

Technical Data Sheet	NAG-P150-100
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Product Information

The NAG-P150-100 is a versatile pavement-light that is suitable for use in any location including roofs, floors and pavements, particularly in roadside locations that may be subject to heavy loads such as the wheels of delivery and emergency vehicles.

The NAG-P150-100 may be cast in-situ or precast and the bearings may be of any structural material such as brick or steel and the edges may be sealed using a variety of materials such as Sikaflex Pro-3 SL, Adcor ES and Nitoseal MBN2 & MB77.

The NAG-P150-100 is 110 mm thick with 100 mm square glass-lenses cast at 150 mm centres. The minimum bearing recommended is 100 mm and the light may be cast with an asphalt tuck if required. The NAG-P150-100 is also suitable for use as a smoke-vent.

Safe Span Tables

The NAG-P150-100 pavement-light is capable of supporting loads in excess of 100 kN and spanning wide openings. The maximum span that may be achieved is dependant on the load and below is a table that lists the maximum one-way and two-way spans for three of the most common load-cases.

All New Age Glass pavement-lights are checked by a Structural Engineer in accordance with BS8110-1:1997: Structural use of Concrete. The load-conditions shown have been tabulated in accordance to the categories listed under Table NA.2: of the NA to BS EN 1991-1-1:2002: Actions on structures. Contact New Age Glass if a special load-case is required.

Where these structures are used within concourses and public spaces, they are likely to be subject to inadvertent or deliberate synchronised movement by people causing dynamic excitation. The design provisions should take account of the nature and intended use of the structure, the potential number of people and their possible behaviour. Structural design should be carried out with the help of specialist advice and specialist guidance documents. (NA. 2.1.4)

Load Condition 1		Commercial and multiple occupancy	
All usage within self-contained dwelling units including student-accommodation, blocks of flats, dormitories, hotels, motels, hospitals, public-toilets, snooker-rooms, balconies., flat-roofs and walkways. Not suitable for where people may congregate.			
UDL kN/m ²	Point kN	Maximum Two-Way Span	Maximum One-Way Span
3.0	2.0	3150 mm	2550 mm
Load Condition 2		Communal Areas	
Areas where people may congregate including restaurants, reading-rooms, classrooms, fixed seating areas, corridors, museums, dance floors, concert halls and public areas subject to crowding.			
UDL kN/m ²	Point kN	Maximum Two-Way Span	Maximum One-Way Span
5.0	3.6	2850 mm	2250 mm
Load Condition 3		Highway Use	
Pavement-lights situated close to a road or access where heavy vehicles could park on the pavement-light. Inner London requirement.			
UDL kN/m ²	Point kN	Maximum Two-Way Span	Maximum One-Way Span
20.0	75.0	1650 mm	1200 mm

Frequently asked questions

What is Safe-Span?

The Safe-Span is the span of the glass-lenses and should not be confused with the Structural-Opening which is the span between the face of the bearings. The concrete-margin or kerb may be any dimension to suit the site conditions.

What does one-way and two-way spanning mean?

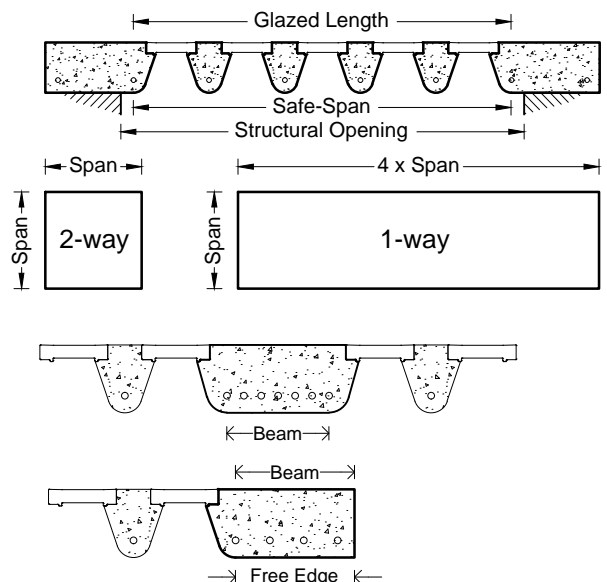
Two-way span is where the panel has the length and breadth of the glazed section of the panel in ratios up to 1:2. When the length exceeds this ratio, the panel is considered to be spanning one-way. The Safe-Load Tables show the Safe-Span for a square panel and a panel with a ratio of 1:4.

