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THE POWERFUL POSSIBILITIES OF SMALL ELEMENT PAVEMENT FOR DESIGNERS OF PUBLIC SPACE

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Note: The following is the notation used in this paper: (.) for decimals and ( ) for thousands.

Summary

The paper summarizes the history of small element paving in the Netherlands. It mentions the main areas of application varying within built-up areas up to rural roads. Much attention is given to examples of powerful applications of small element pavements. Amongst them: rural roads well fitted into the landscape, streets: well adapted to their function and picture quality of the buildings, and squares: not only functional but also attractive. Making public spaces in which people like to stay, play and socialize. Due to the overwhelming possibilities for designers to adjust the use of the different materials to their function and surroundings, small element paving doesn't have to fear the competition with monolith asphalt or concrete at all.

1. INTRODUCTION

The Netherlands is a delta area with a long history in small element paving. About 30% to 35% of the Dutch paved area has a small element pavement. When you consider only urban area, about 55% is small element pavement. This history is a result of:

- The availability of clay.
- The sensitivity of the subsoil for settlements.
- And the desired reach-ability of underground infrastructure such as cables, pipes and sewer systems.

Originally burnt clay bricks were used; nowadays mainly concrete blocks, still a lot of burnt clay bricks and some natural stone. The market has developed in a natural way in the Netherlands. It came into being by this history. Technique, functionality and availability dominated. Aesthetics came into second. Contrary to some countries where small element paving had to gain market by aesthetic value. Over the last, say 15 years, there is much more awareness of the strong potency of small element pavement. It offers a magnificent variety for designers in different materials, shapes, colours and sizes to strengthen the different functions in the public space. A high quality can be reached that could not be made in monolith asphalt or concrete. Of course also in the past there are beautiful examples of applications of small element paving: well chosen considering their function and surroundings.



Figure 1. Cables and pipes.

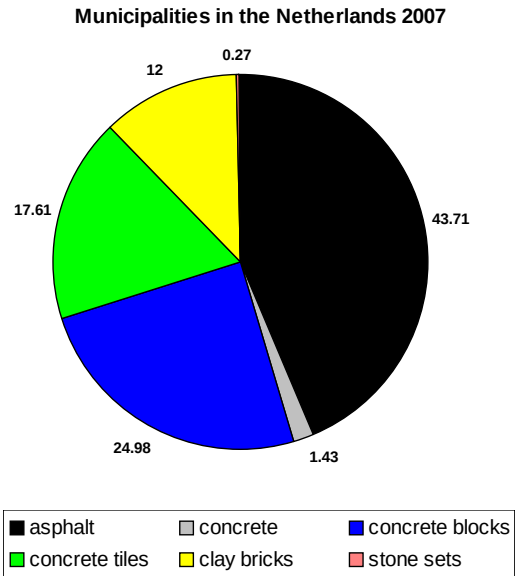

Figure 2. Division of the paved urban area.

2. TREATS, BUT FAR MORE OPPORTUNITIES

The paving market in the Netherlands is stable during a long time. In competition with monolith asphalt or concrete there are only two actual treats in the Netherlands:

- Paviours labour conditions [Crow, 2007; Huben et all., 2009].
- Weed management [Kempanaar et all., 2006].

In the 21th century we can't stay paving manually. Legislation in this field becomes more and more rigorous in the Netherlands. An important inducement for mechanization.

Weed control on pavements is merely by means of herbicides. Costs of chemical weed control are relatively low compared to non-chemical weed control. The emission to surface water can be relatively high. The challenge is to reduce the emission by alternative methods in weed control and weed prevention by smarter design. Of course there is an big difference in priority of these aspects in the world. But in long term everyone has to deal with this aspects.

As mentioned in the Netherlands we have already to deal with these aspects. But by dealing with it, the expectation is that small element paving doesn't have to fear competition. It offers a magnificent variety for designers to make a public space with a high quality that could not be reached in monolith asphalt or concrete.

3. THE POWER OF ELEMENT PAVEMENT FOR DESIGN OF PUBLIC SPACE

The development in small element paving in the Netherlands is a long one. The use and application of materials came into natural: natural stone from surrounding area. Later on: burnt clay bricks made of clay from nearby rivers with different colours. Natural materials and colours fitting in the landscape, fitting in its surrounding. Nowadays mostly replaced by concrete. But still about 20% of element pavement consists of burnt clay bricks. Of course there is some competition between suppliers, but not so much competition in design. For designers it enlarges the possibilities in using the different materials and offers more opportunities. Think about the differences in texture, colour, shapes and sizes. The attractiveness of tight concrete for example can strengthened by use of burnt

clay bricks and at special places like historic centre: natural stone. Good use: not in competition, but in combination!



Figure 3. Concrete blocks combined with burnt clay bricks.



Figure 4. Natural stone.

It offers a magnificent variety for designers to make nice, attractive and functional public spaces, where people like to be, to stay, to play, to communicate. A socializing public space. Often the paved ground level and all its road furniture is minor to the buildings and the architecture, while it makes a big difference. In this paper some examples of Dutch design. Dividing examples in categories doesn't do justice to the connecting power of well designed element paved area. Yet I have categorized the examples in this paper: to different kinds of connection! Of course the connection in the design is not limited to one connection.

