

McCUMSEY, LLC

ENGINEERING • SURVEYING • PLANNING • INSPECTION

36 Depot Street, Verona, NJ 07044

February 9, 2007

Glenn Hauser
Building Inspector
Township of Verona
Linn Drive, Verona, NJ 07044

Re: 175-177 Grove Avenue
Verona, NJ
SITE PLAN – ENGINEER'S COMMENTS (02/05/07)

Dear Mr. Hauser:

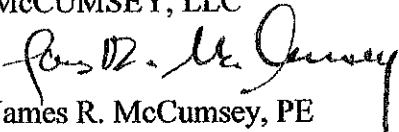
Thank you for the prompt turn-around for the Township Engineer's report. We have made the revisions as follows:

1. Applicant is advised by transmittal of the subject report of his requirement to file the subdivision map.
2. Applicant is advised by transmittal of the subject report of his requirement to submit plans to Essex County.
3. Plans were not intended to be scaled where dimensions are shown. Plan view of retention system on Lot 6.02 now matches dimension.
4. Plans were not intended to be scaled where dimensions are shown. Plan view of retention system on Lot 6.01 now matches dimension.
5. Water-tight cap was to be set at 98.80 (several inches below grade). It has now been set flush with the surface at 99.70. Actual elevation can vary as long as it is flush or out of harm's way.
6. Roof area now shows 550 SF.
7. Pipe thickness has now been accounted for as shown in attached Drainage Report Addendum.
8. The retention system is sized to capture adequate storm water run off to satisfy the 2-year storm requirement while not overflowing during a 100-year storm.
9. Cross section of systems are identical. Systems will completely percolate the most intense storm 11 hours, thereby satisfying the requirement to completely drain in less than 72 hours. Calculations are shown on enclosed Drainage Report Addendum

10. Plans were not intended to be scaled where dimensions are shown. Additional dimensions have been added to provide more clarity.
11. The applicant is advised by transmittal of the subject report to alert the ultimate home-owner of his responsibility. He has been provided a copy of the Maintenance Plan and a copy is enclosed for your files.
12. The applicant is advised by transmittal of the subject report of his requirement to obtain a HEP Soil Conservation permit.
13. The applicant is advised by transmittal of the subject report of his requirement to comply with the Affordable Housing Development Fee Ordinance.
14. The applicant is advised by transmittal of the subject report of his responsibilities for all sewer and water tie in fees.

Please call [(973) 632-0529 cell] if you have any further comments or questions. Thank you.

Very truly yours,
McCUMSEY, LLC


James R. McCumsey, PE

Encl:
Cc: Sam Tuli

TRANSACTION REPORT

P. 01

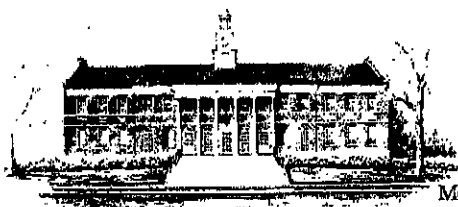
APR-09-2008 WED 12:30 PM

FOR: Verona Engineer's Office 9732397837

SEND

DATE	START	RECEIVER	TX TIME	PAGES	TYPE	NOTE	M#	DP
APR-09	12:30 PM	9738575134	26"	1	FAX TX	OK	116	

TOTAL : 26S PAGES: 1



Township of Verona

#10 Commerce Court
VERONA, NEW JERSEY 07044
OFFICE OF THE TOWNSHIP ENGINEER

Telephone: (973) 857-4003 Fax: (973) 239-7837

Memorandum

For: Thomas Jacobson, Construction Code Official
From: James M. Helb, Township Engineer
Date: April 9, 2008
Re: 175-177 Grove Avenue, Verona, NJ
(Tax Map Block 65 - Lots 6.01 & 6.02)

Please be advised that our office has inspected the drainage for the above project and the drainage has been installed to the satisfaction of the Township Engineer's Office and is in accordance with the "As-built Survey" prepared by James R. McCumsey, PE dated April 7, 2008.

