TOWN OF PLYMOUTH

11 Lincoln Street
Plymouth, Massachusetts 02360
(508) 747-1620
FAX (508) 830-4133

ADDENDUM 1

TO: Potential Bidders

FROM: Pamela D. Hagler, Procurement Officer

DATE: August 24, 2015

RE: 21536, Communications Tower and Compound

This addendum, consisting of 34 pages, modifies the original bid document dated August 6, 2015. Please acknowledge receipt of this addendum in the space provided on the bid form. Failure to do so may subject the bidder to disqualification.

THE FOLLOWING CHANGES AND/OR ADDITIONS/DELETIONS MODIFIES THE BID DOCUMENT

- Table of Contents - As defined in the Pre-Bid Conference section on page 4, the pre-bid was not mandatory;
- Page 25, Section 22, Last paragraph - Change 'amount' in liquidated damages to 'zero dollars ($0)';
- Page 28, Section 31 - Change all references to Authority of Director of Public Works to Authority of Fire Chief;
- Attached is technical specification Section 338105 that was inadvertently left out of the bid document. These should be inserted after page 217;
- Attached is the geotechnical engineering report dated June 15, 2015, from GZA GeoEnvironmental, Inc. These should be inserted at the end of Attachment 4;
- Discard the Valmont Tower Final Plans and replace with the attached.

If you have any questions regarding this addendum, please contact me at (508) 747-1620, ext. 107. Thank you.

SECTION 33 81 05

COMMUNICATIONS TOWER AND COMPOUND

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide a complete 150 foot communications tower and compound in accordance with this Section, the Drawings, and applicable reference standards and coordination of installation of Owner-furnished equipment shelter by Thermobond Buildings.

B. Related Requirements

1. Division 26 Specifications – Electrical and associated Drawings
2. Drawings by Valmont Structures (Tower)
3. Drawings by Thermobond Buildings (Equipment Shelter)

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. As specified in other Specifications and Drawings

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.

1.05 SUBMITTALS

A. Submit in accordance with Division 01 General Requirements per other Specifications and Drawings.

1.06 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide in accordance with Division 01 General Requirements.

1.08 SITE CONDITIONS

A. Existing Conditions: per Division 01 General Requirements and as shown on Drawings.

PART 2 – PRODUCTS

2.01 OWNER-FURNISHED PRODUCTS

A. Equipment shelter with electrical equipment provided by Thermobond Buildings.

2.02 CONCRETE

A. Mixes and tolerances: as indicated the Drawings.

B. Source Quality Control

1. Provide in accordance with Division 01 General Requirements.

2.03 MATERIALS FOR SITE WORK

A. Provide in accordance with Geotechnical Report included in Section 00 31 00 and as indicated in the General and Civil Drawings.

B. Provide security fencing and gates as indicated in the General and Civil Drawings.

2.04 COMMUNICATIONS TOWER

A. Performance/Design Criteria: in accordance with Drawings prepared by Valmont Structures.

1. Acceptable level of quality: equivalent to Valmont Structures.

B. Finishes: as specified on the General and Civil Drawings.

C. Source Quality Control

1. Provide in accordance with Division 01 General Requirements.

2.05 ELECTRICAL EQUIPMENT

A. Diesel-engine-driven generator set and automatic transfer switch: as specified in Section 26 32 13.13.

B. Site electrical and grounding equipment and material: Division 26 Electrical Specifications.

PART 3 – EXECUTION

3.01 INSTALLATION, ERECTION AND PLACEMENT

A. Site Work including installation of access drive and security fencing and gates: in accordance with the Drawings.

B. Concrete pads and foundations for tower, standby generator set and Owner furnished equipment shelter: in accordance with the Drawings and manufacturers' requirements.

C. Communications tower: in accordance with the Drawings.

D. Site electrical, grounding and standby generator set: in accordance with Division 26 Specifications and Drawings.

E. Owner furnished equipment shelter: placed in accordance with the Drawings.

1. Coordinate with Owner's supplier (Thermobond Buildings) through Owner for installation of anchor bolts and placement of prefabricated equipment shelter.

2. Owner's supplier will mount and secure equipment shelter.

3. Connection of electrical equipment: in accordance with Division 26 Specifications and Drawings.

F. Field Quality Control

1. Provide in accordance with Division 01 General Requirements.

G. Startup & Commissioning

1. Provide in accordance with Division 01 General Requirements and individual Specifications.

3.02 CLOSEOUT ACTIVITIES

A. Provide in accordance with Division 01 General Requirements.

END OF SECTION

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GZA
GeoEnvironmental, Inc.

Engineers and Scientists

June 15, 2015
File No. 04.0190239.00

Mr. Scott Medeiros, P.E.
Woodard & Curran, Inc.
1699 King Street, Suite 406
Enfield, Connecticut 06082

Re: Geotechnical Engineering Report
Proposed Communication Tower
Old Sandwich Road
Plymouth, Massachusetts

5 Commerce Park North,
Suite 201
Bedford, NH 03110
603-623-3600
FAX 603-624-9463
www.gza.com

Dear Mr. Medeiros:

GZA GeoEnvironmental, Inc. (GZA) is pleased to submit this geotechnical engineering report to Woodard & Curran, Inc. (W&C) for the proposed communication tower in Plymouth, Massachusetts. A site locus is provided on **Figure 1**. This geotechnical study was performed in accordance with our proposal dated April 7, 2015. The contents of this report are subject to the *Limitations* set forth in **Appendix A**.

OBJECTIVES AND SCOPE OF SERVICES

The objectives of our work were to develop geotechnical engineering recommendations for design and construction of the proposed communication tower. To meet the project objectives, GZA:

- Coordinated and observed a subsurface exploration program consisting of two test borings;
- Performed laboratory gradation analyses on soil samples recovered from the test borings to estimate the engineering properties of the soils encountered and confirm field classifications;
- Conducted geotechnical engineering analyses to evaluate the impacts of subsurface conditions on the proposed construction;
- Developed geotechnical engineering recommendations for foundation design, earthwork, subgrade preparation, and fill materials; and
- Prepared this report summarizing our findings and recommendations.

SITE DESCRIPTION AND PROPOSED CONSTRUCTION

A new, self-supported communication tower is proposed to be constructed near the existing water tower and cell tower in the Pine Hills area of Plymouth Massachusetts. The proposed site location is near an existing transmission line easement off of Old Sandwich Road.

Existing ground surface elevations range from approximately Elevation 359 to Elevation 363[1] within the proposed tower and shelter location. We understand that the proposed grades will generally match the existing grades.

The proposed construction consists of a fenced-in area 75 feet by 75 feet containing a small shelter/storage building and a 150-foot-tall communication tower. Based on plans provided by the proprietary tower designer, the proposed communication tower will be supported on three 3.5-foot-diameter concrete piers that extend down to a 27-foot by 27 foot concrete mat foundation that is approximately 1.5 feet thick. The mat will bear at a depth of about 6 feet below grade (see **Appendix B**).

An equipment shelter is proposed adjacent to the communication tower. We understand that typically these structures are supported on spread footings and slab-on-grade construction, where possible.

SUBSURFACE EXPLORATIONS

New England Boring Contractors (NEBC) of Brockton, Massachusetts drilled two test borings, GZ-1 and GZ-2, on May 20, 2015 to depths of 51 and 22 feet below ground surface (bgs), respectively, terminating in very dense sand. Boring GZ-1 was drilled using 4-inch inside-diameter (ID) flush-joint casing and drive-and-wash methods. Test boring GZ-2 was drilled using 4.25-inch ID hollow stem augers. Standard Penetration Testing (SPT) was generally performed at 5-foot intervals in the test borings.

GZA field personnel approximately located the test borings by using a handheld GPS unit with a precision of 10-feet ±. The locations of the test borings are shown on **Figure 2**, and test boring logs prepared by GZA are included in **Appendix C**.

LABORATORY TESTING

GZA performed two gradation analyses on samples of soil collected from the explorations; boring GZ-1, sample S-7 (24 to 26 feet bgs); and boring GZ-2, sample S-2 (4 to 6 feet bgs). The purpose of the analyses was to confirm the visual classifications made in the field, to assess the suitability of on-site soil for reuse, and to estimate the engineering properties of the soil. Corrosivity testing (pH, resistivity, sulfate and chloride content) was performed by ESS Laboratory (ESS) in Cranston Rhode Island on one sample to evaluate the potential for corrosion of steel and concrete by the native soils.

[1] Elevations are measured in feet and referenced to the North American Datum of 1983 (NAD 83).

Laboratory test results are summarized in **Table 1** and laboratory data sheets are included in **Appendix D**.

SUBSURFACE CONDITIONS

Two soils were encountered in the test borings: Topsoil and Sand. Thicknesses encountered and generalized descriptions are provided below. Detailed descriptions of the soil encountered at the boring locations are provided in the boring logs included in **Appendix C**.

