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Traffic Safety Systems



Safety
dressing
for every
road



www.3m.com/in/tss

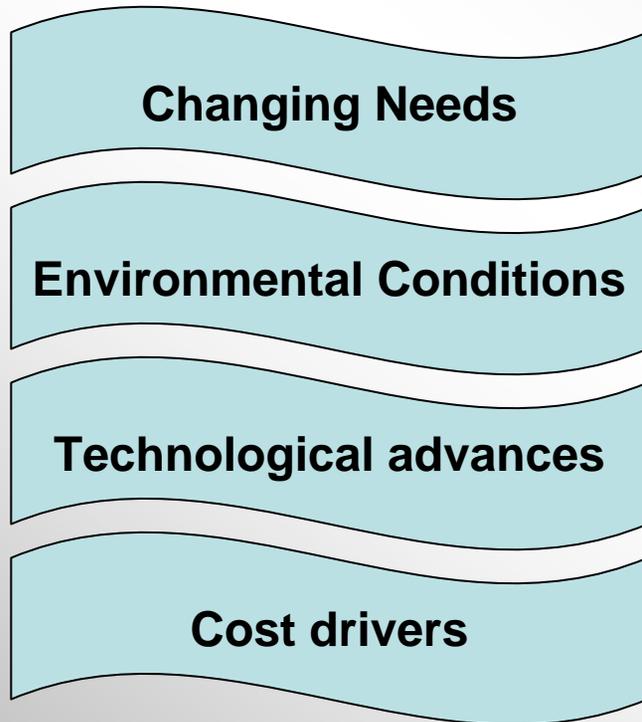
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25-Nov-10

