.8	-5751.7	-.1	.0	42.05	51.87	.811	
16.00	15.00	15.2	.0	48.7	-75.9	-5994.2	-.1	.0	41.68	51.87	.803	
11.00	10.00	15.2	.0	49.0	-78.1	-6237.5	-.1	.0	41.29	51.87	.796	
6.00	5.00	15.2	.0	49.3	-80.3	-6482.5	-.1	.0	40.91	51.87	.789	
1.00	.00	15.2	.0	49.3	-80.3	6728.3	.2	.0	40.51	51.87	.781	BASE

DISPLACEMENTS

ELEV	DEFLECTION feet				ROTATION, degrees			
X, ft	X	Y	Z	XY-Result	X	Y	Z	XY-Result
169.00	.00	9.20	-.36	9.20< 5.44%>	-6.36	.00	.00	6.36

CASE - 3: Everyday Operating

TIA/EIA-222-F

VERTICAL OLF	1.00		WIND SPEED	50.0 mph	80.5 kph
ICE COVER	.00	in	GUST FACTOR	1.69	
STRESS REDUCTION	.60		EXPOSURE COEFF.	.2857	
STRESS AMPLIFY	1.33		Cf	.650	
BASE ABOVE Grd	1.00	ft	REFERENCE HEIGHT	33.0 ft	
			PRESSURE @Ref.Ht	10.8 psf	518.Pa

APPURTENANCE LOADS

#	Qty	Description	Center Line Elev-Ft	WEIGHT each Lbs	AREA each Ft^2	Tx-CABLE Type	Qty	#/Ft	WIND Psf	FORCES Tra-Y Kips	Ax-Z Kips	MOM. Lg-X Ft-K
1	1	Tri-Collar Mount 12"-18" Pole Di	167.0	193	2.0				17.2	.03	-.2	.0
	2	DS4C00F36D-D	172.1	13	1.5	7/8"	4	.54	17.4	.05	-.4	-.3
2	1	Tri-Collar Mount 12"-18" Pole Di	167.0	193	2.0				17.2	.03	-.2	.0
	2	DS1F03F36D-N	180.3	71	6.8	7/8"	4	.54	17.6	.24	-.5	-3.1
3	2	Pipe Mount (up to 6' Dish)	167.0	49	.1				17.2	.00	-.1	.0
	2	2' H.P. DISH	169.0	150	4.0	7/8"	2	.54	17.3	.14	-.5	-.3
_ 4	1	12' LP Platform with Handrail (R	164.0	1491	165.5				17.1	2.84	-1.5	-4.3
	12	8' X 1' X 7IN PANEL	164.0	51		1 5/8"	18	1.04	17.1		-3.7	
	12	RRUS 11	164.0	55		None	1	.00	17.1		-.7	
	6	FD9R6004	164.0	10		None	1	.00	17.1		-.1	
5	1	User Defined Loading	163.9	5	.1				17.1	.00	.0	.0
	3	DC6-48-60-18-8F	164.0	20	1.3	None	1	.00	17.1	.07	-.1	
	4	GPS-TMG-HR-26N	164.0	0	.2	1/2"	4	.40	17.1	.01	-.3	
_ 6	1	12' LP Platform with Handrail (R	154.0	1491	144.7				16.8	2.44	-1.5	-3.7
	12	HPA-65R-BUU-H8-K	154.0	68		3/4"	8	.50	16.8		-1.4	
	2	DC12-48-60-RM	154.0	0		None	1	.00	16.8		.0	
	3	FC12-PC6-10E	154.0	25		None	1	.00	16.8		-.1	
7	1	User Defined Loading	153.9	5	.1				16.8	.00	.0	.0
	6	RRUS 12	154.0	58	3.7	None	1	.00	16.8	.37	-.3	.0
	2	24" X 24" X 10" DISTRIBU	154.0	50	5.6	None	1	.00	16.8	.19	-.1	.0
	6	RRU 22 XX20	154.0	51	2.6	None	1	.00	16.8	.26	-.3	.0
8	1	User Defined Loading	153.9	5	.1				16.8	.00	.0	.0
	6	RRUS A2 MODULE	154.0	22	1.9	1/2"	2	.40	16.8	.19	-.3	.0
	9	RRUS 11	154.0	55	2.9	7/16"	3	.27	16.8	.45	-.6	.0
_ 9	1	12' LP Platform with Handrail (R	144.0	1491	147.3				16.5	2.44	-1.5	-3.7
	12	8' X 1' X 7IN PANEL	144.0	51		1 5/8"	12	1.04	16.5		-2.4	
	12	E15S09P80	144.0	9		None	1	.00	16.5		-.1	
	1	DC6-48-60-18-8F	144.0	20		None	1	.00	16.5		.0	
10	1	User Defined Loading	143.9	5	.1				16.5	.00	.0	.0
	12	9442 RRHX	144.0	50	2.2	1/2"	4	.40	16.5	.44	-.8	.0
_11	1	12' LP Platform with Handrail (R	134.0	1491	154.7				16.2	2.51	-1.5	-3.8
	12	8' X 1' X 7IN PANEL	134.0	51		1 5/8"	12	1.04	16.2		-2.3	
	12	9442 RRHX	134.0	50		1/2"	4	.40	16.2		-.8	
	1	DC6-48-60-18-8F	134.0	20		None	1	.00	16.2		.0	
_12	1	12' LP Platform with Handrail (R	124.0	1491	154.7				15.8	2.45	-1.5	-3.7
	12	8' X 1' X 7IN PANEL	124.0	51		1 5/8"	12	1.04	15.8		-2.2	
	12	9442 RRHX	124.0	50		1/2"	4	.40	15.8		-.8	
	1	DC6-48-60-18-8F	124.0	20		None	1	.00	15.8		.0	

RESULTS

ELEV. X, ft	POLE X, ft	WIND psf	FORCES,kips ShearX	ShearY	AxiaZ	MOMENTS,ft-kips BendX	BendY	TorqZ	STRESS ksi	ALLOW ksi	CSR
170.00	169.00	11.2	.0	.0	-.1	.0	.0	.0	.00	51.87	.000
168.00	167.00	11.2	.0	.2	-.7	-.3	.0	.0	.10	51.87	.002
168.00	167.00	11.2	.0	.5	1.4	3.5	.0	.0	.68	51.87	.013
168.00	167.00	11.2	.0	.7	-2.0	-3.8	.0	.0	.77	51.87	.015
165.00	164.00	11.1	.0	3.8	-7.9	-10.0	.0	.0	2.07	51.87	.040
164.90	163.90	11.1	.0	3.9	-8.3	-10.4	.0	.0	2.15	51.87	.041
159.90	158.90	11.0	.0	4.0	-8.6	-30.0	.0	.0	4.43	51.87	.085
155.00	154.00	10.9	.0	6.7	-11.7	-53.5	.0	.0	6.68	51.87	.129
154.90	153.90	10.9	.0	7.5	-12.4	-54.3	.0	.0	6.79	51.87	.131
154.90	153.90	10.9	.0	8.2	-13.4	-54.3	.0	.0	6.86	51.87	.132
149.90	148.90	10.8	.0	8.3	-13.7	-95.5	.0	.0	10.05	51.87	.194
147.00	146.00	10.8	.0	8.4	-14.0	-119.7	.0	.0	11.54	51.87	.222
145.00	144.00	10.7	.0	11.0	-18.1	-140.2	.0	.0	7.84	51.87	.151
144.90	143.90	10.7	.0	11.5	-19.1	-141.3	.0	.0	7.90	51.87	.152
143.25	142.25	10.7	.0	11.6	-19.7	-160.3	.0	.0	8.56	51.87	.165
138.25	137.25	10.6	.0	11.7	-20.4	-218.3	.0	.0	10.18	51.87	.196
135.00	134.00	10.5	.0	14.5	-25.5	-260.2	.0	.0	11.31	51.87	.218
130.00	129.00	10.4	.0	14.6	-26.3	-332.7	.0	.0	12.83	51.87	.247

125.00	124.00	10.3	.0	17.3	-31.5	-409.4	.0	.0	14.22	51.87	.274	
120.00	119.00	10.2	.0	17.5	-32.3	-496.2	.0	.0	15.51	51.87	.299	
115.00	114.00	10.0	.0	17.6	-33.2	-583.4	.0	.0	16.52	51.87	.318	
110.00	109.00	9.9	.0	17.7	-34.1	-671.3	.0	.0	17.31	51.87	.334	
105.00	104.00	9.8	.0	17.8	-35.0	-759.9	.0	.0	17.93	51.87	.346	
100.00	99.00	9.7	.0	17.9	-35.6	-849.2	.0	.0	18.40	51.87	.355	
99.50	98.50	9.6	.0	18.0	-36.5	-858.3	.0	.0	18.46	51.87	.356	
94.50	93.50	9.5	.0	18.1	-37.4	-947.5	.0	.0	17.21	51.87	.332	
93.50	92.50	9.5	.0	18.2	-38.4	-965.8	.0	.0	17.27	51.87	.333	
88.50	87.50	9.3	.0	18.3	-39.9	-1056.7	.0	.0	17.48	51.87	.337	
83.50	82.50	9.2	.0	18.4	-41.2	-1148.3	.0	.0	17.61	51.87	.340	
78.50	77.50	9.0	.0	18.6	-42.5	-1240.8	.0	.0	17.70	51.87	.341	
73.50	72.50	8.8	.0	18.7	-43.8	-1333.3	.0	.0	17.74	51.87	.342	
68.50	67.50	8.7	.0	18.9	-45.2	-1426.7	.0	.0	17.74	51.87	.342	
63.50	62.50	8.5	.0	19.0	-46.6	-1521.7	.0	.0	17.73	51.87	.342	
58.50	57.50	8.3	.0	19.2	-48.3	-1616.7	.0	.0	17.69	51.87	.341	
54.00	53.00	8.1	.0	19.3	-50.5	-1702.5	.0	.0	17.64	51.87	.340	
49.00	48.00	7.9	.0	19.4	-52.3	-1799.2	.0	.0	18.20	51.87	.351	
46.00	45.00	7.7	.0	19.5	-54.1	-1857.5	.0	.0	18.15	51.87	.350	
41.00	40.00	7.5	.0	19.7	-56.1	-1955.0	.0	.0	18.04	51.87	.348	
36.00	35.00	7.2	.0	19.8	-57.8	-2053.3	.0	.0	17.92	51.87	.345	
31.00	30.00	7.0	.0	19.9	-59.4	-2152.5	.0	.0	17.79	51.87	.343	
26.00	25.00	7.0	.0	20.1	-61.2	-2251.7	-.1	.0	17.65	51.87	.340	
21.00	20.00	7.0	.0	20.2	-62.9	-2351.7	-.1	.0	17.51	51.87	.338	
16.00	15.00	7.0	.0	20.3	-64.8	-2453.3	-.1	.0	17.38	51.87	.335	
11.00	10.00	7.0	.0	20.5	-66.6	-2555.0	-.1	.0	17.24	51.87	.332	
6.00	5.00	7.0	.0	20.6	-68.5	-2656.7	-.1	.0	17.09	51.87	.329	
1.00	.00	7.0	.0	20.6	-68.5	2760.0	.1	.0	16.93	51.87	.326	BASE

DISPLACEMENTS

ELEV	DEFLECTION feet				ROTATION, degrees				MicroW
X, ft	X	Y	Z	XY-Result	X	Y	Z	XY-Result	AlloW
169.00	.00	3.74	-.06	3.74< 2.21%>	-2.57	.00	.00	2.57	

SABRE COMMUNICATIONS CORP	JOB: 00-11956	20-Apr-15 16:30
2101 Murray Street	**INSITE TOWERS LLC**	Ph 712.258.6690
Sioux City, IA 51101	**Cheshire, CT**	Fx 712.258.8250

SHAPE: 18 SIDED POLYGON with FLAT-FLAT ORIENTATION
BOLTS: QUADRANT SPACED BOLTS 6.00 in. ON CENTER
LOCATE:

POLE DATA

DIAMETER	= 71.90 in.	BASE	AXIAL FORCE=	-69.2 kips	Vert
PLATE	= .5000 in.	ACTIONS	SHEAR X =	42.1 kips	Long
TAPER	= .3300 in/ft		SHEAR Y =	42.1 kips	Tran
POLE Fy	= 65.00 ksi		X-AXIS MOM =	5623.0 ft-kips	Tran
			Y-Axis MOM =	5623.0 ft-kips	Long
			Z-Axis MOM =	.0 ft-kips	Vert

DESIGN CASE = 1 Max Wind

Design: ANY Orientation Reactions at 45.00 deg to X-AXIS

BOLT LOADS

	AXIAL - COMPRESSION	= 175.06 kips		
	AXIAL - TENSION	= 170.11 kips		
	SHEAR	= 3.00 kips		
AXIAL	STRESS	= 53.86 ksi		
SHEAR	STRESS	= .98 ksi		
YIELD	STRENGTH Fy	= 75.00 ksi		
ULT.	STRENGTH Fu	= 100.00 ksi	CSR	
ALLOW	STRESS Fa [.60 x 1.33]	= 59.85 ksi	.900	EIA-F
	TENSION AREA REQUIRED	= 2.92 in^2		
	TENSION AREA FURNISHED	= 3.25 in^2		
	ROOT AREA FURNISHED	= 3.07 in^2		

A615 ::: ANCHOR BOLT DESIGN USED

28 Bolts on a	79.000 in. Bolt Circle	SHIP	
2.250 in. Diameter	67.13 in. Embedded	(lbs)	
12.00 in. Exposed	84.00 in. Total Length	3722	

CONCRETE - Fc= 4000 psi

ANCHOR BOLTS are STRAIGHT w\ UPLIFT NUT

BASE PLATE

[Bend Model: 1/4 Circ]
YIELD STRENGTH = 50.0 ksi
BEND LINE WIDTH = 57.0 in.
PLATE MOMENT = 3936.6 in-k
THICKNESS REQD = 3.221 in.
BENDING STRESS = 39.2 ksi
ALLOWABLE STRESS = 39.9 ksi
[Fy x .60 x 1.33]

BASE PLATE USED

3.25	in.	THICK	SHIP
81.00	in.	SQUARE	(lbs)
59.50	in.	CENTER HOLE	2597
20.00	in.	CORNER CLIP	

LOAD CASE SUMMARY

	FORCES-(kips)			MOMENTS-(ft-k)			ABolt-Str	Plate-Str		
							Allow	Actual	Allow	Design
LC	Axial	ShearX	ShearY	X-axis	Y-axis	TorQ	CSR	ksi	ksi	ksi	Code
1	69.2	42.1	42.1	5623	5623	0	.900	59.85	39.20	39.90	EIA-F
2	80.3	34.8	34.8	4757	4757	0	.766	59.85	33.34	39.90	EIA-F
3	68.5	14.6	14.6	1951	1951	0	.321	59.85	13.98	39.90	EIA-F

MAT FOUNDATION DESIGN BY SABRE TOWERS & POLES
170' Monopole INSITE TOWERS LLC Cheshire, CT (119563) 4-20-15 TTW
222-G

Overall Loads:			
Factored Moment (ft-kips)	10483		
Factored Axial (kips)	84.7		
Factored Shear (kips)	79.6		
Bearing Design Strength (ksf)	7.5	Max. Net Bearing Press. (ksf)	7.37
Water Table Below Grade (ft)	11		
Width of Mat (ft)	32.5	Allowable Bearing Pressure (ksf)	5.00
Thickness of Mat (ft)	2.5	Safety Factor	2.00
Depth to Bottom of Slab (ft)	6	Ultimate Bearing Pressure (ksf)	10.00
Quantity of Bolts in Bolt Circle	28	Bearing Φs	0.75
Bolt Circle Diameter (in)	79		
Top of Concrete to Top of Bottom Threads (in)	60		
Diameter of Pier (ft)	9	Minimum Pier Diameter (ft)	8.08
Ht. of Pier Above Ground (ft)	0.5	Equivalent Square b (ft)	7.98
Ht. of Pier Below Ground (ft)	3.5		
Quantity of Bars in Mat	56		
Bar Diameter in Mat (in)	1.128		
Area of Bars in Mat (in^2)	55.96		
Spacing of Bars in Mat (in)	6.96	Recommended Spacing (in)	6 to 12
Quantity of Bars Pier	52		
Bar Diameter in Pier (in)	1.128		
Tie Bar Diameter in Pier (in)	0.625		
Spacing of Ties (in)	12		
Area of Bars in Pier (in^2)	51.97	Minimum Pier A_s (in^2)	45.80
Spacing of Bars in Pier (in)	6.02	Recommended Spacing (in)	6 to 12
f'c (ksi)	4		
fy (ksi)	60		
Unit Wt. of Soil (kcf)	0.1		
Unit Wt. of Concrete (kcf)	0.15		
Volume of Concrete (yd^3)	107.23		
Two-Way Shear Action:			
Average d (in)	25.872		
ϕV_c (kips)	2339.8	V_u (kips)	183.5
$\phi V_c = \phi(2 + 4/\beta_c)f'_c{}^{1/2}b_o d$	3509.7		
$\phi V_c = \phi(\alpha_s d/b_o + 2)f'_c{}^{1/2}b_o d$	2609.3		
$\phi V_c = \phi 4 f'_c{}^{1/2}b_o d$	2339.8		
Shear perimeter, b_o (in)	420.57		
β_c	1		
One-Way Shear:			
ϕV_c (kips)	1084.9	V_u (kips)	578.0
Stability:			
Overturning Design Strength (ft-k)	12464.4	Total Applied M (ft-k)	11000.4

222-G

Pier Design:

ϕV_n (kips)	1007.9	V_u (kips)	79.6
$\phi V_c=\phi 2(1+N_u/(2000A_g))f'_c{}^{1/2}b_wd$	1007.9		
V_s (kips)	0.0	*** V_s max = 4 $f'_c{}^{1/2}b_wd$ (kips)	2360.6
Maximum Spacing (in)	6.82	(Only if Shear Ties are Required)	
Actual Hook Development (in)	24.74	Req'd Hook Development l_{dh} (in)	14.98
		*** Ref. To Spacing Requirements ACI 11.5.4.3	

Flexure in Slab:

ϕM_n (ft-kips)	6196.5	M_u (ft-kips)	6104.6
a (in)	2.53		
Steel Ratio	0.00555		
β_1	0.85		
Maximum Steel Ratio (ρ_t)	0.0181		
Minimum Steel Ratio	0.0018		
Rebar Development in Pad (in)	144.14	Required Development in Pad (in)	31.56

Condition	1 is OK, 0 Fails
Maximum Soil Bearing Pressure	1
Pier Area of Steel	1
Pier Shear	1
Interaction Diagram Visual Check	1
Two-Way Shear Action	1
One-Way Shear Action	1
Overturning	1
Flexure	1
Steel Ratio	1
Length of Development in Pad	1
Hook Development	1

MAT FOUNDATION DESIGN BY SABRE TOWERS & POLES
170' Monopole INSITE TOWERS LLC Cheshire, CT (119563) 4-20-15 TTW
222-F

Overall Loads:			
Moment (ft-kips)	7953		
Axial (kips)	69.2		
Shear (kips)	59.5		
Allowable Bearing Pressure (ksf)	5	Maximum Net Bearing Pressure (ksf)	2.65
Water Table Below Grade (ft)	999		
Width of Mat (ft)	32.5		
Thickness of Mat (ft)	2.5		
Depth to Bottom of Slab (ft)	6		
Quantity of Bolts in Bolt Circle	28		
Bolt Circle Diameter (in)	79		
Top of Concrete to Top of Bottom Threads (in)	60		
Diameter of Pier (ft)	9	Minimum Pier Diameter (ft)	8.08
Ht. of Pier Above Ground (ft)	0.5	Equivalent Square b (ft)	7.98
Ht. of Pier Below Ground (ft)	3.5		
Quantity of Bars in Mat	56		
Bar Diameter in Mat (in)	1.128		
Area of Bars in Mat (in^2)	55.96		
Spacing of Bars in Mat (in)	6.96	Recommended Spacing (in)	6 to 12
Quantity of Bars Pier	52		
Bar Diameter in Pier (in)	1.128		
Tie Bar Diameter in Pier (in)	0.625		
Spacing of Ties (in)	12		
Area of Bars in Pier (in^2)	51.97	Minimum Pier A_s (in^2)	45.80
Spacing of Bars in Pier (in)	6.02	Recommended Spacing (in)	6 to 12
f'c (ksi)	4		
fy (ksi)	60		
Unit Wt. of Soil (kcf)	0.1		
Unit Wt. of Concrete (kcf)	0.15		
Load Factor	1.3		
Volume of Concrete (yd^3)	107.23		
Two-Way Shear Action:			
Average d (in)	25.872		
ϕV_c (kips)	2064.5	V_u (kips)	139.6
$\phi V_c = \phi(2 + 4/\beta_c)f'_c{}^{1/2}b_o d$	3096.8		
$\phi V_c = \phi(\alpha_s d/b_o + 2)f'_c{}^{1/2}b_o d$	2302.3		
$\phi V_c = \phi 4 f'_c{}^{1/2}b_o d$	2064.5		
Shear perimeter, b_o (in)	420.57		
β_c	1		
One-Way Shear:			
ϕV_c (kips)	957.2	V_u (kips)	615.7
Stability:			
Allowable Resisting M (ft-k)	9217.9	Total Applied M (ft-k)	8339.8

MAT FOUNDATION DESIGN BY SABRE TOWERS & POLES (CONTINUED)
170' Monopole INSITE TOWERS LLC Cheshire, CT (119563) 4-20-15 TTW
222-F

Pier Design:

ϕV_n (kips)	888.6	V_u (kips)	77.4
$\phi V_c=\phi 2(1+N_u/(2000A_g))f'_c{}^{1/2}b_wd$	888.6		
V_s (kips)	0.0	*** V_s max = 4 $f'_c{}^{1/2}b_wd$ (kips)	2360.6
Maximum Spacing (in)	6.82	(Only if Shear Ties are Required)	
Actual Hook Development (in)	24.74	Req'd Hook Development l_{dh} (in)	14.98
		*** Ref. To Spacing Requirements ACI 11.5.4.3	

Flexure in Slab:

ϕM_n (ft-kips)	6196.5	M_u (ft-kips)	4477.8
a (in)	2.53		
Steel Ratio	0.00555		
β_1	0.85		
Maximum Steel Ratio (.75p_b)	0.0214		
Minimum Steel Ratio	0.0018		
Rebar Development in Pad (in)	192.00	Required Development in Pad (in)	38.10

Condition	1 is OK, 0 Fails
Maximum Soil Bearing Pressure	1
Pier Area of Steel	1
Pier Shear	1
Interaction Diagram Visual Check	1
Two-Way Shear Action	1
One-Way Shear Action	1
Stability (Safety Factor = 1.5)	1
Flexure	1
Steel Ratio	1
Length of Development in Pad	1
Hook Development	1

LPile Plus for Windows, Version 2013-07.005

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method

222-G
This copy of LPile is used by:

Serial Number of Security Device: 160778402
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is forbidden by the software license agreement.

Files Used for Analysis

Path to file locations: C:\Progra~2\Ensoft\Lpile2013\
Name of input data file: 119563B.lp7d
Name of output report file: 119563B.lp7o
Name of plot output file: 119563B.lp7p
Name of runtime messeage file: 119563B.lp7r

Date and Time of Analysis

Date: April 20, 2015 Time: 16:21:40

Problem Title

170' Monopole INSITE TOWERS LLC Cheshire, CT (119563) 4-20-15 TTW

Job Number:

Client:

Engineer:

Description:

Program Options and Settings

Engineering Units of Input Data and Computations:
- Engineering units are US Customary Units (pounds, feet, inches)

Analysis Control Options:

- Maximum number of iterations allowed	=	300
- Deflection tolerance for convergence	=	1.0000E-05 in
- Maximum allowable deflection	=	100.0000 in
- Number of pile increments	=	100

Loading Type and Number of Cycles of Loading:
- Static loading specified

Computational Options:
- Use unfactored loads in computations (conventional analysis)
- Compute pile response under loading and nonlinear bending properties of pile (only if nonlinear pile properties are input)
- Use of p-y modification factors for p-y curves not selected
- Loading by lateral soil movements acting on pile not selected
- Input of shear resistance at the pile tip not selected
- Computation of pile-head foundation stiffness matrix not selected
- Push-over analysis of pile not selected
- Buckling analysis of pile not selected

Output Options:
- No p-y curves to be computed and reported for user-specified depths
- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
- Printing Increment (nodal spacing of output points) = 3

Pile Structural Properties and Geometry

Total number of pile sections = 1

Total length of pile = 31.50 ft

Depth of ground surface below top of pile = 0.50 ft

Pile diameter values used for p-y curve computations are defined using 2 points.

p-y curves are computed using pile diameter values interpolated with depth over the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	108.0000000
2	31.500000	108.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type = Drilled Shaft (Bored Pile)
Section Length = 31.50000 ft
Section Diameter = 108.00000 in

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees = 0.000 radians

Pile Batter Angle = 0.000 degrees = 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 2 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer = 0.50000 ft
Distance from top of pile to bottom of layer = 10.50000 ft
Effective unit weight at top of layer = 124.93440 pcf
Effective unit weight at bottom of layer = 124.93440 pcf
Friction angle at top of layer = 34.00000 deg.
Friction angle at bottom of layer = 34.00000 deg.
Subgrade k at top of layer = 84.00000 pci
Subgrade k at bottom of layer = 84.00000 pci

Layer 2 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer = 10.50000 ft
Distance from top of pile to bottom of layer = 31.50000 ft
Effective unit weight at top of layer = 62.55360 pcf
Effective unit weight at bottom of layer = 62.55360 pcf
Friction angle at top of layer = 34.00000 deg.
Friction angle at bottom of layer = 34.00000 deg.
Subgrade k at top of layer = 68.57143 pci
Subgrade k at bottom of layer = 68.57143 pci

(Depth of lowest soil layer extends 0.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Layer Soil Type (p-y Curve Criteria)	Layer Depth ft	Effective Unit Wt. pcf	Angle of Friction deg.	kpy pci
1	Sand (Reese, et al.)	0.500	124.934	34.000	84.000
		10.500	124.934	34.000	84.000
2	Sand (Reese, et al.)	10.500	62.554	34.000	68.571
		31.500	62.554	34.000	68.571

Loading Type

Static loading criteria were used when computing p-y curves for all analyses.