JMH

Tuli Realty, LLC.
Licensed Real Estate Brokers/Builders
P. O. Box 333
316 Eisenhower Parkway, Suite 201
Livingston, New Jersey 07039
Telephone: (973) 535-9000 Facsimile: (973) 535-9005
tulirealty@comcast.net



March 17, 2008

Township of Verona
Engineering Department
Commerce Court
Verona, New Jersey 07044
Attention: James Helb, PE, LS PP

Re: 175 Grove Avenue, Verona
177 Grove Avenue, Verona

Dear Mr. Helb:

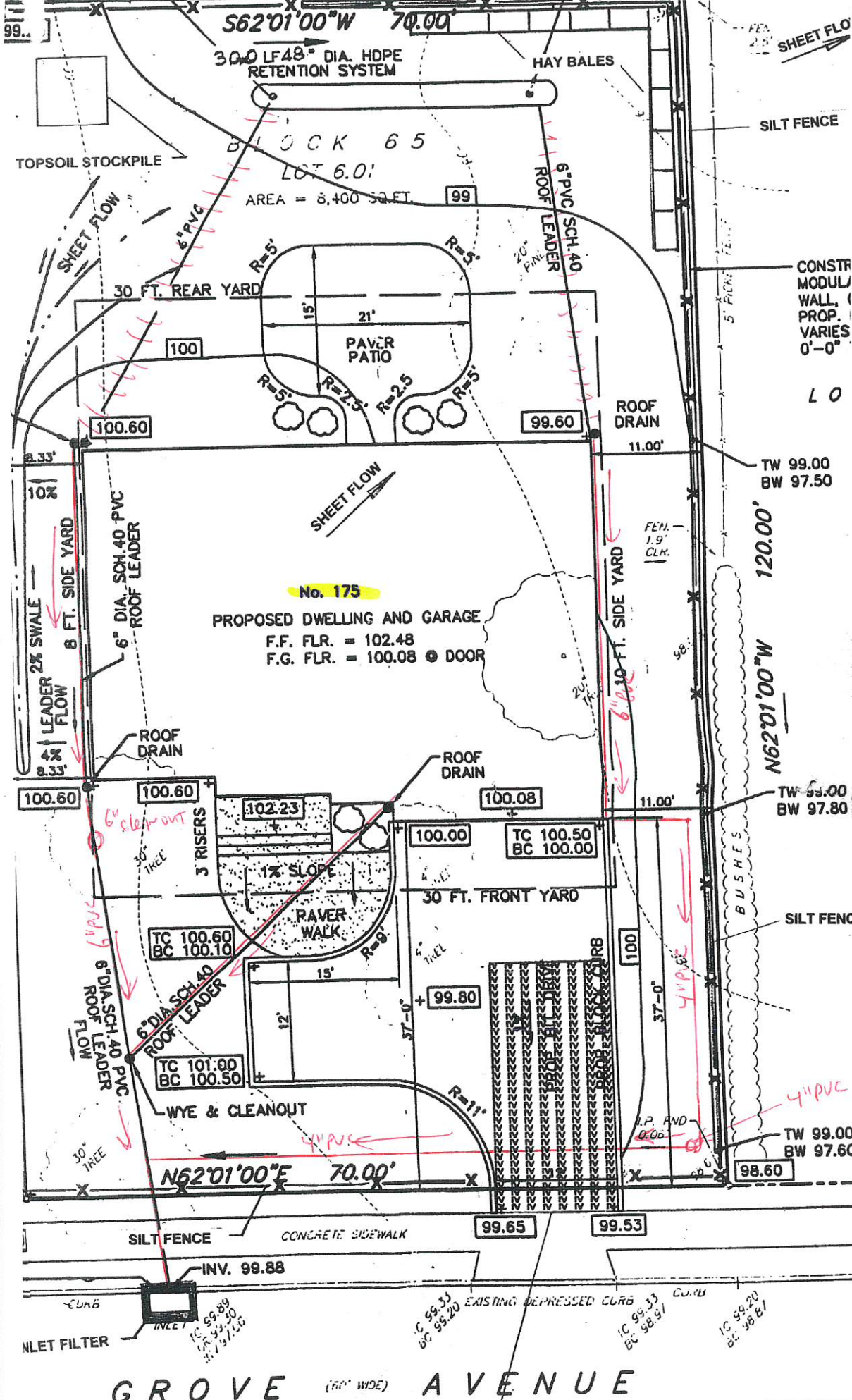
Attached you find a revised drawing of the storm water piping for the above referenced homes. As directed, all storm water piping has now been directed to the catch basin on Grove Avenue and two retention systems are now decommissioned.

If you have any questions, please feel free to call.