3.1 Connection present and past

On count of the industrial looks of "SugarCity" - with two formerly sugar elevators, converted into offices as an eye catcher - choice is made for an parking area with concrete design slabs. A robust and fine pavement, fitting in the industrial past and the striking architectonic present.



Figure 5. Design pavement with respect for present and past.

Where ships used to be unloaded and loaded, nowadays its often domain of modern house building. To bring back the sphere of dock area, there is chosen for big concrete slabs. Thanks to an addition of basalt in the upper layer and a galvanised border, it gives fine looks. Living in Amsterdam dock

area; characteristic houses framed with a robust pavement, with the sphere of the past, but the looks and quality of today (See Figure 6).

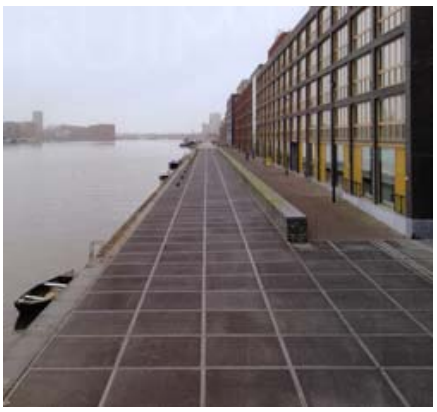

Figure 6. Dock area sphere still maintained in new house building area.

3.2 Connection spheres and styles

In Figure 7 a district is shown with various house building, much green and a nice pavement, in which is invested substantially. However shorn of all its frills. Exactly the modesty with black concrete blocks for footpaths and a dark grey colour for the streets, sees to a public space which connects various architecture. Choices and details are not standard, but yet very simple, effective and beautiful.



Figure 7. Simple but chic pavement binds architecture.



Figure 8. Cheerful streets.

A mix of contrasting coloured blocks and tiles decorates a new district in Figure 8. Thanks to the mix of red and grey and red and black, an unusual pavement is created. Not glaring but with its own character.

3.3 Connection streets and districts

Design and use of materials makes it possible to create identity, to create a recognizable structure and appearance. A clear routing as connection between houses, primary schools, shops and other kind of district facilities. In Figure 9 an example of a long lozenge-structure of sidewalks and cycle-paths. Also facilities are designed in the same style and with the same materials. Before redesign, people easily could be lost in this place.



Figure 9. Pearl chain completed with facilities in the same style.

An own identity for a new district by designing series of striking squares. Obvious belonging to the same family (See Figure 10). Consequently black and blond yellow tiles are used.



Figure 10. Striking squares as connecting elements in a new building area.

3.4 Connection people in crossing

Many crossings are at street level. In Figure 11 an example with a different approach. No standard design of a pedestrian crossing, but striking square passages. That's how nice places were created for the neighbourhood and the passers-by. In fact from out of nothing, pleasant places came into being, in a characteristic park surrounding. Five types of waves in the pavement, varying from calm to hurricane.



Figure 11. Pedestrian crossing and pavement with five types of waves.

Speed limit regularization is a challenge. Enforcing by physical measures in completion with rules and sanctioning, is necessary in urban area. Some modest examples of street crossings in neighbourhoods are shown in Figure 12. Places where the speed limit is 30 km/h. Yet measures are needed to enforce people to "see each other in the eye" and to be caring for each other. So, more connection of people is reached by this type of safety measures.



Figure 12. Examples of raised crossings with increased level of attention.

3.5 Connection people by playing

A hop-scotch with concrete tiles complete with LED lighting (See Figure 13, left).

Figure 13 (right) shows "game of goose" as an eye catcher. Its located in a new little area with houses for young and elder people. No games for a specific age in this neighbourhood in view of its variety of inhabitants, but a pavement for 8 till 88 year old people!

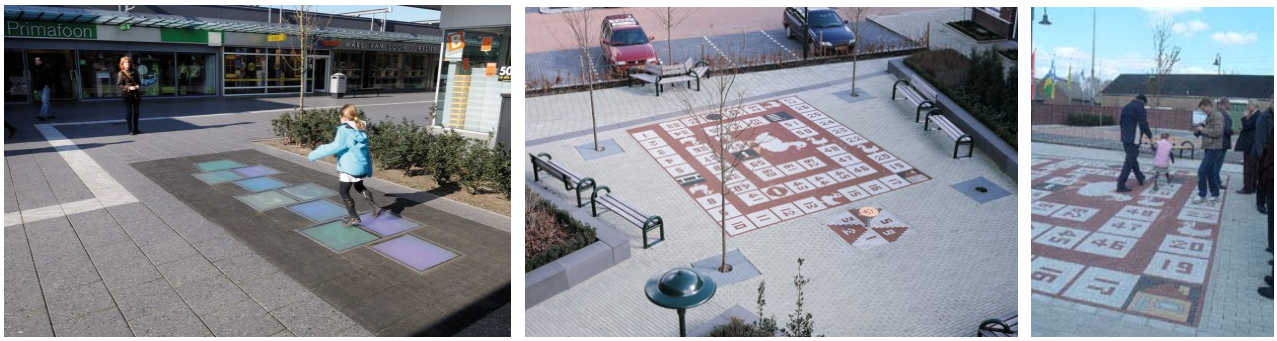

Figure 13. Seduction to play: hop-scotch with LED lighting (left); game of goose (right).

