

Lighting Innovation

Kelley Dick – State Fleet Manager/Maintenance Services Manager



YOUR *Safety* • • • ► YOUR *Mobility* • • • ► YOUR *Economic Opportunity*

Idaho Transportation Department

- Lowest Elevation
 - Lewiston **710 Ft.**
- Highest Elevation
 - Mount Borah **12,662 Ft.**





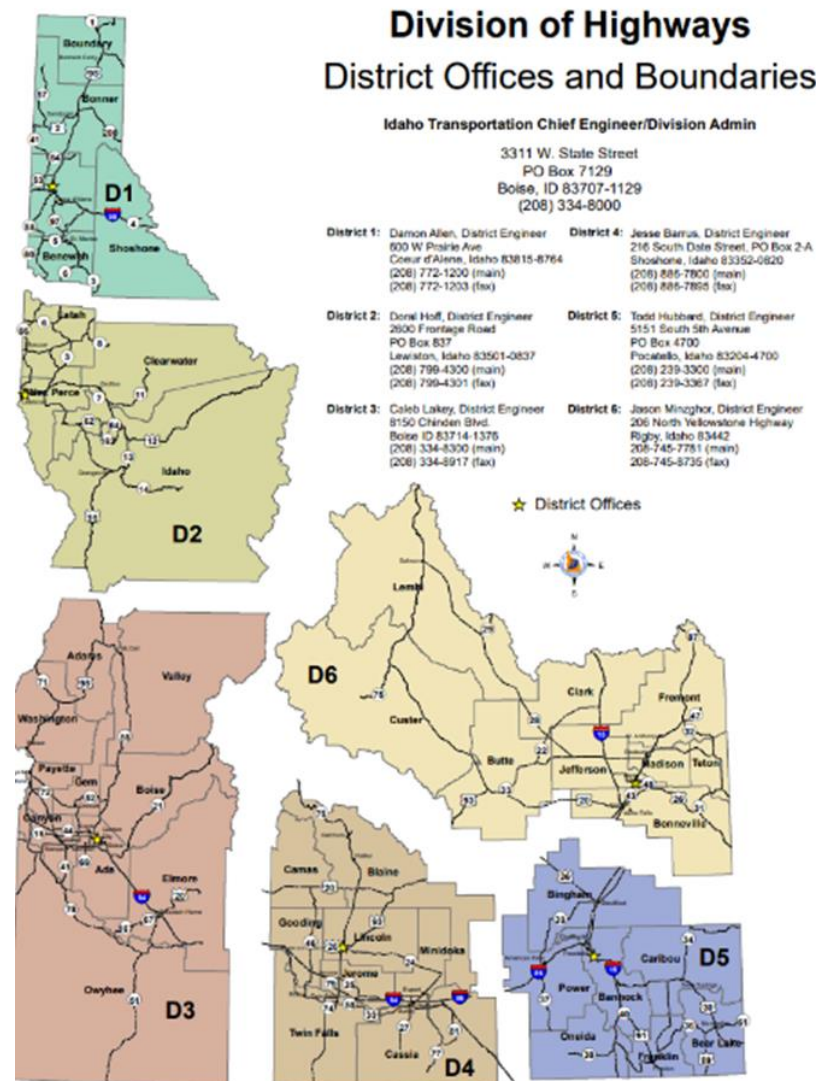
Shoshone Falls
212 Ft. Tall
900 Ft. Wide

Hells Canyon
7,993 Ft. @ Maximum Depth
Deepest Gorge in America



Idaho Transportation Department

- District Headquarters
 - Coeur d'Alene, Lewiston, Boise, Shoshone, Pocatello, Rigby
- 13,899 Lane Miles
- 5,190 Center Lane Miles
- 48 Road Foreman Areas
- 87 Maintenance Sheds









Equipment Warning Lights

All department vehicles working or utilized within the right-of-way shall be equipped with at least one amber, LED light bar, LED light, or as described for each type of equipment listed. All warning lights must be LED type and visible from a distance of not less than 1,000 feet in normal sunlight and not less than 2,500 feet under normal atmospheric conditions at night unless otherwise specified. All lights utilized shall meet SAE Class 1 specifications. All lights shall be amber in color unless otherwise noted. Red lights on winter equipment must be rear facing only with no visible red flashing light to the side or front. Light bars must utilize a random variable flash pattern with LED modules on all four sides of the bar ensuring 360 degree visibility. The alternating lights must utilize a minimum of six (6) individual LED's per unit. Tail lamps, stop lamps, and clearance lamps on all vehicles must meet standards specified in applicable sections of the Idaho Code.

