APPLICATION
FOR RELIEF FROM REQUIREMENTS OF THE CHESPEAKE BAY PRESERVATION PROGRAM
EXCEPTIONS, WAIVERS, EXEMPTIONS AND BUFFER ENCROACHMENTS

To:

The Bureau of Permits and Inspections
Department of Community Development
900 E. Broad Street, Room 110
Richmond, Virginia 23219
Phone (804) 646-6440 Fax (804) 646-6948

Date: 9/28/18

Type of Relief Requested (check one)

☑ Exception ☐ Waiver ☑ Encroachment ☐ Exemption

Please attach required documents.
Requests for exceptions also require an application fee payable to "City of Richmond".

Property Address(es): 5612 LANGDON COURT

Tax Parcel No(s): C0050200030

Brief Description of Exception: EXCEPTION FOR THE CONSTRUCTION OF A SINGLE FAMILY DWELLING

Applicant/Contact Person: TAYLOR GOODMAN, BALZER & ASSOCIATES, INC.

Mailing Address: 15871 CITY VIEW DR. SUITE 200 MIDLOTHIAN, VA 23113

Telephone: (804) 794-0571 Fax: (804) 794-2635

Email address: TGOODMAN@BALZER.CC

Property Owner: R.E. COLLIER, INC.

Mailing Address: 9415 HULL STREET ROAD, SUITE E RICHMOND, VA 23236

Telephone: (804) 276-4134 Fax: (804) 0823

Property Owner's Signature: by William Goldsby

The signatures of all owners of the property are required. Please attach additional sheets as required. If a legal representative signs for a property owner, please attach an executed power of attorney.

Project Information (check appropriate boxes)

Current Use of Property (check one)–

- [x] Vacant Land to be developed
- [ ] Single Family Residential
- [ ] Other: _____
- [ ] Commercial/Office/Industrial
- [ ] Parking or other paved surface
- [ ] Multi-family residential

Subdivision Name, Lot and Section Number: Westover Hills West Lot 13 Blk G Sec D

Lot was last recorded:

- [x] Prior to October 1989
- [ ] Between October 1989 and February 2002
- [ ] After February 2002

Area of Property (square footage)

Within RPA: 16,299 Outside RPA: 90 Total: 16,389

Activity requiring relief is located in (check all that apply)

- [x] Resource Protection Area Buffer land ward 50 feet
- [x] Resource Protection Area Buffer seaward 50 feet
- [x] Slopes greater than 25 percent
- [ ] Wetlands
- [ ] Resource Management Area

Activity requiring relief involves (check all that apply)

- [x] Construction of New principal structure
- [ ] Accessory (detached) structure
- [ ] Addition to principal structure
- [x] Parking area, or driveway, or roadway
- [ ] Paved pathways
- [x] Tree/vegetation removal
- [ ] Utilities
- [ ] Other: _____

Total square footage of RPA impacted: 6,748

Are there any additional approvals or permits from local, state, or federal agencies required for any portion of this project (zoning variances, wetland permits, etc)?

- [x] No
- [ ] Yes, Please describe: _____

Description of the Activity and reason for the request:

Construction of a single-family dwelling and driveway with an exception to encroach into the landward and seaward RPA due to the lot size and configuration.

For **Exceptions**, Please complete the following

APPLICANT'S JUSTIFICATION FOR THE REQUESTED EXCEPTION

In accordance with Section 50-340(c) (1) of the Richmond City code, An exception cannot be granted unless specific findings are made. Please describe how the particular CBPA exception request would meet these six findings:

1. The requested exception to the criteria is the minimum necessary to afford relief;
2. Granting the exception will not confer upon the applicant any special privileges that are denied by the ordinance to other property owners who are subject to its provisions and who are similarly situated;
3. The exception request is in harmony with the purpose and intent of the Ordinance and is not of substantial detriment to water quality;
4. The exception request is not based upon conditions or circumstances that are self-created or self-imposed;
5. Reasonable and appropriate conditions are imposed, as warranted, to prevent the proposed activity from causing degradation of water quality;
6. Other findings and conditions, required by the City have been met.

1. The encroachment into 2,711 ft² landward and 4,037 ft² seaward RPA is the minimum necessary for the construction on the lot due to steep existing slopes and grading to provide positive drainage conditions and adequate space for the dwelling. All but 90 ft² of the lot is RPA, and an existing on-site sewer easement further limits the buildable area on the parcel.
2. The lot was recorded and neighboring lots were constructed prior to the implementation of the CBPA. The proposed home and improvements are comparable in size to those existing in the vicinity.
3. The ordinance protects water quality and the rights of property owners. The entire buildable area and 99.5% of the lot are in RPA and the encroachment is of a reasonable size to be allowed by the exception under the ordinance.
4. The exception is requested based on the existing conditions of the lot.
5. Erosion and Sediment controls including silt fence and a construction entrance will be installed per the VESCH. RPA Buffer Restoration will be completed following a landscape mitigation plan prepared per Table A of the Chesapeake Bay Riparian Buffers Guidance Manual to offset encroachment into the RPA.
6. On-site stormwater quantity control will be achieved with the installation of a dry pond per the City of Richmond's request. A Stormwater Utility Maintenance Agreement will be recorded to ensure long-term maintenance and permanent installation of the BMP.

[see attached letter for further detail]

For **EXCEPTIONS** and **ENROACHMENTS**, please complete the following.

Describe all mitigation measures, including BMPs and vegetation enhancement*,

A Landscape Mitigation Plan prepared per Table A of the Chesapeake Bay Riparian Buffers Guidance Manual will be adhered to in order to meet RPA Buffer Restoration requirements. The plantings will filter runoff and protect against erosion

Water quality requirements will be met through the purchase of nutrient offset credits.

Water quantity control requirements will be met per the City of Richmond through the installation of a dry pond. A Stormwater Utility Maintenance Agreement will be recorded to ensure long-term maintenance and permanent installation of the BMP.

[See attached letter for further detail]

- Note: all vegetation enhancement should be in accordance with the Riparian Buffers Modification and Mitigation Manual available at www.dcr.virginia.gov/chesapeake_bay_local_assistance/publica.shtml#Anchor-18776

Do not mark below this line

Fee Required $_____

Approvals

Program Administrator_____ Date_____

City Planning Commission_____ Date_____

Comments:_____

WATER QUALITY IMPACT ASSESSMENT

5612 LANGDON COURT

WESTOVER HILLS WEST, SECTION D, BLOCK G, LOT 13

BALZER PROJECT NUMBER: 54180244.00

SEPTEMBER 28, 2018
REVISED JANUARY 3, 2019

Prepared By:
Balzer and Associates, Inc.
15871 City View Drive Suite 200
Midlothian, VA 23113
Phone: (804) 794-0571 / Fax: (804) 794-2635

S. Taylor Goodman, P.E.
Vice President

Emily Salkind
Environmental Technician

Attachments:

1) Cover Letter
2) Assessment Photographs
3) Project Location Map (USGS Bon Air Quadrangle)
4) Application for Relief from the Requirements of the CBPP
5) Site Map (11” x 17” Plan)

BALZER
AND ASSOCIATES INC.
REFLECTING TOMORROW

September 28, 2018

The Bureau of Permits and Inspections
Department of Community Development
900 E. Broad Street, Room 110
Richmond, VA 23219

RE: 5612 Langdon Court WQIA
Balzer Project No. 54180244.00

Dear Project Manager,

Balzer and Associates, Inc. is submitting on behalf of our client, R.E. Collier, Inc, a Water Quality Impact Assessment (WQIA) and an application for an exception for relief from the requirements of the Chesapeake Bay Preservation Program on a residential property in the City of Richmond, Virginia. The subject property is a 0.376-acre lot located at 5612 Langford Court (Parcel ID: C0050200030) within the Westover Hills West Subdivision.

Project Narrative

The subject property is located east of Langdon Court. There is a perennial tributary to the James River flowing across the rear of the property. A perennial flow determination was made for this onsite channel in 2013. The property was determined by DCR and the City of Richmond to be perennial. A 100-foot buffer forms the Resource Protection Area (RPA) established on each side of the perennial stream.

On behalf of our client, Balzer and Associates, Inc. is submitting this WQIA and application for exception from the Chesapeake Bay Preservation Program requirements to request encroachment within the landward and seaward portions of the RPA to construct a proposed single-family dwelling on the 0.376-acre residential lot. The lot, Westover Hills West, Section D, Block G, Lot 13, was recorded in September 1989. This recordation pre-dates the implementation of the Chesapeake Bay Preservation Act (CBPA). Due to the size and shape of the lot, along with a sanitary sewer easement across the front of the lot, an encroachment into the seaward and landward portions of the RPA is required to construct a single-family dwelling.

According to City Code 50-340(C)(1) the following six findings are presented to meet the requirements for the CBPA exception request:

1. *The requested exception to the criteria is the minimum necessary to afford relief.*

   The encroachment into the RPA totals approximately 6,748 square feet with 2,711 square feet in the landward portion of the RPA and approximately 4,037 square feet in the seaward portion of the RPA. This is the minimum necessary for the construction of the single-family dwelling and associated improvements. Due to the steep slopes on the lot, grading to provide positive drainage from the dwelling and adequate space for construction is important. The existing location of a sanitary sewer easement across the front of the site limits the options for placement of the dwelling closer to the road. Approximately 1,628 square feet of the RPA disturbance occurs within this sanitary sewer easement.

2. *Granting the exception will not confer upon the applicant any special privileges that are denied by the ordinance to other property owners who are subject to its provisions and who are similarly situated.*

   This lot was recorded as a buildable lot prior to the implementation of the Chesapeake Bay Preservation Act. All other houses within the neighborhood were constructed prior to the implementation of the CBPA and therefore were not subject to these restrictions. Homes within the subdivision are of equal or greater size than the proposed single-family dwelling on the subject property. Due to the size and shape of the lot and limited building area, there are no special privileges afforded to this property.

3. *The exception request is in harmony with the purpose and intent of the Ordinance and is not of substantial detriment to water quality.*

   The purpose and intent of the Ordinance is to protect water quality and protect the rights of property owners. Since this lot was recorded prior to the CBPA, the Ordinance allows for the property owner to construct within a reasonable building area. The entire buildable area and 99.5% of this property is within the RPA and the encroachment is of reasonable size and location to achieve a comparable building area to other homes within the area.

4. *The exception request is not based upon conditions or circumstances that are self-created or self-imposed.*

   The exception request is based on the existing conditions of the lot, there are no conditions to which the owners contributed or created.

5. *Reasonable and appropriate conditions are imposed, as warranted, to prevent the proposed activity from causing degradation of water quality.*

   Erosion and sediment control measures including silt fence and a construction entrance will be installed per the Virginia Erosion and Sediment Control Handbook to prevent erosion during construction. RPA Buffer Restoration will be completed following a landscape mitigation plan prepared per Table A of the Chesapeake Bay Riparian Buffers Guidance Manual to offset the encroachment into the RPA buffer. These restoration plantings will create a more effective filter from the runoff of this property and the adjacent property that drains through the buffer.

6. *Other findings and conditions, required by the City have been met.*

   On-site stormwater management has been included in the design for the development of the property at the request of the City of Richmond. The installation of the proposed dry pond and outfall will manage the quantity of runoff to the on-site perennial channel and mitigate the potential for downstream erosion as previously identified by the City Department of Utilities' Water Resources Division. A Stormwater Utility Maintenance Agreement will be recorded to ensure long-term maintenance and permanent installation of the BMP.

   The encroachment into the RPA includes a total of approximately 6,748 square feet of disturbance. The encroachment is shown on the included Plan. This encroachment is the minimum necessary to construct the dwelling, driveway and associated grading for drainage and stormwater management.

Current Condition of RPA

The property is a 0.376-acre lot characterized as steeply sloping mixed deciduous forest. The entire property, with the exception of 90 square feet along Langdon Court, is located within the RPA, this amounts to 0.5% of the lot that is outside of the RPA. The RPA is measured from the on-site perennial tributary to the James River which flows south to north near the rear of the lot. This channel, at its furthest downstream point on the property, drains approximately 0.24 mi^2 in the vicinity of the property, which is mostly developed residential land featuring single-family homes, lawns, and wooded areas.

Drainage through the lot currently flows with the general gradient to the east and the entirety of the site, 0.376 acres, drains to the on-site channel. The site topography is relatively steep, with ±53.4% the site, including most of the buildable area proposed for disturbance, exhibiting 20-30% slopes. Approximately 10% of the site has slopes greater than 30% and 36.3% of the site has slopes of 10% or less. The dominant soil series on the property and surrounding parcels is Wateree sandy loam which is well drained. Wateree soils are non-hydric, Hydrologic Group A, and exhibit moderate erosion potential.

The existing vegetation on site is young mixed deciduous forest with a dominance of elm and maple less than 6" in caliper. A few maples and elm exceed a diameter of 12" within the building envelope. Herbaceous vegetation within the site consists predominantly of English ivy that is found throughout the site.

The proposed development limits disturbance and grading on the site to the areas directly surrounding the proposed home and garage. Post-development, hydrologic conditions will remain largely the same with drainage continuing to flow to the east. The flow will be captured in the proposed dry pond for stormwater management as requested by the City of Richmond for quantity control, then directed to the on-site channel. A proposed retaining wall allows for the ground surface immediately adjacent to the channel to remain largely undisturbed. No impacts to or diversions of the perennial stream channel are proposed for the development and the entirety of the property will continue to flow to the channel, maintaining the hydrologic regime for the vicinity of the site. Unimproved portions of the site will remain in their natural, pre-development condition. No significant detriment to water quality is anticipated with the proposed development.

Mitigation Measures

Approximately 99.5% of the property is located within the RPA. There is no additional area within the lot to offset the impact to the RPA with additional area. Landscaping will be provided in disturbed areas within the RPA as it is feasible to provide additional vegetation on the lot. The landscaping proposed will help filter runoff and will also protect the property against erosion. The undisturbed portions of the seaward 50-feet of the RPA are moderately vegetated and will remain in place.

The total site area is 0.376 acres. The proposed impervious area, including the house, driveway and sidewalk is 0.060 acres. The total impervious area of the lot is approximately 16%. Water quality requirements for the single-family dwelling will be handled through the purchase of nutrient offset credits. Water quantity control requirements for the lot are met with the design of on-site stormwater management as required by the City of Richmond, consisting of a dry pond at the rear of the lot.

Approximately 1,628 square feet of the RPA disturbance is located within a sanitary sewer easement that runs across the front of the property. The location of the easement prevents building the house and garage closer to the front yard setback as desired. The house is situated on the right side of the lot to allow the front to be set as close to the road as possible. This leaves a large portion of the RPA on the left side of the lot undisturbed. Proper erosion and sediment control measures will be utilized for the proposed project, no significant detriment to water quality is anticipated.

Site reconnaissance photographs and a site plan are provided with this cover letter.

Balzer and Associates, Inc. would like to request an exemption for the relief of the requirements of the Chesapeake Bay Preservation Program within the limits of the subject

property. Please contact us if there are any questions or concerns, or if additional information is needed.

