Experimental Study on Glass Powder Concrete With Scheduling Techniques

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Abstract- *The purposes of this study are to explode the mechanical behavior of concrete with glass powder. The test program was carried out to develop information about the mechanical properties of glass powder concrete. It is possible to have more ductile concrete while using the glass powder. Waste glass when ground to a very fine powder shows pozzolanic prosperities as it contains high silica (SiO_2) and therefore to some extent can replaced cement in concrete and contributes strength development. Due presence of high silica, the concrete will be set quickly. This study also provides the information related to time consumed by glass powder with the conventional one to complete a activity by using Software Packages.*

Keywords- Glass Powder Concrete, Mechanical Properties, Strength Parameters, Scheduling Techniques

I. INTRODUCTION

Concrete is the most widely used building material in construction industry. It's a homogeneous mixture of cement, fine aggregate, coarse aggregate and water. The strength of concrete is mainly depends upon the cement content. Cement is a finely pulverized material which by itself is not a binder but develops the binding property as a result of hydration. The binding nature of cement is due to the presence of silica. The cement industry is one of the primary industrial producers of carbon dioxide (CO2), creating up to 5% of worldwide man-made emissions of this gas, of which 50% is from the chemical process and 40% from burning of fuels.

Glass is an amorphous (non-crystalline) that in essence, a super-cooled liquid and not a solid. Glass can be made with excellent homogeneity in a variety of forms and sizes from small fibers to meter-sizes pieces. Primarily glass is made up of sand, soda ash, limestone and other additives (Iron, Chromium, Alumina, Lead and Cobalt). Glass has been used as cement in road construction; building and masonry structures, because of it contain more silica in nature. forms a more binding capacity to the concrete. so it gives more strength and reduces the initial setting time of cement. Therefore, it leads to reduce the construction time and increase the speed of the construction.

Fine Glass Powder

II. METHODOLOGY

This project follows the steps given below:

1. Collection and study the material properties required for making a concrete.
2. Mix proportioning of concrete (M_{20}).
3. Investigation of strength parameters like Compression, Tensile and Flexural strength of conventional concrete Vs Glass powdered Concrete.
4. Scheduling Technique using MS Project software.

III. MATERIAL PROPERTIES

A. Cement:

The cement used for casting the specimen ordinary Portland cement. The required quantity is procured as single batch, stored in airtight bags are used for the experimental programme. The various properties of cement were determined experimentally and are tabulated.

Table - 1

S.No	Name of the Test	Test Value
1.	Standard Consistency	31%
2.	Specific Gravity	3.02
3.	Initial Setting Time	31 Mins
4.	Final Setting Time	9 Hrs 20 Mins
5.	Fineness Test	9.2%

B. Sand:

The fine aggregate confirms to Zone II and is designated as fine sand. All tests are carried out as per IS: 383-1970.

Table - 2

S.No	Name of the Test	Test Value
1.	Specific Gravity	2.60
2.	Fineness Modulus	3.11

C. Coarse Aggregate:

Aggregate are obtained by crushing various types of granites, schist, crystalline and lime stone and good quality sand stones.

Table - 3

S.No	Name of the Test	Test Value
1.	Impact Test	32.30%
2.	Crushing Strength	32.67%
3.	Elongation Index	41.44%
4.	Flakiness Index	37.21%
5.	Water Absorption	1.50

D. Mix Proportion:

Table - 4

Materials	Mix Ratio (M_{20})	Quantity (Kg/m^3)
Cement	1	383
Sand	1.48	570
Coarse Aggregate	3.00	1152
Water	0.50	191.6 Litres

E. Properties of Fresh Concrete:

Table - 5

S.No	Name of the Test	Test Value
1.	Slump Cone Test	120 mm
2.	Compaction Factor Test	0.94

F. Properties of Glass Powder:

Table - 6

S.No	Name of the Test	Test Value
1.	Specific Gravity	2.60
2.	Fineness Modulus	9.00%

IV. EXPERIMENTAL INVESTIGATION OF CONCRETE

The following experiments were conducted on concrete specimens to study certain aspects of glass powder replaced concrete used in this work.

Mix	Definition
P	Conventional concrete without addition of glass powder.
PG_{10}	10% replacement of cement by glass powder with conventional concrete.
PG_{20}	20% replacement of cement by glass powder with conventional concrete.
PG_{30}	30% replacement of cement by glass powder with conventional concrete.

A. Compression Test:

Compressive strength is one of the important properties of concrete. Concrete cube size of 150x150x150mm was cast with and without glass powder. After 24 hours the specimen were remoulded and subjected to water curing. After 3,7,14 and 28 days of curing, the three cubes were taken and allowed to dry and tested in compressive strength testing machine.

