

Outdoor Emergency Lighting Application Guide



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Outdoor Emergency Lighting Application Guide

Introduction

Traditional emergency lighting and exit signs have been primarily focused on guiding the interior occupants of a building to the nearest exit in the event of an emergency. Today, an additional emphasis is being placed on not only getting occupants to the exit of the building, but also getting them to and along a path of safety once they are out of the building.

The NFPA Life Safety Code requires emergency illumination of the path of egress away from the building (exit discharge) and leading *“to a public way.”* The safe public area or *“public way”* is described in the code as *“a street or alley or other similar parcel of land essentially open to the outside air deeded dedicated or otherwise permanently appropriated to the public for public use and having a clear width and height...”*

Outdoor emergency applications fall into two categories: damp location or wet location. According to Chapter 1, Article 100 of the 2002 National Electric Code, damp locations include *“...partially protected locations under canopies, marquees, roofed open porches, and like locations...”* whereas wet location is partially defined as *“...locations subject to saturation with water or other liquids, such as vehicle washing areas; and in unprotected locations exposed to weather.”*

Lithonia Lighting is pleased to provide this Outdoor Emergency Lighting Application Guide as a resource to identify our complete list of solutions for outdoor emergency applications, including both *normally on* outdoor fixtures that switch to emergency mode when needed, or *normally off* fixtures designed only to provide emergency lighting.

Power Sources

Traditional Building Mounted Fixtures on generators or AC power systems can be used for both normal and emergency egress lighting. An emergency generator provides continuous AC power to the fixtures on the emergency circuit(s) during loss of normal power. An AC power system utilizes batteries and converts DC to AC power for the fixtures on the emergency circuit(s) during loss of normal power.

When using incandescent or fluorescent lamps for emergency egress lighting, an emergency generator or interruptible AC power system can be used. If using HID lamps, a fast transfer AC power system or uninterruptible power supply is required to switch the power quick enough so that the HID lamp does not lose its arc and extinguish.

Power Source System Type	Lamp Type	Lamp Watt	Start Temp (f)*	Lamp Life (in hours)*	Lamp Lumens (initial)*
Generator/Interruptible AC Power System	Incandescent	74 A19	n/a	750	1,210
	Compact Fluor.	100 A19	n/a	750	1,750
		26 DTT	-5 ⁰	10,000	1,800
		28 DTT	-20 ⁰	10,000	1,600
		26 TRT	-5 ⁰	12,000	1,800
		32 TRT	-5 ⁰	12,000	2,400
		42 TRT	-5 ⁰	12,000	3,200
Fast Transfer AC Power System	HPS	35 S	-40 ⁰	16,000	2,250
		50 S	-40 ⁰	24,000	4,000
		70 S	-40 ⁰	24,000	6,300
		100 S	-40 ⁰	24,000	9,500
		150 S	-40 ⁰	24,000	15,800
		200 S	-40 ⁰	24,000	22,000
	Metal Halide	250 S	-40 ⁰	24,000	29,000
		50 M	-20 ⁰	7,500	3,450
		70 M	-20 ⁰	10,000	5,200
		100 M	-20 ⁰	10,000	8,500
		150 M	-20 ⁰	10,000	13,300
		175 M	-20 ⁰	10,000	12,800
		250 M	-20 ⁰	10,000	20,000
*Information taken from various lamp manufactures literature.					

Normally On Outdoor Emergency Lighting Options

Integral Emergency Battery Pack – ELDW/ELDWC

The ELDW (ELDWC for cold weather applications) option is an integral emergency battery pack that operates compact fluorescent lamps at a reduced lumen output for a minimum of 90 minutes. When AC power is restored, the ELDW returns to charging mode and will be completely re-charged in 24 hours.

With the ELDW option, an indicator light and test switch are provided with the fixture. When AC power is applied, the indicator light is illuminated. The test switch provides a means for checking the emergency battery pack to make sure that it is functioning properly. Although no routine maintenance is required to keep the emergency battery pack functional, it is required that the emergency operation be tested at 30-day intervals for a minimum of 30 seconds and that a 90 minute discharge test be completed once a year.

The ELDW option is UL listed for wet locations and is rated to operate in ambient temperatures down to 32°F (0°C). These battery packs have a life expectancy of 7 to 10 years. The ELDWC option operates in ambient temperatures down to -4°F (-20°C).

