

January 11, 2019

Steve Sandy, Director  
Planning & Community Development  
1255 Franklin Street  
Suite 103  
Rocky Mount, VA 24151

Re: Proposed Apex Towers, Ferrum Project  
295' Self Supporting Tower

Dear Mr. Sandy,

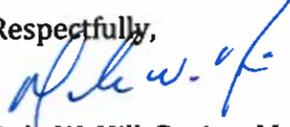
The purpose of this letter is to provide information in support of the above referenced project. This site is being proposed by Apex Towers, LLC for utilization initially by AT&T Wireless in order to provide improved communication service to the citizens and visitors of Franklin County. Specifically, this site will improve the communication services within the Callaway, Ferrum and Ferrum College areas.

The position and height proposed for the structure are extremely important in the network design as it will provide coverage and connections to existing area sites. The proposed facility will be an integral part of the AT&T network in Franklin County and provide mobile communication services to customers, individuals, businesses and government agencies. The requested height of 295' is necessary because wireless is a "line of site" technology and due to the topography and the general geographical area. This height shall assist in providing wireless technologies for this site to allow continuous and seamless communication between the handheld and the site whether the user is located close or at the edge of the site's serving area.

In building this network, AT&T first looked to co-locate on an existing structure located on the property and was found to not have available space or height. AT&T strongly emphasizes on co-location for two reasons 1.) It is the desire of most local governments, and 2.) It is typically cheaper than building a new site. For this search ring, AT&T could not locate an existing structure whose height, location and structural capacity were capable of meeting the AT&T network design criteria.

Since there were no suitable structures available the only viable option was to construct the proposed communications structure in compliance with all applicable Federal, State and County ordinances, codes and regulations which govern wireless communications facilities. Apex Towers, LLC will maintain the tower and equipment in a safe manner. Should you have any questions, please feel free to contact me.

Respectfully,



Dale W. Hill, Project Manager  
Apex Towers, LLC  
[dhill@apex-towers.com](mailto:dhill@apex-towers.com)  
(276)964-7416

**FRANKLIN COUNTY**  
**PETITION/APPLICATION FOR COMPREHENSIVE PLAN CONFORMANCE**  
**REVIEW**  
**(Type or Print)**

I/We, Apex Towers, LLC, as Owner(s), Contract Purchasers, or Owner's Authorized Agent of the property described below, hereby apply to the Franklin County Board of Supervisors for a Comprehensive Plan conformance review on the property as described below:

1. Petitioners Name: Apex Towers, LLC

2. Property Owner's Name: Nathan Hale Mason and Marjorie Popejoy Mason

Phone Number: (540)489-3844

Address: 1285 Isolane Road  
Callaway, VA Zip: 24607

3. Exact Directions to Property from Rocky Mount: Take VA-RT. 40 toward Callaway, turn Right onto Six Mile Post Road, turn left onto Isolane Rd/VA-695

4. Tax Map and Parcel Number: 0740003901

5. Magisterial District: Blue Ridge

6. Property Information:

A. Size of Property: 350.84 Acres

B. Existing Zoning: NZ

C. Existing Land Use: Agricultural/Wooded

D. Is property located within any of the following overlay zoning districts:

Corridor District  Westlake Overlay District  Smith Mountain Lake Surface District

E. Is any land submerged under water or part of a lake? Yes No  If yes, explain.

\_\_\_\_\_

7. Proposed Comprehensive Plan conformance review information:

A. Proposed Land Use: Communications facility

B. Size of Proposed Use: .058 acres (25,050 Sq. Ft)

C. Other Details of Proposed Use: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Checklist for completed items:**

- Application Form
- Letter of Application
- Concept Plan
- Application Fee

**\*\*I certify that this application for a Comprehensive Plan conformance review and the information submitted herein is correct and accurate.**

Petitioner's Name (Print): Dale W. Hill

Signature of Petitioner: \_\_\_\_\_

Date: 1/11/2019

Mailing Address: 2838 Riversdie Drive, Suite C

North Tazewell, VA 24630

Telephone: 276-964-7416

Email Address: dhill@apex-towers.com

Owner's consent, if petitioner is not property owner:

Owner's Name (Print): Nathan Hale Mason and Marjorie Popejoy Mason

Signature of Owner(s): *Nathan Hale Mason* *Marjorie Popejoy Mason*

Date: Jan. 16, 2019

Date Received by Planning Staff: \_\_\_\_\_

Time: \_\_\_\_\_

Clerk's Initials: \_\_\_\_\_

CHECK #: \_\_\_\_\_

RECPT. #: \_\_\_\_\_

AMOUNT: \_\_\_\_\_

January 11, 2019

Steve Sandy, Director  
Planning & Community Development  
1255 Franklin Street  
Suite 103  
Rocky Mount, VA 24151

Re: Justification for the Proposed Apex Towers, Ferrum 295' Self Supporting Tower Project

Dear Mr. Sandy:

Please find embedded the following email chain which outlines the information regarding the present structure located at 1285 Isolane Road in the words of the Facility Owner why it is not suitable or available for a colocation opportunity.

**From:** Davie L Key JR. [<mailto:dlkey@aep.com>]  
**Sent:** Wednesday, March 07, 2018 7:15 AM  
**To:** Tracy Tomovik <[TTomovik@velocitel.com](mailto:TTomovik@velocitel.com)>  
**Cc:** Charles D Powell <[cdpowell@aep.com](mailto:cdpowell@aep.com)>  
**Subject:** RE: Cell Tower inquiry-available RAD and Colo application-1299 Isolane Rd, Callaway, VA 24067-Carrier:AT&T R0517

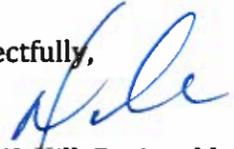
Good morning, Tracey. Our engineering group has reviewed your request (Ferrum Tower) and there is no space available on this tower. The tower height is 180' and we already have a tenant at 162' and the remaining space above that is reserved for AEP use. We also have Franklin County on the tower. Sorry.

Davie Key

540-985-2306

I hope you find this sufficient to justify the proposed facility need as we work together to ensure continued improvements to wireless communications within Franklin County.

Respectfully,



Dale W. Hill, Project Manager  
Apex Towers, LLC

Attachment; Complete email chain

**From:** Tracy Tomovik  
**Sent:** Wednesday, March 07, 2018 8:06 AM  
**To:** Chip Floyd  
**Subject:** FW: Cell Tower inquiry-available RAD and Colo application-1299 Isolane Rd, Callaway, VA 24067-Carrier:AT&T RO517

This tower is unavailable. See below.

**Tracy Tomovik**

LTE Project Coordinator, Sr.

**Velocitel**

4144 Innslake Drive

Glen Allen, VA 23060 U.S.A.

Mobile: 804-874-8471

Fax: 804-217-8665

Email: [TTomovik@Velocitel.com](mailto:TTomovik@Velocitel.com)

Website: [www.velocitel.com](http://www.velocitel.com)

Disclaimer: This email is intended only for the use of the individual or entity to which it is addressed, and may contain information that is privileged, confidential and exempt from disclosure under applicable law. If you received this communication in error, please do not distribute it and notify us immediately by email ([administrator@qualtekservices.com](mailto:administrator@qualtekservices.com)) or via telephone (484.804.4500) and delete the original message. Unless expressly stated in this email, nothing in this message or any attachment should be construed as a digital or electronic signature.

**From:** Davie L Key JR. [<mailto:dlkey@aep.com>]  
**Sent:** Wednesday, March 07, 2018 7:15 AM  
**To:** Tracy Tomovik <[TTomovik@velocitel.com](mailto:TTomovik@velocitel.com)>  
**Cc:** Charles D Powell <[cdpowell@aep.com](mailto:cdpowell@aep.com)>

Sincerely,

**Tracy Tomovik**

LTE Project Coordinator, Sr.

**Velocitel**

4144 Innslake Drive

Glen Allen, VA 23060 U.S.A.

Mobile: 804-874-8471

Fax: 804-217-8665

Email: [TTomovik@Velocitel.com](mailto:TTomovik@Velocitel.com)

Website: [www.velocitel.com](http://www.velocitel.com)

Disclaimer: This email is intended only for the use of the individual or entity to which it is addressed, and may contain information that is privileged, confidential and exempt from disclosure under applicable law. If you received this communication in error, please do not distribute it and notify us immediately by email ([administrator@qualtekservices.com](mailto:administrator@qualtekservices.com)) or via telephone (484.804.4500) and delete the original message. Unless expressly stated in this email, nothing in this message or any attachment should be construed as a digital or electronic signature.

December 28, 2018

Ronald Wilson  
SW/ESC Administrator  
Development Review Coordinator  
Franklin County Planning Department  
1255 Franklin Street – Suite 103  
Rocky Mount, VA 24151  
Phone: 540-483-3027 Ext 2429

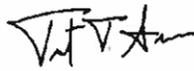
Re: Apex Towers \_ Ferrum II  
Site Address: Isolane Road – Ferrum, VA 24088  
Site Coordinates: Latitude: 36° 56' 43.791", Longitude: -79° 59' 27.866"  
Subject: Tower Removal Bond Estimate PE Letter  
NB+C Construction Drawings \_ Site Name: Ferrum II \_ Rev. C \_ Dated 12/28/18

Dear Mr. Wilson:

We have prepared constructions drawings for the proposed telecommunications site located at Isolane Road – Ferrum, VA 24088 dated December 28, 2018. The proposed tower will be a 295' self-support tower built inside of a 70'x70' fenced-in gravel compound. The site will have a 510' long x 10' wide gravel access road. In the event that the tower and fenced compound would ever have to be demolished and removed from the premises for any reason, we estimate that the construction cost to perform this work would amount to the sum of \$40,000.

Should you have any question or require additional information, please feel free to contact us at our office at (804) 548-4079 x 5102.

Respectfully submitted,  
NB+C ENGINEERING SERVICES, LLC



**Trent Snarr, PE**  
Engineering Manager – South  
VA PE License No. 49978  
[tsnarr@nbcllc.com](mailto:tsnarr@nbcllc.com)  
804.548.4079 x 5102





**APEX TOWERS SITE NAME:**

**FERRUM II**

**APEX TOWERS SITE NUMBER:**

**VAFLFM01**

ISOLANE ROAD  
FERRUM, VA 24088  
FRANKLIN COUNTY

**PROJECT NARRATIVE**  
APEX TOWERS PLANS TO BUILD A NEW WIRELESS TELECOMMUNICATIONS FACILITY WHICH WILL INCLUDE A NEW MONOPOLE TOWER, FENCED COMPOUND, AND ACCESS ROAD AS DEFINED ON THIS PLAN SET. THE TOWER WILL BE DESIGNED WITH AVAILABLE SPACE ON THE TOWER AND GROUND FOR (4) TENANTS' COLLOCATORS. THE PROPOSED TOWER AND FENCED COMPOUND WILL NOT BE LOCATED INSIDE EXISTING WETLANDS OR RIPARIAN BUFFERS.

**SITE INFORMATION**

**SITE ADDRESS:** ISOLANE ROAD  
FERRUM VA 24088

**LATITUDE (NAD 83):** N 36° 56' 43.791"  
**LONGITUDE (NAD 83):** W 79° 59' 27.866"

**GROUND ELEVATION:** 2,171.33 (AMSL) NAVD 88

**JURISDICTION:** FRANKLIN COUNTY

**ZONING:** N/A

**PARCEL T.M.:** 0740003901

**PARCEL AREA:** 350.84 ACRES

**CURRENT USE:** AGRICULTURAL / WOODDED

**PROPOSED DISTURBED AREA:** 0.58 AC (25,050 SQ.FT.)

**PARCEL OWNER:** NATHAN HALE MASON & MARJORIE POPELOJ  
1285 ISOLANE ROAD  
CALLAWAY, VA 24087

**TOWER OWNER:** APEX TOWERS  
548 EAST RIVERSIDE DRIVE, SUITE D  
NORTH TAZEWELL, VA 24630

**STRUCTURE TYPE:** SELF-SUPPORT

**CLASSIFICATION GROUP:** U

**CONSTRUCTION TYPE:** 28

**STRUCTURE HEIGHT:** 296.0' (AGL)

**OVERALL HEIGHT:** 300.0' (AGL)

**POWER PROVIDER:** AEP CO.  
CONTACT: MIKE KEATON  
ENGINEER TECHNICIAN  
PHONE: (340) 489-2591  
EMAIL: MKEATON@AEP.COM  
WORK ORDER# 024831061

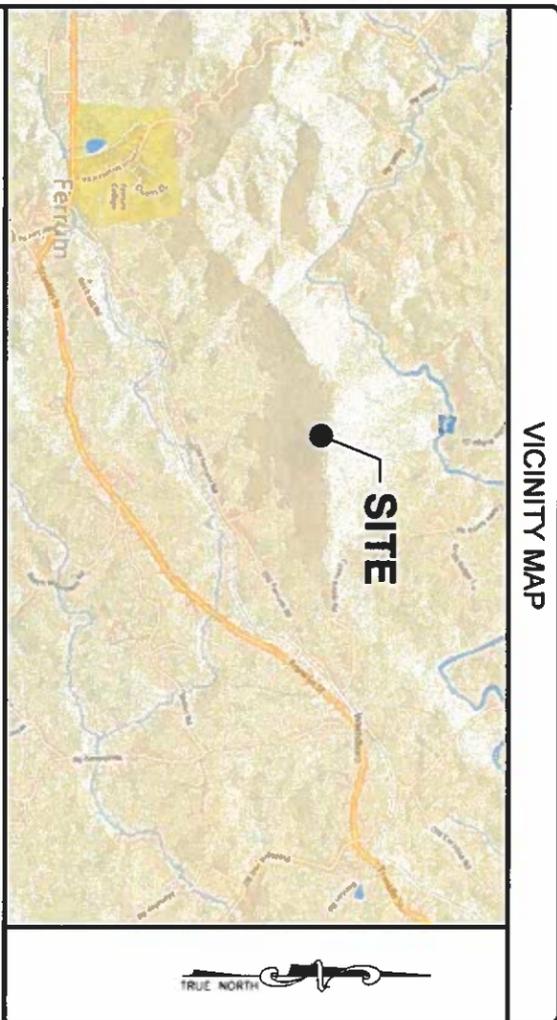
**TELECO PROVIDER:** TBD

**EMERGENCY INFORMATION:**

**FRANKLIN COUNTY SHERIFF DEPARTMENT:** (540) 483-3000

**FERRUM VOLUNTEER FIRE DEPARTMENT:** (540) 365-2186

**APPLICANT:** CRAIG CLIFTON  
APEX TOWERS  
548 EAST RIVERSIDE DRIVE, SUITE D  
NORTH TAZEWELL, VA 24630  
(276) 963-1818



**CODE COMPLIANCE**

- ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING CODES.
- 2015 INTERNATIONAL BUILDING CODE
  - 2011 NATIONAL ELECTRICAL CODE
  - 2009 NFPA 101, LIFE SAFETY CODE
  - 2009 IFC
  - AMERICAN CONCRETE INSTITUTE
  - AMERICAN INSTITUTE OF STEEL CONSTRUCTION
  - MANUAL OF STEEL CONSTRUCTION 13TH EDITION
  - ANSIT/A-222-G
  - TIA 807
  - INSTITUTE FOR ELECTRICAL & ELECTRONICS ENGINEER 81
  - IEEE C2 NATIONAL ELECTRIC SAFETY CODE LATEST EDITION
  - TELECORP/IA GR-1275
  - ANSIR/ 311

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ES-6	EROSION & SEDIMENT CONTROL DETAILS III
ES-7	PREDVELOPMENT DRAINAGE AREA MAP & CALCULATIONS
ES-8	POST DEVELOPMENT DRAINAGE AREA MAP & CALCULATIONS
ES-9	CULVERT & DITCH DRAINAGE AREA MAP & CALCULATIONS

**PROJECT TEAM**

**ENGINEERING FIRM:** TRENT T. SNARR, P.E.  
NB+C ENGINEERING SERVICES, LLC.  
4435 WATERFRONT DRIVE, SUITE 100  
GLEN ALLEN, VA 23060  
(804) 548-4079

**ZONING:** DALE HILL  
APEX TOWERS  
548 EAST RIVERSIDE DRIVE, SUITE D  
NORTH TAZEWELL, VA 24630  
(276) 963-1718

**CONSTRUCTION MANAGER:** CRAIG CLIFTON  
APEX TOWERS  
548 EAST RIVERSIDE DRIVE, SUITE D  
NORTH TAZEWELL, VA 24630  
(276) 963-1818

**ENGINEER**

**TOTALLY COMMITTED**  
NB+C ENGINEERING SERVICES, LLC.  
4435 WATERFRONT DRIVE, SUITE 100  
GLEN ALLEN, VA 23060

**APPLICANT**

548 EAST RIVERSIDE DR, STE. D  
NORTH TAZEWELL, VA 24630  
(276) 963-1818

**SITE INFORMATION**

**APEX SITE NAME:** FERRUM II  
**APEX SITE ID:** VAFLFM01

NB+C PROJ. # 100103  
ISOLANE ROAD  
FERRUM, VA 24088  
FRANKLIN COUNTY

**DESIGN RECORD**

REV	DATE	DESCRIPTION	BY
C	1/29/18	REVISED CD	OP
B	1/27/18	REVISED CD	OP
A	1/26/18	PRELIMINARY CD	OP

**REVISIONS**

**PROFESSIONAL STAMP**

TRENT T. SNARR, P.E.  
VA PROFESSIONAL ENGINEER #44978

**PRELIMINARY (NOT FOR CONSTRUCTION)**

**ENGINEER**

TRENT T. SNARR, P.E.  
VA PROFESSIONAL ENGINEER #44978

**TITLE SHEET**

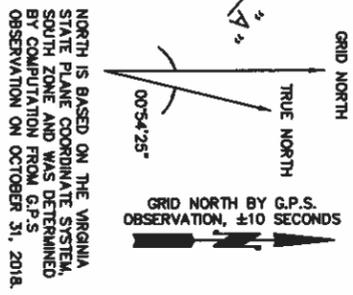
**SHEET NUMBER**

**T-1**

- LEGEND**
- E— EXISTING OVERHEAD ELECTRIC
  - T— EXISTING UNDERGROUND TELEPHONE
  - UT— EXISTING UNDERGROUND TELEPHONE
  - UE— PROPOSED UNDERGROUND ELECTRIC
  - UT— PROPOSED UNDERGROUND TELEPHONE
  - X— FENCE LINE
  - S— SURVEY LINE
  - POWER POLE
  - TELEPHONE PEDESTAL
  - WATER VALVES
  - FIRE HYDRANTS
  - 5/8" REBAR SET
  - AS NOTED
  - COMPUTED POINT

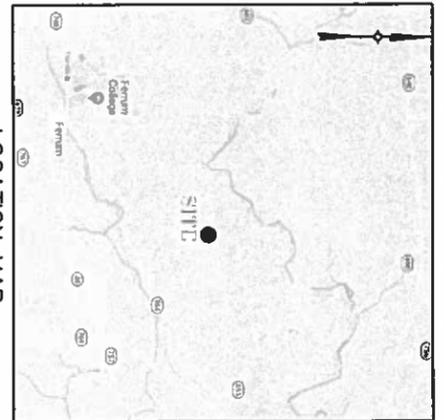
**FLOOD PLAIN CERTIFICATION**  
 I HAVE REVIEWED THE FLOOD INSURANCE RATE MAPS (FIRM) MAP NO. 5108700330C DATED DECEMBER 16, 2008 AND THE LEASE AREA LIES IN ZONE X (DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN)

TAX ID# 0740003801  
 NATHAN HALE MASON  
 MARJORIE POPELOJY MASON  
 D.B. 574, PAGE 1204



**BENCHMARK**  
 NORTH: 350212.53  
 EAST: 11047103.49  
 ELEVATION: 2148.47 (NAVD 88)  
 DESCRIPTION: 5/8" ROD

**COORDINATE POINT LOCATION**  
 CENTERLINE OF TOWER  
 NAD 1983  
 LATITUDE: 36°56'43.791\"/>



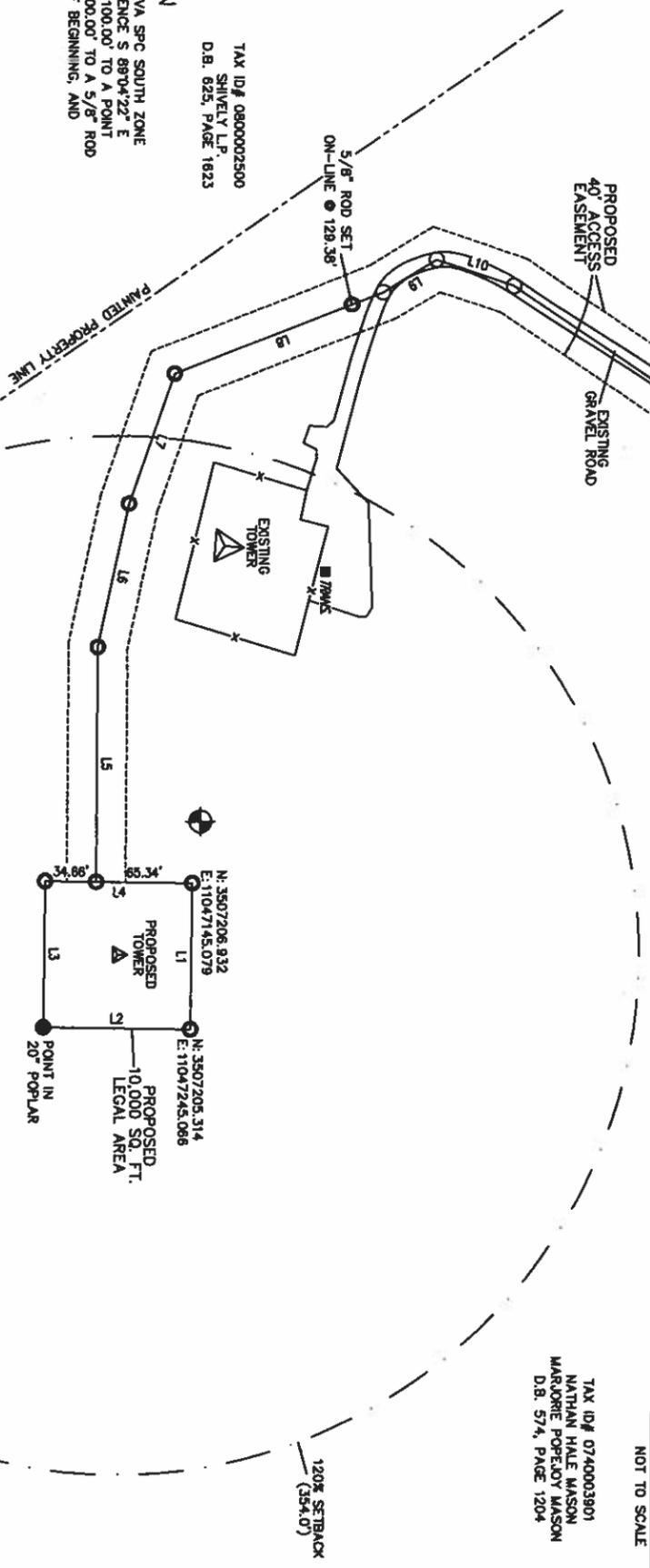
**LOCATION MAP**  
 NOT TO SCALE

- NOTES:**
- THIS PLAT IS THE RESULT OF A CURRENT FIELD SURVEY.
  - THIS IS NOT A BOUNDARY SURVEY.
  - THIS SURVEY IS SUBJECT TO ALL EXISTING EASEMENTS, RESTRICTIONS, EXCEPTIONS, SERVITUDES AND PRIOR LEGALS WHETHER SHOWN HEREON OR NOT. A TITLE REPORT MAY REVEAL EASEMENTS OR OTHER DEFECTS WHETHER SHOWN HEREON OR NOT.
  - LEASE PARCEL LOCATED ON TAX PARCEL #0740003801 NATHAN HALE MASON AND MARJORIE POPELOJY MASON, DEED BOOK 574, PAGE 1204.

**PROPOSED LEGAL DESCRIPTION**

BEGINNING AT A 5/8" ROD SET, SAID ROD HAVING VA SPC SOUTH ZONE COORDINATES : N-3507206.932, E-11047145.079; THENCE S 89°04'22" E 100.00' TO A 5/8" ROD SET; THENCE S 00°55'38" W 100.00' TO A POINT LOCATED IN A 20' POPULAR; THENCE N 89°04'22" W 100.00' TO A 5/8" ROD SET; THENCE N 00°55'38" E 100.00' TO THE POINT OF BEGINNING, AND CONTAINING 10,000 SQUARE FEET MORE OR LESS.

