

EROSION AND SEDIMENTATION CONTROL NOTES:

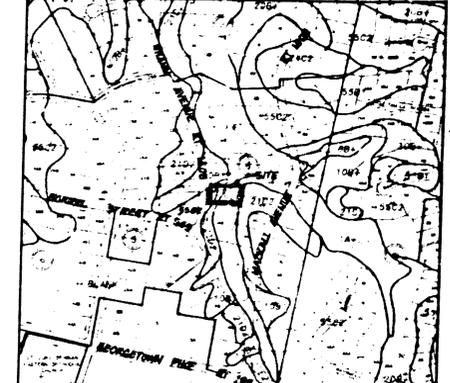
1. NO DISTURBED AREA WILL BE EXPOSED FOR MORE THAN 14 CALENDAR DAYS UNLESS OTHERWISE AUTHORIZED BY THE DIRECTOR OR HIS AGENT.
2. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE PLACED PRIOR TO OR AS THE FIRST STEP IN GRADING.
3. EROSION AND SEDIMENT CONTROL SHALL CONFORM TO THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AS APPROPRIATE AND THE FAIRFAX COUNTY 1990 CHECKLIST FOR EROSION & SEDIMENT CONTROL.

EROSION AND SEDIMENTATION CONTROL SEQUENCE:

1. PRIOR TO CONSTRUCTION, CONSULT WITH THE SITE INSPECTOR WILL ESTABLISH THE LIMITS OF CLEANING AND CONSTRUCTION AS PARKED ON THIS PLAN.
2. ROUGH-MADE DRIVEWAY ENTRANCE AND INSTALL CONSTRUCTION ENTRANCE AS SHOWN. MUD AND DEBRIS SHALL BE WASHED FROM ALL CONSTRUCTION VEHICLES AND EQUIPMENT BEFORE LEAVING SITE.
3. INSTALL EROSION AND SEDIMENTATION CONTROLS AS SHOWN ON THE PLAN.
4. ONCE THE CONTROLS ARE IN PLACE, CLEAR AND GRADE THE REMAINDER OF THE SITE PER THE GRADING PLAN.
5. TEMPORARY SEEDING AND MULCHING ARE TO BE APPLIED TO DISTURBED AREAS AFTER INITIAL CLEARING/DISTURBANCE. TEMPORARY COVER BY SEEDING AND/OR MULCHING SHOULD BE APPLIED ON AREAS WHICH WILL BE EXPOSED FOR A PERIOD GREATER THAN 14 DAYS BEFORE PERMANENT STABILIZATION CAN BE ACHIEVED.
6. ALL SLOPES ARE TO BE LEFT WITH A LIP AND SILT FENCE AT THE TOP OF THE SLOPE AT THE END OF EACH DAY. SOIL THAT IS TO BE STOCKPILED ON-SITE IS TO BE SEEDED AND MULCHED WITH TEMPORARY VEGETATION AND THE PERIMETER SURROUNDED WITH A SILT FENCE IMMEDIATELY AFTER GRADING.
7. AFTER CONSTRUCTION OPERATIONS HAVE ENDED AND ALL DISTURBED AREAS HAVE BEEN STABILIZED, PERMANENT SEDIMENTATION CONTROLS SHALL BE REMOVED AND THE GROUND PERMANENTLY STABILIZED WITH VEGETATION UPON THE APPROVAL OF THE FAIRFAX COUNTY INSPECTOR.

MAINTENANCE PROGRAM: ALL EROSION AND SEDIMENT CONTROLS SHALL BE MAINTAINED DAILY BY THE SITE SUPERVISOR. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL. THE DEVELOPER GRANTS THE RIGHT OF ENTRY UPON THIS PROPERTY TO THE DESIGNATED COUNTY PERSONNEL FOR THE PURPOSES OF INSPECTING AND MONITORING FOR COMPLIANCE WITH THE CODE OF VIRGINIA EROSION AND SEDIMENT CONTROL LAW (TITLE 10, CHAPTER 5, ARTICLE 41). ANY DAMAGED CONTROL MEASURE IS TO BE REPAIRED BY THE OWNER OF THE PROPERTY. THE MINIMUM REPAIR IS TO BE APPROVED BY THE COUNTY INSPECTOR. ALL SEDIMENT TRAPPING DEVICES SHALL BE CLEANED BY THE SITE SUPERVISOR AND ALL SEDIMENT SHALL BE DISPOSED OF OFF-SITE IN AN APPROPRIATE MANNER. IT IS NOT SUITABLE FOR FILL.