Sincerely,

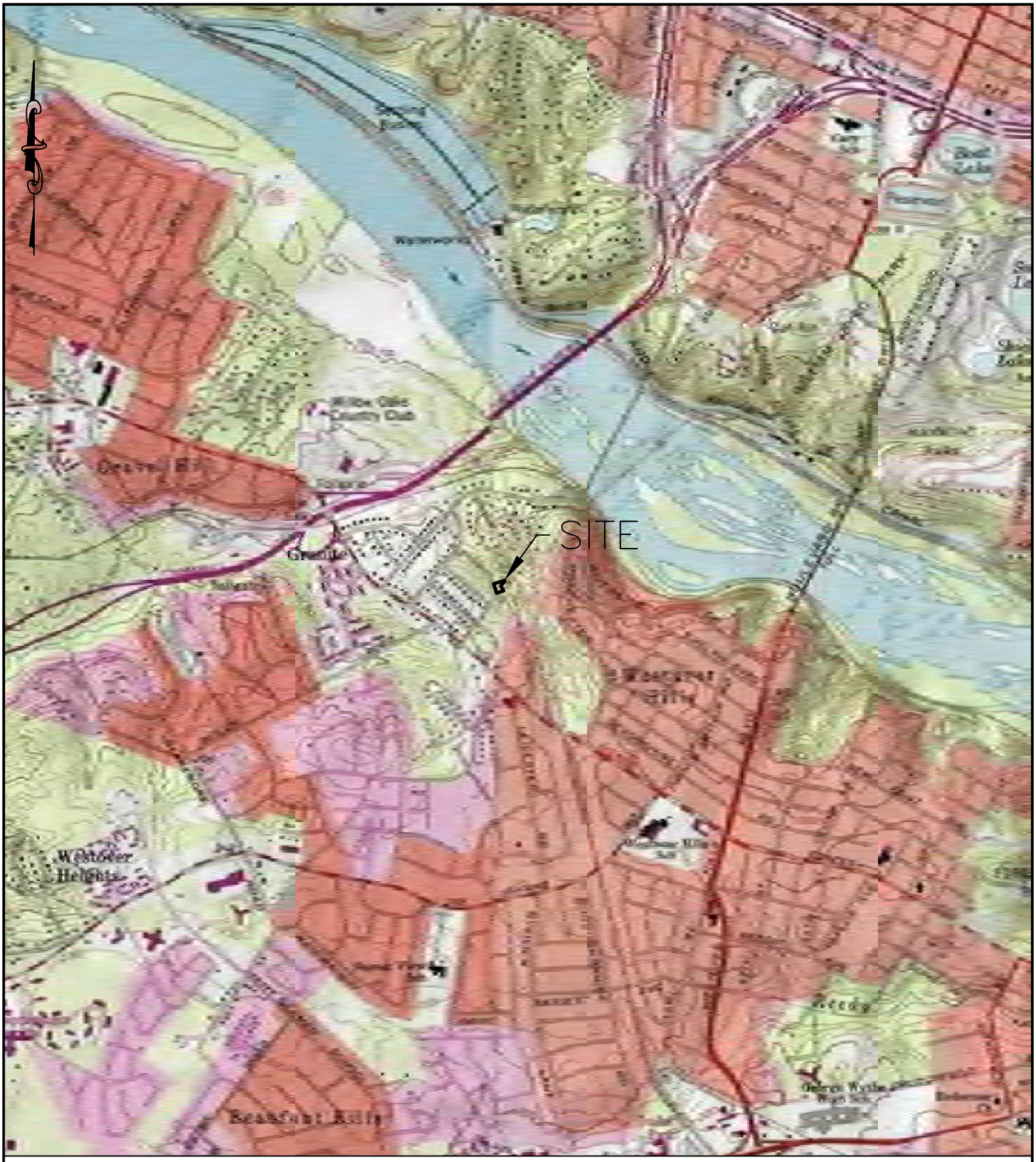
S. Taylor Goodman, P.E.
Vice President

Looking east into property from Langdon Court

Looking west from interior of site toward Langdon Court

Buildable area within property

Existing channel conditions at the rear of the property



5612 LANGDON COURT

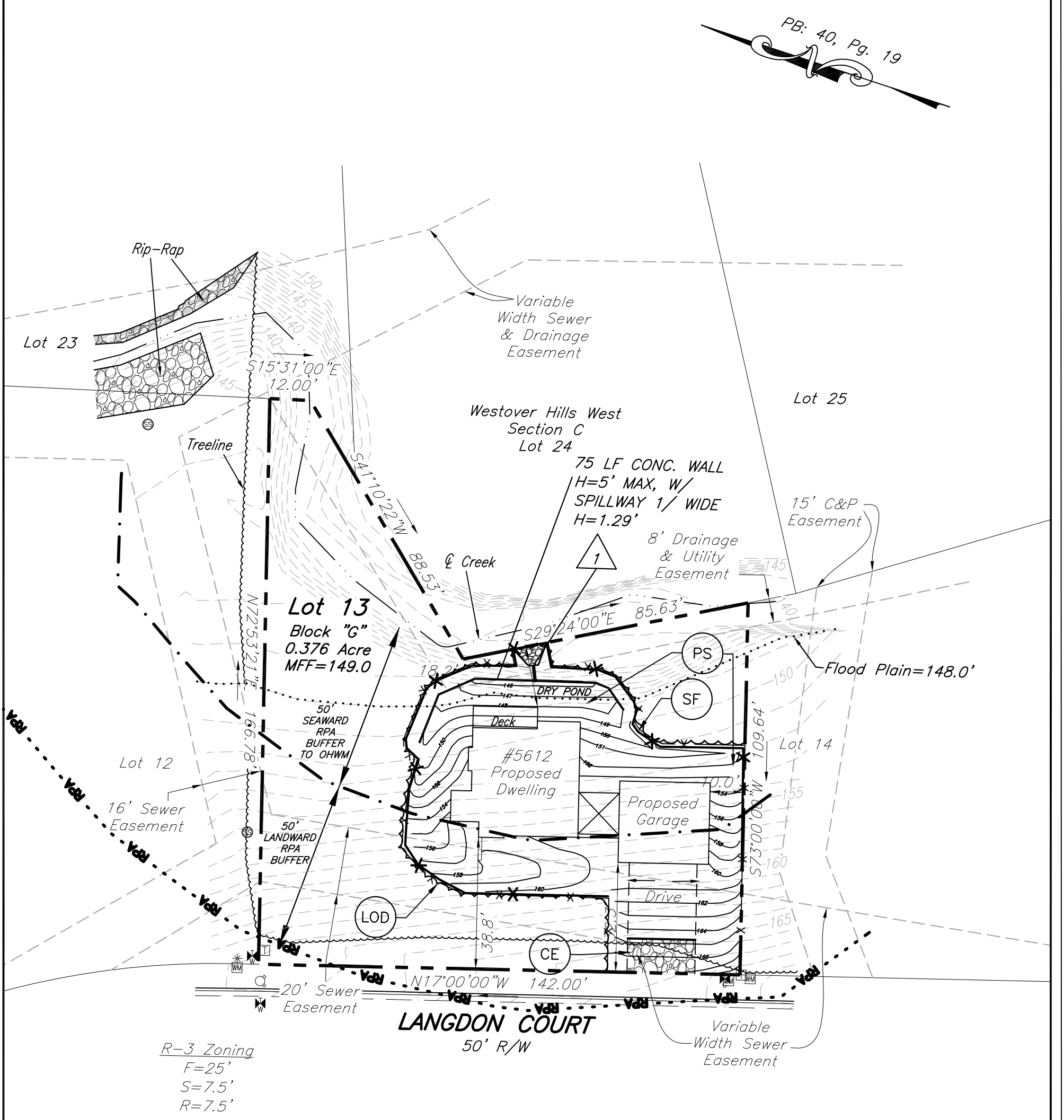
USGS MAP

CITY OF RICHMOND, VA

DATE:9/28/18
SCALE:1"=2000'
JOB NO: 54180244.00
SOURCE: GOOGLE EARTH

BALZER AND ASSOCIATES INC.
REFLECTING TOMORROW
www.balzer.cc

• PLANNERS • ARCHITECTS • ENGINEERS • SURVEYORS •
15871 City View Drive • Suite 200 • Midlothian, Virginia 23113 • Phone (804) 794-0571 • Fax (804) 794-2635



DATE:9/28/2018 REV. 1/3/19
SCALE:1" = 30'
JOB NO:54180244.00
SOURCE: GIS + FIELD SURVEY

5612 LANGDON COURT

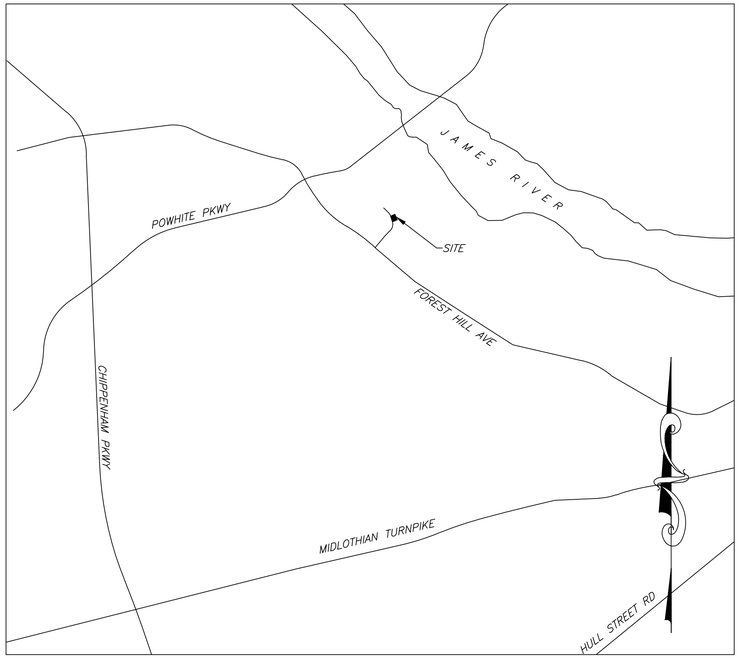
WATER QUALITY IMPACT ANALYSIS

RICHMOND, VA

• PLANNERS • ARCHITECTS • ENGINEERS • SURVEYORS •

501 Branchway Road • Suite 100 • Richmond, Virginia 23236 • Phone (804) 794-0571 • Fax (804) 794-2635

BALZER AND ASSOCIATES INC.
REFLECTING TOMORROW
www.balzer.cc



SCALE: 1"=2000'

THE ON-SITE FACILITY/DAM (INCLUDING OUTLET WORKS) MUST BE INSPECTED BY A PROFESSIONAL ENGINEER DURING THE LAST 60 DAYS OF THE FIRST YEAR OF OPERATION, AND AT LEAST ONCE EVERY FIVE YEARS THEREAFTER. THE ENGINEER'S INSPECTION REPORT MUST BE SUBSEQUENTLY SUBMITTED TO THE CITY OF RICHMOND STORMWATER DEPARTMENT FOR THEIR REVIEW AND FILE.

MAINTENANCE SCHEDULE

MAINTENANCE ITEMS	FREQUENCY
• REMOVE DEBRIS AND BLOCKAGES AT CULVERT	• TWICE A YEAR
• MOWING	• TWICE A YEAR
• SHORELINE CLEANUP TO REMOVE TRASH AND DEBRIS	• ANNUALLY
• FULL MAINTENANCE INSPECTION	• EVERY 5 YEARS
• SEDIMENT REMOVAL	• EVERY 5 TO 7 YEARS
• REPAIR PIPES AS NEEDED	• FROM 5 TO 25 YEARS

MAINTENANCE AND INSPECTION TASK

[redacted]

- Monitor the growth of wetlands, trees and shrubs planted. Record the species and their approximate coverage, and note the presence of any invasive plant species.
- Inspect the condition of stormwater inlets to the pond for material damage, erosion or undercutting.

- Inspect the banks of upstream and downstream channels for evidence of sloughing, animal burrows, boggy areas, woody growth, or gully erosion that may undermine embankment integrity.
- Inspect pond outfall channel for erosion, undercutting, rip-rap displacement, woody growth, etc.
- Inspect condition of principal spillway and riser for evidence of spalling, joint failure, leakage, corrosion, etc.
- Inspect condition of all trash racks, reverse sloped pipes or flashboard risers for evidence of clogging, leakage, debris accumulation, etc.
- Inspect maintenance access to ensure it is free of woody vegetation, and check to see whether valves, manholes and locks can be opened and operated.
- Inspect internal and external side slopes of the pond for evidence of sparse vegetative cover, erosion, or slumping, and make needed repairs immediately.

City of Richmond, Virginia
43D—Wateree sandy loam, 12 to 20 percent slopes
Map Unit Setting
National map unit symbol: 4psb
Mean annual precipitation: 28 to 61 inches
Mean annual air temperature: 47 to 69 degrees F
Frost-free period: 182 to 221 days
Farmland classification: Not prime farmland
Map Unit Composition
Wateree and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.
Description of Wateree
Setting
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy residuum weathered from granite and gneiss
Typical profile
H1 – 0 to 9 inches: sandy loam
H2 – 9 to 22 inches: sandy loam
H3 – 22 to 80 inches: bedrock
Properties and qualities
Slope: 12 to 20 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.4 inches)
Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Hydric soil rating: No

LEGEND/QUANTITIES:

3.02	TEMPORARY STONE CONSTRUCTION ENTRANCE	CE	1 EA.
3.05	SILT FENCE	SF	268 LF
3.32	PERMANENT SEEDING	PS	0.16 AC
3.38	TREE PRESERVATION & PROTECTION	TP	317 LF

DISTURBED AREA=0.16 AC

CONSTRUCTION NARRATIVE

1. PRIOR TO BEGINNING CONSTRUCTION, AN ON SITE PRE-CONSTRUCTION MEETING SHALL BE HELD. CITY OFFICIALS, THE ENGINEER, CRLD AND CONTRACTOR MUST ATTEND. APPROPRIATE OFFICIALS MUST RECEIVE 48 HOURS NOTICE PRIOR TO SCHEDULING.
2. THE CONTRACTOR IS TO NOTIFY THE CITY ENVIRONMENTAL ENGINEERING OFFICE 48 HOURS PRIOR TO COMMENCING WITH LAND DISTURBANCE ACTIVITIES.
3. CLEAR ENTRANCE AND INSTALL GRAVEL CONSTRUCTION ENTRANCE. ALL CONSTRUCTION TRAFFIC SHALL ENTER AND EXIT THE SITE VIA SITE CONSTRUCTION ENTRANCE ONLY. DURING WET WEATHER CONDITIONS, DRIVERS OF CONSTRUCTION VEHICLES SHALL BE REQUIRED TO WASH THEIR WHEELS BEFORE ENTERING HIGHWAY.
4. CLEAR A STRIP AROUND THE ENTRANCE AND SITE PERIMETER FOR INSTALLATION OF SILT FENCE AS SHOWN ON PLANS.
5. INSTALL SILT FENCE AS SHOWN ON PLANS.
6. COMMENCE CLEARING OF SITE, STRIP AND STOCKPILE TOPSOIL AT LOCATION SHOWN ON PLAN.
7. PLACE TEMPORARY SEED ON DENUDED AREAS NOT TO BE PAVED
8. BEGIN ROUGH GRADING OF SITE, INSTALL WALL, AND PREPARE FOR FOUNDATION.
9. INSTALL DRY POND ITEMS IE.. ORIFICE,DEBRI CAGE, 100YR WEIR, OUTFALL PIPE, OUTER PROT
10. INSTALL FOUNDATION AND ERECT BUILDING.
11. PLACE PERMANENT SEEDING OR MULCH ON DENUDED AREAS NOT TO BE HARDSCAPED BY OTHER MEANS.(SEE SHEET 5 FOR LANDSCAPE PLAN/MULCH VS LAWN AREAS)
12. WITH APPROVAL FROM CITY INSPECTOR AND COMPLETION OF ALL SITE WORK, REMOVE ALL EC MEASURES.