GENERALIZED SUBSURFACE CONDITIONS		
Soil Unit	**Approx. Encountered Thickness (feet)**	**Generalized Description**
Topsoil	0.16 to 0.5	Brown to black, fine to medium SAND, little to trace fibrous organics and roots, trace Silt. Topsoil was encountered in both borings.
Sand	0.16 to 51	Natural Sand was encountered in both of the test borings below the topsoil. The Sand generally consisted of medium dense to very dense, fine to medium SAND, with up to 35 percent silt.

GROUNDWATER

Groundwater was not observed in the test borings, which extended to a maximum depth of 51 feet bgs. However, sample descriptions varied from moist changing to wet at about 30 feet bgs. Groundwater conditions and levels can fluctuate, due to variations in rainfall, seasonal runoff, soil conditions and other factors.

CORROSION POTENTIAL

One soil sample was collected for chemical testing, including pH, soluble sulfates, chloride, and conductivity. The test results are summarized in **Table 1**. Corrosivity can be assessed based on the following categories (referenced from several documents[2]):

PARAMETER	GENERALLY NON-CORROSIVE	NEUTRAL	CORROSIVE	SEVERE CORROSION POTENTIAL
Resistivity (ohm-m)	>100	10 – 100	5 – 10	<5
pH	4.0 – 7.5	7.5 – 8.5	2.0 – 4.0 and >8.5	0.0 – 2.0
Sulfate	0 – 15 ppm	15 – 150 ppm	150 – 1500 ppm	>1500 ppm
Chlorides	<20	20 – 100 ppm	100 – 1,000ppm	>1,000 ppm
Moisture	Good Drainage, Generally Dry	Fair Drainage, Generally Moist	Poor Drainage, Generally Wet	Saturated
Cement Type	I	I/II	II	V

[2] Table 1904.3 – "Requirements for Concrete Exposed to Sulfate-Containing Solutions" (IBC, 2000).

Table 6 – Recommended limits of electrochemical properties. "MSE Walls – Reinforced Soil Slopes": Design and Construction Guidelines (FHWA-SA-96-071).

8.8 Design Considerations in Aggressive Subsurface Environments "Design and Construction of Driven Pile Foundations" (FHWA-III-97-013).

The test results indicate the soil has a low corrosion potential; therefore, a Type I or Type II cement is suitable for use. The soil testing results are included in **Appendix C**

GEOTECHNICAL ISSUES AND DESIGN RECOMMENDATIONS

The geotechnical design and construction recommendations presented below are based on our evaluation of the available data and design concepts provided to GZA and are subject to the Limitations attached as **Appendix A**. References to the IBC refer to the International Building Code 2009 with Massachusetts State Building Code 8th Edition (MSBC) amendments.

FOUNDATION DESIGN RECOMMENDATIONS

Foundation loads can be supported in the natural, undisturbed Sand. We understand that the tower is intended to be designed for a single mat foundation. Given the presence of relatively shallow dense sand it is our opinion that a mat foundation is feasible.

Tower Foundations

Assuming subgrade preparation as outlined below, recommended maximum net allowable bearing pressure for the mat foundation bearing on the undisturbed natural sand, or on compacted Sand-Gravel fill placed over the undisturbed natural sand, is 2.5 tons per square foot (tsf). At this bearing pressure, total foundation settlement is estimated to be less than 1 inch and differential settlements across the mat estimated to be less than ½ inch, provided foundations are constructed as recommended herein. If the sand is overexcavated, it should be replaced with lean concrete or compacted Sand-Gravel (refer to **Table 2** below). Sand-Gravel fill placed below foundations should be compacted to at least 95 percent of the soil's maximum dry density as determined by Modified Proctor Tests (ASTM D-1557, Method C).

Table 2
Gradation Requirements

Sieve Size	Percent Finer by Weight
Sand-Gravel shall consist of durable sand and gravel and shall be free from ice and snow, roots, sod, rubbish and other deleterious or organic matter. Sand-Gravel shall conform to the following gradation requirements:	
3 inch	100
1/2 inch	50 - 85
No. 4	40 - 75
No. 50	8 - 28
No. 200	0 - 8
Crushed Stone shall consist of durable crushed rock or durable crushed gravel stone and shall be free from ice and snow, clay, loam and other deleterious material. Crushed Stone shall conform to the following gradation requirements:	
1 inch	100
3/4 inch	90 - 100
1/2 inch	10 - 50
3/8 inch	0 - 20
No. 4	0 - 5

Lateral Resistance

Lateral loads and base shear forces on foundations can be resisted by passive pressure against footings and foundation walls, and bottom friction on the footings. We recommend the following parameters for calculating lateral resistance from earth pressures against foundation units:

$$P_P = 1/6\ \gamma\ K_p\ H^2$$

where: P_P = passive force in pounds per linear foot of foundation;
γ = soil unit weight in pcf, use 115 pcf;
K_p = passive earth pressure coefficient (use $K_p = 3.0$); and
H = height of foundation unit, bgs

The frictional resistance can be calculated using an ultimate friction factor (that is, tan δ) of 0.35 for cast-in-place concrete footings bearing on native sand. A minimum factor of safety of 1.5 should be applied to sliding resistance and earth pressure. We recommend an angle of internal friction of 32 degrees for the sand-gravel backfill placed adjacent to the mat/footing or for adjacent undisturbed sand. The contribution of the upper 2 feet of soil should be neglected when calculating passive resistance.

If passive resistance of soil is used in the design, the area around the foundation should be designed such that it insures the backfill within a zone defined by a 2 horizontal to 1 vertical (2H:1V) line sloping up from the bottom edges of the mat is not excavated during the life of the structure. In addition, backfill placed around the foundation should be native sand, Crushed Stone or Sand-Gravel fill compacted to at least 95 percent of the maximum dry density as determined by the Modified Proctor Tests (ASTM D-1557, Method C).

Equipment Shelter

The equipment shelter foundation should bear on undisturbed natural Sand, or compacted Sand-Gravel Fill over undisturbed natural Sand, with a recommended maximum net allowable bearing pressure of 2.5 tsf.

The existing topsoil and upper 1 foot of sand should be removed from below the shelter area and the slab supported on a compacted Sand-Gravel fill subgrade. A minimum thickness of 6 inches of compacted Sand-Gravel fill should be placed below the slab.

Frost Protection

For frost protection, spread footings or mat foundation bearing on soil should be constructed at least 4 feet below final finished grade. Mat/footing subgrades should be protected from frost during construction. Do not place concrete or fill over a frozen subgrade.

EARTHWORK RECOMMENDATIONS

Soil Excavation

We anticipate that excavation required for the foundations will encounter overburden soil consisting mostly of sand and silty sand. It is expected that the overburden soils can be excavated using conventional earth-moving equipment.

Where space permits, excavations may be achieved using sloped, open-cut techniques, provided they comply with Occupational Health and Safety Administration excavation safety requirements. Where space is limited, temporary support systems such as braced sheeting may be needed to support adjacent travel-ways, earth supported structures, or utilities.

Excavations should not be performed within the zone of influence of existing foundations or utilities, if present. The recommended zone of influence is an area under the foundation or utility under a line extending down from 1 foot outside the edge at a 1H:2V slope without consideration for temporary or permanent underpinning of the foundation or utility.

Subgrade Preparation

Once excavation to bearing elevation has been accomplished, the subgrade should be proof-compacted with six passes of a self-propelled vibratory compactor (capable of generating a minimum of 15,000 pounds of dynamic force) or eight passes of a large vibratory plate compactor (at least 500 pound static weight) to provide a firm, stable subgrade. Areas exhibiting excessive weaving or soft or unstable soils should be excavated and replaced with Sand-Gravel fill compacted to the requirements described below. Footing subgrade preparation should be observed by a qualified geotechnical engineer.

Fill Material and Placement Recommendations

Fill should be placed systematically in horizontal layers not more than 12 inches in thickness prior to compaction when compacted with large, self-propelled vibratory rollers capable of generating a minimum of 15,000 pounds of dynamic force. However, when within 5 feet of foundations or site retaining walls (if any), use hand-guided compaction equipment such as a small vibratory plate compactor at a maximum loose lift thickness of 6 inches. Fill placed beneath slabs and as backfill for foundation walls must be compacted to at least 95 percent of the maximum dry density determined in accordance with ASTM D1557.

Fill placed below access routes and within the fenced site area should be compacted to greater than 95 percent of the material's maximum dry density, determined in accordance with ASTM D1557.

Site plans call for "¾ inch crushed stone over geotextile." The geotextile should be non-woven filter fabric (Mirafi 140N or similar).

Reuse of On-Site Materials

Laboratory results indicate that the existing sandy soils to be excavated contain up to about 24 percent fines and do not meet the gradation requirements for Sand-Gravel or Crushed Stone Fill but may be used for Common Fill in landscape areas. GZA recommends that the excavated soils be stockpiled and assessed by a qualified geotechnical engineer prior to reuse of materials. Please note that due to the high silt content, the on-site sandy soils may be easily disturbed during wet/freezing conditions when subject to earthwork equipment, and difficult to compact when wet.

