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November 21, 2012

BY EMAIL & FEDEX
Ms. Linda Roberts
Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, Connecticut 06051

Re: Message Center Management, Inc.
Application for Certificate of Environmental Compatibility and Public Need
Docket # 425
4 Dittmar Road, Redding, Connecticut

Dear Ms. Roberts:

On behalf of Message Center Management, Inc. ("MCM"), please accept for review and Council approval this Development Management Plan ("D&M Plan") filing for the captioned Facility as approved in Docket No. 425.

Tower, Compound & Other Equipment
Enclosed are an original and fifteen (15) sets of 11"x 17" sized construction drawings being filed in accordance with the Siting Council's ("Council") Decision and Order dated June 21, 2012 ("Decision and Order"). Two full sized sets are being filed under separate cover. As per order number 1, the D&M Plan incorporates a 120' monopole tower (with camouflaging extending up to 127' AGL), as well as the details of the associated compound and T-Mobile equipment as well as the equipment of others. The D&M Plan also includes construction sequencing and site clearing, drainage, and erosion and sedimentation control measures consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control as amended. Also enclosed is a geotechnical report and tower and foundation drawings including information pertinent to the designed camouflaging.

Required Notifications
In accordance with RCSA Section 16-50j-61(d) copies of this filing are being provided to the Service list and the property owner of record. It should be noted that the landscaping plan was previously provided by MCM to the Town of Redding by email on August 23, 2012. No comments have been received to date and MCM knows of no objection to the planned landscaping.

In accordance with the provisions of RCSA Section 16-50j-77, MCM 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 supervisor

for all construction related matters on this project is Mr. Jim Maher. Mr. Maher is located at MCM's office in Hartford, Connecticut and can be reached by telephone at (203) 223-4665.

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.

Very truly yours,

Daniel M. Laub

Enclosures

cc: Brad Mondschein, Esq., Town of Redding
Natalie Ketcham, Town of Redding
Julie D. Kohler, Esq.
Robert. S. Paradise
Maria Scotti, MCM
Virginia King, MCM
Scott Chasse, P.E., APT
Hans Fiedler, T-Mobile
Christopher B. Fisher, Esq.

CERTIFICATE OF SERVICE

I hereby certify that on this day, an original and 15 copies of the foregoing was sent electronically and by first class mail to the Connecticut Siting Council with a copy by email and first class mail to:

T-Mobile Northeast LLC
Julie D. Kohler, Esq.
Cohen and Wolf, P.C.
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Town of Redding
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Town of Redding
Town Hall, P.O. Box 1028
Redding, Connecticut 06875-1028

Owner:
Robert. S. Paradise
4 Dittmar Road
W. Redding, CT 06896-1509

Dated: November 21, 2012

Daniel M. Laub, Esq.

ATTACHMENT A

Geotechnical Engineering Report

Proposed Telecommunications Tower
MCM Dittmar Road (North Alternate)
4 Dittmar Road
Redding, Connecticut

November 7, 2011

Terracon Project No. J2115185

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

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

November 7, 2011

Terracon

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

Attn: Mr. Scott Chasse, P.E., Principal
P: [860] 663 1697
F: [860] 663 0935
E: schasse@allpointstech.com

Re: Geotechnical Engineering Report
Proposed Telecommunications Tower
MCM Dittmar Road (North Alternate)
4 Dittmar Road
Redding, Connecticut
Terracon Project No. J2115185

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 our Proposal for Geotechnical Engineering Services, dated October 11, 2011. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design of foundations for the proposed telecommunications 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.

Stephen C. Lanne, P.E.
Senior Staff Geotechnical Engineer

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

/scl/J2115185
Attachment

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GEOTECHNICAL ENGINEERING REPORT
PROPOSED TELECOMMUNICATIONS TOWER
MCM DITTMAR ROAD (NORTH ALTERNATE)
4 DITTMAR ROAD
REDDING, CONNECTICUT

Terracon Project No. J2115185
November 7, 2011

1.0 INTRODUCTION

A geotechnical engineering report has been completed for the proposed steel "Monopine" telecommunications tower to be located in the northeast corner of the property at 4 Dittmar Road, in Redding, Connecticut. Two test borings, B-1 and B-2, were advanced to depths of approximately 16 and 15 feet below existing ground surface, respectively. B-1 was advanced near center of the proposed north alternate tower location. B-2 was advanced at the south alternate tower location, about 45 feet to the south. Two test probes, P-1 and P-2, were advanced within the proposed compound area each to a depth of approximately 10 feet. Logs of the test borings 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

2.1 Project Description

The project consists of constructing a 120-foot high steel "Monopine" telecommunications tower within an expanded fenced compound area. An existing 110-foot guyed tower within the northern portion of the proposed compound area will be removed, along with its foundation. The existing equipment shelter and slabs will remain; the existing shed will be removed. New equipment cabinets and various electrical appurtenances will be located within the south half of the expanded compound area. The proposed tower will be located about 4½ feet northwest of the guyed tower. The site is generally level at around Elevation (El) 809 feet within the northern portion of the proposed compound area, but grades moderately downward to El 801 in the south corner. A summary of the project is presented below:

Item	Description
Site layout	Appendix A, Exhibit A-2, Exploration Location Diagram
Tower	120-foot high "Monopine"
Tower: **Maximum dead load**	20 kips (assumed)
Tower: **Maximum allowable settlement**	Total Settlement: 1 inch (assumed) Differential Settlement: ½ inch (assumed)
Equipment Pad: **Maximum load**	150 pounds/square foot (psf) (assumed)
Equipment Pad: **Maximum allowable settlement**	Total Settlement: 1 inch (assumed) Differential Settlement: ½ inch (assumed)
Grading	Based on the plans provided, up to about 3 feet of fill will be required to achieve finished grade.
Cut and fill slopes	An approximately 4-foot high, 2H:1V soil slope is proposed around the south corner of the compound area.
Retaining walls	None expected.

2.2 Site Location and Description

Item	Description
Location	4 Dittmar Road, Redding, Connecticut
Existing improvements	The site is occupied by a 110-foot high guyed tower and associated equipment shelter, slabs, and shed.
Current ground cover	Gravel or topsoil in the vicinity of the proposed compound.
Existing topography	Generally level within the northern portion of the proposed compound area. However, to the south, the ground slopes moderately downward.

Ground surface elevations at the exploration locations were based on the elevation contours shown on the drawings titled "Compound Plan & Tower Elevation Alternate 2" Sheet No. SP-3. We consider our estimates of ground surface elevations to be accurate to about ½ foot.

3.0 SUBSURFACE EXPLORATIONS AND CONDITIONS

3.1 Typical Profile

Based on the results of the explorations 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 [2]	8	Fill, Silt, with sand, wood pieces, brown	Very loose
Glacial Till	8.5	Silty sand, with gravel, grey to brown	Dense to very dense
Bedrock	>15	Schist, highly weathered, highly fractured, grey	N/A

1. Topsoil and subsoil to a depth of 2.5 feet was encountered at the surface of B-2, P-1, and P-2. About 10 inches of crushed gravel was encountered at the surface of B-1.
2. Associated with the backfill placed around the foundation of the guyed tower.

Highly weathered bedrock was cored in B-1 and B-2 and augered through in P-1 and P-2. Based on review of the core samples and on the *Bedrock Geological Map of Connecticut (1985)*, the bedrock underlying the site consists of gray Schist with mica.

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

On November 5, 2011, *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 approximately 5, 10, 20, 30, and 40 feet. The location and orientation of resistivity lines are shown on Figure 2. The resistivity test results are tabulated below:

	Resistivity (ohm-cm)	
Electrode Spacing (ft)	Line 1	Line 2
5	221,185	180,010
10	182,115	167,370
20	104,940	124,860

30	86,920	113,175
40	84,950	101,420

3.2 Groundwater

Groundwater was not encountered in the explorations. However, fluctuations in groundwater level may occur because of seasonal variations in the amount of rainfall, runoff and other factors. In addition, water is likely to become temporarily perched on top of the bedrock surface during and after rainfall events. 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

Based on the subsurface conditions encountered in the borings, we recommend the proposed telecommunications tower be supported on either a monolithic mat or a pier and pad foundation bearing directly on the glacial till or highly weathered bedrock, or on compacted structural fill or minus ¾-inch crushed stone placed on the glacial till or highly weathered bedrock. We have also provided recommendations for a drilled shaft option. The proposed equipment cabinets and other ancillary structures may derive support from the inorganic subsoil (subsoil without visible roots), the glacial till, or structural fill placed to backfill the excavation to remove the guyed tower foundation. Design recommendations are presented in the following sections.

As part of the site development, the existing guyed tower will be demolished. Demolition of the existing tower should include removal of foundation systems within the proposed construction area. This should include removal of loose backfill found adjacent to existing foundations.

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 soils. Subsurface conditions in the explorations have been reviewed and evaluated with respect to the proposed construction plans known to us at this time.

4.2 Earthwork

As part of the site preparation, the existing guyed tower will be demolished and its foundation removed. Areas disturbed during demolition of the existing tower and the removal of foundation elements should be evaluated by the geotechnical engineer or his representative prior to placement of fill. Disturbed soils should be undercut prior to placement of fill. Excavations for the removal of foundation elements and utilities should be backfilled in compacted lifts with structural fill.

Prior to placing fill, existing fill, buried concrete, topsoil, subsoil, and any otherwise unsuitable materials should be removed. The subgrade should be proofrolled with a vibratory roller or heavy plate compactor. Unstable subgrades should be removed and replaced with compacted structural fill or minus ¾-inch crushed stone, as necessary. Structural fill may then be placed within the compound area to attain the required grade.

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 is not suitable for re-use as structural fill. The glacial till, if excavated, may be selectively re-used as structural fill, provided it meets the gradation requirements in Note 2, below.
Common fill	Varies [3]	Common fill may be used for site grading to within 12 inches of finished grade. Common fill should not be used under settlement sensitive structures. The existing fill and glacial till, if excavated, may be re-used as common fill provided they are 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 footings or slabs

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.

4.2.1 Compaction Requirements

Item	Description
Fill Lift Thickness	8 inches or less in loose thickness
Compaction Requirements [1]	95% maximum modified Proctor dry density (ASTM D1557,

	Method C)
Moisture Content – Granular Material	Workable moisture levels

1. We recommend that structural 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

The compound area currently slopes downward to the south with a total elevation change of about 3 feet. We understand that fill will be placed over the existing slope, grading the compound area to slope slightly downward from the guyed tower location. A permanent earth slope will be required outside of the proposed compound area. Design of permanent cut slopes in soil and weathered bedrock should be based on a grade no steeper than 2H:1V.

We recommend that permanent soil slope surfaces be vegetated or covered with riprap stone underlain by a geotextile separation fabric (Mirafi 140N, or equivalent) to reduce erosion. Vegetated slopes should be protected with erosion mats until the vegetation is established. Temporary sedimentation and erosion control methods should be implemented during construction and left in place until the slope surfaces have become stabilized.

Provision should be made in the design of the slope and the compound area to collect and divert stormwater run-off away from the slope.

4.2.3 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 subgrade should be avoided to the extent practical. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. If the 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 will probably 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

The tower may be supported by either a monolithic mat or a pier and pad foundation bearing directly on the glacial till or highly weathered bedrock, or on compacted structural fill or minus ¾-inch crushed stone placed on the glacial till or highly weathered bedrock. Alternatively, a drilled shaft could be used to support the tower. Design recommendations and construction considerations for the recommended foundation systems are presented in the following paragraphs and tables.

4.3.1.1 Mat/Pad Foundation Design Recommendations

Description	Value
Net allowable bearing pressure [1]	6,000 psf
Minimum depth of underside of mat/pad [2]	8 feet
Minimum embedment below finished grade for frost protection	3.5 feet
Approximate total settlement [3]	<1 inch
Estimated differential settlement [3]	<½ inch
Total unit weight (γ)	125 pcf
Passive earth pressure coefficient, K_p [4]	3.0 (ultimate)
Coefficient of sliding friction [5]	0.5 (ultimate)

1. The recommended net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation.
2. Represents the depth expected to provide adequate overturning resistance and to place the underside of the mat/pad below the existing fill.
3. 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.
4. Passive pressure calculated with these parameters should be reduced by at least a factor of safety of 3, to reflect the amount of movement required to mobilize the passive resistance.
5. A factor of safety of at least 1.5 should be applied to the sliding resistance.

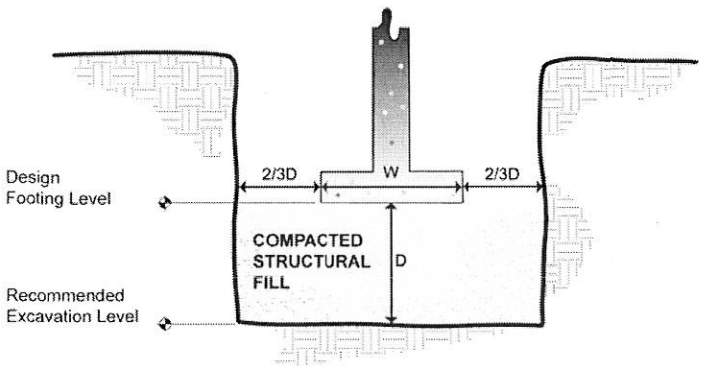
Uplift resistance for spread footings may be computed as the sum of the weight of the foundation element and the weight of the soil overlying the foundation. We recommend using a soil unit weight of 100 pounds per cubic foot (pcf) for engineered fill overlying the footing placed as described in this section of this report. A unit weight of 150 pcf could be used for reinforced footing 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.

The base of the foundation excavation should be free of water and loose soil prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance. Should the soils at bearing level become excessively 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 soil foundation bearing materials.

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 soil 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 soil foundation bearing materials.

If unsuitable bearing soils are encountered in footing excavations, the excavations should be extended deeper to suitable soils and the footings could bear directly on these soils at the lower level. The footings could also bear on properly compacted structural fill extending down to the suitable soils. Overexcavation for compacted structural fill placement below footings should extend laterally beyond the 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 adjacent figure.



Overexcavation / Backfill

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

As groundwater was not encountered during our explorations, we do not expect that significant temporary dewatering will be required during foundation construction. However, groundwater

may become perched over relatively impermeable layers of glacial till and highly weathered bedrock. The contractor should be required to maintain a stable subgrade during construction. 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 fill or minus ¾-inch crushed stone, as necessary.

The predominant soil type at the recommended subgrade levels will be the glacial till, portions of which may have an elevated silt content, or the highly weathered bedrock. Soil with a higher silt content and highly weathered bedrock will be sensitive to excess moisture and lose strength quickly during seasonally wet periods. Contractors experienced in earthwork construction in this area should be aware of the silty soil and highly weathered bedrock behavior, and the effect that moisture and inclement weather can have on their 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 Foundation Design Recommendations

Description	Value
Net Allowable Bearing Capacity	
Bedrock (>10 feet)	20 ksf
Ultimate Side Friction [2]	
Structural Fill (3.5 to 8 feet)	1.0 ksf
Glacial Till/Bedrock (>8 feet)	4.5 ksf
Coefficient Lateral Subgrade Reaction	
Structural Fill (0 to 8 feet)	30 (z/D) kcf [3]
Glacial Till/Bedrock (>8 feet)	80 (z/D) kcf [3]
Angle of Internal Friction	
Structural Fill (0 to 8 feet)	35 degrees
Glacial Till/Bedrock (>8 feet)	45 degrees
Estimated *In-situ* Soil Unit Weight	
Structural Fill (0 to 8 feet)	125 pcf
Glacial Till/Bedrock (>8 feet)	135 pcf
Approximate groundwater depth	Not encountered [4]
Concrete minimum 28-day unconfined compressive strength	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 capacity assumes that the bedrock at the base of the shaft has not been made unstable by drilling methods.

2. 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. Contribution to shaft frictional capacity above the frost depth of 3.5 feet should be ignored.
4. Groundwater was not encountered during the explorations. However, the possibility of encountering perched groundwater conditions should be anticipated.

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 in the bedrock, at least 10 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 the use and removal of temporary steel casing.

4.3.1.4 Drilled Shaft Foundation Construction Considerations

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 is likely to become less weathered with depth. Groundwater was not encountered in the explorations. However, water may become perched over relatively impermeable soil layers and bedrock. The contractor should take these aspects into account in his proposed drilling method(s).

A section of temporary casing will likely be required to maintain the sidewall of the drill hole through the structural fill above bedrock. Concrete should be placed by tremie methods.

4.3.2 Equipment Cabinet Foundations

The proposed equipment cabinets and other ancillary structures may derive support from the inorganic subsoil (subsoil without visible roots), the glacial till, or structural fill placed to backfill the excavation to remove the guyed tower foundation. The topsoil and organic subsoil, i.e., subsoil with visible roots, are not suitable for slab-on-grade support. The proposed equipment cabinets may be supported on a slab-on-grade only if these unsuitable materials are removed. We expect the topsoil and subsoil will be stripped during site preparation.

Alternatively, the equipment cabinets may be supported on concrete pier foundations deriving support from the glacial till or highly weathered bedrock. Design recommendations and construction considerations for the recommended equipment cabinet foundation systems are presented in the following paragraphs and tables.

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
Modulus of subgrade reaction	150 pounds per square inch per in (psi/in)
Minimum embedment below finished grade for frost protection [1,2]	3.5 feet
Approximate total settlement [3]	<1 inch
Estimated differential settlement	<½ inch
Coefficient of sliding friction	0.5

1. 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 3.5 feet of earth cover, thus reducing frost penetration.
2. Air entraining admixtures should be used for concrete exposed to freezing.
3. 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.

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 or minus ¾-inch crushed stone, and corrective action will be required.

We recommend the area underlying the slabs 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. 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.

4.3.2.3 Concrete Pier Design Recommendations

Description	Value
Net Allowable Bearing Capacity Glacial Till/Weathered Bedrock	4 ksf [1]
Minimum depth of pier	3.5 feet
Approximate groundwater depth	Not encountered
Minimum embedment below finished grade for frost protection	3.5 feet
Concrete minimum 28-day unconfined compressive strength	4,000 psi
Minimum pier diameter	12 inches
Approximate total settlement [2]	1 inch

1. The allowable end bearing capacity assumes that the soil/bedrock at the base of the pier has not been made unstable by excavation or other construction activities.
2. Settlement will depend upon the variations within the subsurface soil profile, the structural loading conditions, and the quality of the pier installation.

The concrete piers should be designed to extend through any fill layers and bear in the native glacial till or weathered bedrock. The bottom of the piers should be a minimum of 3.5 feet below finished grade to provide frost protection.

4.3.2.4 Concrete Pier Construction Considerations

The concrete piers may be constructed in drilled holes or in expendable forms (such as *Sonotubes*) placed in excavated holes. The outside of forms used for pier construction should be backfilled with structural fill, crushed stone, or flowable fill, prior to placing concrete. The piers should be aligned vertically. Cobbles and boulders may be encountered within the glacial till. Temporary casing may be required, if the piers are drilled, to reduce the likelihood of caving soils. Provided there are no more than 3 inches of water in the bottom of the pier excavation, concrete may be placed by directing it down the center of the pier using an "elephant trunk", or similar device. Otherwise, concrete should be placed by tremie methods.

4.4 Seismic Considerations

Description	Value
Code Used	Connecticut State Building Code (CBC) [1]
Site Class	B [2]
Maximum considered earthquake ground motions (5 percent damping)	0.066g (1.0 second spectral response acceleration, S_1)
	0.288g (0.2 second spectral response acceleration, S_s)
Liquefaction potential in event of an earthquake	Not susceptible

1. The CBC incorporates the Seismic Design Category approach from the 2003 International Building Code.
2. The CBC requires a site soil profile determination extending a depth of 100 feet for seismic site classification. The current scope requested does not include the required 100 foot soil profile determination; the borings performed for this report extended to a maximum depth of 16 feet. However, bedrock will extend to a depth of 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 explorations performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between explorations, across the site, or due to the modifying effects of weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

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

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or

prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

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

APPENDIX A
FIELD EXPLORATION

SCALE: 1:24 000

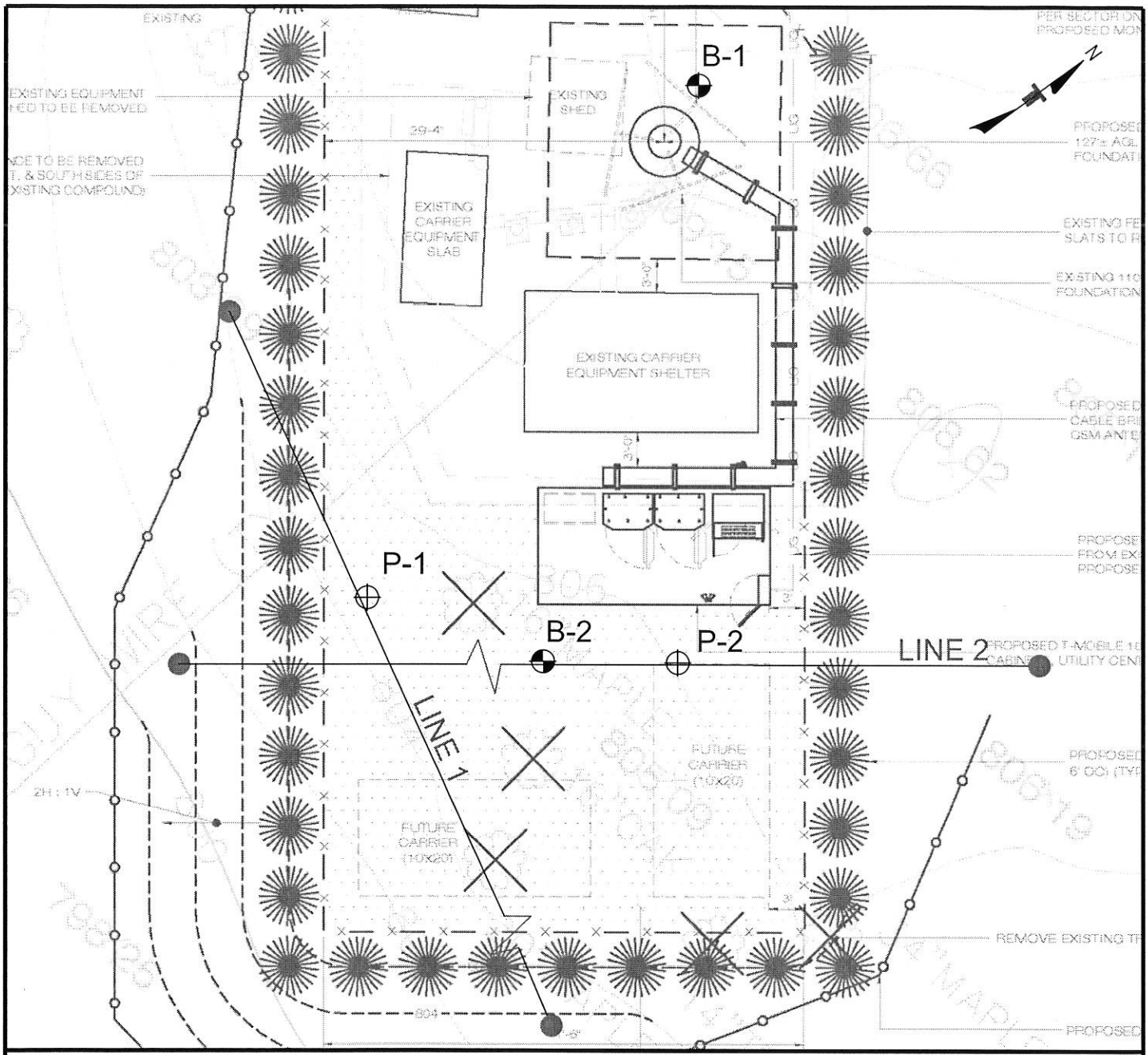
1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Project Mngr: SCL Drawn By: PAN Checked By: SCL Approved By: RWM	Project No. J2115185 Quadrangle: BETHEL , CT - 1984 File No. J2115185 Date: NOVEMBER 2011	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 COMMUNICATIONS TOWER 4 DITTMAR ROAD REDDING, CONNECTICUT	EXHIBIT A-1



20 0 10 20

APPROXIMATE SCALE IN FEET

LEGEND

B-1	TEST BORING LOCATION (TYP)
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, P.C. OF KILLINGWORTH, CONNECTICUT, SITE No. CTFF632, SHEET No. SP-3, TITLED "COMPOUND PLAN & TOWER ELEVATION ALTERNATE 2", REVISED: JULY 21, 2011.

2. TEST BORINGS, B-1 AND B-2, AND PROBES, P-1 AND P-2, WERE ADVANCED ON OCTOBER 21, 2011 UNDER THE DIRECTION OF TERRACON WITH EQUIPMENT OWNED AND OPERATED BY NEW ENGLAND BORING CONTRACTORS OF GLASTONBURY, CONNECTICUT.

3. RESISTIVITY TESTING WAS CONDUCTED ON NOVEMBER 5, 2011 BY A TERRACON FIELD ENGINEER.

4. THE APPROXIMATE LOCATIONS OF THE EXPLORATIONS AND RESISTIVITY 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 EXPLORATIONS, RESISTIVITY TESTS, AND OTHER PERTINENT SITE FEATURES. ANY OTHER USE OF THIS DIAGRAM WITHOUT PERMISSION FROM TERRACON IS PROHIBITED.

Project Mngr: SCL	Project No. J2115185	Terracon Consulting Engineers and Scientists	EXPLORATION LOCATION DIAGRAM
Drawn By: PAN	Scale: 1" = 20'	201 Hammer Mill Road Rocky Hill, CT 06067	PROPOSED COMMUNICATIONS TOWER
Checked By: SCL	File No. J2115185	PH. (860)721-1900 FAX.(860)721-1939	NORTH ALTERNATE
Approved By: RWM	Date: OCTOBER 2011		4 DITTMAR ROAD
			REDDING, CONNECTICUT

EXHIBIT A-2

Field Exploration Description

The proposed tower compound area was occupied by the existing guyed tower and associated fencing and equipment. Surrounding the existing compound area, the site was lightly wooded.

Terracon monitored the advancement of two test borings (B-1 and B-2) and two test probes (P-1 and P-4) within the proposed tower compound area on October 21, 2011. The explorations were advanced using an all terrain vehicle (ATV) mounted Mobile B-53 rotary drill rig, owned and operated by New England Boring Contractors Inc. of Glastonbury, Connecticut. B-1 and B-2 were advanced using 3¼-inch I.D. continuous flight hollow-stem augers (HSA) to depths of 11 and 10 feet below existing ground surface, respectively and terminated in the weathered bedrock. Bedrock was then cored to depths of 16 and 15 feet, respectively, with an NQ2-sized core barrel.

In the split-barrel sampling procedure utilized in B-1 and B-2, 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 taken, along with the rock core in a core box, to our Rocky Hill (Hartford), Connecticut office for further review 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 and P-2 were advanced with 4-inch diameter solid stem augers (SSA) to further evaluate the subsurface conditions at the site. Both probes were terminated in the highly weathered bedrock at a depth of approximately 10 feet. The probes were backfilled with auger cuttings prior to the drill crew leaving the site.

Field logs of the boring and probes were prepared by a Terracon field engineer. These logs included visual classifications of the materials encountered during drilling as well as interpretation by our field engineer of the subsurface conditions between samples. Final exploration logs included with this report represent further interpretation by the geotechnical engineer of the field logs and incorporate, where appropriate, modifications based on laboratory classification of the samples.

The approximate exploration locations, which are shown on Exhibit A-2, were measured by taping from existing features in the field and by estimating right angles. The ground elevations at the exploration locations were estimated by interpolating between contour elevations of existing grade shown on the plans provided. Ground surface elevations rounded to the nearest ½ foot are shown on the individual boring and probe logs in Appendix A. The locations and elevations of the explorations should be considered accurate only to the degree implied by the method used to define them.

BORING No. B-1

CLIENT
All-Points Technology Corporation, P.C.

SITE
4 Dittmar Road
Redding, Connecticut

PROJECT
MCM Dittmar Road

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES RECOVERY, in.	SAMPLES SPT - Blows per 6"	TESTS WATER CONTENT, %	TESTS pH	TESTS RESISTIVITY (ohm-cm)	TESTS OTHER TESTS
	Approx. Surface Elev.: 809 ft										
	0.8 **TRAP ROCK GRAVEL** 808										
	FILL, SILT with sand, trace deleterious materials, brown, very loose.			SS	SS	0	2-1 0-1				
				2	SS	0	1-0 1-1				
		5		3	SS	10	1-1 1-3				
	8 (FILL) 801			4	SS	10	20-58				
	8.5 **SILTY SAND** with gravel, gray to brown, very dense. 800.5 (GLACIAL TILL)										
		10		1 NQ2	C	63%	RQD 38%				Coring Rate (min/ft) 3 4.5 4 3 5
	SCHIST with mica, highly weathered, gray.										
	15 (BEDROCK) 794	15									
	BORING TERMINATED AT 15.0 ft										

The stratification lines represent the approximate boundary lines between soil and rock types: in situ, the transition may be gradual.

Elevations are rounded to the nearest 0.5 ft.
3 1/4" ID HSA, 2" OD SS, 140h, winch & cable

WATER LEVEL OBSERVATIONS, ft		
WL	▽	▼
WL	▼	▼
WL	Not Encountered	

Terracon

BORING STARTED	10-21-11		
BORING COMPLETED	10-21-11		
RIG	Mobile B-53	FOREMAN	TC
LOGGED	MHK	JOB #	J2115185

TERRACON BORERHOLE LOG(PH & RESISTIVITY) J2115185 APT COMMUNICATIONS TOWER,REDDING, CT.GPJ TERRACON 20080217.GDT 11/14/11

BORING No. B-2

CLIENT
All-Points Technology Corporation, P.C.

SITE
4 Dittmar Road
Redding, Connecticut

PROJECT
MCM Dittmar Road

Approx. Surface Elev.: 805 ft

DEPTH, ft.	GRAPHIC LOG	DESCRIPTION	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES RECOVERY, in.	SAMPLES SPT - Blows per 6"	TESTS WATER CONTENT, %	TESTS pH	TESTS RESISTIVITY (ohm-cm)	TESTS OTHER TESTS
		0.3 **TOPSOIL** 804.5		1	SS	16	1-1 1-9				
		1.8 **SILT** with sand, brown, very loose. **(SUBSOIL)** 803	SM	2	SS	20	9-16 21-29				
		SILTY SAND with gravel, gray to brown, dense.									
5		6.5 **(GLACIAL TILL)** 798.5	SM	3	SS	20	16-24 19-22				
		SCHIST weathered to a silty sand with gravel, gray, very dense.		4	SS	4	62/6"				
10		11 **(WEATHERED BEDROCK)** 794		5	SS	2	50/4"				
		SCHIST with mica, highly weathered, gray.		1 NQ2	C	90%	RQD 48%				Coring Rate (min/ft) 3.5 3 5 4
15		16 **(BEDROCK)** 789									4.5
		BORING TERMINATED AT 16.0 ft									

The stratification lines represent the approximate boundary lines between soil and rock types: in situ, the transition may be gradual.