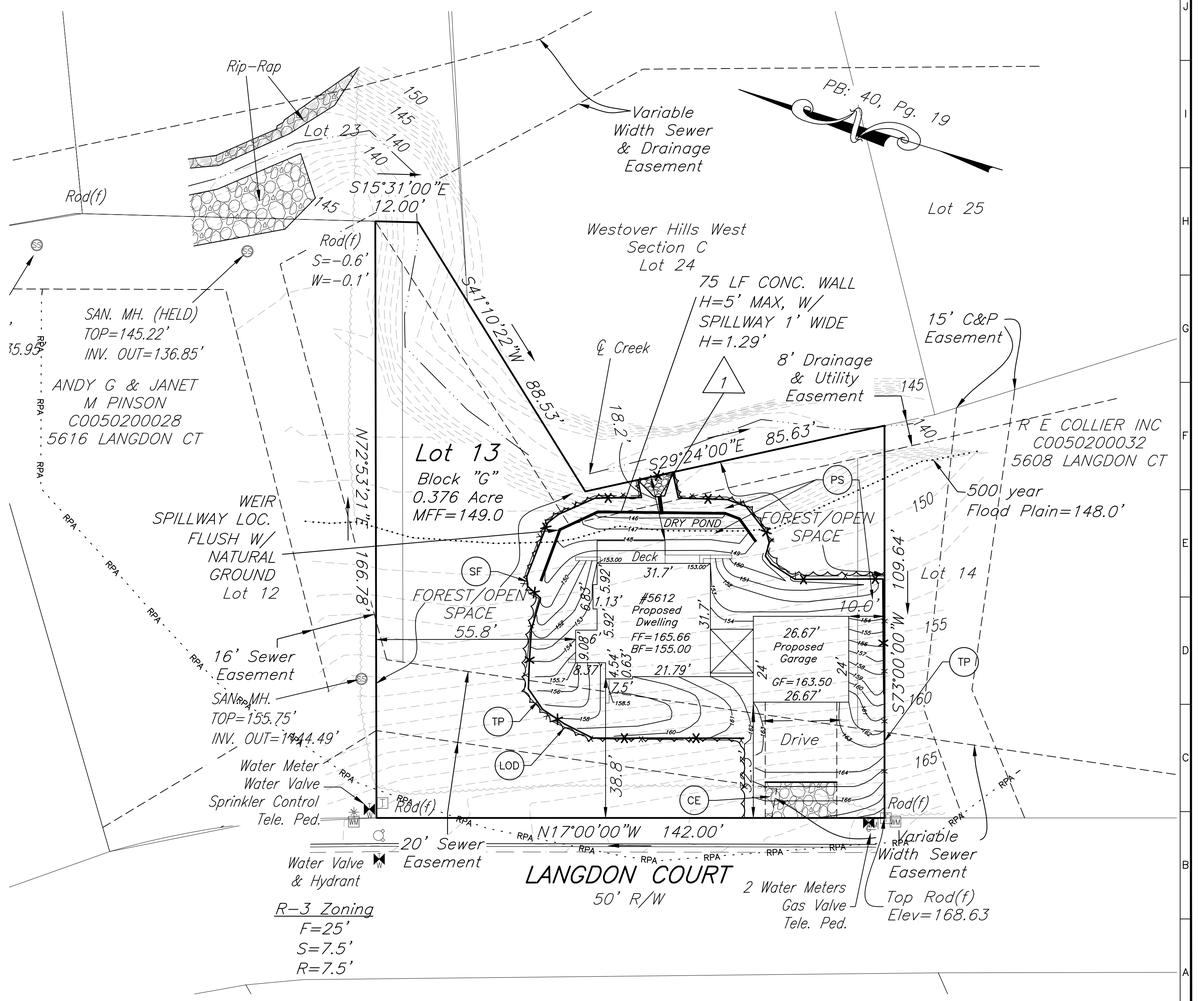
CATEGORY:
-MS-4
-RPA LOT
-OVER 2,500 SF

HUC CODE: JM 86
RECEIVING WATERS: JAMES RIVER
LAT: 37.5308° N
LONG: 77.4996° W

OWNER: R.E. COLLIER
CONTACT: DUTCH GODDARD
ADDRESS: 9415 HULL STREET ROAD
RICHMOND, VA 23236
PHONE: 804-955-7691
EMAIL: DUTCHGODDARD@GMAIL.COM

REQUIRED PERMITS:
BUILDING PERMIT
RSMP PERMIT

SHEET INDEX:



20 0 20 40 60
Scale 1" = 20'

BALZER AND ASSOCIATES, INC
REFLECTING TOMORROW
www.balzer.cc
Chesterfield
Henrico
New River Valley
Roanoke
Shenandoah Valley

RESIDENTIAL LAND DEVELOPMENT ENGINEERING
SITE DEVELOPMENT ENGINEERING
LAND USE PLANNING & ZONING
LANDSCAPE ARCHITECTURE
LAND SURVEYING
ARCHITECTURE
STRUCTURAL ENGINEERING
GEOTECHNICAL ENGINEERING
TRANSPORTATION ENGINEERING
ENVIRONMENTAL & SOIL SCIENCE
WETLAND DELINEATIONS & STREAM EVALUATIONS

Balzer and Associates, Inc.
15871 City View Drive, Suite 200
Midlothian, VA 23113
804-794-0571
FAX 804-794-2635

COMMONWEALTH OF VIRGINIA
BRADLEY P. SCHURMANN
Lic. No. 046628
1-3-19
PROFESSIONAL ENGINEER

5612 LANGDON COURT

GRADING & EC PLAN

CITY OF RICHMOND, VIRGINIA

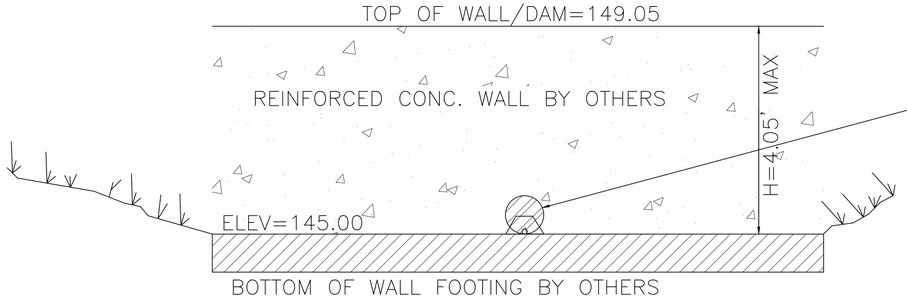
DRAWN BY BPS
DESIGNED BY BPS
CHECKED BY BPS
DATE 9-24-18
SCALE 1"=20'

REVISIONS:
12-13-18
1-3-19

SHEET NO. 1

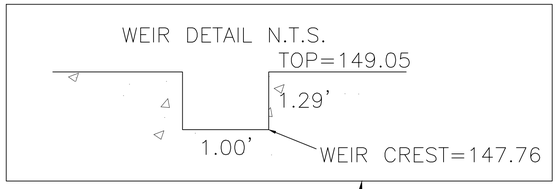
JOB NO. 54180244.00

FACE OF WALL DETAIL N.T.S.

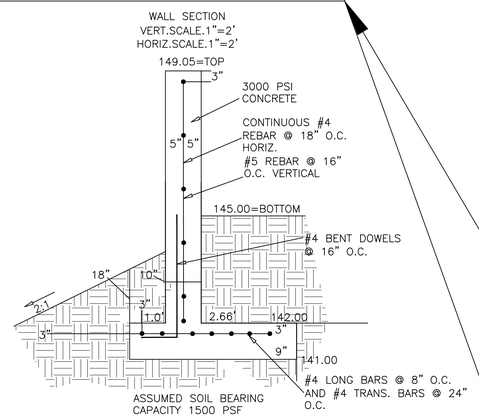


1 5.00 LF 12" RCP @ 100%
INV.IN=145.00 INV.OUT=140.00
W/ 1.75" DIA. RESTRICTOR PLATE
GROUTED TO PIPE, 1/4" THICK STEEL
W/ PLASTIC SOLUTIONS DEBRIS CAGE

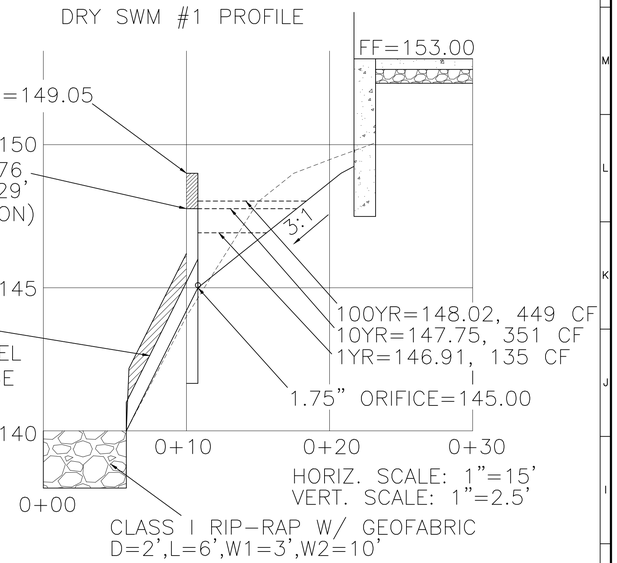
WEIR DETAIL N.T.S.



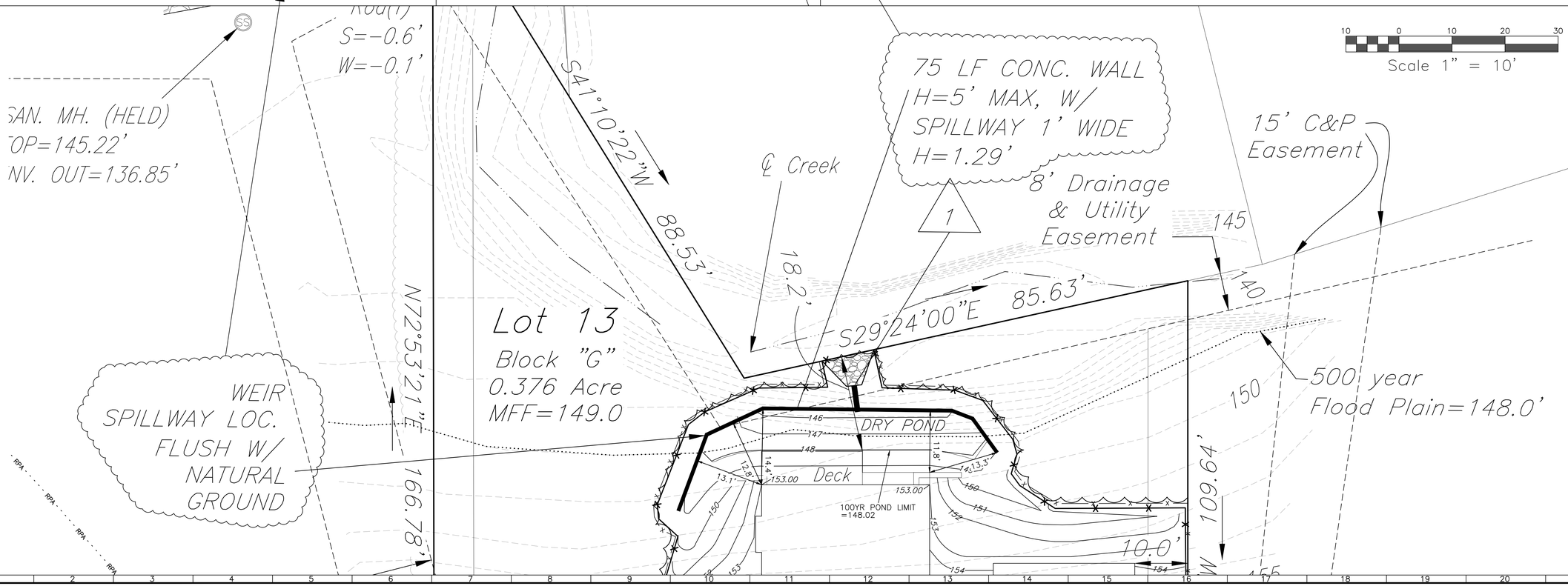
WALL SECTION
VERT.SCALE.1"=2'
HORIZ.SCALE.1"=2'



DRY SWM #1 PROFILE



1 5.00 LF 12" RCP @ 100%
INV.IN=145.00 INV.OUT=140.00
W/ 1.75" DIA. RESTRICTOR PLATE
GROUTED TO PIPE, 1/4" THICK STEEL
W/ PLASTIC SOLUTIONS DEBRIS CAGE



BALZER AND ASSOCIATES INC
REFLECTING TOMORROW
www.balzer.cc
Chesterfield
Henrico
New River Valley
Roanoke
Shenandoah Valley

RESIDENTIAL LAND DEVELOPMENT ENGINEERING
SITE DEVELOPMENT ENGINEERING
LAND USE PLANNING & ZONING
LANDSCAPE ARCHITECTURE
LAND SURVEYING
ARCHITECTURE
STRUCTURAL ENGINEERING
GEOTECHNICAL ENGINEERING
TRANSPORTATION ENGINEERING
ENVIRONMENTAL & SOIL SCIENCE
WETLAND DELINEATIONS & STREAM EVALUATIONS

Balzer and Associates, Inc.
15871 City View Drive, Suite 200
Midlothian, VA 23113
804-794-0571
FAX 804-794-2635

COMMONWEALTH OF VIRGINIA
BRADLEY P. SCHURMANN
Lic. No. 046628
1-3-19
PROFESSIONAL ENGINEER

5612 LANGDON COURT

DRY POND SPECIFICATIONS

CITY OF RICHMOND, VIRGINIA

DRAWN BY BPS
DESIGNED BY BPS
CHECKED BY BPS
DATE 9-24-18
SCALE AS SHOWN

REVISIONS:
12-13-18
1-3-19

SHEET NO. 1A
JOB NO. 54180244.00

TABLE 6-1 (Virginia Erosion and Sediment Control Handbook)

GENERAL EROSION AND SEDIMENT CONTROL NOTES

ES-1: 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 and the Virginia Erosion and Sediment Control Regulations 9VAC25-840.

ES-2: 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.

ES-3: All erosion and sediment control measures are to be placed prior to or as the first step in clearing.

ES-4: A copy of the approved erosion and sediment control plan shall be maintained on the site at all times.

ES-5: Prior to commencing land disturbing activities in areas other than indicated on these plans (including, but not limited to, off-site borrow or waste areas), the contractor shall submit a supplementary erosion control plan to the owner for review and approval by the plan approving authority.

ES-6: The contractor is responsible for installation of any additional erosion control measures necessary to prevent erosion and sedimentation as determined by the plan approving authority.

ES-7: 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.

ES-8: During dewatering operations, water will be pumped into an approved filtering device.

ES-9: The contractor shall inspect all erosion control measures periodically and after each runoff-producing rainfall event. Any necessary repairs or cleanup to maintain the effectiveness of the erosion control devices shall be made immediately.

1. 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 (undisturbed) for longer than 14 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.
2. Excess excavation disposed of off the site shall be disposed of in accordance with the Virginia Erosion and Sediment Control Handbook.
3. Erosion and Sediment Controls shall be installed in accordance with Virginia Erosion and Sediment Control Handbook and shall be placed prior to or as the first step of the land disturbing activity.
4. Erosion and Sediment Controls shall be maintained so that the sediment carrying runoff from the site will not enter storm drainage facilities.
5. Erosion and Sediment Controls shall be maintained until the disturbed area is stabilized.
6. Properties adjoining the site shall be kept clean of mud or silt carried from the site by vehicular traffic or runoff.
7. The disposal of waste materials removed from erosion and sediment control facilities and the disposal of these facilities shall be in accordance with the Virginia Erosion and Sediment Control Handbook.
8. Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation.
9. During construction of the project, soil stockpiles 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 soil intentionally transported from the project site.