The warning light policies described within this revision for equipment other than winter maintenance equipment shall apply to new equipment purchased after the date of this revision. Existing ITD equipment may be modified or retrofitted to current policy standards, but is not required. Equipment warning lights that require repairs shall be repaired to comply with current policy standards at the time of repair.

All winter maintenance equipment shall be retro-fitted with red warning lights to meet the requirements of this lighting revision within six (6) months from the date of this revision. Winter maintenance equipment already equipped with red warning lights are not required to be retrofitted, but it is recommended.

The Maintenance Operations equipment staff is responsible for developing all Warning Light specifications. Only those lights specified and under contract are to be utilized on ITD equipment.

Sedans. Sedans will have two (2) alternating flashing lights mounted to the rear of the body and two (2) in the grill area placed as high as possible. All lights shall be operated by a single switch.

Pickups. Pickups shall be equipped with one (1) 15" LED-light bar above the pickup cab. Two (2) alternating flashing lights shall be mounted to the rear of the body and two (2) in the grill area placed as high as possible. On units equipped with sign boards, either message or Type "B" arrow panels, the warning lights and sign boards shall be mounted in such a manner that warning lights are visible 360 degrees when the sign is stored. When the sign is displayed, the above cab mounted warning light visibility to the rear is not required or preferred. The cab mounted warning light and alternating lights shall have separate switches.

Full Size Vans. All vans shall be equipped with one (1) 15" LED light bar mounted towards the rear of the van body. Two (2) alternating flashing lights shall be mounted to the rear of the body and two (2) in the grill area placed as high as possible. Additionally, Traffic Counted vans will have one (1) a rear facing light mounted in the door jam of each rear door. All lights shall be operated from a single switch.

Sport Utility Vehicles (SUV's). All SUV's shall be equipped with two (2) alternating flashing lights mounted to the rear of the unit placed as high as possible, two (2) alternating flashing lights mounted in the grill area placed as high as possible, and one (1) alternating flashing light mounted in each side rear window. Additionally, two (2) alternating flashing lights can be

mounted in the lower rear hatch edge that will then display rearward when the rear hatch is open or a 15" LED light bar may be installed above the roof of the unit. All lights shall be operated by a single switch.

Service Body and Van Body Trucks. Trucks equipped with service or van bodies shall be equipped with one (1) 15" LED light bars. Those without a canopy roof shall have the light bar mounted above the cab. For trucks with a canopy or van body, the light bar shall be mounted at the rear of body. Additionally, two (2) LED alternating flashing lights shall be mounted to the rear of the body and two (2) alternating flashing lights mounted in the grill area placed as high as possible. The rear alternating lights shall be mounted so that they are visible to the rear with body doors in the open position. All lights shall be operated from a single switch.

Incident Response Trucks. These trucks shall be equipped with four (4) red in color, 15" LED light bars. Two (2) shall be mounted above truck cab and spaced as far apart as possible. Two (2) shall be mounted at the top rear of the canopy, spaced as far apart as possible. In conjunction with the red flashing lights, each truck shall be equipped with a siren. Additionally, four (4) amber LED alternating flashing lights shall be mounted to the rear of the body and two (2) red LED alternating flashing lights shall be mounted in the front grill of truck chassis. Each truck shall be equipped with a variable message board displayed to the rear.

Dump Trucks <20,000 lbs GVW. These vehicles shall be equipped with two (2) 15" LED light bars mounted on the dump body cab guard, side by side and spaced as far apart as possible. Two (2) alternating flashing lights shall be mounted to the rear of the truck chassis and two (2) in the grill area placed as high as possible. Two (2) additional alternating flashing lights shall be mounted on angular brackets facing upwards to the cab guard to provide warning light protection when body is in the dump position. All lights shall be operated by a single switch.