Elevations are rounded to the nearest 0.5 ft.
3 1/4" ID HSA, 2" OD SS, 140h, winch & cable

WATER LEVEL OBSERVATIONS, ft		
WL	▽	▼
WL	▼	▼
WL	Not Encountered	

Terracon

BORING STARTED	10-21-11		
BORING COMPLETED	10-21-11		
RIG	Mobile B-53	FOREMAN	TC
LOGGED	MHK	JOB #	J2115185

TERRACON BORERHOLE LOG(PH & RESISTIVITY) J2115185 APT COMMUNICATIONS TOWER.REDDING, CT.GPJ TERRACON 20080217.GDT 11/14/11

PROBE No. P-1

CLIENT
All-Points Technology Corporation, P.C.

SITE
4 Dittmar Road
Redding, Connecticut

PROJECT
MCM Dittmar Road

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - Blows per 6"	TESTS: WATER CONTENT, %	TESTS: pH	TESTS: RESISTIVITY (ohm-cm)	TESTS: OTHER TESTS
	Approx. Surface Elev.: 804.5 ft										
	0.7 **TOPSOIL** 804										
	SILT with sand, brown.										
	2 (SUBSOIL) 802.5										
	SILTY SAND with gravel, gray to brown.										
	4.5 (GLACIAL TILL) 800	5									
	SCHIST with mica, highly weathered.										
	10 (BEDROCK) 794.5	10									
	PROBE TERMINATED AT 10.0 ft										

The stratification lines represent the approximate boundary lines between soil and rock types: in situ, the transition may be gradual.

Elevations are rounded to the nearest 0.5 ft.
4" Dia. SSA

WATER LEVEL OBSERVATIONS, ft		
WL	▽	▼
WL	▼	▼
WL	Not Encountered	

Terracon

PROBE STARTED	10-21-11		
PROBE COMPLETED	10-21-11		
RIG	Mobile B-53	FOREMAN	TC
LOGGED	MHK	JOB #	J2115185

PROBE No. P-2

CLIENT
All-Points Technology Corporation, P.C.

SITE
4 Dittmar Road
Redding, Connecticut

PROJECT
MCM Dittmar Road

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - Blows per 6"	TESTS: WATER CONTENT, %	TESTS: pH	TESTS: RESISTIVITY (ohm-cm)	TESTS: OTHER TESTS
	Approx. Surface Elev.: 806 ft										
	1 **TOPSOIL** 805										
	SILT with sand, brown. 2.5 **(SUBSOIL)** 803.5										
	3.5 **SILTY SAND** with gravel, gray to brown. 802.5 **(GLACIAL TILL)**	5									
	SCHIST with mica, highly weathered.										
	10 **(BEDROCK)** 796	10									
	PROBE TERMINATED AT 10.0 ft										

The stratification lines represent the approximate boundary lines between soil and rock types: in situ, the transition may be gradual.

Elevations are rounded to the nearest 0.5 ft.
4" Dia. SSA

WATER LEVEL OBSERVATIONS, ft		
WL	▽	▼
WL	▼	▼
WL	Not Encountered	

Terracon

PROBE STARTED	10-21-11		
PROBE COMPLETED	10-21-11		
RIG	Mobile B-53	FOREMAN	TC
LOGGED	MHK	JOB #	J2115185

TERRACON BOREHOLE LOG(PH & RESISTIVITY) J2115185 APT COMMUNICATIONS TOWER,REDDING, CT.GPJ TERRACON 20080217.GDT 11/14/11

APPENDIX B
LABORATORY TESTING

Laboratory Testing

Descriptive classifications of the soils indicated on the boring logs 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

DRILLING & SAMPLING SYMBOLS:

SS:	Split Spoon – 1-3/8" I.D., 2" O.D., unless otherwise noted	HS:	Hollow Stem Auger
ST:	Thin-Walled Tube - 2" O.D., unless otherwise noted	PA:	Power Auger
RS:	Ring Sampler - 2.42" I.D., 3" O.D., unless otherwise noted	HA:	Hand Auger
DB:	Diamond Bit Coring - 4", N, B	RB:	Rock Bit
BS:	Bulk Sample or Auger Sample	WB:	Wash Boring or Mud Rotary

The number of blows required to advance a standard 2-inch O.D. split-spoon sampler (SS) typically the middle 12 inches of the total 24-inch penetration with a 140-pound hammer falling 30 inches is considered the "Standard Penetration" or "N-value".

WATER LEVEL MEASUREMENT SYMBOLS:

WL:	Water Level	WS:	While Sampling	N/E:	Not Encountered
WCI:	Wet Cave in	WD:	While Drilling		
DCI:	Dry Cave in	BCR:	Before Casing Removal		
AB:	After Boring	ACR:	After Casing Removal		

Water levels indicated on the boring logs are the levels measured in the borings at the times indicated. Groundwater levels at other times and other locations across the site could vary. In pervious soils, the indicated levels may reflect the location of groundwater. In low permeability soils, the accurate determination of groundwater levels may not be possible with only short-term observations.

DESCRIPTIVE SOIL CLASSIFICATION: Soil classification is based on the Unified 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.

CONSISTENCY OF FINE-GRAINED SOILS

Unconfined Compressive Strength, Qu, psf	Standard Penetration or N-value (SS) Blows/Ft.	Consistency
< 500	<2	Very Soft
500 – 1,000	2-3	Soft
1,001 – 2,000	4-6	Medium Stiff
2,001 – 4,000	7-12	Stiff
4,001 – 8,000	13-26	Very Stiff
8,000+	26+	Hard

RELATIVE DENSITY OF COARSE-GRAINED SOILS

Standard Penetration or N-value (SS) Blows/Ft.	Ring Sampler (RS) Blows/Ft.	Relative Density
0 – 3	0-6	Very Loose
4 – 9	7-18	Loose
10 – 29	19-58	Medium Dense
30 – 49	59-98	Dense
50+	99+	Very Dense

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. (300mm)
Cobbles	12 in. to 3 in. (300mm to 75 mm)
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
Modifiers	> 12

PLASTICITY DESCRIPTION

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

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-in. (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.

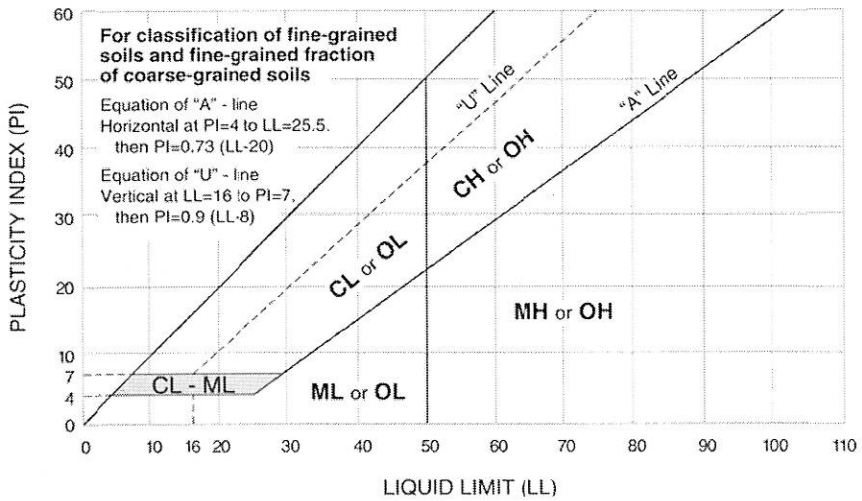


Exhibit C-2

GENERAL NOTES

Description of Rock Properties

WEATHERING

Fresh	Rock fresh, crystals bright, few joints may show slight staining. Rock rings under hammer if crystalline.
Very slight	Rock generally fresh, joints stained, some joints may show thin clay coatings, crystals in broken face show bright. Rock rings under hammer if crystalline.
Slight	Rock generally fresh, joints stained, and discoloration extends into rock up to 1 in. Joints may contain clay. In granitoid rocks some occasional feldspar crystals are dull and discolored. Crystalline rocks ring under hammer.
Moderate	Significant portions of rock show discoloration and weathering effects. In granitoid rocks, most feldspars are dull and discolored; some show clayey. Rock has dull sound under hammer and shows significant loss of strength as compared with fresh rock.
Moderately severe	All rock except quartz discolored or stained. In granitoid rocks, all feldspars dull and discolored and majority show kaolinization. Rock shows severe loss of strength and can be excavated with geologist's pick.
Severe	All rock except quartz discolored or stained. Rock "fabric" clear and evident, but reduced in strength to strong soil. In granitoid rocks, all feldspars kaolinized to some extent. Some fragments of strong rock usually left.
Very severe	All rock except quartz discolored or stained. Rock "fabric" discernible, but mass effectively reduced to "soil" with only fragments of strong rock remaining.
Complete	Rock reduced to "soil". Rock "fabric" not discernible or discernible only in small, scattered locations. Quartz may be present as dikes or stringers.

HARDNESS (for engineering description of rock – not to be confused with Moh's scale for minerals)

Very hard	Cannot be scratched with knife or sharp pick. Breaking of hand specimens requires several hard blows of geologist's pick.
Hard	Can be scratched with knife or pick only with difficulty. Hard blow of hammer required to detach hand specimen.
Moderately hard	Can be scratched with knife or pick. Gouges or grooves to ¼ in. deep can be excavated by hard blow of point of a geologist's pick. Hand specimens can be detached by moderate blow.
Medium	Can be grooved or gouged 1/16 in. deep by firm pressure on knife or pick point. Can be excavated in small chips to pieces about 1-in. maximum size by hard blows of the point of a geologist's pick.
Soft	Can be gouged or grooved readily with knife or pick point. Can be excavated in chips to pieces several inches in size by moderate blows of a pick point. Small thin pieces can be broken by finger pressure.
Very soft	Can be carved with knife. Can be excavated readily with point of pick. Pieces 1-in. or more in thickness can be broken with finger pressure. Can be scratched readily by fingernail.

Joint, Bedding and Foliation Spacing in Rock[a]

Spacing	Joints	Bedding/Foliation
Less than 2 in.	Very close	Very thin
2 in. – 1 ft.	Close	Thin
1 ft. – 3 ft.	Moderately close	Medium
3 ft. – 10 ft.	Wide	Thick
More than 10 ft.	Very wide	Very thick

Rock Quality Designator (RQD)[b]		Joint Openness Descriptors	
RQD, as a percentage	Diagnostic description	Openness	Descriptor
Exceeding 90	Excellent	No Visible Separation	Tight
90 – 75	Good	Less than 1/32 in.	Slightly Open
75 – 50	Fair	1/32 to 1/8 in.	Moderately Open
50 – 25	Poor	1/8 to 3/8 in.	Open
Less than 25	Very poor	3/8 in. to 0.1 ft.	Moderately Wide
		Greater than 0.1 ft.	Wide

a. Spacing refers to the distance normal to the planes, of the described feature, which are parallel to each other or nearly so.
b. RQD (given as a percentage) = length of core in pieces 4 in. and longer/length of run.

References: American Society of Civil Engineers. Manuals and Reports on Engineering Practice - No. 56. Subsurface Investigation for Design and Construction of Foundations of Buildings. New York: American Society of Civil Engineers, 1976.
U.S. Department of the Interior, Bureau of Reclamation, Engineering Geology Field Manual.

ATTACHMENT B

LARSON® CAMOUFLAGE

Larson Camouflage, LLC

1624 South Euclid Avenue
Tucson, AZ 85713
(520) 294-3900
www.larsoncamo.com

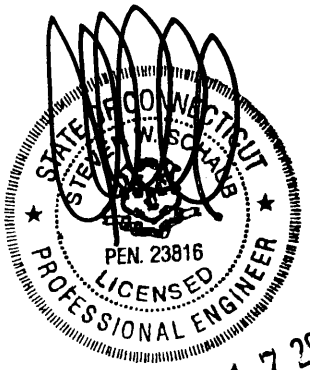
DATE: October 4, 2012

PROJECT: MCM Dittmar Road (North Alternate)
Mat Foundation

LOCATION: 4 Dittmar Road
Redding, CT

ISE JOB NO. 5195-R2

LARSON JOB NO. 612800



OCT 17 2012

DESIGN CRITERIA:

DESIGN SATISFIES ALL CRITERIA FOR:

- CBC (IBC 2003)
- ANSI/TIA/EIA-222-F W/ WIND – 85 MPH (Fastest Mile), & 74 MPH w/0.75" Ice
- SEISMIC DATA: Ss=0.285, S_1=0.066, S_{DS}=0.190, S_{D1}=0.044
- Seismic Site Class B
- Seismic Design Class B, Cs=0.036
- WELDING PER AWS D1.1 LATEST EDITION

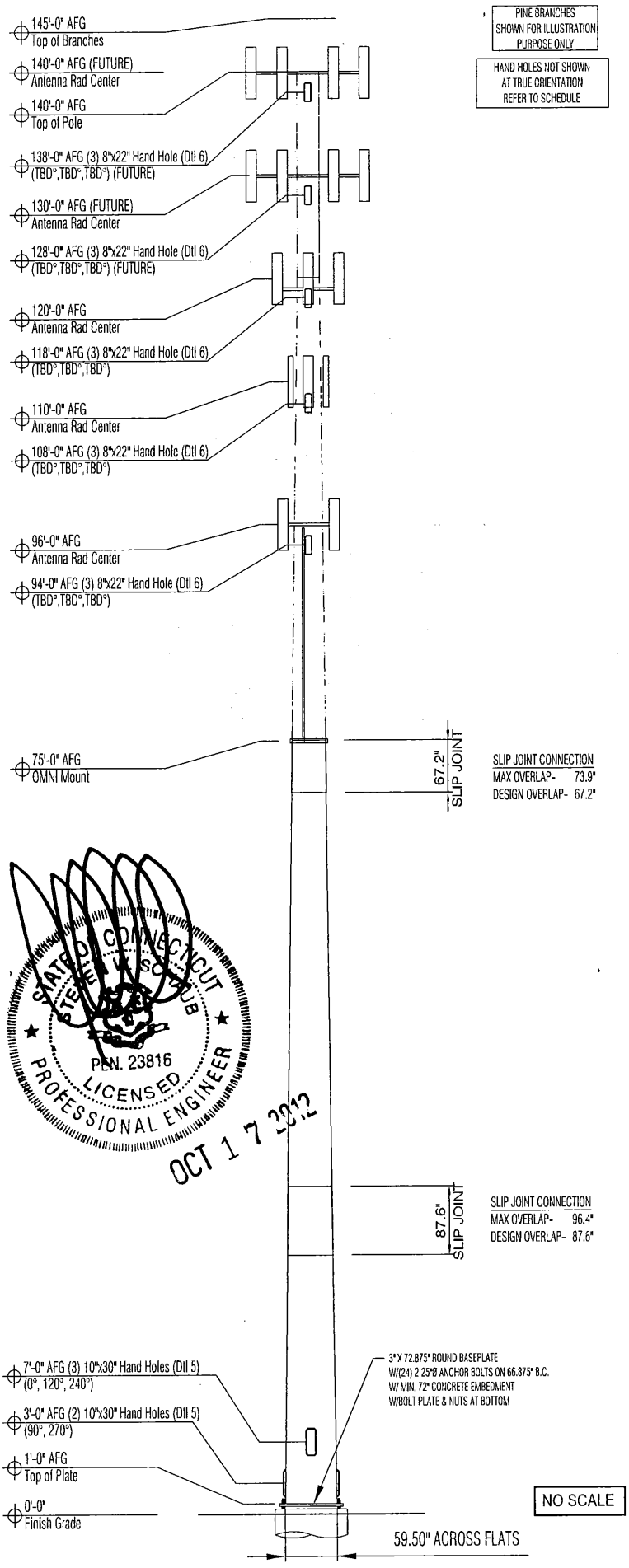
MATERIALS:

SOILS	- Terracon Project # J2115185, November 7, 2011
TAPERED SHAFT STEEL	- A572-65 (Fy=65 KSI)
ANCHOR BOLTS	- A615-75 (Fy=75 KSI)
BASE PLATE STEEL	- A572-50 (Fy=50 KSI)
CONCRETE	- F'c = 4000 PSI AT 28 Days
REINFORCING STEEL	- ASTM A615 BARS (Fy=60 KSI) DEFORMED

CONTENTS

PREPARED BY:
Glen L. Hunt III

APPROVED BY:
Steven Schaub, PE



STATE OF CONNECTICUT
PEN. 23816
LICENSED
PROFESSIONAL ENGINEER

OCT 17 2012

PROJECT INFORMATION

Date: September 24, 2012
ISE Job No. 5195-R2 By: GLH.
Customer: Larson
Product: 140' Mono Pine
Site ID: MCM Dittmar Road (North Alternate)

Location: 4 Dittmar Road (North Alternate)
Redding, CT

DESIGN CRITERION:

2006/2009 IBC
EIA/TIA-222-F (2006) 85MPH (Fastest Mile)
EXP C, Topo Class I, Tower Class II

DESIGN LOADS (Unfactored Base Wind Reactions)

Moment	=	4438.033	Ft-Kips
Shear	=	44.678	Kips
Axial	=	45.873	Kips

POLE SPECIFICATIONS

Section Shape	18-Sided Tapered
PipeTaper	0.2931 IN/FT
Pole Material	ASTM A572-GR65
Base Plate	ASTM A572-50
Anchor Bolts	2.25" x 84" Long, A615-75

Pole Section	Length (ft.)	Weight (kips)	Tkns. (in.)	Lap Splice (in.)	Diameter Top (in.)	Diameter Bot (in.)
1	20.00	1.045	0.188	--	26.000	26.000
2	50.00	5.571	0.313	67.20	26.000	40.653
3	50.00	9.182	0.375	87.60	38.387	53.042
4	31.90	8.198	0.438	--	50.152	59.500
Mast Plate		0.356	1.50	38" OD Round w/20" ID		
Base Plate		1.917	3.00	72.875" OD Round w/50" ID		

APPURTENANCES

Elevation (ft.)	(Qty)	Description
75' to 140'	(113)	Assorted 4', 6', 8', 10' Pine Limbs
140'	(3)	12' T-Arm w/ 5' S.O. (FUTURE)
140'	(12)	5' x 1' Panel Antenna (FUTURE)
130'	(3)	12' T-Arm w/ 5' S.O. (FUTURE)
130'	(12)	5' x 1' Panel Antenna (FUTURE)
120'	(3)	10' T-Arm w/ 5' S.O.
120'	(9)	APXV18-2090-14-C
120'	(6)	14x10x4 TMA
110'	(3)	DR90-11-00DBL w/ Pipe Mt
96'	(3)	10' T-Arm w/ 5' S.O.
96'	(9)	PW 7770.00
96'	(18)	14x10x4 TMA
96'	(12)	RRUS-11
96'	(3)	DC6-48-60-18-8F
75'	(1)	Collar Mount w/ 2' standoff
75'	(1)	dbSpectra DS1F06F36U-N

DEFLECTIONS

Elev. (ft.)	60 MPH Wind Lateral (in.)	60 MPH Wind Sway (°)	85 MPH Wind Lateral (in.)	85 MPH Wind Sway (°)
Top	41.151	2.632	82.411	5.272

Prepared by:

ISE Incorporated
Structural & Civil Engineers
3470 W. Jasper Drive
Chandler, Arizona 85226
PHONE: 602-403-8614 FAX: 623-321-1283
www.ise-inc.biz

Prepared for: LARSON JOB # 612800

LARSON® CAMOUFLAGE
1624 South Euclid Avenue
Tucson, AZ 85713
(520) 294-3900
www.larsoncamo.com

PROJECT INFORMATION

Date: October 04, 2012
ISE Job No. 5195 By: GLH
Customer: Larson
Product: 140' Mono Pine
Site ID: MCM Dittmar Road (North Alternate)

Location: 4 Dittmar Road (North Alternate)
Redding, CT

DESIGN CRITERION:

2006/2009 IBC
EIA/TIA-222-F (2006) 85MPH (Fastest Mile)
EXP C, Topo Class I, Tower Class II

DESIGN LOADS (Unfactored Base Wind Reactions)

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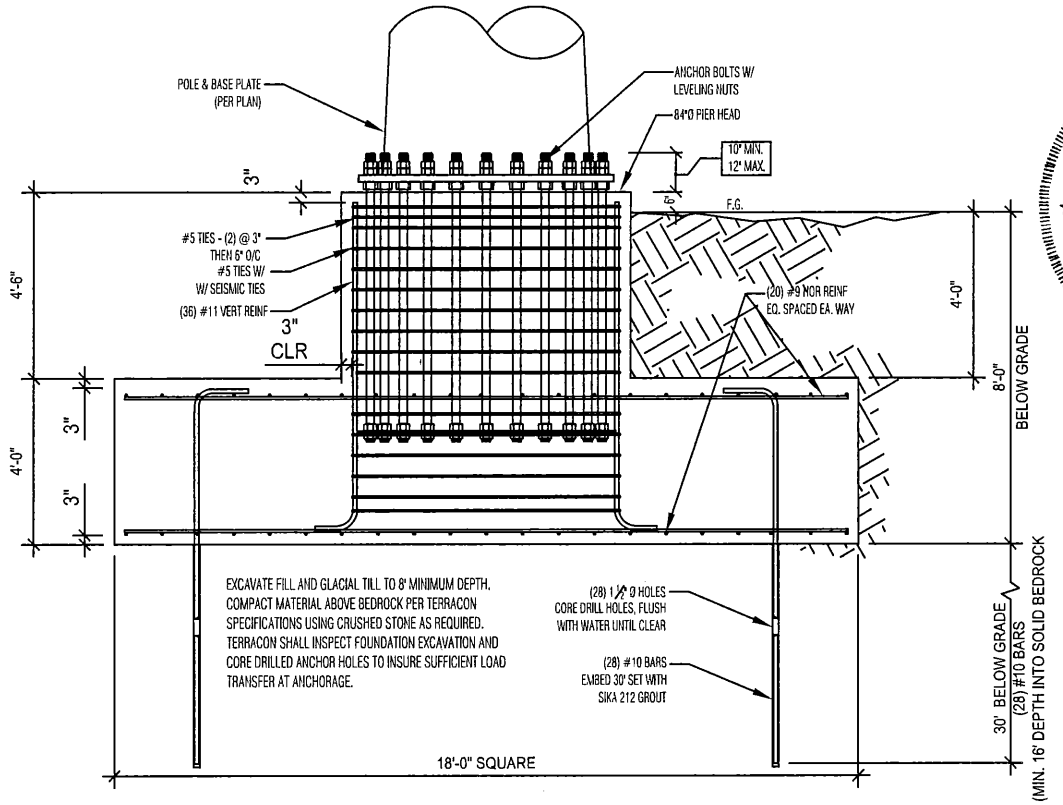
Shear	=	44.678	Kips
Axial	=	45.873	Kips

NOTES:

1. SEE POLE DESIGN PAGE (PAGE 1) FOR POLE, BASEPLATE, AND ANCHOR BOLT DESIGN DATA.
2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS. ALL CONCRETE WORK SHALL CONFORM TO LATEST EDITION ACI 318, "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE". FOUNDATION CONSTRUCTION SHALL CONFORM TO ACI 336, "STANDARD SPECIFICATIONS FOR THE CONSTRUCTION OF DRILLED PIERS.
3. REINFORCING STEEL SHALL CONFORM TO:
   #5 BARS AND LARGER - ASTM A-615, GRADE 60
4. FOUNDATION DESIGN PER GEOTECHNICAL REPORT:
   PREPARED BY: Terracon
   PROJECT NO.: J2115185
   DATE: November 7, 2011
5. CONTRACTOR SHALL READ THE GEOTECHNICAL REPORT AND CONSULT WITH GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTION FOR HAZARDS AND SPECIAL CIRCUMSTANCES.
6. ESTIMATED CONCRETE VOLUME: 54.5 CY
7. SPECIAL INSPECTION REQUIRED F'c > 2500 PSI;
   CONCRETE, REINFORCING STEEL, ANCHOR BOLTS



Prepared by:	Prepared for:	LARSON JOB # 612800

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PROJECT INFORMATION

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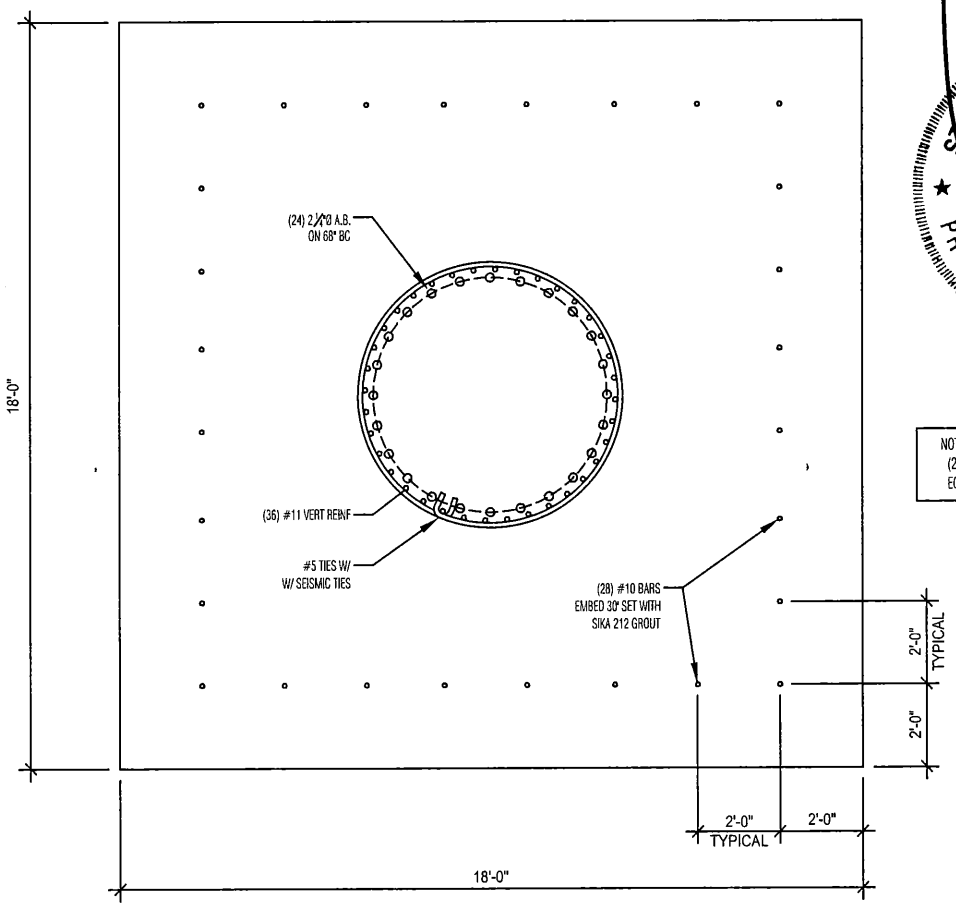

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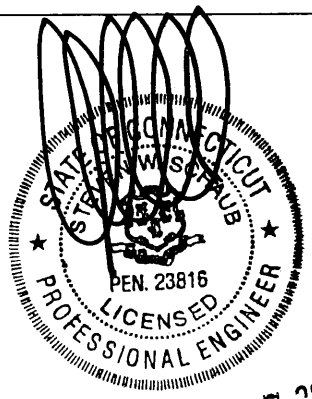

OCT 17 2012

Prepared by:

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Prepared for: LARSON JOB # 612800

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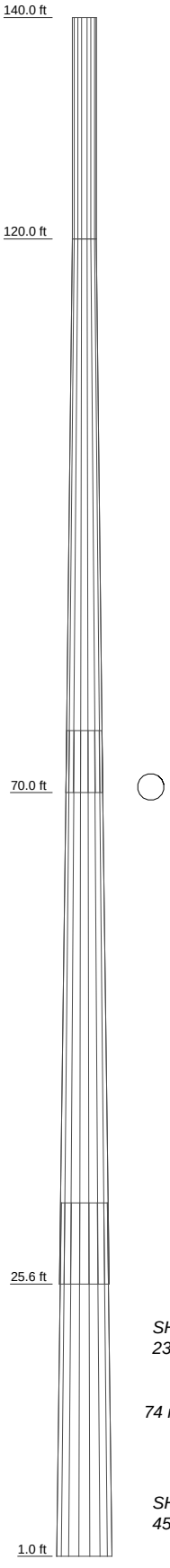
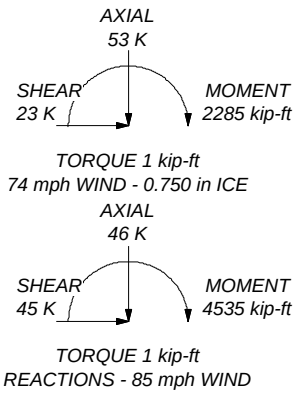
Section	1	2	3	4
Length (ft)	20.000	50.000	50.000	31.900
Number of Sides	18	18	18	18
Thickness (in)	0.188	0.313	0.375	0.438
Socket Length (ft)		5.600	7.300	
Top Dia (in)	26.000	26.000	38.387	50.152
Bot Dia (in)	26.000	40.653	53.042	59.500
Grade	A572-65			
Weight (K)	1.0	5.6	9.2	8.2

24.0





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Pine Branches	140	(2) 14x10x4 TMA (Proposed)	120
Pine Branches	140 - 131	DR90-11-00DBL w/ Pipe Mt (Proposed)	110
12' T-Arm w/ 5' S.O. + (4) Mnt Pipes (Future)	140	DR90-11-00DBL w/ Pipe Mt (Proposed)	110
(4) 5' x 1' Panel Antenna (Future)	140	DR90-11-00DBL w/ Pipe Mt (Proposed)	110
12' T-Arm w/ 5' S.O. + (4) Mnt Pipes (Future)	140	Pine Branches	109 - 103
(4) 5' x 1' Panel Antenna (Future)	140	Pine Branches	103 - 97
12' T-Arm w/ 5' S.O. + (4) Mnt Pipes (Future)	140	Pine Branches	97 - 87
(4) 5' x 1' Panel Antenna (Future)	140	10' T-Arm w/ 5' S.O. + (3) Mnt Pipes (Proposed)	96
Pine Branches	131 - 120	(3) PW 7770.00	96
12' T-Arm w/ 5' S.O. + (4) Mnt Pipes (Future)	130	(6) 14x10x4 TMA	96
(4) 5' x 1' Panel Antenna (Future)	130	(4) RRUS-11 (Proposed)	96
12' T-Arm w/ 5' S.O. + (4) Mnt Pipes (Future)	130	DC6-48-60-18-8F	96
(4) 5' x 1' Panel Antenna (Future)	130	10' T-Arm w/ 5' S.O. + (3) Mnt Pipes (Proposed)	96
12' T-Arm w/ 5' S.O. + (4) Mnt Pipes (Future)	130	(3) 7770.00	96
(4) 5' x 1' Panel Antenna (Future)	130	(6) 14x10x4 TMA	96
Pine Branches	120 - 109	(4) RRUS-11 (Proposed)	96
10' T-Arm w/ 5' S.O. + (3) Mnt Pipes (Proposed)	120	DC6-48-60-18-8F	96
(3) APXV18-2090-14-C (Proposed)	120	10' T-Arm w/ 5' S.O. + (3) Mnt Pipes (Proposed)	96
(2) 14x10x4 TMA (Proposed)	120	(3) 7770.00	96
10' T-Arm w/ 5' S.O. + (3) Mnt Pipes (Proposed)	120	(6) 14x10x4 TMA	96
(3) APXV18-2090-14-C (Proposed)	120	(4) RRUS-11 (Proposed)	96
(2) 14x10x4 TMA (Proposed)	120	DC6-48-60-18-8F	96
10' T-Arm w/ 5' S.O. + (3) Mnt Pipes (Proposed)	120	Pine Branches	87 - 81
(3) APXV18-2090-14-C (Proposed)	120	Pine Branches	81 - 75
		Collar Mount w/ 2' standoff	75
		dbSpectra DS1F06F36U-N	75

