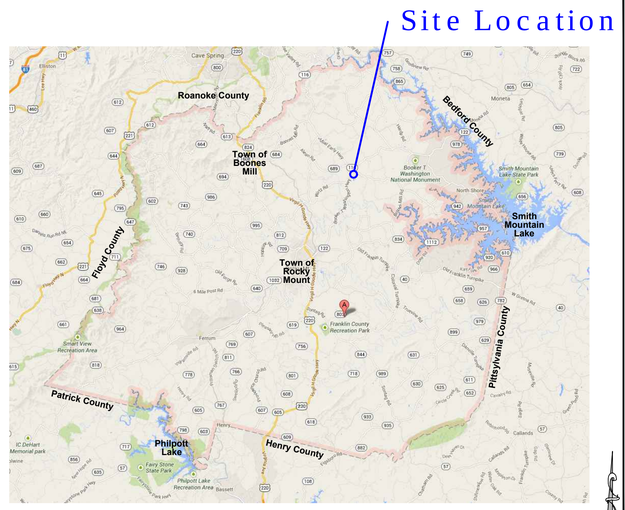
Burnt Chimney Water Storage Tank
Site Plan with Erosion & Sediment Control (E&SC) Plan and Stormwater Management (SWM) Plan
Franklin County Case #13641

OWNER / DEVELOPER
County of Franklin
1255 Franklin Street, Suite 112
Rocky Mount, VA 24151
(540) 483-3027
Don Smith, L.S.

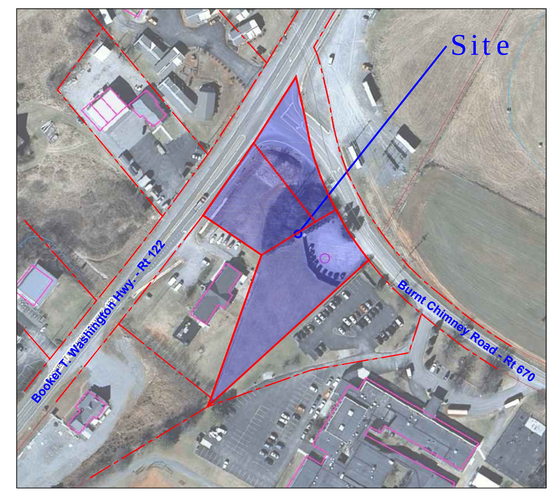
SITE ENGINEER
Stone Engineering, Inc.
P.O. Box 1058
Rocky Mount, VA 24151
(540) 483-0078
Dean Stone, P.E.

SURVEYOR
Cornerstone Land Surveying, Inc.
250 South Main Street
Rocky Mount, VA 24151
(540) 489-3590
Bob Jeans, L.S.

FACILITY OPERATOR
Western Virginia Water Authority
601 South Jefferson Street, Suite 300
Roanoke, VA 24011
(540) 494-5152
Trent Cox, P.E.



Franklin County Location Map
(not to scale)



Vicinity Map
(not to scale)

Property Information
Ownership, use, etc. is addressed within
Franklin County Special Use Case #SPEC-7-14-13142
Tax Map #'s: 028.00 131.01, 028.00 131.01A, 028.00 131.02
All Zoning is B2

ESC Disturbed Area (LOD)
36,654.34 sf = 0.8415 acres

Responsible Land Disturber (RLD)
Name: _____
Address: _____
(_____) _____-_____
RLD # _____

Stormwater Management Facility Table		
Structure Label	Pond - Proposed	Pond - Future
Type	Detention (Dry)	Detention (Dry)
Contributing Drainage Area	0.96 acres	0.96 acres
GPS Latitude	37° 06' 09.4"	
GPS Longitude	-79° 49' 02.1"	
Tributary to Surface Waters	Maggodee Creek	
Pollutant Load	N/A, no VSMP	N/A, no VSMP
Pollutant Removal (P)	N/A, no VSMP	N/A, no VSMP
HUC (12 digit)	030101010504	
Notes	Pond does not change, site will be altered	

LIMITATIONS ON PLAN USE
1. Plan Set is **VOID** without Engineer's Original Signature on Seal.

Table of Contents

	Page	Description
SEI Controlled	1	Cover Sheet
	2	General Notes
	3	Survey Exhibit
	4	Existing Site & Demolition Plan
	5	Site & Grading Plan
	6	Dimension Plan
	7	Site Details
	8	E&SC Plan
	9	E&SC Narrative & Notes
	10	E&SC Notes
	11	E&SC Details
	12	SWM Plan
	13	SWM Details
	14	Adequate Channel / SWM Exhibit
	15	Landscape & Lighting Plan
WVWA Controlled	T1	Tank Details 1
	T2	Tank Details 2

WVWA Bid Set

REVISIONS		
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(540) 483-5250 fax
www.stoneengineering.biz

COMMONWEALTH OF VIRGINIA
RODNEY DEAN STONE
Lic. No. 032060
02/24/15
PROFESSIONAL ENGINEER

DESIGN	CDS
DRAFT	CDS
CHECK	RDS

Burnt Chimney Water Storage Tank Development Plan
Booker T. Washington Highway (Route 122)
& Burnt Chimney Road (670)
Union Hall Magisterial District, Franklin County, VA

DATE	11/12/2014
SCALE	Varies
SHEET	01 OF 15
PROJECT NUMBER	14036

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GENERAL NOTES

1. This plan shows the construction of a municipal service site consisting of: security fencing, gravel access ways, County Service Building with backup generator and above ground propane tank, Lease pad site, water storage tank, control panel for WVWA to operate water storage system, tank overflow and surface runoff system, the minimum required E&SC items to control sediment discharge, and compliance with the stormwater management facility requirements.
2. All work located on the Owners site.
3. This Plan is based upon the best available information. Sources include:
   - 3.1. Franklin County GIS.
   - 3.2. VGIN 2011 Aerial Photography
   - 3.3. "Topographic Survey prepared for County of Franklin, located in Union Hall Magisterial District, Franklin County, VA" as prepared by Cornerstone Land Surveying, Inc., issued October 9, 2014 as Field Book 569, Job No. 13248, Drawing No. D-181. Scale of 1"=30' and contour interval of 2'.
4. Contractor shall obtain any required entrance permits to the existing Virginia Department of Transportation right-of-way from Resident Engineer prior to construction.
5. Contractor shall coordinate access needs with Owner. If exclusive access is not secured, access for other uses must be maintained as directed by Owner. This would include access for emergency vehicles at all times.
6. All construction methods and materials must be in accordance with current VDOT Road and Bridge Specifications and VDOT Road and Bridge Standards.
7. Unless otherwise indicated, all vegetative and structural erosion and sediment control practices will be constructed and maintained according to minimum standards and specifications of the Virginia Erosion and Sediment Control Handbook, Third Edition, 1992 (VESCH) and Virginia Regulations VR 625-02-00 Erosion and Sediment Control Regulations.

GENERAL GRADING & PAVING NOTES FOR ITEMS INCIDENTAL TO E&SC WORK

1. PREPARATION
   - 1.1. Clear and grub all working areas.
   - 1.2. Topsoil to be stripped and stockpiled before grading per notes.
   - 1.3. Concrete, pavement, stumps, grubbing debris, etc. shall be removed from the site for disposal. This work to be completed at the Contractors expense.
   - 1.4. Geotechnical information is not available. Depth to groundwater and/or rock is unknown. The adequacy of existing material for footings or subgrade is unknown.
   - 1.5. Excess materials to be disposed of as directed by the Engineer. This will be an off-site location provided by the Contractor at the Contractors expense. This site must be approved by local E&SC Authority and have an active E&SC Permit.
2. SUBGRADE TESTING (if required by Owner)
   - 2.1. Contractor to provide driver and loaded truck (as approved by Owner) for proof-rolling of subgrade.
   - 2.2. Owner, or appointee, will determine areas of unsuitable material.
   - 2.3. If subgrade is determined to be inadequate by Owner, it will be undercut and and replaced suitable material or material reinforced with geogrid. Price to be negotiated between Owner and Contractor.
3. STONE BASE COURSE TESTING (if required by Owner)
   - 3.1. Contractor to provide driver and loaded truck (as approved by Owner) for proof-rolling of base course.
   - 3.2. Owner, or appointee, will determine areas of unsuitable material.
   - 3.3. If material is found, that is deemed not suitable for paving as determined by the Owner, the Contractor shall remove and replace it according to notes for material placement at the Contractors expense.
4. MATERIAL PLACEMENT
   - 4.1. Place fill material in lifts not to exceed 6" in compacted thickness. Rock material of maximum dimension greater than 6" shall not be included in the fill material.
   - 4.2. Compact each lift to 95% maximum dry density, moisture conditioned to within ±3% of the optimum moisture content, per ASTM D-698, Standard Proctor Method.
5. GRADE and SHAPE
   - 5.1. Contractor to maintain existing slopes and drainage patterns unless indicated otherwise on the Plans, or as directed by the Owner/Engineer.
   - 5.2. Finish grades of proposed pavement shall match existing grades unless indicated on the Plans, or as directed by the Owner/Engineer.
   - 5.3. All construction control to be provided by the Contractor. If the Contractor deems that surveying/staking is required the work shall be provided by the Contractor at the Contractors expense.
6. PROTECTION
   - 6.1. Contractor is to protect adjoining curbs, walk, signs, vegetation, etc. Contractor to repair all damages at Contractors expense.

LIGHTING

The Lighting Plan is shown on Sheet 15.

PARKING PLAN

This Site Plan provides for the one parking space estimated by the site operator.
Any Requirements to meet American Disability Act (ADA) requirements are addressed on Plans by others.

LANDSCAPE PLAN

This Landscape Plan is shown on Sheet 15.

PROJECT CLOSEOUT

Contractor shall be responsible for repair/replacement of any damages to site features not scheduled for repair or replacement, at the Contractors expense, except as noted on the Plans.

WVWA GENERAL NOTES

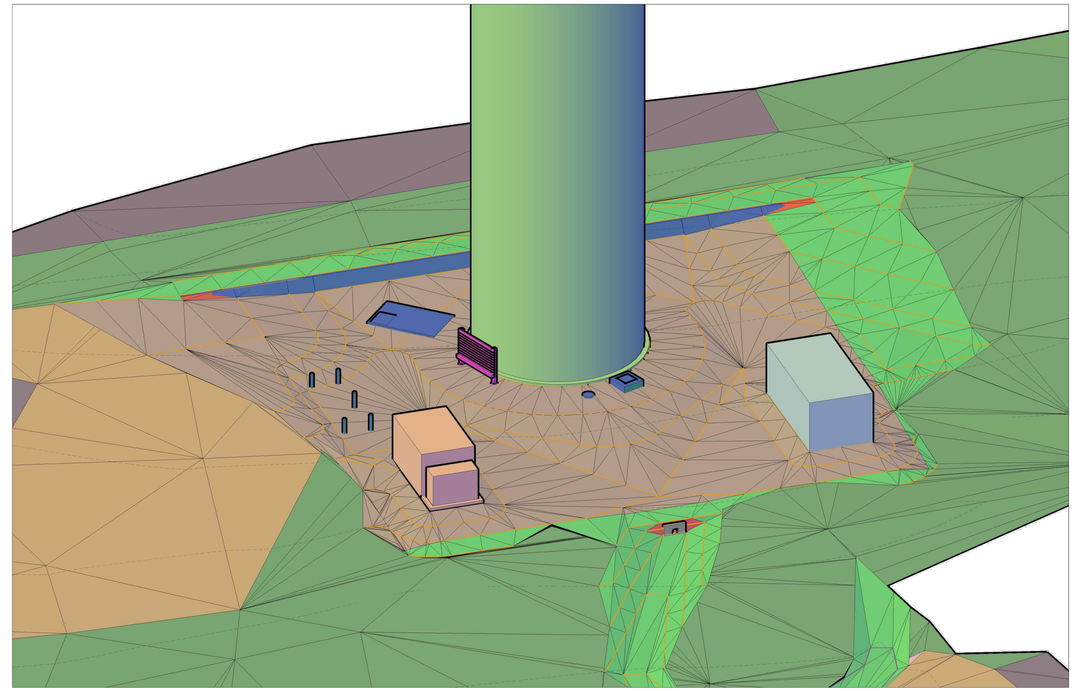
1. All construction methods and materials shall conform to the latest edition of the Design and Construction Standards and Specifications of the Western Virginia Water Authority (Authority) available at www.westernvawater.org or by contacting the Authority at 540-853-5700. The project shall also comply with the governing jurisdiction's standards and other agency standards (e.g., VDOT, DEQ, DCR, VDH, etc.) where applicable.
2. Prior to construction in the right-of-way, all applicable permit(s) from the governing jurisdiction and/or agency must be obtained and a copy kept on the project site.
3. ~~For projects requiring traffic control in the City of Roanoke, notify Manager of Transportation, Mark Jamison, at 540-853-5471 at least two weeks in advance of requiring traffic control. For a lane closure permit in the City of Roanoke, contact the Traffic Engineer, Hong Liu, at 540-853-2686.~~ In Roanoke or Franklin Counties, traffic control requirements shall be determined once the Land Use Permit has been issued. Please contact the local VDOT Office. Traffic control shall be provided in accordance with the most recent MUTCD Manual and the VDOT Work Area Protection Manual unless otherwise specified by the ~~City~~ jurisdiction.
4. The Contractor shall notify the Authority's engineering coordinator, Mark Sink, at 540-537-3460 at least three (3) days prior to construction.
5. A pre-construction conference shall be scheduled at least one (1) day prior to any construction.
6. The Contractor shall have a valid Miss Utility ticket prior to excavation. Contact Miss Utility at 1-800-552-7001.
7. All existing utilities may not be shown or may not be shown in their exact location. Contractor shall locate all utilities and determine all inverts prior to construction to allow for adjustments due to conflicts with other utilities. The contractor shall comply with the Virginia State Water Works Regulations, Section 12VAC5-590-1150, and the Virginia State Sewage Collection and Treatment Regulations where lines cross.
8. An approved set of Plans and Permits must be available at the construction site at all times.
9. Construction debris shall be containerized in accordance with the Virginia Litter Control Act.
10. Prior to commencing work, the Contractor's certified Responsible Land Disturber shall obtain an Erosion and Sediment Control Permit for the project from the local governing jurisdiction and DEQ (if required). All Erosion and Sediment Control measures must be in accordance with the latest edition of the Virginia Erosion and Sediment Control Handbook and shall be installed prior to construction.
11. The Contractor shall provide adequate means of cleaning all vehicles and equipment prior to entering public streets. It is the Contractor's responsibility to ensure that the streets are kept in a clean, mud- and dust-free condition at all times.
12. Field changes shall be approved by the Authority's engineering division prior to such construction.
13. The Contractor shall make provisions to provide access to all properties during construction and shall maintain safe accessibility to fire hydrants at all times.
14. The Contractor shall not excavate more trench length than can be restored within the same work day. All trenches shall be backfilled or plated at the end of each work day or when the Contractor is not on site.
15. The Contractor shall supply the Authority with correct As-Built Plans before substantial completion will be granted.

Utility Information

1. A design locate was not completed as a part of this Plan and was not part of any known referenced plans.
2. All utilities are not shown.
3. All existing utilities are to be maintained in-service during construction.

