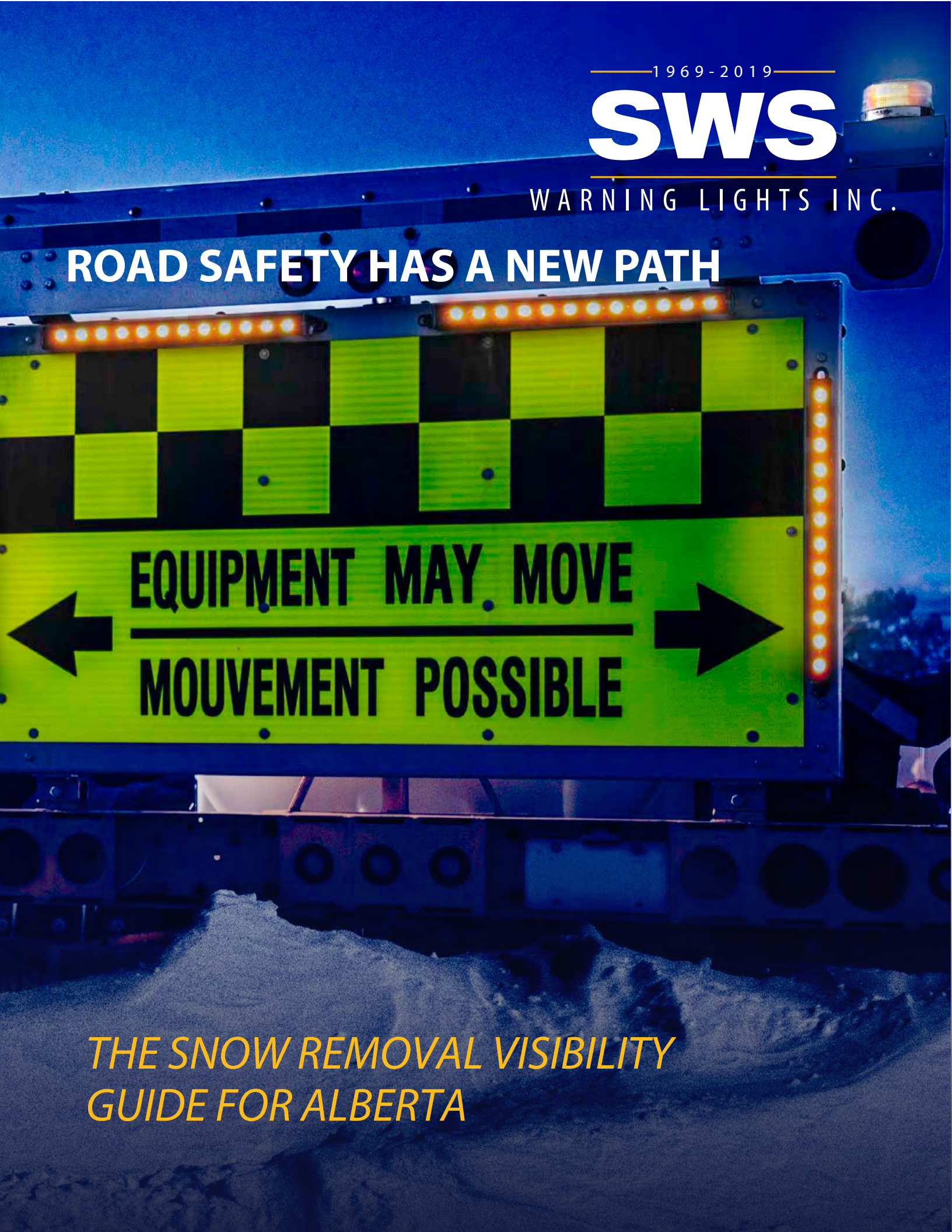


1969-2019
SWS

WARNING LIGHTS INC.