Compressive strength $f_{ck}=P/A$ (N/mm^2)

Where,

P= Ultimate Load (N)

A = cross section of area of cube specimen (mm^2)

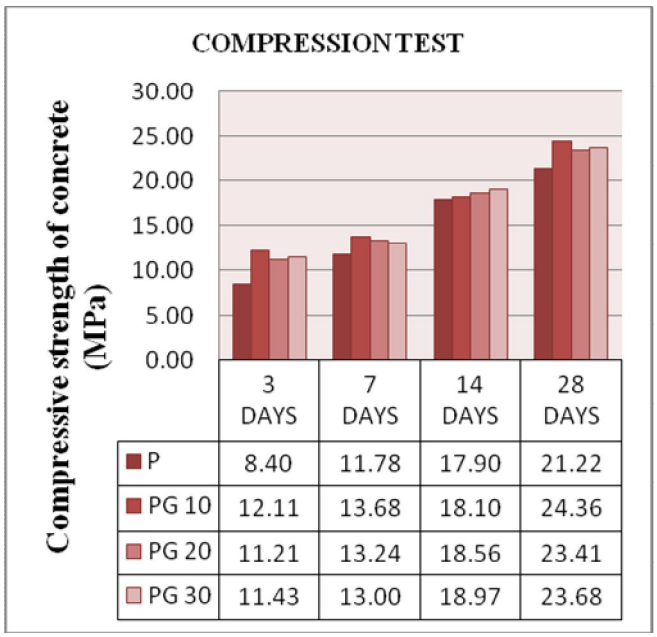

Fig. 1 Compressive Strength of conventional Vs Glass Powder Concrete

Fig. 2 Compressive Strength test on Concrete

B. Split Tensile Strength:

Tensile strength is indirect way of finding the tensile strength of concrete by subjecting the cylinder to a compressive force. Cylinder of size 150mm diameter and 300mm long were cast with and without glass powder. After 24 hours the specimens were remoulded and subjected to water curing. After 3,7,14 and 28days of curing, the curing three cylinders were taken and allowed to dry and tested in UTM by placing the specimen horizontal. The ultimate loads of the specimen were noted.

Split tensile strength= $\frac{2P}{\pi dl}$ (N/mm^2)

Where,

P = maximum load (N).

dl= surface area of specimen (mm^2).

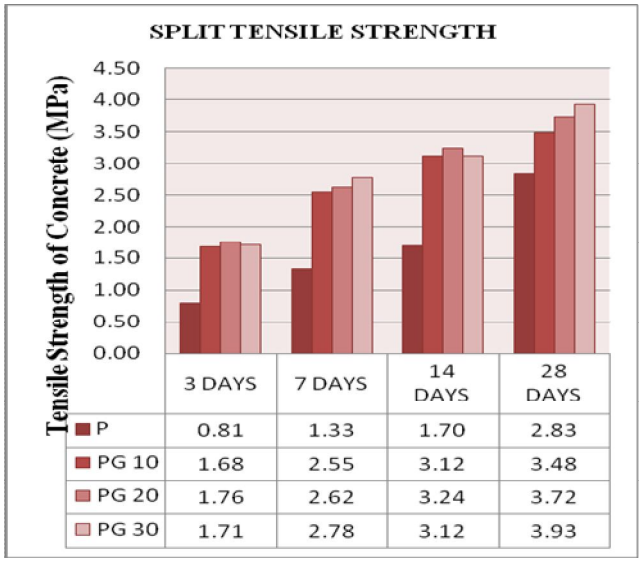

Fig. 3 Split Tensile Strength of conventional Vs Glass Powder Concrete

Fig. 4 Split Tensile Strength test on Concrete.

C. Flexural Strength Test:.

To determine the flexural strength of concrete of beam of size 500x100x100mm were cast with and without glass powder. After 24hours the specimen were remoulded and subjected to water curing. After 3, 7,14and 28days of curing, the curing three beams were taken and allowed to dry and tested in UTM.

Flexural strength = 3pa/bd^2 (N/mm^2)

Where,

P = Ultimate load (N).

a = spacing between the rollers (mm).

b = width of specimen (mm).

d = depth of specimen (mm).

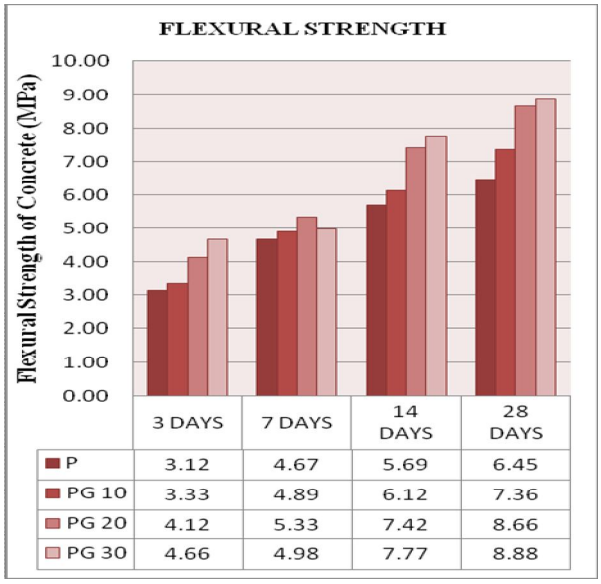

Fig. 5 Flexural Strength of conventional Vs Glass Powder Concrete

Fig. 6 Flexural Strength test on Concrete

V. SCHEDULING TECHNIQUES

Scheduling is a method by which the project work specified by some means is assigned the various resources such as labour, materials, equipment and Cost to complete the task of the project. Its main aim is to complete the total amount of work in a project per estimated time and cost.