CONSTRUCTION PHASE SERVICES AND MONITORING

It is recommended that GZA be given the opportunity to review progress site and structural plans to confirm that our geotechnical recommendations have been interpreted and implemented as we intended. In addition, we recommend that GZA be retained to prepare earthwork specifications for the construction documents. We recommend that GZA be retained and observe/document the following aspects of foundation and site construction:

- Excavation to footing, mat and slab subgrades to confirm the type and bearing condition of materials encountered;
- Proposed footing bearing surfaces to confirm that they have been properly prepared and that they are acceptable for the recommended bearing pressure;
- Placement and compaction of fill materials; and
- Evaluation of the suitability of excavated soils for use as backfill in landscape areas.

By observing these aspects of construction, GZA will be able to document compliance with the design concepts, recommendations, specifications and Building Code, and to help expedite resolution of construction issues.

CLOSURE

This report has been prepared with the assistance of Mr. Mirsad Alihodzic. We appreciate the opportunity to work with you on this project, and we would be pleased to work with you through design and construction. In the meantime, if you have any

questions regarding the recommendations contained in this report or require additional information, please contact us.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Jay L. Hodkinson, P.E.
Senior Project Manager

Bruce W. Fairless, P.E.
Associate Principal

Mary B. Hall, P.E.
Consultant/Reviewer

MA/JLH/BWF/MBH:kr
\\gzaman1\jobs\04jobs\0190200s\04.0190239.00\report\final 190239 00 proposed communication tower geotechnical report 061515.docx

Attachments: Table 1 – Summary of Laboratory Testing
Figure 1 – Site Locus
Figure 2 – Site and Subsurface Exploration Location Plan
Appendix A – Limitations
Appendix B – Tower Foundation Design Assumptions by Others
Appendix C – Test Boring Logs
Appendix D – Results of Geotechnical Laboratory Testing

TABLE

TABLE 1
SUMMARY OF LABORATORY TESTING

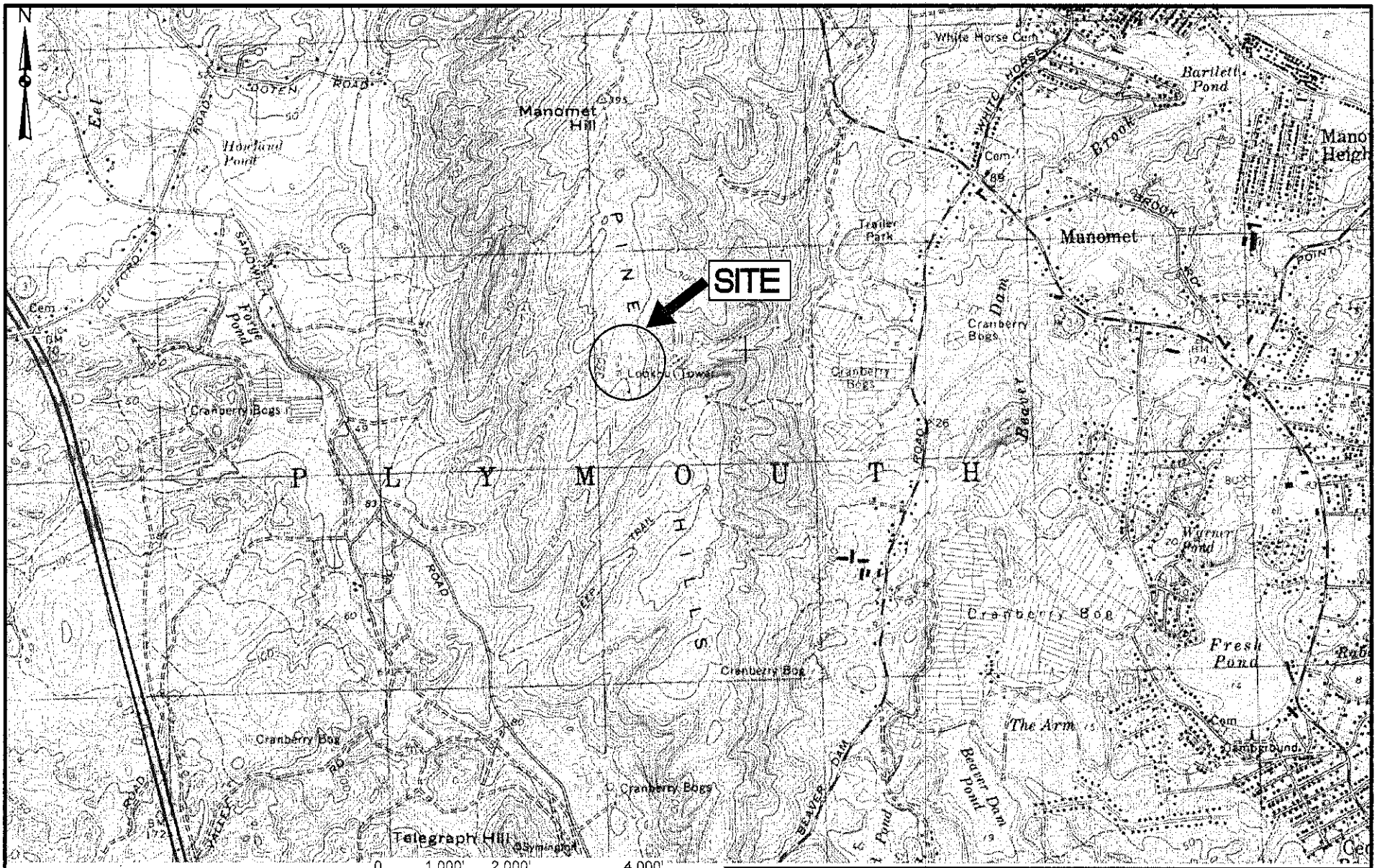
Proposed Communications Tower
Plymouth, Massachusetts

Boring No.	Sample No.	Depth (feet)	Soil Classification (Modified Burmister)	Grain Size Distribution			Natural Water Content (%)	pH	Resistivity (Ohm-m)	Sulfates (ppm)	Chlorides (ppm)
				Gravel	Sand	Fines Content					
GZ-1	S-4	9-11	Light brown, fine SAND, little Silt.	-	-	-	-	5.14	550	<52	<31
GZ-1	S-7	24-26	Light brown, fine SAND, little Silt.	0	82.5	17.5	16.3	-	-	-	-
GZ-2	S-2	4-6	Light brown, fine to medium SAND, some Silt.	0	76.6	23.4	8.8	-	-	-	-

Notes:
1. Refer to laboratory testing sheets in Appendix D for more detailed information.

FIGURES

 GZA–P:\04Jobs\0190200s\04.0190239.00\Figures\CAD\Figure 1 – Locus Plan.dwg [Figure 1] June 09, 2015 – 11:28am mirsad.alihodzic



NO.	ISSUE/DESCRIPTION	BY	DATE

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
5 COMMERCE PARK NORTH, SUITE 201
BEDFORD, NEW HAMPSHIRE 03110
(603) 623-3600