TAX ID# 0800002500  
 SHIVELY L.P.  
 D.B. 825, PAGE 1823



LINE	BEARING	DISTANCE
L1	S 89°04'22" E	100.00'
L2	S 00°55'38" W	100.00'
L3	N 89°04'22" W	100.00'
L4	N 00°55'38" E	100.00'
L5	N 89°30'47" W	180.06'
L6	N 77°41'04" W	100.14'
L7	N 70°32'03" W	93.48'
L8	N 21°28'02" W	152.28'
L9	N 30°57'09" W	42.28'
L10	N 18°43'18" E	55.37'
L11	N 34°32'58" E	413.24'

TAX ID# 0800002500  
 SHIVELY L.P.  
 D.B. 825, PAGE 1823

TAX ID# 0740003801  
 NATHAN HALE MASON  
 MARJORIE POPELOJY MASON  
 D.B. 574, PAGE 1204

**APEX TOWERS**  
 125 Whitesick Road  
 Rockley, WV 25807  
 PHONE 304-256-6476  
 WWW.APEX-TOWERS.COM

**BLUE RIDGE**  
 SURVEYING & MAPPING, INC.  
 445 WEST STUART DRIVE  
 HILLSVILLE, VIRGINIA 24343  
 PHONE 276-728-2022  
 EMAIL: brian@brm.com

**SITE NAME:** FERRUM

**SITE NUMBER:** VAFL101

**SITE ADDRESS:** ISLAKE ROAD, FERRUM, VA 24098, FRANKLIN COUNTY

**AREA:** LEGAL AREA = 10,000 SQ. FT.

**PROPERTY OWNER:** NATHAN HALE MASON, MARJORIE POPELOJY MASON

**TAX MAP NUMBER:** 074000

**PARCEL NUMBER:** 3901

**SOURCE OF TITLE:** D.B. 574, PAGE 1204

**LATITUDE:** 36°56'43.791" N  
**LONGITUDE:** 78°58'27.866" W

NO.	REVISION/ISSUE	DATE
1	SURVEY	11/08/18

**TITLE:** SITE SURVEY  
 LOCATED OFF-  
 ISLAKE ROAD-  
 BLACKWATER MAGISTERIAL DISTRICT  
 FRANKLIN COUNTY, VIRGINIA

**SHEET:** C-2

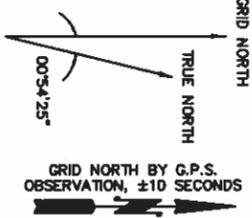
**LEGEND**

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**NOTES:**

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4. LEASE PARCEL LOCATED ON TAX PARCEL 0740003901, NATHAN HALE MASON AND MARJORIE POPELOJY MASON, DEED BOOK 574, PAGE 1204.

NORTH IS BASED ON THE VIRGINIA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE AND WAS DETERMINED BY COMPUTATION FROM G.P.S. OBSERVATION ON OCTOBER 31, 2016.



**MATCHLINE "B"**

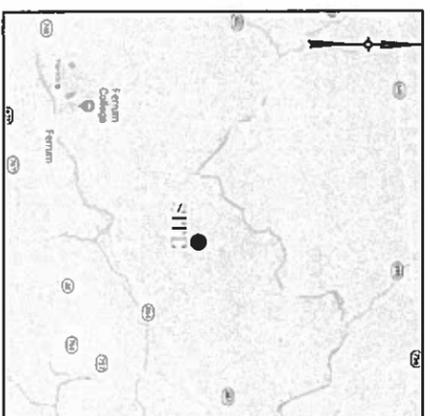
TAX ID# 0740003901  
NATHAN HALE MASON  
MARJORIE POPELOJY MASON  
D.B. 574, PAGE 1204

TAX ID# 0740003901  
NATHAN HALE MASON  
MARJORIE POPELOJY MASON  
D.B. 574, PAGE 1204

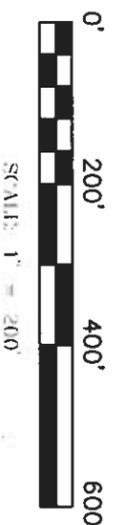
**BENCHMARK**  
NORTH: 3507212.53  
EAST: 11047103.49  
ELEVATION: 2148.47 (NAVD 88)  
DESCRIPTION: 5/8" ROD

**COORDINATE POINT LOCATION**  
NAD 1983  
LATITUDE: 36°56'43.791"N  
LONGITUDE: 78°59'27.866"W  
ELEVATION: 2171.3 SITE (NAVD 88)  
STATE PLANE COORDINATE  
NORTHING: 3507156.13  
EASTING: 11047194.26

**FLOOD PLAN CERTIFICATION**  
I HAVE REVIEWED THE FLOOD INSURANCE RATE MAPS (FIRM) MAP NO. 51067C0330C DATED DECEMBER 16, 2008 AND THE LEASE AREA LIES IN ZONE X (DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN)



**GRAPHIC SCALE**



TAX ID# 0740003901  
NATHAN HALE MASON  
MARJORIE POPELOJY MASON  
D.B. 574, PAGE 1204

TAX ID# 0740003901  
NATHAN HALE MASON  
MARJORIE POPELOJY MASON  
D.B. 574, PAGE 1204

**SITE NAME:** FERRUM

**SITE NUMBER:** VALFEM01

**SITE ADDRESS:** ISOLANE ROAD  
FERRUM, VA, 24098  
FRANKLIN COUNTY

**AREA:** LEGAL AREA = 10,000 SQ. FT.

**PROPERTY OWNER:** NATHAN HALE MASON  
MARJORIE POPELOJY MASON

**TAX MAP NUMBER:** 074000

**PARCEL NUMBER:** 3901

**SOURCE OF TITLE:** D.B. 574, PAGE 1204

**LATITUDE:** 36°56'43.791"N  
**LONGITUDE:** 78°59'27.866"W

**NO. REVISION/ISSUE DATE**

1	SURVEY	11/09/16
---	--------	----------

**TITLE:** SITE SURVEY  
LOCATED OFF ISOLANE ROAD, BLACKWATER MAGISTERIAL DISTRICT, FRANKLIN COUNTY, VIRGINIA

**SHEET:** C-2A

**PROPOSED 40' ACCESS EASEMENT**

BEGINNING AT A 5/8" ROD SET, SAID ROD BEING N 00°55'36" E 34.86' FROM THE SOUTHWEST CORNER OF THE PROPOSED LEASE PARCEL, THENCE N 89°30'47" W 160.08' TO A 5/8" ROD SET; THENCE N 77°41'04" W 100.14' TO A 5/8" ROD SET; THENCE N 70°32'03" W 93.49' TO A 5/8" ROD SET; THENCE N 21°28'02" W, PASSING THROUGH A 5/8" ROD SET ON LINE AT 128.38', 152.28' IN ALL TO A POINT IN THE CENTER OF AN EXISTING GRAVEL ROAD; THENCE WITH SAID ROAD THE FOLLOWING CALLS: N 30°57'09" W 42.28' TO A POINT; THENCE N 18°43'18" E 55.37' TO A POINT; THENCE N 34°32'56" E 413.24' TO A POINT; THENCE N 46°12'38" E 187.78' TO A POINT; THENCE N 39°07'27" E 288.90' TO A POINT; THENCE N 08°38'52" E 37.77' TO A POINT; THENCE N 51°10'40" W 33.73' TO A POINT; THENCE N 73°13'14" W 150.11' TO A POINT; THENCE N 24°18'08" W 40.54' TO A POINT; THENCE N 30°35'49" E 121.36' TO A POINT; THENCE N 18°39'27" E 292.61' TO A POINT; THENCE N 05°56'31" E 145.66' TO A POINT; THENCE N 07°57'10" W 282.41' TO A POINT; THENCE N 03°36'46" W 150.52' TO A POINT; THENCE N 19°22'54" W 69.69' TO A POINT; THENCE N 29°10'58" W 154.78' TO A POINT; THENCE N 41°24'52" W 168.77' TO A POINT; THENCE N 45°54'04" W 129.89' TO A POINT; THENCE N 24°15'43" W 151.88' TO A POINT; THENCE N 12°43'58" W 112.65' TO A POINT; THENCE N 08°12'01" E 89.08' TO A POINT; THENCE N 22°03'22" E 280.51' TO A POINT; THENCE N 36°46'02" E 87.45' TO A POINT; THENCE N 54°54'52" E 118.33' TO A POINT; THENCE N 41°53'41" E 124.92' TO A POINT; THENCE N 22°44'16" E 59.51' TO A POINT; THENCE N 32°57'40" W 20.17' TO A POINT; THENCE N 70°28'14" W 27.58' TO A POINT; THENCE N 80°11'45" W 110.70' TO A POINT; THENCE S 70°04'17" W 188.48' TO A POINT; THENCE N 87°29'49" W 74.05' TO A POINT; THENCE N 53°56'49" W 84.85' TO A POINT; THENCE N 35°41'41" W 92.68' TO A POINT; THENCE N 10°38'29" W 321.34' TO A POINT; THENCE N 03°53'58" E 85.22' TO A POINT; THENCE N 07°33'20" E 168.43' TO A POINT; THENCE N 60°24'45" E 38.51' TO A POINT; THENCE S 79°49'11" E 246.47' TO A POINT; THENCE N 68°07'59" E 65.59' TO A POINT; THENCE N 35°49'09" E 93.64' TO A POINT; THENCE N 17°19'43" E 83.91' TO A POINT; THENCE N 17°04'15" W 79.15' TO A POINT; THENCE N 24°47'49" W 91.95' TO A POINT; THENCE N 08°03'02" W 131.84' TO A POINT; THENCE N 18°10'35" W 106.60' TO A POINT; THENCE N 00°17'34" E 80.01' TO A POINT; THENCE N 04°27'30" E 70.24' TO A POINT; THENCE N 59°32'59" W 39.43' TO A POINT; THENCE N 73°40'57" W 86.46' TO A POINT; THENCE N 61°48'51" W 91.33' TO A POINT; THENCE N 77°33'50" W 73.68' TO A POINT; THENCE N 45°32'34" W 37.99' TO A POINT; THENCE N 07°18'52" E 38.10' TO A POINT; THENCE N 50°41'10" E 57.29' TO A POINT; THENCE N 61°02'11" E 84.06' TO A POINT; THENCE N 41°44'20" E 96.65' TO A POINT; THENCE N 02°34'42" E 63.78' TO A POINT; THENCE N 40°41'39" W 57.65' TO A POINT; THENCE N 60°34'45" W 182.31' TO A POINT; THENCE N 56°03'06" W 98.73' TO A POINT; THENCE N 26°43'12" W 68.50' TO A POINT; THENCE N 00°58'53" E 83.31' TO A POINT; THENCE N 36°56'52" W 47.44' TO A POINT; THENCE N 72°50'11" W 232.45' TO A POINT; THENCE N 41°13'10" W 147.14' TO A POINT; THENCE N 63°20'24" W 73.45' TO A POINT; THENCE N 88°27'10" W 74.78' TO A POINT; THENCE N 63°15'08" W 223.48' TO A POINT; THENCE N 77°39'23" W 50.16' TO A POINT; THENCE N 39°46'59" W 63.72' TO A POINT; THENCE N 28°06'32" W 71.44' TO A POINT IN THE CENTERLINE OF ISOLANE ROAD.

**MATCHLINE "A"**

TAX ID# 0740003901  
NATHAN HALE MASON  
MARJORIE POPELOJY MASON  
D.B. 574, PAGE 1204

TAX ID# 0740003901  
NATHAN HALE MASON  
MARJORIE POPELOJY MASON  
D.B. 574, PAGE 1204



LINE	BEARING	DISTANCE
L12	N 48°12'38" E	187.78'
L13	N 39°07'57" E	288.90'
L14	N 06°36'52" E	37.77'
L15	N 51°10'40" W	33.73'
L16	N 75°13'14" W	150.11'
L17	N 24°18'08" W	40.54'
L18	N 30°35'49" E	121.36'
L19	N 16°39'27" E	282.61'
L20	N 08°58'51" E	145.66'
L21	N 07°57'10" W	262.41'
L22	N 03°56'48" W	150.52'
L23	N 19°22'54" W	69.69'
L24	N 28°10'58" W	154.78'
L25	N 41°24'52" W	168.77'
L26	N 45°54'04" W	129.89'
L27	N 24°15'43" W	151.88'





**LEGEND**

- E— EXISTING OVERHEAD TELEPHONE
- T— EXISTING OVERHEAD TELEPHONE
- UE— EXISTING UNDERGROUND TELEPHONE
- UT— EXISTING UNDERGROUND TELEPHONE
- UE— PROPOSED UNDERGROUND TELEPHONE
- UT— PROPOSED UNDERGROUND TELEPHONE
- X— FENCE LINE
- SURVEY LINE
- POWER POLE
- TELEPHONE PEDESTAL
- WATER VALVES
- FIRE HYDRANTS
- 5/8" REBAR SET
- AS NOTED
- COMPUTED POINT

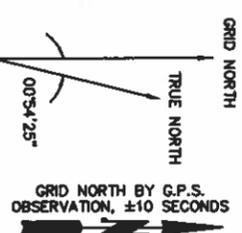
**NOTES:**

1. THIS PLAN IS THE RESULT OF A CURRENT FIELD SURVEY.
2. THIS IS NOT A BOUNDARY SURVEY.
3. THIS SURVEY IS SUBJECT TO ALL EXISTING EASEMENTS, RESTRICTIONS, EXCEPTIONS, SERVITUDES AND PRIOR LEGALS WHETHER SHOWN HEREON OR NOT. A TITLE REPORT MAY REVEAL EASEMENTS OR OTHER DEFECTS WHICH ARE NOT SHOWN HEREON OR NOT.
4. LEASE PARCEL LOCATED ON TAX PARCEL MAP NO. 0740003901, DEED BOOK 574, PAGE 1204.

**FLOOD PLAIN CERTIFICATION**

I HAVE REVIEWED THE FLOOD INSURANCE RATE MAPS (FIRM) MAP NO. 510670330C DATED DECEMBER 16, 2008 AND THE LEASE AREA LIES IN ZONE X (DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN)

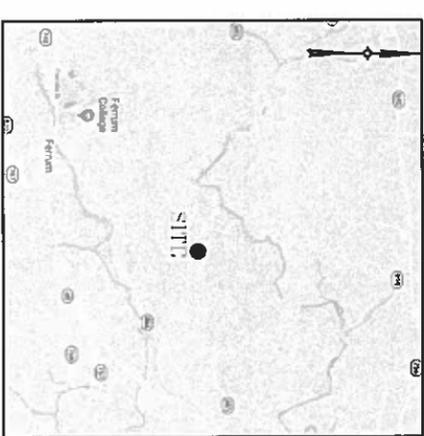
LINE	BEARING	DISTANCE
L72	N 72°50'11" W	232.45'
L73	N 41°13'10" W	147.14'
L74	N 63°29'24" W	73.45'
L75	N 88°27'10" W	74.78'
L76	S 81°05'08" W	223.48'
L77	N 77°39'23" W	50.16'
L78	N 39°48'59" W	63.72'
L79	N 28°08'32" W	71.44'



NORTH IS BASED ON THE VIRGINIA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE AND WAS DETERMINED BY COMPUTATION FROM G.P.S. OBSERVATION ON OCTOBER 31, 2018.

**BENCHMARK**  
 NORTH: 3507212.53  
 EAST: 11047103.49  
 ELEVATION: 2148.47 (NAVD 88)  
 DESCRIPTION: 5/8" ROD

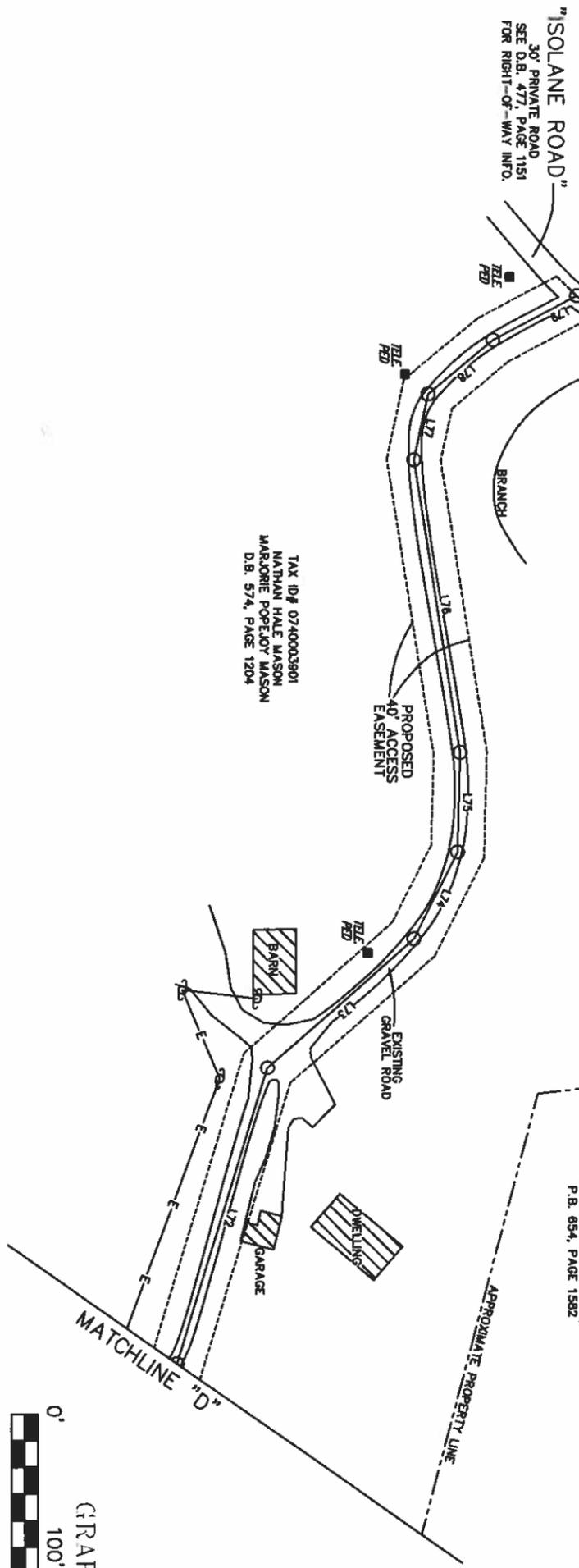
**COORDINATE POINT LOCATION**  
 CENTERLINE OF TOWER  
 NAD 1983  
 LATITUDE: 36°56'43.781"N  
 LONGITUDE: 78°59'27.868"W  
 ELEVATION: 2171.3' SITE (NAVD 88)  
 STATE PLANE COORDINATE  
 NORTHING: 3507156.13  
 EASTING: 11047194.26



TAX ID# 0740003901  
 NATHAN HALE MASON  
 MARJORIE POPELOJ MASON  
 D.B. 574, PAGE 1204

TAX ID# 0740003901  
 NATHAN HALE MASON  
 MARJORIE POPELOJ MASON  
 D.B. 574, PAGE 1204

TAX ID# 0740003902  
 MEADOW RIDGE FARMS S/D  
 P.B. 654, PAGE 1582



**APEX TOWERS**  
 122 Whiteslick Road  
 Beckley, WV 25801  
 PHONE 304-256-6426  
 WWW.APEX-TOWERS.COM

**BLUE RIDGE SURVEYING & MAPPING, INC.**  
 445 WEST STUART DRIVE  
 HILLSVILLE, VIRGINIA 24343  
 PHONE 276-728-2022  
 EMAIL: brian@brsm.com

<b>SITE NAME:</b>	FERRUM	
<b>SITE NUMBER:</b>	VAFL1401	
<b>SITE ADDRESS:</b>	ISOLANE ROAD FERRUM, VA 24098 FRANKLIN COUNTY	
<b>AREA:</b>	LEGAL AREA = 10,000 SQ. FT.	
<b>PROPERTY OWNER:</b>	NATHAN HALE MASON MARJORIE POPELOJ MASON	
<b>TAX MAP NUMBER:</b>	074000	
<b>PARCEL NUMBER:</b>	3901	
<b>SOURCE OF TITLE:</b>	D.B. 574, PAGE 1204	
<b>LATITUDE:</b>	36°56'43.781"N	
<b>LONGITUDE:</b>	78°59'27.868"W	
<b>NO. REVISION/ISSUE</b>	<b>DATE</b>	
1	SURVEY	11/08/18

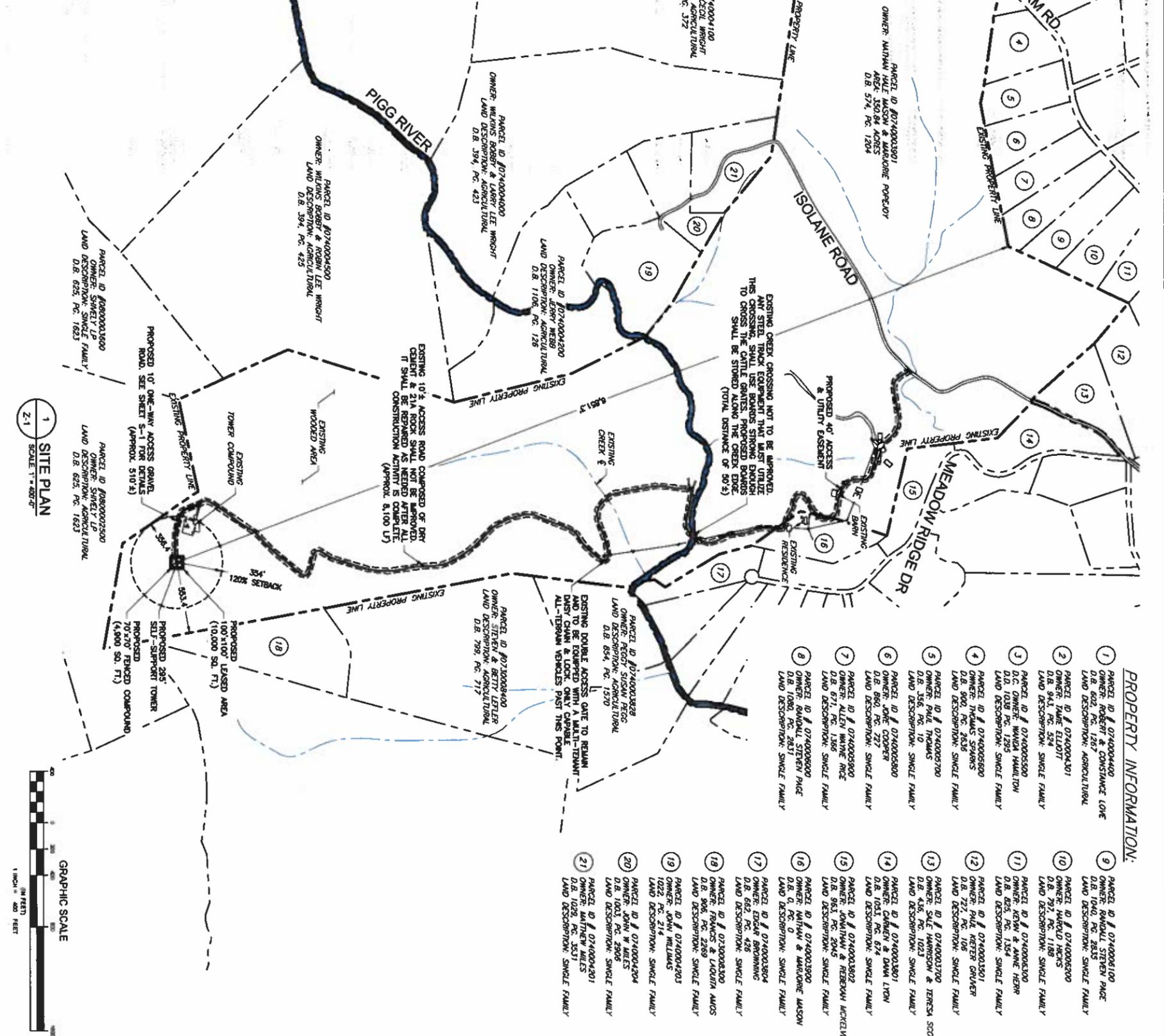
**TITLE:** SITE SURVEY  
 LOCATED OFF  
 ISOLANE ROAD  
 BLACKWATER MAGISTERIAL DISTRICT  
 FRANKLIN COUNTY, VIRGINIA