MISS Utility Location Information

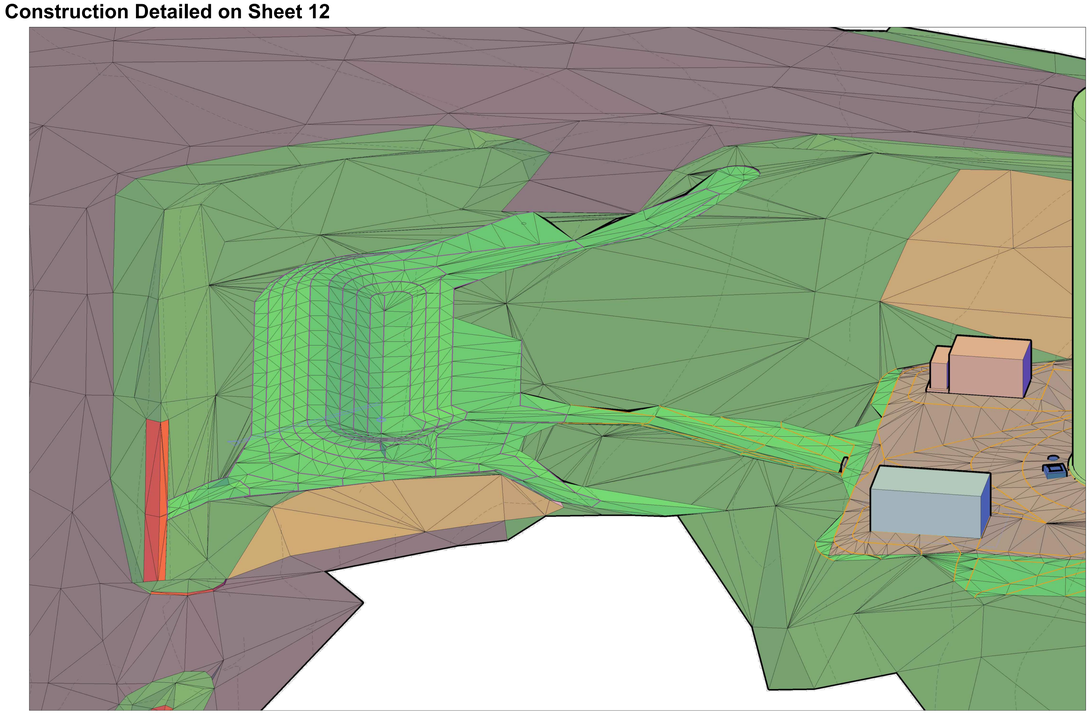
1. Contractor is required to contact MISS UTILITY of Central Virginia @ 1-800-552-7001 (or 811) for a utility mark-out within all working areas BEFORE planning and executing work.
2. Contractor shall verify location and elevation of all underground utilities shown on the plans in areas of construction prior to planning and starting work.
3. Contact Engineer immediately if:
   - 3.1. location or elevation is different from that shown on the plan,
   - 3.2. there appears to be a conflict, or
   - 3.3. upon discovery of any utility not shown on the plan.



Construction Detailed on Sheet 5

Perspective Views are Approximate and may not include all construction items, see Plan Sheets. Fences, landscaping, etc. omitted from this view for clarity.

Construction Detailed on Sheet 12



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4	Revise as directed by WVWA to assist in their bidding	02-24-2015
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2	Revised per Franklin County Letter dated Dec 19, 2014	12-22-2014
1	Revised per Franklin County (post VDH Submittal)	12-04-2014
	DESCRIPTION	DATE

REVISIONS

Stone Engineering
P.O. BOX 1058
Rocky Mount, Virginia 24151
(540) 483-0078
(540) 483-5250 fax
www.stoneengineering.biz

COMMONWEALTH OF VIRGINIA
RODNEY DEAN STONE
Lic. No. 032060
02/24/15
PROFESSIONAL ENGINEER

DESIGN	CDS
DRAFT	CDS
CHECK	RDS

General Notes

Booker T. Washington Highway (Route 122) & Burnt Chimney Road (670)
Union Hall Magisterial District, Franklin County, VA

DATE	11/12/2014
SCALE	As Shown
SHEET	02 OF 15
PROJECT NUMBER	14036

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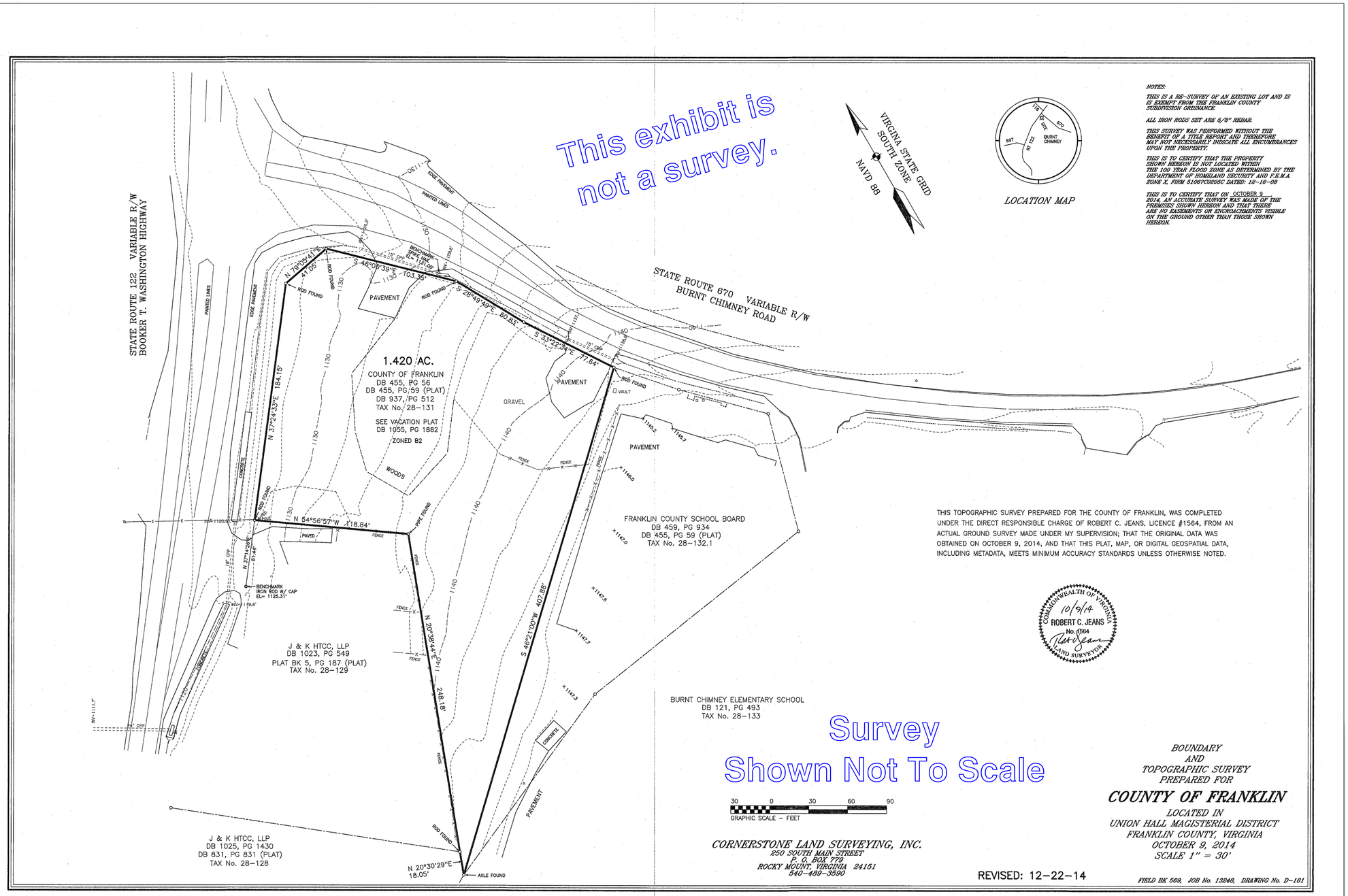
This exhibit is not a Survey

1. Since this exhibit can be reproduced without the control of the surveyor it cannot be an official final version.
2. The Engineer is not providing a survey by including this exhibit.
3. This exhibit is shown with permission of the surveyor.
4. An official signed and sealed survey is available from the surveyor.



NOTES:

THIS IS A RE-SURVEY OF AN EXISTING LOT AND IS IS EXEMPT FROM THE FRANKLIN COUNTY SUBDIVISION ORDINANCE.

ALL IRON RODS SET ARE 5/8" REBAR.

THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE REPORT AND THEREFORE MAY NOT NECESSARILY INDICATE ALL ENCUMBRANCES UPON THE PROPERTY.

THIS IS TO CERTIFY THAT THE PROPERTY SHOWN HEREON IS NOT LOCATED WITHIN THE 100 YEAR FLOOD ZONE AS DETERMINED BY THE DEPARTMENT OF HOMELAND SECURITY AND F.E.M.A. ZONE X, FIRM 51067C0205C DATED: 12-16-08

THIS IS TO CERTIFY THAT ON OCTOBER 9, 2014, AN ACCURATE SURVEY WAS MADE OF THE PREMISES SHOWN HEREON AND THAT THERE ARE NO EASEMENTS OR ENCROACHMENTS VISIBLE ON THE GROUND OTHER THAN THOSE SHOWN HEREON.

REVISIONS

	DATE
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CHECK	RDS

Survey Exhibit

Booker T. Washington Highway (Route 122)
& Burnt Chimney Road (670)
Union Hall Magisterial District, Franklin County, VA

DATE	11/12/2014
SCALE	Not To Scale
SHEET	03 OF 15
PROJECT NUMBER	14036

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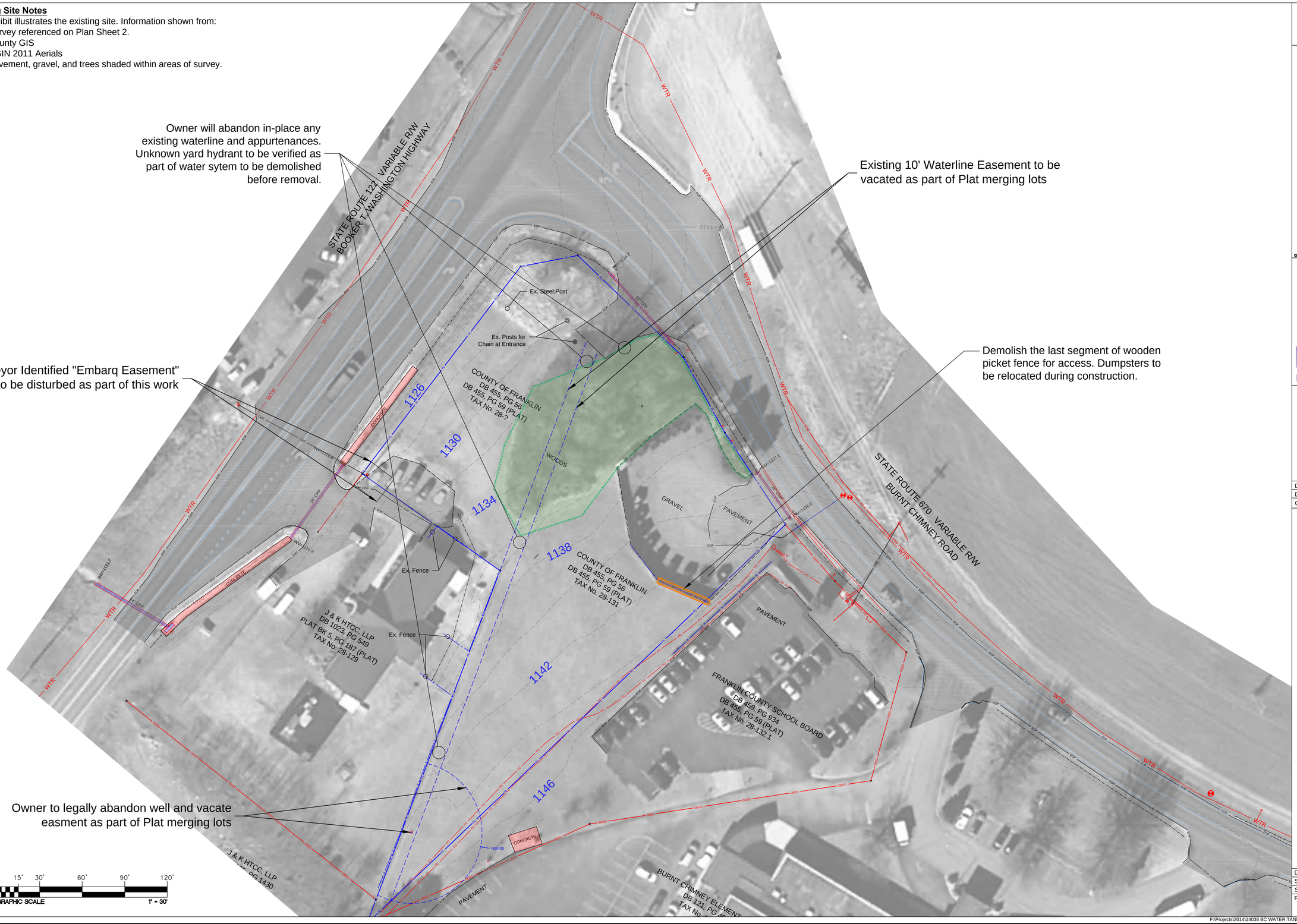
Existing Site Notes

This exhibit illustrates the existing site. Information shown from:

1. Survey referenced on Plan Sheet 2.
2. County GIS
3. VGIN 2011 Aerials
4. Pavement, gravel, and trees shaded within areas of survey.



