

NFPA 1901 - 2009 Edition

CERTIFIED LIGHTING PACKAGE GUIDE

NFPA GUIDE

ZONE A

ZONE B

ZONE C

ZONE D

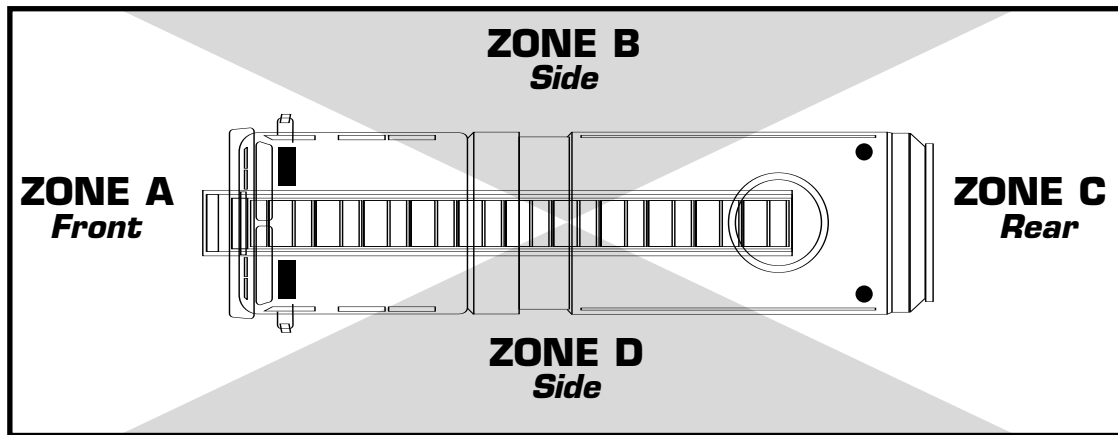


CODE 3[®]
A PUBLIC SAFETY EQUIPMENT COMPANY

Updated 0409

Standard for Electrical Systems & Warning Devices

The following guide is a compilation of NFPA certified lighting devices prepared by Code 3®, Inc. When this guide is used along with the Certificate of Compliance worksheet, pages 16–17 of this guide, you will be able to design a completely NFPA-certified optical warning device system.



Chapter 13 Summary

- The optical warning system is divided into four zones around the vehicle. In each zone there is an upper and lower warning level. The zones are illustrated above.
- The warning system shall be measured in two operating Modes:
 - Calling for right of way (Responding), and
 - Blocking right of way (At Scene)
- Within the constraints of state and local laws there are certain colors allowed or not allowed in each zone:

Lens Color	Calling for Right of Way	Blocking Right of Way
Red	Any zone	Any zone
Blue	Any zone	Any zone
Amber	Any zone but A (front)	Any zone
Clear	Any zone but C (rear)	Not permitted

- Light Energy Requirements for Apparatus (values in candela seconds per minute):

Zone	Large Apparatus 25' or greater	Small Apparatus Less than 25' long
Zone A Upper	1,000K (Calling) 400K (Blocking)	1,000K (Calling) 400K (Blocking)
Zone B Upper	400K (Both)	200K (Both)
Zone C Upper	400K (Calling) 800K (Blocking)	400K (Calling) 800K (Blocking)
Zone D Upper	400K (Both)	200K (Both)
All Lower Level	150K (Both)	Upper and Lower
Zone A, B, C & D		Levels Combined for Zone Totals

A large apparatus is defined as an apparatus with a bumper-to-bumper length of 25 ft. or more. The upper-level optical warning devices shall be mounted as high and as close to the corner points of the apparatus as is practical in order to define the clearance lines of the apparatus. In order to define the clearance lines of the apparatus, the optical center of the lower-level optical warning devices in the front of the vehicle shall be mounted forward of the front axle centerline and as close to the front corner points of the apparatus as is practical. The optical center of the

lower-level optical warning devices at the rear of the vehicle shall be mounted on or behind the rear axle centerline and as close to the rear corners of the apparatus as is practical. The optical center of any lower-level device shall be between 18 in. and 62 in. above level ground. A midship optical warning device shall be used if the distance between the front and rear lower-level optical devices exceeds 25 ft. at the optical center. Additional guidance is used in the appendix in Section A-13.8.13 which states that the minimum optical warning system should require no more than an average of 40 amps for the operation of the upper-level and lower-level devices in the blocking mode. Should the apparatus require midship lights, no more than 5 amps of additional current should be required for operation of each set of midship lights.

A small apparatus is defined as an apparatus whose bumper-to-bumper length is less than 25 ft. The upper-level optical warning devices shall be mounted as high as practical, but not over 8 ft., at the optical center. One or more lower-level warning devices shall be mounted as close as is practical to each front corner of the apparatus with the optical center of the device at the distance between 18 in. and 48 in. above level ground. In Section A-13.8.14 of the appendix, it is stated that the minimum optical warning system should require no more than an average of 35 amps for the operation of the devices in the blocking mode.

NFPA 1901 provides guidance to the fire apparatus purchaser and vehicle manufacturer when the electrical demand exceeds the vehicle's alternator capacity. Section 13-3.2 instructs the purchaser to define which warning devices and electrical loads should be defined as "critical to the mission" these "critical" devices should be included in the electrical load test defined in Section 13-3.2, 13-3.3, 13-14.3.3. The non-critical devices should have additional alternator capacity added to supply them or be controlled such that they do not drain the vehicle's electrical capacity (through load management — see Section 13-3.6, or by standard operating procedures such as turning off non-critical electrical loads at the scene, etc.). Additional guidance is found in NFPA 1901 appendix Sections A-13-3.1, A-13.3 and elsewhere. In part it deals with alternators, batteries and load management. "The purchaser and the OEM must work together to provide the necessary energy (alternator capacity) required to add additional lighting," and "The purchaser needs to analyze the electrical loads that must be maintained to fulfill the mission of the apparatus and to define those loads for the manufacturer of the apparatus. The purchaser needs to understand, however, that there is a limit to the output capacity of an alternator system on the apparatus's engine and this standard requires that the apparatus be capable of maintaining the minimum continuous electrical load under the conditions defined in 13-3.2. When that load is exceeded and larger alternators are not available, the purchaser and the manufacturer need to work together to determine how to reduce the minimum continuous electrical load to that which can be sustained under the conditions defined in 13-3.2."

See NFPA 1901 Standard for Automotive Fire Apparatus, 2009 edition for complete information.

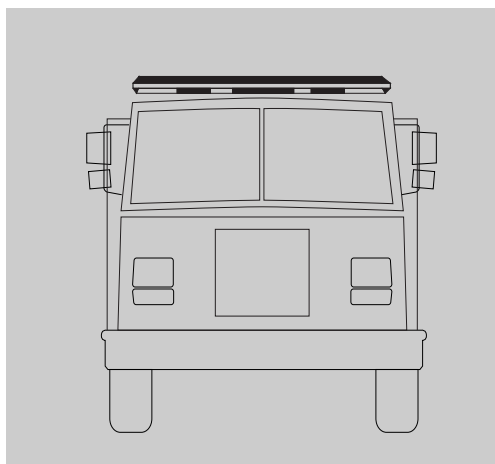
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Defender™ Lightbar

NFPA configurations are listed below.

Additional options may be added to these lightbars. The additional lightbar options will only add to the light output of the lightbar. Any additional light options can and must be load managed per NFPA 1901. For additional lightbar options, see page 11 of this guide or consult our Products and Pricing book.