**SHEET:** C-2D





**811**  
Know what's below.  
Call before you dig.



**PROPERTY INFORMATION:**

- 1. PARCEL ID # 0740004400  
OWNER: JERRY WRIGHT  
D.B. 602, PG. 1267  
LAND DESCRIPTION: AGRICULTURAL
- 2. PARCEL ID # 0740004301  
OWNER: JAME ELLIOTT  
D.B. 518, PG. 1267  
LAND DESCRIPTION: SINGLE FAMILY
- 3. PARCEL ID # 0740005500  
D.C. OWNER: WANDA HAMILTON  
D.B. 1008 PG. 1285  
LAND DESCRIPTION: SINGLE FAMILY
- 4. PARCEL ID # 0740005500  
OWNER: THOMAS SPARKS  
D.B. 900, PG. 2636  
LAND DESCRIPTION: SINGLE FAMILY
- 5. PARCEL ID # 0740003700  
OWNER: PAUL THOMAS  
D.B. 356, PG. 10  
LAND DESCRIPTION: SINGLE FAMILY
- 6. PARCEL ID # 0740002800  
OWNER: JANE GARDNER  
D.B. 652, PG. 1277  
LAND DESCRIPTION: SINGLE FAMILY
- 7. PARCEL ID # 0740003500  
OWNER: ALLEN WAYNE RICE  
D.B. 671, PG. 1286  
LAND DESCRIPTION: SINGLE FAMILY
- 8. PARCEL ID # 0740000900  
OWNER: RANDALL STEVEN RICE  
D.B. 1080, PG. 2831  
LAND DESCRIPTION: SINGLE FAMILY
- 9. PARCEL ID # 0740000100  
OWNER: RAYMOND STEVEN RICE  
D.B. 1040, PG. 2835  
LAND DESCRIPTION: SINGLE FAMILY
- 10. PARCEL ID # 0740002000  
OWNER: JIMMY RICE  
D.B. 518, PG. 1267  
LAND DESCRIPTION: SINGLE FAMILY
- 11. PARCEL ID # 0740003600  
OWNER: KEVIN & ANNE HEHR  
D.B. 603 PG. 135  
LAND DESCRIPTION: SINGLE FAMILY
- 12. PARCEL ID # 0740001501  
OWNER: PAUL KETTER GRIENER  
D.B. 721, PG. 106  
LAND DESCRIPTION: SINGLE FAMILY
- 13. PARCEL ID # 0740001300  
OWNER: SUE HARRISON & TERESA SCOTT  
D.B. 436, PG. 1023  
LAND DESCRIPTION: SINGLE FAMILY
- 14. PARCEL ID # 0740001801  
OWNER: JANE GARDNER  
D.B. 652, PG. 1277  
LAND DESCRIPTION: SINGLE FAMILY
- 15. PARCEL ID # 0740001302  
OWNER: JOYANNA & REBEKAH MCKEELVEY  
D.B. 583 PG. 206  
LAND DESCRIPTION: SINGLE FAMILY
- 16. PARCEL ID # 0740002900  
OWNER: MATTHEW & MARIONNE LAWSON  
D.B. 0, PG. 0  
LAND DESCRIPTION: SINGLE FAMILY
- 17. PARCEL ID # 0740001804  
OWNER: EDGAR BRONKHORST  
D.B. 682, PG. 426  
LAND DESCRIPTION: SINGLE FAMILY
- 18. PARCEL ID # 0740001809  
OWNER: FRANK & LAQUITA AMOS  
D.B. 906, PG. 2269  
LAND DESCRIPTION: SINGLE FAMILY
- 19. PARCEL ID # 0740001201  
OWNER: JOHN WILLIAMS  
D.B. 1001 PG. 2806  
LAND DESCRIPTION: SINGLE FAMILY
- 20. PARCEL ID # 0740001204  
OWNER: JOHN W. WELLS  
D.B. 1001 PG. 2806  
LAND DESCRIPTION: SINGLE FAMILY
- 21. PARCEL ID # 0740001401  
OWNER: MATTHEW WELLS  
D.B. 1029, PG. 3531  
LAND DESCRIPTION: SINGLE FAMILY

EXISTING CREEK CROSSING NOT TO BE APPROVED. ANY STEEL TRUCK EQUIPMENT THAT MUST TRAVEL THIS CROSSING MUST BE STORED ALONG THE CREEK EDGE (TOTAL DISTANCE OF 50'±)

EXISTING 10'± ACCESS ROAD COMPOSED OF DIRT, GRAVEL & 2" X 4" BOARD WALKWAY. THIS ROAD WILL BE IMPROVED TO 12'± WITH ASPHALT SURFACE. CONSTRUCTION ACTIVITY IS COMPLETE (APPROX. 8,100 LY)

EXISTING DOUBLE ACCESS GATE TO REMAIN AND TO BE EQUIPPED WITH A MULTI-TURN HANDLE, LATCH & LOCK. ONLY VEHICLES WITH LICENSED VEHICLES MUST PASS THIS POINT.

**1 SITE PLAN**  
SCALE 1" = 400'-0"



**ZONING MAP**



**ZONING INFORMATION**

JURISDICTION	FRANKLIN COUNTY
ZONING	N/A
DURATION	PROPOSED ±
FRONT YARD SETBACK	6.51 ± FT.
SIDE YARD SETBACK	5.51 ± FT.
REAR YARD SETBACK	3.56 ± FT.
NEAREST RESIDENTIAL STRUCTURE	2.885 ± MI
LOT AREA	330,814 ± ACRES
(ALL DIMENSIONS ARE IN FEET ± UNLESS OTHERWISE NOTED)	

**LEGEND**

---	PROPERTY LINE - SUBJECT PARCEL
---	PROPERTY LINE - ADJACENTS
---	EXISTING ROAD
---	PROPOSED EASEMENT
---	PROPOSED USE AREA
---	EXISTING EASEMENT
---	PROPOSED FENCE

**GENERAL NOTES**

- THIS PLAN IS SUBJECT TO ALL EASEMENTS AND RESTRICTIONS OF RECORD.
- NO SIGNIFICANT NOISE, SMOKE, DUST, OR ODOR WILL RESULT FROM THIS FACILITY.
- THE FACILITY IS UNMANNED AND NOT INTENDED FOR HUMAN HABITATION. THERE IS NO HANDICAP ACCESS REQUIRED.
- THE FACILITY IS UNMANNED AND DOES NOT REQUIRE PORTABLE WATER OR SANITARY SERVICE.
- PROPERTY IS LOCATED IN AN UNMAPPED FLOOD PLAIN AREA.
- FOR SURVEY INFORMATION, SEE "TRUE PROBE SURVEYING & MAPPING, INC." SITE NAME TERMINAL IF DATED 11/07/2018.
- REFER TO SURVEY DOCUMENT ON SHEET C-2 FOR ALL LEASED AREA, ACCESS & UTILITY EASEMENT AND PROPERTY BOUNDARY INFORMATION.
- ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), THE PROPOSED TELECOMMUNICATIONS SITE IS LOCATED IN ZONE "X" (COMMUNITY PANEL NO. 510870303030, DATED 12-18-2008).

**SITE NOTES:**

- ALL TRACTOR TRAILER LOADS SHALL NOT CONTINUE PAST THE EXISTING RESIDENCE ALONG THE EXISTING ACCESS ROAD. SAID VEHICLES SHALL TURN AROUND AT THE RESIDENTIAL DWELLING.
- THERE IS AN EXISTING DOUBLE GATE ALONG THE ACCESS DRIVE DEPICTED ON THIS DRAWING. ONLY VEHICLES WITH LICENSED PLATES SHALL CONTINUE PAST SAID ACCESS POINT AS LARGE WATER BANS ARE PRESENT ALONG THE STEEP ROAD. ALL LARGE VEHICLES THAT CONTINUE PAST DOUBLE GATE WILL REQUIRE ASSISTANCE GOING UP.
- THE EXISTING CREEK CROSSING ALONG THE PIGG RIVER HAS BEEN ESTABLISHED FOR SEVERAL YEARS AND SHALL NOT BE APPROVED. THIS CROSSING IS 6'± UNDER WATER. ANY STEEL TRUCK EQUIPMENT THAT MUST TRAVEL THIS CROSSING, SHALL USE BOARDS STRONG ENOUGH TO CROSS THE CATTLE GRATES. PROPOSED LOADS SHALL BE STORED ALONG THE CREEK EDGE (TOTAL DISTANCE OF 50'±)

**NE+C**  
TOTALLY COMMITTED  
NE+C ENGINEERING SERVICES, L.L.C.  
400 WESTVIEW DRIVE, SUITE 100  
DALLAS, TEXAS 75240

**Apex Towers**  
548 EAST RIVERSIDE DR. STE. D  
NORTH TAZEWELL, VA 24630  
(276) 963-1818

**SITE INFORMATION**  
APEX SITE NAME:  
FERRUM II  
APEX SITE ID: VAF1FM01  
NB+C PROJ. # 100103  
ISOLARE ROAD  
FERRUM, VA 24088  
FRANKLIN COUNTY

**REVISIONS**

REV	DATE	DESCRIPTION	BY
C	12/28/18	REVISED CD	OP
B	12/21/18	REVISED CD	OP
A	12/07/18	PRELIMINARY CD	OP

**PROFESSIONAL STAMP**  
**PRELIMINARY**  
**(NOT FOR CONSTRUCTION)**

**ENGINEER**  
TRENT T. SMAR, P.E.  
VA PROFESSIONAL ENGINEER LIC. #48978

**SHEET TITLE**  
**SITE PLAN**

**SHEET NUMBER**  
**Z-1**

EXISTING 10'± ACCESS ROAD COMPOSED OF DRY  
CONCRETE AND ASPHALT. IT SHALL BE REPAVED AS NEEDED AFTER ALL  
CONSTRUCTION ACTIVITY IS COMPLETE.  
(APPROX. 8,100 LT)

PROPOSED 40'± ACCESS  
& UTILITY EASEMENT

PARCEL ID # 07240004200  
OWNER: LARRY WEBB  
LAND DESCRIPTION: AGRICULTURAL  
D.B. 1108, PG. 128

120K TOWER SETBACK PER FRANKLIN  
COUNTY ORDINANCE  
(35K,07)

PARCEL ID # 07300003300  
OWNER: FRANKS & LAQUITA AARON  
LAND DESCRIPTION: SINGLE FAMILY  
D.B. 908, PG. 2289

PROPOSED 10' ONE-WAY ACCESS  
GRAVEL ROAD W/ TURNAROUND.  
SEE SHEET S-1 FOR DETAILS  
(APPROX. 510±)

PROPOSED  
LIMITS OF DISTURBANCE  
(25,000 SQ.FT.)

EXISTING HEAVY & MATURE VEGETATION  
TO BE TRIMMED AS NECESSARY ALONG  
PROPOSED ACCESS DRIVE AND  
PROPOSED COMPOUND.

PROPOSED 70'x70' FENCED COMPOUND  
(4,900 SQ. FT.)  
PROPOSED 100'x100' LEASED AREA  
(10,000 SQ. FT.)

PROPOSED 200'  
SELF-SUPPORT TOWER

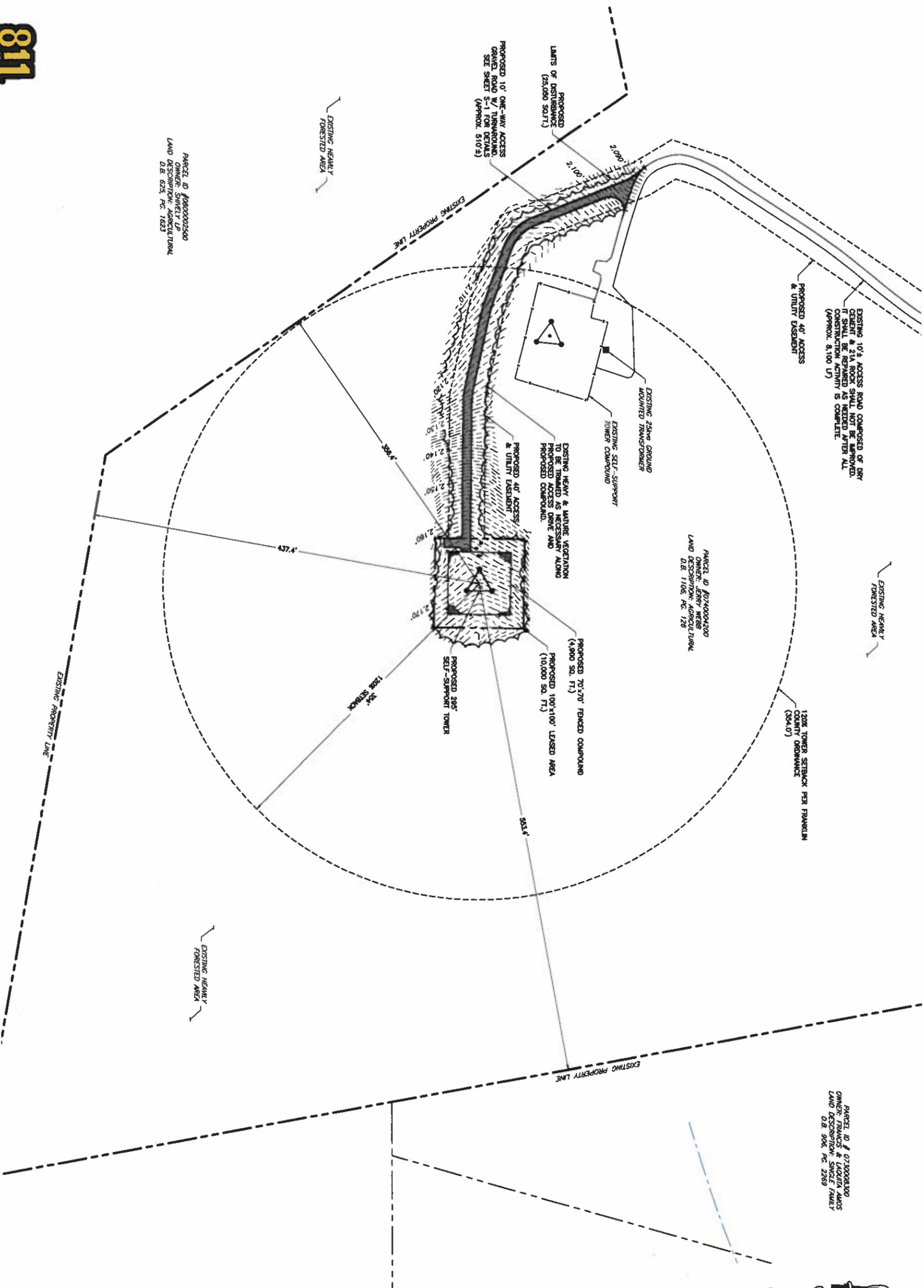
120K SETBACK

PROPOSED 40'± ACCESS/  
& UTILITY EASEMENT

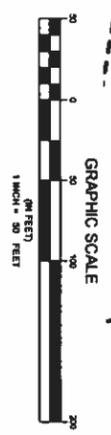
PARCEL ID # 08000023400  
OWNER: SHREVEY LP  
LAND DESCRIPTION: AGRICULTURAL  
D.B. 823, PG. 1923

EXISTING HEAVY  
FORESTED AREA

EXISTING HEAVY  
FORESTED AREA



1 SITE PLAN  
SCALE 1" = 300'

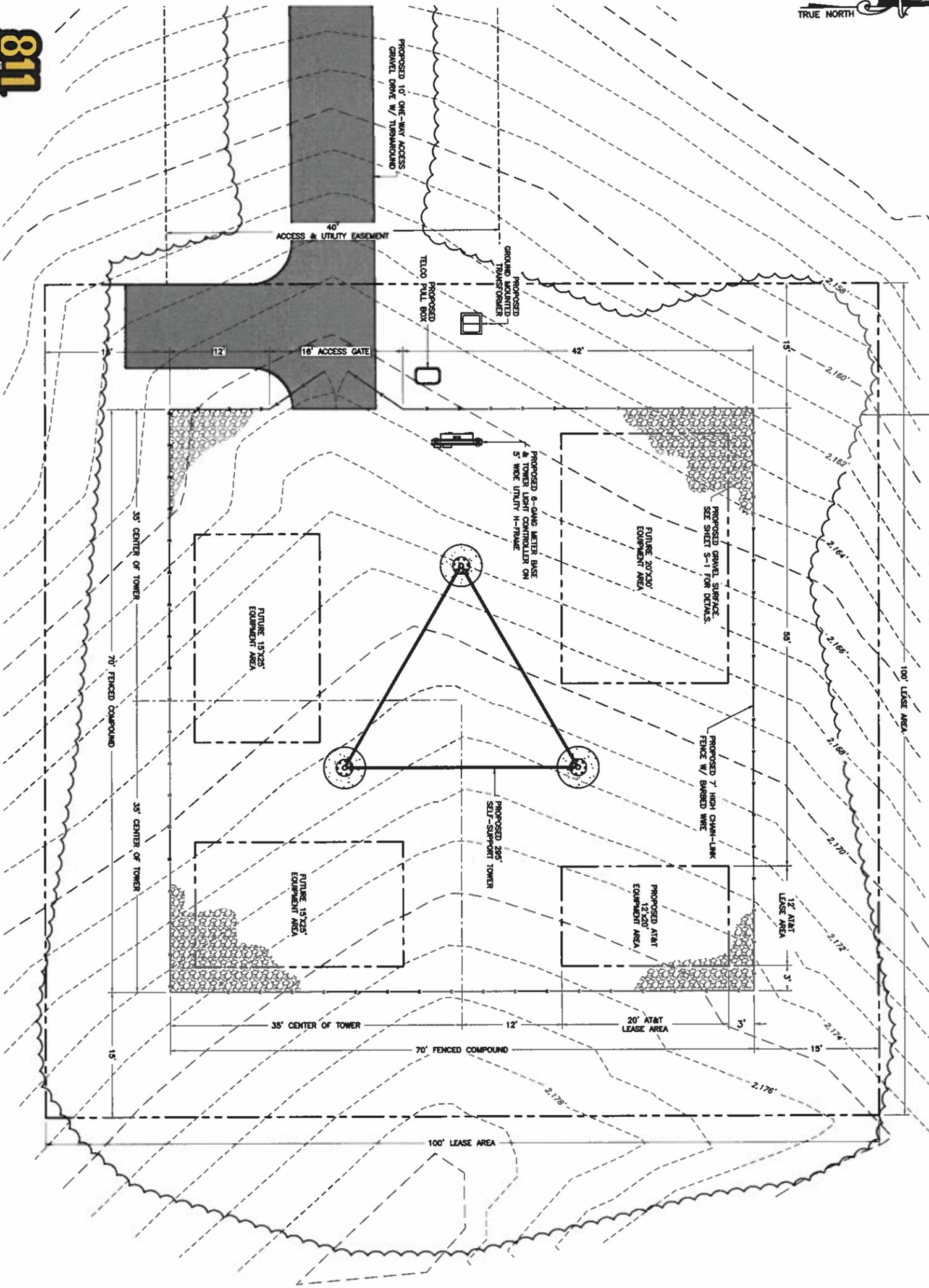


SHEET NUMBER <b>Z-2</b>	SHEET TITLE <b>SITE PLAN</b>	ENGINEER TRENT T. SWARR P.E. VA PROFESSIONAL ENGINEER LIC. #49978	PROFESSIONAL STAMP <b>PRELIMINARY (NOT FOR CONSTRUCTION)</b>	DESIGN RECORD <table border="1"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION</th> <th>BY</th> </tr> </thead> <tbody> <tr> <td>C</td> <td>1/28/18</td> <td>REVISED CD</td> <td>OP</td> </tr> <tr> <td>B</td> <td>1/27/18</td> <td>REVISED CD</td> <td>OP</td> </tr> <tr> <td>A</td> <td>1/26/18</td> <td>PRELIMINARY CD</td> <td>OP</td> </tr> </tbody> </table>	REV	DATE	DESCRIPTION	BY	C	1/28/18	REVISED CD	OP	B	1/27/18	REVISED CD	OP	A	1/26/18	PRELIMINARY CD	OP	SITE INFORMATION APEX SITE NAME: FERRUM II APEX SITE ID: VAFLEFM01 NB+C PROJ. # 100103 ISOLANE ROAD FERRUM, VA 24088 FRANKLIN COUNTY	APPLICANT  548 EAST RIVERSIDE DR. STE. D NORTH TAZEWELL, VA 24630 (276) 963-1818	ENGINEER <b>NB+C</b> TOTALLY COMMITTED NB+C ENGINEERING SERVICES, L.L.C. 445 WESTBROOK DRIVE, SUITE 100 SOUTH LEECH, VA 22606
REV	DATE	DESCRIPTION	BY																				
C	1/28/18	REVISED CD	OP																				
B	1/27/18	REVISED CD	OP																				
A	1/26/18	PRELIMINARY CD	OP																				





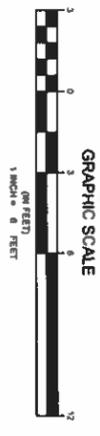
CONTRACTOR TO TRIM EXISTING HEAVY & MATURE VEGETATION ALONG PROPOSED 40' ACCESS & UTILITY EASEMENT, LEASED AREA & POWER CONDUIT FOR NEW DRIVEWAY, FENCED COMPOUND AND UNDERGROUND UTILITY SERVICE INSTALLATION.



**NOTE:**  
APEX TOWERS REQUESTS THAT A LANDSCAPING PLAN BE WAIVED AS EXISTING HEAVY, MATURE & NATIVE VEGETATION SURROUNDS THE PROPOSED COMPOUND AND LEASE AREA.