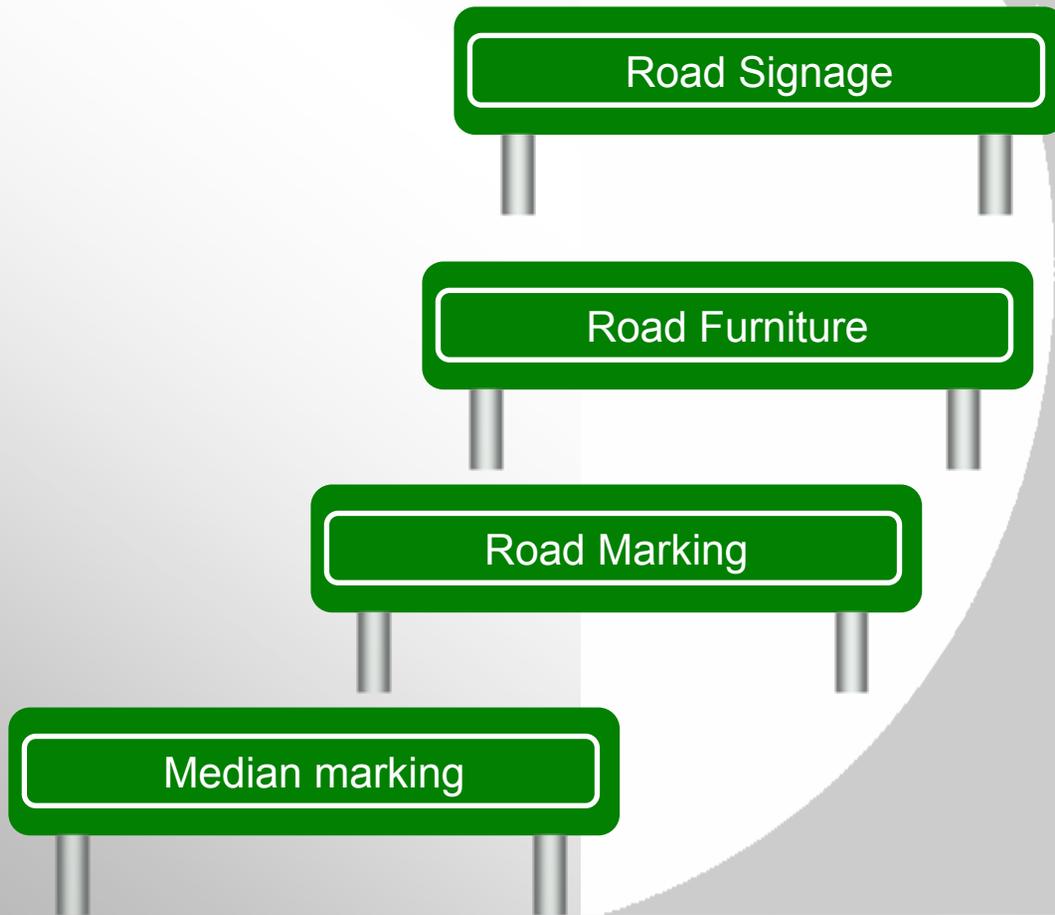


Innovation





Innovation - Agenda





Sheeting for Signage

Changing Driver Needs

Legibility Distance

Distance at which the driver is able to read the sign and take decision



Greater the Speed, larger should be the Legibility Distance



Changing Driver Needs

Technology Challenge

Higher Speeds



Larger Legibility Distance