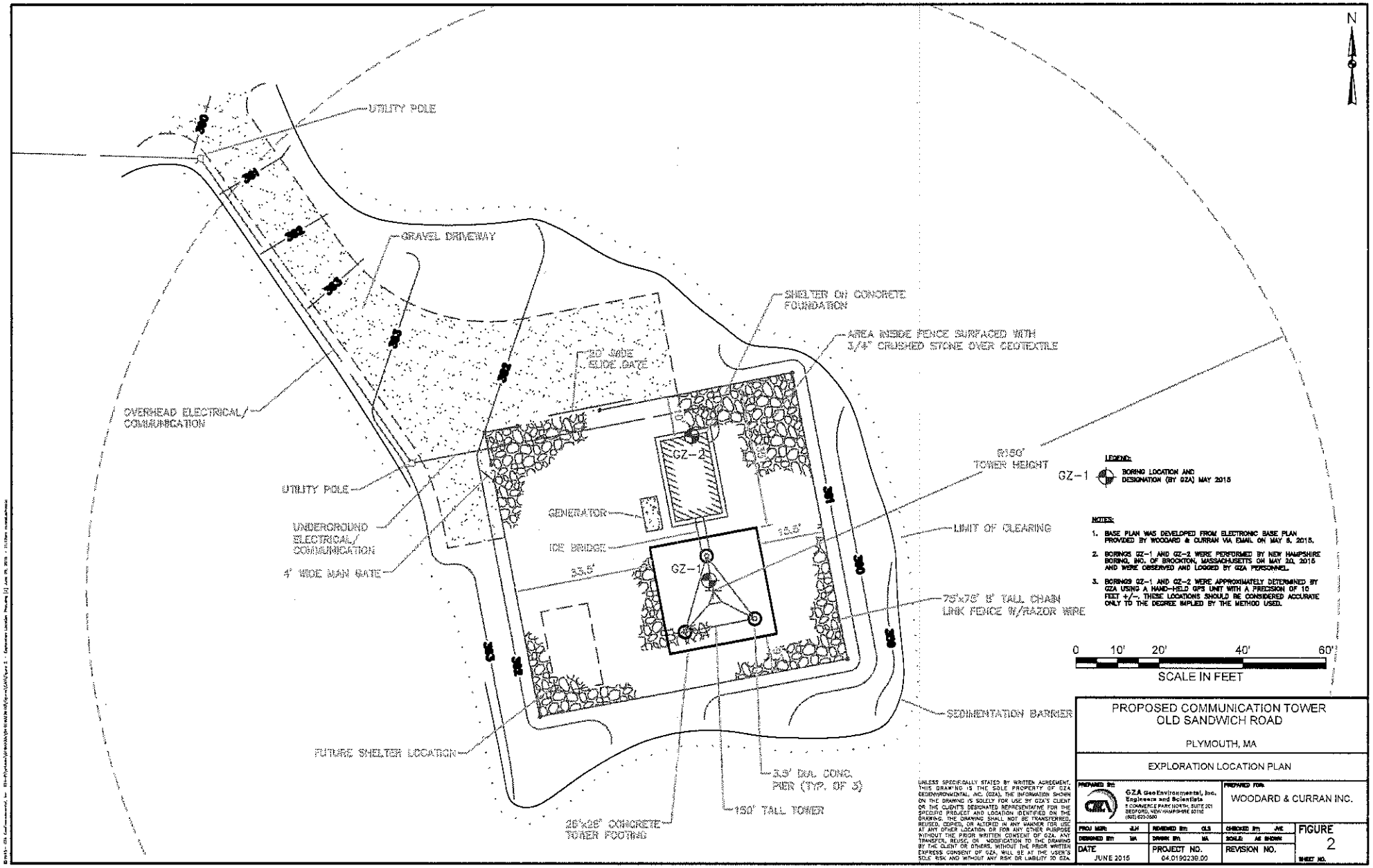
PREPARED FOR:
WOODARD & CURRAN, INC.

PROPOSED COMMUNICATION TOWER
OLD SANDWICH ROAD

PLYMOUTH, MASSACHUSETTS

LOCUS PLAN

PROJ MGR: JLH	DATE: JUNE 2015	FIGURE: 1
DESIGNED BY: MA		
REVIEWED BY: JVE	PROJECT NO.: 04.0190239.00	
DRAWN BY: MA		
CHECKED BY: BFW	REVISION NO.	SHEET NO.: 1 OF 2
SCALE: 1" = 2000'		



PROPOSED COMMUNICATION TOWER
OLD SANDWICH ROAD

PLYMOUTH, MA

EXPLORATION LOCATION PLAN

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists
1 COMMERCE PARK NORTH, SUITE 201
BEDFORD, NEW HAMPSHIRE 03110
(603) 623-5500

PREPARED FOR: WOODARD & CURRAN INC.

PROJ MGR: JLH	REVIEWED BY: CLS	CHECKED BY: JHC	FIGURE 2
DESIGNED BY: MA	DRAWN BY: MA	SCALE: AS SHOWN	
DATE: JUNE 2015	PROJECT NO. 04.0190236.00	REVISION NO.	SHEET NO.

APPENDIX A

LIMITATIONS

GEOTECHNICAL LIMITATIONS

Use of Report

1. GZA GeoEnvironmental, Inc. (GZA) prepared this report on behalf of, and for the exclusive use of our Client for the stated purpose(s) and location(s) identified in the Proposal for Services and/or Report. Use of this report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not expressly identified in the contract documents, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to GZA.

Standard of Care

2. GZA's findings and conclusions are based on the work conducted as part of the Scope of Services set forth in Proposal for Services and/or Report, and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the limited data gathered during the course of our work. If conditions other than those described in this report are found at the subject location(s), or the design has been altered in any way, GZA shall be so notified and afforded the opportunity to revise the report,as appropriate, to reflect the unanticipated changed conditions .

3. GZA's services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services, at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made.

4. In conducting our work, GZA relied upon certain information made available by public agencies, Client and/or others. GZA did not attempt to independently verify the accuracy or completeness of that information. Inconsistencies in this information which we have noted, if any, are discussed in the Report.

Subsurface Conditions

5. The generalized soil profile(s) provided in our Report are based on widely-spaced subsurface explorations and are intended only to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and were based on our assessment of subsurface conditions. The composition of strata, and the transitions between strata, may be more variable and more complex than indicated. For more specific information on soil conditions at a specific location refer to the exploration logs. The nature and extent of variations between these explorations may not become evident until further exploration or construction. If variations or other latent conditions then become evident, it will be necessary to reevaluate the conclusions and recommendations of this report.

6. In preparing this report, GZA relied on certain information provided by the Client, state and local officials, and other parties referenced therein which were made available to GZA at the time of our evaluation. GZA did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this evaluation.

7. Water level readings have been made in test holes (as described in this Report) and monitoring wells at the specified times and under the stated conditions. These data have been reviewed and interpretations have been made in this Report. Fluctuations in the level of the groundwater however occur due to temporal or spatial variations in areal recharge rates, soil heterogeneities, the presence of subsurface utilities, and/or natural or artificially induced perturbations. The water table encountered in the course of the work may differ from that indicated in the Report.

8. GZA's services did not include an assessment of the presence of oil or hazardous materials at the property. Consequently, we did not consider the potential impacts (if any) that contaminants in soil or groundwater may have on construction activities, or the use of structures on the property.

9. Recommendations for foundation drainage, waterproofing, and moisture control address the conventional geotechnical engineering aspects of seepage control. These recommendations may not preclude an environment that allows the infestation of mold or other biological pollutants.

Compliance with Codes and Regulations

10. We used reasonable care in identifying and interpreting applicable codes and regulations. These codes and regulations are subject to various, and possibly contradictory, interpretations. Compliance with codes and regulations by other parties is beyond our control.

Cost Estimates

11. Unless otherwise stated, our cost estimates are only for comparative and general planning purposes. These estimates may involve approximate quantity evaluations. Note that these quantity estimates are not intended to be sufficiently accurate to develop construction bids, or to predict the actual cost of work addressed in this Report. Further, since we have no control over either when the work will take place or the labor and material costs required to plan and execute the anticipated work, our cost estimates were made by relying on our experience, the experience of others, and other sources of readily available information. Actual costs may vary over time and could be significantly more, or less, than stated in the Report.

Additional Services

12. GZA recommends that we be retained to provide services during any future: site observations, design, implementation activities, construction and/or property development/redevelopment. This will allow us the opportunity to: i) observe conditions and compliance with our design concepts and opinions; ii) allow for changes in the event that conditions are other than anticipated; iii) provide modifications to our design; and iv) assess the consequences of changes in technologies and/or regulations.

APPENDIX B

TOWER FOUNDATION DESIGN ASSUMPTIONS BY OTHERS

UNIT BASE FOUNDATION SUMMARY

Woodard & Curran
Plymouth, MA

V- 17.0 150 V 2.1
A- 287900-02

Foundation Dimensions		
Pad width, W:	27.0	ft
Depth, D:	6.0	ft
Ext. above grade, E:	0.5	ft
Pier diameter, d_i:	3.5	ft
Pad thickness, T:	1.50	ft
Depth neglected, N:	6.0	ft
Volume, V_o:	45.85	cy

Reinforcement Design		
pad, m_p:	44	bars *
size, s_p:	8	
vertical, m_c:	19	verticals
size, s_c:	7	3' cage
ties, m_t:	7	ties
size, s_t:	4	w/ overlap

* Rebar to be equally spaced, both ways, top & bottom

* Use standees to support top rebar above bottom rebar in mat

Soil Information Per:
Assumed as Clay Per TIA-222-G Annex F.

