

# The Company

Manufacturing Innovative Products For Over 80 Years



## Over 80 Year History

From 1935 to today

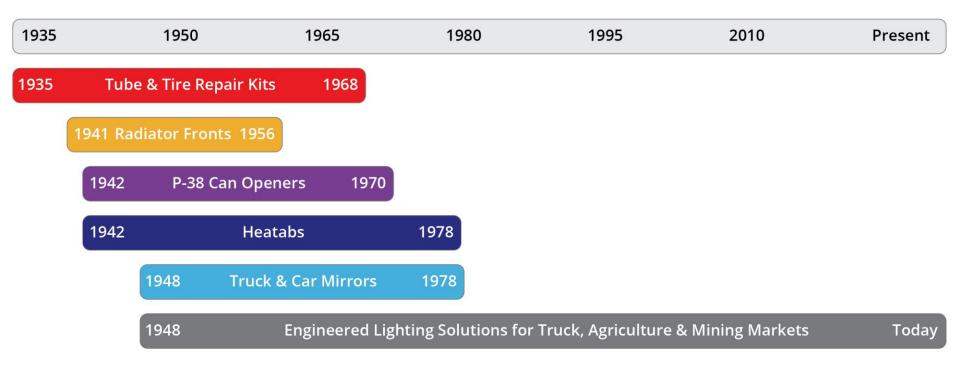
#### Our History



- ✓ Today, J.W. Speaker Corporation is family-run business.
- ✓ Leaded by Tim and Jamie Speaker with their management team
- ✓ Developing world leading LED forward lighting for key OEM wordwide
- ✓ Growning into the aftermarket with the latest LED preformace technology
- ✓ Expanding into different markets around the global as a key brand
- ✓ Work closely with our Key OEM and aftermarket distributors to develop world first LED headlamps, worklamps and safety products
- ✓ To meet all our customers need and wants with lates technology in LED lighting

#### Our History









## Manufacturing

#### U.S.A. fully Manufacture



- ✓ Fully design and manufactured in the U.S.
- ✓ Employ 500 with Design, Optic, Software, Production and Manufacture engineers
- ✓ Fully approved labs
- ✓ Test to all global standards for lighting
- ✓ Two manufacturing sites in Germantown one for OEM and Aftermarket sales
- ✓ Improvement with the latest technology equipment and software
- ✓ Head Office and Production in Germantown U.S.A.

## U.S.A. fully Manufacture







# Industrial Lighting

#### **Industrial Lighting**



✓ J.W. Speaker Industrial LED Lighting range covers for all application from forward white to specialize warning product.



























# High Quality LED Lighting

- Safety
- Operational Productivity
- Low Maintenance

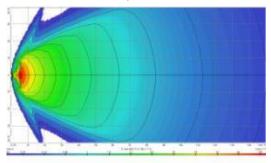


#### Raw Vs Effective LED Lumen





Isolux charts are directly related to the EFFECTIVE Lumen output



#### RAW

The RAW lumen output is calculated by simply taking the number of LED's in the lamp and multiplying by LED rated output.

- ✓ 8 LED's rated at 100 lumens per watt
- √ 8 x 100 = 800 RAW lumens

#### **RAW**

The effective lumen output is calculated by taking the RAW lumen value and subtracting the Thermal, Optical and assembly losses.

- ✓ RAW lumens = 800
- ✓ Subtract Thermal, Optical and Assembly Losses = 40%
- ✓ Effective lumens = 480 lumens

#### IP Rating



#### **IP ratings (International Protection Rating)**

- ✓ This system uses a two-digit code to specify the degree of particle and water resistance of a luminaire.
- ✓ The first digit indicates the degree of protection of interior from the ingress of solid foreign objects.
- ✓ The second digit indicates the degree of protection of the interior from the ingress of water.

#### First Number

Complete protection against entry of dust.

**IP67** 

#### **Second Number**

Protection from immersion in water up to 1 meter.

**IP67** 

## IP Rating



Level	Object size protected against	Effective against	
0	_	No protection against contact and ingress of objects	
1	>50 mm	Any large surface of the body, such as the back of a hand, but no protection against deliberate contact with a body part	
2	>12.5 mm	Fingers or similar objects	
3	>2.5 mm	Tools, thick wires, etc.	
4	>1 mm	Most wires, screws, etc.	
5	Dust protected	Ingress of dust is not entirely prevented, but it must not enter in sufficient quantity to interfere with the satisfactory operation of the equipment; complete protection against contact (dust proof)	
6	Dust tight	Io ingress of dust; complete protection against contact (dust tight)	

## IP Rating



Level	Protected against	Testing for	Details
0	Not protected		-
1	Dripping water	Dripping water (vertically falling drops) shall have no harmful effect.	Test duration: 10 minutes Water equivalent to 1 mm rainfall per minute
		Vertically dripping water shall have no harmful effect when the enclosure is tilted at an angle up to 15° from its normal position.	Test duration: 10 minutes Water equivalent to 3 mm rainfall per minute
3	Snraving water	Water falling as a spray at any angle up to $60^\circ$ from the vertical shall have no harmful effect.	Test duration: 5 minutes Water volume: 0.7 litres per minute Pressure: 80–100 kPa
4	Splashing of water	Water splashing against the enclosure from any direction shall have no harmful effect.	Test duration: 5 minutes Water volume: 10 litres per minute Pressure: 80–100 kPa
5	M/ateriets	Water projected by a nozzle (6.3 mm) against enclosure from any direction shall have no harmful effects.	Test duration: at least 3 minutes  Water volume: 12.5 litres per minute  Pressure: 30 kPa at distance of 3 m
6		Water projected in powerful jets (12.5 mm nozzle) against the enclosure from any direction shall have no harmful effects.	Test duration: at least 3 minutes Water volume: 100 litres per minute Pressure: 100 kPa at distance of 3 m
6K	· ·	Water projected in powerful jets (6.3 mm nozzle) against the enclosure from any direction, under elevated pressure, shall have no harmful effects.	Test duration: at least 3 minutes Water volume: 75 litres per minute Pressure: 1000 kPa at distance of 3 m
7	Immersion up to 1 m	Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1 m of submersion).	Test duration: 30 minutes Immersion at depth of at most 1 m measured at bottom of device, and at least 15 cm measured at top of device
8	Immersion beyond 1 m	The equipment is suitable for continuous immersion in water under conditions which shall be specified by the manufacturer. However, with certain types of equipment, it can mean that water can enter but only in such a manner that it produces no harmful effects.	Test duration: continuous immersion in water Depth specified by manufacturer, generally up to 3 m
9K	Powerful high temperature	Rating for high-pressure, high-temperature wash-down applications. Such enclosures must not only be dust-tight but it must also be able to withstand high-pressure and steam cleaning.	The test specifies a spray nozzle that is fed with 80°C water at 8000 kPa and a flow rate of 14–16 L/min. The nozzle is held 10–15 cm from the tested device at angles of 0°, 30°, 60° and 90° for 30 seconds each.
			The test device sits on a turntable that rotates once every 12 seconds (5 rpm).

#### Types of EMI – Radio Interference



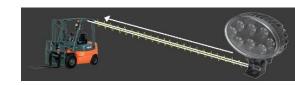
#### **Radiated Emissions**

- ✓ The electromagnetic noise our product emits through the air
- ✓ Can interfere with cell phones, AM/FM radios, 2-way radios, etc

# 

#### **Conducted Emissions**

- ✓ Noise from our lamp that is conducted down the wire
- ✓ Can interfere with other electronics on the vehicle



#### Types of EMI – Radio Interference



#### **Radiated Immunity**

- ✓ Tolerance of our lamps to electromagnetic signals in the atmosphere
- ✓ Any broadcast signal (cell phone, radio towers, other non-compliant electronics, etc.) can interfere with our lamps if not designed properly



#### **Conducted Immunity**

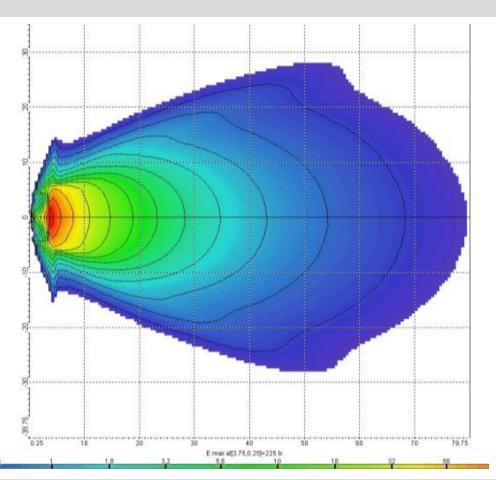
- ✓ Tolerance of our lamps to noise conducted on the vehicle power lines
- ✓ Transients (load dump, inductive coupling, fast transients), BCI (bulk current injection), intermittent power, etc. are all example that fall under the Conducted Immunity category.





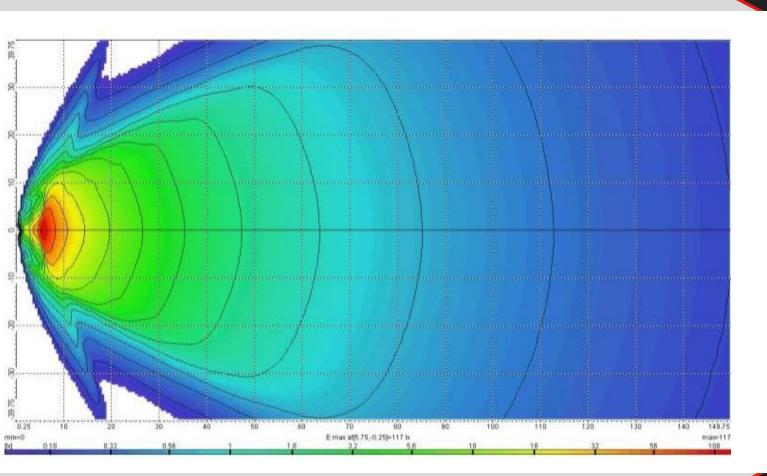
- ✓ All quality lighting manufacturing company use lighting mapping and they all is base on Lux (not lumens)
- ✓ They are all different with wording of patterns
- ✓ They are all different for high and degree of angle.
- ✓ The most important this with respectable lighting company we will always advise you
- ✓ It is important for you to ask this question