A. List of Activity:

ID	Task Name	Duration	Start	Finish	Predecessors	Resource Names
1	Literature Collection	5 days	Mon 8/3/15	Fri 8/7/15		
2	Cement Test	7 days	Mon 8/10/15	Tue 8/18/15		Cement
3	Fine Aggregate Test	7 days	Mon 8/17/15	Tue 8/25/15		Sand
4	Coarse Aggregate Test	7 days	Mon 8/24/15	Tue 9/1/15		Coarse Aggregate
5	Compression Strength Test(CC)	3 days	Thu 9/3/15	Mon 9/7/15		conventional concrete
6	Compression Strength Test(CC)	7 days	Thu 9/3/15	Fri 9/11/15		conventional concrete
7	Compression Strength Test(CC)	14 days	Thu 9/3/15	Tue 9/22/15		conventional concrete
8	Compression Strength Test(CC)	28 days	Thu 9/3/15	Mon 10/12/15		conventional concrete
9	Compression Strength Test (GP10)	3 days	Wed 2/3/16	Fri 2/5/16		Glass powder concrete (10%)
10	Compression Strength Test (GP10)	7 days	Wed 2/3/16	Thu 2/11/16		Glass powder concrete (10%)
11	Compression Strength Test (GP10)	14 days	Wed 2/3/16	Mon 2/22/16		Glass powder concrete (10%)
12	Compression Strength Test (GP10)	28 days	Wed 2/3/16	Fri 3/11/16		Glass powder concrete (10%)
13	Compression Strength Test (GP20)	3 days	Tue 2/9/16	Thu 2/11/16		Glass powder concrete (20%)
14	Compression Strength Test (GP20)	9 days	Tue 2/9/16	Fri 2/19/16		Glass powder concrete (20%)
15	Compression Strength Test (GP20)	14 days	Tue 2/9/16	Fri 2/26/16		Glass powder concrete (20%)
16	Compression Strength Test (GP20)	28 days	Tue 2/9/16	Thu 3/17/16		Glass powder concrete (20%)
17	Compression Strength Test (GP30)	3 days	Fri 2/12/16	Tue 2/16/16	13	Glass powder concrete (30%)
18	Compression Strength Test (GP30)	7 days	Fri 2/12/16	Mon 2/22/16	10	Glass powder concrete (30%)
19	Compression Strength Test (GP30)	14 days	Fri 2/12/16	Wed 3/2/16		Glass powder concrete (30%)
20	Compression Strength Test (GP30)	28 days	Fri 2/12/16	Tue 3/22/16		Glass powder concrete (30%)
21	Split Tensile Strength Test (CC)	3 days	Fri 9/4/15	Tue 9/8/15		conventional concrete
22	Split Tensile Strength Test (CC)	7 days	Fri 9/4/15	Mon 9/14/15		conventional concrete
23	Split Tensile Strength Test (CC)	14 days	Fri 9/4/15	Wed 9/23/15		conventional concrete
24	Split Tensile Strength Test (CC)	28 days	Fri 9/4/15	Tue 10/13/15		conventional concrete
25	Split Tensile Strength Test (GP10)	3 days	Mon 2/8/16	Wed 2/10/16	9	Glass powder concrete (10%)
26	Split Tensile Strength Test (GP10)	7 days	Mon 2/8/16	Tue 2/16/16		Glass powder concrete (10%)
27	Split Tensile Strength Test (GP10)	14 days	Mon 2/8/16	Thu 2/25/16		Glass powder concrete (10%)
28	Split Tensile Strength Test (GP10)	28 days	Mon 2/8/16	Wed 3/16/16		Glass powder concrete (10%)
29	Split Tensile Strength Test (GP20)	3 days	Tue 2/9/16	Thu 2/11/16		Glass powder concrete (20%)
30	Split Tensile Strength Test (GP20)	7 days	Tue 2/9/16	Wed 2/17/16		Glass powder concrete (20%)
31	Split Tensile Strength Test (GP20)	14 days	Tue 2/9/16	Fri 2/26/16		Glass powder concrete (20%)
32	Split Tensile Strength Test (GP20)	28 days	Tue 2/9/16	Thu 3/17/16		Glass powder concrete (20%)
33	Split Tensile Strength Test (GP30)	3 days	Wed 2/10/16	Fri 2/12/16		Glass powder concrete (30%)
34	Split Tensile Strength Test (GP30)	7 days	Wed 2/10/16	Thu 2/18/16		Glass powder concrete (30%)
35	Split Tensile Strength Test (GP30)	14 days	Wed 2/10/16	Mon 2/29/16		Glass powder concrete (30%)
36	Split Tensile Strength Test (GP30)	28 days	Wed 2/10/16	Fri 3/18/16		Glass powder concrete (30%)
37	Flexural Strength Test (CC)	3 days	Fri 2/5/16	Tue 2/9/16		conventional concrete
38	Flexural Strength Test (CC)	7 days	Fri 2/5/16	Mon 2/15/16		conventional concrete
39	Flexural Strength Test (CC)	14 days	Fri 2/5/16	Wed 2/24/16		conventional concrete
40	Flexural Strength Test (CC)	28 days	Fri 2/5/16	Tue 3/15/16		conventional concrete
41	Flexural Strength Test(GP10)	3 days	Mon 2/15/16	Wed 2/17/16	33	Glass powder concrete (10%)
42	Flexural Strength Test(GP10)	7 days	Mon 2/15/16	Tue 2/23/16		Glass powder concrete (10%)