Soil Parameters		
Soil unit weight, γ:	110	pcf
Ultimate Bearing, B_c:	5.000	ksf
Cohesion, C_u:	1.000	ksf
Friction angle, ϕ:	0.0	degrees
Ult. Passive P., P_p:	0.443	pcf
Base sliding, μ:	0.20	
Seismic Zone:	1	
Water at:	none	ft

Anchor Steel Selection		
Part Number, P/N:	103182	Dia = 1" Length = 60"

Material Properties		
Steel tensile str, F_y:	60000	psi
Conc. Comp. str, F'_c:	4000	psi
Conc. Density, δ:	150	pcf
Clear cover, cc:	3.00	in

Backfill Compaction		
Lift thickness:	12	in
Compaction:	97	%
Standard Proctor:	ASTM	D698

Tower design conforms to the following:

* *1997 Uniform Building Code (UBC)*
* *2000 & 2003 International Building Code (IBC)*
* *ANSI TIA-222-G*
* *Building Code Requirements for Reinforced Concrete (ACI 318-05)*

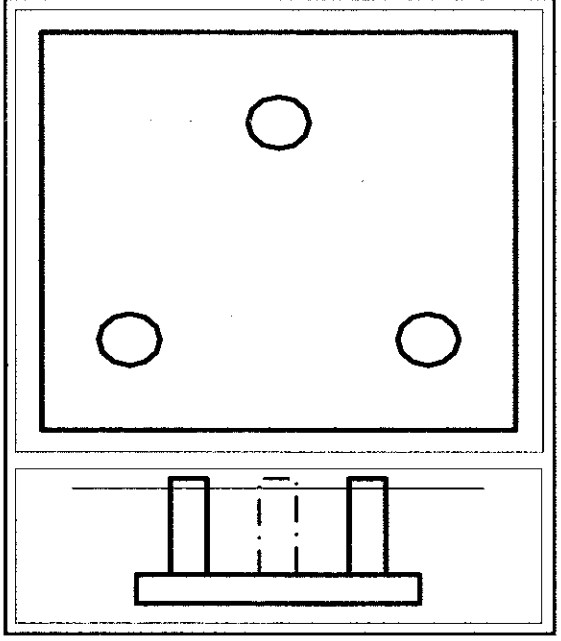
Note: The centroid of the tower is offset from the centroid of the foundation

Foundation Loading

Load Case 1		stress ratio: 99.0%		mark up: 1.0%
Shear (total), S:	61.00 kips	x 1.01	=	61.61 kips
Moment, M:	5073.00 ft-kips	x 1.01	=	5123.73 ft-kips
Compression/Leg, C:	373.00 kips	x 1.01	=	376.73 kips
Uplift/Leg, U:	312.00 kips	x 1.01	=	315.12 kips
Tower Weight, W_t:	86.00 kips		=	86.00 kips
Load Case 2		stress ratio: 99.0%		mark up: 1.0%
Shear (total), S:	61.00 kips	x 1.01	=	61.61 kips
Moment, M:	5073.00 ft-kips	x 1.01	=	5123.73 ft-kips
Compression/Leg, C:	373.00 kips	x 1.01	=	376.73 kips
Uplift/Leg, U:	312.00 kips	x 1.01	=	315.12 kips
Tower Weight, W_t:	86.00 kips		=	86.00 kips

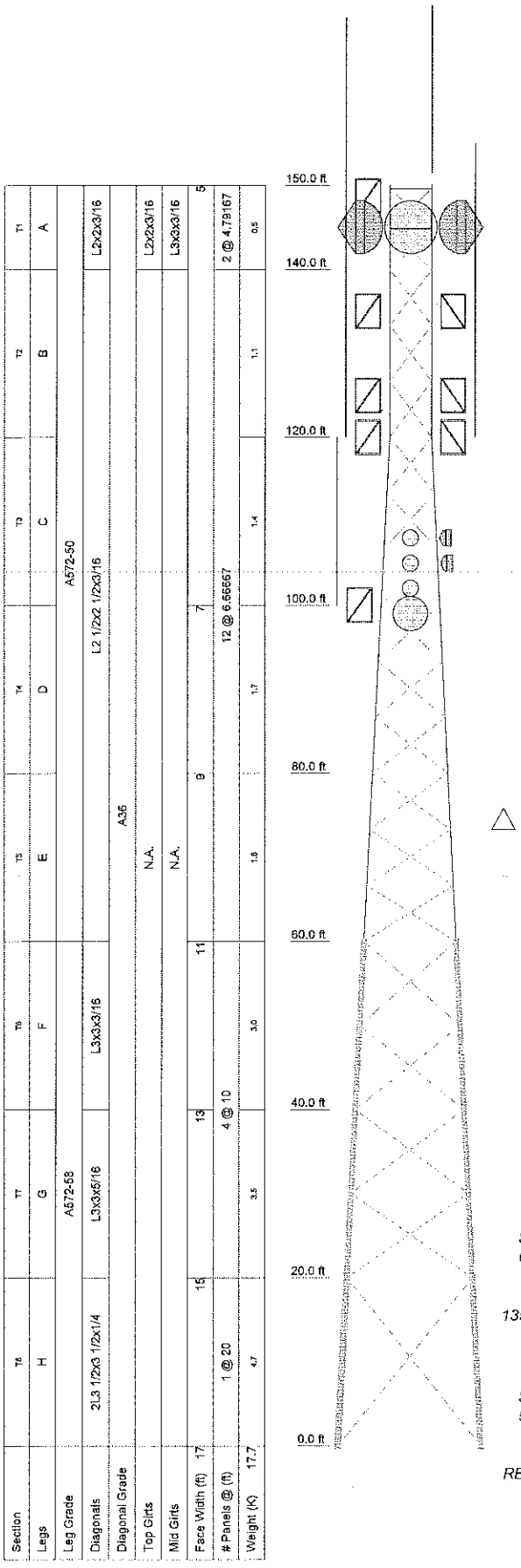
Views of Foundation

(not to scale)



Additional Notes:

* No foundation modifications listed.
* No foundation notes given.



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
21' LRE with 7'-6" lightning rod (arm=11.5')	150	1.5" x 20' Whip (3 sq.ft. CaAa)	125
1.5" x 20' Whip (3 sq.ft. CaAa)	150	6' Pivot Side Arm (50" pipe)	120
6' Pivot Side Arm (50" pipe)	150	1.5" x 20' Whip (3 sq.ft. CaAa)	120
PAR6-59 w/ Radome	145	6' Pivot Side Arm (50" pipe)	120
PAR6-59 w/ Radome	145	1.5" x 20' Whip (3 sq.ft. CaAa)	120
PAR6-59 w/ Radome	145	HP2	108
6' Pivot Side Arm (50" pipe)	135	HP2	108
1.5" x 20' Whip (3 sq.ft. CaAa)	135	HP2	105
6' Pivot Side Arm (50" pipe)	135	HP2	105
1.5" x 20' Whip (3 sq.ft. CaAa)	135	HP2	102
6' Pivot Side Arm (50" pipe)	125	1.5" x 20' Whip (3 sq.ft. CaAa)	100
1.5" x 20' Whip (3 sq.ft. CaAa)	125	6' Pivot Side Arm (50" pipe)	100
6' Pivot Side Arm (50" pipe)	125	HP4	99

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	P- 2.50" - 0.75" conn.-10' -C-(Plrod 226172)	E	P- 6.00"- 0.75" conn.-HBD-Trans-20' -C-(Plrod 229377)
B	P- 4.00"- 0.75" conn.-20' -C-Trans-6B-4B-(Plrod 226184)	F	#12ZG-58 - 1.75" - 1.00" conn.-TR1-(Plrod 195213)
C	P- 5.00"- 0.75" conn.-Trans-20' -C-(Plrod 226200)	G	#12ZG-58 - 1.75" - 1.00" conn. (Plrod 195217)
D	P- 6.00"- 0.75" conn.-20' -C-(Plrod 226206)	H	#12ZG-58 -2.00" - 0.875" conn.-TR3-(Plrod 195637)

MATERIAL STRENGTH

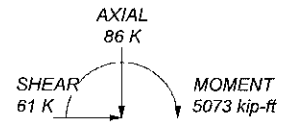
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A572-58	58 ksi	75 ksi
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

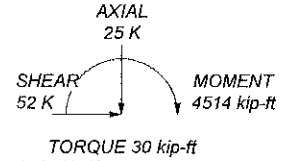
1. Tower is located in Plymouth County, Massachusetts.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 135 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 135 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class III.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 99.9%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 373 K
UPLIFT: -312 K
SHEAR: 47 K



TORQUE 40 kip-ft
135 mph WIND - 0.7500 in ICE



TORQUE 30 kip-ft
REACTIONS - 135 mph WIND

valmont STRUCTURES
Valmont Industries, Inc. - Specialty Structures Group
1545 Pidco Dr.
Plymouth, IN
Phone: (574) 936-4221
FAX: (574) 936-6458

Job: *Quotation 287900-02*			
Project: *V-17 x 150' - Plymouth, MA*			
Client: Woodard & Curran, Inc.	Drawn by: JAK	App'd:	
Code: TIA-222-G	Date: 05/15/15	Scale: NTS	
Path:		Dwg No. E-1	

APPENDIX C

TEST BORING LOGS

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

Woodard & Curran, Inc.
Plymouth Communication Tower
Plymouth, MA

EXPLORATION NO.: GZ-1
SHEET: 1 of 2
PROJECT NO: 04.0190239.00
REVIEWED BY: JLH

Logged By: Jeff Watton
Drilling Co.: New England Boring Contractors
Foreman: John Galvin

Type of Rig: Truck
Rig Model: Diedrich D-50
Drilling Method: D&W

Boring Location: See Plan
Ground Surface Elev. (ft.): 363
Final Boring Depth (ft.): 51
Date Start - Finish: 5/20/2015 - 5/20/2015

