



STATE OF MARYLAND
DEPARTMENT OF INFORMATION TECHNOLOGY

TORFP #: F50B7400023
Dan's Rock SHA
TO Financial Proposal

#	Project Line Item	Price
Site Preparation Work		
1	Survey and mark the Limits of Disturbance (LOD) in accordance with the attached construction drawings.	\$
2	Clearing and grading.	\$
3	Furnish and install sediment and erosion control systems and any necessary storm water management features in accordance with the attached drawings.	\$
4	Furnish and install a stabilized construction entrance and site access road in accordance with the construction drawings.	\$
5	Construct the tower foundation per tower manufacturer's specifications.	\$
6	Construct two (2) 12x38ft. equipment shelter foundations.	\$
7	Construct one (1) 4x20ft. Concrete foundation for one (1) 1,000 gallon LP fuel tank.	\$
8	Install tower and shelter ground rings per the latest version of Motorola R56 installation standards.	\$
9	Upon completion of tower, shelter and site improvements, the TO Contractor shall furnish and install surface materials in accordance with Attachment # 33 Construction Drawings. TO Contractor shall restore all areas of grass or existing pavement which have been disturbed during construction.	\$
10	Install an eight (8) ft. high-galvanized chain link fence with two (2) feet of barbed wire on top, with a twenty-four (22) ft. wide, double leaf vehicle gate around the site (includes tower, fuel tank, and both shelters) as shown on Attachment #33 Construction Drawings.	\$
Installation		
11	Purchase and delivery of one (1) fully functional, 330 ft. above ground level, three (3) legged, solid legged, heavy duty, self-supporting, two-way microwave radio tower.	\$
12	Tower Erection	\$
13	Purchase and install tower lighting equipment on the 330 ft. tower (Total finished height of the tower including all appurtenances will be 348 ft.) as per FAA Advisory Circular AC70/7460-1-G or latest revision.	\$

14	Purchase and installation of one (1) 12x38x10 ft. concrete equipment shelter (height is inside dimension) with a 75kW generator.	\$
15	Purchase and installation of one (1) 12x38x10 ft. concrete equipment shelter without generator.	\$
16	Purchase and installation of one (1) new 1,000 gallon LP fuel tank with hookup to the generator and shall include first LP fill-up.	\$
17	Purchase and install <u>two (2)</u> extruded metal, 24-inch wide, no cantilever ice-bridges.	\$
18	Purchase and installation, per local utility standard, of an electrical backboard of steel post and unistrut construction to include CT cabinet if required, wire trough, main disconnect, at least one (1) electric company approved meter socket with room to accommodate a minimum of three (3) additional meters.	\$
19	Purchase and installation of conduits per specifications.	\$
20	Purchase and connection of electrical wiring.	\$
21	Supply 6" dia. bollards as needed in order to protect the propane fuel tank from possible damage caused by vehicles.	\$
Total Evaluated Price Dan's Rock SHA (Items 1 through 21 added)		\$0.00

Submitted by:

Authorized Signature	Title
Printed Name of Authorized Signature	Federal Employer Number
Company	Date
Phone #	Address

SUBMIT COMPLETED DOCUMENT AS A PDF WITH SIGNATURE

MEMORANDUM

TO: Mr. Ed Macon, Project Manager
Department of Information Technology, Statewide Public Safety Radio
System

FROM: *for* Geoff Hall, Division Chief *Pete K. Rahn*
Pavement and Geotechnical Division

SUBJECT: Contract No.: AT038A51
Communication Tower along Old Dan's Rock
District 6 – Allegany County, Maryland
Subsurface Exploration Summary Report

DATE: April 18, 2017

RESPONSE

REQUESTED BY: N/A

PURPOSE OF MEMORANDUM

The purpose of this report is to summarize the subsurface exploration activities and associated laboratory testing data for the proposed communication tower structure within the project limits.

SUMMARY

Four (4) foundation borings (B-01 to B-04) were drilled by the Field Explorations Division (FED). The attached Subsurface Exploration Summary Report contains our findings and results of laboratory testing including uniaxial compressive strength testing for rock, and Rock Mass Rating (RMR).

If we can be of any further assistance, please contact me at 443-572-5061 or Madan Gaddam at 443-572-5065.

PMD/GK/mg

Attachments

cc: Karen Kalbaugh, Engineering Geology, OMT/SHA
Greg Knoyer, Pavement and Geotechnical Division, OMT/SHA

Communication Tower along Old Dan's Rock Allegany County, Maryland

1.0 INTRODUCTION

The scope of this project consists of the construction of a proposed Self Supported Communication Tower and Equipment Shed at Old Dan's Rock in Allegany County, Maryland.

The following documents were provided to our office to prepare this subsurface explorations summary report:

- A google map showing the approximate location of the site and boring locations;
- A total of four (4) foundation borings.

2.0 GEOLOGY INFORMATION

Our review of the Physiographic Map of Maryland (2008) indicates that the project site is mapped in the Appalachian Plateaus Province. The Appalachian Plateaus Province includes that part of Allegany County west of Dan's Mountain and all of Garrett County, the westernmost county in Maryland. The bedrock of this region consists principally of gently folded shale, siltstone, and sandstone. Folding has produced elongated arches across the region which expose Devonian rocks at the surface.

The sedimentary rocks of the Blue Ridge, Ridge and Valley, and Appalachian Plateaus Provinces yield small to moderate supplies of ground water. Under favorable conditions large amounts may occur.

According to the Geologic Map of Maryland (1968), the specific geologic unit underlying the site is the Allegheny Formation and Pottsville Formation. Allegheny Formation consists of interbedded sandstone, siltstone, claystone, shale, and several coal beds. This formation is typically 275 feet in northeast, increases to 325 feet in south and west. Pottsville Formation consists of interbedded sandstone, siltstone, claystone, shale, and coal beds. This formation is typically 60 feet in northeast, increases to 440 feet in southwest.

3.0 SUBSURFACE EXPLORATION

A total of four (4) Standard Penetration Test (SPT) foundation borings were performed for the structures of this project. Borings B-01 through B-04 were performed for the proposed communication tower and a shelter. The boring locations are indicated in the Boring Location Map in Appendix A. The boring logs are provided in Appendix B.

The borings were drilled using continuous-flight, hollow-stem augers to advance the boreholes. SPT were performed using a split spoon sampler driven by a 140-lb hammer with free fall of 30 inches in accordance with AASHTO T-206. The values reported on the boring logs are the hammer blows required to advance three or four successive six-inch increments. The first six-inch increment blows are considered for seating the sampler below the possibly disturbed overburden, and not indicative of the in situ soil resistance. The sum of the number of blows for the second and third increments is the "N" value. The fourth six-inch increment is driven only to obtain additional soil sample and is not used to determine the N value. The N value is used to determine the relative density of the soil. Soil samples retrieved were visually identified in the field, labeled, preserved in a glass jar, and then delivered to the Office of Materials Technology (OMT) warehouse. When auger refusal was encountered, rock coring was performed in accordance with AASHTO T225 test method. Rock Core Recovery (REC) and Rock Quality Designation (RQD) information are included on the boring logs.

4.0 GROUNDWATER OBSERVATIONS

Groundwater data was recorded during drilling, at completion and 24-hr after drilling. Some borings were backfilled immediately after drilling because of safety concerns and no 24-hr readings were taken. It is noted that fluctuations in the groundwater level may occur due to variations in rainfall, evaporation, construction activity, surface runoff, and other site-specific factors. Where rock was cored, groundwater levels noted in the borings may have been influenced by water used during the rock coring operations. Groundwater levels over the project site are summarized in Table 2 below.

Table 2- Summary of Groundwater Depths

Boring Id.	Water Depth below Existing Ground Surface			Existing Ground Surface Elevation (ft)	Estimated Groundwater Elevation ⁽¹⁾ at Completion / Final (ft)	Cave-in	
	At Completion (ft)	Final (ft)	Final Time (hours)			Depth at Completion / Final (ft)	Elevation at Completion / Final (ft)
B-03	2.0	1.5	24	2821.0	2821.0 / 2821.5	3.0/3.0	2820.0 / 2820.0
Note (1) Water levels in the boring may have been influenced by water used during coring							

5.0 LABORATORY TESTS

A laboratory soil testing program was not conducted as not enough soil material was recovered from the borings to corroborate visual classification and determine soil properties for design. However, Rock samples recovered from rock coring were selected for uniaxial compressive strength testing (ASTM D7012) with values ranging from 16,190 to 17,240 psi. Rock Mass Rating (RMR) and average Elastic Modulus values were also calculated in accordance with LRFD

procedures. RMR values ranged from 70 to 87 and the average Elastic Modulus of $2.13 \text{ ksi} \times 10^3$. The compressive strength, RMR and Elastic Modulus results for each sample tested is included in Appendix C and summarized in the table below.

Table 3. Rock Core Testing Summary

Boring # - Run #	Depth (ft)	Compressive Strength (psi)	RMR	Rock Type	Average Elastic Modulus Ei (ksi x 10 ³) (See note*)		
					Max	Min	Avg
B-01 - Run 6	28' – 33'	16,190	87	Sandstone	5.68	0.09	2.13
B-02 - Run 3	14' – 19'	16,330	70	Sandstone	5.68	0.09	2.13
B-03 - Run 5	24' – 29'	17,240	71	Sandstone	5.68	0.09	2.13
*Ei is based on an estimate from the AASHTO LRFD Bridge Design Specifications							

6.0 SUBSURFACE CONDITIONS

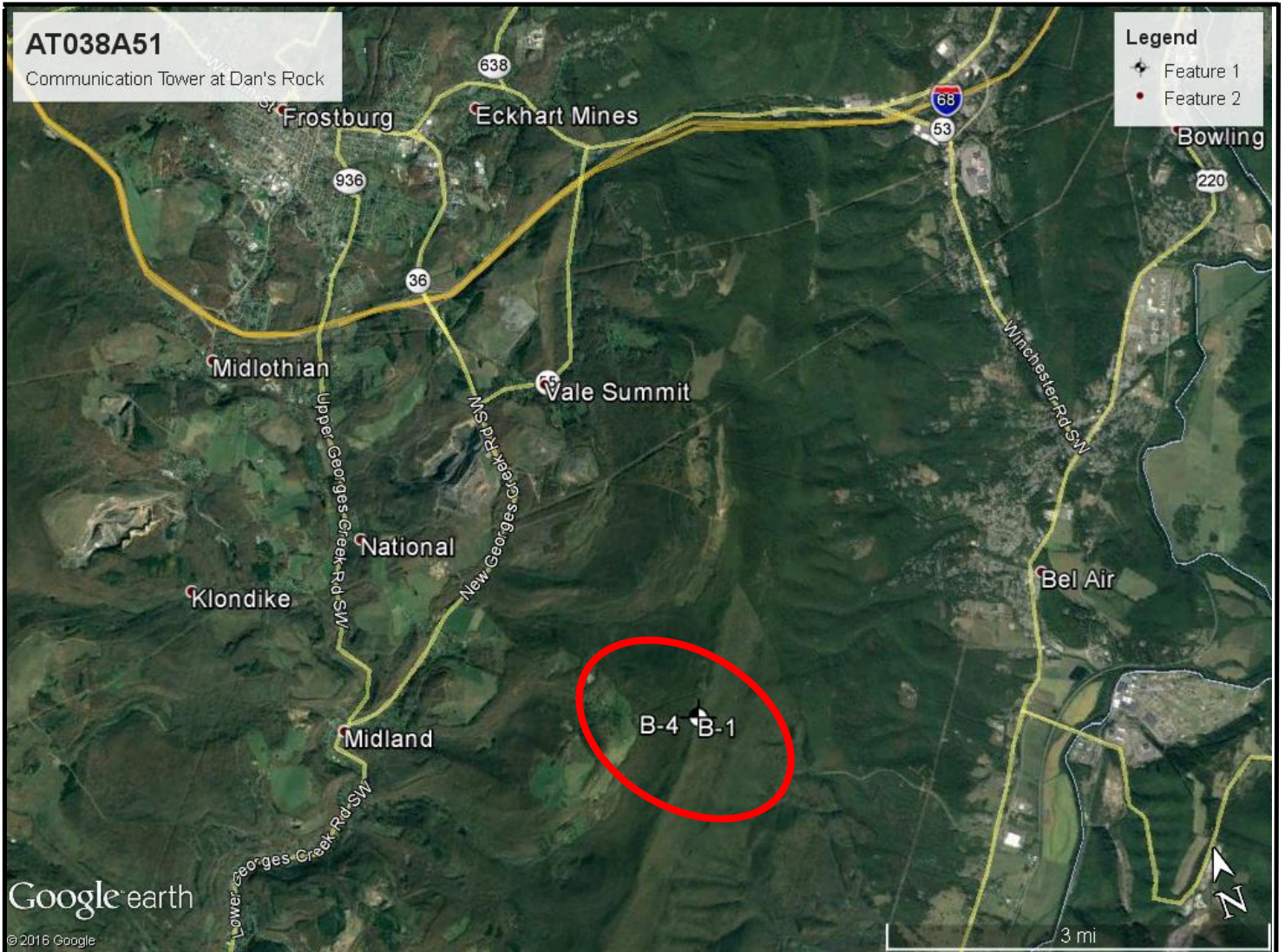
The boring logs represent the driller's interpretation of the subsurface conditions based on visual examination of field samples. The lines designating the interfaces between various strata on the test boring records represent the approximate strata interface locations. However, the actual transitions between strata may be gradual or abrupt. Information on actual subsurface conditions exists only at the specific boring locations and is relevant only to the time the exploration was performed. The following sections briefly describe the stratigraphy encountered within termination depths below the ground surface at the project site.

Stratum I: This stratum mainly consists of boulders, natural granular and fine-grained materials and extend to depths ranging from approximately 0 feet to 4 feet, from EL. 2823 to 2819. This stratum generally consists of SAND and SILT with varying amounts of rock fragments. The SPT N values in this stratum range from 10 to 44 bpf, However, some seemingly high blow counts may have been elevated by the presence of rock fragments or gravel in this stratum. Note that in boring B-01, boulders at the surface were removed by hand for drilling.

Stratum II: This stratum mainly consists of a boulders and voids at depths ranging from 3 feet to 28 feet, from EL. 2820± to EL. 2795±. The rock recovery (REC) ranged from 16% to 77%. The Rock Quality Designation (RQD) varied from 0% to 28%.

Stratum III: The bedrock underlying Strata II was encountered at varying depths. Rock classifications is classified as SANDSTONE, hard, fresh, slightly to highly fractured, light gray. The rock recovery (REC) ranged from 88% to 100%. The Rock Quality Designation (RQD) varied from 54% to 100%.

APPENDIX - A
BORING LOCATION PLAN



SCALE: NTS DATE: April 2017

Figure 1: Project Site Location Map



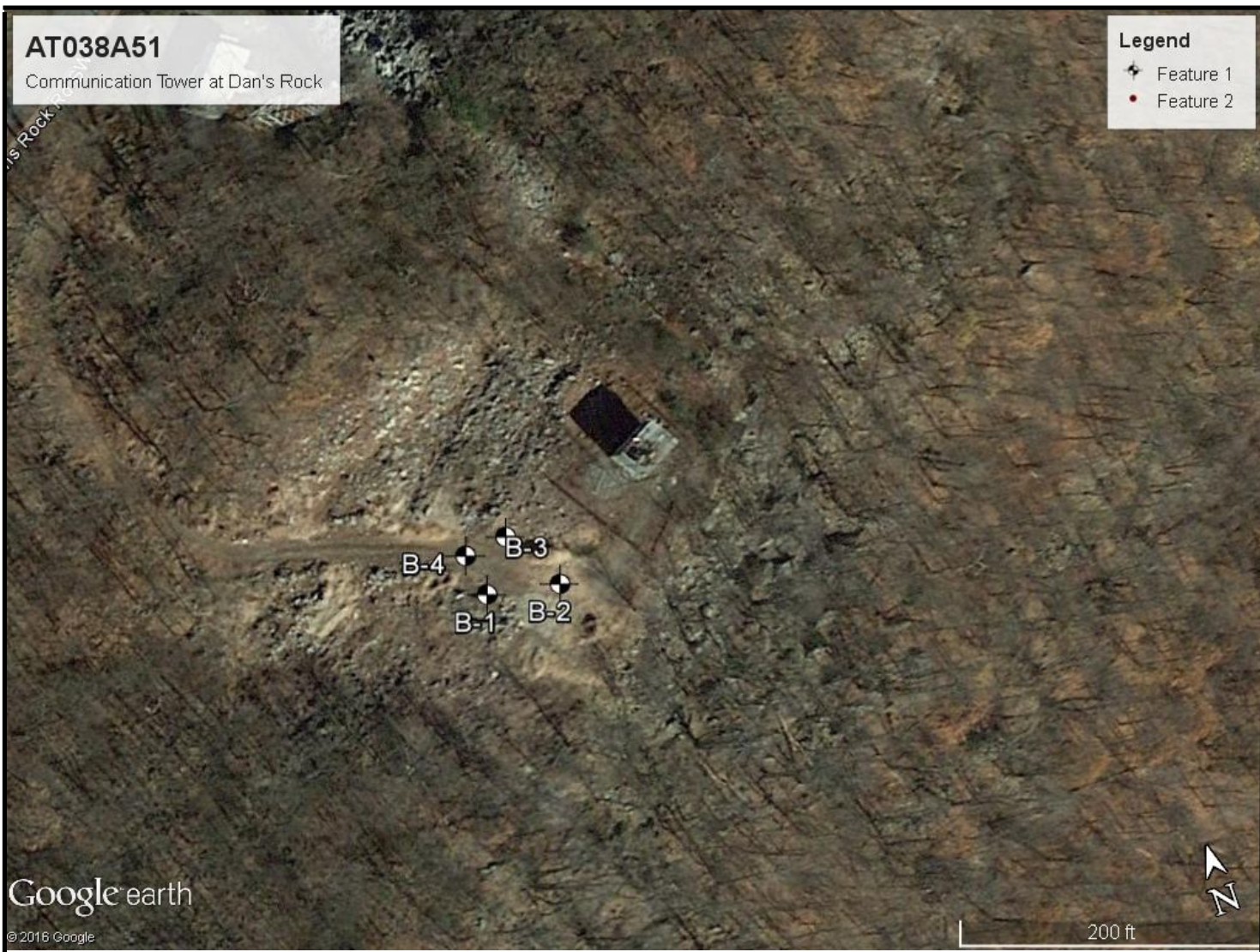
STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

AT038A51

Communication Tower at Dan's Rock

Legend

- Feature 1
- Feature 2



SCALE: NTS DATE: April 2017

Figure 2: Boring Location Map



STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

APPENDIX - B
BORING LOGS

**MARYLAND STATE HIGHWAY ADMINISTRATION
BORING LOG**

Boring and Sampling Conforms to AASHTO:

Sheet 1 of 1
Boring _____ of 4

Contract No. AT038A51 Project Description Communications Tower along Old Dan's Rock Road in Midland, MD

Boring No. B-02 Station _____ B/L _____

N: 702015 E: 776738 Relocated?

Surface Elevation 2823.0 Boring By SHA

Date Started 12/5/16 Date Completed 12/6/16

Driller M. Lochary
Rig Type CME 45
Rig No. 80311
Drive Hammer _____ LB
Casing Auger Size 2.375 IN
Size of Core 1.375 IN
Size of Bit OD 2 IN
Core Barrel Type M
Auger Depth 14 FT

WATER TABLE		CAVE-IN		Time (hours)	Date
Depth (ft)	Elev (ft)	Depth (ft)	Elev (ft)		
∇ DRY		11.0	2812.0	0	12/5/16
∇ DRY		4.0	2819.0	24	12/6/16

DEPTH IN FEET	ELEV. IN FEET	MATERIAL DESCRIPTION	SPOON			RECOVERY	REMARKS
			SAMPLE NO.	BLOWS/RQD	DEPTH		
4.0	2819.00	Moist, loose to dense, silty SAND and rock fragments	1	4-4-6-12	0.0-2.0	71.0%	The surrounding surface area is covered with boulders
			2	7-11-22-18	2.0-4.0	54.0%	
9.0	2814.00	CORED: boulders and voids	1st run	RQD=16%	4.0-9.0	28.4%	
19.0	2804.00	CORED: Sandstone, hard, fresh, highly fractured, light gray	2nd run	RQD=54%	9.0-14.0	98.4%	
			3rd run	RQD=70%	14.0-19.0	88.4%	
		BORING TERMINATED AT 19.0'					Auger refusal Backfilled with auger cuttings at completion

FOUNDATIONS BORING LOG AT038A51 1.3:17.GPJ SHA_DF_US STD.GDT 4/12/17

**MARYLAND STATE HIGHWAY ADMINISTRATION
BORING LOG**

Boring and Sampling Conforms to AASHTO:

Sheet 1 of 1
Boring _____ of 4

Contract No. AT038A51 Project Description Communications Tower along Old Dan's Rock Road in Midland, MD

Boring No. B-03 Station _____ B/L _____

N: 702047 E: 776721 Relocated?

