



# BREEAM Pre-Assessment Checklist

12 Apr 2023 / Aleksandrina Guidi

Complete

Score	95.09%	Flagged items	6	Actions	3
Document Version	Initial Draft				
Date Conducted	12.04.2023 14:36 PST				
Project Name	Sunny World Shopping Center Construction Project				
Building Type	Non-residential				
Provide the type of non-residential building.	Commercial - Retail				
Lead Assessor	Aleksandrina Guidi				
Location	Bedford, TX, USA (32.844017, -97.1430671)				

## Flagged items & Actions

6 flagged, 3 actions

### Flagged items

6 flagged, 3 actions

Ene 01: Reduction of Energy Use and Carbon Emissions / 1. Lighting

**Where at least 80% of general internal luminaires in fixed fittings achieve an efficacy of at least 80 luminaire lumens per watt or greater.**

Non-Compliant

All of the current lighting equipment only has 50 luminaire lumens per watt.

To Do | Priority Low | Due 19.04.2023 14:57 PST | Created by SafetyCulture Staff

Canvass for LED lights with at least 80 luminaire lumens per watt.

Coordinate with Procurement and Finance teams to source these lights in the next 2 weeks.

Ene 01: Reduction of Energy Use and Carbon Emissions / 3. Low and Zero-Carbon (LZC) Technologies

**At least 10% of the total electricity or heating and cooling demand is generated by on-site or near-site LZC technologies.**

Non-Compliant

Over 95% of the electricity used for the shopping center's heating and cooling systems comes from the traditional power grid located in the city. We are currently reviewing renewable and low-carbon options as we transition to cleaner energy.

To Do | Priority Medium | Due 19.04.2023 15:09 PST | Created by SafetyCulture Staff

Submit a roster of low or zero carbon appliances and equipment by the end of next week.

Ene 01: Reduction of Energy Use and Carbon Emissions / 3. Low and Zero-Carbon (LZC) Technologies

**At least 20% of the total electricity or heating and cooling demand is generated by on-site or near-site LZC technologies.**

Non-Compliant

Wat 02: Water Monitoring

**The specification of a water meter on the mains water supply to each building; this includes instances where water is supplied via a borehole or other private source.**

Non-Compliant

Wat 02: Water Monitoring

**Water-consuming plant or building areas, consuming 10% or more of the building's total water demand, are either fitted with easily accessible sub-meters or have water monitoring equipment integral to the plant or area.**

Non-Compliant

The site currently doesn't have a water monitoring system installed to track water consumption.

To Do | Assignee SafetyCulture Staff | Priority High | Due 19.04.2023 15:23 PST | Created by SafetyCulture Staff

Install water meters around the premises ASAP.

Wat 02: Water Monitoring

Each meter (main and sub) has a pulsed or other open protocol communication output to enable connection to an appropriate utility monitoring and management system (e.g., a building management system (BMS)), for the monitoring of water consumption.

Non-Compliant

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Other actions

0 actions

## 1. Safe and Adequate Access Requirements

100%

Appropriate and safe access to the site is provided. This must include as a minimum (see items i-iv):

Compliant

**i. Any of the following:**  
 - Provision of parking on or near the site; OR  
 - A public transport node with an average frequency of under 30 minutes within 500m; OR  
 - A dedicated transport service to a major public transport node provided by the contractor

Compliant



Photo 1

**ii. Good lighting AND adequate barriers AND uniform surfaces (i.e. no trip hazards outside the site boundary)**

Compliant

**iii. All accesses to be clean and mud free**

Compliant

**iv. Hoarding or scaffolding, which forms part of, or is external to the site boundary, to be well lit at night AND scaffold netting is in place and well maintained.**

Compliant

Appropriate and safe access on site is provided. This must include as a minimum (see items i-iv):

Compliant

**i. Footpaths marked with ramps and signs**

Compliant



Photo 2

**ii. Pathways wide enough for wheelchairs**

Compliant

**iii. Accessibility of all areas by visually or hearing impaired visitors**

Compliant

**iv. All site hazards advertised at the site entrance**

Compliant

Site entrances and exits are clearly marked for visitors and delivery drivers to see.