Large Vehicles



High Obsv'n angle performance

Sign Location and Height



Greater reflective efficiency

Nights



Superior reflectivity

Changing needs require superior technology





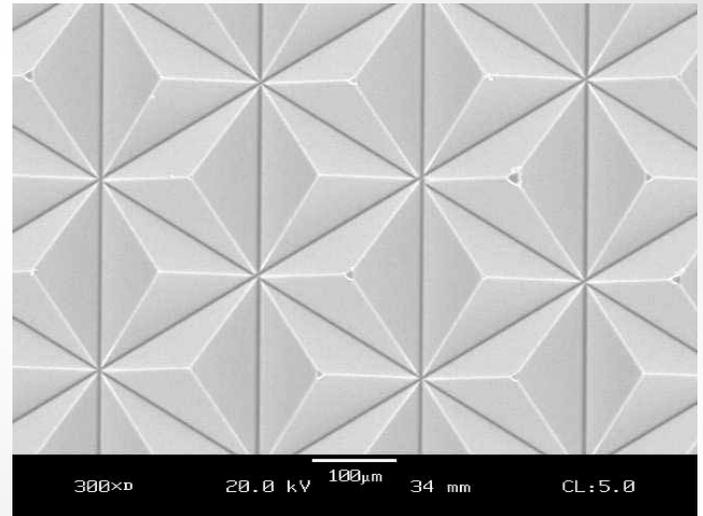
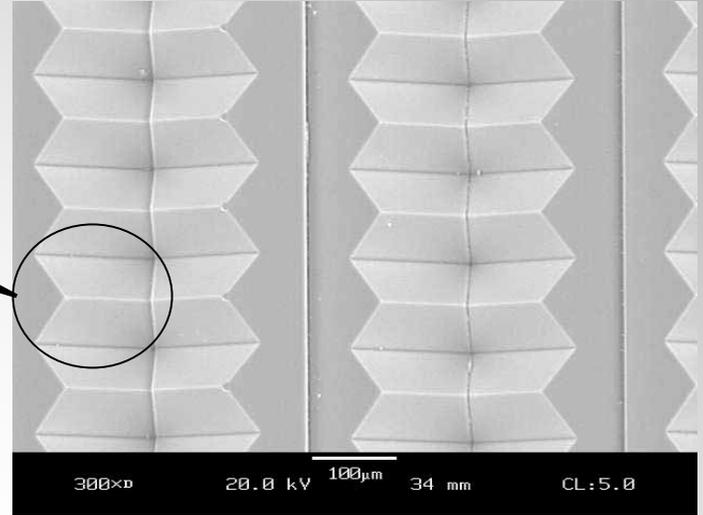
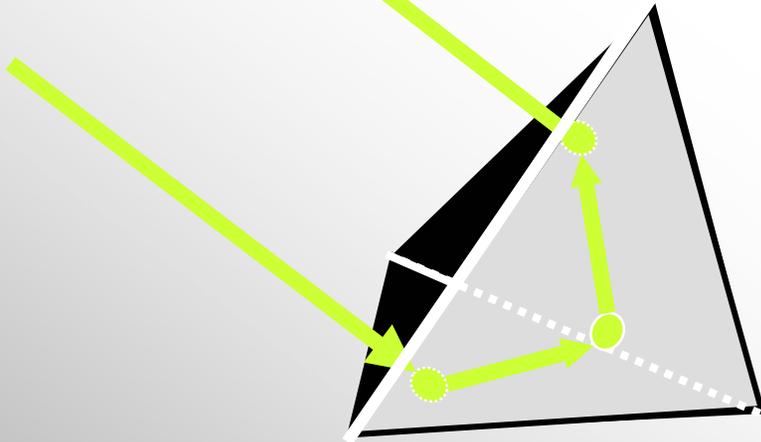
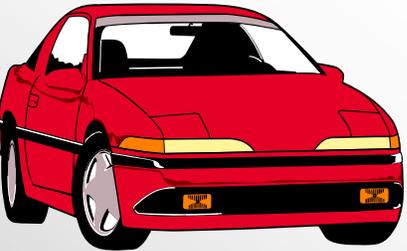
Full Cube Technology