	ELDW				ELDWC (Cold Weather)		
	Gateway® VGR1C, VGR2C	Architectural Sconce WSR, WST	Aeris™ ASW	Emergency Light Output	Architectural Sconce WSR, WST	General Purpose TWP	Emergency Light Output*
<i>Lamp Options (# of lamps/wattage)</i>							
13DTT (one lamp)	X			350	X		700
2/13DTT	X			425			
18DTT (one lamp)	X			300	X		900
2/18DTT	X			525			
26DTT (one lamp)	X			450	X		700
2/26DTT		X	X	725			
26TRT (one lamp)	X			450	X		700
32TRT (one lamp)	X	X	X	575	X		1250
42TRT (one lamp)	X	X	X	750	X	X	1250

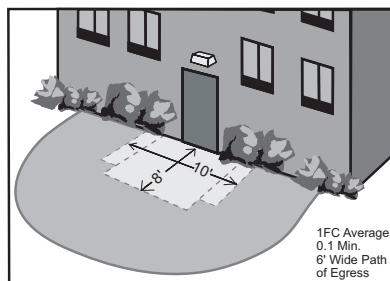
* Total light output from lamp(s) @ 25° C ambient

The ELDW option is currently available in the Aeris ASW product, Architectural Sconce WSR and WST products, and Gateway VGR1C and VGR2C products. The ELDWC option is available in our Architectural Sconce WSR and WST products. The chart above summarizes the lamp wattage capability for products with the ELDW/ELDWC options as well as our general purpose TWP fixtures.

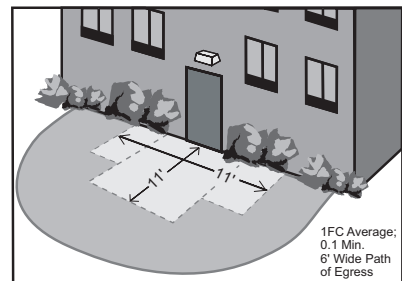
Light output registers at 25°C ambient.

The amount of emergency illumination provided is dependent on the number, wattage and type of lamps selected, and the lamp manufacturer. Initial emergency illumination provided is typically

350 to 1250 lumens (*refer to chart above for specific lamp types*). If (2) 26-watt lamps are selected, light output is evenly divided between the lamps for 725 total lumens.



WSR with ELDW (2/26 DTT)

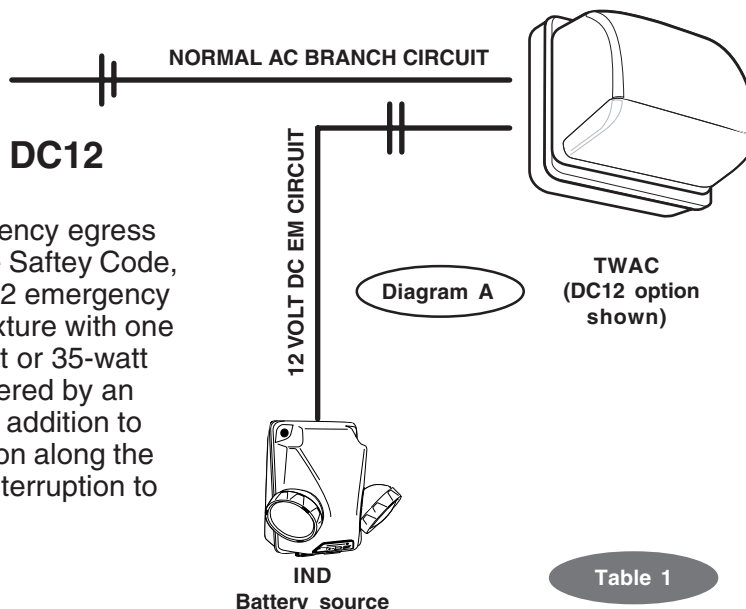


WST with ELDW (42TRT)

Normally On Outdoor Emergency Lighting Options

Emergency Circuit 12-Volt – DC12

To address the growing need of emergency egress lighting and the requirements of the Life Safety Code, Lithonia Lighting now provides the DC12 emergency circuit option. This feature equips the fixture with one or two 12-volt DC bayonet base 20-watt or 35-watt MR11 lamps. Low-voltage lamps, powered by an external battery source, are provided in addition to the HID lamps and will supply illumination along the path of egress when there is a power interruption to the primary HID source.



