Office of the AGE B/R
Ludhiana

800/CEJZ/FZR-14/15-16 / 95 /BR

18 May 2016

M/S RHG Constructions,
& SCO 7-8, 3rd floor, Jandu Tower,
Miller Ganj, GT Road, Ludhiana -141003

CA NO. CEJZ/FZR-14/2015-16 : PROVN OF OTM ACCN FOR LIGHT AD REGT AT DHOLEWAL/LUDHIANA

Dear Sir,

1. It is intimated that Design mix M-25 in respect of the subject work carried out by Command Test Lab Chandigarh has been received with the result not meeting the required strength of 28 days cubes as per IS/CA , and cement also not meeting the requisite criteria as per IS/CA.

2. In view of the above all the cement works including RCC M-25 design mix will not be further carried out till the approval of new design mix.

3. However, the works other than cement works, RCC M-25 design mix like, layout of bldgs, excavation, fabrication and tying of steel reinforcement and form work etc can be carried out so that progress of the work is not affected

Yours faithfully,

(S I Hashmy)
AE (Civ)
AGE B/R Ludhiana

Copy to :-

GE Ludhiana - for info and further necessary action please.

Tele - 0172-2638305

Garrison Engineer (CTL)
'N' Area, Air port Road
Chandigarh

May 2016

5007/64 /Test/CEJZ/CTL

Garrison Engineer Ludhiana
Near to Jagron Bridge
Opp Durga Mata Mandir
Ludhiana – 141001

READY MIX CONCRETE (DESIGN MIX M-25) CA NO. CEJZ/FZR-14/2015-16 : PROVN OF OTM ACCN FOR LIGHT AD REGT AT DHOLEWAL/LUDHIANA

1. Reference AGE B/R Ludhiana letter No. 800/CEJZ/FZR-14/15-16/68/BR dated 31 Mar 2016.

2. Test report of M-25 samples submitted vide your above ref letter are forwarded herewith.

(M K Walia)
AE (Civ)
For GE Comd Test Lab

Encls :- (As above)

Copy to :-

AGE B/R Ludhiana – 141001 - For info wrt your letter cited at Para 1 above.

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BR | 47

MIX DESIGN, M-25

Sample submitted by	:	AGE B/R Ludhiana
Vide letter No	:	800/CEJZ/FZR-14/15-16/68/BR dated 31 Mar 2016
CA No	:	CEJZ/FZR-14/2015-16
Material tested	:	Mix -25
Method Adopted	:	IS : 456, & IS-10262
S. No & Date	:	13 dated 07 Apr 2016

A. STIPULATIONS FOR PROPORTIONING

(a)	Grade designation	M-25
(b)	Type of cement	PPC conforming to IS:1489 Part-I
(c)	Maximum nominal size o	20mm
(d)	Degree of Quality Contro	Good
(e)	Degree of Workability	As per IS-456
(g)	(slump)	50-75 mm
(h)	Cement Content	As per IS 456-2000 Table 5
(j)	Maximum water-cement	As per IS 456-2000 Table 5 (0.5)
(k)	Type of aggregate	Crushed
(l)	Exposure condition	Moderate
(m)	Chemical admixture type	NA

B. TEST DATA FOR MATERIALS

(a)	Cement used	(PPC Shree Cement conforming to IS:1489 pt-I)
(b)	Specific gravity	
	Cement	3.15
	Coarse aggregate	2.66
	Fine aggregate	2.75
	Admixture	0.00
(c)	Water absorption	
	(1) Coarse aggregate	0.70%
	(2) Fine aggregate	0.65%

(d) Free (surface) moisture

(1) Coarse aggregate 0.00%

(2) Fine aggregate 0.15%

Sieve analysis

(I) Coarse aggregate

IS Sieve sizes mm	Analysis of Coarse Aggregate Fraction, % Passing		Percentage Passing of Different Fractions			Percentage passing for graded aggregate as per Table II of IS 383-1970
	I	II	I	II	Combined	
	20mm	12.5mm	60%	40%	100%	
40	100.00	100.00	60.00	40.00	100.00	100
20	96.76	85.90	58.06	34.36	92.42	95-100
10	4.08	63.47	2.45	25.39	27.83	25-55
4.75	0.66	7.47	0.40	2.99	3.38	0-10

