



OTT INDUSTRIES PTY LTD

NEW MINE INNOVATIVE IDEAS:

Improved Mine Delineators/Signage and Safer Maintenance



Mining Operations – 24hrs, half by day/ half by night.

Night Operations add additional risks which are many, including; restricted visibility, fatigue, hazard awareness and disorientation.

Having clearly visible and effective delineators and signage are key to assure safe production during night operations.

There is nothing new about delineator technology to designate sea lanes, roadways and runways.

However, to be **EFFECTIVE** the delineators & signage must be **CLEARLY VISIBLE, NOT CONFUSING AND WELL MAINTAINED.**



LEGISLATION AND RECOGNISED STANDARDS



Recognised standard 19

Design and construction of mine roads

August 2019

Coal Mining Safety and Health Act 1999

16.2 Delineation

Delineators should be provided to adequately define the edge of the running surface of a road. Consider the following when selecting and placing delineators:

- Delineator height should be adequate to match the equipment used on the roadway.
- The spacing of delineators on straight sections of road should be a maximum of 100m apart with the posts in pairs, one each side of the road.

- Around tight curves and over crests the spacing of delineators should be reduced to a maximum of 50m or closer such that the reflectors from at least 3 delineators on the same side of the road can be seen at any one time whilst traversing the curve or crest:
 - For primary and secondary haulroads guideposts shall be between 1.5 and 2.4 metres high.
 - For primary and secondary access roads guideposts shall be a minimum of 900mm high.

- Delineator spacing should be reduced in areas subject to frequent visibility restrictions such as fog.
- Delineator density should be increased to identify such things as culverts, median/centre safety berms, traffic islands, road intersections etc.
- The red reflector shall be placed on the left hand side of the road and the white reflector on the right hand side of the road.

Coal Mining Safety and Health Regulation 2017, S128 - Specification for design and construction of mine roads; states:

- (1) A surface mine's safety and health management system must provide a specification for the design and construction of mine roads to enable the safe movement of vehicles about the mine.
- (3) The specification must be developed through a formal risk assessment process and must provide for the following for the roads –
 - (d) guideposts;
 - (g) signs;

Recognised Standard 19, S16 Delineation and signage

Specifies; Sign shall be minimum 1.5 metres above the road surface, and delineators shall be 1.5-2.4 metres above the road surface.

The standard also mentions spacing, haul road types, density, reflector specs and they shall be visible at night and regularly maintained e.g. washed regularly, damaged or ineffective signs replaced, out of date signs removed, etc. such that their purpose of providing clear and concise information to road users is not compromised. Signs should be appropriately placed so they do not create 'sign pollution'.



Dirty sign requires cleaning and must be 1.5m above road surface.



Sign pollution.



Sign required to be 1.5m above road surface. Flashing lights incorrectly mounted.

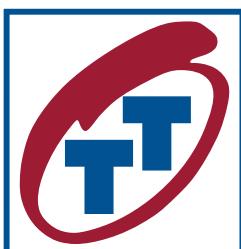
A LIST OF HAZARDS AND THE PROCESS TOWARDS MITIGATING THAT HAZARD

HAZARD	SOLUTION
Signs are installed throughout the road network to provide warning and instructional information to road users. Currently signs are falling over onto the ground after rain or wind events.	Drill a hole into the ground approximately 300mm deep, then hammer the ground post into the drilled hole to securely hold the post in the correct upright position.
The current delineators are generally in one piece 2.5 meters long and in different shapes (round and rectangular) Delineators and signs posts are often over hanging the back of the Ute tray and people walking behind are often accidentally hurt.	OTT have designed a two-piece delineator post making posts shorter therefore now fit neatly into the back of Ute trays.
Delineators and signs often fall out of the back of Utes while driving around corners on the rough mine roads mainly because the delineators overhang the Ute tray and aren't properly secured in. The notable hazards are debris on the road. Other drivers will swerve to miss and the abrupt change in direction can be fatal.	OTT two-piece post combination fits in the tray and OTT have designed a toolbox to store all fittings safely and secure.
Signs turn around in a wind event then cannot be seen or read.	OTT have designed and manufactured a special sized PVC pipe that fits firmly over the timber peg or the steel dropper with a special spacer fitting. The firm fit stops the delineator or sign from turning.
The base of the sign is a minimum of 1.5m above road surface. Recognised std 19 Design and construction of mine roads. Aug 2019.	The PVC pipe from the ground up to the joiner is at the required height so all signs are 1.5m above. (This will align with the Recognised STD 19.)
CMW are climbing up the edge of the Safety berms to install the ground post into soft materials with the possibility of slip, trip and fall.	By providing a Rotary drill (cordless model)the CMW can now drill into the hard ground surface in front of the safety berm preventing a possible slip, trip and fall.
Delineators and signs placed beside each other can create sign pollution.	OTT have designed a universal joiner which will allow the installer to have multiple options. Delineator and sign combined into one post helps avoiding sign pollution.
High risk areas - intersection, HV electrical cables on the ground, low walls behind safety berms, water over roads.	Flashing solar beacons lights can be a useful tool as an indicator for awareness of such high-risk hazards. Flashing lights also help at night to manage fatigue.

OTT INDUSTRIES NEW DELINEATOR AND SIGNAGE KIT

OTT Industries new Delineator and signage kit is a sustainable solution with many safety benefits and cost saving advantages.

1. PVC pipe is square with all fittings to fit. → 
2. The ground pipe is universal to all combinations. → 
3. Delineator and sign in one piece combo. Saving on ground post. → 
4. All reflective tape has 7 years durability, High Intensity Prismatic (HIP) Grade- Class 400 Classification AS/NZS 1906.1 2017 Class 400 (Class 1W). → 
5. Fittings are made of ASA materials proven to be stronger and have a higher UV resistance. → 
6. Signs will be at the required height of the ground to align with the (Recognised STD 19). → 
7. OTT has sourced a quality solar flashing beacon light. → 
8. The signs will be attached to the special joiner off site in OTT's workshop factory. → 
9. All reflective tapes will be applied to fittings and pipe in OTT's workshop factory prior to mine site delivery for quality control measures. → 
10. Purpose made toolbox to fit into the back of the Ute trays will store all posts, PVC pipe, ASA fittings, flashing lights, and associated tools. → 
11. Shipping container can be supplied with special racking inside to help with product ordering and be position in the field near the crib huts go line. → 



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