In a typical application, the emergency 12-volt power would be supplied from a battery source external to the fixture, usually located within the building by an emergency lighting unit such as Lithonia's Indura or Titan Series (*refer to diagram A above right*). Labeled leads that connect to the battery source are provided.

Table 2 below illustrates the distance, by wire size, allowed between the battery source and emergency luminaire at 5% maximum voltage drop per National Electric Code.

Table 1

DC Options	Initial Lumens (per lamp)	LAMP TYPE	
		10° Spot	29° Flood
DC2012 (1) 20W lamp	350		X
2DC2012 (2) 20W lamps	350	X	X
DC12 (1) 35W lamp	660		X
2DC12 (2) 35W lamps	660	X	X

12-VOLT DC VOLTAGE DROP TABLE

Distance between battery pack & luminaire
(5% maximum voltage drop)

Table 2

Wire Size	DC2012 (1) 20W lamp	2DC2012 (2) 20W lamps	DC12 (1) 35W lamp	2DC12 (2) 35W lamps
16 AWG	35'	15'	20'	10'
14 AWG	50'	25'	30'	15'
12 AWG	85'	40'	50'	25'
10 AWG	140'	70'	80'	40'

If using an HID source as your primary lamp, it is recommended that a time delay (TD) option be used in the emergency lighting unit so that the DC12 lamp stays on until the HID lamps come up to full brightness. The chart below outlines a few of the battery sources available from Lithonia Emergency Systems that will work in conjunction with the DC12 option in Lithonia HID products.

Table 3

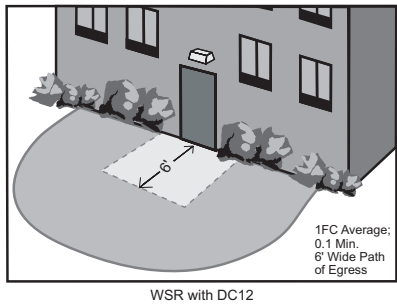
Lithonia Emergency Products

Series	Nomenclature	Lamp Heads Watts/lamp	Output Volts	Remote Wattage Available
Indura	IND12150 XTRA	9	12	132
Titan	ELT125 TD	12	12	101

Other Emergency products available; please refer to the PSG or www.lithonia.com.

Normally On Outdoor Emergency Lighting Options

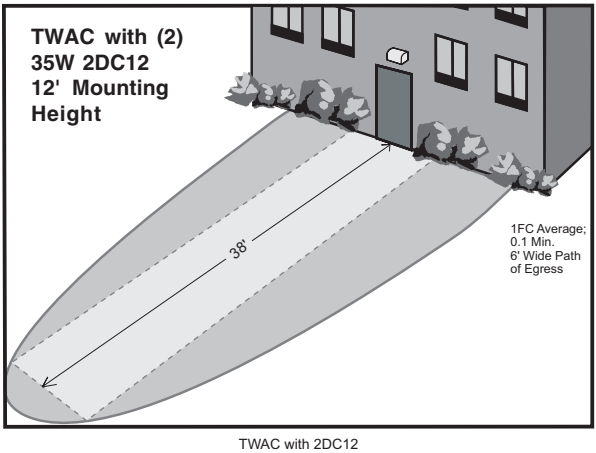
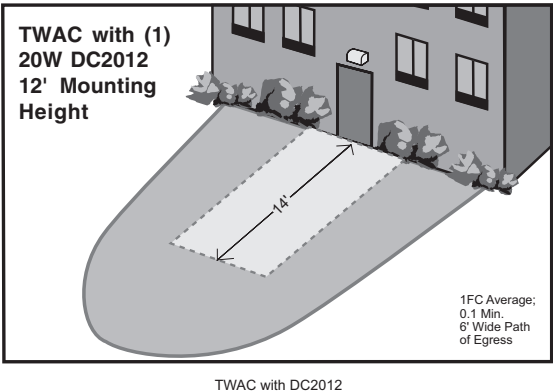
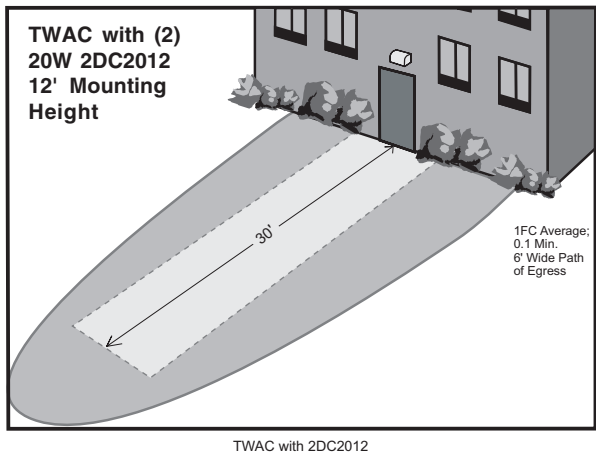
Aeris, Architectural Sconces and TWAC – DC12