SOILS/VICINITY MAP SCALE: 1"=500'



SOILS	SERIES	FORMATION	DRAINAGE	SLOPE	STABILITY	EROSIBILITY	GEOTECHNICAL REPORT REF.
10A	ALLUVIAL	POOR	POOR	GOOD	SLIGHT	A (MOD)	
10B1	GLANVILLE	FAIR	MARGINAL	GOOD	MODERATE	B (MOD)	
21D	MANOR	GOOD	GOOD	GOOD	SEVERE	C (MOD)	
56B2	GLENELLS	GOOD	GOOD	GOOD	SEVERE	C (MOD)	

SEE GEOTECHNICAL REPORT SHEET B OF B

TREE COVER CALCULATION:

GROSS SITE AREA	= 47,500 sq ft
DEBRIS (TYPICAL BUILDABLE AREA (ZONING) - R-1)	= 16,500 sq ft
MINIMUM TREE COVER REQUIRED	= 25,000 sq ft
PERCENTAGE TREE COVER REQUIRED	= 53%
10 YEAR TREE COVER TO BE PROVIDED	= 4,650 sq ft
EXISTING TREE COVER FACTOR	= 14,500 sq ft
MULTIPLY	= 2,112 sq ft
TREE COVER TO BE PROVIDED BY NEW TREES	= 0
TOTAL TREE COVER PROVIDED	= 14,500 sq ft

- NOTES:**
1. TAX MAP NO. 21-4-663-15A
 2. ZONED R-1
 3. OWNER: GUY LINDEN PARTNERSHIP
1222 GALLIAMS ROAD, SUITE 200
DUNN LORING, VIRGINIA 22027
 4. PROPERTY ADDRESS: 917 WHANN AVENUE
MAGNAN, VA 22101
 5. MINIMUM SETBACK REQUIREMENTS (R-1 ZONING)
FRONT: 40'
SIDE: 20'
REAR: 25'
 6. FEMA FLOOD DATA
COMMUNITY NO: 515526C
FEMA MAP NO: 09
ZONE: C
 7. PUBLIC WATER AND SEWER (CITY OF FALLS CHURCH WATER)
 8. BOUNDARY AND TDPO BY OTHERS
 9. NO TITLE REPORT FURNISHED

APPROVED FOR GRADING
Lot 13A

URBAN FORESTRY-APPROVED
DATE 12-19-94 BY JGS

ONLY
BY [Signature] DATE 12/28/94

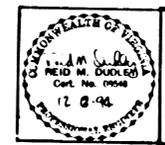
TOTAL IMPERVIOUS AREA - 10,660 SQ FT OR 25.4%

943A7800

CONTRACTORS SHALL NOTIFY OPERATORS WHO MAINTAIN UNDERGROUND UTILITY LINES IN THE AREA OF PROPOSED EXCAVATION OR BLASTING AT LEAST TWO WORKING DAYS BUT NOT MORE THAN TEN WORKING DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION IN ACCORDANCE WITH SECTION 63-2-2 OF THE FAIRFAX COUNTY CODE. NAMES AND TELEPHONE NUMBERS SHALL ALSO BE USED TO SERVE IN AN EMERGENCY CONDITION AS REQUIRED BY SECTION 63-2-2 OF THE CODE.

CONTACT "MISS UTILITY" AT 1-800-257-7777
THE EXISTING UNDERGROUND UTILITIES SHOWN HEREON ARE BASED UPON AVAILABLE INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE UNDERGROUND UTILITIES BEFORE COMMENCING WORK AND FOR ANY DAMAGES WHICH OCCUR BY HIS FAILURE TO LOCATE OR PRESERVE THESE UNDERGROUND UTILITIES. IF DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHOULD ENCOUNTER UTILITIES OTHER THAN IN THOSE LOCATIONS SHOWN ON THE PLANS, HE SHALL IMMEDIATELY NOTIFY THE ENGINEER AND TAKE NECESSARY AND PROPER STEPS TO PROTECT THE FACILITY AND ASSURE THE CONTINUANCE OF SERVICE.