Very truly yours,

Sandy Tuli

cc: Jim McCumsey, PE (VIA FACSIMILE: (973) 857-2281)
Glen Hauser, Verona Building Department (VIA FACSIMILE: (973) 857-5134)



S62°01'00"W 70.00'

30.0 LF 48" DIA. HDPE RETENTION SYSTEM

HAY BALES

BLOCK 65
LOT 6.01
AREA = 8,400 SQ. FT.

TOPSOIL STOCKPILE

30 FT. REAR YARD

PAVER PATIO

No. 175
PROPOSED DWELLING AND GARAGE
F.F. FLR. = 102.48
F.G. FLR. = 100.08 @ DOOR

30 FT. FRONT YARD

PAVER WALK

WYE & CLEANOUT

N62°01'00"E 70.00'

SILT FENCE

CONCRETE SIDEWALK

INV. 99.88

INLET FILTER

GROVE AVENUE (50' WIDE)

SHEET FLO

SILT FENCE

CONSTR. MODUL. WALL, (PROP. VARIES 0'-0")

L O

TW 99.00
BW 97.50

120.00'
N62°01'00"W

TW 99.00
BW 97.80

SILT FENCE

TW 99.00
BW 97.60

98.60

99.65

99.53

100

99

100.60

99.60

100.60

100.08

TC 100.50
BC 100.00

TC 100.60
BC 100.10

TC 101.00
BC 100.50

99.80

TC 99.89
BC 99.30
EC 99.70

TC 99.33
BC 99.20

TC 99.33
BC 98.91

TC 99.20
BC 98.81

FEM. 1.9 CLK.

BUSHES

4" PVC CLEANOUT

SHEET FLOW

SHEET FLOW

5' PICKET FENCE

2% SWALE LEADER FLOW

6" DIA. SCH. 40 PVC ROOF LEADER

6" DIA. SCH. 40 PVC ROOF LEADER

6" PVC SCH. 40 ROOF LEADER

ROOF DRAIN

ROOF DRAIN

ROOF DRAIN

ROOF DRAIN

11.00'

11.00'

11.00'

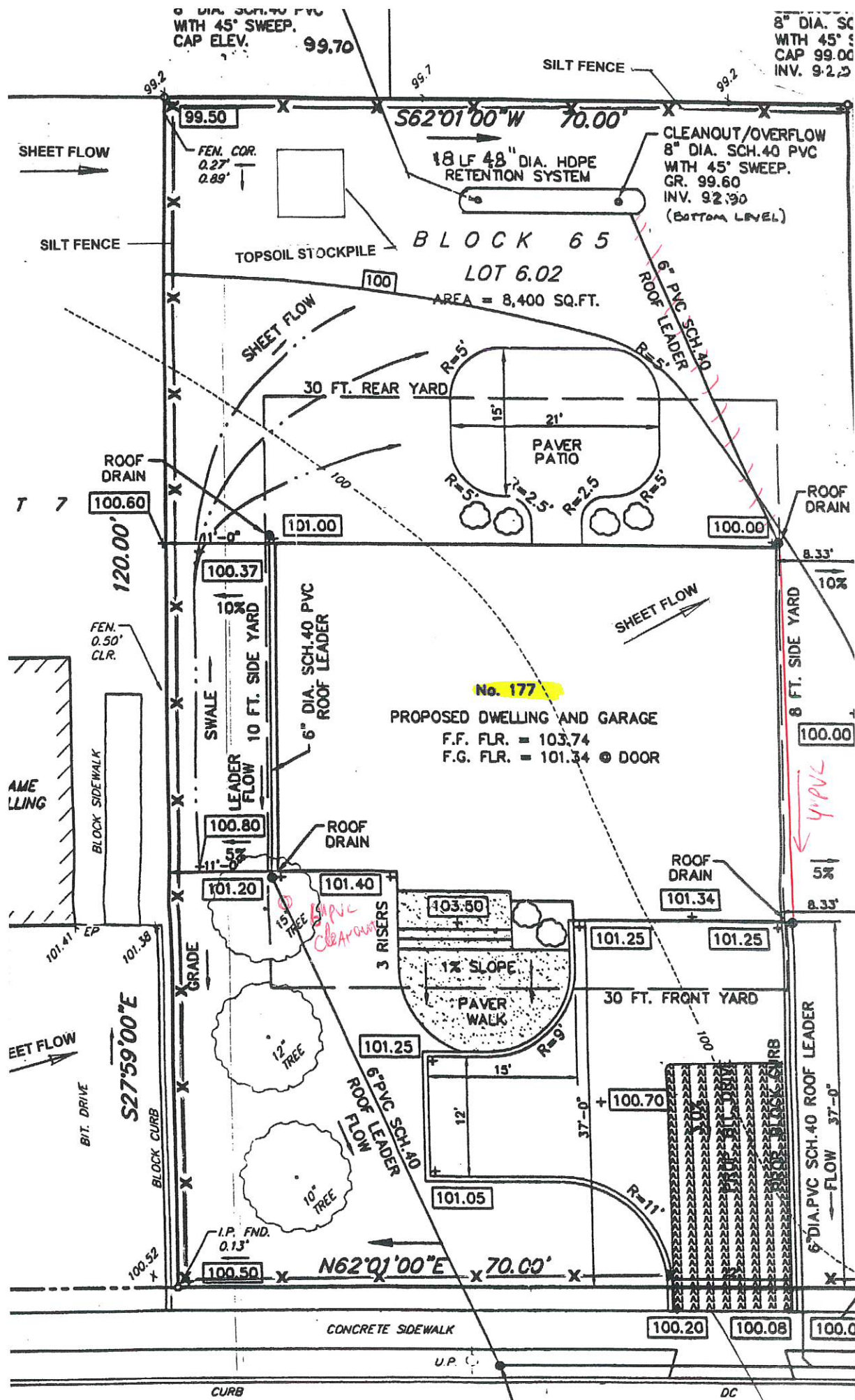
37'-0"