ROAD SAFETY HAS A NEW PATH



EQUIPMENT MAY MOVE
MOUVEMENT POSSIBLE

*THE SNOW REMOVAL VISIBILITY
GUIDE FOR ALBERTA*



You, our customer has afforded SWS Warning Lights Inc. to progress towards greater success. Loyal partnerships sharing a common culture of respect and support build relationships and brands.

Your feedback helps provide the industry knowledge required to feed a company with the strong desire to progress. The result is an exciting innovative culture focused on providing product solutions with no compromise to quality. Public Works, Utilities, Agriculture, Mining, Road Construction, Waste Management and all Heavy Equipment, demands the best in the warning light market.

Our customers deserve the best with product availability, flexible design and top-notch service. SWS Warning Lights Inc. has been chosen to provide these needs since 1969. The products withstand the harshest environments while using the latest technology and still remain being designed and built in North America.

Progress is our most important product.

THE **SWS** ADVANTAGE



75035 Snowplow Package



16363



16382



93610



56045



96043



93605 STT
(optional sold separately)

Features

- 12-24Vdc
- 8A @ 12Vdc (entire package)
- Meets Alberta provincial standards for snowplow lighting requirements

Minibars- 16363, 16382

- Anodized aluminum base
- Polycarbonate dome with UV inhibitors
- Quick connect system for easy installation
- 16363 comes with 10' summertime power connection and 10' control cable extension
- 16364 connects to the junction box via 722087 cable

Floodlights- 93610, 93605

- Dual optic design for both flood and spot
- Corrosion resistant silicone rubber housing
- Flash in sequence with the warning sticks and minibars
- Quick connect system for easy installation

Warning Sticks-56045

- Anodized aluminum housing
- Ultrasonically welded lightheads with waterproof Deutsch connectors
- Fully encapsulated electronics for maximum weatherproofing
- Lightheads are field replaceable with SWS quick clip system

Junction Box- 96043

- Waterproof Deutsch connectors
- 10' of power leads
- Distributes power and makes all necessary communication connections
- Fully encapsulated internal circuitry

See reverse of page for extension cable options and accessories

75035 Snowplow Package

Extension Cables

- Waterproof Deutsch connectors
- PVC jacketed 16AWG/3 conductor wire
- Multiple lengths to accommodate different mounting options and junction box placements
- 93605 STT does not require extension cables



Part Number	Length
722068	10ft
722069	20ft
722070	30ft
722071	40ft
722072	50ft

Checkerboard Options

- Meets TAC standards for retro-reflectivity and construction requirements
- Durable aluminum core with 3M Type XI retro-reflective material
- Checkerboard measures 3' x 6'

405000

Standard Checkerboard



405001

Equipment May Move



405002

Liquid Anti - Icing



Included Parts

Part Number	Description	Quantity Included
16363	Apollo Series AMB/BLU minibar w/ summer and control cables	1
16382	Apollo Series AMB/BLU rear mount minibar	1
56045	Titan 24" AMB/AMB Warning Stick	4
93610	4" Floodlight Flasher	2
96043	Main Junction Box	1
722087	10ft extension cable for 16364 to Junction Box	1
722002	'Y' Harness DT series	2

REQUEST FOR PROPOSAL (RFP)