I HEREBY CERTIFY THAT ALL WETLANDS PERMITS REQUIRED BY LAW HAVE BEEN OBTAINED PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES.
Signature: _____
Date: _____

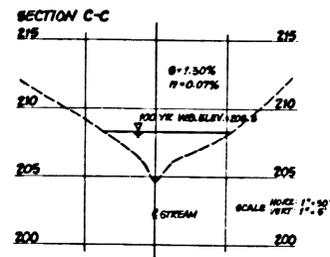


SCALE: 1"=50'
BY: GJ
DATE: MARCH 18, 1995
REVISIONS:
REV. 1: 1995
REV. 2: 1995
REV. 3: 1995
DEC 2, 1994

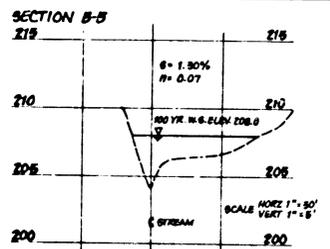
GRADING PLAN
LOT 13-A, SECTION ONE
LANGLEY FOREST
ORANGEVILLE DISTRICT, FAIRFAX COUNTY, VIRGINIA
RUNYON, DUDLEY, ANDERSON, ASSOCIATES, INC.
ENGINEERING, SURVEYING & PLANNING
1858 BAIN STREET SUITE 301
FAIRFAX, VIRGINIA 22030 (703) 591-4888

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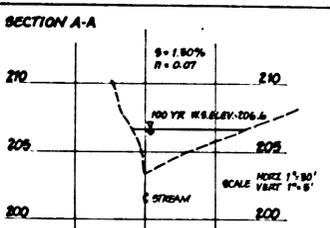
WRIVER # 015092



