

# Boylan Marble and Terrazzo Restoration Ltd.

## Life Cycle Cost Analysis Report for Terrazzo Floor in a Heavy Traffic Area March 24, 2008

This analysis will show the potential savings for the maintenance of a terrazzo floor if it is not coated and waxing, stripping and spray buffing are not required.

### Reference or Area

The areas would include the main lobby and corridors of a hotel or corporate office building with heavy foot traffic and some delivery carts.

### General Information

The type of usage or traffic is based on: **Heavy**  
 The base (start) date of the study is: **March 1, 2008**  
 The total number of years is: **25**  
 The real discount rate is: **3.00%**  
 The inflation rate for this analysis: **Constant Dollars - No Inflation**  
 The NET discount rate used for this analysis: **3.00%**  
 The region used for labor and energy rates is: **Syracuse, New York**

### Hours of Operation

Month	Hours per Day	Days per Week	Weeks per Month	Total Hours / Month
January	12	5	4.4	264
February	12	5	4	240
March	12	5	4.4	264
April	12	5	4.3	258
May	12	5	4.4	264
June	12	5	4.3	258
July	12	5	4.4	264
August	12	5	4.4	264
September	12	5	4.3	258
October	12	5	4.4	264
November	12	5	4.3	258
December	12	5	4.4	264

	Hours per Year	Days per Year	Weeks per Year	Months per Year
Per Year	3120	260	52	12

# Boylan Marble and Terrazzo Restoration Ltd.

## Life Cycle Cost Analysis Report

for

### Terrazzo Floor in a Heavy Traffic Area

#### Analysis Chart

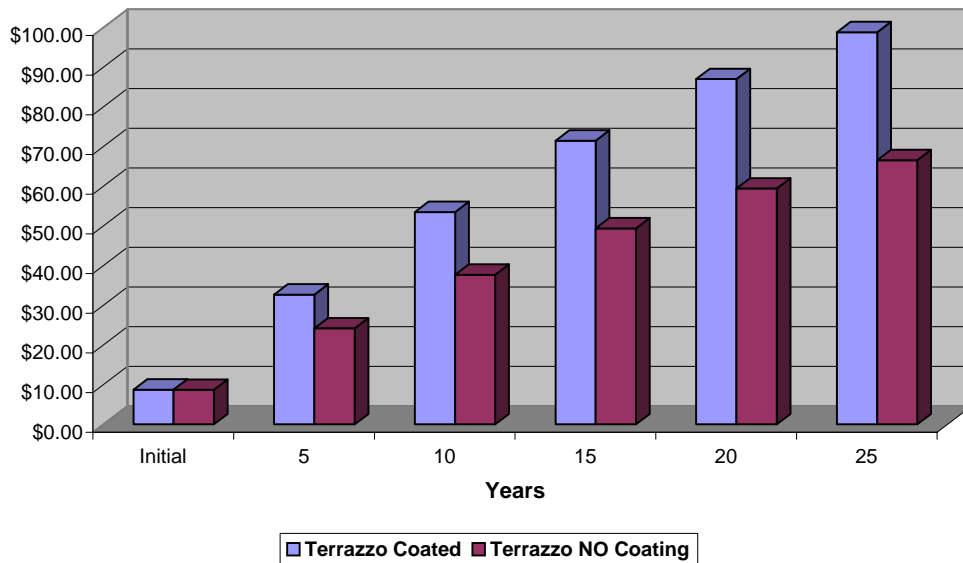
March 24, 2008

Selection 1  
Terrazzo Coated

Selection 2  
Terrazzo NO  
Coating

#### Cumulative Life Cycle Cost Per Year

Initial	2008	\$8.73	\$8.70
5	2013	\$32.69	\$24.18
10	2018	\$53.53	\$37.72
15	2023	\$71.51	\$49.38
20	2028	\$87.02	\$59.44
25	2033	\$98.83	\$66.56



## Terrazzo Floor in a Heavy Traffic Area

Life Cycle Cost Analysis \* Comments and Clarifications

### Clarification & Qualifications for this Analysis

This is **NOT an actual study** but a generalized analysis of the potential savings.