Maintenance Requirements for inclusion in ESC Narrative

3.01 Safety Fence
1. Safety fence shall be checked regularly for weather-related or other damage. Any necessary repairs must be made immediately.
2. Care should be taken to secure all access points (gates) at the end of each working day. All locking devices must be repaired or replaced as necessary.

3.02 Construction Entrance
1. The entrance shall be maintained in a condition which will prevent tracking or flow of mud onto public rights-of-way. This may require periodic top dressing with additional stone or the washing and reworking of existing stone as conditions demand and repair and/or cleanout of any structures used to trap sediment.
2. All materials spilled, dropped, washed, or tracked from vehicles onto roadways or into storm drains must be removed immediately.
3. The use of water trucks to remove materials dropped, washed, or tracked onto roadways will not be permitted under any circumstances.

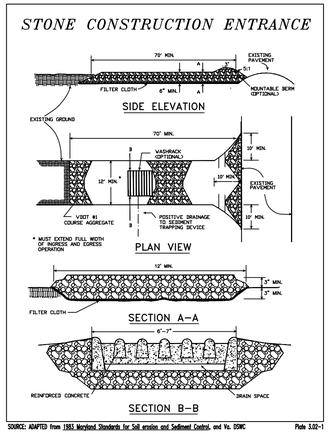
3.04 Straw Bale Barrier
1. Straw bale barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.
2. Close attention shall be paid to the repair of damaged bales, end runs, and undercutting beneath bales.
3. Necessary repairs to barriers or replacement of bales shall be accomplished promptly.
4. Sediment deposits should be removed after each storm event. They must be removed when the level of deposition reaches one-half the height of the barrier.
5. Any sediment deposits remaining in place after the straw bale barrier is no longer required shall be dressed to conform to the existing grade, prepared, and seeded.

3.05 Silt Fence
1. Silt fences shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs shall be made immediately.
2. Close attention shall be paid to the repair of damaged silt fence resulting from end runs and undercutting.
3. Should the fabric on a silt fence decompose or become ineffective prior to the end of the expected usable life and the barrier still be necessary, the fabric shall be replaced promptly.
4. Sediment deposits should be removed after each storm event. They must be removed when deposits reach approximately one-half the height of the barrier.
5. Any sediment deposits remaining in place after the silt fence is no longer required shall be dressed to conform with the existing grade, prepared and seeded.

3.07 Storm Drain Inlet Protection
1. The structure shall be inspected after each rain and repairs made as needed.
2. Sediment shall be removed and the trap restored to its original dimensions when the sediment has accumulated to one half the design depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
3. Structures shall be removed and the area stabilized when the remaining drainage area has been properly stabilized.

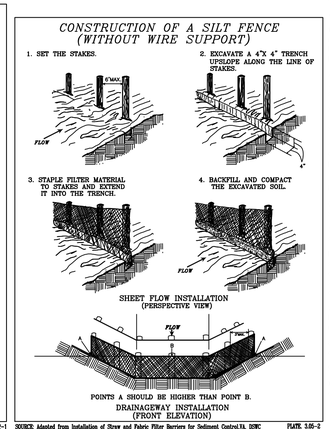
3.08 Culvert Inlet Protection
1. The structure shall be inspected after each rain and repairs made as needed.
2. Aggregate shall be replaced or cleaned when inspection reveals that clogged voids are causing ponding problems which interfere with on-site construction.
3. Sediment shall be removed and the impoundment restored to its original dimensions when sediment has accumulated to one-half the design depth. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode and cause sedimentation problems.

STONE CONSTRUCTION ENTRANCE



SOURCE: ADAPTED from 1983 Maryland Standards for Soil erosion and Sediment Control, and Va. DSWC — Pade 3.02-1

CONSTRUCTION OF A SILT FENCE (WITHOUT WIRE SUPPORT)



SOURCE: Adapted from Installation of Woven and Fabric Filter Barriers for Sediment Control VA. DSWC Sherwood and Wyatt — PLATE 3.05-2

a. Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe or storm sewer system. For those sites where runoff is discharged into a pipe or pipe system, downstream stability analyses at the outfall of the pipe or pipe system shall be performed.

b. Adequacy of all channels and pipes shall be verified in the following manner:

(1) The applicant shall demonstrate that the total drainage area to the point of analysis within the channel is 100 times greater than the contributing drainage area of the project in question; or

(2) (a) Natural channels shall be analyzed by the use of a two-year storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks.

(b) All previously constructed man-made channels shall be analyzed by the use of a 10-year storm to verify that stormwater will not overtop its banks and by the use of a two-year storm to demonstrate that stormwater will not cause erosion of channel bed or banks; and

(c) Pipes and storm sewer systems shall be analyzed by the use of a 10-year storm to verify that stormwater will be contained within the pipe or system.

c. If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:

(1) Improve the channels to a condition where a 10-year storm will not overtop the banks and a two-year storm will not cause erosion to the channel, the bed, or the banks; or

(2) Improve the pipe or pipe system to a condition where the 10-year storm is contained within the appurtenances;

(3) Develop a site design that will not cause the pre-development peak runoff rate from a two-year storm to increase when runoff outfalls into a natural channel or will not cause the pre-development peak runoff rate from a 10-year storm to increase when runoff outfalls into a man-made channel; or

(4) Provide a combination of channel improvement, stormwater detention or other measures which is satisfactory to the VESCP authority to prevent downstream erosion.

d. The applicant shall provide evidence of permission to make the improvements.

e. All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development condition of the subject project.

f. If the applicant chooses an option that includes stormwater detention, he shall obtain approval from the VESCP of a plan for maintenance of the detention facilities. The plan shall set forth the maintenance requirements of the facility and the person responsible for performing the maintenance.

g. Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipators shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transition from the facility to the receiving channel.

h. All on-site channels must be verified to be adequate.

i. Increased volumes of sheet flows that may cause erosion or sedimentation on adjacent property shall be diverted to a stable outlet, adequate channel, pipe or pipe system, or to a detention facility.

j. In applying these stormwater management criteria, individual lots or parcels in a residential, commercial or industrial development shall not be considered to be separate development projects. Instead, the development, as a whole, shall be considered to be a single development project. Hydrologic parameters that reflect the ultimate development condition shall be used in all engineering calculations.

k. All measures used to protect properties and waterways shall be employed in a manner which minimizes impacts on the physical, chemical and biological integrity of rivers, streams and other waters of the state.

l. Any plan approved prior to July 1, 2014, that provides for stormwater management that addresses any flow rate capacity and velocity requirements for natural or man-made channels shall satisfy the flow rate capacity and velocity requirements for natural or man-made channels if the practices are designed to (i) detain the water quality volume and to release it over 48 hours; (ii) detain and release over a 24-hour period the expected rainfall resulting from the one year, 24-hour storm; and (iii) reduce the allowable peak flow rate resulting from the 1.5, 2, and 10-year, 24-hour storms to a level that is less than or equal to the peak flow rate from the site assuming it was in a good forested condition, achieved through multiplication of the forested peak flow rate by a reduction factor that is equal to the runoff volume from the site when it was in a good forested condition divided by the runoff volume from the site in its proposed condition, and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels as defined in any regulations promulgated pursuant to § 62.1-44.15:54 or 62.1-44.15:65 of the Act.

m. For plans approved on and after July 1, 2014, the flow rate capacity and velocity requirements of § 62.1-44.15:52 A of the Act and this subsection shall be satisfied by compliance with water quantity requirements in the Stormwater Management Act (§ 62.1-44.15:24 et seq. of the Code of Virginia) and attendant regulations, unless such land-disturbing activities (i) are in accordance with provisions for time limits on applicability of approved design criteria in 9VAC25-870-47 or grandfathering in 9VAC25-870-48 of the Virginia Stormwater Management Program (VSMP) Regulation, in which case the flow rate capacity and velocity requirements of § 62.1-44.15:52 A of the Act shall apply, or (ii) are exempt pursuant to § 62.1-44.15:34 C 7 of the Act.

n. Compliance with the water quantity minimum standards set out in 9VAC25-870-66 of the Virginia Stormwater Management Program (VSMP) Regulation shall be deemed to satisfy the requirements of this subdivision 19.

Statutory Authority

§ 62.1-44.15:52 of the Code of Virginia.

Historical Notes

Former 4VAC50-30-40, derived from VR625-02-00 § 4; eff. September 13, 1990; amended, Virginia Register Volume 11, Issue 11, eff. March 22, 1995; Volume 29, Issue 4, eff. November 21, 2012; amended and renumbered, Virginia Register Volume 30, Issue 2, eff. October 23, 2013; amended, Virginia Register Volume 31, Issue 24, eff. August 26, 2015; Volume 33, Issue 4, eff. November 17, 2016.

9VAC25-840-40. Minimum standards. (Effective 11/17/16)

A VESCP must be consistent with the following criteria, techniques and methods:

1. Permanent or temporary if 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.

2. During construction of the project, soil stock piles 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.

3. 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.

4. 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.

5. Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation.

6. 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 25-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.

7. 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.

8. Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structure.

9. Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.

10. 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.

11. 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.

12. 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.

13. 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.

14. All applicable federal, state and local requirements pertaining to working in or crossing live watercourses shall be met.

15. The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.

16. 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 this chapter.

f. Applicable safety requirements shall be complied with.

17. 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.

18. 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 VESCP 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.

19. 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 in accordance with the following standards and criteria. Stream restoration and relocation projects that incorporate natural channel design concepts are not man-made channels and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels:

RE Collier shall be the responsible party for maintaining ESC measures

CHESBAY AND RPA NOTES:
–THE RESOURCE PROTECTION AREA (RPA) BUFFER MUST BE RETAINED IN AN UNDISTURBED VEGETATIVE STATE AS SPECIFIED IN THE CHESAPEAKE BAY PRESERVATION AREA DESIGNATION AND MANAGEMENT REGULATIONS.

–ONLY WATER–DEPENDENT FACILITIES OR REDEVELOPMENT SHALL BE ALLOWED IN THE RPA.

EROSION CONTROL NOTES

1) THE E&S INSPECTOR WILL BE NOTIFIED 48 HOURS PRIOR TO ANY CLEARING AND GRADING.
2) ALL ASPHALT AREAS WILL BE STABILIZED WITH BASE STONE WITHIN 30 DAYS OF FINAL GRADING.
3) PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE, BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 14 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.
4) ALL CUT AND FILL SLOPES CHANNELSIDE SLOPES WHICH ARE NOT TO BE PAVED SHALL BE SEEDED UNTIL A GOOD STAND OF GRASS IS OBTAINED IN ACCORDANCE WITH:
   A. 100 LBS. PER 1,000 SQUARE FOOT GROUND LIMESTONE OR EQUIVALENT. NO SOIL TEST REQUIRED FOR INITIAL ESTABLISHMENT.
   B. 20 LBS. OF 10–10–10 FERTILIZER OR EQUIVALENT PER 1,000 SQUARE FOOT.
   C. VARIETIES TO BE SEEDED:
      1. SPRING SEEDING – FEBRUARY 16 – APRIL 30; SPRING OATS 2.5 LBS. PER 1,000 SQUARE FOOT.
      2. SUMMER SEEDING – MAY 1 – AUGUST 31; WEEPING LOVE GRASS AT 2 OZ. PER 1,000 SQUARE FOOT MIXED WITH 1 BUSHEL SAWDUST FOR UNIFORM SEEDING.
      4. SEEDING SHALL BE MULCHED WITH STRAW, HAY, OR MULCH.
5) CITY ENGINEER AND OTHER INTERESTED AGENCIES SHALL MAKE A CONTINUING REVIEW AND EVALUATION OF THE METHOD USED FOR THE OVERALL EFFECTIVENESS OF THE EROSION CONTROL PROGRAM. AN APPROVED EROSION AND SEDIMENT CONTROL PLAN MAY BE AMENDED BY THE APPROVING AUTHORITY OF ON SITE INSPECTION INDICATED THAT THE APPROVED CONTROL MEASURES ARE NOT EFFECTIVE IN CONTROLLING EROSION AND SEDIMENTATION OR IF BECAUSE OF CHANGED CIRCUMSTANCES, THE APPROVED PLAN CANNOT BE CARRIED OUT.
6) CONTRACTOR SHALL LOCATE AND VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
7) THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" BEFORE BEGINNING ANY EXCAVATION OR UTILITY WORK (1–800–552–7001).
8) ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARDS, SPECIFICATIONS AND DETAILS OF THE LATEST EDITION OF THE VIRGINIA EROSION CONTROL HANDBOOK (THE HANDBOOK) BY THE VIRGINIA SOIL AND WATER CONSERVATION BOARD.
9) EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE MAINTAINED, SO THAT SEDIMENT CARRYING RUNOFF FROM THE SITE WILL NOT ENTER STORM DRAINAGE FACILITIES.
10) PROPERTIES AND RIGHT–OF–WAY ADJOINING THE SITE SHALL BE KEPT CLEAN OF MUD OR SILT CARRIED FROM THE SITE BY VEHICULAR TRAFFIC OR RUNOFF.
11) ALL CONSTRUCTION TRAFFIC SHALL ENTER AND EXIT THE SITE VIA THE CONSTRUCTION ENTRANCES.
12) EXCAVATED MATERIAL FROM TRENCHES SHALL BE PLACED ON THE UPGRADE SITE OF THE TRENCH TO ALLOW MATERIAL TO ERODE INTO THE TRENCH
13) THE APPROXIMATE AREA OF THE LIMITS OF CLEARING, GRADING, AND CONSTRUCTION IS 0.16 ACRES.

E&S STATISTICS

Erosion & Sediment Control Measures	Linear or Cubic Feet
Type of Silt Fence	268
Construction Entrance	1
List of other E&S measures as may be required (i.e. tree protection, inlet protection, etc.)	seed=0.16 ac
LOT STATISTICS	**Square Feet**
Total Lot Area	16,388
Amount of Impervious Surface Area	2,605; OK exist, 16.2% prop
Amount of Previous Surface Area	13,783
Amount of Land Disturbance	6,970

SEWER DESIGNATION

MS4 (separate storm sewer)	yes	no
Combined Sewer (CSS)	yes	no

BAY DESIGNATION

Chesapeake Bay Area	yes	no
If Yes,	RMA	RPA

I BRAD P. SCHURMAN certify that the information above is correct.

Signed: _____ Date: 9-21-18

Preparer's Stamp:

TABLE 3.32–D
SITE SPECIFIC SEEDING MIXTURES FOR PIEDMONT AREA

	Total Lbs. Per Acre
Minimum Care Lawn	
–Commercial or Residential	175–200 lbs.
–Kentucky 31 or Turf–Type Tall Fescue	95–100%
–Improved Perennial Ryegrass	0–5%
–Kentucky Bluegrass	0–5%
High–Maintenance Lawn	200–250 lbs.
–Kentucky 31 or Turf–Type Tall Fescue	100%
General Slope (3:1 or less)	
–Kentucky 31 Fescue	128 lbs.
–Red Top Grass	2 lbs.
–Seasonal Nurse Crop*	20 lbs.
	150 lbs.
Low–Maintenance Slope (Steeper than 3:1)	
–Kentucky 31 Fescue	108 lbs.
–Red Top Grass	2 lbs.
–Seasonal Nurse Crop*	20 lbs.
–Crownvetch**	20 lbs.
	150 lbs.

*Use seasonal nurse crop in accordance with seeding dates as stated below:
February 16th through April.....Annual Rye
May 1st through August 15th.....Foxtail Millet
August 16th through October.....Annual Rye
November through February 15th.....Winter Rye

** Substitute Sericea Lespedeza for Crownvetch east of Farmville, VA. (May through September use hulled Sericea, all other periods, use unhulled Sericea). If Flatpea is used in lieu of Crownvetch, increase rate to 30 lbs./acre. All legume seed must be properly inoculated. Weeping Lovegrass may be added to any slope or low–maintenance mix during warmer seeding periods; add 10–20 lbs./acre in mixes.