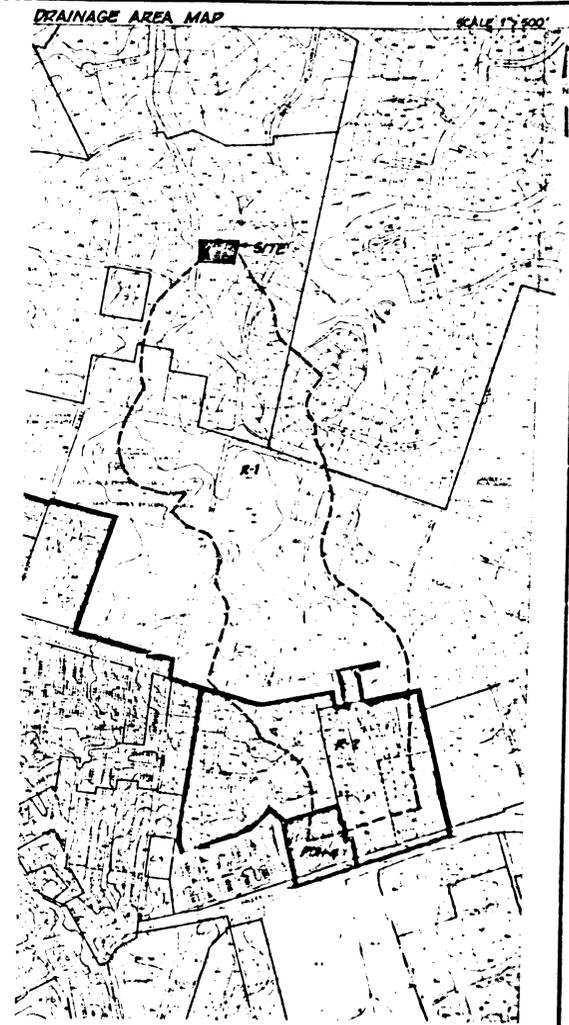
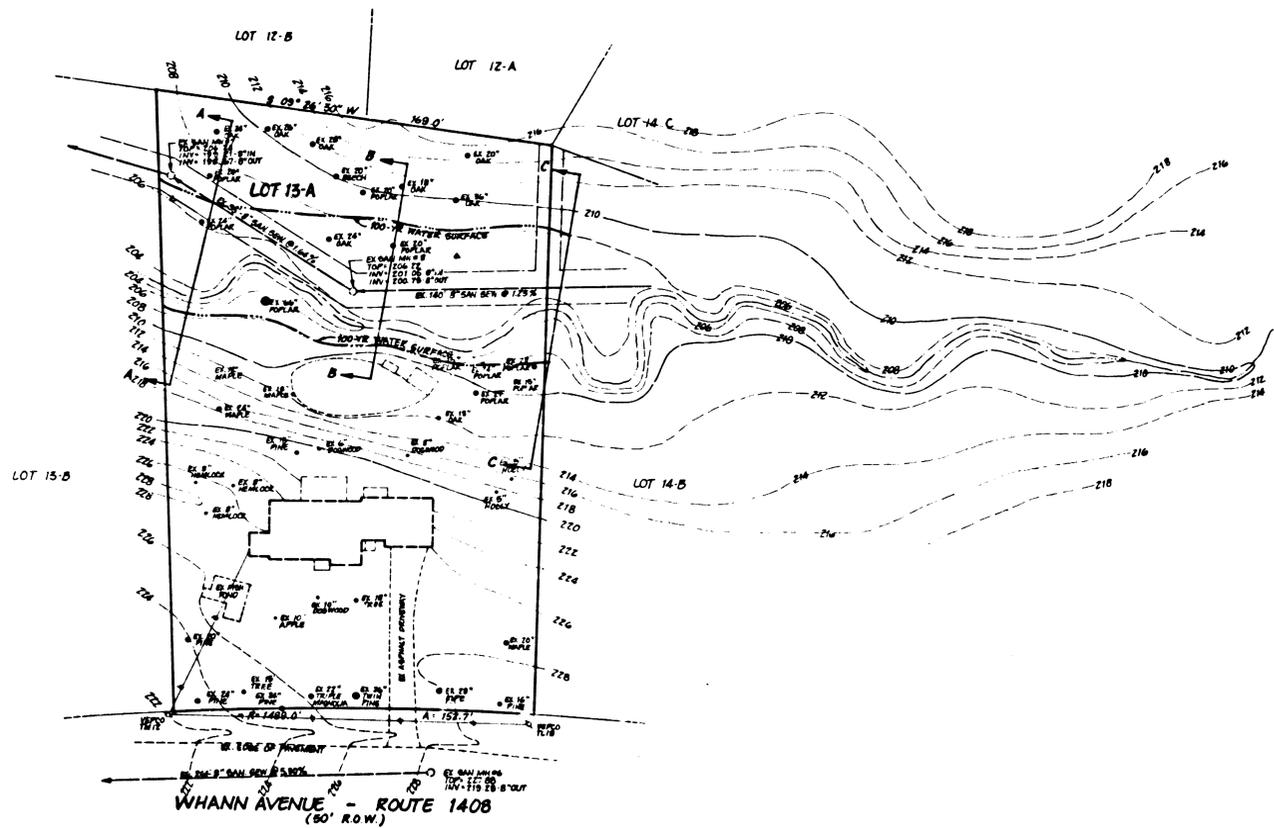
CAPACITY OF DITCH AT DEPTH = 3.6
 $Q = \frac{1.49}{n} \left(\frac{A}{WP} \right)^{2/3} (S)^{1/2} A$
 $Q = \frac{1.49}{0.07} \left(\frac{22}{42} \right)^{2/3} (0.015)^{1/2} (64)$
 = 270 CFS > 225 CFS
 VELOCITY OF DITCH AT DEPTH = 3.6
 $V = \frac{1.49}{n} \left(\frac{A}{WP} \right)^{1/3} (S)^{1/2} A$
 $V = \frac{1.49}{0.07} \left(\frac{22}{42} \right)^{1/3} (0.015)^{1/2} (51)$
 = 140 CFS > 121 CFS
 $V = \frac{Q}{A} = \frac{270}{51} = 5.3$ FPS



CAPACITY OF DITCH AT DEPTH = 5.9
 $Q = \frac{1.49}{n} \left(\frac{A}{WP} \right)^{2/3} (S)^{1/2} A$
 $Q = \frac{1.49}{0.07} \left(\frac{22}{48} \right)^{2/3} (0.015)^{1/2} (75)$
 = 228 CFS > 225 CFS
 VELOCITY OF DITCH AT DEPTH = 5.9
 $V = \frac{1.49}{n} \left(\frac{A}{WP} \right)^{1/3} (S)^{1/2} A$
 $V = \frac{1.49}{0.07} \left(\frac{22}{48} \right)^{1/3} (0.015)^{1/2} (48)$
 = 122 CFS > 121 CFS
 $V = \frac{Q}{A} = \frac{228}{48} = 4.8$ FPS