37'-0"

37'-0"

37'-0"

37'-0"



8" DIA. SCH. 40 PVC WITH 45° SWEEP. CAP ELEV. 99.70

8" DIA. SCH. 40 PVC WITH 45° SWEEP. CAP ELEV. 99.00 INV. 92.20

S62°01'00"W 70.00'

SHEET FLOW

SILT FENCE

FEN. COR. 0.27' 0.89'

18 LF 48" DIA. HDPE RETENTION SYSTEM

CLEANOUT/OVERFLOW 8" DIA. SCH. 40 PVC WITH 45° SWEEP. GR. 99.60 INV. 92.30 (BOTTOM LEVEL)

TOPSOIL STOCKPILE

BLOCK 65

LOT 6.02

AREA = 8,400 SQ. FT.

SHEET FLOW

6" PVC SCH. 40 ROOF LEADER

30 FT. REAR YARD

PAVER PATIO

T 7

100.60

101.00

100.00

120.00'

ROOF DRAIN

No. 177

PROPOSED DWELLING AND GARAGE

F.F. FLR. = 103.74

F.G. FLR. = 101.34 @ DOOR

AMELLING

FEN. 0.50' CLR.

SWALE LEADER FLOW

10% 10 FT. SIDE YARD

6" DIA. SCH. 40 PVC ROOF LEADER

SHEET FLOW

8.33' 10%

100.00

100.80

ROOF DRAIN

101.20

101.40

ROOF DRAIN

101.34

101.41

101.58

15' TREE

12" TREE

10" TREE

103.50

1% SLOPE

PAVER WALK

101.25

101.25

30 FT. FRONT YARD

SHEET FLOW

S27°59'00"E

3 RISERS 6" PVC SCH. 40 ROOF LEADER

101.25

15'

12'

101.05

37'-0"

100.70

R=11'

I.P. FND. 0.13'

100.50

N62°01'00"E 70.00'

CONCRETE SIDEWALK

100.20

100.08

100.00

6" DIA. PVC SCH. 40 ROOF LEADER FLOW

U.P.

DC

CURB

McCUMSEY, LLC

ENGINEERING • SURVEYING • PLANNING • INSPECTION

36 Depot Street, Verona, NJ 07044

January 21, 2008

Mr. James Helb, PE,LS,PP
Municipal Engineer
Township of Verona
Commerce Court
Verona, NJ 07044



Re: 175-177 Grove Avenue
Verona, NJ
RETENTION SYSTEMS

Dear Mr. Helb:

Pursuant to your request a site meeting was held at the subject location on January 18, 2008. Attending were Municipal Engineer Helb, Building Inspectors Jacobsen and Houser, Builders Tuli and Tuli, several neighbors, and Engineer McCumsey.

MINUTES

Each of the neighbors described their particular problems of observed increase or re-directed storm water runoff from the subject property. Mr. Tuli described the construction and function of the retention systems. Mr. Helb explained that the design of the systems had been checked by his office and found to be correct. Mr. McCumsey explained that the original site had drained in sheet flow, diagonally, from left front to right rear and that storm water runoff from the new site was graded to drain in the same direction except that driveway slopes and piping from approximately half of the new roof areas were routed to discharge to Grove Avenue. The remaining storm water runoff from the roofs was connected to the underground retention systems.