11. Maintenance:
The Contractor is responsible for maintenance of all temporary and permanent storm water control measures.

3.02 - Construction Entrance
The entrance shall be maintained in a condition which will prevent tracking or flow of mud onto public rights-of-way. This may require periodic top dressing with additional stone or the washing and reworking of existing stone as conditions demand and repair and/or clean out of any structures used to trap sediment. All materials spilled, dropped, washed or traced from vehicles onto roadways or into storm drains must be removed immediately. The use of water trucks to remove materials dropped, washed, or tracked onto roadways will not be permitted under any circumstances.

3.05 - Silt Fence
a. Silt fences shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs shall be made immediately.
b. Close attention shall be paid to the repair of damaged silt fence resulting from end runs and undercutting.
c. Should the fabric on a silt fence decompose or become ineffective prior to the end of the expected usable life and the barrier still be necessary, the fabric shall be replaced promptly.
d. Sediment deposits should be removed after each storm event. They must be removed when deposits reach approximately one-half the height of the barrier.
e. Any sediment deposits remaining in place after the silt fence is no longer required shall be dressed to conform with the existing grade, prepared and seeded.

3.07 - Storm Drain Inlet Protection
a. The structure shall be inspected after each rain and repairs made as needed.
b. Sediment shall be removed and the trap restored to its original dimensions when the sediment has accumulated to one-half the design depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
c. Structures shall be removed and the area stabilized when the remaining drainage area has been properly stabilized.

3.09 - Temporary Diversion Dike
The measure shall be inspected after every storm and repairs made to the dike, flow channel, outlet or sediment trapping facility, as necessary. Once every two weeks, whether a storm event has occurred or not, the measure shall be inspected and repairs made if needed. Damages caused by construction traffic or other activity must be repaired before the end of each working day.
Seeded areas which fail to establish a vegetative cover shall be re-seeded as necessary.

3.13 - Temporary Sediment Trap
1. Sediment shall be removed and the trap restored to its original dimensions when the sediment has accumulated to one half the design volume of the wet storage.
Sediment removal from the basin shall be deposited in a suitable area and in such a manner that it will not erode and cause sedimentation problems.
2. Filter stone shall be regularly checked to ensure that filtration performance is maintained. Stone choked with sediment shall be removed and cleaned or replaced.
3. The structure should be checked regularly to ensure that it is structurally sound and has not been damaged by erosion or construction equipment. The height of the stone outlet should be checked to ensure that its center is at least 1 foot below the top of the embankment.

3.15 - Temporary slope drain
The slope drain structure shall be inspected weekly and after every storm, and repairs made if necessary. The contractor should avoid the placement of any material on and prevent construction traffic across the slope drain.

3.18 Outlet Protection
Once a rip rap installation has been completed, it should require very little maintenance. It should, however, be inspected periodically to determine if high flows have caused scour beneath the rip rap or filter fabric or dislodged any of the stone. Care must be taken to properly control sediment-laden construction runoff which may drain to the point of the new installation. If repairs are needed, they should be accomplished immediately.

3.19 Rip rap
Once a rip rap installation has been completed, it should require very little maintenance. It should, however, be inspected periodically to determine if high flows have caused scour beneath the rip rap or filter fabric or dislodged any of the stone. Care must be taken to properly control sediment-laden construction runoff which may drain to the point of the new installation. If repairs are needed, they should be accomplished immediately.

3.20 - Rock Check Dams
Check dams should be checked for sediment accumulation after each runoff-producing storm event. Sediment should be removed when it reaches one half of the original height of the measure. Regular inspections should be made to insure that the center of the dam is lower than the edges. Erosion caused by high flows around the edges of the dam should be corrected immediately.

3.32 - Permanent Seeding
In general, a stand of vegetation cannot be determined to be fully established until it has been maintained for one full year after planting.
Irrigation: New seedings should be supplied with adequate moisture. Supply water as needed, especially late in the season, in abnormally hot or dry weather, or on adverse sites. Water application rates should be controlled to prevent excessive runoff. Inadequate amounts of water may be more harmful than no water.
Re-seeding: Inspect seeded areas for failure and make necessary repairs and re-seedings within the same season, if possible.
a. If vegetative cover is inadequate to prevent rill erosion, over-seed and fertilize in accordance with soil test results.
b. If a stand has less than 40% cover, re-evaluate choice of plant materials and quantities of lime and fertilizer. The soil must be tested to determine if acidity or nutrient imbalances are responsible. Re-establish the stand following seedbed preparation and seeding recommendations.
Fertilization: Cool season grasses should begin to be fertilized 90 days after planting to ensure proper stand and density. Warm season fertilization should begin at 30 days after planting. Apply maintenance levels of fertilizer as determined by soil test. In the absence of a soil test, fertilization should be as follows:
Cool Season Grasses: 4 lbs. Nitrogen (N), 1 lb. Phosphorus (P), 2 lbs. Potash (K) per 1000 ft.² per year
75% of the total requirements should be applied between Sept. 1 and DEC. 31st. The balance should be applied during the remainder of the year. More than 1 lb. of soluble nitrogen per 1000 ft.² should not be applied at any one time.
Warm Season Grasses: Apply 4-5 lbs. Nitrogen (N) between May 1 and August 15th per 1000 ft.² per year. Phosphorus (P) and Potash (K) should only be applied according to soil test.
NOTE: The use of slow-release fertilizer formulations for maintenance of turf is encouraged to reduce the number of applications and the impact on groundwater.

MS–16 NOTES

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 the 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 offsite property.
d. Restabilization shall be accomplished in accordance with these regulations.
e. Applicable safety regulations shall be complied with.

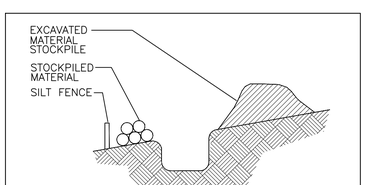


TABLE 3.31-B
(Revised June 2003)
TEMPORARY SEEDING SPECIFICATIONS
QUICK REFERENCE FOR ALL REGIONS

SEED

APPLICATION DATES	SPECIES	APPLICATION RATES
Sept. 1 - Feb. 15	50/50 Mix of Annual Ryegrass (lolium multi-florum) & Cereal (Winter) Rye (Secale cereale)	50 -100 (lbs/acre)
Feb. 16 - Apr. 30	Annual Ryegrass (lolium multi-florum)	60 - 100 (lbs/acre)
May 1 - Aug. 31	German Millet	50 (lbs/acre)

FERTILIZER & LIME

- Apply 10-10-10 **fertilizer** at a rate of 450 lbs. / acre (or 10 lbs. / 1,000 sq. ft.)
- Apply **Pulverized Agricultural Limestone** at a rate of 2 tons/acre (or 90 lbs. / 1,000 sq. ft.)

NOTE:
1 - A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site.
2 - Incorporate the lime and fertilizer into the top 4 – 6 inches of the soil by disking or by other means.
3 - When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin #4, 2003 Nutrient Management for Development Sites at http://www.dcr.state.va.us/sw/es4a.htm#toube

EROSION & SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION: THIS PLAN SHOWS THE INSTALLATION OF A HOUSE AND DRIVEWAY. 0.16 ACRES TO BE DISTURBED.
EXISTING SITE CONDITIONS: THE SITE IS WOODED. TOPOGRAPHY DRAINS FROM W TO THE S TO N.
ADJACENT SITE CONDITIONS: THIS SITE IS BORDERED BY RESIDENTIAL SINGLE FAMILY DWELLINGS TO ALL DIRECTIONS.
OFFSITE AREAS: TREES AND VEGETATION DEBRIS SHALL BE DISPOSED OF AT AN APPROVED LANDFILL LOCATION.
SOILS: SOILS DESCRIPTION IS ON SHEET 1. ONLY 1 SOIL TYPE FOR THIS PROJECT, NO MAP ATTACHED
CRITICAL AREAS: THE RPA AND FLOODPLAIN ARE CRITICAL AREAS.
EROSION CONTROL PRACTICES:
–CONSTRUCTION ENTRANCE; FOR ENTERING AND EXITING VEHICLES
–SILT FENCE; FOR SEDIMENT FLOW TO BE PLACED ON DOWNHILL SIDE OF SLOPES OF DISTURBANCE
–PERMANENT SEEDING/MULCH; FOR ALL NON–IMPERVIOUS AREAS UPON COMPLETION OF FINISHED GRADE.
PERMANENT STABILIZATION: DISTURBED AREAS TO BE PERMANENTLY SEEDED OR LANDSCAPED. (SEE SEEDING CHART & LA PLAN)
DIST AREA = 0.16 ACRES.
STORMWATER RUN–OFF CONSIDERATIONS: WITH THE ADDITION OF A DRY POND W/ ORIFICE OUTLET THIS SITE MEETS THE 1YR ENERGY BALANCE FOR CHANNEL PROTECTION TO THE STREAM. THE PRE–DEVELOPED 10YR FLOW IS REDUCED VIA THE DRY POND TO MEET FLOODING PROTECTION.
NUTRIENT CREDITS WILL BE PURCHASED FROM AN APPROVED OFFSITE NUTRIENT BANK TO MEET WATER QUALITY.
CALCULATIONS : CALCULATIONS FOR THE RUN–OFF ARE LOCATED ON SHEET 3, 4 AND UNDER SEPARATE COVER.

BALZER AND ASSOCIATES, INC
REFLECTING TOMORROW
www.balzer.cc
Chesterfield
Henrico
New River Valley
Roanoke
Shenandoah Valley
RESIDENTIAL LAND DEVELOPMENT ENGINEERING
SITE DEVELOPMENT ENGINEERING
LAND USE PLANNING & ZONING
LANDSCAPE ARCHITECTURE
LAND SURVEYING
ARCHITECTURE
STRUCTURAL ENGINEERING
GEOTECHNICAL ENGINEERING
TRANSPORTATION ENGINEERING
ENVIRONMENTAL & SOIL SCIENCE
WETLAND DELINEATIONS & STREAM EVALUATIONS
Balzer and Associates, Inc.
15871 City View Drive, Suite 200
Midlothian, VA 23113
804-794-0571
FAX 804-794-2635

COMMONWEALTH OF VIRGINIA
BRADLEY P. SCHURMAN
Lic. No. 046628
1–3–19
PROFESSIONAL ENGINEER

5612 LANGDON COURT
EROSION CONTROL NARRATIVE
CITY OF RICHMOND, VIRGINIA

DRAWN BY BPS
DESIGNED BY BPS
CHECKED BY BPS
DATE 9–24–18
SCALE N/A
REVISIONS:
12–13–18
1–3–19

SHEET NO. 2
JOB NO. 54180244.00

	Area =	0.37	ac			C Value						Time of Concentration				
	CA =	0.11				0.37	ac =	100	%@	0.30	C =	0.30	128.13	ft OLF@	22.43	% = 7.65 min
PRE-DEV	Tc =	10.07					ac =		%@		C =		135.00	ft CF ΔH	1.00	= 2.42 min
	I2 =	4.24	in/hr	Q2 =	0.47 cfs		ac =		%@		C =			ft CF ΔH		= min
	I10 =	5.68	in/hr	Q10 =	0.63 cfs		ac =		%@		C =					Tc = 10.07 min
	I25 =	6.41	in/hr	Q25 =	0.78 cfs		ac =		%@		C =		User defined			
	I100 =	7.19	in/hr	Q100	1.00 cfs					ADJ.	C' =	0.300	C factor for OLF=		0.30	
	Area =	0.37	ac			C Value						Time of Concentration				
	CA =	0.16				0.06	ac =	16.22	%@	0.90	C =	0.15	128.13	ft OLF@	22.43	% = 6.56 min
POST-DEV	Tc =	8.98				0.10	ac =	27.03	%@	0.40	C =	0.11	135.00	ft CF ΔH	1.00	= 2.42 min
	I2 =	4.43	in/hr	Q2 =	0.70 cfs	0.21	ac =	56.76	%@	0.30	C =	0.17		ft CF ΔH		= min
	I10 =	5.93	in/hr	Q10 =	0.93 cfs		ac =		%@		C =					Tc = 8.98 min
	I25 =	6.68	in/hr	Q25 =	1.15 cfs		ac =		%@		C =		User defined			
	I100 =	7.49	in/hr	Q100	1.47 cfs					ADJ.	C' =	0.424	C factor for OLF=		0.35	
OFFSITE	Area =	0.04	ac			C Value						Time of Concentration				
	CA =	0.01				0.04	ac =	100	%@	0.30	C =	0.30	110.00	ft OLF@	27.00	% = 6.93 min
	Tc =	6.93					ac =		%@		C =			ft CF ΔH		= min
	I2 =	4.85	in/hr	Q2 =	0.06 cfs		ac =		%@		C =			ft CF ΔH		= min
	I10 =	6.46	in/hr	Q10 =	0.08 cfs		ac =		%@		C =					Tc = 6.93 min
	I25 =	7.27	in/hr	Q25 =	0.10 cfs		ac =		%@		C =		User defined			
	I100 =	8.18	in/hr	**Q100**	0.12 **cfs**					ADJ.	C' =	0.300	C factor for OLF=		0.30	
TO POND	Area =	0.18	ac			C Value						Time of Concentration				
	CA =	0.10				0.09	ac =	50	%@	0.40	C =	0.20	66.00	ft OLF@	24.00	% = 4.90 min
	Tc =	5.31				0.06	ac =	33.33	%@	0.90	C =	0.30	41.00	ft CF ΔH	3.00	= 0.41 min
	I2 =	5.24	in/hr	Q2 =	0.52 cfs	0.03	ac =	16.67	%@	0.30	C =	0.05		ft CF ΔH		= min
	I10 =	6.96	in/hr	Q10 =	0.69 cfs		ac =		%@		C =					Tc = 5.31 min
	I25 =	7.84	in/hr	Q25 =	0.85 cfs		ac =		%@		C =		User defined			
	I100 =	8.85	in/hr	Q100	1.10 cfs					ADJ.	C' =	0.550	C factor for OLF=		0.35	
BYPASS TO	Area =	0.19	ac			C Value						Time of Concentration				
STREAM	CA =	0.06				0.18	ac =	94.74	%@	0.30	C =	0.28	111.00	ft OLF@	20.10	% = 7.35 min
	Tc =	8.38				0.01	ac =	5.263	%@	0.40	C =	0.02	63.00	ft CF ΔH	1.00	= 1.02 min
	I2 =	4.54	in/hr	Q2 =	0.26 cfs		ac =		%@		C =			ft CF ΔH		= min
	I10 =	6.07	in/hr	Q10 =	0.35 cfs		ac =		%@		C =					Tc = 8.38 min
	I25 =	6.84	in/hr	Q25 =	0.44 cfs		ac =		%@		C =		User defined			
	I100 =	7.68	in/hr	Q100	0.56 cfs					ADJ.	C' =	0.305	C factor for OLF=		0.30	

ENERGY BALANCE EQUATION: CHANNEL PROTECTION
RV1pre X Q1pre >= RV1post X Q1post
294.13 CF X 0.39 CFS >= 329.74 CF X 0.34 CFS
114.71 >= 112.11

*no improvement factor as the existing conditions onsite are fully wooded and modeled as such. By state code a developer cannot be required to reduce below a forested condition.