Full Cube Technology – in Type XI DG³ sheeting

Highly efficient
Cube-corners

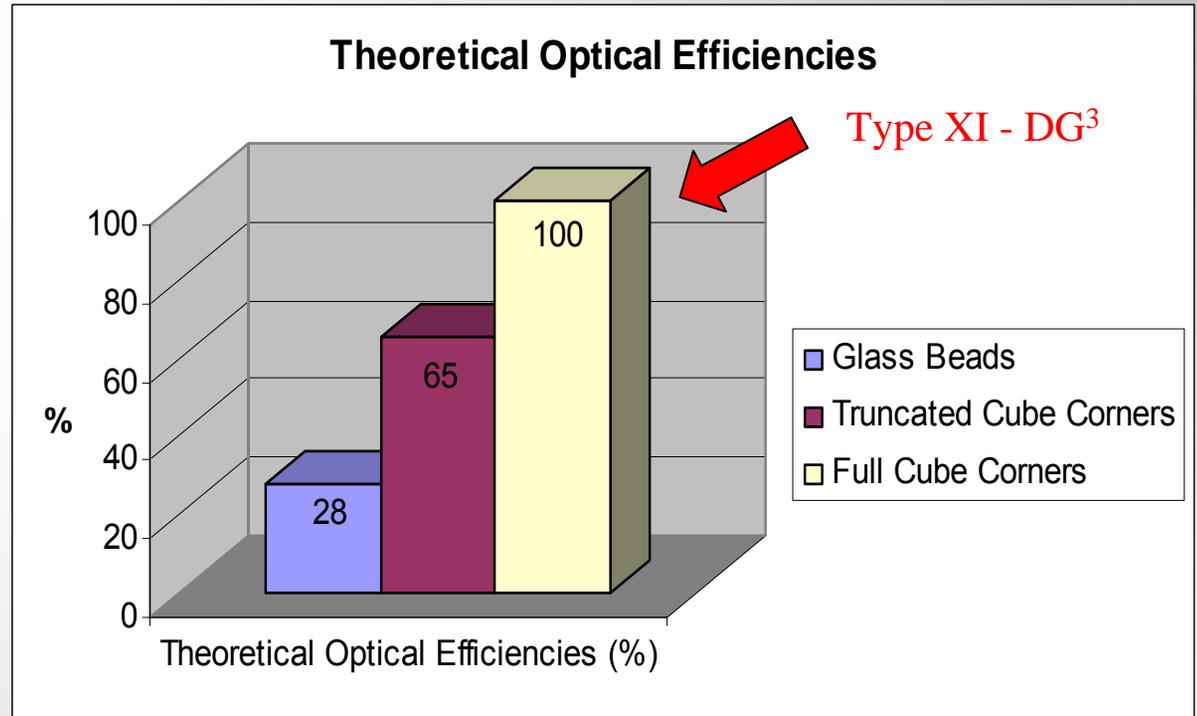
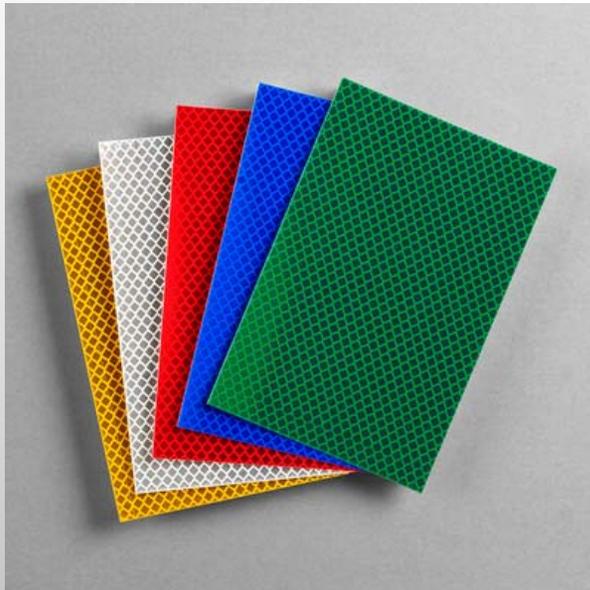


