



Module: Design Economics

Module Code: ACBA6001



Lecturer: Deborah Hughes

Assignment Title: Preparation of a Bill of Quantities

Submission Date: April 22nd 2022

**Client Report to accompany the Bill of Quantities
prepared for the 'Y Fforwm' building at the University
of Wales, Trinity, Saint David.**

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Report Author: Rhys Bolton (Q.S.)**Report Date: 22nd April 2022****Introduction:**

This report has been prepared In accordance with the information provided to yourselves within the Bill of Quantities. Within the elemental Bill of Quantities, there have been quantities, rates and overall costs provided for both:

- The External Finishes
- The Ground Floor Internal Finishes

Main body:

Within the elemental Bill of Quantities, both of the elemental categories; the external finishes and the ground floor internal finishes were broken down into sub-categories. This was to clearly show the overall break down of the final cost figures through individual materials, rates, quantities and costings. The individual materials that were taken off were looked at in the RICS New Rules of Measurement book (Royal Institution of Chartered Surveyors , 2012) to find the item number of the section of work that each material is sub-categorised into. To find the rate of the material, including the supply, labour and plant costs, the material was then identified within the Spons 2020 Architectures book (AECOM, 2020). This breaks down the costs of each material. We can then use the take-off quantities within the Bill of Quantities to times by the rate, to give an overall cost for each material. This contributes to the overall cost of each element within the Bill of Quantities. Due to the Spons book being published in 2020 (two years ago) and the rates based upon Central London, it is important to find accurate overall costs based upon the location of the project. As this project, is based in (Swansea, Wales) and the year and the quarter in which the project is being carried out (2022- 2nd quarter), we must then

multiply the overall elements cost figure by a tender price index and location factor figure. The location factor figure for Wales is (0.85), which means the costs for construction projects in Wales are 0.85 times the costs of those stated in Spons which are based on Central London figures. To find the tender price index figure the formula that was followed is $(126.7-124) \div 124 \times 100\%$). With the '124' figure being published on the front of Spons Architects 2020 book.

Total Costs of the elemental breakdowns:

- The external finishes- **£152,434.41**
- The Ground floor internal finishes- **£112,171.97**
- The overall cost combined for the external finishes along with the ground floor internal finishes (after multiplying by the T.P.I and location factor)- **£229,818.58**

Largest Individual Cost within the elemental breakdowns:

- The largest individual cost within the elemental breakdown is the external cladding at **£116,973.32**, with floor finishes being the second highest with **£62,417.57**. Within these elements, the most expensive material costings are the aluminium rainscreen which costs **£47,643.84** in total, with the facing brickwork being a close second costing **£46,495.68**.

Comments, inclusions, assumptions and exclusions:

- A) Email correspondence with the client to request the ceiling heights as they were not noted on the internal finishes drawings, the exact height was not known. So the assumption was made that the overall height of the three floors is 10.5m high, so divide it by three to get the ceiling height of the ground floor to get 3.5m high.
- B) Assumption that the rainwater goods are to be aluminium to match the majority of the external aluminium façade.
- C) Assumption that underlay will be required for under all of the carpeted areas, so has been accounted for within the floor finishes section of the Bill of Quantities.

- D) Aluminium window costs have been taken from the approximate estimating section of Spons Architects 2020, rather than the prices for measured work section like the rest of the materials. This was due to the sizes of the windows not being listed within the list of window sizes with rates. The highest end of the approximate rate range was used for all.
- E) For the largest three window types, (type 5, 6 and 7) there was not a rate for these sizes in the approximate estimating section or the priced measured works section of Spons Architects 2020. Therefore, for the two types of windows (type 5 and 6), which are slightly larger than (type 2, 2a, 3, 3a and 4) so I doubled the rate of these to get a rate for (type 5 and 6). With the largest window type (type 7), it was decided that the rate of window types(2, 2a, 3, 3a and 4) would be tripled to decide a rate for (type 7). This was to accommodate the vast increase in the size of window (type 7) compared to the rest of the window types.
- F) Assumption that ceiling (type 10), which is described as (N/A) on the ceiling finishes drawing would likely be a plasterboard ceiling finish. This assumption is due to a plasterboard ceiling finish being light-weight and a cost effective ceiling option that is commonly seen within many commercial buildings.
- G) Entrance sheet carpet rate taken from the approximate estimating section, rather than the prices for measured work section due to the specific material not being in the measured work section. The highest end of the approximate rate was used.
- H) Floor finishes (Type 8) material is (N/A), so the assumption was made that the floor covering would be one that was not listed within the other floor covering types. Therefore, the decision was made to go for a resin flooring, with the option still remaining for the client to omit, if they decide that they wish to use a different material as a floor covering.