Compliant

Site reception is clearly signposted OR all visitors are escorted to the reception.	Compliant
The post box has been placed on the pavement to avoid the postman from entering the site.	Compliant
Where there are minority communities speaking a different language in the area or working on site, notices are printed in the common local language.	Compliant
All road signs or names can be seen.	Compliant
When a road sign or name is obstructed, a replacement has been erected.	N/A
Where a site is in an area with severe congestion it has a delivery point remote from the site; deliveries are then made in smaller vehicles and timed to cause the least inconvenience.	Compliant

## 2. Good Neighbour Checklist

100%

Introductory letters have been or will be sent to all neighbours.	Compliant
There is a commitment to write and thank neighbours at the end of the contract for their patience.	Compliant
A feedback form is provided to the neighbours.	Compliant
Site hours and noisy work restrictions are appropriate to the area, in particular when the site is located near: <ul style="list-style-type: none"> <li>- Houses</li> <li>- Schools</li> <li>- Hospitals</li> <li>- Industrial units</li> <li>- Major public transport nodes</li> <li>- City centres</li> <li>- Shopping facilities</li> </ul>	Compliant
The site boundary (which includes all areas affected by the works) is clearly and safely marked and appropriate to the environment (see items i-iv):	Compliant
i. The colour of the hoarding has been considered in terms of the surrounding environment.	Compliant
ii. Pedestrians have a suitable, safe, and protected passage around the site boundary.	Compliant
iii. There are well-lit warning signs for the benefit of the	Compliant

pedestrians and road user.

iv. The site's surroundings are seen by the public as being tidy and clean.

Compliant

There is a complaints book available AND evidence that complaints are being dealt with immediately.

Compliant

Local people are appropriately informed by the use of a notice board:

- Of the site progress
- Of the company contact details (telephone number or website or email address).

Compliant

Light is shielded from the neighbours.

Compliant

Site personnel are discouraged from using local facilities in their site clothes. Examples of how this might be achieved include:

- A dedicated staff canteen
- Staggered breaks for different gangs
- Provision of showers or wash rooms
- Provision of lockers
- A request to leave PPE (Personal Protective Equipment) on site

Compliant

There is a volume restriction on radio use or there is a radio ban in place.

Compliant

### 3. Environmentally Aware

100%

There are restrictions on the effects of light pollution and all lights are directional and non-polluting. If there is a site-specific environmental policy which sets restrictions on lighting, this point can be awarded.

Compliant

Energy-saving measures are implemented on site. Examples of this include:

- Low-energy lighting
- Switching off equipment when not in use
- Installing thermostats
- Installing timers
- Choosing energy-efficient equipment.

Compliant

If there is a site-specific environmental policy that defines energy-saving measures, this point can be awarded.

An impact minimisation strategy review is in place for the site. The review should consider the impact of the site in environmental terms and how any adverse effects are being minimised (e.g., protection of ecological features, pollution

Compliant

control).

<b>Water-saving measures are implemented on-site and monitored.</b>	Compliant
<b>Alternative energy sources have been considered.</b>	Compliant
<b>Fuel oil spillage equipment is available.</b>	Compliant
<b>Sumps are provided in cases of heavy water run-off.</b>	Compliant
<b>Materials and equipment are tidily stacked and protected and covered where necessary.</b>	Compliant
<b>There is adequate space for new materials to be stored in secured covered areas to avoid damage and theft and protect from weather.</b>	Compliant

#### **4. Safe and Considerate Working Environment**

100%

<b>Adequate facilities are provided on-site for workers and visitors. These must include as a minimum (see items i-v):</b>	Compliant
<b>i. Separate male, female, and disabled toilets</b>	Compliant
<b>ii. Working usable showers AND suitable changing areas</b>	Compliant
<b>iii. Lockers in the drying room</b>	Compliant
<b>iv. Dedicated smoking area</b>	Compliant
<b>v. Suitable and safe accommodation (where provided)</b>	Compliant
<b>Site facilities are well-maintained and clean. This must cover as a minimum (see items i-iii):</b>	Compliant
<b>i. Areas around the canteen, offices, and skips</b>	Compliant
<b>ii. Site welfare facilities (including toilets and changing areas)</b>	Compliant
<b>iii. Dedicated smoking area</b>	Compliant
<b>Private or visually-impacting areas are screened. These must include as a minimum (see items i-iii):</b>	Compliant
<b>i. Areas around the canteen, offices and skips, where necessary</b>	Compliant

