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From Highways Office No.
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Tel. No. 3-682092
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To _____
Your Ref. in _____
dated _____

**Road Note No. 7
Thermoplastic Road Marking Materials
Guide Notes for Site Staff**

Enclosed with this memo are copies of Appendix 2, Road Note No.77. The Appendix should be issued to all staff holding copies of Road Note 7 and Appendix 1 to the Road Note.

(M.J. Haydon)

for Principal Government Highway Engineer

M.H/dp

HIGHWAYS OFFICE
RESEARCH AND DEVELOPMENT UNIT

Thermoplastic Road Marking Materials
Guide Notes for Site Staff

1. Introduction

Road Note 7, issued in May 1984, specifies the use of thermoplastic roadmarking materials for all permanent roadmarkings. Appendix No. 1 to the Road Note was issued in September 1984, and covered various aspects of the manufacture and laying of thermoplastic road marking materials and problems that may be encountered.

Appendix No. 2 is now issued to cover additional topics relating to thermoplastic materials that were not previously covered in Appendix No. 1 and some further amplification of other points.

2. Preparation of the Road Surface (Additional to Paragraph 2, Appendix 1)

Appendix 1 covered the requirement to prime concrete road surfaces. It is also considered that prime coat should be applied to smooth, worn asphaltic road surfaces to achieve maximum adhesion. Similarly surfaces with a high stone content should receive treatment.

(Prime/tack coat is not specifically mentioned in the Particular Specification for EDD Contract 38/HO/83 but is included in the B of Q and is thus deemed to be an included item.)

3. Wear Rate

Thermoplastic should give a general life expectancy of at least two years under normal traffic wear conditions. The areas of most rapid wear is at junctions, where turning, braking and accelerating traffic conditions exist. At some of these busy sites, thermoplastic materials may show signs of early wear in a matter of months. The presence of dirt or sand/crushed rock fines on the road will accelerate the rate of wear. Extensive wear may be noted on junction corners where traffic is turning into or through the junction.

Longitudinal lines, symbols and letters/characters generally suffer minimal damage as they are only subjected to rolling traffic.

It is important to consider the above points when assessing performance under the specialist maintenance contract.

4. Possible Problems (Additional to Paragraph 7, Appendix 1)

(i) Blackening of Marks

(a) Again it can only be emphasized that this is a universal problem. The only effective solution is weathering and consequent traffic action. It is suggested that consideration be given to using alternative means (not paint) to mark box-junctions where problems might be expected.

(Refer to H.O.R.D.U. for advice and assistance.)

(b) Discolouration can also be caused at junctions and intersections where traffic is stationary, due to the high level of fuel and oil spillage/dripping in Hong Kong. Severe spillage can soften the markings to such an extent that surface dirt is impregnated into the markings to the extent that they will remain discoloured. (This high rate of contamination can also cause "spreading" of the lines at junctions.)

(ii) Cracking

As mentioned in Appendix 1, cracking can be related to the road surface. Surface cracking can also be expected to occur due to our large seasonal temperature ranges in Hong Kong. The surface durability of the lines will only be affected if there is also poor adhesion, in which case the line will soon flake off the road surface.

Cracked lines which are trafficked can go unnoted as tyre action closes the cracks and prevents them spreading. This is in contrast to edge lines where there is no traffic and cracks are clearly visible.

5. Safety

- (i) Storage :- Materials should be stored in areas not subject to excessive heat or contamination from fuels, oils or greases. Under these conditions the material has an indefinite shelf life.
- (ii) Handling : - When breaking-up unmelted materials take care to avoid small pieces of material flying about. Do not throw material into the pre-heater. Avoid inhalation of the fumes.
- (iii) Temperature :- Bags or drums, marked in accordance with BS 3262 : 1976 will have marked on their containers a "maximum safe heating temperature". This limit denotes the level beyond which discolouration occurs and the material becomes hazardous. Generally, the recommended application temperature is 10-25^oC below the maximum safe heating temperature.
- (iv) Heating :- It is presumed that the Contractors operatives will be fully conversant with the equipment manufacturer's instructions for handling the equipment. However it is emphasised that material should not be overheated or maintained at working temperature longer than necessary. Do not allow the operator to overfill the heating containers, he must allow for expansion of the material.
- (v) Treatment of Burns :- This item is covered as, with all burn-type injuries, immediate treatment can often prevent permanent injury to the injured person :

Flood the affected part of the injured person's body with cold water until the thermoplastic is cold.

Do not try and wipe the thermoplastic off while liquid or solid as in all probability you will only succeed in causing further injury. Take the person to hospital and inform the medical staff of the nature of the product (synthetic hydrocarbon resin with refined mineral oil and mineral powders) and that the material is soluble in surgical ether, olive oil or liquid paraffin.

- (vi) Fire :- If the maximum safe heating temperature is exceeded, there is a likelihood of fire when fumes from the binders can be ignited by the burner. Do not use water to extinguish the fire, use powder or foam extinguishers.

Further information and advice can be obtained from H.O.R.D.U.

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