Standard Configurations

PROD. NO.	LENGTH	
DF23ANFPA1	23"	<p>Total 10 Amps, All Red (for White see Options on page 11)</p>
DF35ANFPA1	35"	<p>Total 8 Amps, All Red (for White see Options on page 11)</p>
DF36ANFPA1	36"	<p>Total 8 Amps, All Red (for White see Options on page 11)</p>
DF44ANFPA1	44"	<p>Total 9 Amps, All Red (for White see Options on page 11)</p>
DF47ANFPA1	47"	<p>Total 10 Amps, All Red (for White see Options on page 11)</p>

Standard Configurations (cont)

PROD. NO. **LENGTH**

DF48ANFPA1 48"

Total 10 Amps, All Red (for White see Options on page 11)

DF52ANFPA1 52"

Total 11 Amps, All Red (for White see Options on page 11)

DF58ANFPA1 58"

Total 12 Amps, All Red (for White see Options on page 11)

DF70ANFPA1 70"

Total 14 Amps, All Red (for White see Options on page 11)

DF82ANFPA1 82"

Total 16 Amps, All Red (for White see Options on page 11)

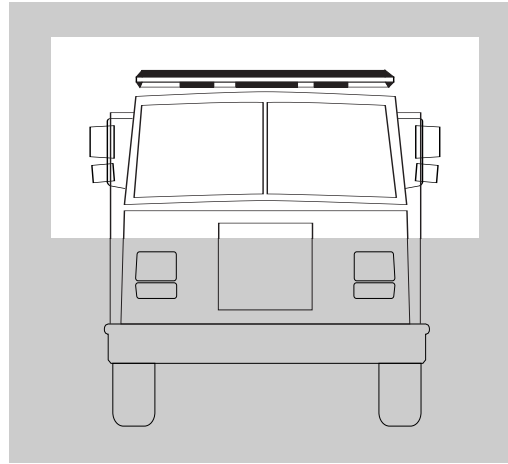
DF94ANFPA1 94"

Total 18 Amps, All Red (for White see Options on page 11)

RX 2700™ Lightbar

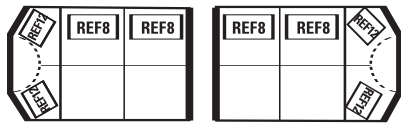
These RX 2700 Frameworks represent the minimum components needed to meet the Clearing and Blocking right-of-way requirement in Upper Zone A. The optical warning devices that make up the minimum requirement cannot be load managed.

Additional options may be added to these lightbars. The additional lightbar options will only add to the light output of the lightbar. Any additional light options can and must be load managed per NFPA 1901. For additional lightbar options, see page 11 of this guide or consult our Products and Pricing book.

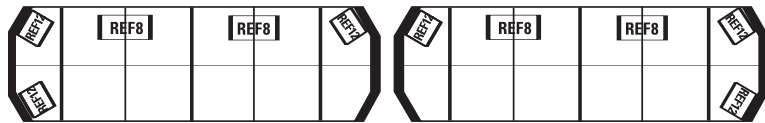


Standard Configurations

2718NFPA1 (pair with Smart LEDs only)



2722NFPA1 (pair with Smart LEDs only)

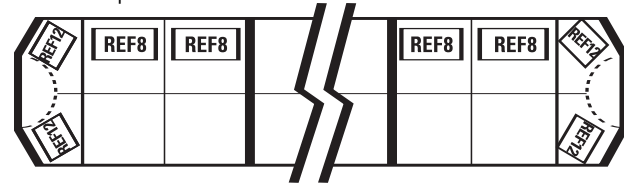


RX 2700 Framework #1 with Smart LED's

RX 2700 Lengths: 18", 36", 47", 58", 69", 80"
 4 x 12 PriZm™ lightheads corner with Red LEDs, Quad Flash
 4 x 8 PriZm lightheads forward with Red LEDs, Quad Flash
 Total 7.0 amps

RX 2700CC Framework #2 with Central Controller

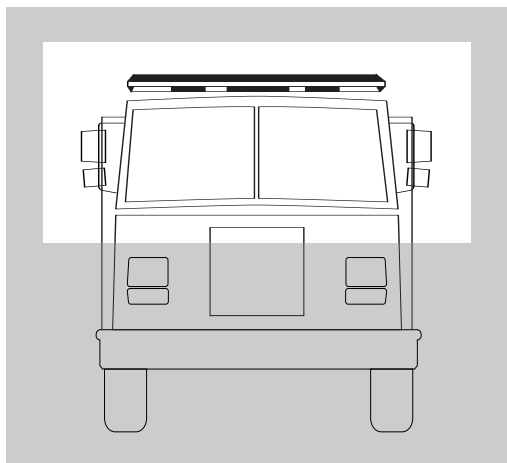
RX 2700CC Lengths: 36", 47", 58", 69", 80"
 4 x 12 PriZm™ lightheads corner with Red LEDs, Quad Flash
 4 x 8 PriZm lightheads forward with Red LEDs, Quad Flash
 Total 7.0 amps



Special Order Option: 91" lightbar, 2791NFPA1 or 2791NFPA1CC

Model No. (Smart LEDs)	Model No. (Central Controller)	Description
2718NFPA1		18" NFPA BAR – Red LED Modules (Quad Flash – Standard)
2736NFPA1	2736NFPA1CC	36" NFPA BAR – Red LED Modules (Quad Flash – Standard)
2747NFPA1	2747NFPA1CC	47" NFPA BAR – Red LED Modules (Quad Flash – Standard)
2758NFPA1	2758NFPA1CC	58" NFPA BAR – Red LED Modules (Quad Flash – Standard)
2769NFPA1	2769NFPA1CC	69" NFPA BAR – Red LED Modules (Quad Flash – Standard)
2780NFPA1	2780NFPA1CC	80" NFPA BAR – Red LED Modules (Quad Flash – Standard)

2100™ Lightbar



These 2100 Frameworks represent the minimum components needed to meet the Clearing and Blocking right-of-way requirement in Upper Zone A. The optical warning devices that make up the minimum requirement cannot be load managed.

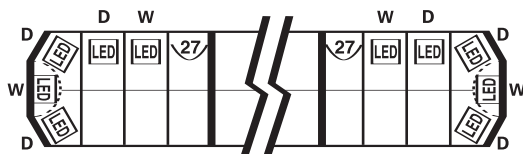
Additional options may be added to these lightbars. The additional lightbar options will only add to the light output of the lightbar. Any additional light options can and must be load managed per NFPA 1901. For additional lightbar options, see page 11 of this guide or consult our Products and Pricing book.

2100 Framework #1

Any length 2100 bar with:
 6 x Directional LEDs* outboard
 2 x Directional LEDs* forward with
 2 x Wide LED* forward
 2 x 27w Flashing Halogen
 10 Red LEDs* or 5 Red & 5 Blue with Clear Outer Lenses
 Total 6.2 amps

For ZONE A – Blocking:
 Drop 27w Flashers
 Total 4.0 amps

*Quad Flash Standard

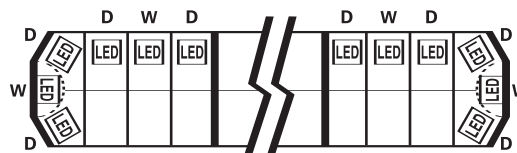


2100 Framework #2

Any length 2100 bar with:
 6 x Directional LEDs* outboard
 4 x Directional LEDs* forward with
 2 x Wide LED* forward
 12 Red LEDs* or 6 Red & 6 Blue with Clear Outer Lenses
 Total 4.8 amps

For ZONE A – Blocking:
 Same as above
 Total 4.8 amps

*Quad Flash Standard



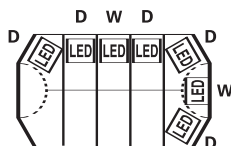
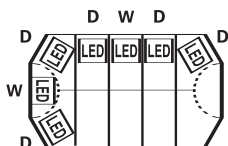
Additional standard bar configurations that meet NFPA requirements (no changes allowed).

2100 Model 2122NFPA1

(Used in pairs, sold separately)
 Pair of 22" length 2100 Beacons with:
 5 x Directional LEDs* forward (each beacon)
 2 x Wide LED* (each beacon)
 14 Red LEDs* (with Clear Outer Lenses)
 Total 3.5 amps per beacon

For ZONE A – Blocking:
 Same as above
 Total 3.5 amps per beacon

*Quad Flash Standard

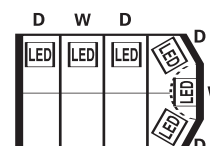
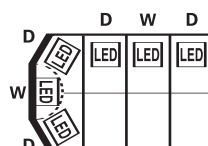


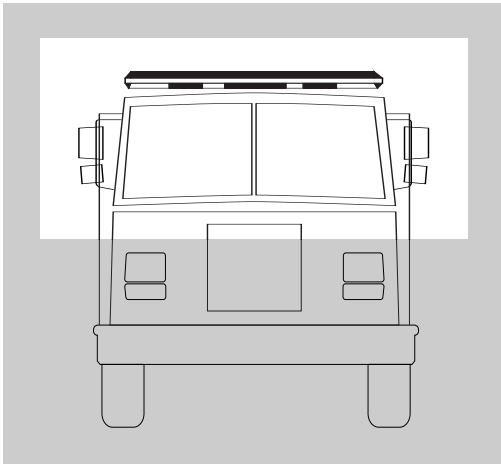
2100 Model 2118NFPA2

(Used in pairs, sold separately)
 Pair of 18" length 2100 Beacons with:
 4 x Directional LEDs* forward (each beacon)
 2 x Wide LED* (each beacon)
 12 Red LEDs* (with Clear Outer Lenses)
 Total 2.4 amps per beacon

For ZONE A – Blocking:
 Same as above
 Total 2.4 amps per beacon

*Quad Flash Standard





MX 7000[®] Lightbar

These MX 7000 Frameworks represent the minimum components needed to meet the Clearing and Blocking right-of-way requirement in Upper Zone A. The optical warning devices that make up the minimum requirement cannot be load managed.