The purpose of this analysis is to show the potential savings if the stripping, waxing and spray buffing can be eliminated from the maintenance of the floor.

This is only a fundamental study and a thorough analysis of the specific maintenance options will be required to develop an accurate life cycle cost.

The costs are based on general assumptions and will vary from the specific costs depending on the size of the floor, specific traffic and maintenance requirements.

These costs are RAW and do NOT include any sales tax, or any markup (overhead & profit).

# Boylan Marble and Terrazzo Restoration Ltd.

## Life Cycle Cost Analysis Report for Terrazzo Floor in a Heavy Traffic Area

### Summary

March 24, 2008

Quantity >	Selection 1 Terrazzo Coated 1	Selection 2 Terrazzo NO Coating 1
<b>Initial Costs</b>		
Initial Installation	\$8.73	\$8.70
<b>Future Costs</b>		
Full Replacement	\$0.00	\$0.00
Partial Replacement	\$0.84	\$0.84
Maintenance / OM&R	\$130.80	\$84.50
Energy & Water Costs	\$0.00	\$0.00
Residual Value	-\$3.27	-\$3.26
<b>Subtotal - NOT Discounted</b>	<b>\$137.09</b>	<b>\$90.77</b>
<b>Total - (x Quantity)</b>	<b>\$137.09</b>	<b>\$90.77</b>

#### Discounted Future Cost to Present Value

Year	Discount Rate	Selection 1 Terrazzo Coated	Selection 2 Terrazzo NO Coating
0	2008	\$8.73	\$8.70
1	2009	\$13.81	\$11.98
2	2010	\$18.74	\$15.17
3	2011	\$23.53	\$18.26
4	2012	\$28.18	\$21.26
<b>5</b>	<b>2013</b>	<b>\$32.69</b>	<b>\$24.18</b>
6	2014	\$37.25	\$27.19
7	2015	\$41.50	\$29.94
8	2016	\$45.63	\$32.61
9	2017	\$49.64	\$35.20
<b>10</b>	<b>2018</b>	<b>\$53.53</b>	<b>\$37.72</b>
11	2019	\$57.31	\$40.16
12	2020	\$61.13	\$42.68
13	2021	\$64.69	\$44.98
14	2022	\$68.15	\$47.21
<b>15</b>	<b>2023</b>	<b>\$71.51</b>	<b>\$49.38</b>
16	2024	\$74.77	\$51.49
17	2025	\$77.94	\$53.53
18	2026	\$81.14	\$55.64
19	2027	\$84.12	\$57.57
<b>20</b>	<b>2028</b>	<b>\$87.02</b>	<b>\$59.44</b>
21	2029	\$89.83	\$61.26
22	2030	\$92.56	\$63.02
23	2031	\$95.21	\$64.73
24	2032	\$97.89	\$66.50
<b>25</b>	<b>2033</b>	<b>\$98.83</b>	<b>\$66.56</b>

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# Boylan Marble and Terrazzo Restoration Ltd.