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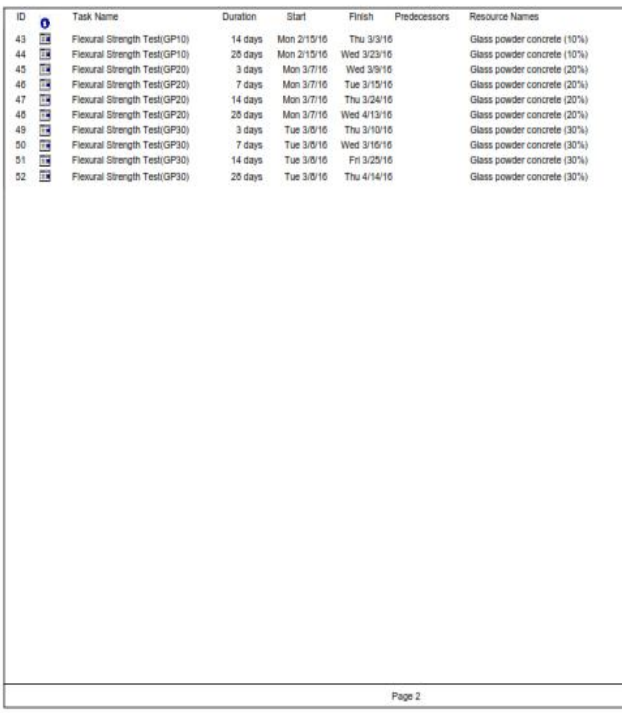

ID	Task Name	Duration	Start	Finish	Predecessors	Resource Names
43	Flexural Strength Test(GP10)	14 days	Mon 2/15/16	Thu 3/3/16		Glass powder concrete (10%)
44	Flexural Strength Test(GP10)	28 days	Mon 2/15/16	Wed 3/23/16		Glass powder concrete (10%)
45	Flexural Strength Test(GP20)	3 days	Mon 3/7/16	Wed 3/9/16		Glass powder concrete (20%)
46	Flexural Strength Test(GP20)	7 days	Mon 3/7/16	Tue 3/15/16		Glass powder concrete (20%)
47	Flexural Strength Test(GP20)	14 days	Mon 3/7/16	Thu 3/24/16		Glass powder concrete (20%)
48	Flexural Strength Test(GP20)	28 days	Mon 3/7/16	Wed 4/13/16		Glass powder concrete (20%)
49	Flexural Strength Test(GP30)	3 days	Tue 3/8/16	Thu 3/10/16		Glass powder concrete (30%)
50	Flexural Strength Test(GP30)	7 days	Tue 3/8/16	Wed 3/16/16		Glass powder concrete (30%)
51	Flexural Strength Test(GP30)	14 days	Tue 3/8/16	Fri 3/25/16		Glass powder concrete (30%)
52	Flexural Strength Test(GP30)	28 days	Tue 3/8/16	Thu 4/14/16		Glass powder concrete (30%)