(II) Fine aggregate Conforming to grading Zone -II of Table 2

C. DESIGN COMPRESSIVE STRENGTH FOR MIX PROPORTIONING

$f'ck = f_{ck} + 1.65 \times S$

Target average compressive strength in N/mm^2 = 31.60

Flexural strength using IS: 456 relationship 3.93

D. SELECTION OF WATER-CEMENT RATIO

From Table -5 of IS-456

TRIAL I	TRIAL II	TRIAL III
0.45	0.495	0.405

0.495< 0.50, Hence OK.

E. SELECTION OF WATER CONTENT

From Table 2, water content for 20	**186.00**	kg/m^3
Adustment :- Add @ 3 % for every 25mm slump. Then actual water content	5.58	kg/m^3
	191.58	kg/m^3
Total		
Net water required	**191.58**	kg/m^3

F. CALCULATION OF CEMENT CONTENT

	TRIAL I	TRIAL II	TRIAL III		
Water-cement ratio	0.45	0.495	0.405		
Cement content	425.73	387.03	473.04	>360 and <450 Except trial III	kg/m^3 OK

G. PROPORTION OF VOLUME OF COARSE AGGREGATE AND FINE AGGREGATE

From Table 3, volume of coarse aggregate corresponding to 20 mm size aggregate and fine aggregate grading Zone-II = 0.62 perunit volume of total aggregate. This is valid for water-cement ratio of 0.45 In the present case water-cement ratio is 0.495.
Therefore,volumn of coarse aggregate =

Volume of fine aggregate content = 1- volume of CA

TRIAL I	TRIAL II	TRIAL III
0.630	0.621	0.639
0.370	0.379	0.361

From Table 3

Nominal Maximum Size of Aggregate (mm)	Volume of Coarse Aggregate Per Unit Volume of Total Aggregate for			
	Zone IV	Zone III	Zone II	Zone I
10	0.50	0.48	0.46	0.44
20	0.66	0.64	0.62	0.60
40	0.75	0.73	0.71	0.69

H. MIX CALCULATIONS

			TRIAL I	TRIAL II	TRIAL III	
			1	1	1	m^3
(a)	Volume of concrete					
(b)	Volume of cement	(Mass of cement / Specific gravity of cement) X (1/1000)	0.1352	0.1229	0.1502	m^3
(c)	Volume of water	(Mass of water / Specific gravity of water) X (1/1000)	0.19158	0.19158	0.19158	m^3
(d)	Volume of chemical Mass of Super-Plasticizer is		0.00000	0.00000	0.00000	
(e)	Volume of all in aggregate	{a -(b+c+d)}	0.67327	0.68555	0.65825	m^3
(f)	Mass of coarse aggregate	(e) X 0.621 XSpecific gravity of coarse aggregate X 1000	1128.26	1132.44	1118.85	kg/m^3
(g)	Mass of fine aggregate	(e) X 0.379 X Specific gravity of fine aggregate X 1000	685.0487	714.5179	653.4772	kg/m^3

J. MIX PROPORTIONS FOR TRIAL NUMBER 1 BASED ON AGGREGATE IN SSD CONDITION

W/C Ratio	Cement	Water	Coarse agg	Fine aggregate	Water absorption		Free moisture	
					Coarse agg	Fine agg	Coarse agg	Fine agg
0.45	425.73	191.58	1128.26	685.05	7.90	4.45	0.00	1.03
0.495	387.03	191.58	1132.44	714.52	7.93	4.64	0.00	1.07