See Hydrocad routing under separate cover for Q1 and RV1 values for both existing and proposed used in the above energy balance equation. Sheet 4

10YR COMPARISON: FLOODING PROTECTION
Q10pre >= Q10post
0.63 CFS >= 0.49 CFS

See Hydrocad routing under separate cover for Q10 values. Sheet 4

CHESBAY STATISTICS:
SITE AREA=0.37 ACRES
IMPERVIOUS AREA=0.06 ACRES
% IMPERVIOUS=16.2%

CHESBAY NARRATIVE

PROJECT DESCRIPTION: THIS PROJECT WILL REMOVE APPROXIMATELY 0.16 ACRES OF WOODED AREA AND REPLACE WITH GRASS AND HOUSE WITH DRIVEWAY.
EROSION CONTROL PRACTICES:
–CONSTRUCTION ENTRANCE; FOR ENTERING AND EXITING VEHICLES
–SILT FENCE; FOR SEDIMENT FLOW TO BE PLACED ON DOWNHILL SIDE OF SLOPES OF DISTURBANCE
–PERMANENT SEEDING OR MULCH; FOR ALL NON–IMPERVIOUS AREAS UPON COMPLETION OF FINISHED GRADE.
THESE PRACTICES ARE LOCATED ON SHEET C01.
–TREE PROTECTION; PROTECT EXISTING VEGETATION FROM CLEARING.
PRESERVATION: THE MINIMAL AMOUNT OF CLEARING HAS BEEN PROVIDED TO CONSTRUCT THE IMPROVEMENTS AS SHOWN. THE DISTURBED AREAS WILL EITHER BE PERMANENTLY SEEDED, MULCHED, OR SODDED.

DEQ Virginia Runoff Reduction Method New Development Compliance Spreadsheet - **Version 3.0**

(•) 2011 BMP Standards and Specifications ( ) 2013 Draft BMP Standards and Specifications

Project Name: 5612 LANGDON COURT
Date: 12/12/2018

CLEAR ALL (Ctrl+Shift+R)

data input cells
constant values
calculation cells
final results

BMP Design Specifications List: 2011 Stds & Specs

Site Information

Post-Development Project (Treatment Volume and Loads)

Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested	0.21	0.00	0.00	0.00	0.21 *
Managed Turf (acres) -- disturbed, graded for yards or other turf to be	0.10	0.00	0.00	0.00	0.10
Impervious Cover (acres)	0.06	0.00	0.00	0.00	0.06
					0.37

** Forest/Open Space areas must be protected in accordance with the Virginia Runoff Reduction Method*

Constants

Annual Rainfall (inches)	43
Target Rainfall Event (inches)	1.00
Total Phosphorus (TP) EMC (mg/L)	0.26
Total Nitrogen (TN) EMC (mg/L)	1.86
Target TP Load (lb/acre/yr)	0.41
Pj (unitless correction factor)	0.90

Runoff Coefficients (Rv)

	A Soils	B Soils	C Soils	D Soils
Forest/Open Space	0.02	0.03	0.04	0.05
Managed Turf	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

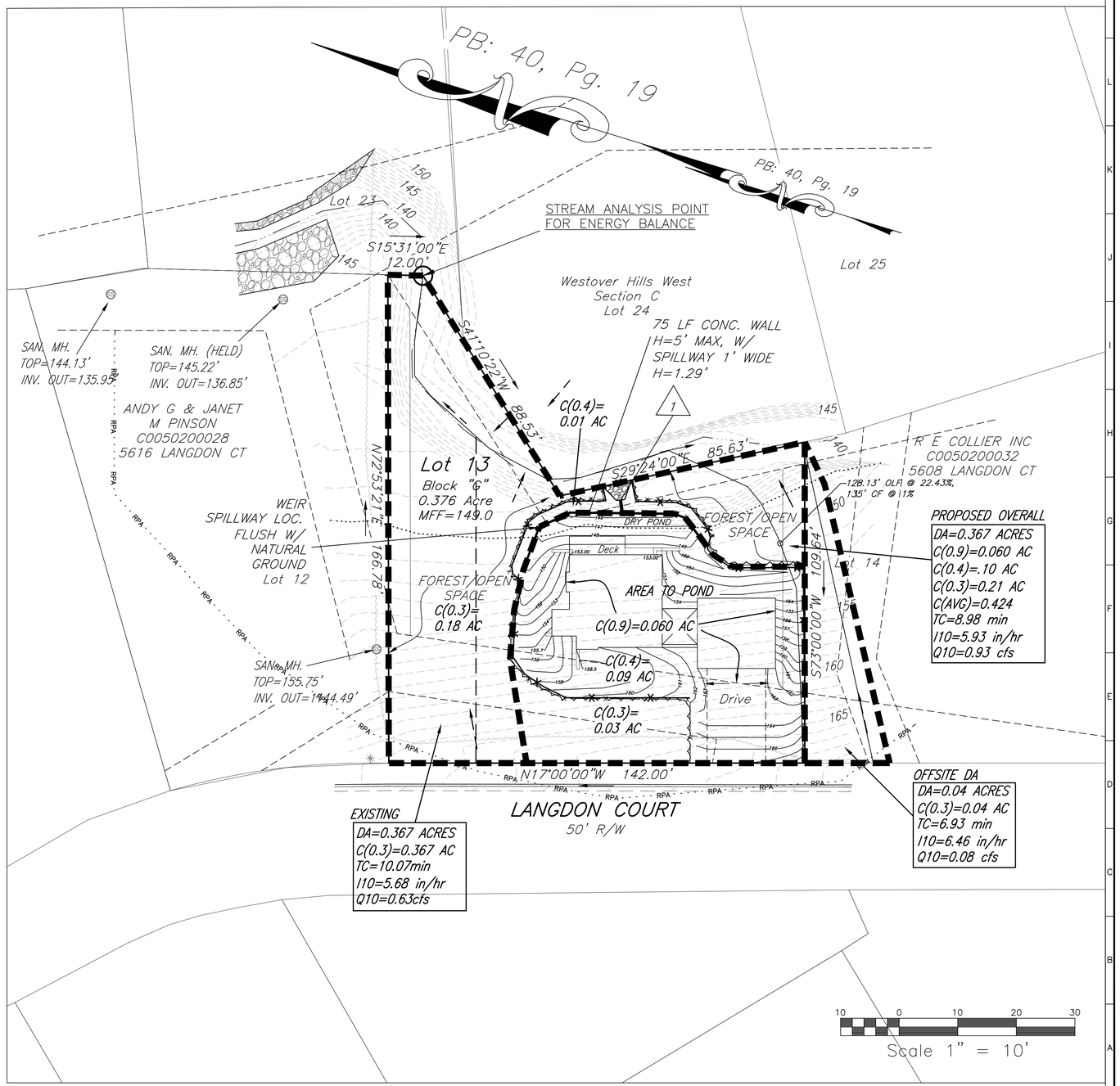
Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	0.02

LAND COVER SUMMARY -- POST DEVELOPMENT

Land Cover Summary	
Forest/Open Space Cover (acres)	0.21
Weighted Rv (forest)	0.02
% Forest	57%
Managed Turf Cover (acres)	0.10
Weighted Rv (turf)	0.15
% Managed Turf	27%
Impervious Cover (acres)	0.06
Rv (impervious)	0.95
% Impervious	16%
Site Area (acres)	**0.37**
Site Rv	**0.21**

Treatment Volume and Nutrient Loads	
Treatment Volume (acre-ft)	0.0064
Treatment Volume (cubic feet)	277
TP Load (lb/yr)	0.17
TN Load (lb/yr) (Informational Purposes Only)	1.24



BALZER AND ASSOCIATES, INC
REFLECTING TOMORROW
www.balzer.cc
Chesterfield
Henrico
New River Valley
Roanoke
Shenandoah Valley

RESIDENTIAL LAND DEVELOPMENT ENGINEERING
SITE DEVELOPMENT ENGINEERING
LAND USE PLANNING & ZONING
LANDSCAPE ARCHITECTURE
LAND SURVEYING
ARCHITECTURE
STRUCTURAL ENGINEERING
GEOTECHNICAL ENGINEERING
TRANSPORTATION ENGINEERING
ENVIRONMENTAL & SOIL SCIENCE
WETLAND DELINEATIONS & STREAM EVALUATIONS

Balzer and Associates, Inc.
15871 City View Drive, Suite 200
Midlothian, VA 23113
804-794-0571
FAX 804-794-2635

COMMONWEALTH OF VIRGINIA
BRADLEY P. SCHURMAN
Lic. No. 046628
1-3-19
PROFESSIONAL ENGINEER

5612 LANGDON COURT

PRE/POST DRAINAGE & CHESBAY PLAN

CITY OF RICHMOND, VIRGINIA

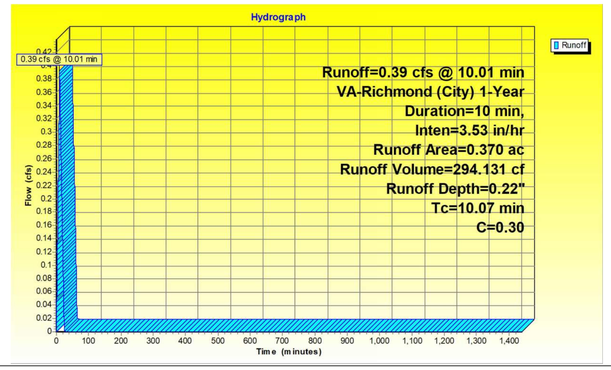
DRAWN BY BPS
DESIGNED BY BPS
CHECKED BY BPS
DATE 9-24-18
SCALE 1"=10'

REVISIONS:
12-13-18
1-3-19

SHEET NO. 3

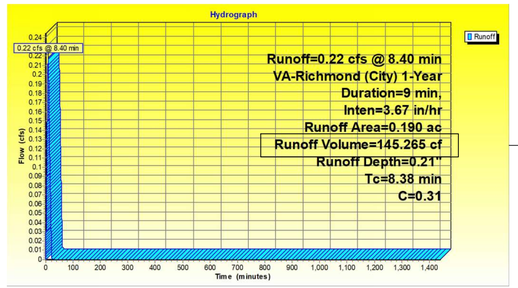
JOB NO. 54180244.00

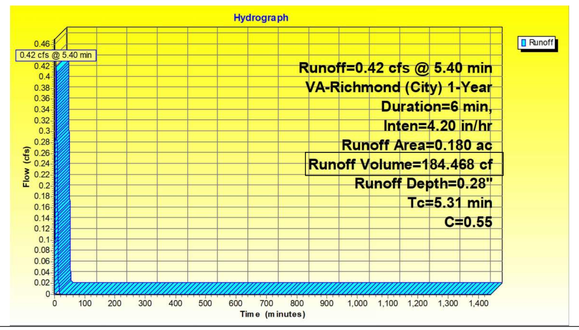
1YR STORM EXISTING CONDITIONS



Q1=0.39 CFS
RV1=294.13 CF

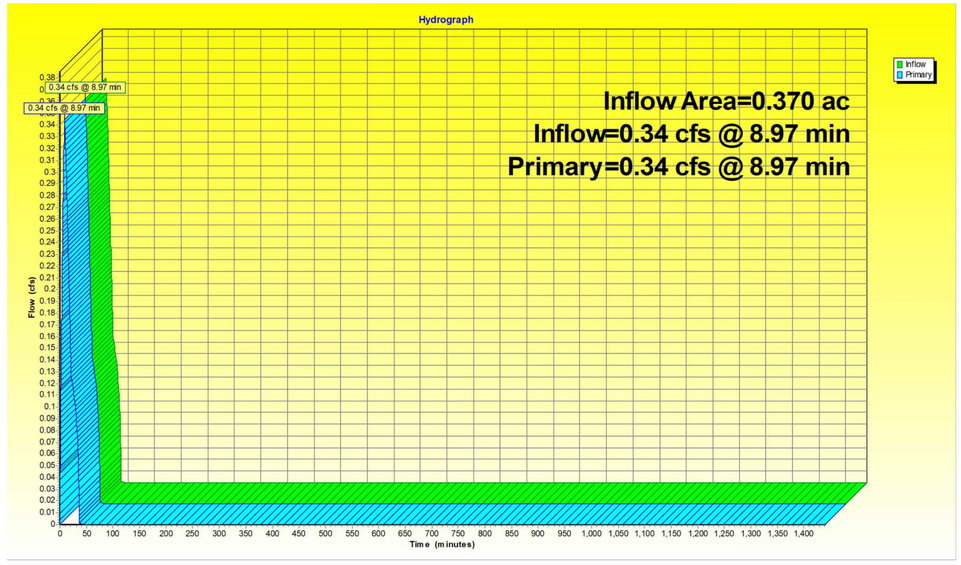
1YR STORM PROPOSED BYPASS AND POND AREAS TO OBTAIN RUNOFF VOLUME, RV1



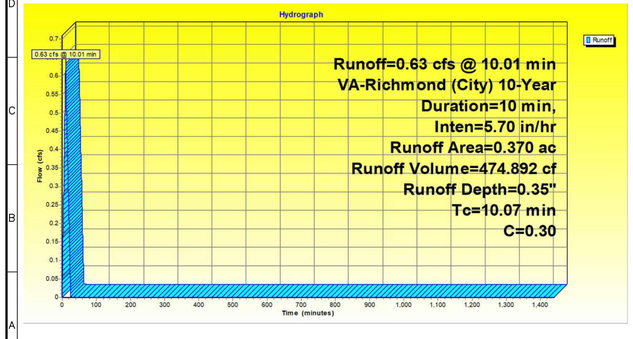


TOTAL VOLUME=
184.47 + 145.27 = 329.74 CF

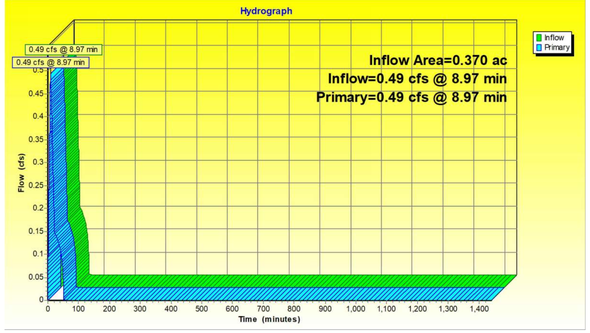
1YR STORM COMBINED ROUTING AT THE STREAM LOCATION FOR Q1=0.34 CFS



10YR STORM EXISTING



10YR STORM PROPOSED



3.38 TREE PROTECTION

14. Maintenance: In spite of precautions, some damage to protected trees may occur. In such cases, the following maintenance guidelines should be followed:

a. Soil Aeration - If the soil has become compacted over the root zone of any tree, the ground shall be aerated by punching holes with an iron bar. The bar shall be driven 1-foot deep and then moved back and forth until the soil is loosened. This procedure shall be repeated every 18 inches until all of the compacted soil beneath the crown of the tree has been loosened.

b. Repair of Damage

1) Any damage to the crown, trunk, or root system of any tree retained on the site shall be repaired immediately.

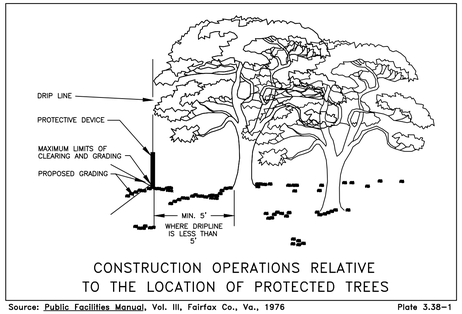
2) Whenever major root or bark damage occurs, remove some foliage to reduce the demand for water and nutrients.

3) Damaged roots shall immediately be cut off cleanly inside the exposed or damaged area. Cut surfaces shall be painted with approved tree paint, and moist peat moss, burlap, or top-soil shall be spread over the exposed area.

4) To treat bark damage, carefully cut away all loosened bark back into the undamaged area, taper the cut at the top and bottom, and provide drainage at the base of the wound (Plate 3.38-8).