H. Datum: NAD83
V. Datum: NAD83

Hammer Type: Donut
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size:

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not Encountered			

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0-2	24	8	2 2 3 7	5	S-1: Loose, brown, fine SAND, little Silt, trace Organics.			0.16	TOPSOIL	362.8
5		S-2	4-6	24	10	9 10 15 20	25	S-2: Medium dense, light brown, fine SAND, trace Silt. (Moist)					
10		S-3	9-11	24	11	9 17 20 29	37	S-3: Dense, light brown, fine SAND, little Silt. (Moist)					
15		S-4	14-16	24	13	13 18 21 26	39	S-4: Dense, light brown, fine SAND, little Silt. (Moist)				SAND	
20		S-5	19-21	24	12	14 27 32 85	59	S-5: Very dense, light brown, fine SAND, little Silt. (Moist)					
25		S-6	24-26	24	11	13 20 26 33	46	S-6: Dense, light brown, fine SAND, little Silt. (Moist)					
30		S-7	29-31	24	13	15 24		S-7: Very dense, light brown, fine SAND, little Silt. (Wet)					

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-1

GZA TEMPLATE TEST BORING; 6/9/2015; 11:08:45 AM

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

Woodard & Curran, Inc.
Plymouth Communication Tower
Plymouth, MA

EXPLORATION NO.: GZ-1
SHEET: 2 of 2
PROJECT NO: 04.0190239.00
REVIEWED BY: JLH

Logged By: Jeff Watton
Drilling Co.: New England Boring Contractors
Foreman: John Galvin

Type of Rig: Truck
Rig Model: Diedrich D-50
Drilling Method: D&W

Boring Location: See Plan
Ground Surface Elev. (ft.): 363
Final Boring Depth (ft.): 51
Date Start - Finish: 5/20/2015 - 5/20/2015

H. Datum: NAD83
V. Datum: NAD83

Hammer Type: Donut
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size:

Groundwater Depth (ft.)			
Date	Time	Water Depth	Stab. Time
Not Encountered			

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
						30 42	54						
35		S-8	34-36	24	12	20 33 44 59	77	S-8: Very dense, light brown, fine SAND, little Silt. (Wet)					
40		S-9	39-44	24	12	23 34 43 55	77	S-9: Very dense, light brown, fine SAND, little Silt. (Wet)				SAND	
45		S-10	44-46	24	13	31 36 53 57	89	S-10: Very dense, light brown, fine SAND, little Silt. (Wet)					
50		S-11	49-51	24	12	33 51 42 52	93	S-11: Very dense, light brown, fine SAND, little Silt. (Wet)	1		51		312.0
								End of exploration at 51 feet.	2				
55													
60													

REMARKS

1 - Drill cuttings were used to backfill the borehole.
2 - Ground water was not encountered during drilling.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-1

GZA TEMPLATE TEST BORING: 6/9/2016; 11:08:45 AM

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*	**Woodard & Curran, Inc.** **Plymouth Communication Tower** **Plymouth, MA**	**EXPLORATION NO.:** GZ-2 **SHEET:** 1 of 1 **PROJECT NO:** 04.0190239.00 **REVIEWED BY:** JLH

Logged By: Jeff Watton **Drilling Co.:** New England Boring Contractors **Foreman:** John Galvin	**Type of Rig:** Truck **Rig Model:** Diedrich D-50 **Drilling Method:** HSA	**Boring Location:** See Plan **Ground Surface Elev. (ft.):** 363 **Final Boring Depth (ft.):** 22 **Date Start - Finish:** 5/20/2015 - 5/20/2015	**H. Datum:** NAD83 **V. Datum:** NAD83

		Groundwater Depth (ft.)			
Hammer Type: Donut **Hammer Weight (lb.):** 140 **Hammer Fall (in.):** 30 **Auger or Casing O.D./I.D Dia (in.):** 4.25	**Sampler Type:** SS **Sampler O.D. (in.):** 2.0 **Sampler Length (in.):** 24 **Rock Core Size:**	**Date**	**Time**	**Water Depth**	**Stab. Time**
		Not Encountered			

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0-2	16	6	2 2 100/8	14.5	S-1: Very, dense, brown to black, fine SAND, little organic.	1		0.5	TOPSOIL	362.5
5		S-2	4-6	24	18	5 4 6 15	10	S-2: Loose, light brown, fine to medium SAND, some Silt. (Moist)					
10		S-3	10-12	24	14	10 13 19 18	32	S-3: Dense, light brown, fine to medium SAND, little Silt. (Moist)				SAND	
15		S-4	15-17	24	20	7 9 11 13	20	S-4: Medium dense, light brown, fine to medium SAND, little Silt. (Moist)					
20		S-5	20-22	24	20	9 11 15 17	26	S-5: Medium dense, fine to medium SAND, little Silt. (Moist)	2		22		341.0
								End of exploration at 22 feet.	3				
25													
30													

REMARKS

1 - Obstruction encoutered at 1 foot below ground surface, boring was moved 3 feet to the north.
2 - Drill cuttings were used to backfill the borehole.
3 - Ground water was not encountered during drilling.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

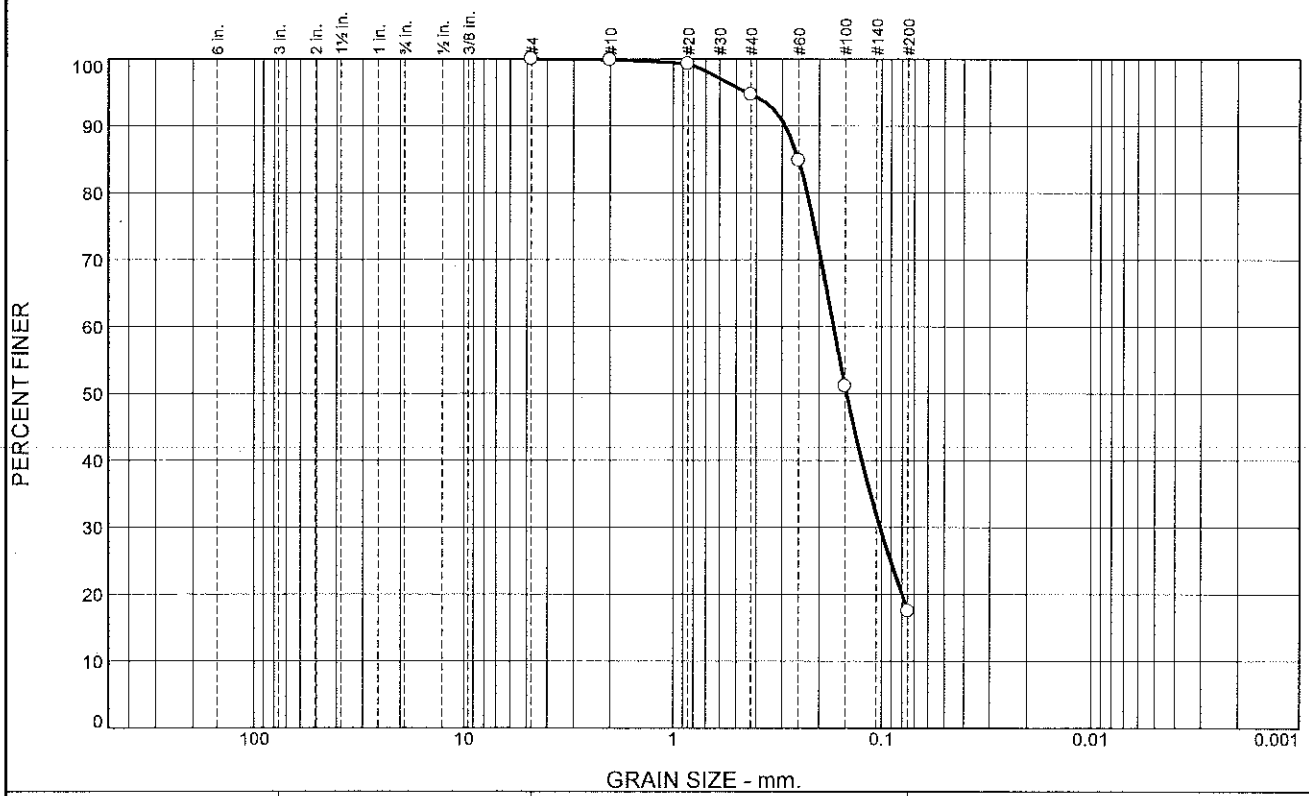
Exploration No.: GZ-2

GZA TEMPLATE TEST BORING: 6/9/2015; 11:08:46 AM

APPENDIX D

RESULTS OF GEOTECHNICAL LABORATORY TESTING

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	5.2	77.2	17.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
# 10	99.9		
#20	99.3		
#40	94.7		
#60	84.8		
#100	51.1		
#200	17.5		

* (no specification provided)

Material Description

Light brown, fine SAND, little Silt.