## Life Cycle Cost Analysis Report for Terrazzo Floor in a Heavy Traffic Area

### Summary

March 24, 2008

Quantity >		Selection 1 Terrazzo Coated	Selection 2 Terrazzo NO Coating
		1	1
<b>Capital Investment Cost Per Year</b>			
0.00%	<b>Inflation Rate</b>		
0	2008	\$8.73	\$8.70
1	2009	\$0.00	\$0.00
2	2010	\$0.00	\$0.00
3	2011	\$0.00	\$0.00
4	2012	\$0.00	\$0.00
<b>5</b>	<b>2013</b>	<b>\$0.00</b>	<b>\$0.00</b>
6	2014	\$0.00	\$0.00
7	2015	\$0.00	\$0.00
8	2016	\$0.00	\$0.00
9	2017	\$0.00	\$0.00
<b>10</b>	<b>2018</b>	<b>\$0.00</b>	<b>\$0.00</b>
11	2019	\$0.00	\$0.00
12	2020	\$0.00	\$0.00
13	2021	\$0.00	\$0.00
14	2022	\$0.00	\$0.00
<b>15</b>	<b>2023</b>	<b>\$0.00</b>	<b>\$0.00</b>
16	2024	\$0.00	\$0.00
17	2025	\$0.00	\$0.00
18	2026	\$0.00	\$0.00
19	2027	\$0.00	\$0.00
<b>20</b>	<b>2028</b>	<b>\$0.00</b>	<b>\$0.00</b>
21	2029	\$0.00	\$0.00
22	2030	\$0.00	\$0.00
23	2031	\$0.00	\$0.00
24	2032	\$0.00	\$0.00
<b>25</b>	<b>2033</b>	<b>-\$3.27</b>	<b>-\$3.26</b>
<b>TOTAL</b>		<b>\$5.45</b>	<b>\$5.44</b>

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## Life Cycle Cost Analysis Report for Terrazzo Floor in a Heavy Traffic Area

### Summary

March 24, 2008

Quantity >	Selection 1 Terrazzo Coated	Selection 2 Terrazzo NO Coating
	1	1

#### Operating, Maintenance, Energy & Water Cost Per Year

0.00%	Inflation Rate		
0	2008	\$0.00	\$0.00
1	2009	\$5.23	\$3.38
2	2010	\$5.23	\$3.38
3	2011	\$5.23	\$3.38
4	2012	\$5.23	\$3.38
<b>5</b>	<b>2013</b>	<b>\$5.23</b>	<b>\$3.38</b>
6	2014	\$5.44	\$3.59
7	2015	\$5.23	\$3.38
8	2016	\$5.23	\$3.38
9	2017	\$5.23	\$3.38
<b>10</b>	<b>2018</b>	<b>\$5.23</b>	<b>\$3.38</b>
11	2019	\$5.23	\$3.38
12	2020	\$5.44	\$3.59
13	2021	\$5.23	\$3.38
14	2022	\$5.23	\$3.38
<b>15</b>	<b>2023</b>	<b>\$5.23</b>	<b>\$3.38</b>
16	2024	\$5.23	\$3.38
17	2025	\$5.23	\$3.38
18	2026	\$5.44	\$3.59
19	2027	\$5.23	\$3.38
<b>20</b>	<b>2028</b>	<b>\$5.23</b>	<b>\$3.38</b>
21	2029	\$5.23	\$3.38
22	2030	\$5.23	\$3.38
23	2031	\$5.23	\$3.38
24	2032	\$5.44	\$3.59
<b>25</b>	<b>2033</b>	<b>\$5.23</b>	<b>\$3.38</b>
<b>TOTAL</b>		<b>\$131.64</b>	<b>\$85.34</b>

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# Boylan Marble and Terrazzo Restoration Ltd.

## Life Cycle Cost Analysis Report for Terrazzo Floor in a Heavy Traffic Area

### Summary

March 24, 2008

Quantity >		Selection 1 Terrazzo Coated	Selection 2 Terrazzo NO Coating
		1	1
<b>Total Sum of Cash Flow Per Year</b>			
0.00%	<b>Inflation Rate</b>		
0	2008	\$8.73	\$8.70
1	2009	\$5.23	\$3.38
2	2010	\$5.23	\$3.38
3	2011	\$5.23	\$3.38
4	2012	\$5.23	\$3.38
<b>5</b>	<b>2013</b>	<b>\$5.23</b>	<b>\$3.38</b>
6	2014	\$5.44	\$3.59
7	2015	\$5.23	\$3.38
8	2016	\$5.23	\$3.38
9	2017	\$5.23	\$3.38
<b>10</b>	<b>2018</b>	<b>\$5.23</b>	<b>\$3.38</b>
11	2019	\$5.23	\$3.38
12	2020	\$5.44	\$3.59
13	2021	\$5.23	\$3.38
14	2022	\$5.23	\$3.38
<b>15</b>	<b>2023</b>	<b>\$5.23</b>	<b>\$3.38</b>
16	2024	\$5.23	\$3.38
17	2025	\$5.23	\$3.38
18	2026	\$5.44	\$3.59
19	2027	\$5.23	\$3.38
<b>20</b>	<b>2028</b>	<b>\$5.23</b>	<b>\$3.38</b>
21	2029	\$5.23	\$3.38
22	2030	\$5.23	\$3.38
23	2031	\$5.23	\$3.38
24	2032	\$5.44	\$3.59
<b>25</b>	<b>2033</b>	<b>\$1.96</b>	<b>\$0.12</b>
<b>TOTAL</b>		<b>\$137.09</b>	<b>\$90.77</b>