5) All tree limbs damaged during construction or removed for any other reason shall be cut off above the collar at the preceding branch junction (Plate 3.38-8).

6) Care for serious injuries shall be prescribed by a forester or a tree specialist.



CONSTRUCTION OPERATIONS RELATIVE TO THE LOCATION OF PROTECTED TREES

Source: Public Facilities Manual, Vol. III, Fairfax Co., Va., 1976 Plate 3.38-1

BALZER AND ASSOCIATES, INC
REFLECTING TOMORROW
www.balzer.cc
Chesterfield
Henrico
New River Valley
Roanoke
Shenandoah Valley

RESIDENTIAL LAND DEVELOPMENT ENGINEERING
SITE DEVELOPMENT ENGINEERING
LAND USE PLANNING & ZONING
LANDSCAPE ARCHITECTURE
LAND SURVEYING
ARCHITECTURE
STRUCTURAL ENGINEERING
GEOTECHNICAL ENGINEERING
TRANSPORTATION ENGINEERING
ENVIRONMENTAL & SOIL SCIENCE
WETLAND DELINEATIONS & STREAM EVALUATIONS

Balzer and Associates, Inc.
15871 City View Drive, Suite 200
Midlothian, VA 23113
804-794-0571
FAX 804-794-2635

COMMONWEALTH OF VIRGINIA
BRADLEY P. SCHURMANN
Lic. No. 046628
1-3-19
PROFESSIONAL ENGINEER

5612 LANGDON COURT
CALCULATIONS
CITY OF RICHMOND, VIRGINIA

DRAWN BY BPS
DESIGNED BY BPS
CHECKED BY BPS
DATE 9-24-18
SCALE N/A

REVISIONS:
12-13-18
1-3-19

SHEET NO. 4

JOB NO. 54180244.00

PLANT SCHEDULE

EVERGREEN TREES	QTY	BOTANICAL NAME / COMMON NAME	CONT	CAL	HT
IS	3	Ilex opaca `Satyr Hill` / Satyr Hill Amencan Holly	CONT. OR B&B		4`-5` MIN.
MC3	9	Morella cenfera / Wax Myrtle	B & B		4`-5` MIN.
LARGE TREES	**QTY**	**BOTANICAL NAME / COMMON NAME**	**CONT**	**CAL**	**HT**
AR	7	Acer rubrum / Red Maple	CONT. OR B&B	1.50" CAL. MIN.	8` MIN.
BD	3	Betula nigra `Duraheat` / Duraheat River Birch	B & B	MULTI-STEM	6`-8` MIN.
CK	5	Cladrastis kentukea / Amencan Yellowwood	B & B	1.50" CAL. MIN.	8`-10` MIN.
QP	2	Quercus phellos / Willow Oak	B & B	1.50" CAL. MIN.	8` MIN.
SMALL TREE	**QTY**	**BOTANICAL NAME / COMMON NAME**	**CONT**	**CAL**	**HT**
AG	5	Amelanchier x grandiflora `Autumn Brilliance` / `Autumn Brilliance` Serviceberry	B & B	MULTI-STEM	6`-8` MIN.
CC	8	Cercis canadensis / Eastern Redbud	CONT. OR B&B	0.75" CAL. MIN.	5`-6` MIN.
CV	4	Chionanthus virginicus / White Fringetree	CONT. OR B&B	0.75" CAL. MIN.	4`-5` MIN.
CP	1	Cornus florida `Cherokee Princess` / Cherokee Princess Dogwood	CONT. OR B&B	0.75" CAL. MIN.	5`-6` MIN.
MN	4	Magnolia virginiana `Northern Belle` / Northern Belle Sweet Bay Magnolia	B & B	MULTI-STEM	6`-8` MIN.
SHRUBS	**QTY**	**BOTANICAL NAME / COMMON NAME**	**CONT**	**HT**	**SPR**
AI	1	Aronia melanocarpa `Iroquois Beauty` TM / Black Chokeberry	3 gal	18" MIN.	15"-18" MIN.
CB3	2	Callicarpa amencana / Amencan Beautyberry	3 gal	18"-24" MIN.	18" MIN.
CA	7	Calycanthus floridus `Aphrodite` / Aphrodite Sweet Shrub	3 gal	18"-24" MIN.	18" MIN.
FA	5	Fothergilla gardenii `Mt. Airy` / Dwarf Witchalder	3 gal	18" MIN.	15"-18" MIN.
HO	6	Hydrangea quercifolia `Snow Queen` / Snow Queen Oakleaf Hydrangea	3 gal	18"-24" MIN.	18"-24" MIN.
IB	16	Ilex vomitoria `Bordeaux` / Bordeaux Holly	3 gal	12"-15"	18" MIN.
IV	7	Itea virginica `Henry`s Garnet` / Henry`s Garnet Sweetspire	3 gal	15"-18" MIN.	18" MIN.
RG	8	Rhus aromatica `Gro-Low` / Gro-Low Fragrant Sumac	3 gal	15" MIN.	18" MIN.
GROUND COVER	**QTY**	**BOTANICAL NAME / COMMON NAME**	**CONT**	**HT**	**SPR**
EP	15	Echinacea x `Pow Wow Wild Berry` / Pow Wow Wild Berry Coneflower	1 gal	8"-12"	8" MIN.
IV3	93	Ins versicolor / Blue Flag	1 gal	12" MIN.	
LC	8	Lobelia cardinalis `Compliment Red` / Cardinal Flower	1 gal	12" MIN.	8" MIN.
MP	8	Matteuccia pennsylvanica / Ostnch Fern	1 gal	12"-15"	
OR	7	Osmunda regalis / Royal Fern	1 gal	12" MIN.	8" MIN.

SITE PREPARATION AND INSTALLATION

1. A CONTRACTOR SHALL ASCERTAIN LOCATIONS OF ALL UTILITIES PRIOR TO EXCAVATION. PRIOR TO COMMENCING ANY WORK, CONTACT "MISS UTILITY" AT 1-800-552-7001.
2. LANDSCAPE CONTRACTOR SHALL COORDINATE WITH THE GENERAL, GRADING, UTILITY AND IRRIGATION CONTRACTORS REGARDING THE READINESS OF THE SITE.
3. IDENTIFY LOCATIONS OF PROPOSED TREES, SHRUBS AND PLANT BEDS ON SITE PRIOR TO DIGGING. NOTIFY LANDSCAPE ARCHITECT IF ANY CONFLICTS EXIST WITH PROPOSED PLANTS AND THE BUILT SITE.
4. LANDSCAPING SHALL BE INSTALLED AND MAINTAINED SO AS NOT TO INTERFERE WITH SIGHT DISTANCE NEEDS OF DRIVERS IN THE PARKING AREAS AND AT THE ENTRANCE/EXIT LOCATIONS.
5. NO LANDSCAPING SHALL BE INSTALLED THAT WILL OBSTRUCT ACCESS TO FIRE HYDRANT OR OTHER FIRE DEPARTMENT CONNECTIONS. A CLEAR AREA OF 3 FEET SHALL BE MAINTAINED AROUND ALL FIRE HYDRANT CONNECTIONS.
6. PLANTING SHALL OCCUR IN ACCORDANCE WITH ALL DETAILS.
7. EXCAVATE EXISTING SOIL TO FORM PLANTING PIT. LOOSEN SIDE SLOPES AND TAMP BOTTOM.
8. INSTALL PLANT TO PROPER LEVEL.
9. BACKFILL WITH SOIL MIXTURE MADE OF 60% SCREENED TOPSOIL (SHALL BE FREE OF STONES, LUMPS, PLANT ROOTS AND OTHER DEBRIS OVER 1-1/2". IT SHALL NOT CONTAIN TOXIC SUBSTANCES HARMFUL TO PLANT GROWTH. TOP SOIL SHALL HAVE A PH RANGE OF 5.0 TO 7.0), 20% LOOSENED SUB-SOIL AND 20% COMPOSTED ORGANIC MATERIAL.
10. IN AREAS WITH POORLY DRAINING SOIL PROVIDED 2"-3" BASE MADE OF LOOSE AGGREGATE AND LEVEL TOP OF ROOT BALL 2"-3" ABOVE SURROUNDING FINISHED GRADE.
11. WHILE BACKFILLING WITH SOIL INSTALL LIFTS OF MYCORRHIZAE SOIL AMENDMENT IN THE AMOUNT RECOMMEND BY MANUFACTURER FOR PLANT SIZE.
12. FIRMLY TAMP SOIL AROUND THE PLANT. DO NOT MOUND SOIL AROUND THE TRUNK OR FILL MORE THEN ¼" OVER THE TOP OF EXISTING ROOT BALL SURFACE.
13. WATER IN THOROUGHLY UNTIL PLANTING PIT IS FULLY SATURATED.
14. DEFINE OUTER EDGE OF PLANTING BED WITH EARTHEN EDGE. REMOVE ROCKS 2" DIAMETER OR GREATER. LOOSEN AND LEVEL EXCESS SOIL.
15. APPLY 3" LAYER OF SHREDDED HARDWOOD MULCH OVER ENTIRE PLANTING AREA. DO NOT MOUND MULCH AROUND TRUNK OF PLANT. LIMIT MULCH ON TOP OF ROOT BALL TO A DEPTH OF 1".
16. MULCH MATERIAL SHALL BE EITHER SHREDDED HARDWOOD MULCH OR APPROVED EQUAL. MATERIAL SHALL BE MULCHING GRADE, UNIFORM IN SIZE AND FREE OF FOREIGN MATTER.

LAWN NOTES:

1. LAWN AREAS TO BE FINE GRADED AND ALL ROOTS, ROCKS, AND CONSTRUCTION DEBRIS TO BE REMOVED.
2. OBTAIN A SOIL SAMPLE FROM LAWN AREAS AND SUBMIT TO A QUALIFIED LAB FOR ANALYSIS. INSTALL NUTRIENTS OVER LAWN AREAS PER RECOMMENDATIONS FROM LAB REPORT.
3. AREAS TO BE SEEDED WITH PERENNIAL HYBRID FESCUE SEED AND MULCHED WITH WHEAT STRAW. AT THE DISCRETION OF THE OWNERS, LAWN AREAS MAY BE PROVIDED WITH HYBRID FESCUE SOD IN LIEU OF SEEDING AND STRAW.

MAINTENANCE AND ACCEPTANCE

1. CONTRACTOR SHALL MAINTAIN PLANT MATERIAL DURING INSTALLATION. MAINTENANCE SHALL BECOME RESPONSIBILITY OF OWNER UPON ACCEPTANCE OF WORK.
2. CONTRACTOR SHALL NOTIFY OWNER AND CITY INSPECTOR WHEN LANDSCAPE INSTALLATION IS COMPLETE AND READY FOR INSPECTION.
3. WHERE THE LANDSCAPE WORK IS COMPLETED, THE OWNER'S REPRESENTATIVE WILL, UPON WRITTEN REQUEST, MAKE AN INSPECTION TO DETERMINE ACCEPTABILITY. IF WORK IS NOT ACCEPTABLE, REPLACE REJECTED WORK AND CONTINUE MAINTENANCE UNTIL REINSPECTION AND APPROVAL.
4. CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND LABOR FOR 12 CALENDAR MONTHS AFTER ACCEPTANCE. MAKE REPLACEMENTS OF ALL PLANTS 50% DEAD OR IMPAIRED IN EARLY FALL FOLLOWING PLANTING AND ADDITIONALLY IN THE EARLY SPRING FOR THE SAME OR OTHER MATERIALS WHICH ARE DEAD OR IMPAIRED FROM THE WINTER CONDITIONS.
5. WITHIN 10 DAYS AFTER ACCEPTANCE THE CONTRACTOR SHALL DELIVER AN OUTLINE OF MAINTENANCE PROCEDURES TO THE OWNER.
6. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY DURING THE GUARANTEE PERIOD TO PROVIDE WRITTEN NOTICE TO THE OWNER OF ANY MAINTENANCE PRACTICE WHICH IN THEIR OPINION WILL AFFECT THE GUARANTEE IF NOT REMEDIED PROMPTLY.

CHESAPEAKE BAY BUFFER RESTORATION/ESTABLISHMENT TABLE A

PER 400SF UNIT: 1 CANOPY TREE
2 UNDERSTORY TREES
3 SMALL SHRUBS

RPA RESTORATION AREA=6,970SF/400=17 UNITS

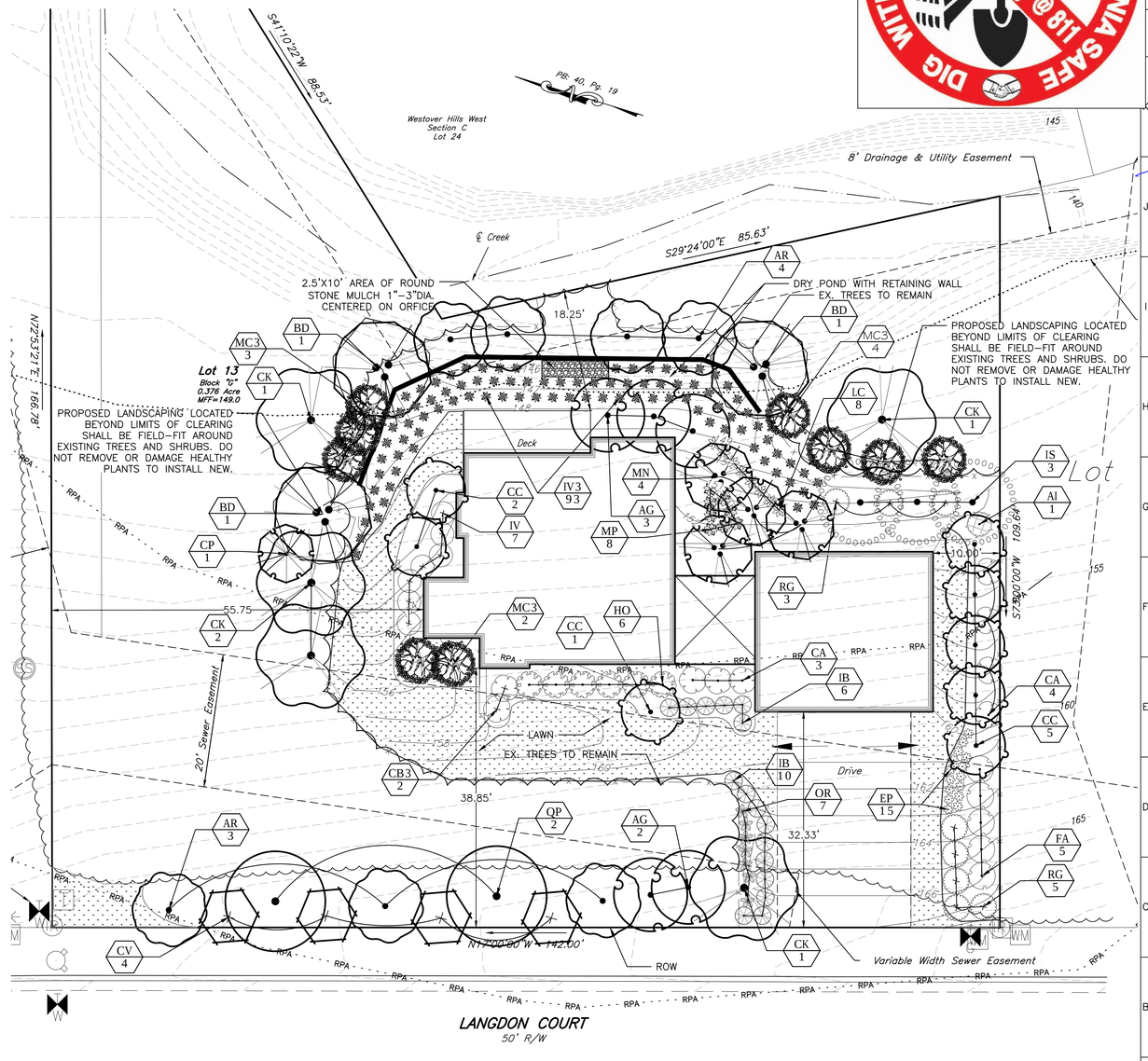
REQUIRED:
17X1=17 CANOPY TREES
X2=34 UNDERSTORY TREES
X3=52 SMALL SHRUBS

PROVIDED:
17 CANOPY TREES
34 UNDERSTORY TREES (SMALL AND EVERGREEN TREES)
52 SMALL SHRUBS
131 GROUND COVER

CATEGORY:
-MS-4
-RPA LOT
-OVER 2,500 SF

HUC CODE: JM 86
RECEIVING WATERS: JAMES RIVER
LAT: 37.5308' N
LONG: 77.4996' W

OWNER: R.E. COLLIER
CONTACT: DUTCH GODDARD
ADDRESS: 9415 HULL STREET ROAD
RICHMOND, VA 23236
PHONE: 804-955-7691
EMAIL: DUTCHGODDARD@GMAIL.COM