Additional options may be added to these lightbars. The additional lightbar options will only add to the light output of the lightbar. Any additional light options can and must be load managed per NFPA 1901. For additional lightbar options, see page 11 of this guide or consult our Products and Pricing book.

MX 7000 Framework #1

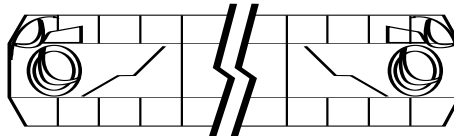
Any length MX 7000 bar with:
 4 X 50w Standard Rotators outboard
 2 Diamond Mirrors centered between Rotators
 Red Outer Lenses, Clear Lower Lenses
 Total 15.6 amps

For ZONE A – Blocking:
 Can drop 1 inboard Rotator each side
 Total 7.8 amps

MX 7000 Framework #2

Any length MX 7000 bar with:
 2 X 50w Standard Rotators outboard
 2 X 2-Step Cascade Mirrors inboard
 2 X 50w Intersection Lights lower level, Clear
 Red Outer Lenses, Clear Lower Lenses
 Total 15.6 amps

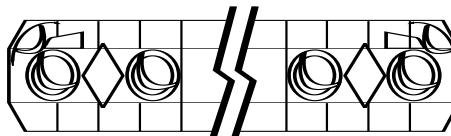
For ZONE A – Blocking:
 Drop Intersection Lights
 Total 7.8 amps



MX 7000 Framework #4

Any length MX 7000 bar with:
 4 X 50w Standard Rotators outboard
 2 X Diamond Mirrors centered between
 2 X 50w Intersection Lights lower level, Clear
 Clear Outer Lenses, Clear Lower Lenses, Red Filters
 Total 23.4 amps

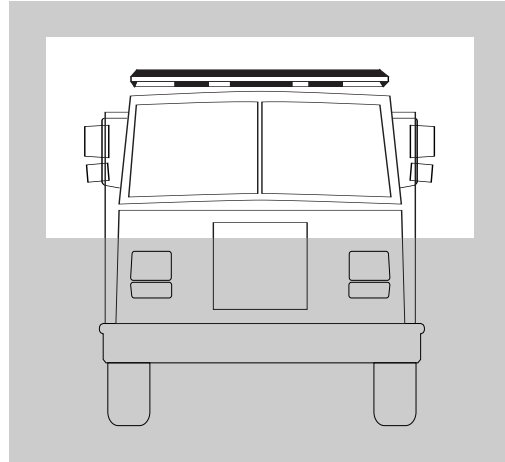
For ZONE A – Blocking:
 Drop Intersection Lights
 Total 15.6 amps



Excalibur® Lightbar

These Excalibur Frameworks represent the minimum components needed to meet the Clearing and Blocking right-of-way requirement in Upper Zone A. The optical warning devices that make up the minimum requirement cannot be load managed.

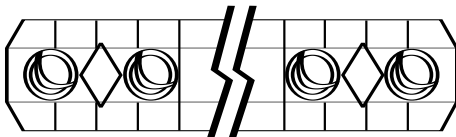
Additional options may be added to these lightbars. The additional lightbar options will only add to the light output of the lightbar. Any additional light options can and must be load managed per NFPA 1901. For additional lightbar options, see page 11 of this guide or consult our Products and Pricing book.



Excalibur Framework #1

- Any length Excalibur bar with:
- 4 X 50w Standard Rotators outboard
- 2 Diamond Mirrors centered between Rotators
- Red Outer Lenses, Clear Lower Lenses
- Total 15.6 amps

For ZONE A – Blocking:
 Can drop 1 inboard Rotator each side
 Total 7.8 amps

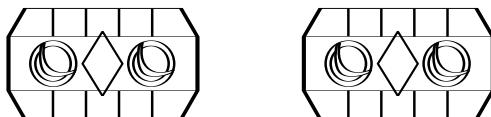


Additional standard bar configurations that meet NFPA requirements (no changes allowed).

Excalibur Model X22NFPA1

- (Must be used in pairs, sold separately)
- Pair of 22.5" length Excalibur Beacons with:
- 4 X 50w Standard Rotators outboard
- 2 Diamond Mirrors centered between Rotators
- Red Outer Lenses, Clear Lower Lenses
- Total 15.6 amps

For ZONE A – Blocking:
 Can drop 1 inboard Rotator each side
 Total 7.8 amps



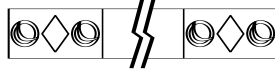
XL 5000™ Lightbar

XL 5000 Framework #1 and Framework #2 represent the minimum components needed to meet the Clearing and Blocking right-of-way requirement in Upper Zone A. The optical warning devices that make up the minimum requirement cannot be load managed.

Additional options may be added to these lightbars. The additional lightbar options will only add to the light output of the lightbar. Any additional light options can and must be load managed per NFPA 1901. For additional lightbar options, see page 11 of this guide or consult our Products and Pricing book.

XL 5000 Framework #1

Any length XL 5000 bar with:
 Red Lenses
 4 X 50w Standard Rotators outboard
 2 Diamond Mirrors centered between Rotators
 Total 15.6 amps



For ZONE A – Blocking:
 Can drop 1 inboard Rotator each side
 Total 7.8 amps

XL 5000 Framework #2

Any length XL 5000 bar with:
 Red Lenses
 2 X 100w Fast Rotators
 2 – Flat Mirrors center, 2 – “V” Mirrors inboard
 Total 15.6 amps



For ZONE A – Blocking:
 Same as above
 Total 15.6 amps

Additional standard bar configurations that meet NFPA requirements (no changes allowed).

Model 556A2

56” length XL 5000 bar with:
 Red Lenses
 2 x 50w Standard or Fast Rotator
 2 x 3-Step Cascade Mirror
 1 x 100w Fast Rotator
 2 x 2-Step Cascade Mirror
 Total 15.6 amps



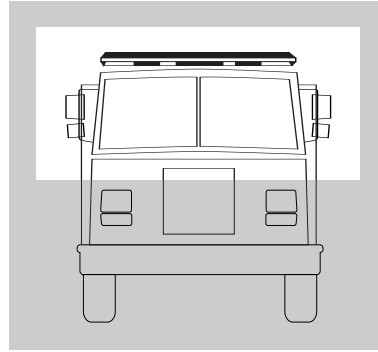
Minimum ZONE A – Clearing & Blocking

Model 574NFPA1

74” length XL 5000 bar with:
 Red Lenses
 4 x 50w Standard or Fast Rotator
 2 x 3-Step Cascade Mirror
 4 x 2-Step Cascade Mirror
 Total 15.6 amps



Minimum ZONE A – Clearing & Blocking



LP 6000™ Lightbar

LP 6000 Framework #1

Any length LP 6000 bar with:
 Red Lenses
 4 X 50w Standard Rotators outboard
 2 Diamond Mirrors centered between Rotators
 Total 15.6 amps

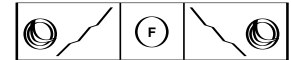


For ZONE A – Blocking:
 Can drop 1 inboard Rotator each side
 Total 7.8 amps

Additional standard bar configurations that meet NFPA requirements (no changes allowed).