Summary and Conclusion:

This Bill of Quantities is a small elemental breakdown of two sub-elements; the external finishes as well as the internal ground floor finishes. The first and second floors of the 'Y Fforwm' building, if the internal finishes were to be taken off from these and added to the Bill of Quantities would look very similar to what we have shown from the ground floor internal finishes. The Bill of Quantities not only has the breakdowns of the external finishes along with the ground floor internal finishes but also combines these costings with the tender price index figure of (2.18%) as well as the location factor figure of Wales (0.85). Once the overall figure is multiplied by the location factor and Tender price index, it gives us an overall cost to carry out the works in Wales in 2022 in the 2nd quarter.

External Cladding Breakdown:

①		External cladding Takeoff		24.03.22
		For 'Y Fforwm' building at		
		UWTSD, SA1 Campus.		
		Facing Brickwork - 1bstock		
		Chester Red Blend - F10/110C		408.00m ²
8/	1.10			
	8.10	71.28		
6/	5.30			
	1.20	38.16		
4/	1.10			
	8.10	35.64		
14/	0.90			
	8.10	102.06		
2/	5.00			
	5.20	52.00		
2/	3.00			
	5.20	31.20		
12/	5.40			
	1.20	77.76		
		408.10		

②		External Cladding Take off		24.03.22
		For 'Y Fforum' building at		
		UWTSD, SA1 Campus.		
		Aluminium rainscreen for the		
		Library - Ash & Lacey Ashtech		
		Lingrid, Dark Grey PPC.		233.00m ²
4/	1.00			
	1.60	6.40		
4/	0.90			
	4.80	17.28		
4/	0.50			
	1.00			
	0.50	1.00		
4/	0.50			
	1.20			
	0.60	1.44		
4/	6.00			
	0.20	4.80		
4/	3.80			
	0.20	3.04		
18/	0.90			
	1.60	25.92		
12/	5.40			
	1.50	97.20		

③			
		External cladding Take off	24.03.22
		For 'Y Fforwm' building at	
		UWTSD, SA1 Campus	
		Aluminium rainscreen for the	
		library - Ash & Lacey Ashtech	
		Lingrid, Dark Grey PPC	
		(continued)	

④	<u>External Cladding Takeoff</u> <u>For 'Y Fforwm' building at</u> <u>UWTSO, SA1 Campus</u>	24.03.22
	<u>Vertical aluminium Curtain</u> <u>Walling - Kawneer AA100,</u> <u>dark grey PPC, colour</u> <u>RAL 7016 - H11 / 110.</u>	220.00m ²
4 / 5.20 2.30	47.84	
4 / 0.50 5.20 2.70	28.08	
4 / 1.00 5.50	22.00	
4 / 0.50 1.00 0.50	1.00	
2 / 3.80 5.70	43.32	
2 / 3.80 1.00 0.50	3.80	
8 / 1.20 2.40	23.04	

⑤

25.03.22

<u>External Takeoff</u>		
<u>For 'Y Fforwm' building</u>		
<u>at UWTSD, SA1 Campus</u>		
<u>Vertical aluminium curtain</u>		
<u>walling (continued)</u>		
4/	2.00	
	2.40	19.20
2/	6.60	
	2.40	31.68
		219.96

Ground-floor ceiling finishes breakdown:

Internal ceiling finishes for			30.03.22
'Y Fforwm' building at			
UWTSD SA1 Campus.			
Ground Floor Type 1 -			17.00 m ²
600mm x 600mm Ecophon			
Gedina E on C3 anti			
corrosive grid.			
1.20			
4.80	5.76	(Circulation - C004)	
2.20			
2.40	5.28	(Circulation - C111)	
2.30			
2.80	6.44	(Circulation - C112)	
	17.48		
Ground Floor Ceiling Type 2 -			34.00m ²
2.50			
0.90	2.25	(WC - W003)	
2.50			
0.90	2.25	(WC - W004)	
2.50		(WC - W002)	
0.90	2.25	(WC - W002)	
2.50			
0.90	2.25	(WC - W005)	
2.50			
1.10	2.75	(WC - W001)	

