Part J7 Artificial lighting and power

J7D1 Deemed-to-Satisfy Provisions

[2019: J6.0]

Delete J7D1(1) and insert NSW J7D1(1) as follows:

(1) Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirements* NSW J1P1 to NSW J1P7 are satisfied by complying with—

(a) NSW J2D2; and

(a) NSW J3D2 to J3D10; and

(b) NSW J4D2 to J4D7; and

(c) NSW J5D2 to J5D8; and

(d) NSW J6D2 to J6D13; and

(e) NSW J7D2 to J7D9; and

(f) J8D2 to NSW J8D4; and

(g) J9D2 to J9D5.

Delete J7D2 and insert NSW J7D2 as follows:

NSW J7D2 Application of Part

[2019: J6.1, NSW J(A)4.1]

(1) The *Deemed-to-Satisfy Provisions* of this Part do not apply to a Class 2 building or a Class 4 part of a building.

(2) J7D3, J7D4 and J7D6(1)(b) do not apply to a Class 8 *electricity network substation*.

J7D3 Artificial lighting

[2019: J6.2]

Delete J7D3(1) and insert NSW J7D3(1) as follows:

(1) This subclause does not apply in NSW.

Delete J7D3(2) and insert NSW J7D3(2) as follows:

(2) In a Class 3 or Class 5 to 9 building—

(a) for artificial lighting, the aggregate design illumination power load must not exceed the sum of the allowances obtained by multiplying the area of each space by the maximum *illumination power density* in Table J7D3a; and

(b) the aggregate design illumination power load in (a) is the sum of the design illumination power loads in each of the spaces served; and

(c) where there are multiple lighting systems serving the same space, the design illumination power load for (b) is—

(i) the total illumination power load of all systems; or

(ii) where a control system permits only one system to operate at a time based on the highest illumination power load; or determined by the formula—

$$[H \times T/2 + P \times (100 - T/2]/100$$

(d) In the formula at (c)(ii)—

(i) H = the highest illumination power load; and

(ii) T = the time for which the maximum illumination power load will occur, expressed as a percentage; and

(iii) P = the predominant illumination power load.

Table J7D3a: Maximum illumination power density

Space	Maximum *illumination power density* (W/m^2)
Auditorium, church and public hall	8
Board room and conference room	5
Carpark - general	2
Carpark - entry zone (first 15 m of travel) during the daytime	11.5
Carpark - entry zone (next 4 m of travel) during the day	2.5
Carpark - entry zone (first 20 m of travel) during night time	2.5
Common rooms, spaces and corridors in a Class 2 building	4.5
Control room, switch room and the like - intermittent monitoring	3
Control room, switch room and the like - constant monitoring	4.5
Corridors	5
Courtroom	4.5
Dormitory of a Class 3 building used for sleeping only	3
Dormitory of a Class 3 building used for sleeping and study	4
Entry lobby from outside the building	9
Health-care - infants' and children's wards and emergency department	4
Health-care - examination room	4.5
Health-care - examination room in intensive care and high dependency ward	6
Health-care - all other *patient care areas* including wards and corridors	2.5
Kitchen and food preparation area	4
Laboratory - artificially lit to an ambient level of 400 lx or more	6
Library - stack and shelving area	2.5
Library - reading room and general areas	4.5
Lounge area for communal use in a Class 3 or 9c building	4.5
Museum and gallery - circulation, cleaning and service lighting	2.5
Office - artificially lit to an ambient level of 200 lx or more	4.5
Office - artificially lit to an ambient level of less than 200 lx	2.5

Space	Maximum *illumination power density* (W/m^2)
Plant room where an average of 160 lx vertical illuminance is required on a vertical panel such as in switch rooms	4
Plant rooms with a horizontal illuminance target of 80 lx	2
Restaurant, café, bar, hotel lounge and a space for the serving and consumption of food or drinks	14
Retail space including a museum and gallery whose purpose is the sale of objects	14
School - general purpose learning areas and tutorial rooms	4.5
Sole-occupancy unit of a Class 3 or 9c building	5
Storage	1.5
Service area, cleaner's room and the like	1.5
Toilet, locker room, staff room, rest room and the like	3
Wholesale storage area with a vertical illuminance target of 160 lx	4
Stairways, including *fire-isolated stairways*	2
Lift cars	3

Table Notes

(1) In areas not listed above, the maximum *illumination power density* is—

- (i) for an illuminance not more than 80 lx, 2 W/m^2; and
- (ii) for an illuminance more than 80 lx and not more than 160 lx, 2.5 W/m^2; and
- (iii) for an illuminance more than 160 lx and not more than 240 lx, 3 W/m^2; and
- (iv) for an illuminance more than 240 lx and not more than 320 lx, 4.5 W/m^2; and
- (v) for an illuminance more than 320 lx and not more than 400 lx, 6 W/m^2; and
- (vi) for an illuminance more than 400 lx and not more than 600 lx, 10 W/m^2; and
- (vii) for an illuminance more than 600 lx and not more than 800 lx, 11.5 W/m^2.

(2) For enclosed spaces with a Room Aspect Ratio of less than 1.5, the maximum *illumination power density* may be increased by dividing it by an adjustment factor for room aspect which is 0.5 + (Room Aspect Ratio/3).

(3) The Room Aspect Ratio of the enclosed space is determined by the formula: A/(H x C), where—

- (i) A is the area of the enclosed space; and
- (ii) H is the height of the space measured from the floor to the highest part of the ceiling; and
- (iii) C is the perimeter of the enclosed space at floor level.