Model 647NFPA1

47” length LP 6000 bar with:
 Red Lenses
 2 x 50w Standard Rotator
 2 x 3-Step Cascade Mirror
 1 x 100w Fast Rotator
 Total 15.6 amps



Minimum ZONE A – Clearing & Blocking

Model 655NFPA1

55” length LP 6000 bar with:
 Red Lenses Outboard
 4 x 50w Standard Rotator
 2 x 3-Step Cascade Mirror
 Total 15.6 amps

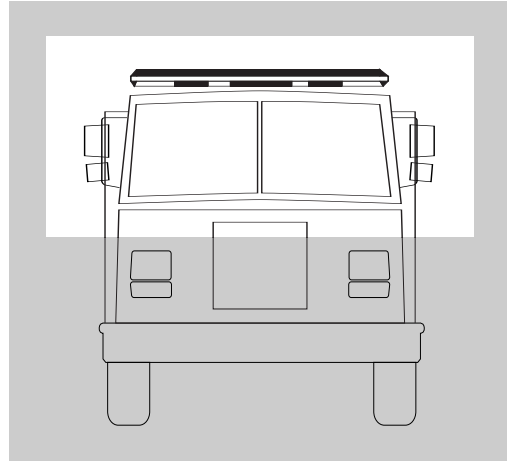


For ZONE A – Blocking:
 Can drop 1 inboard Rotator each side
 Total 7.8 amps

Code 360[®] Lightbar

This Code 360 Framework represents the minimum components needed to meet the Clearing and Blocking right-of-way requirement in Upper Zone A. The optical warning devices that make up the minimum requirement cannot be load managed.

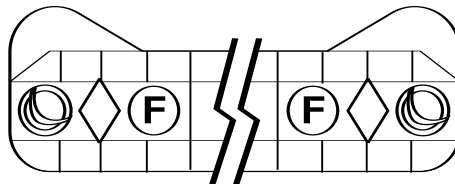
Additional options may be added to these lightbars. The additional lightbar options will only add to the light output of the lightbar. Any additional light options can and must be load managed per NFPA 1901. For additional lightbar options, see page 11 of this guide or consult our Products and Pricing book.



Code 360 Framework #1

Any length Code 360 bar with:
 2 X 50w Standard Rotators outboard
 2 X 50w Fast Rotators outboard
 or 4 X 50w Fast Rotators outboard
 2 Diamond Mirrors centered between
 Rotators
 Red Outer Lenses
 Total 15.6 amps

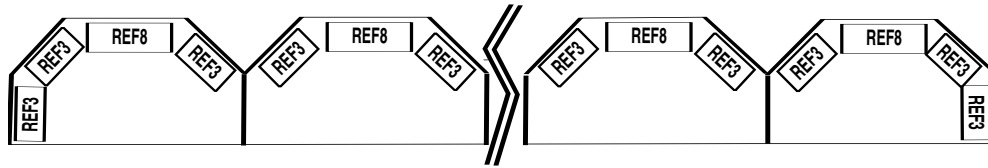
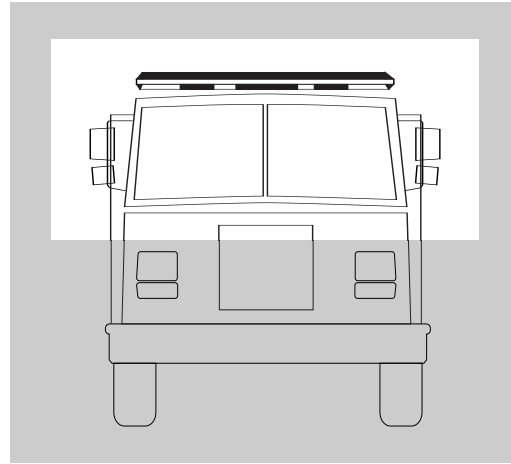
For ZONE A – Blocking:
 Do not drop inboard Rotator



XP 9500™ Lightbar

These XP 9500 Frameworks represent the minimum components needed to meet the Clearing and Blocking right-of-way requirement in Upper Zone A. The optical warning devices that make up the minimum requirement cannot be load managed.

Additional options may be added to these lightbars. The additional lightbar options will only add to the light output of the lightbar. Any additional light options can and must be load managed per NFPA 1901. For additional lightbar options, see page 11 of this guide or consult our Products and Pricing book.

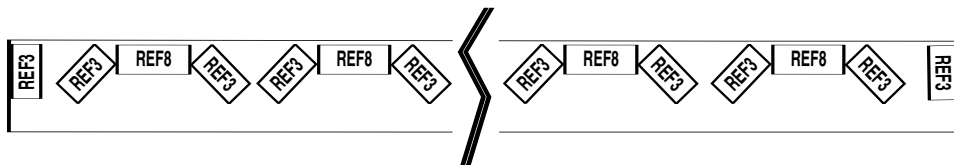
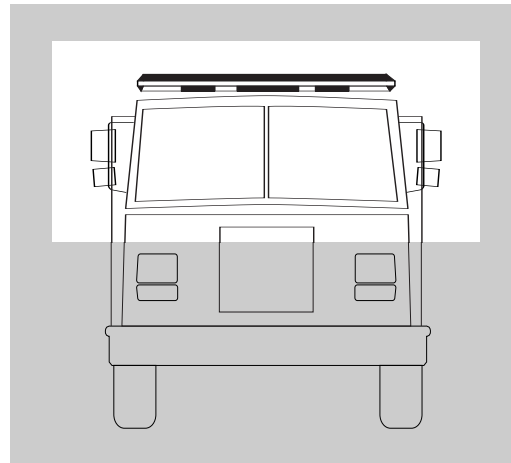


Model No.	Description	Model No.	Description
9512NFPA1	12" NFPA BAR – Red LED Modules (Quad Flash – Standard)	9563NFPA1	63" NFPA BAR – Red LED Modules (Quad Flash – Standard)
9525NFPA1	25" NFPA BAR – Red LED Modules (Quad Flash – Standard)	9575NFPA1	75" NFPA BAR – Red LED Modules (Quad Flash – Standard)
9538NFPA1	38" NFPA BAR – Red LED Modules (Quad Flash – Standard)	9588NFPA1	88" NFPA BAR – Red LED Modules (Quad Flash – Standard)
9550NFPA1	50" NFPA BAR – Red LED Modules (Quad Flash – Standard)		

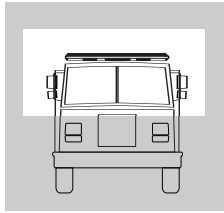
FM 9000™ Lightbar

These FM 9000 Frameworks represent the minimum components needed to meet the Clearing and Blocking right-of-way requirement in Upper Zone A. The optical warning devices that make up the minimum requirement cannot be load managed.

Additional options may be added to these lightbars. The additional lightbar options will only add to the light output of the lightbar. Any additional light options can and must be load managed per NFPA 1901. For additional lightbar options, see page 11 of this guide or consult our Products and Pricing book.



Model No.	Description	Model No.	Description
9013NFPA1	13" NFPA BAR – Red LED Modules (Quad Flash – Standard)	9062NFPA1	62" NFPA BAR – Red LED Modules (Quad Flash – Standard)
9023NFPA1	23" NFPA BAR – Red LED Modules (Quad Flash – Standard)	9075NFPA1	75" NFPA BAR – Red LED Modules (Quad Flash – Standard)
9036NFPA1	36" NFPA BAR – Red LED Modules (Quad Flash – Standard)	9088NFPA1	88" NFPA BAR – Red LED Modules (Quad Flash – Standard)
9049NFPA1	49" NFPA BAR – Red LED Modules (Quad Flash – Standard)		



Lightbar Options

Consult Products and Pricing book for complete option listing or contact your Sales Representative or Customer Service at (314) 426-2700.