Dump Trucks >20,000 lbs GVW. These vehicles shall be equipped with one (1) 15" LED light bar, mounted in the center of dump body cab guard. Two (2) alternating flashing lights shall be mounted to the rear corner posts of the body and two (2) in the grill area placed as high as possible.

Refer to Figure 9-7.

Flatbed/Scissor Bed Trucks. These vehicles shall be equipped with one (1) 15" LED light bars. Lights shall be mounted above truck cab. Additionally, four (4) alternating LED flashing lights shall be mounted at the rear of the vehicle. Two (2) shall be mounted to the truck frame and two (2) shall be mounted to the rear of body. Two (2) alternating flashing lights shall be mounted in the grill area placed as high as possible. All lights shall be operated by a single switch.

Aerial Device Trucks. These vehicles shall be equipped with two (2) 15" LED light bars mounted above truck cab side by side and spaced as far apart as possible. A minimum of one (1) and a maximum of two (2) 15" LED light bars shall be mounted to the rear of the unit. Additional rear lights shall include a minimum of two (2) and a maximum of four (4) LED alternating flashing lights. These vehicles shall also be equipped with two (2) LED alternating flashing lights mounted on each side to insure 360 degree visibility when working in intersections. Two (2) alternating flashing lights shall be mounted in the grill area placed as high as possible. All lights shall be operated by a single switch.



Vehicles Equipped With Attenuators. Vehicles equipped with an energy absorption attenuator shall have two (2) 360 degree 15" LED light bars visible from both directions of travel. Lights shall be mounted above cab, side by side and spaced as far apart as possible. Additional rear lights shall include a minimum of two (2) and a maximum of four (4) LED alternating flashing lights. Each vehicle shall have a rear facing Type "B" Advanced Warning Arrow Panel, 60" wide x 30" high with 25 bulbs minimum and multi-flash capability (i.e. flash left, flash right, and non-directional flash).

Water Tank Trucks. These vehicles shall be equipped with two (2) 15" LED light bars mounted in the center of the vehicle, one mounted above the operators cab and the other mounted at the rear, above the water tank. Two (2) alternating flashing lights shall be mounted to the rear of the truck chassis and two (2) in the grill area placed as high as possible.

Weed Spray Truck <500 Gallon Capacity. These vehicles shall be equipped with two (2) 15" LED light bars. Both lights shall be mounted above cab, side by side and spaced as far apart as possible. Two (2) alternating flashing lights shall be mounted to the rear of the truck chassis and two (2) in the grill area placed as high as possible.

Weed Spray Truck >500 Gallon Capacity. These vehicles shall be equipped with two (2) 15" LED light bars. These lights can be mounted in either of two configurations. Both lights shall be mounted above cab, side by side and spaced as far apart as possible or both shall be mounted on the vehicle centerline with one light mounted above the operator's cab and the other light mounted above the water tank. Two (2) alternating flashing lights shall be mounted to the rear of the truck chassis and two (2) in the grill area placed as high as possible. Additionally, these vehicles shall be equipped with a rear mounted Type "B" Advanced Warning Arrow Panel, 60" wide x 30" high with 25 bulbs minimum.

Striping Trucks. These vehicles shall be equipped with two (2) 15" LED light bars mounted above cab, side by side and spaced as far apart as possible. Two (2) additional 15" dual rotating LED light bars shall be mounted at the rear of unit beside the variable message/arrow board and two (2) alternating flashing lights mounted in the grill area placed as high as possible. Additionally, these vehicles shall be equipped with either a rear mounted Type "B" Advanced Warning Arrow Panel, 60" wide x 30" high with 25 bulbs minimum or a Variable Message Board. Each paint carriage shall be equipped with a 360 degree LED or strobe light mounted to the top of the carriage.

Transport Trucks. These vehicles shall be equipped with two (2) 15" LED light bars mounted above cab, side by side and spaced as far apart as possible and two (2) alternating flashing lights mounted in the grill area placed as high as possible.

