



Environmentally Friendly

TECHNICAL NOTE #9

Green Building Credits

Clay Brick Masonry Walling



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Status

This Technical Note is provided as an information sheet for appending to the ClayBrick.org website.

Scope

A review of the Green Building Council of South Africa's assessment tools is conducted with a view of identifying what credits can be secured by adopting Clay Brick masonry construction.

Methodology

The Green Building Council of South Africa website and other sites referencing the Green Star rating system were reviewed and summarised.

The guidance of a qualified practitioner in Green Building was accepted and a review of the Technical Manuals for Green Star Office, Retail Centres and Multi-Unit residential buildings was conducted.

The relevant credits made available in these categories of building with Clay Brick masonry construction have been identified.

Green Building Council of South Africa (GBCSA)

Green Star SA is a rating system used to assess the design and construction of various building types, from an environmental and human health perspective, and is developed by the Green Building Council of South Africa.

The Green Star SA Rating System includes the following tools:

- ✓ Green Star SA - Office v1
- ✓ Green Star SA - Retail Centre v1
- ✓ Green Star SA – Multi-Unit Residential

GBCSA operates under license to the Australian Green Building Council. However, all categories and credits in the rating tools are researched, reviewed and written in a South African context by a technical working group of local industry experts.

Green Star SA Rating Systems Modus Operandi

Green Star SA rates buildings and does not certify individual products or technologies. The system is performance standards-based, and points are awarded on design measures and the performance standards thresholds met, as opposed to prescribed design solutions. It is therefore up to the design team to develop the best strategies for the building based on the particular site conditions, building orientation, local climate and occupancy. Thus, trade-off decisions between materials are required to be made.

By creating demand for green products, such resources become available for all other buildings to use, whether pursuing Green Star SA certification, or not. For example, Green Star SA creates demand for low-mass bricks (perforated), which require less energy to produce and less fuel to transport to site, as a result generating less harmful gasses into the atmosphere.

Over time, the entire property industry will become more environmentally conscious and move towards a lower energy usage. It is expected that as regulations close in on Green Star SA standards, the ratings tools will raise the benchmark so as to continually maintain a leadership position.

Green Star SA Categories - Credits and Points

Green Star SA rating tools consist of 8 environmental impact categories and an innovation category. Within each category there are credits which represent individual design initiatives. Then, within each credit, points are awarded based on the environmental impact of the relative credit (bigger impact credits have more points available). Although many of the credits are similar across tools and share common codes of reference, each tool comprises of sector specific credits that addresses initiatives specific to those building types.

The Green Star SA rating tools are developed to be equitable across building sectors. In other words, a 5-Star Green Star SA - Retail Centre project will exhibit a degree of industry leadership comparable to that of any other 5 Star Green Star SA project under another tool.

Certification

A Green Star SA rating is based on a 100 point scale, and a rating of zero to six stars may be obtained. The GBCSA offers a formal certification process for achievements of Four, Five or Six Star ratings. Any project may make use of the rating tools to self-assess their projects, however a project may only claim to Green Star SA certified if it has been through the official certification process managed by the GBCSA.

Projects that wish to be certified under Green Star SA should register via the Green Building Council website, i.e. www.gbcsa.org.za. This process requires for projects to make use of the rating tools together with the relevant Technical Manuals so as to document all of the project-related Green Star SA initiatives in a specific way. This information is then compiled and submitted to the GBCSA for assessment by their panel of independent market-based assessors. A project that achieves sufficient points for a Four, Five or Six Star rating, after two rounds of assessments, will receive official certification from the GBCSA, and have the right to market the project as such.

Most rating tools offer two different types of certification, namely;

- a) 'Design' Certification
Can be applied for and awarded at the end of the design phase of the project. The intent is that the building can then be marketed as a Green Star SA certified building, having demonstrated the green building strategies to be included in the building.
- b) 'As Built' Certification
Can be applied for and awarded at the end of construction of the project, to certify that all green building strategies were incorporated into the final building.

It is to be noted that the Design certification is not a prerequisite for the 'As Built' certification, and are viewed as two separate issues.

Regulations and Standards

The GBCSA will develop rating tools for additional building types over the next few years, including Public Buildings (2012) and Commercial Interiors. The GBCSA will also commence with development work on an energy and water benchmarking tool for the operational performance of existing buildings in 2011, which will act as a plug-in to the Existing Building Tool to be developed in 2012.

Tool development is managed by the GBCSA. Each tool is appointed a voluntary Technical Working Group of South African industry experts, who provide the core information for all of the credits, and evaluate the appropriateness of the specific building type addressed by the tool. The GBCSA's rating tools can be downloaded via the GBCSA website, www.gbcsa.org.za.

Green Star SA Technical Manuals

Technical manuals have been developed for each rating tool. These manuals provide detailed information on all credits, including a list of documentation that must be submitted for each credit required for formal certification.

These manuals are available for purchase via the GBCSA website, and are also included in the package for the Green Star SA Accredited Professional course. An Errata sheet for each Technical Manual is also available on the GBCSA website, www.gbcsa.org.za.

Points System in SA Green Star System

The points allocated to each building tool contribute towards the total number of points for that tool. The weighting of each is a fraction of the total number of point expressed as a percentage.

The following percentages indicate the relevant Star Rating:

- Four Star 45 - 59%
- Five Star 60 - 74%
- Six Star 75 - 100%

The Green Star SA Rating System allows for additional points to be added, should masonry construction be used in the following tools. See tables below.