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 74 mph basic wind with 0.75 in ice.
4. Deflections are based upon a 60 mph wind.
5. TOWER RATING: 97.9%

ISE Incorporated
3470 W. Jasper Drive
Chandler, AZ
Phone:
FAX:

Job: ***MCM Dittmar Road (North Alternate)***
Project: ***ISE # 5195-R2***
Client: Larson | Drawn by: Matt G | App'd:
Code: TIA/EIA-222-F | Date: 09/24/12 | Scale: NTS
Path: | Dwg No. E-1

Tower Input Data

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

- Tower is located in Fairfield County, Connecticut.
- Basic wind speed of 85 mph.
- Nominal ice thickness of 0.750 in.
- Ice density of 56 pcf.
- A wind speed of 74 mph is used in combination with ice.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.333.
- Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	140.000-120.000	20.000	0.000	18	26.000	26.000	0.188	0.750	A572-65 (65 ksi)
L2	120.000-70.000	50.000	5.600	18	26.000	40.653	0.313	1.250	A572-65 (65 ksi)
L3	70.000-25.600	50.000	7.300	18	38.387	53.042	0.375	1.500	A572-65 (65 ksi)
L4	25.600-1.000	31.900		18	50.152	59.500	0.438	1.750	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	26.401	15.362	1293.111	9.163	13.208	97.904	2587.924	7.682	4.246	22.645
	26.401	15.362	1293.111	9.163	13.208	97.904	2587.924	7.682	4.246	22.645
L2	26.401	25.479	2124.026	9.119	13.208	160.814	4250.848	12.742	4.026	12.883
	41.280	40.013	8226.559	14.321	20.652	398.347	16463.943	20.010	6.605	21.136
L3	40.646	45.244	8259.108	13.494	19.501	423.533	16529.083	22.626	6.096	16.256
	53.860	62.687	21967.919	18.697	26.945	815.279	43964.743	31.349	8.675	23.134
L4	53.098	69.035	21556.518	17.649	25.477	846.105	43141.400	34.524	8.057	18.416
	60.418	82.016	36145.806	20.967	30.226	1195.851	72339.173	41.016	9.702	22.176

Monopole Base Plate Data

Base Plate Data	
Base plate is square	
Base plate is grouted	
Anchor bolt grade	A615-75
Anchor bolt size	2.250 in
Number of bolts	24
Embedment length	72.000 in
f'_c	4.000 ksi
Grout space	3.000 in
Base plate grade	A572-50

Base Plate Data	
Base plate thickness	3.000 in
Bolt circle diameter	66.875 in
Outer diameter	72.875 in
Inner diameter	50.000 in
Base plate type	Plain Plate

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
HJ7-50A (1-5/8 AIR) (Future)	C	No	Inside Pole	139.000 - 1.000	18	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
HJ7-50A (1-5/8 AIR) (Future)	C	No	Inside Pole	129.000 - 1.000	18	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
HJ7-50A (1-5/8 AIR) (Proposed)	C	No	Inside Pole	119.000 - 1.000	18	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
HJ7-50A (1-5/8 AIR) (Proposed)	C	No	Inside Pole	109.000 - 1.000	18	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
HJ7-50A (1-5/8 AIR) (Proposed)	C	No	Inside Pole	95.000 - 1.000	18	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
****								
3/8" DC Cables (Proposed)	C	No	Inside Pole	95.000 - 1.000	6	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
Fiber Optic Cables (Proposed)	C	No	Inside Pole	95.000 - 1.000	3	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	140.000-120.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.524
L2	120.000-70.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	3.999
L3	70.000-25.600	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	4.177
L4	25.600-1.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	2.314

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	140.000-120.000	A	0.750	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.524
L2	120.000-70.000	A	0.750	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	3.999
L3	70.000-25.600	A	0.750	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	4.177
L4	25.600-1.000	A	0.750	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	2.314

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Pine Branches	C	None		0.000	140.000	No Ice	10.000	0.000	0.500
						1/2" Ice	0.000	0.000	0.000
						1" Ice	0.000	0.000	0.000
Pine Branches	C	None		0.000	140.000 - 131.000	No Ice	48.000	0.000	0.425
						1/2" Ice	0.000	0.000	0.000
						1" Ice	0.000	0.000	0.000
Pine Branches	C	None		0.000	131.000 - 120.000	No Ice	48.000	0.000	0.425
						1/2" Ice	0.000	0.000	0.000
						1" Ice	0.000	0.000	0.000
Pine Branches	C	None		0.000	120.000 - 109.000	No Ice	55.000	0.000	0.532
						1/2" Ice	0.000	0.000	0.000
						1" Ice	0.000	0.000	0.000
Pine Branches	C	None		0.000	109.000 - 103.000	No Ice	39.000	0.000	0.320
						1/2" Ice	0.000	0.000	0.000
						1" Ice	0.000	0.000	0.000
Pine Branches	C	None		0.000	103.000 - 97.000	No Ice	39.000	0.000	0.320
						1/2" Ice	0.000	0.000	0.000
						1" Ice	0.000	0.000	0.000
Pine Branches	C	None		0.000	97.000 - 87.000	No Ice	80.000	0.000	0.621
						1/2" Ice	0.000	0.000	0.000
						1" Ice	0.000	0.000	0.000
Pine Branches	C	None		0.000	87.000 - 81.000	No Ice	37.000	0.000	0.296
						1/2" Ice	0.000	0.000	0.000
						1" Ice	0.000	0.000	0.000
Pine Branches	C	None		0.000	81.000 - 75.000	No Ice	37.000	0.000	0.296
						1/2" Ice	0.000	0.000	0.000
						1" Ice	0.000	0.000	0.000
****									
12' T-Arm w/ 5' S.O. + (4) Mnt Pipes (Future)	A	From Leg	5.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice	10.255 11.800 13.345	3.239 3.702 4.165	0.369 0.471 0.574
(4) 5' x 1' Panel Antenna (Future)	A	From Leg	5.500 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice	7.000 7.471 7.951	2.778 3.146 3.521	0.035 0.070 0.110

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
12' T-Arm w/ 5' S.O. + (4)	B	From Leg	5.000	0.000	140.000	No Ice	10.255	3.239	0.369
Mnt Pipes			0.000			1/2" Ice	11.800	3.702	0.471
(Future)			0.000			1" Ice	13.345	4.165	0.574
(4) 5' x 1' Panel Antenna	B	From Leg	5.500	0.000	140.000	No Ice	7.000	2.778	0.035
(Future)			0.000			1/2" Ice	7.471	3.146	0.070
			0.000			1" Ice	7.951	3.521	0.110
12' T-Arm w/ 5' S.O. + (4)	C	From Leg	5.000	0.000	140.000	No Ice	10.255	3.239	0.369
Mnt Pipes			0.000			1/2" Ice	11.800	3.702	0.471
(Future)			0.000			1" Ice	13.345	4.165	0.574
(4) 5' x 1' Panel Antenna	C	From Leg	5.500	0.000	140.000	No Ice	7.000	2.778	0.035
(Future)			0.000			1/2" Ice	7.471	3.146	0.070
			0.000			1" Ice	7.951	3.521	0.110
****									
12' T-Arm w/ 5' S.O. + (4)	A	From Leg	5.000	0.000	130.000	No Ice	10.255	3.239	0.369
Mnt Pipes			0.000			1/2" Ice	11.800	3.702	0.471
(Future)			0.000			1" Ice	13.345	4.165	0.574
(4) 5' x 1' Panel Antenna	A	From Leg	5.500	0.000	130.000	No Ice	7.000	2.778	0.035
(Future)			0.000			1/2" Ice	7.471	3.146	0.070
			0.000			1" Ice	7.951	3.521	0.110
12' T-Arm w/ 5' S.O. + (4)	B	From Leg	5.000	0.000	130.000	No Ice	10.255	3.239	0.369
Mnt Pipes			0.000			1/2" Ice	11.800	3.702	0.471
(Future)			0.000			1" Ice	13.345	4.165	0.574
(4) 5' x 1' Panel Antenna	B	From Leg	5.500	0.000	130.000	No Ice	7.000	2.778	0.035
(Future)			0.000			1/2" Ice	7.471	3.146	0.070
			0.000			1" Ice	7.951	3.521	0.110
12' T-Arm w/ 5' S.O. + (4)	C	From Leg	5.000	0.000	130.000	No Ice	10.255	3.239	0.369
Mnt Pipes			0.000			1/2" Ice	11.800	3.702	0.471
(Future)			0.000			1" Ice	13.345	4.165	0.574
(4) 5' x 1' Panel Antenna	C	From Leg	5.500	0.000	130.000	No Ice	7.000	2.778	0.035
(Future)			0.000			1/2" Ice	7.471	3.146	0.070
			0.000			1" Ice	7.951	3.521	0.110
****									
10' T-Arm w/ 5' S.O. + (3)	A	From Leg	5.000	0.000	120.000	No Ice	8.033	3.239	0.301
Mnt Pipes			0.000			1/2" Ice	9.230	3.702	0.381
(Proposed)			0.000			1" Ice	10.428	4.165	0.461
(3) APXV18-2090-14-C	A	From Leg	5.500	0.000	120.000	No Ice	3.506	2.003	0.019
(Proposed)			0.000			1/2" Ice	3.848	2.326	0.038
			0.000			1" Ice	4.217	2.657	0.062
(2) 14x10x4 TMA	A	From Leg	0.000	0.000	120.000	No Ice	1.361	0.544	0.021
(Proposed)			0.000			1/2" Ice	1.521	0.665	0.030
			0.000			1" Ice	1.690	0.795	0.040
10' T-Arm w/ 5' S.O. + (3)	B	From Leg	5.000	0.000	120.000	No Ice	8.033	3.239	0.301
Mnt Pipes			0.000			1/2" Ice	9.230	3.702	0.381
(Proposed)			0.000			1" Ice	10.428	4.165	0.461
(3) APXV18-2090-14-C	B	From Leg	5.500	0.000	120.000	No Ice	3.506	2.003	0.019
(Proposed)			0.000			1/2" Ice	3.848	2.326	0.038
			0.000			1" Ice	4.217	2.657	0.062
(2) 14x10x4 TMA	B	From Leg	0.000	0.000	120.000	No Ice	1.361	0.544	0.021
(Proposed)			0.000			1/2" Ice	1.521	0.665	0.030
			0.000			1" Ice	1.690	0.795	0.040
10' T-Arm w/ 5' S.O. + (3)	C	From Leg	5.000	0.000	120.000	No Ice	8.033	3.239	0.301
Mnt Pipes			0.000			1/2" Ice	9.230	3.702	0.381
(Proposed)			0.000			1" Ice	10.428	4.165	0.461
(3) APXV18-2090-14-C	C	From Leg	5.500	0.000	120.000	No Ice	3.506	2.003	0.019
(Proposed)			0.000			1/2" Ice	3.848	2.326	0.038
			0.000			1" Ice	4.217	2.657	0.062
(2) 14x10x4 TMA	C	From Leg	0.000	0.000	120.000	No Ice	1.361	0.544	0.021

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(Proposed)			0.000			1/2" Ice	1.521	0.665	0.030
			0.000			1" Ice	1.690	0.795	0.040
****									
DR90-11-00DBL w/ Pipe Mt	A	From Leg	0.000	0.000	110.000	No Ice	11.610	10.022	0.083
(Proposed)			0.000			1/2" Ice	12.279	11.493	0.172
			0.000			1" Ice	12.939	12.703	0.274
DR90-11-00DBL w/ Pipe Mt	B	From Leg	0.000	0.000	110.000	No Ice	11.610	10.022	0.083
(Proposed)			0.000			1/2" Ice	12.279	11.493	0.172
			0.000			1" Ice	12.939	12.703	0.274
DR90-11-00DBL w/ Pipe Mt	C	From Leg	0.000	0.000	110.000	No Ice	11.610	10.022	0.083
(Proposed)			0.000			1/2" Ice	12.279	11.493	0.172
			0.000			1" Ice	12.939	12.703	0.274
****									
10' T-Arm w/ 5' S.O. + (3)	A	From Leg	5.000	0.000	96.000	No Ice	8.033	3.239	0.301
Mnt Pipes			0.000			1/2" Ice	9.230	3.702	0.381
(Proposed)			0.000			1" Ice	10.428	4.165	0.461
(3) PW 7770.00	A	From Leg	5.500	0.000	96.000	No Ice	5.935	2.961	0.039
			0.000			1/2" Ice	6.371	3.309	0.072
			0.000			1" Ice	6.815	3.664	0.110
(6) 14x10x4 TMA	A	None		0.000	96.000	No Ice	1.361	0.544	0.021
						1/2" Ice	1.521	0.665	0.030
						1" Ice	1.690	0.795	0.040
(4) RRUS-11	A	From Leg	5.000	0.000	96.000	No Ice	3.671	1.619	0.055
(Proposed)			0.000			1/2" Ice	3.936	1.829	0.077
			0.000			1" Ice	4.209	2.047	0.103
DC6-48-60-18-8F	A	From Leg	0.000	0.000	96.000	No Ice	1.760	1.760	0.033
			0.000			1/2" Ice	1.972	1.972	0.055
			0.000			1" Ice	2.196	2.196	0.079
10' T-Arm w/ 5' S.O. + (3)	B	From Leg	5.000	0.000	96.000	No Ice	8.033	3.239	0.301
Mnt Pipes			0.000			1/2" Ice	9.230	3.702	0.381
(Proposed)			0.000			1" Ice	10.428	4.165	0.461
(3) 7770.00	B	From Leg	5.500	0.000	96.000	No Ice	5.935	2.961	0.039
			0.000			1/2" Ice	6.371	3.309	0.072
			0.000			1" Ice	6.815	3.664	0.110
(6) 14x10x4 TMA	B	None		0.000	96.000	No Ice	1.361	0.544	0.021
						1/2" Ice	1.521	0.665	0.030
						1" Ice	1.690	0.795	0.040
(4) RRUS-11	B	From Leg	5.000	0.000	96.000	No Ice	3.671	1.619	0.055
(Proposed)			0.000			1/2" Ice	3.936	1.829	0.077
			0.000			1" Ice	4.209	2.047	0.103
DC6-48-60-18-8F	B	From Leg	0.000	0.000	96.000	No Ice	1.760	1.760	0.033
			0.000			1/2" Ice	1.972	1.972	0.055
			0.000			1" Ice	2.196	2.196	0.079
10' T-Arm w/ 5' S.O. + (3)	C	From Leg	5.000	0.000	96.000	No Ice	8.033	3.239	0.301
Mnt Pipes			0.000			1/2" Ice	9.230	3.702	0.381
(Proposed)			0.000			1" Ice	10.428	4.165	0.461
(3) 7770.00	C	From Leg	5.500	0.000	96.000	No Ice	5.935	2.961	0.039
			0.000			1/2" Ice	6.371	3.309	0.072
			0.000			1" Ice	6.815	3.664	0.110
(6) 14x10x4 TMA	C	None		0.000	96.000	No Ice	1.361	0.544	0.021
						1/2" Ice	1.521	0.665	0.030
						1" Ice	1.690	0.795	0.040
(4) RRUS-11	C	From Leg	5.000	0.000	96.000	No Ice	3.671	1.619	0.055
(Proposed)			0.000			1/2" Ice	3.936	1.829	0.077
			0.000			1" Ice	4.209	2.047	0.103
DC6-48-60-18-8F	C	From Leg	0.000	0.000	96.000	No Ice	1.760	1.760	0.033
			0.000			1/2" Ice	1.972	1.972	0.055

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1" Ice	2.196	2.196	0.079
****									
Collar Mount w/ 2' standoff	C	From Leg	2.000	0.000	75.000	No Ice	2.000	2.000	0.175
			0.000			1/2" Ice	0.000	0.000	0.195
			0.000			1" Ice	0.000	0.000	0.240
dbSpectra DS1F06F36U-N	C	From Leg	2.500	0.000	75.000	No Ice	7.008	7.008	0.060
			0.000			1/2" Ice	9.233	9.233	0.110
			0.000			1" Ice	11.475	11.475	0.174

Tower Pressures - No Ice

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1	130.000	1.48	0.027	43.333	A	0.000	43.333	43.333	100.00	0.000	0.000
140.000-120.0					B	0.000	43.333		100.00	0.000	0.000
00					C	0.000	43.333		100.00	0.000	0.000
L2	93.635	1.347	0.025	138.860	A	0.000	138.860	138.860	100.00	0.000	0.000
120.000-70.00					B	0.000	138.860		100.00	0.000	0.000
0					C	0.000	138.860		100.00	0.000	0.000
L3	47.516	1.11	0.020	172.180	A	0.000	172.180	172.180	100.00	0.000	0.000
70.000-25.600					B	0.000	172.180		100.00	0.000	0.000
					C	0.000	172.180		100.00	0.000	0.000
L4	13.036	1	0.018	114.586	A	0.000	114.586	114.586	100.00	0.000	0.000
25.600-1.000					B	0.000	114.586		100.00	0.000	0.000
					C	0.000	114.586		100.00	0.000	0.000

Tower Pressure - With Ice

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z ksf	t_Z in	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1	130.000	1.48	0.021	0.750	45.833	A	0.000	45.833	45.833	100.00	0.000	0.000
140.000-120.000						B	0.000	45.833		100.00	0.000	0.000
						C	0.000	45.833		100.00	0.000	0.000
L2	93.635	1.347	0.019	0.750	145.110	A	0.000	145.110	145.110	100.00	0.000	0.000
120.000-70.000						B	0.000	145.110		100.00	0.000	0.000
						C	0.000	145.110		100.00	0.000	0.000
L3	47.516	1.11	0.015	0.750	177.730	A	0.000	177.730	177.730	100.00	0.000	0.000
70.000-25.600						B	0.000	177.730		100.00	0.000	0.000
						C	0.000	177.730		100.00	0.000	0.000
L4 25.600-1.000	13.036	1	0.014	0.750	117.661	A	0.000	117.661	117.661	100.00	0.000	0.000
						B	0.000	117.661		100.00	0.000	0.000
						C	0.000	117.661		100.00	0.000	0.000

Tower Pressure - Service

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	130.000	1.48	0.014	43.333	A	0.000	43.333	43.333	100.00	0.000	0.000
140.000-120.0					B	0.000	43.333		100.00	0.000	0.000
00					C	0.000	43.333		100.00	0.000	0.000
L2	93.635	1.347	0.012	138.860	A	0.000	138.860	138.860	100.00	0.000	0.000
120.000-70.00					B	0.000	138.860		100.00	0.000	0.000
0					C	0.000	138.860		100.00	0.000	0.000
L3	47.516	1.11	0.010	172.180	A	0.000	172.180	172.180	100.00	0.000	0.000
70.000-25.600					B	0.000	172.180		100.00	0.000	0.000
					C	0.000	172.180		100.00	0.000	0.000
L4	13.036	1	0.009	114.586	A	0.000	114.586	114.586	100.00	0.000	0.000
25.600-1.000					B	0.000	114.586		100.00	0.000	0.000
					C	0.000	114.586		100.00	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.524	1.045	A	1	0.65	1	1	1	43.333	1.303	0.065	C
140.000-120.0			B	1	0.65	1	1	1	43.333			
00			C	1	0.65	1	1	1	43.333			
L2	3.999	5.571	A	1	0.65	1	1	1	138.860	3.789	0.076	C
120.000-70.00			B	1	0.65	1	1	1	138.860			
0			C	1	0.65	1	1	1	138.860			
L3	4.177	9.182	A	1	0.65	1	1	1	172.180	3.843	0.087	C
70.000-25.600			B	1	0.65	1	1	1	172.180			
			C	1	0.65	1	1	1	172.180			
L4	2.314	8.198	A	1	0.65	1	1	1	114.586	2.328	0.095	C
25.600-1.000			B	1	0.65	1	1	1	114.586			
			C	1	0.65	1	1	1	114.586			
Sum Weight:	11.015	23.997						OTM	725.753 kip-ft	11.262		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.524	1.045	A	1	0.65	1	1	1	43.333	1.303	0.065	C
140.000-120.0			B	1	0.65	1	1	1	43.333			
00			C	1	0.65	1	1	1	43.333			
L2	3.999	5.571	A	1	0.65	1	1	1	138.860	3.789	0.076	C
120.000-70.00			B	1	0.65	1	1	1	138.860			
0			C	1	0.65	1	1	1	138.860			
L3	4.177	9.182	A	1	0.65	1	1	1	172.180	3.843	0.087	C
70.000-25.600			B	1	0.65	1	1	1	172.180			
			C	1	0.65	1	1	1	172.180			
L4	2.314	8.198	A	1	0.65	1	1	1	114.586	2.328	0.095	C
25.600-1.000			B	1	0.65	1	1	1	114.586			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
			C	1	0.65	1	1	1	114.586			
Sum Weight:	11.015	23.997						OTM	725.753 kip-ft	11.262		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	0.524	1.045	A	1	0.65	1	1	1	43.333	1.303	0.065	C
140.000-120.0			B	1	0.65	1	1	1	43.333			
00			C	1	0.65	1	1	1	43.333			
L2	3.999	5.571	A	1	0.65	1	1	1	138.860	3.789	0.076	C
120.000-70.00			B	1	0.65	1	1	1	138.860			
0			C	1	0.65	1	1	1	138.860			
L3	4.177	9.182	A	1	0.65	1	1	1	172.180	3.843	0.087	C
70.000-25.600			B	1	0.65	1	1	1	172.180			
			C	1	0.65	1	1	1	172.180			
L4	2.314	8.198	A	1	0.65	1	1	1	114.586	2.328	0.095	C
25.600-1.000			B	1	0.65	1	1	1	114.586			
			C	1	0.65	1	1	1	114.586			
Sum Weight:	11.015	23.997						OTM	725.753 kip-ft	11.262		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	0.524	1.541	A	1	0.65	1	1	1	45.833	1.033	0.052	C
140.000-120.0			B	1	0.65	1	1	1	45.833			
00			C	1	0.65	1	1	1	45.833			
L2	3.999	7.149	A	1	0.65	1	1	1	145.110	2.969	0.059	C
120.000-70.00			B	1	0.65	1	1	1	145.110			
0			C	1	0.65	1	1	1	145.110			
L3	4.177	11.125	A	1	0.65	1	1	1	177.730	2.975	0.067	C
70.000-25.600			B	1	0.65	1	1	1	177.730			
			C	1	0.65	1	1	1	177.730			
L4	2.314	9.488	A	1	0.65	1	1	1	117.661	1.793	0.073	C
25.600-1.000			B	1	0.65	1	1	1	117.661			
			C	1	0.65	1	1	1	117.661			
Sum Weight:	11.015	29.303						OTM	568.319 kip-ft	8.770		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	0.524	1.541	A	1	0.65	1	1	1	45.833	1.033	0.052	C
140.000-120.0			B	1	0.65	1	1	1	45.833			
00			C	1	0.65	1	1	1	45.833			
L2	3.999	7.149	A	1	0.65	1	1	1	145.110	2.969	0.059	C
120.000-70.00			B	1	0.65	1	1	1	145.110			
0			C	1	0.65	1	1	1	145.110			
L3	4.177	11.125	A	1	0.65	1	1	1	177.730	2.975	0.067	C
70.000-25.600			B	1	0.65	1	1	1	177.730			
			C	1	0.65	1	1	1	177.730			
L4	2.314	9.488	A	1	0.65	1	1	1	117.661	1.793	0.073	C
25.600-1.000			B	1	0.65	1	1	1	117.661			
			C	1	0.65	1	1	1	117.661			
Sum Weight:	11.015	29.303						OTM	568.319 kip-ft	8.770		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	0.524	1.541	A	1	0.65	1	1	1	45.833	1.033	0.052	C
140.000-120.0			B	1	0.65	1	1	1	45.833			
00			C	1	0.65	1	1	1	45.833			
L2	3.999	7.149	A	1	0.65	1	1	1	145.110	2.969	0.059	C
120.000-70.00			B	1	0.65	1	1	1	145.110			
0			C	1	0.65	1	1	1	145.110			
L3	4.177	11.125	A	1	0.65	1	1	1	177.730	2.975	0.067	C
70.000-25.600			B	1	0.65	1	1	1	177.730			
			C	1	0.65	1	1	1	177.730			
L4	2.314	9.488	A	1	0.65	1	1	1	117.661	1.793	0.073	C
25.600-1.000			B	1	0.65	1	1	1	117.661			
			C	1	0.65	1	1	1	117.661			
Sum Weight:	11.015	29.303						OTM	568.319 kip-ft	8.770		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	0.524	1.045	A	1	0.65	1	1	1	43.333	0.649	0.032	C
140.000-120.0			B	1	0.65	1	1	1	43.333			
00			C	1	0.65	1	1	1	43.333			
L2	3.999	5.571	A	1	0.65	1	1	1	138.860	1.888	0.038	C
120.000-70.00			B	1	0.65	1	1	1	138.860			
0			C	1	0.65	1	1	1	138.860			
L3	4.177	9.182	A	1	0.65	1	1	1	172.180	1.915	0.043	C
70.000-25.600			B	1	0.65	1	1	1	172.180			
			C	1	0.65	1	1	1	172.180			
L4	2.314	8.198	A	1	0.65	1	1	1	114.586	1.160	0.047	C
25.600-1.000			B	1	0.65	1	1	1	114.586			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
			C	1	0.65	1	1	1	114.586			
Sum Weight:	11.015	23.997						OTM	361.621 kip-ft	5.611		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	0.524	1.045	A	1	0.65	1	1	1	43.333	0.649	0.032	C
140.000-120.0			B	1	0.65	1	1	1	43.333			
00			C	1	0.65	1	1	1	43.333			
L2	3.999	5.571	A	1	0.65	1	1	1	138.860	1.888	0.038	C
120.000-70.00			B	1	0.65	1	1	1	138.860			
0			C	1	0.65	1	1	1	138.860			
L3	4.177	9.182	A	1	0.65	1	1	1	172.180	1.915	0.043	C
70.000-25.600			B	1	0.65	1	1	1	172.180			
			C	1	0.65	1	1	1	172.180			
L4	2.314	8.198	A	1	0.65	1	1	1	114.586	1.160	0.047	C
25.600-1.000			B	1	0.65	1	1	1	114.586			
			C	1	0.65	1	1	1	114.586			
Sum Weight:	11.015	23.997						OTM	361.621 kip-ft	5.611		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	0.524	1.045	A	1	0.65	1	1	1	43.333	0.649	0.032	C
140.000-120.0			B	1	0.65	1	1	1	43.333			
00			C	1	0.65	1	1	1	43.333			
L2	3.999	5.571	A	1	0.65	1	1	1	138.860	1.888	0.038	C
120.000-70.00			B	1	0.65	1	1	1	138.860			
0			C	1	0.65	1	1	1	138.860			
L3	4.177	9.182	A	1	0.65	1	1	1	172.180	1.915	0.043	C
70.000-25.600			B	1	0.65	1	1	1	172.180			
			C	1	0.65	1	1	1	172.180			
L4	2.314	8.198	A	1	0.65	1	1	1	114.586	1.160	0.047	C
25.600-1.000			B	1	0.65	1	1	1	114.586			
			C	1	0.65	1	1	1	114.586			
Sum Weight:	11.015	23.997						OTM	361.621 kip-ft	5.611		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	23.997					
Bracing Weight	0.000					
Total Member Self-Weight	23.997			0.442	0.765	
Total Weight	45.873			0.442	0.765	
Wind 0 deg - No Ice		0.000	-44.678	-4437.149	0.765	-1.240
Wind 90 deg - No Ice		44.678	0.000	0.442	-4436.826	0.716
Wind 180 deg - No Ice		0.000	44.678	4438.033	0.765	1.240
Member Ice	5.306					
Total Weight Ice	52.565			0.688	1.192	
Wind 0 deg - Ice		0.000	-22.982	-2224.035	1.192	-1.098
Wind 90 deg - Ice		22.982	0.000	0.688	-2223.531	0.634
Wind 180 deg - Ice		0.000	22.982	2225.411	1.192	1.098
Total Weight	45.873			0.442	0.765	
Wind 0 deg - Service		0.000	-22.261	-2210.676	0.765	-0.618
Wind 90 deg - Service		22.261	0.000	0.442	-2210.353	0.357
Wind 180 deg - Service		0.000	22.261	2211.560	0.765	0.618

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 90 deg - No Ice
4	Dead+Wind 180 deg - No Ice
5	Dead+Ice
6	Dead+Wind 0 deg+Ice
7	Dead+Wind 90 deg+Ice
8	Dead+Wind 180 deg+Ice
9	Dead+Wind 0 deg - Service
10	Dead+Wind 90 deg - Service
11	Dead+Wind 180 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	140 - 120	Pole	Max Tension	8	0.002	-0.005	0.001
			Max. Compression	5	-7.368	0.000	-0.000
			Max. Mx	3	-4.772	-186.871	-0.005
			Max. My	4	-4.772	0.009	-186.873
			Max. Vy	3	14.060	-186.871	-0.005
			Max. Vx	4	14.060	0.009	-186.873
			Max. Torque	2			-0.000
L2	120 - 70	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	5	-23.695	0.000	-0.000
			Max. Mx	3	-18.483	-1404.760	-0.033
			Max. My	4	-18.482	0.057	-1404.775
			Max. Vy	3	38.569	-1404.760	-0.033

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	4	38.570	0.057	-1404.775
			Max. Torque	2			0.653
L3	70 - 25.6	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	5	-38.193	1.192	-0.688
			Max. Mx	3	-32.313	-3144.760	-0.453
			Max. My	4	-32.313	0.785	-3145.996
			Max. Vy	3	42.344	-3144.760	-0.453
			Max. Vx	4	42.344	0.785	-3145.996
			Max. Torque	2			1.254
L4	25.6 - 1	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	5	-52.565	1.192	-0.688
			Max. Mx	3	-45.854	-4533.452	-0.454
			Max. My	4	-45.854	0.786	-4534.692
			Max. Vy	3	44.691	-4533.452	-0.454
			Max. Vx	4	44.691	0.786	-4534.692
			Max. Torque	2			1.251

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	5	52.565	0.000	0.000
	Max. H_x	4	45.872	0.000	-44.673
	Max. H_z	2	45.872	0.000	44.673
	Max. M_x	2	4533.784	0.000	44.673
	Max. M_z	3	4533.452	-44.673	-0.000
	Max. Torsion	2	1.251	0.000	44.673
	Min. Vert	4	45.872	0.000	-44.673
	Min. H_x	3	45.872	-44.673	-0.000
	Min. H_z	4	45.872	0.000	-44.673
	Min. M_x	4	-4534.692	0.000	-44.673
	Min. M_z	6	-1.234	0.000	22.970
	Min. Torsion	4	-1.251	0.000	-44.673