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# Boylan Marble and Terrazzo Restoration Ltd.

## Life Cycle Cost Analysis Report

for

### Terrazzo Floor in a Heavy Traffic Area

#### Compiled Yearly Cost Report

March 24, 2008

**Analysis Selection - 1**

Description of Item: **Terrazzo Floor - Bonded Cement - Coated (Waxed & Stripped)**

Unit of Measure: **SQFT**

		Non-Annual Recurring Costs							
Year	Initial	Full Replacement	Non-Annual Maintenance	Maintenance OM&R	Energy & Water Cost	Total Per Year	Residual Value	Discounted Total	Cumulative Total
	2008	\$8.73				\$8.73		\$8.73	\$8.73
1	2009			\$5.23		\$5.23		\$5.08	\$13.81
2	2010			\$5.23		\$5.23		\$4.93	\$18.74
3	2011			\$5.23		\$5.23		\$4.79	\$23.53
4	2012			\$5.23		\$5.23		\$4.65	\$28.18
5	2013			\$5.23		\$5.23		\$4.51	\$32.69
6	2014		\$0.21	\$5.23		\$5.44		\$4.56	\$37.25
7	2015			\$5.23		\$5.23		\$4.25	\$41.50
8	2016			\$5.23		\$5.23		\$4.13	\$45.63
9	2017			\$5.23		\$5.23		\$4.01	\$49.64
10	2018			\$5.23		\$5.23		\$3.89	\$53.53
11	2019			\$5.23		\$5.23		\$3.78	\$57.31
12	2020		\$0.21	\$5.23		\$5.44		\$3.82	\$61.13
13	2021			\$5.23		\$5.23		\$3.56	\$64.69
14	2022			\$5.23		\$5.23		\$3.46	\$68.15
15	2023			\$5.23		\$5.23		\$3.36	\$71.51
16	2024			\$5.23		\$5.23		\$3.26	\$74.77
17	2025			\$5.23		\$5.23		\$3.17	\$77.94
18	2026		\$0.21	\$5.23		\$5.44		\$3.20	\$81.14
19	2027			\$5.23		\$5.23		\$2.98	\$84.12
20	2028			\$5.23		\$5.23		\$2.90	\$87.02
21	2029			\$5.23		\$5.23		\$2.81	\$89.83
22	2030			\$5.23		\$5.23		\$2.73	\$92.56
23	2031			\$5.23		\$5.23		\$2.65	\$95.21
24	2032		\$0.21	\$5.23		\$5.44		\$2.68	\$97.89
25	2033			\$5.23		\$5.23	-\$3.27	\$0.94	\$98.83
<b>TOTALS</b>		\$8.73	\$0.84	\$130.80		\$140.36	-\$3.27		\$98.83