Surface Elevation 2823.0 Boring By SHA

Date Started 12/6/16 Date Completed 12/8/16

Driller M. Lochary
Rig Type CME 45
Rig No. 80311
Drive Hammer _____ LB
Casing Auger Size 2.375 IN
Size of Core 1.375 IN
Size of Bit OD 2 IN
Core Barrel Type M
Auger Depth 4 FT

WATER TABLE		CAVE-IN		Time (hours)	Date
Depth (ft)	Elev (ft)	Depth (ft)	Elev (ft)		
▼ 2.0	2821.0	☒ 3.0	2820.0	0	12/7/16
▽ 1.5	2821.5	☒ 3.0	2820.0	24	12/8/16

DEPTH IN FEET	ELEV. IN FEET	MATERIAL DESCRIPTION	SPOON			RECOVERY	REMARKS
			SAMPLE NO.	BLOWS/ RQD	DEPTH		
2.0	2821.00	Moist, stiff, gray, SILT, little sand	1	2-6-5-14	0.0-2.0	83.5%	The surrounding surface area is covered with boulders
4.0	2819.00	Moist, hard, brown, SILT and rock fragments	2	26-23-20-20	2.0-4.0	54.0%	
19.0	2804.00	CORED: boulders and voids	1st run	RQD=24%	4.0-9.0	31.6%	
			2nd run	RQD=0%	9.0-14.0	31.6%	
			3rd run	RQD=0%	14.0-19.0	40.0%	
29.0	2794.00	CORED: Sandstone, hard, fresh, moderately fractured, light gray	4th run	RQD=62%	19.0-24.0	100.0%	
			5th run	RQD=80%	24.0-29.0	100.0%	
		BORING TERMINATED AT 29.0'					Auger refusal Backfilled with auger cuttings at completion

FOUNDATIONS BORING LOG AT038A51 1.3:17.GPJ SHA_DF_US STD.GDT 4/12/17

APPENDIX - C
ROCK CORE TESTING SUMMARY

AT038A51 : Communication Tower at Dans Rock

LRFD Results

By: Karen Kalbaugh

Date: 12/28/2016

Boring # - Run #	Depth (ft)	Recovery (%)	Comp. Strength (psi)	RQD (%)	RMR	Class No. - Description	GSI Range	Elastic Modulus E_i (ksi x 10^3) (See note*)			
								Rock Type	Max	Min	Avg
B-1 - Run 6	28' to 33'	100	16190	100	87	I - Very Good Rock	50 to 70	Sandstone	5.68	0.09	2.13
B-2 - Run 3	14' to 19'	90	16330	70	70	II - Good Rock	50 to 70	Sandstone	5.68	0.09	2.13
B-3 - Run 5	24' to 29'	100	17420	80	71	II - Good Rock	50 to 70	Sandstone	5.68	0.09	2.13

* E_i is based on a estimate from the AASHTO LRFD manual

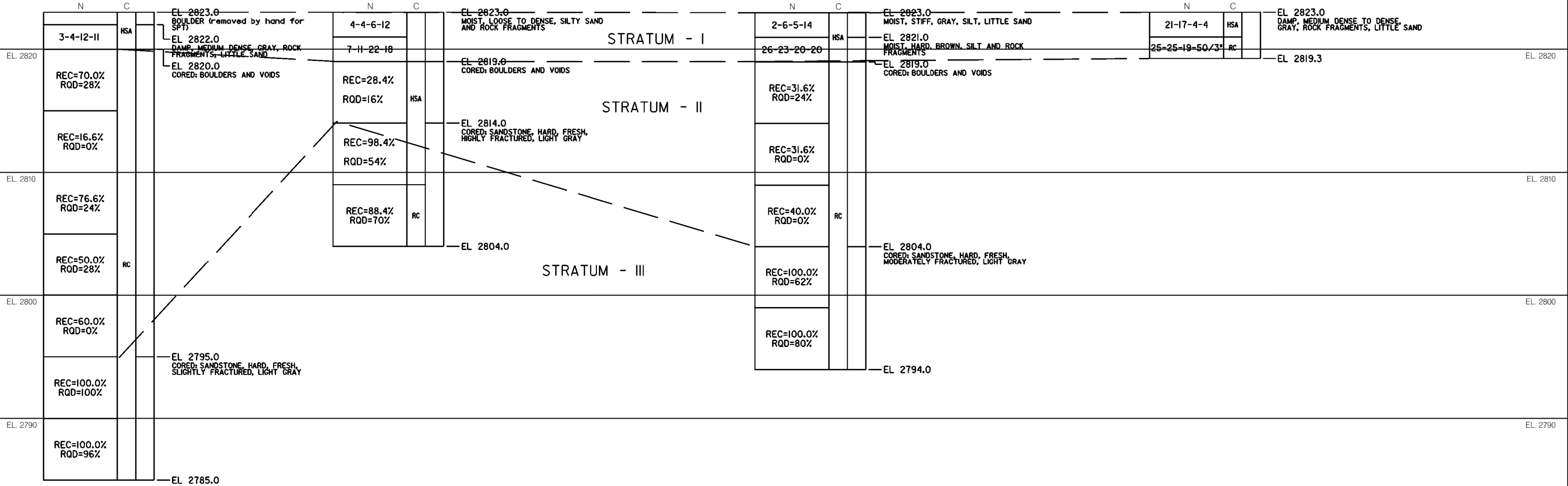
APPENDIX - D
SUBSURFACE PROFILE

BORING B-01
N 702023, E 776702

BORING B-02
N 702015, E 776738

BORING B-03
N 702047, E 776721

BORING B-04
N 702045, E 776699



DATUM EL. 2780

BORINGS AND DRIVE TESTS

SCALE: 1/4" = 1'-0"
10'

DATUM EL. 2780


BY: mgacdam

OTHER CONTRACTS FOR THIS STRUCTURE _____

STRUCTURE INVENTORY NO. _____

SURVEY BOOK NO. _____

PLOTTED: Tuesday, April 11, 2017 AT 11:38 AM
FILE: C:\Users\mgacdam\OneDrive\Desktop\AT038A51.dgn

REVISIONS	 STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION	
	COMMUNICATION TOWER ALONG OLD DAN'S ROCK SUBSURFACE PROFILE	
	SCALE _____	DATE _____
	CONTRACT NO. AT038A51	
DESIGNED BY _____	COUNTY ALLEGANY	
DRAWN BY _____		
CHECKED BY _____		
F.A.P. NO. _____		
	SHEET NO. _____	OF _____



STATE OF MARYLAND
DEPARTMENT OF INFORMATION TECHNOLOGY

TORFP #: F50B7400023
Dan's Rock SHA
TO Financial Proposal

#	Project Line Item	Price
Site Preparation Work		
1	Survey and mark the Limits of Disturbance (LOD) in accordance with the attached construction drawings.	\$
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5	Construct the tower foundation per tower manufacturer's specifications.	\$
6	Construct two (2) 12x38ft. equipment shelter foundations.	\$
7	Construct one (1) 4x20ft. Concrete foundation for one (1) 1,000 gallon LP fuel tank.	\$
8	Install tower and shelter ground rings per the latest version of Motorola R56 installation standards.	\$
9	Upon completion of tower, shelter and site improvements, the TO Contractor shall furnish and install surface materials in accordance with Attachment # 33 Construction Drawings. TO Contractor shall restore all areas of grass or existing pavement which have been disturbed during construction.	\$
10	Install an eight (8) ft. high-galvanized chain link fence with two (2) feet of barbed wire on top, with a twenty-four (22) ft. wide, double leaf vehicle gate around the site (includes tower, fuel tank, and both shelters) as shown on Attachment #33 Construction Drawings.	\$
Installation		
11	Purchase and delivery of one (1) fully functional, 330 ft. above ground level, three (3) legged, solid legged, heavy duty, self-supporting, two-way microwave radio tower.	\$
12	Tower Erection	\$
13	Purchase and install tower lighting equipment on the 330 ft. tower (Total finished height of the tower including all appurtenances will be 348 ft.) as per FAA Advisory Circular AC70/7460-1-G or latest revision.	\$

14	Purchase and installation of one (1) 12x38x10 ft. concrete equipment shelter (height is inside dimension) with a 75kW generator.	\$
15	Purchase and installation of one (1) 12x38x10 ft. concrete equipment shelter without generator.	\$
16	Purchase and installation of one (1) new 1,000 gallon LP fuel tank with hookup to the generator and shall include first LP fill-up.	\$
17	Purchase and install one (1) extruded metal, 24-inch wide, no cantilever ice-bridge.	\$
18	Purchase and installation, per local utility standard, of an electrical backboard of steel post and unistrut construction to include CT cabinet if required, wire trough, main disconnect, at least one (1) electric company approved meter socket with room to accommodate a minimum of three (3) additional meters.	\$
19	Purchase and installation of conduits per specifications.	\$
20	Purchase and connection of electrical wiring.	\$
21	Supply 6" dia. bollards as needed in order to protect the propane fuel tank from possible damage caused by vehicles.	\$
Total Evaluated Price Dan's Rock SHA (Items 1 through 21 added)		\$0.00

Submitted by:

Authorized Signature	Title
Printed Name of Authorized Signature	Federal Employer Number
Company	Date
Phone #	Address

SUBMIT COMPLETED DOCUMENT AS A PDF WITH SIGNATURE



CATS + FA 13
 Construction Schedule
 Big Savage and Blooming Rose Road Communications
 Tower Site Construction

Line	Item	Vendor submitted schedule	Date requirements (calendar days)
-----	Notice to proceed [NTP] (Provided by DoIT with approved purchase order)	-----	-----
1	Clearing and Grading		NTP + # Days
2	Shelter/Tower Foundation poured		NTP + # Days
3	Tower Delivery		NTP + # Days
4	Shelter Delivery		NTP + # Days
5	Tower Erection (will trigger request for tower inspection)		NTP + # Days
6	Final Grounding (will trigger request for R56 and punch list inspection)		NTP + # Days
7	Site Completion (to include punch list and R56 corrections)		NTP + # Days
8	Closeout documents submitted for state review		NTP + # Days
	Vendor Signature:		

Instructions: Vendors will submit this document with their signed/sealed bid proposal. Construction completion will be used to compare and evaluate supplied bids. The submitted schedule will also serve as the contractor's binding schedule for the project. Projects not completed within the scheduled completion shown on the schedule will be subject to an assessment for liquidated damages.

The vendor will write the number of days past the NTP in the boxes provided.



STATE OF MARYLAND

DEPARTMENT OF LABOR, LICENSING AND REGULATION
DIVISION OF LABOR AND INDUSTRY
PREVAILING WAGE SECTION
1100 N. Eutaw Street, Room 607
Baltimore, MD 21201
(410) 767-2342

02/15/2017

REQUEST FOR ADVERTISEMENT AND NOTICE TO PROCEED

Roxann King - Procurement Officer
Information Technology
301 W. Preston Street, Room 1304
Baltimore, MD 21201

Re: Dan's Rock SHA Tower Site Construction
Project No: CATS+ F50B7400023

Enclosed please find the Prevailing Wage Determination and Instructions for Contractors for the project referenced above.

Upon advertisement for bid or proposal of this project, you are requested to submit to this office the date and name of publication in which such advertisement appeared.

Once awarded, you are further directed to submit to this office, the NOTICE TO PROCEED for the project, complete with the date of notice, the name of the general contractor, and the dollar amount of the project. In addition, we ask that a representative of the prevailing wage Unit be invited to attend the Pre-Construction Conference.

Any questions concerning this matter may be referred to PrevailingWage@dllr.state.md.us

Sincerely,

Enclosures
Wage Determination
Instruction for the Contractor

Prevailing Wage Unit

PREVAILING WAGE INSTRUCTIONS FOR THE CONTRACTOR & SUBCONTRACTOR

The contractor shall electronically submit completed copies of certified payroll records to the Commissioner of Labor & Industry, Prevailing Wage Unit by going on-line to <https://www.dllr.state.md.us/prevwage> and following the instructions for submitting payroll information (NOTE: A contractor must register prior to submitting on-line certified payroll information).

If you have technical questions regarding electronic submittal, contact the Department at prevailingwage@dllr.state.md.us.

All certified payroll records shall have an accurate week beginning and ending date. The contractor shall be responsible for certifying and submitting to the Commissioner of Labor and Industry, Prevailing Wage Unit all of their subcontractors' payroll records covering work performed directly at the work site. By certifying the payroll records, the contractor is attesting to the fact that the wage rates contained in the payroll records are not less than those established by the Commissioner as set forth in the contract, the classification set forth for each worker or apprentice conforms with the work performed, and the contractor or subcontractor has complied with the provisions of the law.

A contractor or subcontractor may make deductions that are (1) required by law; (2) required by a collective bargaining agreement between a bona fide labor organization and the contractor or subcontractor; or (3) contained in a written agreement between an employee and an employer undertaken at the beginning of employment, if the agreement is submitted by the employer to the public body awarding the public work and is approved by the public body as fair and reasonable.

A contractor or subcontractor is required to submit information on-line on their fringe benefit packages including a list of fringe benefits for each craft employed by the contractor or subcontractor, by benefit and hourly amount. Where fringe benefits are paid in cash to the employee or to an approved plan, fund, or program, the contribution is required to be indicated.

Payroll records must be electronically submitted and received within 14 calendar days after the end of each payroll period. If the contractor is delinquent in submitting payroll records, processing of partial payment estimates may be held in abeyance pending receipt of the records. In addition, if the contractor is delinquent in submitting the payroll records, the contractor shall be liable to the contracting public body for liquidated damages. The liquidated damages are \$10.00 for each calendar day the records are late.

Only apprentices registered with the Maryland Apprenticeship and Training Council shall be employed on prevailing wage projects. Apprentices shall be paid a percentage of the determined journey person's wage for the specific craft.

Overtime rates shall be paid by the contractor and any subcontractors under its contracts and agreements with their employees which in no event shall be less than time and one-half the prevailing hourly rate of wages for all hours worked in excess of ten (10) hours in any one calendar day; in excess of forty (40) hours per workweek; and work performed on Sundays and legal holidays.

Contractors and subcontractors employing a classification of worker for which a wage rate was not issued SHALL notify the Commissioner of Labor & Industry, Prevailing Wage Unit, for the purpose of obtaining the wage rate for said classification PRIOR TO BEING EMPLOYED on the project. To obtain a prevailing wage rate which was NOT listed on the Wage Determination, a contractor or subcontractor can look on the DLLR webpage under prevailing wage.

Contractors and subcontractors shall maintain a valid copy of proper State and county licenses that permit the contractor and a subcontractor to perform construction work in the State of Maryland. These licenses must be retained at the worksite and available for review upon request by the Commissioner of Labor and Industry's designee.

****Each contractor under a public work contract subject to Section 17-219 shall:**

1. Post a clearly legible statement of each prevailing wage rate to be paid under the public work contract; and
2. Keep the statement posted during the full time that any employee is employed on the public work contract.
3. The statement of prevailing wage rates shall be posted in a prominent and easily accessible place at the site of the public work.

****Penalty - Subject to Section 10-1001 of the State Government Article, the Commissioner may impose on a person that violates this section a civil penalty of up to \$50.00 per violation.**

Under the Maryland Apprenticeship and Training Council requirements, consistent with proper supervision, training and continuity of employment and applicable provisions in collective bargaining agreements, a ratio of one journey person regularly employed to one apprentice shall be allowed. No deviation from this ratio shall be permitted without prior written approval from the Maryland Apprenticeship and Training Council.

Laborers may NOT assist mechanics in the performance of the mechanic's work, NOR USE TOOLS peculiar to established trades.

ALL contractors and subcontractors shall employ only competent workers and apprentices and may NOT employ any individual classified as a HELPER or TRAINEE on a prevailing wage project.

The State Apprenticeship and Training Fund (Fund) law provides that contractors and certain subcontractors performing work on certain public work contracts are required to make contributions toward apprenticeship. See §17-601 through 17-606, State Finance and Procurement, Annotated Code of Maryland. Contractors and subcontractors have three options where they can choose to make their contributions: (1) participate in a registered apprenticeship training program; (2) contribute to an organization that has a registered apprenticeship training program; or (3) contribute to the State Apprenticeship and Training Fund.

The Department of Labor, Licensing and Regulation (DLLR) is moving forward with final adoption of regulations. The regulations were published in the December 14, 2012 edition of the Maryland Register.

IMPORTANT: Please note that the obligations under this law will become effective on JULY 1, 2013. This law will require that contractors and certain subcontractors make contributions toward apprenticeship and report those contributions on their certified payroll records that they submit pursuant to the prevailing wage law.

The Department is offering outreach seminars to any interested parties including contractors, trade associations, and any other stakeholders. Please contact the Department at prevailingwage@dllr.state.md.us or (410) 767-2968 for seminar times and locations. In addition, information regarding this law will be provided at pre-construction meetings for projects covered by the Prevailing Wage law.

**For additional information, contact:
Division of Labor and Industry
Maryland Apprenticeship and Training
1100 North Eutaw Street, Room 606
Baltimore, Maryland 21201
(410) 767-2246
E-Mail Address: matp@dllr.state.md.us.**

STATE OF MARYLAND

DEPARTMENT OF LABOR, LICENSING AND REGULATION
DIVISION OF LABOR AND INDUSTRY
PREVAILING WAGE SECTION
1100 N. Eutaw Street, Room 607
Baltimore, MD 21201
(410) 767-2342

The wage rates to be paid laborers and mechanics for the locality described below is announced by order of Commissioner of Labor and Industry.

It is mandatory upon the successful bidder and any subcontractor under him, to pay not less than the specific rates to all workers employed by them in executing contracts in this locality. Reference: Annotated Code of Maryland State Finance and Procurement, Section 17-201 thru 17-226.

These wage rates were taken from the locality survey of 2016 for Allegany County, issued pursuant to the Commissioner's authority under State Finance and Procurement Article Section 17-209, Annotated Code of Maryland or subsequent modification.

**Note: If additional Prevailing Wage Rates are needed for this project beyond those listed below, contact the Prevailing Wage Unit. Phone: (410) 767-2342, email: prevailingwage@dllr.state.md.us.

Name and Title of Requesting Officer: Roxann King - Procurement Officer
Department, Agency or Bureau: Information Technology
301 W. Preston Street, Room 1304 Baltimore, MD 21201

Project Number
CATS+ F50B7400023

Determination Number
33256

Location and Description of work:

Allegany County: Purchase and turnkey installation of one (1) 330-foot self-supporting tower with foundation, two (2) 12x38 ft concrete foundations, two (2) 12x38x10-foot equipment shelters, one with with a 75kW backup generator and one without a generator, and one (1) 1000 gallon propane tank.

Date of Issue: Feb 15, 2017

BUILDING CONSTRUCTION

CLASSIFICATION	MODIFICATION REASON	BASIC HOURLY RATE	BORROWED FROM	FRINGE BENEFIT PAYMENT
BALANCING TECHNICIAN	AD	\$27.16		\$15.93
BRICKLAYER	AD	\$27.64		\$19.99
CARPENTER	AD	\$27.85		\$16.10
CEMENT MASON	AD	\$25.58		\$15.75
COMMUNICATION INSTALLER TECHNICIAN	AD	\$22.29	043	\$7.35 b
DRYWALL - SPACKLING, TAPING, & FINISHING	AD	\$27.85		\$16.10
ELECTRICIAN	AD	\$32.90		\$17.64
ELEVATOR MECHANIC	AD	\$37.00		\$7.97
GLAZIER	AD	\$23.76		\$7.98
INSULATION WORKER	AD	\$33.86		\$23.73
IRONWORKER - FENCE ERECTOR	AD	\$26.88	043	\$17.74

IRONWORKER - ORNAMENTAL	AD	\$20.53	043	\$17.72
IRONWORKER - REINFORCING	AD	\$27.37		\$18.22
IRONWORKER - STRUCTURAL	AD	\$27.37		\$18.22
MILLWRIGHT	AD	\$28.45		\$16.10
PAINTER	AD	\$25.88		\$7.98
PLUMBER	AD	\$31.43		\$12.98
POWER EQUIPMENT OPERATOR - ASPHALT DISTRIBUTOR	AD	\$17.02	043	\$3.17
POWER EQUIPMENT OPERATOR - BACKHOE	AD	\$30.52		\$13.90
POWER EQUIPMENT OPERATOR - BROOM / SWEEPER	AD	\$17.00	043	\$0.00
POWER EQUIPMENT OPERATOR - BULLDOZER	AD	\$21.00	043	\$6.08 a + b
POWER EQUIPMENT OPERATOR - CONCRETE PUMP	AD	\$38.72	043	\$2.95
POWER EQUIPMENT OPERATOR - CRANE	AD	\$31.12		\$13.90
POWER EQUIPMENT OPERATOR - EXCAVATOR	AD	\$30.52		\$13.90
POWER EQUIPMENT OPERATOR - FORKLIFT	AD	\$30.52		\$13.90
POWER EQUIPMENT OPERATOR - GRADER	AD	\$30.52		\$13.90
POWER EQUIPMENT OPERATOR - HOIST	AD	\$30.52		\$13.90
POWER EQUIPMENT OPERATOR - LOADER	AD	\$30.52		\$13.90
POWER EQUIPMENT OPERATOR - MECHANIC	AD	\$30.52		\$13.90
POWER EQUIPMENT OPERATOR - MILLING MACHINE	AD	\$16.00	043	\$0.00
POWER EQUIPMENT OPERATOR - OILER	AD	\$30.52		\$13.90
POWER EQUIPMENT OPERATOR - PAVER	AD	\$20.40		\$4.00
POWER EQUIPMENT OPERATOR - ROLLER - ASPHALT	AD	\$21.58		\$7.11
POWER EQUIPMENT OPERATOR - ROLLER - EARTH	AD	\$18.24	023	\$6.08
POWER EQUIPMENT OPERATOR - SCREED	AD	\$16.75		\$3.53
POWER EQUIPMENT OPERATOR - SKID STEER (BOBCAT)	AD	\$21.07		\$7.08
POWER EQUIPMENT OPERATOR-VACCUM TRUCK	AD	\$21.00	023	\$6.08
RESILIENT FLOOR	AD	\$28.00		\$10.90
ROOFER/WATERPROOFER	AD	\$27.25		\$9.15
SHEETMETAL WORKER	AD	\$24.34		\$20.07
SPRINKLERFITTER	AD	\$21.75		\$6.30
STEAMFITTER/PIPEFITTER	AD	\$31.43		\$12.98
TILE & TERRAZZO MECHANIC	AD	\$27.25	043	\$11.23
TRUCK DRIVER - DUMP	AD	\$16.00	043	\$0.00
TRUCK DRIVER - DUMP - ARTICULATING	AD	\$17.50	043	\$6.08 a + b
TRUCK DRIVER - FLATBED	AD	\$17.17	043	\$6.08
TRUCK DRIVER - TACK/TAR TRUCK	AD	\$15.45		\$3.48
TRUCK DRIVER - TANDEM	AD	\$21.99		\$8.10
TRUCK DRIVER - TRACTOR TRAILER	AD	\$18.81	043	\$6.08

LABORER GROUP II

LABORER - ASPHALT RAKER	AD	\$19.91		\$18.30
LABORER - COMMON	AD	\$19.91		\$18.30
LABORER - CONCRETE PUDDLER	AD	\$19.91		\$18.30
LABORER - CONCRETE TENDER	AD	\$19.91		\$18.30
LABORER - CONCRETE VIBRATOR	AD	\$19.91		\$18.30
LABORER - DENSITY GAUGE	AD	\$19.91		\$18.30
LABORER - FIREPROOFER - MIXER	AD	\$19.91		\$18.30

LABORER - FLAGGER	AD	\$19.91	\$18.30
LABORER - GRADE CHECKER	AD	\$19.91	\$18.30
LABORER - HAND ROLLER	AD	\$19.91	\$18.30
LABORER - JACKHAMMER	AD	\$19.91	\$18.30
LABORER - LANDSCAPING	AD	\$19.91	\$18.30
LABORER - LAYOUT	AD	\$19.91	\$18.30
LABORER - LUTEMAN	AD	\$19.91	\$18.30
LABORER - MORTAR MIXER	AD	\$19.91	\$18.30
LABORER - PLASTERER - HANDLER	AD	\$19.91	\$18.30
LABORER - TAMPER	AD	\$19.91	\$18.30
LABORERS GROUP I			
LABORER - AIR TOOL OPERATOR	AD	\$20.07	\$18.19
LABORER - ASPHALT PAVER	AD	\$20.07	\$18.19
LABORER - BLASTER - DYNAMITE	AD	\$20.07	\$18.19
LABORER - BURNER	AD	\$20.07	\$18.19
LABORER - CONCRETE SURFACER	AD	\$20.07	\$18.19
LABORER - HAZARDOUS MATERIAL HANDLER	AD	\$20.07	\$18.19
LABORER - MASON TENDER	AD	\$20.07	\$18.19
LABORER - PIPELAYER	AD	\$20.07	\$18.19
LABORER - SCAFFOLD BUILDER	AD	\$20.07	\$18.19

FRINGE REFERENCES AS NOTED:

- a. PAID HOLIDAYS: New Year Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day & Christmas Day.
- b. PAID VACATIONS: Employees with 1 year service - 1 week paid vacation;
2 years service - 2 weeks paid vacation;
10 years service - 3 weeks paid vacation.

Incidental Craft Data: Caulker, Man Lift Operator, Rigger, Scaffold Builder, and Welder receive the wage and fringe rates prescribed for the craft performing the operation to which welding, scaffold building, rigging, operating a Man Lift, or caulking is incidental.

These **Informational Prevailing Wage Rates** may not be substituted for the requirements of pre-advertisement or onsite job posting for a public work contract that exceeds \$500,000 in value and either of the following criteria are met: (1) the contracting body is a unit of State government or an instrumentality of the State and there is any State funding for the project; or (2) the contracting body is a political subdivision, agency, person or entity (such as a county) and the State funds 50% or more of the project.

