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Experimental In Vestigation on Reuse of Plastic Waste in Paver Block

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ABSTRACT-
Theaimofthisprojectit'storeplacecementwithplastic waste in paver blocks and to reduce the cost of Paverblocks.WhencomparedtothatofconventionCon cretePaverblock. at present nearly 59 lakh tones of plastic waste isproduced in India per year the degradation rate of plasticwasteisalsoaveryslowprocesshencethisprojec tisusefulinreducingplasticwasteinausefulwayinthisp rojectwehaveusedaplasticwasteindifferentproportion swithSandcoarseaggregateandceramicwaste.ThePav erblockswherepreparedandtestedandtheresultswere discussed.

KeyWords: Paverblocks,PlasticWaste,CeramicWas te

I. INTRODUCTION

Paverblockpavingisversatile,aestheticallyattractivef unctionalandcost-effectiveandrequireslittleornomaintenanceiscorrectl ymanufacturedandleadmostconcrete block paving constructed in India also performedsatisfactorily but to main area of concern or occasional sellyour due to excessive surface wear and variability in thestrengthofblocksnaturalresourcesaredepletingwo rldwide at the same time The generated waste from theindustryandresidentialareaareincreasingtheStanl eythesustainabledevelopmentofconstructioninvolves theuseofnon-conventionalandinnovativematerialsandrecyclingof waste material in order to compensate the lack of naturalresourcesandtofindalternativewaysconserving thePlasticwasteusedinthisworkwasbroughtfromthes urroundingareacurrentlyabout5600000tonofplastic wastedumpinginIndiainayearthedumpthewastefulof thesurroundingenvironment as the result it affects both human beings andanimals in direct and indirect way since it is necessary todisposetheplasticwithproperlyaspertheregulationp rovided byourgovernment.

Plasticwastes

Reduce,ReuseandRecycleofplasticsareessentialtom akeenvironment greener andsafer.

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Typesofplastics

Plasticmaterialsincludeasfollows,

1) Polypropylene(PP)
2) Polystyrene(PS)
3) Highimpactpolystyrene(HIPS)
4) Acrylonitrilebutadienestyrene(ABS)
5) Polyethyleneterephthalate(PET)
6) Polyester(PES)
7) Polyamides(PA)
8) Poly(vinylchloride)(PVC)

Factorsaffectingrecyclingofplastics

Recycling and re-utilization of waste plastics have severaladvantages. Recycling and re-utilization of waste plasticslead to a reduction of the use of virgin materials and of theuseofenergy,thusalsoareductionofcarbondioxide emissions. Economically, in some cases, plastics recyclingmaybeprofitable.However,anumberoffactorscancomplicate the practice of plastics recycling, such as thecollectionoftheplasticswaste,separationofdifferenttypesofplastics,cleaningofthewasteandpossiblepollutionoftheplastics. A further complicating factor is the low-value natureof most of the products that can be manufactured fromrecycledplastics.Reusingplasticispreferabletorecyclingas ituseslessenergyandfewerresources.

OBJECTIVEOFPROJECT

1. ToutilizedtheIndustrialWasteMaterial.
2. Toreducewastedisposalproblemsofindustries.
3. ToreducetheCO2emissionwhileproducingPortland cement.
4. Tominimizetheutilizationofnaturalresourcesmaterial.

II. LITERATURE SURVEY

P.Saravanan,AssistantProfessor,(2017):Discussthat,the following conclusions were drawn from the experimentalinvestigation. The utilization of waste plastic in productionofpaverblockhasproductivewayofdisposalofplastic waste.Thecostofpaverblockisreducedwhencompared tothatofconcretepaverblock.Paverblockmadeusingplasticwaste,quarrydust,coarseaggregateandceramicwastehaveshown better result. It also shows good heat resistance.Thoughthecompressivestrengthislowwhencomparedtotheconcretepaverblockitcanbeusedingardens,pedestrian path and cycle way etc. It can be used in Non-trafficandlighttrafficroad.

F. Pacheco Torgala, Yining Dingb (2012): Discuss that, Tirerubber and PET wastes represent a serious environmentalissuethatneedstobeaddressedwithurgencybythescientificcommunity.Investigationscarried outsofarrevealthattirewasteconcreteisspeciallyrecommendedforconcrete structures located in areas of severe earthquakerisk and also for applications submitted to severe dynamicactionslikerailwaysleepers.Thismaterialcan alsobeusedfornon-load-bearingpurposessuchasnoisereductionbarriers. Investigations about rubber waste concrete showthatconcrete.Performanceisdependentonthewasteaggregates. Further investigations are needed to clarify forinstancewhicharethecharacteristicsthatmaximize concreteperformance.AstoPETbasedconcretetheinvestigationsshowthatthismaterialisverydependentonthesewastes.AtpresentPETbrasarealreadyusedtoreplace steel bras and some author's even report the use ofPET concrete mixtures for repairing concrete structuressubmittedtohighunderwatererosion.Nevertheless,futureinvestigationsshouldclarifywhichtreatments canmaximizeconcreteperformancebeingresponsibleforthelowestenvironmentalimpact.Furtherinvestigationsshouldalsobecarriedonabouttheuseofotherpolymericwastesinconcrete.

