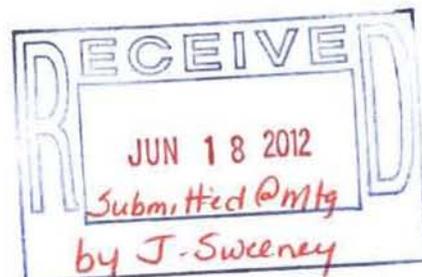


**DOVER VILLAGE IMPERMEABLE COVERAGE CALCULAIONS**

**As per FEMA Flood Mapping Dated May 2, 2012**

**Pietrzak & Pfau  
Engineers & Surveyors PLLC  
362 Greenwich Avenue, Suite A  
Goshen NY, 10924**



**Dover Village Impermeable Coverage Calculations for  
Preliminary Plan Dated 7/13/11**

The definition of impermeable coverage is as follows:

“The ratio between impermeable surface and total land area of a lot (excluding wetland, watercourses, and flood plains) expressed as the percentage of land covered by impermeable surfaces.”

The following tables display impermeable coverage calculations for Lot 2, proposed Lots 3 and 4, and the total area. These calculations were performed based on the following four (4) criteria:

1. No Flood Plain on-site
2. 100 year Flood Plain – utilizing topo provided on site plan (see plate 1)
3. 100 year Flood Plain – utilizing FEMA mapping only (no topo) (see plate 2)
4. 500 year Flood Plain – utilizing FEMA mapping only (no topo) (see plate 2)

<b>Lot 2 Impermeable Coverage Calculations</b>											
<b><u>Total Gross Area:</u></b>	1.00 ac.										
<b><u>Impervious Areas:</u></b>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Pavement (s.f.)</td> <td style="text-align: right;">17,501</td> </tr> <tr> <td>Sidewalk (s.f.)</td> <td style="text-align: right;">2,214</td> </tr> <tr> <td>Buildings (s.f.)</td> <td style="text-align: right;">3,981</td> </tr> <tr> <td colspan="2"><hr/></td> </tr> <tr> <td>Total Impervious Area =</td> <td style="text-align: right;">23,696 s.f. = 0.54 ac.</td> </tr> </table>	Pavement (s.f.)	17,501	Sidewalk (s.f.)	2,214	Buildings (s.f.)	3,981	<hr/>		Total Impervious Area =	23,696 s.f. = 0.54 ac.
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<b><u>Flood Plain Areas:</u></b>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">100 year Flood Plain w/topo (ac.)</td> <td style="text-align: right;">0</td> </tr> <tr> <td>100 year Flood Plain FEMA mapped (ac.)</td> <td style="text-align: right;">0.45</td> </tr> <tr> <td>500 year Flood Plain FEMA mapped (ac.)</td> <td style="text-align: right;">0.97</td> </tr> </table>	100 year Flood Plain w/topo (ac.)	0	100 year Flood Plain FEMA mapped (ac.)	0.45	500 year Flood Plain FEMA mapped (ac.)	0.97				
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<b><u>Watercourse Areas:</u></b>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Bioretention Area (ac.)</td> <td style="text-align: right;">0.00</td> </tr> <tr> <td>Detention Area (ac.)</td> <td style="text-align: right;">0.00</td> </tr> </table>	Bioretention Area (ac.)	0.00	Detention Area (ac.)	0.00						
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<b><u>Net Area:</u> gross area – (F.P. area + watercourse area)</b>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">No Flood Plain on-site</td> <td style="text-align: right;">1.0 ac. – 0 ac. = 1.0</td> </tr> <tr> <td>100 year Flood Plain w/topo</td> <td style="text-align: right;">1.0 ac. – 0 ac. = 1.0</td> </tr> <tr> <td>100 year Flood Plain – FEMA Mapped</td> <td style="text-align: right;">1.0 ac. – 0.45 ac. = 0.55</td> </tr> <tr> <td>500 year Flood Plain – FEMA Mapped</td> <td style="text-align: right;">1.0 ac. – 0.97 ac. = 0.03</td> </tr> </table>	No Flood Plain on-site	1.0 ac. – 0 ac. = 1.0	100 year Flood Plain w/topo	1.0 ac. – 0 ac. = 1.0	100 year Flood Plain – FEMA Mapped	1.0 ac. – 0.45 ac. = 0.55	500 year Flood Plain – FEMA Mapped	1.0 ac. – 0.97 ac. = 0.03		
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500 year Flood Plain – FEMA Mapped	1.0 ac. – 0.97 ac. = 0.03										
<b><u>Calculation of Impervious Cover:</u> (impervious area/net area)</b>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">1. No Flood Plain on-site</td> <td style="text-align: right;">0.54/1.0 = <b>54.4%</b></td> </tr> <tr> <td>2. 100 year Flood Plain w/topo</td> <td style="text-align: right;">0.54/1.0 = <b>54.4%</b></td> </tr> <tr> <td>3. 100 year Flood Plain – FEMA Mapping</td> <td style="text-align: right;">0.54/0.55 = <b>98.2%</b></td> </tr> <tr> <td>4. 500 year Flood Plan – FEMA Mapping</td> <td style="text-align: right;">0.54/0.03 = <b>1800%</b></td> </tr> </table>	1. No Flood Plain on-site	0.54/1.0 = <b>54.4%</b>	2. 100 year Flood Plain w/topo	0.54/1.0 = <b>54.4%</b>	3. 100 year Flood Plain – FEMA Mapping	0.54/0.55 = <b>98.2%</b>	4. 500 year Flood Plan – FEMA Mapping	0.54/0.03 = <b>1800%</b>		
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4. 500 year Flood Plan – FEMA Mapping	0.54/0.03 = <b>1800%</b>										