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	45.873	0.000	0.000	0.442	0.765	0.000
Dead+Wind 0 deg - No Ice	45.872	-0.000	-44.673	-4533.784	0.785	-1.251
Dead+Wind 90 deg - No Ice	45.872	44.673	0.000	0.453	-4533.452	0.722
Dead+Wind 180 deg - No Ice	45.872	-0.000	44.673	4534.692	0.785	1.251
Dead+Ice	52.565	0.000	0.000	0.688	1.192	0.000
Dead+Wind 0 deg+Ice	52.564	-0.000	-22.970	-2283.149	1.234	-1.111
Dead+Wind 90 deg+Ice	52.564	22.970	0.000	0.712	-2282.628	0.641
Dead+Wind 180 deg+Ice	52.564	-0.000	22.970	2284.573	1.234	1.111
Dead+Wind 0 deg - Service	45.872	-0.000	-22.252	-2259.831	0.788	-0.626
Dead+Wind 90 deg - Service	45.872	22.252	0.000	0.455	-2259.498	0.361
Dead+Wind 180 deg - Service	45.872	-0.000	22.252	2260.740	0.788	0.626

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 120	41.229	11	2.634	0.001
L2	120 - 70	30.399	11	2.471	0.001
L3	75.6 - 25.6	11.363	11	1.516	0.001
L4	32.9 - 1	1.948	11	0.544	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140.000	Pine Branches	11	41.229	2.634	0.001	13716
135.500	Pine Branches	11	38.742	2.606	0.001	13716
131.000	Pine Branches	11	36.271	2.576	0.001	7620
130.000	12' T-Arm w/ 5' S.O. + (4) Mnt Pipes	11	35.726	2.568	0.001	6857
125.500	Pine Branches	11	33.296	2.530	0.001	4729
120.000	Pine Branches	11	30.399	2.471	0.001	3546
114.500	Pine Branches	11	27.603	2.393	0.001	3249
110.000	DR90-11-00DBL w/ Pipe Mt	11	25.398	2.316	0.001	3117
109.000	Pine Branches	11	24.919	2.298	0.001	3089
106.000	Pine Branches	11	23.505	2.240	0.001	3007
103.000	Pine Branches	11	22.126	2.179	0.001	2930
100.000	Pine Branches	11	20.784	2.114	0.001	2857
97.000	Pine Branches	11	19.481	2.046	0.001	2787
96.000	10' T-Arm w/ 5' S.O. + (3) Mnt Pipes	11	19.055	2.023	0.001	2764
92.000	Pine Branches	11	17.394	1.928	0.001	2678
87.000	Pine Branches	11	15.420	1.804	0.001	2577
84.000	Pine Branches	11	14.292	1.729	0.001	2520
81.000	Pine Branches	11	13.206	1.653	0.001	2465
78.000	Pine Branches	11	12.164	1.577	0.001	2415
75.000	Pine Branches	11	11.167	1.501	0.001	2384

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 120	82.565	4	5.276	0.002
L2	120 - 70	60.890	4	4.950	0.002
L3	75.6 - 25.6	22.773	4	3.038	0.002
L4	32.9 - 1	3.906	4	1.090	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140.000	Pine Branches	4	82.565	5.276	0.002	6940
135.500	Pine Branches	4	77.588	5.221	0.002	6940
131.000	Pine Branches	4	72.643	5.160	0.002	3855
130.000	12' T-Arm w/ 5' S.O. + (4) Mnt Pipes	4	71.552	5.145	0.002	3469
125.500	Pine Branches	4	66.690	5.069	0.002	2392
120.000	Pine Branches	4	60.890	4.950	0.002	1792
114.500	Pine Branches	4	55.294	4.794	0.002	1641
110.000	DR90-11-00DBL w/ Pipe Mt	4	50.881	4.641	0.002	1572
109.000	Pine Branches	4	49.921	4.604	0.002	1558
106.000	Pine Branches	4	47.089	4.489	0.002	1516
103.000	Pine Branches	4	44.329	4.365	0.002	1476
100.000	Pine Branches	4	41.643	4.235	0.002	1438
97.000	Pine Branches	4	39.032	4.099	0.002	1403
96.000	10' T-Arm w/ 5' S.O. + (3) Mnt Pipes	4	38.179	4.053	0.002	1391
92.000	Pine Branches	4	34.854	3.863	0.002	1347
87.000	Pine Branches	4	30.901	3.616	0.002	1295
84.000	Pine Branches	4	28.640	3.465	0.002	1265
81.000	Pine Branches	4	26.465	3.313	0.002	1238
78.000	Pine Branches	4	24.378	3.160	0.002	1212
75.000	Pine Branches	4	22.381	3.008	0.002	1195

Base Plate Design Data

Plate Thickness in	Number of Anchor Bolts	Anchor Bolt Size in	Actual Allowable Ratio Bolt Tension K	Actual Allowable Ratio Bolt Compression K	Actual Allowable Ratio Plate Stress ksi	Actual Allowable Ratio Stiffener Stress ksi	Controlling Condition	Ratio
3.000	24	2.250	133.706 131.211 1.02	137.528 217.810 0.63	43.409 37.500 1.16		Plate	1.16 ✔

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	140 - 120 (1)	TP26x26x0.188	20.000	0.000	0.0	39.000	15.362	-4.772	599.105	0.008
L2	120 - 70 (2)	TP40.653x26x0.313	50.000	0.000	0.0	39.000	38.385	-18.482	1497.010	0.012
L3	70 - 25.6 (3)	TP53.042x38.387x0.375	50.000	0.000	0.0	39.000	60.140	-32.313	2345.460	0.014
L4	25.6 - 1 (4)	TP59.5x50.152x0.438	31.900	0.000	0.0	39.000	80.962	-44.857	3157.520	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	140 - 120 (1)	TP26x26x0.188	186.873	22.905	39.000	0.587	0.000	0.000	39.000	0.000
L2	120 - 70 (2)	TP40.653x26x0.313	1404.775	45.998	39.000	1.179	0.000	0.000	39.000	0.000
L3	70 - 25.6 (3)	TP53.042x38.387x0.375	3146.000	50.325	39.000	1.290	0.000	0.000	39.000	0.000
L4	25.6 - 1 (4)	TP59.5x50.152x0.438	4419.258	45.512	39.000	1.167	0.000	0.000	39.000	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	140 - 120 (1)	TP26x26x0.188	14.060	0.915	26.000	0.070	0.000	0.000	26.000	0.000
L2	120 - 70 (2)	TP40.653x26x0.313	38.570	1.005	26.000	0.077	0.001	0.000	26.000	0.000
L3	70 - 25.6 (3)	TP53.042x38.387x0.375	42.344	0.704	26.000	0.054	1.252	0.010	26.000	0.000
L4	25.6 - 1 (4)	TP59.5x50.152x0.438	44.598	0.551	26.000	0.042	1.251	0.006	26.000	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	140 - 120 (1)	0.008	0.587	0.000	0.070	0.000	0.597 ✔	1.333	H1-3+VT ✔
L2	120 - 70 (2)	0.012	1.179	0.000	0.077	0.000	1.193 ✔	1.333	H1-3+VT ✔
L3	70 - 25.6 (3)	0.014	1.290	0.000	0.054	0.000	1.305 ✔	1.333	H1-3+VT ✔
L4	25.6 - 1 (4)	0.014	1.167	0.000	0.042	0.000	1.182 ✔	1.333	H1-3+VT ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	140 - 120	Pole	TP26x26x0.188	1	-4.772	798.607	44.7	Pass
L2	120 - 70	Pole	TP40.653x26x0.313	2	-18.482	1995.514	89.5	Pass
L3	70 - 25.6	Pole	TP53.042x38.387x0.375	3	-32.313	3126.498	97.9	Pass
L4	25.6 - 1	Pole	TP59.5x50.152x0.438	4	-44.857	4208.974	88.6	Pass
							Summary	
						Pole (L3)	97.9	Pass
						Base Plate	86.8	Pass
						RATING =	**97.9**	**Pass**

ISE Incorporated
3470 W. Jasper Drive
Chandler, Arizona
Phone: 602-403-8614
FAX: 623-321-1283

Job: MCM Dittmar Rd (North Alternate)
Project: ISE Job No. 5195
Client: Larson Camouflage
Date: October 4, 2012
Designed by: Glen Hunt

SEISMIC DATA

Conterminous 48 States
2005 ASCE 7 Standard
Latitude = 41.34673
Longitude = -73.393013
Spectral Response Accelerations Ss and S1
Ss and S1 = Mapped Spectral Acceleration Values
Site Class B - Fa = 1.0 ,Fv = 1.0
Data are based on a 0.05 deg grid spacing

Period (sec)	Sa (g)
0.2	0.285 (Ss, Site Class B)
1.0	0.066 (S1, Site Class B)

Conterminous 48 States
2005 ASCE 7 Standard
Latitude = 41.34673
Longitude = -73.393013
Spectral Response Accelerations SMs and SM1
SMs = Fa x Ss and SM1 = Fv x S1
Site Class B - Fa = 1.0 ,Fv = 1.0

Period (sec)	Sa (g)
0.2	0.285 (SMs, Site Class B)
1.0	0.066 (SM1, Site Class B)

Conterminous 48 States
2005 ASCE 7 Standard
Latitude = 41.34673
Longitude = -73.393013
Design Spectral Response Accelerations SDs and SD1
SDs = 2/3 x SMs and SD1 = 2/3 x SM1
Site Class B - Fa = 1.0 ,Fv = 1.0

Period (sec)	Sa (g)
0.2	0.190 (SDs, Site Class B)
1.0	0.044 (SD1, Site Class B)

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SEISMIC CALCULATIONS

ASCE 7-05 Seismic Design Requirements for Non-Building Structures Not Similar to Buildings

IBC/CBC Section 1613 Earthquake Loads

			REFERENCE
Importance Factor			
I =	1		ASCE 7-05 Table 11.5-1
Site Classification			
	B		IBC/CBC Table 1613.5.2/1613A.5.2
Site Coefficients			
SS =	0.285	Mapped Spectral Accelerations: Short Period	
S1 =	0.066	Mapped Sectral Accelerations: 1 sec Period	
Fa =	1.000	Site Coefficient	ASCE 7-05 Table 11.4-1; IBC/CBC Table 1613.5.3(1)/1613A.5.3(1)
Fv =	1.000	Site Coefficient	ASCE 7-05 Table 11.4-2; IBC/CBC Table 1613.5.3(2)/1613A.5.3(2)
SMS =	0.285	Max Spectral Accelerations: Short Periods	ASCE 7-05 Eqn. 11.4-1; IBC/CBC Eqn. 16-37/16A-37
SM1 =	0.066	Max Spectral Accelerations: 1sec Period	ASCE 7-05 Eqn. 11.4-2; IBC/CBC Eqn. 16-38/16A-38
Design Spectral Response Acceleration Parameters			ASCE 7-05 11.4.4; IBC/CBC 1613.5.4/1613A.5.4
SDS =	0.190	5% Damped Spectral Acceleration: Short Period	ASCE 7-05 Eqn. 11.4-3; IBC/CBC Eqn. 16-39/16A-39
SD1 =	0.044	5% Damped Spectral Acceleration: 1 sec Period	ASCE 7-05 Eqn. 11.4-4; IBC/CBC Eqn. 16-40/16A-40
SDC =	B	Seismic Design Category	ASCE 7-05 Tables 11.6-1 & 11.6-2 IBC/CBC Table 1613.5.6(1) & 1613A.5.6(2) if S1>0.75 then E

Equivalent Lateral Force Procedure

T =	$Ct\ hn^x$ =	0.814	Fundamental Period	ASCE 7-05 Eqn. 12.8-7
	Ct =	0.020	Period Parameter	ASCE 7-05 Table 12.8-2
	x =	0.750	Period Parameter	ASCE 7-05 Table 12.8-2
	hn =	140.000	Structure Height (ft)	
R =		1.500	Response Modification Factor	ASCE 7-05 Table 15.4-2
TL =		8.000	Long-Period Transition Period	ASCE 7-05 Figure 22-15
Cs =	SDS/[R/I] =	0.127	Seismic Response Coefficient	ASCE 7-05 Eqn. 12.8-2
where;				
Cs >		0.030	Lower Limit	ASCE 7-05 Eqn. 15.4-1
Cs >	3 S1/[R/I] =	0.035	Lower Limit for S1 > 0.6g	ASCE 7-05 Eqn. 15.4-2
Cs <	D1/T[R/I] =	0.036	Upper Limit for T $\leq$ TL	ASCE 7-05 Eqn. 12.8-3
Cs <	$TL/T^2[R/I]$ =	0.354	Upper Limit for T > TL	ASCE 7-05 Eqn. 12.8-4
Design Value Cs =		0.036		
W =		45.873	Pole Dead Weight + Appurtenances Weight (kips)	
V =	CsW =	1.653	Equivalent Seismic Base Shear (kips)	ASCE 7-05 Eqn. 12.8-1
	Fwind =	44.673	Wind Base Shear (kips) : 1.6W	

Lateral Wind Shear > Seismic Base Shear : Wind Controls Design

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Job: MCM Dittmar Rd (North Alternate)
Project: ISE Job No. 5195
Client: Larson Camouflage
Date: October 4, 2012
Designed by: Glen Hunt

ANCHOR BOLT & BASE PLATE DESIGN

Calculated Wind Force Reactions from Force Totals Table: M = 4438.033 k-Ft, V = 44.678 kip, A = 45.87 kip

(Round or Square Plate)

Geometry

Plate Square/Round Plate =	Round		
Plate Width/Diameter: OD =	74	inch	
Pole Diameter: Dp =	60.2	inch	
Bolt Circle Diameter: BC =	68	inch	
No. Bolts: N =	24		
Bolt Moment of Inertia: I =	13872	$inch^2$	$(1/8)(N\ BC^2)$
Anchor Bolt Diameter: Dbolt =	2.25	inch	
Nominal Anchor Bolt Area: An =	3.98	$inch^2$	

Materials

Anchor Bolt Material: Fu =	100	KSI	A615 GR 75
Base Plate Material: Fy =	50	KSI	A572 GR50

Loads

Unfactored Base Reactions
M = 4438.033
V = 44.678
A = 45.873

Factored Moment: Mu =	4533.8	Kip-Ft	1.2D + 1.6W
Factored Base Shear: V =	44.673	Kips	1.2D + 1.6W
Axial Dead Load: A =	55.0476	Kips	1.2 DL

Analysis

ANCHOR BOLTS

Anchor Bolt Tension: T = Pu =	131.053	Kips	[(Mu BC/2) / I] - A/N
Anchor Bolt Compression: C =	135.641	Kips	[(Mu BC/2) / I] + A/N
Anchor Bolt Shear: Vu =	1.861	Kips/bolt	V / N
AB Design Strength - $\phi R_{nt} = \phi F u A_n$ =	298.206	Kips	ϕ = 0.75 for Rupture Strength

INTERACTION PER TIA-222-G Section 4.9.9

$[P_u + V_u/\eta] / \phi R_{nt} \leq 1.0$ $\eta = 0.4$ For Detail Type D

Anchor Bolt Stress Ratio = 0.46 **< 1.0 OK!!**

UN-GROUTED BASEPLATE

Plate Bending: Mpb =	529.00	Kip-Inch	Mpb =C(1/2)(BC-Dp)
Required Plastic Modulus: Z =	11.76	$inch^3$	Z = Mpb / (0.9)Fy
Square Plate Bend Line Length: L =	44.45	inch	$L = [2^{1/2}(OD) - Dp]$
Round Plate Bend Line Length: L =	10.95	inch	L = .75BC SIN(360/N)
Required Plate Thickness: Tpl =	2.07	inch	$Tpl = [4Z/ L]^{1/2}$

Plate Stress Ratio = 0.48 **< 1.0 OK!!**

Design Summary

(24) 2.25 Diameter A615 GR 75 Bolts on 68" BC Diameter

3" X 74" Round A572 GR50 Base Plate

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Flange Ring Assembly

Dp =	60.2	inch	
Factored Moment: Mu =	4533.8	Kip-Ft	Factored Moment
Factored Base Shear: V =	44.673	Kips	Factored Shear
Weld Thickness: Tw =	0.876	inch	Groove + Filet Weld Thickness
Weld Material Yield: Fyw =	70	ksi	
Allowable Weld Force: Fallow =	20.810	kip/inch	Fallow = (.707)Tw (.48)Fyw
Weld Force: Fw =	14.336	kip/inch	$Fw = (3/4)Sqrt [\{Mu/\pi(Dp^2/4)\}^2 + \{V/\pi Dp\}^2]$
Base Weld Stress Ratio =	68.890	%	

DESIGN: APPLY GROOVE WELD AND APPLY 7/16" FILET CAP WELD TO POLE AT TOP OF PLATE

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Anchor Bolt Development (ACI 318-05)

Anchor bolts are mechanically anchored with nuts and load plates at bottom of bolts.
Failure cones emanate at 35 degrees from top of nut.
The failure cones from the 4 bolts overlap and exit the sides of the caisson.
Concrete is assumed to crack and carry no load so, vertical reinforcing steel must be developed to transfer bolt loads.
Calculations presented below determine the required length of anchor bolt embedment
and reinforcing development necessary to transfer the design loads.

Minimum Development Length per ACI 318-05 12.2.2, Eq 12-1.

$l_d = d_b[f_y/\sqrt{(f_c)}](3/40)(\varphi_t\varphi_e\lambda/2.5)$:

where; f_y = 60,000psi, f'_c = 4000 psi, and $\varphi_t\varphi_e\lambda$ = 1.0,

$l_d = 28.46\ d_b$ For # 11 Bar l_d = 39.13 in.

Anchor Bolts are 2-1/4" X 84" with 72" Embedment on 68" Bolt Circle

Reinforcing Cage Diameter = 78.00 in.

Minimum Required AB Depth

cover = 3.00 in.
bottom grip = 3.00 in.
½(Cage-BC) = 5.00 in.
$l_{min} = l_d$ + cover + bottom grip + ½(Cage-BC)/tan65 = 47.46 in.

Bolt Embedment Provided = 72.00 in.

Anchor bolts are restrained by fully developed reinforcement satisfying the requirements of 318-05 Appendix D.

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Job: MCM Dittmar Rd (North Alternate)
Project: ISE Job No. 5195
Client: Larson Camouflage
Date: October 4, 2012
Designed by: Glen Hunt

Foundation Design – Mat Foundation Design

Calculated Wind Force Reactions from Force Totals Table: M = 4438.033 k-Ft, V = 44.678 kip, A = 45.87 kip

Soils – Terracon, Project No. J2115185, November 7, 2011
Site has 8-9' Fill & Glacial Till Overburden above Highly Weathered Schist Bedrock

Design Features:
Pier Head > 84” diameter x 4’-6" pier head (Includes 6” Above grade) w/ (36) #11 verticals
Mat >> 18’-0" x 18’-0" x 48” deep mat foundation with (20) #9 bars each way at top and bottom of mat.
Bottom of Mat at 8' Below grade on compacted 3/4" crushed stone placed
on glacial till or bedrock per Terracon specificaitons
Rock Anchors: Matt Foundation will be secured with (28) #10 Rebars embedded 30' in 1-1/2"
Diameter core drilled holes below mat. Bars to be set with Sikka 212 grout.
Minimum 16' embedment into suitable bedrock required.

Per EnerCalc Matt Foundation Analysis:
Mu = 0.6D + W = 4914 k-ft : Use 0.9D + W = 3276 k-ft
Mn = 2162 k-ft
Anchorage Capacity Required = 3276- 2162 = 1114 k-ft : Use1500 k-ft
Per Anchor Analysis for , Next Page;
Maximum Anchor Force Compression = 13 kips
Maximum Anchor Tension = 10 kips

Anchors set using Sikka 212 Grout: 50 psi /2 = 25 psi bond strength.

Required Anchor Embedment in Bedrock l_d= (13,000/25 psi)/(3.93" Circumf) = 132 Inches

Use Total 30' Depth to provide Min 10' Unbonded length + 20' Bonded length of Anchors Bars

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3-DIMENSIONAL WEIGHTED FASTENER PATTERN ANALYSIS

Equal Count - Bolts Above and Below Neutral Axis

	Forces (kip)			Moments (kip-inch)			Loads Coordinate		
Load #	**Fx**	**Fy**	**Fz**	**Mx**	**My**	**Mz**	**Xl**	**Yl**	**Zl**
1	-44.68		0.00		18000.0	0.0			
2									
3									

Sectional Properties				Resultant loads about centroid	
X xz	1.000	I x	#######		
X xy	1.000	I y	#######	F'x	-44.7
		I z	#######	F'y	0.0
Y xy	0.000			F'z	0.0
Y yz	0.000			M'x	0.0
		I xy	0.00	M'y	18000.0
Z xz	0.000	I yz	0.00	M'z	0.0
Z yz	0.000	I xz	0.00		

Notes:
1. FOUNDATION ANCHOR RODS
2. ANCHORS ON 14' SQUARE F
3. **(28) #10 Anchor Rods**
4. Rebar Diameter = 1.230 sq. in.

MCM Dittmar Rd (North Alternate)

Base Overturning = 1500 K-Ft

				Sum A_x	Sum A_y	Sum A_z	Sum P_x	Sum P_y	Sum P_z	Bolt Loads and Stresses				
				28	28	28	-44.7	0.0	0.0			LOAD		STRESS
Fastener	**X**	**Y**	**Z**	**A_x**	**A_y**	**A_z**	**P_x**	**P_y**	**P_z**	**Theta**	**Pz'**	**KIPS**		**KSI**
1	**1.00**	**12.00**	**84.00**	**1.00**	**1.00**	**1.00**	9.768	0.000	0.000	**8**	**0**	**9.768**	**T**	7.94
2	**1.00**	**36.00**	**84.00**	**1.00**	**1.00**	**1.00**	9.768	0.000	0.000	**23**	**0**	**9.768**	**T**	7.94
3	**1.00**	**60.00**	**84.00**	**1.00**	**1.00**	**1.00**	9.768	0.000	0.000	**36**	**0**	**9.768**	**T**	7.94
4	**1.00**	**84.00**	**84.00**	**1.00**	**1.00**	**1.00**	9.768	0.000	0.000	**45**	**0**	**9.768**	**T**	7.94
5	**1.00**	**84.00**	**60.00**	**1.00**	**1.00**	**1.00**	6.521	0.000	0.000	**54**	**0**	**6.521**	**T**	5.30
6	**1.00**	**84.00**	**36.00**	**1.00**	**1.00**	**1.00**	3.274	0.000	0.000	**67**	**0**	**3.274**	**T**	2.66
7	**1.00**	**84.00**	**12.00**	**1.00**	**1.00**	**1.00**	0.028	0.000	0.000	**82**	**0**	**0.028**	**T**	0.02
8	**1.00**	**84.00**	**-12.00**	**1.00**	**1.00**	**1.00**	-3.219	0.000	0.000	**98**	**0**	**3.219**	**C**	2.62
9	**1.00**	**84.00**	**-36.00**	**1.00**	**1.00**	**1.00**	-6.466	0.000	0.000	**113**	**0**	**6.466**	**C**	5.26
10	**1.00**	**84.00**	**-60.00**	**1.00**	**1.00**	**1.00**	-9.713	0.000	0.000	**126**	**0**	**9.713**	**C**	7.90
11	**1.00**	**84.00**	**-84.00**	**1.00**	**1.00**	**1.00**	-12.959	0.000	0.000	**135**	**0**	**12.959**	**C**	10.54
12	**1.00**	**60.00**	**-84.00**	**1.00**	**1.00**	**1.00**	-12.959	0.000	0.000	**144**	**0**	**12.959**	**C**	10.54
13	**1.00**	**36.00**	**-84.00**	**1.00**	**1.00**	**1.00**	-12.959	0.000	0.000	**157**	**0**	**12.959**	**C**	10.54
14	**1.00**	**12.00**	**-84.00**	**1.00**	**1.00**	**1.00**	-12.959	0.000	0.000	**172**	**0**	**12.959**	**C**	10.54
15	**1.00**	**-12.00**	**-84.00**	**1.00**	**1.00**	**1.00**	-12.959	0.000	0.000	**188**	**0**	**12.959**	**C**	10.54
16	**1.00**	**-36.00**	**-84.00**	**1.00**	**1.00**	**1.00**	-12.959	0.000	0.000	**203**	**0**	**12.959**	**C**	10.54
17	**1.00**	**-60.00**	**-84.00**	**1.00**	**1.00**	**1.00**	-12.959	0.000	0.000	**216**	**0**	**12.959**	**C**	10.54
18	**1.00**	**-84.00**	**-84.00**	**1.00**	**1.00**	**1.00**	-12.959	0.000	0.000	**225**	**0**	**12.959**	**C**	10.54
19	**1.00**	**-84.00**	**-60.00**	**1.00**	**1.00**	**1.00**	-9.713	0.000	0.000	**234**	**0**	**9.713**	**C**	7.90
20	**1.00**	**-84.00**	**-36.00**	**1.00**	**1.00**	**1.00**	-6.466	0.000	0.000	**247**	**0**	**6.466**	**C**	5.26
21	**1.00**	**-84.00**	**-12.00**	**1.00**	**1.00**	**1.00**	-3.219	0.000	0.000	**262**	**0**	**3.219**	**C**	2.62
22	**1.00**	**-84.00**	**12.00**	**1.00**	**1.00**	**1.00**	0.028	0.000	0.000	**278**	**0**	**0.028**	**T**	0.02
23	**1.00**	**-84.00**	**36.00**	**1.00**	**1.00**	**1.00**	3.274	0.000	0.000	**293**	**0**	**3.274**	**T**	2.66
24	**1.00**	**-84.00**	**60.00**	**1.00**	**1.00**	**1.00**	6.521	0.000	0.000	**306**	**0**	**6.521**	**T**	5.30
25	**1.00**	**-84.00**	**84.00**	**1.00**	**1.00**	**1.00**	9.768	0.000	0.000	**315**	**0**	**9.768**	**T**	7.94
26	**1.00**	**-60.00**	**84.00**	**1.00**	**1.00**	**1.00**	9.768	0.000	0.000	**324**	**0**	**9.768**	**T**	7.94
27	**1.00**	**-36.00**	**84.00**	**1.00**	**1.00**	**1.00**	9.768	0.000	0.000	**337**	**0**	**9.768**	**T**	7.94
28	**1.00**	**-12.00**	**84.00**	**1.00**	**1.00**	**1.00**	9.768	0.000	0.000	**352**	**0**	**9.768**	**T**	7.94

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Title : MCM Dittmar Rd (North Alternate) Job #
Engineer: GLH
Project Desc.:

Concrete Column

File: C:\Documents and Settings\Glen Hunt PE\Desktop\5195 MCM Dittmar\5195 foudation design.ec6
ENERCALC, INC. 1983-2012, Build:6.12.9.26, Ver:6.12.9.26

Description : 140' Mono-Pine Mat Foundation Concrete Pier Head-R2

Code References

Calculations per ACI 318-08, IBC 2009, CBC 2010, ASCE 7-05
Load Combinations Used : ASCE 7-05

General Information

f'c : Concrete 28 day strength	=	4.0 ksi
E =	=	3,605.0 ksi
Density	=	145.0 pcf
β	=	0.850
fy - Main Rebar	=	60.0 ksi
E - Main Rebar	=	29,000.0 ksi
Allow. Reinforcing Limits	*ASTM A615 Bars Used*	
Min. Reinf.	=	0.50 %
Max. Reinf.	=	2.0 %

Load Combination : ASCE 7-05

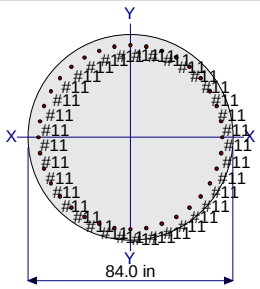
Overall Column Height = 4.50 ft
End Fixity Top Free, Bottom Fixed

Brace condition for deflection (buckling) along columns :
X-X (width) axis : Fully braced against buckling along X-X Axis
Y-Y (depth) axis : Fully braced against buckling along Y-Y Axis

Column Cross Section

Column Dimensions : 84.0in Diameter, Column Edge to Rebar Edge Cover = 3.625in

Column Reinforcing : 36.0 - #11 bars



Applied Loads

Entered loads are factored per load combinations specified by user.

Column self weight included : 25,111.1 lbs * Dead Load Factor
AXIAL LOADS . . .
Axial Load at 4.50 ft above base, D = 45.873 k
BENDING LOADS . . .
Lat. Point Load at 4.50 ft creating Mx-x, W = 44.678 k
Moment acting about X-X axis, W = 4,533.80 k-ft

DESIGN SUMMARY

Load Combination +0.90D+1.60W+1.60H
Location of max.above base 4.470 ft

Maximum Stress Ratio 0.875 : 1
Ratio = (Pu^2+Mu^2)^.5 / (PhiPn^2+PhiMn^2)^.5

Pu =	63.886 k	φ * Pn =	43.776 k
Mu-x =	-7,575.76 k-ft	φ * Mn-x =	8,759.29 k-ft
Mu-y =	0.0 k-ft	φ * Mn-y =	0.0 k-ft
Mu Angle =	180.0 deg		
Mu at Angle =	7,575.76 k-ft	φMn at Angle =	8,656.49 k-ft

Pn & Mn values located at Pu-Mu vector intersection with capacity curve

Column Capacities . . .

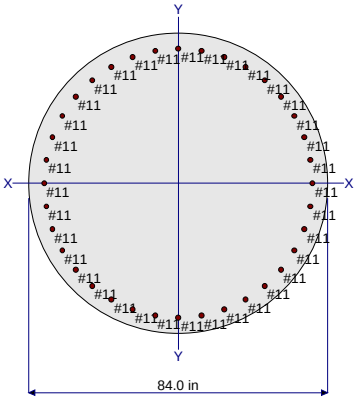
Pnmax : Nominal Max. Compressive Axial Capacity	22,020.7 k
Pnmin : Nominal Min. Tension Axial Capacity	-3,369.60 k
φ Pn, max : Usable Compressive Axial Capacity	14,038.2 k
φ Pn, min : Usable Tension Axial Capacity	-2,527.20 k

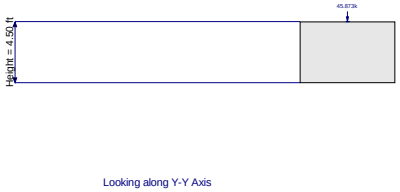
Maximum SERVICE Load Reactions . .