Mr. Helb directed the Builders to re-direct the piping from the roof leaders so that all of the storm water runoff from the roofs would be directed to Grove Avenue. He requested the Builder to have his Engineer inspect the function of the retention system and to monitor its function for a period of time to document the expected change of condition by letter reports to his office.

Respectfully submitted

James R. McCumsey, PE

Cc: Jacobsen, Houser, Tuli Realty

(revised 02/10/07)

DRAINAGE REPORT

Lot 6.01, Block 65
175 Grove Avenue
Township of Verona, County of Essex, New Jersey

PREPARED FOR SAM TULI

BY

McCUMSEY, LLC
36 DEPOT STREET
VERONA, NJ

James R. McCumsey
NJPE Lic. No. 11766

DRAINAGE REPORT (revised 02/10/07)

**Lot 6.01, Block 65
175 Grove Avenue
Township of Verona, County of Essex, New Jersey**

Description

Lot 6.01 is 70 feet wide and is comprised of the right half of a recently subdivided 140 foot wide parcel on the easterly side of Grove Avenue. The original parcel was the homestead of a century old farmstead with a large frame house, concrete patios, walks, driveway and swimming pool. The balance of the original parcel is comprised of lawn with trees and shrubs.

The subject lot is covered with a portion of the old house, walk and patio. The lot slopes from left-front to right-rear at a uniform 1 % grade except for a localized low spot in the right front. Sheet run-off from the site is to the right rear and along the right property line.

It is proposed to construct a residential single-family, frame dwelling with a paved driveway and a paver patio. The balance of the lot will be lawn and shrubs.

The increase in impervious coverage on the lot will be mitigated by directing a certain portion of the roof run-off to a sub-surface retention system located in the rear of the property. The capacity of retention system is equal to the calculated increase in storm water runoff for a 100-year storm.

The retention system is comprised of 30 linear feet of slotted, 48-inch diameter, HDPE pipe, surrounded by 12 inches of clean, 1-1/2 inch stone (40% voids) and encased with filter fabric. The high end of end of the pipe-system is accessed for clean out with a manufactured 8-inch diameter, 45-degree sweep, riser and cap. The low end of the system is provided with a similar riser for clean out and is fashioned with a slotted cap to act as an emergency overflow in the event that a 100-year storm is exceeded.

A percolation test was conducted and witnessed by the township. The soils were found to be sandy loam and demonstrated a percolation rate of 1 inch in 15 minutes. The percolation rate indicates that the retention system will completely discharge in 11 hours, thus complying with the requirement that such systems fully discharge within 72 hours.

The plans show the portion of roof to be directed to the retention system and the balance of roof run off to be directed to a storm water inlet at the curb.

Methodology

TR55 methods were used to determine the existing and proposed runoff volume (Natural Resource Conservation Service, Urban Hydrology for Small Watersheds, 1986). The 100-year frequency 24 hour rainfall of 8.7 inches was used as the design storm. Based upon type C soils (Boonton BouB) in good hydrologic condition, a curve number of 74 was assigned for the lawn and landscape areas and a curve number of 98 was assigned to the pavement and roof areas.

Under pre-development conditions 1,460 square feet of the existing 8,400 square foot lot is deemed to be impervious and 6,940 square feet is pervious. The composite runoff curve number is 78.17. The 100-year frequency storm water run off volume is calculated to be 4,243.6 cubic feet.

Under post-development conditions 3,286 square feet of the proposed 8,400 square foot lot will be impervious and 5,114 square feet will be pervious. The composite runoff curve number is 83.39 CN for the post-development condition. The 100-year storm water run off is calculated to be 4,686.5 cubic feet.

The proposed underground retention system is designed to contain and infiltrate the increase in runoff for the 100-year frequency (and smaller) storms. The increased runoff volume for the 100-year frequency storm is calculated to be 442.9 cubic feet. However, the roof area required for the 2-year storm of 917 square feet controls the design and this area will be collected. For this roof area with a 100 year frequency storm, a total storage of 664.6 cubic feet is required. The proposed retention system length is 30 linear feet of 48 inch diameter slotted pipe surrounded with 12 inches of clean stone with a liquid capacity of 695 cubic feet.