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 1

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	1	V = 106133. lbs	M = 167728000. in-lbs	112933.	No

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

Axial thrust force values were determined from pile-head loading conditions

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Dimensions and Properties of Drilled Shaft (Bored Pile):

Length of Section	=	31.50000 ft
Shaft Diameter	=	108.00000 in
Concrete Cover Thickness	=	3.62533 in
Number of Reinforcing Bars	=	42 bars
Yield Stress of Reinforcing Bars	=	60000. psi
Modulus of Elasticity of Reinforcing Bars	=	29000000. psi
Gross Area of Shaft	=	9160.88418 sq. in.
Total Area of Reinforcing Steel	=	65.52000 sq. in.
Area Ratio of Steel Reinforcement	=	0.72 percent
Edge-to-Edge Bar Spacing	=	6.01364 in
Maximum Concrete Aggregate Size	=	0.75000 in
Ratio of Bar Spacing to Aggregate Size	=	8.02
Offset of Center of Rebar Cage from Center of Pile	=	0.0000 in

Axial Structural Capacities:

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As	=	34855.439 kips
Tensile Load for Cracking of Concrete	=	-4002.062 kips
Nominal Axial Tensile Capacity	=	-3931.200 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	1.41000	1.56000	49.66967	0.00000
2	1.41000	1.56000	49.11490	7.40288
3	1.41000	1.56000	47.46299	14.64039
4	1.41000	1.56000	44.75083	21.55086
5	1.41000	1.56000	41.03901	27.97992
6	1.41000	1.56000	36.41045	33.78396
7	1.41000	1.56000	30.96853	38.83331
8	1.41000	1.56000	24.83484	43.01520
9	1.41000	1.56000	18.14637	46.23619
10	1.41000	1.56000	11.05254	48.42435
11	1.41000	1.56000	3.71182	49.53079
12	1.41000	1.56000	-3.71182	49.53079
13	1.41000	1.56000	-11.05254	48.42435
14	1.41000	1.56000	-18.14637	46.23619
15	1.41000	1.56000	-24.83484	43.01520
16	1.41000	1.56000	-30.96853	38.83331
17	1.41000	1.56000	-36.41045	33.78396
18	1.41000	1.56000	-41.03901	27.97992
19	1.41000	1.56000	-44.75083	21.55086
20	1.41000	1.56000	-47.46299	14.64039
21	1.41000	1.56000	-49.11490	7.40288
22	1.41000	1.56000	-49.66967	0.00000
23	1.41000	1.56000	-49.11490	-7.40288
24	1.41000	1.56000	-47.46299	-14.64039
25	1.41000	1.56000	-44.75083	-21.55086
26	1.41000	1.56000	-41.03901	-27.97992
27	1.41000	1.56000	-36.41045	-33.78396
28	1.41000	1.56000	-30.96853	-38.83331
29	1.41000	1.56000	-24.83484	-43.01520
30	1.41000	1.56000	-18.14637	-46.23619
31	1.41000	1.56000	-11.05254	-48.42435
32	1.41000	1.56000	-3.71182	-49.53079
33	1.41000	1.56000	3.71182	-49.53079

34	1.41000	1.56000	11.05254	-48.42435
35	1.41000	1.56000	18.14637	-46.23619
36	1.41000	1.56000	24.83484	-43.01520
37	1.41000	1.56000	30.96853	-38.83331
38	1.41000	1.56000	36.41045	-33.78396
39	1.41000	1.56000	41.03901	-27.97992
40	1.41000	1.56000	44.75083	-21.55086
41	1.41000	1.56000	47.46299	-14.64039
42	1.41000	1.56000	49.11490	-7.40288

NOTE: The positions of the above rebars were computed by LPile

Minimum spacing between any two bars not equal to zero = 6.01364 inches between Bars 1 and 42

Spacing to aggregate size ratio = 8.01818

Concrete Properties:

Compressive Strength of Concrete	=	4000.00000 psi
Modulus of Elasticity of Concrete	=	3604997. psi
Modulus of Rupture of Concrete	=	-474.34164 psi
Compression Strain at Peak Stress	=	0.00189
Tensile Strain at Fracture of Concrete	=	-0.0001154
Maximum Coarse Aggregate Size	=	0.75000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 1

Number	Axial Thrust Force kips
1	112.933

Definitions of Run Messages and Notes:

C = concrete in section has cracked in tension.
Y = stress in reinforcing steel has reached yield stress.
T = ACI 318-08 criteria for tension-controlled section met, tensile strain in reinforcement exceeds 0.005 while simultaneously compressive strain in concrete more than than 0.003. See ACI 318-08, Section 10.3.4.
Z = depth of tensile zone in concrete section is less than 10 percent of section depth.

Bending Stiffness (EI) = Computed Bending Moment / Curvature.
Position of neutral axis is measured from edge of compression side of pile.
Compressive stresses and strains are positive in sign.
Tensile stresses and strains are negative in sign.

Axial Thrust Force = 112.933 kips

Bending Curvature rad/in.	Bending Moment in-kip	Bending Stiffness kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in	Max Concrete Stress ksi	Max Steel Stress ksi	Run Msg
0.000000250	7563.4461696	30253784678.	65.1937772	0.0000163	-0.0000107	0.0682582	0.4687399	
0.000000500	15095.	30189468728.	59.6129615	0.0000298	-0.0000242	0.1242885	0.8565579	
0.000000750	22592.	30122789926.	57.7528292	0.0000433	-0.0000377	0.1799171	1.2443790	
0.000001000	30056.	30055510302.	56.8228252	0.0000568	-0.0000512	0.2351439	1.6322019	
0.000001250	37485.	29987989383.	56.2648662	0.0000703	-0.0000647	0.2899688	2.0200264	
0.000001500	44881.	29920347545.	55.8929274	0.0000838	-0.0000782	0.3443917	2.4078523	
0.000001750	52242.	29852636604.	55.6272862	0.0000973	-0.0000917	0.3984127	2.7956798	
0.000002000	59570.	29784882444.	55.4280806	0.0001109	-0.0001051	0.4520318	3.1835086	
0.000002250	59570.	26475451061.	29.0055178	0.0000653	-0.0001777	0.2670245	-5.1191550	C
0.000002500	59570.	23827905955.	28.5170519	0.0000713	-0.0001987	0.2911391	-5.7233637	C
0.000002750	59570.	21661732686.	28.1043003	0.0000773	-0.0002197	0.3150289	-6.3286170	C
0.000003000	59570.	19856588296.	27.7613263	0.0000833	-0.0002407	0.3388536	-6.9337846	C
0.000003250	59570.	18329158427.	27.4688624	0.0000893	-0.0002617	0.3625713	-7.5391647	C
0.000003500	59570.	17019932825.	27.2102114	0.0000952	-0.0002828	0.3860995	-8.1453535	C
0.000003750	59570.	15885270637.	26.9868546	0.0001012	-0.0003038	0.4095636	-8.7514545	C
0.000004000	59570.	14892441222.	26.7921764	0.0001072	-0.0003248	0.4329634	-9.3574675	C
0.000004250	59570.	14016415268.	26.6211176	0.0001131	-0.0003459	0.4562989	-9.9633922	C
0.000004500	59570.	13237725530.	26.4697434	0.0001191	-0.0003669	0.4795699	-10.5692285	C
0.000004750	59570.	12541003134.	26.3290036	0.0001251	-0.0003879	0.5026644	-11.1757948	C
0.000005000	59570.	11913952977.	26.2025508	0.0001310	-0.0004090	0.5256871	-11.7823301	C
0.000005250	59570.	11346621883.	26.0887423	0.0001370	-0.0004300	0.5486463	-12.3887740	C
0.000005500	59570.	10830866343.	25.9858555	0.0001429	-0.0004511	0.5715417	-12.9951260	C
0.000005750	59570.	10359959111.	25.8924672	0.0001489	-0.0004721	0.5943734	-13.6013861	C
0.000006000	59570.	9928294148.	25.8073915	0.0001548	-0.0004932	0.6171412	-14.2075539	C
0.000006250	59570.	9531162382.	25.7296325	0.0001608	-0.0005142	0.6398450	-14.8136291	C
0.000006500	59570.	9164579213.	25.6583471	0.0001668	-0.0005352	0.6624848	-15.4196116	C
0.000006750	59570.	8825150354.	25.5928174	0.0001728	-0.0005562	0.6850605	-16.0255010	C
0.000007000	59570.	8509966412.	25.5324280	0.0001787	-0.0005773	0.7075719	-16.6312971	C
0.000007250	59570.	8216519295.	25.4766483	0.0001847	-0.0005983	0.7300190	-17.2369997	C
0.000007500	59570.	7942635318.	25.4250186	0.0001907	-0.0006193	0.7524017	-17.8426084	C
0.000007750	59570.	7686421276.	25.3769954	0.0001967	-0.0006403	0.7747156	-18.4481553	C
0.000008000	59570.	7446220611.	25.3302873	0.0002026	-0.0006614	0.7969015	-19.0540933	C
0.000008250	59570.	7220577562.	25.2868205	0.0002086	-0.0006824	0.8190235	-19.6599332	C
0.000008500	59570.	7008207634.	25.2463103	0.0002146	-0.0007034	0.8410817	-20.2656745	C
0.000008750	59570.	6807973130.	25.2085043	0.0002206	-0.0007244	0.8630760	-20.8713170	C
0.000009000	59570.	6618862765.	25.1731783	0.0002266	-0.0007454	0.8850062	-21.4768604	C
0.000009250	59570.	6439974582.	25.1401324	0.0002325	-0.0007665	0.9068723	-22.0823045	C
0.000009500	59570.	6270501567.	25.1091876	0.0002385	-0.0007875	0.9286741	-22.6876488	C

0.000009750	59570.	6109719476.	25.0801833	0.0002445	-0.0008085	0.9504116	-23.2928931	C
0.0000102	59570.	5811684379.	25.0274324	0.0002565	-0.0008505	0.9936931	-24.5030807	C
0.0000107	59570.	5541373478.	24.9808831	0.0002685	-0.0008925	1.0367162	-25.7128647	C
0.0000112	59570.	5295090212.	24.9397159	0.0002806	-0.0009344	1.0794798	-26.9222427	C
0.0000117	60613.	5158539105.	24.9032510	0.0002926	-0.0009764	1.1219834	-28.1312122	C
0.0000122	63023.	5144756410.	24.8709197	0.0003047	-0.0010183	1.1642260	-29.3397708	C
0.0000127	65432.	5131907440.	24.8422424	0.0003167	-0.0010603	1.2062068	-30.5479158	C
0.0000133	67838.	5119885739.	24.8168122	0.0003288	-0.0011022	1.2479250	-31.7556449	C
0.0000138	70243.	5108600328.	24.7942813	0.0003409	-0.0011441	1.2893798	-32.9629553	C
0.0000143	72646.	5097972986.	24.7743508	0.0003530	-0.0011860	1.3305704	-34.1698445	C
0.0000148	75047.	5087936095.	24.7567624	0.0003652	-0.0012278	1.3714958	-35.3763098	C
0.0000153	77446.	5078430705.	24.7412919	0.0003773	-0.0012697	1.4121552	-36.5823490	C
0.0000157	79843.	5069405935.	24.7277433	0.0003895	-0.0013115	1.4525478	-37.7879585	C
0.0000162	82238.	5060816550.	24.7159452	0.0004016	-0.0013534	1.4926727	-38.9931360	C
0.0000167	84631.	5052622919.	24.7057464	0.0004138	-0.0013952	1.5325291	-40.1978788	C
0.0000172	87023.	5044790003.	24.6970135	0.0004260	-0.0014370	1.5721159	-41.4021841	C
0.0000177	89412.	5037286700.	24.6896280	0.0004382	-0.0014788	1.6114325	-42.6060490	C
0.0000182	91799.	5030085313.	24.6834847	0.0004505	-0.0015205	1.6504777	-43.8094708	C
0.0000187	94184.	5023161091.	24.6784895	0.0004627	-0.0015623	1.6892507	-45.0124464	C
0.0000192	96567.	5016491850.	24.6745581	0.0004750	-0.0016040	1.7277507	-46.2149729	C
0.0000197	98949.	5010057644.	24.6716150	0.0004873	-0.0016457	1.7659766	-47.4170475	C
0.0000202	101328.	5003840492.	24.6695921	0.0004996	-0.0016874	1.8039276	-48.6186670	C
0.0000207	103705.	4997824140.	24.6684278	0.0005119	-0.0017291	1.8416027	-49.8198285	C
0.0000212	106080.	4991993857.	24.6680667	0.0005242	-0.0017708	1.8790009	-51.0205288	C
0.0000217	108453.	4986336261.	24.6684581	0.0005365	-0.0018125	1.9161213	-52.2207650	C
0.0000222	110824.	4980839167.	24.6695564	0.0005489	-0.0018541	1.9529628	-53.4205337	C
0.0000227	113192.	4975491453.	24.6713196	0.0005613	-0.0018957	1.9895246	-54.6198318	C
0.0000232	115559.	4970282951.	24.6737098	0.0005737	-0.0019373	2.0258056	-55.8186561	C
0.0000237	117924.	4965204341.	24.6766919	0.0005861	-0.0019789	2.0618048	-57.0170034	C
0.0000242	120286.	4960247066.	24.6802343	0.0005985	-0.0020205	2.0975213	-58.2148702	C
0.0000247	122646.	4955403255.	24.6843074	0.0006109	-0.0020621	2.1329539	-59.4122533	C
0.0000252	125004.	4950665655.	24.6888846	0.0006234	-0.0021036	2.1681016	-60.0000000	CY
0.0000257	127360.	4946027569.	24.6939409	0.0006359	-0.0021451	2.2029635	-60.0000000	CY
0.0000262	129665.	4939631448.	24.6963967	0.0006483	-0.0021867	2.2373125	-60.0000000	CY
0.0000267	131702.	4923445508.	24.6827359	0.0006603	-0.0022287	2.2701347	-60.0000000	CY
0.0000272	133464.	4897770454.	24.6530859	0.0006718	-0.0022712	2.3014067	-60.0000000	CY
0.0000277	135066.	4867239066.	24.6149813	0.0006831	-0.0023139	2.3316696	-60.0000000	CY
0.0000282	136578.	4834606090.	24.5731509	0.0006942	-0.0023568	2.3612715	-60.0000000	CY
0.0000287	137984.	4799449606.	24.5266169	0.0007051	-0.0023999	2.3901320	-60.0000000	CY
0.0000292	139238.	4760259069.	24.4724884	0.0007158	-0.0024432	2.4180196	-60.0000000	CY
0.0000297	140490.	4722349208.	24.4205380	0.0007265	-0.0024865	2.4456917	-60.0000000	CY
0.0000317	144768.	4559615532.	24.1814502	0.0007678	-0.0026612	2.5500781	-60.0000000	CY
0.0000337	148282.	4393527669.	23.9203960	0.0008073	-0.0028377	2.6466515	-60.0000000	CY
0.0000357	151384.	4234520130.	23.6668768	0.0008461	-0.0030149	2.7380518	-60.0000000	CY
0.0000377	153851.	4075516255.	23.4026888	0.0008835	-0.0031935	2.8229994	-60.0000000	CY
0.0000397	156216.	3929957892.	23.1582161	0.0009205	-0.0033725	2.9043815	-60.0000000	CY
0.0000417	158065.	3785993955.	22.8936766	0.0009558	-0.0035532	2.9789614	-60.0000000	CY
0.0000437	159891.	3654645793.	22.6547822	0.0009911	-0.0037339	3.0510446	-60.0000000	CY
0.0000457	161495.	3529940895.	22.4233573	0.0010259	-0.0039151	3.1192681	-60.0000000	CY
0.0000477	162831.	3410074116.	22.1948439	0.0010598	-0.0040972	3.1834401	-60.0000000	CY
0.0000497	164143.	3299365606.	21.9750075	0.0010933	-0.0042797	3.2442960	-60.0000000	CY
0.0000517	165418.	3196475026.	21.7681208	0.0011265	-0.0044625	3.3024251	-60.0000000	CY
0.0000537	166444.	3096630987.	21.5591238	0.0011588	-0.0046462	3.3566287	-60.0000000	CY
0.0000557	167367.	3002100637.	21.3591625	0.0011908	-0.0048302	3.4080984	-60.0000000	CY
0.0000577	168286.	2914037762.	21.1747252	0.0012228	-0.0050142	3.4575736	-60.0000000	CY
0.0000597	169193.	2831675197.	20.9996005	0.0012547	-0.0051983	3.5046192	-60.0000000	CY
0.0000617	170059.	2753987735.	20.8264046	0.0012860	-0.0053830	3.5487032	-60.0000000	CY
0.0000637	170767.	2678698448.	20.6519936	0.0013166	-0.0055684	3.5896877	-60.0000000	CY
0.0000657	171378.	2606510520.	20.4813602	0.0013466	-0.0057544	3.6281407	-60.0000000	CY
0.0000677	171986.	2538532914.	20.3221156	0.0013768	-0.0059402	3.6648116	-60.0000000	CY
0.0000697	172590.	2474402677.	20.1732936	0.0014071	-0.0061259	3.6996838	-60.0000000	CY
0.0000717	173190.	2413797311.	20.0340359	0.0014374	-0.0063116	3.7327408	-60.0000000	CY
0.0000737	173776.	2356281268.	19.8965366	0.0014674	-0.0064976	3.7634302	-60.0000000	CY
0.0000757	174351.	2301658925.	19.7627981	0.0014970	-0.0066840	3.7919922	-60.0000000	CY
0.0000777	174815.	2248422061.	19.6264344	0.0015260	-0.0068710	3.8180495	-60.0000000	CY
0.0000797	175225.	2197172551.	19.4928573	0.0015546	-0.0070584	3.8420913	-60.0000000	CY
0.0000817	175604.	2148067014.	19.3641999	0.0015830	-0.0072460	3.8643272	-60.0000000	CY
0.0000837	175982.	2101274193.	19.2426994	0.0016116	-0.0074334	3.8849374	-60.0000000	CY
0.0000857	176356.	2056631768.	19.1278652	0.0016402	-0.0076208	3.9039069	-60.0000000	CY
0.0000877	176728.	2013992211.	19.0192518	0.0016689	-0.0078081	3.9212203	-60.0000000	CY
0.0000897	177097.	1973221132.	18.9164539	0.0016978	-0.0079952	3.9368620	-60.0000000	CY
0.0000917	177449.	1934046258.	18.8103254	0.0017258	-0.0081832	3.9504367	-60.0000000	CY
0.0000937	177796.	1896486139.	18.7079470	0.0017539	-0.0083711	3.9623403	-60.0000000	CY
0.0000957	178138.	1860445513.	18.6105109	0.0017820	-0.0085590	3.9726341	-60.0000000	CY
0.0000977	178475.	1825831673.	18.5177314	0.0018101	-0.0087469	3.9813070	-60.0000000	CY
0.0000997	178760.	1792075975.	18.4237342	0.0018378	-0.0089352	3.9882189	-60.0000000	CY
0.0001017	178990.	1759113033.	18.3283366	0.0018649	-0.0091241	3.9934538	-60.0000000	CY
0.0001037	179214.	1727362339.	18.2369699	0.0018921	-0.0093129	3.9971658	-60.0000000	CY
0.0001057	179428.	1696719981.	18.1489792	0.0019193	-0.0095017	3.9993459	-60.0000000	CY
0.0001077	179640.	1667193213.	18.0650705	0.0019465	-0.0096905	3.9993556	-60.0000000	CY
0.0001097	179848.	1638709436.	17.9852923	0.0019739	-0.0098791	3.9911116	-60.0000000	CY
0.0001217	181002.	1486671433.	17.5446861	0.0021361	-0.0110129	3.9929961	60.0000000	CY
0.0001337	182019.	1360893374.	17.1838022	0.0022983	-0.0121467	3.9901692	60.0000000	CY
0.0001457	182709.	1253575967.	16.8638240	0.0024579	-0.0132831	3.9935112	60.0000000	CY
0.0001577	183246.	1161623175.	16.5729238	0.0026144	-0.0144226	3.9983287	60.0000000	CY
0.0001697	183714.	1082263249.	16.3230943	0.0027708	-0.0155622	3.9827862	60.0000000	CY
0.0001817	184147.	1013187606.	16.1197362	0.0029298	-0.0166992	3.9985346	60.0000000	CY
0.0001937	184495.	952232539.	15.9696728	0.0030941	-0.0178309	3.9821360	60.0000000	CYT
0.0002057	184729.	897833589.	15.8339549	0.0032578	-0.0189632	3.9940419	60.0000000	CYT
0.0002177	184883.	849061809.	15.7205091	0.0034231	-0.0200939	3.9974088	60.0000000	CYT
0.0002297	184952.	805014380.	15.6126775	0.0035870	-0.0212260	3.9724423	60.0000000	CYT
0.0002417	185005.	765274506.	15.5058742	0.0037485	-0.0223605	3.9896605	60.0000000	CYT
0.0002537	185041.	729224378.	15.4188302	0.0039125	-0.0234925	3.9990468	60.0000000	CYT

Summary of Results for Nominal (Unfactored) Moment Capacity for Section 1

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

Load No.	Axial Thrust kips	Nominal Mom. Cap. in-kip	Max. Comp. Strain
1	112.933	184295.649	0.00300000

Note note that the values of moment capacity in the table above are not factored by a strength reduction factor (phi-factor).

In ACI 318-08, the value of the strength reduction factor depends on whether the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.70).

The above values should be multiplied by the appropriate strength reduction factor to compute ultimate moment capacity according to ACI 318-08, Section 9.3.2.2 or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding bending stiffnesses computed for common resistance factor values used for reinforced concrete sections.

Axial Load No.	Resistance Factor for Moment	Nominal Moment Capacity in-kip	Ultimate (Factored) Axial Thrust kips	Ultimate (Factored) Moment Capacity in-kip	Bending Stiffness at Ult. Mom. Cap. kip-in^2
1	0.65	184295.649	73.407	119792.167	4961283314.111
1	0.70	184295.649	79.053	129006.952	4941458270.345
1	0.75	184295.649	84.700	138221.737	4792021716.855

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 1

Pile-head conditions are Shear and Moment (Loading Type 1)

Shear force at pile head = 106133.3 lbs
Applied moment at pile head = 167728000.0 in-lbs
Axial thrust load on pile head = 112933.3 lbs

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	2.7381	1.677E+08	106133.	-0.0181	0.000	2.967E+12	0.000	0.000	0.000
0.945	2.5370	1.690E+08	105149.	-0.0174	0.000	2.853E+12	-329.8217	491.4147	0.000
1.890	2.3435	1.701E+08	97314.	-0.0167	0.000	2.746E+12	-1056.7042	1704.3981	0.000
2.835	2.1581	1.712E+08	81090.	-0.0160	0.000	2.631E+12	-1807.1274	3165.3173	0.000
3.780	1.9809	1.720E+08	56291.	-0.0152	0.000	2.539E+12	-2567.0042	4898.3423	0.000
4.725	1.8125	1.725E+08	22884.	-0.0145	0.000	2.488E+12	-3323.4172	6931.0395	0.000
5.670	1.6530	1.725E+08	-19043.	-0.0137	0.000	2.483E+12	-4069.3985	9305.8659	0.000
6.615	1.5024	1.720E+08	-69305.	-0.0129	0.000	2.534E+12	-4790.2684	12053.	0.000
7.560	1.3605	1.709E+08	-127528.	-0.0121	0.000	2.658E+12	-5471.5910	15203.	0.000
8.505	1.2268	1.692E+08	-193196.	-0.0114	0.000	2.835E+12	-6101.5080	18800.	0.000
9.450	1.1008	1.666E+08	-265659.	-0.0108	0.000	3.083E+12	-6668.3567	22897.	0.000
10.395	0.9818	1.631E+08	-344255.	-0.0102	0.000	3.384E+12	-7183.0785	27655.	0.000
11.340	0.8690	1.588E+08	-427024.	-0.009700	0.000	3.734E+12	-7355.8647	31998.	0.000
12.285	0.7616	1.535E+08	-510678.	-0.009248	0.000	4.099E+12	-7387.5173	36665.	0.000
13.230	0.6591	1.472E+08	-592050.	-0.008848	0.000	4.441E+12	-6928.7951	39739.	0.000
14.175	0.5608	1.401E+08	-667328.	-0.008493	0.000	4.734E+12	-6331.6301	42679.	0.000
15.120	0.4663	1.321E+08	-735225.	-0.008174	0.000	4.917E+12	-5627.6437	45618.	0.000
16.065	0.3753	1.235E+08	-794554.	-0.007880	0.000	4.954E+12	-4821.2491	48557.	0.000
17.010	0.2875	1.142E+08	-844180.	-0.007609	0.000	4.973E+12	-3916.9758	51497.	0.000
17.955	0.2027	1.044E+08	-883016.	-0.007360	0.000	4.996E+12	-2918.6570	54436.	0.000
18.900	0.1205	94198306.	-910012.	-0.007135	0.000	5.023E+12	-1829.1488	57375.	0.000
19.845	0.0408	83792204.	-924145.	-0.006935	0.000	5.055E+12	-650.3359	60315.	0.000
20.790	-0.0369	73303073.	-924409.	-0.006759	0.000	5.095E+12	616.8392	63254.	0.000
21.735	-0.1126	62893896.	-909803.	-0.006609	0.000	5.145E+12	1972.3260	66193.	0.000
22.680	-0.1872	52739102.	-879298.	-0.006568	0.000	2.985E+13	3424.1979	69133.	0.000
23.625	-0.2616	43025683.	-831696.	-0.006549	0.000	2.994E+13	4987.7459	72072.	0.000
24.570	-0.3358	33954712.	-765729.	-0.006535	0.000	3.002E+13	6663.2795	75011.	0.000
25.515	-0.4098	25741073.	-681182.	-0.006524	0.000	3.009E+13	7974.4551	73554.	0.000
26.460	-0.4837	18546909.	-588006.	-0.006515	0.000	3.015E+13	8449.2930	66023.	0.000
27.405	-0.5576	12438706.	-489792.	-0.006510	0.000	3.020E+13	8863.9029	60090.	0.000
28.350	-0.6314	7472593.	-386326.	-0.006506	0.000	3.025E+13	9386.3360	56194.	0.000
29.295	-0.7051	3713331.	-276973.	-0.006504	0.000	3.025E+13	9897.1847	53055.	0.000
30.240	-0.7789	1226636.	-161927.	-0.006503	0.000	3.025E+13	10391.	50426.	0.000
31.185	-0.8526	75982.	-41376.	-0.006503	0.000	3.025E+13	10868.	48182.	0.000

* This analysis computed pile response using nonlinear moment-curvature relationships. Values of total stress due to combined axial and bending stresses are computed only for elastic sections only and do not equal the actual stresses in concrete and steel. Stresses in concrete and steel may be interpolated from the output for nonlinear bending properties relative to the magnitude of bending moment developed in the pile.

Output Summary for Load Case No. 1:

Pile-head deflection = 2.7380837 inches

Computed slope at pile head	=	-0.0180541 radians
Maximum bending moment	=	172547903. inch-lbs
Maximum shear force	=	-925924. lbs
Depth of maximum bending moment	=	5.3550000 feet below pile head
Depth of maximum shear force	=	20.4750000 feet below pile head
Number of iterations	=	62
Number of zero deflection points	=	1

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in Pile in-lbs	Maximum Shear in Pile lbs	Pile-head Rotation radians
1	1	V = 106133.	M = 1.677E+08	112933.	2.73808375	172547903.	-925924.	-0.01805415

The analysis ended normally.

1805.7.2.1 (2006 IBC) & 1807.3.2.1 (2009 IBC & 2012 IBC)

d = A/2*(1+(1+(4.36*h/A))^0.5)

Monopole		**222-G**
Moment (ft-k)	10483	
Shear (k)	79.6	
Caisson Diameter, b (ft)	9	
Caisson Height Above Ground (ft)	0.5	
Caisson Height Below Ground (ft)	31	
Lateral soil pressure per foot (lb/ft^3)	400	
Applied lateral force, P (lbs)	79600	
Dist. from ground to application of P, h (ft)	132.20	
A = 2.34*P/(S1*b)	5.01	
Min. Depth of Embedment Required, d (ft)	29.48	

LPile Plus for Windows, Version 2013-07.005

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method

222-F
This copy of LPile is used by:

Serial Number of Security Device: 160778402
This copy of LPile is licensed for exclusive use by: Sabre Communications Corporation

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is forbidden by the software license agreement.

