

Energy Efficiency in Buildings

Building Design – Fenestration – Buildings with Natural Environmental Control

Occupancy:

Design Occupancy Time: Hours per day
 Days per week

Climatic Zone:

Fenestration – Buildings with Natural Environmental Control Constants

Conductance (C_U) constant:
 Solar Heat Gain (C_{SHGC}) constant:

Max. Conductance / Solar Heat Gain

Ground Storey

Net Floor Area of Storey / Room: m ²	<input type="text" value="155,000"/>	NOTE !! NO FURTHER CALCULATION REQUIRED.	Max. Conductance (C _U) for Storey / Room:	<input type="text" value="186,000"/>	Permissible
Fenestration Area of Storey / Room: m ²	<input type="text" value="1,600"/>		Max. Solar Heat Gain (C _{SHGC}) for Storey / Room:	<input type="text" value="23,250"/>	Permissible
% Fenestration Area to Nett Floor Area: %	<input type="text" value="1,032"/>				

Achieved Aggregate Conductance / Solar Heat Gain

Conductance / Solar Heat Gain Available

Ground Storey

Conductance (C _U) for Storey / Room:	<input type="text" value="12,64"/>	Conductance (C _U) for Storey / Room:	<input type="text" value="173,36"/>
Solar Heat Gain (C _{SHGC}) for Storey / Room:	<input type="text" value="0,98"/>	Solar Heat Gain (C _{SHGC}) for Storey / Room:	<input type="text" value="22,27"/>

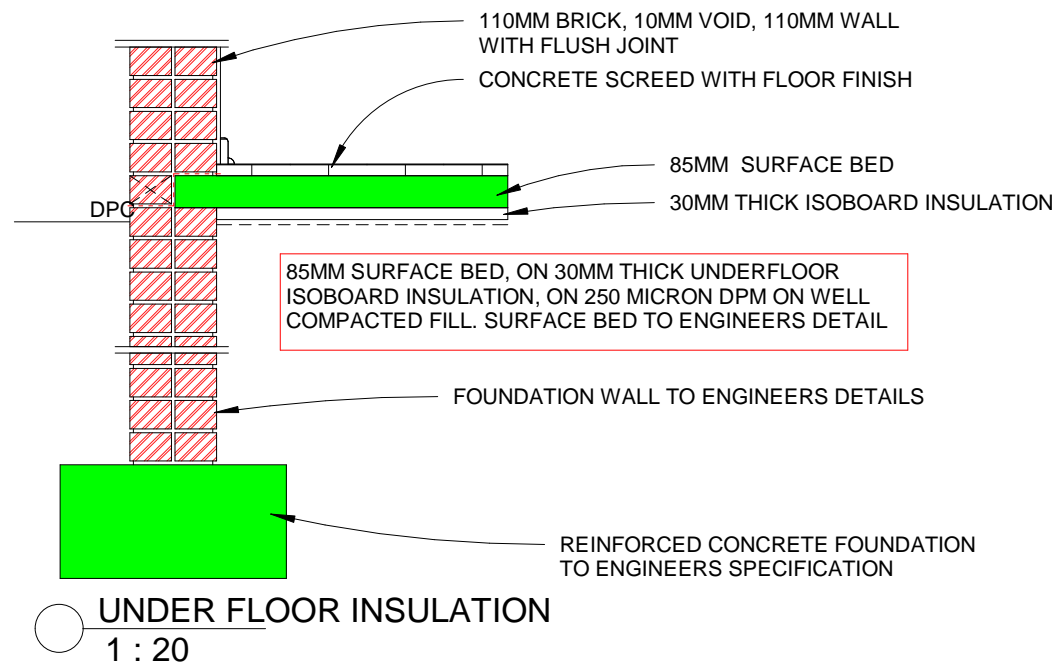
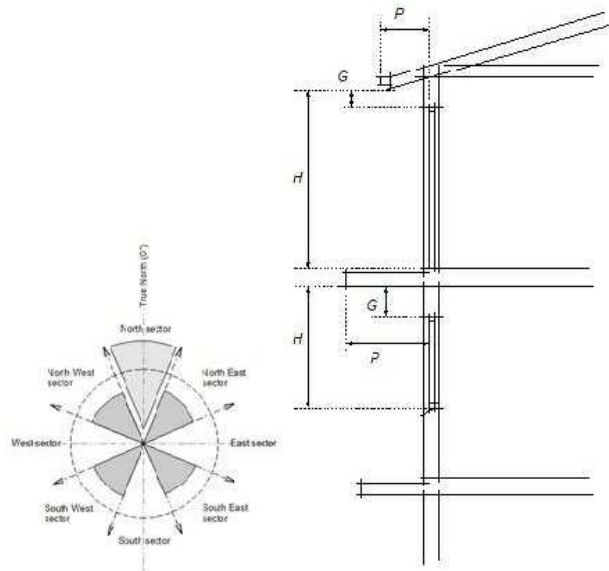
GLAZING ELEMENTS : FACTOR & CO-EFFICIENT SUMMARY

Glazing Elements					Glazing Element		Sector	Shading				Solar Exposure	Energy Constants			Multipliers	
Storey Level	Identifier No:	No. of Units	Size w x h	Area (m ²)	U-value	SHGC	Orientation	Projection (P)	Height (H)	Height (G)	P/H	Factor (E)	C _A	C _B	C _C	Heating S _a	Cooling S _c
Ground Storey	w06	1	0,9 x 0,875	0,79	7,90	0,81	East	0,900	1,385	0,510	0,325	0,800				0,980	0,960
Ground Storey	w07	2	0,889 x 0,457	0,81	7,90	0,81	East	0,900	0,967	0,510	0,465	0,710				0,970	0,940

ALL XA CALCULATIONS ARE COMPLIANT AND IN ACCORDANCE TO SANS 1400 PART XA

Refer to Electrical engineers and Mechanical engineers drawings for lighting layouts and calculations

ROOF INSULATION AS PER BUILDING SECTIONS ALL TO MECHANICAL ENGINEERS APPROVAL



Worst-case whole glazing element performance figures.

Glass Description	Performance Values			
	Aluminium / Steel Framing		Timber / uPVC / *Aluminium Framing	
	Total U-value	SHGC	Total U-value	SHGC
Single – clear	7,9	0,31	5,6	0,77
Single – tinted	7,9	0,59	5,6	0,65
Single Low E	5,73	0,66	4,06	0,63
Clear Double (3/6/3)	4,23	0,72	3	0,68
Tinted Double	4,23	0,59	3	0,56
Clear Double Low E	3,4	0,96	2,41	0,62
Tinted Double Low E	3,4	0,54	2,41	0,51

(* Thermal Break Framing)

No.	Description	Date
01	ISSUED FOR INFORMATION	26 / 10 / 2021

Owner/Client:
 Owner/Client Signature:
 Eng. Signature: _____
 Arch. Signature: _____
 Arch. Council no.: 7812



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Project Title:
Trompsburg Special Needs School Establishment of New Special Needs School in Trompsburg, Free State

date : 26/10/2021 15:38:24 scale :
 drawn : Author 1 : 20

Drawing Description:
TUCKSHOP XA
 Sheet size: A3

ISSUED FOR INFORMATION: ISSUED FOR CONSTRUCTION: DATE ISSUE: Issue Date

Job No. 2020 Drawing No. TSNS_TS_XA Rev. 01