OPTION/DESCRIPTION	AMP DRAW PER DEVICE	OPTION/DESCRIPTION	AMP DRAW PER DEVICE
Defender™ Lightbars		MR-16 Alley Lights 50w	3.9
2.7" TriCore Lighthouse Flashing (all colors except white)	0.5	MR-11 Alley Lights 35w (Excalibur)	2.7
2.7" TriCore White only	0.75	2 Linear Strobe Heads with Power Supply	2.8
5.2" TriCore Lighthouse Flashing (all colors except white)	1	4 Linear Strobe Heads with Power Supply	6.0
5.2" TriCore White only	1.5	LED X Drop-In Module	0.4
		LED X Stationary Light	0.8
RX 2700™ Lightbars		XL 5000™ Lightbars	
12 LED PriZm™ Lighthoods Drop-in Module Flashing	1.0	50w Rotator (any speed)	3.9
8 LED PriZm Lighthoods Drop-in Module Flashing	0.75	55w Rotator (any speed)	4.3
Optix 6-Up Drop-in Module Flashing, Dual Stack Optional	0.5	100w Rotator (any speed)	7.8
Optix 3-Up Drop-in Module Flashing, Dual Stack Optional	0.3	OsciLaser™-35w	2.7
		28w Stationary Light	2.2
		28w Flashing Stationary Light	1.1
2100™ Lightbars		LP 6000™ Lightbars	
Optix 6-Up Drop-in Module Flashing, Dual Stack Optional	1.0	50w Rotator (any speed)	3.9
Optix 3-Up Drop-in Module Flashing, Dual Stack Optional	0.5	55w Rotator (any speed)	4.3
LED X™ Drop-In Module, Flashing	0.4	100w Rotator (any speed)	7.8
LED X™ Stationary Light	0.8	OsciLaser-35w	2.7
27w Flashing Stationary Light	1.1	50w Stationary Light	3.9
		50w Flashing Stationary Light	2.0
		28w Stationary Light	2.2
		28w Flashing Stationary Light	1.1
MX 7000® / Excalibur® / Code 360® Lightbars		XP 9500™ / FM 9000™ Lightbars	
50w Rotator (any speed)	3.9	8 LED PriZm Lighthoods Drop-in Module Flashing	0.75
55w Rotator (any speed)	4.3	3 LED PriZm Lighthoods Drop-in Module Flashing	0.25
OsciLaser™ 35w	2.7	Optix 6-Up Drop-in Module Flashing, Dual Stack Optional	0.5
50w Stationary Light	3.9	Optix 3-Up Drop-in Module Flashing, Dual Stack Optional	0.3
50w Flashing Stationary Light	2.0		
28w Stationary Light	2.2		
28w Flashing Stationary Light	1.1		
Alley Lights 50w	3.9		
Intersection / Pursuit Lights 50w (MX 7000)	3.9		
Intersection / Pursuit Lights 27w (Excalibur)	2.1		

Perimeter Lighting

Specify one of the following lighting packages for each Lower Zone:

Lower Zone A (Front)

Code 3 recommends LED technology for this zone coverage. The benefits are long life, no maintenance and low amp draw.

2 – Model 45R or 45BZR 3 x 7 LED OR LED PriZm™ 378R-75 or 378RBZ-75, Red Lenses OR 1 Red and 1 Blue Lens
Total 1.0 amp

2 – Model 65R or 65BZR 4 x 6 LED OR LED PriZm 468R-75 or 468RBZ-75, Red Lenses OR 1 Red and 1 Blue Lens
Total 1.0 amp

2 – Model 85R or 85BZR 7 x 9 LED OR LED PriZm 798R-75 or 798RBZ-75, Red Lenses OR 1 Red and 1 Blue Lens
Total 1.6 amps

2 – Model LXEX1F-R LED Wide Optic Red OR 1 Red and 1 Blue
Total .8 amp

2 – Model LXEX2F-RR LED Wide / Directional Optic Red OR 2 Red Modules and 2 Blue Modules
Total 1.6 amps

2 – OPX6-RR Wide
Total 1.0 amp

2 – OPX3-R Wide
Total 0.5 amp

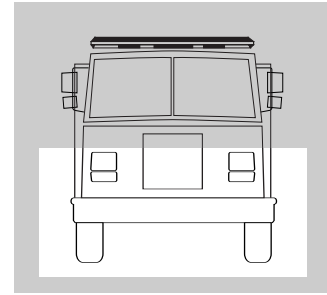
2 – Model 80, 80BZ, 87 or 87BZ 9 x 7 Strobe Perimeter Lights
Red Lenses
Total 3.5 amps

2 – Model 4135 or 4135BZ 7 x 3 Perimeter Lights
35w Halogen – Flashing, using 1 Model 710 or 950 flasher with Red or Blue Lens
Total 2.7 amps

2 – Model 8135, 8135BZ, 8835, or 8835BZ 9 x 7 Perimeter Lights
35w Halogen – Flashing, using 1 model 710 or 950 flasher, Red or Blue Lenses
Total 2.7 amps

2 – Model OL135 or OL13F Oscilasers™
35w Halogen, Flush-Mount or Headlight Mount with Red or Blue Lenses
Total 5.5 amps

2 – Model OPX3LRR OptiLasers™
Two Red Wide 3-up Optix each, Flush Mount with Clear or Red Lens.
Total 1.0 amp



Lower Zone B (Passenger Side) & Lower Zone D (Driver Side)

Code 3 recommends LED technology for this zone coverage. The benefits are long life, no maintenance and low amp draw.

* Note: For vehicles whose horizontal distance between the front & rear lower optical devices is less than 25 feet. If the distance is greater than 25' a midship optical device is required.

*2 – Model 45R or 45BZR 3 x 7 LED OR LED PriZm 378R-75 or 378RBZ-75, Red Lenses OR 1 Red and 1 Blue Lens OR 1 Red and 1 Amber Lens. Total 1.0 amp

*2 – Model 65R or 65BZR 4 x 6 LED OR LED PriZm 468R-75 or 468RBZ-75, Red Lenses OR 1 Red and 1 Blue Lens OR 1 Red and 1 Amber Lens. Total 1.0 amp

*2 – Model 85R or 85BZR 7 x 9 LED OR LED PriZm 798R-75 or 798RBZ-75, Red Lenses OR 1 Red and 1 Blue Lens OR 1 Red and 1 Amber Lens. Total 1.6 amps

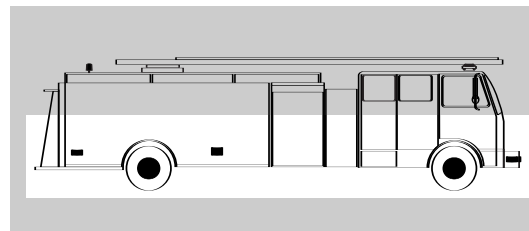
*2 – Model LXEX1F-R LED Wide Optic Red OR 1 Red and 1 Blue OR 1 Red and 1 Amber
Total .8 amp

2 – OPX6-RR Wide
Total 1.0 amp

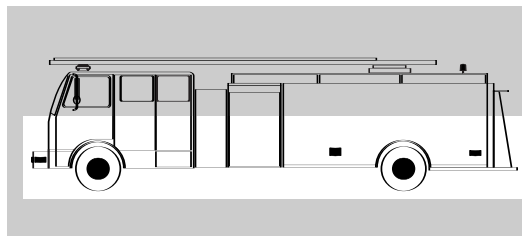
2 – OPX3-R Wide
Total 0.5 amp

*2 – Model LXEX2F-RR LED Wide / Directional Optic Red OR 2 Red Modules and 2 Blue Modules OR 2 Red Modules and 2 Amber Modules
Total 1.6 amps

3 – Model 40 or 40BZ 7 x 3 Strobe Perimeter Lights
Red/Amber/Red OR Amber/Red/Amber OR Amber/Amber/Amber
Total 5.25 amps



Lower Zone B & Lower Zone D (continued)



*2 – Model 40 or 40BZ 7 x 3 Strobe Perimeter Lights
Red/Amber OR Amber/Red OR Amber/Amber
Total 3.5 amps

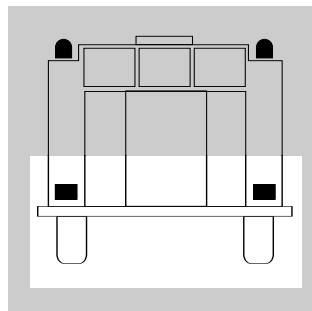
3 – Model 4135 or 4135BZ 7 x 3 Perimeter Lights
35w Halogen – Flashing, using 1 Model 710 or 950 flasher, Red OR
Amber OR Blue Lens
Total 4.1 amps

*2 – Model 4135 or 4135BZ 7 x 3 Perimeter Lights
35w Halogen – Flashing, using 1 Model 710 or 950 flasher, Red OR Amber OR Blue Lens
Total 2.7 amps

2 – Model 40 or 40BZ 7 x 3 Strobe Perimeter Lights
Red/Red OR Red/Amber OR Amber/Amber Lenses, plus: 1 – Model 41 or 41BZ 7 x 3 Perimeter Light 50w Halogen – Flashing,
using 1 Model 710 or 950 flasher, Red OR Amber Lens
Total 5.5 amps

Lower Zone C (Rear)

Code 3 recommends LED technology for this zone coverage.
The benefits are long life, no maintenance and low amp draw.



