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Q1 (9) What is re-tempring of concrete? In which re-tempring of concrete done.

Ans (A) Re-tempring of concrete when water is added to stiffered concrete Or partially set fresh concrete in order to bring it back to the desired consistency OR workability. Then it is called "Re-tempring of concrete."

Re-tempring is done on the motar board by the maso. usually by dribbling water into mortar pile. Then reworking with trowel or shovel. This replaces water lost by evaportion.

(D) What is the normal RPM of the agitator of a transit mixer? what is the minimum limitation of total revolutions of agitator in a transit mixer set by ASTM before Concrete placement?

Ans: Mixer generally run at speed of 15-20 revolutions per minute

Normally 25-30 revolutions are required for a well-designed mixer to mix ingredients properly.

Mixing time is usually 1·5 to 2·5 minutes and depends upon volumetric capacity of mixer.

Batching Plant takes 12 minutes to load a transit mixer of $6m^3$ capacity.

Q2 (a) What will be expected loss in Strength of 3000 psi Concrete if it curing has not been performed at all?

Ans *Expected Loss In Concrete Of*

3000 Psi

losses of up to 40% were experienced when the Concrete was immediately exposed to freezing. after 8 hours resulted in losses of approximately 5% and exposure after 24 hours had little effect.

(b) What is the percentage efficiency of membrane curing as compared to water curing?

Ans Percentage effeciency of membrane Curing is 80% efficient as Compared to water Curing.

(C) What is meant by retrogression of Strength in Concrete? which method of Curing Promotes retrogression in Concrete Strength?

Ans: ## * Retrogression Of Strength * in Concrete *

Strength retrogression is defined as a change in the hydration products that are formed when Cement is exposed to high temperatures (>110°C / 230°F). it can be described as a decline of cement Strength at elevated temperatures where decreased Strength is observed with increasing time

four Categories are.

A water Curing.

B Membrane curing.

C Applications of heat.

D Miscellaneous.

Q3 (a) What do you mean by endurance level? What is the endurance level of concrete and steel?

Ans: * Endurance Level *

As the maximum flexural fatigue stress at which the beam could withstand 2 million cycles of no reserved fatigue loading. expressed as a percentage of modulus of rupture of plane concrete.

* Endurance Level Of Concrete and Steel. *

for a large number of steels. there is a direct correlation between tensile strength and fatigue strength.

higher-tensile-strength steel have higher endurance limits the endurance limit is normally in the range of 0.35 to 0.60 of the tensile strength.

(b) What is the difference between attrition and erosion of concrete.?

Ans: An attrition is a test carried out to measure the resistance of a granular material to wear. An example of material subjected to an attrition test are stone used in road Construction.

Indicating the resistance of the material to being broken down under road traffic. Erosion is the deterioration of concrete surface as a result of particles in moving & water scrubbing the surface. when concrete surface is exposed to the water borne sand and gravel. the surface gets deteriorated by particles scrubbing against the surface. flowing ice particles can also cause the problem.

(c) **Steps that should be taken to improve the bond strength of reinforcement in concrete.**

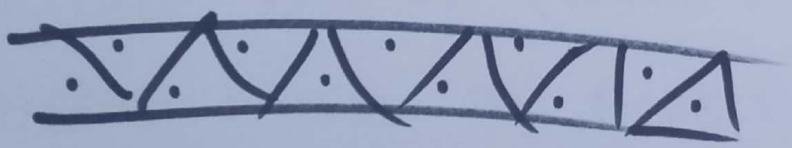
1 using Concrete Cover to sustain thereinforcment

and Concrete well bonded.

2 Using small dia of bar in the design to have a stable connection of bars and Concrete.

3 Corrosion free bar or any chemical using for reduction of corrosion Concrete.

4 The use of methyl cellulose (0.4% to 0.8% by weight of cement) as an admixture in Cement Paste or Concrete was found to increase the shear bond strength with steel reinforcing bar. Steel fiber, or Carbon fiber to values attained.



Q4 What is Creep? what are the factors affecting Creep? what difference is between Creep and Strain relaxation?

Ans

CREEP

Creep is indicated when the strain in Solid increase with time while stress Produce the Strain is kept Constant.

Creep in Concret is defined as: the increse in Strain of Concrete with Passage of time under Sustain Stress is known as Creep. Creep is not a Completely reversible phenomena.

All material exhibit the phenomena of Concrete but in Concrete it ~~is~~ ~~possible~~ Considerable more. In creep the deformation of material under design stress is termed as elastic, while the Subsequent increase in deformation under Sustain design Stress,

Factors Affecting Creep

1:- Decrease in w/c cause decrease in Creep, So creep and strength are inversely proportional.