for

**CONTRACT MAINTENANCE AREAS
504, 508, 514, 515, 516, 520, and 521
HIGHWAY MAINTENANCE WORK**

for

ALBERTA TRANSPORTATION

Contract Number: CON0020623

28 SEPTEMBER 2018

MAINTENANCE SPECIFICATIONS
Section 4 – Material and Equipment

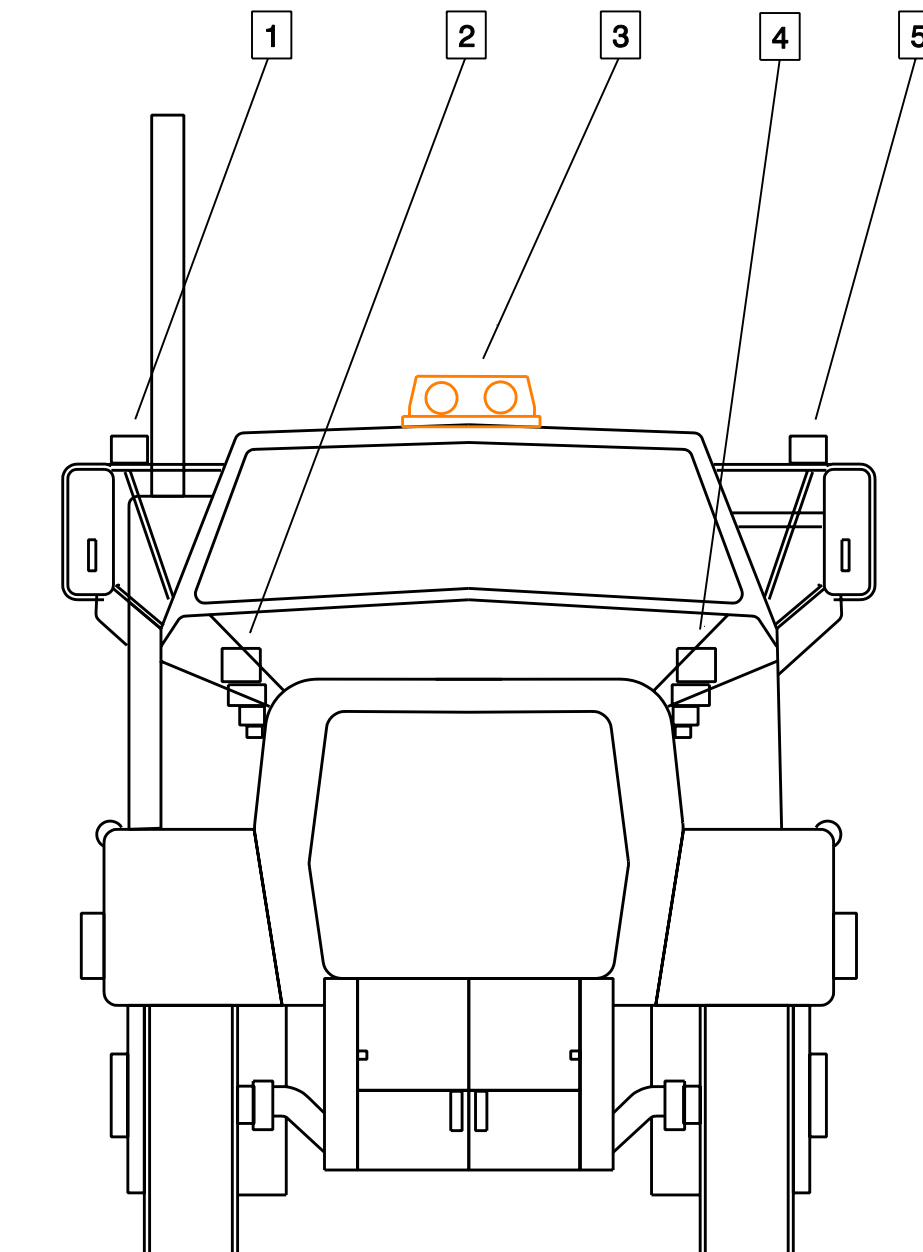
(Pages ME 30 - ME 31)

4.13.2.3 Equipment

4.13.2.3.1 Snow Plow Trucks

.1 Snow plow trucks must meet the following requirements:

- (i) All snow plow trucks and motor graders must be equipped with GPS and communications hardware compatible with the Department's selected real-time Automated Vehicle Location System (AVLS). Real-time location data must be provided to 511 Alberta on a continuous basis.
- (ii) Trucks must be equipped with Mobile Automatic Road Weather Information System (MARWIS).
- (iii) Rear Lighting must conform to the Transportation Association of Canada's *Snow Removal Equipment Visibility Guide* (most current version), Section 3.0 Recommended Snow Plow Visibility Guidelines, except that where the guidelines call for flashing blue lights, the Contractor must provide flashing orange lights, until the Department directs the contractors to switch to flashing blue lights.
- (iv) Front lighting configurations must conform to Drawing HMS 52.1D found in Appendix H and must include an amber dual rotating lamp beacon or LED mini light bar. The front-mounted beacon or light bar must be unobstructed and clearly visible.
- (v) To prevent snow accumulation, all LED lights, except for the rectangular LED amber-red (later blue) flashing warning lights, must be mounted in locations with wind deflectors above them. The rear wind deflector must be across the full width of the truck box, with the bottom of the wind deflector located no more than 300 mm from the top of the raised LED Stop, Tail and Turn lights.
- (vi) Two strips of specialized 50 mm wide retro-reflective tape, containing alternating blocks of red and white colours, must be located horizontally across the width of the truck, one at the mid-point of the truck and the other 2 m from the ground. These must provide reflectivity during day and night use and conform to Transport Canada regulations.
- (vii) Where a snow plow is fitted to a truck, the snow plow blade can be under-mounted, front-mounted one-way for right-side plowing only or two-way for both left- and right-side plowing. The snow plow must be equipped with in-cab controls for lifting and adjusting the plow blade, and 330 mm x 410 mm red flags mounted on the top outside edges of front-mounted blades.
- (viii) Where a snow plow truck is operating wings or tow plows, it must be equipped with in-cab controls for lifting and adjusting the wing or tow plow. The functions must be quick acting and positively controlled. The wing control system must have a "panic button" to provide for fast raising of the wing in emergency situations. The wing or tow plow must have clearance lighting in compliance with the Transportation Association of Canada's *Snow Removal Equipment Visibility Guide* (most current version).



FRONT VIEW

1. R.H. Marker/Signal Lamp, Red/Amber
2. R.H. Plow Lamp
3. Dual Rotating Lamp Beacon (Amber)
4. L.H. Plow Lamp
5. L.H. Marker/Signal Lamp, Red/Amber

No.	DESCRIPTION	BY	DATE
		DRAWING HMS 52.ID	
		Date: AUGUST 2005	
SNOW REMOVAL AND ICE CONTROL TRUCK FRONT LIGHTING STANDARD			
Drawn By:	Checked By:	Scale: N.T.S.	SECTION