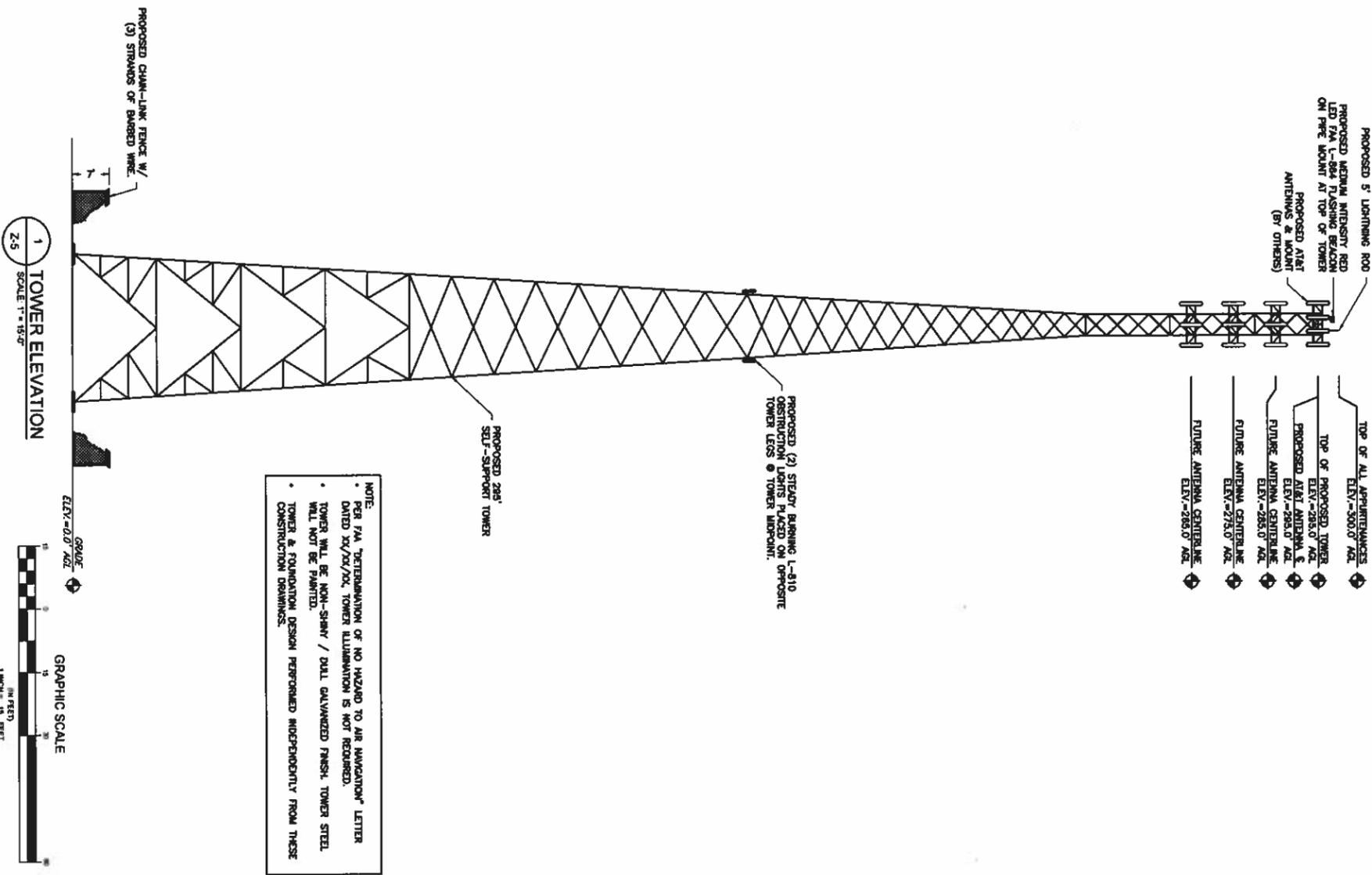
1 COMPOUND PLAN  
SCALE: 1" = 6'-0"



SHEET NUMBER	SHEET TITLE	ENGINEER	PROFESSIONAL STAMP	DESIGN RECORD	SITE INFORMATION	APPLICANT	ENGINEER																
Z-4	COMPOUND PLAN	TRENT T. SWARR, P.E. VA PROFESSIONAL ENGINEER LIC #48978	<p style="color: red; text-align: center;"><b>PRELIMINARY</b> (NOT FOR CONSTRUCTION)</p>	<table border="1"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION</th> <th>BY</th> </tr> </thead> <tbody> <tr> <td>C</td> <td>1/28/18</td> <td>REVISED CDS</td> <td>OP</td> </tr> <tr> <td>B</td> <td>1/22/18</td> <td>REVISED CDS</td> <td>OP</td> </tr> <tr> <td>A</td> <td>1/20/18</td> <td>PRELIMINARY CDS</td> <td>OP</td> </tr> </tbody> </table>	REV	DATE	DESCRIPTION	BY	C	1/28/18	REVISED CDS	OP	B	1/22/18	REVISED CDS	OP	A	1/20/18	PRELIMINARY CDS	OP	<p>APEX SITE NAME: FERRUM II APEX SITE ID: VAFLEFM01</p> <p>NB+C PROJ # 100103 ISOLANE ROAD FERRUM, VA 24088 FRANKLIN COUNTY</p>	<p>548 EAST RIVERSIDE DR. STE. D NORTH TAZEWELL, VA 24630 (276) 963-1818</p>	<p><b>TOTALLY COMMITTED</b></p> <p>NB+C ENGINEERING SERVICES, LLC. 400 WESTBROOK DR. SUITE 600 CLYDE, VA 24630</p>
REV	DATE	DESCRIPTION	BY																				
C	1/28/18	REVISED CDS	OP																				
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A	1/20/18	PRELIMINARY CDS	OP																				

**GENERAL NOTES**

1. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, LAWS AND REGULATIONS OF ALL MUNICIPALITIES, UTILITIES COMPANIES OR OTHER PUBLIC AUTHORITIES.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS THAT MAY BE REQUIRED BY ANY FEDERAL, STATE, COUNTY OR MUNICIPAL AUTHORITIES.
3. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER IN WRITING OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF BIDS OR PERFORMANCE OF WORK. MINOR OMISSIONS OR ERRORS IN THE BID DOCUMENTS SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR THE OVERALL INTENT OF THESE DRAWINGS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING SITE IMPROVEMENTS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED AS A RESULT OF CONSTRUCTION OF THIS FACILITY.
5. THE SCOPE OF WORK FOR THIS PROJECT SHALL INCLUDE PROVIDING ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED TO COMPLETE THIS PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE MANUFACTURER'S RECOMMENDATIONS.
6. THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING A BID TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
7. CONTRACTOR SHALL VERIFY ANTENNA ELEVATION AND AZIMUTH WITH RF ENGINEERING PRIOR TO INSTALLATION.
8. TRANSMITTER EQUIPMENT AND ANTENNAS ARE DESIGNED TO MEET AWS/E/DTN 22-9 REQUIREMENTS.
9. ALL STRUCTURAL ELEMENTS SHALL BE HOT DIPPED GALVANIZED STEEL.
10. CONTRACTOR SHALL HAVE A UTILITY "ONE CALL" TO LOCATE ALL UTILITIES PRIOR TO EXCAVATING.
11. IF ANY UNDERGROUND UTILITIES OR STRUCTURES EXIST BENEATH THE PROPOSED FACILITY, THE CONTRACTOR SHALL NOTIFY THE APPLICANT & THE OWNER'S REPRESENTATIVE.
12. OCCUPANCY IS LIMITED TO PERIODIC MAINTENANCE AND INSPECTION BY TECHNICIANS APPROXIMATELY 2 TIMES PER MONTH.
13. PRIOR TO THE INSTALLATION OF THE PROPOSED EQUIPMENT OR MODIFICATION OF THE EXISTING STRUCTURE, A STRUCTURAL ANALYSIS SHALL BE PERFORMED BY THE OWNER'S AGENT TO CERTIFY THAT THE EXISTING/PROPOSED COMMUNICATION STRUCTURE AND COMPONENTS ARE STRUCTURALLY ADEQUATE TO SUPPORT ALL EXISTING AND PROPOSED ANTENNAS, COAXIAL CABLES AND OTHER APPLIANCE.
14. PROPERTY LINE INFORMATION WAS PREPARED USING DEETS, TAX MAPS, AND PLANS OF RECORD AND SHOULD NOT BE CONSIDERED AS AN ACCURATE BOUNDARY SURVEY.
15. THIS PLAN IS SUBJECT TO ALL EASEMENTS AND RESTRICTIONS OF RECORD.
16. NO SMOKE, NOISE, SHAKE, DUST, OR ODOR WILL RESULT FROM THIS FACILITY.
17. THE FACILITY IS UNMANNED AND NOT INTENDED FOR HUMAN HABITATION (NO HANDICAP ACCESS REQUIRED).
18. THE FACILITY IS UNMANNED AND DOES NOT REQUIRE PORTABLE WATER OR SANITARY SERVICE.
19. POWER TO THE FACILITY WILL BE MONITORED BY A SEPARATE METER.



**NOTE:**

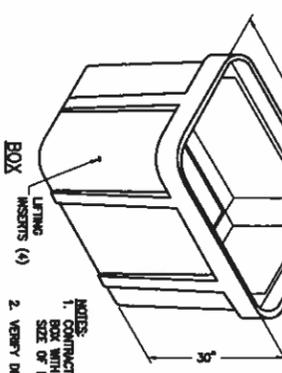
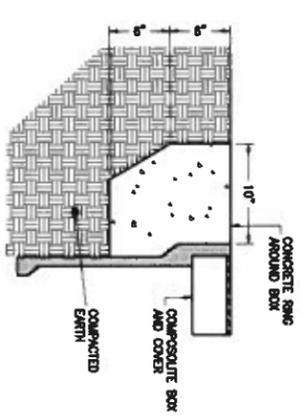
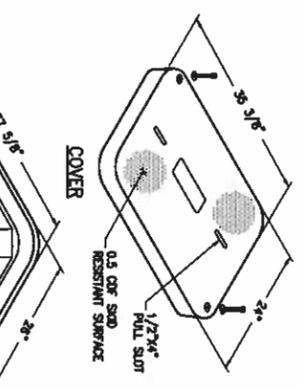
- PER FAA "DETERMINATION OF NO HAZARD TO AIR NAVIGATION" LETTER DATED XX/XX/XX, TOWER ILLUMINATION IS NOT REQUIRED.
- TOWER WILL BE NON-SHAW / DUAL GALVANIZED FINISH. TOWER STEEL WILL NOT BE PAINTED.
- TOWER & FOUNDATION DESIGN PERFORMED INDEPENDENTLY FROM THESE CONSTRUCTION DRAWINGS.



SHEET NUMBER	SHEET TITLE	ENGINEER	PROFESSIONAL STAMP	DESIGN RECORD	SITE INFORMATION	APPLICANT	ENGINEER																
Z-5	TOWER ELEVATION	TRENT T. SMARR, P.E. VA PROFESSIONAL ENGINEER LIC. #48978	<p style="color: red; text-align: center; font-weight: bold;">PRELIMINARY (NOT FOR CONSTRUCTION)</p>	<table border="1"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION</th> <th>BY</th> </tr> </thead> <tbody> <tr> <td>C</td> <td>1/27/18</td> <td>REVISED CD</td> <td>OP</td> </tr> <tr> <td>B</td> <td>1/27/18</td> <td>REVISED CD</td> <td>OP</td> </tr> <tr> <td>A</td> <td>1/27/18</td> <td>PRELIMINARY CD</td> <td>OP</td> </tr> </tbody> </table>	REV	DATE	DESCRIPTION	BY	C	1/27/18	REVISED CD	OP	B	1/27/18	REVISED CD	OP	A	1/27/18	PRELIMINARY CD	OP	<p>REVISIONS</p> <p>APEX SITE NAME: FERRUM II APEX SITE ID: VAFILM01</p> <p>NB+C PROJ. # 100103 ISOLANE ROAD FERRUM, VA 24088 FRANKLIN COUNTY</p>	<p>Apex Towers</p> <p>548 EAST RIVERSIDE DR. STE. D NORTH TAZEWELL, VA 24630 (276) 963-1818</p>	<p>NB+C TOTALLY COMMITTED</p> <p>NB+C ENGINEERING SERVICES, LLC. 448 WESTPORT DRIVE, SUITE 100 OLNEY, ALVA, VA 22600</p>
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**STRUCTURAL NOTES**

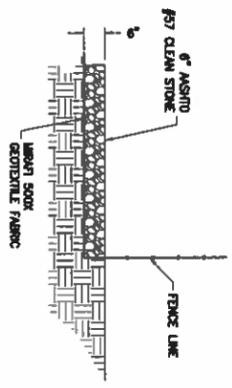
- DESIGN REQUIREMENTS PER INTERNATIONAL BUILDING CODE 2012 AND THE AISC/AIA-222-0 STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES.
- REINFORCEMENT SHOWN ON THESE DRAWINGS WAS OBTAINED BY FIELD MEASUREMENT AND FROM THE EXISTING STRUCTURAL DRAWINGS. THE GENERAL CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIALS OR PROCEEDING WITH CONSTRUCTION.
- STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE AISC SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS - ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN INCLUDING THE COMMENTARY AND THE AISC CODE FOR STANDARD PRACTICE.
- STRUCTURAL STEEL PLATES AND SHAPES SHALL CONFORM TO ASTM A36. ALL STRUCTURAL STEEL PARTS SHALL BE ASTM A36 UNLESS OTHERWISE NOTED. ALL STRUCTURAL STEEL SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
- WELDING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF AMERICAN WELDING SOCIETY (AWS) STRUCTURAL WELDING CODE - STEEL WELD ELECTRODES SHALL BE E70XX.
- ALL CABLE, CABLE CONNECTORS AND TRANSMITTER EQUIPMENT SHALL BE AS SPECIFIED BY THE OWNER AND IS NOT INCLUDED IN THESE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL FURNISH ALL CONNECTION HARDWARE REQUIRED TO SECURE THE CABLES. CONNECTION HARDWARE SHALL BE STAINLESS STEEL.
- ALL TOWERED STRUCTURAL FASTENERS AND TOWERED ROD FOR ANTENNA SUPPORT ASSEMBLIES SHALL CONFORM TO ASTM A307 OR ASTM A36. ALL STRUCTURAL FASTENERS FOR STRUCTURAL STEEL FRAMING SHALL CONFORM TO ASTM A325. FASTENERS SHALL BE 5/8" DIA. DIAMETER BEARING TYPE CONNECTIONS WITH THREADS INCLUDED IN THE WEAR PLATE. ALL EXPOSED FASTENERS, NUTS AND WASHERS SHALL BE STAINLESS STEEL. ALL EXPOSED FASTENERS, NUTS AND WASHERS SHALL BE HULL NUT BOLTS UNLESS OTHERWISE NOTED.
- NORTH ARROW SHOWN ON PLANS REFERS TO TRUE NORTH. CONTRACTOR SHALL VERIFY TRUE NORTH AND NORTH CONSTRUCTION UNLESS OF ANY DISCREPANCY BEFORE STARTING CONSTRUCTION.



**1 HANDHOLE DETAIL**  
S-1 NTS

- NOTES:**
- CONTRACTOR TO VERIFY HANDBOLE ENCASEMENT TO BE 1,000 P.S.I. MINIMUM.
  - CONCRETE ENCASEMENT RING DIMENSION, D, TO BE EQUAL TO DESIGN HANDBOLE DETAIL.
  - PERMITS AND SUPPORT TO BE AS SHOWN ON THE ENGINEERING PLANS.
  - QUANTITY DOES NOT RECOMMEND THE USE OF CONCRETE OR POLYMER CONCRETE BOXES IN HIGH VOLUME TRAFFIC APPLICATIONS.

**2 GRAVEL COMPOUND DETAIL**  
S-1 NTS



**CONCRETE GENERAL NOTES**

- ALL CONCRETE WORK SHALL CONFORM TO ACI 318, "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" AND TO THE PROJECT SPECIFICATIONS.
  - ALL CONCRETE IS TO BE NORMAL DENSITY CONCRETE WITH A MAXIMUM SLUMP OF 4 INCHES. MAXIMUM AGGREGATE SIZE 3/4" HIGH. NO ADDITIONAL WATER SHALL BE ADDED TO THE CONCRETE AT THE JOB SITE.
  - PROVIDE AIR ENTRAINMENT OF 4 TO 8 PERCENT IN ALL EXPOSED CONCRETE WORK WITH AIR-ENTRAINING AGENT COMPATIBLE WITH ASTM C 268. CONCRETE SHALL BE PLACED IN 20 MINUTE RISE-TIME FROM-TURNED FLOORS. DO NOT EXCEED AIR-ENTRAINMENT CONTENT OF 3 PERCENT.
  - NO HOLES OR SLICES SHALL BE MADE THROUGH CONCRETE WORK OTHER THAN THOSE INDICATED ON THE STRUCTURAL DRAWINGS WITHOUT THE APPROVAL OF THE STRUCTURAL ENGINEER.
  - ALL FORMWORK OFFSET TOLERANCES (PER ACI 117) TO BE CLASS A.
  - FLOOR SLAB TOLERANCES TO ASTM E1155; SPECIFIED OVERALL MINIMUM VALUE OF FLATNESS F=25 WITH LOCAL MINIMUM F=17, AND MINIMUM VALUE OF LEVELNESS L=20 WITH LOCAL MINIMUM L=1 AND F WITHIN 72 HOURS OF SLAB CONSTRUCTION.
  - CURETS ON SLAB (IF APPLICABLE). ALLOWABLE CAPACITY OF CONCRETE USED IN DESIGN MAX. 5000 PSI.
- EXCAVATION NOTES:**
- EXCAVATION AND GENERAL NOTES:
    - DESIGN CONFORMS TO INTERNATIONAL BUILDING CODE 2012.
    - AMERICAN CONCRETE INSTITUTE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE," ACI 318-09.
  - REINFORCEMENT:
    - FOUNDATIONS:
      - FOUNDATIONS HAVE BEEN DESIGNED TO BEAR ON (UNDISTURBED RESIDUAL SOILS/COMPACTED STRUCTURAL FILL). CAPABLE OF SAFELY SUPPORTING A NET ALLOWABLE BEARING PRESSURE OF 2000 PSF. IF FOUNDATION CONDITIONS PROVE UNACCEPTABLE AT ELEVATIONS SHOWN, EXCAVATION SHALL BE COVERED DEEPER AND SHALL BE BACKFILLED WITH LEAN CONCRETE TO FIRM FOUNDATION BELOW THE REVISION OF FOUNDATIONS WILL BE REQUIRED AT THE DISCRETION OF THE ENGINEER.
      - DESIGN, FURNISH AND INSTALL ALL TEMPORARY SHEETING, SHORING AND DRAINAGE NECESSARY TO MAINTAIN THE EXCAVATION AND PROTECT SURROUNDING STRUCTURES AND UTILITIES.
      - THOROUGHLY COMPACT ALL BOTTOM OF FOOTINGS PRIOR TO PLACING ANY CONCRETE.
    - CONCRETE:
      - CONCRETE CONSTRUCTION SHALL CONFORM TO "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS," (ACI 301-89).
      - FORMWORK SHALL CONFORM TO ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS."
    - REINFORCEMENT:
      - REINFORCING STEEL ASTM A193, GRADE 60, WELDED WIRE ASTM A193 (FLAT SHEET), LAPS 40 BAR DIAMETERS UNLESS NOTED. BARS SHALL BE SECURELY TIED IN ALL DIRECTIONS. MINIMUM LAP LENGTHS SHALL BE 12 BAR DIAMETERS.
      - CONCRETE COVER FOR REINFORCING BARS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:
 

FOOTINGS & SLABS CAST AGAINST GROUND OR WEATHER AT	5"
CONCRETE TO BE IN CONTACT WITH GROUND OR WEATHER AT	3"
BARS GREATER THAN #5	1-1/2"
CONCRETE NOT TO BE EXPOSED TO GROUND OR WEATHER	1-1/2"
BEAMS, GIRDERS & COLUMNS	1-1/2"
SLABS & WALLS	3/4"
  - CAST-IN-PLACE CONCRETE:
    - MINIMUM 28 DAY CUMBER STRENGTH AND MAXIMUM SLUMP, PRIOR TO ADDITION OF SUPER PLASTICIZERS, AS FOLLOWS:
 

CLASS I FOOTINGS	4000	3"	ETC. (PSI) SLUMP
CLASS II FOOTINGS	4000	3"	
CLASS III INTERIOR ELEVATED	4000	4"	
SLABS & WALLS	4000	4"	
CLASS V OTHER WORK	4000	4"	
CLASS VI LEAN CONCRETE FOR OVER EXCAVATION OF FOUNDATIONS	2000	N/A	
    - MAX DESIGN TO BE IN ACCORDANCE WITH ACI 318, CHAPTER 5, NO CALCIUM CHLORIDE OR ADULTERATE CONTAINING CHLORIDES SHALL BE USED IN ANY CONCRETE.
    - COARSE AGGREGATE FOR NORMAL WEIGHT CONCRETE SHALL CONFORM TO ASTM C33 SIZE #57. COARSE AGGREGATE FOR LIGHT WEIGHT CONCRETE SHALL CONFORM TO ASTM C330 GRADED 3/4" TO 1 1/4".
    - COLD WEATHER PLACEMENT SHALL COMPLY WITH ACI 308.1
    - HOT WEATHER PLACEMENT SHALL COMPLY WITH ACI 308 R.
    - CHATTER ALL EXPOSED EDGES 3/4".
    - THE MAXIMUM TEMPERATURE OF ALL CONCRETE AT DELIVERY TO THE SITE SHALL BE 95°. TOTAL DELIVERY TIME SHALL BE LESS THAN 75 MINUTES.

ENGINEER	APPLICANT	SITE INFORMATION	DESIGN RECORD	PROFESSIONAL STAMP	ENGINEER	SHEET NUMBER																
<p><b>TOTALLY COMMITTED.</b> NB+C ENGINEERING SERVICES, LLC. 4405 UNIVERSITY DRIVE, SUITE 200 GLEN ALLEN, VA 22060</p>	<p>548 EAST RIVERSIDE DR. STE D NORTH TAZEWELL, VA 24630 (276) 963-1818</p>	<p>APEX SITE NAME: FERRUM II APEX SITE ID: VAFLEFM01 NB+C PROJ. # 100103 ISOLANE ROAD FERRUM, VA 24088 FRANKLIN COUNTY</p>	<p>REVISIONS</p> <table border="1"> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION</th> <th>BY</th> </tr> <tr> <td>C</td> <td>1/22/18</td> <td>REVISED CD</td> <td>OP</td> </tr> <tr> <td>B</td> <td>1/22/18</td> <td>REVISED CD</td> <td>OP</td> </tr> <tr> <td>A</td> <td>1/20/18</td> <td>PRELIMINARY CD</td> <td>OP</td> </tr> </table>	REV	DATE	DESCRIPTION	BY	C	1/22/18	REVISED CD	OP	B	1/22/18	REVISED CD	OP	A	1/20/18	PRELIMINARY CD	OP	<p style="color: red; text-align: center; font-weight: bold;">PRELIMINARY (NOT FOR CONSTRUCTION)</p>	<p>TRENT T SMARR, P.E. VA PROFESSIONAL ENGINEER LIC #48978</p>	<p style="font-size: 2em; font-weight: bold;">S-1</p>
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<p><b>CONSTRUCTION DETAILS &amp; NOTES</b></p>																						



**NEBC**  
TOTALLY COMMITTED

NEBC ENGINEERING SERVICES, LLC.  
400 WASHINGTON DRIVE, SUITE 100  
DUN ALLEN, VA 22822

**Apex Towers**

548 EAST RIVERSIDE DR. STE. D  
NORTH TAZEWELL, VA 24630  
(276) 963-1818

APPEX SITE NAME:  
FERRUM II  
APEX SITE ID: VAFLEFM01

NB+C PROJ. # 100103  
ISOLANE ROAD  
FERRUM, VA 24088  
FRANKLIN COUNTY

REVISIONS			
REV	DATE	DESCRIPTION	BY
C	1/28/18	REVISED CDA	OP
B	1/27/18	REVISED CDA	OP
A	1/26/18	PRELIMINARY CDA	OP

PROFESSIONAL STAMP

**PRELIMINARY**  
*(NOT FOR CONSTRUCTION)*

ENGINEER

TRENT I SWARR, P.E.  
VA PROFESSIONAL ENGINEER LIC #48978

SHEET TITLE

**SIGNAGE DETAILS**

SHEET NUMBER

**S-3**

# Apex Towers, LLC

**SITE NAME: FERRUM II**  
**APEX TOWERS, LLC NO. - VAFLEFM01**  
**FCC#: TBD**

**FOR LEASE INFORMATION ON IN CASE OF AN EMERGENCY: 276-864-7416**

QTY: (1) ON RIGHT SIDE OF MAIN COMPOUND GATE, (1) AT ACCESS ROAD GATE, F EXIST  
CONTRACTOR SHALL VERIFY FCC NUMBER PRIOR TO ORDERING SIGNAGE

**NOTICE**

**NO TRESPASSING IN THIS PROPERTY UNDER PENALTY OF LAW**

QTY: (4) EACH SIDE OF COMPOUND

**2 NO TRESPASSING - SIGN**  
10' WIDE X 7' HIGH

**NOTICE**

**COMPETENT CLIMBERS ONLY BEYOND THIS POINT**

Climbers of this antenna/tower structure must comply 100% with all governing State and Federal regulations. Climbers must also comply with all OSHA regulations. This includes, but not limited to, being lead-off 100% at all times. Failure to comply could result in serious injury or death.

QTY: (1) MOUNT SIGN ON CLIMBER FACE AT EYE LEVEL

**3 COMPETENT CLIMBER - SIGN**  
10' WIDE X 7' HIGH

**CAUTION**

**CAUTION**

**RADIO FREQUENCY ENVIRONMENT AREA**

AUTORIZED PERSONNEL ONLY BEYOND THIS POINT. RADIO FREQUENCY EMISSIONS AT THIS SITE MAY EXCEED THE FEDERAL OCCUPATIONAL CONTROLLED EXPOSURE LIMITS. Personnel possessing impaired hearing should wear hearing aids and use communication devices to ensure safety. Refer to the Federal Communications Commission website for additional information.

QTY: (1) TO BE MOUNTED AT EYE LEVEL ON TOWER NEAR SAFETY CLIMB

**4 CAUTION RF - SIGN**  
12" WIDE X 18" HIGH

**NOTICE**

Radio frequency fields beyond this point may exceed the FCC general public exposure limit. OBEY ALL POSTED SIGNS AND SITE GUIDELINES FOR WORKING IN RADIO FREQUENCY ENVIRONMENTS.