Files Used for Analysis

Path to file locations: C:\Progra~2\Ensoft\Lpile2013\
Name of input data file: 119563B.lp7d
Name of output report file: 119563B.lp7o
Name of plot output file: 119563B.lp7p
Name of runtime messeage file: 119563B.lp7r

Date and Time of Analysis

Date: April 20, 2015 Time: 16:22:22

Problem Title

170' Monopole INSITE TOWERS LLC Cheshire, CT (119563) 4-20-15 TTW

Job Number:

Client:

Engineer:

Description:

Program Options and Settings

Engineering Units of Input Data and Computations:
- Engineering units are US Customary Units (pounds, feet, inches)

Analysis Control Options:

- Maximum number of iterations allowed	=	300
- Deflection tolerance for convergence	=	1.0000E-05 in
- Maximum allowable deflection	=	100.0000 in
- Number of pile increments	=	100

Loading Type and Number of Cycles of Loading:
- Static loading specified

Computational Options:
- Use unfactored loads in computations (conventional analysis)
- Compute pile response under loading and nonlinear bending properties of pile (only if nonlinear pile properties are input)
- Use of p-y modification factors for p-y curves not selected
- Loading by lateral soil movements acting on pile not selected
- Input of shear resistance at the pile tip not selected
- Computation of pile-head foundation stiffness matrix not selected
- Push-over analysis of pile not selected
- Buckling analysis of pile not selected

Output Options:
- No p-y curves to be computed and reported for user-specified depths
- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
- Printing Increment (nodal spacing of output points) = 3

Pile Structural Properties and Geometry

Total number of pile sections = 1

Total length of pile = 31.50 ft

Depth of ground surface below top of pile = 0.50 ft

Pile diameter values used for p-y curve computations are defined using 2 points.

p-y curves are computed using pile diameter values interpolated with depth over the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	108.0000000
2	31.500000	108.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type = Drilled Shaft (Bored Pile)
Section Length = 31.50000 ft
Section Diameter = 108.00000 in

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees = 0.000 radians

Pile Batter Angle = 0.000 degrees = 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 2 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer = 0.50000 ft
Distance from top of pile to bottom of layer = 10.50000 ft
Effective unit weight at top of layer = 124.93440 pcf
Effective unit weight at bottom of layer = 124.93440 pcf
Friction angle at top of layer = 34.00000 deg.
Friction angle at bottom of layer = 34.00000 deg.
Subgrade k at top of layer = 84.00000 pci
Subgrade k at bottom of layer = 84.00000 pci

Layer 2 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer = 10.50000 ft
Distance from top of pile to bottom of layer = 32.50000 ft
Effective unit weight at top of layer = 124.93440 pcf
Effective unit weight at bottom of layer = 124.93440 pcf
Friction angle at top of layer = 34.00000 deg.
Friction angle at bottom of layer = 34.00000 deg.
Subgrade k at top of layer = 58.90000 pci
Subgrade k at bottom of layer = 58.90000 pci

(Depth of lowest soil layer extends 1.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Layer Soil Type (p-y Curve Criteria)	Layer Depth ft	Effective Unit Wt. pcf	Angle of Friction deg.	kpy pci
1	Sand (Reese, et al.)	0.500	124.934	34.000	84.000
		10.500	124.934	34.000	84.000
2	Sand (Reese, et al.)	10.500	124.934	34.000	58.900
		32.500	124.934	34.000	58.900

Loading Type

Static loading criteria were used when computing p-y curves for all analyses.

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 1

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	1	V = 59500. lbs	M = 95436000. in-lbs	69200.	No

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

Axial thrust force values were determined from pile-head loading conditions

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Dimensions and Properties of Drilled Shaft (Bored Pile):

Length of Section	=	31.50000 ft
Shaft Diameter	=	108.00000 in
Concrete Cover Thickness	=	3.50033 in
Number of Reinforcing Bars	=	40 bars
Yield Stress of Reinforcing Bars	=	60000. psi
Modulus of Elasticity of Reinforcing Bars	=	29000000. psi
Gross Area of Shaft	=	9160.88418 sq. in.
Total Area of Reinforcing Steel	=	62.40000 sq. in.
Area Ratio of Steel Reinforcement	=	0.68 percent
Edge-to-Edge Bar Spacing	=	6.40369 in
Maximum Concrete Aggregate Size	=	0.75000 in
Ratio of Bar Spacing to Aggregate Size	=	8.54
Offset of Center of Rebar Cage from Center of Pile	=	0.0000 in

Axial Structural Capacities:

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As	=	34678.847 kips
Tensile Load for Cracking of Concrete	=	-3992.921 kips
Nominal Axial Tensile Capacity	=	-3744.000 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	1.41000	1.56000	49.79467	0.00000
2	1.41000	1.56000	49.18162	7.78960
3	1.41000	1.56000	47.35755	15.38740
4	1.41000	1.56000	44.36738	22.60631
5	1.41000	1.56000	40.28474	29.26857
6	1.41000	1.56000	35.21015	35.21015
7	1.41000	1.56000	29.26857	40.28474
8	1.41000	1.56000	22.60631	44.36738
9	1.41000	1.56000	15.38740	47.35755
10	1.41000	1.56000	7.78960	49.18162
11	1.41000	1.56000	0.00000	49.79467
12	1.41000	1.56000	-7.78960	49.18162
13	1.41000	1.56000	-15.38740	47.35755
14	1.41000	1.56000	-22.60631	44.36738
15	1.41000	1.56000	-29.26857	40.28474
16	1.41000	1.56000	-35.21015	35.21015
17	1.41000	1.56000	-40.28474	29.26857
18	1.41000	1.56000	-44.36738	22.60631
19	1.41000	1.56000	-47.35755	15.38740
20	1.41000	1.56000	-49.18162	7.78960
21	1.41000	1.56000	-49.79467	0.00000
22	1.41000	1.56000	-49.18162	-7.78960
23	1.41000	1.56000	-47.35755	-15.38740
24	1.41000	1.56000	-44.36738	-22.60631
25	1.41000	1.56000	-40.28474	-29.26857
26	1.41000	1.56000	-35.21015	-35.21015
27	1.41000	1.56000	-29.26857	-40.28474
28	1.41000	1.56000	-22.60631	-44.36738
29	1.41000	1.56000	-15.38740	-47.35755
30	1.41000	1.56000	-7.78960	-49.18162
31	1.41000	1.56000	0.00000	-49.79467
32	1.41000	1.56000	7.78960	-49.18162
33	1.41000	1.56000	15.38740	-47.35755

34	1.41000	1.56000	22.60631	-44.36738
35	1.41000	1.56000	29.26857	-40.28474
36	1.41000	1.56000	35.21015	-35.21015
37	1.41000	1.56000	40.28474	-29.26857
38	1.41000	1.56000	44.36738	-22.60631
39	1.41000	1.56000	47.35755	-15.38740
40	1.41000	1.56000	49.18162	-7.78960

NOTE: The positions of the above rebars were computed by LPile

Minimum spacing between any two bars not equal to zero = 6.40369 inches between Bars 17 and 18

Spacing to aggregate size ratio = 8.53825

Concrete Properties:

Compressive Strength of Concrete	=	4000.00000 psi
Modulus of Elasticity of Concrete	=	3604997. psi
Modulus of Rupture of Concrete	=	-474.34164 psi
Compression Strain at Peak Stress	=	0.00189
Tensile Strain at Fracture of Concrete	=	-0.0001154
Maximum Coarse Aggregate Size	=	0.75000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 1

Number	Axial Thrust Force kips
1	69.200

Definitions of Run Messages and Notes:

C = concrete in section has cracked in tension.
Y = stress in reinforcing steel has reached yield stress.
T = ACI 318-08 criteria for tension-controlled section met, tensile strain in reinforcement exceeds 0.005 while simultaneously compressive strain in concrete more than than 0.003. See ACI 318-08, Section 10.3.4.
Z = depth of tensile zone in concrete section is less than 10 percent of section depth.

Bending Stiffness (EI) = Computed Bending Moment / Curvature.
Position of neutral axis is measured from edge of compression side of pile.
Compressive stresses and strains are positive in sign.
Tensile stresses and strains are negative in sign.

Axial Thrust Force = 69.200 kips

Bending Curvature rad/in.	Bending Moment in-kip	Bending Stiffness kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in	Max Concrete Stress ksi	Max Steel Stress ksi	Run Msg
0.000000250	7543.0747659	30172299063.	60.8718881	0.0000152	-0.0000118	0.0637137	0.4374062	
0.000000500	15053.	30105737078.	57.4458989	0.0000287	-0.0000253	0.1197637	0.8251355	
0.000000750	22529.	30038270198.	56.3039593	0.0000422	-0.0000388	0.1754120	1.2128661	
0.000001000	29971.	29970575633.	55.7330221	0.0000557	-0.0000523	0.2306584	1.6005976	
0.000001250	37378.	29902789887.	55.3904850	0.0000692	-0.0000658	0.2855031	1.9883301	
0.000001500	44752.	29834958487.	55.1621470	0.0000827	-0.0000793	0.3399459	2.3760634	
0.000001750	52092.	29767100997.	54.9990659	0.0000962	-0.0000928	0.3939870	2.7637976	
0.000002000	59398.	29699227199.	54.8767704	0.0001098	-0.0001062	0.4476262	3.1515327	
0.000002250	59398.	26399313066.	26.7303141	0.0000601	-0.0001829	0.2460208	-5.2676120	C
0.000002500	59398.	23759381759.	26.4028582	0.0000660	-0.0002040	0.2695222	-5.8766428	C
0.000002750	59398.	21599437963.	26.1253176	0.0000718	-0.0002252	0.2928419	-6.4864409	C
0.000003000	59398.	19799484799.	25.8950203	0.0000777	-0.0002463	0.3161004	-7.0961532	C
0.000003250	59398.	18276447507.	25.7010662	0.0000835	-0.0002675	0.3392978	-7.7057795	C
0.000003500	59398.	16970986971.	25.5356696	0.0000894	-0.0002886	0.3624340	-8.3153195	C
0.000003750	59398.	15839587840.	25.3931212	0.0000952	-0.0003098	0.3855088	-8.9247731	C
0.000004000	59398.	14849613600.	25.2636265	0.0001011	-0.0003309	0.4084336	-9.5347793	C
0.000004250	59398.	13976106917.	25.1495198	0.0001069	-0.0003521	0.4312881	-10.1447667	C
0.000004500	59398.	13199656533.	25.0487814	0.0001127	-0.0003733	0.4540821	-10.7546640	C
0.000004750	59398.	12504937768.	24.9593023	0.0001186	-0.0003944	0.4768154	-11.3644711	C
0.000005000	59398.	11879690880.	24.8793954	0.0001244	-0.0004156	0.4994880	-11.9741877	C
0.000005250	59398.	11313991314.	24.8076948	0.0001302	-0.0004368	0.5220997	-12.5838135	C
0.000005500	59398.	10799718982.	24.7430830	0.0001361	-0.0004579	0.5446506	-13.1933482	C
0.000005750	59398.	10330165982.	24.6846370	0.0001419	-0.0004791	0.5671405	-13.8027918	C
0.000006000	59398.	9899742400.	24.6315876	0.0001478	-0.0005002	0.5895693	-14.4121437	C
0.000006250	59398.	9503752704.	24.5832884	0.0001536	-0.0005214	0.6119370	-15.0214040	C
0.000006500	59398.	9138223754.	24.5391928	0.0001595	-0.0005425	0.6342434	-15.6305721	C
0.000006750	59398.	8799771022.	24.4988351	0.0001654	-0.0005636	0.6564885	-16.2396480	C
0.000007000	59398.	8485493485.	24.4618160	0.0001712	-0.0005848	0.6786722	-16.8486313	C
0.000007250	59398.	8192890262.	24.4277913	0.0001771	-0.0006059	0.7007943	-17.4575219	C
0.000007500	59398.	7919793920.	24.3964630	0.0001830	-0.0006270	0.7228549	-18.0663193	C
0.000007750	59398.	7664316697.	24.3675711	0.0001888	-0.0006482	0.7448538	-18.6750234	C
0.000008000	59398.	7424806800.	24.3408884	0.0001947	-0.0006693	0.7667909	-19.2836339	C
0.000008250	59398.	7199812654.	24.3162153	0.0002006	-0.0006904	0.7886661	-19.8921505	C
0.000008500	59398.	6988053459.	24.2930306	0.0002065	-0.0007115	0.8104682	-20.5006579	C
0.000008750	59398.	6788394788.	24.2707650	0.0002124	-0.0007326	0.8321827	-21.1092686	C
0.000009000	59398.	6599828266.	24.2501158	0.0002183	-0.0007537	0.8538359	-21.7177800	C
0.000009250	59398.	6421454530.	24.2309530	0.0002241	-0.0007749	0.8754277	-22.3261920	C
0.000009500	59398.	6252468884.	24.2131604	0.0002300	-0.0007960	0.8969579	-22.9345045	C
0.000009750	59398.	6092149169.	24.1966336	0.0002359	-0.0008171	0.9184265	-23.5427170	C
0.0000102	59398.	5794971161.	24.1670113	0.0002477	-0.0008593	0.9611786	-24.7588409	C

0.0000107	59398.	5525437618.	24.1414384	0.0002595	-0.0009015	1.0036831	-25.9745616	C
0.0000112	59398.	5279862613.	24.1193827	0.0002713	-0.0009437	1.0459393	-27.1898764	C
0.0000117	59398.	5055187608.	24.1004025	0.0002832	-0.0009858	1.0879463	-28.4047831	C
0.0000122	59498.	4856985034.	24.0841285	0.0002950	-0.0010280	1.1297034	-29.6192786	C
0.0000127	61818.	4848457382.	24.0702492	0.0003069	-0.0010701	1.1712098	-30.8333605	C
0.0000133	64136.	4840441262.	24.0585003	0.0003188	-0.0011122	1.2124648	-32.0470264	C
0.0000138	66452.	4832880179.	24.0486559	0.0003307	-0.0011543	1.2534674	-33.2602735	C
0.0000143	68767.	4825725562.	24.0405221	0.0003426	-0.0011964	1.2942169	-34.4730993	C
0.0000148	71079.	4818935418.	24.0339311	0.0003545	-0.0012385	1.3347125	-35.6855010	C
0.0000153	73390.	4812473254.	24.0287374	0.0003664	-0.0012806	1.3749533	-36.8974759	C
0.0000157	75699.	4806307204.	24.0248139	0.0003784	-0.0013226	1.4149385	-38.1090212	C
0.0000162	78007.	4800409320.	24.0220493	0.0003904	-0.0013646	1.4546673	-39.3201342	C
0.0000167	80312.	4794754980.	24.0203456	0.0004023	-0.0014067	1.4941389	-40.5308121	C
0.0000172	82616.	4789322415.	24.0196163	0.0004143	-0.0014487	1.5333522	-41.7410519	C
0.0000177	84918.	4784092299.	24.0197845	0.0004264	-0.0014906	1.5723066	-42.9508509	C
0.0000182	87218.	4779047419.	24.0207822	0.0004384	-0.0015326	1.6110011	-44.1602060	C
0.0000187	89516.	4774172392.	24.0225483	0.0004504	-0.0015746	1.6494348	-45.3691143	C
0.0000192	91812.	4769453427.	24.0250283	0.0004625	-0.0016165	1.6876068	-46.5775729	C
0.0000197	94106.	4764878124.	24.0281733	0.0004746	-0.0016584	1.7255163	-47.7855787	C
0.0000202	96399.	4760435300.	24.0319392	0.0004866	-0.0017004	1.7631624	-48.9931287	C
0.0000207	98689.	4756114845.	24.0362864	0.0004988	-0.0017422	1.8005440	-50.2002197	C
0.0000212	100978.	4751907595.	24.0411788	0.0005109	-0.0017841	1.8376604	-51.4068486	C
0.0000217	103265.	4747805222.	24.0465840	0.0005230	-0.0018260	1.8745105	-52.6130122	C
0.0000222	105550.	4743800141.	24.0524723	0.0005352	-0.0018678	1.9110934	-53.8187073	C
0.0000227	107832.	4739885428.	24.0588168	0.0005473	-0.0019097	1.9474082	-55.0239307	C
0.0000232	110113.	4736054749.	24.0655930	0.0005595	-0.0019515	1.9834538	-56.2286790	C
0.0000237	112392.	4732302297.	24.0727785	0.0005717	-0.0019933	2.0192294	-57.4329490	C
0.0000242	114669.	4728622738.	24.0803527	0.0005839	-0.0020351	2.0547340	-58.6367371	C
0.0000247	116944.	4725011165.	24.0882968	0.0005962	-0.0020768	2.0899665	-59.8400401	C
0.0000252	119217.	4721463052.	24.0965938	0.0006084	-0.0021186	2.1249259	-60.0000000	CY
0.0000257	121488.	4717974220.	24.1052275	0.0006207	-0.0021603	2.1596112	-60.0000000	CY
0.0000262	123617.	4709231149.	24.1048840	0.0006328	-0.0022022	2.1933258	-60.0000000	CY
0.0000267	125419.	4688564566.	24.0835418	0.0006442	-0.0022448	2.2251411	-60.0000000	CY
0.0000272	127030.	4661647994.	24.0508604	0.0006554	-0.0022876	2.2557488	-60.0000000	CY
0.0000277	128557.	4632667886.	24.0143015	0.0006664	-0.0023306	2.2857008	-60.0000000	CY
0.0000282	129911.	4598609991.	23.9680080	0.0006771	-0.0023739	2.3145357	-60.0000000	CY
0.0000287	131196.	4563354911.	23.9192262	0.0006877	-0.0024173	2.3428044	-60.0000000	CY
0.0000292	132481.	4529269307.	23.8724836	0.0006983	-0.0024607	2.3708635	-60.0000000	CY
0.0000297	133586.	4490299481.	23.8156405	0.0007085	-0.0025045	2.3977510	-60.0000000	CY
0.0000317	137635.	4334968867.	23.5855287	0.0007488	-0.0026802	2.5013630	-60.0000000	CY
0.0000337	140900.	4174819137.	23.3371625	0.0007876	-0.0028574	2.5976561	-60.0000000	CY
0.0000357	143666.	4018635843.	23.0793514	0.0008251	-0.0030359	2.6875201	-60.0000000	CY
0.0000377	146143.	3871350316.	22.8266368	0.0008617	-0.0032153	2.7724387	-60.0000000	CY
0.0000397	148195.	3728179121.	22.5722660	0.0008972	-0.0033958	2.8520725	-60.0000000	CY
0.0000417	150033.	3593615392.	22.3306521	0.0009323	-0.0035767	2.9279716	-60.0000000	CY
0.0000437	151823.	3470231466.	22.1085262	0.0009672	-0.0037578	3.0010336	-60.0000000	CY
0.0000457	153175.	3348093867.	21.8632407	0.0010002	-0.0039408	3.0675326	-60.0000000	CY
0.0000477	154478.	3235139205.	21.6371995	0.0010332	-0.0041238	3.1316183	-60.0000000	CY
0.0000497	155775.	3131158556.	21.4313457	0.0010662	-0.0043068	3.1936135	-60.0000000	CY
0.0000517	156934.	3032539656.	21.2325821	0.0010988	-0.0044902	3.2524762	-60.0000000	CY
0.0000537	157854.	2936812654.	21.0298834	0.0011304	-0.0046746	3.3073331	-60.0000000	CY
0.0000557	158737.	2847307780.	20.8291595	0.0011612	-0.0048598	3.3589105	-60.0000000	CY
0.0000577	159617.	2763933282.	20.6439057	0.0011922	-0.0050448	3.4086403	-60.0000000	CY
0.0000597	160493.	2686072583.	20.4725856	0.0012232	-0.0052298	3.4565057	-60.0000000	CY
0.0000617	161285.	2611907658.	20.3068163	0.0012539	-0.0054151	3.5018389	-60.0000000	CY
0.0000637	161919.	2539906482.	20.1392227	0.0012839	-0.0056011	3.5440829	-60.0000000	CY
0.0000657	162511.	2471656855.	19.9798408	0.0013137	-0.0057873	3.5842772	-60.0000000	CY
0.0000677	163079.	2407073988.	19.8173617	0.0013426	-0.0059744	3.6215123	-60.0000000	CY
0.0000697	163644.	2346152069.	19.6653928	0.0013717	-0.0061613	3.6571041	-60.0000000	CY
0.0000717	164206.	2288584352.	19.5230676	0.0014008	-0.0063482	3.6910379	-60.0000000	CY
0.0000737	164765.	2234097351.	19.3896141	0.0014300	-0.0065350	3.7232988	-60.0000000	CY
0.0000757	165294.	2182095728.	19.2616890	0.0014591	-0.0067219	3.7536602	-60.0000000	CY
0.0000777	165766.	2132041435.	19.1361317	0.0014878	-0.0069092	3.7819334	-60.0000000	CY
0.0000797	166132.	2083162405.	19.0076668	0.0015159	-0.0070971	3.8078018	-60.0000000	CY
0.0000817	166494.	2036617967.	18.8851016	0.0015439	-0.0072851	3.8320101	-60.0000000	CY
0.0000837	166836.	1992070335.	18.7589823	0.0015711	-0.0074739	3.8539517	-60.0000000	CY
0.0000857	167176.	1949574486.	18.6396573	0.0015984	-0.0076626	3.8744171	-60.0000000	CY
0.0000877	167514.	1908989753.	18.5266712	0.0016257	-0.0078513	3.8933930	-60.0000000	CY
0.0000897	167849.	1870187998.	18.4196097	0.0016532	-0.0080398	3.9108661	-60.0000000	CY
0.0000917	168183.	1833052248.	18.3180949	0.0016807	-0.0082283	3.9268225	-60.0000000	CY
0.0000937	168513.	1797475507.	18.2217812	0.0017083	-0.0084167	3.9412485	-60.0000000	CY
0.0000957	168842.	1763359710.	18.1303524	0.0017360	-0.0086050	3.9541297	-60.0000000	CY
0.0000977	169155.	1730485551.	18.0420684	0.0017636	-0.0087934	3.9653959	-60.0000000	CY
0.0000997	169447.	1698718312.	17.9560535	0.0017911	-0.0089819	3.9750346	-60.0000000	CY
0.0001017	169715.	1667956818.	17.8716371	0.0018184	-0.0091706	3.9830533	-60.0000000	CY
0.0001037	169914.	1637723610.	17.7801561	0.0018447	-0.0093603	3.9892899	-60.0000000	CY
0.0001057	170102.	1608526646.	17.6868353	0.0018704	-0.0095506	3.9940102	-60.0000000	CY
0.0001077	170288.	1580397290.	17.5976887	0.0018962	-0.0097408	3.9973768	-60.0000000	CY
0.0001097	170472.	1553277005.	17.5124959	0.0019220	-0.0099310	3.9993771	-60.0000000	CY
0.0001217	171535.	1408913344.	17.0748231	0.0020789	-0.0110701	3.9999757	-60.0000000	CY
0.0001337	172528.	1289930054.	16.7379388	0.0022387	-0.0122063	3.9999150	60.0000000	CY
0.0001457	173218.	1188458438.	16.4068569	0.0023913	-0.0133497	3.9976308	60.0000000	CY
0.0001577	173692.	1101059113.	16.1132330	0.0025419	-0.0144951	3.9861301	60.0000000	CY
0.0001697	174143.	1025879692.	15.8716676	0.0026942	-0.0156388	3.9996736	60.0000000	CY
0.0001817	174539.	960322723.	15.6810036	0.0028500	-0.0167790	3.9849132	60.0000000	CY
0.0001937	174885.	902633443.	15.4953847	0.0030022	-0.0179228	3.9986295	60.0000000	CYT
0.0002057	175142.	851235247.	15.3608233	0.0031605	-0.0190605	3.9836769	60.0000000	CYT
0.0002177	175316.	805126517.	15.2359367	0.0033176	-0.0201994	3.9893674	60.0000000	CYT
0.0002297	175445.	763634661.	15.1267441	0.0034754	-0.0213376	3.9993661	60.0000000	CYT
0.0002417	175492.	725922820.	15.0253995	0.0036324	-0.0224766	3.9846265	60.0000000	CYT
0.0002537	175531.	691749653.	14.9381547	0.0037906	-0.0236144	3.9743363	60.0000000	CYT
0.0002657	175531.	660513545.	15.0206500	0.0039917	-0.0247093	3.9975051	60.0000000	CYT

Summary of Results for Nominal (Unfactored) Moment Capacity for Section 1

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

Load No.	Axial Thrust kips	Nominal Mom. Cap. in-kip	Max. Comp. Strain
1	69.200	174880.150	0.00300000

Note note that the values of moment capacity in the table above are not factored by a strength reduction factor (phi-factor).

In ACI 318-08, the value of the strength reduction factor depends on whether the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.70).

The above values should be multiplied by the appropriate strength reduction factor to compute ultimate moment capacity according to ACI 318-08, section 9.3.2.2 or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding bending stiffnesses computed for common resistance factor values used for reinforced concrete sections.

Axial Load No.	Resistance Factor for Moment	Nominal Moment Capacity in-kip	Ultimate (Factored) Axial Thrust kips	Ultimate (Factored) Moment Capacity in-kip	Bending Stiffness at Ult. Mom. Cap. kip-in^2
1	0.65	174880.150	44.980	113672.093	4730233926.152
1	0.70	174880.150	48.440	122416.103	4714163009.295
1	0.75	174880.150	51.900	131160.113	4564351399.674

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 1

Pile-head conditions are Shear and Moment (Loading Type 1)

Shear force at pile head = 59500.0 lbs
Applied moment at pile head = 95436000.0 in-lbs
Axial thrust load on pile head = 69200.0 lbs

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0724	95436000.	59500.	-0.006682	0.000	4.762E+12	0.000	0.000	0.000
0.945	0.9979	96114829.	58738.	-0.006454	0.000	4.761E+12	-255.6589	968.3886	0.000
1.890	0.9261	96758813.	52658.	-0.006224	0.000	4.760E+12	-820.2651	3348.1947	0.000
2.835	0.8568	97296962.	40062.	-0.005993	0.000	4.759E+12	-1402.8481	6189.1738	0.000
3.780	0.7901	97654490.	20825.	-0.005760	0.000	4.758E+12	-1989.6229	9518.2957	0.000
4.725	0.7261	97756067.	-5025.1213	-0.005528	0.000	4.758E+12	-2567.0695	13363.	0.000
5.670	0.6648	97527438.	-37365.	-0.005295	0.000	4.758E+12	-3137.0135	17838.	0.000
6.615	0.6060	96895442.	-76088.	-0.005063	0.000	4.759E+12	-3688.2478	23004.	0.000
7.560	0.5499	95793489.	-119445.	-0.004833	0.000	4.762E+12	-3913.6140	26900.	0.000
8.505	0.4964	94188903.	-164416.	-0.004607	0.000	4.765E+12	-4005.5754	30501.	0.000
9.450	0.4454	92069794.	-209976.	-0.004386	0.000	4.769E+12	-4018.4915	34102.	0.000
10.395	0.3969	89434443.	-255267.	-0.004170	0.000	4.774E+12	-3959.0311	37702.	0.000
11.340	0.3508	86340548.	-288516.	-0.003961	0.000	4.781E+12	-2687.4798	28956.	0.000
12.285	0.3071	82901297.	-318287.	-0.003760	0.000	4.789E+12	-2557.2743	31480.	0.000
13.230	0.2655	79133404.	-346361.	-0.003569	0.000	4.798E+12	-2388.6179	34005.	0.000
14.175	0.2261	75058532.	-372322.	-0.003387	0.000	4.808E+12	-2184.9543	36530.	0.000
15.120	0.1887	70702849.	-395789.	-0.003215	0.000	4.820E+12	-1949.3597	39055.	0.000
16.065	0.1531	66096636.	-416416.	-0.003054	0.000	4.834E+12	-1684.5230	41579.	0.000
17.010	0.1194	61273934.	-433886.	-0.002905	0.000	4.850E+12	-1392.7304	44104.	0.000
17.955	0.0868	56272312.	-447888.	-0.002859	0.000	2.973E+13	-1070.7810	46629.	0.000
18.900	0.0545	51133358.	-458011.	-0.002839	0.000	2.977E+13	-708.6583	49154.	0.000
19.845	0.0224	45903641.	-463800.	-0.002820	0.000	2.982E+13	-306.3979	51679.	0.000
20.790	-0.009476	40634891.	-464800.	-0.002804	0.000	2.987E+13	135.8858	54203.	0.000
21.735	-0.0412	35383983.	-460559.	-0.002790	0.000	2.992E+13	618.1413	56728.	0.000
22.680	-0.0727	30212935.	-450621.	-0.002777	0.000	2.997E+13	1140.3757	59253.	0.000
23.625	-0.1042	25188908.	-434535.	-0.002767	0.000	3.001E+13	1702.6506	61778.	0.000
24.570	-0.1355	20384208.	-411845.	-0.002758	0.000	3.005E+13	2305.0751	64302.	0.000
25.515	-0.1667	15876309.	-382095.	-0.002751	0.000	3.010E+13	2947.7986	66827.	0.000
26.460	-0.1979	11747865.	-344828.	-0.002746	0.000	3.012E+13	3631.0012	69352.	0.000
27.405	-0.2290	8086735.	-299582.	-0.002742	0.000	3.016E+13	4354.8827	71877.	0.000
28.350	-0.2601	4986012.	-245896.	-0.002740	0.000	3.017E+13	5119.6500	74401.	0.000
29.295	-0.2912	2544042.	-183304.	-0.002738	0.000	3.017E+13	5925.5025	76926.	0.000
30.240	-0.3222	864459.	-111341.	-0.002738	0.000	3.017E+13	6772.6152	79451.	0.000
31.185	-0.3533	56198.	-29536.	-0.002738	0.000	3.017E+13	7661.1204	81976.	0.000

* This analysis computed pile response using nonlinear moment-curvature relationships. Values of total stress due to combined axial and bending stresses are computed only for elastic sections only and do not equal the actual stresses in concrete and steel. Stresses in concrete and steel may be interpolated from the output for nonlinear bending properties relative to the magnitude of bending moment developed in the pile.