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(540) 483-5250 fax
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Existing Site & Demolition Plan

Booker T. Washington Highway (Route 122) & Burnt Chimney Road (670)
Union Hall Magisterial District, Franklin County, VA

DATE	11/12/2014
SCALE	As Shown
SHEET	04 OF 15
PROJECT NUMBER	14036

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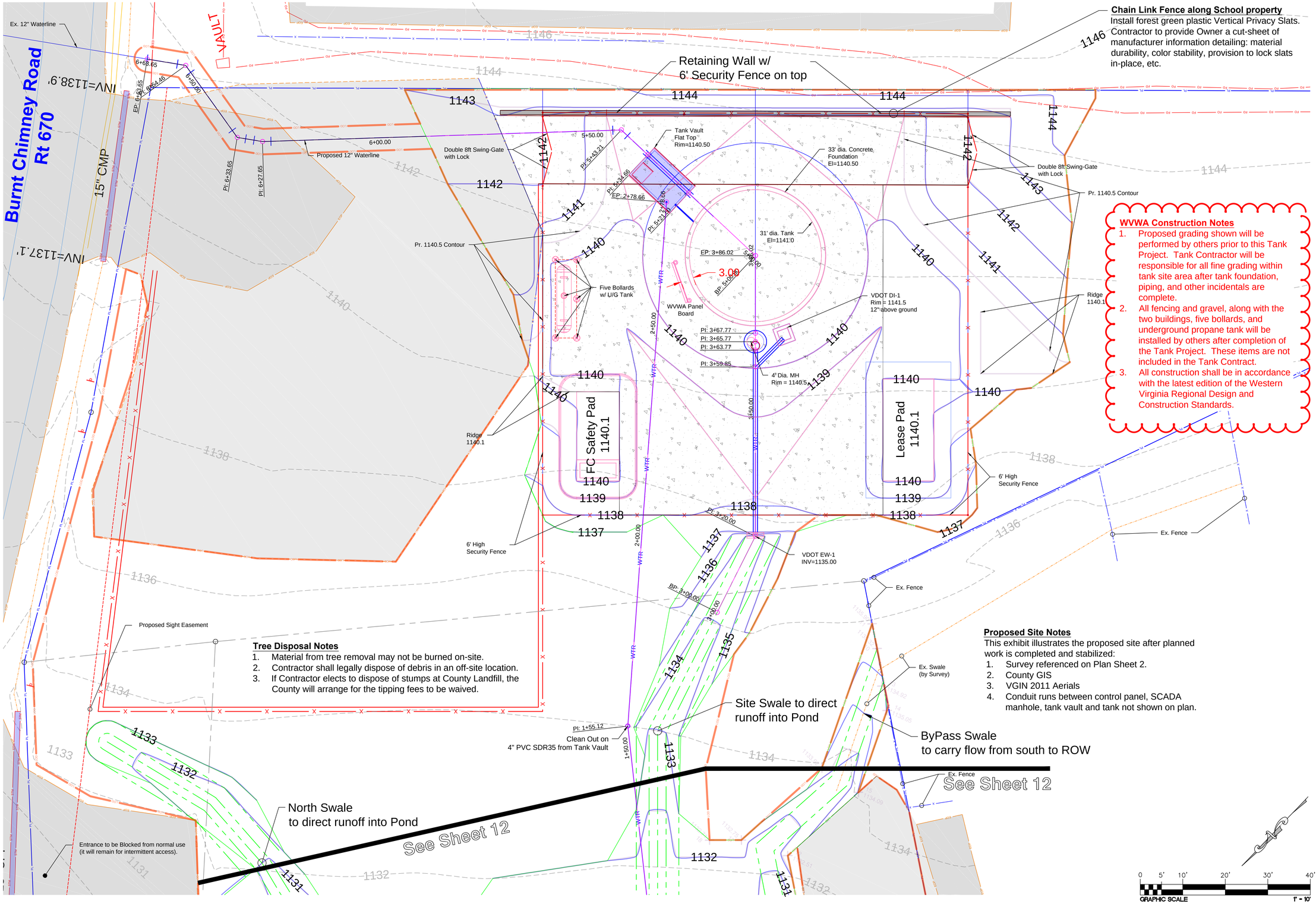

Chain Link Fence along School property
Install forest green plastic Vertical Privacy Slats. Contractor to provide Owner a cut-sheet of manufacturer information detailing: material durability, color stability, provision to lock slats in-place, etc.

WVWA Construction Notes
1. Proposed grading shown will be performed by others prior to this Tank Project. Tank Contractor will be responsible for all fine grading within tank site area after tank foundation, piping, and other incidentals are complete.
2. All fencing and gravel, along with the two buildings, five bollards, and underground propane tank will be installed by others after completion of the Tank Project. These items are not included in the Tank Contract.
3. All construction shall be in accordance with the latest edition of the Western Virginia Regional Design and Construction Standards.

Tree Disposal Notes
1. Material from tree removal may not be burned on-site.
2. Contractor shall legally dispose of debris in an off-site location.
3. If Contractor elects to dispose of stumps at County Landfill, the County will arrange for the tipping fees to be waived.

Proposed Site Notes
This exhibit illustrates the proposed site after planned work is completed and stabilized:
1. Survey referenced on Plan Sheet 2.
2. County GIS
3. VGIN 2011 Aerials
4. Conduit runs between control panel, SCADA manhole, tank vault and tank not shown on plan.

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Site & Grading Plan

Booker T. Washington Highway (Route 122)
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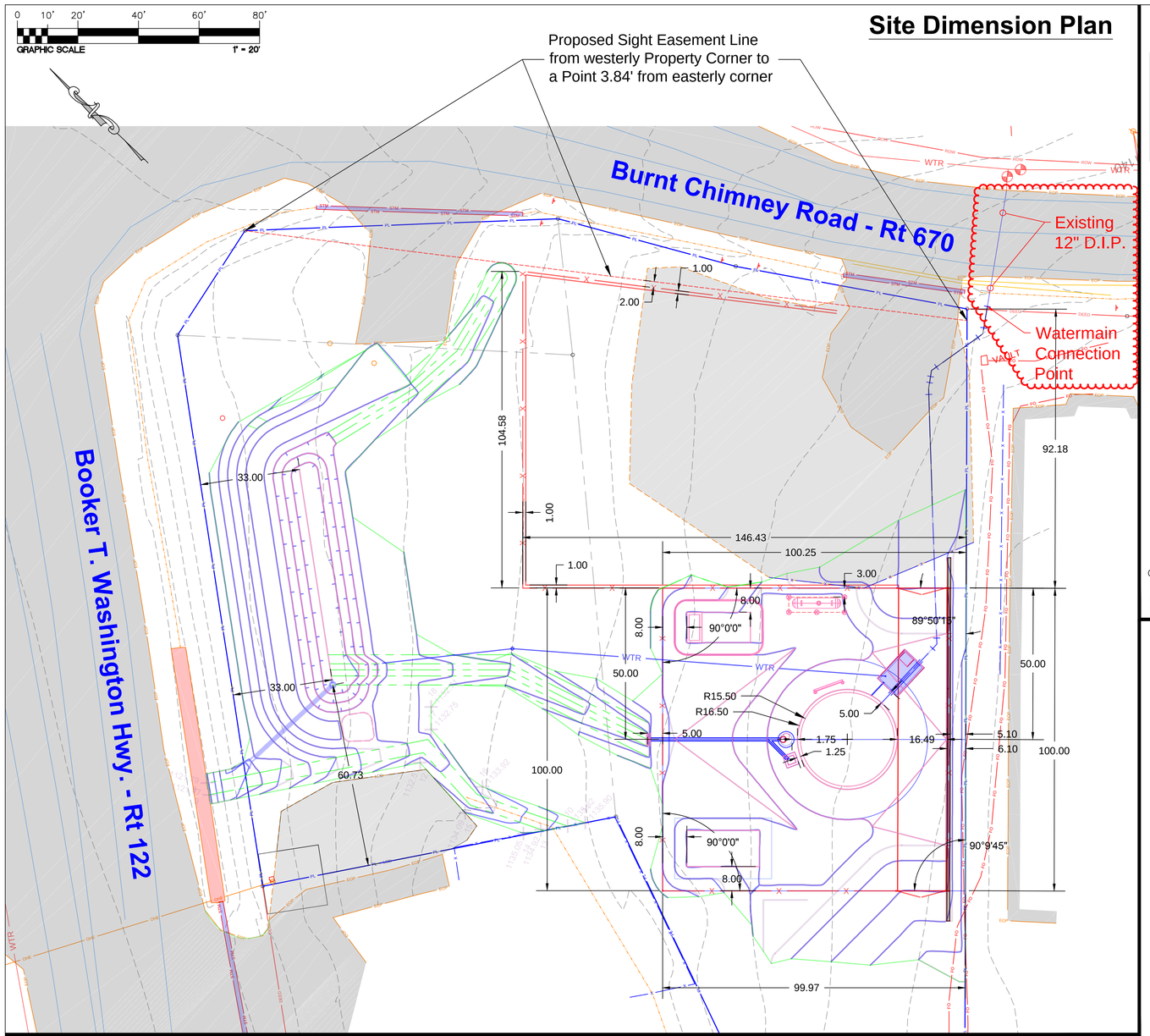
Site Dimension Plan



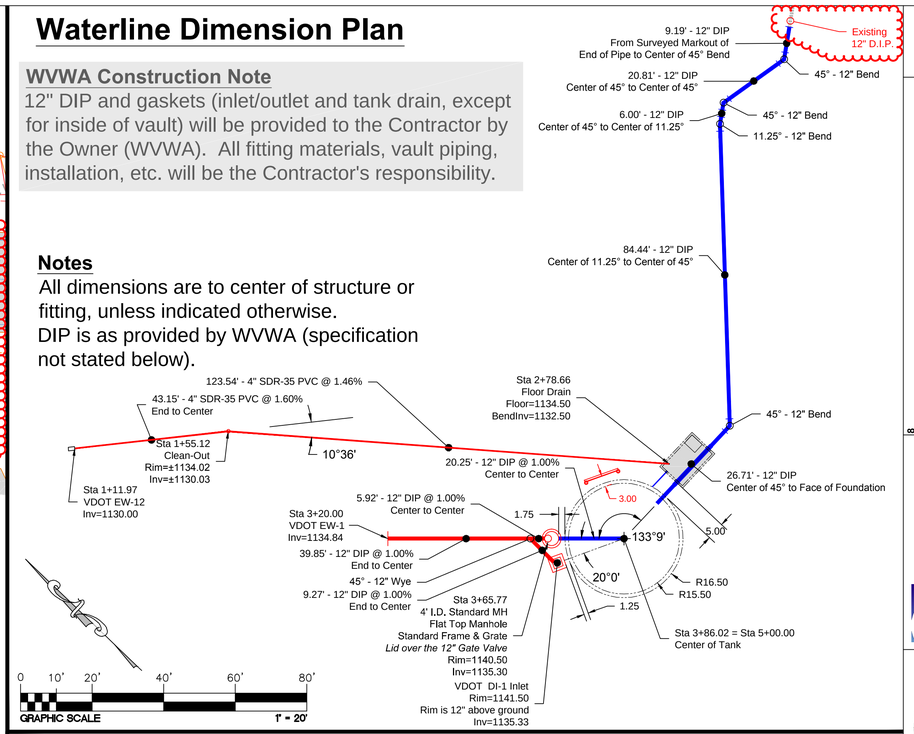
Waterline Dimension Plan

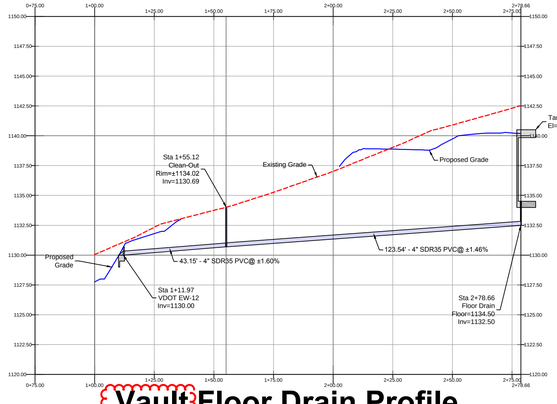
WVWA Construction Note

12" DIP and gaskets (inlet/outlet and tank drain, except for inside of vault) will be provided to the Contractor by the Owner (WVWA). All fitting materials, vault piping, installation, etc. will be the Contractor's responsibility.

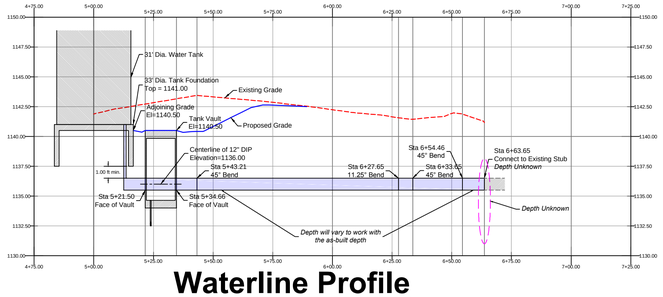
Notes

All dimensions are to center of structure or fitting, unless indicated otherwise.
DIP is as provided by WVWA (specification not stated below).

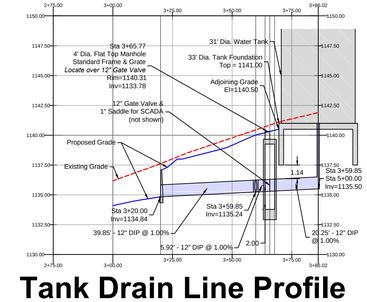




Vault Floor Drain Profile



Waterline Profile



Tank Drain Line Profile

Dimension Plan

Booker T. Washington Highway (Route 122) & Burnt Chimney Road (670)
Union Hall Magisterial District, Franklin County, VA

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DATE	11/12/2014
SCALE	As Shown
SHEET	06 OF 15
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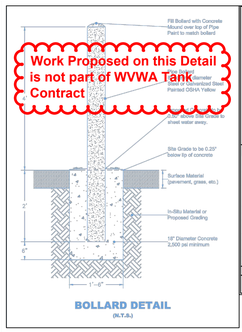
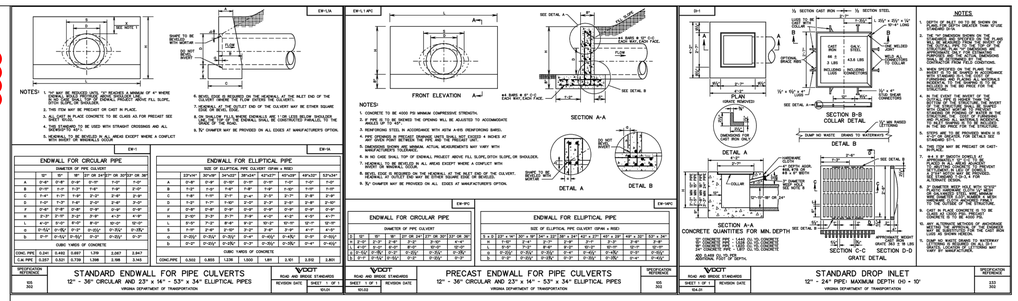
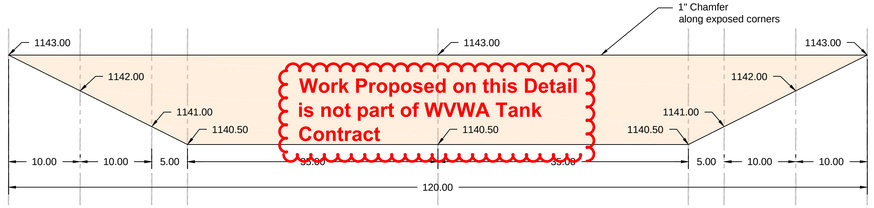


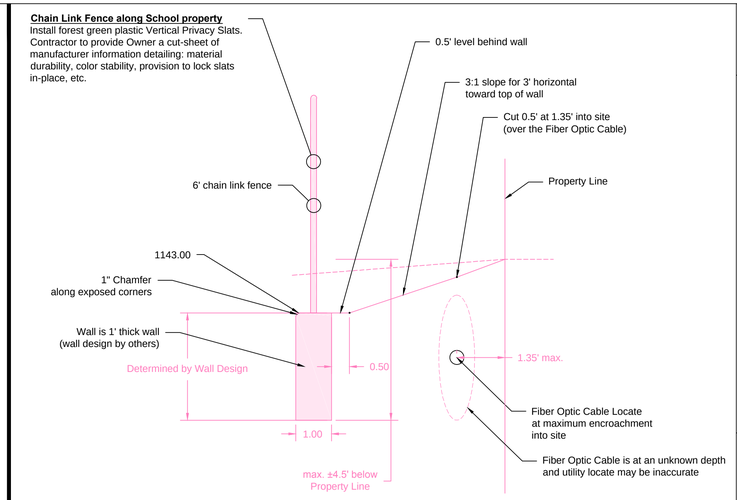




Exposed Face of Wall Detail

(N.T.S.)

Wall Design (by Others). Footing, fence attachment, etc. not detailed.



Wall Detail

(N.T.S.)

Gravel Building Pad Section

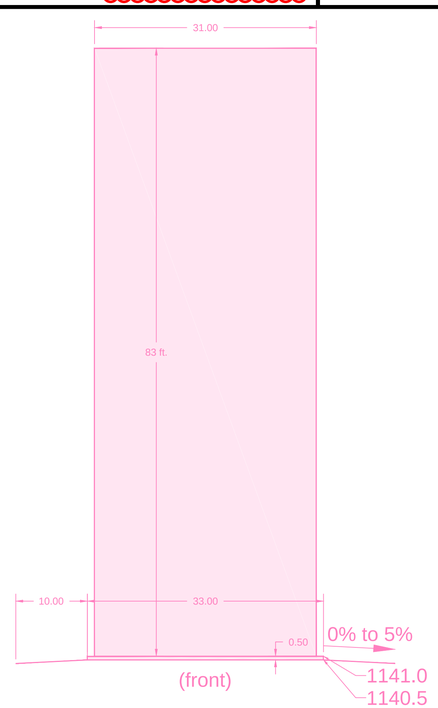
(N.T.S.)