<b>ii. Toilets</b>	Compliant
<b>iii. Dedicated smoking area</b>	N/A
Smoking is prohibited within the building premises.	
<b>Clean Personal Protective Equipment (PPE) is available for use by visitors.</b>	Compliant
<b>Health and Safety (H&amp;S) procedures are in place for the following issues (see items i-v):</b>	Compliant
<a href="#">Health and Safety Procedure [2023].pdf</a>	
<b>i. Appropriate training of all staff including non-native operatives to understand H&amp;S best practices and information displayed on site</b>	Compliant
<b>ii. Operatives' exposure to the sun</b>	Compliant
<b>iii. Operatives' identification; all operatives to be provided with a photo identification clip card</b>	Compliant
<b>iv. Reporting of all incidents (minor and serious) and near misses</b>	Compliant
<b>v. Ensuring that an appropriate number of first aiders and first aid equipment are available for the site</b>	Compliant
<b>There is posted material indicating the nearest police station and hospital (with Accident &amp; Emergency facilities) in the following areas as a minimum:</b>	Compliant
<ul style="list-style-type: none"> <li>- Site reception</li> <li>- Site canteen</li> <li>- Main site office</li> </ul>	
<b>An inspection has been carried out by an H&amp;S inspector or equivalent.</b>	Compliant
<b>Emergency escape routes are well-identified.</b>	Compliant
<b>There is a clear emergency evacuation procedure.</b>	Compliant
<b>Drills are carried out regularly.</b>	Compliant



<b>Hea 01: Visual Comfort</b>	100%
<b>1. Prerequisite</b>	100%
All fluorescent and compact fluorescent lamps are fitted with high-frequency ballasts.	Compliant
<b>2. Glare Control</b>	100%
The potential for glare has been designed out of all relevant building areas using a glare control strategy, either through building form and layout or building design measures.	Compliant
The glare control strategy avoids increasing lighting energy consumption by ensuring that (see items i-iii):	Compliant
i. The glare control system is designed to maximise daylight levels under all conditions while avoiding disabling glare in the workplace or other sensitive areas.	Compliant
ii. The system should not inhibit daylight from entering the space under cloudy conditions, or when sunlight is not on the façade	Compliant
iii. The use or location of shading does not conflict with the operation of lighting control systems.	Compliant
<b>3. Daylighting</b>	100%
Daylighting criteria have been met using either of the following options:	
- The relevant building areas meet good practice daylight factors and other criteria; OR - The relevant building areas meet good practice average and minimum point daylight illuminance criteria	Compliant
<b>4. View Out</b>	100%
Floor space in the relevant building areas has an adequate view out to reduce eye strain and provide a link to the outside.	Compliant
<b>5. Internal Lighting</b>	100%
Internal lighting in all relevant areas of the building is designed to provide an illuminance (lux) level appropriate to the tasks undertaken, accounting for building user concentration and comfort levels.	Compliant

This can be demonstrated through a lighting design strategy that provides illuminance levels in accordance with national best-practice lighting guides.

The uniformity of illuminance due to electric lighting is as per the recommendation in the approved local standard.

Compliant

For areas where computer screens are regularly used, confirmation is required that the lighting has been designed to limit the potential for glare in accordance with a numerical glare limit specified within national best practice lighting guides. These should include items i-iii:

Compliant

i. Limits to the luminance of the luminaires to avoid screen reflections. Manufacturers' data for the luminaires should be sought to confirm this

Compliant

ii. For uplighting, the recommendations refer to the luminance of the lit ceiling rather than the luminaire; a design team calculation is usually required to demonstrate this

Compliant

iii. Recommendations for direct lighting, ceiling illuminance, and average wall illuminance

Compliant

## 6. External Lighting

100%

All external lighting located within the construction zone is designed to provide illuminance levels that enable users to perform outdoor visual tasks efficiently and accurately, especially during the night.