Modification Codes:

- (AD) 17-209 Annual Determination from Survey Wage Data Received
- (CH) 17-211 Commissioners' Hearing
- (CR) 17-208 Commissioners' Review
- (SR) 17-208 Survey Review by Staff

Each "Borrowed From" county is identified with the FIPS 3-digit county code unique for the specific jurisdiction in Maryland.

For additional information on the FIPS (Federal Information Processing Standard) code, see <http://www.census.gov/datamap/fipslist/AllSt.txt>

The Prevailing Wage rates appearing on this form were originally derived from Maryland's annual Wage Survey. The Commissioner of Labor & Industry encourages all contractors and interested groups to participate in the voluntary Wage Survey, detailing wage rates paid to workers on various types of construction throughout Maryland.

A mail list of both street and email addresses is maintained by the Prevailing Wage Unit to enable up-to-date prevailing wage information, including Wage Survey notices to be sent to contractors and other interested parties. If you would like to be included in the mailing list, please forward (1) your Name, (2) the name of your company (if applicable), (3) your complete postal mailing address, (4) your email address and (5) your telephone number to PWMAILINGLIST@dllr.state.md.us. Requests for inclusion can also be mailed to: Prevailing Wage, 1100 N. Eutaw Street - Room 607, Baltimore MD 21201-2201.



**ATTACHMENT 23
TECHNICAL SPECIFICATIONS
TORFP WORK# F50B7400023**

1. Summary

This task order is for the purchase and turnkey installation of one (1) 330-foot self-supporting tower with foundation, two (2) 12x38 ft concrete foundations, two (2) 12x38x10-foot equipment shelters, one with with a 75kW backup generator and one without a generator, and one (1) 1000 gallon propane tank for the State Highway Administration (SHA) at the following location:

DAN'S ROCK SHA COMMUNICATIONS TOWER

Old Dan's Rock Rd.

Cumberland, MD

Grid Coordinates: Latitude: N39-34-44.16, Longitude: W78-54-00.93

The TO Contractor shall comply with all applicable sections of the MD State Highway Administration Standards of Construction Specifications for Construction and Materials, July 2008 (Grey Book).

TO Contractors will only use approved tower and shelter designs. The following manufacturers have pre-approved designs:

Nello Towers www.nelloinc.com

Tower Innovations www.towerinnovations.net

Sabre Towers www.sabreindustriesinc.com

Valmont www.Valmont.com

Cellxion www.cellxion.com

Fibrebond www.fibrebond.com

Thermobond www.thermobond.com

2. TORFP Specifications

The TO Contractor shall provide all coordination, functions, labor, materials, insurance and purchase items required to install a fully functional microwave and wireless communications site in accordance with the following specifications:

A. Site Preparation Work

1. TO Contractor shall perform locating of any buried electrical and/or telephone cables on all of the property affected by the tower site construction and installation of electrical and communications conduits.
2. TO Contractor shall remove and dispose of existing small self-supporting tower and associated concrete block equipment building prior to initiating construction of the new facility.
3. The TO Contractor shall follow the approved sequence of constructions as shown in the attached construction drawings. Any deviations shall be approved by the County, Maryland Department of the Environment (MDE) and/or the DOIT project manager, as required.
4. TO Contractors may use subcontractors who have experience in civil / site work, Erosion and Sediment Control (E&S) implementation and Storm Water Management (SWM) and Storm Drain (SD) construction, etc in the context of SHA projects and meeting MDE requirements. TO Contractors without green and yellow cards shall use approved subcontractors to install and maintain soil and erosion controls who do have these certificates.
5. TO Contractor shall if applicable coordinate and meet with County or MDE environmental inspectors to obtain and ensure compliance with permits and regulations for maintaining sediment and erosion control. This will be done at least seven (7) days prior to any construction.
6. The TO Contractor shall maintain an A or B rating for the E&S controls for the duration of the project. Grades of C, D or F may result in liquidated damages.
7. The TO Contractor shall clear, grade, survey and mark the Limits of Disturbance (LOD) in accordance with the attached construction drawings.
8. The TO Contractor shall, if required, furnish and install sediment and erosion control systems and **any necessary** storm water management features in accordance with the attached drawings. Sediment and erosion control systems may include but are not limited to: silt fencing, silt stakes, hay bales. Disposition of any spoils shall be conducted in accordance with the most current version of MDE policy. Details are provided in Attachment #33 Construction Drawings. Deviations from the drawings require County or MDE approval as appropriate. **A watertight container shall be placed on site to contain up to and including the following: Approved Construction drawings, daily completed SWM/ES inspection logs, all applicable permits for construction, and copies of all materials related to the construction of the site (e.g, concrete delivery tickets, stone delivery tickets, MDI). The container must be placed in a conspicuous location on the site.** The site will be

- subject to random and scheduled inspections. Sites left dormant shall be stabilized prior to departure in accordance with County or MDE standards as appropriate. Sites are subject to inspection even during dormant periods. Maintenance of all E&S measures shall be required until approval is granted to remove each feature. One individual, designated by the TO Contractor, will be responsible for the supervision of all E&S controls and issues. This individual shall have a current green and yellow card.
9. The TO Contractor shall furnish and install a stabilized construction entrance and site access road in accordance with the construction drawings. Near completion of the site improvements the stabilized construction entrance shall be restored to match the grade of the existing access road in accordance with the construction drawings
 10. All concrete supplied shall originate from a State certified / SHA approved plant. Supplied concrete shall meet SHA, tower design specifications and comply with Section 902 of the Grey Book. TO Contractors shall use a SHA-approved concrete mix that complies with the tower and shelter foundation designers' specifications.
 11. The TO Contractor shall construct the tower foundation per tower manufacturer's specifications.
 12. The TO Contractor shall construct two (2) 12x38ft. equipment shelter foundations. The foundation design shall be approved by the shelter manufacturer. At a minimum its footers shall extend at least 6 inches below the local frost line. The supply and installation of the equipment shelter foundations shall include an integrated continuous stoop for the doors, and shall be designed to support a 12x38x10ft. concrete equipment shelter (height is inside dimension).
 13. The TO Contractor shall construct one (1) 4x20ft. Concrete foundation for one (1) 1,000 gallon LP fuel tank. The foundation shall be constructed on compacted dirt and no less than 3 inches of 57 stone. The foundation shall be at least six inches above final grade and be reinforced with rebar or 6x6 metal mesh.
 14. The TO Contractor shall install tower and shelter ground rings per the latest version of Motorola R56 installation standards. This shall include at least two test wells. Test wells shall not interfere with vehicular traffic. Locations will be verified by the State Project Manager
 15. Upon completion of tower, shelter and site improvements, the TO Contractor shall furnish and install surface materials in accordance with Attachment # 33 Construction Drawings. TO Contractor shall restore all areas of grass or existing pavement which have been disturbed during construction.
 16. The TO Contractor shall install an eight (8) ft. high-galvanized chain link fence with two (2) feet of barbed wire on top, with a twenty-four (22) ft. wide, double leaf vehicle gate around the site (includes tower, fuel tank, and both shelters) as shown on

Attachment #33 Construction Drawings. The fence materials shall be bonded and grounded in accordance with the latest version of R56. The TO Contractor shall utilize sufficiently sized insulated copper wire to bond the fence fabric and barbed wire. The insulation shall be UV rated and black or grey in color. If the copper is not tinned, anti-oxidation compound shall be used for any mechanical connections. The TO Contractor shall provide chains and combination style commercial grade padlocks for all gates. The State Project Manager shall be given the combination and shall control access to the site.

B. Tower Specifications

1. The tower shall be a solid steel leg constructed, self-supporting, 330-ft tower (total height is 348ft. with all appurtenances). The tower shall be constructed of high-strength steel. All components and hardware are to be hot-dip galvanized with a zinc coating (per EIA standards) after fabrication. A zinc coating shall be permanently fused to the steel, so all surfaces are protected and no painting is required for rust protection. Upon delivery, the tower shall be subject to approval by the State Project Manager.
2. Exact placement of the tower and shelters shall be coordinated by the TO Contractor with the State Project Manager.
3. The tower shall be required to meet or exceed the latest **EIA 222-G** standards for this type of tower. It shall be **designed to carry the number and type of antennas as per attached 330-ft State Tower loading plan (see TORFP Attachment # 25 - 330-ft State Tower Loading Plan)**. The tower and associated installation shall conform to all local, County, State and Federal Equipment Shelter codes. The State of Maryland shall be responsible for obtaining Federal Aviation Administration (FAA) approval and permits. The tower shall be designed with the following 222-G design criteria:

Three second wind gust:	90 MPH
Three second wind gust concurrent with radial ice:	40 MPH
Concurrent radial ice:	¾ IN
Structure classification:	III
Exposure category:	C
Topographic category:	3
Crest Height:	N/A

4. The bottom 20 feet (minimum) of the tower shall have K-bracing construction to allow for ingress and egress under the tower. The top 60 ft. (minimum) of the tower shall contain no slope.

5. Spacing between tower legs shall not exceed 31 ft. If using a pad and pier foundation, keep the pad to no more than 45x45ft.
6. Proper and thorough grounding and bonding methods in accordance with currently published Motorola R56 standards shall be employed to provide maximum lightning protection.
7. The TO Contractor shall use soil borings supplied by the State for analysis to assure that the engineered tower foundation and the calculated ground loadings are acceptable. The TO Contractor shall furnish two (2) copies of the foundation designs and the ground loading calculations certified by a Maryland registered Professional Engineer (P.E.) to the State Project Manager. The TO Contractor shall furnish a statement that the engineered tower foundations and the calculated ground loadings meet the manufacturer's recommended requirements.
8. Step bolts on one leg, safety climb and grounding bars shall be furnished and installed by the TO Contractor as part of the tower. Safety climb stand offs shall be of sufficient length to ensure the safety climb does not rub on the flanges. Step bolt mounts shall be permanently attached to the side of the climbing leg instead of the face/apex of the climbing leg. Tower ground bus bars shall be grounded to the tower ground ring and bonded directly to the tower structure through the use of stainless steel hardware. Tower ground bus bars shall be a minimum of 1/4"x4"x24", (minimum 33 hole pairs) copper bars. One tower bus bar shall be provided for each shelter installed.
9. The tower shall be designed to accommodate two (2) "State" cable ladders (supplied by the TO Contractor) and one (1) "Cellular" cable ladder (supplied by others). The "State" cable ladders shall be designed in accordance with the Tower Layout (Attachment #28). The "State" cable ladders shall be a "rail" configuration with cable ladder side rails and rungs to accommodate at least fifteen (15) 3/4 inch snap-ins and be at least three (3) FT wide. If the cable ladders are required to meet, a single ladder shall extend to the top of the tower. The single cable ladder shall accommodate at least fifteen (15) 3/4 inch snap-ins and be at least three (3) FT wide. The State Project Manager shall determine where the two cable ladders meet and transition to the single cable ladder. The cable ladders shall be mounted on the same face and the outside edge of the tower. The ladders shall each originate on opposite outer edges of the face of the tower. They shall originate approximately one foot from the leg of the tower and shall remain one foot from the edge of the tower. One foot edge spacing shall be maintained to the point where both cable ladders meet. From that point, a single cable ladder shall extend, centered on the face, to the top of the tower. Cable ladders shall not be positioned back to back. The "Cellular" cable ladder shall be designed in accordance with the Tower layout (Attachment #28). The cellular cable ladder shall be a "rail" configuration with cable ladder side rails and rungs to accommodate at least fifteen (15) 3/4 inch snap-ins and be at least three (3) FT wide and shall extend the full height of the tower. The feed lines shall be arranged in accordance with the Tower Loading Plan (Attachment #25). Feed Lines heights shall

terminate at its corresponding antenna on the Tower Loading Plan (Attachment #25). The tower shall be designed in compliance with the State loading plan, the above configuration and all other applicable sections of this Task Order.

10. All leg and leg flange material shall be ASTM A-572 grade 50 ($F_y \geq 50$ ksi). All other material is ASTM A36 ($F_y \geq 36$ ksi).
11. Anchor bolts shall comply with ASTM A449 and be any number or size determined by the tower designer to comply with the requested load requirements.
12. Tower foundation concrete strength shall be at least 4000 PSI or the tower foundation designer's recommendation; whichever is greater. Concrete testing shall be conducted in accordance with DoIT's concrete inspection policy memorandum (see TORFP Attachment #24). Test cylinders shall be crushed and results provided to the State Project Manager prior to stacking the tower. Tower erection shall NOT commence until verification is provided that the concrete has reached the minimum compressive strength. Compressive strength can be tested prior to 28 days to expedite the tower erection, but this does not exclude the TO Contractor's responsibility to supply 28 day crush reports.
13. Non-chloride, non-corrosive concrete set accelerate may be utilized in compliance with ASTM-C-494 type C and ACI-318.
14. Water reducing admixture may be utilized in compliance with ASTM-C-494.
15. All admixtures shall be dispensed into fresh concrete and sufficiently mixed. All admixtures shall be added separately.
16. There shall be a minimum concrete cover of 3" on all steel.
17. Crown top of piers for drainage and chamfer all exposed concrete edges 1".
18. Compact backfill in 9" lifts. Remove all forms prior to backfill.
19. The TO Contractor shall purchase and install tower lighting equipment on the 330 ft. tower (Total finished height of the tower including all appurtenances will be 348 ft.) as per FAA Advisory Circular AC70/7460-1-G or latest revision according to the following specifications:
 - i. The TO Contractor ***shall use tower lighting manufacturer trained and certified personnel*** to install tower lighting equipment on the 330 ft. tower.
 - ii. The side markers shall be installed using stainless steel hose clamps, not plastic cable ties.
 - iii. The tower lighting system shall be an all LED system by Flash Technology Systems (<http://www.flashtechnology.com/>) (Part # FTS370d LED SMART IR with NVG compatibility using infrared "IR" LEDs) or approved equivalent

- and manufactured to specifications for FAA type L-864/L-865 and FAA-AC 150/5345-43E.
- iv. The TO Contractor shall install a dual, medium intensity, Type E-1 LED system that provides a white flashing LED for day operation and a red flashing LED (with IR LED) for night operation as per FAA requirements. The L-810 side markers shall also utilize NVG-compatible LED technology. A 15 foot beacon extension assembly, with safety climb, shall be installed with flash head and lightning rod mounts and step bolts spaced alternately at approximately 15 inch intervals from the tower flange to the beacon. The beacon extension shall be centrally mounted and not anchored to just one tower leg. It shall be anchored to all three tower legs to distribute weight evenly. The beacon extension can be solid like the other legs on the tower or hollow, but no less than 4.5 IN outside diameter and ¼ IN wall thickness. The design must be approved by the State Project Manager prior to shipment.
 - v. The lighting rod shall extend at least four (4) Ft. above the top of the beacon. No part of the lightning rod or mount that obstructs the beacon shall be larger than 7/8" in diameter.
 - vi. The tower lighting system shall be supplied with remote and onsite diagnostics capabilities including software and direct connect cable.
 - vii. TO Contractor shall supply temporary power to the lighting controller until permanent power is supplied. This shall include all materials and labor to install temporary power and may include the use of a portable generator or a utility approved metering device, means of disconnect and receptacles. Delays in permanent power shall be evaluated on a case by case basis and solutions shall be directed by the State Project Manager.
 - viii. The supplied tower lighting system shall include 5-year parts warranty.
 - ix. The lighting controller shall be bonded to the internal halo inside the generator room.

C. Equipment Shelter Specifications

12x38 ft Shelter with 75 Kw Generator:

1. Shelter installations must be in conformance with manufacturer's requirements for application of warranties provided by the manufacturer as well as be compliant with the current version Motorola R56 grounding requirements.
2. The equipment shelter supplied shall be a one-piece concrete communications equipment shelter and include a 75 Kw vapor propane fueled generator, 400-amp integrated load center, such as a Transtector ISP Series, incorporating the main service disconnect, manual transfer switch, surge protection and load center, and 200-amp sub feed with installation. The supplied equipment shelter shall be nominally sized 12x38x10 ft (height is inside dimension) and configured with two rooms as depicted in TORFP Attachment # 26 – Typical Equipment Shelter With Generator.

3. The double room shelter shall be provided with a NEMA 4, 250 Volt D.C., 600 Volt A.C. 200 amp, weatherproof emergency generator receptacle such as Appleton AJA20044-200, mounted on the front of the shelter to allow connection of a 50kW portable Emergency Generator in case of failure of the internal generator during a power outage. The generator receptacle shall be located in such a place that it will not interfere with the operation of the equipment room door. The receptacle's operation shall be controlled by operating the manual transfer switch inside the equipment shelter.
4. The TO Contractor shall furnish a compatible Appleton plug such as AP20044CD with 50 Ft of conductors terminated in a pig tail. The plug shall be designed to interface a portable generator with the Appleton receptacle mounted on the building. The plug shall be weatherproof and the conductors shall be adequately insulated and weatherproofed. They shall be sized to safely connect a 50 kW emergency generator and mitigate any voltage drop. The cable assembly shall be provided with each shelter and installed inside the generator compartment on an adequately sized hose bib in accordance with the attached shelter layout. If made of a conductive material the cable holder will be bonded per the latest version of R56.
5. Two 16-port cable entry points complete with weatherproof caps shall be provided for antenna cable entry. One entry point shall be located on the long side of the Equipment Shelter and the second entry point shall be located on the end wall of the Equipment Shelter between the air conditioner units. Each port within both assemblies shall be four (4) inches in diameter, and shall be located with the top of the assembly located directly under the cable rack, in four (4) rows of four (4) ports each. In addition to the cable entry points, one single four inch PVC conduit sleeve for communications conduits and one single two inch PVC conduit sleeve for installation of S. O. cables to the tower lighting system, both with temporary end caps shall be installed. The actual location of these penetrations and sleeves must be confirmed with the State Project Manager prior to the fabrication of the shelter.
6. Cable ladders (24 inches wide) shall be mounted from the ceiling using all-thread and "cherry" insulators and be spaced eight feet above the finished floor, measured from the floor to the bottom of the cable ladder, as shown in Attachment # 26 – Typical Equipment Shelter with Generator.
7. Two 5-ton 230/208V-Single-phase, dual (redundant) wall-mounted, vertical, self contained HVAC units with 5-kw heat strips shall be installed at the locations specified on the equipment shelter drawing. Separate circuit breakers for each unit shall be installed in the main load circuit panel. The provided HVAC units shall have sufficient capacity for the Equipment Shelter size supplied, fully loaded with equipment. Each unit shall contain a time delay startup relay, low ambient control, and a forced air resistive heat strip. The HVAC controller shall include a humidity control feature. The outside portions of the units shall be weather/rodent and tamper proof.

8. The shelter shall be equipped with 16" ventilation fans with gravity operated back draft louvers and 16" gravity intake damper with filter and hood (bug and rodent intrusion resistant). Each fan shall be connected to a thermostatic device to allow automatic fan on-off control. The openings shall be provided with shutters and weather hoods. All required exhaust piping and intake and exhaust plenums required for the manufacturer's recommended air flow shall be included as part of the installed equipment. All openings in the shelter structure for the provision of entry or exit of cables, equipment, ventilation, etc. shall be sealed to prevent the invasion of the shelter interior by insects, rodents and external moisture.
9. Electric baseboard heater strips shall supply heating for the generator room. A thermostat mounted on the wall opposite the heater shall control the heater strips. The heater strips shall be sufficient for the size of the generator room to maintain a room temperature of 72 degrees F.
10. Insulation shall be non-combustible, with a vapor barrier. Wall and floor thickness shall provide an R-11 (minimum) rating, and the roof shall have an R-19 (minimum) rating.
11. Concrete Construction – The wall outer finish shall be natural stone aggregate finish with an aesthetically pleasing earth tone.
12. Each foundation shall be comprised of concrete piers or concrete pad with steel reinforcement. The top of the finished foundation shall be 6 inches above finished grade. The foundations shall level each shelter such that all foundation to shelter contact points shall have equal loads. The equipment shelter is to rest flush on the poured concrete foundation without showing any gaps between shelter and pad and to be level to within ½ degree. The shelter shall have an integrated continuous stoop for the doors, and steps if necessary, to provide safe entry into the shelter. Installations requiring stoops more than 24 inches above grade shall have safety rails installed.
13. The minimum floor loading design shall be 300lbs. per square foot (PSF).
The minimum roof loading design shall be 100lbs. per square foot (PSF).
The minimum wall loading design shall be 34 lbs. per square foot (PSF).
The minimum wind loading design shall be 50 lbs. per square foot (PSF).
14. Two reinforced steel finished doors shall be located on the shelter, per the attached drawings. The doors shall be finished to match the appearance of the shelter. The doors shall be pre-hung, gasket sealed, insulated, approximately 3 foot by 7 foot, and in a metal frame. Doors shall be supplied with door-closer, magnetic weather stripping, drip strip over door, doorstop, door sweep and a 42-inch door canopy. Door checks and door stops shall be provided along with a three (3) point locking system for maximum security. The doors shall have non-removable ball bearing hinges and deadbolt locks with tamper plates installed. These deadbolt locks shall be security type with removable cylinders, such as "Best" locks. Each generator and equipment room door shall be bonded to its frame with welding cable of an

- appropriate gauge in accordance with the latest version of R56. Braided cable shall not be used.
15. The equipment shelter floor shall be covered with 1/8", 12" x 12" vinyl tile, light in color (beige, tan or white). The walls shall be trimmed with a 4-inches high and 1/8 inch thick rubber base trim against the floor.
 16. The walls shall be covered with a minimum of white wood-grained paneling or white vinyl over 1/2 inch plywood. The equipment shelter shall have a 3/4" X 4ft X 8ft plywood telephone mounting board installed as per attached shelter layout drawing TORFP Attachment # 26 – Typical Equipment Shelter with Generator.
 17. Electrical installation and wiring shall conform to the latest version of the National Electrical Code. Surface mounted, grounded, duplex outlets shall be provided at five (5) foot intervals (where possible) around the interior walls. All wiring shall be installed in surface mount EMT conduit. Outlets shall be installed 18 inches above finished floor. Horizontal runs of conduit shall be installed a minimum of 7 1/2 feet above the floor whenever possible with vertical connections to the surface mounted devices to minimize interference with installing equipment against the wall. Two weatherproof outlets shall be installed on the exterior of the shelter. These outlets are to be located at both ends of the shelter. In addition, circuits supplying power to equipment racks # 3-16 in the shelter shall extend downward six (6) feet from boxes mounted at 22" intervals on the ceiling as shown in the supplied TORFP Attachment #26 - Typical Equipment Shelter with Generator.
 18. Wiring for these drops shall be housed in "Sealtite" flexible conduit and each drop shall be terminated in a quad receptacle box. Each quad box shall contain two circuits and each circuit shall have its own dedicated 15 or 20-amp circuit breaker. These drops shall be planned to fall immediately adjacent to the edge of the cable tray. The exact location for each drop must be confirmed with the State Project Manager before the shelter is fabricated. The circuit breakers for the 240 VAC quad boxes supplying power to equipment racks # 1-3 shall be located in the main load center. Racks #1-3 shall be supplied with one junction box each containing one 240 Volt 20 amp circuit. The junction box shall be fastened to the wall in accordance with the shelter drawings and supplied photos. All circuits shall have a dedicated neutral installed in accordance with the latest Motorola R56 standard. The junction boxes shall be mounted in line vertically.
 19. **All low voltage wiring (e.g. alarm, control, etc.) shall be routed in separate conduits in accordance with the national electrical code.**
 20. Power to the shelter shall be fed through a properly sized 240-Volt, fused single-phase disconnect switch mounted on the exterior wall of the shelter. (See Attachment #26 - Typical Equipment Shelter With Generator.).