Work Proposed on this Detail is not part of WVWA Tank Contract

GENERAL NOTE

The details and dimension of items shown that are not under the control of the Site Plan are for *reference only* and labelled refering to the documents controlling their construction.

Any design parameters listed hereon are/were used to coordinate the seperate Plans. They are listed to allow field personel to determine if any field changes would require re-design and who to refer to for the work.

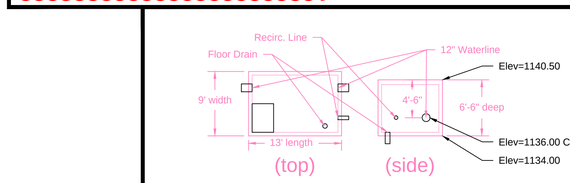


WVWA Water Tower

(N.T.S.)

ALL details for construction, installation, are controlled by Detail Sheets T-1 & T-2 (Designed by WVWA) and *shown hereon for reference only*.

Notes
Bottom of Steel Tower = 1141.00
31' dia at 83' = 62,645.71 cf=468,627.53 gal
600 gpm max overflow = 80.21 cfm=1.34 cfs

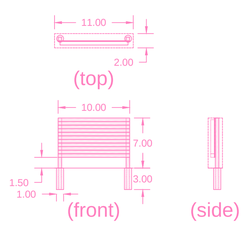


WVWA Tank Vault (13'x9'x6'-6" box)

(N.T.S.)

ALL details for construction, installation, etc. are controlled by Detail Sheets T-1 & T-2 (Designed by WVWA) and *shown hereon for reference only*.

Notes
Rim/Top=1140.50
Waterline Centerline=1136.00
Floor=1134.50

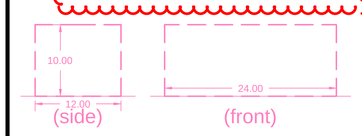


WVWA Panel Board

(N.T.S.)

ALL details for construction, installation, etc. are controlled by Detail Sheets T-1 & T-2 (Designed by WVWA) and *shown hereon for reference only*.

Work Proposed on this Detail is not part of WVWA Tank Contract

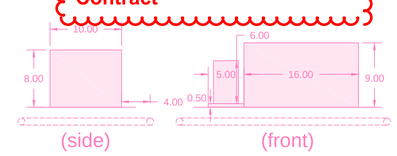


Lease Space (12'x24'x10' box)

(N.T.S.)

Box to encompass: building, generator, & grounding system.
Finish Pad=1140.10
Building Design to be done with future construction

Work Proposed on this Detail is not part of WVWA Tank Contract

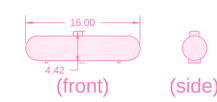


F.C. Public Safety Building

(N.T.S.)

Shown with slab extension for Generator Pad.
Finish Floor=1140.10
Halo ground system shown 'dashed' as an approximate location.
Building Design by Others. Shown hereon for reference only.

Work Proposed on this Detail is not part of WVWA Tank Contract



Underground Propane Tank

(N.T.S.)

1,000 gallon capacity
Contractor/Installer to coordinate corrosion protection, anti-flotation, etc.
Schematically shown hereon for reference only

8			
7			
6			
5	4	Revise as directed by WVWA to assist in their bidding	02.24.2015
	3	Revised Survey Exhibit to 12-31-2014 PDF as provided by Surveyor	01-05-2015
	2	Revised per Franklin County Letter dated Dec 19, 2014	12-22-2014
	1	Revised per Franklin County (post VDH Submittal)	12-04-2014
		DESCRIPTION	DATE

REVISIONS

Stone Engineering
P.O. BOX 1058
Rocky Mount, Virginia 24151
(540) 483-0078
(540) 483-5250 fax
www.stoneengineering.biz

COMMONWEALTH OF VIRGINIA
RODNEY DEAN STONE
Lic. No. 032060
02/24/15
PROFESSIONAL ENGINEER

DESIGN	CDS
DRAFT	CDS
CHECK	RDS

Site Details

Booker T. Washington Highway (Route 122)
& Burnt Chimney Road (670)
Union Hall Magisterial District, Franklin County, VA

DATE	11/12/2014
SCALE	As Shown
SHEET	07 OF 15
PROJECT NUMBER	14036

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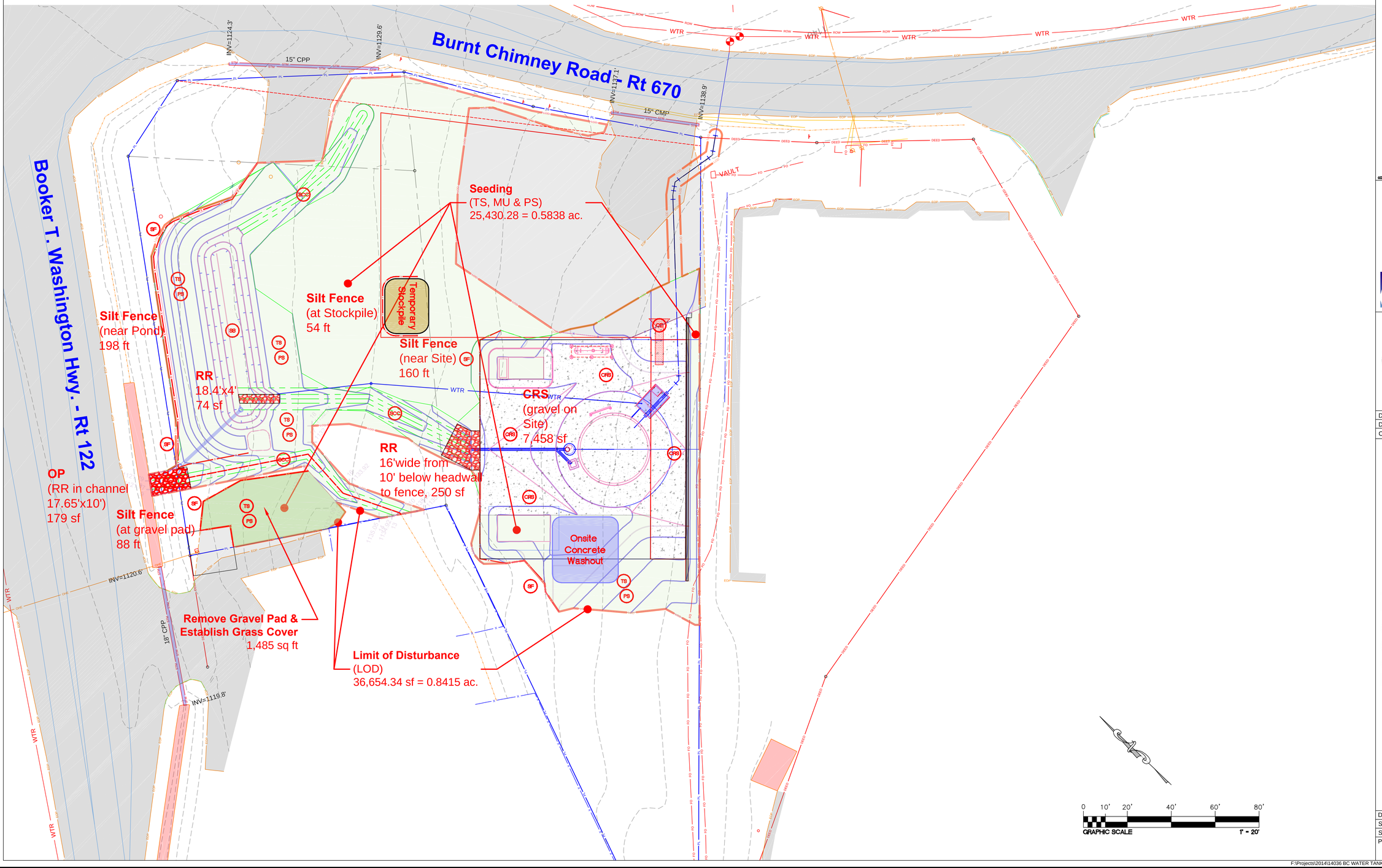
E&SC Plan Notes

Information shown from:

1. Survey referenced on Plan Sheet 2.
2. County GIS
3. VGIN 2011 Aerials

MS-16 Modified per Franklin County

Maximum open trench at any one time is adjusted from 500 feet to 200 feet.



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E&SC Plan

Booker T. Washington Highway (Route 122)
& Burnt Chimney Road (670)
Union Hall Magisterial District, Franklin County, VA

DATE	11/12/2014
SCALE	As Shown
SHEET	08 OF 15
PROJECT NUMBER	14036

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E&SC Narrative

Soil Erosion and Sediment Control Narrative

The following sections describe the potential for erosion and sedimentation and measures to be taken to control those problems related to proposed construction at the Burnt Chimney Road Tank Site.

Project Description
The purpose of this Plan is to prevent the discharge of sediment resulting from the planned work at the Burnt Chimney Road Tank Site.

As part of this work, the following will occur:
- Installation of perimeter controls: construction entrance, and silt fence
- Installation of stormwater conveyance channels
- Grading and access improvements
- Tank Site Construction
- Building Construction
- Construction of a new gravel pad for a future building
- Temporary and Permanent seeding to stabilize any disturbances
- All disturbances will be permanently seeded and mulched.

Project Areas
This plan affects the following areas:
Limit Of Disturbance is ±0.8415 acres
Seeding is 0.5838 acres

Property Location
The site is located southwest of the intersection of Booker T. Washington Highway (Rt.122) & Burnt Chimney Road (Rt. 670).

Existing On-Site Conditions
The site contains a Green-Box Site and an existing well (abandoned). The site is accessed by two paved entrances to Burnt Chimney Road and may be unofficially accessed from the adjoining property to the southwest (Daycare Site) through their entrance.

The site is typified by rolling lawns and a wooded area. The drainage is entirely to the south with all runoff entering the roadway ditches. The runoff exits by an 18" pipe under the Daycare entrance. Existing discharges are evaluated in the "Stormwater Management Report".

Proposed On-Site Conditions
All proposed impervious areas are within the proposed drainage divide tributary to the proposed stormwater management pond. Some existing impervious areas directly discharge to the roadway ditch and are evalauted separately. All proposed discharges are evaluated in the "Stormwater Management Report".

In summary, the developer is proposing to manage runoff on-site before release to the roadside ditch. There are no changes to the point of dicharge and the discharge rate is not increased. Rates and adequate channel calculations are in the "Stormwater Management Report".

Proposed Off-Site Conditions
No off-site properties will be affected as a part of the E&SC Plan.
Demolition materials will be properly disposed of and/or landfilled.
Any import material will be from the approved and regulated sources.

Adjacent Areas
Our E&SC limits of disturbance is entirely within our Site. The Site is bounded to the east by property owned by Franklin County Public Schools and to the southwest by the Daycare Site.

There are no proposed changes to off-site properties as a part of this work and the adjoining areas will not be impacted if the E&SC Plan properly executed.

Soils
The Site is composed of two soil types:

Map Unit Symbol	Erodability Factor	Map Unit Name
7B	0.28	Clifford fine sandy loam
7C	0.28	Clifford fine sandy loam

Maps and supporting information included on the E&SC Plan and in the "Stormwater Management Plan".

Erosion and Sediment Control Measures
Unless otherwise stated, all vegetative and structural erosion and sediment control practices will be constructed and maintained in accordance with the minimum standards and specifications of the 1992 Virginia Erosion and Sediment Control Handbook. If during construction, additional erosion control devices are deemed necessary, they shall be installed as directed by the Site Engineer or Authority personnel.

E&SC Practices
Virginia Erosion and Sediment Control Handbook abbreviated to VESCH.
Virginia Storm Water Management Handbook abbreviated to VSWMH.

1. Temporary Stone Construction Entrance - 3.02 VESCH: A construction entrance will be installed to reduce the amount of dust and/or mud from leaving the site.
2. Silt Fence - 3.05 VESCH: Silt fence shall be installed as shown on the plans.
4. Storm Drain Inlet Protection - 3.07 VESCH: Inlet protection shall be installed as shown on the plans.
5. Temporary Sediment Trap - 3.13 VESCH: Sediment traps shall be installed as shown on the plans.
4. Stormwater Conveyance Channel - 3.17 VESCH: Channels shall be installed as shown on the plans.
5. Temporary Seeding - 3.31 VESCH: Temporary seeding shall be installed as shown on the plans.
6. Mulching - 3.35 VESCH: Mulching shall be installed as shown on the plans.
7. Soil Stabilization Blankets and Matting - 3.36: Matt all slopes steeper than 3:1 as shown on the plans.
8. Permanent Seeding - 3.32 VESCH: Permanent seeding shall be installed as shown on the plans.
   Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Permanent stabilization shall be applied to areas that are to be left dormant for more than a year. Permanent vegetation shall not be considered established until a ground cover is achieved that, in the opinion of the local program administrator or his designated agent, is uniform, mature enough to survive and will inhibit erosion. Reference is made to the 1992 Virginia Erosion and Sediment Control Handbook addressing minimum standards number one and three (MS-1 and MS-3).

Management Strategies
1. Construction should be sequenced so that grading operations can begin and end as quickly as possible.
2. Erosion and sediment control devices shall be installed as a first step of construction.
3. Areas that are not to be disturbed shall be clearly marked by flags.
4. The R.L.D. or grading contractor shall be designated by the Developer as responsible for the installation and maintenance of all erosion and sediment control practices. The R.L.D. shall be responsible for all inspections.

Permanent Stabilization
All areas disturbed by construction will be stabilized with permanent seeding within seven (7) days after finish grading. Permanently seeded areas shall be protected during establishment with straw mulch. Reference is made to the 1992 Virginia and Erosion Sediment Control Handbook addressing minimum standards number one and three (MS-1 and MS-3).

All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the local program authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation. (MS-18)

SEQUENCE OF CONSTRUCTION
1. The contractor shall contact Franklin County Department of Planning and Community Development - Sediment and Erosion Control Inspector Joseph Arthur (jarthur@franklincountyva.gov or (540) 483-3027) in writing a minimum five (5) business days in advance of the pre-construction meeting. Failure to do so makes this a violation of the approved plan and is a finable offense.
2. The contractor shall install the perimeter erosion and sediment control measures including the silt fence, and construction entrance before any land disturbance takes place.
3. The contractor shall then begin installation of the stormwater conveyance channels.
4. The contractor may now begin preliminary grading.
5. The contractor may now begin site plan construction.
6. Before any concrete work is started the Onsite Concrete Washout(s) will be constructed and operated as specified, and, as modified by the Contractor with agreement from Franklin County.
7. Stockpile(s) shall be formed and protected by silt fence and temporary/permanent seeding as required. The ESC Plan provides a location, additional/alternate locations can be provided by the Contractor with agreement from Franklin County.
8. The contractor shall provide temporary seeding and mulching as necessary as construction progresses.
9. The contractor shall begin fine grading and providing permanent seeding as construction nears completion.
10. Once the site has been stabilized and grass is beginning to grow, the contractor shall elocate/stabilize any excess sediment and repair the stormwater conveyance channel as needed.
11. The contractor shall survey and record the excavated area(s) for each stormwater design facility. The surveyed volume information will be part of the as-built/record drawings to verify the stormwater management area to be filled with media meets the designed water quality/quantity volume. (Note this information will be part of the as-built submittal)
12. The contractor shall contact Franklin County for a final site inspection.
13. Once approved, the contractor shall remove temporary erosion and sediment control measures.