Aeris ASW and Architectural Sconces (WSR and WST) are available with either (1) 35-watt or (2) 20-watt MR11 lamps that fit into the same area on the reflector tray as the test switch and indicator light for the integral battery pack. The application information to the left demonstrates the area of coverage with the Architectural Sconce mounted at 12', while the DC12 option is in operation.

The DC12 option is available in the TWAC with either 20 or 35-watt lamps in one- or two-lamp configurations. The DC12 lamps mount to a special fixed bracket attached to the component cover on either side of the main reflector. Table 1 on page 4 details the ordering information for each option and the lamp data specific to that option. Providing two lamps will prevent leaving an area in total darkness if one of the lamps should fail.

The application information below demonstrates the area of coverage for each option.



Normally On Outdoor Emergency Lighting Options

Emergency Circuit – EC

The EC option provides a separate, normally off 120-volt quartz or incandescent double contact bayonet socket that can be connected to the generator or AC power system. The light output of the emergency lamp in the EC option is usually less than the light output of the normal lamp in the fixture. The EC option is available in many of our Outdoor products, including area lighting, floodlighting, building mounted and rough service. However, because there is a range of lamp wattages capable of operating the EC circuit, the lamp provided (*or supplied by others*) with the option does vary among these different product types. Following is the information regarding the maximum emergency lamp wattage capability and availability with each product type:

Area Lighting:

<i>Product Family</i>	<i>Wattage Capability (max.)</i>	<i>Lamp Included</i>	<i>Socket Type</i>
AS	100W (AS1) 250W (AS2)	No	DC Bayonet
KSE	250W	No	DC Bayonet
KSF	250W	No	DC Bayonet
KAD	250W	No	DC Bayonet
KVF	250W	No	DC Bayonet
KVS	250W	No	DC Bayonet
KVE	250W	No	DC Bayonet
KVR	250W	No	DC Bayonet
KAR	250W	No	DC Bayonet
KKS	250W	No	DC Bayonet
KKR	250W	No	DC Bayonet
KQS	250W	No	DC Bayonet

Building Mounted:

<i>Product Family</i>	<i>Wattage Capability (max.)</i>	<i>Lamp Included</i>	<i>Socket Type</i>
ASW	100W	No	DC Bayonet
WSR, WST	25W	Yes	DC Bayonet
WFL3	100W	No	DC Bayonet
TWH	250W	No	DC Bayonet
TWP	150W	No	DC Bayonet
TWA, TWAC	100W	No	DC Bayonet

Rough Service:

<i>Product Family</i>	<i>Wattage Capability (max.)</i>	<i>Lamp Included</i>	<i>Socket Type</i>
VGR1C, VGR2C	25W	Yes	DC Bayonet
VGO1C, VGO2C	25W	Yes	DC Bayonet
VGO3C	25W	Yes	DC Bayonet
























Floodlighting:

<i>Product Family</i>	<i>Wattage Capability (max.)</i>	<i>Lamp Included</i>	<i>Socket Type</i>
TFA	250W	No	DC Bayonet
TFL	250W	No	DC Bayonet
TFR	250W	No	DC Bayonet
KFL3	100W	No	DC Bayonet
ASF2	400W	No	DC Bayonet

Normally On Outdoor Emergency Lighting Options

Overview by Product

The following is an overview of outdoor fixtures that are available with emergency lighting options; for other fixtures refer to lithonia.com or the Product Selection Guide:

	Fixture		Description	EC	ELDW (emergency battery pack)	DC12
Area Lighting	Aeris™ Area AS		Architectural Die-cast Size 1 & 2	X		
	KSE		Square Size 1 & 2	X		
	KSF		Rectangular Size 1, 2 & 3	X		
	Contour® KAD		Soft-Corner Square Flat Lens	X		
	KAR		Round Size 1, 2 & 3	X		
	KVF		Square	X		
Building Mounted	Aeris™ Wall ASW		Architectural	X	X	X
	WSR		Decorative	X	X	X
	WST		Decorative	X	X	X
	WFL (size 3 only)		Architectural	X		
	Contour® TWAC		Cutoff Mini	X		X
	Contour® TWA		Mini	X		
	TWH		Glass Refractor	X		
	TWP		Polycarbonate Refractor	X		
Floodlighting	Aeris™ Flood* ASF (size 2 only)		Architectural	X		
	KFL (size 3 only)		Architectural	X		
	Contour® TFA		Large	X		
	Contour® TFR		Medium	X		
	Contour® TFL		Medium	X		
Rough Service	Gateway® VGR2C		Round Eyelid	X	X	
	Gateway® VGO1C		Oval Open Face	X	X	
	Gateway® VGO2C		Oval Horizontal Eyelid	X	X	
	Gateway® VGO3C		Oval Vertical Eyelid	X	X	

*Aeris Flood (ASF) will be available in 2006.












Normally Off Outdoor Emergency Lighting Options

Remote Fixtures

In general, remote fixtures offer advantages such as lower initial costs and better aesthetics compared to typical emergency battery units. These advantages are more prevalent in environments that require special ratings such as wet location and NEMA 4X, or in areas where ambient temperatures can diminish capacity or life. Both occurrences are common with the exit discharge.

In many instances, the battery unit can be installed in a normal or conditioned environment with the remote heads located in the areas that require special ratings.

The chart on this page details normally off remote fixtures that may be used in damp or wet locations as well as popular sealed beam recessed remote heads. Lamp type, voltage and wattage can be found in the Product Selection Guide and on the specific product specification sheets. The stand-alone units listed on the following page can be used to run the remote fixtures.





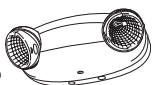
Fixture		Description	Wet	Damp	Cold Weather
Remote Fixtures	ELA AFN DB 	Architectural die-cast	X	X	X (-40°C to 60°C)
	ELA OSL 	Recessed outdoor step light Die-cast aluminum 12V	X	X	
	ELA Core Light 	Recessed round outdoor core light, Die-cast aluminum 6V, 12V	X	X	
	ELA OMC* 	Surface-mount outdoor mini cylinder, die-cast aluminum 6V, 12V	X	X	
	ELA WP 	Surface-mount weatherproof aluminum 12V	X	X	
	ELA NX* 	Surface-mount wet location sealed glass 6V, 12V	X	X	
	ELA Z 	Surface-mount Class 1, Div. 2 Haz. location, sealed glass 6V, 12V	X	X	
	ELA RG 	Recessed Gimbal PAR36 SB lamp up to 25W			
	6" ELA OC 3" ELA LV3 OC 	PAR36 SB lamp up to 25W MR16 SB lamp up to 20W			
	6" ELA SB 3" ELA LV3 SB 	PAR36 SB lamp up to 25W MR16 SB lamp up to 20W			
	6" ELA EB 3" ELA LV3 EB 	PAR36 SB lamp up to 25W MR16 SB lamp up to 20W			

*These remote fixtures are offered in single and double head versions.

Normally Off Outdoor Emergency Lighting Options

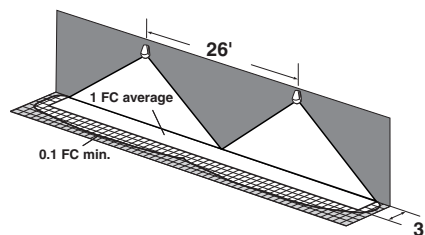
Stand-Alone Units

Not only can your unit equipment be used as a power source, but it can be used as stand-alone equipment. The chart below is an overview of stand-alone emergency units that are suitable for outdoor use; for other fixtures refer to www.lithonia.com or the Product Selection Guide.

