


Kingdom of Bahrain		مملكة البحرين
Electricity & Water Authority		هيئة الكهرباء والماء
Electricity & Water Conservation Directorate		إدارة ترشيد الكهرباء والماء

**THERMAL INSULATION IMPLEMENTATION**  
**MODIFICATION FORM**

To : Electricity & Water Conservation Directorate

We would like to inform you about the following changes in our Application No. \_\_\_\_\_

Date Approved \_\_\_\_\_

- |  |  |
|--|--|
| <input type="checkbox"/> Owner<br><input type="checkbox"/> Insulation Materials in Roof<br><input type="checkbox"/> Glass Type | <input type="checkbox"/> Engineering Office<br><input type="checkbox"/> Insulation Materials in walls<br><input type="checkbox"/> Glass Area |
|--|--|

• **Thermal Transmittance(U-value) for Roof**

Sr. No.	Description of materials used in Roof	Density kg/m <sup>3</sup>	Thickness (I) m	r $\frac{m.k}{w}$	R $\frac{m^2.k}{w}$	Notes
1-						
2-						
3-						
4-						
5-						
6-						
7-						
8-						
9-						
Total thermal resistances for materials used in Roof (R <sub>T</sub> ):						

<b>U-Value =                      W/m.<sup>2</sup> °C</b>
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\_\_\_\_\_  
Client's Name  
& Signature

\_\_\_\_\_  
Incharge Engineer  
Name & Signature

\_\_\_\_\_  
Engineering Office  
Stamp & Signature

\_\_\_\_\_  
Electricity & Water Authority Approval

\_\_\_\_\_  
Date of Approval

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- *Thermal Transmittance (U-Value) for Air-conditioned floors/ceilings exposed to non air-conditioned spaces*

Sr. No.	Description of materials used	Density kg/m <sup>3</sup>	Thickness (I) m	r $\frac{m.k}{w}$	R $\frac{m^2.k}{w}$	Notes
1-						
2-						
3-						
4-						
5-						
6-						
7-						
8-						
9-						
10-						
11-						
12-						
13-						
<b>Total thermal resistance for materials used in Wall (R<sub>T</sub>):</b>						

<b>U-Value =</b> <b>W/m.<sup>2</sup> °C</b>
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\_\_\_\_\_  
**Client's Name  
& Signature**

\_\_\_\_\_  
**Incharge Engineer  
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\_\_\_\_\_  
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Stamp & Signature**

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• *Thermal Transmittance (U-Value) for external Walls with Blocks*

Sr. No.	Description of materials used	Density kg/m <sup>3</sup>	Thickness (I) m	r $\frac{m.k}{w}$	R $\frac{m^2.k}{w}$	Notes
1-						
2-						
3-						
4-						
5-						
6-						
7-						
8-						
9-						
10-						
11-						
12-						
13-						
<b>Total thermal resistance for materials used in Wall (R<sub>T</sub>):</b>						

<b>U-Value =</b>	<b>W/m.<sup>2</sup> °C</b>
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• *Thermal Transmittance (U-Value) for Concrete/ Shear Walls*

Sr. No.	Description of materials used	Density kg/m <sup>3</sup>	Thickness (I) m	r $\frac{m.k}{w}$	R $\frac{m^2.k}{w}$	Notes
1-						
2-						
3-						
4-						
5-						
6-						
7-						
8-						
9-						
10-						
11-						
12-						
13-						
<b>Total thermal resistance for materials used in Wall (R<sub>T</sub>):</b>						

<b>U-Value =</b> <b>W/m.<sup>2</sup> °C</b>
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\_\_\_\_\_  
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• *Thermal Transmittance (U-Value) for External Columns*

Sr. No.	Description of materials used	Density kg/m <sup>3</sup>	Thickness (I) m	$\frac{r}{m.k}$ w	$\frac{R}{m^2.k}$ w	Notes
1-						
2-						
3-						
4-						
5-						
6-						
7-						
8-						
9-						
10-						
11-						
12-						
13-						
<b>Total thermal resistance for materials used in Wall (R<sub>T</sub>):</b>						

<b>U-Value =</b> <b>W/m.<sup>2</sup> °C</b>
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\_\_\_\_\_  
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• *Thermal Transmittance (U-Value) for External Beams*

Sr. No.	Description of materials used	Density kg/m <sup>3</sup>	Thickness (I) m	$\frac{r}{w}$ m.k	$\frac{R}{w}$ m <sup>2</sup> .k	Notes
1-						
2-						
3-						
4-						
5-						
6-						
7-						
8-						
9-						
10-						
11-						
12-						
13-						
<b>Total thermal resistance for materials used in Wall (R<sub>T</sub>):</b>						

<b>U-Value =</b> <b>W/m.<sup>2</sup> °C</b>
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• *Thermal Transmittance (U-Value) for Spandrel Area of Curtain Wall*

Sr. No.	Description of materials used	Density kg/m <sup>3</sup>	Thickness (l) m	r $\frac{m.k}{w}$	R $\frac{m^2.k}{w}$	Notes
1-						
2-						
3-						
4-						
5-						
6-						
7-						
8-						
9-						
10-						
11-						
12-						
13-						
Total thermal resistance for materials used in Wall (R <sub>T</sub> ):						

<b>U-Value =</b> <b>W/m.<sup>2</sup> °C</b>
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*Thermal Transmittance (U-Value) for walls of light wells/shafts/voids*

Sr. No.	Description of materials used in Walls	Density kg/m <sup>3</sup>	Thickness (I) m	$\frac{r}{m.k}$ w	$\frac{R}{m^2.k}$ w	Notes
1-						
2-						
3-						
4-						
5-						
6-						
7-						
8-						
9-						
10-						
11-						
12-						
13-						
<b>Total thermal resistance for materials used in Wall (R<sub>T</sub>):</b>						

<b>U-Value =</b>	<b>W/m.<sup>2</sup> °C</b>
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- *Thermal Transmittance (U-Value) for* *(specify the type of wall)*

Sr. No.	Description of materials used in Exterior Walls	Density kg/m <sup>3</sup>	Thickness (I) m	r <u>m.k</u> w	R <u>m<sup>2</sup>.k</u> w	Notes
1-						
2-						
3-						
4-						
5-						
6-						
7-						
8-						
9-						
10-						
11-						
12-						
13-						
Total thermal resistance for materials used in Wall (R <sub>T</sub> ):						

<b>U-Value =</b> <b>W/m.<sup>2</sup> °C</b>
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**Glass Selection Details**

Location	Windows & Doors	Curtain Wall	Sky Light	Total Glass Area (M <sup>2</sup> )	Total Surface Area (M <sup>2</sup> )	Glass %
Glass Area (M <sup>2</sup> )						

LOCATION	GLASS MAKE/DESCRIPTION/COATING SURFCE #		THICKNESS (mm)			SUMMER U-VALUE (W/M <sup>2</sup> °C)	SHADING COEFFICIENT (SC)
	OUTER GLASS	INNER GLASS	OUTER GLASS	AIR SPACE	INNER GLASS		
WINDOWS & DOORS							
CURTAIN WALLS							
SKY LIGHT							

I hereby state that all information in the attached tables and documents is correct and I confirm that I will comply with Thermal Insulation Order no. (8 /99) for the construction of this building.

\_\_\_\_\_  
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Name & Signature

\_\_\_\_\_  
Engineering Office  
Stamp & Signature

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