2 – Model 45R or 45BZR 3 x 7 LED OR LED PriZm 378R-75 or 378RBZ-75,
Red Lenses OR 1 Red and 1 Blue Lens OR 1 Red and 1 Amber Lens
Total 1.0 amp

2 – Model 65R or 65BZR 4 x 6 LED OR LED PriZm 468R-75 or 468RBZ-75,
Red Lenses OR 1 Red and 1 Blue Lens OR 1 Red and 1 Amber Lens
Total 1.0 amp

2 – Model 85R or 85BZR 7 x 9 LED OR LED PriZm 798R-75 or 798RBZ-75,
Red Lenses OR 1 Red and 1 Blue Lens OR 1 Red and 1 Amber Lens
Total 1.6 amps

2 – Model LXEX1F-R LED Wide Optic Red OR 1 Red and 1 Blue OR 1 Red and 1 Amber
Total .8 amp

2 – Model LXEX2F-RR LED Wide / Directional Optic Red OR 2 Red Modules and 2 Blue Modules
OR 2 Red Modules and 2 Amber Modules
Total 1.6 amps

2 – OPX6-RR WIDE
Total 1.0 amp

2 – OPX3-R WIDE
Total 0.5 amp

2 – Model 80, 80BZ, 87, or 87BZ 9 x 7 Strobe Perimeter Lights; Red OR Amber OR Blue Lenses
Total 2.8 amps

2 – Model 8135, 8135BZ, 8835, or 8835BZ 9 x 7 Perimeter Lights
35w Halogen – Flashing, using 1 model 710 or 950 flasher, Red OR Amber OR Blue Lenses
Total 2.7 amps

2 – Model 40 or 40BZ 7 x 3 Strobe Perimeter Lights; 1 Red and 1 Amber Lens;
OR 2 Amber Lenses
Total 3.5 amps

2 – Model 4135 or 4135BZ 7 x 3 Perimeter Lights
35w Halogen – Flashing, using 1 Model 710 or 950 flasher w/ Red OR Blue OR Amber lens
Total 2.7 amps

Beacons & Perimeter Lighting

Code 3 recommends LED technology for this zone coverage. The benefits are long life, no maintenance and low amp draw.

ALL LED ZONE OPTIONS

- 1 Pair XP 9501 PriZm™ Beacon with Red LEDs
- 1 Pair LDB24NFPA1 or LDB24NFPA2 Red LED DuoBeam
- 1 Pair PDB412NFPA1 or PDB412NFPA2 Red LED PriZm DuoBeam

• Choose one of the following for Rear Upper Zone C:

- 2 – 85R or 85BZR LED Perimeter Lights
OR 2 – LED PriZm 798R-75 or 798RBZ-75
- OR 4 – 65R or 65BZR LED Perimeter Lights
OR 2 – LED PriZm 468R-75 or 468RBZ-75
OR 2 – LED PriZm 378R-75 or 378RBZ-75

- OR 8 – LXEX1F LED Red Perimeter Lights
- OR 4 – LXEX2F LED Red Perimeter Lights
- OR 4 – OPX6-RR WIDE

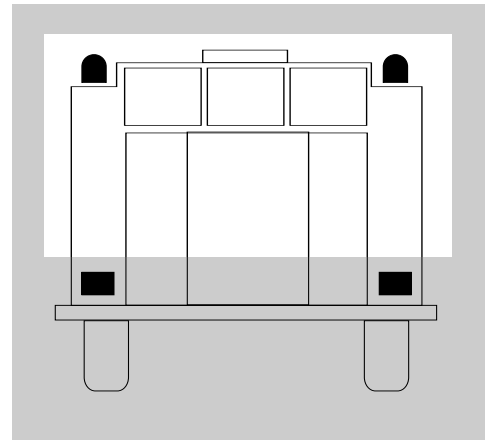
• Combine with one of the following for Side Rear Upper Zones B & D:

- 2 – 85R or 85BZR LED Perimeter Lights (1 light used in Zone B, 1 light used in Zone D)
OR 2 – LED PriZm 798R-75 or 798RBZ-75
- OR 2 – 65R or 65BZR LED Perimeter Lights (1 light used in Zone B, 1 light used in Zone D)
OR 2 – LED PriZm 468R-75 or 468RBZ-75
OR 2 – LED PriZm 378R-75 or 378RBZ-75
- OR 2 – OPX6-RR WIDE OPTIC (1 light used in Zone B, 1 light used in Zone D)

OTHER OPTIONS

- 2 – Model 550 Beacons with Fast or Standard Rotator Red or Amber Lens
Total 7.8 amps

- 2 – Model 550 Beacons with Fast or Standard Rotator
1 Red Lens, 1 Amber Lens



RESCUE VEHICLE APPLICATIONS

ALL LED ZONE OPTIONS

- Choose one of the following packages for Upper Zone A or C:
9588 – 88" XP 9500™ Lightbar
9088 – 88" FM 9000™ Lightbar
- Choose one of the following packages for Rear Upper Zone C:
2 – 85 or 85BZ LED Perimeter Lights
OR 2 – LED PriZm 798R-75 or 798RBZ-75
- OR 4 – 65 or 65BZ LED Perimeter Lights
OR 2 – LED PriZm 468R-75 or 468RBZ-75
- OR 8 – LXEX1F LED Perimeter Lights
OR 4 – LXEX2F LED Perimeter Lights
- Combine with one of the following for Side Rear Upper Zones B & D:
2 – 85 or 85BZ LED Perimeter Lights
OR 2 – LED PriZm 798R-75 or 798RBZ-75
(1 light used in Zone B, 1 light used in Zone D)
- OR 4 – 65 or 65BZ LED Perimeter Lights
OR 4 – LED PriZm 468R-75 or 468RBZ-75
(2 lights used in Zone B, 2 lights used in Zone D)

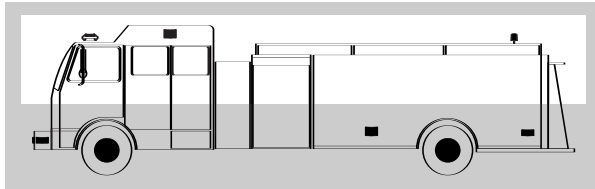
OTHER OPTIONS

- 4 – Model 81 or 88 9 x 7 Perimeter Lights
50w Halogen-Flashing
Using 1 – Model 710 Flasher or 950 flasher
Color choices: 2 – Red or Amber or Blue – ZONE C
1 each in Rear, Upper ZONES B & D
Red or Amber or Blue
Total 8.4 amps
- 4 – Model 41 7 x 3 Perimeter Lights
50w Halogen – Flashing
Using 1 – Model 710 Flasher
Color choices – 2 – Red or Amber or Blue – ZONE C
1 each in Rear, Upper ZONES B & D
Red or Amber or Blue
Total 7.8 amps

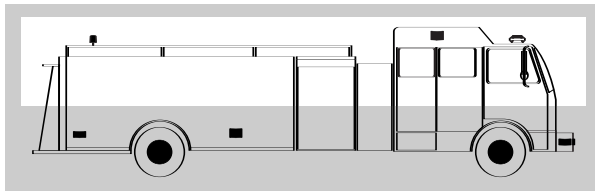
Special Applications

Raised-roof application. (Optional)

For raised application – you may add the following lights to Upper Zone B & D on the raised roof part of the vehicle.