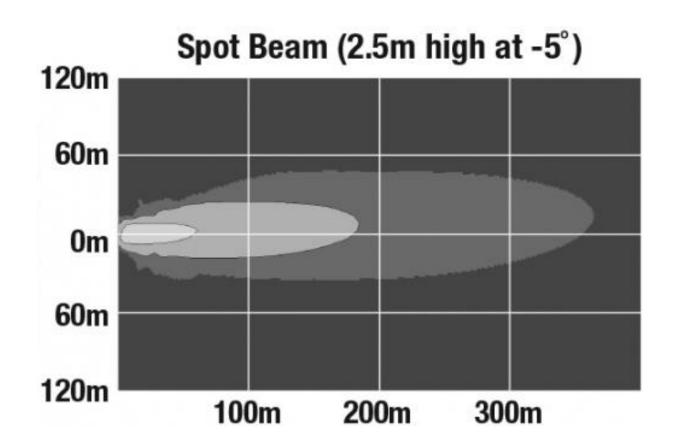
2.5m high at 20 degrees



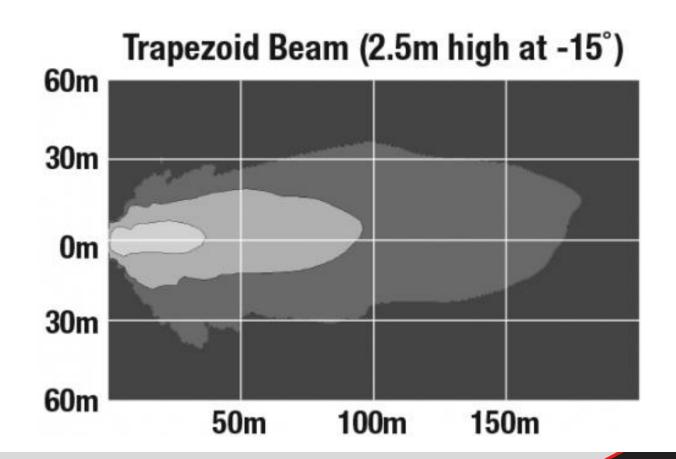


2.5m high at 10 degrees

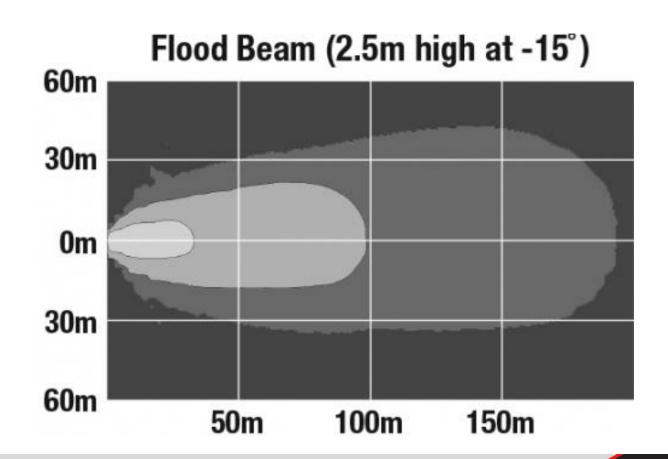








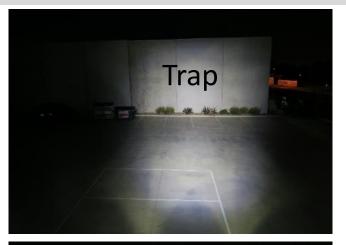














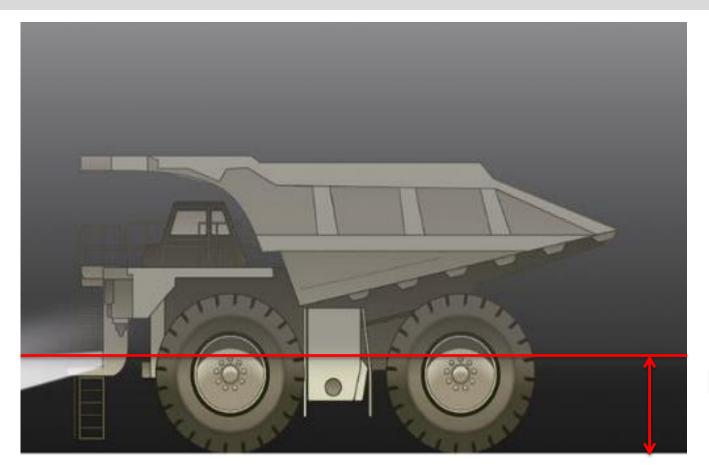


526 Beam Range



- ✓ Fog is made up of water particles and cannot be penetrated. All light is reflected.
- ✓ Amber light reduces the brightness of the reflection but is 30% less brighter than white on the road.
- ✓ With the correct optics lighting up under the fog, white is far more effective.



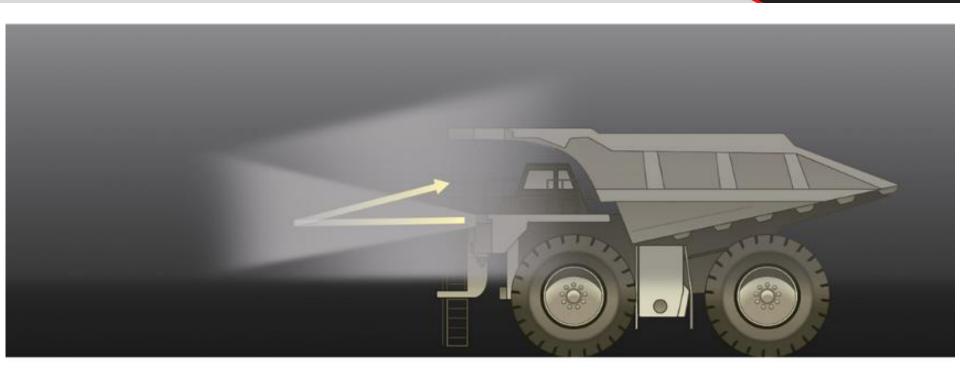


Fog come down to 0.5 to 0.8m



- ✓ Traditional lights mounted high on the truck are immersed in fog.
- ✓ These reflect a lot of stray light back into the driver's eyes.
- ✓ Only a very small amount of light reaches the road but is overpowered by the amount of reflected light.



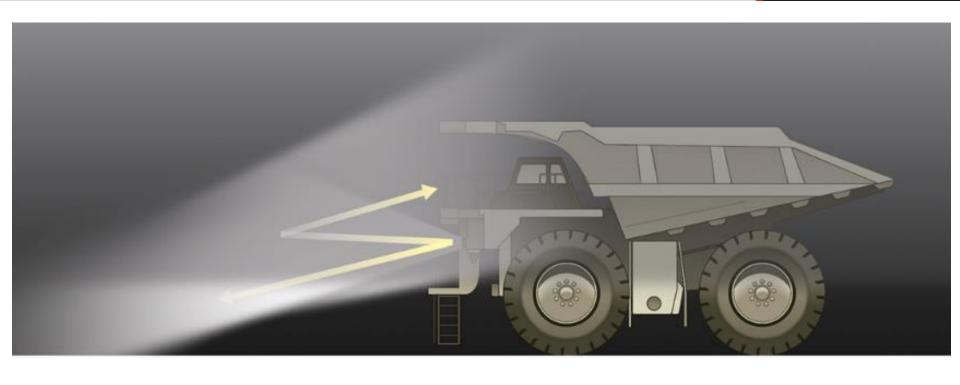


Traditional lights mounted high in Fog



- ✓ Traditional lights mounted lower on the truck are partially immersed in fog.
- ✓ Part of the beam penetrates the fog and makes it to the roads surface while a part of the beam is reflected back into the driver's eyes.





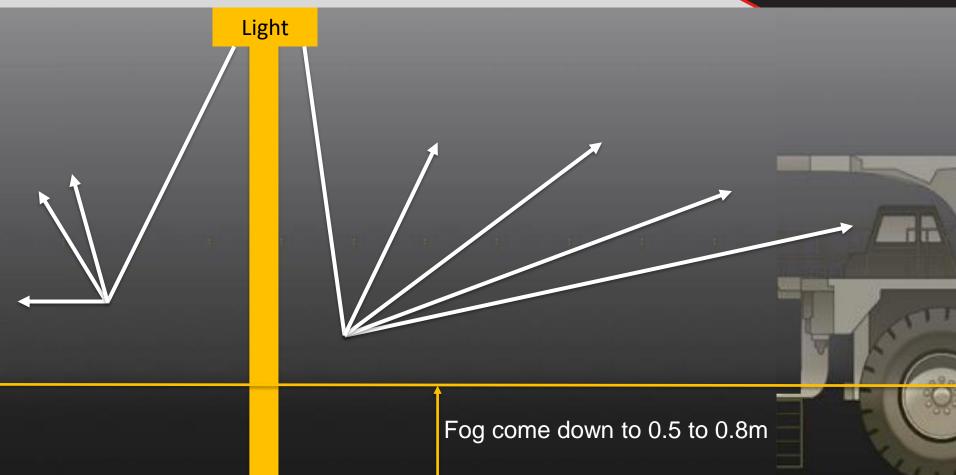
Traditional lights mounted lower in Fog



- ✓ J.W. Speaker fog lights, mounted at the lowest point on the truck have a beam pattern that is wide and thin and is designed to position the light under the fog.
- ✓ The very low amounts of stray light from the optics result in minimal reflection into the driver's eyes.

## Understanding Fog on Poles Light





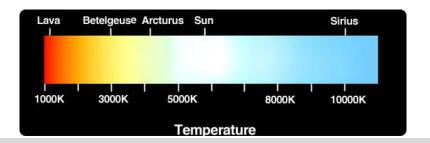
#### Pole Lighting



✓ For Poles mounted lighting hi in the fog the higher the color temperature the more glare happens

✓ More lumens more glare

✓ Facts are if you try more whiter color or more lumens in
fog it will reflect off the fog in many direction causing glare





#### Lumens

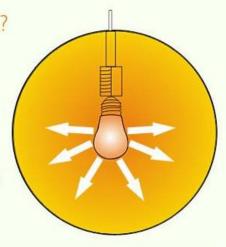


#### What is Lumen and Luminous Flux?

**Luminous Flux** (symbol  $\Phi$ ) is the amount of visible light emitted by a light source per second.

Unit: Lumen (Im)

**Lumen** = Light Output = **Brightness** 

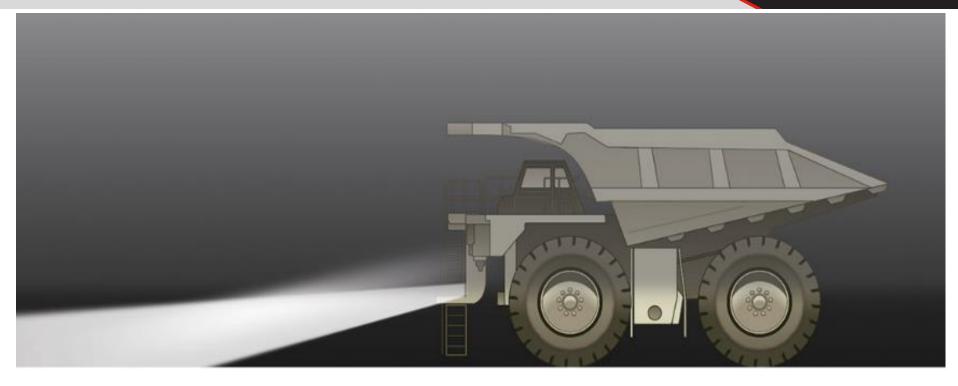


The higher the lumen value, the brighter the bulb

Lumen +

More Lumens More Glare In Fog

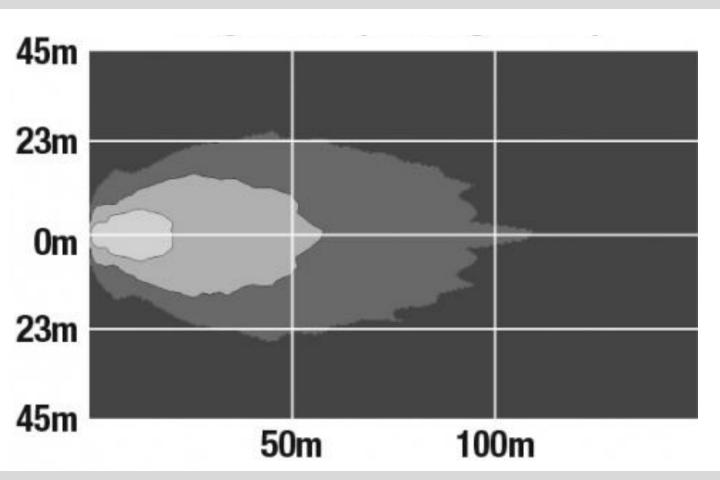




J.W. Speaker fog lights, mounted at the lowest point on the truck

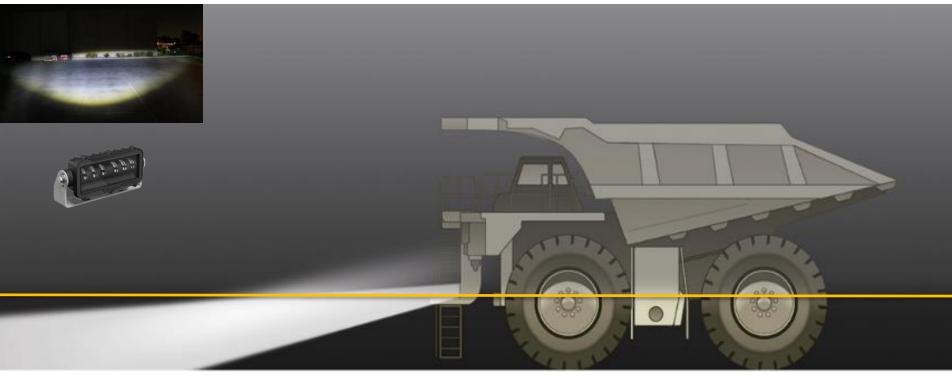
## Our Fog





#### Correct Fog Lamp Mounted





527 Fog Lamp correct fog lamp for Haul Trucks

# Key Industrial Product Work Lamps























# Key Industrial Warning Product



















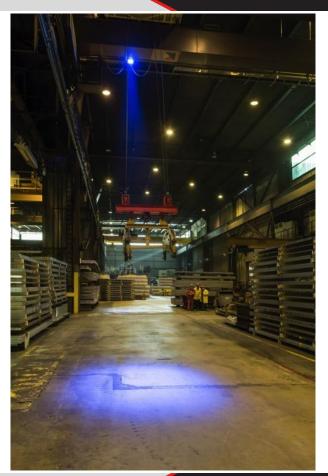




# Key Industrial Warning Product







# Key Industrial Headlamps

















#### Key Industrial Fog Lamps





527 – 12-24V Amber & Fog White



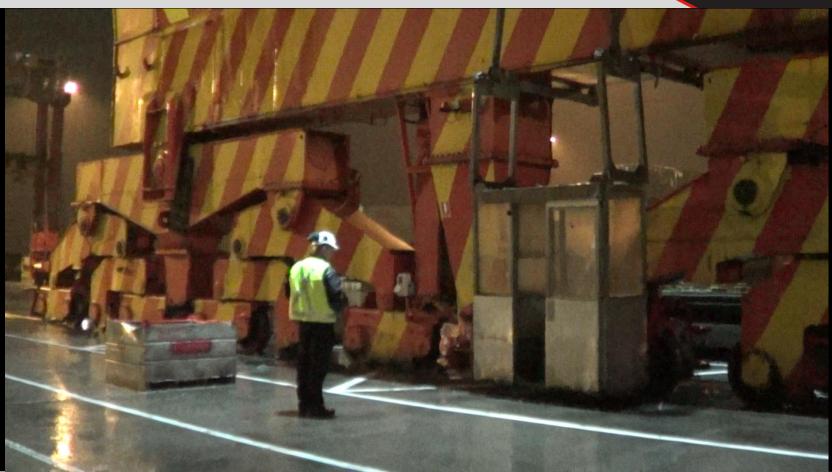
6150 – 12V White – Fog





# Photo Ship to Shore Crane Sydney





# Photo Indonesia Mining





# Photo Indonesia Mining





#### Photo Straddle Cranes Melbourne





# Photo Mining Chile





#### Photo Locomotive Adelaide







# Industrial Mapping





#### Product Used 526XL



#### **Features & Benefits**

- ✓ 9,000 Raw Lumens; 5,800 (Flood, Spot, Trap), 5,500 (Anti-Glare) Effective
- ✓ Voltage: 12-24V DC configuration
- ✓ Flood, Spot, Trapezoid, & Anti-Glare beam patterns available
- ✓ Your choice of durable glass or polycarbonate lens options
- ✓ Rugged solid-state LEDs can withstand shock & vibration Long-lasting LEDs mean never having to replace another bulb again!
- ✓ Die-cast aluminum housing provides maximum protection
- ✓ Universal pedestal mount