Compliant

To demonstrate this, external lighting provided is specified in accordance with EN 13201 series Road Lighting and EN 12464-2:2014 Light and lighting - Lighting of work places - Part 2: Outdoor work places.

## 7. Zoning and Occupant Control

100%

Internal lighting is zoned to allow for occupant control in accordance with the criteria below for relevant areas present within the building:

- In office areas, zones of no more than four workplaces
- Workstations adjacent to windows or atria and other building areas separately zoned and controlled
- Seminar and lecture rooms: zoned for presentation and audience areas
- Library spaces: separate zoning of stacks, reading, and counter areas
- Teaching space or demonstration area
- Whiteboard or display screen
- Auditoria: zoning of seating areas, circulation space, and lectern area
- Dining, restaurant, café areas: separate zoning of servery

Compliant

and seating or dining areas

- Retail: separate zoning of display and counter areas
- Bar areas: separate zoning of bar and seating areas
- Day rooms, waiting areas: zoning of seating and activity areas and circulation space with controls accessible to staff
- Hotel bedrooms: separate zoning of hallway, bathroom, desk and sleeping area (where present in the room).

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Does the building have an area used for teaching, seminar, or lecture purposes?

No

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(For education buildings) Manual lighting controls are easily accessible for the teacher while teaching and on entering or leaving the teaching space.

N/A

<b>Hea 02: Indoor Air Quality</b>	100%
<b>1. Prerequisite</b>	100%
<b>Materials containing asbestos are prohibited from being specified and used within the building.</b>	Compliant
<b>2. Minimising Sources of Air Pollution</b>	100%
<b>a. Indoor Air Quality (IAQ) Plan</b>	100%
<b>An indoor air quality plan has been produced and implemented, with the objective of facilitating a process that leads to design, specification, and installation decisions and actions that minimise indoor air pollution during the design, construction, and occupation of the building. The indoor air quality plan must consider the following:</b>	Compliant
<ul style="list-style-type: none"> <li>- Removal of contaminant sources</li> <li>- Dilution and control of contaminant sources</li> <li>- Procedures for pre-occupancy flush out</li> <li>- Third party testing and analysis</li> <li>- Maintaining indoor air quality in-use</li> </ul>	
<a href="#">Indoor Air Quality Plan [2023].pdf</a>	
<b>b. Ventilation</b>	100%
<b>The building must provide fresh air into the building in accordance with the criteria of the national best practice standard for ventilation.</b>	Compliant
<b>What is the ventilation system for the building or space?</b>	Mixed-mode
The location of fresh air intakes are designed to minimise the entry of air pollutants into the building.	
<b>The location of the building's air intakes and exhausts, in relation to each other and external sources of pollution, is designed in accordance with EN 13779:20071 Annex A2.</b>	Compliant
<b>Where EN 13779:20072 Annex A2 is not followed, the building's air intakes and exhausts are over 10m of horizontal distance apart and intakes are over 10m of horizontal distance from sources of external pollution.</b>	Compliant
<b>Where present, HVAC systems must incorporate suitable filtration to minimise external air pollution, as defined in EN 13779:2007 Annex A3.</b>	Compliant
<b>Areas of the building subject to large and unpredictable or variable occupancy patterns have carbon dioxide (CO<sub>2</sub>) or air</b>	Compliant

quality sensors specified.

Sensors are linked to the mechanical ventilation system and provide demand-controlled ventilation to the space.

Compliant

Is smoking within buildings prohibited by law in your country of operation?

No

Is smoking permitted in the building (provided there are dedicated smoking rooms)?

No

A smoking ban covering all public and staff areas of the building is implemented.

Compliant

'No Smoking' signs are located in appropriate areas clearly visible to all occupants (i.e., common areas, offices, and building entrances).