Output Summary for Load Case No. 1:

Pile-head deflection = 1.0724177 inches
Computed slope at pile head = -0.0066819 radians

Maximum bending moment = 97756067. inch-lbs
Maximum shear force = -465027. lbs
Depth of maximum bending moment = 4.7250000 feet below pile head
Depth of maximum shear force = 20.4750000 feet below pile head
Number of iterations = 58
Number of zero deflection points = 1

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in Pile in-lbs	Maximum Shear in Pile lbs	Pile-head Rotation radians
1	1	V = 59500.	M = 95436000.	69200.	1.07241773	97756067.	-465027.	-0.00668186

The analysis ended normally.

UBC 1806.8.2.1 & IBC 1805.7.2.1

d = A/2*(1+(1+(4.36*h/A))^0.5)

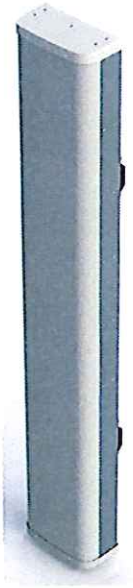
Monopole		**222-F**
Moment (ft-k)	7953	
Shear (k)	59.5	
Caisson Diameter, b (ft)	9	
Caisson Height Above Ground (ft)	0.5	
Caisson Height Below Ground (ft)	31	
Lateral soil pressure per foot (lb/ft^3)	300	
Applied lateral force, P (lbs)	59500	
Dist. from ground to application of P, h (ft)	134.16	
A = 2.34*P/(S1*b)	4.99	
Min. Depth of Embedment Required, d (ft)	29.62	

ATTACHMENT 3
AT&T Antenna Specification sheets

HPA Antenna Series

HexPort Multi-Band Antenna

Model HPA-65R-BUU-H8



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.

Hexport Multi-Band Antenna Array

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

HexPort Multi-Band Antenna

Model HPA-65R-BUU-H8

HPA-65R Multi-Band Antenna

Electrical Specifications

Frequency Range	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			
	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

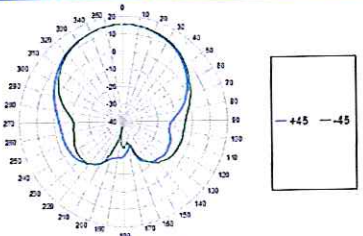
Mechanical Specifications

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)

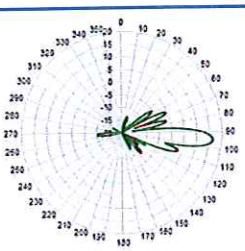
Bottom View

Rear View

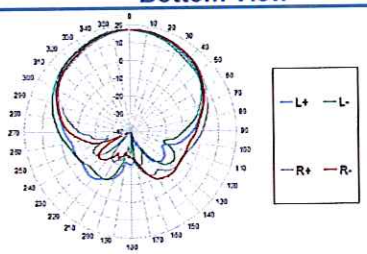
Antenna Patterns*



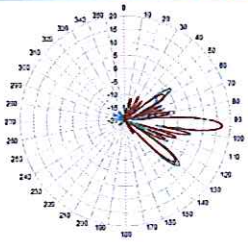
894 MHz Azimuth



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.

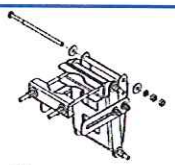
HexPort Multi-Band Antenna

Model HPA-65R-BUU-H8

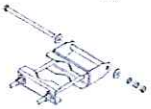
Ordering Information:

HPA-65R-BUU-H8	8 Foot Hexport Antenna with 65° Azimuth Beamwidth with Factory Installed RET 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

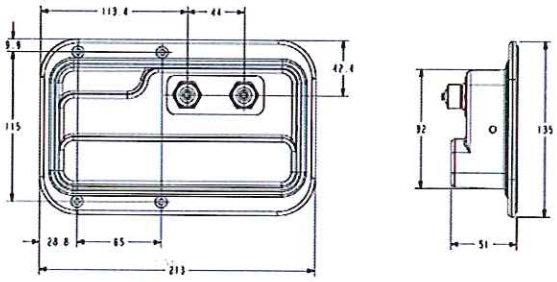
Part Number	BSA-RET200
Protocols	AISG 2.0
Adjustment Cycles	>10,000 cycles
Tilt Accuracy	±0.1°
Temperature Range	-40°C to +70°C

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

RRUS 12 AND RRUS A2 OVERVIEW

2013-12-02

RRUS 12

- 2x60 Watts
- GSM, WCDMA & LTE
- Frequencies:
  - Band 2 (PCS, KRC 161 299/2)
  - Band 4 (AWS, KRC 161 349/2)
  - Band 5 (850MHz, KRC 161 321/2)
- IBW: 40 MHz (B2, B4), 25 MHz (B5)
- Up to 4 carriers WCDMA or LTE
- 2.5 Gbps CPRI
- 6 external alarms
- DC supply (AC as an option)
- Dimensions (HxWxD): 20.4"x18.5"x7.5" (including sun shield and handle)
- Weight: 50 lbs, excluding mounting hardware
  - 58 lbs in Extranet description, applicable to heaviest (non-AT&T) frequency model

RRUS 11 – RRUS 12 COMPARISON

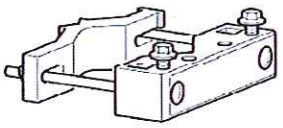
RRUS 11

- GSM, WCDMA, LTE
- 4 carriers over 20 MHz IBW
  - 4 carriers WCDMA, LTE
- Up to 20 MHz LTE
- Up to 2 x 40 W
- IBW = up to 20 MHz
- 19.7"x17.0"x7.2"
- 50 lbs

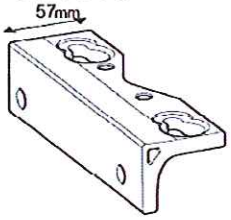
RRUS 12

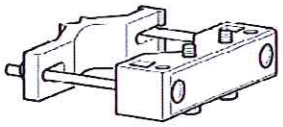
- GSM, WCDMA, LTE
- 8 carriers over 40 MHz IBW
  - 4 carriers WCDMA, LTE
- Up to 20 MHz LTE
- Up to 2 x 60 W
- IBW = up to 40 MHz
- 20.4"x18.5"x7.5"
- 50 lbs
  - 58 lbs in Extranet description

RRUS 12 MOUNTING HW


Upper Pole Clamp

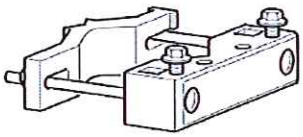
› SXK 125 0245/1: Pole Mount, short
  – Weight: 4.8 lbs



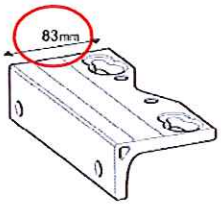

Lower Pole Clamp

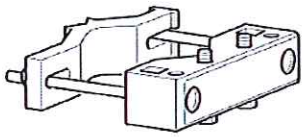
› SXK 125 0246/1: Wall Mount, short

Required for AC-PSU:


Upper Pole Clamp

› SXK 125 0244/1: Pole Mount, long




Lower Pole Clamp

› SXK 125 0247/1: Wall Mount, long

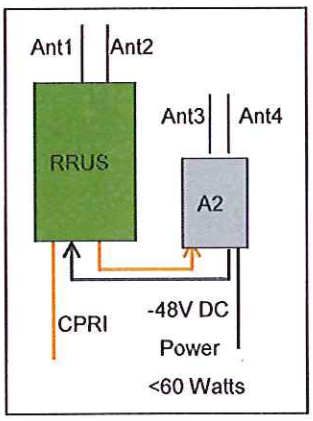
RRUS 12 KIT
EXAMPLE: FFA MODEL FOR BAND 2 – CEQ.13501

UCRRUS12B2-48FFA	**1**	**RRUS12 B2 1900; 2x60W -48V FFA**
KRC161299/2	1	RRUS 12 B2; Radio Unit
SXK1250245/1	1	SINGLE RRU POLE MOUNT_SHORT
SXK1250246/1	1	SINGLE RRU WALL MOUNT_SHORT
RDH10247/3	2	SFP SM CPRI 614.4-2457.6 Mbit/s 20km/GbE 10km DFB LC-SFP
SDF107236/001	1	COVER/COVER for Outdoor application
RF Power Hardware Activation licenses included in the Radio Price (license is activated in DUL or D		
	1	HW ACTIVATION CODES/Output power 20W to 40W
	1	HW ACTIVATION CODES/Output power 40W to 60W
	1	HW ACTIVATION CODES/Output Power 60W to 80W
	1	HW ACTIVATION CODES/Output Power 80W to 100W
	1	HW ACTIVATION CODES/Output Power 100W to 120W

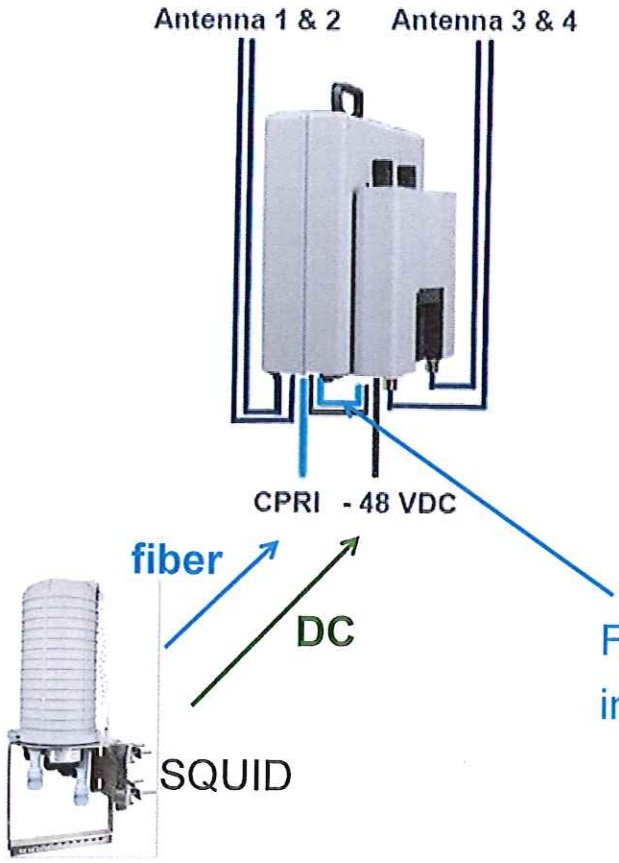
RRUS A2 RX-ONLY MODULE

- 2 RX expansion module for RRUS
- Available for PCS (B25/2) and AWS (B4)
- LTE
- 40 MHz IBW
- Up to 20 MHz carrier bandwidth for LTE
- 2.5 Gbit/s CPRI

CPRI & power Cascading



RRUS A2 DATA



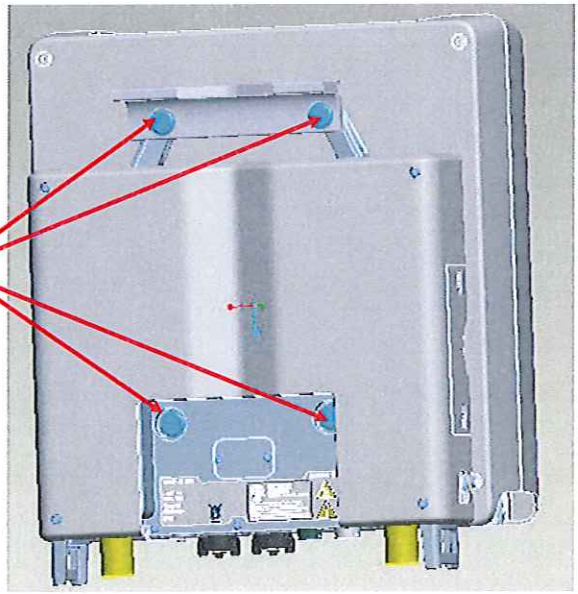
Band	PCS	AWS
Product Name	RRUS A2 B2	RRUS A2 B4
Product Number	KRC 161 286/1	KRC 161 290/1
TX power	N/A	N/A
RX branches	2	2
Dimensions (HxWxD)	16.4"x15.1"x3.4"	16.4"x15.1"x3.4"
Weight	22 lbs	22 lbs
HW Availability	Jan. '14	Jan. '14
SW Dependency	L13A	L13A

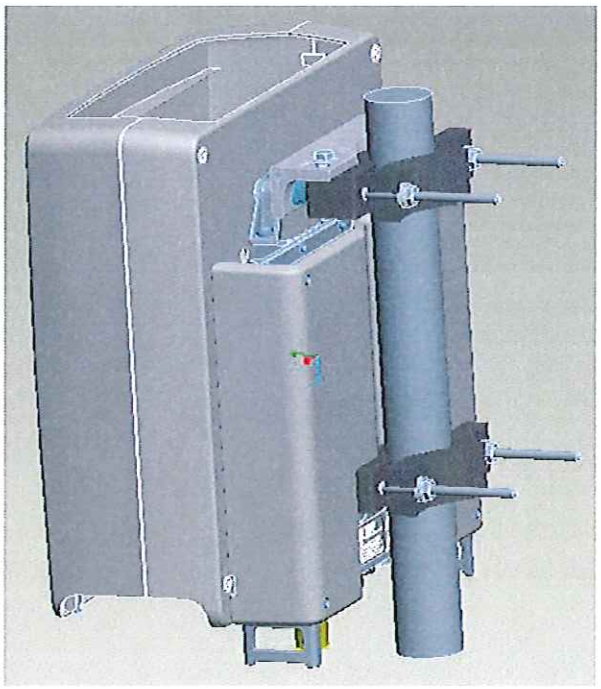
Fiber cascade cable (1m) + 2 SFPs included in RRUS A2 kit

RRUS A2 INSTALLATION CONCEPT – PIGGY-BACK TO RRU

S1

4 screws



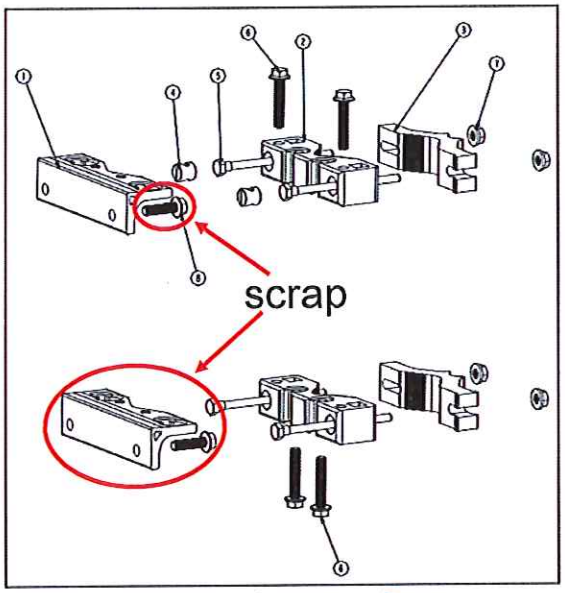


S1 Screw: SXA 215 3525/0550 (included with the RRUS A2)

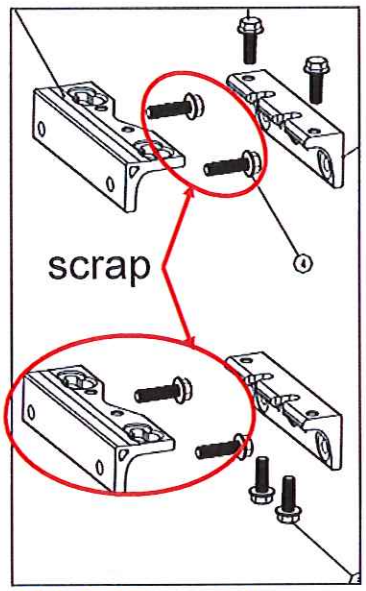
MOUNTING HARDWARE (1)

- Included with RRUS A2
  - KRC module + power in mated connector + power out mated connector + 4 screws (connect RRU and A2 together) ← S1
- Pole Mount (reuse from SXK 125 0245/1)
  - Mounting brackets for single pole mounting
  - Scrap: 1 bracket + 4 short screws
- Wall Mount (reuse from SXK 125 0246/1)
  - Mounting brackets for single wall mounting
  - Scrap: 1 bracket + 4 short screws

MOUNTING HARDWARE (2)



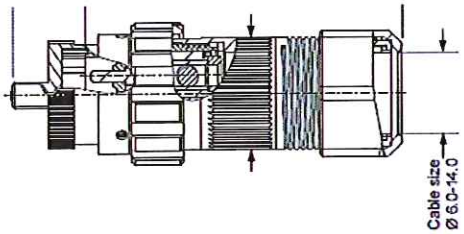
Pole Mount (reuse from SXK 125 0245/1)



Wall Mount (reuse from SXK 125 0246/1)

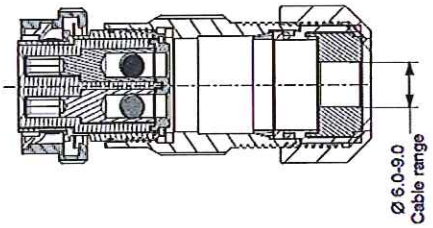
DC CONNECTORS FOR RRUS A2

› Mating connector of DC_out: RPT 447 22/01, included with RRUS A2



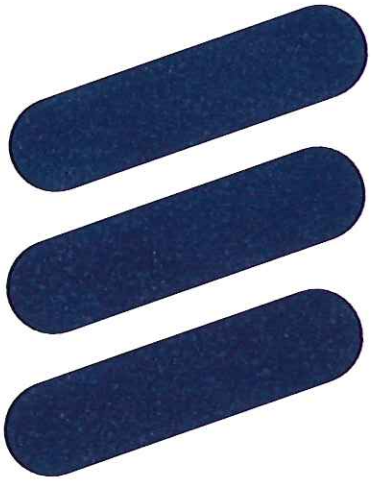
› Mating connector of DC_in: RNT 447 19/001, included with RRUS A2

- Same as the RRUS 11 DC connector



RRUS A2 KIT
EXAMPLE: FFA MODEL FOR BAND 2 – CEQ.13055

KRC161286/1	1	RRUS 12 B2_B25; Radio Unit
RDH10247/3	2	SFP SM CPRI 614.4-2457.6 Mbit/s 20km/GbE 10km DFB LC-SFP
RPM2530292/1000	1	RRUS Cascade Fiber Cable, 1 meter
SXK1250245/1	1	One RRU pole bracket short
SXK1250246/1	1	One RRU wall bracket short
No RF Power Licenses for RRUS A2, since it does not transmit (RRUS A2 is receive-only)		



ERICSSON

RRU E2 SPECS

DIMENSIONS

LxWxD = 20”x20.4”x9.5

Weight – 71.5

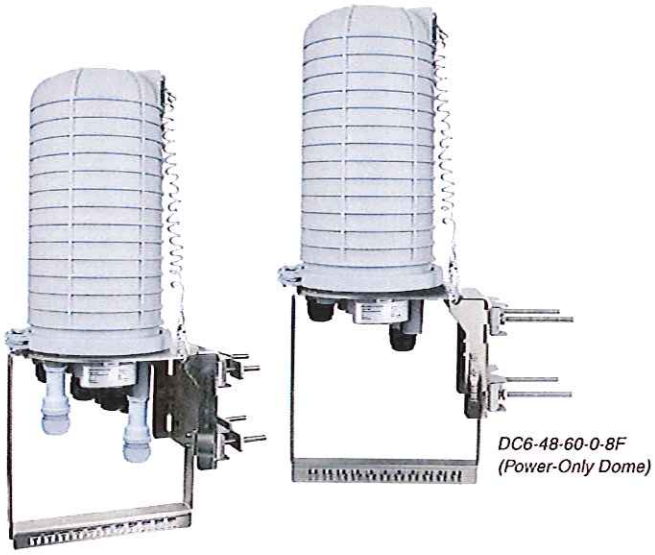
DATA SHEET

Tower Fiber Optic & DC Overvoltage Protection Power Connection Solutions

DC6-48-60-18-8F & DC6-48-60-0-8F

The DC6-48-60-18-8F and DC6-48-60-0-8F are dual chambered, DC surge suppression systems for use in multi-circuit, distributed node B/e-node B applications. The system will protect up to six remote radio heads (RRH) from voltage surges and lightning. The DC6-48-60-18-8F supports up to 18 pair of fiber. The DC6-48-60-0-8F is designed for use when a site is upgrading to more than 6 total RRH's.

powered by **Strikesorb®**



DC6-48-60-18-8F (Power & Fiber Dome)

DC6-48-60-0-8F (Power-Only Dome)

Features

- Protects up to six remote radio heads, each with its own protection circuit.
- Flexible design allows for installation at the top of a tower for RRH protection.
- Light-emitting diode (LED) indicators on individual circuits provide visual indication of suppressor status.
- Form C relays allow for remote monitoring of the suppressor status.
- 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 other equipment manufacturers (OEM) applications.
- Raycap recommends that DC protection system be installed within 5 meters or 15 feet of the radio.
- DC6-48-60-18-8F includes fiber connections for up to eighteen pair of fiber.
- Patent pending

Benefits

- Dome design is lightweight and aerodynamic providing maximum flexibility for installation on top of towers.

G02-00-272 130306

Raycap

www.raycapsurgeprotection.com

SPECIFICATIONS

Tower Fiber Optic & DC Overvoltage Protection Power Connection Solutions

DC6-48-60-18-8F & DC6-48-60-0-8F

powered by **Strikesorb®**

Mechanical

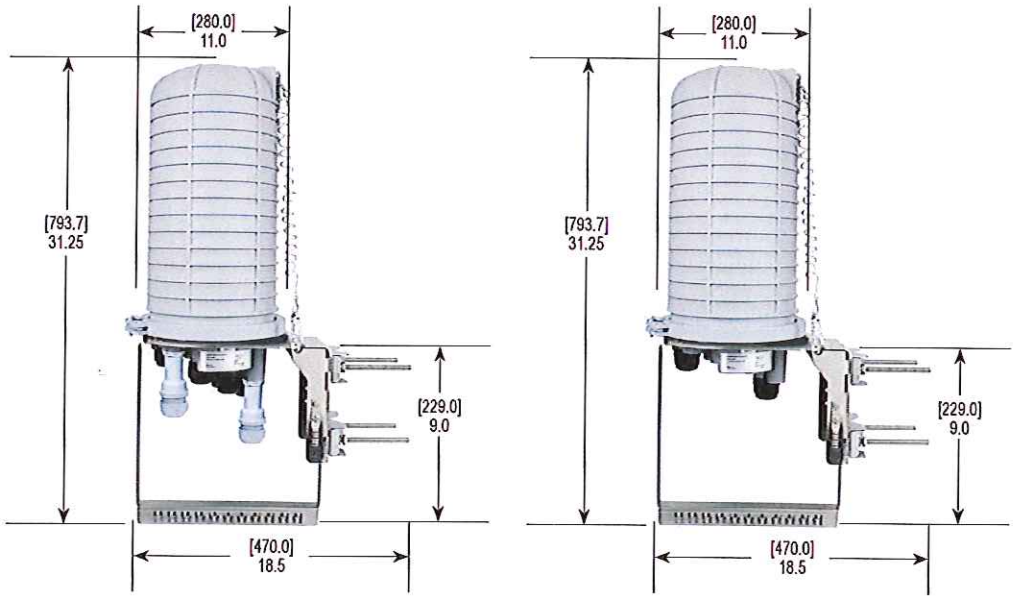
Model Number		DC6-48-60-18-8F	DC6-48-60-0-8F
CEQ / ANT Number		ANT. 13884	ANT. 10529
Suppression Connection Method		Compression Lug	Compression Lug
	Copper	#14 to #2 AWG [2.5 to 35 mm²]	#14 to #2 AWG [2.5 to 35 mm²]
Fiber Connection Method		LC-LC Single Mode	N/A
Environmental Ingress Protection (IP) Rating		IP68	IP68
Operating Temperature		-40° C to +80° C	-40° C to +80° C
Storage Temperature		-70° C to +80° C	-70° C to +80° C
Cold Temperature Cycling IEC 61300-2-22		-30° C to +60° C 200 hrs @ 5 PSI	-30° C to +60° C 200 hrs @ 5 PSI
Resistance to Aggressive Materials CEI IEC 61073-2		Including Acids and Bases	Including Acids and Bases
UV Protection ISO 4892-2 Method A		Xenon-Arc 2160 hrs	Xenon-Arc 2160 hrs
Weight*	System	18.9 lbs [8.57 kg]	18.9 lbs [8.57 kg]
	Mount	13.9 lbs [6.30 kg]	13.9 lbs [6.30 kg]
	Total	32.8 lbs [14.88 kg]	32.8 lbs [14.88 kg]
Combined Wind Loading	Sustained	150 mph Sustained: 105.7 lbs [470 N]	150 mph Sustained: 105.7 lbs [470 N]
	Gust	195 mph Gust: 213.6 lbs [950 N]	195 mph Gust: 213.6 lbs [950 N]

Optional Products	Part Number	CEQ / ANT
Module Assembly (Field Upgradeable)	DC6-48-60-18-8F-U	ANT.10082
Pre-wired Module Kit for a single remote radios		
*Module Weight: 5.64 oz [160 g] *(Calculated into the above Part Number weights.)*		
Accessory Kit	DC6-8F-ACC-KIT	CEQ.11443
Modification Kit	DC6-8F-MOD-KIT	CEQ.11444