#### Product Used 527 Fog Lamp



#### **Features & Benefits**

- √ 960 Raw Lumens; 400 Effective Lumens
- ✓ Voltage: 12-24V DC configuration
- ✓ Fog Lamp available in Amber or White
- ✓ Glass lens
- ✓ Rugged solid-state LEDs can withstand shock & vibration Long-lasting LEDs mean never having to replace another bulb again!
- ✓ Xenoy housing provides maximum protection
- ✓ Universal pedestal mount

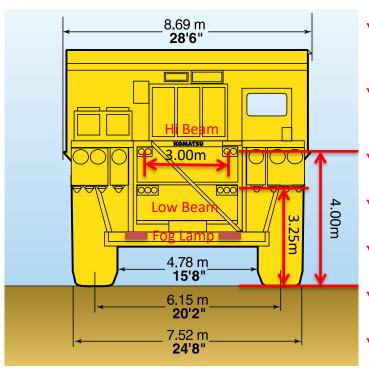
#### Product Used 526XL



- ✓ 2 x Model 526XL Anti Glare Low Beam mounted at bottom for low beam at 20 degrees
- ✓ 2 x Model 526XL Anti Glare Low Beam mounted at bottom for low beam at 20 degrees only use in fog with Model 527 Fog lamp
- ✓ 2 x Model 526XL Flood beam left and right hand outer at 5 degrees.
- ✓ 2 x Model 526XL Trap beam left and right hand inner at 5 degrees
- ✓ 2 x Model 526XL Flood beam at rear 5 degrees
- ✓ 2 x Model 527 Amber or White Fog Lamps, fitted at low as possible on the Truck use in Fog
- ✓ All Model 526XL LED Lamps replace standard halogen work lamps

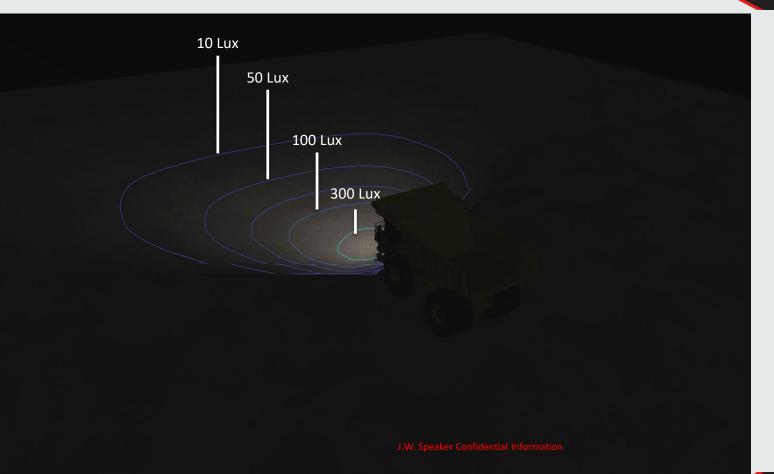
#### Komatsu 930E Set Up





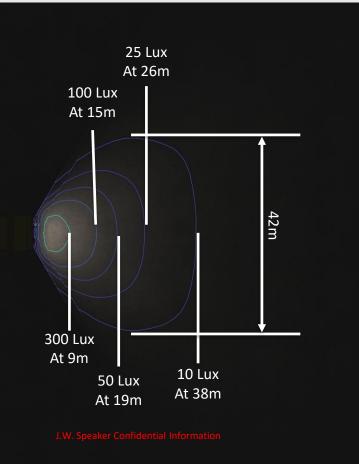
- ✓ 2 x Model 526XL Anti Glare Low Beam mounted at bottom for low beam at 20 degrees
- ✓ 2 x Model 526XL Anti Glare Amber Low Beam mounted at bottom for low beam at 20 degrees Used in fog only
- 2 x Model 526XL Flood beam left and right hand outer at 5 degrees
- ✓ 2 x Model 526XL Trap beam left and right hand inner at 5 degrees
- ✓ 2 x Model 526XL Flood beam at rear 5 degrees
- ✓ 2 x Model 527 Amber or white Fog Lamps
- ✓ All Model 526XL LED Lamps replace standard halogen work lamps





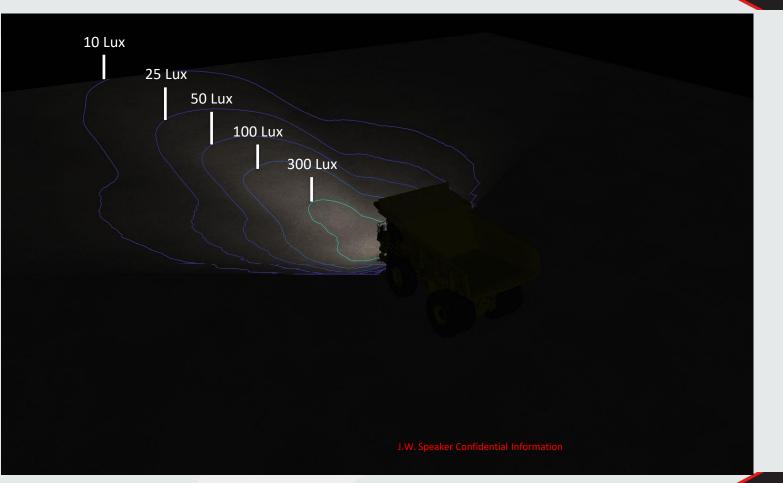
Model 526XL Anti Glare Low Beam





Model 526XL Anti Glare Low Beam





Model 526XL Hi Beam





Model 526XL Hi Beam



Model 526XL Anti Glare Low Beam





Model 526XL High Beam

### Fog Lamps Mining







527 Fog Beam





#### Product Used 832



#### Features & Benefits

- ✓ 3,900 Raw Lumens; 2,400 Effective
- ✓ Voltage 12-14V DC
- ✓ Flood, Trapezoid and Spot beam patterns available
- ✓ Polycarbonate lens
- ✓ Rugged solid-state LEDs can withstand shock & vibration Long-lasting LEDs mean never having to replace another bulb again!
- ✓ Die-cast aluminum housing provides maximum protection
- ✓ Universal pedestal mount

#### Product Used 832



#### **Features & Benefits**

- ✓ 5,400 Raw Lumens; 4,500 Effective
- ✓ Voltage 12-14V DC
- ✓ Flood, Trapezoid and Spot beam patterns available
- ✓ Durable Glass or Polycarbonate lens
- ✓ Rugged solid-state LEDs can withstand shock & vibration Long-lasting LEDs mean never having to replace another bulb again!
- ✓ Die-cast aluminum housing provides maximum protection
- ✓ Universal pedestal mount

CYLINDER TOP INSIDE

CYLINDER TOP OUTSIDE

REAR

TOP CENTER

**BOTTOM REARS** 

RIPPER (SHINE ON

TOOTH)



CAT D10 Set Up			J.W. SPEAKER. Engineered. Lighting. Solutions.	
FRONT	Part #	QTY	Description	
LOWED OIDEO	0545004		MODEL 000E 40 04\/ 4  -4     ED EL	