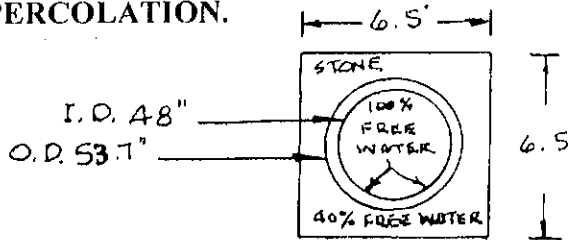
Summary

The proposed system reduces the proposed flows to less than or equal to existing conditions for the 2-, 10-, and 100-year storms.

The proposed system provides ample capacity to store a 100-year storm runoff from the dedicated 917 square foot roof area

**DRAINAGE REPORT ADDENDUM
 LOT 6.01 BLOCK 65
 175 GROVE AVENUE
 TOWNSHIP OF VERONA, COUNTY OF ESSEX, NEW JERSEY**

**CALCULATIONS SHOWING FREE-WATER CAPACITY OF
 RETENTION/INFILTRATION SYSTEM AND TIME FOR COMPLETE
 PERCOLATION.**



**SYSTEM 6.5' X 6.5' = 42.25 SF END AREA
 PIPE I.D. 48.0" = 12.56 SF END AREA
 PIPE O.D. 53.7" = 15.72 SF END AREA**

15.72 SF - 12.56 SF = 3.16 SF END AREA PIPE WALL

STONE = 42.25 - 15.72 = 26.53 SF END AREA

CALC END AREA OF FREE WATER

**PIPE = 12.56 SF
 STONE 26.53 SF X 40% = 10.61 SF
 23.17 SF**

23.17 SF / 6.5' WIDE = 3.56' THEO. DEPTH OF FREE WATER

PERCOLATION RATE = 15 MIN PER INCH (SEE FIELD REPORT)

3.56' = 43 INCHES X 15 MIN/INCH (PERC RATE) = 640 MINUTES

640 MIN = 11 HOURS +/- FOR SYSTEM TO FULLY DRAIN

11 HOURS IS LESS THAN THE ALLOWABLE 72 HOUR MAX

THEREFORE OK

2 YEAR STORM RUNOFF VOLUME:

175 GROVE AVENUE - LOT 6.01

	AREA (SF)	AREA (ACRES)	CN	S (INCH)	0.2*S	P (INCH)	Q (INCH)	V (CUBIC FT)
EXISTING								
Impervious	1460	0.033517	98	0.204082	0.040816	3.4	3.17	385.3
Pervious	6940	0.15932	74	3.513514	0.702703	3.4	1.17	677.5
	8400	0.192837	78.17143	2.792398	0.55848	3.4	1.43	1003.2
PROPOSED								
Impervious	3286	0.075436	98	0.204082	0.040816	3.4	3.17	867.2
Pervious	5114	0.117401	74	3.513514	0.702703	3.4	1.17	499.2
	8400	0.192837	83.38857	1.992051	0.39841	3.4	1.80	1262.9

CHANGE IN RUNOFF VOL = 259.7 CUBIC FEET

11.8 LF OF PIPE/TRENCH

To capture this much runoff need the following roof area: 917 square feet of roof area

For the 100 year storm this roof area is equivalent to: 664.6248 cubic feet

48" HDPE stone trench 2.56 cf per lf
10.61 cf per lf

total liquid capacity = 23.17 cf per lf

664 cf / 23.17 = 28.66 lf required. Use 30 lf

10 YEAR STORM RUNOFF VOLUME:

175 GROVE AVENUE - LOT 6.01

	AREA (SF)	AREA (ACRES)	CN	S (INCH)	0.2*S	2 YR P (INCH)	Q (INCH) (CUBIC FT)	V
EXISTING								
Impervious	1460	0.033517	98	0.204082	0.040816	5.2	4.96	603.8
Pervious	6940	0.15932	74	3.513514	0.702703	5.2	2.52	1460.2
	8400	0.192837	78.17143	2.792398	0.55848	5.2	2.90	2028.6
PROPOSED								
Impervious	3286	0.075436	98	0.204082	0.040816	5.2	4.96	1359.0
Pervious	5114	0.117401	74	3.513514	0.702703	5.2	2.52	1076.0
	8400	0.192837	83.38857	1.992051	0.39841	5.2	3.39	2375.6

CHANGE IN RUNOFF VOL = 346.9 CUBIC FEET

15.8 LF OF PIPE/TRENCH

To capture this much runoff need the following roof area: 801 square feet of roof area