Compliant

### c. Emissions from Building Products

100%

At least four of the five product types listed below meet the emission limits, testing requirements, and any additional requirements listed in Table 17 or refer to [CN3.5](#):

- Interior paints and coatings
- Wood-based products (including wood flooring)
- Flooring materials (including floor leveling compounds and resin flooring)
- Ceiling, wall, and acoustic and thermal insulation materials
- Interior adhesives and sealants (including flooring adhesives)

Compliant

Table 17: Emission criteria by product type

Table 17. Emission criteria by product type

Product type (see CML3)	Emission limit*			Testing requirement (see C85.2 and C85.3)	Additional requirements
	Formaldehyde	Total volatile organic compounds (TVOC)	Category 1A and 1B carcinogens		
Interior paints and coatings	≤ 0.06 mg/m <sup>2</sup>	≤ 1.0 mg/m <sup>2</sup>	≤ 0.001 mg/m <sup>2</sup>	EN 15402 <sup>10</sup> or ISO 16000-5 <sup>11</sup> or CEN/TS 16516 <sup>12</sup> or CDPH Standard Method v1.1 <sup>13</sup>	Meet TVOC control limits (Table 19). Paints used in wet areas (e.g. bathrooms, kitchens, utility rooms) should protect against mould growth (see C90.6)
Wood-based products (including wood flooring)	≤ 0.05 mg/m <sup>2</sup> (Non-MDF) ≤ 0.08 mg/m <sup>2</sup> (MDF)	≤ 1.0 mg/m <sup>2</sup>	≤ 0.001 mg/m <sup>2</sup>	ISO 16000-5 <sup>14</sup> or CEN/TS 16516 <sup>15</sup> or CDPH Standard Method v1.1 <sup>16</sup> or EN 717.1 (formaldehyde emissions only) <sup>17</sup>	N/A
Flooring materials (including floor finishing compounds and resin flooring)	≤ 0.05 mg/m <sup>2</sup>	≤ 1.0 mg/m <sup>2</sup>	≤ 0.001 mg/m <sup>2</sup>	ISO 16000 or ISO 16000-5 or CEN/TS 16516 or CDPH Standard Method v1.1	N/A
Ceiling, wall, and acoustic and thermal insulation materials	≤ 0.05 mg/m <sup>2</sup>	≤ 1.0 mg/m <sup>2</sup>	≤ 0.001 mg/m <sup>2</sup>		N/A
Interior adhesives and sealants (including flooring adhesives)	≤ 0.05 mg/m <sup>2</sup>	≤ 1.0 mg/m <sup>2</sup>	≤ 0.001 mg/m <sup>2</sup>	EN 13999 (Parts 1-4) <sup>18,19,20,21</sup> or ISO 16000-5 or CEN/TS 16516 or CDPH Standard Method v1.1	N/A

\* Compliance with emission levels shall be demonstrated after 28 days in an emission test chamber or earlier as stipulated by the relevant testing requirements standard.

#### d. Post-Construction Indoor Air Quality Measurement

100%

The formaldehyde concentration in indoor air is measured post-construction (but pre-occupancy) and does not exceed 100µg/m<sup>3</sup>, averaged over 30 minutes.

Compliant

The formaldehyde sampling and analysis is performed in accordance with ISO 16000-24 and ISO 16000-35.

Compliant

The total volatile organic compound (TVOC) concentration in indoor air is measured post-construction (but pre-occupancy) and does not exceed 300µg/m<sup>3</sup>, averaged over 8 hours.

Compliant

The TVOC sampling and analysis is performed in accordance with ISO 16000-57 and ISO 16000-68 or ISO 16017-19.

Compliant

Where levels are found to exceed these limits, the project team confirms the measures that have, or will be undertaken in accordance with the IAQ plan, to reduce the TVOC and formaldehyde levels to within the above limits.

Compliant

The measured concentration levels of formaldehyde (µg/m<sup>3</sup>) and TVOC (µg/m<sup>3</sup>) are reported, via the BREEAM scoring and reporting tool, for the purpose of confirming criteria ii-v.