21. Shelter shall be provided with 400-amp, 20-position (minimum) main load center, equipped with a minimum of twenty (20) 20-amp breakers. Breakers shall be “high magnetic” or high inrush current type (Square D, HM or equivalent). This box shall be installed at one end of the equipment area within five (5) feet of the primary cable entry port. In addition to the 400-ampere main load center, a minimum 20-position quad box load center shall be installed, fed from the main load center; the quad box load center shall be located on the generator room wall and shall supply power to quad boxes above rack positions 3-16. Load centers, circuit breakers and quad boxes shall be properly marked.
22. An interior system ground (halo) with a single #2 AWG stranded wire shall be provided with proper connections to the shelter and, in turn, to the tower ground system. The halo shall have a 6-inch break roughly opposite the Master Ground Bar. The #2 AWG ground wire for each row of racks shall be suspended on independent ground lead stand offs as outlined in the typical shelter drawing. They shall be positioned to ensure the #2 AWG lead is isolated from the main cable racks. No electrical conduit is allowed to bridge the 6” gap in the halo ground. The internal ground system shall be mounted on the wall using 2-inch (2”) standoff insulators, connected to two (2) minimum ¼” x 5”x 24”, (33 hole pairs) minimum copper master ground bus bars that are installed directly under each cable entry port. The ground bus system shall be a Harger EPK16MOT bus bar system or an approved substitute. The copper ground bars on the back interior wall of the shelter shall be connected to the corresponding exterior ground bar with stainless steel insulated feed through. The external ground bar shall be connected through a minimum of three (3) 2-inch copper straps to the external building ground ring and tower grounding system. All exterior connections shall be exothermically welded to ensure proper connection. Electrical ground shall be bonded to the RF ground.
23. TO Contractor shall purchase and install the following lightning protection devices in the equipment shelter:
 - i. An IEEE Type 1 SAD/MOV protection device shall be part of the integrated load center and approved for use in the latest version of R56.
 - ii. An IEEE Type 2 MOV protection device shall be installed at the main power input inside the shelter, by means of a 60-Ampere (per “leg”) breaker or fused disconnect, across the utility lugs of the transfer switch. The device shall be installed inside of the equipment shelter and approved for use in the latest version of R56 such as Transtector IMAX series. Its installation shall comply with the latest version of R56 and maintain the device’s UL1449 (latest edition) listing.
 - iii. An IEEE Type 3 SAD protection device shall be installed across the 120V/20A circuit for the lighting controller. This device must be installed in such a manner that its replacement shall not cause an outage to the tower lighting system. The device shall be installed in the generator room near the lighting controller and approved for use in the latest version of R56.

- iv. All surge suppression devices shall have the ability to create a dry contact alarm (contact closure upon alarm). This alarm shall be integrated with the shelter alarm wiring. The dry contact alarms shall be enabled from the factory.
24. The Air conditioning units shall be connected to the internal (halo) grounding system **only**, not to the external equipment shelter grounding system.
25. 48-inch, two or four-tube, energy efficient fluorescent fixtures shall provide sufficient lighting (minimum 50 foot candles) for the shelter in accordance with Attachment #26. The lights shall be controlled by a wall switch / timer internal to the shelter, and located next to the entry door. An exterior entry light shall be installed outside the main doorway of the structure. This light shall be controlled by a motion sensor wired through a wall switch inside the shelter.
26. The shelter shall be pre-wired, with the following functions, to a common point in the radio compartment and terminated with a split 66 Block. The 66 Block shall be mounted in the upper right-hand side of the punch block board. All alarms shall be punched down on the left-hand side of the punch block using solid wire. The 66 block shall not be enclosed in any box or enclosure. All functions/alarms shall be programmed to be normally open. Upon an alarm they will close. The alarms shall be programmed as follows:
 - a. High Temperature Alarm – Adjustable for over-temperature alert (may be integrated with HVAC system).
 - b. Low Temperature Alarm – Adjustable for under-temperature alert (may be integrated with HVAC system).
 - c. HVAC Failure Alarm- derived from the HVAC controller
 - d. Generator Running Alarm – Closure when generator is running.
 - e. Remote Generator Start – No transfer to load (a dry contact closure will remote start the generator but will not transfer to the load if commercial power is good)
 - f. Generator transfer to Load (a dry contact closure will initiate a transfer to load. If the generator is off, it will start the generator)
 - g. Low Oil Pressure Alarm
 - h. Low Coolant Alarm
 - i. Generator Overcrank Alarm
 - j. High Coolant Temperature alarm
 - k. Transfer Panel Switched- indicates that the transfer panel has switched to backup power
 - l. Equipment Room Door Alarm
 - m. Generator Room Door Alarm
 - n. Equipment Room Smoke Alarm
 - o. Equipment Room Heat Detector Alarm
 - p. Generator Room Smoke Alarm
 - q. Generator Room Heat Detector Alarm
 - r. Type I Surge Suppressor Alarm

- s. Type II Surge Suppressor Alarm
 - t. Type III Lighting Controller Surge Suppressor Alarm
 - u. Strobe White Alarm (per strobe controller)
 - v. Strobe Red Alarm (per strobe controller)
 - w. Marker Alarm (per strobe controller)
 - x. Spare
 - y. Spare
27. On this double room shelter, there shall be a partition wall separating the emergency generator from the room containing the RF equipment. This partition wall shall have a one (1) hour fire rating (from the inside out and outside in). The floor under this section shall be reinforced to handle additional loading. Two gravity intake louvers and one exhaust fan with gravity louvers shall be installed. All louvers and openings shall be wire covered for security and prevention of entry by rodents. A separate outside door shall be installed on this room and shall be identical to the equipment room door. (See Attachment #26 - Typical Equipment Shelter With Generator.)
28. The lighting for this room shall be controlled by a separate wall switch / timer internal to the room and located next to the entry door.
29. The TO Contractor shall supply with this equipment shelter a 75 Kilowatt, liquid propane vapor fueled, 1800-RPM generator, 60 Hz, 120/240 volt, single phase with a 400-amp Automatic Transfer Switch (ATS).
30. Installation shall include all materials, parts, labor, etc. to provide a fully functional generator back-up system. Included in the installed price is the transfer switch and all associated wiring as well as generator alarm programming in accordance with state requirements. Block heaters with necessary wiring shall be included. Fuel tank hookup, fuel tank, fuel tank pad and fuel supply piping to the shelter shall be provided by the site work TO Contractor. Fuel supply piping shall be non-metallic to comply with R56 single point grounding requirements. The fuel tank shall be connected to the tower ground ring.
31. Fuel strainers on the propane fuel systems shall be installed for proper drainage to prevent moisture buildup in the line. Proper sized flex fuel lines shall be installed on all generators and the fuel line so as to not impede the proper flow of fuel and shall not be sharply bent, or crimped. The flex jumper shall be placed to ensure minimal engine vibration is transferred to the fuel solenoid assemblies to prevent rupture. The fuel line from the secondary regulator to the manifold shall not be less than 1" to minimize fuel pressure drop from no load to full load. The metal fuel line inside the room shall be bonded to the internal halo where it enters the room. This can be done with a c-clamp style device at the fuel line. Proper venting of the fuel system shall be installed to ensure no buildup of pressure and safe venting will occur. Fuel lines run in conduit or sleeves shall be sealed from moisture. All exhaust piping that can come in contact with personnel shall have a heat shield installed. Proper battery chargers

shall be installed for the appropriate system, either 12 VDC or 24 VDC, 110 VAC.
Note: two (2) 12 VDC battery chargers is not acceptable on 24-volt systems.

32. The TO Contractor shall perform on-site startup of the generator under full load, using a load bank. The original of the startup form shall be completed and submitted prior to submission of an invoice for work performed. The State Project Manager or his designee shall be notified in advance to attend the event at his discretion. The load bank test shall be at least one hour and conducted under full load. The startup shall also include the programming of all generator related alarms/function.
33. All alarm outputs from the generator shall be extended to the radio compartment via a data cable and terminated in a remote annunciator panel which provides both visual and audible alarm indications for each circuit monitored. The annunciator panel shall also provide either normally open or normally closed dry contacts which can be field selectable as needed to provide the proper inputs to the existing "66 block" for the dissemination of alarm information to the system. The annunciator panel shall be located directly below the existing "66 block" in the radio compartment.
34. All wiring for the generator shall be routed overhead. It is unacceptable to cross the floor with conduits.
35. An external minimum of 1/4" x 4" x 24", (36 hole pairs) copper ground bar shall be installed on the outside of the shelter directly under the main cable entry port and attached with three (3), solid tinned copper, 2-inch ground straps, to the single ground point directly below the main cable entry port. Refer to Harger EPK16MOT.
36. The shelter shall be designed and installed per the latest version of Motorola R56 to include eye wash station, first aid kit, chemical and CO2 type fire extinguishers mounted on the partition wall in the radio compartment.
37. The shelter shall include one broom and dust pan (mounted to the wall), one six foot step ladder, one 30 gallon (plastic) garbage can and one box of 30 gallon garbage can liners.
38. An external ground ring shall be provided around each shelter foundation. Above grade ground tails shall be provided for both shelter foundations. The buried external ground ring shall be in direct contact with the earth at a depth of 30 inches below the earth's surface with ground rods driven into the earth at intervals not to exceed twice the ground rod length. In the event 10-foot ground rods cannot be driven shorter rods are acceptable if driven at the proper intervals. The external ground ring shall be placed 3 feet outside the shelter foundation in order to be outside the drip line of the shelter.
39. All grounds shall be bonded together. This includes the generator, the shelters, the fuel tank, the fencing, and equipment shelter grounding systems, the ice bridge and the tower. The ground test reading shall not normally exceed 5 OHMS. The State

shall test all grounds using a fall-of-potential method test to determine compliance. In the event 5 OHMS cannot be reached by reasonable means and through no fault of the TO Contractor, the State will determine the course of action to be taken by the TO Contractor at an additional cost to the State. Grounds shall test fewer than 10 OHMS for the site to be acceptable for reasons of personal safety.

12x38 ft Single Compartment Shelter Without Generator

1. Shelter installation shall be in conformance with manufacturer's requirements for application of warranties provided by the manufacturer as well as be compliant with the current version of the Motorola R56 grounding requirements.
2. The equipment shelter supplied shall be a one-piece concrete communications equipment shelter without a backup generator. The shelter shall be equipped with a 200-amp integrated load center, such as Transtector ISP Series, incorporating the main service disconnect, manual transfer switch, surge protection and load center. The supplied equipment shelter shall be nominally sized 12 X 38 X 10 ft. (height is inside dimension) and configured as a one-room shelter as depicted in the Equipment Shelter Layout Drawing (TORFP Attachment 27 – Shelter without Generator).
3. The shelter shall be provided with a NEMA 4, 250 Volt D.C., 600 Volt A.C. 200 amp, weatherproof emergency generator receptacle such as Appleton AJA20044-200, mounted on the front of the shelter to allow connection of a 50kW portable Emergency Generator in case of failure of the site generator during a power outage. The generator receptacle shall be located in such a place that it will not interfere with the operation of the equipment room door. The receptacle's operation shall be controlled by operating the manual transfer switch inside the equipment shelter.
4. The TO Contractor shall furnish a compatible Appleton plug such as AP20044CD with 50 Ft of conductors terminated in a pig tail. The plug shall be designed to interface a portable generator with the Appleton receptacle mounted on the building. The plug shall be weatherproof and the conductors shall be adequately insulated and weatherproofed. They shall be sized to safely connect a 50 kW emergency generator and mitigate any voltage drop. The cable assembly shall be provided with each shelter and installed inside the generator compartment on an adequately sized hose bib in accordance with the attached shelter layout. If made of a conductive material the cable holder shall be bonded per the latest version of R56. Shelters without generators shall have the cable installed/stored just inside the door in accordance with the shelter layout drawings.
5. One 24-port cable entry port and one 16-port cable entry port complete with weatherproof caps shall be provided for antenna cable entry. The main cable entry port shall be a 24 position cable entry port and shall be located on the back wall of the building. The secondary cable entry port shall be a 16 position cable entry port and shall be located on the end wall of the building between the air conditioner units. These locations are shown in the supplied Typical Equipment Shelter Layout

- Drawings. Each port within both assemblies shall be four (4) inches in diameter, and shall be located with the top of the assembly located directly under the cable rack. In addition to the two cable entry ports, one four (4) inch PVC conduit sleeve for communications conduits shall be installed. The actual location of this penetration and sleeve must be confirmed with the State Project Manager prior to the fabrication of the shelter. Do not penetrate the building without generator for tower lighting cables.
6. Cable ladders (24 inches wide), shall be mounted from the ceiling using all-thread and “cherry” insulators and shall be spaced eight feet above the finished floor as measured from the floor to the bottom of the cable ladder, as shown in the attached (Attachment 27) Shelter without Generator layout drawing.
 7. Two 5-ton 230/208V-Single-phase, dual (redundant) wall-mounted, vertical, self-contained HVAC units with 5-kw heat strips shall be installed at the locations specified on the equipment shelter drawing. Separate circuit breakers for each unit shall be installed in the main load circuit panel. The provided HVAC units shall have sufficient capacity for the building size supplied, fully loaded with equipment. Each unit shall contain a time delay startup relay, low ambient control, and a forced air resistive heat strip. The HVAC controller shall have a humidity control module installed. The outside portions of the units shall be weather/rodent and tamper proof.
 8. The shelter shall be equipped with one 16” ventilation fan with gravity operated back draft louvers and 16” gravity intake damper with filters and hoods (bug and rodent intrusion resistant). Each fan shall be connected to a thermostatic device to allow automatic fan on-off control. The openings shall be provided with shutters and weather hoods. All openings in the shelter structure for the provision of entry or exit of cables, equipment, ventilation, etc. must be sealed to prevent the invasion of the shelter interior by insects, rodents and external moisture.
 9. Insulation shall be non-combustible, with a vapor barrier. Wall and floor thickness shall provide an R-11 (minimum) rating, and the roof shall have an R-19 (minimum) rating.
 10. Concrete Construction – The wall outer finish shall be natural stone aggregate finish with an aesthetically pleasing earth tone.
 11. Each foundation shall be comprised of concrete piers or concrete pad with steel reinforcement. The top of the finished foundation shall be 6 inches higher than finished grade. The foundations shall level each shelter such that all foundation to shelter contact points shall have equal loads. The equipment shelter is to rest flush on the poured concrete foundation without showing any gaps between shelter and pad and to be level to within ½ degree. The shelter shall have a poured concrete entrance stoop for each entrance, and steps if necessary, to provide safe entry into the shelter. Installations requiring stoops more than 24 inches above grade shall have 42 inch safety rails installed.

12. The minimum floor loading design shall be 300 lbs. per square foot (PSF).
The minimum roof loading design shall be 100 lbs. per square foot (PSF).
The minimum wall loading design shall be 34 lbs. per square foot (PSF).
The minimum wind loading design shall be 50 lbs. per square foot (PSF).
13. One reinforced steel finished door shall be located on the shelter, per the attached drawings. The door shall be finished to match the appearance of the shelter. The door shall be pre-hung, gasket sealed, insulated, approximately 3 foot by 7 foot, and in a metal frame. Door shall be supplied with door-closer, magnetic weather stripping, drip strip over door, doorstop, door sweep and a 42-inch door canopy. Door checks and door stops shall be provided along with a three (3) point locking system for maximum security. The door shall have non-removable ball bearing hinges and deadbolt locks with tamper plates installed. These deadbolts locks shall be security type with removable cylinders, such as "Best" locks. Each equipment room door shall be bonded to its frame with welding cable of an appropriate gauge in accordance with the latest version of R56. Braided cable SHALL NOT be used.
14. The equipment shelter floor shall be covered with 1/8", 12" x 12" vinyl tile, light in color (beige, tan or white). The walls shall be trimmed with a 4-inches high and 1/8 inch thick rubber base trim against the floor.
15. The walls shall be covered with a minimum of white wood-grained paneling or white vinyl over 1/2 inch plywood. The equipment shelter shall have one (1) 3/4" X 4ft X 8ft plywood telephone mounting board installed as per attached shelter layout drawing (TORFP Attachment # 27 – Shelter without Generator).
16. Electrical installation and wiring shall conform to the latest version of the National Electrical Code. Surface mounted, grounded, duplex outlets shall be provided at five (5) foot intervals (where possible) around the interior walls. All wiring shall be installed in surface mount EMT conduit. Outlets shall be installed 18 inches above finished floor. Horizontal runs of conduit shall be installed a minimum of 7 1/2 feet above the floor whenever possible with vertical connections to the surface mounted devices to minimize interference with installing equipment against the wall. Two weatherproof outlets shall be installed on the exterior of the shelter. These outlets shall be located at both ends of the shelter. In addition, circuits supplying power to equipment racks # 3-24 in the shelter shall extend downward six (6) feet from boxes mounted at 22" intervals on the ceiling as shown in the supplied Typical Equipment Shelter Layout Drawing (TORFP Attachment #27 – Shelter without Generator).
17. Wiring for these drops shall be housed in "Sealtite" flexible conduit and each drop shall be terminated in a quad receptacle box. Each quad box shall contain two circuits and each circuit shall have its own dedicated 15 or 20-amp circuit breaker. These drops shall be planned to fall immediately adjacent to the edge of the cable tray. The exact location for each drop must be confirmed with the State Project Manager before the shelter is fabricated. The circuit breakers for the quad boxes

- supplying power to equipment racks # 1-4 shall be located in the main load center. Racks # 1-3 shall each be supplied with one junction box each containing one 20 amp 240 volt circuit. These junction boxes will be fastened to the wall in accordance with the shelter drawing and supplied photos. These junction boxes will be mounted vertically in line. Racks # 3 & 4 shall each be supplied with a quad box containing (2) two 120 volt 20 amp circuits. All circuits will have a dedicated neutral installed in accordance with the latest Motorola R56 standard. Do not install a dedicated circuit for a tower light in the Shelter without Generator.
18. Power to the shelter shall be fed through a properly sized 240-Volt, single-phase fused disconnect switch mounted on the exterior wall of the shelter. (See TORFP Attachment #27- Shelter without Generator drawing for locations.)
 19. Shelter shall be provided with 200-amp, 20-position (minimum) main load center, equipped with a minimum of twenty (20) 20-amp breakers. Breakers shall be "high magnetic" or high inrush current type (Square D, HM or equivalent). This box shall be installed at one end of the equipment area within five (5) feet of the primary cable entry port. In addition to the 200-ampere main load center, a 100-amp, 40-position (minimum) quad box load center with 15 or 20-amp circuit breakers shall be installed, fed from a 100 amp breaker in the main load center; the quad box load center shall be located on the left end wall. Load centers, circuit breakers and quad boxes shall be properly marked.
 20. An interior system ground (halo) with a single #2 AWG stranded wire shall be provided with proper connections to the shelter and, in turn, to the tower ground system. The halo shall have a 6-inch break roughly opposite the Master Ground Bar. The #2 AWG ground wire for each row of racks shall be suspended on independent ground lead stand offs as outlined in the typical shelter drawing. They shall be positioned to ensure the #2 AWG lead is isolated from the main cable racks. No electrical conduit is allowed to bridge the 6" gap in the halo ground. The internal ground system shall be mounted on the wall using 2-inch (2") standoff insulators, connected to two (2) minimum ¼" x 5"x 24", (33 hole pairs) minimum copper master ground bus bars that are installed directly under each cable entry port. The ground bus system shall be a Harger EPK24MOT bus bar system or an approved substitute. The copper ground bars on the back interior wall of the shelter shall be connected to the corresponding exterior ground bar with stainless steel insulated feed through. The external ground bar shall be connected through a minimum of three (3) 2-inch copper straps to the external building ground ring and tower grounding system. All exterior connections shall be exothermically welded to ensure proper connection. Electrical ground shall be bonded to the RF ground.
 21. An IEEE Type 1 SAD/MOV protection device shall be part of the integrated load center and approved per the latest version of Motorola R56.
 22. The Air conditioning units shall be connected to the internal (halo) grounding system **only**, not to the external equipment shelter grounding system.

23. 48-inch, two or four-tube, energy efficient fluorescent fixtures shall provide sufficient lighting (minimum 50 foot candles) for the shelter. The lights shall be controlled by a wall switch/ timer internal to the shelter, and located next to the entry door. An exterior entry light shall be installed outside the main doorway of the structure. This light shall be controlled by a motion sensor wired through a wall switch inside the shelter.
24. The shelter shall be pre-wired, with the following functions, to a common point in the radio compartment and terminated with a "66 Block". These alarms may be monitored using the equipment shelter with the generator and may include the following. If alarms are installed on a 66 block they shall not be enclosed in a box or enclosure.
 - a. High Temperature Alarm – Adjustable for over-temperature alert (integrated with HVAC system).
 - b. Low Temperature Alarm – Adjustable for under-temperature alert (integrated with HVAC system).
 - c. Equipment Room Entry/Intrusion – Output when door is opened
 - d. Surge protector Alarms
 - e. Equipment Room Fire and Smoke Alarm
 - f. HVAC Fail
25. An external ground ring shall be provided around each shelter foundation. The buried external ground ring shall be in direct contact with the earth at a depth of 30 inches below the earth's surface with ground rods driven into the earth at intervals not to exceed twice the ground rod length. In the event 10-foot ground rods cannot be driven shorter rods are acceptable if driven at the proper intervals. The external ground ring shall be placed 3 feet outside the shelter foundation in order to be outside the drip line of the shelter.
26. All grounds shall be bonded together. This includes the generator, the shelters, the fuel tank, the fencing, and the equipment shelter grounding systems, the ice bridges and the tower. The ground test reading shall not normally exceed 5 OHMS. The State shall test all grounds using a fall-of-potential method test to determine compliance. In the event 5 OHMS cannot be reached by reasonable means and through no fault of the TO Contractor, the State shall determine the course of action to be taken by the TO Contractor at an additional cost to the State. Grounds shall test fewer than 10 OHMS for the site to be acceptable for reasons of personal safety.

27. The shelter shall be designed and installed per the latest version of Motorola R56 to include eye wash station, first aid kit, chemical and CO2 type fire extinguisher.
28. The shelter shall include one broom and dust pan (mounted to the wall), one six foot step ladder, one 30 gallon (plastic) garbage can and one box of 30 gallon garbage can liners.

D. Specifications for Installation

1. Purchase and delivery of one (1) fully functional, 330 ft. above ground level, three (3) legged, solid legged, heavy duty, self-supporting, two-way microwave radio tower.
2. Installation of the tower shall include placing a foundation which is certified, signed and stamped by a Maryland registered Professional Engineer (certification must be provided with the response to the bid) that it is designed in accordance with the tower manufacturer's recommendations based upon the soil borings provided by the State (see TORFP Attachment #30 – Dan's Rock Communications Tower Geotechnical Report).
3. The TO Contractor shall furnish and install two (2), "State" cable ladders on one face of the tower. The supplied cable ladders shall be installed in accordance with the state loading plan (Attachment #25), Tower layout (Attachment #28) and all other applicable sections of this task order.
4. The tower shall be erected to a height of 330 ft. (AGL) above ground in such a manner as to assure straightness and plumb.
5. Install tower lighting flash and SO cable on outside of cable ladder rail. The flash and SO cable shall be routed along the cable ladder rail in a manner to prevent damage over sharp edges, inadvertent climbing, etc; and attached per manufactures specifications
6. Purchase and installation of one (1) 12x38x10 ft. concrete equipment shelter (height is inside dimension) with a 75kW generator and one (1) 12x38x10 ft. concrete equipment shelter without generator. The equipment shelters shall rest flush on the poured concrete foundation without showing any gaps between the equipment shelter and pad and leveled to within ½ degree. Typical Equipment Shelter drawings are supplied with this Task Order (Attachment #'s 26 and 27) and should be used for pricing purposes.
7. An approved/certified shelter manufacturer representative shall be on site for all shelter deliveries to supervise the setting of each shelter. This individual shall correct any foundation gaps or any deficiencies found due to shipment. This individual shall also supervise the installation of any field installable items (e.g. hoods, light fixtures).