PROPERTIESOFPLASTIC

PlasticwasteusedinmakingpaverblockwascollectedfromthesurroundinglocalityLDPEisindicatedbyresinnumber 4.Itincludesplasticbags.Theplasticbagusedisofabout 50microns.

Thebasicpropertiesareprovidedbelow.

PROPERTIESOFLDPE

S.N.	Particulars	value
1	Meltingpoint	150˚
2	Thermalco-efficientofexpansion	100-200X10-6

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3	Density	0.910-0.940
4	Tensilestrength	0.20-0.40(N/mm2)

PROPERTIESOFFINESAND

In the present investigation fine aggregate is natural sandfrom local market is used. The properties of fine aggregatelike specific gravity, bulk density, gradation and finenessmodulusaretestedinaccordance withIS2386.

Thebasicpropertiesareprovidedbelow.

PROPERTIESOFFINESAND

SN	Description	Value
1	Specificgravity	2.479
2	Gradingzone	ZoneIIofsoil
3	Finenessmodulus	2.952
4	Waterabsorption	1.80

III. METHODOLOGY

Plastic wastes are heated in a metal bucket at a temp ofabove150˚.Asaresultofheatingtheplasticwastemelt .Thematerials quarry dust, aggregate and other materials asdescribedinpreviouschapterareaddedtoitinrightpr oportion at molten state of plastic and well mixed. Themetal mould is cleaned through at using waste cloth. Nowthis mixture is transferred to the mould. It will be in hotconditionandcompactitwelltoreduceinternalpore spresentinit.Thentheblocksareallowedtodryfor24hou rssothattheyharden.Afterdryingthepaverblockisremo vedfrom the mouldsand readyfortheuse.

2.COMPRESSIVESTRENGTH

CompressionStrengthResultForBlockType1

ProportionName	**PlasticWaste**	**Sand**	**CoarseAgreegate**	**CompressiveStress(N/Sq.m)**
PPB-1	1kg	1.4kg	0.700kg	6.76
PPB-2	1.5kg	1.4kg	0.700kg	7.35
PPB-3	2kg	1.4kg	0.700kg	7.92
				Avg=5.01

CompressionStrengthResultForBlockType2

Proportion Name	**Plastic Waste**	**Sand**	**CoarseAgreegate**	**Ceramicwaste**	**CompressiveStress(N/Sq.m)**
PPB-1	2.5kg	1.4 kg	0.700kg	0.700 kg	9.45
PPB-2	3kg	1.4 kg	0.700kg	0.700 kg	9.67
PPB-3	3.5kg	1.4 kg	0.700kg	0.700 kg	10.15
					Avg=9.75

CompressionStrengthResultForBlockType3

Proportion Name	**Plastic Waste**	**Sand**	**Coarse Agreegate**	**Ceramic waste**	**Compressive Stress(N/Sq.m)**
PPB-1	4kg	1.4kg	0.700kg	0.75kg	18.62

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PPB-2	4.5kg	1.4kg	0.700kg	0.75kg	17.50
PPB-3	5kg	1.4kg	0.700kg	0.75kg	19.87
					Avg=18.65

IV. CONCLUSIONS

1. Theutilizationof wasteplasticinproductionofpaver blockhasproductive wayofdisposalofplasticwaste.
2. Thecostofpaverblockis reducedwhencomparedtothatofconcretepaverbl ock.
3. Paverblockmadeusingplasticwaste,quarrydust,c oarseaggregateandceramicwastehaveshownbett erresult.

REFERENCES

[1]. P. Saravavnan-"ReuseofPlastic WasteinPaverBlocks"(International
[2]. Journalof EngineeringResearch&Technology).
[3]. F.PachecoTorgal"PropertiesAndDurabilityOf ConcreteContainingPolymericWaste"(Constr uctionandBuildingMaterials30(2012)714–724).
[4]. ViswanathanM.E- "ProductionofPlasticPaverBlock fromTheSolidWaste."
[5]. Dr.A.K.Mishra"UtilizationofWasteMaterialin ConcretePaverBlocks:AReview"(Internationa lJournalforResearchinApplied Science &EngineeringTechnology(IJRASET).