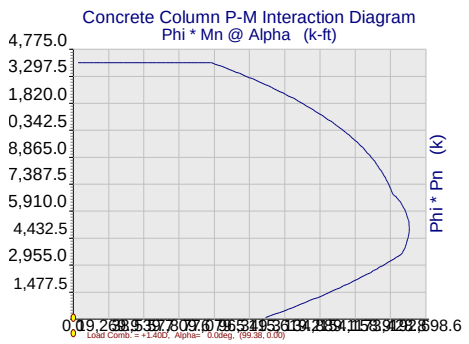
Top along Y-Y	0.0 k	Bottom along Y-Y	0.0 k
Top along X-X	0.0 k	Bottom along X-X	44.678 k

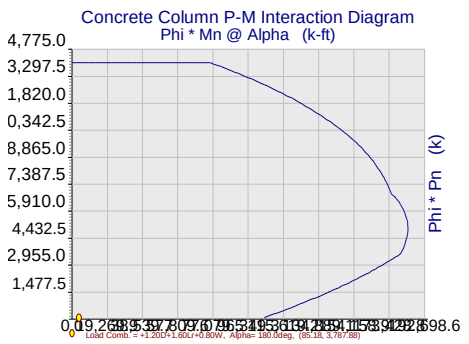
Maximum SERVICE Load Deflections . . .
Along Y-Y 0.009239 in at 4.50 ft above base
for load combination : W Only
Along X-X 0.0 in at 0.0 ft above base
for load combination :

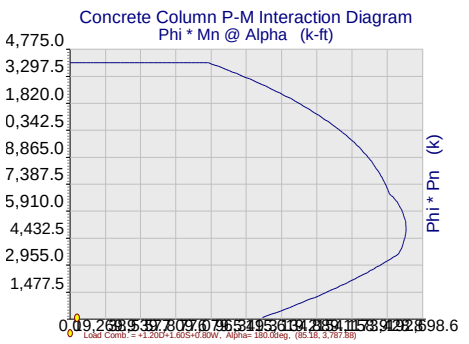
General Section Information . φ = 0.750 β = 0.850 θ = 0.850
ρ : % Reinforcing 1.013 % Rebar % Ok
Reinforcing Area 56.160 in^2
Concrete Area 5,541.77 in^2











Concrete Column

Description : 140' Mono-Pine Mat Foundation Concrete Pier Head-R2

Governing Load Combination Results

Governing Factored Load Combination	Moment Source X-X	Moment Source Y-Y	Dist. from base ft	Axial Load k Pu	Axial Load k φ * Pn	δ x	δ x * Mux	δ y	δy * Muy	Bending Analysis k-ft Alpha (deg)	δ Mu	φ Mn	Utilization Ratio
+1.40D			4.47	99.38	14,038.18					0.000			0.007
+1.20D+1.60Lr+0.80W	Actual		4.47	85.18	225.54	1.000	-3,787.88			180.000	3,787.88	9,077.72	0.417
+1.20D+1.60S+0.80W	Actual		4.47	85.18	225.54	1.000	-3,787.88			180.000	3,787.88	9,077.72	0.417
+1.20D+0.50Lr+0.50L+1.60W	Actual		4.47	85.18	133.67	1.000	-7,575.76			180.000	7,575.76	8,865.91	0.854
+1.20D+0.50L+0.50S+1.60W	Actual		4.47	85.18	133.67	1.000	-7,575.76			180.000	7,575.76	8,865.91	0.854
+0.90D+1.60W+1.60H	Actual		4.47	63.89	43.78	1.000	-7,575.76			180.000	7,575.76	8,656.49	0.875

Maximum Reactions - Unfactored

Note: Only non-zero reactions are listed.

Load Combination	Reaction along X-X Axis @ Base	Reaction along X-X Axis @ Top		Reaction along Y-Y Axis @ Base	Reaction along Y-Y Axis @ Top		Axial Reaction @ Base	
D Only			k			k	70.984	k
W Only	44.678		k			k		k
D+W	44.678		k			k	70.984	k

Maximum Deflections for Load Combinations - Unfactored Loads

Load Combination	Max. X-X Deflection		Distance		Max. Y-Y Deflection		Distance	
D Only	0.0000	in	0.000	ft	0.000	in	0.000	ft
W Only	0.0000	in	0.000	ft	0.009	in	4.500	ft
D+W	0.0000	in	0.000	ft	0.009	in	4.470	ft

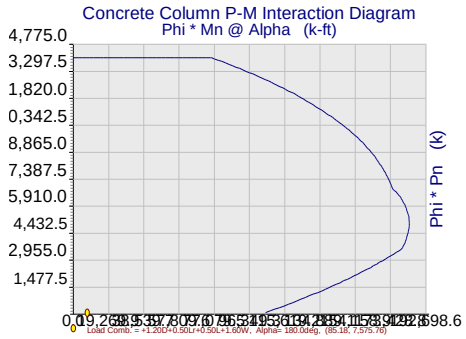
Sketches

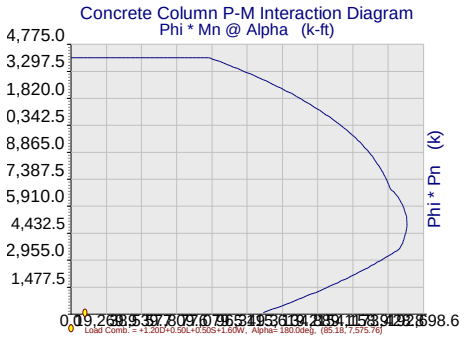
Looking along X-X Axis

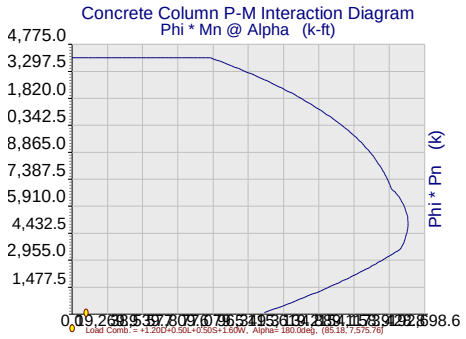
Looking along Y-Y Axis

Interaction Diagrams

Description : 140' Mono-Pine Mat Foundation Concrete Pier Head-R2







ISE Inc
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www.ISE-INC.biz

Title : MCM Dittmar Rd (North Alternate) Job #
Engineer: GLH
Project Desc.:

General Footing

File: C:\Documents and Settings\Glen Hunt PE\Desktop\5195 MCM Dittmar\5195 foudation design.ec6
ENERCALC, INC. 1983-2012, Build:6.12.9.26, Ver:6.12.9.26

Description : 140' Mono-Pine Foundation Mat

Code References

Calculations per ACI 318-08, IBC 2009, CBC 2010, ASCE 7-05
Load Combinations Used : ASCE 7-05

General Information

Material Properties

f'c : Concrete 28 day strength	=	4.0 ksi
fy : Rebar Yield	=	60.0 ksi
Ec : Concrete Elastic Modulus	=	3,605.0 ksi
Concrete Density	=	145.0 pcf
φ Values Flexure	=	0.90
Shear	=	0.750

Analysis Settings

Min Steel % Bending Reinf.	=	0.00140
Min Allow % Temp Reinf.	=	0.00180
Min. Overturning Safety Factor	=	1.50 : 1
Min. Sliding Safety Factor	=	1.50 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	Yes
Use Pedestal wt for stability, mom & shear	:	Yes

Soil Design Values

Allowable Soil Bearing	=	6.0 ksf
Increase Bearing By Footing Weight	=	Yes
Soil Passive Resistance (for Sliding)	=	250.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

Increases based on footing Depth

Footing base depth below soil surface	=	ft
Allowable pressure increase per foot of deptl	=	ksf
when footing base is below	=	ft

Increases based on footing plan dimension

Allowable pressure increase per foot of dept	=	ksf
when maximum length or width is greater	=	ft

Dimensions

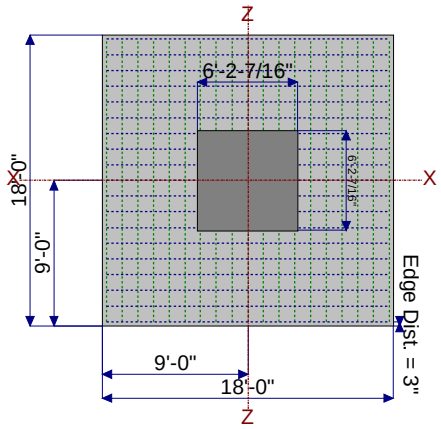
Width parallel to X-X Axis	=	18.0 ft
Length parallel to Z-Z Axis	=	18.0 ft
Footing Thicknes	=	48.0 in

Pedestal dimensions...

px : parallel to X-X Axis	=	74.440 in
pz : parallel to Z-Z Axis	=	74.440 in
Height	=	54.0 in

Rebar Centerline to Edge of Concrete..

at Bottom of footing	=	3.0 in

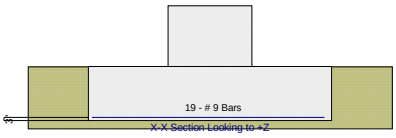


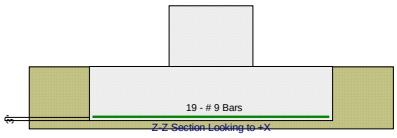
Reinforcing

Bars parallel to X-X Axis		
Number of Bars	=	19.0
Reinforcing Bar Size	=	# 9
Bars parallel to Z-Z Axis		
Number of Bars	=	19.0
Reinforcing Bar Size	=	# 9

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation	n/a
# Bars required within zone	n/a
# Bars required on each side of zone	n/a





Applied Loads

		D	Lr	L	S	W	E	H	
P : Column Load	=	45.873							k
OB : Overburden	=	0.4950							ksf
M-xx	=								k-ft
M-zz	=					4,534.0			k-ft
V-x	=					44.670			k
V-z	=								k

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General Footing

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ENERCALC, INC. 1983-2012, Build:6.12.9.26, Ver:6.12.9.26

Lic. # : KW-06004631 Licensee : ISE, INC.

Description : 140' Mono-Pine Foundation Mat

DESIGN SUMMARY

Design N.G.

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
FAIL	Ecc>L/2	Soil Bearing	0.0 ksf	6.580 ksf	Ecc>L/2
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
FAIL	0.4398	Overturning - Z-Z	4,913.70 k-ft	2,161.26 k-ft	0.6D+W
PASS	1.613	Sliding - X-X	44.670 k	72.042 k	0.6D+W
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.01195	Z Flexure (+X)	2.509 k-ft	210.063 k-ft	+0.90D+E+1.60H
PASS	0.01195	Z Flexure (-X)	2.509 k-ft	210.063 k-ft	+0.90D+E+1.60H
PASS	0.01858	X Flexure (+Z)	3.904 k-ft	210.063 k-ft	+1.40D
PASS	0.01195	X Flexure (-Z)	2.509 k-ft	210.063 k-ft	+0.90D+E+1.60H
PASS	0.05421	1-way Shear (+X)	5.143 psi	94.868 psi	+1.20D+0.50Lr+0.50L+1.60W
PASS	0.05421	1-way Shear (-X)	5.143 psi	94.868 psi	+1.20D+0.50Lr+0.50L+1.60W
PASS	0.009430	1-way Shear (+Z)	0.8946 psi	94.868 psi	+1.40D
PASS	0.009430	1-way Shear (-Z)	0.8946 psi	94.868 psi	+1.40D
PASS	0.07092	2-way Punching	13.456 psi	189.737 psi	+1.20D+0.50Lr+0.50L+1.60W

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Zecc	Actual Soil Bearing Stress +Z	+Z	-X	-X	Actual / Allowable Ratio
X-X, +D	6.580	n/a	0.0	1.235	1.235	n/a	n/a	0.188
X-X, +D+W+H	6.580	n/a	0.0	1.235	1.235	n/a	n/a	0.188
X-X, +0.90D+W+H	6.580	n/a	0.0	1.112	1.112	n/a	n/a	0.169
Z-Z, +D	6.580	0.0	n/a	n/a	n/a	1.235	1.235	0.188
Z-Z, +D+W+H	6.580	> L/2	n/a	0.0	0.0	0.0	0.0	0.000
Z-Z, +0.90D+W+H	6.580	> L/2	n/a	0.0	0.0	0.0	0.0	0.000

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
X-X, D	None	0.0 k-ft	Infinity	OK
X-X, 0.6D+W	None	0.0 k-ft	Infinity	OK
Z-Z, D	None	0.0 k-ft	Infinity	OK
Z-Z, 0.6D+W	4,913.70 k-ft	2,161.26 k-ft	0.4398	No Good!

Sliding Stability

All units k

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Sliding SafetyRatio	Status
X-X, D	0.0 k	120.070 k	No Sliding	OK
X-X, 0.6D+W	44.670 k	72.042 k	1.613	OK
Z-Z, D	0.0 k	120.070 k	No Sliding	OK
Z-Z, 0.6D+W	0.0 k	72.042 k	No Sliding	OK

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	3.904	+Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK
X-X, +1.40D	3.904	-Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	3.346	+Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	3.346	-Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK
X-X, +1.20D+1.60L+0.50S+1.60H	3.346	+Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK
X-X, +1.20D+1.60L+0.50S+1.60H	3.346	-Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK
X-X, +1.20D+1.60Lr+0.50L	3.346	+Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK
X-X, +1.20D+1.60Lr+0.50L	3.346	-Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK
X-X, +1.20D+1.60Lr+0.80W	3.346	+Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK
X-X, +1.20D+1.60Lr+0.80W	3.346	-Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK
X-X, +1.20D+0.50L+1.60S	3.346	+Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK
X-X, +1.20D+0.50L+1.60S	3.346	-Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK
X-X, +1.20D+1.60S+0.80W	3.346	+Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK
X-X, +1.20D+1.60S+0.80W	3.346	-Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK

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General Footing

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ENERCALC, INC. 1983-2012, Build:6.12.9.26, Ver:6.12.9.26

Description : 140' Mono-Pine Foundation Mat

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.20D+0.50Lr+0.50L+1.60W	3.346	+Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK
X-X, +1.20D+0.50Lr+0.50L+1.60W	3.346	-Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK
X-X, +1.20D+0.50L+0.50S+1.60W	3.346	+Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK
X-X, +1.20D+0.50L+0.50S+1.60W	3.346	-Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK
X-X, +1.20D+0.50L+0.20S+E	3.346	+Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK
X-X, +1.20D+0.50L+0.20S+E	3.346	-Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK
X-X, +0.90D+1.60W+1.60H	2.509	+Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK
X-X, +0.90D+1.60W+1.60H	2.509	-Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK
X-X, +0.90D+E+1.60H	2.509	+Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK
X-X, +0.90D+E+1.60H	2.509	-Z	Bottom	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +1.40D	3.904	-X	Bottom	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +1.40D	3.904	+X	Bottom	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +1.20D+0.50Lr+1.60L+1.60H	3.346	-X	Bottom	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +1.20D+0.50Lr+1.60L+1.60H	3.346	+X	Bottom	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +1.20D+1.60L+0.50S+1.60H	3.346	-X	Bottom	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +1.20D+1.60L+0.50S+1.60H	3.346	+X	Bottom	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +1.20D+1.60Lr+0.50L	3.346	-X	Bottom	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +1.20D+1.60Lr+0.50L	3.346	+X	Bottom	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +1.20D+1.60Lr+0.80W	22.439	-X	Top	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +1.20D+1.60Lr+0.80W	113.180	+X	Bottom	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +1.20D+0.50L+1.60S	3.346	-X	Bottom	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +1.20D+0.50L+1.60S	3.346	+X	Bottom	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +1.20D+1.60S+0.80W	22.439	-X	Top	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +1.20D+1.60S+0.80W	113.180	+X	Bottom	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +1.20D+0.50Lr+0.50L+1.60W	22.439	-X	Top	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +1.20D+0.50Lr+0.50L+1.60W	22.439	+X	Top	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +1.20D+0.50L+0.50S+1.60W	22.439	-X	Top	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +1.20D+0.50L+0.50S+1.60W	22.439	+X	Top	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +1.20D+0.50L+0.20S+E	3.346	-X	Bottom	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +1.20D+0.50L+0.20S+E	3.346	+X	Bottom	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +0.90D+1.60W+1.60H	16.830	-X	Top	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +0.90D+1.60W+1.60H	16.830	+X	Top	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +0.90D+E+1.60H	2.509	-X	Bottom	1.0368	Min Temp %	1.056	210.063	OK
Z-Z, +0.90D+E+1.60H	2.509	+X	Bottom	1.0368	Min Temp %	1.056	210.063	OK

One Way Shear

Load Combination...	Vu @ -X	Vu @ +X	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	0.8946 psi	0.8946 psi	0.8946 psi	0.8946 psi	0.8946 psi	94.868 psi	0.00943	OK
+1.20D+0.50Lr+1.60L+1.60H	0.7668 psi	0.7668 psi	0.7668 psi	0.7668 psi	0.7668 psi	94.868 psi	0.008083	OK
+1.20D+1.60L+0.50S+1.60H	0.7668 psi	0.7668 psi	0.7668 psi	0.7668 psi	0.7668 psi	94.868 psi	0.008083	OK
+1.20D+1.60Lr+0.50L	0.7668 psi	0.7668 psi	0.7668 psi	0.7668 psi	0.7668 psi	94.868 psi	0.008083	OK
+1.20D+1.60Lr+0.80W	0.7668 psi	0.7668 psi	0.7668 psi	0.7668 psi	0.7668 psi	94.868 psi	0.008083	OK
+1.20D+0.50L+1.60S	0.7668 psi	0.7668 psi	0.7668 psi	0.7668 psi	0.7668 psi	94.868 psi	0.008083	OK
+1.20D+1.60S+0.80W	0.7668 psi	0.7668 psi	0.7668 psi	0.7668 psi	0.7668 psi	94.868 psi	0.008083	OK
+1.20D+0.50Lr+0.50L+1.60W	5.143 psi	5.143 psi	0.7668 psi	0.7668 psi	5.143 psi	94.868 psi	0.05421	OK
+1.20D+0.50L+0.50S+1.60W	5.143 psi	5.143 psi	0.7668 psi	0.7668 psi	5.143 psi	94.868 psi	0.05421	OK
+1.20D+0.50L+0.20S+E	0.7668 psi	0.7668 psi	0.7668 psi	0.7668 psi	0.7668 psi	94.868 psi	0.008083	OK
+0.90D+1.60W+1.60H	3.857 psi	3.857 psi	0.5751 psi	0.5751 psi	3.857 psi	94.868 psi	0.04066	OK
+0.90D+E+1.60H	0.5751 psi	0.5751 psi	0.5751 psi	0.5751 psi	0.5751 psi	94.868 psi	0.006062	OK

Punching Shear

All units k

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	2.341 psi	189.737 psi	0.01234	OK
+1.20D+0.50Lr+1.60L+1.60H	2.006 psi	189.737 psi	0.01058	OK
+1.20D+1.60L+0.50S+1.60H	2.006 psi	189.737 psi	0.01058	OK
+1.20D+1.60Lr+0.50L	2.006 psi	189.737 psi	0.01058	OK
+1.20D+1.60Lr+0.80W	8.883 psi	189.737 psi	0.04682	OK
+1.20D+0.50L+1.60S	2.006 psi	189.737 psi	0.01058	OK
+1.20D+1.60S+0.80W	8.883 psi	189.737 psi	0.04682	OK
+1.20D+0.50Lr+0.50L+1.60W	13.456 psi	189.737 psi	0.07092	OK
+1.20D+0.50L+0.50S+1.60W	13.456 psi	189.737 psi	0.07092	OK
+1.20D+0.50L+0.20S+E	2.006 psi	189.737 psi	0.01058	OK
+0.90D+1.60W+1.60H	10.092 psi	189.737 psi	0.05319	OK

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Engineer: GLH
Project Desc.:

General Footing

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ENERCALC, INC. 1983-2012, Build:6.12.9.26, Ver:6.12.9.26

Lic. # : KW-06004631 Licensee : ISE, INC.

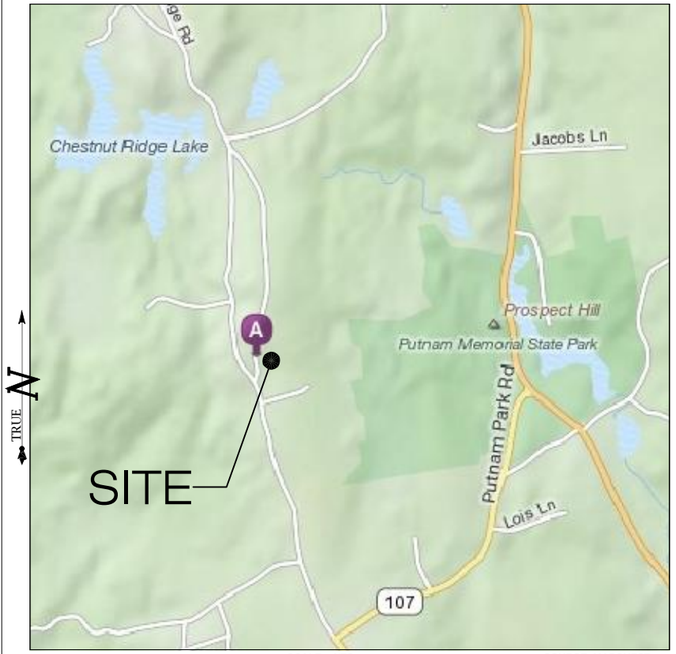
Description : 140' Mono-Pine Foundation Mat

Punching Shear

All units k

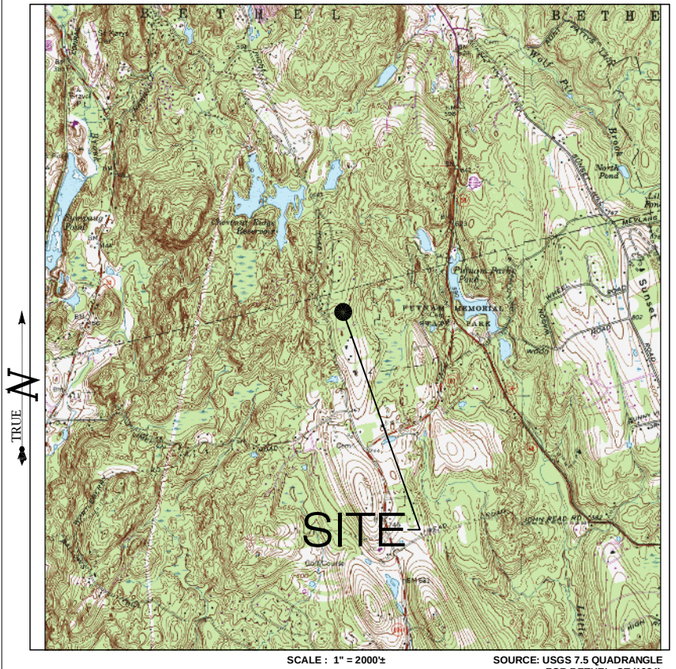
Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+0.90D+E+1.60H	1.505 psi	189.737 psi	0.007931	OK

LOCATION MAP



SCALE : NTS SOURCE: MAPQUEST

USGS TOPOGRAPHIC MAP



SCALE : 1" = 2000'± SOURCE: USGS 7.5 QUADRANGLE FOR BETHEL, CT (1984)

T-Mobile

35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

OFFICE: (860)-692-7100
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MCM

MESSAGE CENTER MANAGEMENT
40 WOODLAND STREET
HARTFORD, CT 06105
OFFICE: (888) 973-7483

DEVELOPMENT & MANAGEMENT PLAN DRAWING INDEX

*SITE INFORMATION:

-SITE NAME:..... MCM DITTMAR ROAD
-SITE ID NUMBER:..... CTFF632A
-SITE ADDRESS:..... 4 DITTMAR ROAD
REDDING, CT 06896

-MAP ID:..... 1-10
-MAP:..... 32
-BLOCK:..... 47
-LOT:..... 15

-ZONE:..... R-2
-LATITUDE:..... 41° 20' 23.42" N
-LONGITUDE:..... 73° 23' 30.62" W
-ELEVATION:..... 806'± AMSL
-FEMA/FIRM DESIGNATION:..... PANEL #09001C0234F - ZONE 'X'
-ACREAGE:..... 5.58 Ac

ALL-POINTS TECHNOLOGY CORPORATION
3 SADDLEBROOK DRIVE
KILLINGWORTH, CT 06419
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FAX: (860)-663-0935

CONTACT PERSONNEL

APPLICANT:
MESSAGE CENTER MANAGEMENT
40 WOODLAND STREET
HARTFORD, CT 06105

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T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

LANDLORD
MESSAGE CENTER MANAGEMENT
40 WOODLAND STREET
HARTFORD, CT 06105

MCM PROJECT MANAGER:
VIRGINIA KING (860) 727-5790

MCM PROJECT ATTORNEY:
CHRISTOPHER B. FISHER, ESQ.
CUDDY & FEDER, LLP.
445 HAMILTON AVE, 14TH FLOOR
WHITE PLAINS, NY 10601
914-761-1300

POWER PROVIDER:
CL&P (203) 845-3487
MATTHEW RICHARDS - CASE #1638732

TELCO PROVIDER:
AT&T: (800)-727-8368

CALL BEFORE YOU DIG:
(800) 922-4455

GOVERNING CODEs:
2005 CONNECTICUT BUILDING CODE (2003 IBC BASIS)
NATIONAL ELECTRIC CODE
EIA/TIA 222F

SITE INFORMATION

CTFF632A
MCM DITTMAR ROAD
4 DITTMAR ROAD
REDDING, CT 06896

DEVELOPMENT & MANAGEMENT PLAN

MCM DITTMAR ROAD
4 DITTMAR ROAD
REDDING, CT 06896

DESIGN TYPE:

RAW LAND

REVISIONS:

REV.1: 11/12/12: FOR REVIEW: SMC
REV.2: 11/16/12: FOR FILING: SMC
REV.3:
REV.4:
REV.5:
REV.6:

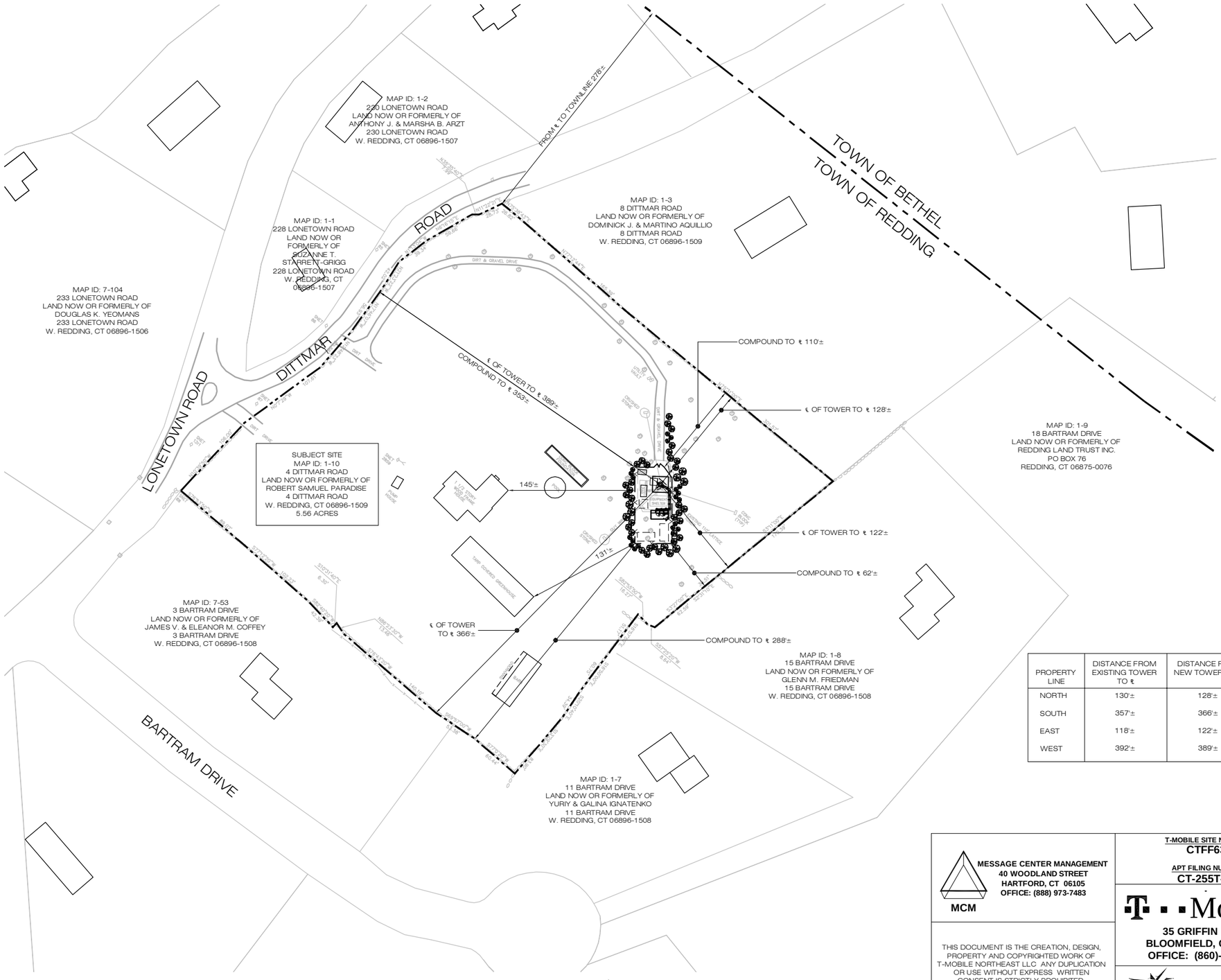
TITLE SHEET AND INDEX

APT FILING NUMBER: CT-255T-830
APT DRAWING NUMBER: CTFF632 T-1.DWG
DRAWN BY: SMC
CHECKED BY: SMC
SCALE: AS NOTED
DATE: 03/15/11

SHEET NUMBER:

T-1

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



ABUTTERS MAP

SCALE : 1" = 60'-0"

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 NEW WORK IS BEING COMPLETED.

2. INSTALL TEMPORARY EROSION AND SEDIMENTATION CONTROL BARRIERS.

3. CLEAR & LEVEL AREAS FOR AT&T AND SPRINT/NEXTEL 'CELL ON WHEELS' (COWs)

4. RUN TEMPORARY POWER AND TELCO TO AT&T AND SPRINT/NEXTEL 'CELL ON WHEELS' (COWs)

5. ERECT, INSTALL AND ENERGIZE AT&T AND SPRINT/NEXTEL 'CELL ON WHEELS' (COWs)

6. DECOMMISSION EXISTING GUYED TOWER, GUYS, DEADMEN AND TOWER BASE

7. REMOVE EXISTING TREES AS INDICATED ON THE PLANS

8. DISCONNECT AND TEMPORARILY RELOCATE EXISTING AT&T AND SPRINT/NEXTEL TELECOM EQUIPMENT AND EQUIPMENT SHELTER

9. REMOVED EXISTING FENCING AS REQUIRED

10. EXCAVATE FOR TOWER FOUNDATION

11. PREPARE SUBGRADE AND INSTALL ROCK ANCHORS AND PERFORM PULL TEST

12. SET FORMS, STEEL REINFORCING, AND CONCRETE FOR TOWER FOUNDATION

13. INSTALL BURIED TOWER GROUND RINGS, GROUND RODS AND GROUND LEADS

14. BACKFILL TOWER FOUNDATION

15. ERECT MONOPINE.

16. INSTALL TELECOMMUNICATIONS EQUIPMENT ON TOWER

17. INSTALL NEW ELECTRICAL TRANSFORMER & METER BANK ASSEMBLY AND CONSTRUCT NEW UTILITY TRENCHING AS REQUIRED

18. CLEAR AND ROUGH GRADE THE EXISTING & NEW EXPANDED EQUIPMENT COMPOUND

19. EXCAVATE, FORM, INSTALL REBAR AND POUR REPLACEMENT CONCRETE FOUNDATIONS FOR SPRINT/NEXTEL SHELTER, AT&T EQUIPMENT SLAB AND T-MOBILE'S NEW EQUIPMENT SLAB

20. INSTALL BURIED EQUIPMENT & COMPOUND GROUND RINGS, GROUND RODS , GROUND LEADS AND UTILITY CONDUITS

21. BACKFILL EQUIPMENT FOUNDATIONS

22. RE-INSTALL RELOCATED AT&T AND SPRINT/NEXTEL EQUIPMENT AND T-MOBILE'S NEW EQUIPMENT AND ALL NEW ICE-BRIDGES

23. INSTALL COMPOUND GRAVEL SURFACES.

24. INSTALL FENCING.

25. CONNECT GROUNDING LEADS AND LIGHTENING PROTECTION.

26. COORDINATE POWER/TELCO CUTOVER FROM COWs TO NEW EQUIPMENT FACILITIES

27. FINAL GRADE AROUND COMPOUND.

28. LANDSCAPE, LOAM AND SEED DISTURBED AREAS OUTSIDE COMPOUND, AS REQUIRED.

29. INSTALL DEER FENCING AROUND NEW LANDSCAPING

30. REMOVE SILT FENCING AFTER SEEDED AREAS HAVE ESTABLISHED VEGETATION.

31. FINAL CLEANUP AND EQUIPMENT TESTING.

THE ESTIMATED TIME FOR COMPLETION OF THE WORK IS APPROXIMATELY EIGHT (8) WEEKS. THE EXACT PROCESS MAY VARY DEPENDING ON THE CONTRACTORS AND SUBCONTRACTORS AVAILABILITY TO COMPLETE WORK AND WEATHER DELAYS.