Compliant

### 3. Adaptability - Potential for Natural Ventilation

100%

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**The building ventilation strategy is designed to be flexible and adaptable to potential building occupant needs and climatic scenarios.**

Compliant

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**The natural ventilation strategy is capable of providing at least two levels of user control on the supply of fresh air to the occupied space**

Compliant

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**Hea 09: Water Quality**

100%

**All water systems in the building are designed in compliance with the measures outlined in the relevant national health and safety best practice guides or regulations to minimise the risk of microbial contamination, e.g. legionellosis.**

Compliant

**A wholesome supply of accessible potable drinking water is supplied as follows in the permanently staffed areas:**

- Point-of-use water coolers
- Provision in each staff kitchenette, or in a suitable location on each floor level, and in a staff canteen (if provided)

Compliant

**A wholesome supply of accessible potable drinking water is supplied in public areas (see items i-iii):**

Compliant

**A wholesome supply of accessible potable drinking water is supplied in public areas, such as the foyer or lobby and gym or fitness suite (where present).**

Compliant

**Is potable water available in each bedroom?**

No

**A point-of-use water cooler is accessible from all key public spaces, i.e. bar, lounge, lobby, entrance hall or reception, restaurant AND specified in public areas next to key access points (lifts and stairwells) to each bedroom floor or area.**

Compliant



## Ene 01: Reduction of Energy Use and Carbon Emissions

3 flagged, 2 actions, 84.31%

### 1. Lighting

1 flagged, 1 action, 25%

Select building type.

Non-residential

**Internal daylight and non-daylit areas have switching controls that take account of absence or occupancy, or daylighting as recommended by ASHRAE Standard 90.1 and the California Energy Code.**

**Adequate lighting controls must be provided to all ancillary areas (as applicable) such as:**

Partially Compliant

- Storerooms and cold stores.
- Plant and control rooms.
- Toilet, washroom, and shower areas.
- Circulation areas, corridors, and stairwells.

Due to budget restrictions, lighting controls are only installed in storage and control rooms. We will be looking into cost-effective lighting controls to accommodate other areas in the center.

**Where at least 80% of general internal luminaires in fixed fittings achieve an efficacy of at least 80 luminaire lumens per watt or greater.**

Non-Compliant

All of the current lighting equipment only has 50 luminaire lumens per watt.

To Do | Priority Low | Due 19.04.2023 14:57 PST | Created by SafetyCulture Staff

Canvass for LED lights with at least 80 luminaire lumens per watt.

Coordinate with Procurement and Finance teams to source these lights in the next 2 weeks.

Note: General internal lighting refers to all internal light fittings, but excludes those used for emergency purposes. The assessor should note that the benchmark is for individual fittings, not the average lumens per circuit watt.

### 2. Water Heat Generator Efficiency

100%

**Hot water is supplied via a self-contained system that has an efficiency of greater than or equal to 85% (either central or decentralised). (Select N/A if not applicable)**

N/A

**Hot water is supplied where decentralised gas-fired storage heaters are specified that have an efficiency of greater than or equal to 85%. (Select N/A if not applicable)**

Compliant

**Heat pumps are specified for hot water the criteria can be awarded provided that the COP is greater than or equal to 4.5. (Select N/A if not applicable)**

N/A

Note: The water heating system is designed in accordance with the recommendations of ASHRAE Standard 90.1 and the controls specified comply with the guidance for hot water systems. Where the building is not heated, this criterion is not applicable.

### 3. Low and Zero-Carbon (LZC) Technologies

2 flagged, 1 action, 0%

**At least 10% of the total electricity or heating and cooling demand is generated by on-site or near-site LZC technologies.**

Non-Compliant

Over 95% of the electricity used for the shopping center's heating and cooling systems comes from the traditional power grid located in the city. We are currently reviewing renewable and low-carbon options as we transition to cleaner energy.

To Do | Priority Medium | Due 19.04.2023 15:09 PST | Created by SafetyCulture Staff

Submit a roster of low or zero carbon appliances and equipment by the end of next week.

**At least 20% of the total electricity or heating and cooling demand is generated by on-site or near-site LZC technologies.**

Non-Compliant

Note: The low and zero carbon technologies listed in BREEAM issue Ene 04 Low carbon design can be used to demonstrate compliance. Other systems may be acceptable as part of a LZC strategy under this issue but are not inherently considered as LZC technologies. Acceptability will be dependent on the nature of the system proposed. The BREEAM Assessor must confirm acceptability with BRE Global if in doubt.