<b>Proposed Lot 3 Impermeable Coverage Calculations</b>	
<b>Total Gross Area:</b>	6.80 ac.
<b>Impervious Areas:</b>	Pavement (s.f.)            102,957 Sidewalk (s.f.)            9,358 Buildings (s.f.)            22,229 <hr/> Total Impervious Area = 134,544 s.f. = 3.09 ac.
<b>Flood Plain Areas:</b>	100 year Flood Plain w/topo (ac.)    1.79 100 year Flood Plain FEMA mapped (ac.) 2.74 500 year Flood Plain FEMA mapped (ac.) 6.37
<b>Watercourse Areas:</b>	Bioretention Area (ac.)            0.04 Detention Area (ac.)                0.00
<b>Net Area:</b> gross area - (F.P. area + watercourse area)	No Flood Plain on-site 6.80 ac. - 0.04 ac. = 6.76 100 year Flood Plain w/topo 6.80 ac. - 1.83 ac. = 4.97 100 year Flood Plain - FEMA Mapped 6.80 ac. - 2.78 ac. = 4.02 500 year Flood Plain - FEMA Mapped 6.80 ac. - 6.41 ac. = 0.39
<b>Calculation of Impervious Cover:</b> (impervious area/net area)	1. No Flood Plain on-site 3.09/6.76 = 45.7% 2. 100 year Flood Plain w/topo 3.09/4.97 = 62.2% 3. 100 year Flood Plain - FEMA Mapping 3.09/4.02 = 76.9% 4. 500 year Flood Plan - FEMA Mapping 3.09/0.39 = 792.3%

<b>Proposed Lot 4 Impermeable Coverage Calculations</b>	
<b>Total Gross Area:</b>	5.10 ac.
<b>Impervious Areas:</b>	Pavement (s.f.)            92,025 Sidewalk (s.f.)            6,005 Buildings (s.f.)            36,000 <hr/> Total Impervious Area = 134,030 s.f. = 3.08 ac.
<b>Flood Plain Areas:</b>	100 year Flood Plain w/topo (ac.)    0 100 year Flood Plain FEMA mapped (ac.) 0.89 500 year Flood Plain FEMA mapped (ac.) 3.55
<b>Watercourse Areas:</b>	Bioretention Area (ac.)            0.31 Detention Area (ac.)                0.26
<b>Net Area:</b> gross area - (F.P. area + watercourse area)	No Flood Plain on-site 5.10 ac. - 0.57 ac. = 4.53 100 year Flood Plain w/topo 5.10 ac. - 0.57 ac. = 4.53 100 year Flood Plain - FEMA Mapped 5.10 ac. - 1.46 ac. = 3.64 500 year Flood Plain - FEMA Mapped

	5.10 ac. – 4.12 ac. = 0.98
<b>Calculation of Impervious Cover:</b> (impervious area/net area)	1. No Flood Plain on-site $3.08/4.53 = 68.2\%$ 2. 100 year Flood Plain w/topo $3.08/4.53 = 68.2\%$ 3. 100 year Flood Plain – FEMA Mapping $3.08/3.64 = 84.6\%$ 4. 500 year Flood Plan – FEMA Mapping $3.08/0.98 = 314.3\%$

<b>Total Area</b>	
<b>Total Gross Area:</b>	12.90 ac.
<b>Impervious Areas:</b>	Pavement (s.f.)            212,483 Sidewalk (s.f.)            17,577 Buildings (s.f.)            62,210 Total Impervious Area = 292,270 s.f. = 6.71 ac.
<b>Flood Plain Areas:</b>	100 year Flood Plain w/topo (ac.)    1.79 100 year Flood Plain FEMA mapped (ac.) 4.08 500 year Flood Plain FEMA mapped (ac.) 10.90
<b>Watercourse Areas:</b>	Bioretention Area (ac.)            0.35 Detention Area (ac.)                0.26
<b>Net Area:</b> gross area – (F.P. area + watercourse area)	No Flood Plain on-site $12.90 \text{ ac.} - 0.61 \text{ ac.} = 12.29$ 100 year Flood Plain w/topo $12.90 \text{ ac.} - 2.40 \text{ ac.} = 10.50$ 100 year Flood Plain – FEMA Mapped $12.90 \text{ ac.} - 4.69 \text{ ac.} = 8.21$ 500 year Flood Plain – FEMA Mapped $12.90 \text{ ac.} - 11.51 \text{ ac.} = 1.39$
<b>Calculation of Impervious Cover:</b> (impervious area/net area)	1. No Flood Plain on-site $6.71/12.29 = 54.6\%$ 2. 100 year Flood Plain w/topo $6.71/10.50 = 63.9\%$ 3. 100 year Flood Plain – FEMA Mapping $6.71/4.69 = 143.1\%$ 4. 500 year Flood Plan – FEMA Mapping $6.71/1.39 = 482.7\%$

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11105 Dover Village Calculations for 7-13-11 Preliminary Plan 2012-06-11

Assumptions: Proposed Building on Lot 4 will not be located in the 100 year flood plain. As per LOMRs: West Building on Lot 3 (assumed to be Dunkin Donuts) and the Post Office on Lot 2 are not in the 100 year flood plain. Stormwater management devices are considered watercourses.

These calculations are based on the latest FEMA flood mapping. FEMA flood mapping was recently updated in this area effective May 2, 2012. The flood elevations have been lowered by approximately one (1) foot from the August 15, 1984 flood maps.