Optional Configuration		
Power/Fiber connection system	FC18-PC6-8F	CEQ.11167

Product Diagram

[mm]
inches



AWG=American Wire Gauge

Raycap

www.raycapsurgeprotection.com

ATTACHMENT 4
AT&T Generator Specification Sheet

SD050

CUSTOM MODEL

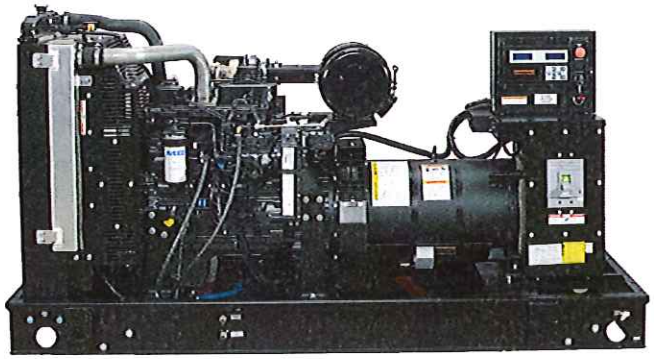
GENERAC® | INDUSTRIAL POWER

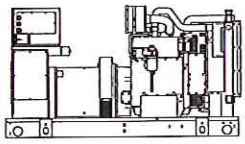
Industrial Diesel Generator Set

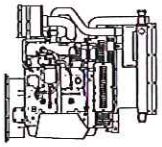
EPA Emissions Certification: Tier III

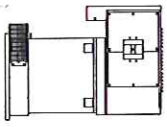
50 kW Diesel

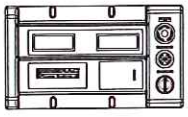
Standby Power Rating
50KW 60 Hz











features benefits

Generator Set	
• PROTOTYPE & TORSIONALLY TESTED	▸ PROVIDES A PROVEN UNIT
• UL2200 TESTED	▸ ENSURES A QUALITY PRODUCT
• RHINOCOAT PAINT SYSTEM	▸ IMPROVES RESISTANCE TO ELEMENTS
• SOUND LEVEL 2 ENCLOSURE	▸ 71dbA @ 7 METERS (23FT)
Engine	
• EPA TIER CERTIFIED	▸ ENVIRONMENTALLY FRIENDLY
• INDUSTRIAL TESTED, GENERAC APPROVED	▸ ENSURES INDUSTRIAL STANDARDS
• POWER-MATCHED OUTPUT	▸ ENGINEERED FOR PERFORMANCE
• INDUSTRIAL GRADE	▸ IMPROVES LONGEVITY AND RELIABILITY
Alternator	
• TWO-THIRDS PITCH	▸ ELIMINATES HARMFUL 3RD HARMONIC
• LAYER WOUND ROTOR & STATOR	▸ IMPROVES COOLING
• CLASS H MATERIALS	▸ HEAT TOLERANT DESIGN
• DIGITAL 3-PHASE VOLTAGE CONTROL	▸ FAST AND ACCURATE RESPONSE
Controls	
• ENCAPSULATED BOARD W/ SEALED HARNESS	▸ EASY, AFFORDABLE REPLACEMENT
• 4-20mA VOLTAGE-TO-CURRENT SENSORS	▸ NOISE RESISTANT 24/7 MONITORING
• SURFACE-MOUNT TECHNOLOGY	▸ PROVIDES VIBRATION RESISTANCE
• ADVANCED DIAGNOSTICS & COMMUNICATIONS	▸ HARDENED RELIABILITY

primary codes and standards

NEMA c UL us LISTED NFPA ASME ISO CE

SD050

application and engineering data

ENGINE SPECIFICATIONS

General

Make	Iveco / FPT		
EPA Emissions Compliance	Tier III		
EPA Emissions Reference	See Emissions Data Sheet		
Cylinder #	4		
Type	Diesel		
Displacement - L (cu. in.)	4.5	(274)	
Bore - mm (in.)	105	(4.1)	
Stroke - mm (in.)	132	(5.2)	
Compression Ratio	17.5:1		
Intake Air Method	Turbocharged		
Cylinder Head Type	2 Valve		
Piston Type	Aluminum		
Crankshaft Type	Forged Steel		
Engine Block Type	Cast Iron / Wet Sleeve		

Engine Governing

Governor	Electronic Isochronous
Frequency Regulation (Steady State)	+/- 0.25%

Lubrication System

Oil Pump Type	Gear		
Oil Filter Type	Full Flow		
Crankcase Capacity - L (gal)(qts)	13.6	(3.6)	(14.4)

Cooling System

Cooling System Type	Closed
Water Pump	Belt Driven Centrifugal
Fan Type	Pusher
Fan Blade Number	2538 (10)
Fan Diameter (in.)	26
Coolant Heater Wattage	1500
Coolant Heater Standard Voltage	120

Fuel System

Fuel Type	Ultra Low Sulfur Diesel Fuel
Fuel Specifications	ASTM
Fuel Filtering (microns)	5
Fuel Inject Pump Make	Standyne
Fuel Pump Type	Engine Driven Gear
Injector Type	Mechanical
Engine Type	Direct Injection
Fuel Supply Line - mm (in.)	1/4 inch Npt
Fuel Return Line - mm (in.)	1/4 inch Npt

Engine Electrical System

System Voltage	12VDC
Battery Charging Alternator	90 Amp
Battery Size (at 0 oC)	Optima Redtop
Battery Group	34
Battery Voltage	12VC
Ground Polarity	Negative

ALTERNATOR SPECIFICATIONS

Standard Model	390
Poles	4
Field Type	Revolving
Insulation Class - Rotor	H
Insulation Class - Stator	H
Total Harmonic Distortion	< 3.5%
Telephone Interference Factor (TIF)	< 50
Standard Excitation	PMG
Bearings	Single Sealed Cartridge
Coupling	Direct, Flexible Disc
Load Capacity - Standby	100%
Load Capacity - Prime	100%
Prototype Short Circuit Test	Y

Voltage Regulator Type	Digital
Number of Sensed Phases	All
Regulation Accuracy (Steady State)	+/- 0.25%

CODES AND STANDARDS COMPLIANCE (WHERE APPLICABLE)

NFPA 99
NFPA 110
ISO 8528-5
ISO 1708A.5
ISO 3046
BS5514
SAE J1349
DIN6271
IEEE C62.41 TESTING
NEMA ICS 1

Rating Definitions:
Standby – Applicable for a varying emergency load for the duration of a utility power outage with no overload capability. (Max. load factor = 70%)
Prime – Applicable for supplying power to a varying load in lieu of utility for an unlimited amount of running time. (Max. load factor = 80%) A 10% overload capacity is available for 1 out of every 12 hours.

SD050

operating data (60Hz)

POWER RATINGS (kW)

	STANDBY		
Single-Phase 120/240VAC @1.0pf	50	Amps:	208
Three-Phase 120/208VAC @0.8pf	-	Amps:	-
Three-Phase 120/240VAC @0.8pf	-	Amps:	-
Three-Phase 277/480VAC @0.8pf	-	Amps:	-
Three-Phase 346/600VAC @0.8pf	-	Amps:	-

NOTE: Generator output limited to 200A.

STARTING CAPABILITIES (sKVA)

sKVA vs. Voltage Dip

		480VAC						208/240VAC					
Alternator*	kW	10%	15%	20%	25%	30%	35%	10%	15%	20%	25%	30%	35%
Standard	50	-	-	-	-	-	-	26	39	52	65	77	90
Upsize 1		-	-	-	-	-	-	-	-	-	-	-	-
Upsize 2		-	-	-	-	-	-	-	-	-	-	-	-

*All Generac Industrial alternators utilize Class H insulation materials. Standard alternator provides less than or equal to Class B temperature rise. Upsize 1 provides less than or equal to Class B temperature rise. Upsize 2 provides less than or equal

FUEL

Fuel Consumption Rates

Fuel Pump Lift - in (m)
36(.9)

	STANDBY	
Percent Load	gph	lph
25%	1.52	5.75
50%	2.33	8.82
75%	3.08	11.65
100%	4.15	15.71

COOLING

Coolant System Capacity - Gal (L)
4.5 (17.44)

Maximum Radiator Backpressure
1.5" H_2O Column

		STANDBY
Coolant Flow per Minute	gpm (lpm)	32.7(123.8)
Heat rejection to Coolant	BTU/min	123,000
Inlet Air	cfm (m3/min)	6,360 (180.0)
Max. Operating Radiator Air Temp	F° (C°)	122(50)
Max. Operating Ambient Temperature	F° (C°)	122(50)

COMBUSTION AIR REQUIREMENTS

		STANDBY	
Intake Flow at Rated Power	cfm (m3/min)	247	(7.00)

EXHAUST

Exhaust Outlet Size (Open Set)
3.0"

Maximum Backpressure (Post-Silencer)
1.5" Hg

		STANDBY
Exhaust Flow (Rated Output)	cfm (m3/hr)	534(906.7)
Maximum Backpressure	inHg (Kpa)	1.5 (5.1)
Exhaust Temp (Rated Output)	°F (°C)	930(498.8)

ENGINE

		STANDBY
Rated Engine Speed	rpm	1800
Horsepower at Rated kW	hp	93
Temperature Deration		Consult Factory
Altitude Deration		Consult Factory

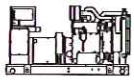
* CA units include aftertreatment

Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions. Please consult a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with ISO3046, BS5514, ISO8528 and DIN6271 standards.

SD050

standard features and options

GENERATOR SET



● Genset Vibration Isolation	Std
● Factory Testing	Std
● Extended warranty	Std
● Padlockable Doors	Std
● Steel Enclosure (Enclosed Models)	Std
○ Remote Emergency Shutdown	Opt

ENGINE SYSTEM

General

● Oil Drain Extension	Std
● Air Cleaner	Std
● Industrial Exhaust Silencer (Open Sets, ship loose)	Std
● Critical Exhaust Silencer (Enclosed Sets)	Std
● Stainless steel flexible exhaust connection	Std

Fuel System

● Primary Fuel Filter with Water Separator	Std
● Flexible Fuel Lines	Std
● UL142 Fuel Tank, 48 Hr Runtime	Std
● 2 Gal Overflow Containment with Alarm	Std

Cooling System

● 120VAC Coolant Heater (3-wire connection cord)	Std
● 50%/50% Coolant	Std
● Level 1 Guarding (Open Sets)	Std
● Closed Coolant Recovery System	Std
● UV/Ozone resistant hoses	Std
● Factory-Installed Radiator	Std
● Radiator Drain Extension	Std
● Fan guard	Std
● Radiator duct adapter (Open Sets)	Std
●	

Engine Electrical System

● Battery charging alternator	Std
● Battery cables	Std
● Battery tray	Std
● 75W 120VAC Battery heater	Std
● Solenoid activated starter motor	Std
● 10A UL float/equalize battery charger	Std
● Weather Resistant electrical connections	Std
● Duplex GFCI Convenience Outlet	Std

ALTERNATOR SYSTEM

● UL2200 GENprotect™	Std
● 100% Rated 200A Main Line Circuit Breaker	Std

CONTROL SYSTEM

Control Panel

● Digital H Control Panel - Dual 4x20 Display	Std
● Programmable Crank Limiter	Std
● 7-Day Programmable Exerciser (requires H-Transfer Switch)	Std
● Special Applications Programmable PLC	Std
● RS-232	Std
● RS-485	Std
● All-Phase Sensing DVR	Std
● Full System Status	Std
● Utility Monitoring (Req. H-Transfer Switch)	Std
● 2-Wire Start Compatible	Std
● Power Output (kW)	Std
● Power Factor	Std
● Reactive Power	Std
● All phase AC Voltage	Std
● All phase Currents	Std
● Oil Pressure	Std
● Coolant Temperature	Std
● Coolant Level	Std
● Low Fuel Pressure Indication	Std
● Engine Speed	Std
● Battery Voltage	Std
● Frequency	Std
● Date/Time Fault History (Event Log)	Std
● UL2200 GENprotect™	Std
○ Low-Speed Exercise	Opt
● Isochronous Governor Control	Std
● -40deg C - 70deg C Operation	Std
● Weather Resistant Electrical Connections	Std
● Audible Alarms and Shutdowns	Std
● Not in Auto (Flashing Light)	Std
● On/Off/Manual Switch	Std
● E-Stop (Red Mushroom-Type)	Std
○ Remote E-Stop (Break Glass-Type, Surface Mount)	-
○ Remote E-Stop (Red Mushroom-Type, Surface Mount)	-
○ Remote E-Stop (Red Mushroom-Type, Flush Mount)	-
● NFPA 110 Level I and II (Programmable)	Std
● Remote Communication - RS232	Std

Alarms (Programmable Tolerances, Pre-Alarms and Shutdowns)

● Low Fuel	Std
● Oil Pressure (Pre-programmed Low Pressure Shutdown)	Std
● Coolant Temperature (Pre-programmed High Temp Shutdo	Std
● Coolant Level (Pre-programmed Low Level Shutdown)	Std
● Engine Speed (Pre-programmed Overspeed Shutdown)	Std
● Voltage (Pre-programmed Overvoltage Shutdown)	Std
● Battery Voltage	Std

Other Options

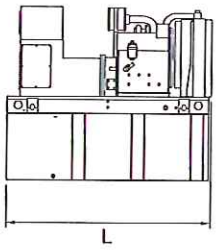
● Single Side Service

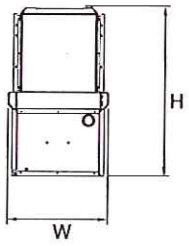
●

○

SD050

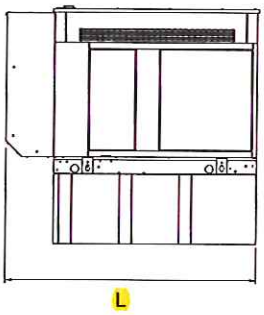
dimensions, weights and sound levels

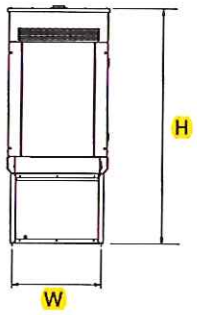




OPEN SET

	TANK SIZE							
	RUNTIME HOURS	CAPACITY (GAL)	TANK VOLUME	L	W	H	WT	dBA*
○	-	-	-	-	-	-	-	84
○	-	-	-	-	-	-	-	
○	-	-	-	-	-	-	-	
○	-	-	-	-	-	-	-	
○	-	-	-	-	-	-	-	
●	48	210	210	76	38	87	3400	
○	-	-	-	-	-	-	-	
○	-	-	-	-	-	-	-	





LEVEL 2 SOUND ENCLOSURE

	TANK SIZE							
	RUNTIME HOURS	CAPACITY (GAL)	TANK VOLUME	L	W	H	WT	dBA*
○	-	-	-	-	-	-	-	71
○	-	-	-	-	-	-	-	
○	-	-	-	-	-	-	-	
○	-	-	-	-	-	-	-	
○	-	-	-	-	-	-	-	
●	48	210	210	94.8	38	99	3935	
○	-	-	-	-	-	-	-	
○	-	-	-	-	-	-	-	

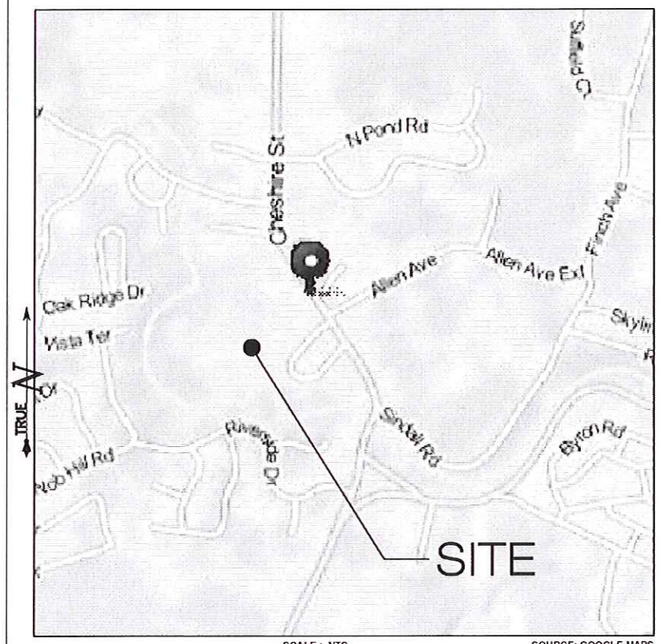
*Required gallons based on 100% of standby rating. Weights consider steel enclosure and are without fuel in tank. Sound levels measured at 23ft (7m) and does not account for ambient site conditions.

YOUR FACTORY RECOGNIZED GENERAC INDUSTRIAL DEALER

Specification characteristics may change without notice. Dimensions and weights are for preliminary purposes only. Please consult a Generac Power Systems Industrial Dealer for detailed installation drawings.

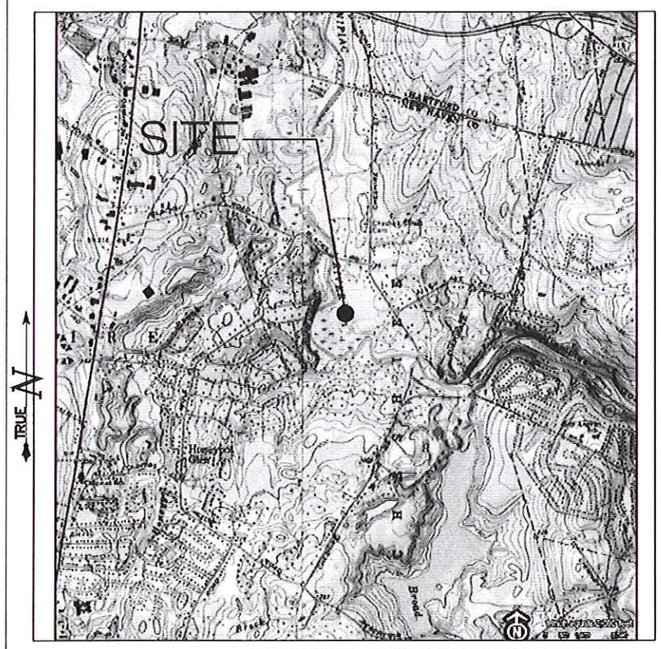
ATTACHMENT 5
D&M Plans

LOCATION MAP



SCALE : NTS SOURCE: GOOGLE MAPS

USGS TOPOGRAPHIC MAP



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

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

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

HOMELAND TOWERS

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

DEVELOPMENT & MANAGEMENT PLAN
DRAWING INDEX

*SITE INFORMATION:

-SITE NAME:..... CHESHIRE
-SITE ID NUMBER:..... CT-005
-SITE ADDRESS:..... 1325 CHESHIRE STREET CHESHIRE, CT 06410
-MAP:..... 38
-LOTS:..... 180
-ZONE:..... R-40
-LATITUDE - ..... 41° 31' 57.32" N
-LONGITUDE - ..... 72° 52' 13.70" W
-ELEVATION - ..... 116± AMSL
-FEMA/FIRM DESIGNATION:..... PANEL#09009C0161H - ZONE X
-ACREAGE:..... 59.0± Ac (VOL. 150, PAGE 376)

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
TOWN OF CHESHIRE
84 SOUTH MAIN STREET
CHESHIRE, CT 06410

HOMELAND PROJECT MANAGER:
VINCENT XAVIER
(914) 879-9172

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

POWER PROVIDER:
NU (203) 271-4856
DAVID MOREL

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

CHESHIRE
1325 CHESHIRE STREET
CHESHIRE, CT 06410

HOMELAND TOWERS SITE NUMBER:
CT-005

APT FILING NUMBER:
CT-283-250

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
CHESHIRE
1325 CHESHIRE STREET
CHESHIRE, CT 06410

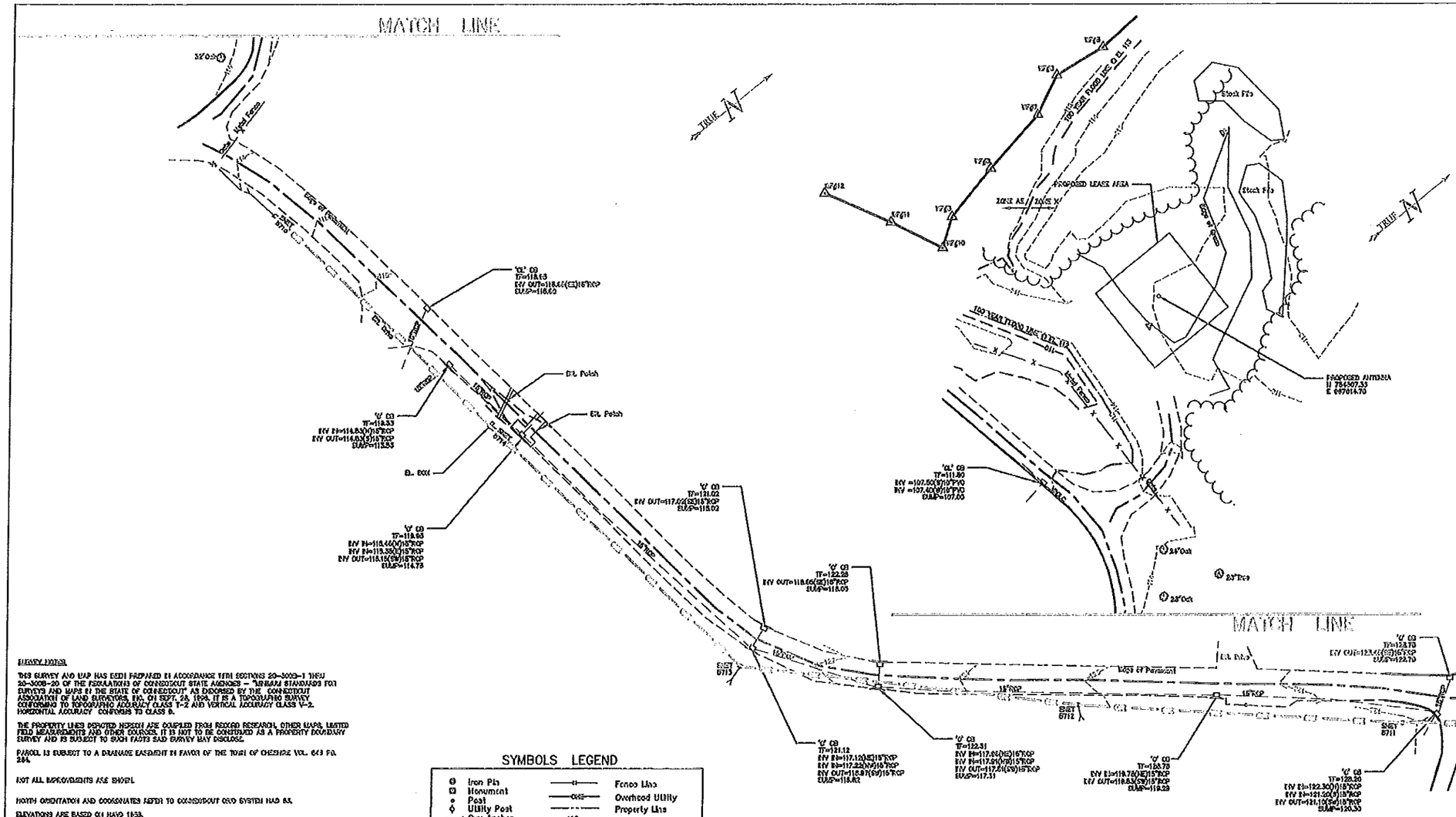
DESIGN TYPE:
RAW LAND
DEVELOPMENT SITE

REVISIONS:
REV.0: 04/29/15: FOR REVIEW: SMC
REV.1: 05/14/15: CLIENT REVISIONS: SMC
REV.2:
REV.3:
REV.4:
REV.5:

TITLE SHEET & INDEX

APT FILING NUMBER: CT-283-250
APT DRAWING NUMBER: CT005 T-1
DRAWN BY: RGR SCALE: AS NOTED
CHECKED BY: SMC DATE: 04/29/15
SHEET NUMBER: T-1

STATE OF CONNECTICUT
SCOTT M. CHASE
No. 19128
LICENSED PROFESSIONAL ENGINEER



SURVEY NOTES:

THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300b-1 THRU 20-300b-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES – "MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPT. 26, 1996. IT IS A TOPOGRAPHIC SURVEY CONFORMING TO TOPOGRAPHIC ACCURACY CLASS T-2 AND VERTICAL ACCURACY CLASS V-2. HORIZONTAL ACCURACY CONFORMS TO CLASS B.

THE PROPERTY LINES DEPICTED HEREON ARE COMPILED FROM RECORD RESEARCH, OTHER MAPS, LIMITED FIELD MEASUREMENTS AND OTHER SOURCES. IT IS NOT TO BE CONSTRUED AS A PROPERTY BOUNDARY SURVEY AND IS SUBJECT TO SUCH FACTS SAID SURVEY MAY DISCLOSE.

PARCEL IS SUBJECT TO A DRAINAGE EASEMENT IN FAVOR OF THE TOWN OF CHESHIRE VOL. 643 PG. 284.

NOT ALL IMPROVEMENTS ARE SHOWN.

NORTH ORIENTATION AND COORDINATES REFER TO CONNECTICUT GRID SYSTEM NAD 83.

ELEVATIONS ARE BASED ON NAVD 1988.

PARCEL ADDRESS: 1323 CHESHIRE STREET, CHESHIRE CT.

PARCEL OWNER OF RECORD: TOWN OF CHESHIRE.

PARCEL IS IN THE R-40 ZONE.

PARCEL MAP 33 LOT 100 CHESHIRE ASSESSORS MAP.

PARCEL AREA = 688 ACRES.

PARCEL IS IN ZONE X AND AE OF THE FLOOD INSURANCE RATE MAP, NEW HAVEN COUNTY, CONNECTICUT, ALL JURISDICTIONS, PANEL 181 OF 626, MAP NUMBER MAP NUMBER 09009C0181H, EFFECTIVE DATE DECEMBER 17, 2010, BY FEDERAL EMERGENCY MANAGEMENT AGENCY.

100 YEAR FLOOD LINE BASED ON ELEVATIONS DEPICTED ON THE FLOOD INSURANCE RATE MAP, NEW HAVEN COUNTY, ALL JURISDICTIONS, PANEL 181 OF 626, MAP NUMBER 09009C0181H, EFFECTIVE DATE DECEMBER 17, 2010, BY FEDERAL EMERGENCY MANAGEMENT AGENCY.

WETLAND FLAG LOCATIONS PROVIDED BY ALL-POINTS TECHNOLOGY CORPORATION.

MAP REFERENCES

1) 1) "PROPERTY OF ANN DAUNER TO BE SOLD TO TOWN OF CHESHIRE, CHESHIRE STREET, CHESHIRE CONN., SCALE 1"=100', DATED DECEMBER, 29, 1955, BY CARL G. EATHON – LAND SURVEYOR & CIVIL ENGINEER.

SYMBOLS LEGEND

⊕	Iron Pin	—o—	Fence Line
⊡	Monument	—OHE—	Overhead Utility
•	Post	— — —	Property Line
◊	Utility Post	—100—	Contour Line
—<	Guy Anchor	~~~~~	Tree Line
□	'CL' CB	— — — —	Property Line
⊡	'G' CB		
⊛	Deciduous Tree	△WF600	Wetland Flag
WV	Water Valve	BOLC	Bituminous Curb

GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.

TO MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

THIS MAP IS NOT VALID WITHOUT A LIVE SIGNATURE AND SEAL.