### 4. Building Fabric

100%

**Is the building a low-rise residential structure?**

No

**5% improvement on the U-value requirements for walls, roofs, ground floor, windows, and doors, in ASHRAE Standard 90.1 (for all buildings except low-rise residential buildings).**

Yes

**b. 10% improvement on the U-value requirements in ASHRAE Standard 90.1.**

Compliant

**c. 15% improvement on the U-value requirements in ASHRAE Standard 90.1.**

Compliant

**Pressure test shows air permeability of less than or equal to 50% of the leakage value of current national standards.**

Compliant

**If national standards are not available,  $2\text{m}^3/\text{h}/\text{m}^2$  @ 50Pa is the maximum value for air permeability to achieve this criterion.**

**Pressure test shows air permeability of less than or equal to 75% of leakage value of current national standards.**

Compliant

**If national standards are not available,  $1.5\text{m}^3/\text{h}/\text{m}^2$  @ 50Pa is the maximum value for air permeability to achieve this criterion.**

**The average g-value of the glazing is greater than or equal to 60%.**

Compliant

### 5. Space Heat Generator Efficiency

91.67%

The seasonal efficiency of the source of space heating should be greater than or equal to 90%.

Compliant

The heating system is to be designed in accordance with the recommendations of ASHRAE Standard 90.1.

Compliant

At least 75% of the heat demand must be sourced by the heating system with the highest efficiency; the remaining top-up heat must be supplied by a high-efficiency heating source greater than or equal to 90%.

Partially Compliant

The heat supply from our energy-efficient heat generator is currently at 50 percent.

Where the heating system is comprised of an arrangement of multiple boilers or heat sources, the seasonal efficiency of the multiple boiler system must be greater than or equal to 90%.

N/A

The overall system efficiency, i.e. the distribution and seasonal boiler efficiency, is greater than or equal to 70%.

Compliant

The heating system controls must comply with ASHRAE Standard 90.1.

Compliant

A form of variable flow control is fitted, i.e. variable speed pumps.

Compliant

## 6. Cooling and Ventilation

100%

Select building type.

Non-residential

The design incorporates a system of providing low-carbon cooling to completely displace the need for a mechanical cooling system. (Select N/A if not applicable)

Compliant

The cooling generator has a coefficient of performance (COP) of more than 3.5 (Select N/A if not applicable).

N/A

Note: Compliance with this criterion will be shown if the design has used a low carbon cooling technology, such as, but not exclusively limited to:

- Night-time cooling, i.e. requires fabric to have a high thermal mass
- Ground coupled air cooling
- Displacement ventilation (not linked to any active cooling system)
- Ground water cooling
- Surface water cooling
- Evaporative cooling, direct or indirect
- Passive house (Passivhaus) cooling strategies
- Desiccant dehumidification and evaporative cooling, using waste heat
- Absorption cooling, using waste heat
- The building does not require any form of cooling

The assessment of this criterion excludes specialist cooling systems (such as server rooms, cold food storage, etc.). The assessor should confirm with BRE which specialist cooling systems may be excluded from the assessment of this criterion.

Is there a mechanical ventilation system for the building

Yes

(apart from those required as part of national building regulations)?

All ductwork and air handling units (AHUs) are certified to meet the best leakage standards.

Compliant

The specific fan power for the mechanical ventilation system specified is:

≤ 1.4 W/litre/second for central mechanical ventilation systems including heating only  
≤ 1.8 W/litre/second for central mechanical ventilation systems including heating and cooling

Compliant

The system has a form of variable flow control fitted, i.e. variable speed drives.

Compliant

The system can be controlled in accordance with the recommendations of ASHRAE Standard 90.1.

Compliant

Where a method of heat recovery is integrated into the design of the mechanical ventilation system, it must (see items i-iii):

Compliant

i. Achieve a heat recovery efficiency of at least 75%.

Compliant

ii. Have a form of variable flow control fitted, i.e. variable speed drives.

Compliant

iii. Be controlled in accordance with the recommendations of ASHRAE Standard 90.1.

Compliant

Note: Where the building is naturally ventilated this criterion is not applicable.