Uses most efficient corner of the cube as the reflective element





Type XI – DG³ Reflective Sheeting

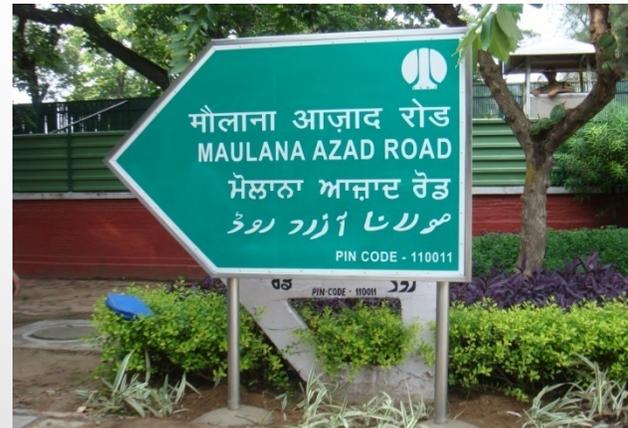


Full cube corner – most efficient retroreflective element



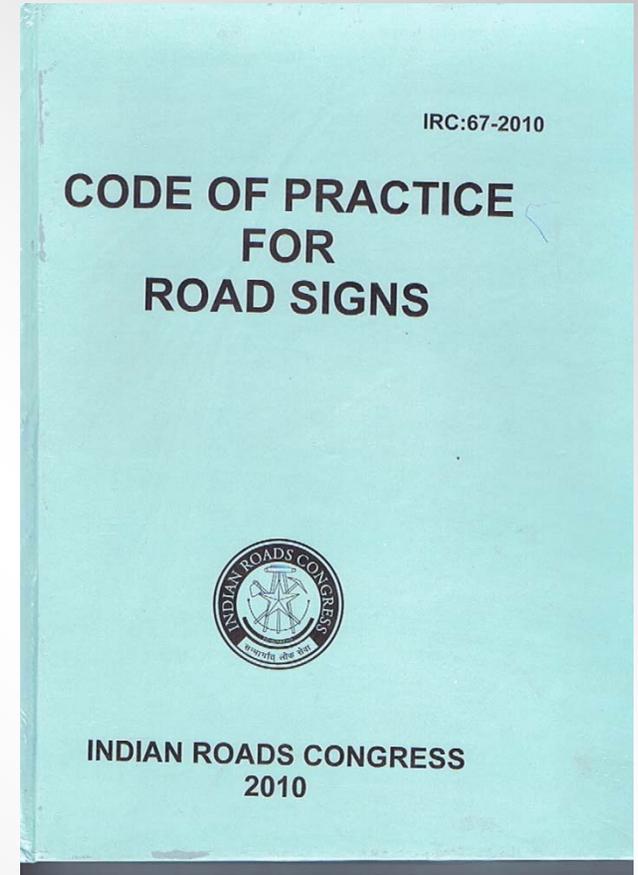
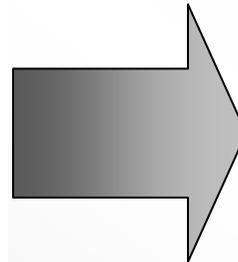
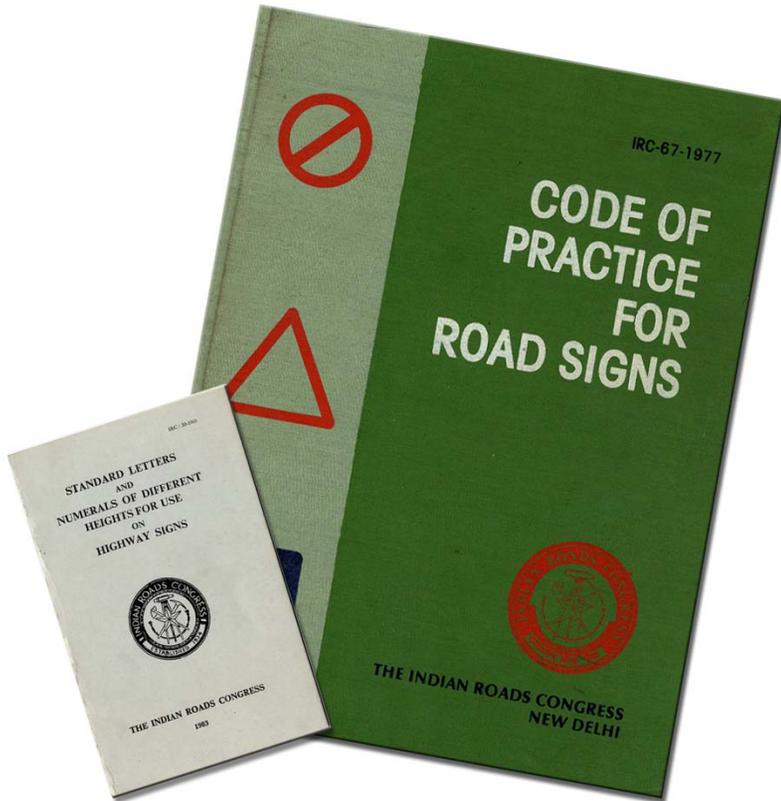


Type XI - DG³ Sheeting





Revised IRC-67 Standard



OLD

NEW

3M



IRC – sheeting recommendation

<i>Class of Sheeting</i>	<i>Category of Road</i>				
	<i>National / State Highways</i>	<i>Major District Roads</i>	<i>Rural Roads</i>	<i>Urban Roads</i>	<i>Expressways</i>
<i>Class A (Type I and II)</i>	-	-	✓	-	-
<i>Class B* (Type III and IV)</i>	✓	✓	✓	✓	-
<i>Class C (Type VIII, IX and XI)</i>	✓	-	-	✓	✓