Miscellaneous Trucks. All trucks not previously defined shall be equipped with two (2) 15" LED light bars mounted above cab, side by side and spaced as far apart as possible. Additional alternating lights in the front and rear can be added if applicable.

Motor Graders. This equipment shall be equipped with one (1) roof mounted 15" LED light bar. Additionally, four (4) LED alternating flashing lights shall be mounted to the rear of the motor grader. These flashing lights will be operated from a separate switch and will deactivate when the turn signals or brakes are activated. All motor graders shall be equipped with the appropriate size "Slow Moving Vehicle" emblem mounted to the rear.

Loaders and Backhoes. These pieces of equipment shall be equipped with one (1) 15" LED light bar mounted on top of operator's cab. Backhoes shall have two (2) 15" LED light bars mounted to the roof panel. One light mounted to the street side with the second light mounted to the curbside of the unit to insure visibility to the rear. This equipment shall also be equipped with the appropriate size "Slow Moving Vehicle" emblem mounted to the rear.

Construction Equipment. This equipment is defined as including the following: Rollers, Excavators, Dozers, Skid Steer Loader, etc. Asphalt pavers are excluded. Rubber tired construction equipment shall be equipped with one (1) 15" LED light bar mounted on top of operator's cab. Non-rubber tired construction equipment shall be equipped with one (1) 360 degree LED light mounted above operator's cab or station.

Tractors. This equipment shall be equipped with one (1) 15" LED light bar mounted above operator's cab. The appropriate sized Slow Moving Vehicle Emblem shall be mounted to the rear of the unit.

Mowers. Rotary, flail, and sickle type mowers mounted to the rear of or pulled by tractors will be equipped with a minimum of two (2) alternating flashing amber lights mounted to illuminate the left and right side of the center/main mower deck. For mowers with multiple fold down decks, an 18" x 18" red or fluorescent orange flag shall be mounted to the furthest outside edge to designate the overall mower width when in the mower position.

Street Pickup Sweepers. These vehicles shall be equipped with two (2) 15" LED light bars mounted in the center of the vehicle, one mounted above the operators cab and the other mounted at the rear. Additional rear lighting shall include four (4) LED alternating flashing lights and two (2) alternating flashing lights mounted in the grill area placed as high as possible. The appropriate sized Slow Moving Vehicle Emblem shall be mounted to the rear of the unit.

Self-Propelled Broom. This equipment shall be equipped with one (1) 15" LED light bar mounted above operator's cab. The appropriate sized Slow Moving Vehicle Emblem shall be mounted to the rear of the unit.

Forklifts. This equipment shall be equipped with an SAE Class 3 warning light as per OSHA requirements. For those units that are utilized on ITD right-of-way, one (1) 15" LED light bar shall be mounted above operator's cab or station.

Port of Entry Vehicles. Port of Entry SUV's shall be equipped with a full width interior visor LED light bar mounted at the top of the windshield interior configured as shown in Figure 9-8. Additionally, two (2) LED red alternating lights shall be mounted in the grill. Two (2) alternating LED red lights mounted at the exterior top of rear hatch. Two (2) LED amber alternating lights mounted next to the license plate on the rear hatch. Additionally, two (2) alternating LED red lights shall be mounted inside the rear hatch to provide warning lights with the hatch in the raised position. One (1) LED red warning light shall be mounted in each rear side cargo window to create 360 degree visibility. "Wig-wag" head and tail lights may be installed if the vehicle factory construction allows the installation. All warning lights and siren shall be controlled from a single controller.