**Wat 01: Water Consumption**

100%

**An assessment of the efficiency of the building's domestic water-consuming components is undertaken using the BREEAM Wat 01 calculator.**

Compliant

**The water consumption (L/person/day) for the assessed building is compared against a baseline performance and BREEAM credits awarded based upon Table 40.**

Compliant

Table 40: BREEAM credits available for percentage improvement over baseline building water consumption

Table 40 BREEAM credits available for percentage improvement over baseline building water consumption

No. of BREEAM credits	Percentage improvement		
	Precipitation zone 1	Precipitation zone 2	Precipitation zone 3
1	12.5%	12.5%	12.5%
2	25%	25%	25%
3	40%	35%	35%
4	50%	45%	40%
5	55%	55%	50%
Exemplary	65%	65%	60%

**The efficiency of the following 'domestic-scale' water-consuming components must be included in the assessment (where specified):**

- WCs
- Urinals
- Taps (wash hand basins and where specified kitchen taps and waste disposal unit)
- Showers
- Baths
- Dishwashers (domestic and commercial-sized)
- Washing machines (domestic and commercial or industrial-sized)

Compliant

**Where a greywater or rainwater system is specified, its yield (L/person/day) is used to offset non-potable water demand from components that would otherwise be supplied using potable water.**

Compliant

**Any greywater systems must be specified and installed in compliance with the national best practice standard.**

Compliant

**Wat 02: Water Monitoring**

3 flagged, 1 action, 0%

**The specification of a water meter on the mains water supply to each building; this includes instances where water is supplied via a borehole or other private source.**

Non-Compliant

**Water-consuming plant or building areas, consuming 10% or more of the building's total water demand, are either fitted with easily accessible sub-meters or have water monitoring equipment integral to the plant or area.**

Non-Compliant

The site currently doesn't have a water monitoring system installed to track water consumption.

To Do | Assignee SafetyCulture Staff | Priority High | Due 19.04.2023 15:23 PST | Created by S afetyCulture Staff

Install water meters around the premises ASAP.

**Each meter (main and sub) has a pulsed or other open protocol communication output to enable connection to an appropriate utility monitoring and management system (e.g., a building management system (BMS)), for the monitoring of water consumption.**

Non-Compliant

**If the site on which the building is located has an existing BMS, managed by the same occupier or owner (as the new building), the pulsed or digital water meters for the new building must be connected to the existing BMS.**

N/A

**Mat 03: Responsible Sourcing of Construction Products**

100%

**All timber and timber-based products used on the project are Legally harvested and traded timber.**

Compliant

**Note: For other construction products, there are no prerequisite requirements at this stage.**

**By the end of concept design stage, the client or developer has a documented policy and procedure that sets out procurement requirements for all suppliers and trades to adhere to relating to the responsible sourcing of construction products.**

Compliant

**The documented policy and procedure must be disseminated to all relevant internal and external personnel, and included within the construction contract to ensure that they are enforceable on the assessed project.**

Compliant

**The documented policy and procedure must encourage the specification of products with responsible sourcing certification over similar products without certification.**

Compliant

**The available responsible sourcing credits (refer to Table 44) can be awarded where the applicable construction products are responsibly sourced in accordance with the BREEAM methodology, as defined in the Methodology section.**

Compliant

Table 44: The number of BREEAM credits achieved is determined as follows:

Table 44: The number of BREEAM credits achieved is determined as follows

Responsible sourcing credits	% of available Responsible sourcing points achieved
3	≥ 30
2	≥ 20
1	≥ 10

## Completion

### Summary of Observations

The proposed Sunny World Shopping Center Construction Project demonstrates compliance with responsible construction practices, visual comfort, indoor air quality, water quality, and responsible sourcing of construction products. However, the project requires corrective actions to improve the sustainability of the building in the reduction of energy use and carbon emissions and water monitoring.

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### Recommended Action(s)

- Look for cost-effective lighting controls to accommodate other areas in the center.
  - Canvass for LED lights with at least 80 luminaire lumens per watt.
  - Submit a roster of low or zero-carbon appliances and equipment by the end of next week.
  - Install water meters around the premises as soon as possible.
  - Implement measures to reduce water consumption in areas with high rates of water consumption.
- 

### Name and Signature of Lead Assessor



Aleksandrina Guidi  
12.04.2023 15:28 PST

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## Media summary



Photo 1



Photo 2

[Health and Safety Procedure \[2023\].pdf](#)

[Indoor Air Quality Plan \[2023\].pdf](#)