LOWER SIDES 0545631

1800841

1800851

Part #

1800841

1800841

0545631

MODEL 7150T -24V 5"x7" LED Trapezoidal

MODEL 7150F -24V 5"x7" LED Flood

**Description** 

MODEL 7150T -24V 5"x7" LED Trapezoidal

MODEL 7150T -24V 5"x7" LED Trapezoidal

MODEL 832F -12-24V 4"x4" LED Flood

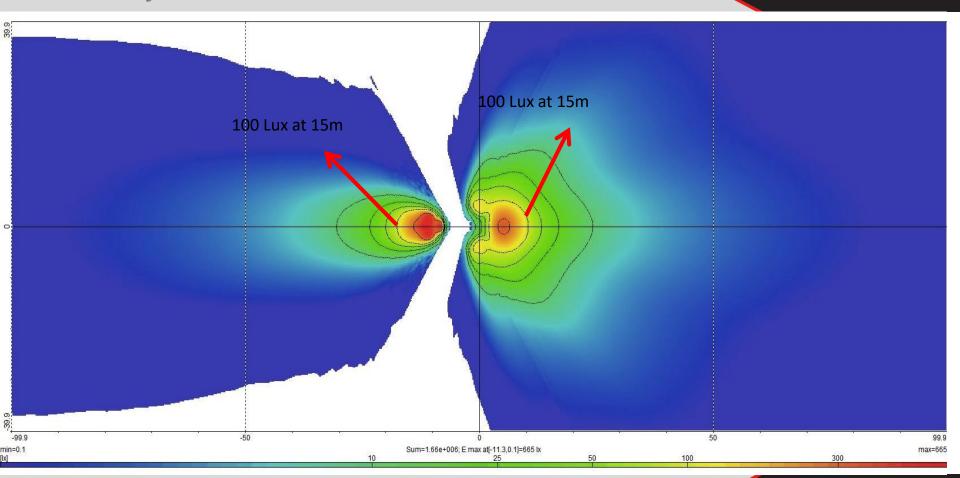
MODEL 832F -12-24V 4"x4" LED Flood

QTY

2

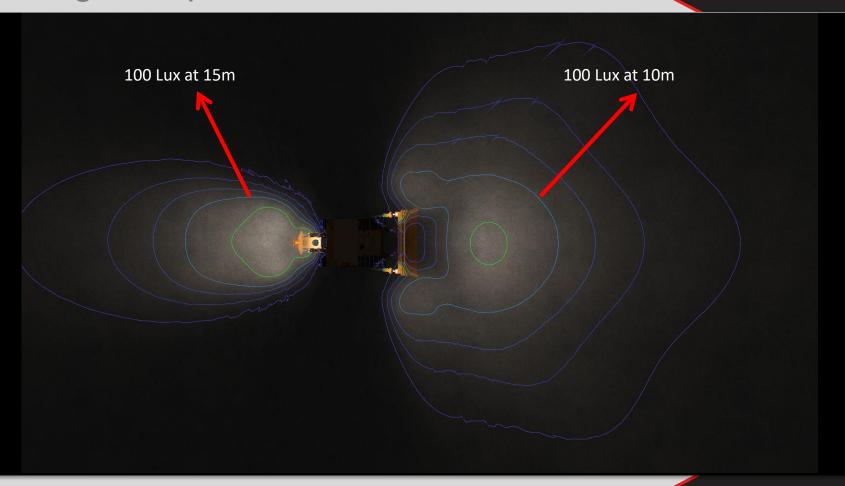
# Bird Eye View Lux with 7150 and 832





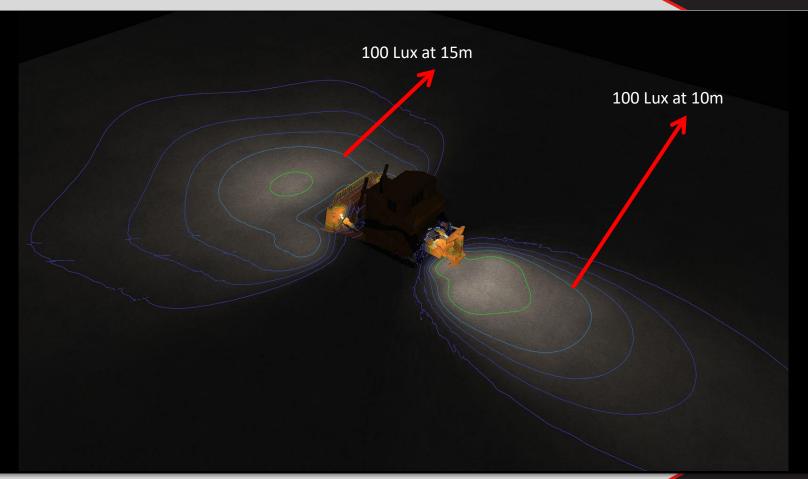
### VR Light Map with 7150 and 832





# VR Light Map with 7150 and 832





# VR Light Map with 7150 and 832









#### **Product Used 623**



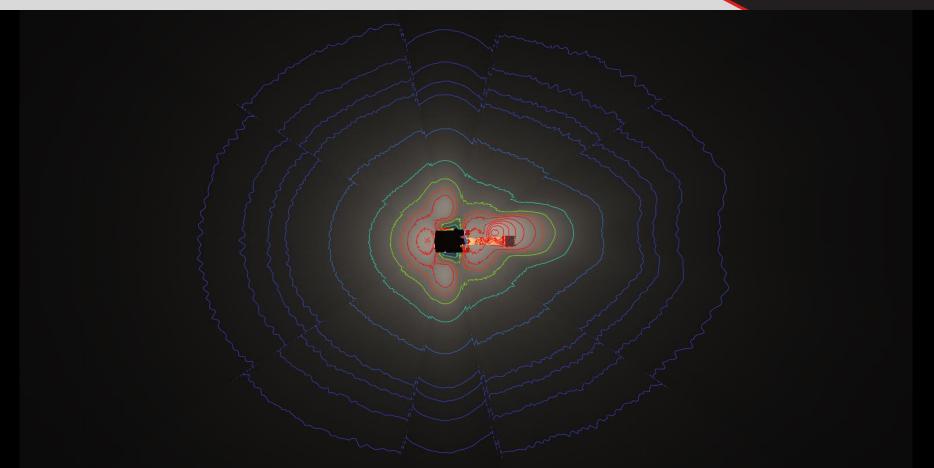
- √ 40,000 Raw Lumens; 20,000 Effective
- ✓ Voltage 16-60V DC
- ✓ Wide Flood, Medium and Narrow beam patterns available
- ✓ Durable Glass Lens
- ✓ Rugged solid-state LEDs can withstand shock & vibration Long-lasting LEDs mean never having to replace another bulb again!
- ✓ Die-cast aluminum housing provides maximum protection
- ✓ Universal pedestal mount

#### Location of Model 623

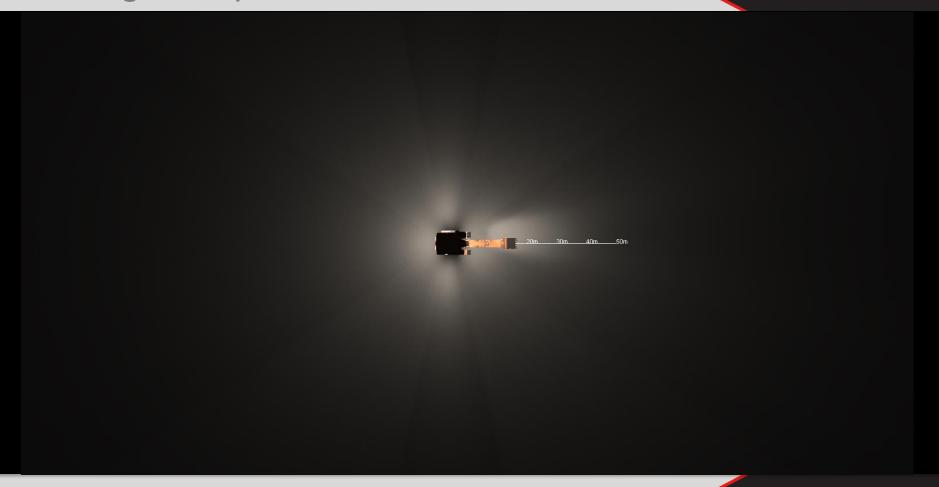


- ✓ Above Cab 1 x Model 623 Medium Flood 8.6m high 30 degrees down
- ✓ Below Cab 2 x Model 623 Wide Flood 7m high 30 degrees down. 1 x Left and 1 x Right Side.
- ✓ Side Centre 1 x Model 623 Wide Flood 7m high 30 degrees down. 1 x Left and 1vx Right side
- ✓ Rear Model 623 Wide Flood 7m high 3.7m from 1 x Left and 1 x Right hand Side with 30 degree down.

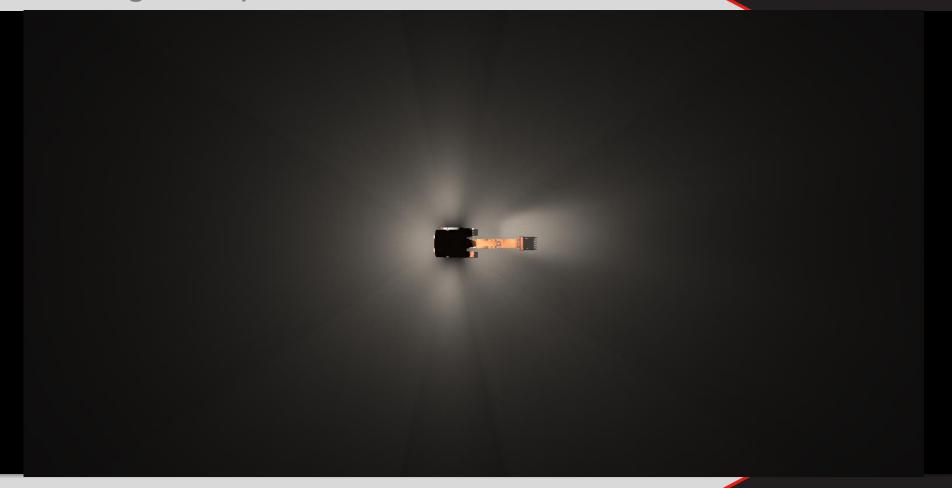




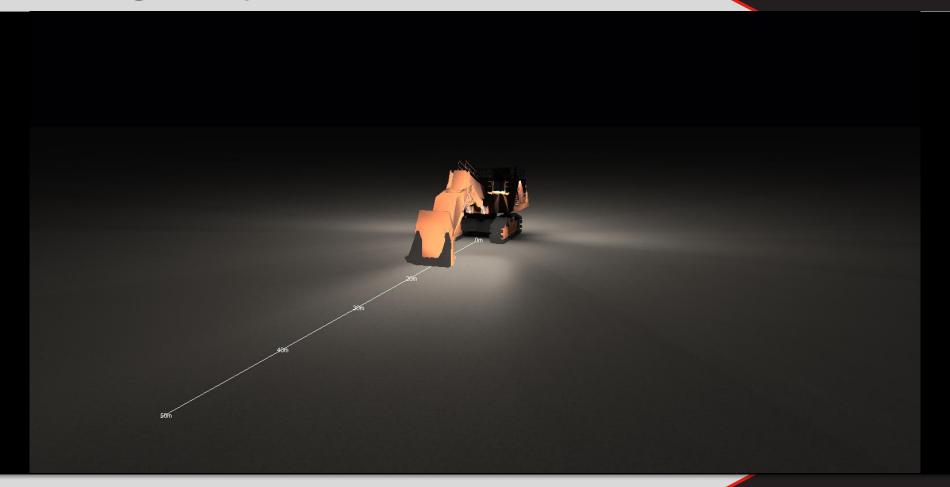




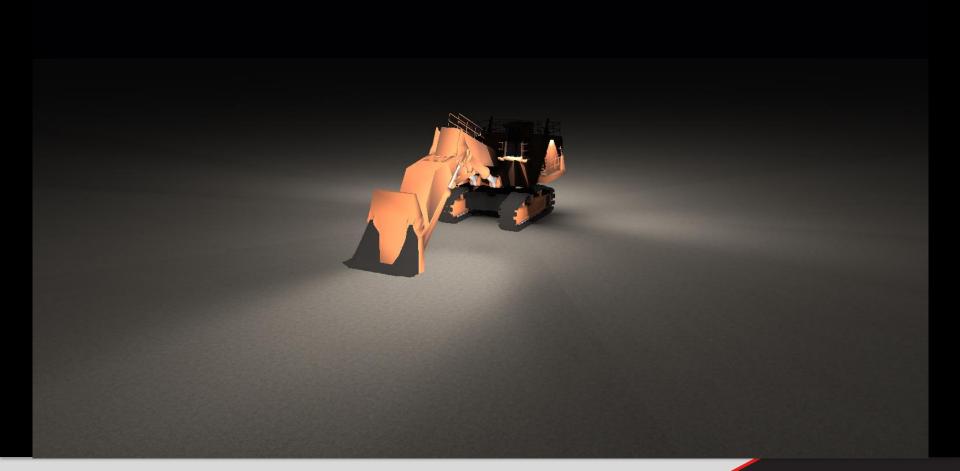




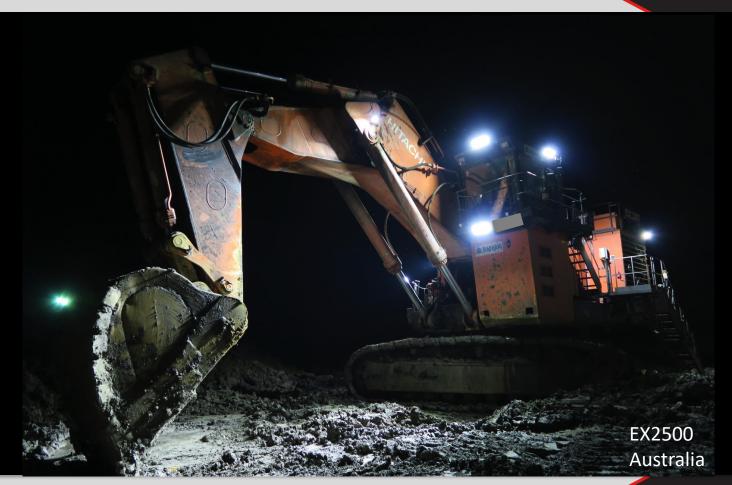












## Product 527 Red Zone Warning



#### **Features & Benefits**

- ✓ Voltage: 12-24V DC
- ✓ Available in Red, Green and Amber
- ✓ Durable Glass lens
- ✓ Rugged solid-state LEDs can withstand shock & vibration Long-lasting LEDs mean never having to replace another bulb again!
- ✓ Xenoy housing provides maximum protection
- ✓ Universal pedestal mount

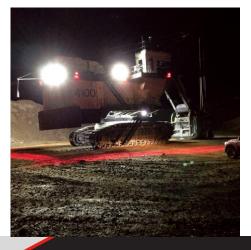
#### Location of Model 527



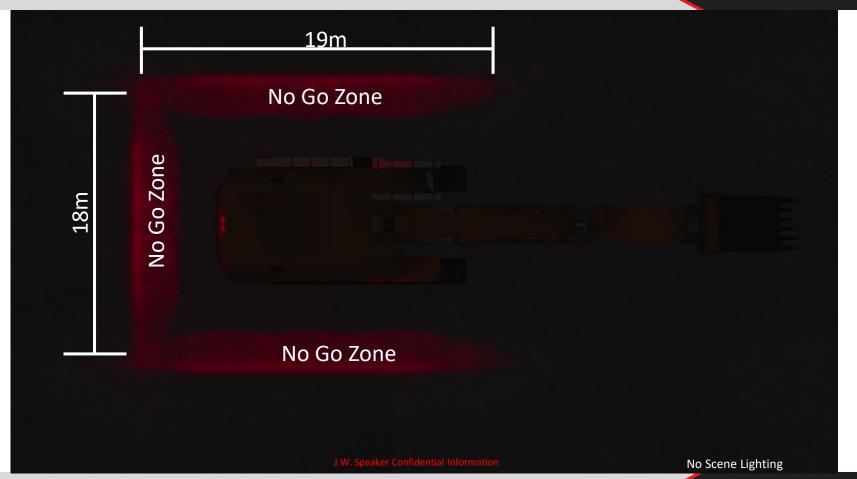
- ✓ 9 Model 527 LED Red No Go Zone Lamps
- ✓ Mounted at 7m high
- ✓ 3 Left and Right hand side fitted around upper deck under the hand rails. Set at 4m apart, aimed 55° down
- ✓ 3 at rear fitted at the top space . Set at 4m apart, aimed 60° down