CAPACITY OF DITCH AT DEPTH = 3.2
 $Q = \frac{1.49}{n} \left(\frac{A}{WP} \right)^{2/3} (S)^{1/2} A$
 $Q = \frac{1.49}{0.07} \left(\frac{22}{48} \right)^{2/3} (0.015)^{1/2} (77)$
 = 236 CFS > 225 CFS
 VELOCITY OF DITCH AT DEPTH = 3.2
 $V = \frac{1.49}{n} \left(\frac{A}{WP} \right)^{1/3} (S)^{1/2} A$
 $V = \frac{1.49}{0.07} \left(\frac{22}{48} \right)^{1/3} (0.015)^{1/2} (48)$
 = 134 CFS > 121 CFS
 $V = \frac{Q}{A} = \frac{236}{48} = 4.9$ FPS



DRAINAGE TO SITE		ROUGHNESS COEFFICIENT (REF VA E & S HANDBOOK)	
A = 101.0 ACRES	n = 0.02	1/8" = 0.01	
Tc = 50 min (1.10 = 6.52)	1/4" = 0.02	1/2" = 0.015	
N = 120'	3/4" = 0.025	1" = 0.03	
L = 4500'	1 1/4" = 0.03	1 1/2" = 0.04	
C = 0.85	1 3/4" = 0.04	2" = 0.05	
Q = 225 CFS	2 1/4" = 0.05	2 1/2" = 0.06	
Q2 = 121 CFS	3" = 0.06	3 1/2" = 0.07	



SCALE: 1" = 50'
 BY: RJD
 DATE: MARCH 18, 1995
 REVISIONS:

DRAINAGE STUDY
 LOT 13-A, SECTION ONE
LANGLEY FOREST
 DRAKEVILLE DISTRICT, FAIRFAX COUNTY, VIRGINIA
 RUNYON, DUDLEY, ANDERSON, ASSOCIATES, INC.
 ENGINEERING, SURVEYING & PLANNING
 10650 WAIR STREET, SUITE 301
 FAIRFAX, VIRGINIA 22030 (703) 591-4000

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GEOTECHNICAL SPECIFICATIONS

Site Observations

All foundation walls, footings and slabs for the existing building shall be removed prior to construction of the new foundation. All new foundations shall be constructed on undisturbed natural ground unless otherwise indicated on the recommendations of this report. It is noted that foundation construction.

A. Foundations

To estimate allowable soil bearing capacities, penetration tests were made or estimated at regular intervals in the soil boring locations. The actual tests were made with a dynamic cone penetrometer were calibrated to ASTM D-1586-67 (1974) test procedure. A range of values was determined for particular soil materials based on soil classification, evaluation of penetration resistance and experience with similar natural soil materials. The statistical mode was used to estimate soil bearing according to the following:

Equation 1 $q_a = n / 2.5 K_d$

where,

- q_a = allowable soil bearing capacity (kips/sf)
- n = standard penetration test (blows/foot)
- K_d = depth correction, where $K_d = 1 + 0.2D/B$ (B < 4)
- B = assumed or designed footing width
- D = base of footing depth below ground

Recommendations

Conservatively, for shallow foundations, all allowable soil bearing capacity estimates should be diminished during footing design to take into account the conditions associated with seasonal ground water at foundation depth. During construction stages, soil bearing estimates should be verified.

An allowable soil bearing capacity of 2000 psf can be used for foundations placed in natural ground on loose to medium dense or denser silty SAND some gravel (SM) or sandy SILT (ML).

Assuming a wall load of 4 kips per linear foot the width of the footings shall be no less than 12 inches and embedded at least 30 inches from any finished plan grade. For greater loads the footing design shall be modified accordingly. Strip wall and/or column footings should have their ultimate working and unit loads calculated and made available to the Soil Engineer so that footing designs can be verified and finalized.