8. Provision and installation of a liquid cooled, 1800 RPM, 75 kW propane vapor fueled generator complete with a 400-Amp automatic transfer switch capable of zero cross-over (in-phase switching) and time-delay neutral switching to eliminate service interruptions of the electronic equipment and the tower lighting system. The transfer switch shall also have a programmable exercise timer. Time delay neutral shall be programmable from at least 0-3 seconds. The exercise timer shall allow preprogramming of time and date of weekly generator runs. The transfer switch shall allow the weekly generator runs to be conducted with or without load.
9. Purchase and installation of one (1) new 1,000 gallon LP fuel tank with hookup to the generator and shall include first LP fill-up. Underground fuel supply piping shall be “plastic” high-performance polyethylene piping or equivalent. The above ground piping shall be UV rated rubber jacketed corrugated metallic piping. The fuel tank shall be connected to the tower ground ring. NOTE: a valid bill of sale must be provided with the tank.
10. Generator start-up and test under full load (using load bank) after permanent power is connected to the equipment shelter must be coordinated with the State Project Manager. The test using the load bank will be one hour in duration. The startup shall include generator alarm/function programming.
11. Purchase and install one (1) extruded metal, 24-inch wide, no cantilever ice-bridge with a four tier “tee” or “tree” trapeze cable management system to facilitate easy installation and removal of cables, such as Andrew WB-T24-4 or suitable equivalent. Ice bridge posts shall be no less that 3” in diameter, spaced no more than 6’ apart. Posts shall be buried 36” encased in concrete. The ice bridge shall be electrically insulated from the tower. The trapeze sections shall be no more than four (4) feet apart. The ice bridge shall be bonded to the external ground bus bar.
12. Purchase and installation, per local utility standard, of an electrical backboard of steel post and unistrut construction to include CT cabinet if required, wire trough, main disconnect, at least one (1) electric company approved meter socket with room to accommodate a minimum of three (3) additional meters.
13. Purchase and installation of two (2) 4-inch conduits, approx. 60 ft. in length from the existing power company supplied pad mounted transformer, to the TO Contractor supplied electrical backboard, and from the backboard into the disconnect switch, located on the back of the equipment shelter.
14. Purchase and connection of electrical wiring, per local electrical code, from the TO Contractor installed backboard to the fused disconnect on the back of the shelter and from fused disconnect located on the back of the shelter into the equipment shelter’s 400-amp load center. Electrical work shall be completed by a State of Maryland certified electrician.

15. Purchase and installation of two (2) 4-inch conduits, one (1) for electrical service and one (1) for communication cabling, with pull strings, each approximately 60-ft in length, from the 12x38 ft. equipment shelter with generator to the 12x38 ft. equipment shelter without generator. The communication conduits shall originate at a minimum of 12x12x12 IN or larger communications cable pull box on the exterior of the shelter with generator and be terminated in a similar box on the equipment shelter without generator in accordance with Attachment #33– Construction drawings. The pull box shall accommodate at least three (3) 4-inch schedule 40 conduits. This box shall be weather proof and constructed of plastic or other non conductive materials. A pull box shall be supplied by the TO Contractor for each shelter provided. The location of the pull box shall be determined by the State Project Manager. A future, one (1) 4” communications conduit shall extend from the communications cable pull box located on the exterior of equipment shelter with the generator to a location beyond the compound limits to a point determined by the State Project Manager. Locator tape shall be installed in all communications and electric trenches one (1) ft. above new conduits.
 16. Supplied materials, including, but not limited to, equipment shelters and tower, LP tank, etc shall be new, unused and shall meet the latest design and fabrication standards of the Electronics Industry Association (EIA). A VALID BILL OF SALE FOR THE FUEL TANK MUST BE PROVIDED UPON INSTALLATION.
 17. All supplied materials shall be purchased, not leased.
 18. Supply 6” dia. bollards as needed in order to protect the propane fuel tank from possible damage caused by vehicles.
 19. The TO Contractor shall provide placards affixed to every equipment and generator room door stating there is Electro Magnetic Energy dangers. These signs shall comply with the latest version of Motorola’s R56. The TO Contractor shall provide placards affixed to every vehicle and man gate indicating the site is alarmed and under 24 hour surveillance. The signs shall say: “Private property – No trespassing. This site is monitored by remote surveillance equipment. Equipment and entrances are alarmed and shall notify local police of any intrusion.” The TO Contractor shall provide placards to the fence along the entrance to the site with the FCC ASR number. The sign shall comply with FCC guidelines. The ASR number shall be provided by the State Project Manager. All signs shall be metal, fade and weather proof. They shall be permanently affixed to their respective gate or door. ASR signs shall be provided with the delivery of the tower.
- 3. Inspection schedule/requirements**
- a. Sediment and Erosion Controls – A preconstruction meeting shall be conducted if applicable with the required inspectors at least seven (7) days prior to any disturbance. Controls shall be randomly inspected by the appropriate inspectors having jurisdiction (County or State), but emphasis is placed after rain events.

- Corrections/repairs must be made within time limits specified by County or State requirements.
- b. Compaction tests – Construction inspectors shall inspect each lift required for site grading, access road work and fill (to include the tower foundation). Non compliance may require the removal of fill and/or halting work.
 - c. Storm Water Management – TO Contractor shall provide evidence of the installation of Storm Water Management materials and techniques. This is outlined in Attachment #33 – Construction Drawings and shall be done at the TO Contractor's expense.
 - d. Cylinder break reports – The tower and shelter foundations shall require PE certified crush reports at a minimum of 28 days. Tower erection or shelter installation may not occur until compressive strength is tested and verified in compliance with manufacturer and task order specification.
 - e. Electrical inspection – Final wiring shall be inspected prior to energizing the site. An approved third party inspection agency can be utilized if recognized by the local utility. This shall be supplied by the TO Contractor.
 - f. Tower Inspection – The tower's structural integrity, galvanizing condition and assembly shall be inspected by a third party inspector furnished by DoIT.
 - g. R56 Inspection – the site, tower and shelters shall be subject to an R56 inspection. Discrepancies shall be corrected at the TO Contractor's expense. The inspector shall be furnished by DoIT.
 - h. Punch-list – A final inspection shall be conducted by DoIT personnel to ensure all items in the Task Order are completed to the satisfaction of the State.

4. Commencement of Work

Work in response to this Task Order shall be initiated only upon issuance of a fully executed Notice to Proceed, authorized by the TO Procurement Officer.

5. Approvals

Prior to ordering the following drawings/designs shall be approved by the State Project Manager:

- a. Tower profile (Final drawings shall have PE stamp)
- b. Tower foundation design (Final drawings shall have PE stamp)
- c. Shelter drawings (Final drawings shall have PE stamp)
- d. Foundation design (Final drawings shall have PE stamp)
- e. Shop drawings for LP tank foundation
- f. Shop drawings for fence

6. Final Acceptance Sign-off

The TO Contractor shall provide all items as outlined in the DoIT's close out policy (Attachment #31). The following is required to be demonstrated to the State Project Manager upon project completion:

- a. The lighting system has operated without fault for thirty (30) days.

- b. The State receives a satisfactory inspection report from an independent tower vendor, funded by the State to perform a tower inspection, and all deficient items identified in the inspection report have been corrected to the State's satisfaction. The inspector shall mark all deficiencies with blue, permanent paint pens. All corrections shall be marked with yellow, permanent paint pens. The correction shall be initialed and dated by the crew. Photos shall be taken showing the correction to include the initials as proof that the correction was made. The State reserves the right to perform additional tower inspections to verify that deficient items have been corrected. Should the State require two (2) or more tower inspections to verify correction of deficient items, all costs of the additional inspections, beyond the second inspection, shall be deducted from the TO Contractor's final payment.
- c. All other deficiencies noted by the State have been corrected to the State's satisfaction.
- d. All construction materials, equipment, excess tools and other materials shall be removed from the site. The shelter interior (equipment and generator room) shall be swept and all protective paper removed from the floors. The site shall be left neat and organized.
- e. If applicable, final acceptance by MDE that all work has been completed in accordance with the MDE permit.



ATTACHMENT 24 – FOUNDATION INSPECTION SCOPE OF WORK

SUMMARY: Tower construction vendors will incorporate the following series of tests and inspections to ensure proper quality/strength of all concrete poured and the proper foundation installation on all CATS II, FA13 jobs. These inspections will also incorporate verification of foundation dimensions, rebar dimensions, rebar layout and soil compaction. Test results will be supplied, reviewed and approved by DoIT prior to any structures being set on foundations, tower erection or backfilling operations. Field testing will be conducted by an independent, third party.

DETAILS: Each concrete batch (6-9 cubic yards) will have a corresponding batch report provided by the supplier. These will be included in the close out documentation. Batches will be uniquely identified on the batch report. The vendor will use MD SHA approved concrete mixes for all FA13 projects. Mix tables and more information on concrete specifications can be found in section 900.10.03 in the MD SHA grey book.

These mandatory tests/inspections must take place for the tower and shelter foundations:

1. Construction inspectors will verify the excavated foundation dimensions are correct.
2. The compaction of the tower foundation excavated materials will be tested in accordance with AASHTO T99 (Standard Proctor Test). Compaction results will be in accordance with the tower foundation designer's specification or the geotechnical report provided, whichever is greater. Excavated fill will only be used to backfill the foundation if they pass the compaction test.
3. The bearing pressure of the tower foundation sub grade will be tested. Bearing results will be in accordance with the tower foundation designer's specifications or the geotechnical report provided, whichever is greater. In the event, the vendor cannot meet the required bearing pressure they will solicit advice from the tower manufacturer and geotechnical engineer to achieve the desired results.
4. Construction inspectors will verify the proper rebar size, dimension, grade, configuration, layout, fastener/wire ties and other provisions as specified by the foundation designer are correct prior to any concrete pours.
5. Ambient air temperature and general weather conditions will be recorded and noted by the inspector. Readings will be taken at the time of delivery.
6. Concrete slump will be tested for each continuously poured section of caisson or every fifty (50) cubic yards of concrete on a pad and pier foundation. The slump will be tested in accordance with ASSHTO T119 testing standard. The slump will meet the tower foundation designer's specification. If none are noted, then the Slump will be measured in accordance with SHA Grey Book Specification 902.10.03, Chart A. Results will be recorded and supplied prior to acceptance of the given foundation. Work may be halted if the slump is not deemed acceptable.
7. Concrete temperature will be measured for each continuously poured section of a caisson or every fifty (50) cubic yards of concrete on a pad and pier foundation. Temperatures will be tested in accordance with ASSHTO T309 testing standard. Temperature will be in accordance with the foundation designer's specification. If no specifications are supplied then the temperature will be

measured in accordance with SHA Grey Book Specification 902.10.03, Chart A. Results will be recorded and supplied prior to acceptance of the given foundation.

8. Air entrainment will be tested and documented in accordance with ASSHTO T152 or T196. The results will be documented for each continuously poured caisson or 50 cubic yards for a pad and pier foundation. Air content will be within the foundation designer's specification or no more than 5-8%.
9. Compressive strength will be measured at 7 days after pour and 28 days after pour. Compressive strength tests will be tested in accordance with ASSHTO T23 testing standard. A minimum of one (1) set of four (4) cylinders will be taken for each continuously poured section of caisson or every fifty (50) cubic yards of concrete on a pad and pier foundation. Compressive strength will be a minimum of the tower foundation's specification or 4000 psi at 28 days, whichever is greater. At least one cylinder per set will be broken at 7 days and one at 28 days. If all 7 day sets have reached the required compressive strength then back fill operations and/or tower erection can commence. 14 day tests can be conducted if the 7 day tests are not within specification to expedite construction. 28 day tests will be conducted even if 7 day tests are deemed acceptable. Written results must be provided to the state project manager prior to tower erection. Shelter foundations will be at least 3000 psi or the shelter foundation designer's requirements, whichever is greater, at 28 days. Shelter foundations will require one (1) set of four (4) cylinders for both shelter foundations. Test cylinders will be cured on site. As weather conditions dictate, the vendor will provide a cure box to adequately insulate the test cylinders as they cure.

The inspector will provide photographs if necessary. If specifications are not met then the inspector has the authority to stop work until specifications are met.

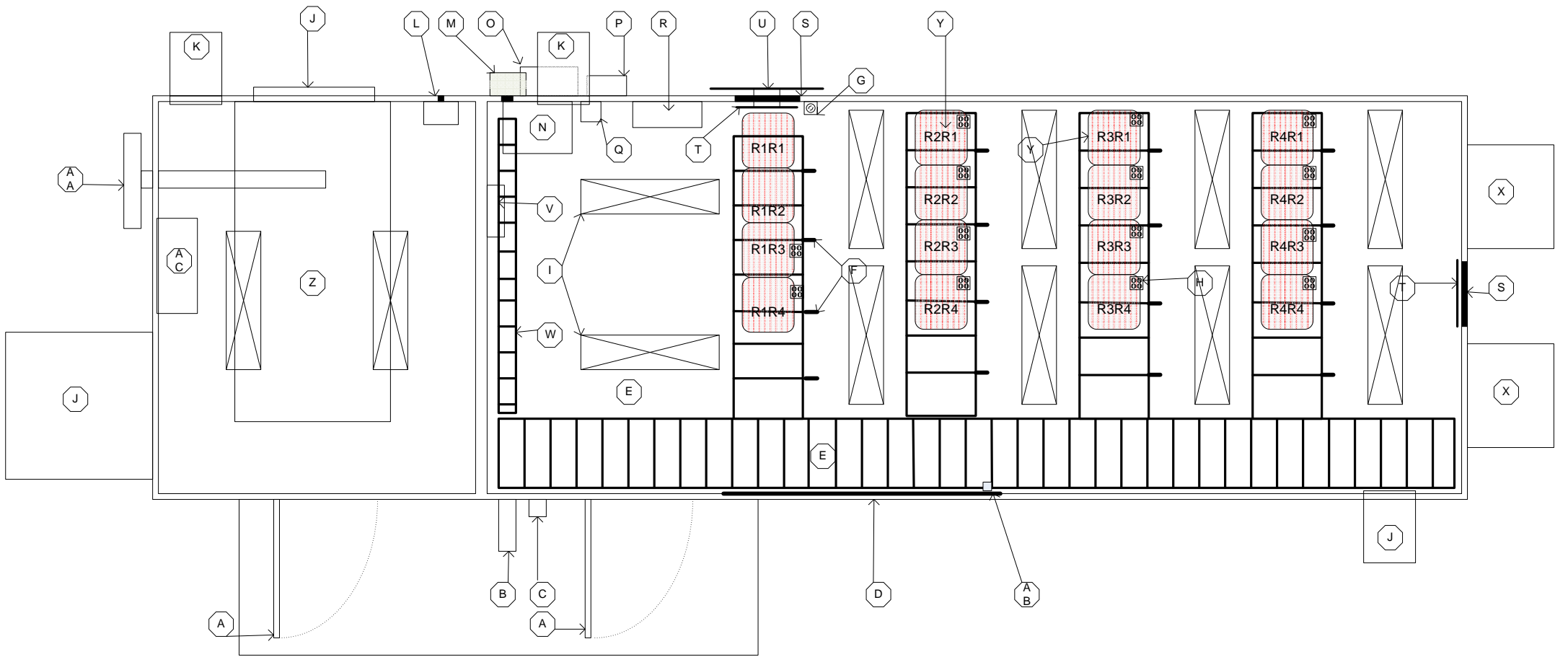
ATTACHMENT 25
Dan's Rock SHA 330' State Tower Loading Plan

<u>Antenna#</u>	<u>Mounting Location</u> (AGL)	<u>Antenna Model</u>	<u>Azimuth</u>	<u>Frequency</u>	<u>Line Size</u>	<u>Cable Ladder</u>
1	330	BMR-12	0°	700 MHZ	1 5/8"	State
2	330	BMR-12	120°	700 MHZ	1 5/8"	State
3	330	BMR-12	240°	700 MHZ	1 5/8"	State
4	310	BMR-12	0°	700 MHZ	1 5/8"	State
5	310	BMR-12	120°	700 MHZ	1 5/8"	State
6	310	BMR-12	240°	700 MHZ	1 5/8"	State
7	290	DB-420	0°	450 MHZ UHF paging	1 5/8"	State
8	290	PAR-6	120°	MW-6ft Dan's-Warrior + ice shield	EW63	State
9	290	UHX-10	240°	MW 10ft Dan's-Table Rock + ice shield	EW63	State
10	270	DB 420-D	0°	PASSPORT	2x 7/8"	State
11	270	PAR-6	120°	Dan's-Warrior + ice shield (div.).	EW63	State
12	270	DB 420-D	240°	PASSPORT	2 X 7/8"	State
13	250	PAR-6	0°	Dan's- Alleg. PSAP + ice shield	EW63	State
14	250	DB 224	120°	138-174 MHZ	7/8"	State
15	250	UHX-10	240°	Dan's- Table Rock div. + ice shield	EW63	State

16		230 feet	(4) DAPA 59210 Panel Antenna array	0°	1710-1990 MHZ	4 X 1 5/8"	Cellular
17		230 feet	(4) DAPA 59210 Panel Antenna arr.	120°	1710-1990 MHZ	4 X 1 5/8"	Cellular
18		230 feet	(4) DAPA 59210 Panel Antenna array	240°	1710-1990 MHZ	4 X 1 5/8"	Cellular
19		210 feet	(4) DB858HV9 0E-SX Panel Antenna Array	0°	806-896 MHZ	4 X 1 5/8"	Cellular
20		210 feet	(4) DB858HV9 0E-SX Panel Antenna Array	120°	806-896 MHZ	4 X 1 5/8"	Cellular
21		210 feet	(4) DB858HV9 0E-SX Panel Antenna Array	240°	806-896 MHZ	4 X 1 5/8"	Cellular
22		190 feet	8' High Perf Solid Dish w/o radome	0°	6.000 GHz	EW63	State
23		190 feet	8' High Perf Solid Dish w/o radome	120°	6.000 GHz	EW63	State
24		190 feet	8' High Perf Solid Dish w/o radome	240°	6.000 GHz	EW63	State
25		170 feet	(4) DAPA 59210 Panel Ant. Array	0°	1710-1990 MHZ	4 X 1 5/8"	Cellular
26		170 feet	(4) DAPA 59210 Panel Ant. Array	120°	1710-1990 MHZ	4 X 1 5/8"	Cellular
27		170 feet	(4) DAPA 59210 Panel Ant. Array	240°	1710-1990 MHZ	4 X 1 5/8"	Cellular
28		150 feet	(4) DB858HV9 0E-SX Panel Ant. Array	0°	806-896 MHZ	4 X 1 5/8"	Cellular

29		150 feet	(4) DB858HV9 0E-SX Panel Ant. Array	120°	806-896 MHZ	4 X 1 5/8"	Cellular
30		150 feet	(4) DB858HV9 0E-SX Panel Ant. Array	240°	806-896 MHZ	4 X 1 5/8"	Cellular
31		130 feet	8' High Perf Solid Dish w/o radome	0°	6.000 GHZ	EW63	State
32		130 feet	8' High Perf Solid Dish w/o radome	120°	6.000 GHZ	EW63	State
33		130 feet	8' High Perf Solid Dish w/o radome	240°	6.000 GHZ	EW63	State
34		110 feet	(4) DB858HV9 0E-SX Panel Ant. Array	0°	806-896 MHZ	4 X 1 5/8"	Cellular
35		110 feet	(4) DB858HV9 0E-SX Panel Ant. Array	120°	806-896 MHZ	4 X 1 5/8"	Cellular
36		110 feet	(4) DB858HV9 0E-SX Panel Ant. Array	240°	806-896 MHZ	4 X 1 5/8"	Cellular
37		90 feet	(4) DAPA 59210 Panel Ant. Array	0°	1710-1990 MHZ	4 X 1 5/8"	Cellular
38		90 feet	(4) DAPA 59210 Panel Ant. Array	120°	1710-1990 MHZ	4 X 1 5/8"	Cellular
39		90 feet	(4) DAPA 59210 Panel Ant. Array	240°	1710-1990 MHZ	4 X 1 5/8"	Cellular

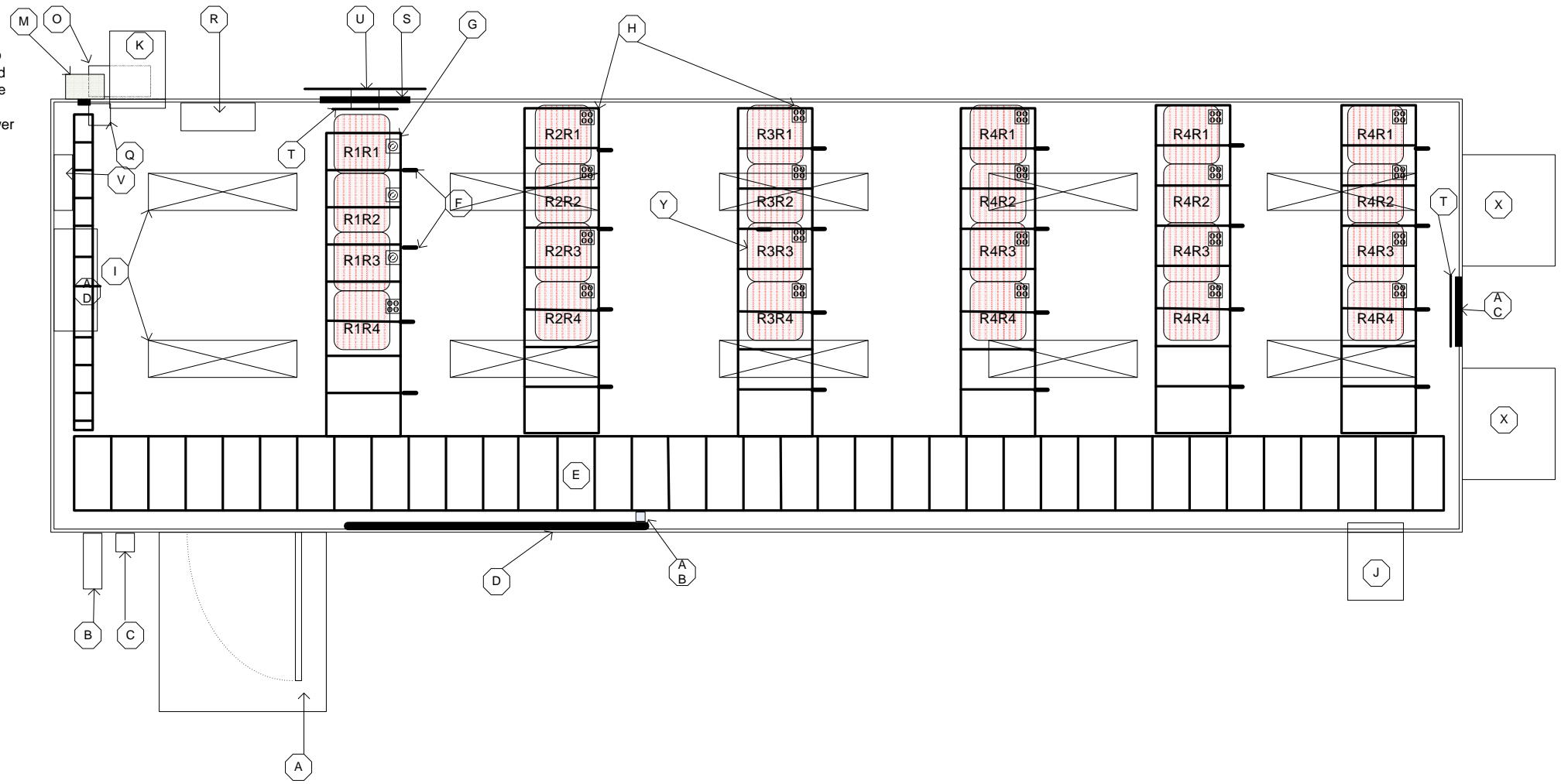
State of Maryland		REVISIONS		Drawn by: William Drew, PMP William.Drew@dot.state.md.us 410-767-2366	
Typical 12x38 Ft Shelter (with generator) Layout		NO. DATE DESCRIPTION		-Dimensions are approximate. -Final layout/design is subject to the State's approval.	
DATE ORIGINAL 9/8/08		B 10/08 Added alarms			
LATEST REVISION C		C 06/09 Changed location of 240VAC outlets/ subfeed disconnect			
JOB NO.		D 03/11 Revised lighting plan			
SCALE 1/4" = 1'		CHECKED		DRAWN	