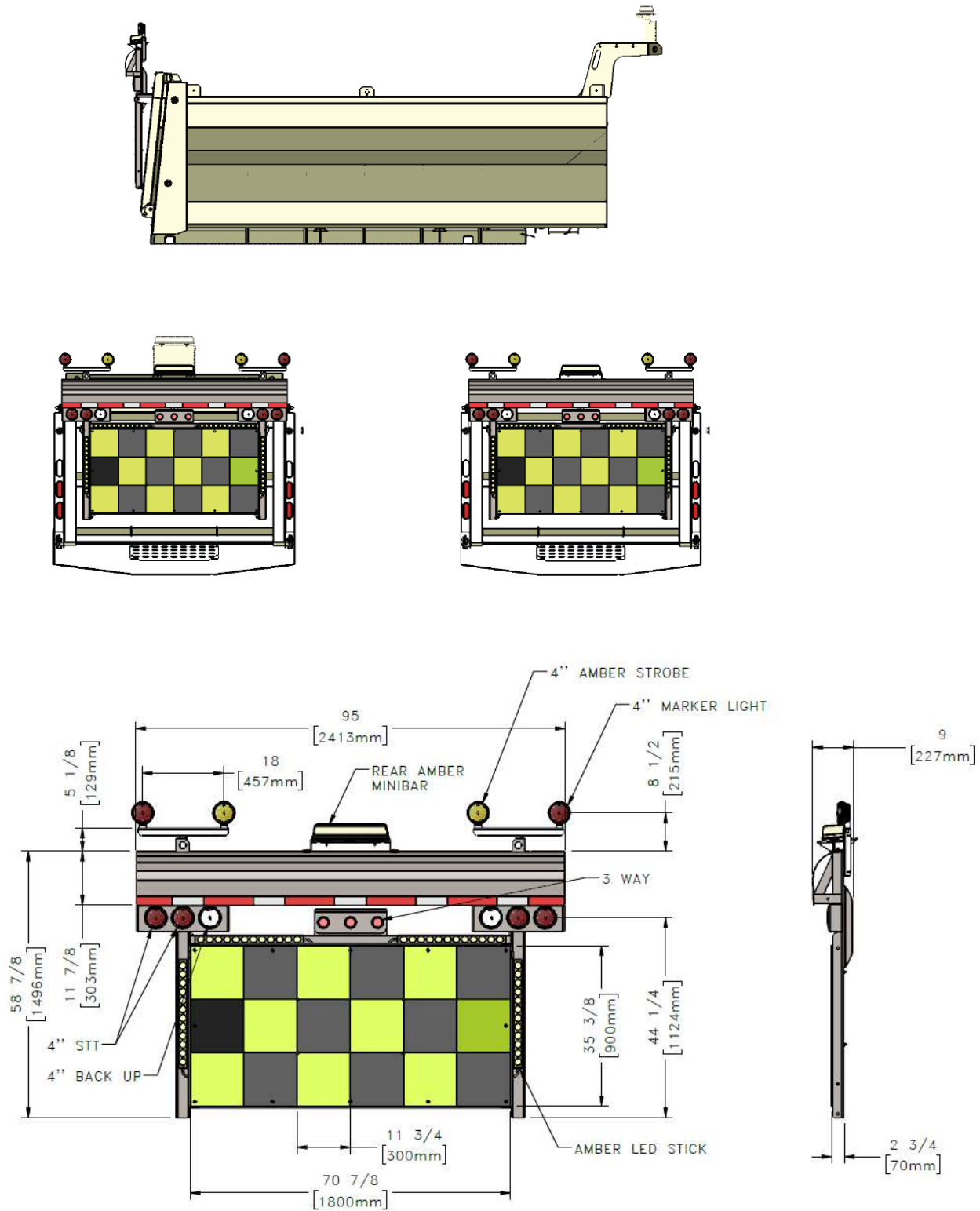
Contract Maintenance Areas 504, 508, 514, 515, 516, 520, and 521 Highway Maintenance Work

Project ID: CON0020623

This Addendum forms part of the RFP and Contract Documents and modifies them as follows:

DEPARTMENT CLARIFICATIONS

9. **DEPARTMENT CLARIFICATION:** With reference to Appendix H1, H2 and H3 and the Transportation Association of Canada "Snow Removal Equipment Visibility Guide" reference in Section 2.2 Performance Based Maintenance Specification: the Department provides the following visual interpretations that align with the "Snow Removal Equipment Visibility Guide". Proponents are expected to ensure their equipment is aligned with both the following drawings and the Guide before the Commencement of Contract. Proponents are also advised that the current red lights are likely to be phased to blue at some point in the future. The drawings in Appendix H1, H2 and H3 are superseded by the following drawings.



3.0 RECOMMENDED SNOWPLOW VISIBILITY GUIDELINES

Snowplow detection, recognition and comprehension are enhanced when all of the components (lights and signs) are connected providing one complete image. Components which are not connected may be mistaken for other roadway features e.g. a raised red tail light may be mistaken for a traffic light.