A. RUFUS CONTINO LLS #15333 — DATE 10/10/13

HOMELAND TOWERS:
CT005-CHESHIRE

APT FILING NUMBER:
CT-283-250

1323 CHESHIRE STREET
CHESHIRE, CT 06410

TOPOGRAPHIC SURVEY

APT FILING NUMBER: CT-283-250

APT DRAWING NUMBER: CT-283-250-EX-1.DWG

DRAWN BY: JBR | SCALE: 1"=40'

CHECKED BY: ARM | DATE: 10/10/13

REVISIONS:

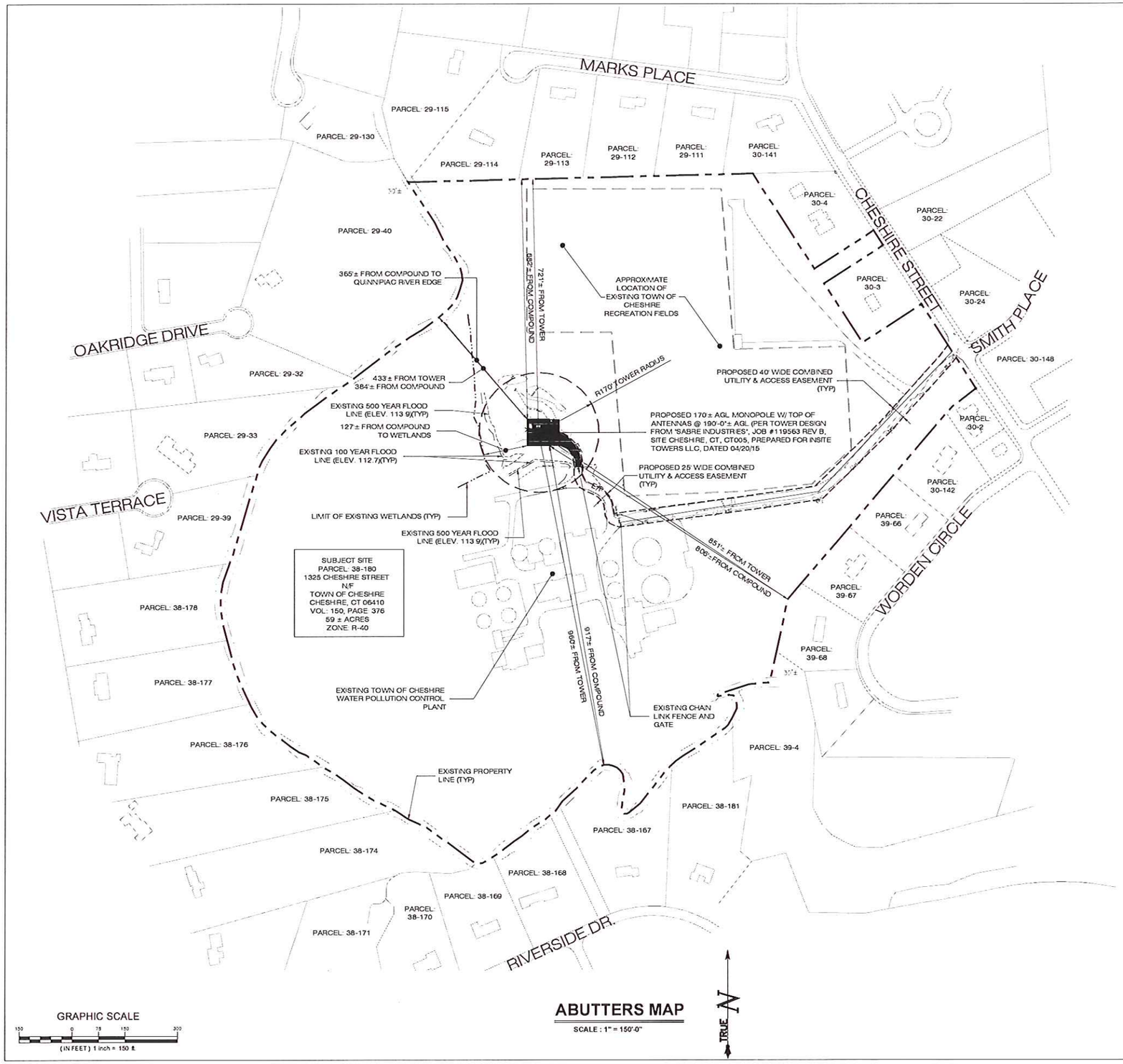
REV.6:
REV.5:
REV.4:
REV.3:
REV.2:
REV.1:

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

SHEET NUMBER:

EX-1

CONNECTICUT LICENSED LAND SURVEYOR



ABUTTERS MAP

SCALE : 1" = 150'-0"

ABUTTERS INFORMATION

NOB HILL ROAD

PARCEL: 38-178
286 NOB HILL ROAD
N/F
JOSEPH R. ANTHONY
286 NOB HILL ROAD
CHESHIRE, CT 06410

PARCEL: 38-177
270 NOB HILL ROAD
N/F
GORDON R. & JUDITH P. OBEREMPT
270 NOB HILL ROAD
CHESHIRE, CT 06410

PARCEL: 38-176
256 NOB HILL ROAD
N/F
FDFSDFS
256 NOB HILL ROAD
CHESHIRE, CT 06410

PARCEL: 38-175
240 NOB HILL ROAD
N/F
HARRY J. JR & CHARLENE R. BLACK
240 NOB HILL ROAD
CHESHIRE, CT 06410

PARCEL: 38-174
226 NOB HILL ROAD
N/F
JENNIFER ARCESI & DAVID CETRONE
226 NOB HILL ROAD
CHESHIRE, CT 06410

MARKS PLACE

PARCEL: 29-111
5 MARKS PLACE
N/F
DREW S. & JENNIFER K BLACK
5 MARKS PLACE
CHESHIRE, CT 06410

PARCEL: 29-112
7 MARKS PLACE
N/F
CHRISTOPHER J & NANCY S. SMOCK
7 MARKS PLACE
CHESHIRE, CT 06410

PARCEL: 29-113
9 MARKS PLACE
N/F
ATTANASIO JOSEPH JR
9 MARKS PLACE
CHESHIRE, CT 06410

PARCEL: 29-114
11 MARKS PLACE
N/F
DIANE M. KEARNEY
11 MARKS PLACE
CHESHIRE, CT 06410

PARCEL: 29-115
13 MARKS PLACE
N/F
PETER S. & GINA M. REINERS
13 MARKS PLACE
CHESHIRE, CT 06410

SABLE COURT

PARCEL: 29-130
499 SABLE COURT
N/F
MARK S. & SUSAN HALLBACH
499 SABLE COURT
CHESHIRE, CT 06410

OAKRIDGE DRIVE

PARCEL: 29-40
540 OAKRIDGE DRIVE
N/F
EDWARD S. KONOWITZ
540 OAKRIDGE DRIVE
CHESHIRE, CT 06410

PARCEL: 29-32
532 OAKRIDGE DRIVE
N/F
DONALD L. & DIANE E DRUST
532 OAKRIDGE DR
CHESHIRE, CT 06410

RIVERSIDE DRIVE

PARCEL: 38-171
450 RIVERSIDE DRIVE
N/F
ROBERT H. & LINDA J. IVEY
450 RIVERSIDE DRIVE
CHESHIRE, CT 06410

PARCEL: 38-170
454 RIVERSIDE DRIVE
N/F
JANE RUSSELL BATE
454 RIVERSIDE DRIVE
CHESHIRE, CT 06410

PARCEL: 38-169
470 RIVERSIDE DRIVE
N/F
THOMAS E. GRIMSHAW
470 RIVERSIDE DRIVE
CHESHIRE, CT 06410

PARCEL: 38-168
490 RIVERSIDE DRIVE
N/F
ROBERT A. MEISTER
490 RIVERSIDE DRIVE
CHESHIRE, CT 06410

PARCEL: 38-167
510 RIVERSIDE DRIVE
N/F
SCOTT WEINER & ANAT LEVITEH
510 RIVERSIDE DRIVE
CHESHIRE, CT 06410

PARCEL: 38-181
520 RIVERSIDE DRIVE
N/F
JOHN F & ROBIN G CAPONE
520 RIVERSIDE DRIVE
CHESHIRE, CT 06410

PARCEL: 39-4
CHESHIRE STREET
N/F
CHESHIRE LAND TRUST INC
CHESHIRE, CT 06410

VISTA TERRACE

PARCEL: 29-33
94 VISTA TERRACE
N/F
JOAN L. TATIGIAN
94 VISTA TERRACE
CHESHIRE, CT 06410

PARCEL: 29-39
91 VISTA TERRACE
N/F
LIAM C. & ALISON A. CONSIDINE
91 VISTA TERRACE
CHESHIRE, CT 06410

WORDEN CIRCLE

PARCEL: 39-68
13 WORDEN CIRCLE
N/F
GARY WASSMER & ANDREA DOANE
13 WORDEN CIRCLE
CHESHIRE, CT 06410

PARCEL: 39-67
15 WORDEN CIRCLE
N/F
KATHLEEN S. RICHARD
15 WORDEN CIRCLE
CHESHIRE, CT 06410

PARCEL: 39-66
17 WORDEN CIRCLE
N/F
RICHARD M. & ROSEANNE B. FERRARO
17 WORDEN CIRCLE
CHESHIRE, CT 06410

PARCEL: 30-142
19 WORDEN CIRCLE
N/F
CATHE A. NIZICH
19 WORDEN CIRCLE
CHESHIRE, CT 06410

CHESHIRE STREET

PARCEL: 30-141
1369 CHESHIRE STREET
N/F
STEPHEN J. & DANNA COBBE
1369 CHESHIRE STREET
CHESHIRE, CT 06410

PARCEL: 30-2
1311 CHESHIRE STREET
N/F
JEAN H. WARGO
1311 CHESHIRE STREET
CHESHIRE, CT 06410

PARCEL: 30-4
1355 CHESHIRE STREET
N/F
DAVID M. & SANDRA D. LETOURNEAU
1355 CHESHIRE STREET
CHESHIRE, CT 06410

PARCEL: 30-3
1339 CHESHIRE STREET
N/F
VARRI RAMPRASAD
1339 CHESHIRE STREET
CHESHIRE, CT 06410

PARCEL: 30-22
1344 CHESHIRE STREET
N/F
RICHARD SR. & DOREEN C. PRUITT
1344 CHESHIRE STREET
CHESHIRE, CT 06410

PARCEL: 30-24
1322 CHESHIRE STREET
N/F
MONTGOMERY T. HELMS
1322 CHESHIRE STREET
CHESHIRE, CT 06410

PARCEL: 30-148
1314 CHESHIRE STREET
N/F
JOHN E. & TARA K. MILLER
1314 CHESHIRE STREET
CHESHIRE, CT 06410

SITE AREAS & VOLUMES OF EARTHWORK

SITEWORK SHALL PRODUCE A BALANCED SITE IN TERMS OF CUT AN FILL. THE COMPOUND AND ROADWAY WILL IMPORT APPROXIMATELY 160 CUBIC YARDS OF CLEAN BROKEN STONE. THE UTILITY TRENCH FROM THE DEMARC TO THE COMPOUND WILL EXCAVATE APPROXIMATELY 250 CUBIC YARDS OF MATERIAL THAT WILL BE USED TO BACKFILL THE TRENCH.

COMPOUND AREA SLOPES:
EXISTING - <2.0%
PROPOSED - <2.0%

TOTAL AREA OF DISTURBANCE = 13,500± SF

STORMWATER VELOCITY:
PRIOR TO GROUND COVER < 3.0 FT/SEC
FOLLOWING GROUND COVER < 3.0 FT/SEC

STORMWATER VOLUME:
PROPOSED IMPERVIOUS AREA = 8,125 SF
WATER QUALITY STD VOLUME (1") = 677 CF
NEW GRAVEL SURFACE AREA = 6,338 SF
STORAGE VOLUME (6" DEPTH, 30% VOIDS) = 950 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 R-1, SP-1 AND A-1 FROM:

1. PLAN ENTITLED "TOPOGRAPHIC SURVEY - 1325 CHESHIRE STREET CHESHIRE, CONNECTICUT "PREPARED BY MARTINEZ COUCH & ASSOCIATES, LLC 1084 CROMWELL AVENUE ROCKY HILL, CT DATED OCTOBER 10, 2013

2. TOWN OF CHESHIRE ASSESSORS MAPS 29, 30, 38, & 39.

3. TOWN OF CHESHIRE "ZONING MAP"

4. DIGITAL GLOBAL 2012 DIGITAL ORTHOPHOGRAPHS.

HOMELAND TOWERS SITE NUMBER:
CT-005

APT FILING NUMBER:
CT-283-250

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

CHESHIRE
1325 CHESHIRE STREET
CHESHIRE, CT 06410

DESIGN TYPE:
RAW LAND DEVELOPMENT SITE

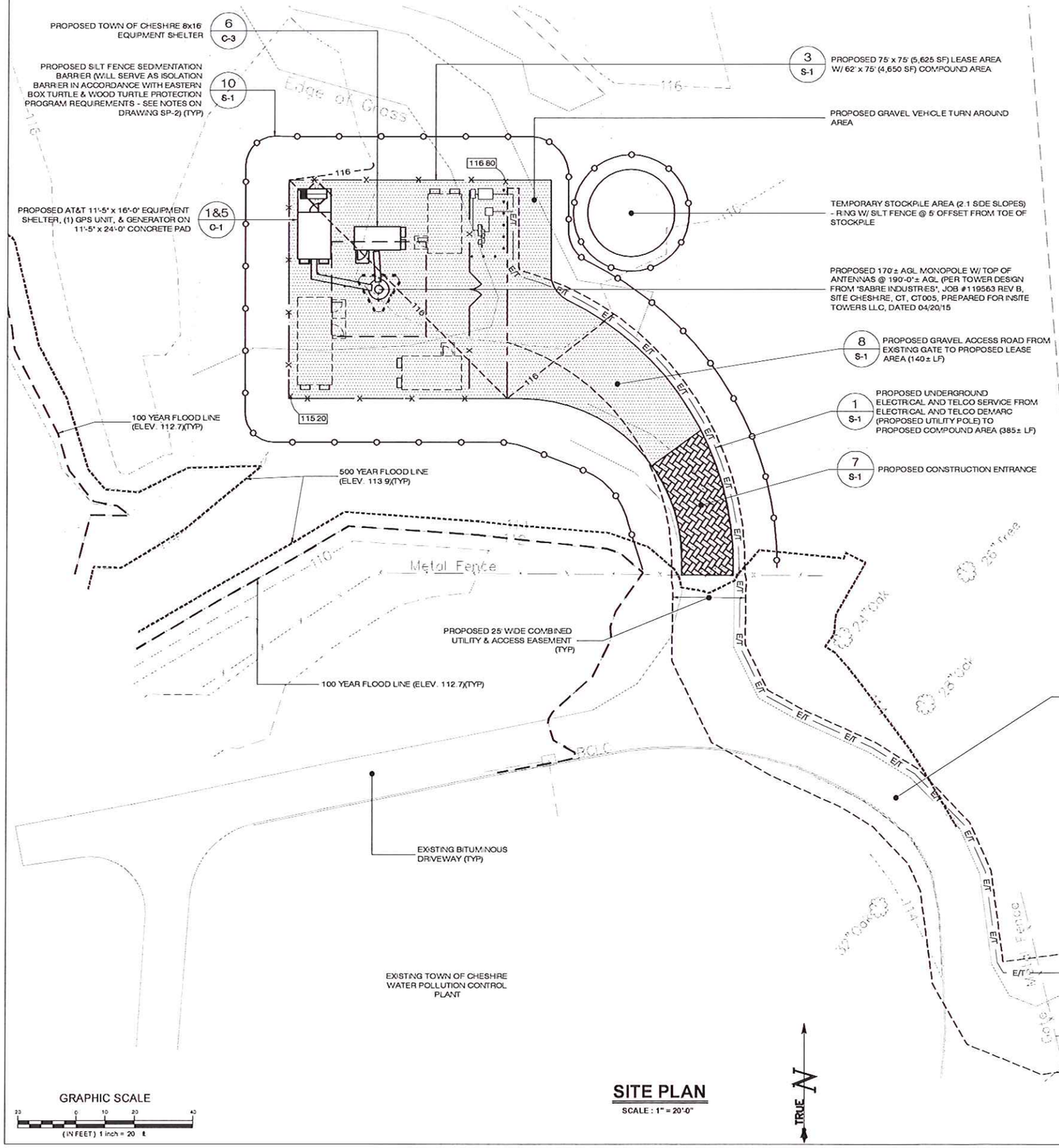
REVISIONS:
REV.0: 04/29/15: FOR REVIEW: SMC
REV.1: 05/14/15: CLIENT REVISIONS: SMC
REV.2:
REV.3:
REV.4:
REV.5:

ABUTTERS MAP

APT FILING NUMBER: CT-283-250
APT DRAWING NUMBER: CT005-14
DRAWN BY: RCB
SCALE: AS NOTED
CHECKED BY: SMC
DATE: 04/29/15

SHEET NUMBER:
R-1

STATE OF CONNECTICUT
SCOTT M. CHASE
No. 19728
LICENSED PROFESSIONAL ENGINEER



SURVEY NOTES

THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300B-1 THRU 20-300B-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES - "MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPT. 26, 1996. IT IS A TOPOGRAPHIC SURVEY CONFORMING TO TOPOGRAPHIC ACCURACY CLASS T-2 AND VERTICAL ACCURACY CLASS V-2. HORIZONTAL ACCURACY IS CONFORMS TO CLASS D.

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PARCEL IS SUBJECT TO A DRAINAGE EASEMENT IN FAVOR OF THE TOWN OF CHESHIRE VOL. 646 PG. 284.

NOT ALL IMPROVEMENTS ARE SHOWN.

NORTH ORIENTATION AND COORDINATES REFER TO CONNECTICUT GRID SYSTEM NAD 83.

ELEVATIONS ARE BASED ON NAVD 1988.

ALL IMPROVEMENTS ARE NOT SHOWN.

PARCEL ADDRESS: 1325 CHESHIRE STREET, CHESHIRE CT.

PARCEL OWNER OF RECORD: TOWN OF CHESHIRE

PARCEL IS IN THE R-40 ZONE.

PARCEL MAP 38 LOT 180 CHESHIRE ASSESSORS MAP.

PARCEL AREA = 59± ACRES.

PARCEL IS IN ZONE X AND AE OF THE FLOOD INSURANCE RATE MAP, NEW HAVEN COUNTY, CONNECTICUT, ALL JURISDICTIONS, PANEL 161 OF 635, MAP NUMBER 09009C0161H, EFFECTIVE DATE DECEMBER 17, 2010, BY FEDERAL EMERGENCY MANAGEMENT AGENCY.

THE 100 YEAR FLOOD LINE BASED ON ELEVATIONS DEPICTED ON THE FLOOD INSURANCE RATE MAP, NEW HAVEN COUNTY, ALL JURISDICTIONS, PANEL 161 OF 635, MAP NUMBER 09009C0161H, EFFECTIVE DATE DECEMBER 17, 2010, BY FEDERAL EMERGENCY MANAGEMENT AGENCY.

THE 500 YEAR FLOOD LINE BASE ON ELEVATIONS TAKEN FROM THE FLOOD INSURANCE STUDY, QUINNIPIAC RIVER NEW HAVEN COUNTY, CONNECTICUT DATED JULY 8, 2013 BY FEDERAL EMERGENCY MANAGEMENT AGENCY.

MAP REFERENCES

1) 1) "PROPERTY OF JOHN DANAHER TO BE SOLD TO TOWN OF CHESHIRE. CHESHIRE STREET. CHESHIRE CONN., SCALE 1"=100', DATED DECEMBER 29, 1965, BY CARL G. MATTSON - LAND SURVEYOR & CIVIL ENGINEER.

NOTE: NO TREES WILL BE REMOVED IN CONSTRUCTING THE FACILITY

HOMELAND TOWERS SITE NUMBER:
CT-005

APT FILING NUMBER:
CT-283-250

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

ALL-POINTS TECHNOLOGY CORPORATION
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KILLINGWORTH, CT 06419
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DEVELOPMENT & MANAGEMENT DOCUMENTS

CHESHIRE
1325 CHESHIRE STREET
CHESHIRE, CT 06410

DESIGN TYPE:
RAW LAND DEVELOPMENT SITE

REVISIONS:
REV.0: 04/29/15: FOR REVIEW: SMC
REV.1: 05/14/15: CLIENT REVISIONS: SMC
REV.2:
REV.3:
REV.4:
REV.5:

SITE PLAN

APT FILING NUMBER: CT-283-250
APT DRAWING NUMBER: CT005_SP
DRAWN BY: RCB
CHECKED BY: SMC
SCALE: AS NOTED
DATE: 05/29/15

SHEET NUMBER:
SP-1

STATE OF CONNECTICUT
SCOTT M. CHASE
12728
LICENSED PROFESSIONAL ENGINEER

ENVIRONMENTAL NOTES

Eastern Box Turtle and Wood Turtle Protection Program

Eastern Box Turtle and Wood Turtle, both State Special Concern species afforded protection under the Connecticut Endangered Species Act, are known to occur on or within the vicinity of the site. The following protective measures satisfy requirements from the Connecticut Department of Energy & Environmental Protection ("CTDEEP") Wildlife Division and follow protocols developed from previous rare species consultations and state-approved protection plans. This protection plan is valid for one year from the date of CTDEEP's letter, 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 if work will occur during the Eastern Box Turtle's and Wood Turtle's active period (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 and Wood Turtle protection measures are implemented properly and will provide an education session on Eastern Box Turtle and Wood 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) 984-9515 or via email at dgustafson@allpointstech.com.

The proposed Eastern Box Turtle and Wood Turtle species protection program consists of several components: isolation of the project perimeter, periodic inspection and maintenance of isolation structures, 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 Verizon Wireless 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 (i.e., silt fencing), 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 to ensure the area is free of eastern box turtles and wood turtles and satisfactorily installed. The intent of the barrier is to segregate the majority of the work zone from foraging/migrating/dispersing turtles. 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 turtles.
   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 inspected for tears or breeches in the fabric following installation and at either on a weekly or biweekly inspection frequency by APT. If inspections are performed on a biweekly basis, such inspections will also include inspections following storm events of 0.25 inch or greater. Inspections will be conducted 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 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.

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 wood turtles and emphasizing the non-aggressive nature of these 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. 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, wood 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 Material's 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 Material's 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. Monthly inspection reports (brief narrative and applicable photos) will be submitted to the Connecticut Siting Council for compliance verification. Any observations of turtles will be included in the reports.
   b. Following completion of the construction project, APT will provide a summary report to CTDEEP documenting the monitoring and maintenance of the barrier fence and erosion control measures.
   c. Any observations of eastern box turtle or wood 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.

CONSTRUCTION SEQUENCING

CONTRACTOR TO FOLLOW THE FOLLOWING CONSTRUCTION PHASING AS CLOSELY AS POSSIBLE:

1. MOBILIZATION. BRING MATERIAL AND EQUIPMENT TO SITE. ALL CONSTRUCTION TRAFFIC AND ACTIVITIES MUST RESIDE INSIDE ACCESS PATH DELINEATED, WITHIN STAGING AND STOCKPILE AREA, OR WITHIN AREA WHERE PROPOSED WORK IS BEING COMPLETED. THE CONTRACTOR IS TO PROTECT WETLANDS FROM DISTURBANCE AT ALL TIMES AND NO CONSTRUCTION ACTIVITIES OR DUMPING SHALL OCCUR IN THE WETLANDS.
2. INSTALL TEMPORARY EROSION AND SEDIMENTATION CONTROL BARRIERS.
3. INSTALL CONSTRUCTION ENTRANCE.
3. CLEAR AND ROUGH GRADE ACCESS ROAD TO THE NEW EQUIPMENT COMPOUND.
4. CONSTRUCT NEW UTILITY TRENCH & SET CONDUITS & BACKFILL.
5. ROUGH GRADE COMPOUND AREA.
6. EXCAVATE FOR TOWER FOUNDATION AND EQUIPMENT SHELTER FOUNDATION.
7. FINALIZE ACCESS ROAD GRADES AND INSTALL WEARING COURSE.
8. PREPARE SUBGRADE AND INSTALL FORMS, STEEL REINFORCING, AND CONCRETE FOR TOWER FOUNDATION & EQUIPMENT SHELTER FOUNDATION.
9. INSTALL BURIED GROUND RINGS, GROUND RODS, GROUND LEADS, UTILITY CONDUITS, AND UTILITY EQUIPMENT.
10. BACKFILL FOUNDATION & EQUIPMENT SHELTER FOUNDATION.
11. ERECT MONOPOLE.
12. INSTALL TELECOMMUNICATIONS EQUIPMENT ON TOWER AND IN COMPOUND.
13. INSTALL COMPOUND GRAVEL SURFACES.
14. INSTALL FENCING.
15. CONNECT GROUNDING LEADS AND LIGHTENING PROTECTION.
16. FINAL GRADE AROUND COMPOUND.
17. LOAM AND SEED DISTURBED AREAS OUTSIDE COMPOUND, AS REQUIRED.
18. REMOVE SILT FENCING AFTER SEEDED AREAS HAVE ESTABLISHED VEGETATION.
19. FINAL CLEANUP AND EQUIPMENT TESTING.

THE ESTIMATED TIME FOR COMPLETION OF THE WORK IS APPROXIMATELY FOUR (4) WEEKS. THE EXACT PROCESS MAY VARY DEPENDING ON THE CONTRACTORS AND SUBCONTRACTORS AVAILABILITY TO COMPLETE WORK AND WEATHER DELAYS.

HOMELAND TOWERS SITE NUMBER:
CT-005

APT FILING NUMBER:
CT-283-250

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

CHESHIRE
1325 CHESHIRE STREET
CHESHIRE, CT 06410

DESIGN TYPE:
RAW LAND DEVELOPMENT SITE

REVISIONS:

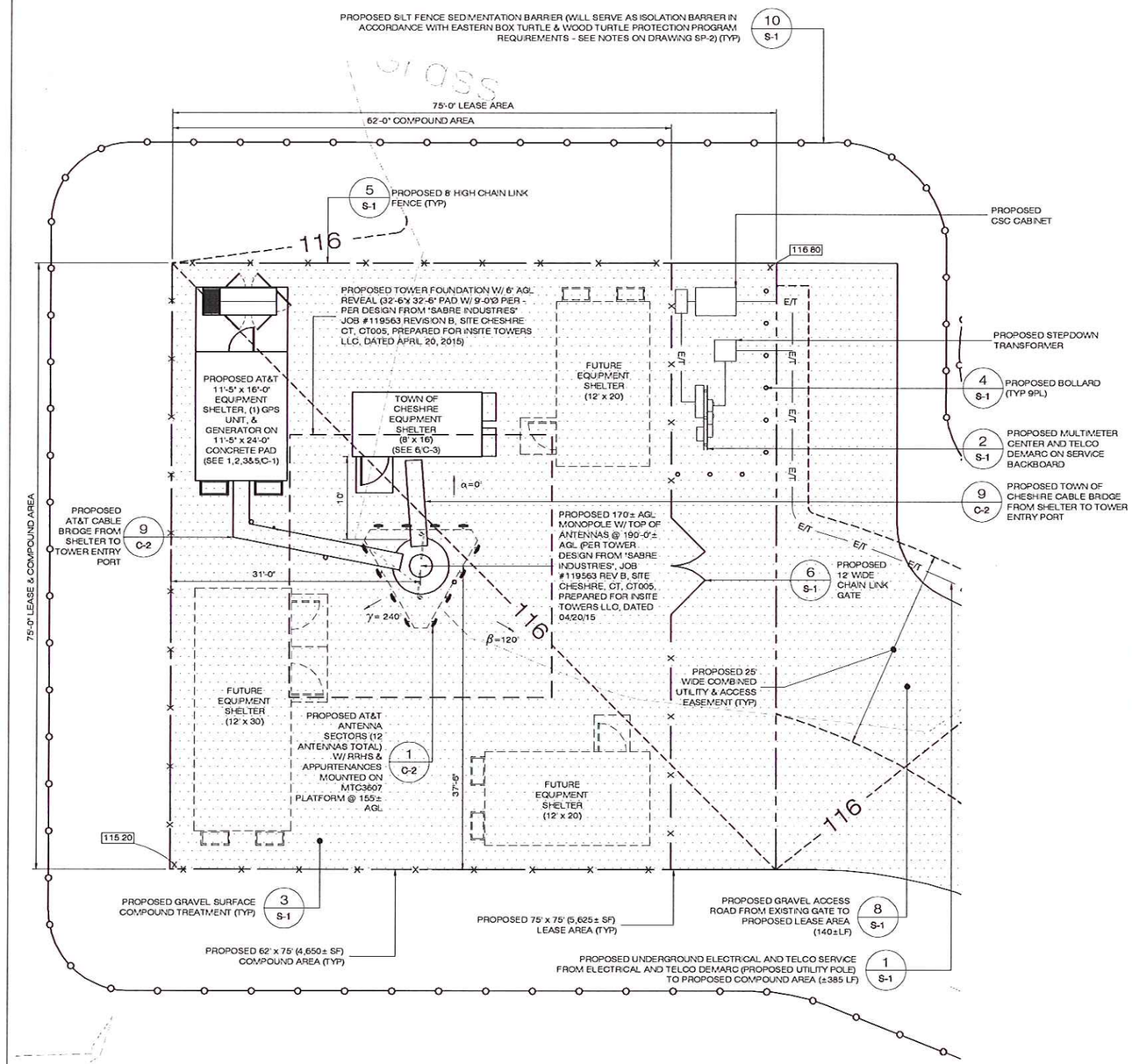
REV.0: 04/29/15: FOR REVIEW: SMC
REV.1: 05/14/15: CLIENT REVISIONS: SMC
REV.2:
REV.3:
REV.4:
REV.5:

TURTLE PROTECTION PROGRAM & CONST. SEQUENCE

APT FILING NUMBER: CT-283-250
APT DRAWING NUMBER: CT-283-SP-2
DRAWN BY: RCB
CHECKED BY: SMC
SCALE: AS NOTED
DATE: 04/29/15

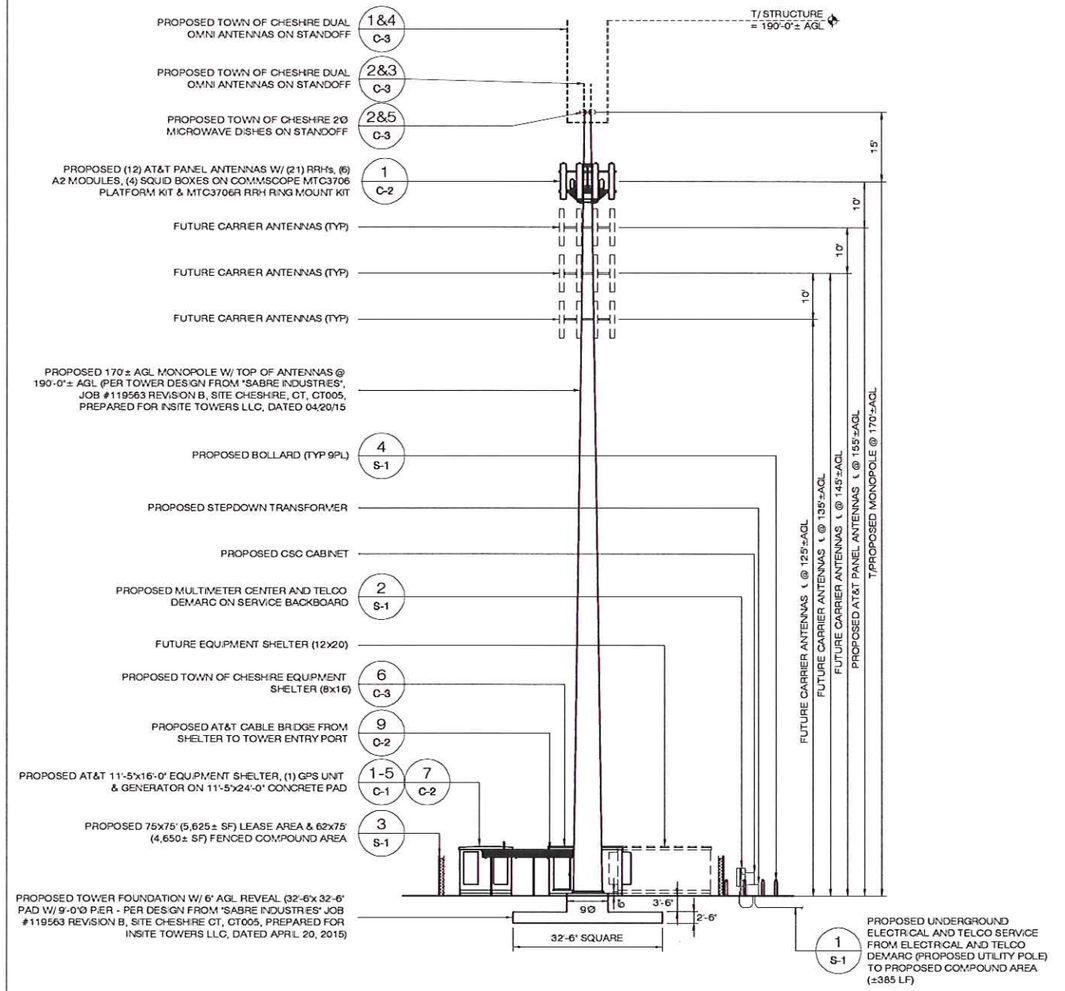
SHEET NUMBER:
SP-2

STATE OF CONNECTICUT
SCOTT M. CHASE
No. 19778
LICENSED PROFESSIONAL ENGINEER



COMPOUND PLAN

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



SOUTHERN ELEVATION

SCALE : 1/16" = 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 EIA/TIA-222-F "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORT STRUCTURES" FOR NEW HAVEN 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.