LANGDON COURT
50' R/W

SCALE: 1" = 10'

C.A.R.E. KEEP VIRGINIA SAFE
Call Miss Utility @ 811
DIG WITH

BALZER AND ASSOCIATES, INC.
REFLECTING TOMORROW
www.balzer.cc
Chesterfield
Henrico
New River Valley
Roanoke
Shenandoah Valley

RESIDENTIAL LAND DEVELOPMENT ENGINEERING
SITE DEVELOPMENT ENGINEERING
LAND USE PLANNING & ZONING
LANDSCAPE ARCHITECTURE
LAND SURVEYING
ARCHITECTURE
STRUCTURAL ENGINEERING
GEOTECHNICAL ENGINEERING
TRANSPORTATION ENGINEERING
ENVIRONMENTAL & SOIL SCIENCE
WETLAND DELINEATIONS & STREAM EVALUATIONS

Balzer and Associates, Inc.
15871 City View Drive, Suite 200
Midlothian, VA 23113
804-794-0571
FAX 804-794-2635

COMMONWEALTH OF VIRGINIA
DAVID J. LISOWSKI
Lic. No. 1263
01-09-2019
LANDSCAPE ARCHITECT

5612 LANGDON COURT

LANDSCAPE MITIGATION PLAN

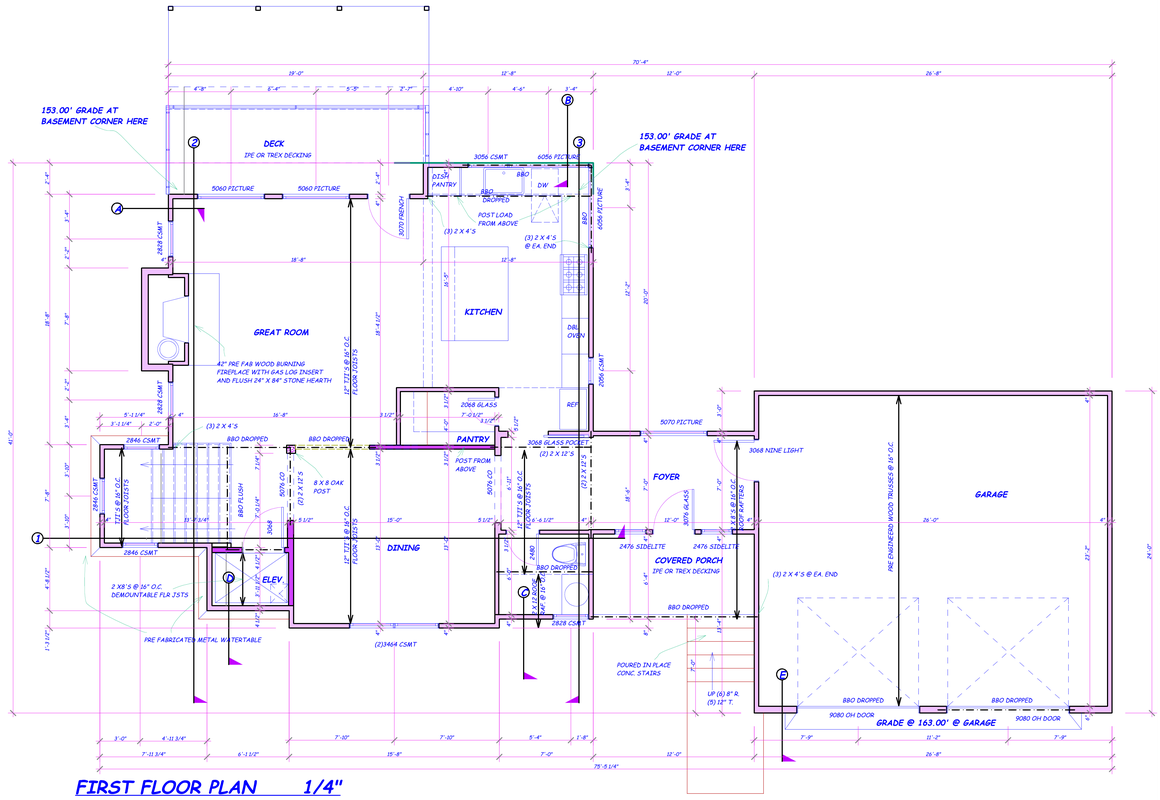
CITY OF RICHMOND, VIRGINIA

DRAWN BY DJL
DESIGNED BY DJL
CHECKED BY DJL
DATE 11-09-2018
SCALE 1"=10'

REVISIONS:
12-14-2018
01-03-2019
01-09-2018

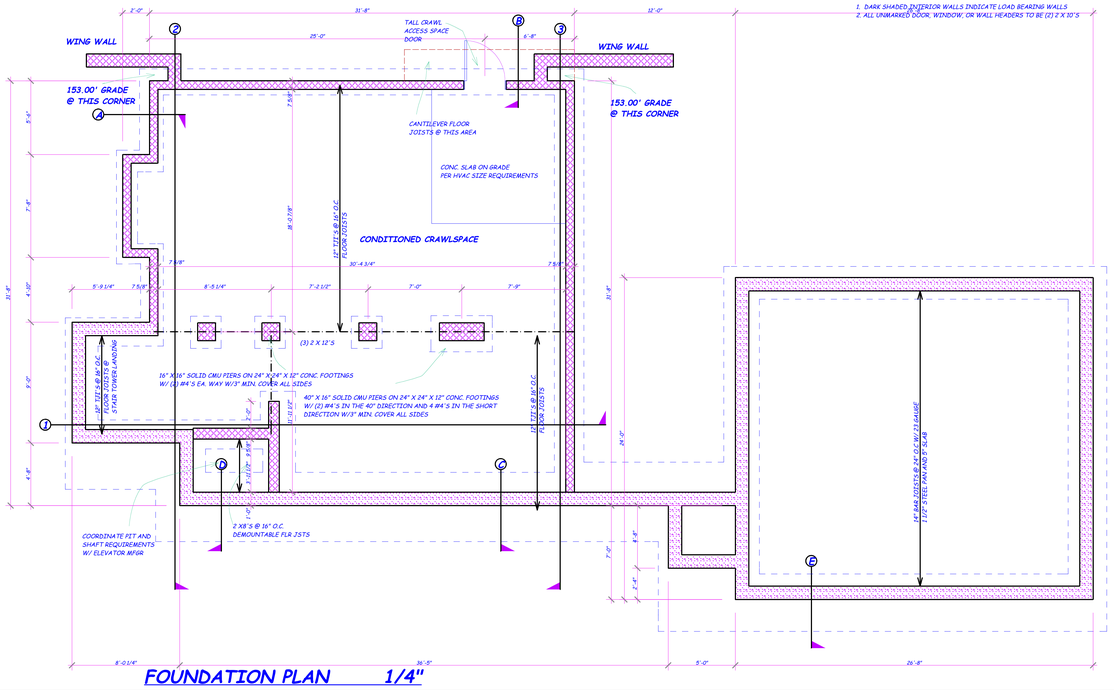
SHEET NO. 5

JOB NO. 54180244.00



FIRST FLOOR PLAN 1/4"

1. DARK SHADED INTERIOR WALLS INDICATE LOAD BEARING WALLS
2. ALL UNMARKED DOOR, WINDOW, OR WALL HEADERS TO BE (2) 2 X 10'S



FOUNDATION PLAN 1/4"

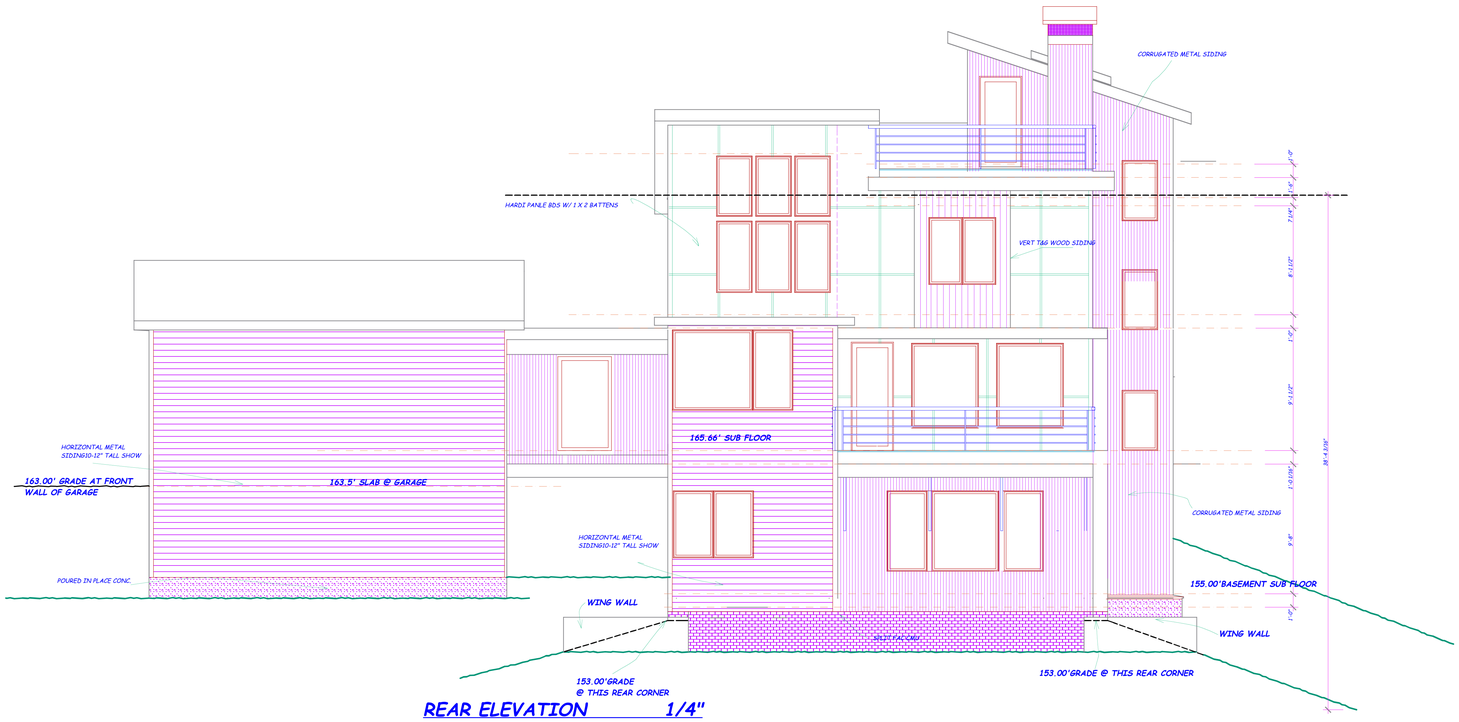
MARK SPANGLER
ARCHITECTURE
1727 W. MAIN ST.
RICHMOND, VA. 23220
804-432-4739
MARK@SPANGLERARCHITECTURE.COM

SMITH RESIDENCE

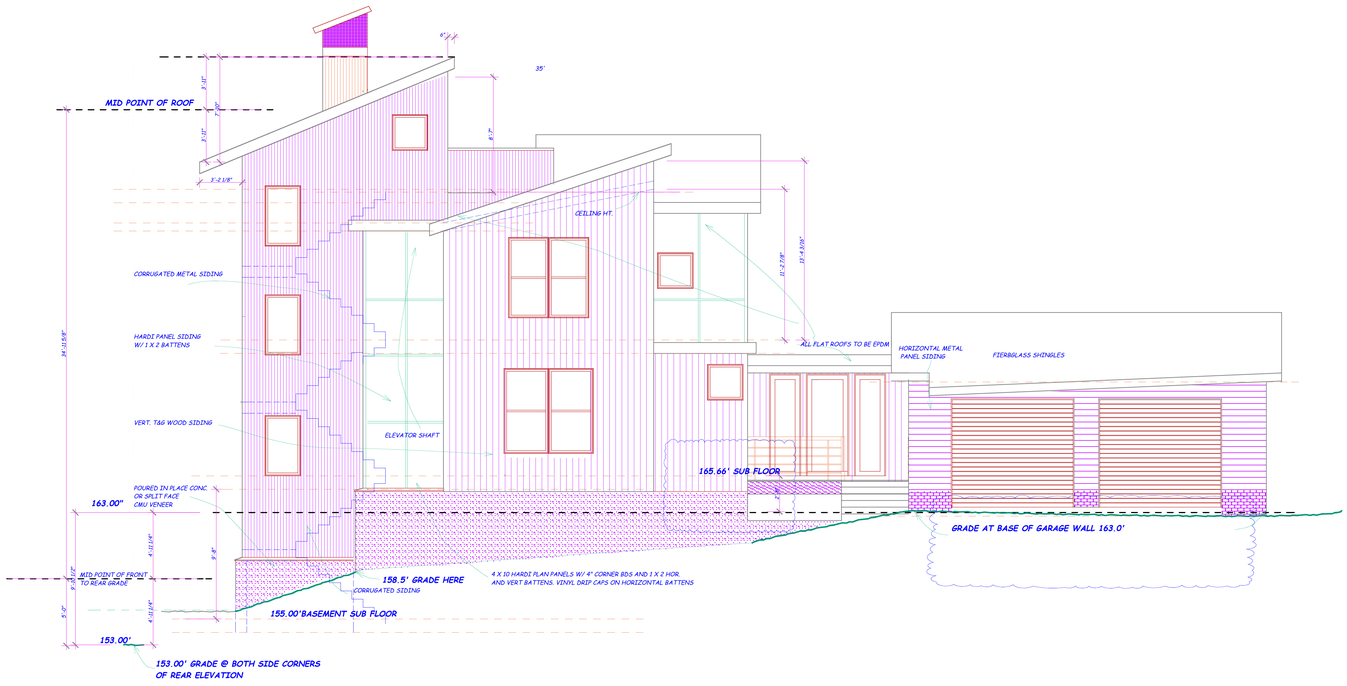
PERMIT SET

DATE OF ISSUE:
OCTOBER 10, 2018
FEBRUARY 2, 2019

A-1



REAR ELEVATION 1/4"



MARK SPANGLER
ARCHITECTURE
1727 W. MAIN ST.
RICHMOND, VA. 23220
804-432-4739
MARK@SPANGLERARCHITECTURE.COM

SMITH
RESIDENCE

PERMIT
SET

DATE OF ISSUE:
OCTOBER 10, 2018
FEBRUARY 2, 2019