PROPERTY LINE	DISTANCE FROM EXISTING TOWER TO ℄	DISTANCE FROM NEW TOWER TO ℄
NORTH	130'±	128'±
SOUTH	357'±	366'±
EAST	118'±	122'±
WEST	392'±	389'±

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T-Mobile

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

DEVELOPMENT & MANAGEMENT PLAN

MCM DITTMAR ROAD
4 DITTMAR ROAD
REDDING, CT 06896

DESIGN TYPE:

RAW LAND

REVISIONS:

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ABUTTERS MAP

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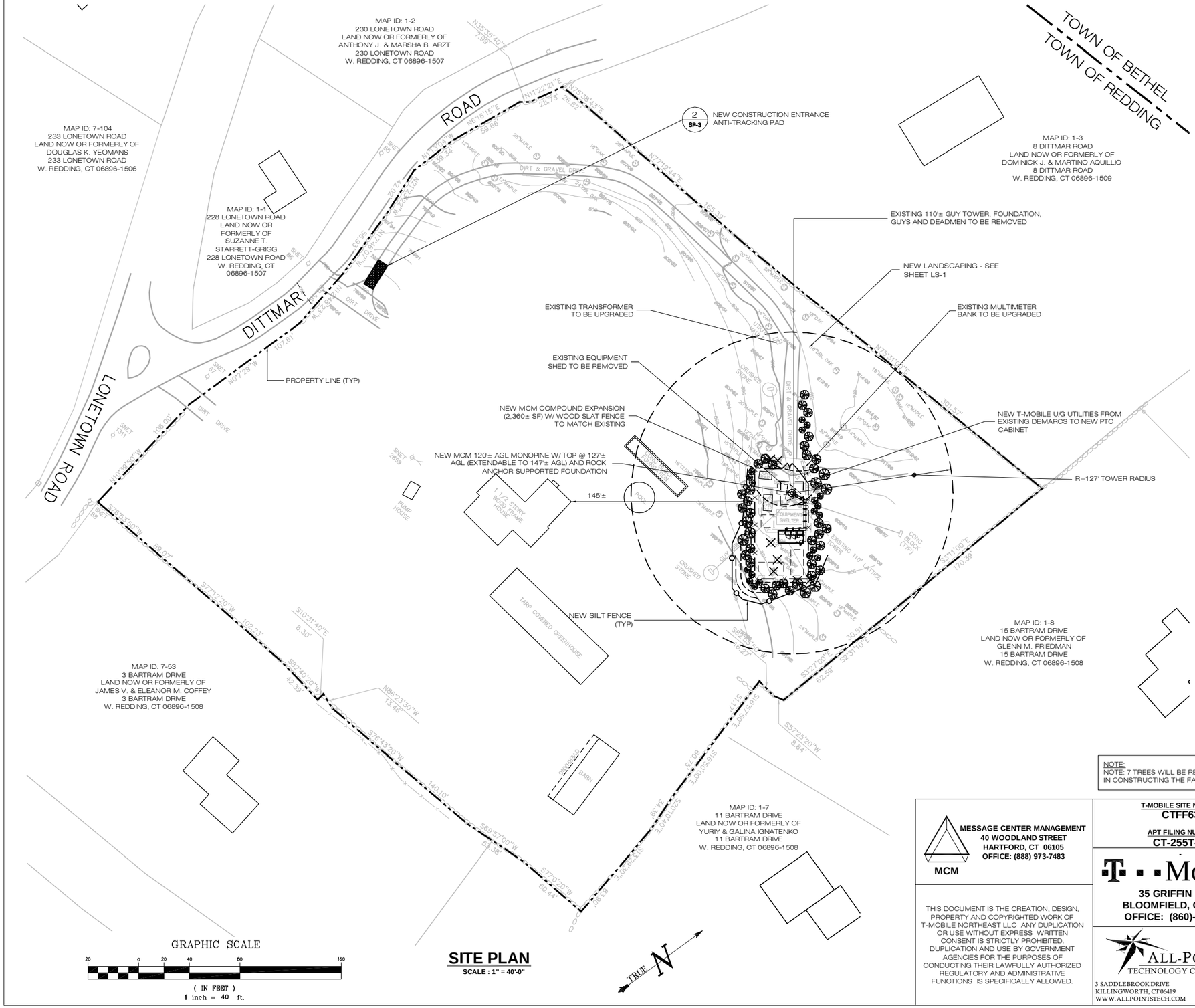
R-1

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



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 IMPROVEMENT LOCATION SURVEY AND IS BASED UPON A DEPENDENT RESURVEY CONFORMING TO HORIZONTAL ACCURACY CLASS A-2 AND A VERTICAL ACCURACY OF CLASS T-2 AND IS INTENDED TO BE USED FOR THE PURPOSE OF SHOWING EXISTING CONDITIONS AND PROPERTY LINE INFORMATION.

MAP REFERENCES

1) "MAP OF PROPERTY PREPARED FOR PAUL J. PLISHNER, REDDING & BETHEL, CONN., SCALE 1"=100', DATED NOV. 19, 1973, BY RYAN AND FAULDS - LAND SURVEYORS.

2) "MAP PREPARED FOR GLADYS H. BUTLER, REDDING, CONNECTICUT, SCALE 1"=50', DATED JANUARY 1966, BY JOHN W. FULLER.

3) "MAP PREPARED FOR ROBERT S. PARADISE, 4 DITTMAR ROAD, REDDING, CONNECTICUT, SCALE 1"=40', DATED 7-30-86, BY CARROCCIO - COVILL & ASSOCIATES.

4) RIGHT OF WAY MAP, TOWN OF REDDING, GEORGETOWN - REDDING ROAD, FROM THE GEORGETOWN - BETHEL ROAD NORTHEASTERLY TO THE BETHEL TOWN LINE, ROUTE NO. 107, SCALE 1"=40', DATED SEPT. 30, 1932, BY CONNECTICUT STATE HIGHWAY DEPARTMENT. NO. 11116-04 SHEET NO. 7 OF 7.

ALL IMPROVEMENTS ARE NOT SHOWN.

PARCEL ADDRESS: 4 DITTMAR ROAD, WEST REDDING, CT 06896.

PARCEL OWNER OF RECORD: ROBERT SAMUEL PARADISE.

PARCEL IS IN THE R-2 ZONE.

PARCEL MAP 32 BLOCK 47 LOT 15 REDDING ASSESSORS MAP.

PARCEL AREA = 242,187 SQ. FT., 5.560 ACRES.

PARCEL IS IN ZONE X OF THE FLOOD INSURANCE RATE MAP, FAIRFIELD COUNTY, CONNECTICUT, ALL JURISDICTIONS, PANEL 234 OF 6269, MAP NUMBER 09001C234F, EFFECTIVE DATE JUNE 18, 2010, BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.

HANDICAPPED REQUIREMENTS
FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAP ACCESS NOT REQUIRED.

DRAINAGE NOTE
THE IMPERVIOUS AREA ON THE SUBJECT PARCEL WILL BE INCREASED BY APPROXIMATELY 2.3%.

LAND DISTURBANCE NOTE:
0.38 ACRES (0.19 Ac COMPOUND, 0.19 Ac UTILITIES) OF LAND WILL BE DISTURBED DURING CONSTRUCTION ACTIVITIES, WHICH IS BELOW THE 0.5 ACRE LIMIT NOTED IN FIGURE 3-1 OF PAGE 3-3 OF THE 2002 CT EROSION AND SEDIMENT CONTROL GUIDELINES.

SITE AREAS & VOLUMES OF EARTHWORK

SITEWORK SHALL ENTAIL APPROXIMATELY 365 CUBIC YARDS OF CUT (310 CY FOUNDATION EXCAVATION & 55 CY COMPOUND/UTILITIES) AND 426 CY FILL. APPROXIMATELY 75 CUBIC YARDS OF CRUSHED STONE SHALL BE IMPORTED TO CONSTRUCT THE COMPOUND AND IMPROVE THE ACCESS ROAD.

COMPOUND AREA SLOPES:
EXISTING - 7%
NEW - 4.5%

TOTAL AREA OF DISTURBANCE = 8292± SF (COMPOUND)
= 8150± SF (COWs)

STORMWATER VELOCITY:
PRIOR TO GROUND COVER = <5 FT/SEC
FOLLOWING GROUND COVER = <5 FT/SEC

GROUND COVER TO BE ESTABLISHED AS FOLLOWS:
- WHITE CLOVER @ 0.20#/- SF
- TALL FESCUE @ 0.45#/- SF
- RYEGRASS @ 0.10#/- SF

NOTE:
NOTE: 7 TREES WILL BE REMOVED IN CONSTRUCTING THE FACILITY

LEGEND

CURB	DRAINAGE INLET / STRUCTURE
DROP CURB	CATCH BASIN
WALL	SIGN
STONE WALL	LIGHT POLE
EDGE OF PAVEMENT	UTILITY POLE
OVERHEAD WIRES	STOCKADE FENCE
STRUCTURE - MANHOLE	CONTOURS
GAS VALVE	TOP/BOTTOM OF CURB
WATER VALVE	SPOT ELEVATION
HANDICAP PARKING	CONCRETE
PARKING STALL COUNT	GUY WIRE

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DEVELOPMENT & MANAGEMENT PLAN

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4 DITTMAR ROAD
REDDING, CT 06896

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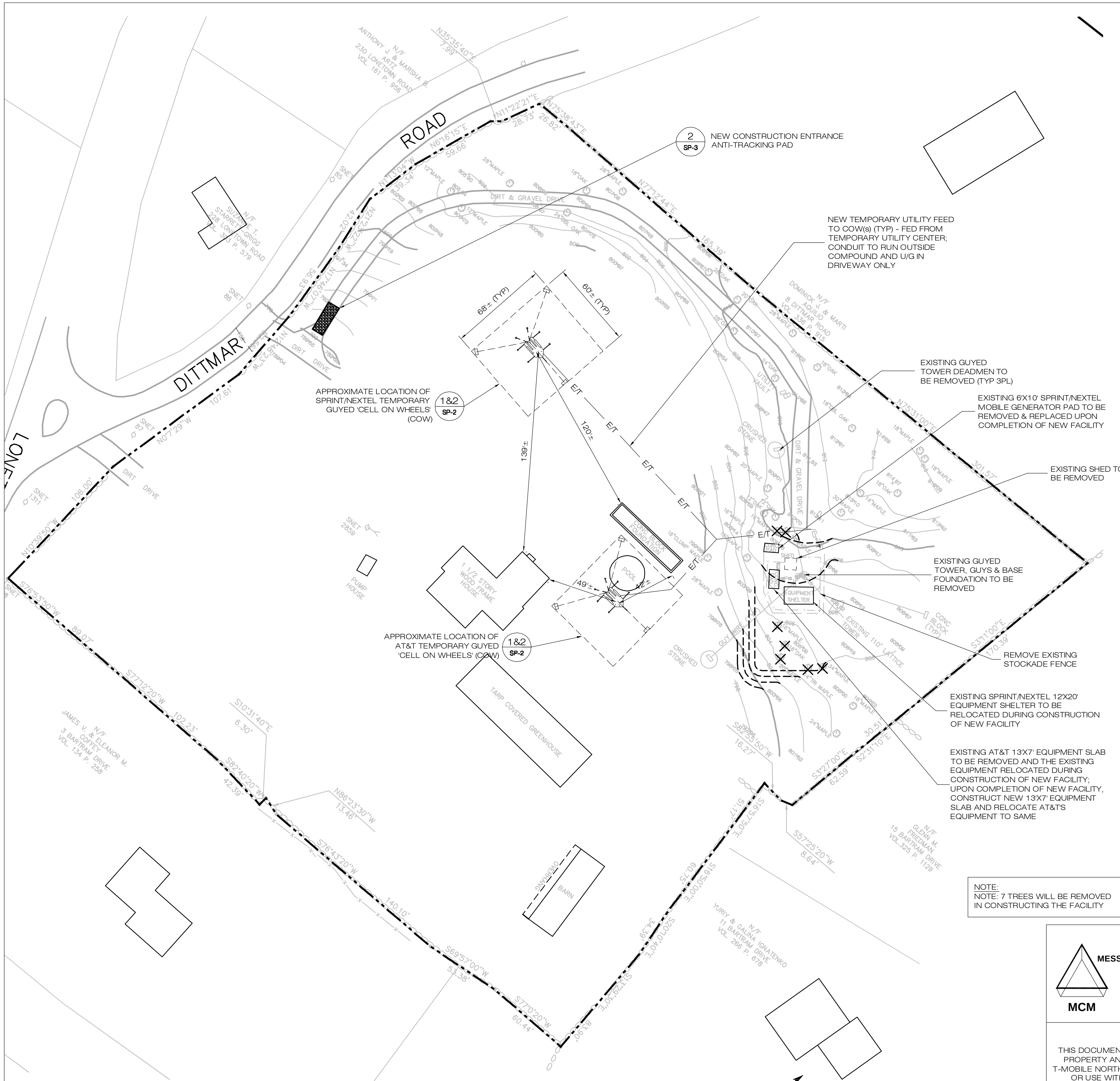
SP-1

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



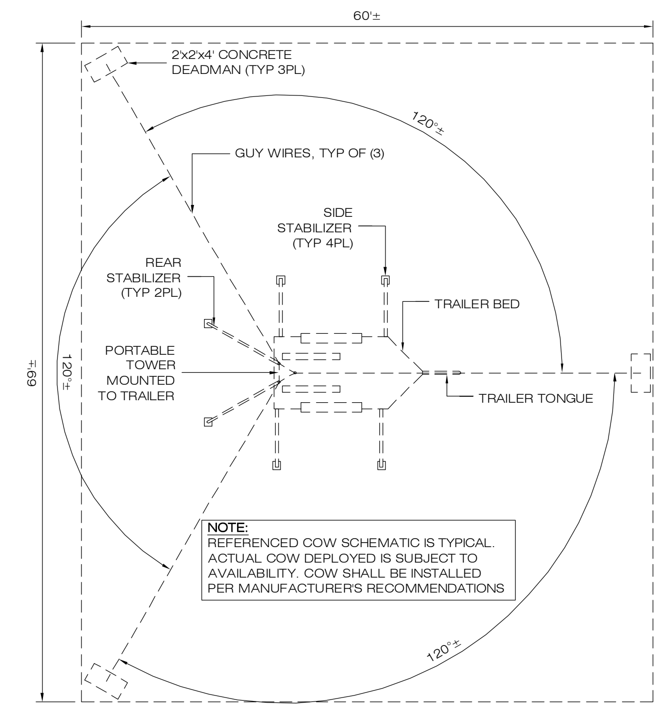
GRAPHIC SCALE

20 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

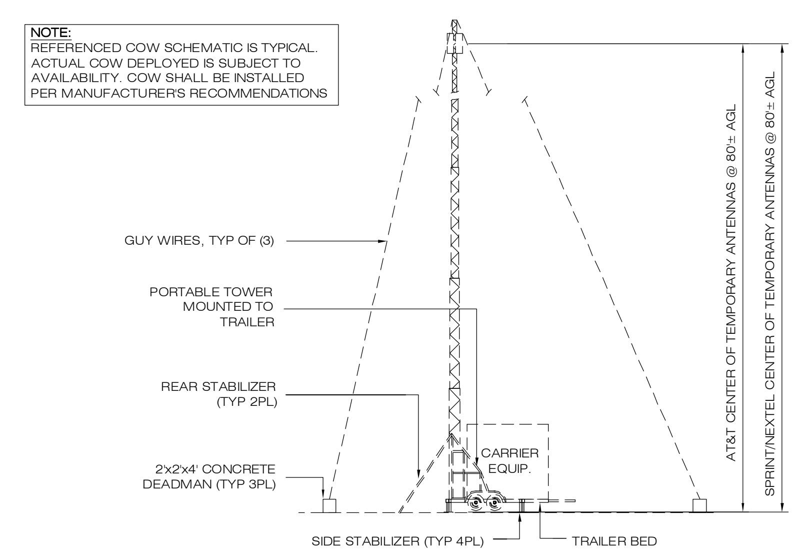
SITE PLAN

SCALE : 1" = 40'-0"



1 SP-2 COW PLAN VIEW

SCALE : 1" = 10'-0"

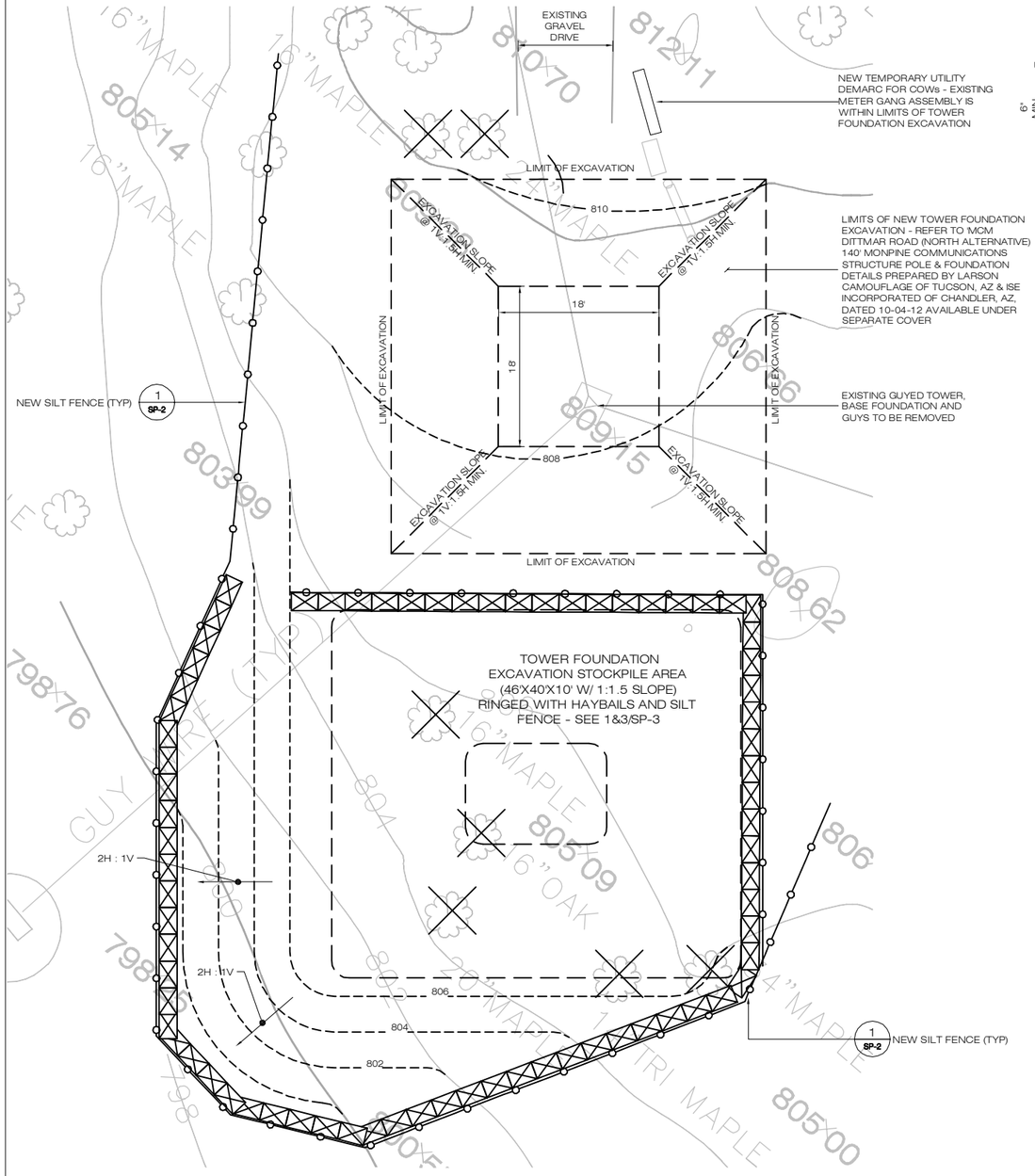


2 SP-2 COW ELEVATION VIEW

SCALE : 1" = 15'-0"

MCM MESSAGE CENTER MANAGEMENT 40 WOODLAND STREET HARTFORD, CT 06105 OFFICE: (888) 973-7483	T-MOBILE SITE NUMBER: CTFF632 APT FILING NUMBER: CT-255T-830	DEVELOPMENT & MANAGEMENT PLAN MCM DITTMAR ROAD 4 DITTMAR ROAD REDDING, CT 06896	DECOMMISSION & COW PLAN
THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF T-MOBILE NORTHEAST LLC. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.	T · · Mobile · 35 GRIFFIN ROAD BLOOMFIELD, CT 06002 OFFICE: (860)-692-7100	DESIGN TYPE: RAW LAND	APT FILING NUMBER: CT-255T-830 APT DRAWING NUMBER: CTFF632
	ALL-POINTS TECHNOLOGY CORPORATION 3 SADDLEBROOK DRIVE KILLINGWORTH, CT 06419 WWW.ALLPOINTSTECH.COM PHONE: (860)-663-1697 FAX: (860)-663-0935	REVISIONS: REV.1: 11/12/12: FOR REVIEW: SMC REV.2: 11/16/12: FOR FILING: SMC REV.3: REV.4: REV.5: REV.6:	DRAWN BY: SMC SCALE: AS NOTED CHECKED BY: SMC DATE: 03/15/11 SHEET NUMBER: SP-2

STATE OF CONNECTICUT · SCOTT M. CHASSE · No.19728 · LICENSED · PROFESSIONAL ENGINEER

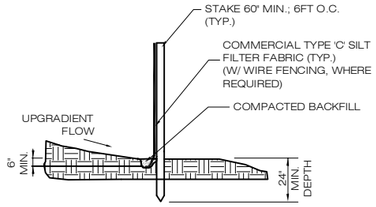


GRAPHIC SCALE

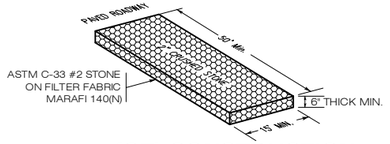
8 0 4 8 16 32

(IN FEET)
1 inch = 8 ft.

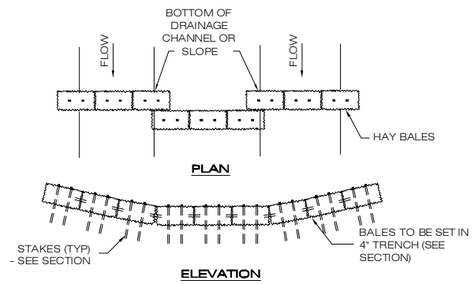
EXCAVATION PLAN
SCALE : 3/32" = 1'-0"

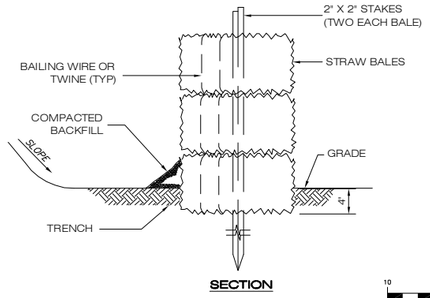


1 SP-2 (GSF) GEOTEXTILE SILT FENCE DETAIL
SCALE : NTS

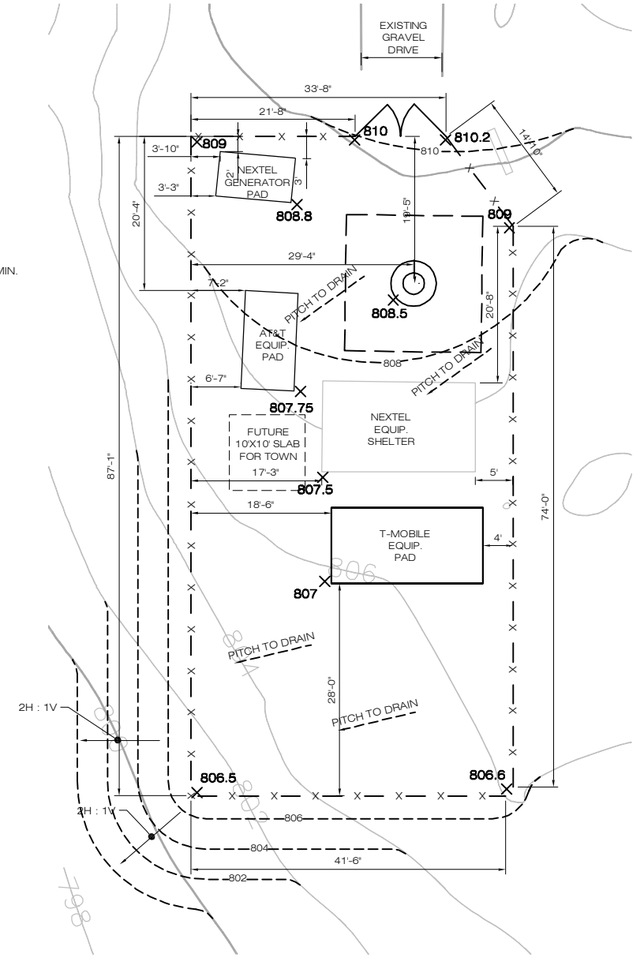


2 SP-2 (CE) CONSTRUCTION ENTRANCE DETAIL
SCALE : NTS





3 SP-2 HAY BALE BARRIER
SCALE : NTS



GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

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

NEW LANDSCAPING NOT SHOWN FOR CLARITY - REFER TO SHEET LS-1 FOR LANDSCAPING PLAN

DENOTES EXISTING TREES TO BE REMOVED (TYP 7PL)

FOR EROSION & SEDIMENTATION CONTROL SPECIFICATIONS, SEE SHEET N-1

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DEVELOPMENT & MANAGEMENT PLAN

MCM DITTMAR ROAD
4 DITTMAR ROAD
REDDING, CT 06896

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RAW LAND

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REV.3:
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REV.6:

GRADING & EROSION SEDIMENTATION CONTROL PLAN

APT FILING NUMBER: CT-255T-830
APT DRAWING NUMBER: CTFF632
DRAWN BY: SMC
CHECKED BY: SMC
SCALE: AS NOTED
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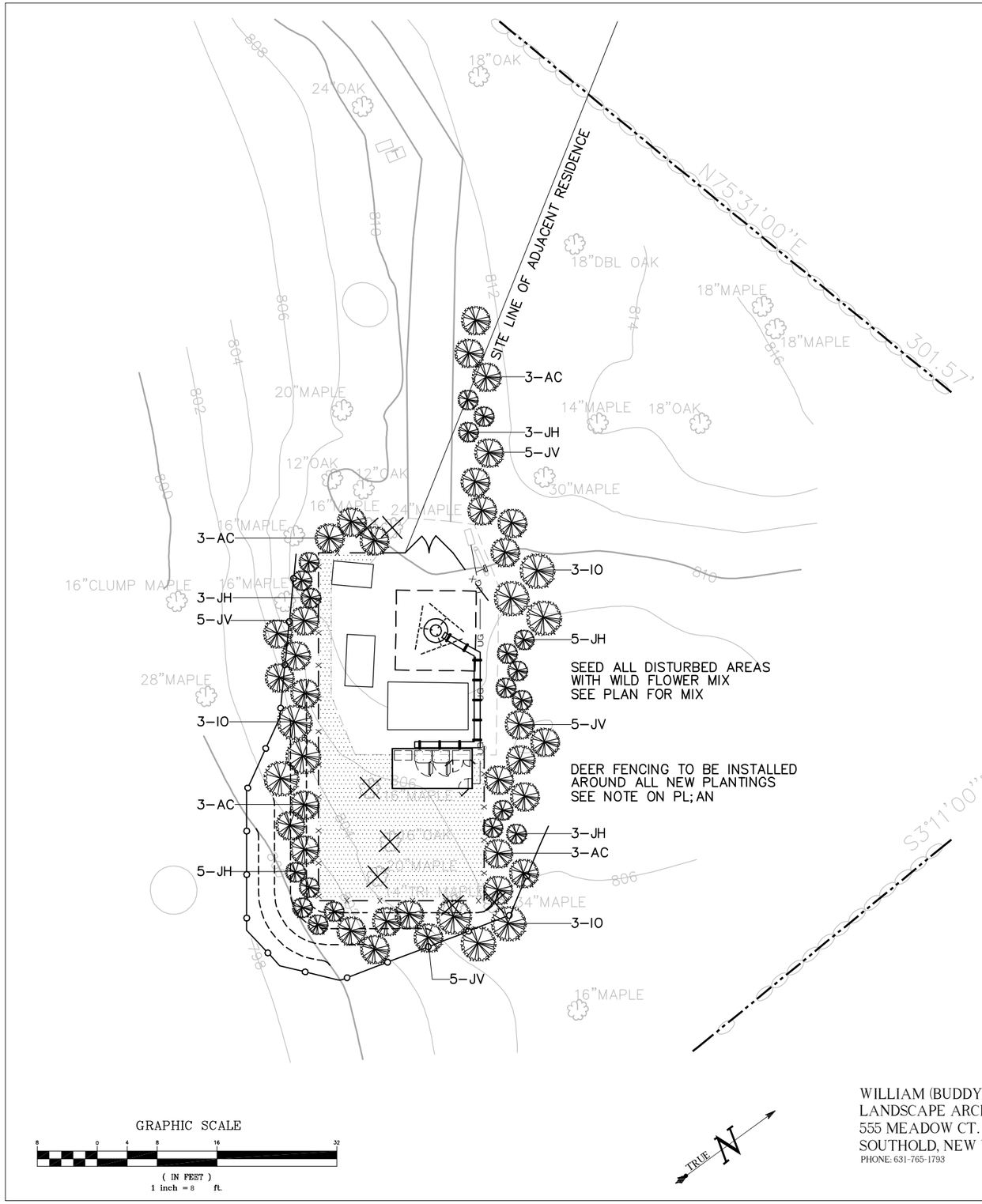
SHEET NUMBER:

SP-3

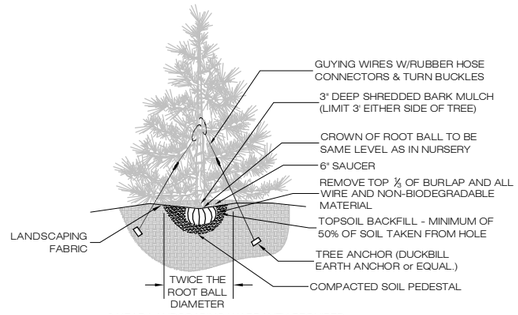
STATE OF CONNECTICUT SCOTT M. CHASE No.19728 LICENSED PROFESSIONAL ENGINEER



WILLIAM (BUDDY) JOHNSON
LANDSCAPE ARCHITECT
555 MEADOW CT. 11-C
SOUTHOLD, NEW YORK 11971
PHONE: 631-765-1793

PLANT LIST

QTY	KEY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
12	AC	ABIES CONCOLOR	WHITE FIR	12-14' HT.	FULL AND DENSE TO GROUND
9	IO	ILEX OPACA	AMERICAN HOLLY	8-10' HT.	FULL AND DENSE TO GROUND
19	JH	JUNIPERUS 'HETZI COLUMNARIS'	GREEN COLUMNA R JUNIPER	7-8' HT.	FULL AND DENSE TO GROUND
20	JV	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	12-14' HT.	FULL AND DENSE TO GROUND



2 YEAR LANDSCAPING WARRANTY REQUIRED

1 / LS-1 **EVERGREEN TREE PLANTING DETAIL**

LANDSCAPING NOTES

1. ALL LANDSCAPING SHALL BE INSTALLED PER STANDARDS AND SPECIFICATIONS OF THE TOWN OF REDDING.
2. EXISTING TREE CANOPY HEIGHT IS APPROXIMATELY 65'.
3. OWNER SHALL GUARANTEE AND BE RESPONSIBLE FOR MAINTAINING THE LANDSCAPE PLANTINGS SPECIFIED FOR A PERIOD OF (2) YEARS.
4. ALL PLANTINGS SHALL BE MAINTAINED IN A HEALTHY RIGOROUS CONDITION.
5. ANY AND ALL INVASIVE SPECIES FOUND IN THIS AREA SHALL BE REMOVED.
6. ANY AND ALL PLANTS FOUND TO BE DEAD OR IN POOR CONDITION AFTER THE (2) YEAR GUARANTEE SHALL BE REPLACED IN KIND AND SIZE.
7. ALL PROPOSED PLANTINGS SHALL BE INSTALLED BETWEEN APRIL 15 th AND OCTOBER 15 th.