During grading, install any additional erosion control techniques as required.
The measures must be kept in place and maintained as needed.
The Operator shall execute the required paperwork to document the operation of the E&SC Plan,

GENERAL EROSION AND SEDIMENT CONTROL NOTES
1. These Plans are an Erosion and Sediment Control Plan. This is an official Plan set only if it is signed and sealed by the original E&SC Engineer, and, stamped and counter-signed by the Plan Approving Authority.
2. A copy of the official approved E&SC Plan must be maintained on-site at all times.
3. The plan approving authority must be notified one week prior to the pre-construction conference, one week prior to the commencement of land disturbing activity, and one week prior to the final inspection.
4. E&SC Authority Note: "Upon site inspection, additional erosion and sediment control measures may be required by the Authority if installed measures are deemed inadequate." The Contractor is responsible for installation of any additional erosion control measures necessary to prevent erosion and sedimentation. This determination will be made by the Plan Approving Authority.
5. The Contractor is responsible for obtaining and adhering to the provisions of the approved E&SC Plan and any modifications thereof.
6. The Contractor shall perform all construction inspections and keep field notes detailing installation, pay tickets, etc..
7. The Contractor shall repair any items damaged immediately. This is regardless of the source of the damage.
8. The Contractor shall perform and properly document all inspections within the regulatory time period and record report on forms in E&SC Plan.
9. The Contractor shall perform and properly document all inspections after a rainfall event as defined in the regulations and record report on forms in E&SC Plan.
10. Contractor is notified that current regulations define the regulatory rainfall event as a 0.25" of rainfall within 24 hours.
11. Unless otherwise indicated, all vegetative and structural erosion and sediment control practices will be constructed and maintained according to minimum standards and specifications of the Virginia Erosion and Sediment Control Handbook, Third Edition, 1992 (VESCH) and Virginia Regulations 4 VAC50-30 Erosion and Sediment Control Regulations.
12. Prior to commencing land disturbing activities in areas other than indicated on these plans (including, but not limited to, offsite borrow or waste areas), the contractor shall: create a supplementary erosion and sediment control plan, acquire approval from the pertinent plan approving authority's, and submit a copy of the plan for the owner to review. This work to be completed at the Contractor's own expense.
13. All disturbed areas are to drain to approved sediment control measures at all times during land disturbing activities and during site development until final stabilization is achieved.
14. Care must be taken during construction to prevent erosion, dust and mud from damaging adjacent property, clogging ditches, tracking public streets and otherwise creating a public or private nuisance to surrounding areas.
15. The entire construction area, excluding proposed gravel, pavement, curb, and concrete, to be backfilled and seeded together with ditches and channels at the earliest possible time after final grading.
16. If erosion is encountered in any drainage easement, it will be the responsibility of the developer to sod, rip rap, grout, pave, or do whatever is necessary to correct the problem.
17. All vegetation and overburden to be removed from areas to receive buildings, pavement, gravel, concrete, etc. prior to the conditioning (cutting and/or preparation) of the subgrade.
18. For underground utilities no more than 200' of trench may be open at one time.
19. There is no work within the existing tree lines except as noted on the E&SC Plan. Individual trees may be designated for protection from damage as noted on the E&SC Plan.
20. The entire working limits may be cleared, grubbed and individual trees may be removed if not noted for protection. Trees to be appropriately disposed of at public landfill, an approved site, or burned on site (if approved by Fire Marshal).

Critical Erosion Areas
If proper methods are followed, there are the following critical erosion areas:
CEA1) Exposed temporary or permanent slopes constructed at 3:1 or steeper slope will be closely monitored. If vegetation cannot reasonably be established the areas will be blanket matted. Temporary silt fence will be placed and maintained at the toe of the slope until the slope has stabilized.

SCHEDULE OF MAINTENANCE
In general, all erosion and sediment control measures will be checked daily and after each significant rainfall. The following items will be checked in particular:
1. Contractor shall regularly inspect all surface conveyances and ditches for erosion and scouring and repair as needed.
2. Contractor shall regularly inspect all silt fences for sediment buildup, undermining, and deterioration of the fabric. Sediment shall be removed when the level of sediment deposition reaches half-way to the top of the barrier. Sediment to be disposed of on-site and permanently seeded, or, removed from site in an appropriate manner.
2. Contractor shall regularly inspect the sediment traps for sediment buildup or damage. Sediment shall be removed when the level of sediment deposition reaches half-way to the top of the barrier. Sediment to be disposed of on-site and permanently seeded, or, removed from site in an appropriate manner.
3. Contractor shall regularly inspect all seeded areas to ensure that a good stand of vegetative cover is maintained. Contractor will reapply seeding, and soil preparation as needed.
4. Contractor shall regularly inspect the construction entrance for sediment buildup and clean, repair, or replace as needed.

RESPONSIBILITY FOR MAINTENANCE AND REPAIR
Is assigned and delegated as follows:
- The R.L.D. (responsible land disturber) employed by the Owner is responsible for executing the Erosion & Sediment Control (E&SC) Plan as approved, and, as amended by the ESC Authority. The R.L.D. will also be the coordinator for any E&SC activities on-site.
- Contractors working on-site are responsible for using and maintaining the E&SC features as they are encountered in the execution of their work.
- The Owner is responsible for authorizing and funding any required activities.
- The ESC Authority is responsible for notifying the R.L.D. of any site issues, site inspections, and amending the E&SC Plan as needed.

Temporary & Permanent Seeding
Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Permanent stabilization shall be applied to areas that are to be left dormant for more than a year. Permanent vegetation shall not be considered established until a ground cover is achieved that, in the opinion of the local program administrator or his designated agent, is uniform, mature enough to survive and will inhibit erosion. Reference is made to the 1992 Virginia Erosion and Sediment Control Handbook addressing minimum standards number one and three (MS-1 and MS-3).

Seeding Mixture

Seeding	Total lbs. Per acre
A. General	200-250 lbs.
- Kentucky 31 or Turf Type Tall Fescue	90-100%
-Improved Perennial Ryegrass* 0-10%	
-Kentucky Bluegrass	0-10%
B. General Slope (3:1 or less)	
- Kentucky 31Fescue	128 lbs
-Red Top Grass	2 lbs.
-Seasonal Nurse Crop**	20 lbs.
	150 lbs.
C. Low Maintenance Slope (Steeper than 3:1)	
- Kentucky 31Fescue	128 lbs
-Red Top Grass	2 lbs.
-Seasonal Nurse Crop**	20 lbs.
-Crownvetch***	20 lbs.
	150 lbs.

*Perennial Ryegrass will germinate faster and at lower soil temperatures than fescue, thereby providing cover and erosion resistance for seedbed.
**Use seasonal nurse crop in accordance with seeding dates as stated below:

March, April - May 15	Annual Rye	May 16 - August 15	Foxtail Millet
August 16 - October	Annual Rye	November - February	Winter Rye

***If Flatpea is used, increase to 30 lb/acre. All legume seed must be properly inoculated. Weeping Lovegrass may also be included in any slope or low-maintenance mixture during warmer seeding periods: add 10-20 lb/acre in mixes.

Lime
Pulverized agricultural grade limestone 2 tons/acre (90 lbs/1000 sf)
Fertilizer
10-20-10 or equivalent nutrients 1000 lbs/acre (23 lbs/1000 sf)
Seed Application
Apply seed uniformly with a broadcast seeder, drill, culti-packer seeder, or hydroseeder on a firm friable seedbed. Seeding depth should be ¼ to ½ inch.

8		
7		
6		
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E&SC Narrative & Notes

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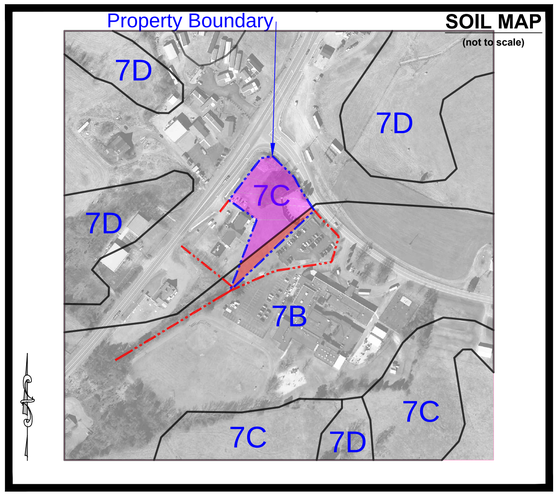

SOILS TABLE

Soil Unit

Soil Unit Line

Unit	Name	Slopes	HSG	Kf
7B	Clifford fine sandy loam	02 to 08 percent	B	0.28
7C	Clifford fine sandy loam	08 to 15 percent	B	0.28

Erosion & Sediment Control
Total disturbance = ±0.8415 acres
(disturbance area calculation on E&SC Plan)

E&SC Quantities

Construction Entrance	1 each
Silt Fence	500 l.f.
Sediment Basin *	1 each (Modified)
Stormwater Converyance Channel	296 l.f.
Construction Road Stabilization	7,458 s.f.
(CRS not included in bonding, work to be completed are part of gravel drive construction)	
RipRap	503 sf
Mulch	25,430 s.f. (0.5838 ac.)
Temporary Seeding	25,430 s.f. (0.5838 ac.)
Permanent Seeding	25,430 s.f. (0.5838 ac.)
Blankets or Matting	0.00 s.y.
Concrete Washout	1 each

E&SC Quantity Notes
1. The Plans are provided as a guide for the execution of the work. Actual quantities will be as required by field conditions.
2. The Erosion & Sediment Control quantities are provided for bonding purposes. This includes a one-time closure of working areas.
3. The contractor shall include within their proposal to the Owner all work to complete the improvements shown.
4. The contractor shall include within their proposal all work to construct & maintain the site during on-going construction of all the proposed measures.
5. It is expected that actual quantities used during construction, and/or as-built, will vary from any estimates included in the Plans. This is due to day-to-day changes, rework, phasing of construction, and unavoidable weather events that cannot be included or predicted.

E&SC Quantity Notes
1. Quantities shown are approximations made by Engineer according to this Plan and shall assist in bond estimates only.
2. Additional materials and/or quantities may be required for completion of the project.

Grading Volume Notes
1. Grading is not estimated as part of this E&SC Plan.
2. Actual work completed in the field should determine the true cost and payment for the grading.
3. Grading contractor to dispose of material to an approved site covered by an existing land disturbance permit.
4. This estimate does not include the demolition of existing features on the site. All disposal material will be removed from the site at the contractors expense for disposal or re-use in a proper manner as directed by the Site Engineer.

Excavation Raw Volume
Grading is not estimated as part of the E&SC Plan.

Off-Site Impacts
Any material to be disposed of off-site must be received by a site with an approved E&SC Plan, or, provide documentation that they are licensed to receive the material. A Municipal landfill does not need to provide documentation per Franklin County. Documentation to be submitted to Franklin County before planning work.

Virginia Uniform Coding System for E&SC Practices

NO.	TITLE	KEY	SYMBOL	NOTES
3.02	Temporary Stone Construction Entrance	CE	CE	Symbol adjusted for labeling consistency.
3.03	Construction Road Stabilization *and Gravel Surfaced Areas*	CRS	CRS	Reflects Gravel surfaces to be maintained, repaired, or created. Symbol per "Green Book" example VI-42.
3.05	Silt Fence	SF	SF	Silt Fence is wire-backed variant only if noted on plan for a specific location.
3.07	Storm Drain Inlet Protection	IP	IP	Type of inlet protectionis noted on Plan for each installation.
3.08	Culvert Inlet Protection	CIP	CIP	Note on Plan describes measure.
3.09	Temporary Diversion Dike	DD	DD	Note on Plan describes measure.
3.10	Temporary Fill Diversion	FD	FD	Note on Plan describes measure.
3.11	Temporary Right-Of-Way Diversion	RWD	RWD	Note on Plan describes measure.
3.12	Diversion	DV	DV	Note on Plan describes measure.
3.13	Temporary Sediment Trap	ST	ST	Contours on Plan denote actual outline of measure and adjoining work to allow installation.
3.14	Temporary Sediment Basin	SB	SB	Symbol changed since sediment basin will be drawn to scale reflecting the actual limits of the structure. Plan notes will describe appurtenances.
3.17	Stormwater Conveyance Channel	SCC	SCC	Note on Plan describes measure.
3.18	Outlet Protection	OP	OP	Note on Plan describes measure.
3.19	Rip Rap	RR	RR	Note on Plan describes measure.
3.20	Rock Check Dams	CD	CD	Note on Plan describes measure.
3.31	Temporary Seeding	TS	TS	This measure may be labeled on Plan as a separate vegetative control measure, or, as part of Permanent Seeding.
3.32	Permanent Seeding	PS	PS	This measure includes TS and MU measures, if not labeled separately.
3.35	Mulching	MU	MU	This measure may be labeled on Plan as a separate vegetative control measure, or, as part of Permanent Seeding.
3.36	Soil Stabilization Blankets & Matting	B/M	B/M	Symbol changed for clarity. Note with symbol on plan will designate treatment method.
3.38	Tree Protection and Protection	TP	TP	Line work indicates limits of protection. In no event will this be less than the drip-line of the trees.
SEI	Onsite Concrete Washout	Onsite Concrete Washout	Onsite Concrete Washout	Specific installation to be determined by Contractor in accordance with Detail, or as modified by Franklin County.

MINIMUM STANDARDS FOR CONTROLLING EROSION AND SEDIMENT

MS-1 Stabilization of Denuded Areas
Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain dormant for longer than 14 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.
All disturbed areas are proposed for permanent stabilization. The Contractor has been directed to execute temporary and/or permanent soil stabilization (as the case requires) in accordance with MS-1.

MS-2 Stabilization of Soil Stockpiles
During construction of the project, soil stockpiles and borrow areas shall be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site as well as borrow areas and soil intentionally transported from the project site.
Soil piles to be located by the contractor on an as-needed basis. Soil piles to be constructed at 2:1 slope or less with a silt fence at the toe of slope. Piles to be temporary seeded if not in-use within 7 days.

MS-3 Permanent Vegetation
A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that, is uniform, mature enough to survive and will inhibit erosion.
All disturbed areas are proposed for permanent stabilization.

MS-4 Timing and Stabilization of Sediment Trapping Measures
Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance takes place.
This is acknowledged and is included in the Sequence of Construction Notes.

MS-5 Stabilization of Earthen Structures
Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation.
Contractor has been directed to stabilize all installed measures at time of construction.

MS-6 Sediment Basins
Sediment traps and sediment basins shall be designed and constructed based upon the total drainage area to be served by the trap or basin.
A. The minimum storage capacity of a sediment trap shall be 134 cubic yards per acre of drainage area and the trap shall only control drainage areas less than three acres.
B. Surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to three acres shall be controlled by a sediment basin. The minimum storage capacity of a sediment basin shall be 134 cubic yards per acre of drainage area. The outfall system shall, at a minimum, maintain the structural integrity of the basin during a twenty-five year storm of 24-hour duration. Runoff coefficients used in runoff calculations shall correspond to a bare earth condition or those conditions expected to exist while the sediment basin is utilized.
This is addressed in the design and this plan accommodates the requirements.