3.1 SNOWPLOW REAR VISIBILITY

3.1.1 SIGN DISPLAY PANEL

The following components of a rear sign display panel are recommended for snowplow detection and recognition:

- A sign on the back of the truck with two contrasting colours, yellow / green and black, in a checkerboard / harlequin pattern. The sign should fill the back of the snowplow space as much as possible. The checkerboard / harlequin pattern should have a minimum of three (3) rows and three (3) columns. Each square should be between 200mm and 300mm.
- Sign sheeting type III / IV mounted on aluminum or plywood.
- Where wording is desired on the sign, for example for 'LIQUID ANTI-ICING' or 'EQUIPMENT MAY MOVE', the wording should not take up more than 70% of the sign. The wording will be in black letters on a solid yellow / green background. The remaining portion of the sign will maintain the checkerboard pattern.

3.1.2 LIGHTING

The following general comments are recommended for rear lighting for snowplow detection, recognition and operation

- LED lights are brighter and more resistant to vibration and subsequent failure in snowplowing conditions.
- Two colour flashing lights provide better recognition and identification than amber alone. The colour combination of amber and blue provides the best visibility and recognition.
- Blue lights are the most conspicuous colour in daytime and nighttime conditions. Blue light needs the least intensity of all the colours to be seen which minimizes glare.
- Slow flashing lights or lights that stay on are easier for the driver to detect closing speed than strobe lights or lights that flash quickly. Strobe lights provide good detection.
- When using dual coloured beacons, the snowplow operator should have a switch in the cab to allow for amber only operations.

The following components of rear lighting are recommended for snowplow detection and recognition:

- One centre 360° flashing or rotating beacon over the cab. The colour will allow for amber and for amber / blue operations.

- Two rear mounted beacons on the top left and top right. The colour will allow for amber and for amber / blue operations. The beacons will be 127mm to 178mm (5" to 7") in diameter and 76mm to 152mm (3" to 6") in height.
- Light bars on the outside edge of the sign covering a minimum of 75% of the top and each side. The lighting will sequentially flash for amber and amber / blue operations. Each section will be a minimum of 38mm x 64mm (1.5" x 2.5") and the overall dimension of the light bar will be a minimum of 51mm x 610mm (2" x 24"). An amber arrow bar on the top of the truck back may be used instead of the light bar when directing vehicles to pass on either side of the snowplow is required.
- Rotating beacons and light bars will all rotate or flash in a synchronized fashion at 1 Hz.
- Rotating beacons and light bars will automatically dim to 65% of maximum output for nighttime operations. Optional switches to manually dim to 50% may be helpful in some operations including echelon plowing.
- An amber spot light focused 100m behind the snowplow to catch drivers' attention when approaching too closely.
- Duplicate pedestal tail lights and turn lights on the rear of the snowplow mounted 150mm (6") below the rear beacons.



Typical Signing and Lighting Layout

3.1.3 AIR FOILS

The following components are recommended for snowplow detection and recognition:

- Air foils on the top and each side of the rear snowplow help keep the sign and lights free of snow and ice enhancing visibility and reducing the need to stop and clean them.

3.2 SNOWPLOW EQUIPMENT VISIBILITY

There are a number of devices such as post markers and clearance flag kits commercially available to enhance the visibility of the snowplow equipment. The following equipment is recommended for the visibility of the equipment from the rear of the snowplow:

3.2.1 PLOW VISIBILITY

Plow light 146mm (5.75") minimum diameter, clear flood pattern 1,000 lumens.

3.2.2 WING VISIBILITY

- Wing light 146mm (5.75") minimum, clear flood pattern 1,000.
- Conspicuity marker or flag close to the outside end of the wing. Conspicuity tape and red LED lights on the marker plus conspicuity tape push-arm support.

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2221 KENMORE AVE. UNIT 108
BUFFALO, NEW YORK,
U.S.A, 14207

P: 1.877.357.0222
F: 1.905.357.9122
E: SALES@WARNINGLIGHTSINC.COM