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 0.2896 D_{85}= 0.2510 D_{60}= 0.1703
D_{50}= 0.1475 D_{30}= 0.1015 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

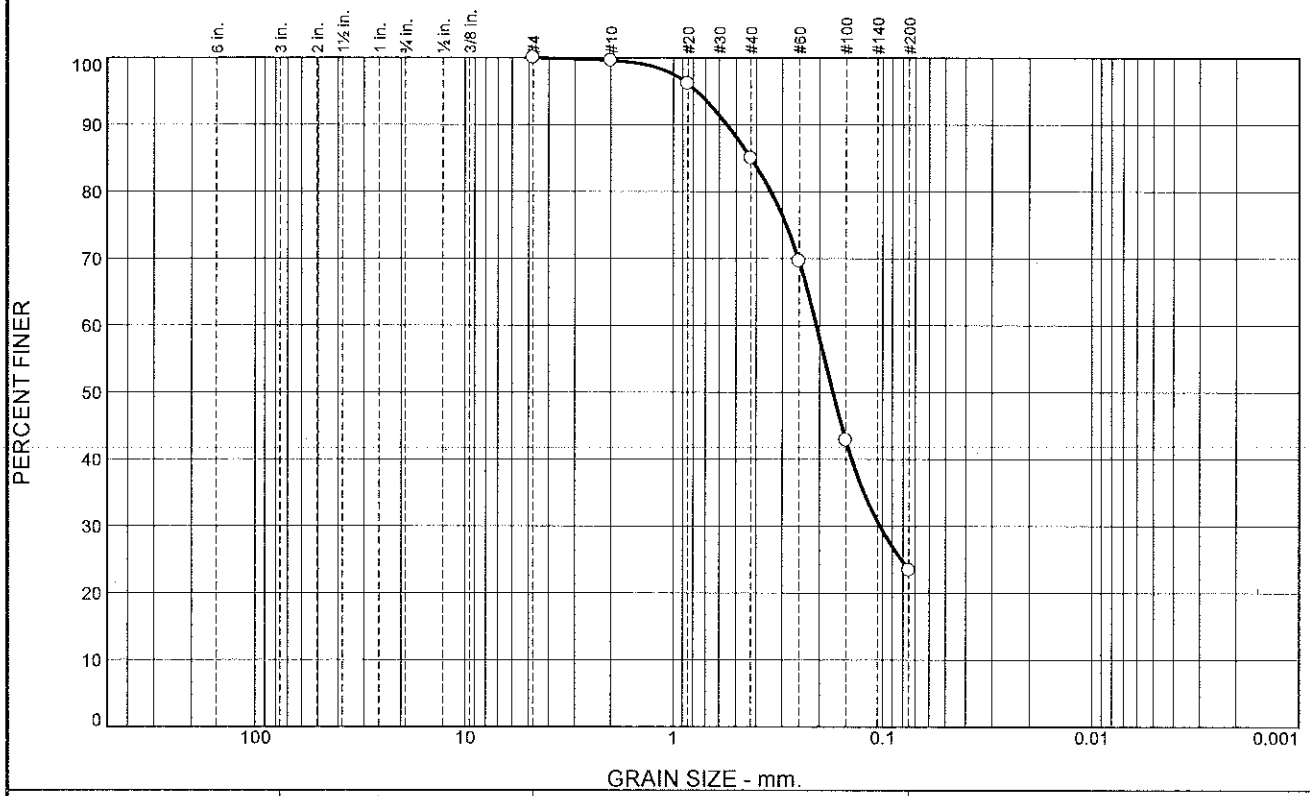
Location: GZ-1
Sample Number: S-7 **Depth:** 24 - 26 feet **Date:** 5/29/15

GZA GeoEnvironmental, Inc.

Manchester, NH

Client: Woodard and Curran
Project: Plymouth Communication Tower
Plymouth, MA
Project No: 04.00190239.00 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.4	14.6	61.6	23.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
# 10	99.6		
#20	96.1		
#40	85.0		
#60	69.6		
#100	42.8		
#200	23.4		

* (no specification provided)

Material Description

Light brown, fine to medium SAND, some Silt.

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 0.5531 D_{85}= 0.4252 D_{60}= 0.2069
D_{50}= 0.1728 D_{30}= 0.1029 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

Location: GZ-2
Sample Number: S-2 **Depth:** 4 - 6 feet **Date:** 5/29/15

GZA GeoEnvironmental, Inc.

Manchester, NH

Client: Woodard and Curran
Project: Plymouth Communication Tower
Plymouth, MA
Project No: 04.00190239.00 **Figure**

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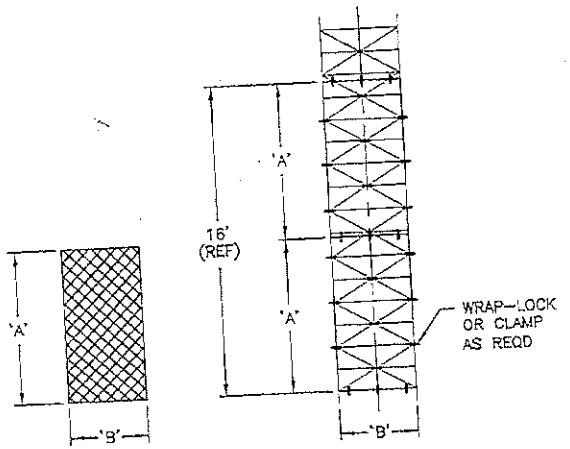
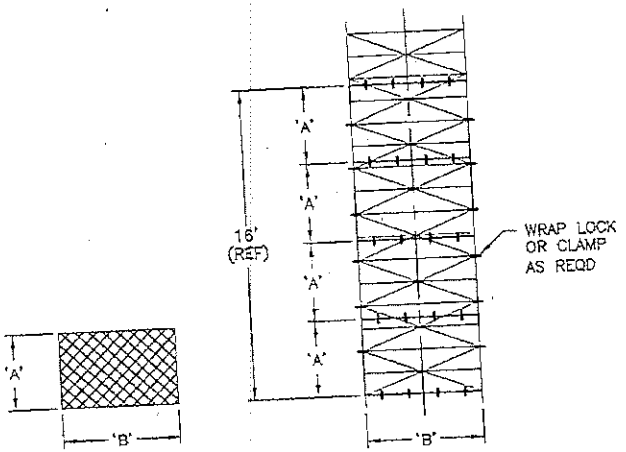


MATERIAL: 1/2" X 13-15 EXPANDED STEEL MESH FLATTENED

PART #	BLACK P/N	DIM 'A'	DIM 'B'	WEIGHT
140538	194034	2'	12"	2.8#
140420	194035	4'	12"	5.5#
140421	194036	4'	18"	8.25#
101247	195226	8'	12"	11#
110232	195225	8'	18"	16.5#
125518	194622	8'	24"	22#
111062	194617	8'	30"	28#
125519	194618	8'	36"	33#
125520	194615	8'	42"	38.5#
125521	194616	8'	45"	41.3#
125522	194614	8'	48"	44#



MATERIAL: 1/2" X 13-15 EXPANDED STEEL MESH FLATTENED

PART #	BLACK P/N	DIM 'A'	DIM 'B'	WEIGHT
125523	194612	4'	52"	23.8#
125524	194613	4'	60"	27.5#
216059	216058	4'	72"	33.0#

FINISH:
HOT DIPPED GALVANIZED.

REV.	DESCRIPTION OF REVISIONS	CPD	BY	DATE
ΦH	ADDED P/N's 213288 & 216059	4253	SAN	01/07/2008
ΦG	CLARIFIED WITH EXAGGERATION DETAIL VIEWS	4023	BTJ	12/06/2007
ΦF	ADDED U-7.0 TO PAGE 3	4118	BTJ	05/18/2007
ΦE	ADDED P/N'S FOR BLACK PURCHASED PARTS	3795	BTJ	08/12/2005
ΦD	ADDED NEW BORDER	3655	TNS	10/06/2004
ΦC	ADDED P/N 140538		DMF	12/20/1999
ΦB	ADDED 4 " PART NUMBERS		CJD	11/30/1999
ΦA	WAS 110062, NOW 111062 (ON PAGE 1)		TNS	04/05/1995

PROPRIETARY NOTE:
THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

TOLERANCE NOTE:
TOLERANCES ON DIMENSIONS UNLESS OTHERWISE NOTED ARE (PLUS OR MINUS) MACHINING 0.030" AND STRUCTURAL 0.060". BENDS ARE (+ OR -) 1/2 DEGREE.