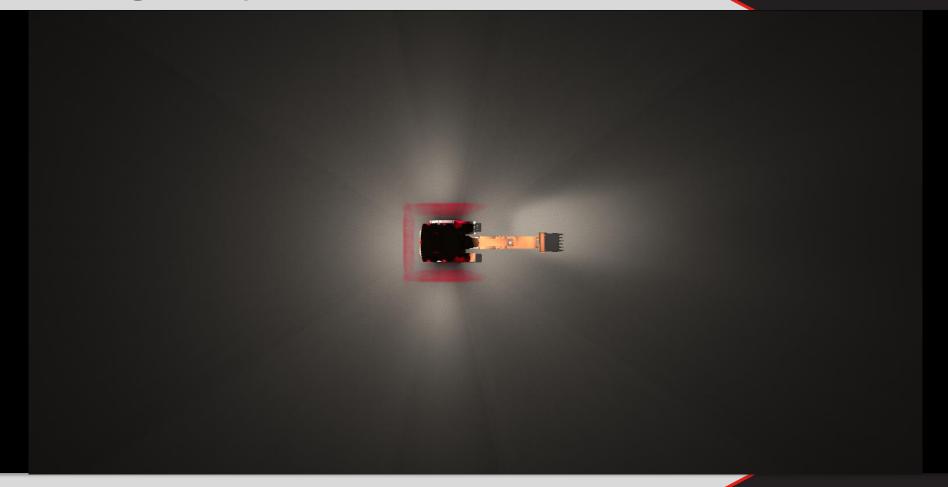






## VR Light Map with 623 and 527





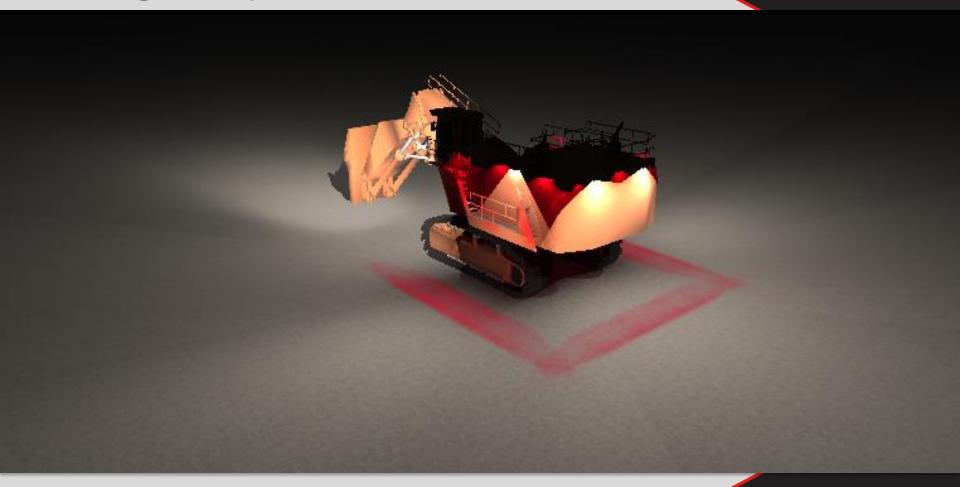
## VR Light Map with 623 and 527





## VR Light Map with 623 and 527







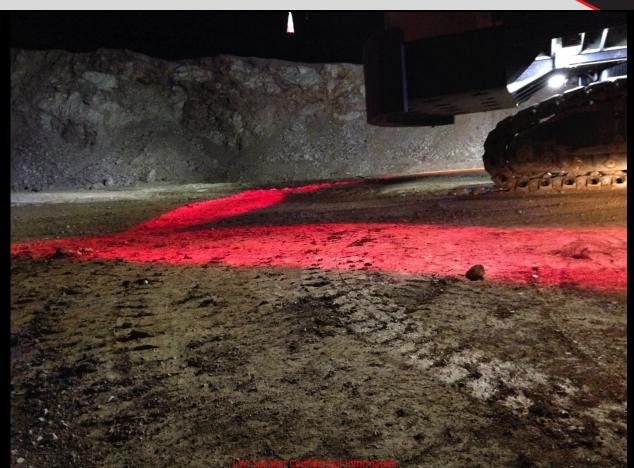


Photo P&H 4100 Chile



# Crusher Area

LED 623 Lighting

#### **Product Used 623**



- √ 40,000 Raw Lumens; 20,000 Effective
- ✓ Voltage 16-60V DC
- ✓ Wide Flood, Medium and Narrow beam patterns available
- ✓ Durable Glass Lens
- ✓ Rugged solid-state LEDs can withstand shock & vibration Long-lasting LEDs mean never having to replace another bulb again!
- ✓ Die-cast aluminum housing provides maximum protection
- ✓ Universal pedestal mount

#### Product Used 6406



- ✓ 24V 240W AC/DC Converter Box
- ✓ 106.00 (mm) / 4.17 (in) 281.00 (mm) / 11.06 (in) 318.72 (mm) / 12.55 (in)
- ✓ Rectangular
- ✓ Xenoy Black
- ✓ Input: 100-277 V AC 50/60Hz input Output: 24 V DC Output Current Max: 10 Amp UL recognized, Class 2 power supplies
- ✓ IP 69K
- ✓ AC Cable and DC cable to suit Model 6406 AC/DC Converter Box

### Pole Set Up





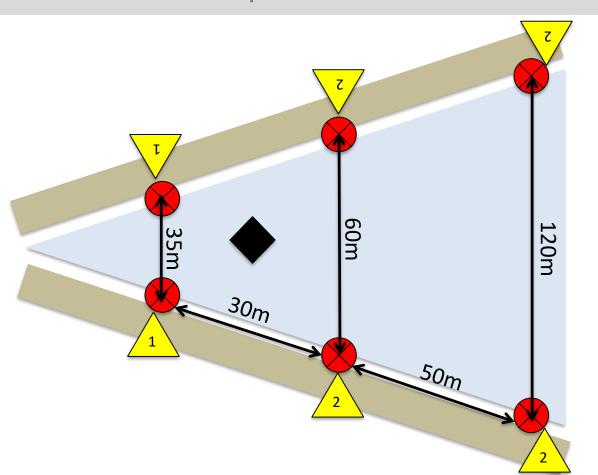
#### Requirement:

6 poles in Crusher area will have Model 623 Wide Flood along with converter boxes and cable to suit

- ✓ Pole are 22m high 623 mounted at the top
- ✓ Each lamp will have 240W converter box
- ✓ With AC/DC cable
- ✓ Model 623 IP67 Converter IP69K

#### Crusher Area Set up 10 Model 623WF









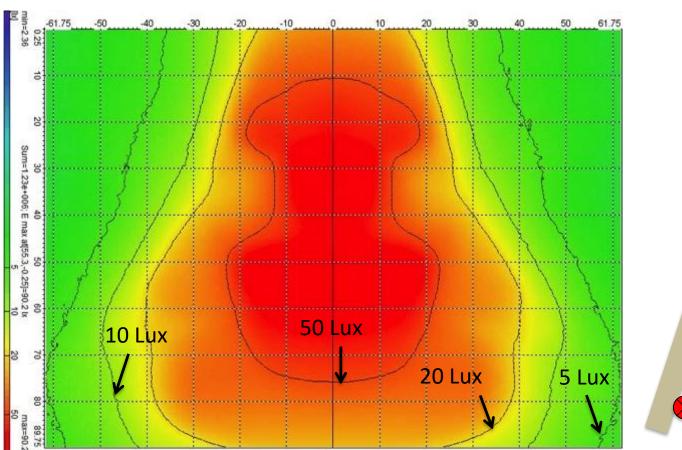


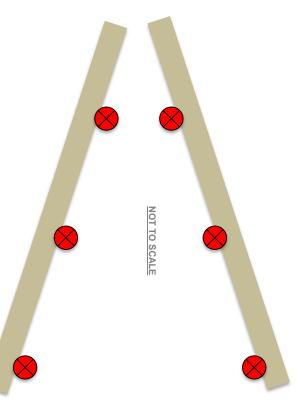
To get the layout supplied in photos to layout properly We used the dimensions on this diagram

**NOT TO SCALE** 

#### Crusher Area Set up 10 Model 623WF

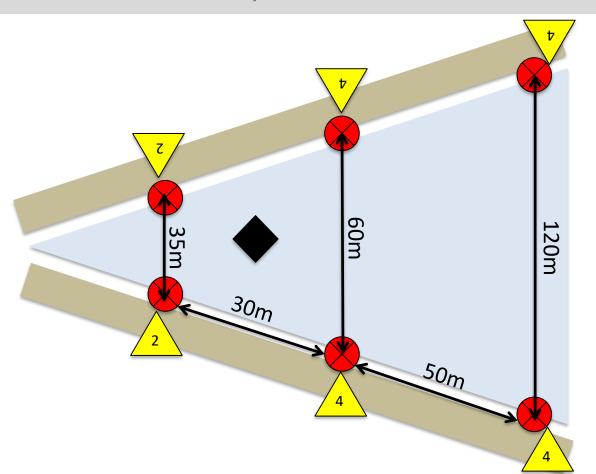






#### Crusher Area Set up 20 Model 623WF









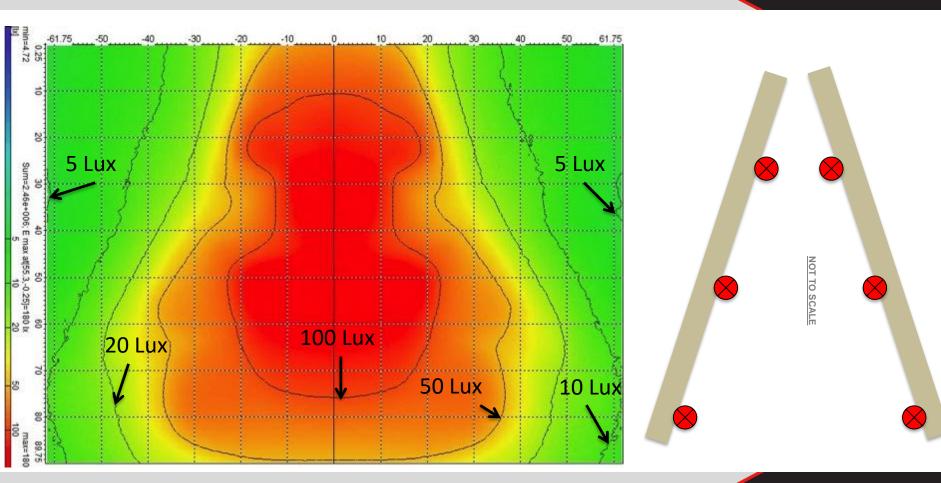


To get the layout supplied in photos to layout properly We used the dimensions on this diagram

**NOT TO SCALE** 

#### Crusher Area Set up 20 Model 623WF





## Color Temperature



Model 623 color temperature is 5000 kelvin

 5000K-5500K is high noon daylight which the human eye likes it true daylight safety color for night outside work.

■ J.W. Speaker, we not only select LEDs out of the highest lumen output bin but also accept only those LEDs with a color temperature of 5000K to 5500K, thus producing a light that truly shines like the sun at midday for safety at night!