By the choice of specific coloured concrete blocks the playground got the sphere of the sea, the waves and the beach. The design seduces to play (See Figure 14). Figure 15 shows a schoolyard in Amsterdam. The grey tiles are plastered. An alternative way to make a playground more lively.



Figure 14. Beach and sea.



Figure 15. Plastered tiles in Amsterdam.

A striking square for a college (See Figure 16). The artist used 23 different coloured blocks!. In Figure 17 another example of a schoolyard design.



Figure 16. Square with computer graphics.



Figure 17. A playground with all opportunities to create your own game.

Figure 18 shows a nice example of child-friendly design. The district dates from the sixties. The public space is redesigned. The square is a kind of meeting-place of long-drawn streets in a district of Meppel. This starting-point is used in redesigning by a strip in lengthways the square (amongst other changes). A strip to be, to sport, to play, to stay, to socialize.



Figure 18. Play-strip for young and old.

3.6 Connection with water

After a firework catastrophe in the district “Roombeek” in Enschede, the whole district is redesigned and rebuild. A new public space is created. Water of an underground brooklet is made visible again at the surface. The bottom of the brook is a special shaped, transverse ribbed, concrete structure, that causes constant movement (See Figure 19).



Figure 19. Left: a ribbed concrete floor; right: a constant moving water surface.

A few years ago a copy is build in the Netherlands of the Olympic wild water circuit in Peking. The place is named " Dutch Water Dreams". A pavement with the looks of cobble-stones, made of concrete; robust, simple, cheap, natural looking and also permeable.



Figure 20. Special pavement for wild water circuit.

Of course this is somewhat extreme example of a permeable pavement. Permeable pavement is becoming more and more of interest in the Netherlands and with it: the application in urban area. Connecting water over ground with water underground.

3.7 Connection with the landscape

Every area has his own specific and unique character. The landscape is an expression of it and the road forms an integral part of this landscape. This starting-point offers opportunities in (re)designing rural roads in an integral way. The grown landscape forms an inspiration source. Of course most rural roads are build up in asphalt. Examples in Figure 21 however show element paved rural roads, well fitted in their landscape. Due to the character of the pavement in cohesion with its surrounding, they are speed reducing and more safe for traffic [Crow, 2008].

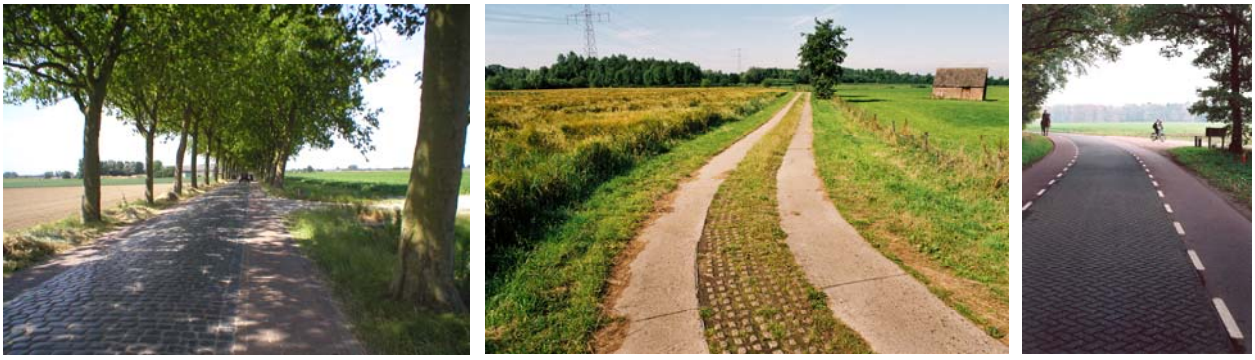

Figure 21. Element paved rural roads, well fitted in their landscape.

4. REFERENCE

CROW, 2007. Mechanical Paving (in Dutch). Publication 255, National Information and Technology Platform for Transport, Infrastructure and Public Space (CROW), Ede, the Netherlands [1].

HOUBEN, L.J.M., KNOL, J. (2009). Mchanical Paving in the Netherlands. Proceedings 9th International Conference on Concrete Block Paving, Buenos Aires, Argentina, 2009 [2].

KEMPENAAR, C, LOTZ, L.A.P., RIEMENS, M.M., KNOL, J. (2006). Sustainable weed management on concrete block pavement. Proceedings 8th International Conference on Concrete Block Paving, San Francisco, California, 2006 [3].

CROW, 2008. Inspiration book rural roads nice and safe (in Dutch). Publication 259, National Information and Technology Platform for Transport, Infrastructure and Public Space (CROW), Ede, the Netherlands [4].