- 2 – Model 45 or 45BZ
- OR 2 – LED PriZm 378R-75 or 378RBZ-75
- 7 x 3 Perimeter Lights
- Red Lens on each
- LED – Flashing
- Total 1.0 amp



- 2 – Model 4135 or 4135BZ
- 7 x 3 Perimeter Lights
- Red Lens on each
- 35w Halogen – Flashing, using
- 1 model 710 or 950 flasher
- Total 2.7 amps

- 2 – OPX6-RR
- 2 – OPX3-R
- 2 – LXEX1F
- 2 – LXEX2F
- 2 – 65R OR 65BZR
- OR 2 – LED PriZm 468R-75 or 468RBZ-75

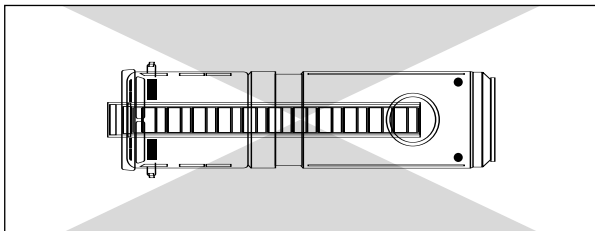
STROBE POWER SUPPLIES

Power Supply Requirements

Count the number of strobe heads selected in your package and match with one of the following selections:

- Four (4) Strobe Perimeter Lights on vehicle require 1– PSE475 Power Supply utilized in Quad-Flash or Five-Flash mode.

- Six (6) Strobe Perimeter Lights on vehicle require 1– PSE690 Power Supply utilized in Quad-Flash or Five-Flash mode.
- Eight (8) Strobe Perimeter Lights on vehicle require 2– PSE475 or 1– PS8150 Power Supply utilized in Quad-Flash or Five-Flash mode.
- Ten (10) Strobe Perimeter Lights on vehicle require 2– PSE475 or 1– PS8150 Power Supply utilized in Quad-Flash or Five-Flash mode and 1–PSE235 Power Supply utilized in Quad-Flash mode.



The compiled systems below are certified by Code 3[®], Inc. to meet and/or exceed the requirements of the NFPA 1901 Standard for Automotive Fire Apparatus 2003 Edition as described in Chapter 13 titled "Low Voltage Electrical Systems and Warning Devices."

Code 3[®], Inc. has performed tests on these systems that demonstrate, when mounted and functioning properly, will meet or exceed the minimum requirements as specified in the NFPA 1901 Standard. When completely filled out, this form will serve as your certification from Code 3[®], Inc.

The compiled system is only in compliance when every section is completely filled out. Follow the instructions for each section. Refer to the notes at the bottom of this page for additional information. Consult the NFPA 1901 Standard for color selection and current requirements. Contact the OEM Department at Code 3[®], Inc. to receive NFPA candela compliancy certification at (314) 426-2700.

Front-Upper Zone A

Fill in blank spaces with your choices from previous pages.

- | | | | |
|------------------------------|-------|-------|------|
| 1. Framework or Standard Bar | _____ | _____ | Amps |
| 2. Managed Item/Option | _____ | _____ | Amps |
| 3. Managed Item/Option | _____ | _____ | Amps |
| 4. Managed Item/Option | _____ | _____ | Amps |
| 5. Managed Item/Option | _____ | _____ | Amps |

NFPA	_____	Total Amps* *
Managed	_____	Total Amps

Rear-Upper Zone C and Zones B and D

All LED Zone Options

• Choose one of the following for Rear Upper Zone C:

- | | | | |
|---|----------------|-------|------|
| 1 – Pair XP 9501 PriZm™ LED Beacon | 3.5 amps | _____ | Amps |
| 4 – OPX6-RR WIDE | 2.0 amps | _____ | Amps |
| 2 – I85 or 85BZ LED Perimeter Lights) OR (798R-75 or 798RBZ-75 LED PriZm Perimeter Lights) | 1.6 amps | _____ | Amps |
| OR 4 – I65 or 65BZ LED Perimeter Lights) OR (468R-75 or 468RBZ-75 LED PriZm Perimeter Lights) | 2.0 amps | _____ | Amps |
| OR 8 – LXEX1F LED Perimeter Lights | 3.2 amps | _____ | Amps |
| OR 4 – LXEX2F LED Perimeter Lights | 3.2 amps | _____ | Amps |

• Combine with one of the following for Side Rear Upper Zones B & D:

- | | | | |
|---|----------------|-------|------|
| 2 – I85 or 85BZ LED Perimeter Lights) OR (798R-75 or 798RBZ-75 LED PriZm Perimeter Lights) | | | |
| (1 light used in Zone B, 1 light used in Zone D) | 1.6 amps | _____ | Amps |
| OR 4 – I65 or 65BZ LED Perimeter Lights) OR (468R-75 or 468RBZ-75 LED PriZm Perimeter Lights) | | | |
| (2 lights used in Zone B, 2 used in Zone D) | 2.0 amps | _____ | Amps |

Other Options

• Choose one of the following lighting packages and fill in amp draw:

- | | | | |
|--|----------------|-------|------|
| 2 – Model 550F Beacons or 2 – 550 Beacons – 1 Red / 1 Amber | 7.8 amps | _____ | Amps |
| 2 – Model 550F Beacons plus 1 – Model 4135 or 4135BZ Perimeter Light | 9.2 amps | _____ | Amps |
| 4 – Model 81 or 88 9X7 Perimeter Lights | 7.8 amps | _____ | Amps |
| 4 – Model 41 7X3 Perimeter Lights | 7.8 amps | _____ | Amps |

NFPA	_____	Total Amps* *
-------------	-------	----------------------

Lower Zones A, B, C and D

• Choose one lighting option from each Lower Zone. Fill in amp draw for Lower zones A, B, C & D.

Lower Zone A

- | | | | |
|--|----------------|-------|------|
| • 2 – OPX6-RR WIDE | 1.0 amps | _____ | Amps |
| • 2 – OPX3-R WIDE | 0.5 amps | _____ | Amps |
| • 2 – I85 or 85BZ LED Perimeter Lights) OR (798R-75 or 798RBZ-75 LED PriZm Perimeter Lights) | 1.6 amp | _____ | Amps |
| • 2 – I65 or 65BZ LED Perimeter Lights) OR (468R-75 or 468RBZ-75 LED PriZm Perimeter Lights) | 1.0 amp | _____ | Amps |
| • 2 – I45 or 45BZ LED Perimeter Lights) OR (378R-75 or 378RBZ-75 LED PriZm Perimeter Lights) | 1.0 amp | _____ | Amps |
| • 2 – LXEX1F LED Perimeter Lights | 0.8 amp | _____ | Amps |
| • 2 – LXEX2F LED Perimeter Lights | 1.6 amps | _____ | Amps |
| • 2 – Model 80, 80BZ, 87 or 87BZ Strobe Perimeter Lights | 2.8 amps | _____ | Amps |
| • 2 – Model 8135, 8135BZ, 8835 or 8835BZ Flashing Halogen | 2.7 amps | _____ | Amps |
| • 2 – Model OL135 or OL13F OscLaser™ | 5.5 amps | _____ | Amps |
| • 2 – Model 4135 or 41-35BZ | 2.7 amps | _____ | Amps |

NFPA	_____	Total Amps* *
-------------	-------	----------------------

Total from bottom of previous page _____ **Amps**

Lower Zone B

- 2* – I85 or 85BZ LED Perimeter Lights) OR (798R-75 or 798RBZ-75 LED PriZm Perimeter Lights) . . . 1.6 amps _____ Amps
- 2* – I65 or 65BZ LED Perimeter Lights) OR (468R-75 or 468RBZ-75 LED PriZm Perimeter Lights) . . . 1.0 amp _____ Amps
- 2* – I45 or 45BZ LED Perimeter Lights) OR (378R-75 or 378RBZ-75 LED PriZm Perimeter Lights) . . . 1.0 amp _____ Amps
- 2* – LXEX1F LED Perimeter Lights 0.8 amp _____ Amps
- 2* – LXEX2F LED Perimeter Lights 1.6 amps _____ Amps
- 3 – Model 40 or 40BZ Strobe Perimeter Lights 5.25 amps _____ Amps
- 2 – Model 40 or 40BZ Strobe Perimeter Lights* 3.5 amps _____ Amps
- 3 – Model 4135 or 4135BZ Flashing
Halogen Perimeter Lights 4.1 amps _____ Amps
- 2 – Model 4135 or 4135BZ Flashing
Halogen Perimeter Lights* 2.7 amps _____ Amps
- 2 – Model 40 or 40BZ Strobe Perimeter Lights
plus 1– Model 41 or 41BZ Perimeter Light 5.5 amps _____ Amps