# Boylan Marble and Terrazzo Restoration Ltd.

## Life Cycle Cost Analysis Report

for

### Terrazzo Floor in a Heavy Traffic Area

#### Compiled Yearly Cost Report

March 24, 2008

**Analysis Selection - 2**

Description of Item: **Terrazzo Floor - Bonded Cement - NO Coating**

Unit of Measure: **SQFT**

		Non-Annual Recurring Costs								
Year	Initial	Full Replacement	Non-Annual Maintenance	Maintenance OM&R	Energy & Water Cost	Total Per Year	Residual Value	Discounted Total	Cumulative Total	
	2008	\$8.70				\$8.70		\$8.70	\$8.70	
1	2009				\$3.38	\$3.38		\$3.28	\$11.98	
2	2010				\$3.38	\$3.38		\$3.19	\$15.17	
3	2011				\$3.38	\$3.38		\$3.09	\$18.26	
4	2012				\$3.38	\$3.38		\$3.00	\$21.26	
5	2013				\$3.38	\$3.38		\$2.92	\$24.18	
6	2014			\$0.21	\$3.38	\$3.59		\$3.01	\$27.19	
7	2015				\$3.38	\$3.38		\$2.75	\$29.94	
8	2016				\$3.38	\$3.38		\$2.67	\$32.61	
9	2017				\$3.38	\$3.38		\$2.59	\$35.20	
10	2018				\$3.38	\$3.38		\$2.52	\$37.72	
11	2019				\$3.38	\$3.38		\$2.44	\$40.16	
12	2020			\$0.21	\$3.38	\$3.59		\$2.52	\$42.68	
13	2021				\$3.38	\$3.38		\$2.30	\$44.98	
14	2022				\$3.38	\$3.38		\$2.23	\$47.21	
15	2023				\$3.38	\$3.38		\$2.17	\$49.38	
16	2024				\$3.38	\$3.38		\$2.11	\$51.49	
17	2025				\$3.38	\$3.38		\$2.04	\$53.53	
18	2026			\$0.21	\$3.38	\$3.59		\$2.11	\$55.64	
19	2027				\$3.38	\$3.38		\$1.93	\$57.57	
20	2028				\$3.38	\$3.38		\$1.87	\$59.44	
21	2029				\$3.38	\$3.38		\$1.82	\$61.26	
22	2030				\$3.38	\$3.38		\$1.76	\$63.02	
23	2031				\$3.38	\$3.38		\$1.71	\$64.73	
24	2032			\$0.21	\$3.38	\$3.59		\$1.77	\$66.50	
25	2033				\$3.38	\$3.38	-\$3.26	\$0.06	\$66.56	
<b>TOTALS</b>		\$8.70		\$0.84	\$84.50	\$94.03	-\$3.26		\$66.56	

# Boylan Marble and Terrazzo Restoration Ltd.

## Life Cycle Cost Analysis Report

for

### Terrazzo Floor in a Heavy Traffic Area

#### Input Data

March 24, 2008

#### Analysis Selection - 1

Description of Item or System: **Terrazzo Floor - Bonded Cement - Coated (Waxed & Stripped)**

The unit of measure used for this analysis is: **SQFT**

The **Initial Installation Cost** consists of the following:

Description	U/M	Qty	Unit Price	Ext Price
Terrazzo Floor - Bonded Cement - Approx. 2" Thick - Average Cost	SQFT	1	\$8.696	\$8.696
Terrazzo Floor Maintenance - Spray Buffing	SQFT	1	\$0.029	\$0.029
<b>TOTAL INITIAL INSTALLATION COST</b>				<b>\$8.725</b>

The **General Maintenance Cost** is based on the following:

Description	U/M	Qty	Frequency (Times Per)		Unit Price
Terrazzo Floor Maintenance - Dust Mopping	SQFT	1	5	Weekly	\$0.004
Terrazzo Floor Maintenance - Wet Mopping	SQFT	1	3	Weekly	\$0.015
Terrazzo Floor Maintenance - Spray Buffing	SQFT	1	4	Monthly	\$0.029
Terrazzo Floor Maintenance - Stripping & Rewaxing	SQFT	1	4	Annually	\$0.115

**Non-Annual Maintenance / Partial Replacement Cost** is based on the following:

Description	U/M	Qty	Occurs Every		Unit Price
Terrazzo Floor Maintenance - Spot Repair	SQFT	0.01	6	Years	\$20.950

**Complete Replacement Cost** is based on the following:

Description	U/M	Qty	Replace Every		Unit Price
Remove Terrazzo Floor	SQFT	1	40	Years	\$1.939
Terrazzo Floor - Bonded Cement - Approx. 2" Thick - Average Cost	SQFT	1	40	Years	\$8.696

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# Boylan Marble and Terrazzo Restoration Ltd.

