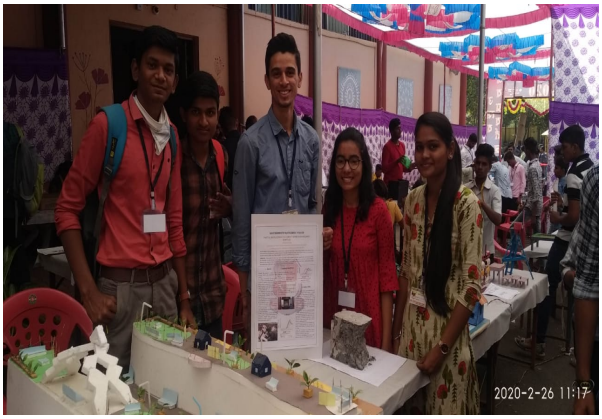
Government Polytechnic, Valsad

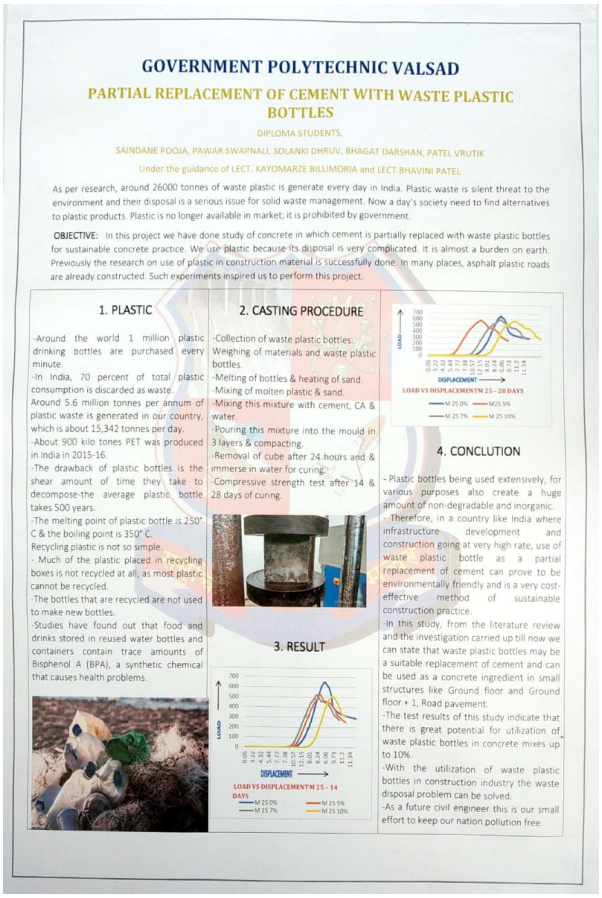
Civil Engineering Department

26 FEBRUARY, 2020

Science Center Dharampur ,Dikeakra Fair 26 & 27 FEB 2020

'Dikcarka 2020' visit and presentation was arranged at Science Center Dharampur on 26,27 Feb, 2020. Final year students of the civil engineering department (G.P Valsad) participated in this event with faculty member, Mr. A J Patel. Students have presented the final year project details to visitors.





GOVERNMENT POLYTECHNIC VALSAD

PARTIAL REPLACEMENT OF CEMENT WITH WASTE PLASTIC BOTTLES

DIPLOMA STUDENTS,

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Under the guidance of LECT. KAYOMARZE BILLIMORIA and LECT.BHAVINI PATEL

As per research, around 26000 tonnes of waste plastic is generate every day in India. Plastic waste is silent threat to the environment and their disposal is a serious issue for solid waste management. Now a day's society need to find alternatives to plastic products. Plastic is no longer available in market; it is prohibited by government.

OBJECTIVE: In this project we have done study of concrete in which cement is partially replaced with waste plastic bottles for sustainable concrete practice. We use plastic because its disposal is very complicated. It is almost a burden on earth. Previously the research on use of plastic in construction material is successfully done. In many places, asphalt plastic roads are already constructed. Such experiments inspired us to perform this project.