# 4 Head Lighting Tower

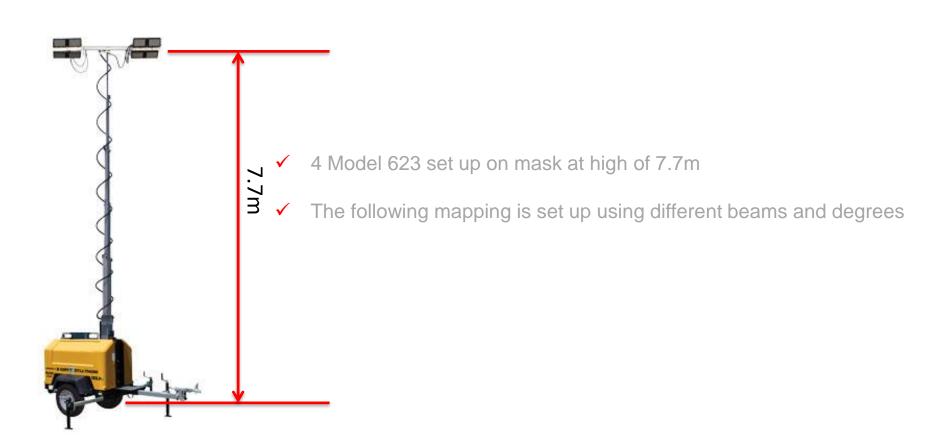
#### **Product Used 623**



- √ 40,000 Raw Lumens; 20,000 Effective
- ✓ Voltage 16-60V DC
- ✓ Wide Flood, Medium and Narrow beam patterns available
- ✓ Durable Glass Lens
- ✓ Rugged solid-state LEDs can withstand shock & vibration Long-lasting LEDs mean never having to replace another bulb again!
- ✓ Die-cast aluminum housing provides maximum protection
- ✓ Universal pedestal mount

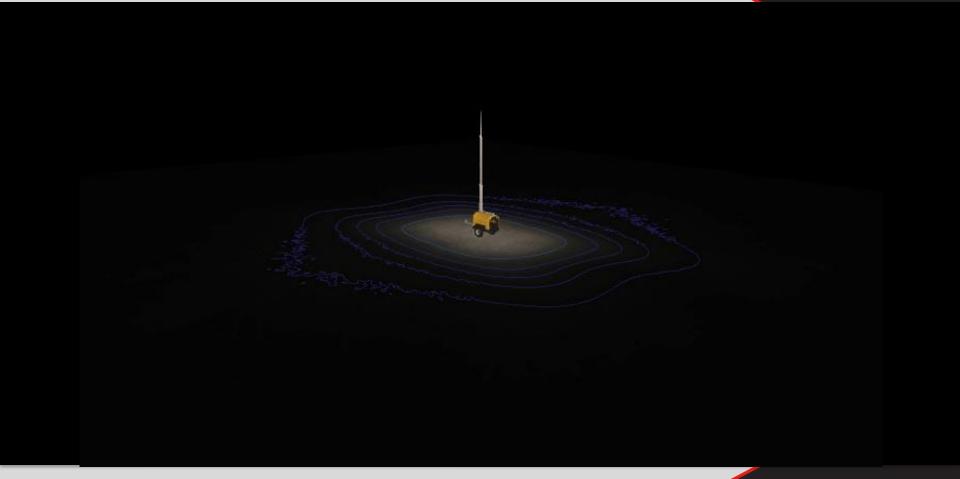
## 4 Head Lighting Tower Set up





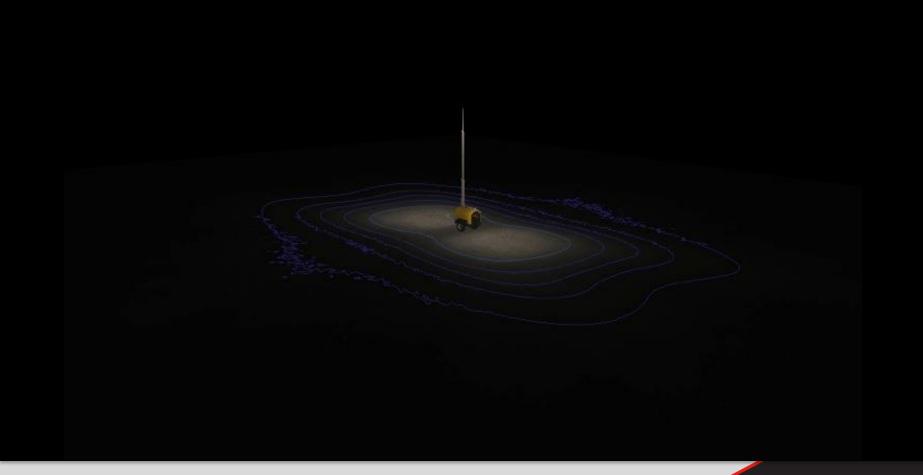
### VR Light Map with 4 x 623 15-degree Tilt



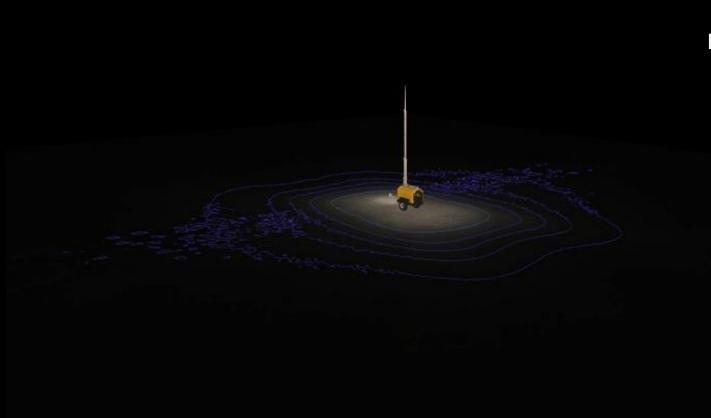


### VR Light Map with 4 x 623 25-degree Tilt







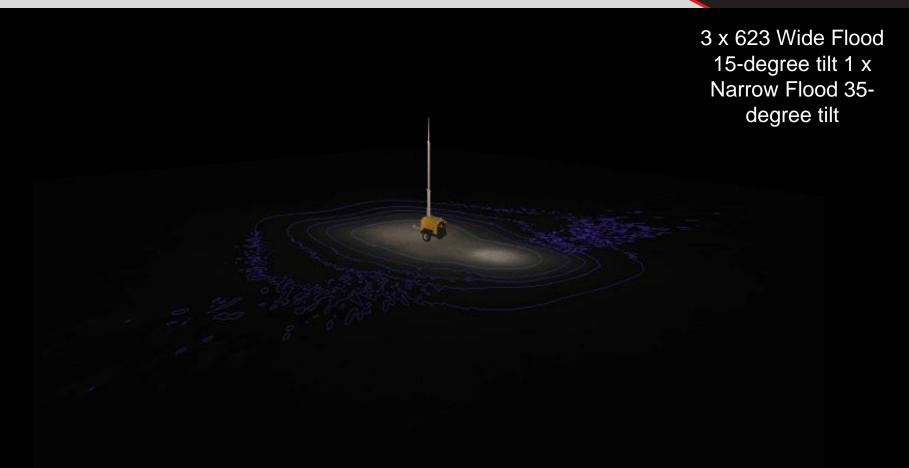


3 x 623 Wide Flood 1 x Narrow Flood 15-degree tilt

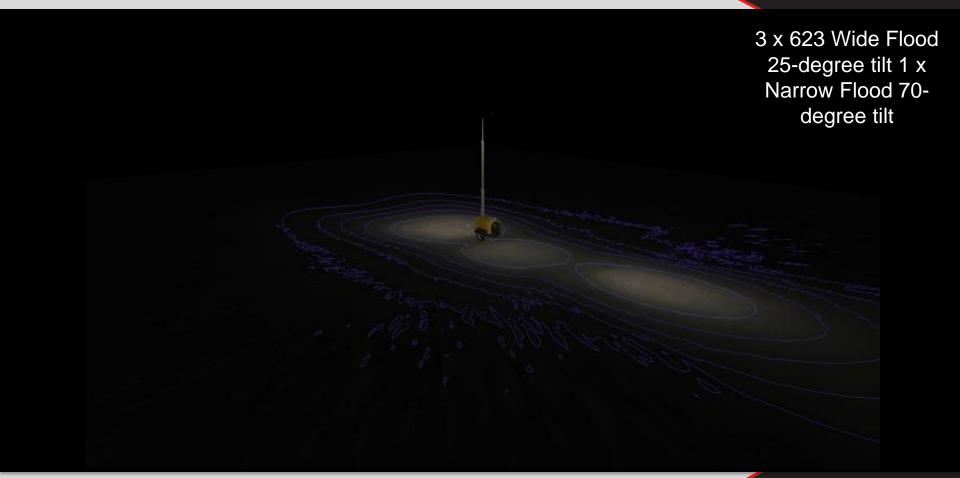


3 x 623 Wide
Flood 1 x Narrow
Flood 25-degree
tilt



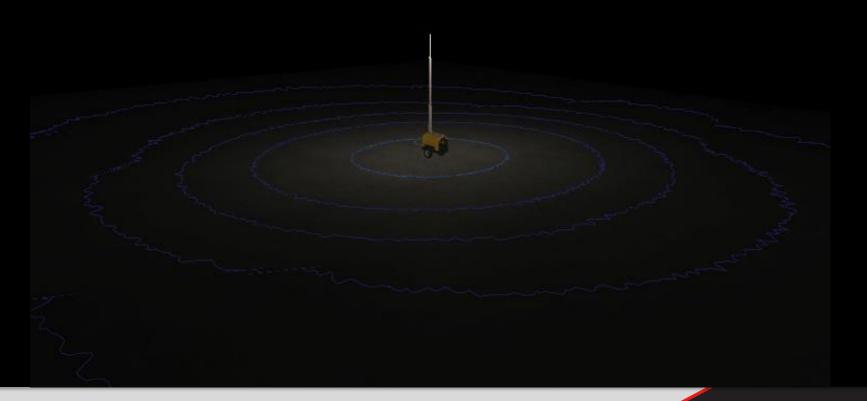








4 x 623 Super Wide Flood 25-degree tilt



## Photo 623 Lighting Tower Queensland





## Photo 623 Lighting Tower Queensland



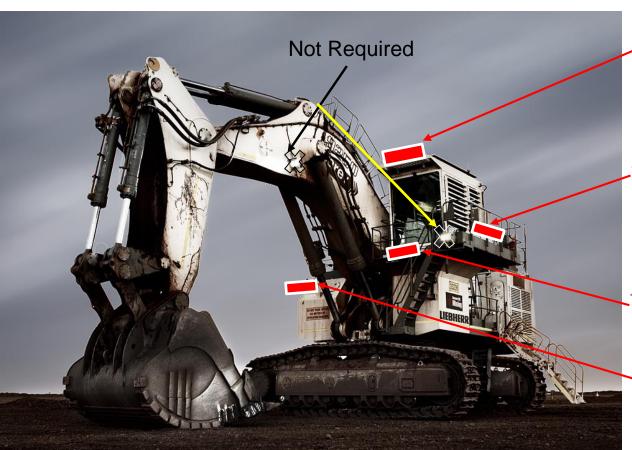






#### Liebherr- Model 9250





1 x 623 Medium Flood on roof front Facing slightly down

1 x 623 Wide Flood on side walk rail
Facing down

1 x 623 Wide Flood front walk rail Facing hard down

1 x 623 Wide Flood on off side Facing slightly down

#### Liebherr- Model 9250





2 x 623 Wide Flood (1 each side)



2 x 832 Flood Maintenance & Ladder Light



#### Liebherr- Model 9250





Not Required

2 x 623 Wide Flood (1 each side)



#### Liebherr- Model 9250 Set Up





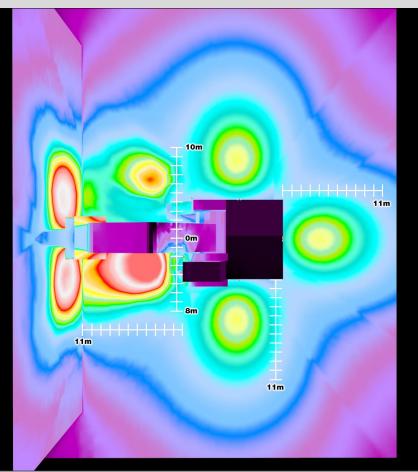




Part No	Description	Qty	Location
0546681	623 Medium Flood Beam 16/60V	1	Top of Cab (Front)
0546691	623 Wide Flood Beam 16/60V	6	<ol> <li>Cab side walk rail (Side)</li> <li>Under Cab (Front)</li> <li>Offside side</li> <li>Off side front</li> <li>Rear off side</li> <li>Rear cab side</li> </ol>
1300131	8 <sub>32</sub> Flood	2	<ol> <li>Rear of Cab</li> <li>Ladder Light</li> </ol>

#### Light Mapping

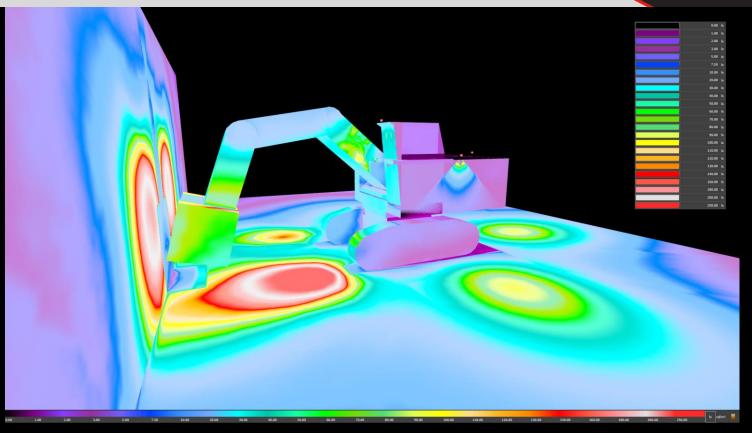






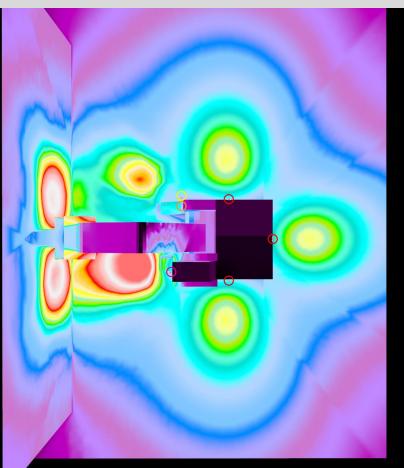
#### **Light Mapping**

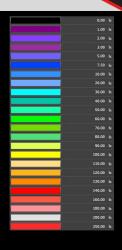




#### **Light Mapping**







- 623 Super Wide Flood x 3 40 Degrees Down
- 526 Trap x 1 30 Degrees Out 45 Degrees Down
- 623 Medium Flood x 1
  5 Degrees Out
  10 Degrees Down
  - \*\* Below Cabin \*\* 623 Medium Flood x 1 5 Degrees Out 10 Degrees Down
  - \*\* Above Cabin \*\* 623 Medium Flood x 1 55 Degrees Down





#### Hitachi 2500 Set Up









Flood light fitting

Brackets bolted or welded

If bolted use 3 bolts on each light with lock nuts or spring washers

Wiring finished with heat shrink over connectors

623 is supplied with 5.5 metres of 5mm cable. If extended longer, use solder or crimp to join and use 6mm cable for longer extension.