Source: IRC 67 - 2010

Type XI DG³ sheeting recommended by IRC for signage





Sheeting for Road furniture

Challenges



Road furniture - Challenges



Usage

Minimal road furniture used



Road furniture - challenges



Tree



Machinery, Pillars

Visibility

Hazardous elements barely visible during night



Road furniture - challenges



Poor Adhesion & Durability



Theft



Challenges

Technology Challenge

Applicability

On uneven, curved surfaces and
Plastic, metal or concrete surfaces



Flexibility and Conformability



Adhesion

Long distance visibility



Retroreflectivity

Impact withstanding



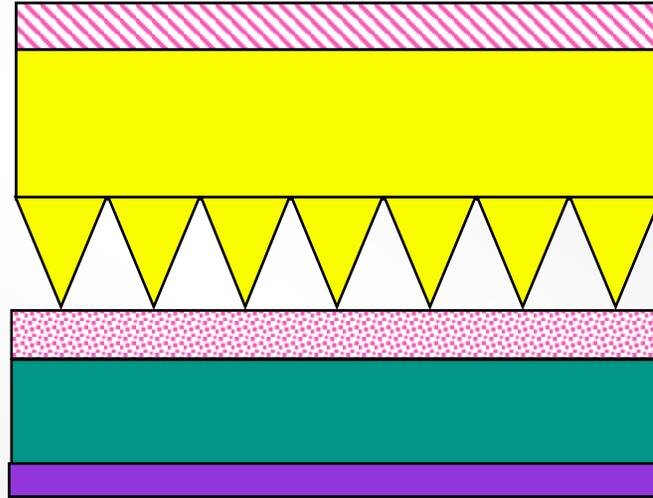
Impact resistance



Flexible Prismatic Sheeting



Regular Prismatic Sheeting



Schematic: Construction of
microprismatic sheeting

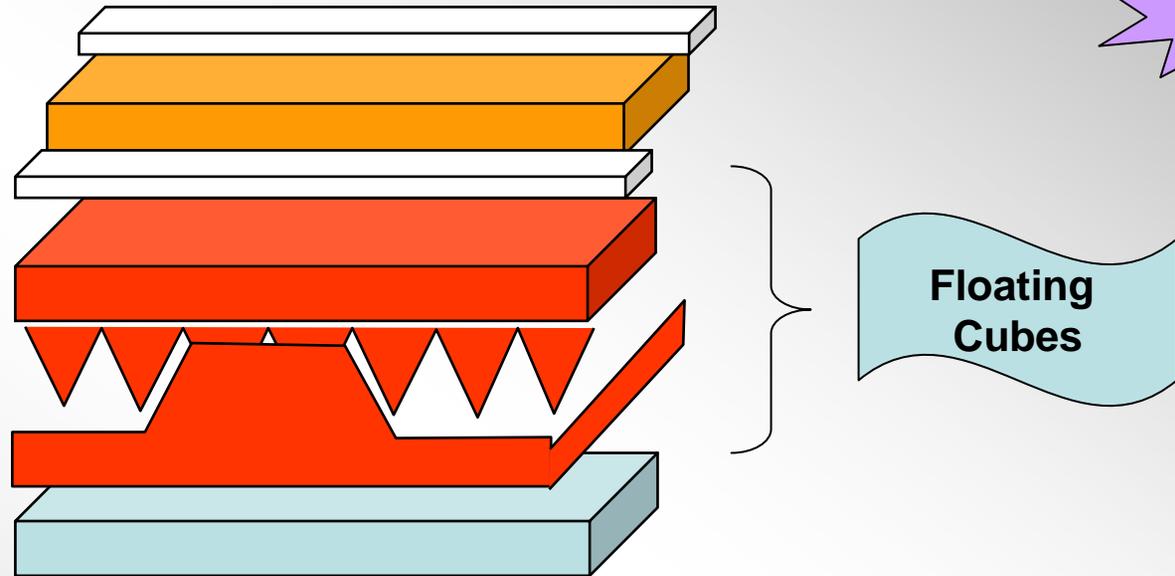
Cannot be applied on **curved, plastic** surfaces

Its **rigid** nature makes application difficult and prone to premature failure

(Ex: work zone applications)



Flexible Prismatic Sheetting



**Schematic:
Flexible prismatic sheetting**

- Floating Cubes provide greater flexibility
- High Sheetting Brightness
- Good impact resistance





Flexible Prismatic Sheeting:
For hazardous road elements



Aluminum-backed Flexible Prismatic (AFP)



AFP

▶ Features

- ▶ Diamond Grade Flexible Prismatic
- ▶ Laminated with thin Al foil
- ▶ Ready-to-use Screen-printed pattern

▶ Benefits

- ▶ Highly flexible and conformable
- ▶ Excellent Visibility
- ▶ Superior Adhesion to wood and concrete surfaces
- ▶ Low vandalism losses with edge sealing