①		30.03.22	
<u>Internal Ceiling Finishes -</u>			
<u>Type 2 (continued)</u>			
2.90			
6.20	17.98	(Pantry - 013)	
2.10			
2.10	4.41	(Cleaner - W006)	
	34.14		
<u>Ground Floor ceiling Type 3 -</u>			0.00m ²
N/A			
<u>Ground Floor Ceiling Type 4 -</u>			643.00m ²
7.60			
6.30	47.88	(014 - 24 person teaching room)	
5.30			
6.30	33.39	(015 - Staff Touch-Down)	
32.80			
7.40	242.72	(016 - seating)	
3.10			
7.10	22.01	(C002 - Circulation and 007, 008, 009, 010, 011)	
8.90			
6.30	56.07	(006 - 24 person room)	
9.30			
6.30	58.59	(005 - 30 person room)	

③			30.03.22
		<u>Internal ceiling Finishes -</u>	
		<u>Type 4 (Continued)</u>	
9.40			
6.30	59.22	(004 - 30 person room)	
9.40			
6.30	59.22	(003 - 30 person room)	
10.20			
6.30	64.26	(002 - 30 person room)	
	643.36		
		<u>Internal ceiling Finishes -</u>	115.00m ²
		<u>Type 7.</u>	
3.60			
6.30	22.68	(Photocopying / printer)	
4.30			
6.30	27.09		
		(Plant - Poo1)	
		(Plant - Poo3)	
2.50			
3.60	9.00		
3.60			
2.60	9.36	(Stairs - 005)	

④			Internal Ceiling Finishes - Type 7 (continued)		30.03.22
4.50					
3.10	13.95				
1.90					
2.50	4.75	(Stairs - 007)			
3.70					
7.50	27.75	(Circulation - 008)			
	114.58				
			Internal Ceiling Finishes - Type 10.		84.00 m ²
2.40					
3.30	7.92				
2.20					
1.10	2.42	(Riser zone P002)			
2.40					
2.80	6.72	(Lift - 003)			
0.50					
2.80	1.40	(Riser - P003)			
3.80					
7.50	28.50	(Circulation - 001)			
5.90					
6.30	37.17	(Vending - 012)			
	84.13				

External Windows breakdown:

External Windows takeoff For 'Y Fforwm' building at UWTSD, SA1 campus.					24.03.21
Supply and Install Windows					
4/	1.00	4.00	Window Type 1 -	4 nr	
		4.00			
14/	1.00	14.00	Window Type 2 -	14 nr	
		14.00			
5/	1.00	5.00	Window Type 2a -	5 nr	
		5.00			
3/	1.00	3.00	Window Type 3 -	3 nr	
		3.00			
1/	1.00	1.00	Window Type 3a -	1 nr	
		1.00			

②

External Windows Takeoff
For 'Y Fferwm' building at
UWTSD, SA1 Campus.

24.03.22

Supply and Install Windows

1/	1.00	1.00	Window Type 4	1nr
		1.00		
7/	1.00	7.00	Window Type 5	7nr
		7.00		
3/	1.00	3.00	Window Type 6	6nr
		3.00		
4/	1.00	4.00	Window Type 7	7nr
		4.00		

Internal Skirting finishes breakdown:

①	Internal - Skirting	30.03-22
	Finishes For 'Y Fforwm'	
	building at UWTSD - SA1	
	Campus:	
	Type 1- Timber with Water	
	based gloss finish.	403.00m ²
5.90		
6.30	(ending - 012)	
6.30	(vending - 012)	
7.60		
7.60		
6.70		
6.70	(014 - 24 person room)	
3.60		
3.60		
6.20		
6.20		
2.30		
2.30	(016 - Photocopying / Printing)	
5.30		
5.30		
6.30		
6.30	(015 - Staff Touch-down)	
3.70		
3.70		
7.40	(008 - Circulation)	
9.00		
9.00		
6.30		
6.30	(006 - 24 person room)	
9.30		
9.30		

(2)		Internal - Skirting Finishes for	20-04.22
		'Y Fforwm' building at	
		UWTSD - SA1 Campus:	
		Type 1 - Continued.	
6.30			
6.30		(005 - 30 person room)	
9.30			
9.30			
6.30			
6.30		(004 - 30 person room)	
9.30			
9.30			
6.30			
6.30		(003 - 30 person room)	
10.20			
10.20			
6.30			
6.30		(002 - 30 person room)	
3.40			
3.40			
4.60			
4.60		(007 - Seating)	
43.30			
43.30			
7.40			
7.40		(001 + 002 - circulation)	
2.30			
2.30			
2.80			
2.80		(C111 - circulation)	
2.20			
2.20			
2.40			
2.40			
	403.30		