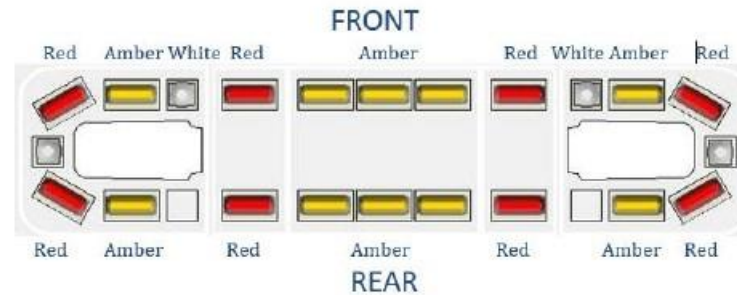


Figure 9-8



Port of Entry roving port vehicles shall be equipped with an LED 360 degree roof mounted light bar configured as shown in Figure 9-9. Additionally, two (2) amber/red LED flashing warning lights shall be mounted to the rear tailgate of the truck body. Each vehicle shall also be equipped with "Wig-wag" head and tail lights if the vehicle factory construction allows the installation. An amber light bar utilizing up to twelve (12) LED modules will be installed on the inside of the rear canopy door facing rearward. Two (2) red/white LED alternating flashing lights shall be mounted in the center grill area placed as high as possible. Additionally, two (2) LED amber/red/white alternating lights shall be mounted at the outer edges of the grill. All warning lights shall be controlled from a single controller.

Figure 9-9



Enclosed Box Trailers. These trailers shall be equipped with one (1) 15" LED light bar mounted towards the rear. Two (2) alternating flashing lights shall be mounted to the rear of the trailer visible when the rear door(s) are open. All lights shall be operated by a single switch on the trailer utilizing power from the auxiliary trailer circuit from the towing vehicle.

Miscellaneous Utility Equipment. This equipment shall be equipped with one (1) 360 degree LED light mounted above operator's cab or station.

Rental Equipment. All rental equipment working or utilized within the right-of-way shall be equipped with at least one (1) 360 degree amber LED light bar or LED beacon warning light meeting SAE Class 1 standards. Temporary mounting of the light utilizing magnets or suction cups or other means is acceptable.

Winter Maintenance Vehicle Warning Lights

All department vehicles utilized for winter maintenance (snowplowing, sanding, and/or deicing) shall be equipped with warning lights of the appropriate color as described for each vehicle type. All warning lights must be visible from a distance of not less than 1,000 feet in normal sunlight and not less than 2,500 feet under normal atmospheric conditions at night unless otherwise specified.

Tail lamps, stop lamps, and clearance lamps on all vehicles equipment, must meet standards specified in applicable sections of the Idaho Code.

The Maintenance Operations equipment staff is responsible for developing all Warning Light specifications. Only those lights specified and under contract are to be utilized on ITD equipment.

Snowplow/Sander Trucks. These vehicles shall be equipped with one (1) 15" LED light bar, mounted in the center of dump body cab guard. Two (2) alternating flashing lights shall be mounted to the rear corner posts of the body and two (2) in the grill area placed as high as possible. A 23" 4-head LED light bar shall be mounted to rear of sander body. The 23" light bar rear heads shall be Red with amber heads on the rear corners. Additionally, four (4) LED alternating flashing lights shall be mounted to the rear of the sander. The top left and lower right lights shall be Red and the two remaining lights shall be amber in color. These flashing lights will be operated from a separate switch and will deactivate when the turn signals or brakes are activated.

Trucks equipped with sander bodies may have a lamp that will illuminate the spinner assembly and the rear of the sander. The direct beam of the light from this lamp must not be visible to following vehicles. An additional lamp may be installed to illuminate the top of the sander for loading purposes. The direct beam of this light must face forward and not be visible to following vehicles.

These trucks will also be equipped with amber conspicuity stripes along the upper side rail of the sander body and red/white conspicuity stripes on the rear of the body.

Refer to Figures 9-10 and 9-11.

Snowplow/Sander Trucks Equipped with Wing Plows. In addition to snowplow lighting previously described, the wing plow shall have two (2) alternating flashing lights mounted to the outer most part of wing plow facing rearward. An additional three (3) alternating amber flashing lights may be installed across the top of the wing plow moldboard. The upper light shall be Red and lower light shall be Amber. The wing plow rear push arms and rear facing edge shall have Red/White conspicuity striping.

Wing plows may be illuminated by the use of not more than two (2) amber flood lights mounted to the truck chassis. One light shall illuminate the rear of the wing plow and one light shall illuminate the area in front of the wing plow. All lights shall have separate switches.

As an added safety device, all wing plow trucks shall be equipped with a color camera and monitor with the camera focused on the wing plow.