B. Slab on Grade

Standard slab on grade construction is adequate. For floor slab on grade construction a moisture barrier of minimum 4 mils of no. 30 stone covered with a mil polyethylene is recommended. Floor slabs must be isolated from column walls and peripheral walls to minimize the possibility of the floor slab cracking due to relative displacement.

The slab subgrade must consist of suitable natural soil or engineered fill. The slab subgrade should consist of topsoil, existing fill, or "soft" soil materials. The slab subgrade should be prepared in accordance with an engineered fill specification.

C. Subsurface Drainage

In order to prevent water from collecting under the slabs and to reduce the hydrostatic pressure against the walls it is required that the following steps be taken:

- Any exterior block wall faces below grade must be tapered with at least 1/2 inch cement and all walls must be waterproofed with a heavy coating of bituminous materials.
- Provide exterior peripheral drains near the base of the footings. The perforated drainage pipe, with a minimum diameter of 4 inches, must drain by gravity to a storm sewer or surface discharge point. The drainage pipe must be covered with minimum 12 inches of crushed stone or gravel and wrapped with geotextile or other suitable cover to prevent settling of the crushed stone.
- For the exterior peripheral drains the backfill over the gravel and against the wall shall consist of free draining soil material or coarser to within 12 inches of the finished grade. Free draining RL soil material may be used only if the basement walls have been designed for an equivalent fluid pressure of 40 psf ft.
- Complete the backfill over the granular material to the finished grade with compacted, fine-grained soil, with the surface sloping away at no less than 5 percent from the building to prevent ponding.
- The yard shall slope at a minimum grade of 3 percent away from the building.

D. Engineered (Structural) Fill

All fill shall be compacted to minimum 95 percent within 2 percent of the optimum moisture content in accordance with the specifications of ASTM D-698. On site soil materials including SM, and ML classes having liquid limits equal to or less than 40 and plasticity indices equal to or less than 15 are satisfactory.

E. Underground Utilities

Ground water may be encountered above 5 feet during wet periods only in the alluvial landscape in the vicinity of the retaining wall. No bedrock was encountered within 12 feet.

F. Equivalent Fluid Pressure

For SM soil materials with $LL < 40$ and $PI < 15$ an equivalent fluid pressure of 45 psf ft can be used. For ML soil materials with $LL < 40$ and $PI < 15$ an equivalent fluid pressure of 60 psf ft can be used.

G. Retaining Wall

The terrace deck retaining wall footings shall be taken to competent soil materials more than 3 feet below the existing surface to resist soil types including clayey SILT (ML), sandy SILT (ML) and silty SAND (SM). An allowable soil bearing pressure of 1000 psf shall be used for foundation design. On site granular soil materials which may be used as backfill have equivalent fluid pressures of 60 psf or less.

In the retaining wall area groundwater may be encountered during excavation. A drainage trench can be constructed to intercept the seepage water and divert it to the creek to allow footing construction. If necessary the footing trenches can be backfilled with no more than 24 inches of crushed aggregate (VDOT #57) if seepage cannot be intercepted or if undercut is required.

M. Construction Quality Control

To assure soil conditions prior to design and construction and during construction are as they are thought to be, inspection, testing and construction methods are instituted so that:

- All footing excavations should be inspected and approved for bearing and base depth locations by a Registered Professional Soils Engineer or his representative.
- Floor slab excavations must be inspected and approved for bearing and base depth locations by the Soil Engineer or his representative.
- Structural fill must be placed and compacted, subgrades must be prepared, and aggregate base courses must be placed and compacted under the continuous observation and testing of an individual testing firm.

I. Notes

- All construction involving problem soils must be performed under the full time inspection of a geotechnical engineer.
- The geotechnical engineer shall furnish a written opinion to Fairfax County as to whether or not work has been performed in accordance with the approved plans prior to the issuance of a residential use permit.
- The geotechnical engineer must review the final grading plans and state his opinion as to whether or not the plans have been prepared in accordance with the recommendations of this report and to note deviations from the recommendation.
- The recommendations of this soil report, as approved, shall be incorporated in the grading plans as requirements to be performed during construction.



STRUCTURAL FILL SPECIFICATION

These specifications apply only to those areas requiring engineered fill.

1. Excavation

All excavations should conform to the dimensions and elevations shown on the construction drawings and should extend a sufficient depth and distance from the walls, footings and other structures to allow for the placing and removal of forms, installations of structural fills, utility lines, subsurface drainage systems and for inspection and testing procedures.