K. MIX PROPORTIONS BASED ON AGGREGATE IN DRY CONDITION

W/C Ratio	Cement	Water	Coarse agg		Fine aggregate	Admixture	28th day's comp strength
			20mm	12.5mm			
0.45	425.73	202.90	672.22	448.14	681.62	0.00000	30.28
0.495	387.03	203.08	674.71	449.80	710.95	0.00000	27.84

Result - 28th day's compressive strength of mix is below the mean target strenth. Few reasons are as under-

(a) Cement has low compressive strength (separate test sheet enclosed)
(b) Sample of 20 mm aggregate failed in individul sieve analysis under graded aggregate. (Sieve analysis enclosed)

OMD TEST LAB (V) DATE CHANDIGARH

Station : Chandigarh
Date May, 2016

(M K Walia)
AE (Civ)
AGE, CTL
for GE CTL, WC

Notes -

1. The test results listed pertain to the sample tested and applicable parameters.
2. Any discrepancy found in the test report may be communicated within 15 days from the date of issue of test report.
3. Remanants of sample tested may be collected within 90 days from the date of issue of test report, after which they shall be disposed off
4. The test report or any part thereof should not be produced as an evidence for any legal purposes without prior permission of GE CTL, WC

COMMAND TEST LAB, WESTERN COMD
TEST REPORT

submitted by : AGE B/R Ludhiana
ter No : 800/CEJZ/FZR-14/15-16/68/BR dated 31 Mar 2016
ial tested : CEJZ/FZR-14/2015-16
od Adopted : Shree Cement (PPC)
o & Date : IS : 4031-1988
: 13 dated 07 Apr 2016

Obseravation			Specs as per IS	
o Name of Test	Result	IS No	Space	Remarks
Consistency of Cement	-	-	Should be less than 35%	
Setting time				
(a) Initial	-	4031 (Pt-5)	> 30 minutes	
(b) Final	-	4031 (Pt-5)	> 600 minutes	
Soundness	2.67 mm	4031 (Pt-3)	< 10 mm	
Compressive strength (N/mm²)			PPC OPC (43 grade)	
(a) 3 days	19.16	1489 (Pt-1)	> 16 > 23	Does not Confirm
(b) 7 days	26.34	1489 (Pt-1)	> 22 > 33	even as PPC, should
(c) 28 days	30.79	1489 (Pt-1)	> 33 > 43	meet the critria of OPC 43 grade.
Finess of cement	-	4031 (Pt-1)	< 10%	

COMD TEST LAB (WC) CHANDIGARH DATE AREA, CHANDIGARH

tation : Chandigarh

Date : May 2016

(M K Walia)
AE (Civ)
AGE, CTL
for GE CTL, WC

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COMMAND TEST LAB, WESTERN COMD
TEST REPORT

Sample submitted by : AGE B/R Ludhiana
Vide letter No : 800/CEJZ/FZR-14/15-16/68/BR dated 31 Mar 2016
CA No : CEJZ/FZR-14/2015-16
Material tested : Aggregate
Method Adopted : IS : 2386 (Part-I) - 1963
S. No & Date : 13 dated 07 Apr 2016

Sieve Size	Observation: % by wt of sample passing			Specs as pe IS:383-1970 (%) - graded aggregate: % by wt of sample passing		
	40 mm	20 mm	12.5 mm	40 mm	20 mm	12.5 mm
63 mm	-	-	-	100	-	-
40 mm	-	100.00	-	95 to 100	100	-
20 mm	-	96.76	100.00	30 to 70	95 to 100	100
16 mm	-	-	-	-	-	-
12.5 mm	-	-	85.9	-	-	90 to 100
10 mm	-	4.08	63.47	10 to 35	25 to 55	40 to 85
4.75 mm	-	0.66	7.47	0 to 5	0 to 10	0 to 10

Remarks :- Aggregates 12.5 mm confirm table 2 of IS-383 : 1970 under graded aggregate but 20 mm does not confirm graded aggregate.

Station : Chandigarh
Date : 07 May 2016

(M K Walia)
AE (Civ)
AGE, CTL
for GE CTL, WC

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