SEED MIX

ANY EXPOSED SOIL AREAS ASSOCIATED WITH THE WIRELESS TELECOMMUNICATIONS FACILITY, ACCESS ROAD AND STORMWATER MANAGEMENT AREAS SHALL BE SOWN WITH NEW ENGLAND EROSION CONSERVATION/WILDLIFE MIX SUPPLIED BY NEW ENGLAND WETLAND PLANTS, INC. (413.548.8000) OR APPROPRIATE SUBSTITUTE. THE NEW ENGLAND CONSERVATION/WILDLIFE MIX PROVIDES A PERMANENT COVER OF GRASSES, FORBS, WILDFLOWERS, LEGUMES AND GRASSES TO PROVIDE BOTH GOOD EROSION CONTROL AND WILDLIFE HABITAT VALUE AND INCLUDES THE FOLLOWING SPECIES: BIG BLUESTEM (ANDROPOGON GERARDII), SWITCHGRASS (PANICUM VIRGATUM), LITTLE BLUESTEM (SCHIZACHYRIUM SCOPARIUM), VIRGINIA WILD RYE (ELYMUS VIRGINICUS), PARTRIDGE PEA (CHAMAECRISTA FASCICULATA), COMMON MILKWEED (ASCLEPIAS SYRIACA), SHOWY TICK-TREFOIL (DESMODIUM CANADENSE), NEW ENGLAND ASTER (ASTER NOVAE-ANGLIAE), SPOTTED JOE PYE WEED (EUPATORIUM MACULATUM), GRASS LEAVED GOLDENROD (EUTHAMIA GRAMINIFOLIA) CREEPING RED FESCUE (FESTUCA RUBRA), OX EYE SUNFLOWER (HELIOPSIS HELIANTHOIDES), DEER TONGUE (PANICUM CLANDESTINUM), TALL/GREEN HEADED CONEFLOWER (RUDBECKIA LACINIATA), EARLY GOLDENROD (SOLIDAGO JUNCEA), INDIAN GRASS (SORGHASTRUM NUTANS). THE SEED MIX WILL BE APPLIED AT A RATE OF 1LB/1,500 SQUARE FEET. SOIL CONDITIONING ACTIVITIES, INCLUDING RAKING, WILL BE COMBINED WITH THE SEED APPLICATION PROCESS.

DEER FENCING NOTES

1. DEER FENCING SHALL BE INSTALLED AROUND ALL NEW PLANTINGS AND INSPECTED AND REPAIRED AS NECESSARY.
2. DEER FENCING SHALL BE 8' HIGH MOUNTED TO ANGLE STEEL LINE POSTS - NIXALITE DEER BLOCKER DEER FENCING, OR EQUAL.

DENOTES EXISTING TREES TO REMAIN

DENOTES EXISTING TREES TO BE REMOVED (TYP 7PL)

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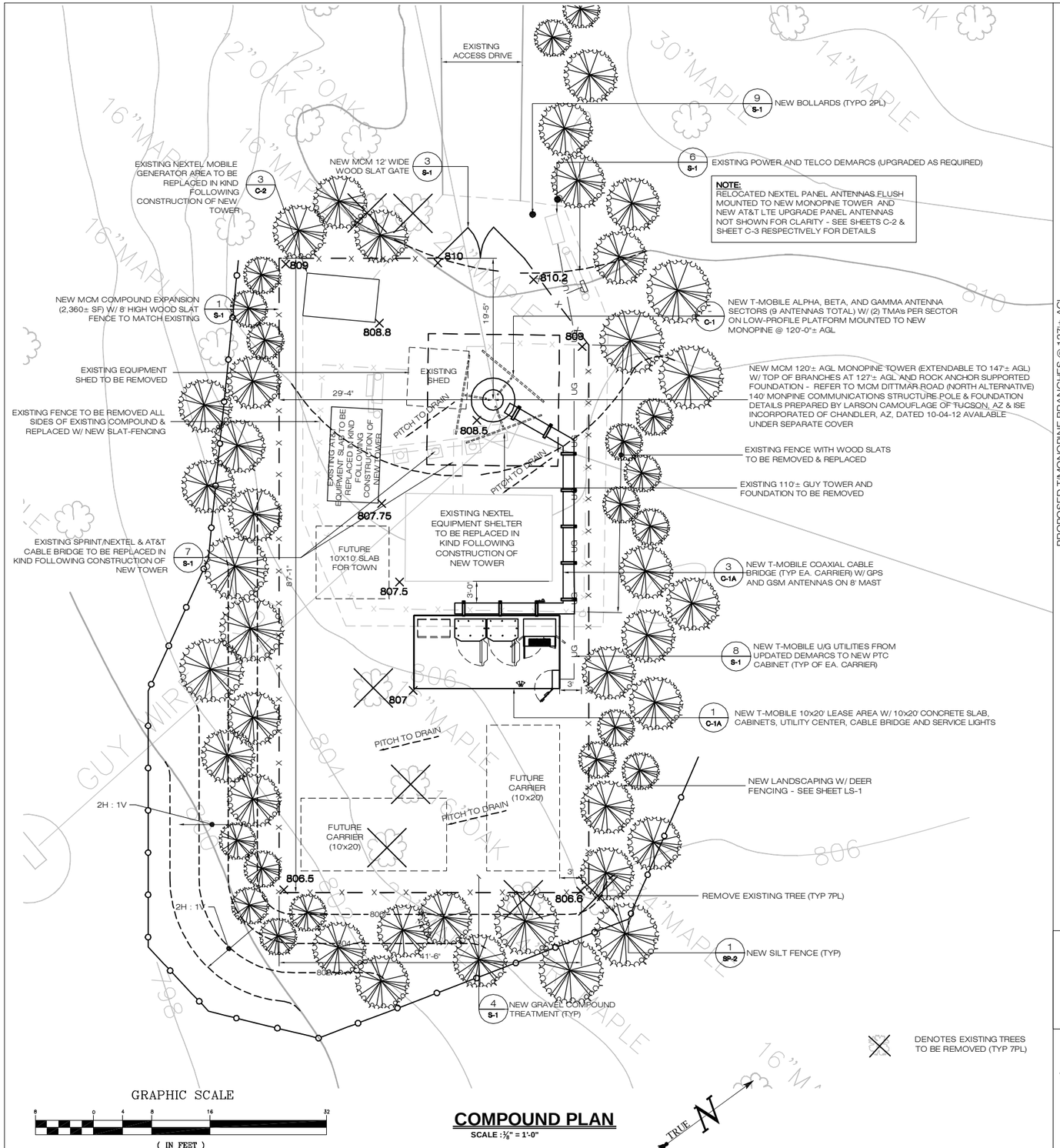
LANDSCAPE PLAN

APT FILING NUMBER: CT-255T-830
APT DRAWING NUMBER: CTFF632
DRAWN BY: WWJ
CHECKED BY: SMC
SCALE: 1/8" = 1'
DATE: 08/22/12

SHEET NUMBER:

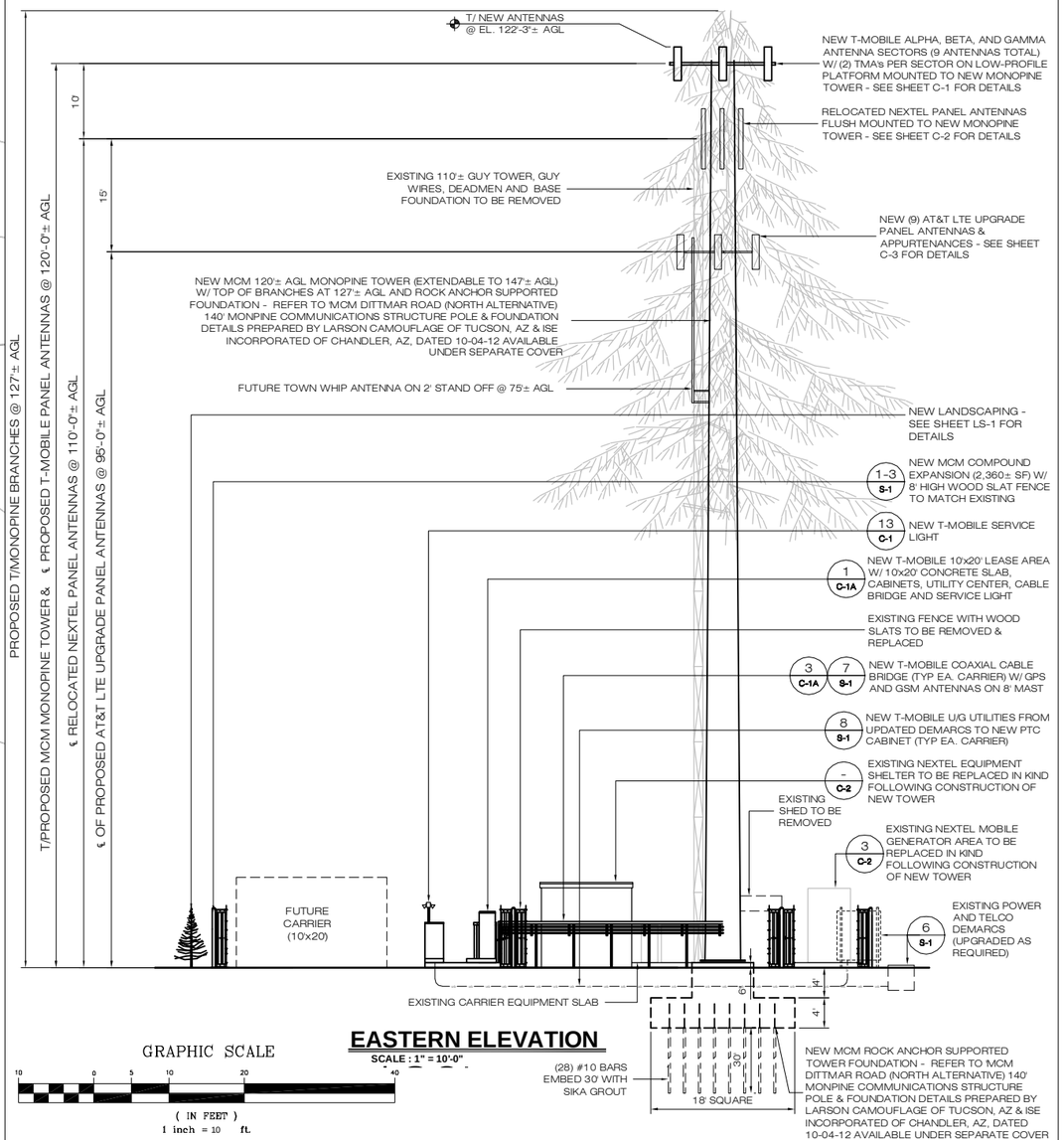
LS-1

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



COMPOUND PLAN

SCALE : 3/8" = 1'-0"



EASTERN ELEVATION

SCALE : 1" = 10'-0"

MCM
MESSAGE CENTER MANAGEMENT
40 WOODLAND STREET
HARTFORD, CT 06105
OFFICE: (888) 973-7483

T-MOBILE SITE NUMBER: CTFF632

APT FILING NUMBER: CT-255T-830

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002
OFFICE: (860)-692-7100

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

DEVELOPMENT & MANAGEMENT PLAN

MCM DITTMAR ROAD
4 DITTMAR ROAD
REDDING, CT 06896

DESIGN TYPE:

RAW LAND

REVISIONS:

REV.1: 11/12/12: FOR REVIEW: SMC
REV.2: 11/16/12: FOR FILING: SMC
REV.3:
REV.4:
REV.5:
REV.6:

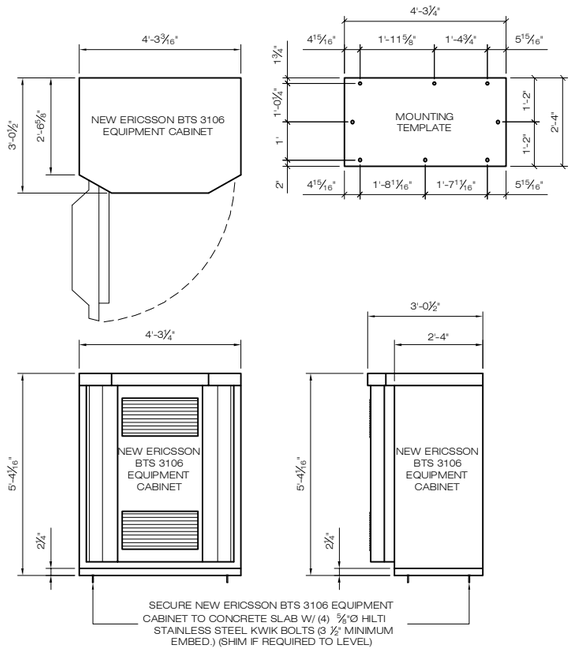
COMPOUND PLAN & TOWER ELEVATION

APT FILING NUMBER: CT-255T-830
APT DRAWING NUMBER: CTFF632
DRAWN BY: SMC
CHECKED BY: SMC
SCALE: AS NOTED
DATE: 03/15/11

SHEET NUMBER:

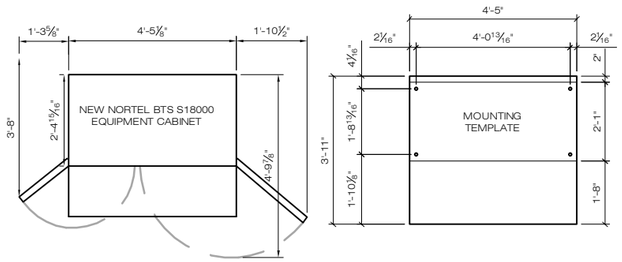
A-1

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



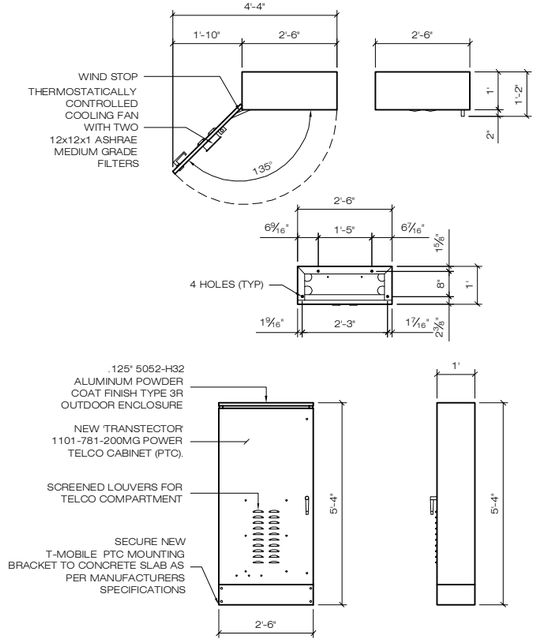
1 C-1 ERICSSON RBS 3106 EQUIPMENT CABINET

SCALE : ½" = 1'-0"



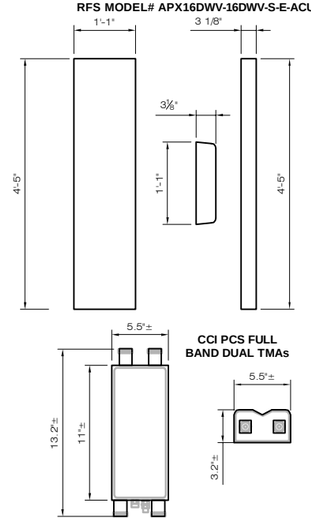
2 C-1 NORTEL BTS S18000 EQUIPMENT CABINET

SCALE : ½" = 1'-0"



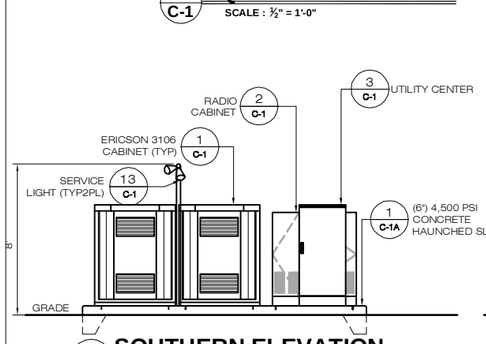
3 C-1 TRANSTECTOR PTC CABINET

SCALE : ½" = 1'-0"



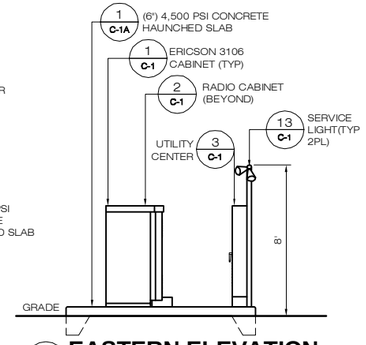
12 C-1 TYPICAL PANEL ANTENNA & TMA

SCALE : NTS



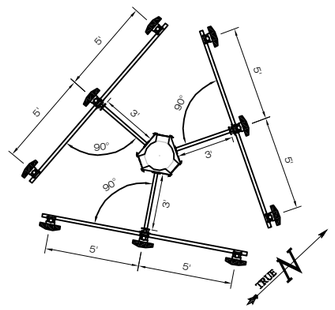
5 C-1 SOUTHERN ELEVATION

SCALE : ¼" = 1'-0"



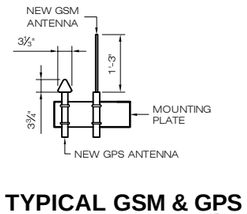
6 C-1 EASTERN ELEVATION

SCALE : ¼" = 1'-0"



10 C-1 ANTENNA PLAN

SCALE : ¼" = 1'-0"



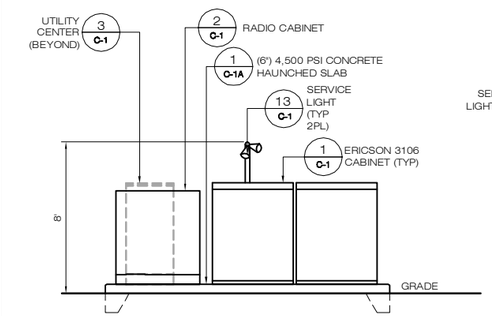
11 C-1 TYPICAL GSM & GPS ANTENNA DETAILS

SCALE : NTS

DESIGN LOAD CRITERIA

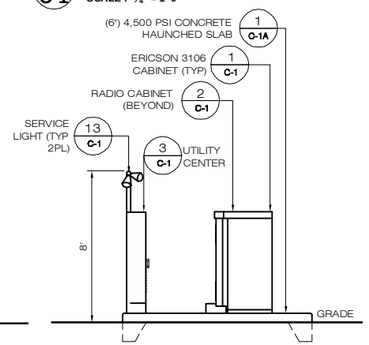
EQUIPMENT SHELTER SHALL BE DESIGNED AND MANUFACTURED TO MEET ALL STATE AND LOCAL CODES. ITS LAYOUT SHALL BE COORDINATED WITH CARRIERS.

DESIGN BASIS	CONNECTICUT
GOVERNING CODE	STATE BUILDING CODE
DESIGN LIVE LOADS	40 PSF (ASCE 7-02)
IMPORTANCE CATEGORY	II
SNOW LOAD:	
GROUND SNOW LOAD (Pg)	30 PSF
IMPORTANCE FACTOR	1.0
EXPOSURE FACTOR (Ce)	1.0
THERMAL FACTOR (Ct)	1.0
WIND LOAD:	
BASIC WIND LOAD	100 MPH (3 SECOND GUST)
EXPOSURE GROUP	B
IMPORTANCE FACTOR	1.00
EQUIPMENT LOAD:	
EQUIPMENT DL	9,000 LBS
SEISMIC DESIGN PARAMETERS:	
SEISMIC USE GROUP	II
MCE SPECTRAL ACCELERATION SHORT (Sa)	0.354
MCE SPECTRAL ACCELERATION SHORT (Si)	0.089
SITE CLASS	C
IMPORTANCE FACTOR	1.0



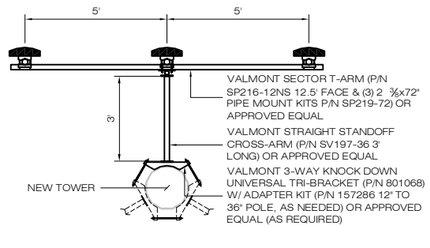
7 C-1 NORTHERN ELEVATION

SCALE : ¼" = 1'-0"



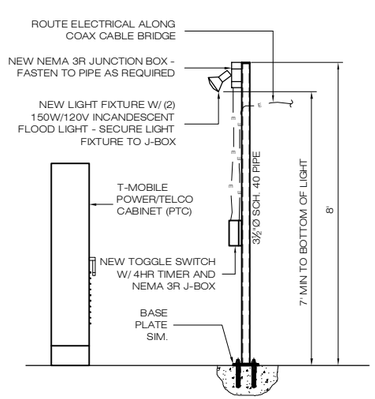
8 C-1 WESTERN ELEVATION

SCALE : ¼" = 1'-0"



9 C-1 ANTENNA MOUNT

SCALE : ⅜" = 1'-0"



13 C-1 SERVICE LIGHT

SCALE : ½" = 1'-0"

MESSAGE CENTER MANAGEMENT
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HARTFORD, CT 06105
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DEVELOPMENT & MANAGEMENT PLAN

MCM DITTMAR ROAD
4 DITTMAR ROAD
REDDING, CT 06896

DESIGN TYPE:

RAW LAND

REVISIONS:

REV.1: 11/12/12: FOR REVIEW: SMC
REV.2: 11/16/12: FOR FILING: SMC
REV.3:
REV.4:
REV.5:
REV.6:

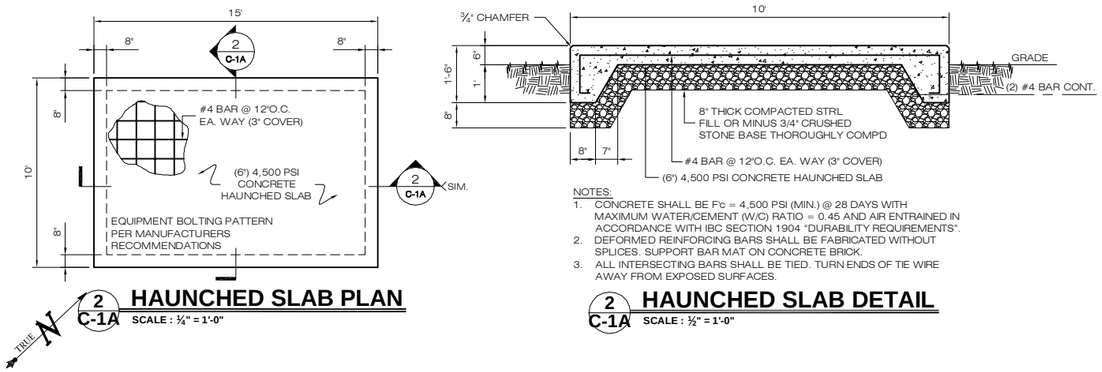
T-MOBILE EQUIPMENT PLAN & DETAILS

APT FILING NUMBER: CT-255T-830
APT DRAWING NUMBER: CTFF632
DRAWN BY: SMC
CHECKED BY: SMC
SCALE: AS NOTED
DATE: 03/15/11

SHEET NUMBER:

C-1

SCOTT M. CHASE No.19726 LICENSED PROFESSIONAL ENGINEER STATE OF CONNECTICUT



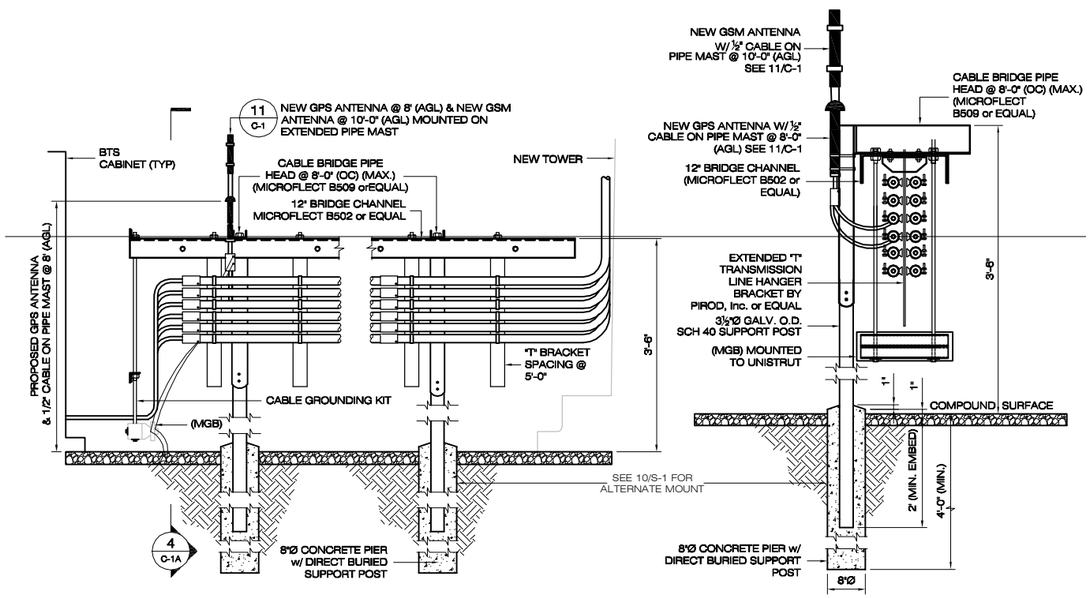
2 C-1A HAUNCHED SLAB PLAN

SCALE : ¼" = 1'-0"

NOTES:
1. CONCRETE SHALL BE Fc = 4,500 PSI (MIN.) @ 28 DAYS WITH MAXIMUM WATER/CEMENT (W/C) RATIO = 0.45 AND AIR ENTRAINED IN ACCORDANCE WITH IBC SECTION 1904 "DURABILITY REQUIREMENTS".
2. DEFORMED REINFORCING BARS SHALL BE FABRICATED WITHOUT SPLICES. SUPPORT BAR MAT ON CONCRETE BRICK.
3. ALL INTERSECTING BARS SHALL BE TIED. TURN ENDS OF TIE WIRE AWAY FROM EXPOSED SURFACES.

2 C-1A HAUNCHED SLAB DETAIL

SCALE : ½" = 1'-0"



3 C-1A CABLE BRIDGE DETAIL

SCALE : N.T.S.

4 C-1A SECTION VIEW

SCALE : N.T.S.