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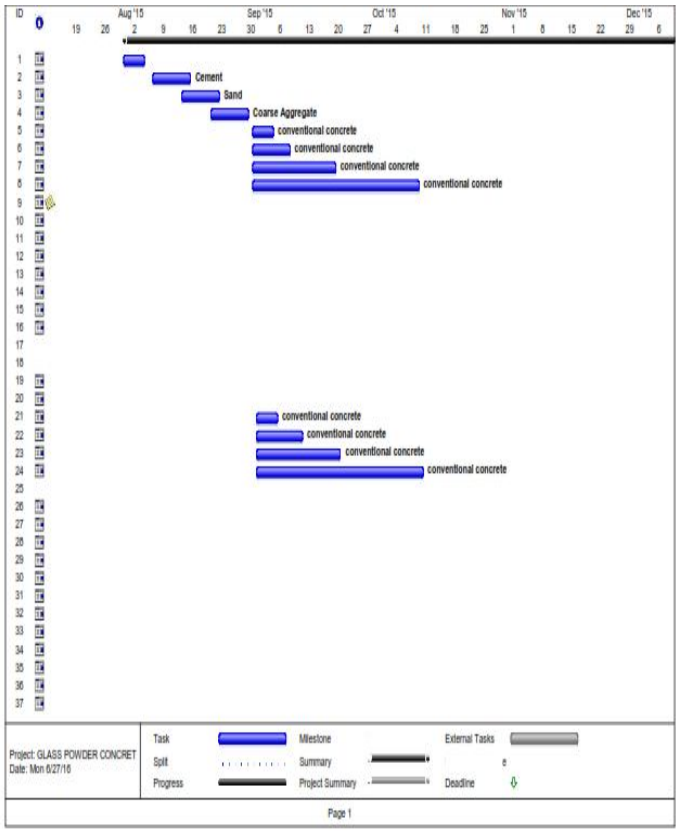
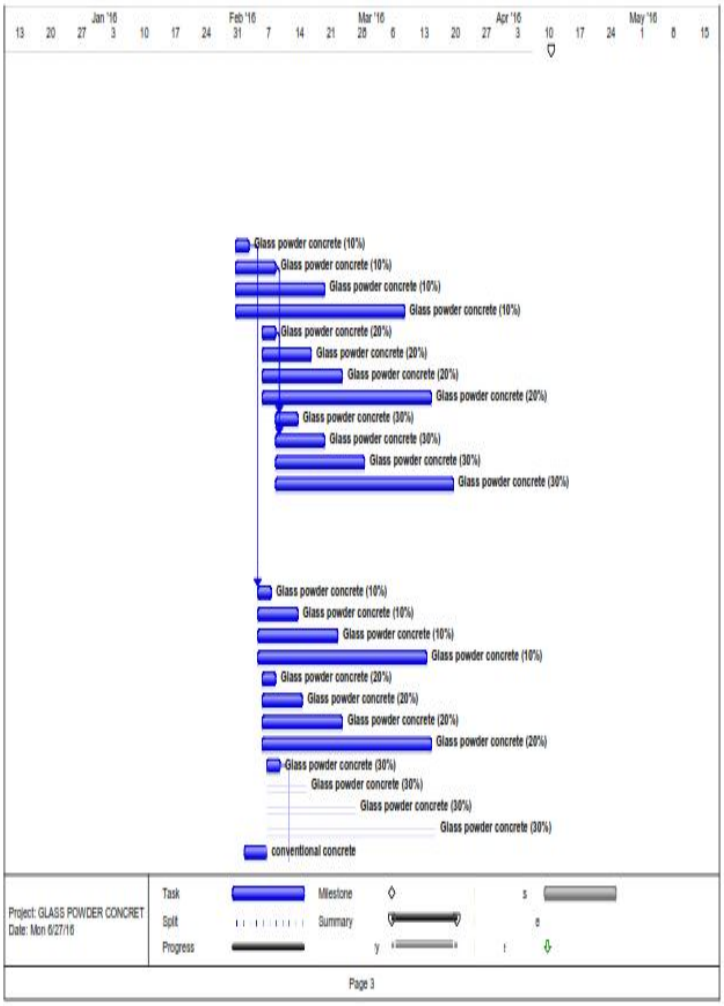
Fig. 7 Activity Chart