③	Internal - Skirting Finishes for 'Y Fforwm' building at UWTSD - SA1 Campus:	20.04.22
	Type 2 - 150mm high covered Skirting to match host marmoleum / vinyl flooring.	72.00 m
1.20		
1.20		
4.80		
4.80	(C004 - Circulation)	
2.50		
2.50		
0.90		
0.90	(W003 - WC)	
2.50		
2.50		
0.90		
0.90	(W004 - WC)	
2.50		
2.50		
0.90		
0.90	(W002 - WC)	
2.50		
2.50		
0.90		
0.90	(W005 - WC)	
2.50		
2.50		
1.50		
1.50	(W001 - WC)	
2.90		
2.90		

	④		
		<u>Internal - Skirting Finishes</u> <u>For 'Y Fforwm' building at</u> <u>UWTSD - SA1 Campus:</u>	20.04.22
		<u>Type 2 - 150mm high covered</u> <u>skirting to match host</u> <u>marmoleum / vinyl flooring.</u> <u>(continued).</u>	
6.20			
6.20		(Finishes - Pantry 013)	
2.00			
2.00			
2.10			
2.10		(Finishes - Cleaner - 0006)	
	72.40		
		<u>Type 4 - N/A.</u>	

Internal wall finishes breakdown:

		30.03.12	
		Internal Wall Finishes for	
		'Y Fforwm' building at	
		UWTSD, JA1 Campus.	
		Ground Floor - Type 1 -	1,378.00m ²
		Water based interior vinyl	
		Silk emulsion.	
2/	1.20	C004 - Circula	
	3.50	8.40	
2/	4.80		
	3.50	33.60 C004 - Circulation	
2/	2.00		
	3.50	14.00	
2/	2.10		
	3.50	14.70 W006 - Cleaner	
2/	7.90		
	3.50	55.30	
4/	43.00		
	3.50	150.50	
	28.80		
	3.50	100.80	
	0.60		
	3.50	2.10	

30.03.22

Internal Wall Finishes.
Ground Floor - Type 1 (continued)

7.00		
3.50	24.50	
1.20		
3.50	4.20	
3.10		
3.50	10.85	
6.80		
3.50	23.80	
5.90		
3.50	20.65	
6.30		
3.50	22.05	
2.30		C008 - Circulation and
3.50	8.05	012 - Vending, and C002 -
		Circulation, and C001 - Circulation.
2/ 2.20		
3.50	15.40	
2/ 2.50		
3.50	17.50	C111 - Circulation.

③		
		30.03.22
		<u>Internal Wall Finishes</u>
		<u>Ground Floor - Type 1 (continued)</u>
2/	5.30	
	3.50	37.10
2/	6.30	
	3.50	44.10 015 - Staff Touch-Down
2/	8.90	
	3.50	62.30
2/	6.30	006 - 24 person teaching room.
	3.50	44.10
2/	9.30	
	3.50	65.10
2/	6.30	005 - 30 person teaching room.
	3.50	44.10
2/	9.30	
	3.50	65.10
2/	6.30	004 - 30 person teaching room.
	3.50	44.10
2/	9.30	
	3.50	65.10
2/	6.30	003 - 30 person teaching room.
	3.50	44.10

④		Internal Wall Finishes		30.03.22
		<u>Ground Floor - Type 1 (continued)</u>		
2/	10.20			
	3.50	71.40		
2/	6.30			
	3.50	44.10	002 - 30 person teaching room.	
2/	2.30			
	3.50	16.10		
2/	2.80			
	3.50	19.60	C112 - Circulation.	
2/	7.60			
	3.50	53.20		
2/	6.70		014 - 24 person teaching room.	
	3.50	46.90	014 - 24 person teaching room	
2/	3.60			
2/	3.60			
	3.50	25.20		
2/	6.20			
	3.50	43.40		
2/	2.30			
	3.50	16.10	016 - Photocopying / printing	
		1,377.60		

⑤

Internal Wall Finishes			30.03.22
Ground Floor - Type 2			188.00m ²
2/ 2.50			
3.50	17.50		
2/ 0.90			
3.50	6.30	WC - W003	
2/ 2.50			
3.50	17.50		
2/ 0.90			
3.50	6.30	WC - W004	
2/ 2.50			
3.50	17.50		
2/ 0.90			
3.50	6.30	WC - W002	
2/ 2.50			
3.50	17.50		
2/ 0.90			
3.50	6.30	WC - W005	
2/ 2.50			
3.50	17.50		
2/ 1.60			
3.50	11.20	WC - W001	