Lower Zone C

- 2 – I85 or 85BZ LED Perimeter Lights) OR (798R-75 or 798RBZ-75 LED PriZm Perimeter Lights) . . . 1.6 amps _____ Amps
- 2 – I65 or 65BZ LED Perimeter Lights) OR (468R-75 or 468RBZ-75 LED PriZm Perimeter Lights) . . . 1.0 amp _____ Amps
- 2 – I45 or 45BZ LED Perimeter Lights) OR (378R-75 or 378RBZ-75 LED PriZm Perimeter Lights) . . . 1.0 amp _____ Amps
- 2 – LXEX1F LED Perimeter Lights 0.8 amp _____ Amps
- 2 – LXEX2F LED Perimeter Lights 1.6 amps _____ Amps
- 2 – Model 80, 80BZ, 87, or 87BZ Strobe Perimeter Lights 2.8 amps _____ Amps
- 2 – Model 8135, 8135BZ, 8835, or 8835BZ Flashing Halogen 2.7 amps _____ Amps
- 2 – Model 40 or 40BZ Strobe Perimeter Lights 3.5 amps _____ Amps
- 2 – Model 4135 or 4135BZ Flashing
Halogen Perimeter Lights 2.7 amps _____ Amps

Lower Zone D

- 2* – I85 or 85BZ LED Perimeter Lights) OR (798R-75 or 798RBZ-75 LED PriZm Perimeter Lights) . . . 1.6 amps _____ Amps
- 2* – I65 or 65BZ LED Perimeter Lights) OR (468R-75 or 468RBZ-75 LED PriZm Perimeter Lights) . . . 1.0 amp _____ Amps
- 2* – I45 or 45BZ LED Perimeter Lights) OR (378R-75 or 378RBZ-75 LED PriZm Perimeter Lights) . . . 1.0 amp _____ Amps
- 2* – LXEX1F LED Perimeter Lights 0.8 amp _____ Amps
- 2* – LXEX2F LED Perimeter Lights 1.6 amps _____ Amps
- 3 – Model 40 or 40BZ Strobe Perimeter Lights 5.25 amps _____ Amps
- 2 – Model 40 or 40BZ Strobe Perimeter Lights* 2.8 amps _____ Amps
- 3 – Model 4135 or 4135BZ Flashing
Halogen Perimeter Lights 4.1 amps _____ Amps
- 2 – Model 4135 or 4135BZ Flashing
Halogen Perimeter Lights* 2.7 amps _____ Amps
- 2 – Model 40 or 40BZ Strobe Perimeter Lights
plus 1– Model 41 or 41BZ Perimeter Light 5.5 amps _____ Amps

NFPA _____ **Total Amps* ***

NFPA Total Amp Draw for All Zones* :

plus, if required:

Raised roof application – for options drawing 42.3 amps or less

- 2 – 4135 or 4135BZ 2.7 amps _____ Amps
- 2 – 45 or 45BZ 1.0 amps _____ Amps

Total NFPA Amp Draw _____ **Amps**

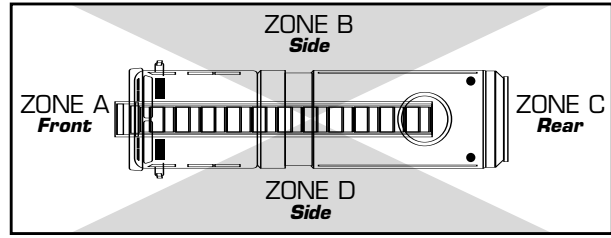
Truck/Order No _____

Fire Department _____

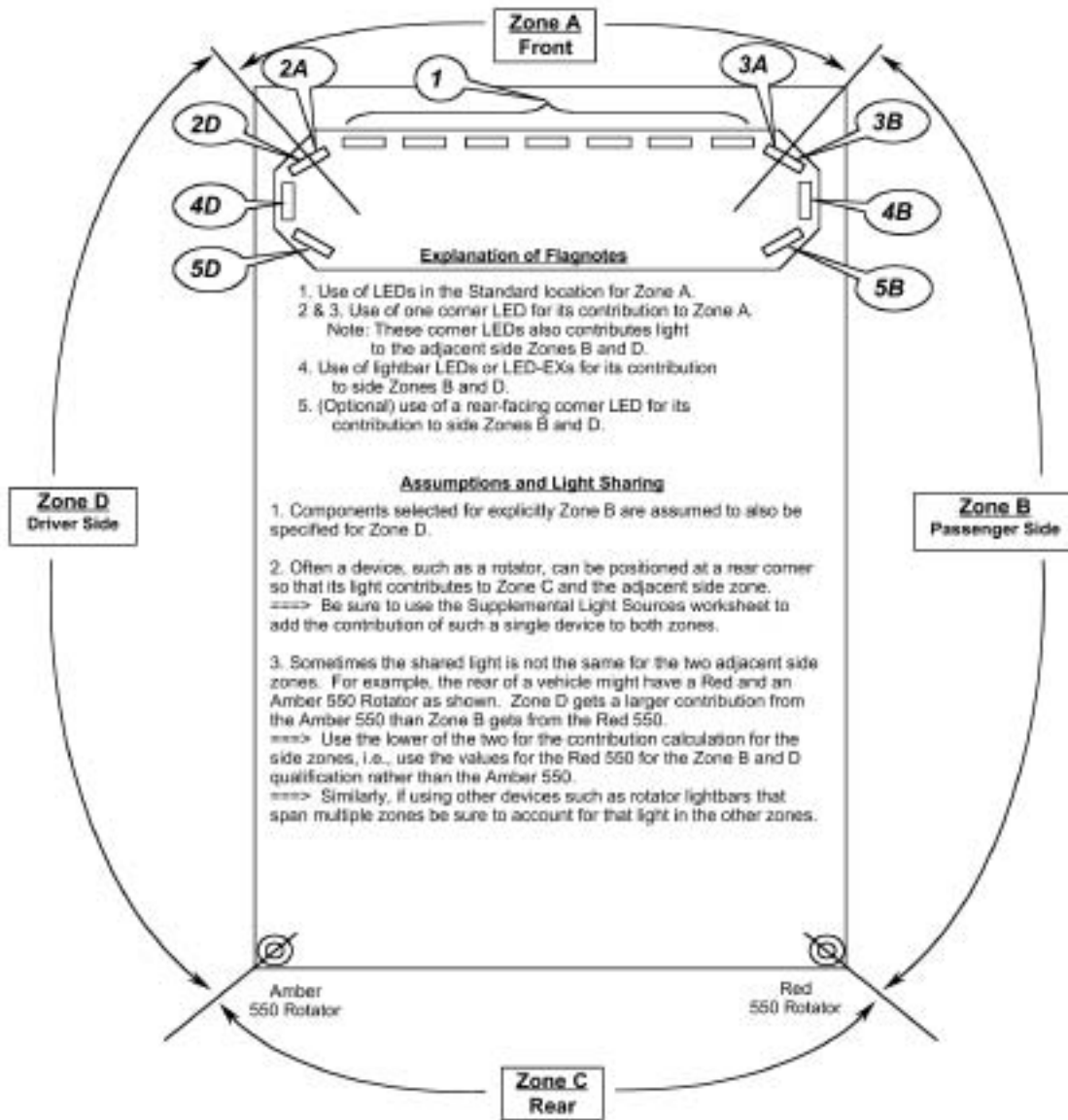
**Note:* For vehicles whose horizontal distance between the front & rear lower optical devices is less than 25 feet.
***Notes:*
 1. For vehicles larger than 25', additional midship lighting may be required. (See NFPA Standard on large apparatus 25' or larger.)
 2. For vehicles smaller than 25', the optical power of all optical sources in both upper and lower levels are combined to meet the total optical requirements. (See NFPA Standard on small apparatus less than 25'.)
 3. Certain optical sources may need to be load managed. All additional items or options are not needed to meet minimum NFPA Standard.
 4. When a specific color combination is needed or prohibited in your state, please contact the factory for other color packages that may be available.
 5. Power Supplies must be used as specified in Code 3®, Inc. NFPA Guide.
 6. When all optical devices are mounted per NFPA 1901, the above compiled system is considered to be a certified system from Public Safety Equipment, Inc.
 7. See NFPA Standard for Automotive Fire Apparatus, 2009 edition for complete information.

Standard for Electrical Systems & Warning Devices

This guide is a compilation of NFPA certified lighting devices prepared by Code 3®, Inc. When this guide is used along with the Certificate of Compliance worksheet, pages 16-17 of this guide, you will be able to design a completely NFPA-certified optical warning device system.



NFPA Upper Zones Shared Lighting



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