Colored Pavements

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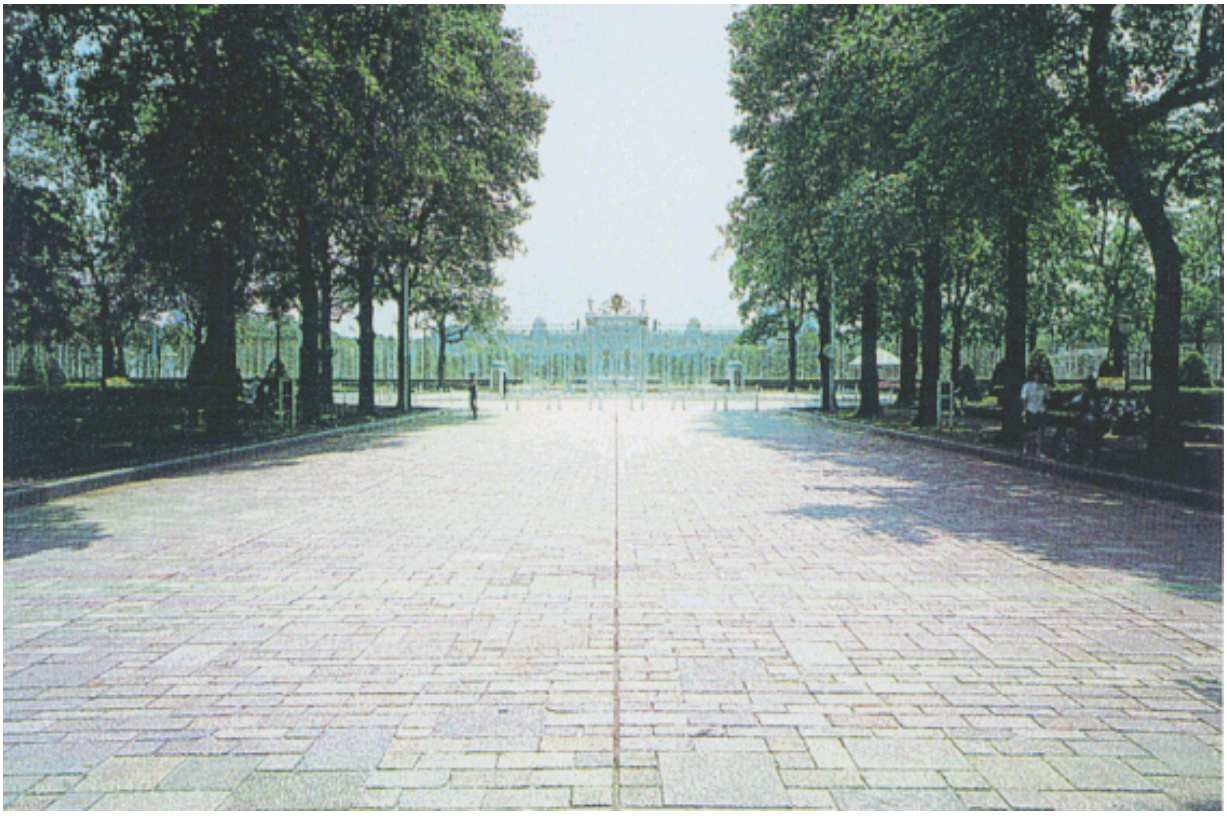

Photo 1　Stone pavement in front of Akasaka Detached Palace in Minato Ward, Tokyo

WHAT IS A COLORED PAVEMENT?

There are two types of colored pavement in common use. One, generally light-colored, improves the brightness and reflection of light at the surface by making use of a highly reflective, light-colored aggregate. The other uses pigments in the asphalt mixture or an artificially colored aggregate to provide variations in the appearance of roads.

WHY COLORED PAVEMENTS?

The contrast between black asphalt and white concrete has been a feature of Japan for a long time. Although the colored pavement was first introduced on the sidewalks and crosswalks of Ginza about 40 years ago, at the time of the Tokyo Olympic Games, it was not until 10 years ago that their use became widespread. They are in use overseas as well, and the light-colored paving front of Buckingham Palace was seen around the world when the funeral of Princess Diana was televised. It can be said that such coloring expresses a certain individuality.