Deicer Application Trucks. Vehicles equipped with liquid de-icing application tanks shall be equipped with one (1) 360 degree LED type light mounted on truck cab guard. A 23" 4 head LED

light bar shall be mounted to rear of tank. The 23" light bar rear heads shall be Red with amber heads on the rear corners. Additionally, four (4) LED alternating flashing lights shall be mounted to the rear of the tank. The top left and lower right lights shall be Red and the two remaining lights shall be amber in color. The alternating lights shall activate only when de-icing application is activated. The alternating lights will deactivate when the turn signals or brakes are activated.

In addition to the warning lights, liquid de-icing application trucks are to be equipped with 48" x 18" "Anti-Icing" signs mounted to the sides of the tank as well as a 48" x 36" "Anti-Icing Caution Liquid Spray" sign, Catalog No. 546619309, mounted to the rear. A flashing arrow board sign of the equivalent size may be substituted for the rear sign.

In the event the de-icing application tank is utilized to haul water during other times of the year, the "Anti-Icing" signs and Red warning light lenses are to be removed.

Motor Graders Utilized for Plowing Snow. This equipment shall be equipped with one (1) roof mounted 15" amber LED light bar. Additionally, six (6) LED alternating flashing lights shall be mounted to the rear of the motor grader. Two (2) shall be mounted above the rear window with the street-side light red in color and the curbside light amber in color. The four (4) remaining lights shall be mounted along the rear engine cover. The top left and lower right lights shall be Red and the two remaining lenses shall be amber in color. These flashing lights will be operated from a separate switch and will deactivate when the turn signals or brakes are activated.

If the motor grader is equipped with a wing plow, the wing plow shall have two (2) LED alternating flashing lights mounted to the outer most part of wing plow facing rearward. Three (3) alternating amber flashing lights shall be equally spaced across the top of the wing plow moldboard. The upper light shall be Red and lower light shall be Amber. The wing plow rear push arms and rear facing edge shall have Red/White conspicuity striping.

Rotary Snow Plows. This equipment shall be equipped with three (3) 15" LED light bars. Two (2) shall be mounted on the roof of the cab side by side and spaced as far apart as possible and amber in color. The third light bar shall be mounted on the rear of the engine cover and red in color. Additionally, four (4) LED alternating flashing lights shall be mounted to the rear of the unit. The top left and lower right lights shall be Red and the two remaining lights shall be amber in color. These flashing lights will be operated from a separate switch and will deactivate when the turn signals are activated. All rotary snow plows shall be equipped with the appropriate size "Slow Moving Vehicle" emblem mounted to the rear.



Equipment Warning Light Modification Request



Submit completed form to the Highway Equipment Superintendent

Requester's Name Brad Steiner	Section/District Low Medals D3	Phone Number 208-315-0584	Date 10-12-23	Equipment Number T-32024
Requester's Supervisor's Signature <i>[Signature]</i>				

Describe and Justify Requested Modification or Change

Add SPot lights (2,200 lumen ECCO BRAND) to the Driver's side of snowplow. I have the light Shining across my lane Pointing at the shoulder/Ditch. Ran one this SPring & Got Good feedback from Co workers & the Public. If aimed Properly the lights do not shine in oncoming traffic Eyes. these lights work very well to be able to see through snow storms after dark hours.

– Completed by Equipment Warning Light Committee –

<input type="checkbox"/> Approved Permanently	<input type="checkbox"/> Approved on Trial Basis	<input checked="" type="checkbox"/> Disapproved
Reason for Disapproval 1: Cost to replace the light on the plow. 2: Wiring to the light. The trucks are close to maximum on wattages. 3: Can cause overloading on circuits. 4: when plow raised, it changes the direction of the light which could result in unwanted light glare to vehicles, homes, or pedestrian.		
Equipment Superintendent's Signature Kelley Dick Digitally signed by Kelley Dick Date: 2024.02.14 09:52:26 -07'00'		



Day Mode-

Double Flash 75

Night Mode-

DVI Pattern Single Flash 60

Pattern change with a slower flash







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Henderson

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steril KOMI EARTHLIFT

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18500