⑥		Internal Wall Finishes		30.03.22
		Ground Floor - Type 2		
		(continued)		
2/	2.90			
	3.50	20.30		
2/	6.20			
	3.50	43.40	(Pantry - 013)	
		187.60		
		Internal Wall Finishes - Type		
		3 (In the Stairwells, so		
		the height taken at 2		
		floors, so 7m high.)		274.00 m ²
	6.30			
	7.00	44.10		
	2.60			
	7.00	18.20		
	3.60			
	7.00	25.20		
	0.90			
	7.00	6.30		
	2.50			
	7.00	17.60		
	3.50			
	7.00	24.50	(Stairs - C005)	

⑦		Internal Wall Finishes		30.03.22	
		<u>Ground Floor - Type 3</u>			
		<u>(continued)</u>			
6.30					
7.00	44.10				
3.50					
7.00	14.50				
1.90					
7.00	13.30				
0.90					
7.00	6.30				
4.60					
7.00	32.20				
2.60					
7.00	18.20				
	274.40				
		<u>Internal Wall Finishes -</u>			
		<u>Type 4.</u>			
		N/A.			

Internal floor finishes breakdown:

Internal Floor Finishes for 'Y Fforwm' building at UWTSD SA1 Campus.		
Ground Floor Type 2 - Heckmondwike FB Battleship high performance Sheet entrance carpet -		
		56.00m ²
3.80		
7.50	18.50	(Circulation - C001)
3.70		
7.50	17.75	(Circulation - C008)
	56.25	
Gro.		
Ground Floor Type 3.-		133.00m ²
2.30		
3.80	8.74	(C112 - Circulation)
1.20		
4.80	57.60	(C004 - Circulation)
2.90		
6.20	17.98	(Pantry - 013)
2.10		
2.10	4.41	(Cleaner - W006)
2.20		
2.40	5.28	(Circulation - C111)

(2)		Internal Floor Finishes		30.03.22
		<u>Type 3 (continued)</u>		
		<u>(Stairs)</u>		
4.50				
2.70	12.15			
1.90				
3.60	6.84	(Stairs - 007)		
3.70				
2.70	9.99			
2.70				
3.60	9.72			
	132.71			
		<u>Type 5 - Safeshop Smoke-</u>		
		<u>174032</u>		12.00m ²
2.50				
0.90	2.25	(WC - W003)		
2.50				
0.90	2.25	(WC - W004)		
2.50				
0.90	2.25	(WC - W002)		
2.50				
0.90	2.25	(WC - W005)		
2.50				
1.10	2.75	(WC - W001)		
	11.75			

③		Internal Floor Finishes		30.03.22
		Type 6 -	31.00m ²	
0.50				
2.80	1.40	(Riser - P003)		
2.20				
1.10	2.42	(Riser zone P002)		
4.30				
6.30	27.09	(Plant - P001)		
	30.91			
		Type 8 -	7.00m ²	
2.40				
2.80	6.72	(Lift - C003)		
	6.72			
		Type 13 -	0.00m ²	
		N/A.		
		Type 14 -	302.00m ²	
32.80				
7.40	242.72			
3.10				
7.10	22.01	(C002 - circulation and 007, 008, 009, 010, 011)		
5.90				
6.30	37.17	(Vending - 012)		
	301.90			

		Internal Floor Finishes	30-08-22
		Type 17 -	0.00m ²
		N/A.	
		Type 26 -	0.00m ²
		N/A	
		Type 27 -	130.00m ²
10.20			
6.30	64.26	(002 - 30 person room)	
9.40			
6.30	59.22	(004 - 30 person room)	
8.90			
6.30	56.07	(006 - 24 person room)	
	179.55		
		Type 28 -	23.00m ²
3.60			
6.30	12.68	(Photocopying / printing)	
	22.68		
		Type 30 -	199.00m ²
9.40			
6.30	59.22	(003 - 30 person room)	

⑤		Internal Floor Finishes	
		Type 30 - (Continued)	
9.30			
6.30	58.59	(005 - 30 person room)	
7.60			
6.30	47.88	(014 - 24 person room)	
5.30			
6.30	33.39	(015 - Staff Touch-down)	
	199.08		
		Type 31 -	0.00m ²
		N/A	

References

AECOM. (2020). *Spons Architects and Builders Price Book 2020*. CRC Press.

Royal Institution of Chartered Surveyors . (2012). *RICS New Rules of Measurement, Detailed measurement for building works*. Coventry: Royal Institution of Chartered Surveyors .