- Footings, foundations and concrete slabs on grade shall bear on soil strata with an allowable soil bearing capacity equal to or greater than that indicated in the Engineering Recommendations part of this report. All controlled fill areas within 5.0 feet of the footing and slab edges shall be compacted in accordance with ASTM D698 (standard) procedures as described below.
- Footing elevations shown on the drawings are assumed to be the minimum allowable depth.
- If excavations are made below the elevations indicated on the drawings, the elevations shall be restored by filling with approved materials and compacted according to specification. If over excavation occurs in footing trenches, the depth of the footings may be increased only after the bearing capacity at the new elevation is approved.
- The bottom of the excavations should be protected from frost and no foundations, footings and slabs should be placed on frozen ground or wet, saturated soil. Dewatering of the trenches and other excavated areas must be insured during construction.
- The foundation line should be carried to a minimum depth of 30 inches below exterior grade.
- Due to possible variations in subsurface conditions and the allowable bearing capacities all footing excavations and trenches must be inspected and approved by a soil engineer.

2. Fill

All fill materials shall consist of easily compactible soil with the following minimum requirements.

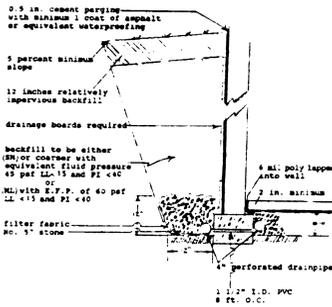
- Fill materials within and extending out to 5.0 feet beyond all footings, foundations, paved areas and slab edges can be approved, materials such as SW, SC, ML, GM (PI < 15 and LL < 40).
- Fill materials beyond the zone of the building lines as previously described can include other soil types and rock with dimensions greater than 4 inches in diameter but not within 5.0 feet of the finished grade. Furthermore the location and placement of these materials should be prearranged and placed selectively in non-use areas.

(3) The fill materials should not contain inclusions of ice, snow, organic matter subject to decay such as topsoil, tree roots and branches and soil materials with moderate to high swelling potential (liquid limit > 40 and plasticity index > 15).

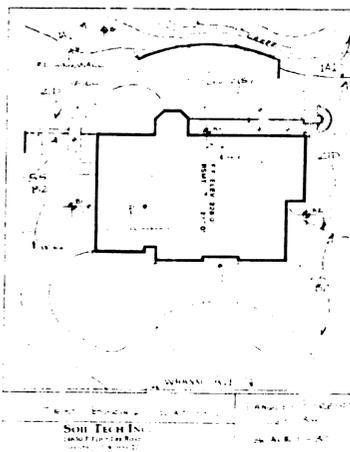
(4) All onsite and imported soil material to be used as compacted fill shall be sampled, inspected, tested and approved by a qualified soil materials testing laboratory.

B. Preparation and Placement

- The surface of the area to be filled shall be cleared of all topsoil, stones, boulders, trash and organic matter such as grass and root matter. All "soft" soil materials such as silty deposits and wet spots should be removed. The soil surfaces should be profiled and if necessary, scarified and inspected prior to fill placement.
- All fills shall be placed in nearly horizontal lifts not exceeding eight (8) inches in thickness and uniformly spread prior to compaction.
- All controlled fill materials within and extending out to 5.0 feet beyond all footings, and foundations shall be compacted to minimum 95 percent of ASTM D-698 and within 2.0 percent of the optimum moisture content.
- Backfill around the foundation, above the footings in utility trenches shall be compacted to minimum 90 percent of ASTM D698 within 2.0 percent of the optimum moisture content.



FOUNDATION DRAINAGE PLAN



SCALE N/A
BY EFD
DATE MARCH 18, 1993
REVISIONS

GEOTECHNICAL SPECIFICATIONS
LOT 13-A, SECTION ONE
LANGLEY FOREST
DUNESVILLE DISTRICT, FAIRFAX COUNTY, VIRGINIA

RUNYON, DUDLEY, ANDERSON, ASSOCIATES, INC.
ENGINEERING, SURVEYING & PLANNING
10650 WAIR STREET SUITE 301
FAIRFAX, VIRGINIA 22030 (703) 591-4686

SHEET 3 OF 3
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