QTY: (1) TO BE MOUNTED AT COMPOUND ACCESS GATE

**5 NOTICE RF - SIGN**  
12" WIDE X 18" HIGH

- SIGNAGE NOTES**
1. SIGNS SHALL BE FABRICATED FROM CORROSION RESISTANT PRESSED METAL AND PAINTED WITH LONG LASTING UV RESISTANT COATINGS.
  2. SIGNS UNLESS NOTED OTHERWISE SHALL BE MOUNTED TO THE TOWER, GATE AND FENCE USING A MINIMUM OF 8 GAUGE ALUMINUM WIRE. HIG RINGS (AS UTILIZED IN FENCE INSTALLATIONS) OR BRACKETS WHERE NECESSARY. BRACKETS SHALL BE OF SIMILAR METAL AS THE STRUCTURE TO AVOID GALVANIC CORROSION.
  3. CONTRACTOR TO PROVIDE AND INSTALL ALL SIGNAGE.
  4. ALL SIGNS SHALL BE MOUNTED ON INSIDE OF FENCE FABRIC, UNLESS NOTED OTHERWISE.



EXISTING HEAVILY FORESTED AREA

EXISTING 10'± ACCESS ROAD COMPOSED OF DRY GUNITE & 2 1/4" ROCK SHALL NOT BE APPROVED. IT SHALL BE REPAIRED AS NEEDED AFTER ALL CONSTRUCTION ACTIVITY IS COMPLETE. (APPROX. 6,100 LF)

PROPOSED 40' ACCESS & UTILITY EASEMENT

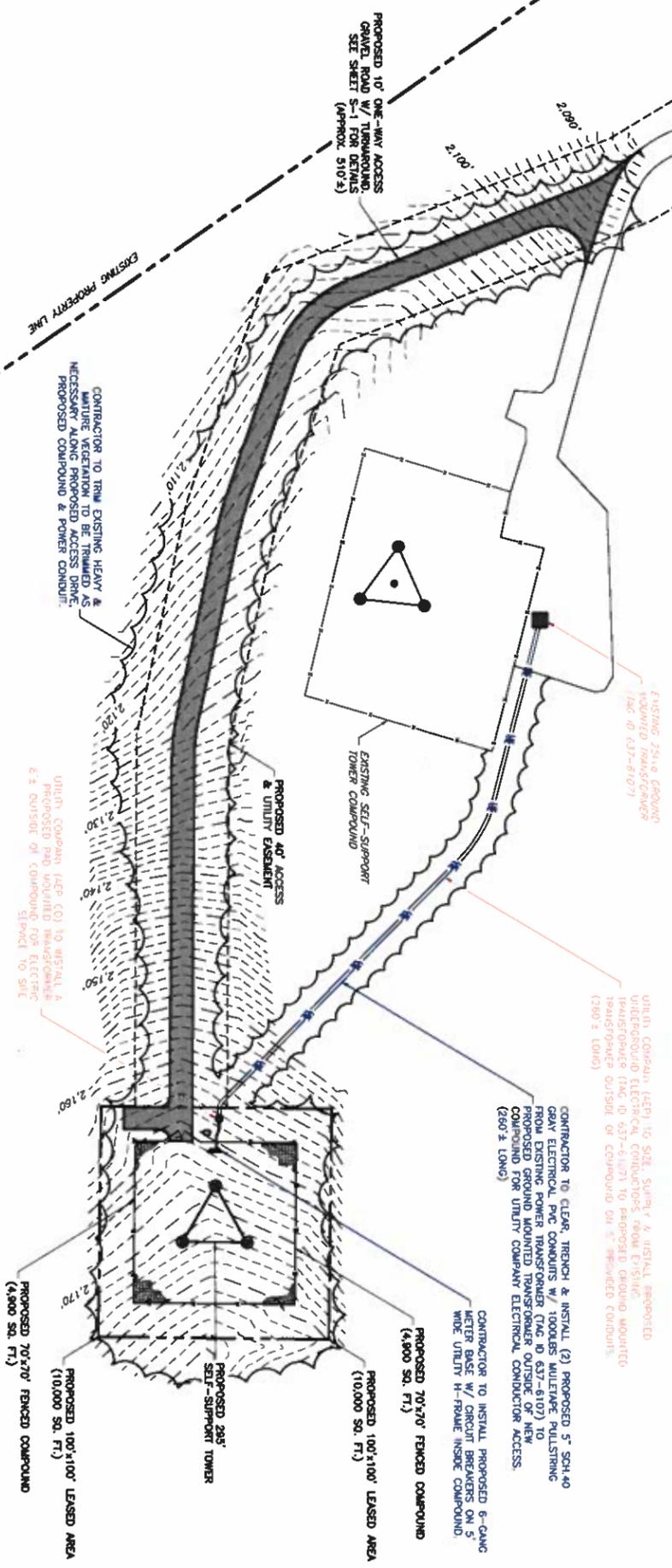
NOTE: UTILITY COMPANY (AEP CO) SHALL MAINTAIN 20' ACCESS AND UTILITY EASEMENT CENTERED ON THE PROPOSED UNDERGROUND ELECTRICAL UNITS. RIGHTS TO BE ACQUIRED BY UTILITY COMPANY AND NOT SHOWN ON THIS SET OF PLANS.

**POWER UTILITY SERVICE CONTACT:**  
 \* AEP CO  
 WME HEATH  
 ENGINEER TECH-CON  
 PHONE: (540) 488-2581  
 EMAIL: WMEHEATH@AEP.COM  
 WORK ORDER # 02-483106

- NOTES:**
1. CONTRACTOR IS RESPONSIBLE TO CONTROL EXACT POWER DEMARCATION POINTS WITH UTILITY COORDINATOR AND/OR UTILITY COMPANY PRIOR TO CONSTRUCTION OF CONDUITS AND ALL UNDERGROUND UTILITY LINES. POWER AND TELEPHONE CONDUIT SHALL BE PROVIDED AND INSTALLED PER UTILITY COMPANY REQUIREMENTS FOR COMPLETE CARRIER INTERNAL WIRING AND ARRANGEMENT, REFER TO DRAWINGS PROVIDED BY PANEL MANUFACTURER.
  2. THE CONTRACTOR SHALL INSTALL SUFFICIENT LENGTHS OF CONDUIT INCLUDING ALL CONDUIT FITTINGS NECESSARY, (UNTS, REDUCING BUSHINGS, ELBOWS, COUPLERS, ETC.)
  3. THE CONTRACTOR SHALL PREPARE ELECTRICAL SPACE EQUIPMENT WITH FAULT CURRENT RATINGS GREATER THAN THE AVAILABLE FAULT CURRENT FROM THE POWER UTILITY.
  4. AT THE END OF THE CONDUIT, CUT COW, AND TIE A 10' FOOT FRINGE FOR TERMINATING.
  5. THE CONTRACTOR SHALL VERIFY THAT THE MAIN BONDING JUMPER AND GROUNDING ELECTRODE CONDUCTOR IS INSTALLED PROPERLY WHEN PANEL SERVICE ENTRANCE EQUIPMENT IS INSTALLED.
  6. THE CONTRACTOR SHALL VERIFY THAT THE ALL ELECTRICAL INSTALLATION CONFORMS TO THE CURRENT NATIONAL CODE.

PARCEL ID #0740004200  
 OWNER: JERRY WEBB  
 LAND DESCRIPTION: AGRICULTURAL  
 D.R. 1108, PG. 128

EXISTING HEAVILY FORESTED AREA



EXISTING HEAVILY FORESTED AREA

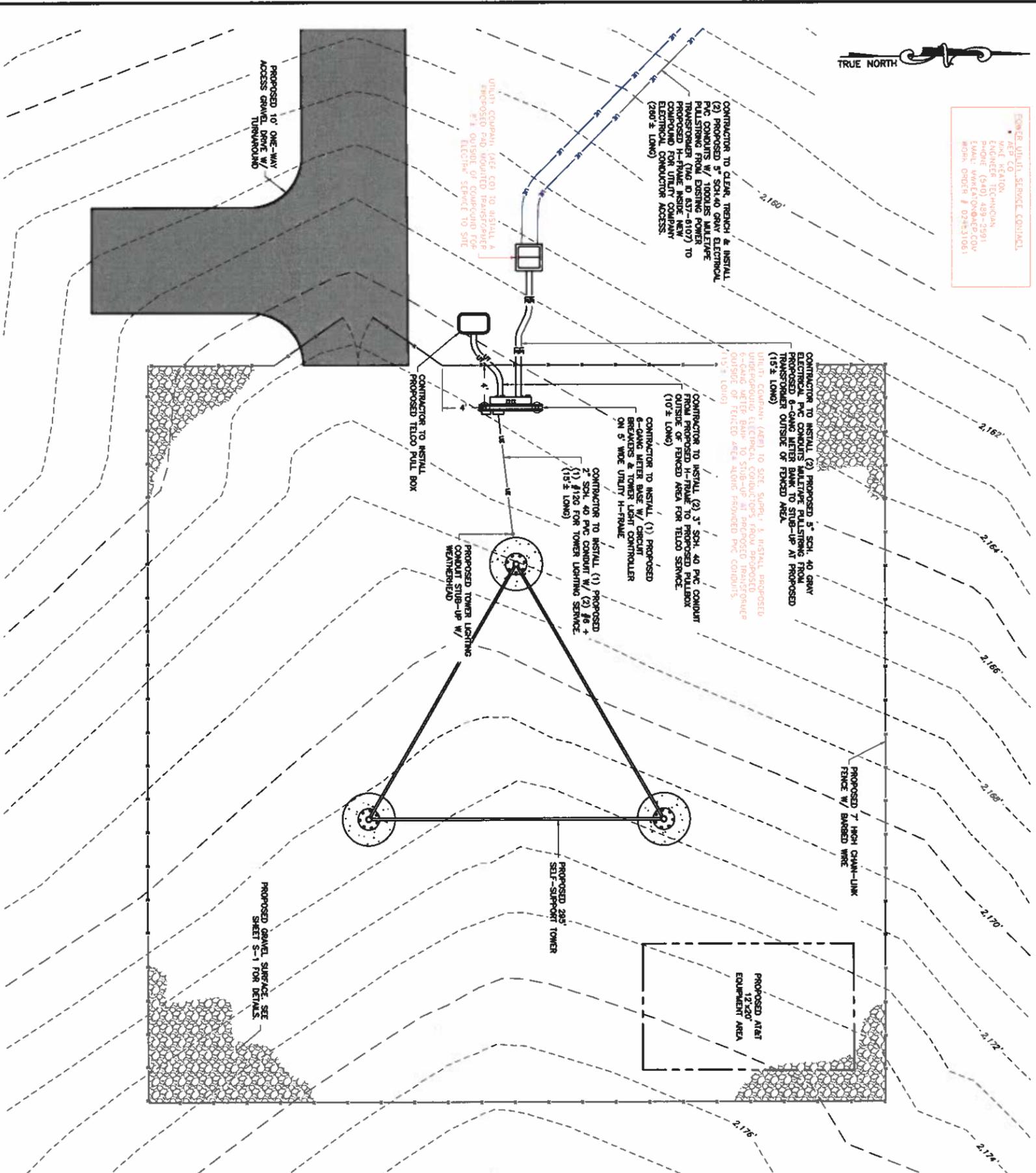


1 OVERALL ELECTRICAL PLAN  
 SCALE: 1" = 30'-0"



SHEET NUMBER	SHEET TITLE	ENGINEER	PROFESSIONAL STAMP	DESIGN RECORD				SITE INFORMATION	APPLICANT	ENGINEER
				REV	DATE	DESCRIPTION	BY			
E-1	OVERALL ELECTRICAL PLAN	TRENT T. SNARR, P.E. VA PROFESSIONAL ENGINEER LIC. #48978	PRELIMINARY (NOT FOR CONSTRUCTION)	C	12/28/18	REVISED CDL	OP			
				B	1/22/19	REVISED CDL	OP			
				A	1/28/18	PRELIMINARY CDL	OP			

ENGINEER: JUDITH STANLEY, CONTACT  
 APEX CO.  
 ENGINEER TECHNICIAN  
 PHONE: (540) 438-2591  
 EMAIL: JUDITH@APEXCO.VA  
 MOBILE: (803) 228-3106



1  
 SCALE: 1" = 50'  
 COMPOUND PLAN



**ELECTRICAL & GROUNDING NOTES**

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE UL APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELLER WIRING AT EXPOSED INDOOR LOCATIONS SHALL BE IN ELECTRICAL METALLIC TUBING OR RIGID NONMETALLIC TUBING (RIGID SCHEDULE 40 PVC OR RIGID SCHEDULE 80 PVC FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) (AS PERMITTED BY CODE).
6. ELECTRICAL AND TELLER WIRING AT CONCEALED INDOOR LOCATIONS SHALL BE RIGID NONMETALLIC TUBING (RIGID SCHEDULE 40 PVC AS PERMITTED BY CODE).
7. ELECTRICAL AND TELLER WIRING OUTSIDE A BUILDING, ABOVE GRADE AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS (RGS) AND W/ARE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
8. BURRED CONDUIT SHALL BE RIGID NONMETALLIC CONDUIT (RIGID SCHEDULE 40 PVC) DIRECT BURRED IN AREAS OF OCCASIONAL LIGHT TRAFFIC. ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY TRAFFIC.
9. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT SHALL BE USED INDOORS AND OUTDOORS IN AREAS WHERE VIBRATION OCCURS AND FLEXIBILITY IS NEEDED.
10. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE THHN, THWN-2, OR THW INSULATION.
11. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEPARTMENTS OR FROM THE UTILITY TO THE PROJECT SITE. THE CONDUIT SHALL BE INSTALLED IN THE MIDDLE OF THE ROAD AND SHALL BE FULLY COORDINATE INSTALLATION WITH UTILITY COMPANY.
12. RUN TELLER CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEPARTMENT (AT UTILITY POLE) AND CELL SITE TELLER CABINET AND RUN CABLE AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL LINE IN REINFORCED TELLER CONDUIT. PROVIDE GREEN/BLUE CONDUIT IDENTIFICATION TAPE AT EACH END.
13. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE MEDIA 38 ENCLOSURE.
14. PVC SUPPLIED BY PROJECT OWNER.
15. GROUNDING SHALL COMPLY WITH NEC ART. 250, APPROXIMATELY. ACCORDANCE WITH APEX TOWERS GROUNDING STANDARDS.
16. GROUND CABLE SHIELDS MANUAL AT BOTH ENDS USING MANUFACTURER'S CABLE GROUNDING KITS SUPPLIED BY APEX TOWERS.
17. USE #8 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR GROUND GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
18. ALL POWER AND GROUND CONNECTIONS TO BE CRIMP-STYLE. COMPRESSOR WIRE LUGS AND WIRE NUTS BY HAGER (OR APPROVED EQUAL) RATED FOR OPERATING AT NO LESS THAN 75°C. (OR CORRECTED EQUIV. RATED) AND SHALL BE TIGHTENED TO MANUFACTURER'S CONTACT WITH GALVANIZED STEEL.
19. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEGS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS BEND AT LEAST 12 RADIUS BENDS. #8 WIRE CAN BE BENT AT 60 DEGREE BENDS. #2 WIRE CAN BE BENT AT 180 DEGREE BENDS. ALL GROUNDING CONDUCTORS SHALL BE IDENTIFIED AS PROJECT OWNER EQUIPMENT OR CABINET TO WATER GROUND BAR OR GROUNDING RING.
20. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
21. APPLY OXIDE INHIBITING COMPOUND TO ALL MECHANICAL GROUND CONNECTIONS.
22. CONTRACTOR SHALL PROVIDE AND INSTALL OWN DIRECTIONAL, ELECTRONIC MARKER SYSTEM (EAS) BULBS OVER EACH GROUND ROD AND BONDING POINT BETWEEN EXISTING TOWER/ MONOPOLE GROUNDING RING AND EQUIPMENT GROUNDING RING.
23. CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMS MAXIMUM RESISTANCE REQUIRED.
24. CONTRACTOR SHALL CONDUIT ANTENNA, CABLE, AND LMA RETURN-LOSS RESULTS FOR PROJECT CLOSE-OUT.
25. THE ELECTRICAL EQUIPMENT INCLUDING PANEL, SWITCH GEAR AND DISCONNECT ARE TO BE LABELED WITH ENGRAVED BANGULTE LABELS.



**Apex Towers**  
 548 EAST RIVERSIDE DR. STE. D  
 NORTH TAZEWELL, VA 24630  
 (276) 963-1818

APEX SITE NAME:  
 FERRUM II  
 APEX SITE ID: VA/FLM01  
 NB+C PROJ. # 100103  
 ISOLANE ROAD  
 FERRUM, VA 24088  
 FERRUM COUNTY

REV	DATE	DESCRIPTION	BY
C	12/29/18	REVISED CDR	OP
B	12/21/18	REVISED CDR	OP
A	12/07/18	PRELIMINARY CDR	OP

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 (NOT FOR CONSTRUCTION)

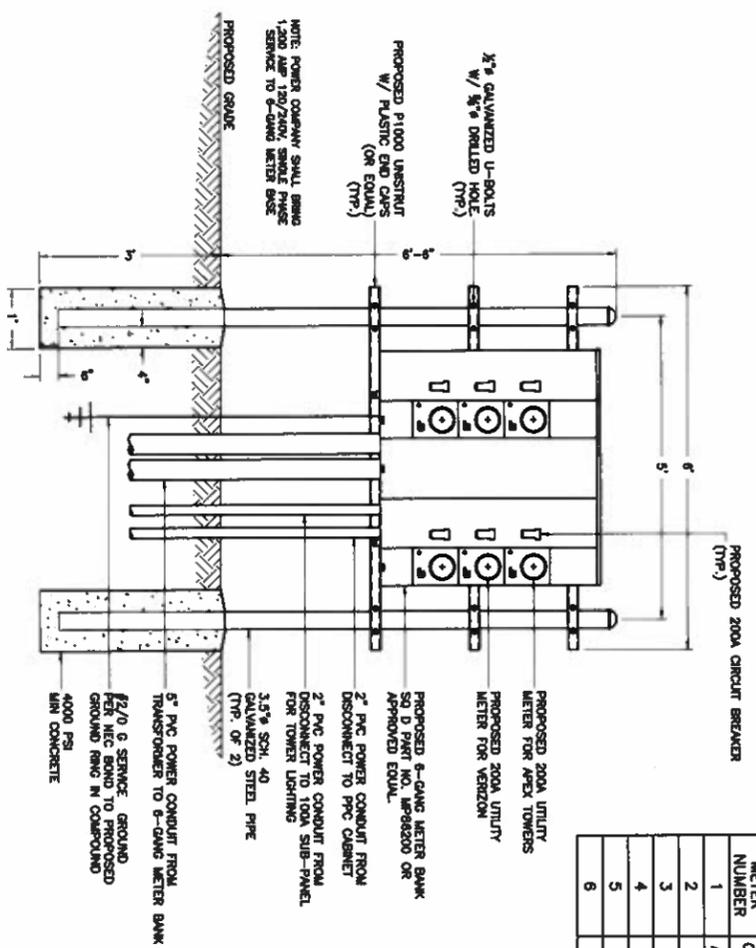
TRENT T SWARR, P.E.  
 VA PROFESSIONAL ENGINEER LIC #48978

**COMPOUND ELECTRICAL PLAN & NOTES**

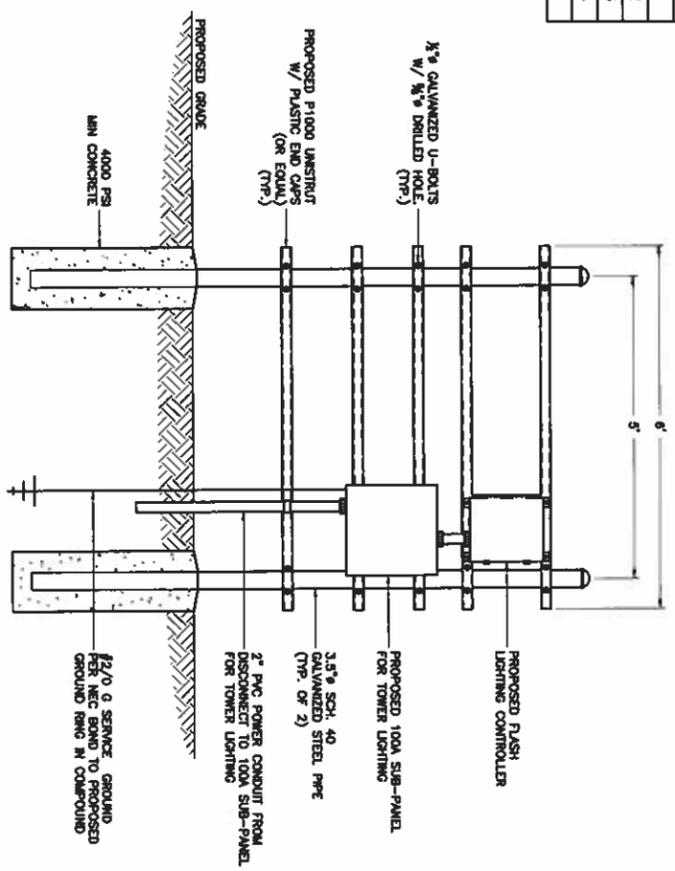
E-2



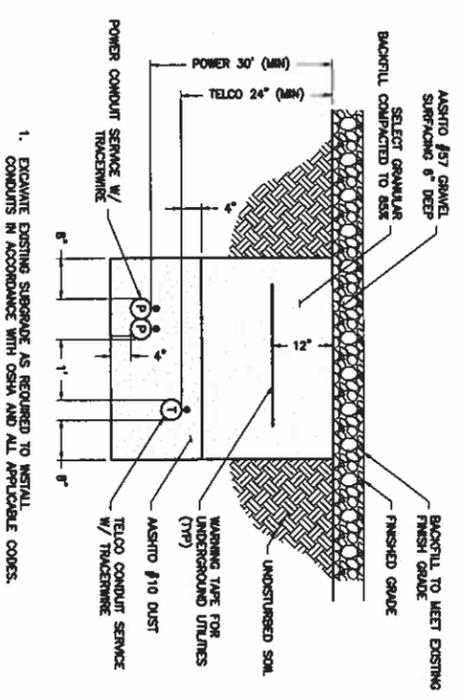
METER ASSIGNMENTS		
METER NUMBER	CARRIER NAME	
1	APEX TOWERS	
2	AT&T	
3	TEENANT #2	
4	TEENANT #3	
5	TEENANT #4	
6		



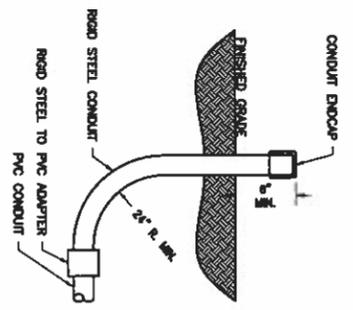
1 COMPOUND UTILITY H-FRAME FRONT VIEW  
E-3 NTS



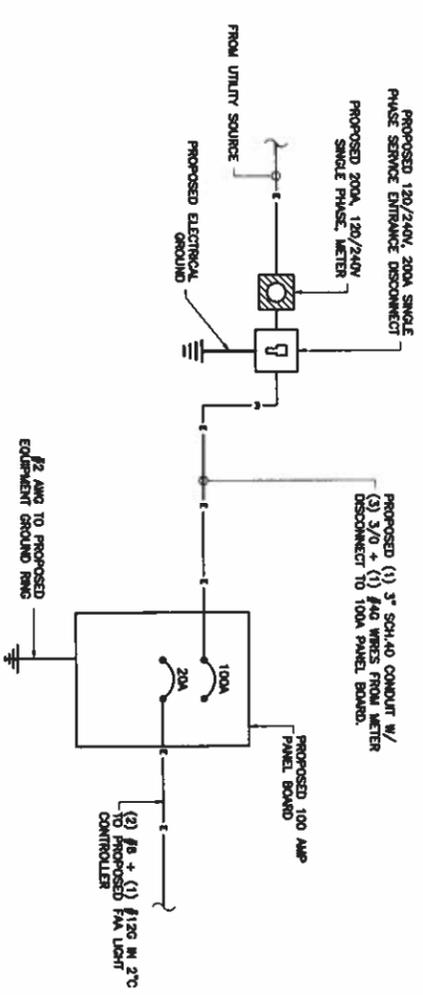
2 COMPOUND UTILITY H-FRAME REAR VIEW  
E-3 NTS



3 TYPICAL TRENCH DETAIL  
E-4 NTS



4 PROPOSED STUB-UP DETAIL  
E-3 NTS



5 FAA LIGHT POWER DIAGRAM  
E-3 NTS

**NE+C**  
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NE+C ENGINEERING SERVICES, L.L.C.  
400 WATERLOO DRIVE, SUITE 100  
DALLAS, TEXAS 75220