(4) In addition to 2, the maximum *illumination power density* may be increased by dividing it by the *illumination power density* adjustment factor in Table J7D3b and Table J7D3c and where the control device is not installed to comply with J6D4.

(5) Circulation spaces are included in the allowances listed in the Table.

Specification 40 Lighting and power control devices

S40C1 Scope

[2019: Spec J6: 1]

This Specification contains the requirements for lighting and power control devices including timers, time switches, motion detectors and daylight control devices.

S40C2 Lighting timers

[2019: Spec J6: 2]

A lighting timer must—

(a) be located within 2 m of every entry door to the space; and

(b) have an indicator light that is illuminated when the artificial lighting is off; and

(c) not control more than—

(i) an area of 100 m^2 with a single push button timer; and

(ii) 95% of the lights in spaces of area more than 25 m^2; and

(d) be capable of maintaining the artificial lighting—

(i) for not less than 5 minutes; and

(ii) for not more than 12 hours if the timer is reset.

S40C3 Time switch

[2019: Spec J6: 3]

(1) A time switch must be—

(a) capable of switching on and off electric power at variable pre-programmed times and on variable pre-programmed days; and

(b) configured so that the lights are switched off at any time the space is designated to be unoccupied.

(2) A time switch for internal lighting must be capable of being overridden by—

(a) a means of turning the lights on, either by—

(i) a manual switch, remote control or an occupant sensing device that on sensing a person's presence, overrides the time switch for a period of up to 2 hours, after which if there is no further presence detected, the time switch must resume control; or

(ii) an occupant sensing device that overrides the time switch upon a person's entry and returns control to the time switch upon the person's exiting, such as a security card reader or remote control; and

(b) a manual "off" switch.

(3) A time switch for external lighting must be—

(a) configured to limit the period the system is switched on to between 30 minutes before sunset and 30 minutes after sunrise is determined or detected including any pre-programmed period between these times; and

(b) capable of being overridden by a manual switch, remote control or a security access system for a period of up to 8 hours, after which the time switch must resume control.

(4) A time switch for boiling water or chilled water storage units must be capable of being overridden by a manual switch or a security access system that senses a person's presence, overrides for a period of up to 2 hours, after which if there is no further presence detected, the time switch must resume control.

S40C4 Motion detectors

[2019: Spec J6: 4]

(1) In a Class 2, 3 or 9c *residential care building* other than within a *sole-occupancy unit*, a motion detector must—

(a) be capable of sensing movement such as by infra-red, ultrasonic or microwave detection or by a combination of these means; and

(b) be capable of detecting a person before they are 1 m into the space; and

(c) other than within a *sole-occupancy unit* of a Class 3 building, not control more than—

(i) an area of 100 m^2; and

(ii) 95% of the lights in spaces of area more than 25 m^2; and

(d) be configured so that the lights are turned off when the space is unoccupied for more than 15 minutes; and

(e) be capable of being overridden by a manual switch only enabling the lights to be turned off.

(2) In a Class 5, 6, 7, 8, 9a or 9b building, a motion detector must—

(a) be capable of sensing movement such as by infra-red, ultrasonic or microwave detection or by a combination of these means; and

(b) be capable of detecting—

(i) a person before they have entered 1 m into the space; and

(ii) movement of 500 mm within the useable part of the space; and

(c) not control more than—

(i) in other than a *carpark*, an area of 500 m^2 with a single sensor or group of parallel sensors; and

(ii) 75% of the lights in spaces using high intensity discharge; and

(d) be configured so that the lights are turned off when the space is unoccupied for more than 15 minutes; and

(e) be capable of being overridden by a manual switch that only enables the lights to be turned off.

(3) When outside a building, a motion detector must—

(a) be capable of sensing movement such as by pressure, infra-red, ultrasonic or microwave detection or by a combination of these means; and

(b) be capable of detecting a person within a distance from the light equal to—

(i) twice the mounting height; or

(ii) 80% of the ground area covered by the light's beam; and

(c) not control more than five lights; and

(d) be operated in series with a photoelectric cell or astronomical time switch so that the light will not operate in daylight hours; and

(e) be configured so that the lights are turned off when the area is unoccupied for more than 15 minutes; and

(f) have a manual override switch which is reset after a maximum period of 4 hours.

(4) When in a *fire-isolated stairway*, *fire-isolated passageway* or *fire-isolated ramp*, a motion detector must—

(a) be capable of sensing movement such as by infra-red, ultrasonic or microwave detection or by a combination of these means; and

(b) be capable of detecting—

(i) movement of 500 mm within the useable part of the space; and

(ii) a person before they have entered 1 m into the space; and

(c) be configured so that the lights dim to a 30% peak power or less when the space is unoccupied for more than 15 minutes.

S40C5 Daylight sensor and dynamic lighting control device

[2019: Spec J6: 5]

(1) A daylight sensor and dynamic control device for artificial lighting must—

(a) for switching on and off—

(i) be capable of having the switching level set point adjusted between 50 and 1000 lux; and

(ii) have—

(A) a delay of more than 2 minutes; and

(B) a differential of more than 100 lux for a sensor controlling high pressure discharge lighting, and 50 lux for a sensor controlling other than high pressure discharge lighting; and

(b) for dimmed or stepped switching, be capable of reducing the power consumed by the controlled lighting in proportion to the incident daylight on the working plane either—

(i) continuously down to a power consumption that is less than 50% of full power; or

(ii) in no less than 4 steps down to a power consumption that is less than 50% of full power.

(2) Where a daylight sensor and dynamic control device has a manual override switch, the manual override switch must not be able to switch the lights permanently on or bypass the lighting controls.