For the 100 year storm this roof area is equivalent to: 580.4525 cubic feet

48" HDPE 2.56 cf per lf
stone trench 10.61 cf per lf

total liquid capacity = 23.17 cf per lf

664 cf / 23.17 = 28.66 lf required. Use 30 lf

100 YEAR STORM RUNOFF VOLUME

175 GROVE AVENUE - LOT 6.01

	AREA (SF)	AREA (ACRES)	CN	S (INCH)	0.2*S	P (INCH)	Q (INCH)	V (CUBIC FT)
EXISTING								
Impervious	1460	0.033517	98	0.204082	0.040816	8.7	8.46	1029.3
Pervious	6940	0.15932	74	3.513514	0.702703	8.7	5.56	3213.4
	8400	0.192837	78.17143	2.792398	0.55848	8.7	6.06	4243.6
PROPOSED								
Impervious	3286	0.075436	98	0.204082	0.040816	8.7	8.46	2316.6
Pervious	5114	0.117401	74	3.513514	0.702703	8.7	5.56	2367.9
	8400	0.192837	83.38857	1.992051	0.39841	8.7	6.70	4686.5

CHANGE IN RUNOFF VOL = 442.9 CUBIC FEET

20.2 LF OF PIPE/TRENCH

To capture this much runoff need the following roof area: 611 square feet of roof area

For the 100 year storm this roof area is equivalent to: 442.9434 cubic feet

48" HDPE stone trench 2.56 cf per lf
10.61 cf per lf

total liquid capacity = 23.17 cf per lf

664 cf / 23.17 = 28.66 lf required. Use 30 lf

PERCOLATION TEST

McCUMSEY, LLC
36 Depot Street, Verona, NJ 07044

SARATOLI
175 GROVE AVE - VERONA
PERC TESTS AUG 24, 2004

TEST BY: J. McCumsey, PE

OBSERVED BY: KEVIN KILGSTONE

BACKLOG BY: DEMUND MORZONG

TEST PIT 0-1 TOPSOIL - DRY
1-7.5' SANDY LOAM - DRY
7.5-8.5' SMALL GRAVEL - MOIST
8.5-10' GRAVEL & COBBLES FEW ROOTS

PERC TEST @ 5'