A	Door	J	Intake hood	S	16 Port cable entry port	A	Alarm 66 Block (no enclosure)
B	Appleton Plug	K	Temp activated fans	T	Internal ground bus bar	B	Appleton cable/hose bib
C	Exterior Light	L	Light controller and penetration for SO cables	U	External ground bus bar	C	
D	4x8 Telco board	M	Pull box and 4IN penetration for telco	V	Subfeed	D	
E	24" cable ladders	N	Auto transfer switch	W	Teleco cable ladder	E	
F	Stand offs for #2 ground lead (3) vertically mounted 240v outlets (twist lock type)	O	Main service disconnect	X	HVAC	F	
G	120V Quad box outlet	P	Building subfeed disconnect	Y	Rack footprint	G	
H	48IN lights	Q	Type2 MOV	Z	Generator	H	
I		R	Integrated load center	A	Generator exhaust	I	
				A		J	

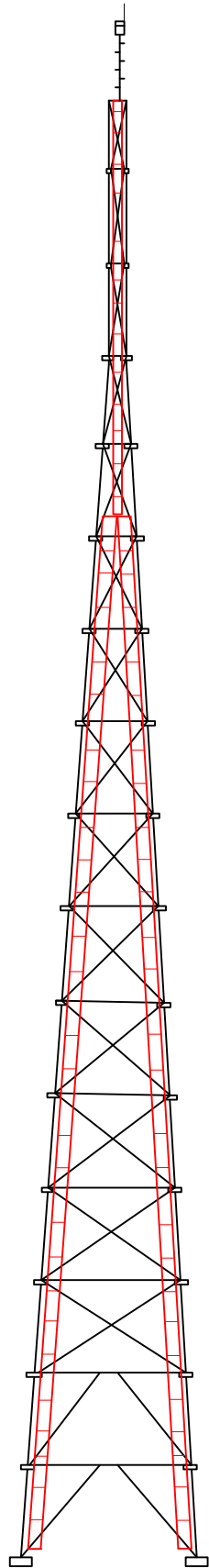
TITLE		DATE ORIGINAL		LATEST REVISION	
SCALE		JOB NO.			
CHECKED	NO.	DATE	DESCRIPTION		
DRAWN					

If there are two shelters ordered do not penetrate 12x38 without generator for tower light cables

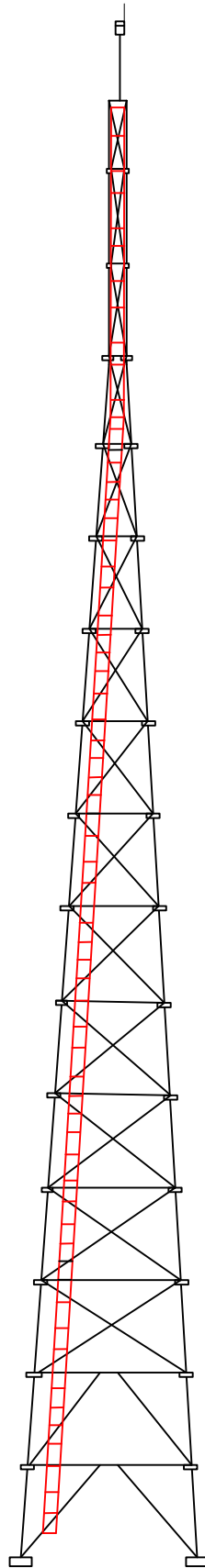


A	Door	J	Intake hood	S	24 Port cable entry port	AB	Alarm 66 Block (no enclosure)
B	Appleton Plug	K	Temp activated fans	T	Internal ground bus bar	AC	16 Port cable entry port
C	Exterior Light	L	Light controller and penetration for SO cables	U	External ground bus bar	AD	Appleton cable/hose bib
D	4x8 Telco board	M	Pull box and 4IN penetration for telco	V	Subfeed	AE	
E	24" cable ladders	N	Auto transfer switch	W	Teleco cable ladder	AF	
F	Stand offs for #2 ground lead	O	Main service disconnect	X	HVAC	AG	
G	240v outlets (twist lock type)	P	Building subfeed disconnect	Y	Rack footprint	AH	
H	120V Quad box outlet	Q	Type2 MOV	Z	Generator	AI	
I	48IN lights	R	Integrated load center	AA	Generator exhaust	AJ	

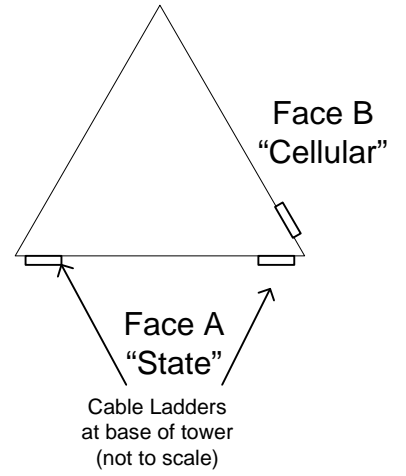
<p style="text-align: center;">Typical State tower layout</p>		<p style="text-align: center;">Drawn by: Sean Javins sean.javins@doit.state.md.us</p>	
		<p>SIZE</p> <p>FSCM NO</p>	<p>DWG NO</p>
<p>SCALE</p> <p>1in = 40ft. 0in.</p>	<p>SHEET</p> <p>1 OF 3</p>	<p>REV</p> <p>A</p>	



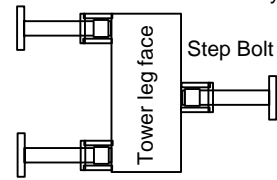
Face A
"State"



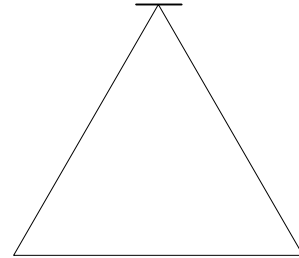
Face B
"Cellular"



Step Bolt Detail
Not to scale. Provide similar layout.

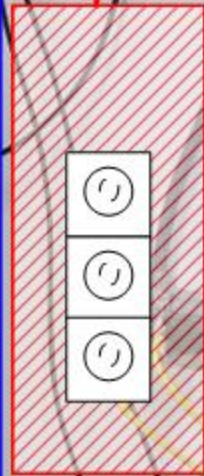


Tower Leg Face



Approximate EMT conduit route - do not interfere with cable entry port or rack positions

To the right of the right edge of the cable entry port



Approximate 240VAC outlet location - 3 to 4 Ft above floor

04.16.2009 08:18

Racks are centered under the 24 IN cable ladder and centered on the centerline of the cable entry port

**MARYLAND STATE HIGHWAY ADMINISTRATION
FOUNDATIONS BORING LOG**

Boring and Sampling Conforms to AASHTO:

Sheet 1 of 2
Boring _____ of 4

Contract No. AT038A51 Project Description Communications Tower along Old Dan's Rock Road in Midland, MD

Boring No. B-01 Station _____ Coordinates 702023 776702 Relocated?

Boring By _____ SHA _____

Driller M. Lochary

Rig Type CME 45

Surface Elevation 2823.0 Date Started 12/8/16

Rig No. 80311

Date Completed 12/14/16

Drive Hammer _____ LB

Casing Auger Size 2.375 IN

Size of Core 1.375 IN

Size of Bit OD 2 IN

Core Barrel Type M

Auger Depth 3 FT

WATER TABLE		Time (hours)	Date	CAVE-IN		Time (hours)
Depth (ft)	Elev (ft)			Depth (ft)	Elev (ft)	
∇						
∇						

DEPTH IN FEET	ELEV. IN FEET	MATERIAL DESCRIPTION	SPOON			RECOVERY	REMARKS
			SAMPLE NO.	BLOWS/RQD	DEPTH		
1.0	2822.00	Boulder (removed by hand for SPT)					The surrounding surface area is covered with boulders
3.0	2820.00	Damp, medium dense, gray, ROCK FRAGMENTS, little sand	1	3-4-12-11	1.0-3.0	37.5%	
		CORED: boulders and voids	1st run	RQD=28%	3.0-8.0	70.0%	
			2nd run	RQD=0%	8.0-13.0	16.6%	
			3rd run	RQD=24%	13.0-18.0	76.6%	
			4th run	RQD=28%	18.0-23.0	50.0%	
			5th run	RQD=0%	23.0-28.0	60.0%	
28.0	2795.00	CORED: Sandstone, hard, fresh, slightly fractured, light gray	6th run	RQD=100%	28.0-33.0	100.0%	
			7th run	RQD=96%	33.0-38.0	100.0%	

FOUNDATIONS BORING LOG AT038A51 1.3:17.GPJ SHA_TEMPLATE.GDT 1/3/17

**MARYLAND STATE HIGHWAY ADMINISTRATION
FOUNDATIONS BORING LOG**

Boring and Sampling Conforms to AASHTO:

Sheet 1 of 1
Boring _____ of 4

Contract No. AT038A51 Project Description Communications Tower along Old Dan's Rock Road in Midland, MD

Boring No. B-02 Station _____ Coordinates 702015 776738 Relocated?

Boring By _____ SHA _____

Driller M. Lochary

Surface Elevation 2823.0 Date Started 12/5/16

Rig Type CME 45

Date Completed 12/6/16

Rig No. 80311

Drive Hammer _____ LB

Casing Auger Size 2.375 IN

Size of Core 1.375 IN

Size of Bit OD 2 IN

Core Barrel Type M

Auger Depth 14 FT

WATER TABLE		Time (hours)	Date	CAVE-IN		Time (hours)
Depth (ft)	Elev (ft)			Depth (ft)	Elev (ft)	
▼						
▽						

DEPTH IN FEET	ELEV. IN FEET	MATERIAL DESCRIPTION	SPOON			RECOVERY	REMARKS
			SAMPLE NO.	BLOWS/RQD	DEPTH		
4.0	2819.00	Moist, loose to dense, silty SAND and rock fragments	1	4-4-6-12	0.0-2.0	71.0%	The surrounding surface area is covered with boulders
			2	7-11-22-18	2.0-4.0	54.0%	
9.0	2814.00	CORED: boulders and voids	1st run	RQD=16%	4.0-9.0	28.4%	
			2nd run	RQD=54%	9.0-14.0	98.4%	
19.0	2804.00	CORED: Sandstone, hard, fresh, highly fractured, light gray	3rd run	RQD=70%	14.0-19.0	88.4%	

FOUNDATIONS BORING LOG AT038A51 1.3.17.GPJ SHA_TEMPLATE.GDT 1/3/17

**MARYLAND STATE HIGHWAY ADMINISTRATION
FOUNDATIONS BORING LOG**

Boring and Sampling Conforms to AASHTO:

Sheet 1 of 1
Boring _____ of 4

Contract No. AT038A51 Project Description Communications Tower along Old Dan's Rock Road in Midland, MD

Boring No. B-03 Station _____ Coordinates 702047 776721 Relocated?

Boring By _____ SHA _____

Driller M. Lochary

Surface Elevation 2823.0 Date Started 12/6/16

Rig Type CME 45

Date Completed 12/8/16

Rig No. 80311

Drive Hammer _____ LB

Casing Auger Size 2.375 IN

Size of Core 1.375 IN

Size of Bit OD 2 IN

Core Barrel Type M

Auger Depth 4 FT

WATER TABLE		Time (hours)	Date	CAVE-IN		Time (hours)
Depth (ft)	Elev (ft)			Depth (ft)	Elev (ft)	
▼						
▽						

DEPTH IN FEET	ELEV. IN FEET	MATERIAL DESCRIPTION	SPOON			RECOVERY	REMARKS
			SAMPLE NO.	BLOWS/RQD	DEPTH		
2.0	2821.00	Moist, stiff, gray, SILT, little sand	1	2-6-5-14	0.0-2.0	83.5%	The surrounding surface area is covered with boulders
4.0	2819.00	Moist, hard, brown, SILT and rock fragments	2	26-23-20-20	2.0-4.0	54.0%	
19.0	2804.00	CORED: boulders and voids	1st run	RQD=24%	4.0-9.0	31.6%	
			2nd run	RQD=0%	9.0-14.0	31.6%	
			3rd run	RQD=0%	14.0-19.0	40.0%	
29.0	2794.00	CORED: Sandstone, hard, fresh, moderately fractured, light gray	4th run	RQD=62%	19.0-24.0	100.0%	
			5th run	RQD=80%	24.0-29.0	100.0%	

FOUNDATIONS BORING LOG AT038A51 1.3.17.GPJ SHA_TEMPLATE.GDT 1/3/17



ATTACHMENT 31

State Of Maryland Dept. of Information Technology Communication Tower Closeout Acceptance Standards

Table of Contents

1. Intent

- 1.11 Tower Foundation
- 1.12 Concrete Placement
- 1.13 Concrete Testing
- 1.14 Electrical Conduit Placement
- 1.15 Tower Erection and Installation
- 1.16 Shelter Placement
- 1.17 Fence Installation
- 1.18 Tower Lighting
- 1.19 Generator Start up
- 1.20 Liquid Propane Information
- 1.21 Generator Start Up
- 1.22 Site As - Built Drawings
- 1.23 MD Dept of the Environment Permit and Receipt
- 1.24 Photo Documentation

2. Closeout Book Set Up

- 1. Site Name and Notes
- 2. Manufacturer Warranties
- 3. Site Ground Resistance Reports
- 4. Concrete Test Reports
- 5. Site Photos
- 6. Tower and Foundation Drawings
- 7. Shelter Drawings
- 8. Site As-Built Drawings
- 9. MDE Permit / Completion Receipt
- 10. Equipment Spec Sheets
- 11. Contract Task Orders (include any addendums)
- 12. Contract Purchase Order
- 13. Liquid propane information

3 Site Binder

- 1. Site ground test.
- 2. Concrete reports.
- 3. Manufacturer warranties for shelter, generator, lighting controller, HVAC, Transfer Switch, etc.
- 4. Generator start up documents.
- 5. Photos of underground work.

1. Intent

The intent of this document is to provide designated personnel with set guidelines, including specified performance metrics, for verifying completeness of construction of communication towers, shelters, and ancillary equipment. Successful completion of the tests and mandatory document submissions set forth in this document will guarantee functional acceptance of a quality facility.

1.11 Tower Foundation

Tower foundation closeout documentation will include:

a. The reinforcement bar steel manufacturer will furnish certification of grade steel report. The certification shall include actual mill test results including the chemical and physical properties of the finished metal products.

1.12 Concrete Placement

a. Concrete placement shall comply with current ASTM and/or AASHTO specifications.

b. Concrete delivery tickets will include the following

- Concrete producers name, including address and phone number.
- Date and time batched concrete departed the mix facility.
- Concrete mixture (i.e. 4000 psi mix, % of air, slump, etc).
- Time batched concrete arrived and site location.
- Verified time of discharged concrete.

1. 13 Concrete Testing

3rd party independent inspection and certification report to include the following (provided at the vendor's expense):

- The sealed report will include a written report of inspection of the reinforcement bar in accordance with the approved tower foundation design.
- Certified concrete test cylinders break test report.
- The report will include results of slump, air entrainment, weather conditions at the time of pour, the use of any admixtures per latest DoIT concrete inspection policy.

1.14 Electrical Conduit/Equipment Installation

Electrical conduit, wiring and materials will be installed in accordance with National NEC codes and standard, local jurisdictional requirements, local utility requirements, and latest version on Motorola's R56. Documentation required for electrical installation is:

- a. Photo documentation of underground conduit depicting depth of trench.
- b. Photo documentation of underground utility marking tape.
- c. Electrician's current Maryland License.

1.15 Tower Erection and Installation

The tower installation will be in accordance with ASTM specifications. Closeout documentation will include:

- a. A copy of the erection manual specification contained with the tower.
- b. A copy of the lighting installation manual.
- c. Copies of the safety climb installation manual.
- d. Compliance letter from the installer certifying the tower has been installed in accordance with the manufactures specifications.
- e. Provide photo documentation of any repairs or corrections made as a result of the State supplied tower inspection report.

1.16 Ground System/Underground Details

- a. Provide photo documentation of ground ring depth, welded and mechanical ground connections.

1.17 Shelter Placement

Provide copy of shelter documents enclosed with the shelter.
Provide shelter set photos.

1.18 Tower Lighting

Provide a copy of the tower light manual and diagnostic materials. Document that the tower light has been functional for at least 30 days and at the time of acceptance.

- a. Provide proof of warranty through the manufacturer or CATS II vendor.

1.19 Site grounding

Provide evidence of site grounding compliance through a three point – fall of potential test and resistance test of at least 10 equipment grounds with a clamp on test meter. These tests will be conducted at the vendors expense.

- a. Clamp on test will demonstrate less than 5 ohms of resistance for each ground tested.
- b. Report will describe the ground lead tested, relative location within the site and the ground reading.
- c. Fall of potential test will describe type of equipment used, soil type, equipment calibration date and test results.
- d. All will be conducted by personnel trained on the equipment.

1.20 Liquid Propane Information

Provide evidence to support buried installation. The tank shall be new and unused.

- a. Provide an invoice that demonstrates the installation of non metallic fuel line.
- b. Provide photos of underground installation.
- c. Provide certified documentation that high performance polyethylene “plastic” fuel line or similar substitute was installed.
- d. Provide a bill of sale demonstrating the tank’s ownership by the State of Maryland.

1.21 Generator Start up

Provide factory certified inspection/start up documents. The initial setup and testing of the generator will be conducted by a factory certified representative. The required documentation under this section includes:

- a. Record serial numbers, models, nomenclature, etc of the generator and automatic transfer switch.
- b. Record and document all services performed to check the integrity of the delivered generator, alarm configuration, components and automatic transfer switch.
- c. Record and document the generator’s performance during the required one (1) hour load bank test (under full load).
 - a. This will include indicators such as voltage output, frequency output, oil/water pressure, load, etc.
- d. Provide a copy of the generator and transfer switch warranty.

1.22 Site As Built Drawings

Provide three hard copies of site as built drawings. Provide one soft copy of the as built drawings.

In the event construction drawings are provided by the State the vendor will red line any changes and provide measurements/locations highlighting the actual location.

If no construction drawings are provided, then the vendor will create a set of as built drawings that show the location of the following items: Tower, shelters, LP tank/pad, electrical conduit, transformer, electric backboard, fence, ice bridges, etc. The drawings will be to scale.

1.23 MD Dept of the Environment Permit and Receipt

Provide a copy of the MDE permit. Provide a copy of the receipt provided by MDE to demonstrate completion of the E&S/SWM portion of the project.

1.24 Photo Documentation

Exhibit A Photo Documentation Log

Format

All photographs must be submitted printed in color and contained within the photo tab of the closeout binder.

Pre Construction

1. Access road.
2. Utility path.
3. Utility Pole at primary power location, including pole number.
4. Proposed compound location 4 photos. North, East, West South.
5. Tower Location.
6. Shelter Pad location.

Construction

Tower Foundation

1. Tower foundation excavation and shoring.
2. Placement of rebar.
3. Placement of anchor bolts.
4. Tower foundation concrete placement.
5. Finished concrete.
6. Backfill and compaction of foundation.

Shelter Foundation

1. Shelter foundation excavation, forms and shoring.
2. Placement of rebar.
3. Foundation concrete placement.
4. Stoop forms, rebar and reinforcement.
5. Finished concrete.

Utilities

1. Power routing from primary pole location to tower site.
2. Telco routing from pole to demark.
3. Underground conduit depth.
4. Power and Telco conduit bends.

Fuel Tank

1. Installation of pad, including rebar, concrete, etc.

2. Underground fuel supply line trench, trench depth, and connections.
3. Photo evidence of installation of non-metallic fuel line.

Tower Installation

1. Erection process.
2. Installation of lighting system.
3. Lighting cable routing (to include strain relief).

Antenna System

1. Antenna and Microwave mounts.
2. Antenna and Microwave model and serial number.
3. Digital photo verifying mounts are plumb and level.
4. Photo verifying mounts are secured to tower (including stiff arms).
5. Photos of coax grounding and ground kits.

Facility Grounding

1. Grounding trench including verification of trench depth.
2. #2 solid to ground rod (minimum of 5 photos).
3. Underground exothermic welds (minimum of 5 photos)
4. Ice bridge grounding.
5. Entry port grounding.
6. Coax grounding (tower and port).
7. Fence grounding including grounding "buttons".
8. Fence Gate grounding.
9. Shelter grounding exterior / interior.

Post Construction

1. Tower profile. North, East, South West.
2. Compound and Tower with Shelter, North, East, South West.
3. Antenna System, including mount antennas coax, ice bridge entry port.
4. Generator including serial number model number.
5. Primary utility backboard, including meter and meter number.
6. Generator fuel tank location and connections.
7. Shelter bolted down.
8. Shelter door grounds.
9. Tower grounded.
10. Fire Extinguisher.

2. Closeout Book Set Up

Closeout binder will be submitted in one (1) hard copy and one (1) CD version with all photos in jpeg format

1. Site Name and Notes

Provide title sheet to include:

- Site name.
- Project number.

