International Journal of Advanced Research Methodology in Engineering & Technology, ISSN 2456-6446
Volume 2, Issue 2, March 2018

RECON PAVEMENT

Mr. M.RAJIV [1]. R.JEEVANESAN[2]
1 Assistant professor / Department of Civil Engineering, Saranathan College of Engineering, Panjappur, Trichy Dt-620012
2 Assistant professor / Kings College of Engineering / Department of Civil Engineering
A.ANAND, C.HARIHARA SUDHAN.
Final year /Civil Engineering
Kings College of Engineering, Punalkulam, Gandarvakottai post, Pudukkottai Dt-613303

ABSTRACT- The normal conventional concrete is not allows the rain water directly into the ground. So we provide an additional drainage system to drain the rain water. The additional drainage system we provided was increasing the construction cost. So it is not economical. To solve this problem using recent innovation materials. So we replace normal conventional concrete in to recon pavement. It is a special type of concrete with a high porosity used for concrete flatwork applications that allows water from precipitation and other sources to pass directly through, thereby reducing the runoff from a site and allowing groundwater recharge.

INTRODUCTION-

Due to rapid urbanization most of the places are covered with impermeable surfaces like cement concrete. This has a major impact on the ground water table. Recon pavement is an effective ways to minimize this issue. Recon is an open graded structure with interconnected voids through which rain and stormwater is permitted to percolate into the aquifer.It is a special type of concrete. With a high porosity used for concrete flat work applications that allow s water from precipitation and other sources to pass directly through , thereby reducing the runoff from a site and allowing ground water recharge.

RE- Recharging
CON- Concrete
RECON-Recharging concrete

INGREDIENTS

CEMENT-Hydraulic cement, more commonly known as cement [also referred to as Portland cement or Ordinary

Portland cement, O.P.C] , is one of the most extensively used basic material

AGGREGATE-Aggregates are the major & important constituents of concrete .They form the whole body of concrete as it occupies 70 to 80% of the volume of concrete. We use only course aggregate ,not use fine aggregates. The size of aggregate is 3/8" same size only.

ADMIXTURE- Ordinary concrete does not fit in for varied purpose. Thus admixtures are added along with the ingredients of concrete. The effect of admixture depends on the brand of cement, grading of aggregate, mix proportion & richness of cement.

Silica fume admixture is added , in case of sand is not used. concrete containing silica fume can have very high strength and can be very durable .

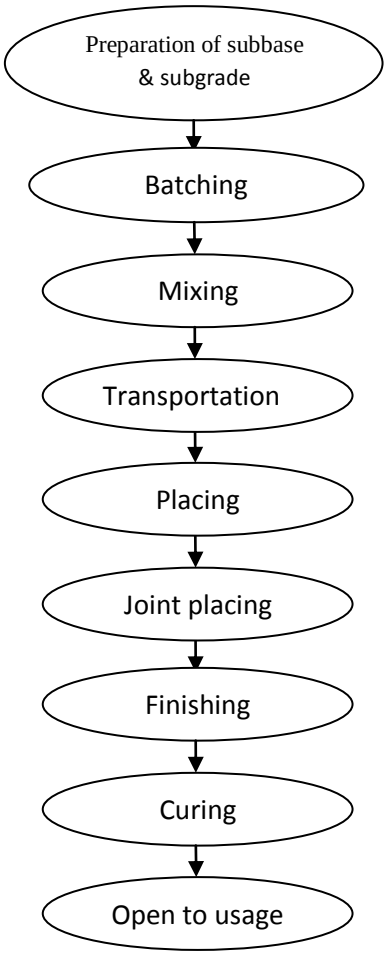
WATER- Water is an important ingredient of concrete .As a general guidance , if the water is drinking , it is fit for making concrete. However, some water containing a small sum of salt is not suitable for concrete. the ph is between 6 to 8 the water is accepted to be suitable

CONSTRUCTION

Construction of recon pavement is similar to the conventional concrete pavement method. Only the curing process is differ. That is do not added water externally for increase the strength of pavement.

We already added water in mix design .That water is more than enough for the increase the strength of concrete pavement.

FLOW CHART



TYPICAL COMPOSITION OF RECON

concrete layer-Top most layer, air voids content approximately 15-30%

Sub-base layer- Placed underneath the previous concrete layer. Made by coarse aggregate.

Sub-grade layer- This is undisturbed soil underneath the sub-base layer.

Drainage -It is not always necessary but may be needed when the infiltration rate of the sub grade layer is low

STRUCTURAL PERFORMANCE OF RECON

Permeability test - The flow rate through pervious concrete depends on the materials and placing operations. Typical flow rates for water through recon are 120 L/m²/min - 320 L/m²/min, with rates of up to 700 L/m²/min . Even higher rates have been measured in the laboratory**.**

Compressive strength test

Age (days)	w/c ratio	Aggregate Cement ratio	Compressive strength (kg/m^2)
7 14 28	0.4	6:1	7.22 8.51 10.04
7 14 28	0.4	8:1	4.22 6.35 8.2
7 14 28	0.4	10:1	3.23 5.39 7.16

Durability test

Size of gravel	Concrete mix	28 days avg% durability
	1:6	0.35
A:3/4" (18.75mm)	1:8	0.30
	1:10	0.27
B:3/8" (9.37mm)	1:6	0.37
	1:8	0.34
	1:10	0.31

ADVANTAGES

- ✓ Allow water to drain into the sub grade naturally
- ✓ Reduces storm water runoff
- ✓ Replenishes water tables and aquifers
- ✓ Minimizes flooding and standing water

DISADVANTAGES

- ✓ Need a contractor with special skill and tool to place it.
- ✓ Cost more than regular concrete.
- ✓ Need maintenance.(vacuum or pressure wash)
- ✓ It is still a new material that requires acceptance from cities and states

APPLICATIONS

- ✓ Recon pavement for parking lots
- ✓ Alleys
- ✓ Trees gates in sidewalk.
- ✓ Swimming pool decks
- ✓ Tennis court

CONCLUSION

- ✓ Errors of the past will dictate design of the future.
- ✓ Recommendation is that recon should not be placed in areas subjected to repeated heavy loads.

- ✓ Recon, although not as strong as conventional concrete, provides an acceptable alternative when used in low volume and low impact areas.
- ✓ This will add points to a project with a sustainable material managing storm water, reducing ground water pollution.

REFERENCE

- ✓ California Department of Transportation "Pervious Pavement Design Guidance"
- ✓ U.S Department of Transportation, Federal Highway Administration "Tech Brief"December 2012
- ✓ ACI 552R (2010): "Report on Pervious Concrete", American Concrete Institute, Farmington Hills, Michigan, http://www.concrete.org
- ✓ S.O. Ajamu, A.A. Jimoh, J.R. Oluremi "Evaluation of Structural Performance of Pervious Concrete in Construction" ISSN: 2049-3444 pg no: 829-835
- ✓ Dr.S.K.Khanna, Dr.C.E.G.JustoNEM CHAND & BROS, Roorkee"Highway Engineering"(U.A) ISBN 81-85240-77-9
- ✓ Narayanan Neithalath, Milani S. Sumanasooriya & Omkar Deo. (2010) . Characterizing pore volume, sizes, and connectivity in pervious concretes for permeability prediction. *Materials Characterization* , 61, 802 813.