1. PLASTIC

-Around the world 1 million plastic drinking bottles are purchased every minute.
-In India, 70 percent of total plastic consumption is discarded as waste.
Around 5.6 million tonnes per annum of plastic waste is generated in our country, which is about 15,342 tonnes per day.
-About 900 kilo tones PET was produced in India in 2015-16.
-The drawback of plastic bottles is the shear amount of time they take to decompose-the average plastic bottle takes 500 years.
-The melting point of plastic bottle is 250° C & the boiling point is 350° C.
Recycling plastic is not so simple.
- Much of the plastic placed in recycling boxes is not recycled at all, as most plastic cannot be recycled.
-The bottles that are recycled are not used to make new bottles.
-Studies have found out that food and drinks stored in reused water bottles and containers contain trace amounts of Bisphenol A (BPA), a synthetic chemical that causes health problems.

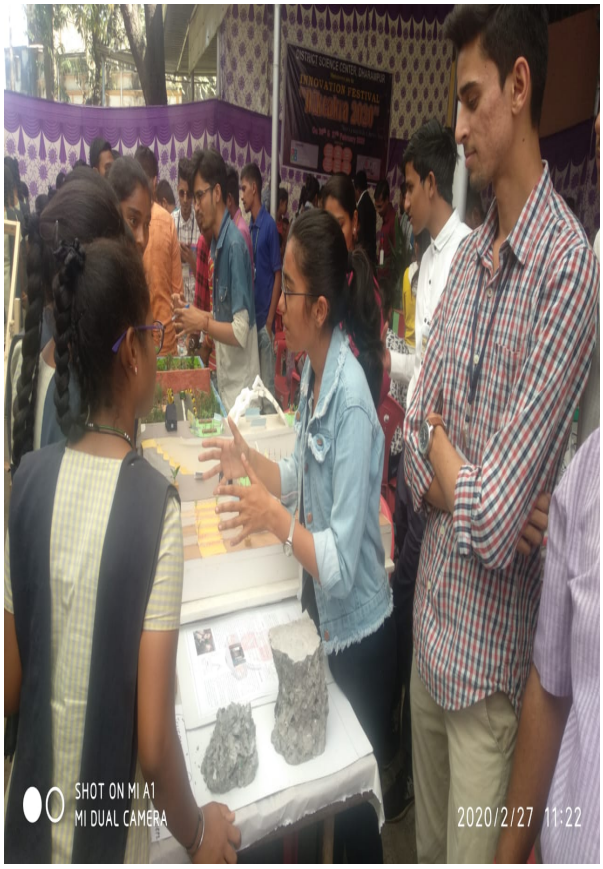
2. CASTING PROCEDURE

-Collection of waste plastic bottles.
Weighing of materials and waste plastic bottles.
-Melting of bottles & heating of sand.
-Mixing of molten plastic & sand.
-Mixing this mixture with cement, CA & water.
-Pouring this mixture into the mould in 3 layers & compacting.
-Removal of cube after 24 hours and & immerse in water for curing.
-Compressive strength test after 14 & 28 days of curing.

3. RESULT

4. CONCLUTION

- Plastic bottles being used extensively, for various purposes also create a huge amount of non-degradable and inorganic.
- Therefore, in a country like India where infrastructure development and construction going at very high rate, use of waste plastic bottle as a partial replacement of cement can prove to be environmentally friendly and is a very cost-effective method of sustainable construction practice.
-In this study, from the literature review and the investigation carried up till now we can state that waste plastic bottles may be a suitable replacement of cement and can be used as a concrete ingredient in small structures like Ground floor and Ground floor + 1, Road pavement.
-The test results of this study indicate that there is great potential for utilization of waste plastic bottles in concrete mixes up to 10%.
-With the utilization of waste plastic bottles in construction industry the waste disposal problem can be solved.
-As a future civil engineer this is our small effort to keep our nation pollution free.



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