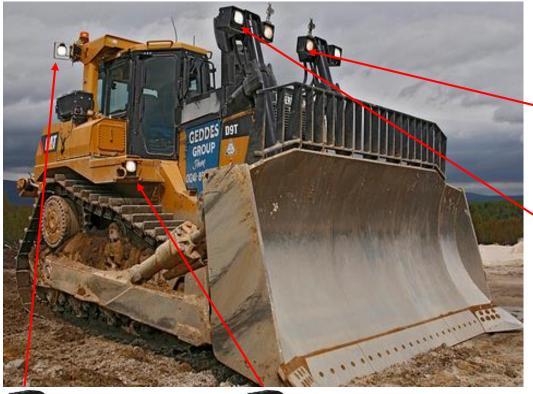


# Other Mining Equipment

**LED** Lighting

#### CAT D9 Dozer







2 x 526 Low Beam Anti-glare (Inside)



2 x 526 Flood (Outside)



2 x 832 Flood



2 x 832 Flood

#### CAT D9 Dozer







**Part Number** 

2 x 526 Flood

 1300191
 526XL
 Antiglare Low Beam PC Lens 12/24V

 1300201
 526XL
 Flood Beam PC Lens 12/24V

 1300131
 832
 Flood Beam PC Lens 12/24V

 1300121
 832
 Trap Beam PC Lens 12/24V

Description

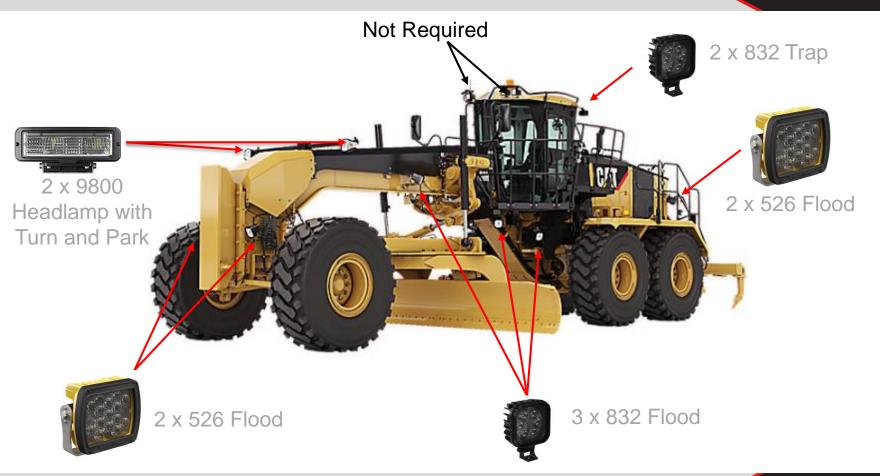
Model



2 x 832 Flood

#### CAT 14M to 16M Grader





#### CAT 14M to 16M Grader











#### Full LED Spec

 $2 \times 526 \text{ Flood} = \text{Front}$ 

 $2 \times 526 \text{ Flood} = \text{Rear}$ 

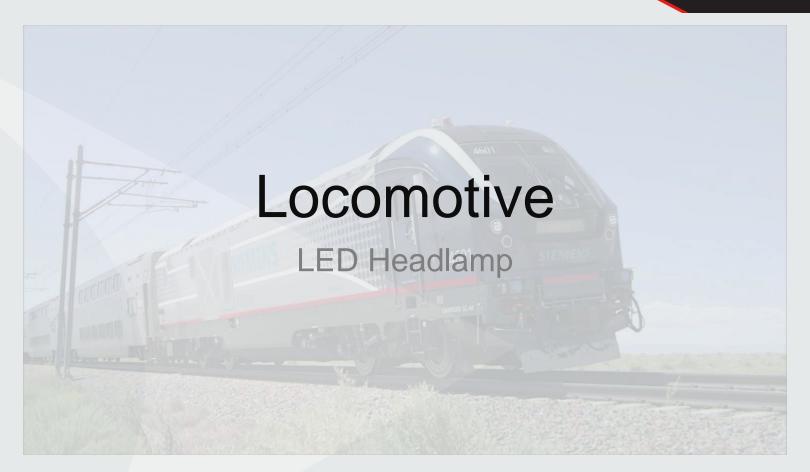
6 x 832 Flood= Blade & Side illumination

2 x 832 Trap = Rear Top of Cab

 $2 \times 9800 \text{ Headlamp} = \text{Front}$ 

Part Number	Model	Description
1300201	526XL	Flood Beam PC Lens 12/24V
1300131	832	Flood Beam PC Lens 12/24V
1300121	832	Trap Beam PC Lens 12/24V
0550061	9800	Headlamp with turn, DRL and Park