**Apex Towers**

548 EAST RIVERSIDE DR. STE. D  
NORTH TAZEWELL, VA 24630  
(276) 963-1818

**SITE INFORMATION**

APEX SITE NAME:  
FERRUM II  
APEX SITE ID: VA/FLFM01

NB+C PROJ. # 100103  
ISOLANE ROAD  
FERRUM, VA 24088  
FRANKLIN COUNTY

**DESIGN RECORD**

REV	DATE	DESCRIPTION	BY
C	1/28/18	REVISED CDA	OP
B	1/27/18	REVISED CDA	OP
A	1/26/18	PRELIMINARY CDA	OP

**PROFESSIONAL STAMP**

**PRELIMINARY**  
(NOT FOR CONSTRUCTION)

**ENGINEER**

TRENT T. SMARR, P.E.  
VA PROFESSIONAL ENGINEER LIC. #48978

**SHEET TITLE**

ELECTRICAL  
DETAILS

**SHEET NUMBER**

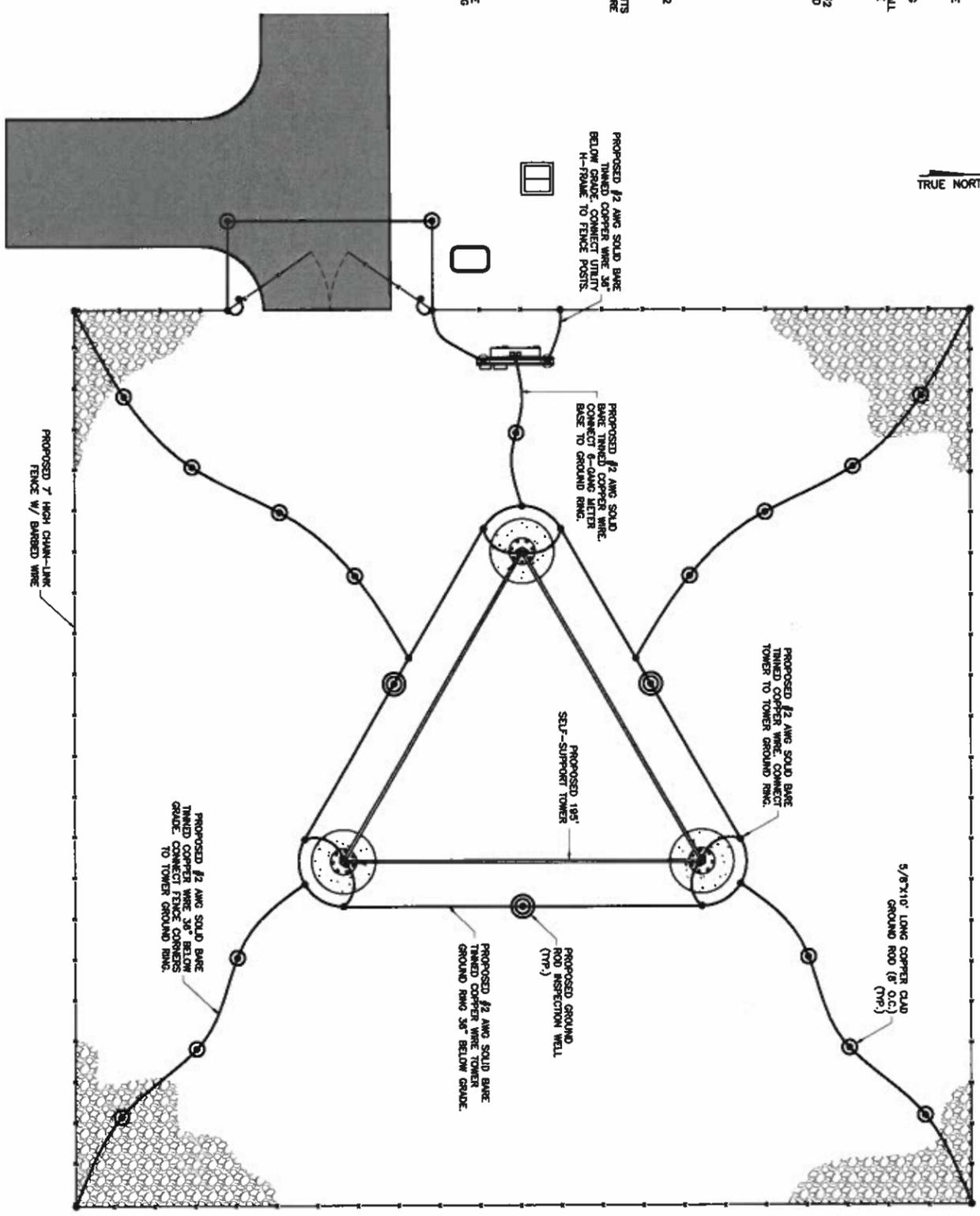
E-3

**GROUNDING NOTES:**

- GROUNDING SHALL COMPLY WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE.
- ALL GROUNDING DEVICES SHALL BE U.L. APPROVED OR LISTED FOR THEIR INTENDED USE.
- ALL WIRES SHALL BE AWG THRU/THRU COPPER UNLESS NOTED OTHERWISE.
- GROUNDING CONNECTIONS TO GROUND RODS, GROUND RING WIRE, GROUND BARS, AND GROUNDING CONDUCTORS SHALL BE MADE USING EXTERIOR MECHANICAL CONNECTIONS. CLEAN SURFACES TO SPARK METAL WHERE GROUND WIRES ARE CONNECTED TO GALVANIZED SURFACES, SPARK CAUSED WITH GALVANIZING PAINT.
- GROUNDING CONNECTIONS TO GROUND BARS ARE TO BE TWO-HOLE BRACKET TYPE EXTERIOR MECHANICAL CONNECTIONS. REMAINING GROUNDING CONNECTIONS SHALL BE COMPRESSION FITTINGS. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO-HOLE LUGS.
- THE GROUND ELECTRODE SYSTEM SHALL CONSIST OF BARE OR GALVANIZED GROUND RODS POSITIONED ACCORDING TO GROUNDING PLAN. THE GROUND RODS SHALL BE 5/8"x10'-0" COPPER CLAD STEEL, INTERCONNECTED WITH #2 TANKED SOLID COPPER WIRE BARBED 36" BELOW GRADE, BURY GROUND RODS A MINIMUM OF 10' APART, AND A MINIMUM OF 8' APART.
- IF ROCK IS ENCOUNTERED GROUND RODS SHALL BE PLACED AT AN OBlique ANGLE NOT TO EXCEED 45°.
- EXOTHERMIC WELDS SHALL BE MADE IN ACCORDANCE WITH ERDO PRODUCTS BULLETIN A-11.
- CONSTRUCTION OF GROUND RING AND CONNECTIONS TO EXISTING GROUND RING SYSTEM SHALL BE DOCUMENTED WITH PHOTOGRAPHS FROM TO BACKDRAFTING SITE. PROVIDE PHOTOS TO THE APEX TOWERS CONSTRUCTION MANAGER.
- ALL GROUND LEADS EXCEPT THOSE TO THE EQUIPMENT ARE TO BE #2 TANKED SOLID COPPER WIRE. ALL EXTERIOR GROUND BARS TANKED COPPER.
- BEFORE INSTALLING LUGS ON GROUND WIRES, APPLY THOMAS & BETTS KOPR-SHIELD (IN OF LET LUBE INC.), PRIOR TO BOLTING GROUND WIRE LUGS TO GROUND BARS, APPLY KOPR-SHIELD OR EQUAL.
- WHERE BARE COPPER GROUND WIRES ARE ROUTED FROM ANY CONNECTION ABOVE GRADE TO GROUND RING, INSTALL WIRE IN 3/4" PVC SLEEVE, FROM 1' BELOW GRADE AND SEAL TOP WITH SILICONE MATERIAL.
- PREPARE ALL BONDING SURFACES FOR GROUNDING CONNECTIONS BY REMOVING ALL PAINT AND CORROSION DOWN TO SPARK METAL. FOLLOWING CONNECTION, APPLY APPROPRIATE ANTI-CORROSION PAINT.
- ANY SITE WHERE THE EQUIPMENT (BTS, CABLE BRIDGE, PCC, GENERATOR, ETC.) IS LOCATED WITHIN 6 FEET OF METAL FENCING, THE GROUND RING SHALL BE BOND TO THE NEAREST FENCE POST USING (5) RINGS OF #2 BARE TANKED COPPER WIRE.

**GROUNDING LEGEND**

- COAXIAL CABLE SHIELD
- GROUND KIT CONNECTION
- COMPRESSION FITTING CONNECTION
- EXOTHERMIC WELD CONNECTION
- 5/8"x10' COPPER-CLAD
- STEEL GROUND ROD
- 5/8"x10' COPPER-CLAD STEEL GROUND ROD WITH INSPECTION WELL
- EXISTING GROUND WIRING
- TANKED COPPER GROUND BAR
- 1/4"x4"x12' OR 1/4"x4"x20' COLLECTOR GROUND BAR
- MAIN GROUND BAR

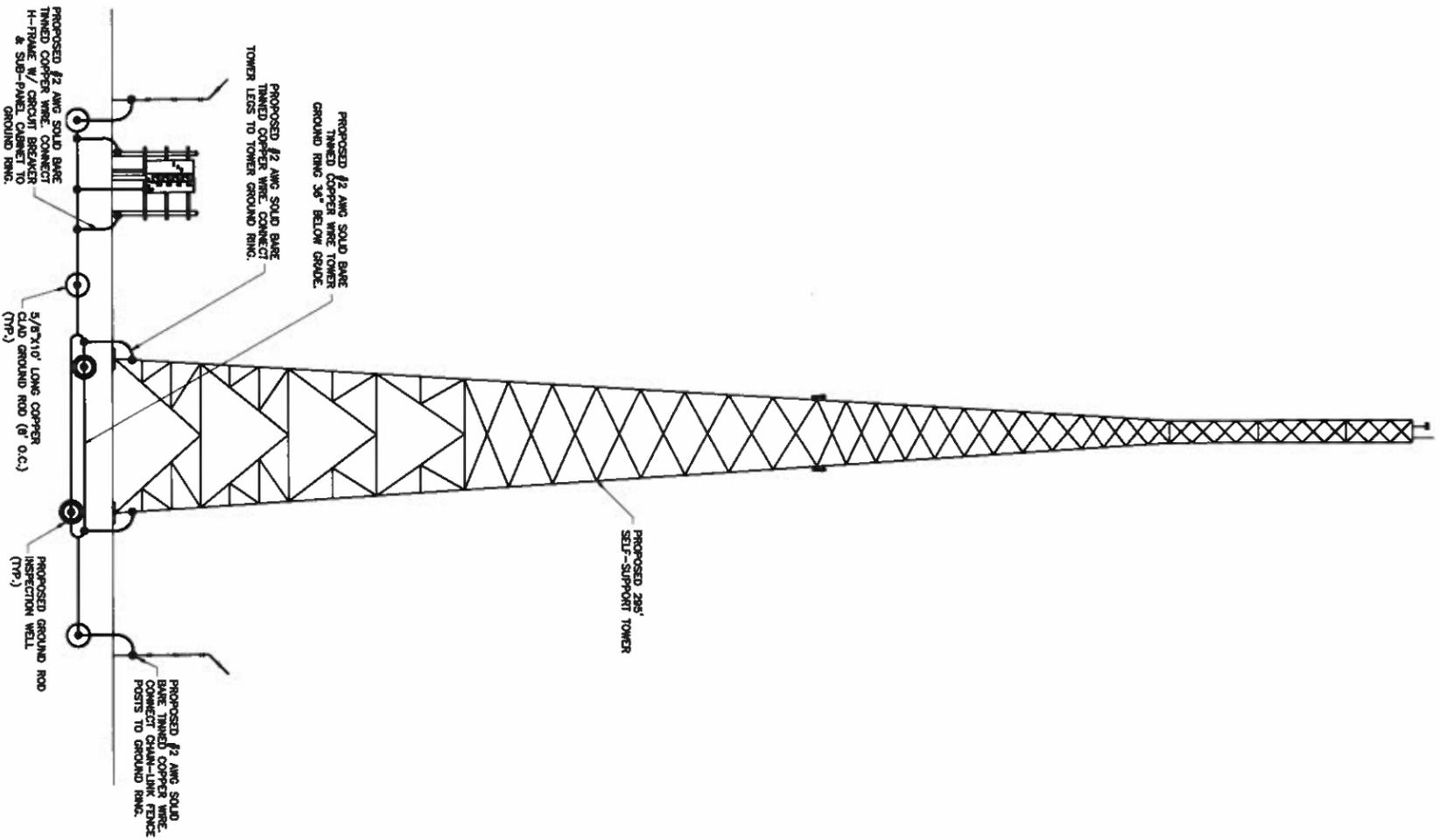


**NOTES THIS SHEET ONLY:**  
 1. BELOW GRADE GROUND BONDING AND CONNECTIONS WILL BE EXOTHERMIC WELDS. NO EXCEPTIONS.  
 2. GROUND CONDUCTORS FROM GROUND RING TO PLATFORM OR EQUIPMENT WILL BE RUN IN 3/4" PVC CONDUIT AND SEALED WITH SILICONE.  
 3. CONNECTIONS TO GROUND BAR WILL BE HIGH PRESSURE CRIMPED LONG BARREL 2-HOLE LUG.

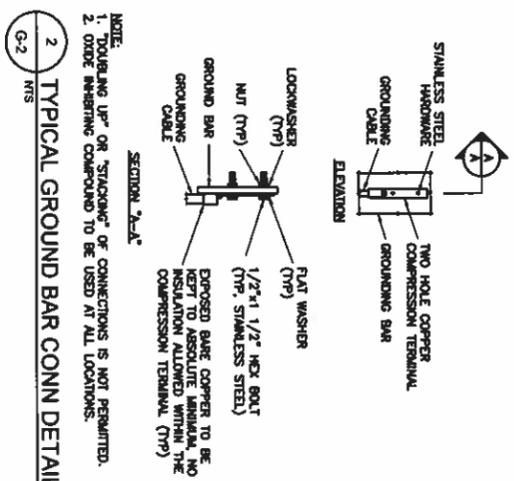
**GROUNDING PLAN**  
 SCALE 1"=5'-0"



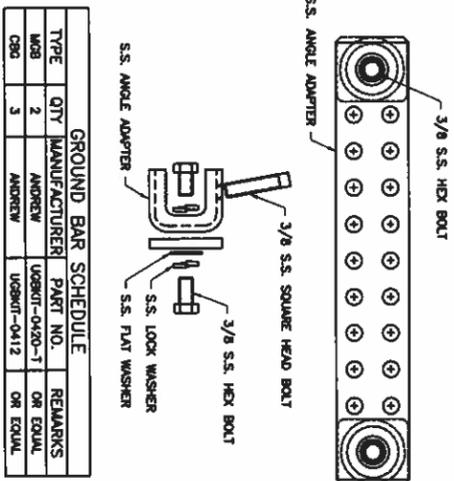
SHEET NUMBER <b>G-1</b>	SHEET TITLE <b>GROUNDING PLAN &amp; NOTES</b>	ENGINEER TRENT T. SMARR, P.E. VA PROFESSIONAL ENGINEER LIC #48978	PROFESSIONAL STAMP <b>PRELIMINARY (NOT FOR CONSTRUCTION)</b>	DESIGN RECORD <table border="1"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION</th> <th>BY</th> </tr> </thead> <tbody> <tr> <td>C</td> <td>12/29/18</td> <td>REVISED CDS</td> <td>OP</td> </tr> <tr> <td>B</td> <td>12/21/18</td> <td>REVISED CDS</td> <td>OP</td> </tr> <tr> <td>A</td> <td>12/07/18</td> <td>PRELIMINARY CDS</td> <td>OP</td> </tr> </tbody> </table>	REV	DATE	DESCRIPTION	BY	C	12/29/18	REVISED CDS	OP	B	12/21/18	REVISED CDS	OP	A	12/07/18	PRELIMINARY CDS	OP	SITE INFORMATION APEX SITE NAME: FERRUM II APEX SITE ID: VAF/FLM01 NB+C PROJ # 100103 ISOLANE ROAD FERRUM, VA 24088 FRANKLIN COUNTY	APPLICANT Apex Towers 548 EAST RIVERSIDE DR. STE. D NORTH TAZEWELL, VA 24630 (276) 963-1818	ENGINEER NB+C TOTALLY COMMITTED NB+C ENGINEERING SERVICES, LLC. 400 WESTBROOK DRIVE, SUITE 100 OLNEY ALLEN, VA 22950
		REV	DATE	DESCRIPTION	BY																		
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1 GROUNDING RISER DIAGRAM  
G-2 NTS



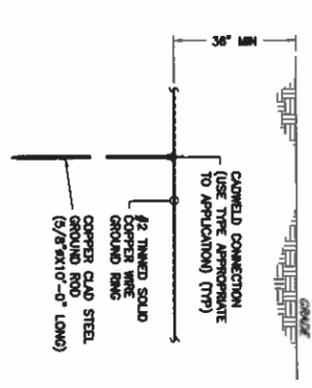
2 TYPICAL GROUND BAR CONN DETAIL  
G-2 NTS