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HOWELAND TOWERS SITE NUMBER: CT-005

APT FILING NUMBER: CT-283-250

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

DEVELOPMENT & MANAGEMENT DOCUMENTS

CHESHIRE
1326 CHESHIRE STREET
CHESHIRE, CT 06410

DESIGN TYPE:
RAW LAND DEVELOPMENT SITE

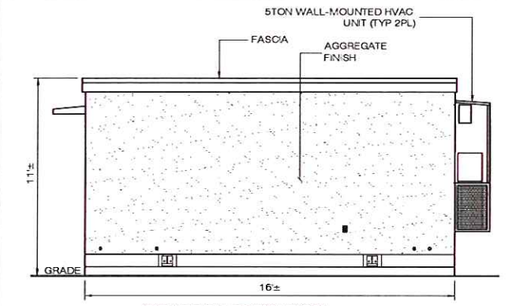
REVISIONS:
REV.0: 04/29/15: FOR REVIEW: SMC
REV.1: 05/14/15: CLIENT REVISIONS: SMC
REV.2:
REV.3:
REV.4:
REV.5:

COMPOUND PLAN & TOWER ELEVATION

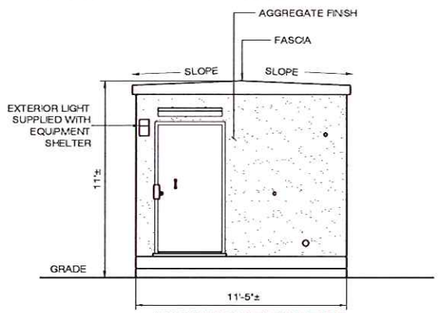
APT FILING NUMBER: CT-283-250
APT DRAWING NUMBER: CT005
DRAWN BY: RCB
SCALE: AS NOTED
CHECKED BY: SMC
DATE: 04/29/15

SHEET NUMBER: A-1

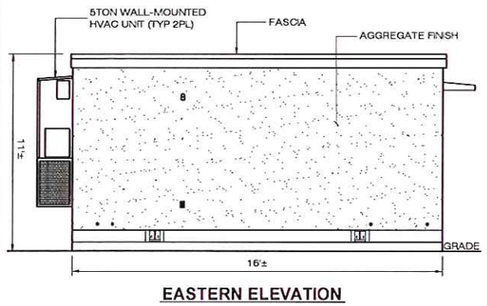
STATE OF CONNECTICUT
SCOTT M. CHASE
No. 19728
LICENSED PROFESSIONAL ENGINEER



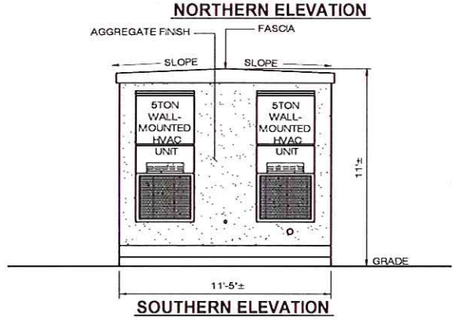
WESTERN ELEVATION



NORTHERN ELEVATION

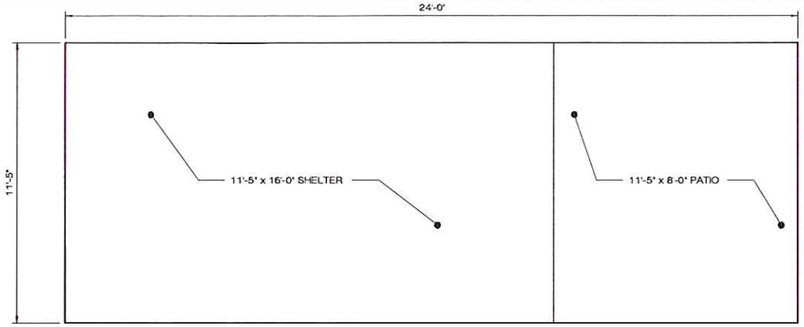


EASTERN ELEVATION

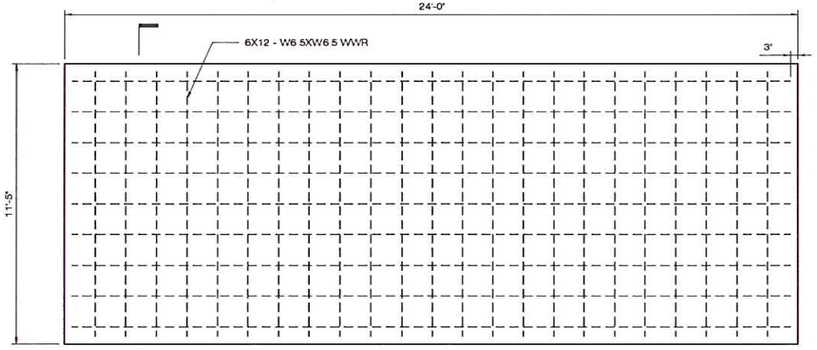


SOUTHERN ELEVATION

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 2009.

9. SLAB TO BE LEVEL ¼"±.

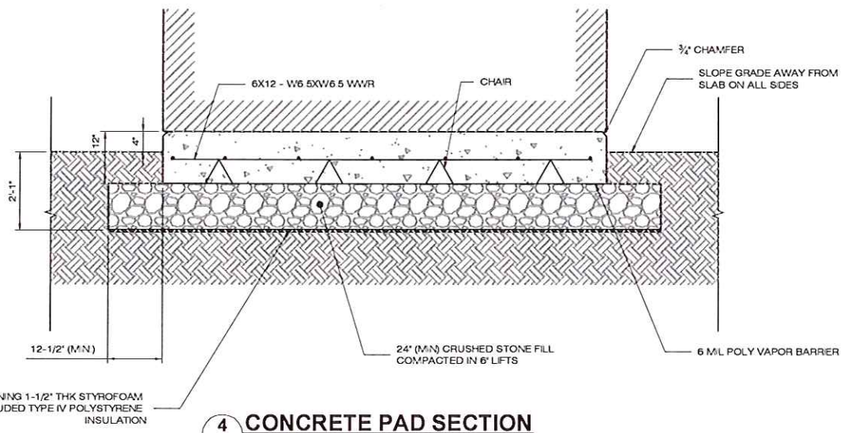
10. SLAB FOUNDATION DESIGNED ASSUMING ALLOWABLE SOIL BEARING PRESSURE OF 2000 PSF.

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

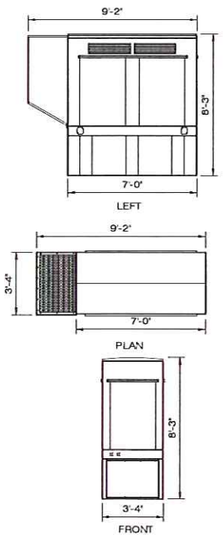
12. CONTRACTOR TO VERIFY FINAL SHELTER DIMENSIONS PRIOR TO CONSTRUCTION OF FOUNDATION.

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

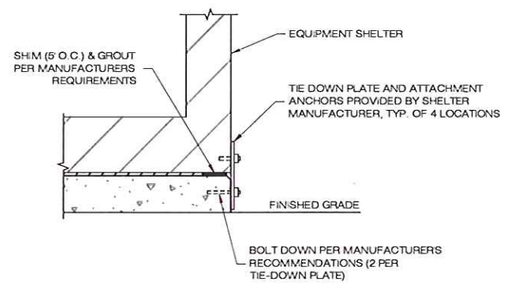
14. ANCHOR SHELTER TO FOUNDATION PER SHELTER MANUFACTURERS RECOMMENDATIONS.



4 C-1 CONCRETE PAD SECTION
SCALE : NTS



5 C-1 GENERAC 35kW 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	II
SNOW LOAD	
GROUND SNOW LOAD (Pg)	30 PSF
IMPORTANCE FACTOR	1.0
EXPOSURE FACTOR (Ce)	0.9
THERMAL FACTOR (Ct)	1.0
WIND LOAD	
BASIC WIND LOAD	100 MPH (3 SEC. GUST)
EXPOSURE GROUP	C
IMPORTANCE FACTOR	1.00
SHELTER LOAD	
FLOOR LIVE LOAD INCLUDING EQUIPMENT	250 PSF
EQUIPMENT SHELTER DL	20,000 LBS
SEISMIC DESIGN PARAMETERS	
SEISMIC USE GROUP	I
MCE SPECTRAL ACCELERATION SHORT (Ss)	0.244
MCE SPECTRAL ACCELERATION SHORT (S1)	0.063
SITE CLASS	D FOR UNKNOWN SOIL PROPERTIES
IMPORTANCE FACTOR	1.0

HOMELAND TOWERS SITE NUMBER:
CT-005

APT FILING NUMBER:
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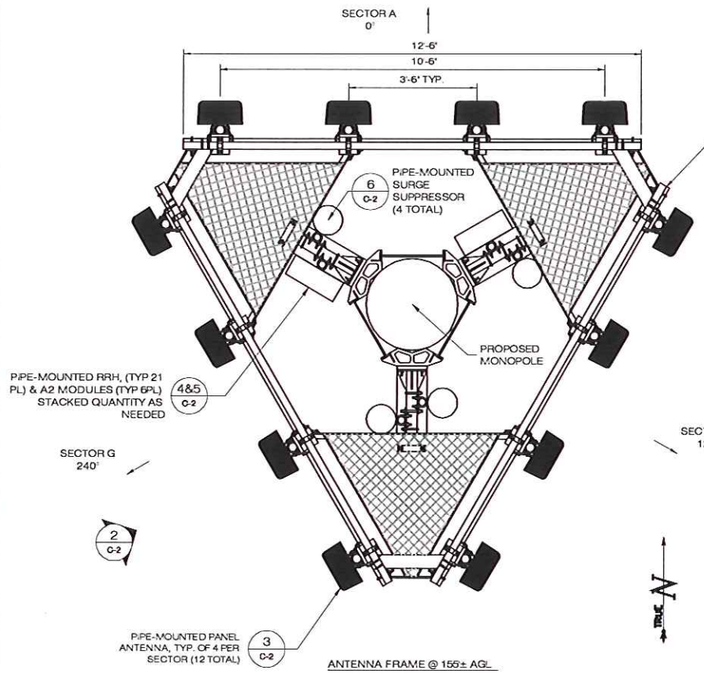
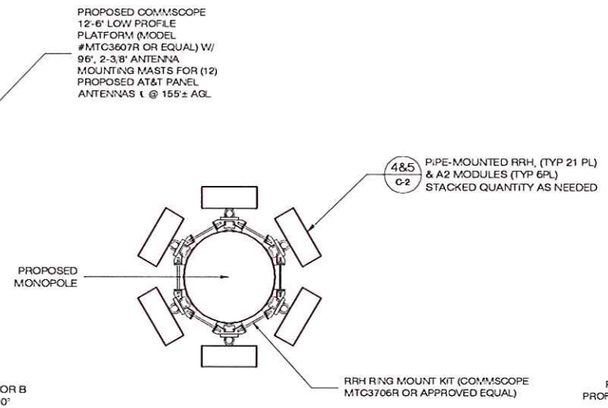
AT&T EQUIP. SHELTER PLAN & DETAILS

APT FILING NUMBER: CT-283-250
APT DRAWING NUMBER: CT005_C1
DRAWN BY: RCB
CHECKED BY: SMC
SCALE: AS NOTED
DATE: 05/29/15

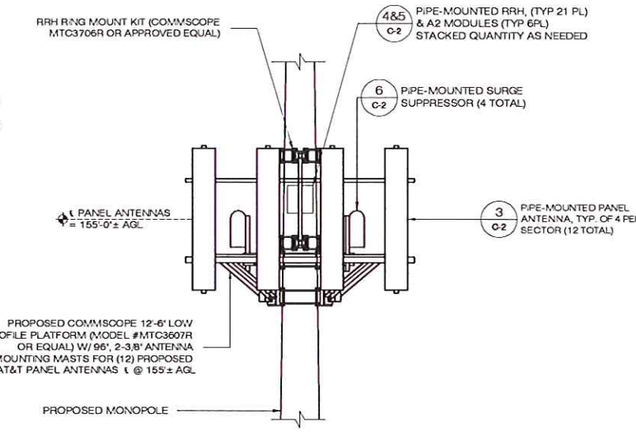
SHEET NUMBER:
C-1

STATE OF CONNECTICUT
SCOTT M. CHASE
LICENSED PROFESSIONAL ENGINEER



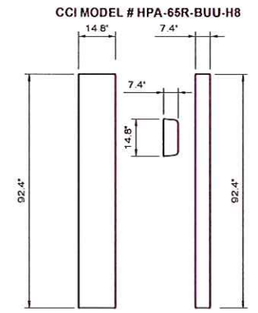


1 C-2 ANTENNA PLAN
SCALE : NTS

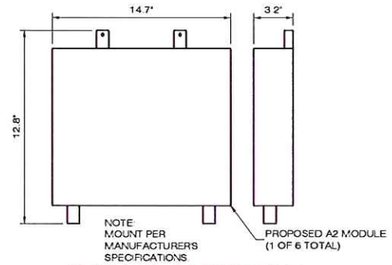


2 C-2 ANTENNA ELEVATION
SCALE : NTS

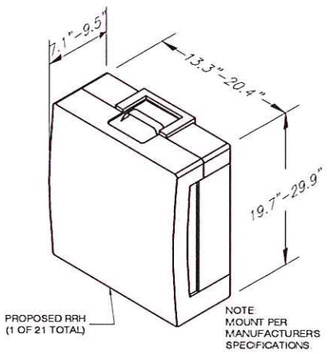
CCI MODEL # HPA-65R-BUU-H8



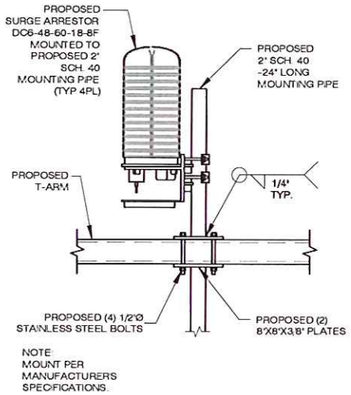
3 C-2 TYPICAL PANEL ANTENNA
SCALE : NTS

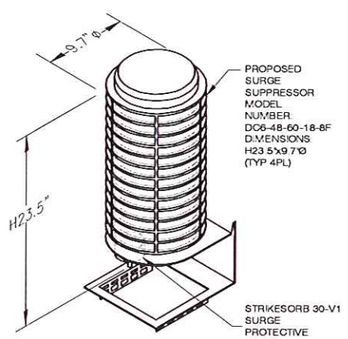


4 C-2 TYPICAL A2 MODULE
SCALE : NTS

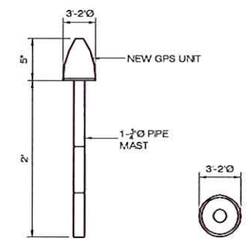


5 C-2 TYPICAL RRU
SCALE : NTS



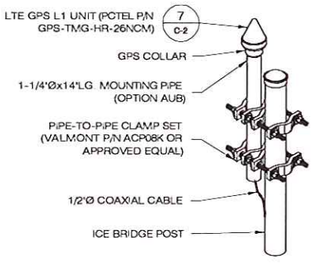


6 C-2 TYPICAL SURGE SUPPRESSOR
SCALE : NTS

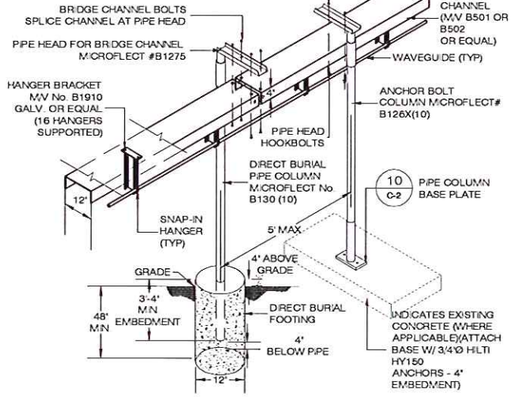


FOR MOUNT - SEE 8/C-2

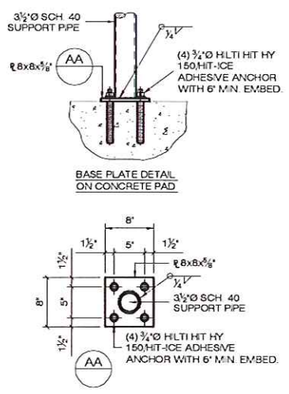
7 C-2 TYPICAL GPS DETAILS
SCALE : NTS



8 C-2 TYPICAL GPS MOUNTING DETAIL
SCALE : NTS



9 C-2 CABLE BRIDGE & COAX HANGER DETAIL
SCALE : NTS



10 C-2 PIPE BASE PLATE
SCALE : N.T.S.

HOMELAND TOWERS SITE NUMBER: CT-005
APT FILING NUMBER: CT-283-250

HOMELAND TOWERS
22 SHELTER ROCK LANE
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1325 CHESHIRE STREET
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DESIGN TYPE:
RAW LAND
DEVELOPMENT SITE

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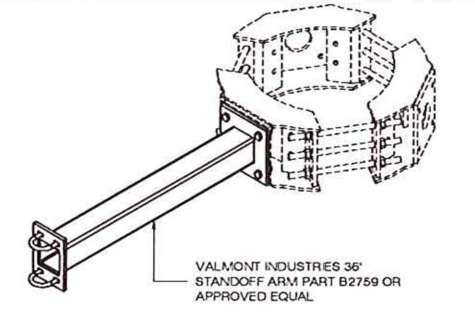
REV.5:

AT&T ANTENNA PLAN & DETAILS

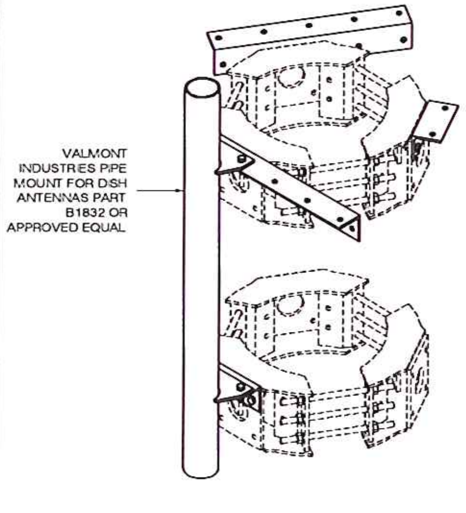
APT FILING NUMBER: CT-283-250
APT DRAWING NUMBER: CT005 C-2
DRAWN BY: RCB
SCALE: AS NOTED
CHECKED BY: SMC
DATE: 05/14/15

SHEET NUMBER:
C-2

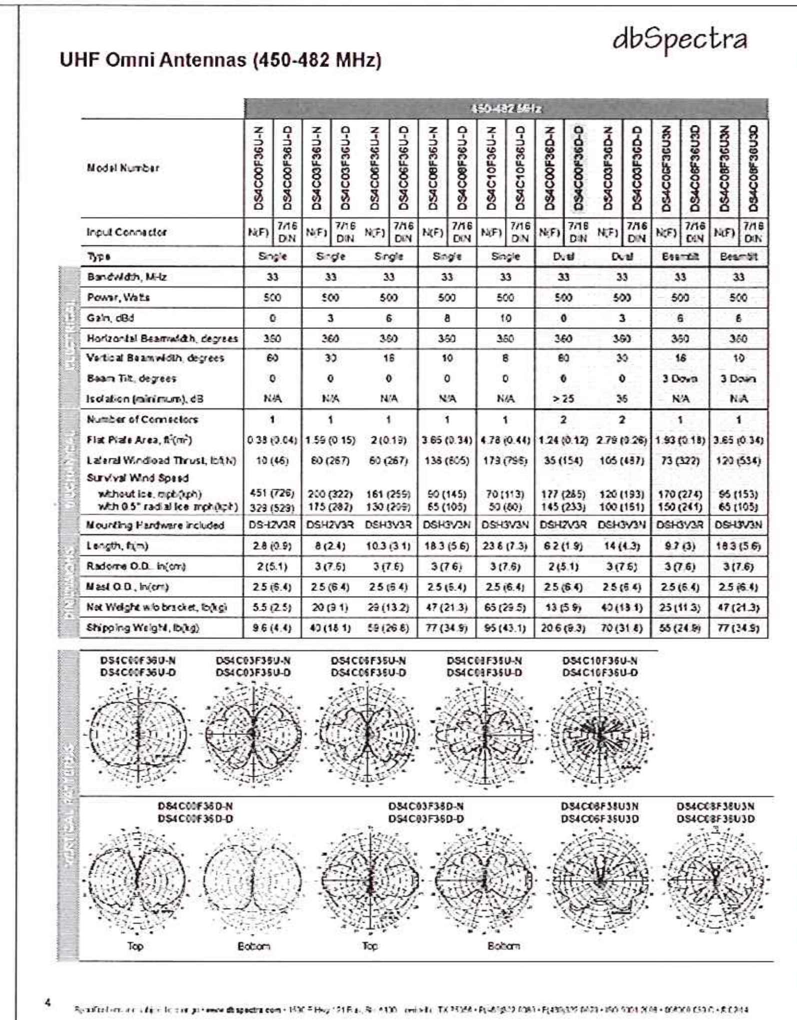
STATE OF CONNECTICUT
SCOTT M. CHASSE
LICENSED PROFESSIONAL ENGINEER
NO. 19728



1/C-3 3' SIDEARM ANTENNA MOUNT
SCALE : NTS



2/C-3 MICROWAVE DISH MOUNT
SCALE : NTS

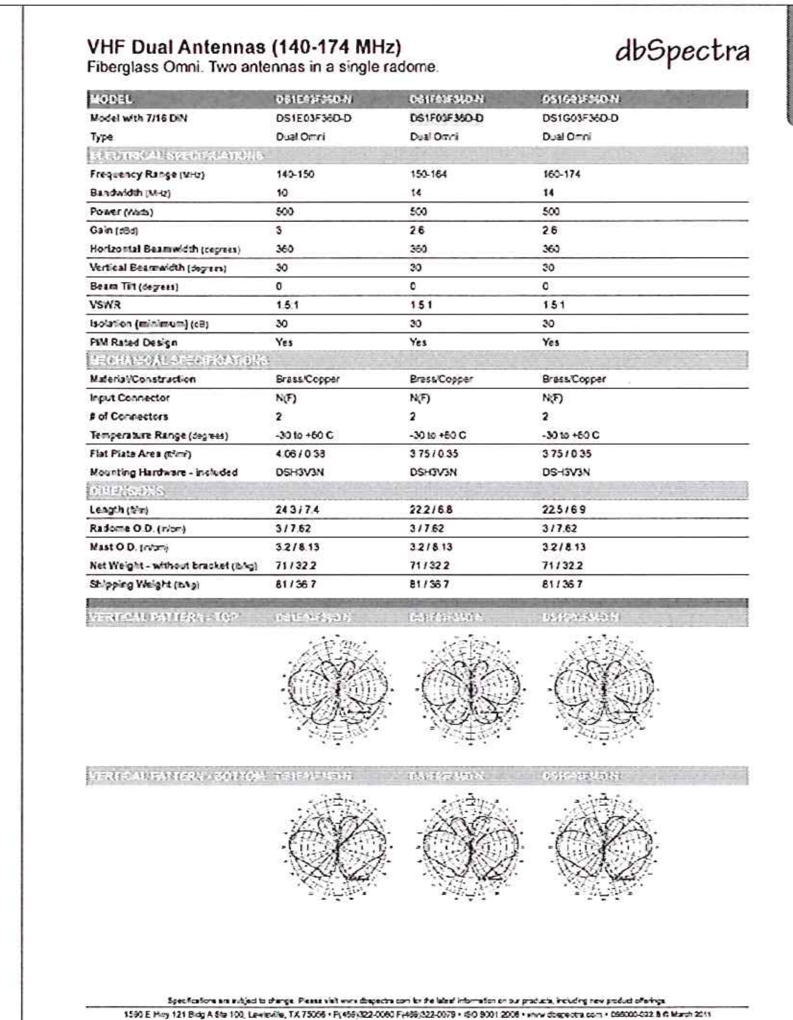


UHF Omni Antennas (450-482 MHz)

dbSpectra

450-482 MHz									
Model Number	DS4C00F36U-N / DS4C00F36U-D	DS4C03F36U-N / DS4C03F36U-D	DS4C06F36U-N / DS4C06F36U-D	DS4C08F36U-N / DS4C08F36U-D	DS4C10F36U-N / DS4C10F36U-D	DS4C00F36D-N / DS4C00F36D-D	DS4C03F36D-N / DS4C03F36D-D	DS4C06F36U3N / DS4C06F36U3D	DS4C08F36U3N / DS4C08F36U3D
Input Connector	N(F) / 7/16 DIN	N(F) / 7/16 DIN	N(F) / 7/16 DIN	N(F) / 7/16 DIN	N(F) / 7/16 DIN	N(F) / 7/16 DIN	N(F) / 7/16 DIN	N(F) / 7/16 DIN	N(F) / 7/16 DIN
Type	Single	Single	Single	Single	Single	Dual	Dual	Beamtilt	Beamtilt
Bandwidth, MHz	33	33	33	33	33	33	33	33	33
Power, Watts	500	500	500	500	500	500	500	500	500
Gain, dBd	0	3	6	8	10	0	3	6	8
Horizontal Beamwidth, degrees	360	360	360	360	360	360	360	360	360
Vertical Beamwidth, degrees	60	30	16	10	8	60	30	16	10
Beam Tilt, degrees	0	0	0	0	0	0	0	3 Down	3 Down
Isolation (minimum), dB	N/A	N/A	N/A	N/A	N/A	> 25	36	N/A	N/A
Number of Connectors	1	1	1	1	1	2	2	1	1
Flat Plate Area, ft^2(m^2)	0.38 (0.04)	1.59 (0.15)	2 (0.19)	3.65 (0.34)	4.78 (0.44)	1.24 (0.12)	2.79 (0.26)	1.93 (0.18)	3.65 (0.34)
Lateral Windload Thrust, lbf(N)	10 (46)	60 (267)	60 (267)	136 (605)	179 (796)	35 (154)	105 (467)	73 (322)	120 (534)
Survival Wind Speed without Ice, mph(kph)	451 (726)	200 (322)	161 (259)	90 (145)	70 (113)	177 (285)	120 (193)	170 (274)	95 (153)
Survival Wind Speed with 0.5" radial Ice mph(kph)	329 (529)	175 (282)	130 (209)	65 (105)	50 (80)	145 (233)	100 (161)	150 (241)	65 (105)
Mounting Hardware included	DSH2V3R	DSH2V3R	DSH3V3R	DSH3V3N	DSH3V3N	DSH2V3R	DSH3V3N	DSH3V3R	DSH3V3N
Length, ft(m)	2.8 (0.9)	8 (2.4)	10.3 (3.1)	18.3 (5.6)	23.8 (7.3)	6.2 (1.9)	14 (4.3)	9.7 (3)	18.3 (5.6)
Radome O.D., in(cm)	2 (5.1)	3 (7.6)	3 (7.6)	3 (7.6)	3 (7.6)	2 (5.1)	3 (7.6)	3 (7.6)	3 (7.6)
Mast O.D., in(cm)	2.5 (6.4)	2.5 (6.4)	2.5 (6.4)	2.5 (6.4)	2.5 (6.4)	2.5 (6.4)	2.5 (6.4)	2.5 (6.4)	2.5 (6.4)
Net Weight w/o bracket, lb(kg)	5.5 (2.5)	20 (9.1)	29 (13.2)	47 (21.3)	65 (29.5)	13 (5.9)	40 (18.1)	25 (11.3)	47 (21.3)
Shipping Weight, lb(kg)	9.6 (4.4)	40 (18.1)	59 (26.8)	77 (34.9)	95 (43.1)	20.6 (9.3)	70 (31.8)	55 (24.9)	77 (34.9)