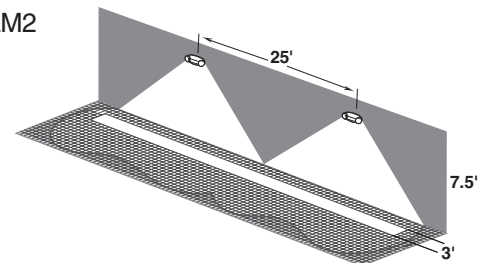
Fixture	Description	Wet	Damp	Cold Weather	NEMA 4X/IP66
AFN DB EXT	 Architectural die-cast emergency unit	X	X	X (-18°C to 50°C)	
IND618-6100 IND1236-12450 IND24100-2450	 Industrial emergency unit		X	X (ULT package) (-40°C to 55°C)	
INDX618-6100 INDX1236-12125 INDX24100	 Industrial NEMA 4X emergency unit	X	X	X (ULT package) (-40°C to 55°C)	X
ELM ELM2	 Thermoplastic emergency unit		X		
ELM618-654 ELM1254-1272	 High-capacity thermoplastic emergency unit		X		

PERFORMANCE

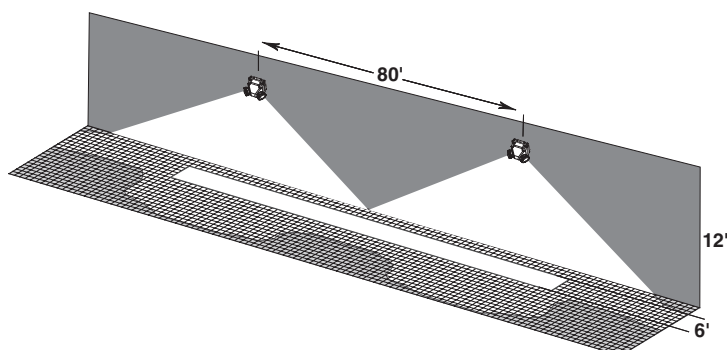
AFFINITY



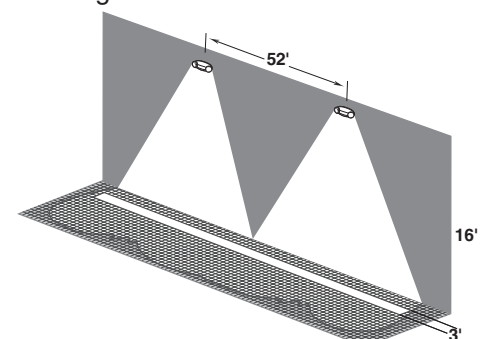
ELM2



INDURA



ELM6 Halogen



Life Safety Code® (NFPA 101®)

Section 3.3.151 Means of Egress:

A continuous and unobstructed way of travel from any point in a building or structure to a public way consisting of three separate and distinct parts: (1) the exit access, (2) the exit, and (3) the exit discharge.

Section 3.3.193 Public Way:

A street, alley, or other similar parcel of land essentially open to the outside air deeded, dedicated, or otherwise permanently appropriated to the public for public use and having a clear width and height of not less than 10 ft (3050 mm).

Section 7.9 Emergency Lighting:

7.9.1.2 ... exit discharge shall include only designated stairs, ramps, aisles, walkways, and escalators leading to a public way.

Section 7.9.2 Performance of System:

7.9.2.1 Emergency illumination shall be provided for not less than 1-1/2 hours in the event of failure of normal lighting. Emergency lighting facilities shall be arranged to provide initial illumination that is not less than an average of 1 ft-candle (10.8 lux) and, at any point, not less than 0.1 ft-candle (1.1 lux), measured along the path of egress at floor level. Illumination levels shall be permitted to decline to not less than an average of 0.6 ft-candle (6.5 lux) and, at any point, not less than 0.06 ft-candle (0.65 lux) at the end of the 11D 2 hours. A maximum-to-minimum illumination uniformity ratio of 40 to 1 shall not be exceeded.

Since exit discharge is one of the three components defined as the “means of egress” per 3.3.151 of the Life Safety Code and since 7.9.1.2 also includes exit discharge, many authorities having jurisdiction have concluded that the lighting levels of 7.9.2 apply in full. *Note: Variations may exist depending upon the interpretation of codes in your area.*

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