- Proper physical address.
 - Company name
2. Manufacture Warranties
 - Include all manufactures warranties.
 3. Site Ground Resistance Reports
 - Provide post ground test.
 4. Concrete Test Reports
 - Provide certified test reports.
 - Concrete delivery tickets for all concrete placed at site location - **Mandatory submission.**
 5. Site Photos
 - As required by Exhibit A.
 6. Tower and Foundation Drawings
 - **Mandatory Submission** (Provide 2 copies).
 7. Shelter Drawings
 - Mandatory Submission (Provide 2 copies).
 8. Site As-Builts
 - Provide as required.
 9. MDE Permit / Completion Receipt
 - **Mandatory submission.**
 10. Equipment Spec Sheets
 - Provide as required.
 11. Contract Task Orders
 - **Mandatory submission.**
 - 12 Contract Purchase Order
 - **Mandatory submission.**
 13. Liquid Propane Information
 - A bill of sale demonstrating the tank's ownership by the State of Maryland - **Mandatory submission.**
 14. Generator Startup
 - Documented record of all services performed and generator performance during load bank testing- **Mandatory submission.**
 15. Electricians current Maryland License
 - **Mandatory submission.**

ALLEGANY COUNTY, MARYLAND
 ALLEGANY COUNTY COMMISSIONERS
 DAN'S MOUNTAIN PROPOSED
 330' COMMUNICATION TOWER PROJECT

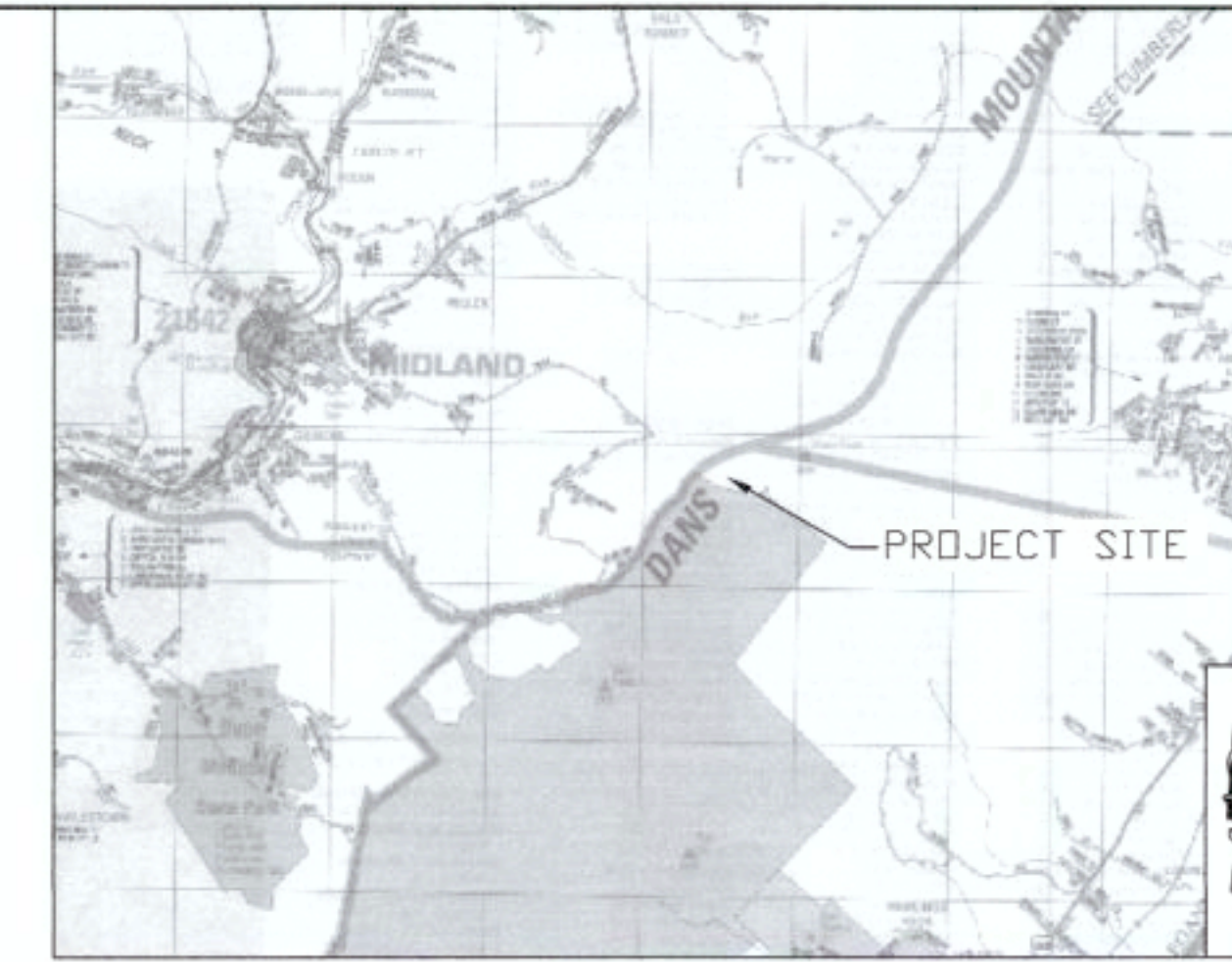
MARCH 2016



ALLEGANY COUNTY COMMISSIONERS

JACOB C. SHADE, PRESIDENT
 CREADE V. BRODIE JR., COMMISSIONER
 WILLIAM R. VALENTINE, COMMISSIONER

DAVID A. EBERLY – COUNTY ADMINISTRATOR
 PAUL F. KAHL, P.E. – DIRECTOR OF PUBLIC WORKS
 ADAM PATTERSON, P.E. – COUNTY ENGINEER
 MARK W. YODER, P.E. – UTILITIES DIVISION CHIEF



LOCATION MAP
 SCALE: 1" = 1 MILE

LIST OF DRAWINGS	
DRAWING	DESCRIPTION
1	COVER SHEET
2	GENERAL NOTES
3	SITE PLAN
4	SITE PROFILES
5	SITE PROFILES
6	SITE PROFILES
7	SITE PROFILES
8	DETAIL SHEET

ALLEGANY COUNTY

APPROVAL RECOMMENDED
Paul Shade 3/24/16
 DIRECTOR OF PUBLIC WORKS DATE

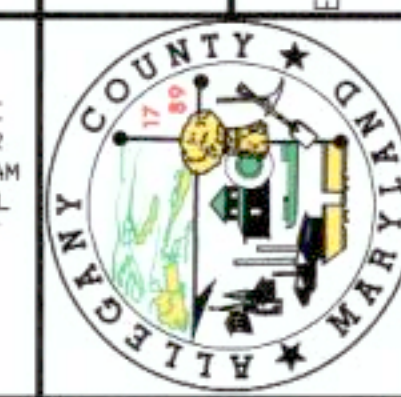
APPROVAL RECOMMENDED
Adam Patterson 3/23/16
 COUNTY ENGINEER DATE

APPROVAL RECOMMENDED
 _____ DATE
 UTILITIES DIVISION CHIEF

APPROVAL STORMWATER MANAGEMENT
Adam Patterson 3/24/16
 LAND USE AND PLANNING ENGINEER DATE



PROFESSIONAL
 CERTIFICATION
 I HEREBY CERTIFY THAT THESE
 DOCUMENTS WERE PREPARED OR
 APPROVED BY ME, AND THAT I AM
 A DULY LICENSED PROFESSIONAL
 ENGINEER UNDER THE LAWS OF
 THE STATE OF MARYLAND.
 LICENSE NO. 32721
 SIGNATURE EXPIRATION DATE: 2-7-16



DRAWING NO. 1 OF 8	SCALE NO SCALE	NO. DATE REVISIONS	MARCH 2016	DESIGNED: WMD	DRAWN: WMD	CHECKED: AP	DAN'S MOUNTAIN PROPOSED 330' COMMUNICATION TOWER PROJECT COVER SHEET	ALLEGANY COUNTY COMMISSIONERS 701 KELLY ROAD CUMBERLAND, MARYLAND 21502	ALLEGANY COUNTY DEPARTMENT OF PUBLIC WORKS UTILITIES DIVISION 701 KELLY ROAD, SUITE 300 CUMBERLAND, MARYLAND 21502	OWNER:	ENGINEER:
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CONTACT LIST

- 1. ALLEGANY COUNTY DEPARTMENT OF PUBLIC WORKS - ENGINEERING
ALLEGANY COUNTY OFFICE COMPLEX
701 KELLY ROAD, SUITE 300
CUMBERLAND, MARYLAND 21501
PHONE: 301-777-5933
FAX: 301-777-2001
CONTACT: ADAM PATTERSON, P.E.
2. ALLEGANY COUNTY DEPARTMENT OF PUBLIC WORKS - ROADS DIVISION
ALLEGANY COUNTY OFFICE COMPLEX
701 KELLY ROAD
CUMBERLAND, MARYLAND 21501
PHONE: 301-777-5955
FAX: 301-777-1439
CONTACT: PAUL GOLDSWORTHY
3. ALLEGANY COUNTY DIVISION OF PERMITS AND COMPLIANCE
ALLEGANY COUNTY OFFICE COMPLEX
701 KELLY ROAD, SUITE 400
CUMBERLAND, MARYLAND 21501
PHONE: 301-777-5951
FAX: 301-777-2001
CONTACT: JAMES SQUIRES
4. MDE - NON-TIDAL WETLANDS & WATERWAY DIVISION
160 SOUTH WATER STREET
FROSTBURG, MARYLAND 21532
PHONE: 301-689-1486
FAX: 301-689-6543
CONTACT: SCOTT BOYLAN
5. ALLEGHENY POWER
700 FOURTH STREET @ SOMERVILLE AVENUE
CUMBERLAND, MARYLAND 21502
PHONE: 301-759-5757
CONTACT: JOHN EMERICK
6. COLUMBIA GAS OF MARYLAND
1000 INDUSTRIAL BOULEVARD
CUMBERLAND, MARYLAND 21502
PHONE: 301-784-3363
FAX: 301-759-9331
CONTACT: DAVE YATES
7. VERIZON (PHONE)
425 BLACKISTON AVENUE
CUMBERLAND, MARYLAND 21502
PHONE: 301-759-1846
FAX: 301-722-9910
CONTACT: GARY BENNETT

GENERAL NOTES

- 1. THE CONTRACTOR SHALL NOTIFY ALLEGANY CO. DEPT. OF PUBLIC WORKS AT 301-777-5933 PRIOR TO ENTERING THE SITE.
2. THE CONTRACTOR SHALL VERIFY THE EXISTENCE AND LOCATION OF ALL THE UTILITIES, SHOWN HEREON OR OTHERWISE, AND VERIFY EXISTING CONDITIONS BEFORE BEGINNING CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE CONTRACTORS TO ASSURE THEMSELVES THAT NO HAZARD EXISTS OR DAMAGE WILL OCCUR TO THE UTILITIES. IT IS REQUIRED THAT "MISS UTILITY" (1-800-257-7777) AND ALL APPLICABLE UTILITY COMPANIES BE CONTACTED AT LEAST TWO WEEKS PRIOR TO COMMENCEMENT OF WORK.
3. JOB SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
4. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE THAT MIGHT OCCUR TO ANY EXISTING PRIVATE, COUNTY PROPERTY. SHOULD ANY DAMAGE OCCUR AS THE RESULT OF CONTRACTOR'S ACTIVITIES, THEN THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OR REPLACEMENT OF SAID PROPERTY AT NO COST TO THE OWNER. CONTRACTOR SHALL NOTIFY PROPERTY OWNERS PRIOR TO BEGINNING WORK ON THE PROPERTY.
5. THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE ENGINEER OF ANY DISCREPANCIES BETWEEN THE PLANS AND THE ACTUAL FIELD CONDITIONS.
6. THE CONTRACTOR SHALL NOTE THAT IN CASE OF DISCREPANCY BETWEEN THE SCALED AND FIGURED DIMENSIONS SHOWN ON THE PLANS, THE FIGURED DIMENSIONS SHALL GOVERN.
7. IN CASE OF A DISCREPANCY BETWEEN THE SPECIAL PROVISIONS INCLUDED IN THIS CONTRACT, THE ENGINEER SHALL BE THE SOLE AUTHORITY AS TO THE PROPER PROCEDURE TO FOLLOW.
8. ALL CONSTRUCTION MATERIALS AND METHODS TO BE IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
9. THE CONTRACTOR SHALL COORDINATE HIS WORK SCHEDULE WITH THE ALLEGANY COUNTY DEPARTMENT OF PUBLIC WORKS. ALLEGANY COUNTY SHALL HAVE FINAL AUTHORITY ON THE CONTRACTOR'S WORK SCHEDULE.
10. ALLEGANY COUNTY IS NOT RESPONSIBLE FOR THE CONTRACTOR'S UTILIZATION OF WORKERS, MATERIALS, EQUIPMENT OR SAFETY MEASURES IN THE PERFORMANCE OF ANY WORK ON THIS PROJECT. THE CONTRACTOR ASSUMES ALL RESPONSIBILITY AND LIABILITY FOR PERFORMING THE WORK CORRECTLY AND IN CONFORMANCE WITH ALL APPLICABLE CODES AND REGULATIONS.
11. THE PLANS PROVIDE A GENERAL APPROACH FOR THE CONTRACTOR TO ACCESS THE SITE. IT IS THE CONTRACTOR'S RESPONSIBILITY FOR FULLY IMPLEMENTING A PLAN TO ACCESS ALL NECESSARY EQUIPMENT, MATERIALS, AND MANPOWER INTO THE SITE, AND FOR COMPLETELY DEMOBILIZING ALL EQUIPMENT AND EXCESS MATERIALS FROM THE SITE ONCE CONSTRUCTION IS COMPLETE.
12. THE CONTRACTOR IS RESPONSIBLE FOR FURNISHING ALL EQUIPMENT AND MATERIALS NECESSARY FOR COMPLETE CONSTRUCTION OF THIS PROJECT.
13. IT IS THE CONTRACTOR'S RESPONSIBILITY FOR REMOVING ALL EXCESS MATERIALS, SOIL, ROCK, TRASH, AND CONSTRUCTION DEBRIS FROM THE SITE ONCE CONSTRUCTION IS COMPLETE. THE SITE SHALL BE CLOSED AND LEFT IN A CONDITION TO THE COMPLETE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST.
14. SHOULD THE CONTRACTOR HAVE THE NEED FOR A MAINTENANCE OF TRAFFIC PLAN, THE CONTRACTOR SHALL FORMULATE A TRAFFIC CONTROL PLAN AND SUBMIT SAME TO ALLEGANY COUNTY FOR APPROVAL. ALL MAINTENANCE OF TRAFFIC WORK SHALL BE IN ACCORDANCE WITH THE MD SHA BOOK OF STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES AND THE "MD MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES", LATEST EDITION AVAILABLE AT THE TIME OF THE NOTICE TO PROCEED.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING AND REPLACING ANY PROPERTY CORNERS, DRIVEWAYS AND DRAINS DAMAGED OR REMOVED DURING CONSTRUCTION AT NO ADDITIONAL COST AND TO THE SATISFACTION OF THE ENGINEER.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR AVOIDING AND/OR CLEANING UP DUST AND MUD ON ALL ROADS DUE TO VEHICLES ARRIVING AND LEAVING THE JOB SITE AS PART OF THIS WORK.
17. IT SHALL BE DISTINCTLY UNDERSTOOD THAT FAILURE TO MENTION SPECIFICALLY ANY WORK WHICH WOULD NORMALLY BE REQUIRED TO COMPLETE THE PROJECT SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY TO COMPLETE SUCH WORK.
18. EXISTING UTILITIES SHOWN ON THE PLANS HAVE BEEN LOCATED FROM THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS MADE FOR THEIR ACCURACY OR COMPLETENESS. THE CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES IN THE VICINITY OF THE PROPOSED PROJECT TO HIS OWN SATISFACTION. COST OF REPAIR AND / OR REPLACEMENT OF ALL DAMAGED UTILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

REQUIRED STANDARD SEDIMENT AND EROSION CONTROL NOTES

- 1. THE CONTRACTOR SHALL PROTECT ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS TO PREVENT THE DEPOSITION OF MATERIALS ONTO PUBLIC ROADS. ALL MATERIALS DEPOSITED ONTO PUBLIC ROADS SHALL BE REMOVED IMMEDIATELY.
2. THE CONTRACTOR SHALL INSPECT DAILY AND MAINTAIN CONTINUOUSLY IN AN EFFECTIVE OPERATING CONDITION ALL EROSION AND SEDIMENT CONTROL MEASURES UNTIL SUCH TIME AS PERMANENT STABILIZATION OF EXPOSED SOIL OCCURS.
3. WHEN PROPERTY IS BROUGHT TO FINISHED GRADE DURING THE MONTHS OF NOVEMBER THROUGH FEBRUARY, AND PERMANENT STABILIZATION IS FOUND TO BE IMPRACTICAL, TEMPORARY SEED AND ANCHORED STRAW MULCH SHALL BE APPLIED TO DISTURBED AREAS. THE FINAL PERMANENT STABILIZATION OF SUCH PROPERTY SHALL BE APPLIED BY APRIL 15 OR EARLIER IF GROUND AND WEATHER CONDITIONS ALLOW.
4. THE SITE'S APPROVED EROSION AND SEDIMENT CONTROL PLANS SHALL BE AVAILABLE AT THE SITE.
5. THE APPLICANT IS RESPONSIBLE FOR OBTAINING ANY OTHER FEDERAL, STATE, AND LOCAL AUTHORIZATIONS WHICH MAY BE REQUIRED.
6. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN 7 CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1), AND 7 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE. THIS DOES NOT APPLY TO THOSE AREAS WHICH ARE SHOWN ON THE PLAN AND ARE CURRENTLY BEING USED FOR MATERIAL STORAGE OR FOR THOSE AREAS ON WHICH ACTUAL CONSTRUCTION ACTIVITIES ARE CURRENTLY PERFORMED. MAINTENANCE SHALL BE PERFORMED AS NECESSARY TO INSURE THAT STABILIZED AREAS CONTINUOUSLY MEET THE APPROPRIATE REQUIREMENTS OF THE "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL".
7. THE APPROVAL OF THIS PLAN MAKES NO REPRESENTATION AS TO THE EXISTENCE OR NONEXISTENCE OF ANY UTILITIES AT THIS SITE. IT IS THE RESPONSIBILITY OF THE LANDOWNERS OR OPERATORS AND CONTRACTORS TO ASSURE THAT NO HAZARD EXISTS OR DAMAGE WILL OCCUR TO UTILITIES. IT IS SUGGESTED THAT MISS UTILITY BE CONTACTED AT: PHONE 1-800-257-7777.
8. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL COMPLY WITH THE "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL".
9. ALL DISTURBED AREAS TO BE SEEDED WITHIN 7 DAYS OF INITIAL GRADING. FOR TEMPORARY SEEDING SPECIFICATIONS, SEE SECTION G-20, "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL".
10. THE CONTRACTOR SHALL NOTIFY THE MARYLAND DEPARTMENT OF ENVIRONMENT BEFORE REMOVING SEDIMENT CONTROLS AND AFTER SEEDING AND MULCHING.

CONSTRUCTION SEQUENCE

- 1. CONTACT MISS UTILITY 72 HOURS BEFORE YOU DIG 1-800-257-7777, AND CONTACT MDE 48 HOURS BEFORE ANY SITE DISTURBANCE OCCURS 301-689-1480.
2. INSTALL STABILIZED CONSTRUCTION ENTRANCE AS SHOWN ON PLAN.
3. INSTALL ALL EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON THE PLAN.
4. CLEAR AND GRUB SITE WITHIN THE LIMITS OF DISTURBANCE.
5. WIDEN EXISTING ACCESS ROAD TO PROPOSED 22' WIDTH AS SHOWN ON PLAN.
6. GRADE TOWER SITE PAD AND CONSTRUCT PRO DITCH #1 AND PRO DITCH #2. COMPACTING PAD AREA IN NO MORE THAN 3" LIFTS. DO NOT COMPACT SOIL WITHIN SWM TRENCH AREAS.
7. CONSTRUCT BUILDING AND TOWER FOUNDATIONS AND STRUCTURES.
8. CONSTRUCT SWM TRENCHES AS SHOWN ON PLAN.
9. INSTALL STONE SURFACE AND FENCE.
10. STABILIZE THE SURROUNDING SITE, REMOVE STABILIZED CONSTRUCTION ENTRANCE, SEED AND MULCH.
11. REDUCE 22' ACCESS ROAD TO 12' WIDTH BY REMOVING THE STONE AND SEED AND MULCH THE REMAINING 5' SHOULDERS.
12. ONCE SITE IS 70% VEGETATED, REMOVE ALL EROSION AND SEDIMENT CONTROL DEVICES.

SITE DATA

TOTAL SITE AREA: 0.98 ACRE ±
TOTAL SITE AREA (TOWER SITE ONLY): 0.53 ACRE ±
TOTAL AREA OF DISTURBANCE: 0.98 ACRE ±
EXISTING IMPERVIOUS AREA: 0.05 ACRE ±
PROPOSED IMPERVIOUS AREA: 0.31 ACRE ±
SITE SOIL TYPES: DEKALB ROCK OUTCROP COMPLEX, 8 TO 15% SLOPES, RUBBLY SOIL GROUP: A
CUT/FILL VOLUMES: CUT: 604 CU. YDS. +/-
FILL: 704 CU. YDS. +/-

NOTE: QUANTITIES ARE FOR INFORMATION ONLY. CONTRACTOR SHALL INDEPENDENTLY DETERMINE QUANTITIES FOR BID IF NECESSARY.

OWNER'S/DEVELOPER'S CERTIFICATION

"I/WE HEREBY CERTIFY THAT ALL CLEARING, GRADING, CONSTRUCTION AND/OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATION OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I HEREBY AUTHORIZE THE RIGHT OF ENTRY FOR PERIODIC ON-SITE EVALUATION BY THE STATE OF MARYLAND, DEPARTMENT OF THE ENVIRONMENT, COMPLIANCE INSPECTORS."

7/24/16 301-777-5933 Paul F. Kahn
DATE PHONE OWNER/DEVELOPER SIGNATURE

Paul F. Kahn, P.E. - Director of Public Works
ADDRESS PRINTED NAME AND TITLE

DESIGN CERTIFICATION

"I HEREBY CERTIFY THAT THIS PLAN OF EROSION & SEDIMENT CONTROL AND/OR POND DESIGN IS/ARE IN ACCORDANCE WITH THE 2011 STANDARDS AND SPECIFICATIONS AND ANY OTHER LOCAL OR STATE REQUIREMENTS. ANY STORMWATER STRUCTURES ARE DESIGNED IN ACCORDANCE WITH THE ALLEGANY COUNTY STORMWATER MANAGEMENT ORDINANCE AND ACCEPTED STANDARDS OF ENGINEERING PRACTICE."