#### 8770 Spec





#### **JW Speaker Model 8700**

> 300,000 Cd

> 10 lux @ 250m

Primary beam 5°

> 30K hrs, 5 yr warranty

63W @ 75v DC

Driver is internal to lamp

20-300Hz, 10G, 8hrs, 3-axis. HALT

CISPR 25 Class 2 Radiated

-40°C to +65°C

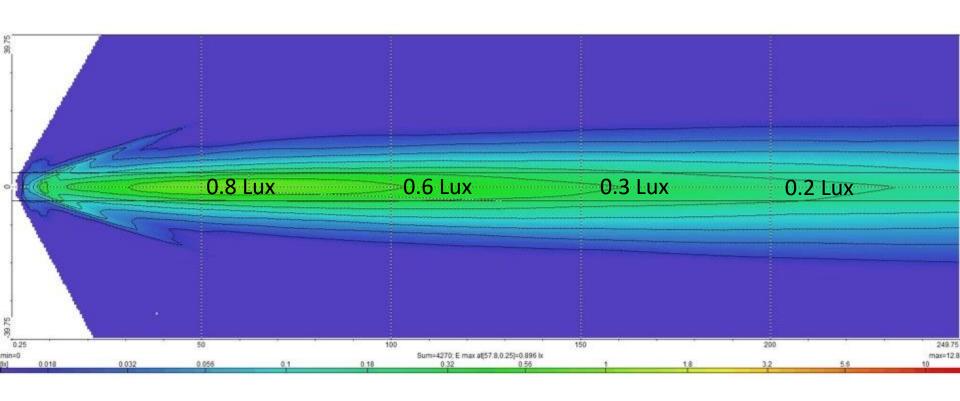
IP66 for complete lamp

1.2 kg ; 2.7 lbs

168mm Diam. Standard Par 56

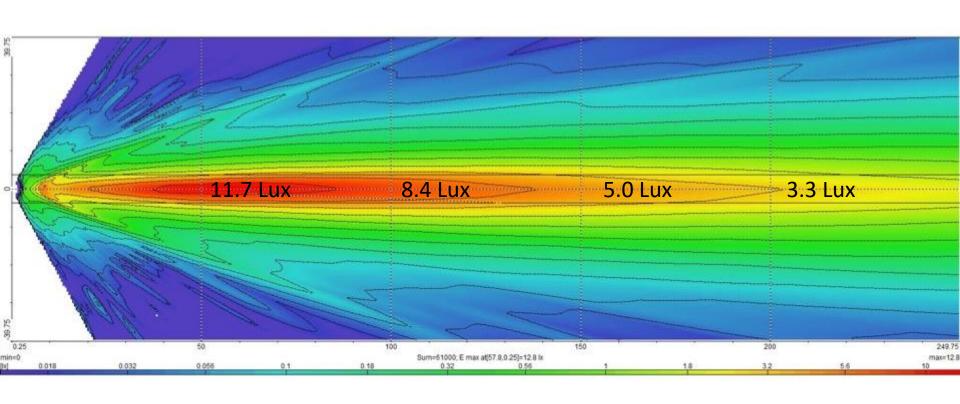
#### Lux Chart Low Beam





#### Lux Chart Hi Beam



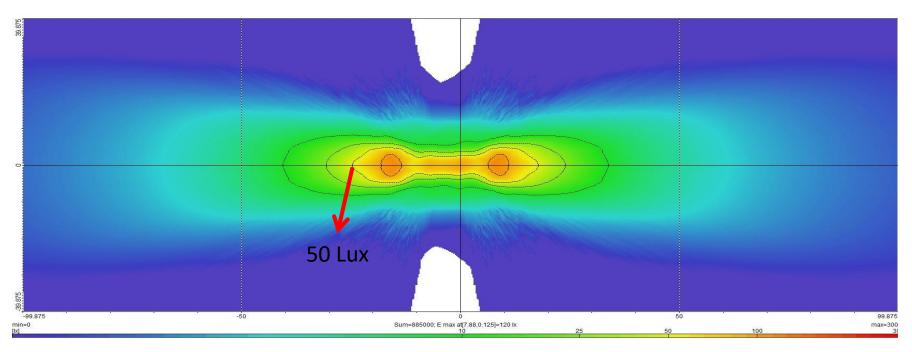




# Port Straddle Crane LED Lighting

#### Bird Eye View Lux with 523 and 7150

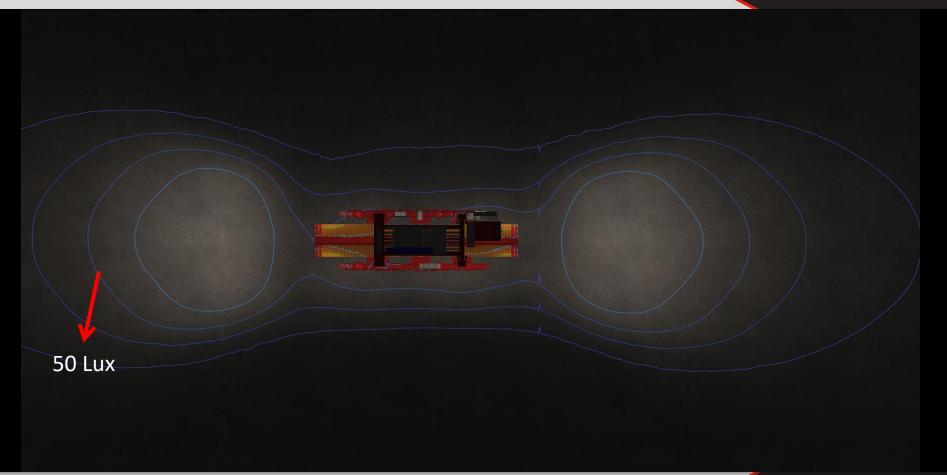




Diagrams show the lux values on the ground only, with no obstructions considered

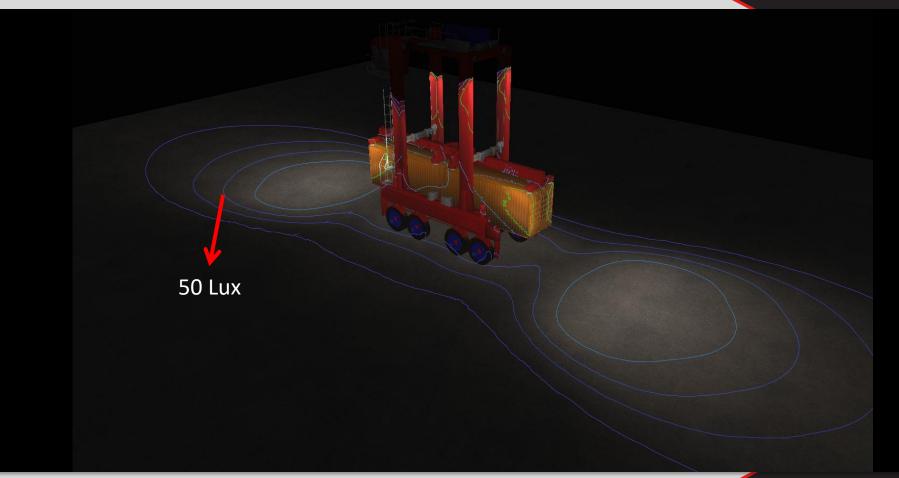
## VR Light Map with 523 and 7150





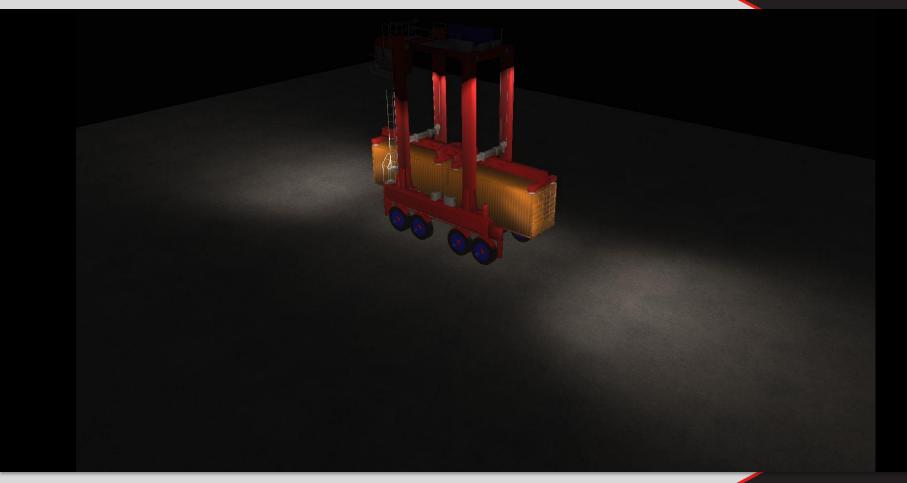
## VR Light Map with 523 and 7150





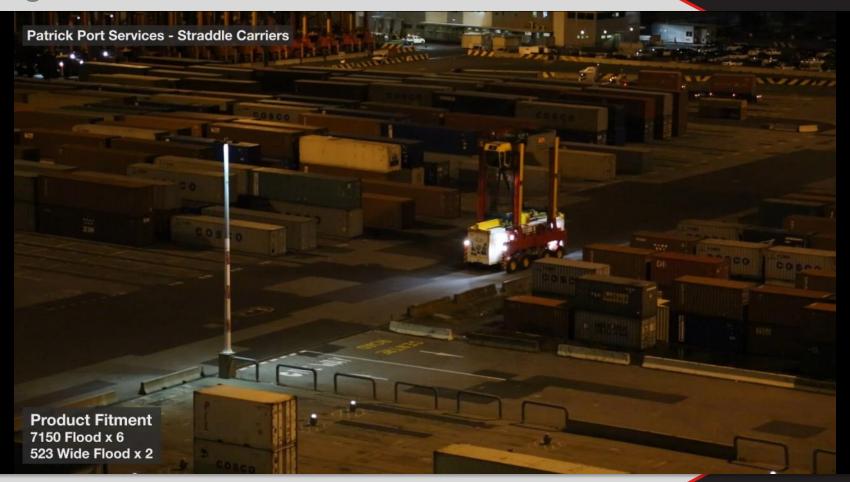
## VR Light Map with 523 and 7150





#### Night Photo Straddle 523 and 7150



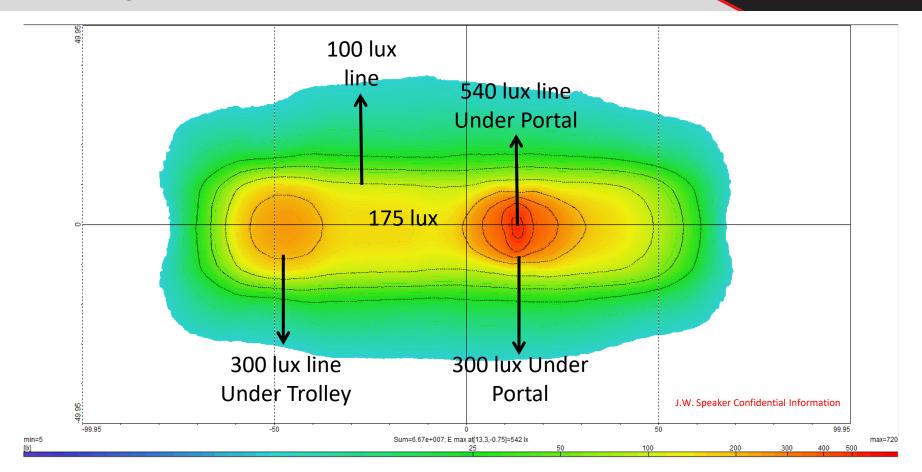




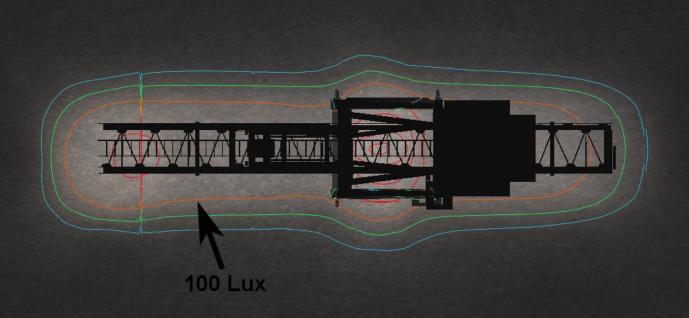
# Ship to Shore Crane LED Lighting

#### Bird Eye View Lux with 623





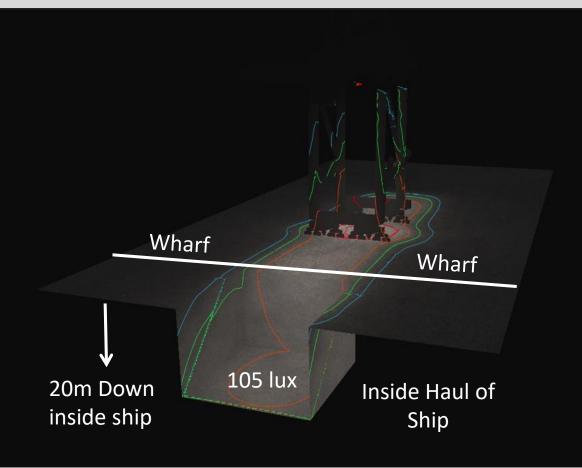




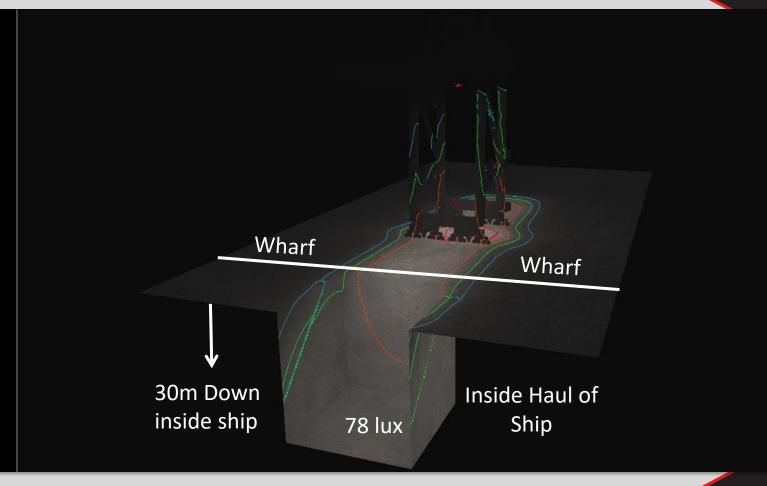




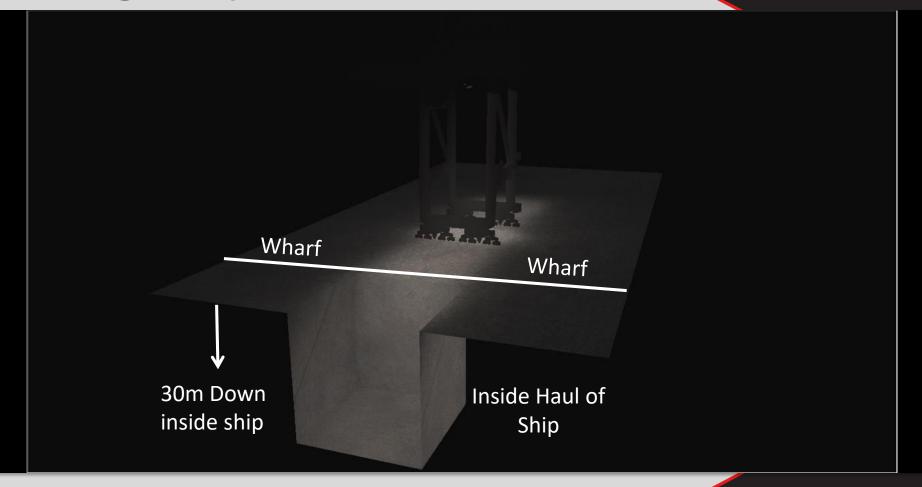




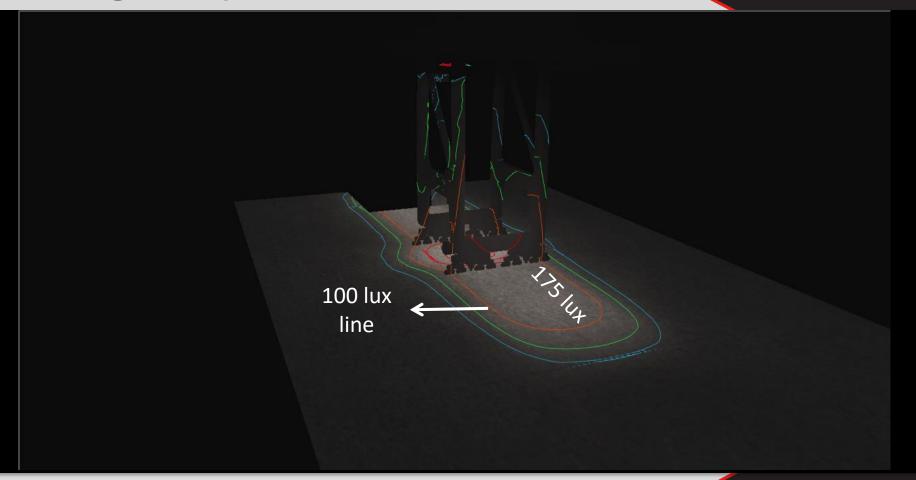






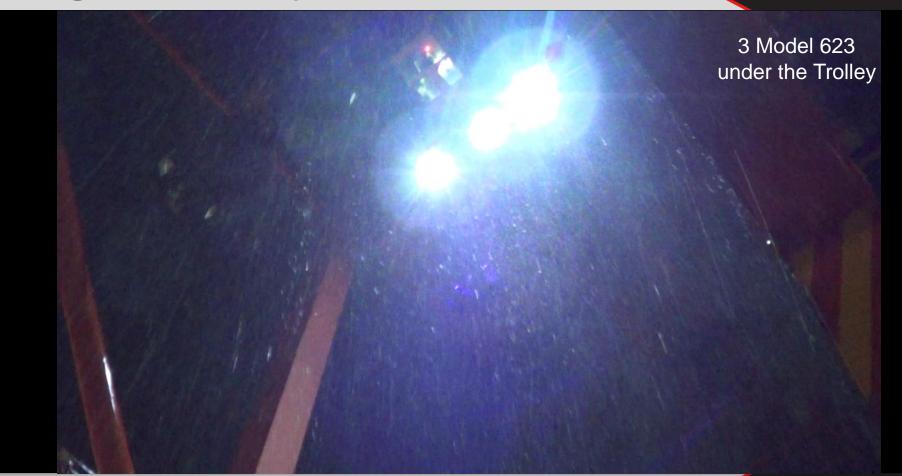






#### Night Photo Ship to Shore Crane 623





#### Night Photo Ship to Shore Crane 623







## Aftermarket Committed

#### Aftermarket Committed



- ✓ Development full range of fast moving LED forward product for Aftermarket Distributors worldwide
- ✓ To ensure we meet all our Distributors needs and wants worldwide
- ✓ Meet all standards worldwide for our Distributor
- ✓ Visit our distributors and their dealers for product training on our brand
- ✓ To support Distributors managerment team to ensure we all meet our goals

#### Summary



- ✓ J.W. Speaker Corporation are market leaders with many world first LED forward lighting program
- ✓ We are fully dedicated to our Key OEM and Aftermarket distributors and listen to theirs needs and wants
- ✓ We are always looking for new technologies to ensure the best quality is given to our customers worldwide
- ✓ We fully design and manufacture our products in the US
- ✓ We are leaders in our field for LED forward white lights in the world and value our new and old customers commitmet and relationship to us



## We thank you for your time Any further question