MS-7 Cut and Fill Slopes
Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.
The Owner is notified that the Permit can not be closed until fully stabilized, and, that any "issues" identified within one-year of permit closure will need to be immediately addressed and fully stabilized.

MS-8 Concentrated Runoff Flow Down Cut or Fill Slopes
Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structure.
No concentrated flows are directed across areas of cut or fill on this Plan without adequate control structures down slope. If any rills, gully's, etc. develop the Contractor will re-grade and stabilize.

MS-9 Water Seeps From a Slope Face
Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.
The Contractor has been made aware that any requirements that may be needed to stabilize the site during construction, but not shown on the Plan, are still required. If seeps, weeps, etc. are encountered the Contractor shall repair, maintain, and install whatever measures are required, as directed by Owner or ESC Authority.

MS-10 Storm Sewer Inlet Protection
All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment.
All disturbed areas are filtered before release across the remainder of the site. No storm sewer inlets are impacted before filtering of sediment.

MS-11 Stabilization of Outlets
Before newly constructed stormwater conveyance channels or pipes are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.
The Contractor is notified that features on the discharge end must be installed before upstream features. All work is to establish a perimeter and work inward (upstream).

MS-12 Work in Live Watercourses
When work in a live watercourse is performed, precautions shall be taken to minimize encroachment, control sediment transport and stabilize the work area to the greatest extent possible during construction. Nonerodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by nonerodible cover materials.
Not Applicable. No work is proposed within any live watercourses.

MS-13 Crossing a Live Watercourse
When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary vehicular stream crossing constructed of nonerodible material shall be provided.
Not Applicable. No work is proposed that would involve crossing a live watercourse.

MS-14 Applicable Regulations
All applicable federal, state and local regulations pertaining to working in or crossing live watercourses shall be met.
Not Applicable. No work is proposed that would involve working in or crossing a live watercourse. Permits are not required.

MS-15 Stabilization of Bed and Banks
The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.
Not Applicable. No work is proposed that would involve working in or crossing a live watercourse.

MS-16 Underground Utility Construction
Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:
A. No more than 500 linear feet of trench may be opened at one time.
B. Excavated material shall be placed on the uphill side of trenches.
C. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.
D. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.
E. Restabilization shall be accomplished in accordance with these regulations.
F. Applicable safety regulations shall be complied with.
Contractor is notified that any underground utility work must conform to the above requirements and that maximum open underground trench is 200 feet.

MS-17 Construction Access Routes
Where construction vehicle access routes intersect paved or public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a paved or public road surface, the road surface shall be cleaned thoroughly at the end of each day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner. This provision shall apply to individual development lots as well as to larger land-disturbing activities.
A Construction Entrance is proposed at the access to the Green Box site. The Contractor is aware of restriction for sediment discharges from the site and requirements to immediately clean up any discharges.

MS-18 Temporary Erosion & Sediment Control Measure Removal
All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the local program authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.
All temporary measures will be removed after final stabilization. As noted in the Sequence of Construction the Silt Fence is the last measure to be removed. Any areas disturbed by removal will be appropriately permanently stabilized
.

MS-19 Protection of Downstream Properties and Waterways
Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration. Contractor shall be responsible for obtaining a copy of the approved Erosion and Sediment control Plan and adhere to same. The Virginia Erosion and Sediment Control Handbook shall be used in addition to the approved narrative and plan.
Proper execution of this Plan will control sediment discharge and prevent erosion from anticipated design flows. Any measures to accommodate increased volume, velocity and peak flow rate, as determined in the Stormwater Management Plan (SWMP, a separate document) are shown on this ESC Plan.The SWMP also addresses adequate channel for the E&SC Plan. This is done to an attempt to singly document requirements that occur in the E&SC Program and Virginia Stormwater Management Program (VSMP) permits. Contractor has been notified that the approved Plan is to be maintained on-site and updated to reflect any field changes directed by the ESC Authority. All work will be in accordance with the VESCH, latest revision.

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5	4 Revise as directed by WVWA to assist in their bidding	02-24-2015
	3 Revised Survey Exhibit to 12-31-2014 PDF as provided by Surveyor	01-05-2015
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P.O. BOX 1058
Rocky Mount, Virginia 24151
(540) 483-0078
(540) 483-5250 fax
www.stoneengineering.biz

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RODNEY DEAN STONE
Lic. No. 032060
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PROFESSIONAL ENGINEER

DESIGN	CDS
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CHECK	RDS

E&SC Notes

Booker T. Washington Highway (Route 122)
& Burnt Chimney Road (670)
Union Hall Magisterial District, Franklin County, VA

DATE	11/12/2014
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SHEET	10 OF 15
PROJECT NUMBER	14036

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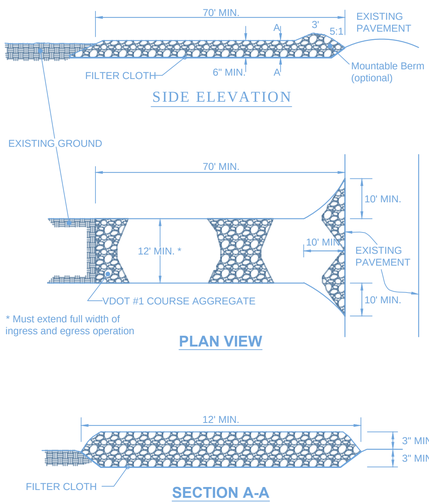
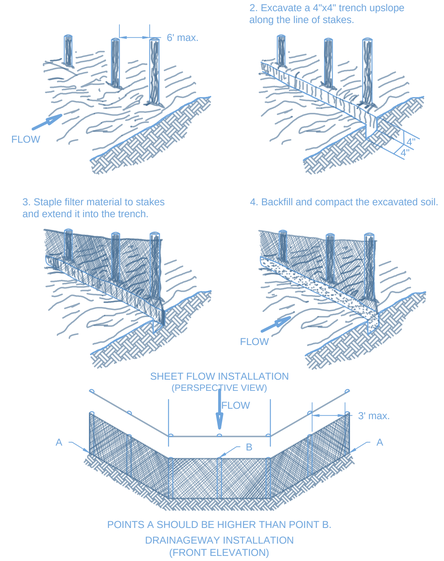
STONE CONSTRUCTION ENTRANCE



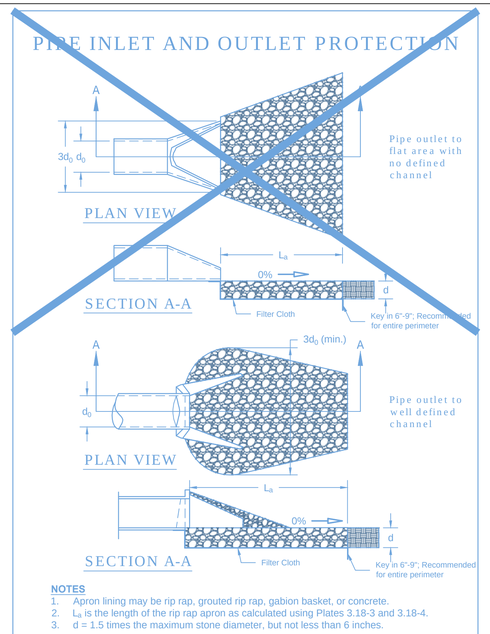
SOURCE: VA. DSWC PLATE. 3.02-1

CONSTRUCTION OF SILT FENCE (WITHOUT WIRE SUPPORT)



SOURCE: VA. DSWC PLATE. 3.05-2

PIPE INLET AND OUTLET PROTECTION



NOTES

1. Apron lining may be rip rap, grouted rip rap, gabion basket, or concrete.
2. L_a is the length of the rip rap apron as calculated using Plates 3.18-3 and 3.18-4.
3. d = 1.5 times the maximum stone diameter, but not less than 6 inches.

SOURCE: VA. DSWC PLATE. 3.18-1

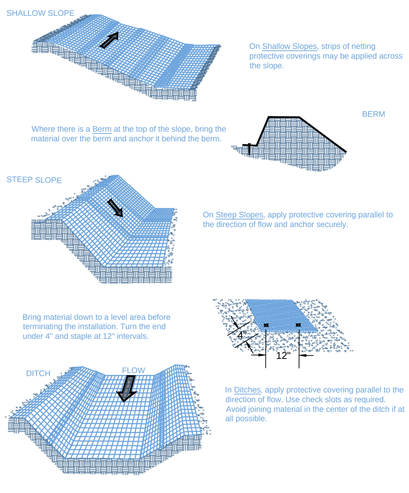
Outlet Protection

	From Pond
Q_{10}	1.255 cfs
Outlet Velocity	4.72 fps
Minimum Tailwater Condition	yes
Upstream Width ($3d_0$)	3.0 ft.
L_a	3.0 ft.
Downstream Width (W)	6.0 ft.
d_{50}	6 in.

Downstream Width (W) varies by tailwater depth
Tailwater < 0.5 d_0: $W = d_0 + L_a$
Tailwater > 0.5 d_0: $W = d_0 + 0.4\ L_a$

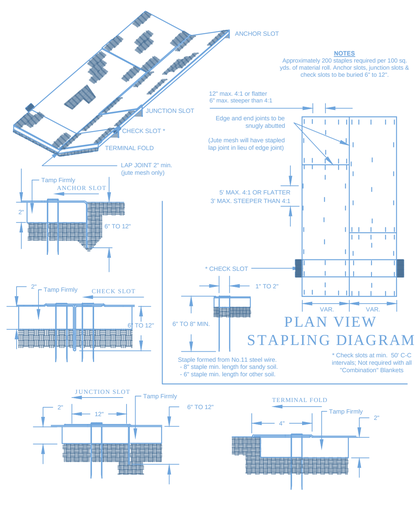
Operation range is off bottom of Nomograph.
Decision is: Upstream Width = $3d_0 = L_a = W$

TYPICAL ORIENTAITON OF TREATMENT - 1 (SOIL STABILIZATION BLANKET)



SOURCE: VA. DSWC PLATE. 3.36-1

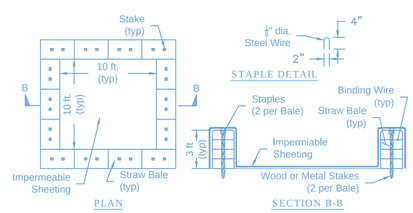
TYPICAL TREATMENT - 1 (SOIL STABILIZATION BLANKET) INSTALLATION CRITERIA



SOURCE: VA. DSWC PLATE. 3.36-2

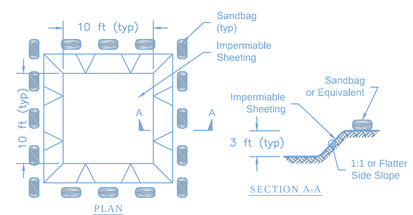
SEI ONSITE CONCRETE WASHOUT

This detail was created for use in Franklin County, VA and is local version of: Detail H-6, Onsite Concrete Washout Structure, Maryland Standards and Specifications for Soil and Sediment Control, Maryland Department of Environment Water Management Administration as approved by the U.S. Department of Agriculture Natural Resource Conservation Service, dated 2011.



WASHOUT STRUCTURE - STRAW BALES

Bales may be two-stacked or partially excavated to reach 3 ft. depth.



ALTERNATE: WASHOUT STRUCTURE - EXCAVATED

Contractor to select structure type.

Standards and Specifications for Onsite Concrete Washout Structure

Definition
A prefabricated or fabricated container used for containing wash water from rinsing out concrete trucks, drums, pumps, chutes, other equipment, and concrete truck exteriors.

Purpose
To promote proper disposal of waste concrete and wash water by containing it onsite thereby preventing contamination of waterways, groundwater, and storm drains.

Conditions Where Practice Applies
Concrete washout structures are used when concrete equipment is cleaned onsite.

Design Criteria

1. Concrete washout structures must be located a minimum of 50 feet away from open channels, storm drain inlets, sensitive areas, wetlands, buffers, and waterways.
2. The location of the washout structure must be away from construction traffic.
3. Excavated washout structures must be located so that they do not intercept surface runoff. If runoff drains toward an excavated structure, a diversion must be provided around the structure.
4. Prefabricated containers are an acceptable alternative to fabricated washout structures provided the volume is adequate to contain all wash water and solids while maintaining at least 4 inches of freeboard.

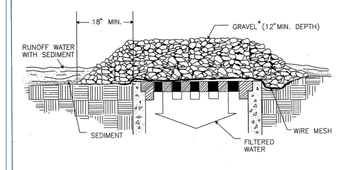
Maintenance
It is critical that the concrete washout structure be watertight. The impermeable liner needs to be replaced if damaged (e.g., ripped or punctured). A washout structure that is 75 percent full must be emptied or replaced, and the accumulated material must be disposed of properly. The liner may not be reused. Prefabricated containers require less maintenance. Stored liquids that have not evaporated can be wet vacuumed and disposed of in an approved manner. Prior to forecasted rainstorms, remove liquids or cover the structure to prevent overflows. Hardened solids can be removed whole or broken up for disposal or recycling. Runoff diversion(s) around an excavated washout structure must be maintained until the structure is removed.

Construction Specifications

1. Locate washout structure a minimum of 50 feet away from open channels, storm drain inlets, sensitive areas, wetlands, buffers and water courses and away from construction traffic.
2. Size washout structure for volume necessary to contain wash water and solids and maintain at least 4 inches of freeboard. Typical dimensions are 10 feet x 10 feet x 3 feet deep.
3. Prepare soil base free of rocks or other debris that may cause tears or holes in the liner. For liner, use 10 mil or thicker uv resistant, impermeable sheeting, free of holes and tears or other defects that compromise impermeability of the material.
4. Provide a sign for the washout in close proximity to the facility.
5. Keep concrete washout structure water tight. Replace impermeable liner if damaged (e.g., ripped or punctured). Empty or replace washout structure that is 75 percent full, and dispose of accumulated material properly. Do not reuse plastic liner. Wet-vacuum stored liquids that have not evaporated and dispose of in an approved manner. Prior to forecasted rainstorms, remove liquids or cover structure to prevent overflows. Remove hardened solids, whole or broken up, for disposal or recycling. Maintain runoff diversion around excavated washout structure until structure is removed.

1992 3.07

GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER



SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY CONCENTRATED FLOWS ARE EXPECTED, BUT NOT WHERE PONDING AROUND THE STRUCTURE MIGHT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES AND UNPROTECTED AREAS.

* GRAVEL SHALL BE VDOT #3, #357 OR #5 COARSE AGGREGATE.