2:- Creep is smaller when Concrete is Curved at high temperature.

3:- Creep also depend on applied stress. The relation between Creep and stress are directly proportional.

4:- Creep also depend on the type of cement. Cement having high alumenia having less creep as compare to Portland cement.

5:- Stiffer the aggregate, the creep will be lower. More the content of aggregate per unit volume of aggregate, lower will be the creep.

* Difference B/w Creep And relaxation *

Creep is an increase in plastic strain under Constant stress while Stress relaxation is a decrease in stress under Constant strain.

Creep is an increased tendency towards more strain and plastic deformation with no change in Stress.

Q5: What is the difference between drying Shrinkage and Plastic Shrinkage? Is drying and Plastic Shrinkage reversible?

Ans:

* Difference B/w dry Shrinkage * and Plastic Shrinkage *

1 Plastic Shrinkage :-

Plastic Shrinkage is caused by loss of water by evaporation from the surface of newly laid concrete or by suction of dry concrete underneath. At the surface, plastic shrinkage occur when the rate of evaporation exceed the rate of bleading, actually the volumetric concentration of cement is called plastic shrinkage and result in 1 Percent reduction per unit volume of cement paste thus result a cracks become. produce. plastic Shrinkage depends on temperature, it increase with increase in the rate of evaporation.

2:- Drying Shrinkage

The Contracting of a hardened Concrete mixture due to the loss of Capillary water.

This Shrinkage cause an increase in tensile Stress, which may load to cracking internal wrapping.

Drying Shrinkage depends on several factors which include property of component Propotion of the component amount of moisture while curing. Dry Shrinkage happen mostly because of the reduction of capillary water by evaportion and the water in the cement paste.

:(1)6 (a) What are risks to Concrete Structure exposed to Sea water? How do you increase resistance of Concrete to Sea water?

Ans: In addition to sulphate present in Sea water, Chloride are also present.

The presence of Chloride preseut expansion of Concrete unlike sulphate attack but increase porosity of Concrete over time. the resulting decrease in Strength- expansion of Concrete above high level due to crystalization of Percelted salt can occur which can be Prevented by malcing concret impermeable

Concrete subjected to alternat wetting and drying is severally attacked while Concrete that is Constantly wet is least affected. Concrete exposed to Sea water Should have ~~w/w~~ w/c below 0.45 it should have low permeability. It should be well compacked with good work mainship Especially in the construction Joints.

Q6
(B)

Step 1 :-

Slumps = 50mm

Step 2:- Max size of aggregate = 25mm

Step 3:- quantity of water = 180 kg/m^3

Step 4:- Average strength of concrete

28 days of strength of concrete = x+y+15

= 5 + 8 + 15

= 28 MPa

we can use the 2nd equation

$f_m = 28 + 8.5$

$= 36.5$ MPa we can take this value

OR

$f_m = 1.1 \times 28 + 5$

$= 36.1$ MPa

Probability of Air Content = 1.5%

Step 5:- Water Cement ratio = ?

we can find from table 19.1

W/C = 0.41

Step 6:- Cement quantity = $w/w/c = \frac{180}{0.41}$

$= 439 kg/m^3$

Step 6:- Quantity of Course aggregate we can find from table 19.9

C.A = 0.69

weight of C.A = 0.69×1600

$= 1104 kg/m^3$

Step 7:- Quantity of F.A By volume method.

weight of C.A = $2.65\left[1000 - \left[\frac{439}{3.15} + \frac{180}{1} + \frac{1104}{2.7} + 15\right]\right]$

~~weight of~~ C.A = $2.65[1000 - 139.3 - 180 - 408 - 15]$

C.A = $2.65[257.7]$

C.A = 682.9 kg/m³

Step 8:-

For 1% absorbed C.A = $\frac{1}{100} \times 1104$

C.A = 11.04 kg

Step 9:-

For 2% moisture Present in F.A that will added after Mix

$\frac{2}{100} \times 682.9 kg/m^3$

$= \boxed{13.65 kg}$

Net Quantity of water = 185 + 13.65 - 11.04

$= \boxed{187.61 kg}$

Net Quantity of C.A = 1104 - 11.04

$= \boxed{1092.96 kg}$

Net Quantity of F.A = 682.9 + 13.65

$= \boxed{696.55 kg}$

Final Quantities

Cement = $439 kg/m^3$

water = $187.61 kg/m^3$

F.A = $696.55 kg/m^3$

C.A = $1092.96 kg$