## Life Cycle Cost Analysis Report

for

### Terrazzo Floor in a Heavy Traffic Area

#### Input Data

March 24, 2008

#### Analysis Selection - 2

Description of Item or System: **Terrazzo Floor - Bonded Cement - NO Coating**

The unit of measure used for this analysis is: **SQFT**

The **Initial Installation Cost** consists of the following:

Description	U/M	Qty	Unit Price	Ext Price
Terrazzo Floor - Bonded Cement - Approx. 2" Thick - Average Cost	SQFT	1	\$8.696	\$8.696
<b>TOTAL INITIAL INSTALLATION COST</b>				<b>\$8.696</b>

The **General Maintenance Cost** is based on the following:

Description	U/M	Qty	Frequency (Times Per)		Unit Price
Terrazzo Floor Maintenance - Dust Mopping	SQFT	1	5	Weekly	\$0.004
Terrazzo Floor Maintenance - Wet Mopping	SQFT	1	3	Weekly	\$0.015

**Non-Annual Maintenance / Partial Replacement Cost** is based on the following:

Description	U/M	Qty	Occurs Every		Unit Price
Terrazzo Floor Maintenance - Spot Repair	SQFT	0.01	6	Years	\$20.950

**Complete Replacement Cost** is based on the following:

Description	U/M	Qty	Replace Every		Unit Price
Remove Terrazzo Floor	SQFT	1	40	Years	\$1.939
Terrazzo Floor - Bonded Cement - Approx. 2" Thick - Average Cost	SQFT	1	40	Years	\$8.696

# Boylan Marble and Terrazzo Restoration Ltd.

## Life Cycle Cost Analysis Report

for

### Terrazzo Floor in a Heavy Traffic Area

#### Annual Maintenance Worksheet

March 24, 2008

#### Analysis Selection - 1

Description of Item or System: **Terrazzo Floor - Bonded Cement - Coated (Waxed & Stripped)**

The **Annual General Maintenance Cost** is based on the following:

Description	U/M	Qty		Frequency				Times Per Year		Unit Price	Annual Cost		
Terrazzo Floor Maintenance - Dust Mopping	SQFT	1	x	5	x	52	Weeks	=	260	x	\$0.004	=	\$1.040
Terrazzo Floor Maintenance - Wet Mopping	SQFT	1	x	3	x	52	Weeks	=	156	x	\$0.015	=	\$2.340
Terrazzo Floor Maintenance - Spray Buffing	SQFT	1	x	4	x	12	Months	=	48	x	\$0.029	=	\$1.392
Terrazzo Floor Maintenance - Stripping & Rewaxing	SQFT	1	x	4	x	1	Annually	=	4	x	\$0.115	=	\$0.460
			x		x			=		x		=	
<b>TOTAL ANNUAL MAINTENANCE COST PER SQFT</b>												<b>\$5.232</b>	

#### Analysis Selection - 2

Description of Item or System: **Terrazzo Floor - Bonded Cement - NO Coating**

The **Annual General Maintenance Cost** is based on the following:

Description	U/M	Qty		Frequency				Times Per Year		Unit Price	Annual Cost		
Terrazzo Floor Maintenance - Dust Mopping	SQFT	1	x	5	x	52	Weeks	=	260	x	\$0.004	=	\$1.040
Terrazzo Floor Maintenance - Wet Mopping	SQFT	1	x	3	x	52	Weeks	=	156	x	\$0.015	=	\$2.340
			x		x			=		x		=	
<b>TOTAL ANNUAL MAINTENANCE COST PER SQFT</b>												<b>\$3.380</b>	

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