Source: Va. DSWC Plate 3.07-2

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E&SC Details

Booker T. Washington Highway (Route 122)
& Burnt Chimney Road (670)
Union Hall Magisterial District, Franklin County, VA

DATE	11/12/2014
SCALE	As Shown
SHEET	11 OF 15
PROJECT NUMBER	14036

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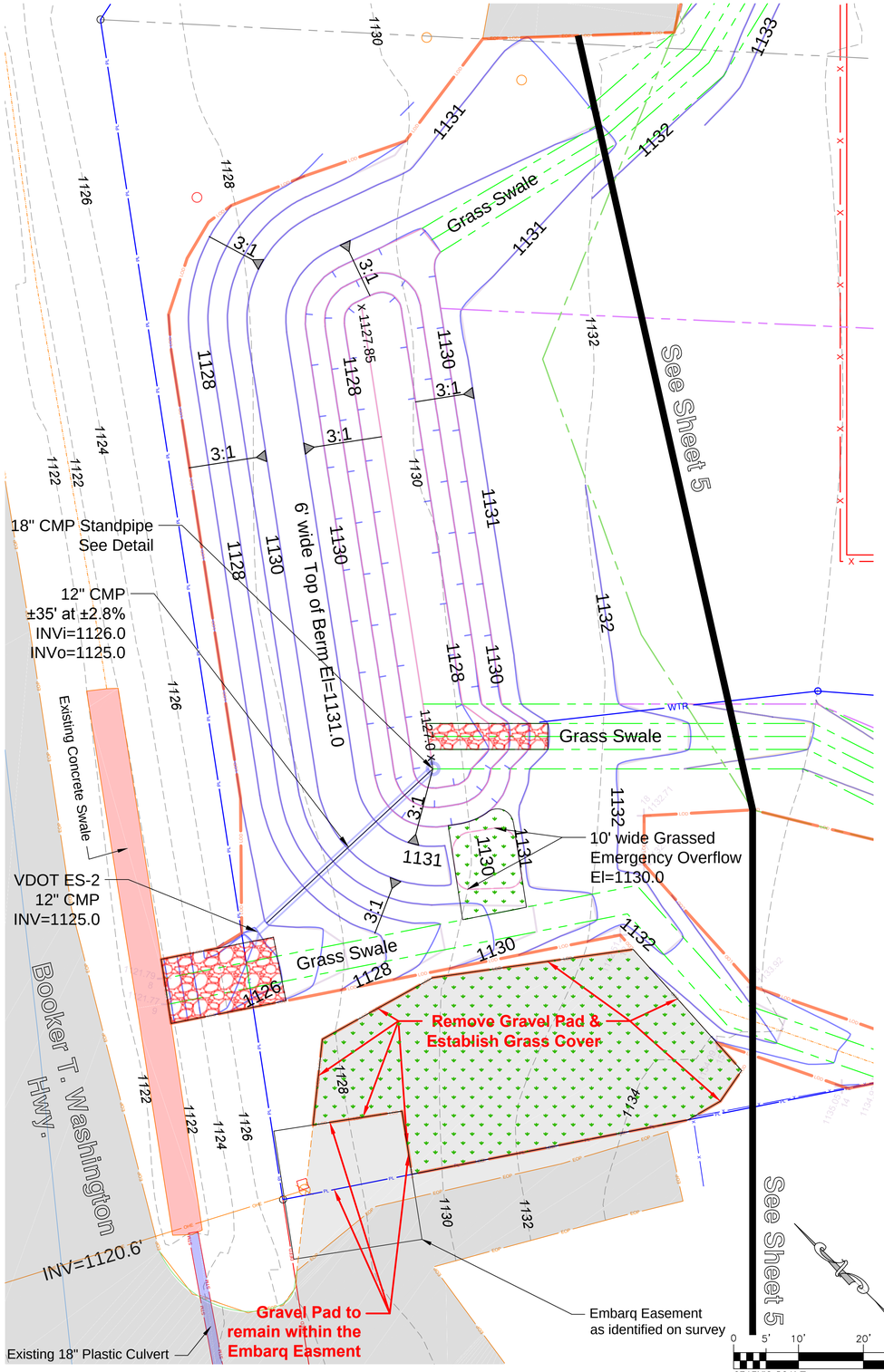
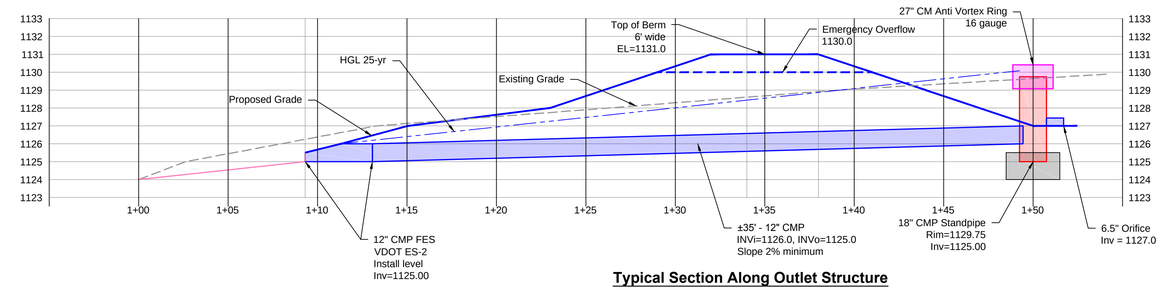




Typical Section Along Outlet Structure
(Horiz: 1" = 4', Vert: 1" = 4')

Security Fence Notes
This design does not require a security fence to limit access for engineering purposes. This determination is based upon:

- the 100-year rainfall maximum water depth of 3.19 feet,
- all sideslopes are 3:1 or less (walkable and mowable),
- low slope access via the north swale.

Property Owner must determine their own needs for access control. Normally riders on the property insurance are available for 4 feet of water depth or less.

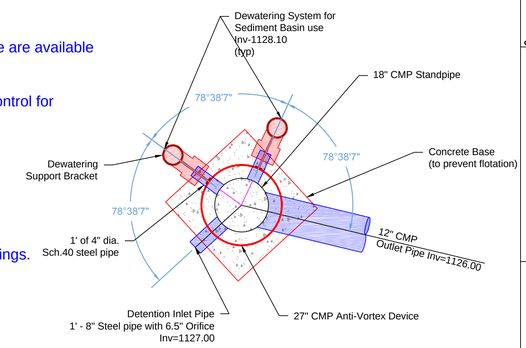
It is left to the Property Owner / Manager to determine insurance liability and other needs related to access control for implementation as part of this work .

General Pond Notes

1. Design Flows for 2-year controlled by orifice.
2. Design Flows for 10-year controlled by orifice and 0.09' over the standpipe.
3. Pond Emergency Bypass (25-year) conveyed by orifice, standpipe and weir at 0.08' depth over weir.
4. The 100-year event is contained within structure with 0.22' depth over weir.
5. Rip rap dimensions on E&SC Plan.
6. Pond shall have minimum 12' wide accessible maintenance area around perimeter of pond with no plantings.

Multi-Use Basin Sizing & Conversion Information

1. The standpipe, orifice and all elevations are based upon final Detention Pond requirements.
2. The interim-condition, Sediment Basin, is based upon a Variance Request from the Standard Sediment Basin.
3. While operated as a Sediment Basin the two filter sock outlets will be in use with the orifice plugged.
4. After conversion to a Detention Pond the filter sock outlets will be plugged and the orifice will be in use.



Multi-Stage Outlet Structure Top View
(n.t.s.)

Variance Request
A variance is requested to install a modified version of the Sediment Basin Standard to meet ESC requirements for the period before the Detention Facility is in-place.

Variance Justification
The justification for granting the variance is:

- less than one-acre is tributary to the detention pond so a Sediment Trap could be used
  - a sediment basin approach is being utilized since we do have a proposed underground discharge path
  - it would prevent re-work required to convert a Sediment Trap into the post-construction detention pond (described in 'Alternate to Variance' below),
  - we avoid the alternate of installing the discharge structure inside a sediment trap and interim maintenance issues
- it would simplify the required work and provide the same level of protection against erosion and sediment transport,
- it would prevent re-work required to convert a Sediment Trap into the post-construction detention pond (described in Alternate to Variance below),
- the fenced tank site will be graveled after grading, so there will be limited sediment discharge and no delay for grass to be established before reducing sediment
- the bulk of the disturbed areas that are not to be graveled are low slope so there will be limited sediment transport

Alternate to Variance (for consideration)
If Variance is not issued the Plans will be revised to a Sediment Trap for the interim-condition.
After site work is finished and stabilized the Sediment Trap would be removed then the Detention Pond Release Structure (weir, standpipe, and discharge pipe) would be installed per the existing Plan. These disturbances would need to be re-stabilized after the re-work before the project can be closed.

Face-On Photo of Site Discharge
(n.t.s.)

Photo of Site Discharge Swale
(n.t.s.)

Pond Operation Summary

Recurance Interval	Water Surface Elevation	Maximum Depth
2-yr	1128.75	1.75
10-yr	1129.84	2.84
25-yr	1130.08	3.08
100-yr	1130.22	3.22

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Stormwater Management Plan

Booker T. Washington Highway (Route 122)
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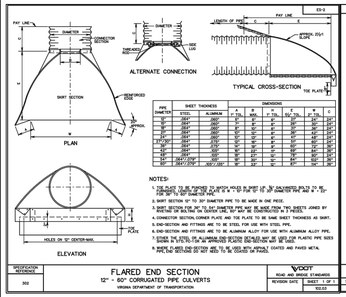
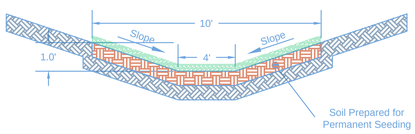


Swale Summary - Unit Calculation Method

Description	Geometry					Results				
	Shape	z	b	S	n	Q10	Area	Pw	V	depth
		ft:ft	ft	%		cfs	sq ft	ft	fps	ft
Bypass Swale	Trapezoidal	3:1	4.0	< 33.3	.04	< 2	0.48	4.70	4.20	0.11
Site Swale	Trapezoidal	3:1	4.0	< 33.3	.04	< 2	0.48	4.70	4.20	0.11
North Swale	Trapezoidal	3:1	4.0	< 33.3	.04	<2	0.48	4.70	4.20	0.11

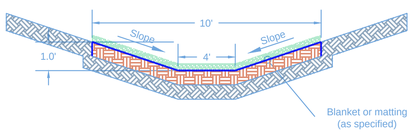
Structure Table

Str01	12" CMP FES, VDOT ES-2	Install Level	INV=1125.00	
Str02	35 ft - 12" CMP	Min. 2% slope	INVi=1126.00	INVo=1125.00
Str03	18" CMP Standpipe	37" CM Anti-Vortex Ring, 16 ga.	RIM=1129.75, INVi=1127.00 (8" tube with 6.5" Orifice), INVi=1128.10 (4" tube for sediment drawdown)	INVo=1126.00



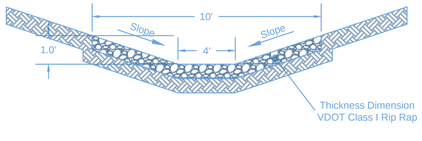
Typical 4-foot Trapezoidal Grass Swale
(N.T.S.)

Slope to be between
1% minimum, and 3:1 maximum



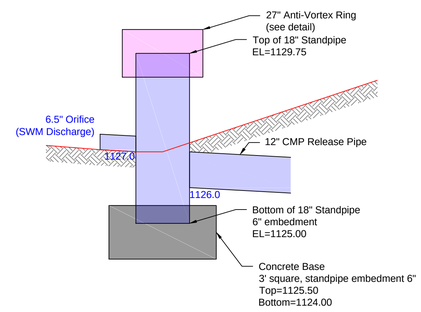
Typical 4-foot Trapezoidal Matted Swale
(N.T.S.)

Slope to be between
1% minimum, and 3:1 maximum



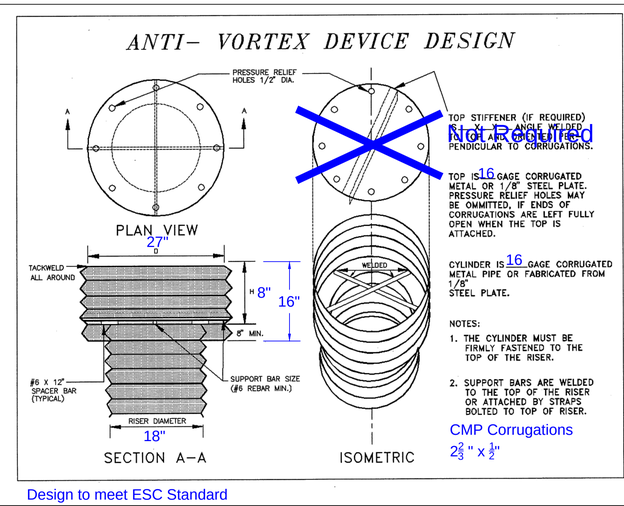
Typical 4-foot Trapezoidal Rip Rap Swale
(N.T.S.)

Slope to be between
1% minimum, and 3:1 maximum



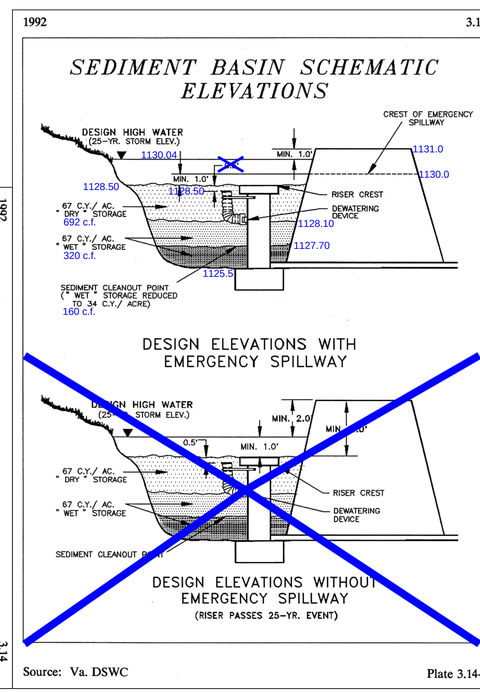
Outfall Structure Anti-Bouyancy Detail
(Note: No calcuations needed for this case.)