DESCRIPTION: ANTI-CLIMB GUARD ASSEMBLY

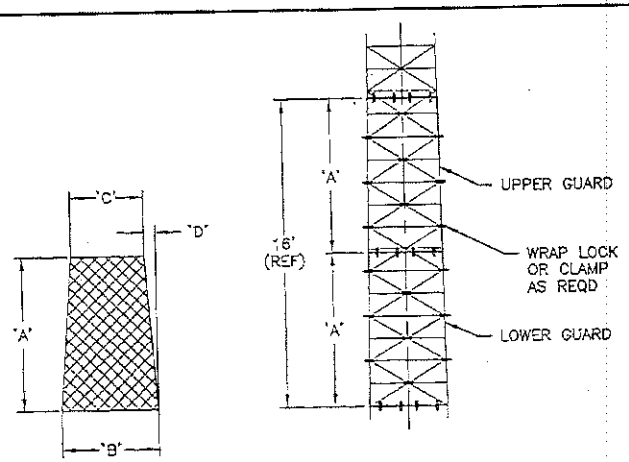
DR BY: HDS 01/12/1995
CPD NO.:
DRAWING USAGE: SHOP
ENG. APPROVAL: TBC 01/08/2008
CHECKED BY: MVC 01/08/2008

valmont STRUCTURES
1-877-467-4783 Plymouth, IN
1-888-680-9191 Salem, OR

PART NO.:
DWG. NO.: 125517

PAGE 1 OF 3

Printed: 08/20/2014 13:52



FINISH:
HOT DIPPED GALVANIZED.

MATERIAL: 1/2" X 13–15 EXPANDED STEEL MESH FLATTENED

TOWER	POSITION	PART #	BLACK P/N	DIM 'A'	DIM 'B'	DIM 'C'	DIM 'D'	WEIGHT
U–1.5	UPPER	125525	194611	8'	16 3/4"	15 1/2"	5/8"	14.8#
(18")	LOWER	125526	194607	8'	18"	16 3/4"	5/8"	15.9#
U–2.0	UPPER	125527	194608	8'	21 1/2"	19"	1 1/4"	18.6#
(24")	LOWER	101890	194609	8'	24"	21 1/2"	1 1/4"	21.2#
U–2.5	UPPER	125528	194610	8'	27 1/2"	25"	1 1/4"	24.1#
(30")	LOWER	101894	194356	8'	30"	27 1/2"	1 1/4"	26.8#
U–3.0	UPPER	125529	194357	8'	33 1/2"	31"	1 1/4"	29.6#
(36")	LOWER	101251	194358	8'	36"	33 1/2"	1 1/4"	32.4#
U–3.5	UPPER	125530	194359	8'	39 1/2"	37"	1 1/4"	35.1#
(42")	LOWER	100291	194360	8'	42"	39 1/2"	1 1/4"	37.4#
U–4.0	UPPER	125531	194361	8'	45 1/2"	43"	1 1/4"	40.6#
(48")	LOWER	100662	194362	8'	48"	45 1/2"	1 1/4"	43.6#
U–5.0								
BASE	LOWER	213288	213289	4'	59 1/4"	24 5/8"	17 5/16"	16.7#

REV.	DESCRIPTION OF REVISIONS	CPD	BY	DATE
ΦH	ADDED P/N's 213288 & 216059	4253	SAN	01/07/2008
ΦG	CLARIFIED WITH EXAGGERATION DETAIL VIEWS	4023	BTJ	12/06/2007
ΦF	ADDED U–7.0 TO PAGE 3	4118	BTJ	05/18/2007
ΦE	ADDED P/N'S FOR BLACK PURCHASED PARTS	3795	BTJ	08/12/2005
ΦD	ADDED NEW BORDER	3655	TNS	10/06/2004
ΦC	ADDED P/N 140538		DMF	12/29/1999
ΦB	ADDED 4 " PART NUMBERS		CJD	11/30/1999
ΦA	WAS 110062, NOW 111062 (ON PAGE 1)		TNS	04/05/1995

TOLERANCE NOTE:
TOLERANCES ON DIMENSIONS UNLESS OTHERWISE NOTED ARE (PLUS OR MINUS) MACHINING 0.030" AND STRUCTURAL 0.060". BENDS ARE (+ OR –) 1/2 DEGREE.

DESCRIPTION: ANTI–CLIMB GUARD ASSEMBLY

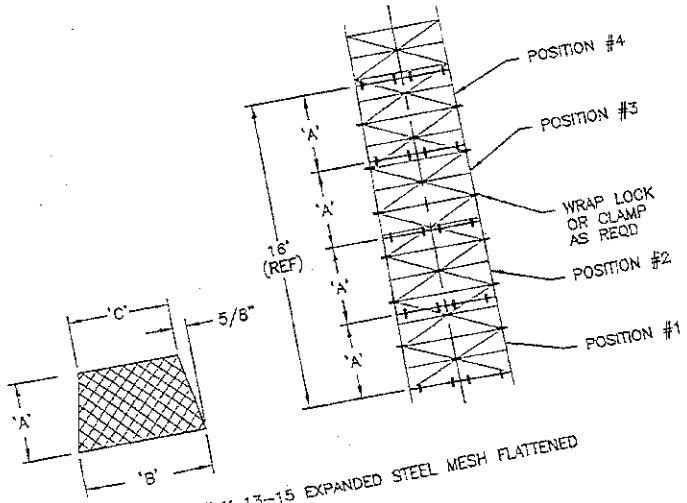
DR BY	CPD NO.	DRAWING USAGE
HDS 01/12/1995		SHOP
ENG. APPROVAL	CHECKED BY	
TBC 01/08/2008	MVC 01/08/2008	

valmont STRUCTURES
1–877–467–4763 Plymouth, IN
1–888–880–9191 Salem, OR

PART NO.

DWG. NO. 125517

Printed: 08/20/2014 13:52



MATERIAL: 1/2" X 13-15 EXPANDED STEEL MESH FLATTENED

TOWER	POSITION	PART #	BLACK P/N	DIM 'A'	DIM 'B'	DIM 'C'	WEIGHT
U-4.5 (54")	4	111329	194363	4'	50 1/4"	49"	23.1#
	3	111249	194407	4'	51 1/2"	50 1/4"	23.7#
	2	100140	194408	4'	52 3/4"	51 1/2"	24.3#
	1	100141	194409	4'	54"	52 3/4"	24.9#
U-5.0 (60")	4	123012	194410	4'	56 1/4"	55"	25.5#
	3	112700	194411	4'	57 1/2"	56 1/4"	26.1#
	2	106828	194412	4'	58 3/4"	57 1/2"	26.6#
	1	106829	194413	4'	60"	58 3/4"	27.2#
U-5.5 (66")	4	111370	194414	4'	62 1/4"	61"	28.6#
	3	111369	194440	4'	63 1/2"	62 1/4"	29.2#
	2	101246	194441	4'	64 3/4"	63 1/2"	30#
	1	101249	195227	4'	66"	64 3/4"	30.8#
U-6.0 (72")	4	111095	194443	4'	68 1/4"	67"	31#
	3	111094	194444	4'	69 1/2"	68 1/4"	31.6#
	2	100546	194445	4'	70 3/4"	69 1/2"	32.5#
	1	100547	211468	4'	72"	70 3/4"	33#
U-7.0 (84")	4	211335	211470	4'	80 1/4"	79"	45.18#
	3	211469	211472	4'	81 1/2"	80 1/4"	44.52#
	2	211471	211474	4'	82 3/4"	80 1/2"	43.85#
	1	211473			84"	82 3/4"	43.18#

FINISH:
HOT DIPPED GALVANIZED.

REV.	DESCRIPTION OF REVISIONS	CPD	BY	DATE
⊕H	ADDED P/N's 213288 & 216059	4253	SAN	01/07/2008
⊕G	CLARIFIED WITH EXAGGERATION DETAIL VIEWS	4023	BTJ	12/06/2007
⊕F	ADDED U-7.0 TO PAGE 3	4118	BTJ	05/18/2007
⊕E	ADDED P/N'S FOR BLACK PURCHASED PARTS	3795	BTJ	08/12/2005
⊕D	ADDED NEW BORDER	3655	TNS	10/06/2004
⊕C	ADDED P/N 140538		DMF	12/20/1999
⊕B	ADDED 4 " PART NUMBERS		CJD	11/30/1999
⊕A	WAS 110062, NOW 111062 (ON PAGE 1)		TNS	04/05/1995

TOLERANCE NOTE:
TOLERANCES ON DIMENSIONS UNLESS OTHERWISE NOTED ARE (PLUS OR MINUS) MACHINING 0.030" AND STRUCTURAL 0.060". BENDS ARE (+ OR -) 1/2 DEGREE.

DESCRIPTION: ANTI-CLIMB GUARD ASSEMBLY

DR BY: HDS 01/12/1995
CPD NO.:
DRAWING USAGE: SHOP
ENG. APPROVAL: TBC 01/08/2008
CHECKED BY: MVC 01/08/2008

valmont STRUCTURES
1-877-467-4763 Plymouth, IN
1-888-880-9191 Salem, OR

PART NO.:
DWG. NO.: 125517

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