B. Gantt Chart:





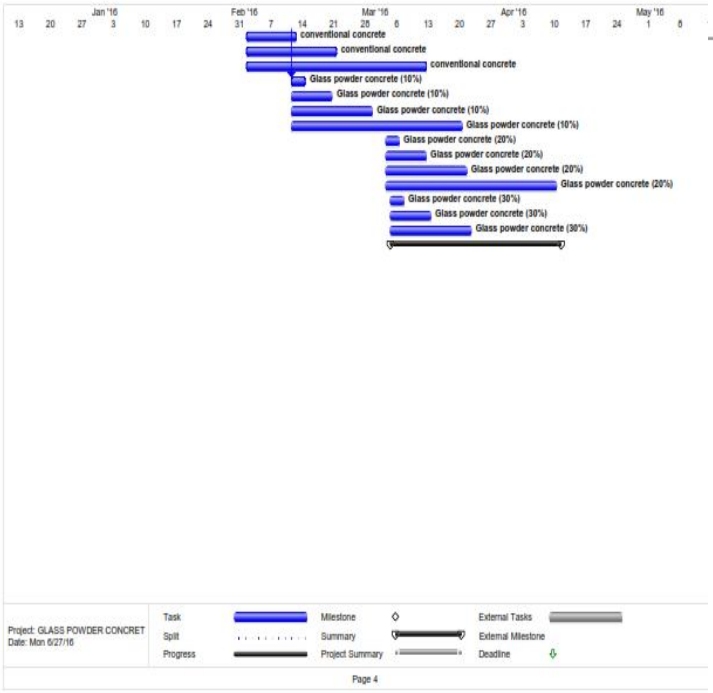


Fig. 8 Gantt chart

C. Task and Duration:

ID	Task Name	Duration	Start	Finish	Predecessors	Resource Names
1	Literature Collection	5 days	Mon 8/3/15	Fri 8/7/15		
2	Cement Test	7 days	Mon 8/10/15	Tue 8/18/15		Cement
	ID Resource Name Units Work Delay Start Finish					
	28 Cement 100% 56 hrs 0 days Mon 8/ 0/15 Tue 8/18/15					
3	Fine Aggregate Test	7 days	Mon 8/17/15	Tue 8/25/15		Sand
	ID Resource Name Units Work Delay Start Finish					
	29 Sand 100% 56 hrs 0 days Mon 8/17/15 Tue 8/25/15					
4	Coarse Aggregate Test	7 days	Mon 8/24/15	Tue 9/1/15		Coarse Aggregate
	ID Resource Name Units Work Delay Start Finish					
	30 Coarse Aggregate 100% 56 hrs 0 days Mon i /24/15 Tue 9/1/15					
5	Compression Strength Test(CC)	3 days	Thu 9/3/15	Mon 9/7/15		conventional concrete
	ID Resource Name Units Work Delay Itart Finish					
	24 conventional concrete 100% 24 l rs 0 ds ys Thu 9/3/15 Mon 9/7/15					
6	Compression Strength Test(CC)	7 days	Thu 9/3/15	Fri 9/11/15		conventional concrete
	ID Resource Name Units Work Delay Start Finish					
	24 conventional concrete 100% 56 hrs 0 days Thu 9/3/15 Fri 9/11/15					
7	Compression Strength Test(CC)	14 days	Thu 9/3/15	Tue 9/22/15		conventional concrete
	ID Resource Name Units Work Delay Start Finish					
	24 conventional concrete 100% 112 hrs 0 days Thu 9/3/15 Tue 9/22/15					
8	Compression Strength Test(CC)	28 days	Thu 9/3/15	Mon 10/12/15		conventional concrete
	ID Resource Name Units Work Dx lay Start Finish					
	24 conventional concrete 100% 224 hrs 3 days Thu 9/3/15 Mon 10/12/15					
21	Split Tensile Strength Test (CC)	3 days	Fri 9/4/15	Tue 9/8/15		conventional concrete
	ID Resource Name Units Work Delay Start Finish					
	24 conventional concrete 100% 24 hrs 0 days Fri 9/4/15 Tu e 9/8/15					
22	Split Tensile Strength Test (CC)	7 days	Fri 9/4/15	Mon 9/14/15		conventional concrete
	ID Resource Name Units Work Delay Start Finish					
	24 conventional concrete 100% 56 hrs 0 days Fri 9/4/15 Mon 9/14/15					
23	Split Tensile Strength Test (CC)	14 days	Fri 9/4/15	Wed 9/23/15		conventional concrete
	ID Resource Name Units Work Delay Start Finish					
	24 conventional concrete 100% 112 hrs 0 days Fri 9/4/15 Wed 9/23/15					
24	Split Tensile Strength Test (CC)	28 days	Fri 9/4/15	Tue 10/13/15		conventional concrete
	ID Resource Name Units Work Delay Start Finish					
	24 conventional concrete 100% 224 hrs 0 days Fri 9/4/15 Tue 10/13/15					