Source: USDA-SCS



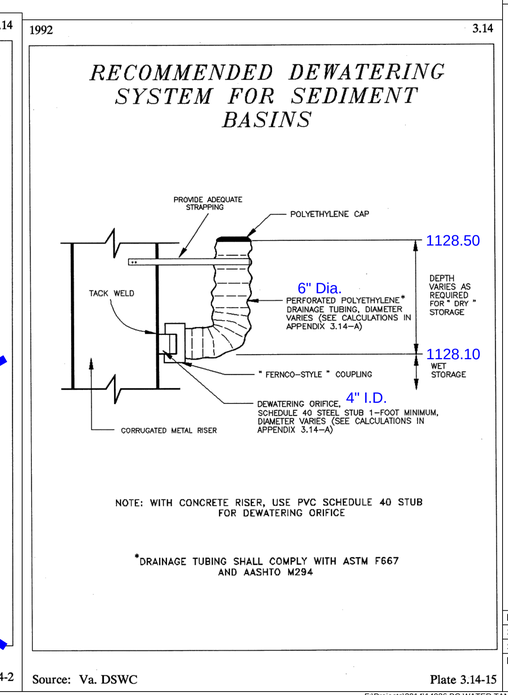
Design to meet ESC Standard

Plate 3.14-10



Source: Va. DSWC

Plate 3.14-2



Source: Va. DSWC

Plate 3.14-15

8		
7		
6		
5	4 Revise as directed by WVWA to assist in their bidding	02.24.2015
	3 Revised Survey Exhibit to 12-31-2014 PDF as provided by Surveyor	01-05-2015
	2 Revised per Franklin County Letter dated Dec 19, 2014	12-22-2014
	1 Revised per Franklin County (post VDH Submittal)	12-04-2014
	DESCRIPTION	DATE

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Stone Engineering
P.O. BOX 1058
Rocky Mount, Virginia 24151
(540) 483-0078
(540) 483-5250 fax
www.stoneengineering.biz

COMMONWEALTH OF VIRGINIA
RODNEY DEAN STONE
Lic. No. 032060
02/24/15
PROFESSIONAL ENGINEER

DESIGN	CDS
DRAFT	CDS
CHECK	RDS

Stormwater Management Details

Booker T. Washington Highway (Route 122)
& Burnt Chimney Road (670)
Union Hall Magisterial District, Franklin County, VA

DATE	11/12/2014
SCALE	As Shown
SHEET	13 OF 15
PROJECT NUMBER	14036

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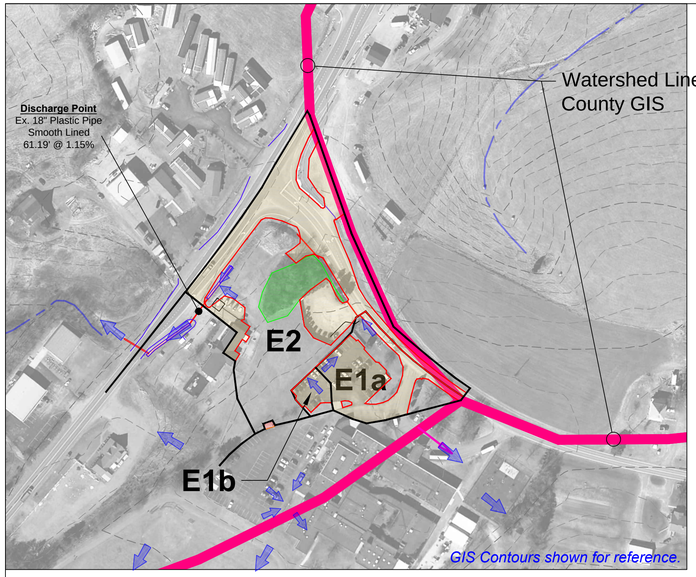


Adequate Channel

(Scale: 1" = 150')

Rational Method

$Q=C_f(CA)I$

Project Name: BC Tank Site
Area: Adequate Channel at Culvert under Daycare Entrance

Description	Station	Area (Ac)	Cavg.	CA
E1a Impervious		0.5618	0.9	0.51
E1a Tree		0	0.3	0.00
E1a Grass		0.1773	0.2	0.04
E1b Impervious		0.107	0.9	0.10
E1b Tree		0	0.3	0.00
E1b Grass		0.0228	0.2	0.00
E2 Impervious		1.3745	0.9	1.24
E2 Tree		0.2548	0.3	0.08
E2 Grass		1.6573	0.2	0.33
Sum Area:		4.1555	Sum CA:	2.29
			Cavg	0.550

Time of Concentration:

Overland:
Length of Travel: (ft) 0
"n" Value: 0.024
Slope: (ft/ft) 0.04
T= 0.00 min

Shallow Concentrated:
Length of Travel: (ft) 0
Slope: (ft/ft) 9.1
Paved (yes/no) No
Average Velocity (fps) 4.8
T= 0.00 min

Channel:
Length of Travel: (ft) 0
Height: (ft) 1
T= 0.00 min

Sum= 0.00 min
Tc= 5.00 min

Cf	CA	I	Q	
1.00	2.29	5.01	11.45	Q_2
1.00	2.29	6.52	14.90	Q_{10}
1.10	2.52	7.44	18.71	Q_{25}
1.25	2.86	8.67	24.79	Q_{100}

All paths <200' to improved channels

Overland and shallow flow time calculations per NRCS TR55 procedures.

Cover	n
Paved	0.011
Dense Grass	0.24
Woods with light brush	0.4
Wood with heavy brush	0.8

Channel flow time calculations per VDOT Drainage Manual, Appendix 6D-5, Kirpich Method
Rainfall Intensities from B,D, & E factors based onVDOT HDA 05-03

0 75' 150' 300' 450' 600'
GRAPHIC SCALE 1" = 150'

Culvert HY-8 Evaluation Summary

Event (yr)	Flow (cfs)	HW Elev (ft)	Outlet Velocity (fps)	Control State	Note
Q_2	11.45	1122.85	7.23	Inlet	Barrel Full, concrete lined entrance and exit.
Q_{10}	14.9	1123.91	8.662	Outlet	Barrel Full, concrete lined entrance and exit.

Adequate Channel Calculation for E&SC

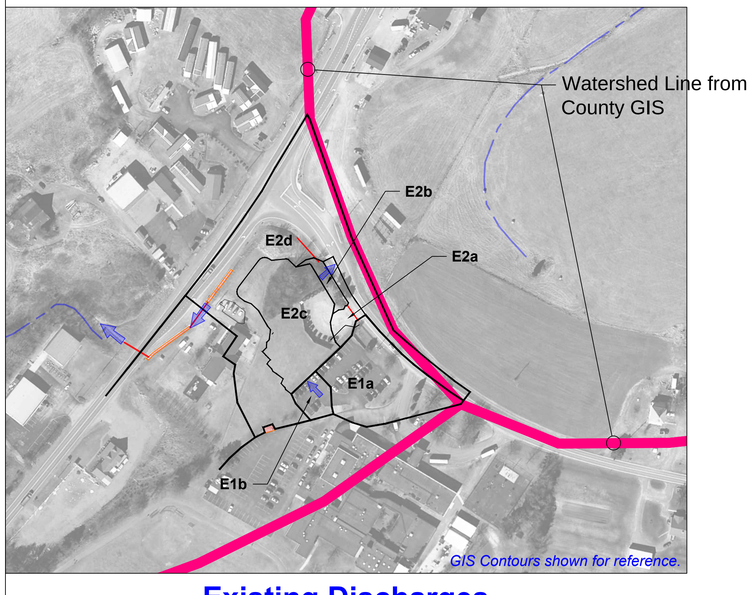
1.1. Evaluated at 18" Culvert under Daycare Entrance.
1.2. Steep Slopes and short flowpaths hit the 5 minute lower limit for calculation.
1.3. High velocities encounterd in ditchand culvert.
1.4. Existing ditch is concrete lined and is adequate - will not erode.

Basin Notes

E1a = P1a No Changes
E1b = P1b No Changes
E2a = P2a No Changes
E2b = P2b Trees removed. Undetained increase in runoff
E2c = P2c Detention. Includes reduction to offset non-detained areas
E2d = P2d Grass areas graded and reseeded - No Changes
Basin slopes and impervious cover result in Tc at 5 minute lower limit for evaluation in all cases.

Analysis Note

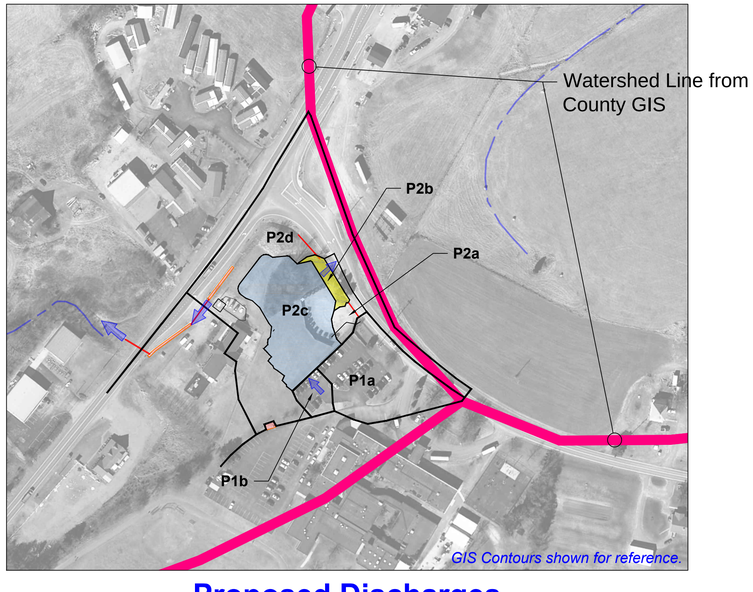
E1a = P1a *Trib to ROW, Bypass system under analysis, not calculated*
E1b = P1b No Changes, included in system under analysis
E2a = P2a *Trib to ROW, Bypass system under analysis, not calculated*
E2b = P2b Trees removed. Undetained release. Detention release rate reduced to compensate
E2c = P2c Detention. Includes reduction to offset non-detained areas
E2d = P2d Grass areas graded and reseeded - No Changes, Bypass system under analysis, not calculated
Note: Flow Paths not shown. All Tc < 5 minute lower-limit due to small size of the watershed.



Existing Discharges

(Scale: 1" = 150')

Existing		Area (sf)	Area (ac)	Tree (sf)	Tree (ac)	Impervious (sf)	Impervious (ac)	Grass (sf)	Grass (ac)	Tc (min)	Q2 (cfs)	Q10 (cfs)
E1b	Trib to Pond	5652.25	0.1298	0	0.0000	4662	0.1070	992.25	0.0228	5.00	0.583	0.932
E2b	Trib to ROW	3292.76	0.0756	1288.01	0.0296	0	0.0000	2004.75	0.0460	5.00	0.054	0.191
E2c	Trib to Pond	35872.12	0.8235	9810.68	0.2252	6549.1	0.1503	19512.34	0.4479	5.00	1.092	2.8
Total										*Peak of Hydrographs (not a sum)*	**1.722**	**3.913**



Proposed Discharges

(Scale: 1" =150')

Proposed		Area (sf)	Area (ac)	Tree (sf)	Tree (ac)	Impervious (sf)	Impervious (ac)	Grass (sf)	Grass (ac)	Tc (min)	Q2 (cfs)	Q10 (cfs)
P1b	Trib to Pond	5652.25	0.1298	0	0.0000	4662	0.1070	992.25	0.0228	5.00	0.583	0.932
P2b	Trib to ROW	3292.76	0.0756	0	0.0000	0	0.0000	3292.76	0.0756	5.00	0.068	0.214
P2c	Trib to Pond	35872.12	0.8235	0	0.0000	15923.18	0.3655	19948.94	0.4580	5.00	2.108	1.169
										Pond Inflow	2.686	5.091
										Pond Discharge	1.348	2.216
Total										*Peak of Hydrographs (not a sum)*	**1.394**	**2.33**

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	DESCRIPTION	DATE

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Stone Engineering
P.O. BOX 1058
Rocky Mount, Virginia 24151
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(540) 483-5250 fax
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RODNEY DEAN STONE
Lic. No. 032060
02/24/15
PROFESSIONAL ENGINEER

DESIGN	CDS
DRAFT	CDS
CHECK	RDS

Adequate Channel / SWM Exhibit

Booker T. Washington Highway (Route 122)
& Burnt Chimney Road (670)
Union Hall Magisterial District, Franklin County, VA

DATE	11/12/2014
SCALE	As Shown
SHEET	14 OF 15
PROJECT NUMBER	14036

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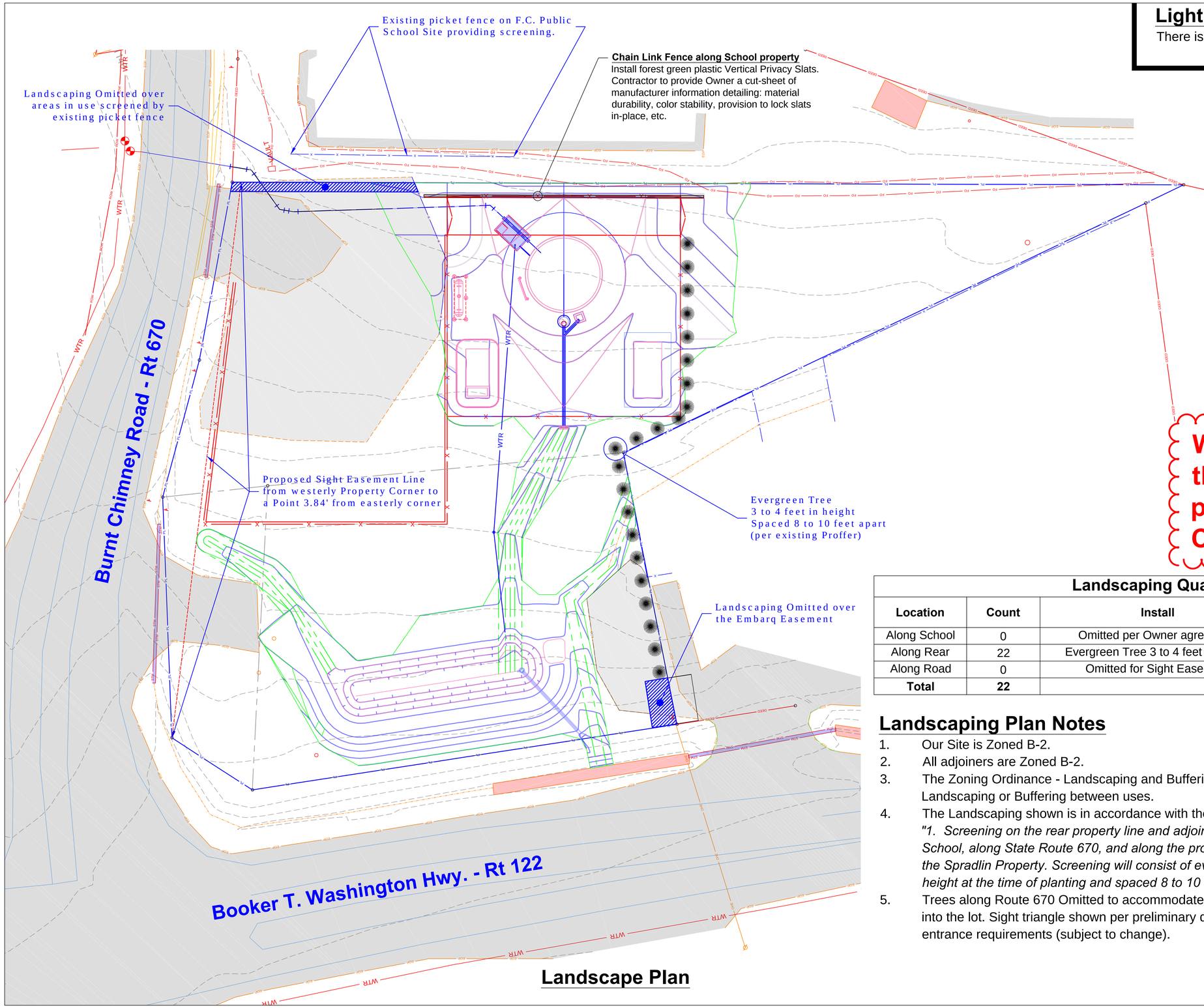

Lighting Plan Note

There is no proposed lighting on the Proposed Site.

Work Proposed on this Sheet is not part of WVWA Tank Contract

Landscaping Quantities

Location	Count	Install	Spacing along Row	Offset from Property Line
Along School	0	Omitted per Owner agreement		
Along Rear	22	Evergreen Tree 3 to 4 feet in height	10'	3'
Along Road	0	Omitted for Sight Easement		
Total	**22**			

Landscaping Plan Notes

1. Our Site is Zoned B-2.
2. All adjoiners are Zoned B-2.
3. The Zoning Ordinance - Landscaping and Buffering Section, does not require any Landscaping or Buffering between uses.
4. The Landscaping shown is in accordance with the existing proffer from 1989 *"1. Screening on the rear property line and adjoining Burnt Chimney Elementary School, along State Route 670, and along the property line adjoining the rear of the Spradlin Property. Screening will consist of evergreen trees, 3 to 4 feet in height at the time of planting and spaced 8 to 10 feet apart."*
5. Trees along Route 670 Omitted to accommodate the sight triangle that cuts deep into the lot. Sight triangle shown per preliminary discussions with VDOT on entrance requirements (subject to change).

Landscape Plan

0 10' 20' 40' 60' 80'
GRAPHIC SCALE 1" = 20'

8		
7		
6		
5		
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Landscape & Lighting Plan

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& Burnt Chimney Road (670)
Union Hall Magisterial District, Franklin County, VA

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SHEET	15 OF 15
PROJECT NUMBER	14036

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