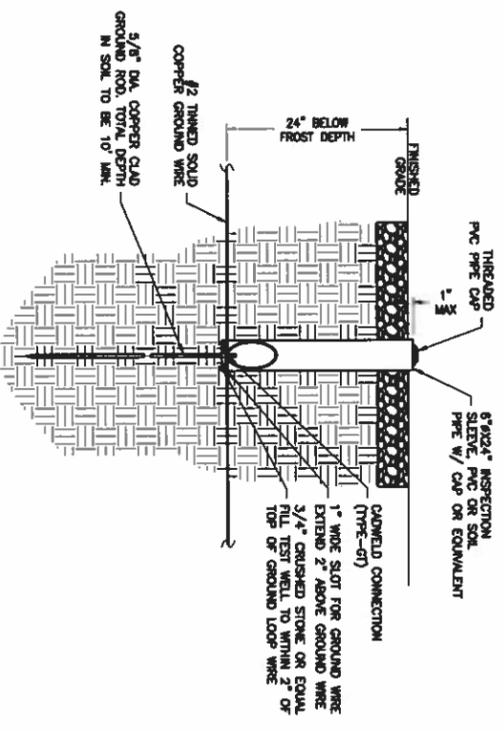
3 GROUND BAR DETAIL  
G-2 NTS

GROUND BAR SCHEDULE			
TYPE	QTY	MANUFACTURER	PART NO.
M08	2	ANDREW	UG8MT-0420-1
C08	3	ANDREW	UG8MT-0412

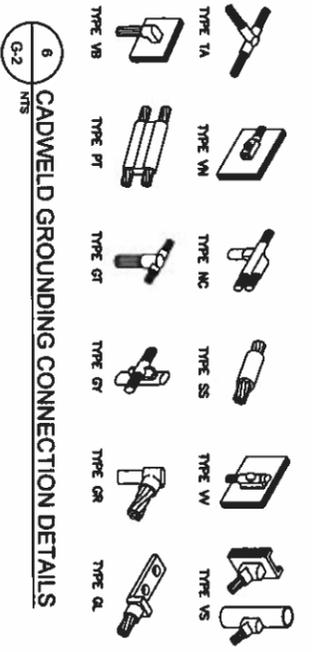
NOTE: GROUND BAR TO BE MOUNTED AT EACH LOCATION WITH (2) ANGLE ADAPTERS



4 TYPICAL GROUND ROD DETAIL  
G-2 NTS



5 INSPECTION WELL DETAIL  
G-2 NTS



6 CADWELD GROUNDING CONNECTION DETAILS  
G-2 NTS

**NE+C**  
TOTALLY COMMITTED

NE+C ENGINEERING SERVICES, L.L.C.  
400 WESTPORT DRIVE, SUITE 100  
OLNEY, ALLEN, VA 22009

**Apex Towers**

548 EAST RIVERSIDE DR. STE. D  
NORTH TAZEWELL, VA 24630  
(276) 963-1818

APEX SITE NAME:  
FERRUM II  
APEX SITE ID: VAFLEMO1

NB+C PROJ. # 100103  
ISOLANE ROAD  
FERRUM, VA 24088  
FRANKLIN COUNTY

REVISIONS			
REV	DATE	DESCRIPTION	BY
C	1/20/18	REVISED CDS	OP
B	1/27/18	REVISED CDS	OP
A	1/26/18	PRELIMINARY CDS	OP

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ENGINEER

TRENT T. SMARR, P.E.  
VA PROFESSIONAL ENGINEER L.C. #48978

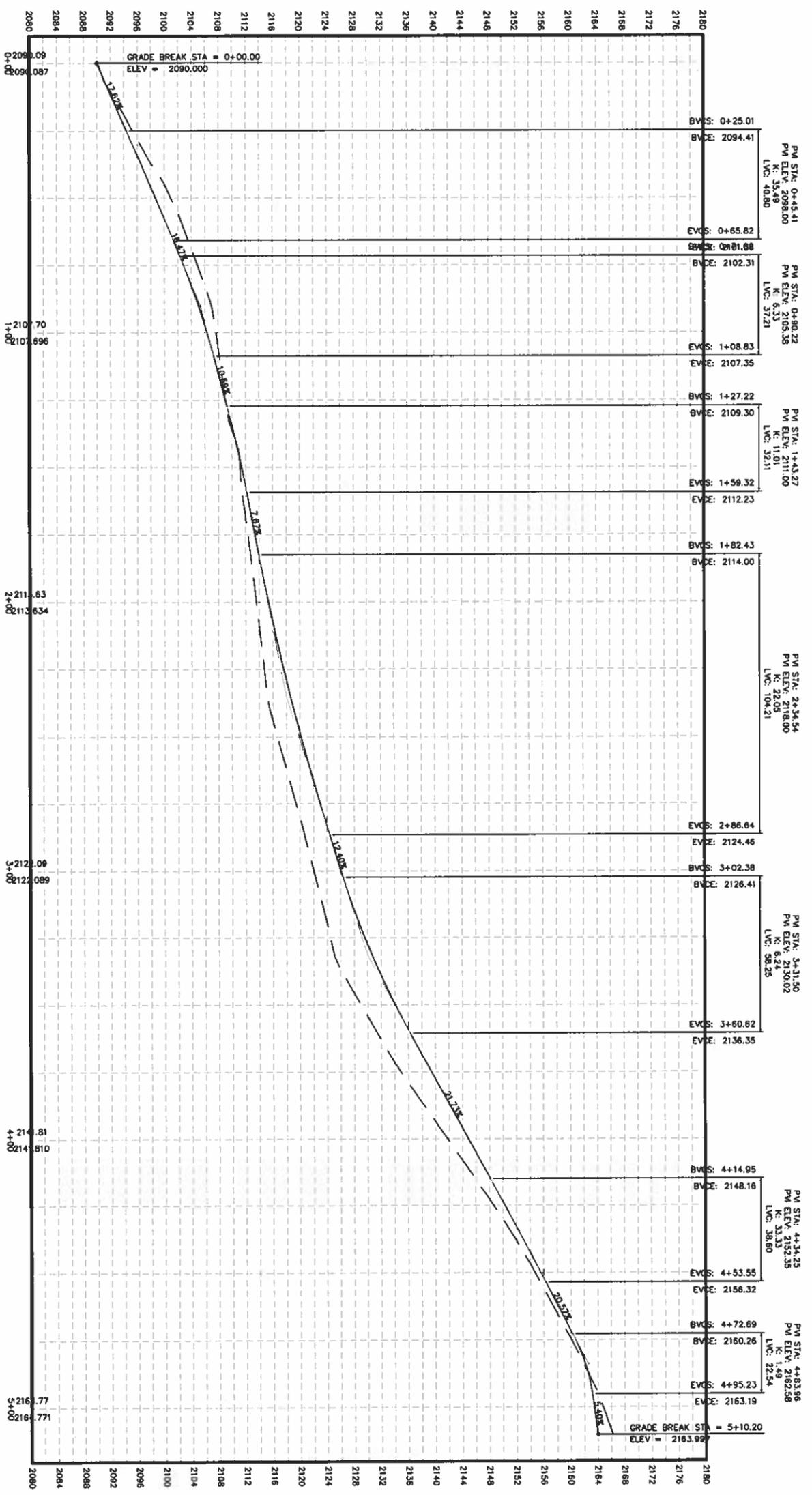
SHEET TITLE

**GROUNDING RISER  
DIAGRAM & DETAILS**

SHEET NUMBER

**G-2**





1 ACCESS ROAD PROFILE  
ES-2

**NE+C**  
TOTALLY COMMITTED

NE+C ENGINEERING SERVICES, LLC.  
405 WASHINGTON DRIVE, SUITE 110  
OLD ALLEN, VA 22050

**Apex Towers**

548 EAST RIVERSIDE DR. STE. D  
NORTH TAZEWELL, VA 24630  
(276) 963-1818

**SITE INFORMATION**

APEX SITE NAME:  
FERRUM II  
APEX SITE ID: VA/FLM01

NB+C PROJ. # 100103  
ISOLANE ROAD  
FERRUM, VA 24088  
FRANKLIN COUNTY

**DESIGN RECORD**

REV	DATE	DESCRIPTION	BY
A	12/07/18	PRELIMINARY CDR	OP
B	1/27/19	REVISED CDR	OP
C	1/28/19	REVISED CDR	OP

**PROFESSIONAL STAMP**

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**ENGINEER**

TRENT T. SMARR, P.E.  
VA PROFESSIONAL ENGINEER LIC. #448715

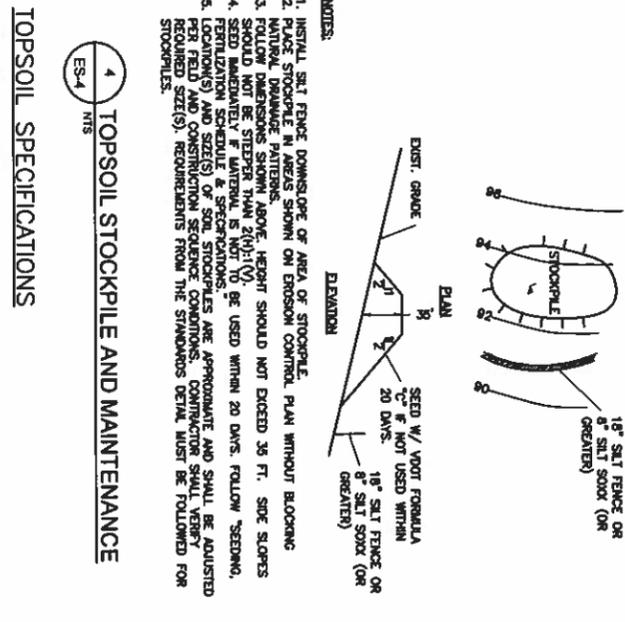
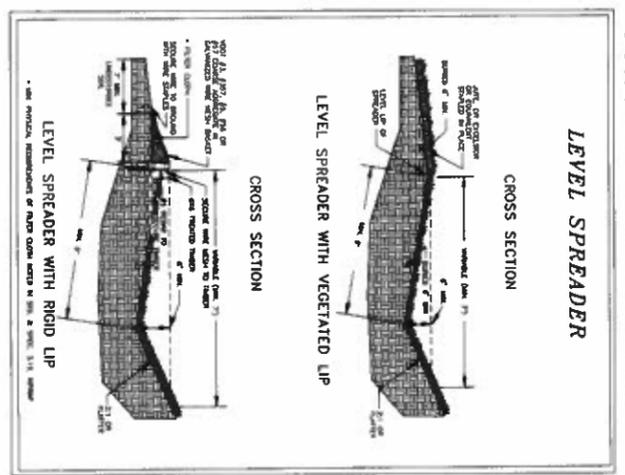
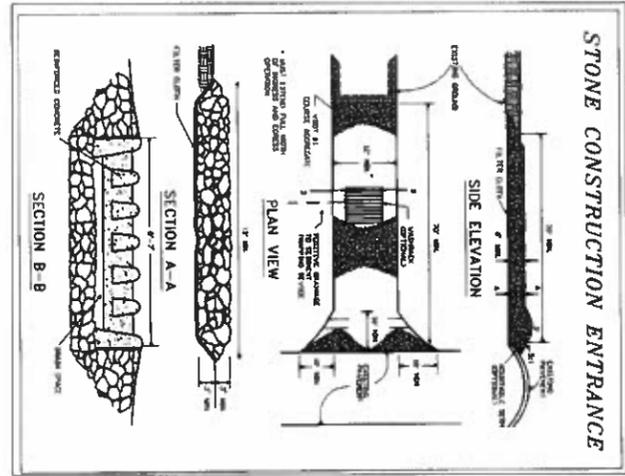
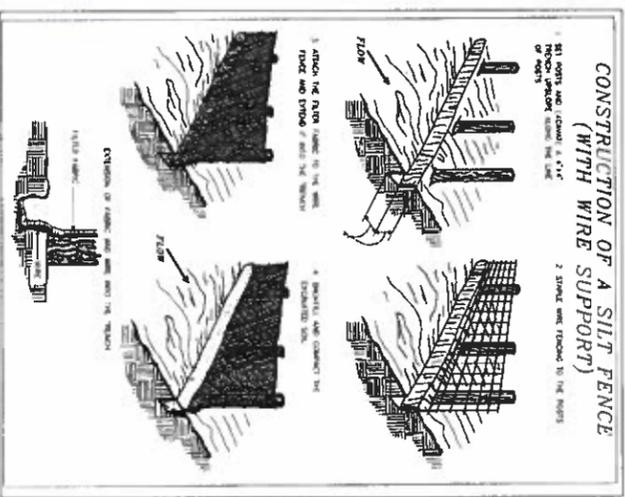
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ACCESS ROAD  
PROFILE

**SHEET NUMBER**

ES-2



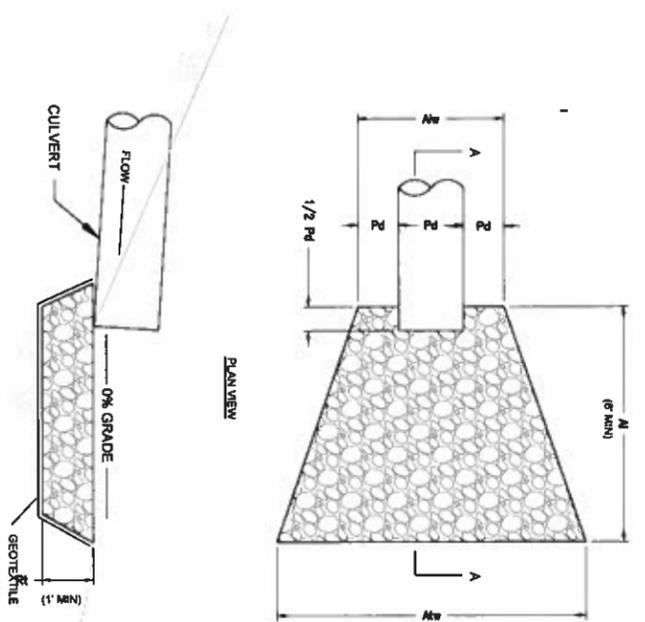


NOTE: ALL SILT FENCES ARE TO USE 36 INCH FABRIC AND STAKED WITH 2"x2" HARDWOOD STAKES ON 8' CENTERS  
YESCH 3.05 SILT FENCE  
ES-4 NTS SF

YESCH 3.02 TEMPORARY CONSTRUCTION ENTRANCE  
ES-4 NTS SF CE

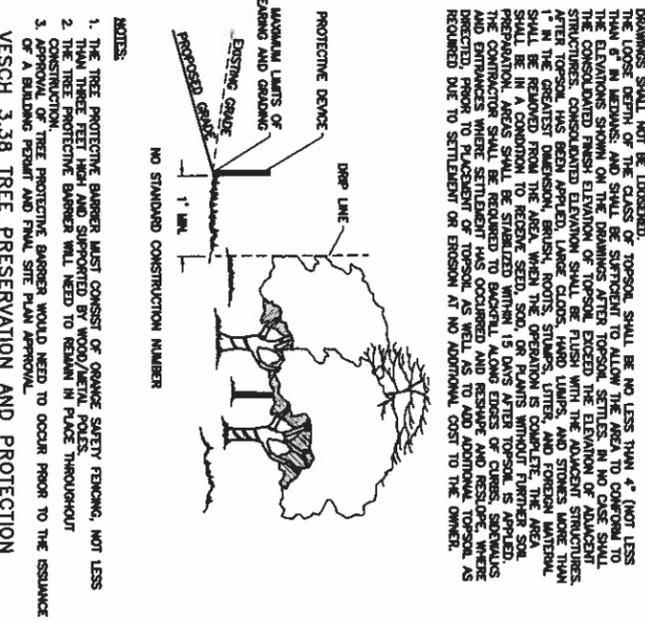
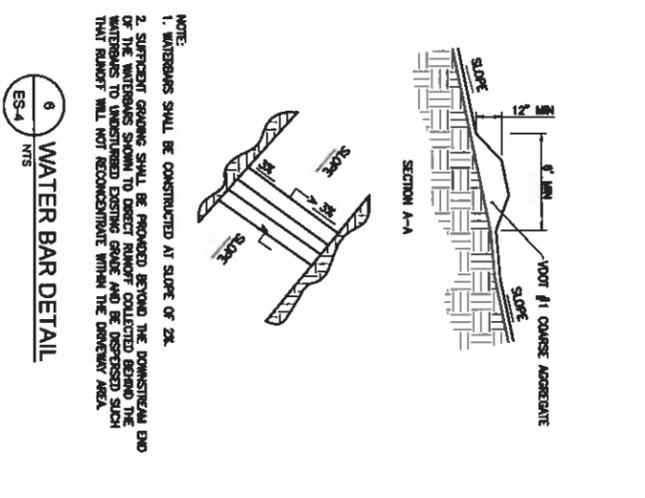
YESCH 3.21 LEVEL SPREADER  
ES-4 NTS SF LS

TOPSOIL SPECIFICATIONS  
ES-4 NTS SF



NOTE:  
1. REMOVE TOPSOIL AND PLACE GEOTEXTILE FABRIC PRIOR TO PLACING STONE.  
1.1. WOVEN GEOTEXTILE APPROVED PRODUCTS ARE US FABRIC (US 250 AND TENCATE MIRAF 550X). CONTRACTOR MAY SUBMIT DESIGN ALTERNATIVE AS OUTLINED IN THE AMERICAN TOWER MASTER SPECIFICATIONS.  
2. ALL APRONS SHALL BE CONSTRUCTED TO THE DIMENSIONS SHOWN. TERMINAL WIDTHS SHALL BE ADJUSTED AS NECESSARY TO MATCH RECEIVING CHANNELS.  
3. EXTEND RIPRAP ON BACK SIDE OF APRON TO AT LEAST 1/2 DEPTH OF PIPE ON BOTH SIDES TO PREVENT SCOUR AROUND THE PIPE.

OUTLET NO.	THICK. R1 (IN)	LENGTH L2 (FT)	WIDTH W3 (FT)	END WIDTH (FT)
OP-1	R-3	12	8	4
OP-2	R-6	30	8	4



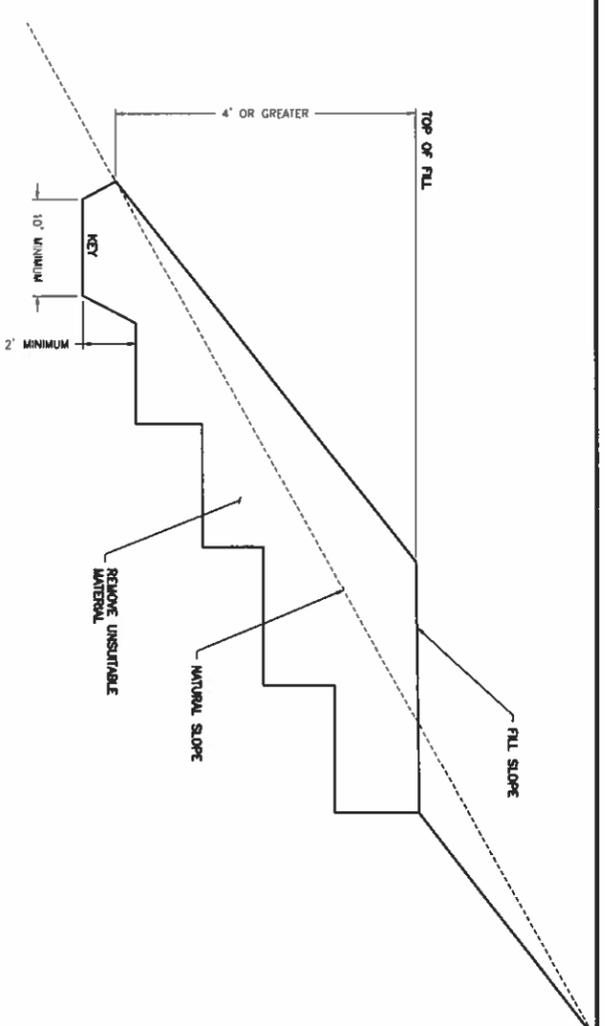
SECTION A-A  
YESCH 3.18-1 OUTLET PROTECTION  
ES-4 NTS OP

ES-4 NTS SF

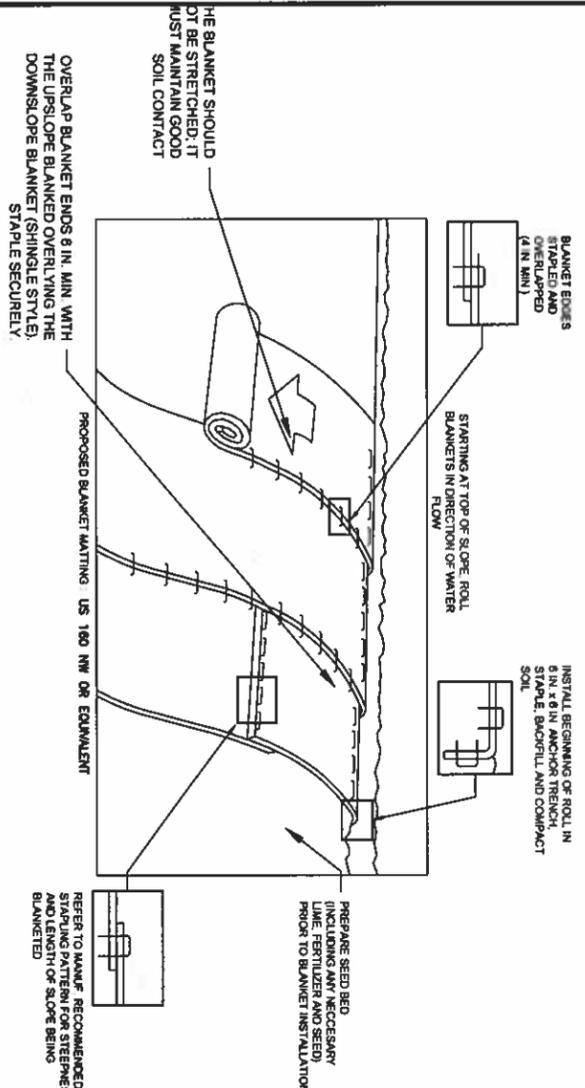
ES-4 NTS TP

SHEET NUMBER	SHEET TITLE	ENGINEER	PROFESSIONAL STAMP	DESIGN RECORD	SITE INFORMATION	APPLICANT	ENGINEER													
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ES-4	SEDIMENT CONTROL DETAILS I	TRENT I SMAR, P.E. VA PROFESSIONAL ENGINEER LIC. 449378																		

ES-4

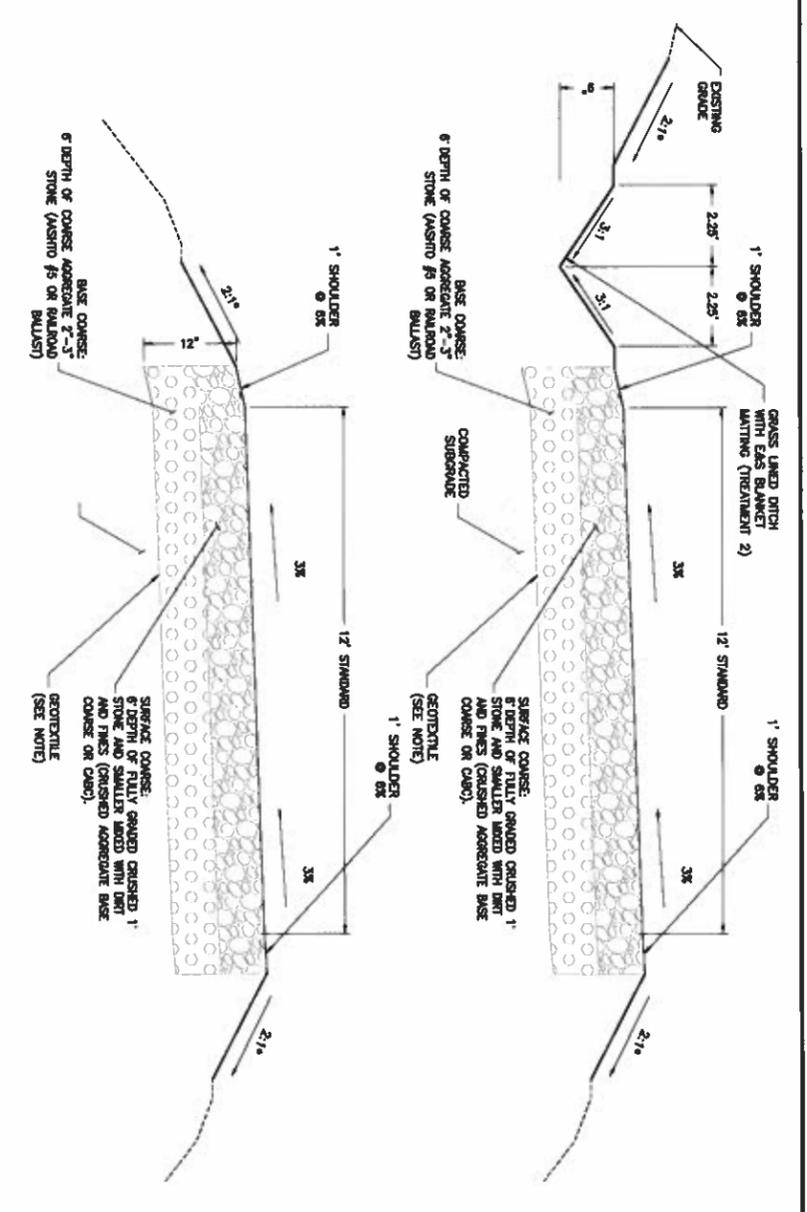


1 ACCESS ROAD GRADING DETAIL  
ES-5  
NTS



- SEQUENCE OF CONSTRUCTION
1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECPs), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER AND SEED.
  2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECPs IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 1/2" OF RECPs EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECPs WITH A ROW OF STAPLES/STAPLES APPROXIMATELY 1/2" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO THE COMPACTED SOIL AND FOLD THE REMAINING 1/2" PORTION OF RECPs BACK ACROSS THE WIDTH OF THE TRENCH. SECURE RECPs OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAPLES SPACED APPROXIMATELY 1/2" APART ACROSS THE WIDTH OF THE RECPs.
  3. ROLL THE RECPs DOWN HORIZONTALLY ACROSS THE SLOPE. RECPs WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECPs MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAPLES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE.
  4. THE EDGES OF PARALLEL RECPs MUST BE STAPLED WITH APPROXIMATELY 2" - 3" OVERLAP DEPENDING ON THE RECPs TYPE.
  5. CONSECUTIVE RECPs SPACED DOWN THE SLOPE MUST BE END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA APPROXIMATELY 1/2" APART ACROSS BUNDLE RECPs WIDTH.
- NOTES
1. PROVIDE ANCHOR TRENCH AT TOP OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE.
  2. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLUMPS, STICKS, AND GRASS.
  3. BLANKET SHALL HAVE GOOD CONTINUOUS CONTACT WITH UNDERLYING SOIL THROUGHOUT ENTIRE LENGTH. LAY BLANKET LOOSELY AND STAPLE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL. DO NOT STRETCH BLANKET.
  4. THE RECPs SHALL BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAPLES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE.
  5. THE RECPs SHALL BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAPLES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.

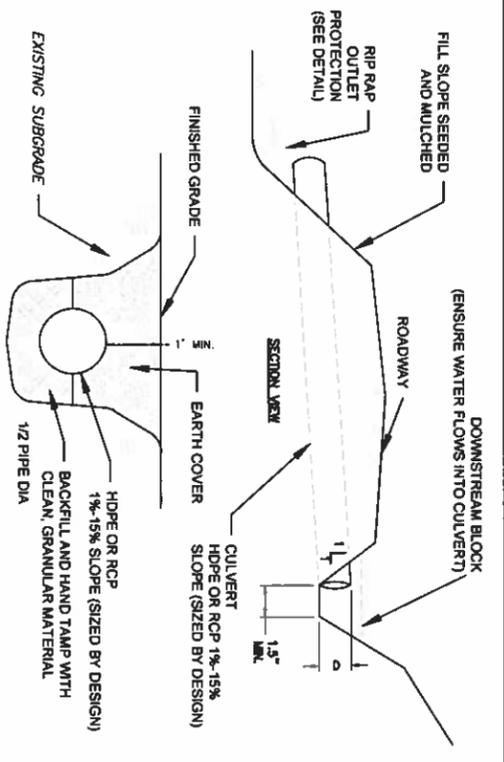
YESCH 3.36-1 SOIL STAB BLANKETS & MATTING  
3 SOIL STABILIZATION BLANKET MATTING  
ES-5  
NTS  
B/M



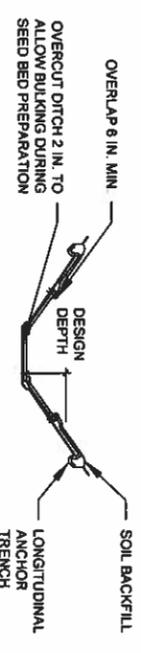
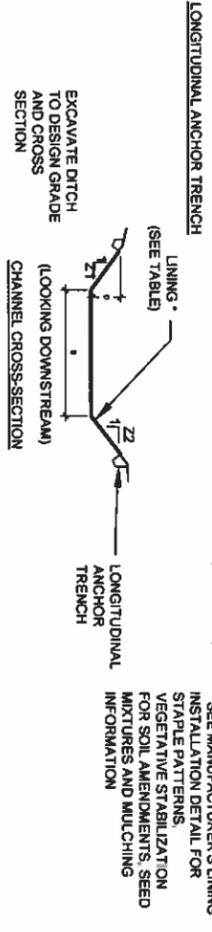
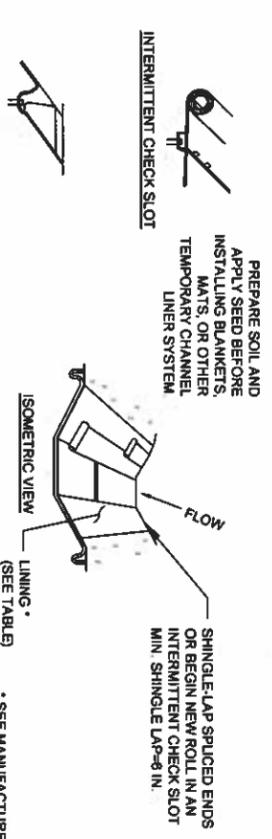
2 PROPOSED GRAVEL DRIVE TYPICAL SECTION  
ES-5  
NTS

- NOTES:
1. SUBGRADE AND FILL SHALL CONSIST OF CLEAN SOIL, NO DELETERIOUS MATERIALS OR ORGANICS TO BE USED. FREE OF FROZEN PARTICLES, ORGANIC MATTER, CLAYED MATERIAL AND ROCK PARTICLES GREATER THAN 1 1/2" IN ANY DIRECTION.
  2. REMOVE ALL TOPSOIL AND ORGANICS BEFORE CONSTRUCTION ACCESS ROAD FOR A MIN. DEPTH OF 12".
  3. DITCH SHALL BE CONSTRUCTED FREE OF SEDIMENT, TREE ROOTS, STUMPS OR OTHER PROJECTIONS THAT WILL IMPIDE NORMAL CHANNEL FLOW AND/OR PREVENT GOOD LINING TO SOIL CONTACT.
  4. WHEN GEOTEXTILE APPROVED PRODUCTS ARE US FABRICS: US 200 AND TENSILE: 100N. CONTRACTOR MAY SUBMIT DESIGN ALTERNATIVE.