Applicable on curved, uneven and undulated surfaces





Aluminum-backed Flexible Prismatic (AFP)



Superior Adhesion



Aluminum-backed Flexible Prismatic (AFP)



Toll plaza – bull noses

Aluminum-backed Flexible Prismatic (AFP)



Bright and conspicuous



Flexible Prismatic Sheeting:
For work zone products

Roll-up Sign



Features

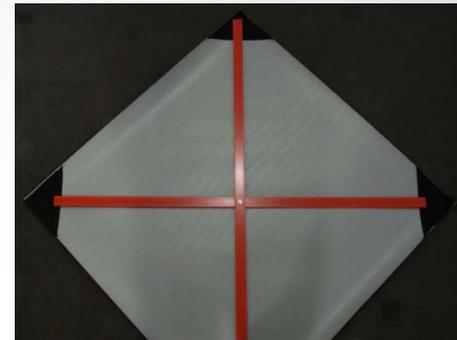
- Fluorescent orange color
- Compact & foldable
- Robust Stand & structure

Benefits

- Conspicuous and commands attention,
- Portable and easy to install
- Stable and robust



Roll-up Sign



Roll-up Sign with Rubber Base



Flexible Prismatic Sheeting – for Road furniture



Superior reflectivity and long distance visibility



Road Marking



Thermoplastic Road Marking - Issues



Issues

Poor Night Visibility
And Road Presence

Effect

Accident danger
at critical spots



Performance focus

- ▶ Current IRC specification – Recipe based
 - ▶ Sub-standard components being used resulting in poor road presence and visibility



Need for Performance-based Specification





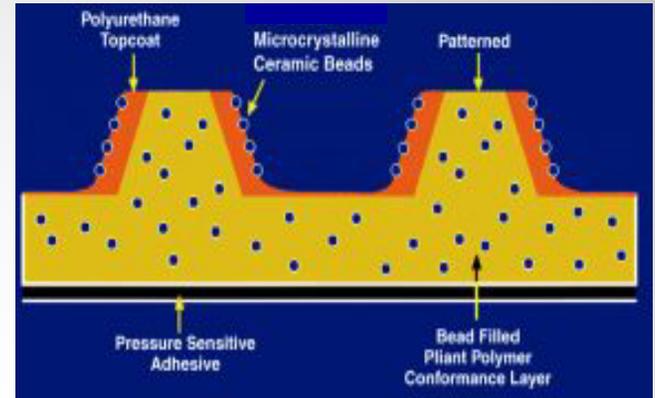
Preformed Patterned
Road Marking Tape



Preformed Patterned Tapes

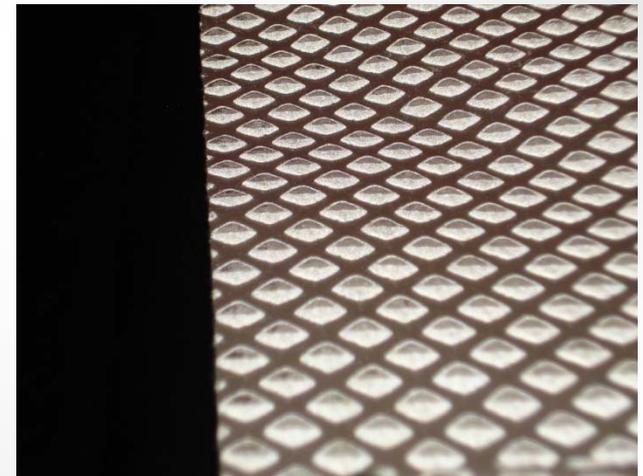
Features

- Raised Pattern Construction
- High Index Microcrystalline Ceramic Beads
- Urethane Topcoat
- Reliable Pressure Sensitive Adhesive