What if the required span exceeds the Safe-Span?

If the Safe-Span is exceeded, a beam is introduced to split the panel. The simplest method is the remove a row of the lenses and to introduce additional steel to support the pavement-light.

What if the panel has a free-edge such as a balcony?

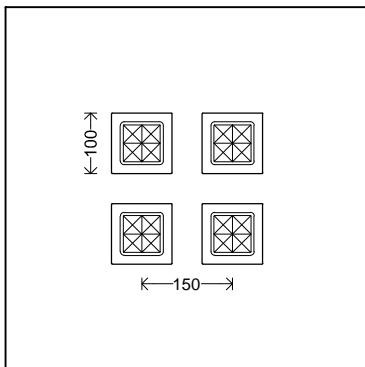
Edge-beams may be used where there are no bearings and the panel has a free edge



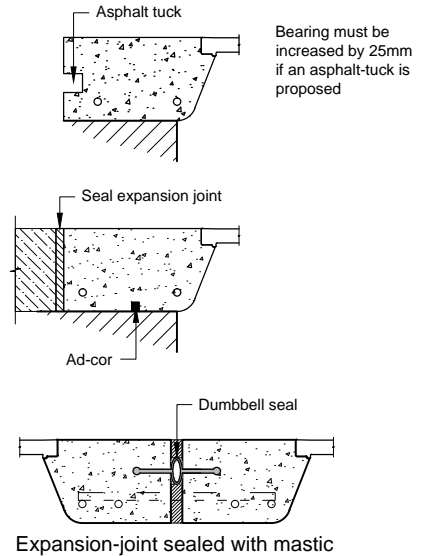
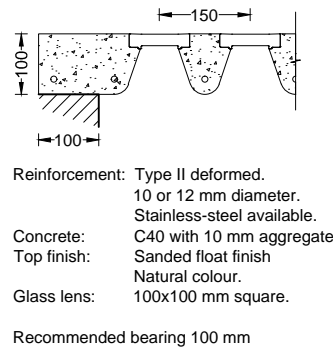
Properties		
Fire Rating	1-hour fire protection to grillage only. Glass unspecified.	Concrete cover to steel-bars allows for 1-hr fire-protection. Glass-lenses do not have a fire-rating
Thermal Transmittance	5.65 W/sq.m.K	Value for a m ² of the glazed-area of the pavement-light and includes the concrete grillage and Glass-lenses but no allowance made for the concrete-margin or kerb.
Self-weight	17.6 kN/sq.m (179.4 kg/sq.m)	Value for a m ² of the glazed-area of the pavement-light and includes the concrete grillage and Glass-lenses but no allowance made for the concrete-margin or kerb.
Light Transmittance	31.29 %	See calculation below

Structural Details

Important. A 10 mm (minimum) gap must be provided around every panel. This is to allow for expansion.



100 x 100 mm square-lens: 150-mm centres: 100-mm thick



Calculations

Dimensions	NAG-P150-100		
Depth of panel	t	110	mm
Lens Centres	c	150	mm
Number of units per sq.m	n	44.4	no.
Lens width	lg	100	mm
Area of glass	Ag	444444	mm ² n * lg * lg
Thickness of lens	tg	20	mm Measured
Volume of concrete	Vc	0.00154	cu.m Measured
Ratio of glass to concrete	r	0.44	

Light Transmittance			
Glass Light Transmittance	Ltr.g	78.0	
Area of glass	A	401111	mm 5 mm for lip
Resultant light transmittance	L.tr	31.29	% A * Ltr.g

Self Weight					
Mass of glass	mg	0.56	kg	Measured	
Mass of concrete	mc	3.48	kg	Vc * 2260 E-9	
Mass per unit	mu	4.04	kg	Vg.mg + Vc.mc	
Self-weight	sw	179.37	kg/m ²	n * mu	

Thermal Resistance									
Unit u-values		Glass Lens			Concrete			Rib	
		d	λ	R			d	λ	R
	rsi			0.100		rsi			0.100
Glass	tg	20	0.800	0.025	Concrete	tc	110	2.30	0.048
	rse			0.040		rse			0.040
Total resistance				Rg	0.165				
Unit u-value				ug	6.061				
Resultant U-Values									
Glass	Ug	2.694		ug * Ag					
Rib	Ur	2.958		ur * Ac					
Total u-value	U	5.651		W/m ² .K					
							Rr	0.188	
							ur	5.324	
							W/m ² .K		