MCM
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T-Mobile
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DEVELOPMENT & MANAGEMENT PLAN

MCM DITTMAR ROAD
4 DITTMAR ROAD
REDDING, CT 06896

DESIGN TYPE:

RAW LAND

REVISIONS:

REV.1: 11/12/12: FOR REVIEW: SMC
REV.2: 11/16/12: FOR FILING: SMC
REV.3:
REV.4:
REV.5:
REV.6:

T-MOBILE EQUIPMENT DETAILS

APT FILING NUMBER: CT-255T-830
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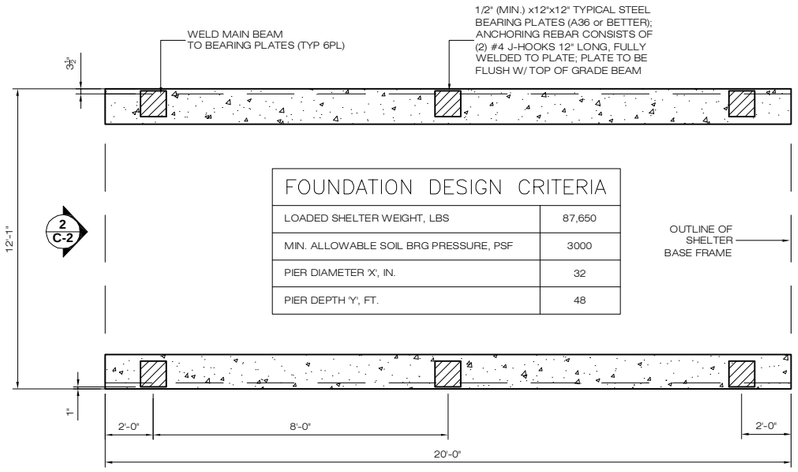
SCALE: AS NOTED
DATE: 03/15/11

SHEET NUMBER:

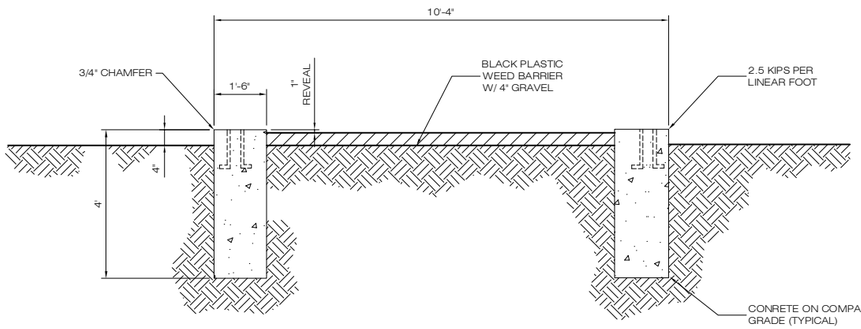
C-1A

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

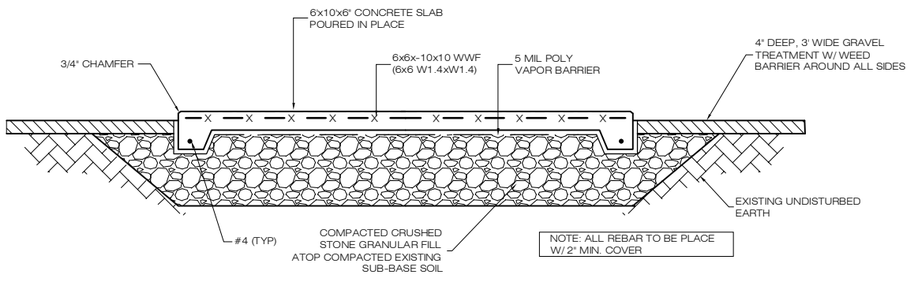


FOUNDATION DESIGN CRITERIA	
LOADED SHELTER WEIGHT, LBS	87,650
MIN. ALLOWABLE SOIL BRG PRESSURE, PSF	3000
PIER DIAMETER 'X', IN.	32
PIER DEPTH 'Y', FT.	48

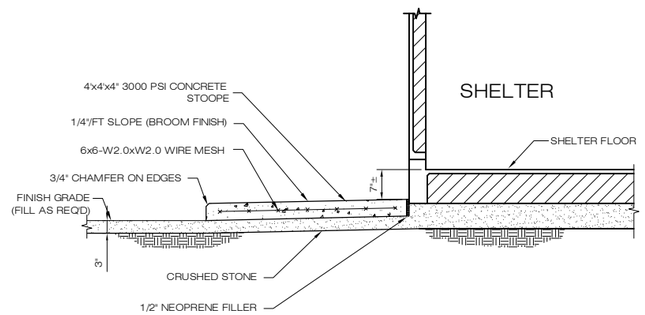
1 C-2 FOUNDATION PLAN
SCALE : NTS



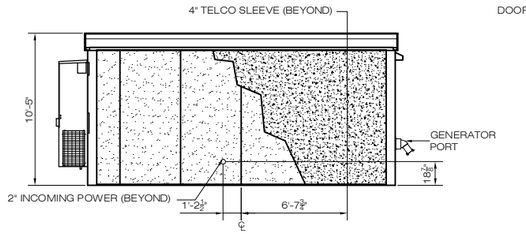
2 C-2 GRADE BEAM FOUNDATION SECTION
SCALE : NTS



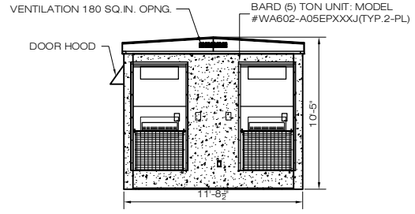
3 C-2 GENERATOR PAD FOUNDATION PLAN
SCALE : 1/2" = 1'-0"



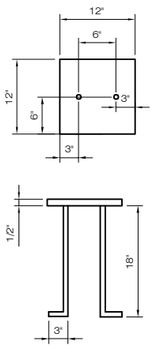
4 C-2 CONCRETE STOOP DETAIL
SCALE : NTS



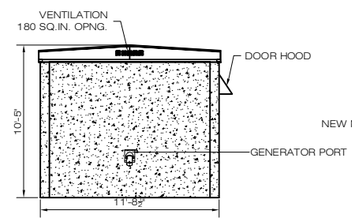
5 C-2 SOUTHERN ELEVATION
SCALE : NTS



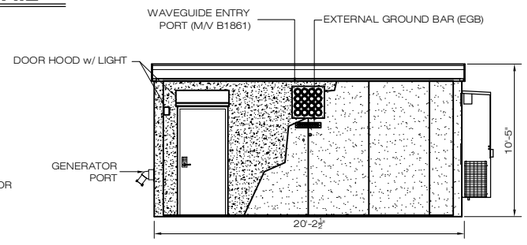
6 C-2 WESTERN ELEVATION
SCALE : NTS



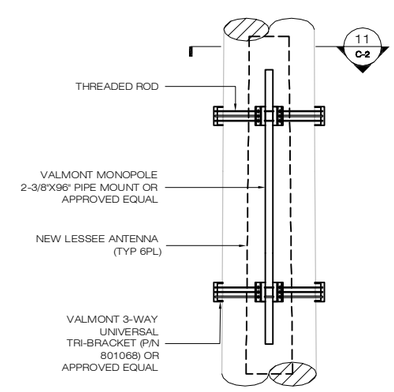
7 C-2 BEARING PLATE DETAIL
SCALE : NTS



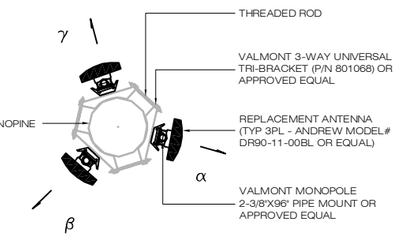
8 C-2 EASTERN ELEVATION
SCALE : NTS



9 C-2 NORTHERN ELEVATION
SCALE : NTS

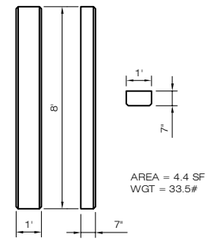


10 C-2 ANTENNA MOUNT
SCALE : ½" = 1'-0"



11 C-2 ANTENNA PLAN
SCALE : ¼" = 1'-0"

REPLACEMENT ANTENNA
(TYP 3PL - ANDREW MODEL#
DR90-11-00BL OR EQUAL)



12 C-2 ANTENNA SPEC
SCALE : ¾" = 1'-0"

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
GOVERNING CODE	STATE BUILDING CODE
DESIGN LIVE LOADS	250 PSF (ASCE 7-02)
IMPORTANCE CATEGORY	II
SNOW LOAD:	
GROUND SNOW LOAD (Pg)	30 PSF
IMPORTANCE FACTOR	1.0
EXPOSURE FACTOR (Ce)	1.0
THERMAL FACTOR (Ct)	1.0
WIND LOAD:	
BASIC WIND LOAD	100 MPH (3 SECOND GUST)
EXPOSURE GROUP	B
IMPORTANCE FACTOR	1.00
EQUIPMENT LOAD:	
EQUIPMENT DL	38,000 LBS
SEISMIC DESIGN PARAMETERS:	
SEISMIC USE GROUP	II
MCE SPECTRAL ACCELERATION SHORT (Sa)	0.354
MCE SPECTRAL ACCELERATION SHORT (Si)	0.089
SITE CLASS	C
IMPORTANCE FACTOR	1.0

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DEVELOPMENT & MANAGEMENT PLAN

MCM DITTMAR ROAD
4 DITTMAR ROAD
REDDING, CT 06896

DESIGN TYPE:

RAW LAND

REVISIONS:

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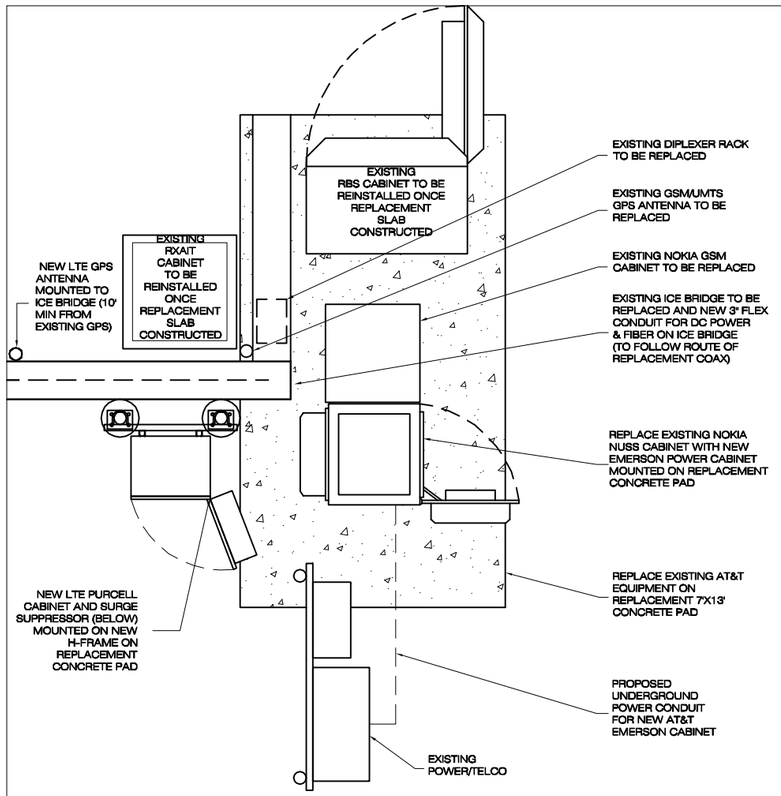
SPRINT/NEXTEL EQUIPMENT DETAILS

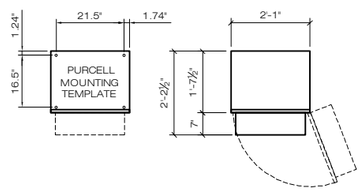
APT FILING NUMBER: CT-255T-830
APT DRAWING NUMBER: CTFF632
DRAWN BY: SMC
CHECKED BY: SMC
SCALE: AS NOTED
DATE: 03/15/11

SHEET NUMBER:

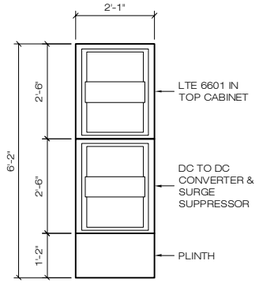
C-2



EQUIPMENT PLAN
SCALE : ⅛" = 1'-0"

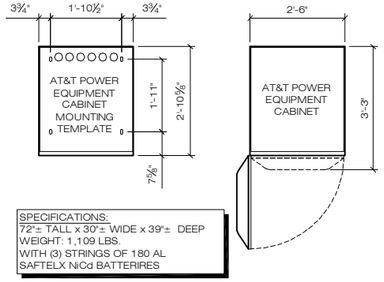


SPECIFICATIONS:
74"± TALL x 25"± WIDE x 26.5"± DEEP
WEIGHT: 600 LBS.

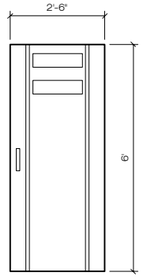


SECURE NEW PURCELL EQUIPMENT CABINET TO STEEL DUNNAGE PER MANUFACTURERS SPECIFICATIONS

1 C-3 PURCELL W/ 14" PLINTH EQUIPMENT CABINET
SCALE : ½" = 1'-0"

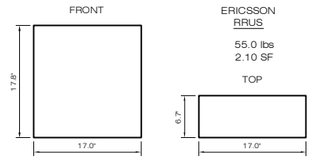


SPECIFICATIONS:
72"± TALL x 30"± WIDE x 39"± DEEP
WEIGHT: 1,109 LBS.
WITH (3) STRINGS OF 180 AL SAFTELX NiCd BATTERIRES

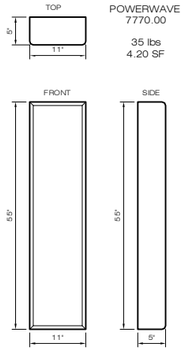


SECURE NEW RBA72 EQUIPMENT CABINET TO STEEL DUNNAGE PER MANUFACTURERS SPECIFICATIONS

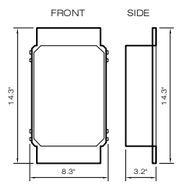
2 C-3 AT&T RBA72 POWER & BATTERY EQUIPMENT CABINET
SCALE : ½" = 1'-0"



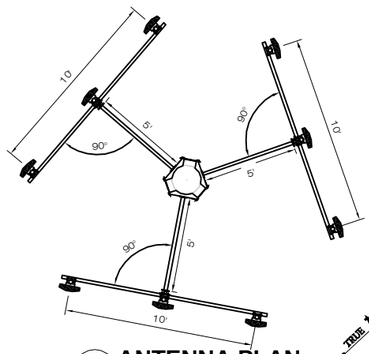
3 C-3 TYPICAL RRUS
SCALE : 1" = 1'-0"



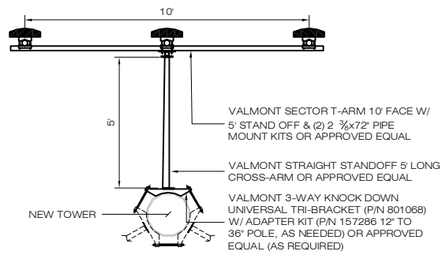
5 C-3 TYPICAL PANEL ANTENNA
SCALE : NTS



4 C-3 TYPICAL TMA
SCALE : 1½" = 1'-0"



6 C-3 ANTENNA PLAN
SCALE : ¾" = 1'-0"

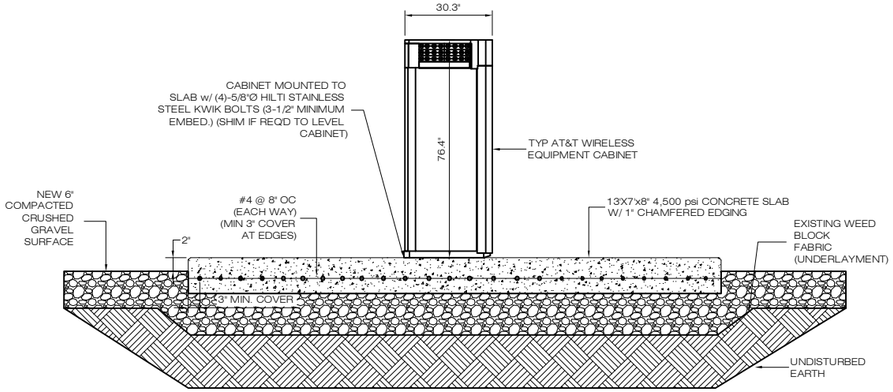


7 C-3 ANTENNA MOUNT
SCALE : ⅜" = 1'-0"

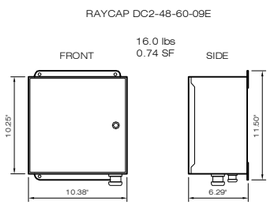
DESIGN LOAD CRITERIA

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

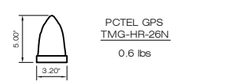
DESIGN BASIS	CONNECTICUT
GOVERNING CODE	STATE BUILDING CODE
DESIGN LIVE LOADS	250 PSF (ASCE 7-02)
IMPORTANCE CATEGORY	II
SNOW LOAD:	
GROUND SNOW LOAD (Pg)	30 PSF
IMPORTANCE FACTOR	1.0
EXPOSURE FACTOR (Ce)	1.0
THERMAL FACTOR (Ct)	1.0
WIND LOAD:	
BASIC WIND LOAD	100 MPH (3 SECOND GUST)
EXPOSURE GROUP	B
IMPORTANCE FACTOR	1.00
EQUIPMENT LOAD:	
EQUIPMENT DL	10,500 LBS
SEISMIC DESIGN PARAMETERS:	
SEISMIC USE GROUP	II
MCE SPECTRAL ACCELERATION SHORT (Sa)	0.354
MCE SPECTRAL ACCELERATION SHORT (Si)	0.089
SITE CLASS	C
IMPORTANCE FACTOR	1.0



8 C-3 AT&T EQUIPMENT SLAB SECTION VIEW
SCALE : NTS



9 C-3 TYPICAL SURGE SUPPRESSOR
SCALE : 1½" = 1'-0"



10 C-3 TYPICAL GPS UNIT
SCALE : 1½" = 1'-0"

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DEVELOPMENT & MANAGEMENT PLAN

MCM DITTMAR ROAD
4 DITTMAR ROAD
REDDING, CT 06896

DESIGN TYPE:

RAW LAND

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AT&T EQUIPMENT DETAILS

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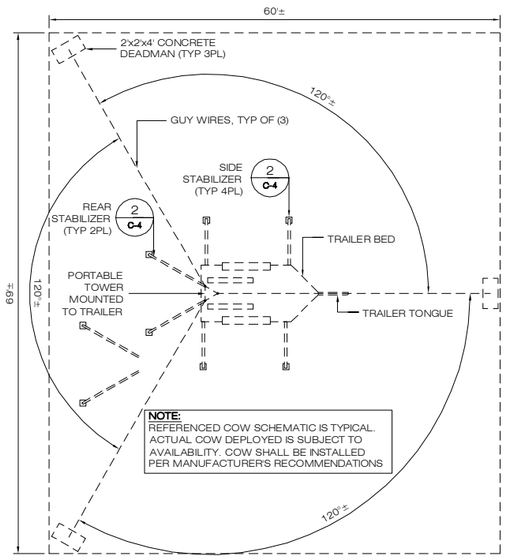
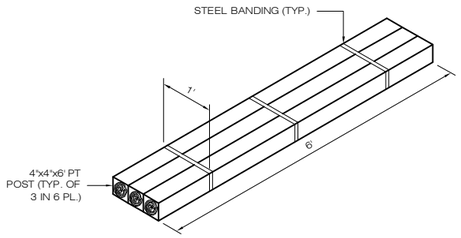
C-3

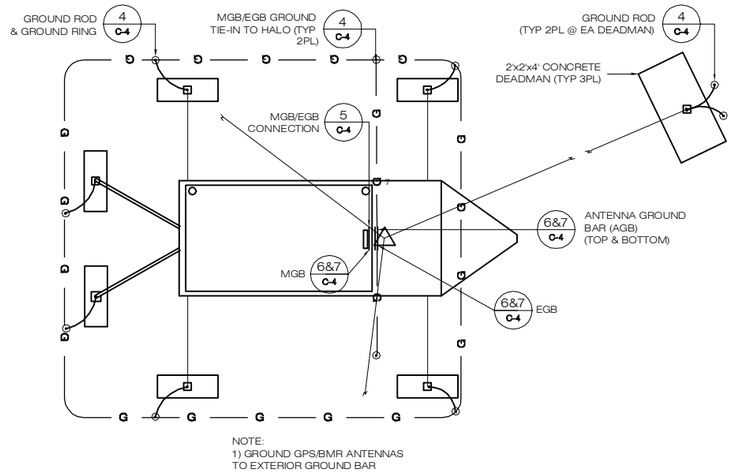
STATE OF CONNECTICUT SCOTT M. CHASE No.19728 LICENSED PROFESSIONAL ENGINEER



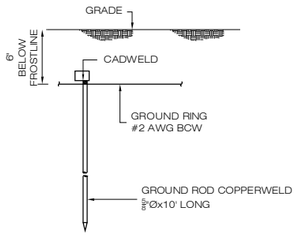
1 C-4 COW PLAN VIEW
SCALE : 1" = 10'-0"



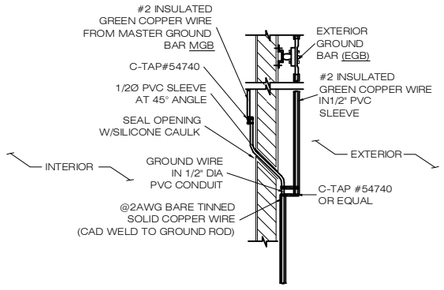
2 C-4 OUTRIGGER CRIBBING
SCALE : NTS



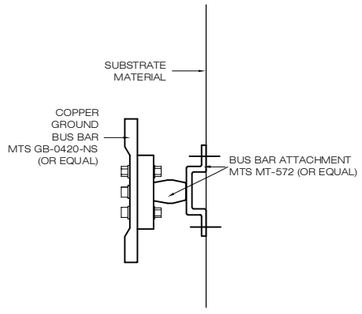
3 C-4 GROUNDING PLAN
SCALE : NTS



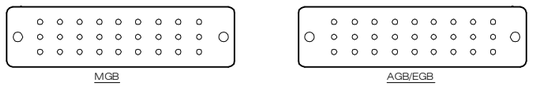
4 C-4 GROUND ROD DETAIL
SCALE : NTS



5 C-4 MGB/EGB CONNECTION DETAIL
SCALE : NTS



6 C-4 GROUND BAR MOUNTING DETAIL
SCALE : NTS



GROUNDING SPECIFICATIONS:	NOTES:	MGB:	AGB/EGB:
1) ALL CONDUCTORS 2 AWG W/ 2 HOLE LUGS. 2) ALL FIELD SIZED LUGS MUST CONFORM W/ NEMA STANDARDS. 3) NO CAD WELDS TO GROUND BAR. 4) DOUBLE UP COAX GROUND LEADS ON BACKSIDE OF GROUND BAR AS NECESSARY. 5) COPPER BUS BAR: MTS GB0420-NH 4'x20'x1/4" (OR EQUAL)	1) MGB = MASTER GROUND BAR 2) AGB = ANTENNA GROUND BAR 3) EGB = EXTERIOR GROUND BAR 4) FOR CONNECTION, SEE DETAIL (5/C-4)	1) HALO RING 2) SPARE 3) RADIO EQUIPMENT 4) POLYPHASER BAR	1) EXISTING GROUND RING 2) MASTER GROUND BAR 3) GPS COAX 4) COAX

7 C-4 GROUND BARS
SCALE : NTS

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TEMPORARY COW DEPLOYMENT

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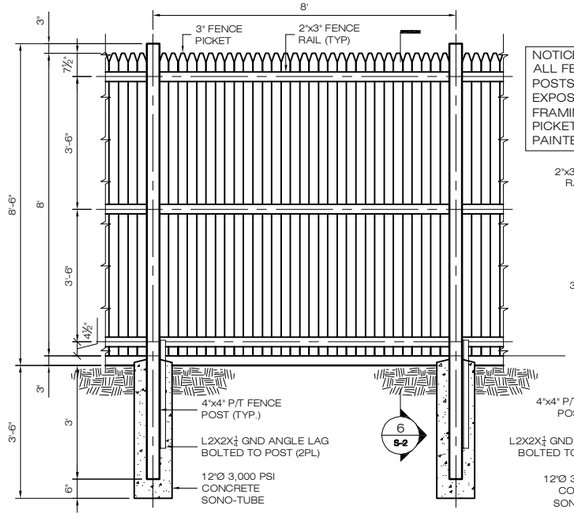
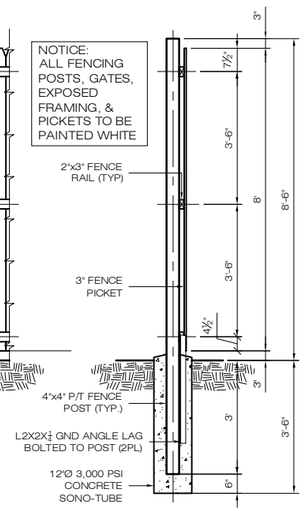
STATE OF CONNECTICUT
SCOTT M. CHASE
No.19728
LICENSED PROFESSIONAL ENGINEER



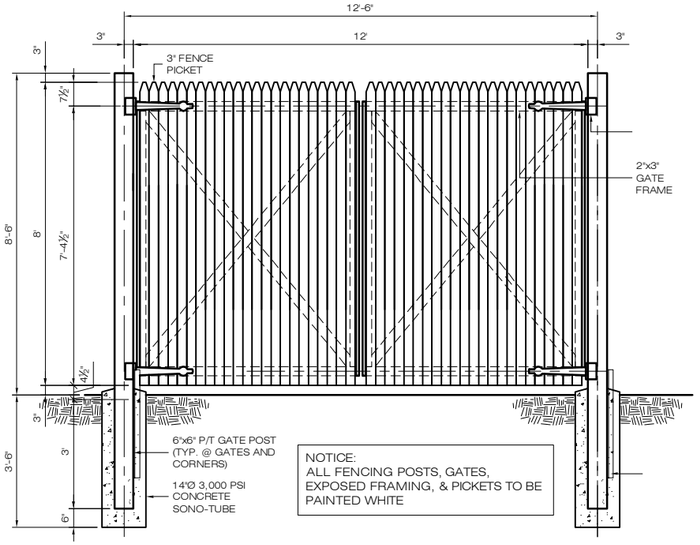
1 S-1 COMPOUND FENCE DETAIL

SCALE : ½" = 1'-0"



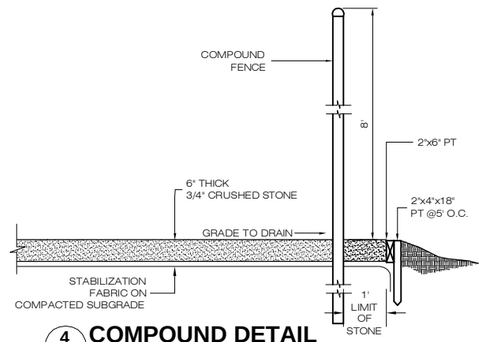
2 S-1 FENCE DETAIL

SCALE : ½" = 1'-0"



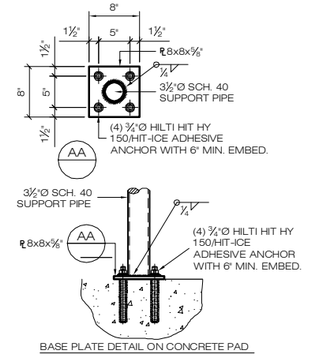
3 S-1 COMPOUND GATE DETAIL

SCALE : ½" = 1'-0"



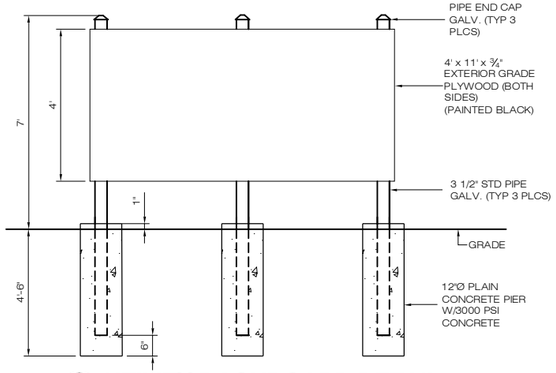
4 S-1 COMPOUND DETAIL

SCALE : NTS



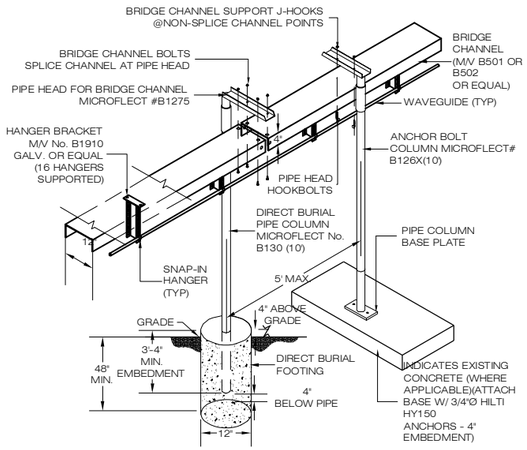
5 S-1 HAUNCHED SLAB PLAN

SCALE : N.T.S.



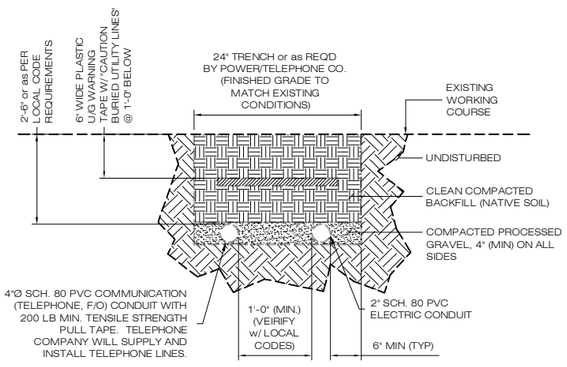
6 S-1 UTILITY BACKBOARD DETAIL

SCALE : NTS



7 S-1 CABLE BRIDGE & COAX HANGER DETAIL

SCALE : NTS



8 S-1 SECONDARY TRENCH DETAIL

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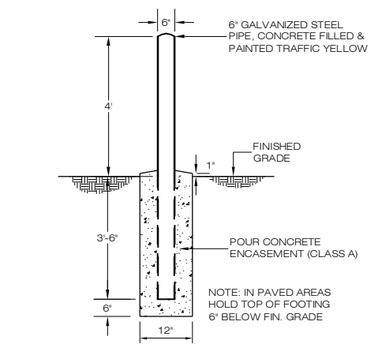

9 S-1 BOLLARD DETAIL

SCALE : NTS

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DEVELOPMENT & MANAGEMENT PLAN

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COMPOUND DETAILS

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S-1

GENERAL NOTES:

1. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL COMPLY WITH THE STANDARDS AND SPECIFICATIONS OF THE TOWN OF OLD LYME, 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 UTILITIES 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. IF NECESSARY, 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. 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), UON.

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 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

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 WEATHERED BEDROCK MAY BE SELECTIVELY RE-USED AS STRUCTURAL FILL, PROVIDED IT MEET THE GRADATION REQUIREMENTS IN NOTE 2, BELOW.
COMMON FILL	VARIES (3)	COMMON FILL MAY BE USED FOR SITE GRADING TO WITHIN 12 INCHES OF FINISHED GRADE. COMMON FILL SHOULD NOT BE USED UNDER SETTLEMENT SENSITIVE STRUCTURES. THE WEATHERED BEDROCK MAY BE RE-USED AS COMMON FILL PROVIDED IT IS FREE OF ORGANICS AND CAN BE ADEQUATELY COMPACTED.

1. COMPACTED STRUCTURAL 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 FOOTINGS OR SLABS

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 GUIDLINES 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 CYCLONE SEED DRILL CULTIPACKER SEEDER OR HYDROSEEDER (SEED & FERTILIZER SLURRY) FOR STEEP SLOPES. IRRIGATE UNTIL VEGETATION IS COMPLETELY ESTABLISHED.

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

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

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

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 STABILIZED.

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.

STEEL NOTES & SPECIFICATIONS

STEEL

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

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

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

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

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

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

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

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

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

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

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

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

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 OWNER'S 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 & SPECIFICATIONS

CONCRETE

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

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

ALL CONCRETE USED SHALL BE 4500 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
*CONCRETE SUBJECT TO FREEZING AND THAWING SHALL HAVE A MAXIMUM WATER/CEMENT (W/C) RATIO OF 0.45 AND SHALL BE AIR ENTRAINED IN ACCORDANCE WITH IBC 2003 SECTION 1904 'DURABILITY REQUIREMENTS.'

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).

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.

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

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

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

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DEVELOPMENT & MANAGEMENT PLAN

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DESIGN TYPE:

RAW LAND

REVISIONS:

REV.1: 11/12/12: FOR REVIEW: SMC
REV.2: 11/16/12: FOR FILING: SMC
REV.3:
REV.4:
REV.5:
REV.6:

NOTES & SPECIFICATIONS

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APT DRAWING NUMBER: CTFF632
DRAWN BY: SMC
CHECKED BY: SMC
SCALE: AS NOTED
DATE: 03/15/11

SHEET NUMBER:

N-1

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