Benefits

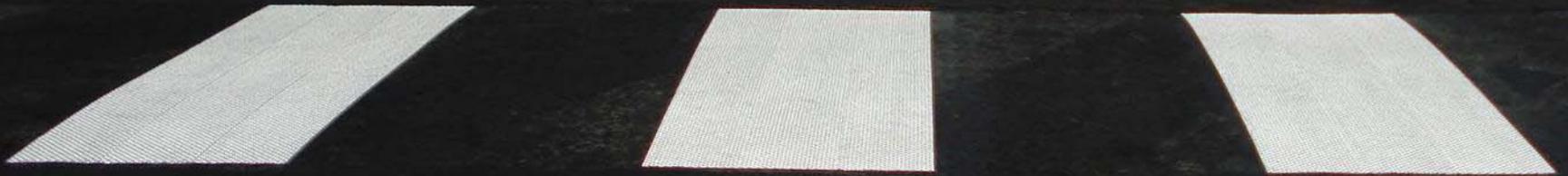
- High Initial & Retained Reflectivity
- Durable road presence
- Easy to store, carry and install
- Minimal traffic disruption
- Pre-cut symbols and letters



Ensure superior lane visibility throughout life



Preformed Patterned Tapes



Critical Spots – Pedestrian Crossings



Precut Symbols & Letters



Road Marking - Retro reflectivity Levels

~~((Minimum of 100 for 60 mph roads))~~

Stamark Tapes - Initial reflectivity
Stamark Tapes - Retained reflectivity

Minimum recommended reflectivity
The minimum recommended reflectivity
The minimum recommended reflectivity
The minimum recommended reflectivity



600

300

200

150

100

50

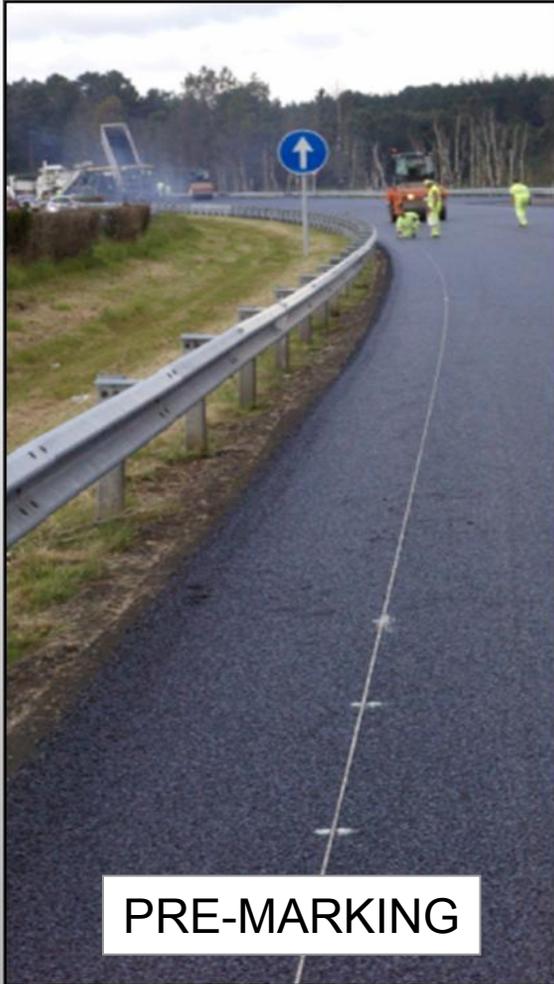
Stamark™ Tapes provide the much needed reflectivity durability



Median Markers



Preformed Patterned Tapes - Application



PRE-MARKING



TAPE APPLICATION



FINAL COMPACTING





Median Visibility



Median Visibility during is critical



Median Markers- Innovative Design for Enhanced Safety





Median Markers



Benefits

- ▶ Excellent all light and weather median visibility (day & night, dawn & dusk)
- ▶ Very high impact resistance

Dawn & Dusk conditions





Innovation - Role of Institutions



Innovation – Role of Institutions

Upgradation of Performance Standards

Planning and adequate budgeting

Enforcement of Quality Standards

Maintenance of Assets

Encouraging innovative solutions



▶ Let us join hands...



... and make Indian roads safer!!!



*Thank
You*