3/C-3 dbSpectra DS4C00F36D-D ANTENNA
SCALE : NTS

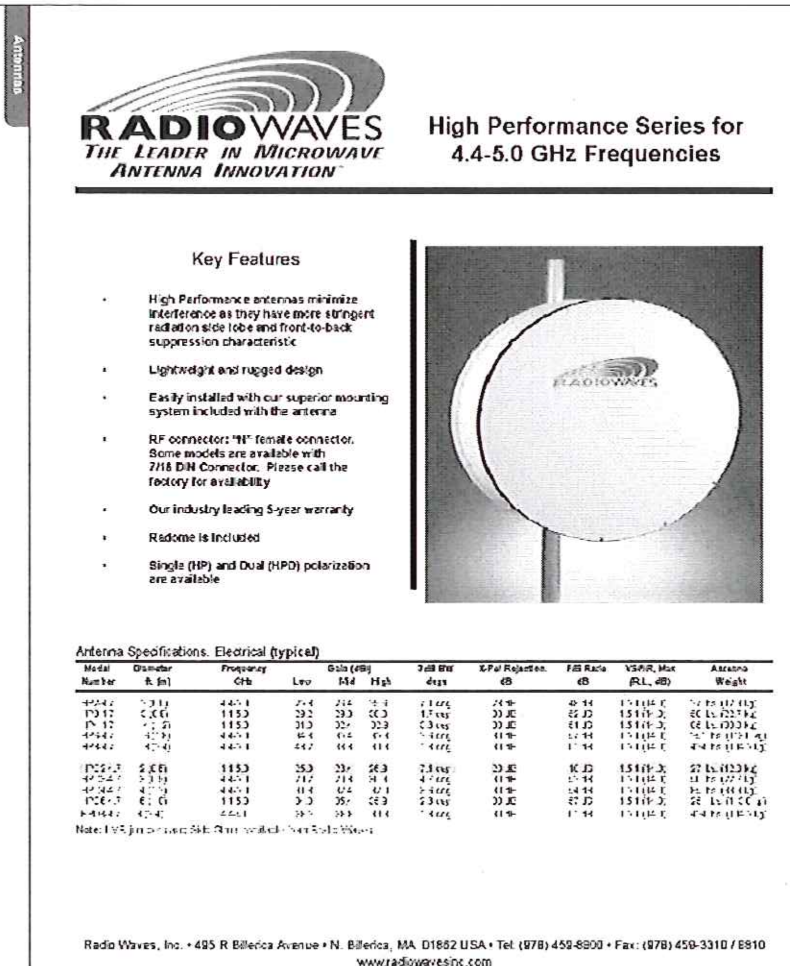


VHF Dual Antennas (140-174 MHz)
Fiberglass Omni. Two antennas in a single radome.

dbSpectra

MODEL	DS1E03F36D-N	DS1F03F36D-N	DS1G03F36D-N
Model with 7/16 DIN	DS1E03F36D-D	DS1F03F36D-D	DS1G03F36D-D
Type	Dual Omni	Dual Omni	Dual Omni
ELECTRICAL SPECIFICATIONS			
Frequency Range (MHz)	140-150	150-164	160-174
Bandwidth (MHz)	10	14	14
Power (Watts)	500	500	500
Gain (dBd)	3	2.6	2.6
Horizontal Beamwidth (degrees)	360	360	360
Vertical Beamwidth (degrees)	30	30	30
Beam Tilt (degrees)	0	0	0
VSWR	1.5:1	1.5:1	1.5:1
Isolation (minimum) (dB)	30	30	30
PIM Rated Design	Yes	Yes	Yes
MECHANICAL SPECIFICATIONS			
Material/Construction	Brass/Copper	Brass/Copper	Brass/Copper
Input Connector	N(F)	N(F)	N(F)
# of Connectors	2	2	2
Temperature Range (degrees)	-30 to +60 C	-30 to +60 C	-30 to +60 C
Flat Plate Area (ft^2/m^2)	4.06 / 0.38	3.75 / 0.35	3.75 / 0.35
Mounting Hardware - included	DSH3V3N	DSH3V3N	DSH3V3N
DIMENSIONS			
Length (ft/m)	24.3 / 7.4	22.2 / 6.8	22.5 / 6.9
Radome O.D. (in/cm)	3 / 7.62	3 / 7.62	3 / 7.62
Mast O.D. (in/cm)	3.2 / 8.13	3.2 / 8.13	3.2 / 8.13
Net Weight - without bracket (lb/kg)	71 / 32.2	71 / 32.2	71 / 32.2
Shipping Weight (lb/kg)	81 / 36.7	81 / 36.7	81 / 36.7

4/C-3 dbSpectra DS4C00F36D-N ANTENNA
SCALE : NTS



RADIOWAVES
THE LEADER IN MICROWAVE ANTENNA INNOVATION

High Performance Series for 4.4-5.0 GHz Frequencies

Key Features

- High Performance antennas minimize interference as they have more stringent radiation side lobe and front-to-back suppression characteristic
- Lightweight and rugged design
- Easily installed with our superior mounting system included with the antenna
- RF connector: "N" female connector. Some models are available with 7/16 DIN 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	Gain (dBi) Mid	Gain (dBi) High	3dB BW degs	X-Pol Rejection dB	F/B Ratio dB	VSWR, Max (RL, dB)	Antenna Weight
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Note: [illegible]

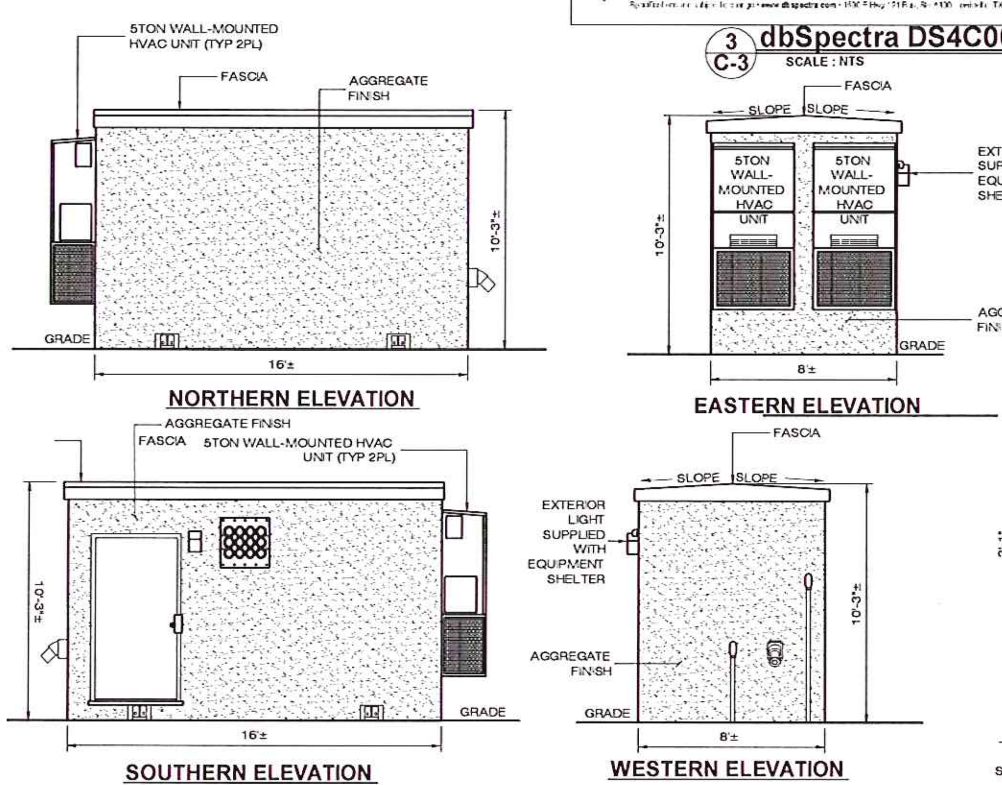
Radio Waves, Inc. • 495 R Billerica Avenue • N. Billerica, MA 01862 USA • Tel: (978) 459-8800 • Fax: (978) 459-3310 / 8810
www.radiowavesinc.com

5/C-3 RADIOWAVES HFD2-4.7 ANTENNA
SCALE : NTS

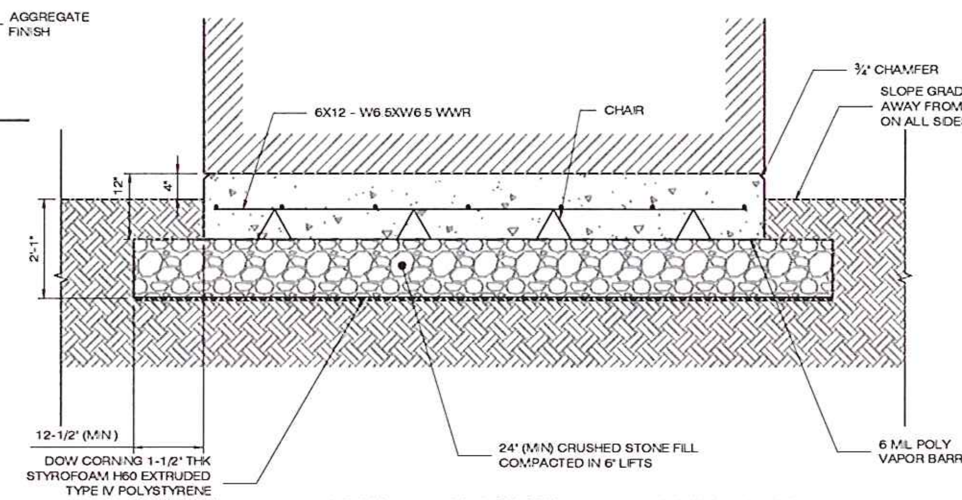
DESIGN LOAD CRITERIA

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

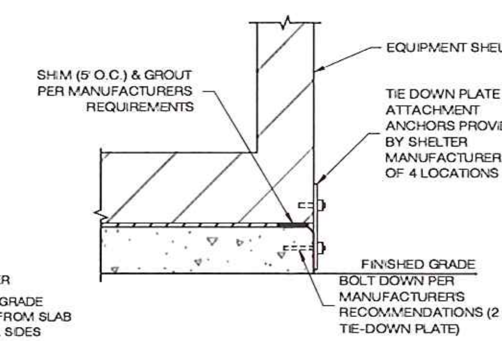
DESIGN BASIS	CONNECTICUT STATE
GOVERNING CODE	BUILDING CODE
DESIGN LIVE LOADS	40 PSF (ASCE 7-05)
IMPORTANCE CATEGORY	IV
SNOW LOAD:	
GROUND SNOW LOAD (Pg)	30 PSF
IMPORTANCE FACTOR	1.2
EXPOSURE FACTOR (Ce)	0.9
THERMAL FACTOR (Ct)	1.0
WIND LOAD:	
BASIC WIND LOAD	100 MPH (3 SEC. GUST)
EXPOSURE GROUP	C
IMPORTANCE FACTOR	1.15
SHELTER LOAD:	
FLOOR LIVE LOAD INCLUDING EQUIPMENT	NA
EQUIPMENT SHELTER DL	NA
SEISMIC DESIGN PARAMETERS:	
SEISMIC USE GROUP	III
MCE SPECTRAL ACCELERATION SHORT (Ss)	0.244
MCE SPECTRAL ACCELERATION SHORT (S)	0.063
SITE CLASS	D FOR UNKNOWN SOIL PROPERTIES
IMPORTANCE FACTOR	1.5



6/C-3 8' X 16' EQUIPMENT SHELTER
SCALE : NTS



7/C-3 EQUIPMENT SHELTER FOUNDATION
SCALE : NTS



8/C-3 TIE - DOWN DETAIL
SCALE : NTS

HOMELAND TOWERS SITE NUMBER:
CT-005

APT FILING NUMBER:
CT-283-250

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

CHESHIRE
1325 CHESHIRE STREET
CHESHIRE, CT 06410

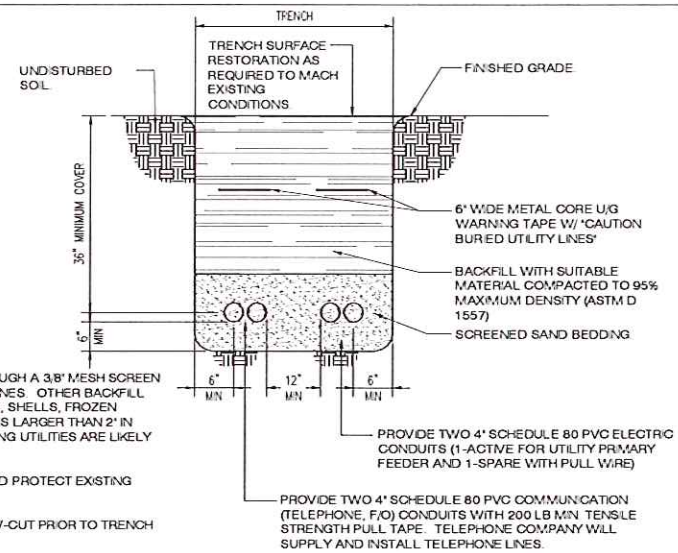
DESIGN TYPE:
RAW LAND DEVELOPMENT SITE

REVISIONS:
REV.0: 04/29/15: FOR REVIEW: SMC
REV.1: 05/14/15: CLIENT REVISIONS: SMC
REV.2:
REV.3:
REV.4:
REV.5:

TOWN EQUIPMENT PLAN & DETAILS

APT FILING NUMBER: CT-283-250
APT DRAWING NUMBER: CT005 C-3
DRAWN BY: RCB
SCALE: AS NOTED
CHECKED BY: SMC
DATE: 04/29/15

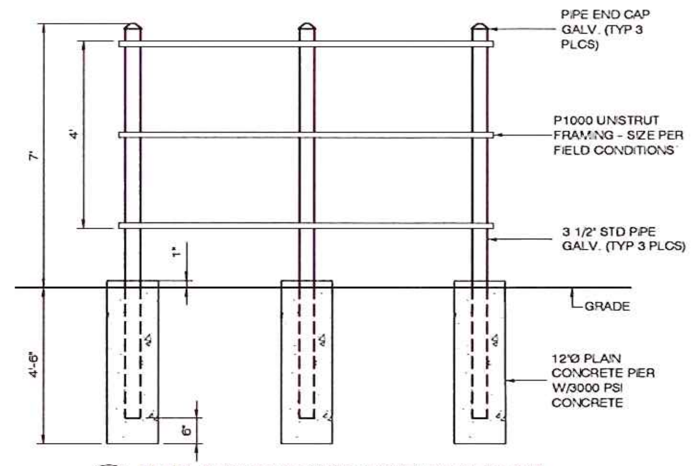
SHEET NUMBER:
C-3



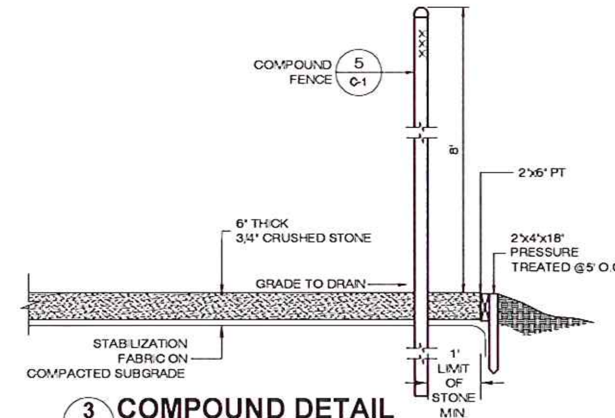
NOTES

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

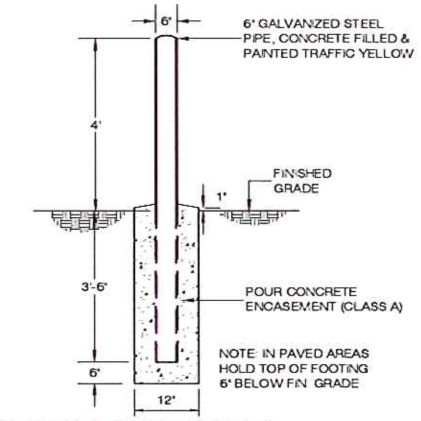
1 S-1 PRIMARY UTILITY TRENCH
SCALE : NTS



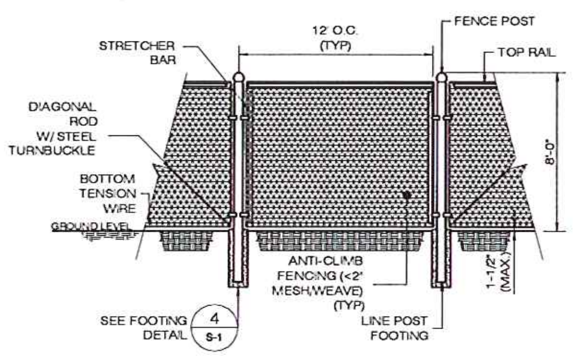
2 S-1 UTILITY BACKBOARD DETAIL
SCALE : NTS



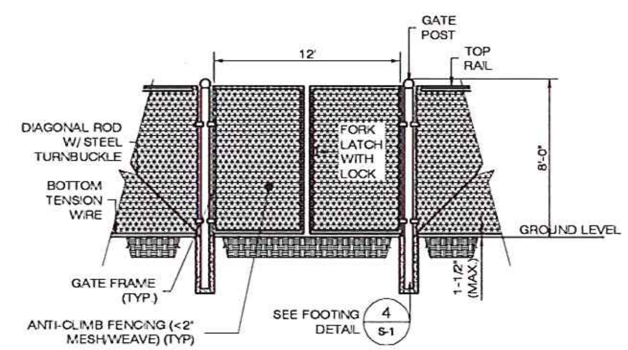
3 S-1 COMPOUND DETAIL
SCALE : NTS



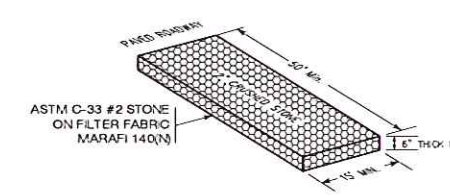
4 S-1 BOLLARD DETAIL
SCALE : NTS



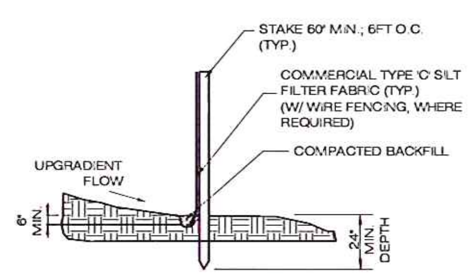
5 S-1 CHAIN-LINK FENCING DETAIL
SCALE : NTS



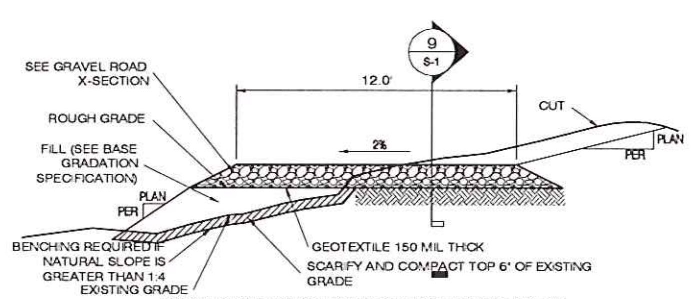
6 S-1 FENCE & GATE DETAIL
SCALE : N.T.S.



7 S-1 (CE) CONSTRUCTION ENTRANCE DETAIL
SCALE : NTS

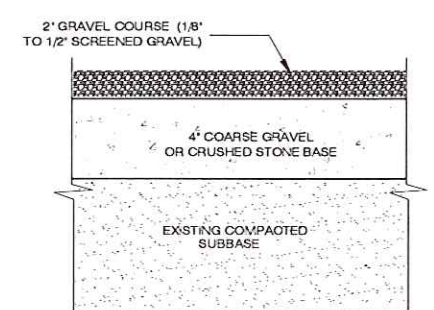


10 S-1 GEOTEXTILE SILT FENCE DETAIL
SCALE : NTS



* CROSS SLOPE GRADE SHALL BE 2% FROM HIGH SIDE TO LOW SIDE BASED ON EXISTING TOPOGRAPHY AND GRADING SHOWN

8 S-1 TYPICAL GRAVEL ROAD SECTION
SCALE : NTS



NOTES
1. SUBBASE MAY CONSIST OF NATIVE MATERIALS IF FOUND ACCEPTABLE BY THE ENGINEER. SUBBASE TO BE COMPACTED TO 95% MAX DRY DENSITY.
2. SUBBASE IS TO CLEAN GRANULAR MATERIAL (SEE NOTES, SHEET N-1), FREE FROM DEBRIS AND UNSUITABLE MATERIALS.
3. RECYCLED CONCRETE MAY BE SUBSTITUTED FOR GRAVEL OR CRUSHED STONE BASE IN NON-WETLANDS AREAS.

9 S-1 GRAVEL ROAD X-SECTION
SCALE : NTS

HOMELAND TOWERS SITE NUMBER: CT-005
APT FILING NUMBER: CT-283-250

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DEVELOPMENT & MANAGEMENT DOCUMENTS

CHESHIRE
1325 CHESHIRE STREET
CHESHIRE, CT 06410

DESIGN TYPE:
RAW LAND DEVELOPMENT SITE

REVISIONS:
REV.0: 04/29/15: FOR REVIEW: SMC
REV.1: 05/14/15: CLIENT REVISIONS: SMC
REV.2:
REV.3:
REV.4:
REV.5:

COMPOUND DETAILS

APT FILING NUMBER: CT-283-250
APT DRAWING NUMBER: CT005-S-1
DRAWN BY: RCB
SCALE: AS NOTED
CHECKED BY: SMC
DATE: 04/29/15
SHEET NUMBER:
S-1

GENERAL NOTES:

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

2. 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 UTILITES AND SERVICE CONNECTIONS (OR PORTIONS THERE OF) 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 EXISTING FILL MAY BE SELECTIVELY RE-USED AS STRUCTURAL FILL PROVIDED IT IS FREE OF ORGANIC AND CLOSELY MEETS THE GRADATION REQUIREMENTS IN NOTE 2, BELOW.
COMMON FILL	VARIES (3)	COMMON FILL MAY BE USED FOR GENERAL SITE GRADING TO WITHIN 12 INCHES OF FINISHED GRADE. COMMON FILL SHOULD NOT BE USED UNDER SETTLEMENT SENSITIVE STRUCTURES. THE EXISTING FILL MAY BE RE-USED AS COMMON FILL, PROVIDED IT IS FREE OF ORGANICS AND CAN BE ADEQUATELY COMPACTED.

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. 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: UON, 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 GYCLONE 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 FORM BEING TRACKED ONTO LOCAL ROADS. THE CONSTRUCTION ENTRANCE SHALL BE MAINTAINED UNTIL THE SITE IS PERMANENTLY STABLIZED.

13. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES SHALL BE IN CONFORMACE 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 80,000 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 ACRES. BALES SHALL BE UNSPOILED, AIR-DRIED, AND FREE FROM WEED, SEEDS, AND ANY COARSE MATERIAL.

STRUCTURAL NOTES & SPECS

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 GALVANZED 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 REVEW.

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 RESPONSIBILTY. 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, T1
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 OR 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 THEROSEAL TO EXPOSED CONCRETE IN ACCORDANCE WITH MANUFACTURERS APPLICATIONS DIRECTIONS.

HOMELAND TOWERS SITE NUMBER:
CT-005

APT FILING NUMBER:
CT-283-250

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

ALL-POINTS TECHNOLOGY CORPORATION

3 SADDLEBROOK DRIVE
KILLINGWORTH, CT 06419
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DEVELOPMENT & MANAGEMENT DOCUMENTS

CHESHIRE
1325 CHESHIRE STREET
CHESHIRE, CT 06410

DESIGN TYPE:
RAW LAND DEVELOPMENT SITE

REVISIONS:

REV.0:	04/29/15: FOR REVIEW: SMC
REV.1:	05/14/15: CLIENT REVISIONS: SMC
REV.2:	
REV.3:	
REV.4:	
REV.5:	

NOTES & SPECIFICATIONS

APT FILING NUMBER: CT-283-250
APT DRAWING NUMBER: CT005-C01
DRAWN BY: RCB | SCALE: AS NOTED
CHECKED BY: SMC | DATE: 04/29/15

SHEET NUMBER:
N-1

STATE OF CONNECTICUT
SCOTT M. CASSIDY
LICENSED
PROFESSIONAL ENGINEER
ORIGINAL