- Green Star SA - Office v1
- Green Star SA - Retail Centre v1
- Green Star SA - Multi Unit Residential

Green Star SA -Office V1 2008 Additional Points for Making use of Masonry Construction

Points Category	Description	Points	Explanation
MAN7	Reuse of On-site Material 30%	1, 2 or 3	An additional point is added for each percentage value achieved for the three threshold levels of 30% / 50%/ 70% of reuse by mass
IEQ9	Thermal Comfort	2	An additional point is available if either 80% or 90% of persons are comfortable or satisfied per a comfort modelling for an artificially ventilated environment, or there is a predicted mean vote score of either 1.0 or 0.5
IEQ12	Internal Noise Levels	2	Two points are available if use is made of masonry walling as a noise control feature, plus other noise attenuation features, per expert evaluation
IEQ13	VOC Levels	1	If 95% of walls are face brick, a single point is achieved for reduced VOCs
IEQ14	Formaldehyde Minimisation	-	If no wood is used then this point is not available and therefore the total is reduced, and under which circumstances masonry contributes
ENE1	Greenhouse Gas Reduction	20	Masonry walling may contribute to achieving SANS 204 compliance via the CR-value
MAT2	Building Reuse	5 1, 2 or 3	Two points are available if 50% of a façade is reused. Progressively 1, 2 or 3 points are available if 30%, 60% or 90% of a structure is retained
MAT3	Reused Materials	1	A point is scored if 1% of the contract value is by way of materials saved from other sites
MAT10	Dematerialisation	1	A Technical Clarification may be needed to take advantage of this point if masonry is reduced in mass by virtue of a percentage of hollow core.
MAT11	Local Sourcing	2	A single point is available if 20% of all materials are sourced from within 400km. A further point is scored if 10% of materials are from within 50km

Green Star SA - Retail V1 2008 Additional Points for Making use of Masonry Construction

Points Category	Description	Points	Explanation
MAN7	Reuse of On-site Material 30%	1, 2 or 3	An additional point is added for each percentage value achieved for the three threshold levels of 30% / 50% / 70% of reuse by mass
IEQ9	Thermal Comfort	2	An additional point is available if either 80% or 90% of persons are comfortable or satisfied per a comfort modelling for an artificially ventilated environment, or there is a predicted mean vote score of either 1.0 or 0.5
IEQ12	Internal Noise Levels	2	Two points are available if use is made of masonry walling as a noise control feature, plus other noise attenuation features, per expert evaluation
IEQ13	VOC Levels	1 of 2	If 95% of walls are face brick, a single point is achieved for reduced VOCs
IEQ14	Formaldehyde Minimisation	-	If no wood is used then this point is not available and therefore the total is reduced, and under which circumstances masonry contributes
ENE1	Greenhouse Gas Reduction	20	Masonry walling may contribute to achieving SANS 204 compliance via the CR-Value
MAT2	Building Reuse	5 1, 2 or 3	Two points are available if 50% of a façade is reused. Progressively 1, 2 or 3 points are available if 30%, 60% or 90% of a structure is retained.
MAT3	Reused Materials	1 2	A point is scored if 1% of the contract value is by way of materials saved from other sites
MAT10	Dematerialisation	1	A Technical Clarification may be needed to take advantage of this point if masonry is reduced in mass by virtue of a percentage of hollow core.
MAT11	Local Sourcing	2	A single point is available if 20% of all materials are sourced from within 400km. A further point is scored if 10% of materials are from within 50km

Residential Multi Unit Additional Points for Making use of Masonry Construction

Points Category	Description	Points	Explanation
MAN7	Reuse of On-site Material 30%	1, 2 or 3	An additional point is added for each percentage value achieved for the three threshold levels of 30% / 50% / 70% of reuse by mass.
IEQ9	Thermal Comfort	2	If the building is naturally ventilated and the Deemed-to-satisfy compliance method shows that effective ventilation is demonstrated and the walls may contribute in three of the parts to this compliance tool: ENE1-Part A-Insulation and ENE1-Part B-Thermal Mass and ENE1-Part -Solar Heat Gain.
IEQ12	Internal Noise Levels	2	Two points are available if use is made of masonry walling as a noise control feature, plus other noise attenuation features, per expert evaluation
IEQ13	VOC Levels	1 of 2	If 95% of walls are face brick, a single point is achieved for reduced VOCs
IEQ14	Formaldehyde Minimisation	-	If no wood is used then this point is not available and therefore the total is reduced, under which circumstances masonry contributes
ENE1	Greenhouse Gas Reduction	10	Masonry walling may contribute to achieving SANS 204 compliance via the CR-Value
MAT2	Building Reuse	5 1, 2 or 3	Two points are available if 50% of a façade is reused. Progressively 1, 2 or 3 points are available if 30%, 60% or 90% of a structure is retained.
MAT3	Reused Materials	0	A point is scored if 1% of the contract value is by way of materials saved from other sites
MAT10	Dematerialisation	2	A Technical Clarification may be needed to take advantage of this point if masonry is reduced in mass by virtue of a percentage of hollow core.
MAT11	Local Sourcing	2	A single point is available if 20% of all materials are sourced from within 400km. A further point is scored if 10% of materials are from within a 50km radius.
MAT13	Perforated Clay Brick		One point is available for Clay Brick with at least 20% perforation to 50% of all masonry. A second point is available for Clay Brick with 20% perforation to 80% of all masonry.