7/24/16 301-777-5933 Adam Patterson, P.E.
DATE PHONE DESIGNER SIGNATURE

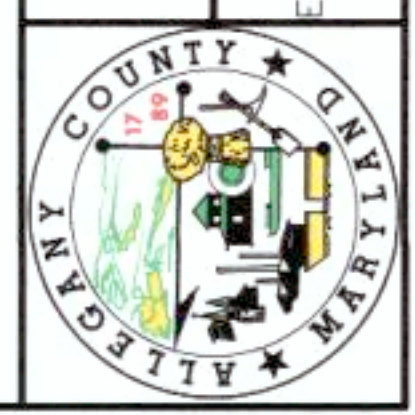
32721 (P.E.) RLS, R.L.A. ADAM PATTERSON, P.E.
MD REG. NO. (CIRCLE ONE) PRINTED NAME

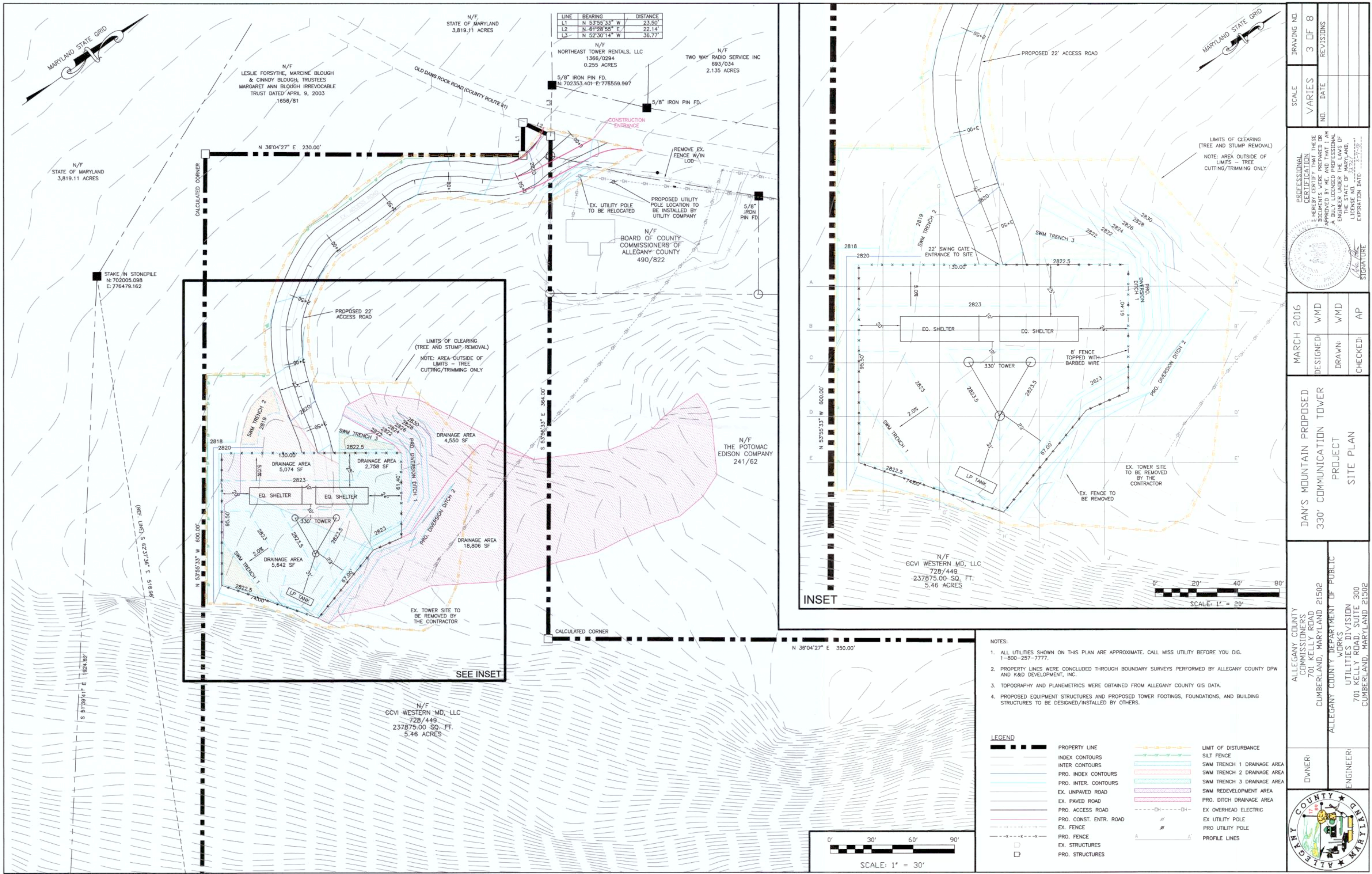
APPROVED FOR SEDIMENT CONTROL

Benjamin Cooper 7/20/16
SIGNATURE DATE

ALLEGANY COUNTY SOIL CONSERVATION DISTRICT

Professional Engineer Seal for Adam Patterson, P.E., License No. 32721, State of Maryland, expires 7/24/17. Includes project title 'DAN'S MOUNTAIN PROPOSED 330' COMMUNICATION TOWER PROJECT' and 'GENERAL NOTES'. Includes drawing info: SCALE, NO. 2 OF 8, DATE, REVISIONS. Includes design status: MARCH 2016, DESIGNED: WMD, DRAWN: WMD, CHECKED: AP.





LINE	BEARING	DISTANCE
L1	N 53°55'33" W	23.50'
L2	N 61°28'55" E	22.14'
L3	N 52°30'14" W	36.77'

N/F
STATE OF MARYLAND
3,819.11 ACRES

N/F
NORTHEAST TOWER RENTALS, LLC
1366/0294
0.255 ACRES

N/F
TWO WAY RADIO SERVICE INC
693/034
2.135 ACRES

5/8" IRON PIN FD.
N: 702353.401 E: 776559.997

5/8" IRON PIN FD.

CONSTRUCTION ENTRANCE

REMOVE EX. FENCE W/IN LOD

EX. UTILITY POLE TO BE RELOCATED

PROPOSED UTILITY POLE LOCATION TO BE INSTALLED BY UTILITY COMPANY

N/F
BOARD OF COUNTY COMMISSIONERS OF ALLEGANY COUNTY
490/822

5/8" IRON PIN FD.

N/F
THE POTOMAC EDISON COMPANY
241/62

5/8" IRON PIN FD.

5/8" IRON PIN FD.

5/8" IRON PIN FD.

5/8" IRON PIN FD.

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5/8" IRON PIN FD.

5/8" IRON PIN FD.

N/F
CCVI WESTERN MD, LLC
728/449
237875.00 SQ. FT.
5.46 ACRES

5/8" IRON PIN FD.

5/8" IRON PIN FD.

5/8" IRON PIN FD.

5/8" IRON PIN FD.

SCALE	DRAWING NO.
VARIABLES	3 OF 8
NO.	REVISIONS
DATE	

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 22212 AND EXPIRATION DATE: 2-27-22

APR 2016
DESIGNED: WMD
DRAWN: WMD
CHECKED: AP

DAN'S MOUNTAIN PROPOSED
330' COMMUNICATION TOWER
PROJECT
SITE PLAN

ALLEGANY COUNTY COMMISSIONERS
701 KELLY ROAD
CUMBERLAND, MARYLAND 21502

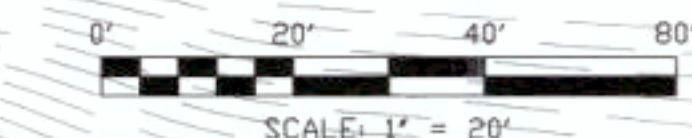
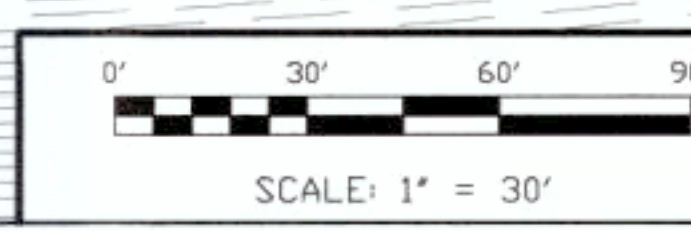
ALLEGANY COUNTY DEPARTMENT OF PUBLIC WORKS
UTILITIES DIVISION
701 KELLY ROAD, SUITE 300
CUMBERLAND, MARYLAND 21502

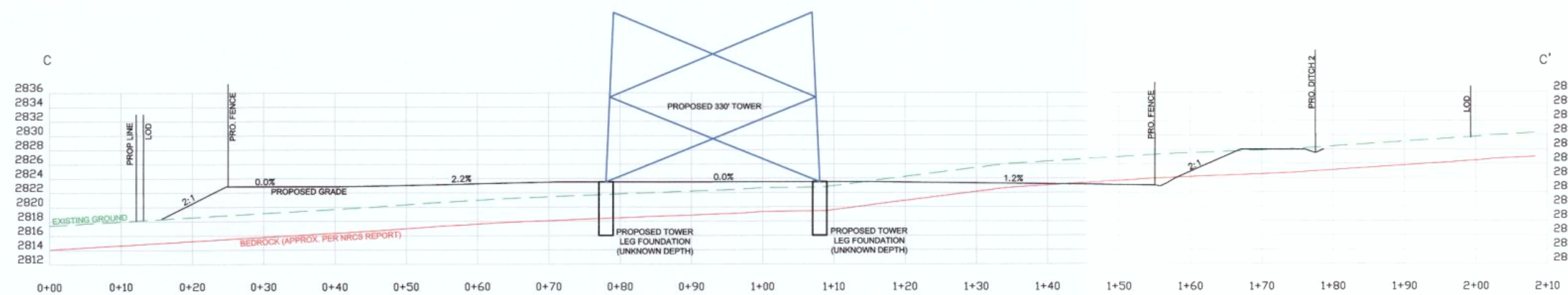
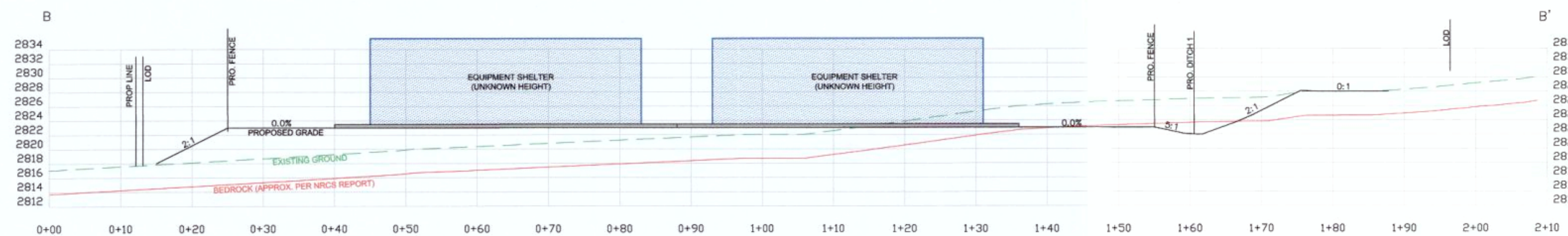
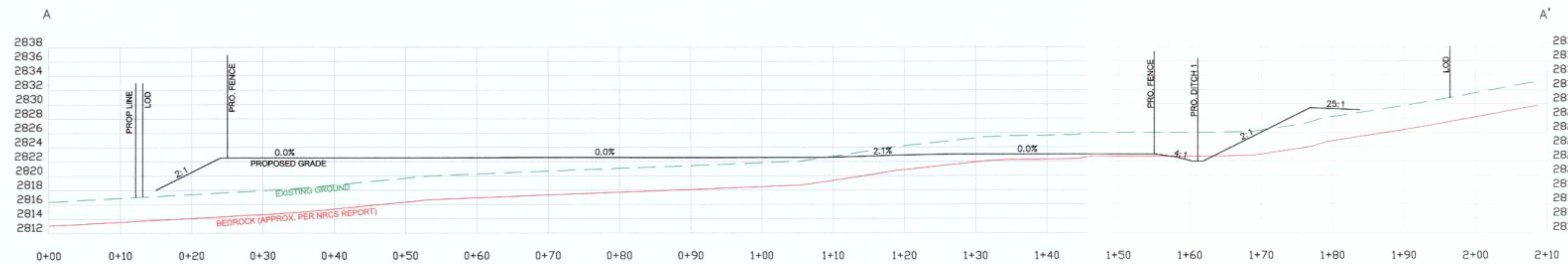
OWNER:
ENGINEER:



- NOTES:
1. ALL UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE. CALL MISS UTILITY BEFORE YOU DIG. 1-800-257-7777.
 2. PROPERTY LINES WERE CONCLUDED THROUGH BOUNDARY SURVEYS PERFORMED BY ALLEGANY COUNTY DPW AND K&D DEVELOPMENT, INC.
 3. TOPOGRAPHY AND PLANIMETRICS WERE OBTAINED FROM ALLEGANY COUNTY GIS DATA.
 4. PROPOSED EQUIPMENT STRUCTURES AND PROPOSED TOWER FOOTINGS, FOUNDATIONS, AND BUILDING STRUCTURES TO BE DESIGNED/INSTALLED BY OTHERS.

LEGEND	
—	PROPERTY LINE
---	INDEX CONTOURS
---	INTER CONTOURS
---	PRO. INDEX CONTOURS
---	PRO. INTER. CONTOURS
---	EX. UNPAVED ROAD
---	EX. PAVED ROAD
---	PRO. ACCESS ROAD
---	PRO. CONST. ENTR. ROAD
---	EX. FENCE
---	PRO. FENCE
---	EX. STRUCTURES
---	PRO. STRUCTURES
---	LIMIT OF DISTURBANCE
---	SILT FENCE
---	SWM TRENCH 1 DRAINAGE AREA
---	SWM TRENCH 2 DRAINAGE AREA
---	SWM TRENCH 3 DRAINAGE AREA
---	SWM REDEVELOPMENT AREA
---	PRO. DITCH DRAINAGE AREA
---	EX. OVERHEAD ELECTRIC
---	EX. UTILITY POLE
---	PRO. UTILITY POLE
---	PROFILE LINES





PROPOSED TOWER SITE PROFILES
 HORIZONTAL SCALE: 1" = 10'
 VERTICAL SCALE: 1" = 10'

SCALE	DRAWING NO.
1" = 10'	4 OF 8
NO.	REVISIONS
DATE	

PROFESSIONAL CERTIFICATION THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. EXPIRATION DATE: 2-27-18

STATE OF MARYLAND PROFESSIONAL ENGINEERING BOARD

WILLIAM B. WILSON, P.E.
 SIGNATURE

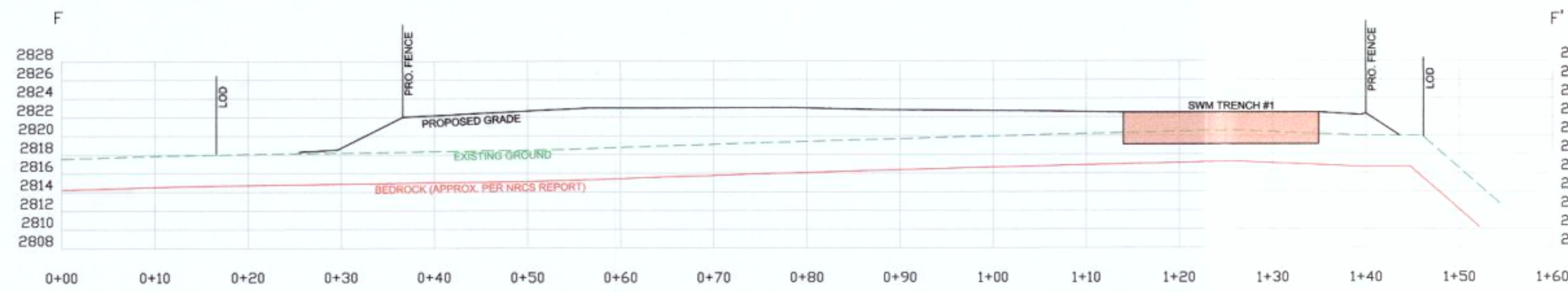
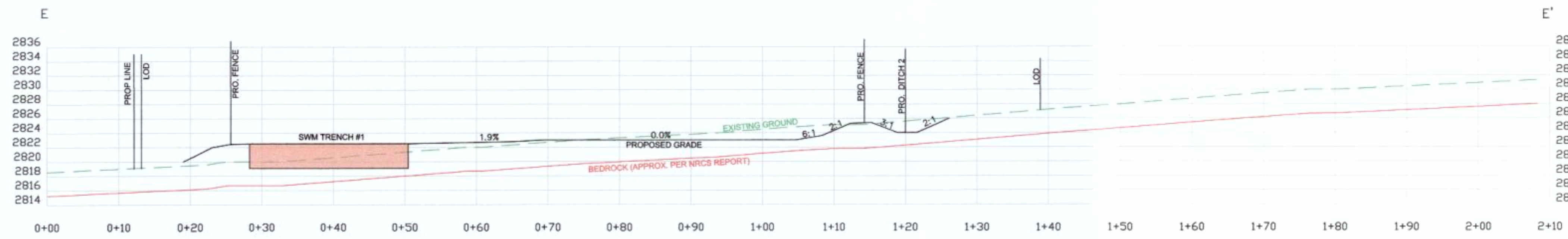
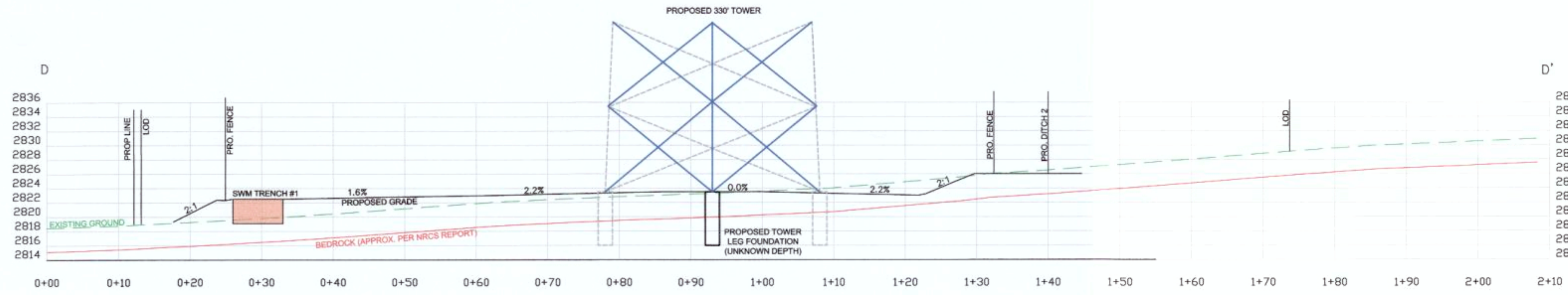
MARCH 2016	DESIGNED BY	DRAWN	CHECKED
	WMD	WMD	AP

DAN'S MOUNTAIN PROPOSED
 330' COMMUNICATION TOWER
 PROJECT
 SITE PROFILES

OWNER:
 ALLEGANY COUNTY COMMISSIONERS
 701 KELLY ROAD
 CUMBERLAND, MARYLAND 21502

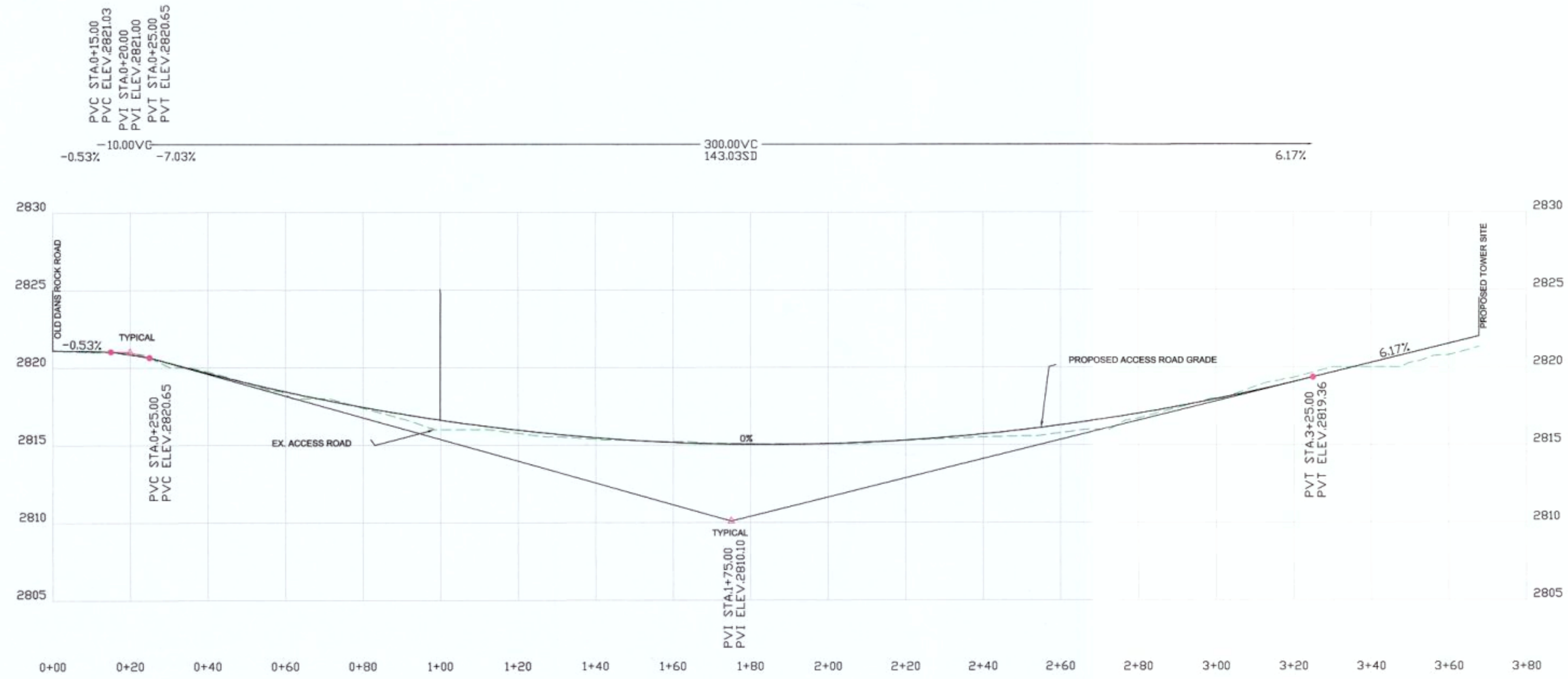
ENGINEER:
 ALLEGANY COUNTY DEPARTMENT OF PUBLIC WORKS
 UTILITIES DIVISION
 701 KELLY ROAD, SUITE 300
 CUMBERLAND, MARYLAND 21502





PROPOSED TOWER SITE PROFILES
 HORIZONTAL SCALE: 1" = 10'
 VERTICAL SCALE: 1" = 10'

	PROFESSIONAL ENGINEER CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 17721 AND EXPIRATION DATE: 03/31/2018	SCALE: 1" = 10' DRAWING NO.: 5 OF 8 REVISIONS:
	MARCH 2016 DESIGNED BY: WMD DRAWN BY: WMD CHECKED BY: AP	DAN'S MOUNTAIN PROPOSED 330' COMMUNICATION TOWER PROJECT SITE PROFILES
ENGINEER: ALLEGANY COUNTY DEPARTMENT OF PUBLIC WORKS UTILITIES DIVISION 701 KELLY ROAD, SUITE 300 CUMBERLAND, MARYLAND 21502		



PROPOSED ACCESS ROAD PROFILE

HORIZONTAL SCALE: 1" = 20'
 VERTICAL SCALE: 1" = 5'

- NOTES:
1. PROPOSED PROFILE GRADES ARE APPROXIMATE.
 2. THE PROPOSED VERTICAL CURVES WERE DETERMINED TO SHOW THE DESIRED ACCESS ROAD IMPROVEMENTS ASSOCIATED WITH THE COMMUNICATION TOWER SITE PROJECT. THE CONTRACTOR CAN SUBSTITUTE A VERTICAL "SPLINE" GRADE PROFILE. THE "SPLINE" PROFILE SHALL BE CONSTRUCTED IN SEGMENTS NOT LESS THAN 20 LF.



OWNER:
 ALLEGANY COUNTY COMMISSIONERS
 701 KELLY ROAD
 CUMBERLAND, MARYLAND 21502

ENGINEER:
 ALLEGANY COUNTY DEPARTMENT OF PUBLIC WORKS
 UTILITIES DIVISION
 701 KELLY ROAD, SUITE 300
 CUMBERLAND, MARYLAND 21502

DAN'S MOUNTAIN PROPOSED
 330' COMMUNICATION TOWER
 PROJECT
 SITE PROFILES

MARCH 2016
 DESIGNED: WMD
 DRAWN: WMD
 CHECKED: AP

PROFESSIONAL CERTIFICATION THESE SHEETS WERE PREPARED BY ME, APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. EXPIRATION DATE: 2-29-28

WMD
 SIGNATURE

SCALE: 1" = 20'

NO.	DATE	REVISIONS
7	DF	8

DRAWING NO. 7 DF 8