The colored pavement came into being in response to demand for improved street appearance as the development of the road system progressed. Color was introduced for a number of reasons: harmony with the surroundings, expression of a local community's individuality, to introduce a sense of liveliness and peace of mind, and to improve safety and comfort. Innovations and development in paving materials made color possible, while the increasing sophistication and diversity that followed the provision of basic roads for citizens, as well as economic growth, drove its widespread use. Adoption of color was encouraged by the nation's five-year road and technology improvement programs, which implemented policies to ensure a better living

environment.

RICH VARIETY OF COLORED PAVEMENTS

Recent technological advances have added variety to the range of colored pavements. Roughly speaking, technological development has advanced toward the following targets for each type of colored paving material: for light-colored pavements, suitable raw materials are being imported from abroad; for secondary colored paving materials, alternative raw materials are being introduced from the viewpoint of resource conservation; for heated paving mixtures, the thermal durability of colorants originally developed from paints has been improved by improving binders and colored aggregates; and for normal paving mixtures, informality and natural appearance have been enhanced.

EFFECTS OF COLORED PAVEMENTS

Light-colored pavements are used in tunnels to reduce lighting costs and at intersections, ramps, shoulders, median strips, and bridges to improve visibility and driving safety. Since light colors are less prone to overheating in summer, colored pavements are also more resistant to the rutting that can occur at high temperatures.

Light-colored pavements made from secondary products are used to provide variety in the appearance of roads; natural stone gives a sense of profundity and nature, while brick has a feeling of simplicity. Such surfaces also have the effect of reducing light reflection from the pavement.

Colored pavements made with

Photo 2 Red oxide pavement on park walkways

Photo 3 Water-permeable colored pavement for bus lanes

Photo 4 Semi-flexible pavement in a parking area

heated and mixed paving materials are used where consideration of the landscape is important as well as for sidewalks used by students on their way to school, crosswalks, and bus lanes. They contribute to traffic safety by delimiting lanes with color. They enhance road appearance and reduce accidents. Recent developments include modified type II asphalt for heavily used roads and high-viscosity binders for water-permeable and low-noise pavements. (Photo 3) These expand the range of application of thermoplastic resins.

Colored pavements made with materials that are mixed and laid at normal temperature offer excellent flexibility as regards color, texture, and shape, so such materials are used on sidewalks, bicycle paths, pedestrian walkways, park footpaths, and elsewhere in parks and pedestrian plazas. They offer the flexibility to develop an effect that matches the landscape. In the past, such types of pavement have been used without proper consideration of their basic purpose, which is to provide a surface for walking. However, improvements are now being made and the so-called "Disneyfication" characterized by radical, fanciful designs and colors is being replaced by environmentally friendly designs that offer a sound street environment.

EXPECTATIONS FOR THE FUTURE

The present demand for colored pavements can be attributed to reduced fabrication and construction costs, as well as to increased environmental awareness and the aging society. Still, colored paving is comparatively higher in price than

Photo 5 Neat-cement pavement on a jogging trail

Photo 6 Interlocking block pavement (for roads, park walkways, and pedestrian walkways

Photo 7 Colored elastometric block pavement at a bus stop

the conventional alternatives. Developments aimed at reducing costs include the embossed colored pavement (Photo 9) and a block paving system containing a high proportion of waste rubber tires and recycled glass (Photo 7). The former is designed to give consideration to the environment while providing a non-slip surface suitable for our aging society, and the latter is a response to the demand for environmental preservation under the Law Concerning the Promotion of Classified Collection and Recommercialization of Containers and Packaging Materials.

To meet environmental obligations, future efforts will aim at better cost-performance and cost-effectiveness. A particular issue is to grasp what factors are involved in cost effectiveness. Research is now in progress to investigate roadways and sidewalks in urban landscapes, and the feelings of people walking on paved sidewalks. The development of new colored pavements requires an evaluation of the work that has been done so far, as well as proper consideration of the demands of the times.

Photo 8 Tile pavement for a building entrance plaza

Photo 9 Embossed colored pavement in a park square