ID	Task Name	Duration	Start	Finish	Predecessors	Resource Names
12	Compression Strength Test (GP10)	28 days	Wed 2/3/16	Fri 3/11/16		Glass powder concrete (10%)
	ID Resource Name Units Work Delay Start Finish					
	25 Glass powder concrete (10%) 100% 224 hrs 0 days Wed 2/3/16 Fri 3/11/16					
37	Flexural Strength Test (CC)	3 days	Fri 2/5/16	Tue 2/9/16		conventional concrete
	ID Resource Name Units Work Delay Start Finish					
	24 conventional concrete 100% 24 hrs 0 days Fri 2/5/16 Tue 2/9/16					
38	Flexural Strength Test (CC)	7 days	Fri 2/5/16	Mon 2/15/16		conventional concrete
	ID Resource Name Units Work Delay Start Finish					
	24 conventional concrete 100% 56 hrs 0 days Fri 2/5/16 Mon 2/15/16					
39	Flexural Strength Test (CC)	14 days	Fri 2/5/16	Wed 2/24/16		conventional concrete
	ID Resource Name Units Work Delay Start Finish					
	24 conventional concrete 100% 112 hrs 0 days Fri 2/5/16 Wed 2/24/16					
40	Flexural Strength Test (CC)	28 days	Fri 2/5/16	Tue 3/15/16		conventional concrete
	ID Resource Name Units Work Delay Start Finish					
	24 conventional concrete 100% 224 hrs 0 days Fri 2/5/16 Tue 3/15/16					
25	Split Tensile Strength Test (GP10)	3 days	Mon 2/8/16	Wed 2/10/16	9	Glass powder concrete (10%)
	ID Resource Name Units Work Delay Start Finish					
	25 Glass powder concrete (10%) 100% 24 hrs 0 days Mon 2/8/16 Wed 2/10/16					
26	Split Tensile Strength Test (GP10)	7 days	Mon 2/8/16	Tue 2/16/16		Glass powder concrete (10%)
	ID Resource Name Units Work Delay Start Finish					
	25 Glass powder concrete (10%) 100% 56 hrs 0 days Mon 2/8/16 Tue 2/16/16					
27	Split Tensile Strength Test (GP10)	14 days	Mon 2/8/16	Thu 2/25/16		Glass powder concrete (10%)
	ID Resource Name Units Work Delay Start Finish					
	25 Glass powder concrete (10%) 100% 112 hrs 0 days Mon 2/8/16 Thu 2/25/16					
28	Split Tensile Strength Test (GP10)	28 days	Mon 2/8/16	Wed 3/16/16		Glass powder concrete (10%)
	ID Resource Name Units Work Delay Start Finish					
	25 Glass powder concrete (10%) 100% 224 hrs 0 days Mon 2/8/16 Wed 3/16/16					
13	Compression Strength Test (GP20)	3 days	Tue 2/9/16	Thu 2/11/16		Glass powder concrete (20%)
	ID Resource Name Units Work Delay Start Finish					
	26 Glass powder concrete (20%) 100% 24 hrs 0 days Tue 2/9/16 Thu 2/11/16					
14	Compression Strength Test (GP20)	9 days	Tue 2/9/16	Fri 2/19/16		Glass powder concrete (20%)
	ID Resource Name Units Work Delay Start Finish					
	26 Glass powder concrete (20%) 100% 72 hrs 0 days Tue 2/9/16 Fri 2/19/16					
15	Compression Strength Test (GP20)	14 days	Tue 2/9/16	Fri 2/26/16		Glass powder concrete (20%)
	ID Resource Name Units Work Delay Start Finish					
	26 Glass powder concrete (20%) 100% 112 hrs 0 days Tue 2/9/16 Fri 2/26/16					
16	Compression Strength Test (GP20)	28 days	Tue 2/9/16	Thu 3/17/16		Glass powder concrete (20%)
	ID Resource Name Units Work Delay Start Finish					
	26 Glass powder concrete (20%) 100% 224 hrs 0 days Tue 2/9/16 Thu 3/17/16					
29	Split Tensile Strength Test (GP20)	3 days	Tue 2/9/16	Thu 2/11/16		Glass powder concrete (20%)
	ID Resource Name Units Work Delay Start Finish					
	26 Glass powder concrete (20%) 100% 24 hrs 0 days Tue 2/9/16 Thu 2/11/16					
30	Split Tensile Strength Test (GP20)	7 days	Tue 2/9/16	Wed 2/17/16		Glass powder concrete (20%)
	ID Resource Name Units Work Delay Start Finish					
	26 Glass powder concrete (20%) 100% 56 hrs 0 days Tue 2/9/16 Wed 2/17/16					

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Fig. 9 Task and Duration of Project