SHEET NUMBER	SHEET TITLE	ENGINEER	PROFESSIONAL STAMP	DESIGN RECORD	SITE INFORMATION	APPLICANT	ENGINEER																
ES-5	EROSION & SEDIMENT CONTROL DETAILS II	THOMAS T. SWARR, P.E. VA PROFESSIONAL ENGINEER LIC. #48978	<b>PRELIMINARY</b> <b>(NOT FOR CONSTRUCTION)</b>	<table border="1"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION</th> <th>BY</th> </tr> </thead> <tbody> <tr> <td>C</td> <td>1/26/18</td> <td>REVISED CD</td> <td>OP</td> </tr> <tr> <td>B</td> <td>1/27/18</td> <td>REVISED CD</td> <td>OP</td> </tr> <tr> <td>A</td> <td>1/20/18</td> <td>PRELIMINARY CD</td> <td>OP</td> </tr> </tbody> </table>	REV	DATE	DESCRIPTION	BY	C	1/26/18	REVISED CD	OP	B	1/27/18	REVISED CD	OP	A	1/20/18	PRELIMINARY CD	OP	APEX SITE NAME: FERRUM II APEX SITE ID: VAFLEFM01 NB+C PROJ # 100103 ISOLANE ROAD FERRUM, VA 24088 FRANKLIN COUNTY	<b>Apex Towers</b> 548 EAST RIVERSIDE DR. STE. D NORTH FAZEWELL, VA 24630 (276) 963-1818	<b>NBC+C</b> <b>TOTALLY COMMITTED</b> NBC ENGINEERING SERVICES, LLC 408 WATERLOO DRIVE, SUITE 100 OLNEY, VA 22950
REV	DATE	DESCRIPTION	BY																				
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1 PIPE BEDDING DETAIL  
ES-6 M/S



2 SOIL STABILIZATION BLANKETS & MATTING  
ES-6 M/S B/M

\* SEE MANUFACTURERS LINING INSTALLATION DETAIL FOR STAPLE PATTERNS, VEGETATIVE STABILIZATION FOR SOIL AMENDMENTS, SEED MIXTURES AND MULCHING INFORMATION

ENGINEER

**TOTALLY COMMITTED**

NB+C ENGINEERING SERVICES, LLC.  
400 WESTPORT DRIVE, SUITE 100  
OLNEY, ALABAMA 36050

APPLICANT

548 EAST RIVERSIDE DR., STE. D  
NORTH TAZEWELL, VA 24630  
(278) 963-1818

SITE INFORMATION

APEX SITE NAME:  
FERRUM II  
APEX SITE ID: VAFLM01

NB+C PROJ. # 100103  
ISOLANE ROAD  
FERRUM, VA 24088  
FRANKLIN COUNTY

DESIGN RECORD

REV	DATE	DESCRIPTION	BY
C	1/26/18	REVISED CD#	OP
B	1/22/18	REVISED CD#	OP
A	1/26/18	PRELIMINARY CD#	OP

REVISIONS

PROFESSIONAL STAMP

**PRELIMINARY**  
**(NOT FOR CONSTRUCTION)**

ENGINEER

TRENT T. SMARR, P.E.  
VA PROFESSIONAL ENGINEER, LIC. #49878

SHEET TITLE

**EROSION & SEDIMENT CONTROL DETAILS III**

SHEET NUMBER

**ES-6**



**STORM WATER RUNOFF CALCULATIONS**

THE SUBJECT PARCEL (390.04 ACRES) IS OPEN PASTURE, AND IS HEAVILY WOODED STEEP SLOPES. THERE IS NO EXISTING TELECOMMUNICATIONS TOWER AND STEEP ACCESS ROAD THAT WILL BE REMOVED AND REPLACED WITH A NEW ACCESS ROAD. THE EXISTING ACCESS ROAD WILL BE RELOCATED TO A DISTURBED AREA OF 25,000 SQUARE FEET, OF WHICH, 10,400 SQUARE FEET WILL BE COVERED WITH A GRAVEL SURFACE AND THE REMAINING 14,600 SQUARE FEET WILL BE UNPAVED PERVIOUS TURF. ANALYSIS METHODOLOGIES AND PROCEDURES: PRE AND POST DEVELOPMENT RUNOFF VALUES FOR THE DRAINAGE AREA WERE CALCULATED USING THE SCS TR55 METHODOLOGY. THE PRE AND POST DEVELOPMENT RUNOFF VALUES FOR THE DRAINAGE AREA WERE DETERMINED USING A LOCAL SURVEY AND TOPOGRAPHIC INFORMATION FROM FRANKLIN COUNTY GIS. PERVIOUS AND IMPVIOUS AREAS WERE DETERMINED BY AERIAL PHOTOGRAPHY.

SITE CONDITION	DRAINAGE AREA STORM EVENT PEAK DISCHARGE (CFS)			
	1-YR	2-YR	10-YR	100-YR
PREDEVELOPMENT	5,084 CFS	6,448 CFS	14,03 CFS	23.64 CFS
POST DEVELOPMENT	5,636 CFS	7,057 CFS	14.87 CFS	24.58 CFS

**Hyd. No. 3**  
Post Development North

Hydrograph type	= SCS Runoff	Peak discharge	= 8,513 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 18,497 cuft
Drainage area	= 1,720 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 6,500 min
Total precip.	= 5.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

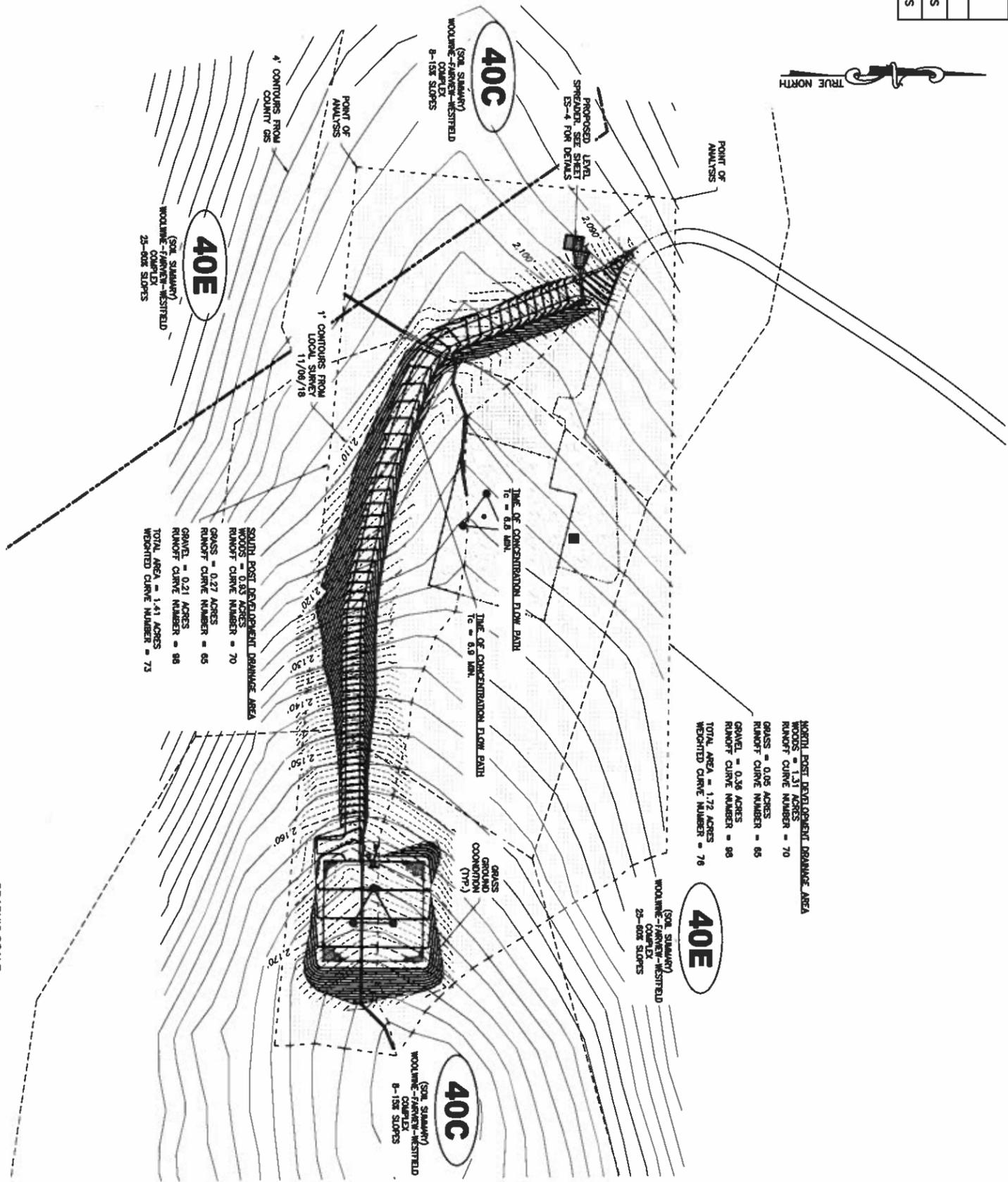
**Hyd. No. 4**  
Post Development South

Hydrograph type	= SCS Runoff	Peak discharge	= 6,357 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 14,544 cuft
Drainage area	= 1,410 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8,900 min
Total precip.	= 5.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

**Hyd. No. 8**  
Post Development

Hydrograph type	= Combine	Peak discharge	= 14.87 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 34,041 cuft
Drainage area	= 3,4	Curve number	= 3,130 ac

Station	1+00	2+00	3+00	4+00	5+00	6+00	7+00	8+00
Profile	3.20	3.70	4.70	5.70	6.00	6.00	7.00	8.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Height	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Width	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



1 POSTDEVELOPMENT DRAINAGE AREA MAP  
SCALE 1" = 40'-0"



SHEET NUMBER	SHEET TITLE	ENGINEER	PROFESSIONAL STAMP	DESIGN RECORD	SITE INFORMATION	APPLICANT	ENGINEER																
ES-8	POST DEVELOPMENT DRAINAGE AREA MAP & CALCULATIONS	TRENT I. SWARR, P.E. VA PROFESSIONAL ENGINEER LIC. #49918	PRELIMINARY (NOT FOR CONSTRUCTION)	<table border="1"> <tr><th>REV</th><th>DATE</th><th>DESCRIPTION</th><th>BY</th></tr> <tr><td>C</td><td>12/20/18</td><td>REVISED CD</td><td>OP</td></tr> <tr><td>B</td><td>1/22/19</td><td>REVISED CD</td><td>OP</td></tr> <tr><td>A</td><td>1/26/19</td><td>PRELIMINARY CD</td><td>OP</td></tr> </table>	REV	DATE	DESCRIPTION	BY	C	12/20/18	REVISED CD	OP	B	1/22/19	REVISED CD	OP	A	1/26/19	PRELIMINARY CD	OP	APEX SITE NAME: FERRUM II APEX SITE ID: VA/FLM01 NB+C PROJ. # 100103 ISOLANE ROAD FERRUM, VA 24088 FRANKLIN COUNTY	Apex Towers 548 EAST RIVERSIDE DR. STE. D NORTH TAZEWELL, VA 24630 (276) 983-1818	NB+C ENGINEERING SERVICES, LLC. 455 WILSON DR., SUITE 100 CLYDE, VA 22901
REV	DATE	DESCRIPTION	BY																				
C	12/20/18	REVISED CD	OP																				
B	1/22/19	REVISED CD	OP																				
A	1/26/19	PRELIMINARY CD	OP																				

**STORM WATER RUNOFF CALCULATIONS**

THE SUBJECT PARCEL (390.84 ACRES) IS OPEN FARMLAND AND IS HEAVILY WOODED STEEP SLOPES. THE EXISTING CONCRETE DRIVEWAY AND STEEP CONCRETE ROAD THAT WILL BE EXTENDED TO THE PROPOSED TOWER. THE PROPOSED SITE CONSTRUCTION WILL CREATE A TOTAL DISTURBED AREA OF 25,050 SQUARE FEET, OF WHICH, 10,455 SQUARE FEET WILL BE COVERED WITH A GRAVEL SURFACE AND THE REMAINING 14,595 SQUARE FEET WILL BE UNPAVED PERVIOUS TURF.

ANALYSIS METHODOLOGIES AND PROCEDURES: FOR THE DRAINAGE AREA WERE CALCULATED USING THE RATIONAL METHOD, OBTAINED IN THE ORIGINAL STORM WATER MANAGEMENT MANUAL, USING THE RATIONAL PROGRAM PROBE/FLOW HYDROLOGIC EXTENSION FOR AUTOCAD CIVIL 3D 2016. THE DRAINAGE AREAS WERE DETERMINED USING A LOCAL SURVEY AND TOPOGRAPHIC INFORMATION FROM FRANKLIN COUNTY GIS. PERVIOUS AND IMPERVIOUS AREAS WERE DETERMINED BY AERIAL PHOTOGRAPHY.

SITE CONDITION	DRAINAGE AREA		
	1-YR	2-YR	10-YR
GRASS CHANNEL 0+25	0.218 CFS	0.277 CFS	0.603 CFS
GRASS CHANNEL 1+50	0.694 CFS	0.869 CFS	1.828 CFS
			3.030 CFS

**Hyd. No. 5**  
**Culvert 0+25**  
 Hydrograph type = SCS Runoff  
 Storm frequency = 10 yrs  
 Time interval = 2 min  
 Drainage area = 0.130 ac  
 Basin Slope = 0.0 %  
 TC method = TR55  
 Total precip. = 5.70 in  
 Storm duration = 24 hrs

Peak discharge = 0.603 cfs  
 Time to peak = 718 min  
 Hyd. volume = 1,217 cuft  
 Curve number = 72  
 Hydraulic length = 0 ft  
 Time of conc. (Tc) = 5.70 min  
 Distribution = Type II  
 Shape factor = 484

**Hyd. No. 6**  
**Culvert 1+50**  
 Hydrograph type = SCS Runoff  
 Storm frequency = 10 yrs  
 Time interval = 2 min  
 Drainage area = 0.370 ac  
 Basin Slope = 0.0 %  
 TC method = TR55  
 Total precip. = 5.70 in  
 Storm duration = 24 hrs

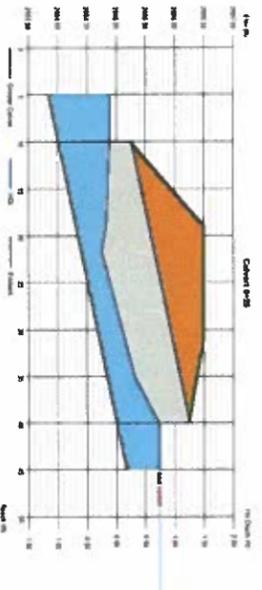
Peak discharge = 1.828 cfs  
 Time to peak = 716 min  
 Hyd. volume = 3,685 cuft  
 Curve number = 74  
 Hydraulic length = 0 ft  
 Time of conc. (Tc) = 6.50 min  
 Distribution = Type II  
 Shape factor = 484

Method	1-yr	2-yr	3-yr	4-yr	5-yr	6-yr	7-yr	8-yr	10-yr
SCS 24-hour	3.20	3.70	4.00	4.70	5.70	6.00	7.00	8.00	9.00
SCS 6-hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hyd. 1-hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hyd. 2-hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hyd. 3-hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hyd. 4-hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hyd. 6-hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hyd. 12-hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hyd. 24-hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**Culvert 0+25**  
 Invert Elev Dn (ft) = 2094.00  
 Pipe Length (ft) = 30.00  
 Slope (%) = 3.33  
 Invert Elev Up (ft) = 2095.00  
 Rise (in) = 15.0  
 Shape = Circular  
 Span (in) = 18.0  
 No. Barrels = 1  
 n-Value = 0.012  
 Culvert Type = Circular Concrete  
 Culvert Entrance Coeff. K<sub>1</sub>, K<sub>2</sub>, K<sub>3</sub> = 0.0098, 2, 0.0380, 0.97, 0.5

Calculations  
 Orin (cfs) = 1.00  
 Ormax (cfs) = 2.00  
 Tailwater Elev (ft) = (dc+D)/2

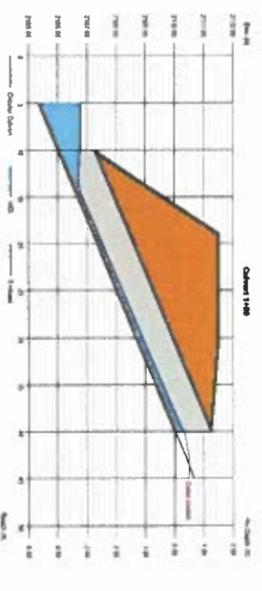
Highlights  
 Orin (cfs) = 1.83  
 Ormax (cfs) = 1.83  
 Dc (cfs) = 0.10  
 Dcmax (cfs) = 0.10  
 Vc (ft/s) = 1.95  
 Vcmax (ft/s) = 2.04  
 HGL Dn (ft) = 2084.89  
 HGL Up (ft) = 2085.74  
 HGL Elev (ft) = 2085.74  
 HGL Dn (ft) = 2085.74  
 Flow Regime = HGL Control



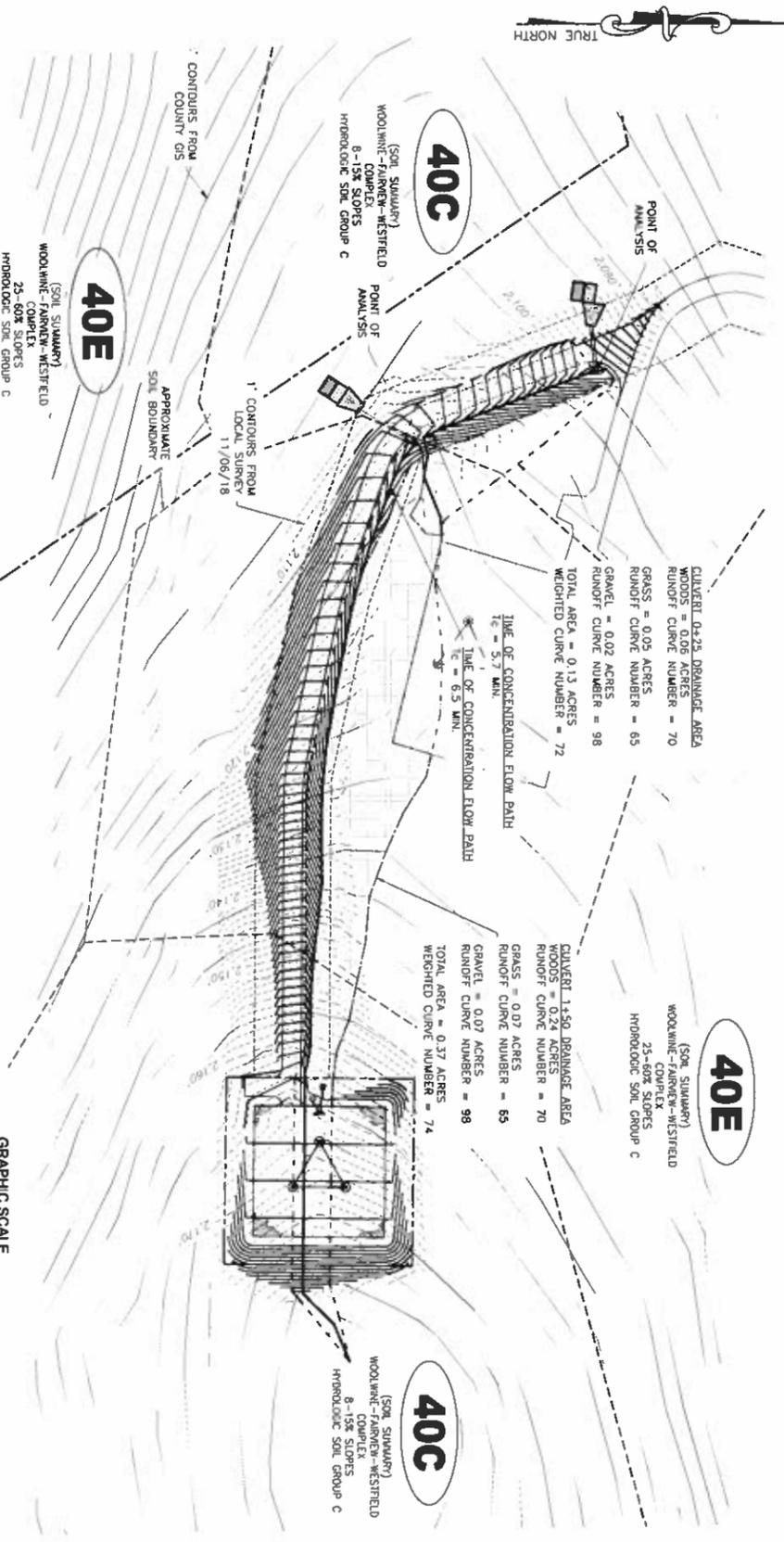
**Culvert 1+50**  
 Invert Elev Dn (ft) = 2106.00  
 Pipe Length (ft) = 30.00  
 Slope (%) = 13.33  
 Invert Elev Up (ft) = 2110.00  
 Rise (in) = 15.0  
 Shape = Circular  
 Span (in) = 18.0  
 No. Barrels = 1  
 n-Value = 0.012  
 Culvert Type = Circular Concrete  
 Culvert Entrance Coeff. K<sub>1</sub>, K<sub>2</sub>, K<sub>3</sub> = 0.0098, 2, 0.0380, 0.97, 0.5

Calculations  
 Orin (cfs) = 0.10  
 Ormax (cfs) = 1.00  
 Tailwater Elev (ft) = (dc+D)/2

Highlights  
 Orin (cfs) = 0.61  
 Ormax (cfs) = 0.61  
 Dc (cfs) = 0.00  
 Dcmax (cfs) = 0.76  
 Vc (ft/s) = 2.04  
 Vcmax (ft/s) = 2.10  
 HGL Dn (ft) = 2106.78  
 HGL Up (ft) = 2110.47  
 HGL Elev (ft) = 2110.47  
 HGL Dn (ft) = 2110.47  
 Flow Regime = Outlet Control



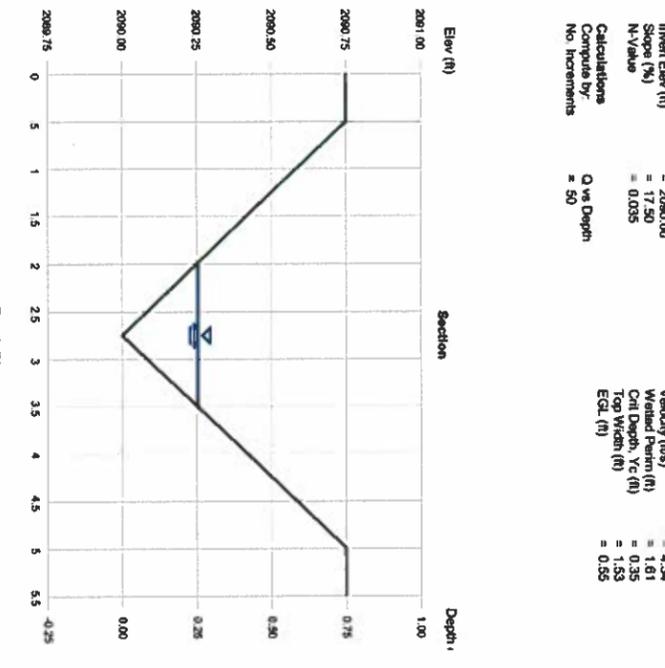
**1 CULVERT & DITCH DRAINAGE AREA MAP**  
 SCALE 1" = 40'-0"



**Grass Channel with EC-3 Blanket Matting**  
 Triangular  
 Side Slopes (Z:1) = 3.00, 3.00  
 Total Depth (ft) = 0.75  
 Invert Elev (ft) = 2090.00  
 Slope (%) = 17.50  
 N-Value = 0.035

Calculations  
 Compute by No. Increments = 50  
 Q vs Depth

Highlights  
 Depth (ft) = 0.26  
 Q (cfs) = 0.847  
 Area (sqft) = 0.20  
 Velocity (ft/s) = 4.34  
 Wetland Pattern (ft) = 1.61  
 Cnt Depth, Yc (ft) = 0.35  
 Top Width (ft) = 1.53  
 EGL (ft) = 0.55



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ES-9	CULVERT & DITCH DRAINAGE AREA MAP & CALCULATIONS	TRENT T. SWARR P.E. VA PROFESSIONAL ENGINEER LIC. #44918	PRELIMINARY (NOT FOR CONSTRUCTION)																