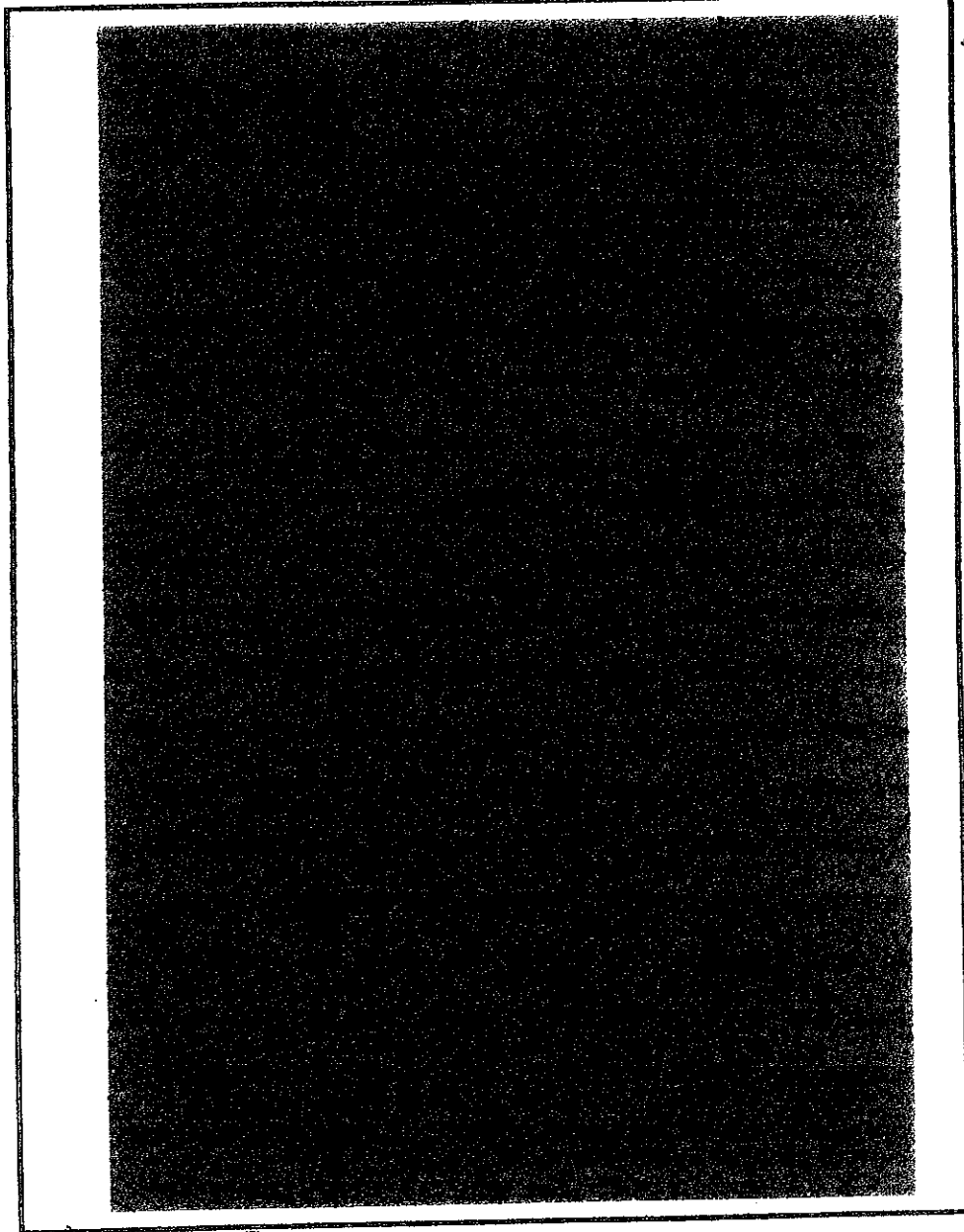
10:22	0'-8 3/8"	} 3 5/8" / 40 ^M = 11 ^M / in
10:32	0'-9 5/8"	
10:44	0'-10 7/8"	
10:56	0'-11 3/8"	
11:03	1'-0"	
11:07	0'-6"	} 6 3/8" / 48 ^M = 7 1/2 ^M / in
12:05	1'-0 3/8"	
3:49	0'-7 3/4"	} 5 1/4" / 49 ^M = 9 1/3 ^M / in
4:38	1'-1"	

$$\frac{\bar{Q}}{h} = 9.3 \text{ MIN/INCH}$$

USE 15 MIN/INCH FOR CALCS

ESRI ArcExplorer 2.0

175 GROVE AVENUE SOILS MAP



essrds003 (FENAME)
ess_ssurgo (MUSYM)



Tuesday, Sep 12 2006

Maintenance Plan
Underground Infiltration System

175 Grove Avenue
Lot 6.01 Block 65
Verona, New Jersey

This is the maintenance plan for the underground retention/infiltration system located in the back yard of the property. This system is made up of a 30 linear feet of 48-inch diameter, high-density polyethylene, slotted pipe that is surrounded by clean, 1-1/2 inch stone.

The purpose of this system is to mitigate the increase in storm water run-off from your property so that it doesn't exceed the run off prior to construction of the house and driveway. These increases, un-checked, are one of the root causes of flooding and other damages to properties located downstream.

It is the homeowners responsibility to follow this maintenance plan and ensure that the system operates as designed.

A. General Maintenance

Screens are to be secured in the roof gutter at the mouth of the down-spout to prevent small scraps of deleterious material from entering the system. The system should be inspected at least four times annually as well as after every storm exceeding 1 inch of rainfall. The level of water remaining in the system after a rain storm is the primary means of measuring infiltration rates and drain times.

The presence of puddling at the discharge grate of the system would be an indication of poor percolation. Inspection of the system is available via 8-inch diameter clean-out and discharge pipes at each end of the system. Roof gutters should be kept clean.

The system is designed to fully drain the most intense rain storm within 19.5 hours. This normal drain time should then be used to evaluate the system's actual performance. If significant increases in the normal drain time are observed or if it greatly exceeds the 19.5 hour maximum, appropriate measures must be taken to comply with the drain time requirements and maintain the proper functioning of the dry well.

Since all of the water that is retained in the system consists of storm water run off from the roof top, any accumulation of silts will be negligible and a compromise of the system's ability to fully drain would be unusual.

The system can be flushed and pumped out should that un-likely occasion arise. If that be the case, disposal of waste material removed from the underground system should be done at suitable disposal/recycling sites and in compliance with local, state, and federal waste regulations.