D. Budget:

GLASS POWDER CONCRETE

ID	Task Name	Fixed Cost	Fixed Cost Accrual	Total Cost	Baseline	Variance	Actual	Remaining
2	Cement Test	$0.00	Prorated	$700.00	$0.00	$700.00	$0.00	$700.00
4	Coarse Aggregate Test	$0.00	Prorated	$600.00	$0.00	$600.00	$0.00	$600.00
3	Fine Aggregate Test	$0.00	Prorated	$200.00	$0.00	$200.00	$0.00	$200.00
5	Compression Strength Test(CC)	$0.00	Prorated	$150.00	$0.00	$150.00	$0.00	$150.00
6	Compression Strength Test(CC)	$0.00	Prorated	$150.00	$0.00	$150.00	$0.00	$150.00
7	Compression Strength Test(CC)	$0.00	Prorated	$150.00	$0.00	$150.00	$0.00	$150.00
8	Compression Strength Test(CC)	$0.00	Prorated	$150.00	$0.00	$150.00	$0.00	$150.00
21	Split Tensile Strength Test (CC)	$0.00	Prorated	$150.00	$0.00	$150.00	$0.00	$150.00
22	Split Tensile Strength Test (CC)	$0.00	Prorated	$150.00	$0.00	$150.00	$0.00	$150.00
23	Split Tensile Strength Test (CC)	$0.00	Prorated	$150.00	$0.00	$150.00	$0.00	$150.00
24	Split Tensile Strength Test (CC)	$0.00	Prorated	$150.00	$0.00	$150.00	$0.00	$150.00
37	Flexural Strength Test (CC)	$0.00	Prorated	$150.00	$0.00	$150.00	$0.00	$150.00
38	Flexural Strength Test (CC)	$0.00	Prorated	$150.00	$0.00	$150.00	$0.00	$150.00
39	Flexural Strength Test (CC)	$0.00	Prorated	$150.00	$0.00	$150.00	$0.00	$150.00
40	Flexural Strength Test (CC)	$0.00	Prorated	$150.00	$0.00	$150.00	$0.00	$150.00
9	Compression Strength Test (GP10)	$0.00	Prorated	$120.00	$0.00	$120.00	$0.00	$120.00
10	Compression Strength Test (GP10)	$0.00	Prorated	$120.00	$0.00	$120.00	$0.00	$120.00
11	Compression Strength Test (GP10)	$0.00	Prorated	$120.00	$0.00	$120.00	$0.00	$120.00
12	Compression Strength Test (GP10)	$0.00	Prorated	$120.00	$0.00	$120.00	$0.00	$120.00
25	Split Tensile Strength Test (GP10)	$0.00	Prorated	$120.00	$0.00	$120.00	$0.00	$120.00
26	Split Tensile Strength Test (GP10)	$0.00	Prorated	$120.00	$0.00	$120.00	$0.00	$120.00
27	Split Tensile Strength Test (GP10)	$0.00	Prorated	$120.00	$0.00	$120.00	$0.00	$120.00
28	Split Tensile Strength Test (GP10)	$0.00	Prorated	$120.00	$0.00	$120.00	$0.00	$120.00
41	Flexural Strength Test(GP10)	$0.00	Prorated	$120.00	$0.00	$120.00	$0.00	$120.00
42	Flexural Strength Test(GP10)	$0.00	Prorated	$120.00	$0.00	$120.00	$0.00	$120.00
43	Flexural Strength Test(GP10)	$0.00	Prorated	$120.00	$0.00	$120.00	$0.00	$120.00
44	Flexural Strength Test(GP10)	$0.00	Prorated	$120.00	$0.00	$120.00	$0.00	$120.00
13	Compression Strength Test (GP20)	$0.00	Prorated	$100.00	$0.00	$100.00	$0.00	$100.00
14	Compression Strength Test (GP20)	$0.00	Prorated	$100.00	$0.00	$100.00	$0.00	$100.00
15	Compression Strength Test (GP20)	$0.00	Prorated	$100.00	$0.00	$100.00	$0.00	$100.00
16	Compression Strength Test (GP20)	$0.00	Prorated	$100.00	$0.00	$100.00	$0.00	$100.00
29	Split Tensile Strength Test (GP20)	$0.00	Prorated	$100.00	$0.00	$100.00	$0.00	$100.00
30	Split Tensile Strength Test (GP20)	$0.00	Prorated	$100.00	$0.00	$100.00	$0.00	$100.00
31	Split Tensile Strength Test (GP20)	$0.00	Prorated	$100.00	$0.00	$100.00	$0.00	$100.00
32	Split Tensile Strength Test (GP20)	$0.00	Prorated	$100.00	$0.00	$100.00	$0.00	$100.00
45	Flexural Strength Test(GP20)	$0.00	Prorated	$100.00	$0.00	$100.00	$0.00	$100.00
46	Flexural Strength Test(GP20)	$0.00	Prorated	$100.00	$0.00	$100.00	$0.00	$100.00
47	Flexural Strength Test(GP20)	$0.00	Prorated	$100.00	$0.00	$100.00	$0.00	$100.00
48	Flexural Strength Test(GP20)	$0.00	Prorated	$100.00	$0.00	$100.00	$0.00	$100.00
17	Compression Strength Test (GP30)	$0.00	Prorated	$80.00	$0.00	$80.00	$0.00	$80.00
18	Compression Strength Test (GP30)	$0.00	Prorated	$80.00	$0.00	$80.00	$0.00	$80.00
19	Compression Strength Test (GP30)	$0.00	Prorated	$80.00	$0.00	$80.00	$0.00	$80.00
20	Compression Strength Test (GP30)	$0.00	Prorated	$80.00	$0.00	$80.00	$0.00	$80.00
33	Split Tensile Strength Test (GP30)	$0.00	Prorated	$80.00	$0.00	$80.00	$0.00	$80.00
34	Split Tensile Strength Test (GP30)	$0.00	Prorated	$80.00	$0.00	$80.00	$0.00	$80.00
35	Split Tensile Strength Test (GP30)	$0.00	Prorated	$80.00	$0.00	$80.00	$0.00	$80.00
36	Split Tensile Strength Test (GP30)	$0.00	Prorated	$80.00	$0.00	$80.00	$0.00	$80.00
49	Flexural Strength Test(GP30)	$0.00	Prorated	$80.00	$0.00	$80.00	$0.00	$80.00
50	Flexural Strength Test(GP30)	$0.00	Prorated	$80.00	$0.00	$80.00	$0.00	$80.00
51	Flexural Strength Test(GP30)	$0.00	Prorated	$80.00	$0.00	$80.00	$0.00	$80.00
52	Flexural Strength Test(GP30)	$0.00	Prorated	$80.00	$0.00	$80.00	$0.00	$80.00
1	Literature Collection	$0.00	Prorated	$0.00	$0.00	$0.00	$0.00	$0.00
		$0.00		$6,900.00	$0.00	$6,900.00	$0.00	$6,900.00

Fig. 10 Budgeting of Project

VI. CONCLUSION

This project that cement in concrete can be replaced by waste fine glass powder; because of it contains more siliceous and calcareous products. suggests The quality of various materials required for making a concrete was selected as per Indian Standards testing procedure and the values are in permissible limit. Then the project deals with the comparison of various strength parameters of both conventional and Glass powder concrete (GPC). The 10% replacement of glass powder by cement gives better compression, tensile and flexural characteristics result when compared conventional concrete. And also study about the time difference between conventional concrete and glass powder concrete to complete an activity in the site considerations.

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