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10th Semester

Subj: Concret technology.

Submitted To: Engr. Osama.

Q1 A: What is re-tempering of Concrete? In which case is re-tempering of concret done?

Ans: Re-tempering of Concrete:- The process of remixing of water to concrete in addition to required quantity of water is known as re-tempering of concrete, extra cement is also added while retempering.

* In which case is re-tempering of Concrete done.

Retempering is done owing to loss of workability or undue stiffness of Concrete at actual Side in case of long tunnels, roads construction etc where batching plant is few kilometer away.

Q1 B

Ans: The rate of rotation is about 2 to 6 revolution per minute (r.p.m) in the transit mixed type. The mixing is done in the truck during transit or even partly at the delivery site. Use for some years & more discarded in favour of more costly but more effective rotating drum type agitator trucks on ordinary chassis over which is

which is mounted along horizontal or incliened steel drum which contains the concrete.

Q2 A:- What will be the expected loss in strength of 3000 psi concrete if it curing has not been performed to all?

Ans:- Standard crush strength are very difficult to perform and reproduce due to excessive cracking of the samples it has been proposed that the reason for the cracking is the rapid release of the confining pressure during the tests, which may not. While this claim may appear valid. This study use to samples cured both under 3000 psi confining pressure and under. Most convential cement system do not allow for high strength development and extended working time like those seen.

Q3B What is the percentage efficiency of membrane curing as compare to water curing.

Ans Result indicate that, using membrane curing compounds, an efficiency of 80 – 90% can be achieved as compared to conventional water curing.

Q3C what is meant by retrogression of strength in concrete? which methode curing promotes ---?

Ans Strength Retrogression:

is defined as a change in the hydration products that are formed when cement is exposed to high temperature (>110°C/230°F). It can be discribed as a decline of cement strength at elevated temprature where decreased strength is observed with increasing time.

Q3 A: what you mean by endurance level? endurance level of concrete and steel.

Ans: Endurance :- (Also related the Sufferinge regilitence, Constitution, fortitude and hardness) is ability of an organism to exert ~~Usefed~~ itself & remain active for along period of time, as well as its ability to resist, withstand, recover from and have immunity to trauma, wounds or fatigue.

3B: ~~AH~~

Ans: Attrition of Concrete:

It is a test to measure the resistence of a granular material to wear.
An example of material subjected to an attrition test are Stone used in road construction etc.

Erosion of Concrete:

Erosion is deterioration of concrete Surface as a result of particle in moving water scrubbing the Surface.

3C:- what step should be taken to improve bond strength of reinforcement in concrete.

Ans. ⇒ The use of methylcellulose (0.4% to 0.8%) by weight of cement in cement paste.

⇒ ~~Concrete~~

⇒ Concrete was found to increase the shear bond strength with steel reinforcing base, steel fiber.

⇒ The bond strength increase with increase in methylcellulose.

⇒ The combined use of Silica fom (15% by weight of cement) as admixture was found to give concrete that high bond strength are occur.

Q4 What is creep? What are the factor affecting creep? what difference b/w creep & strain relaxation.

Ans: Creep:

The increase in strain of concrete with in passage of time under sustained stress is known as creep.

⇒ All materials exhibit the phenomenon of creep. but in concrete its considerably more.

⇒ The deformation of material under design stress is termed elastic and the subsequent increase in deformation under sustained design stres increep.

⇒ If a loaded concrete specimen is retrained in such away that strain over time remain constant, creep will manifest itself in the form of progressive decrease in stress over time. This is term as relaxation.

⇒ Creep is not a completley reversible phenomenon.

* Factor affecting creep.

⇒ Stiffer the aggregate lower the creep. More the content of aggregate per unit volume of concrete. lower the creep.

⇒ Decrease in w/c cause decrease in creep. In other words strength and creep & inversely proportional.

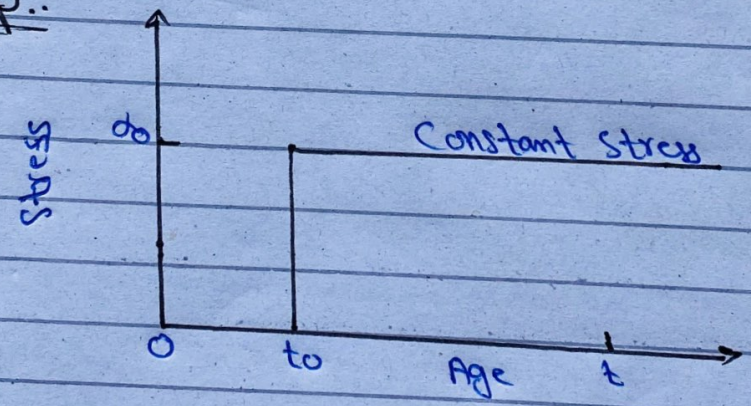
⇒ Creep is smaller when concrete is ~~cured~~ cured at high temperature because strength is higher than when cured and loaded at high temperature.

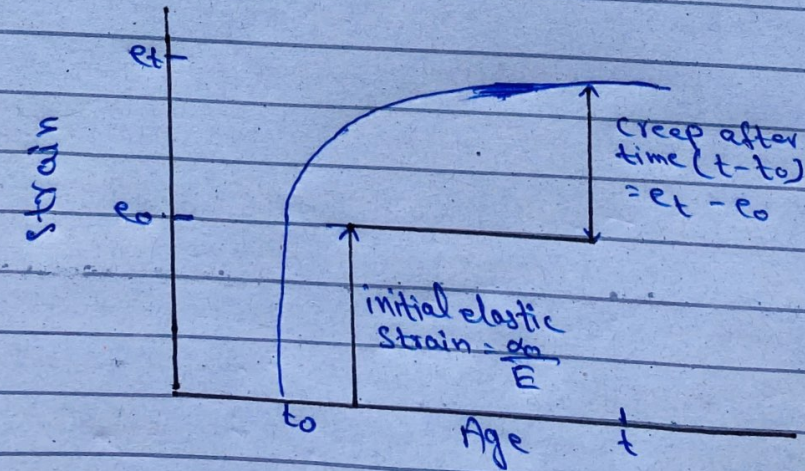
⇒ Creep also depend upon the applied stress. The relationship is directly proportional.

⇒ Creep also depends on the type of cement. High alumina cement experiences less creep as compared to ordinary Portland cement.

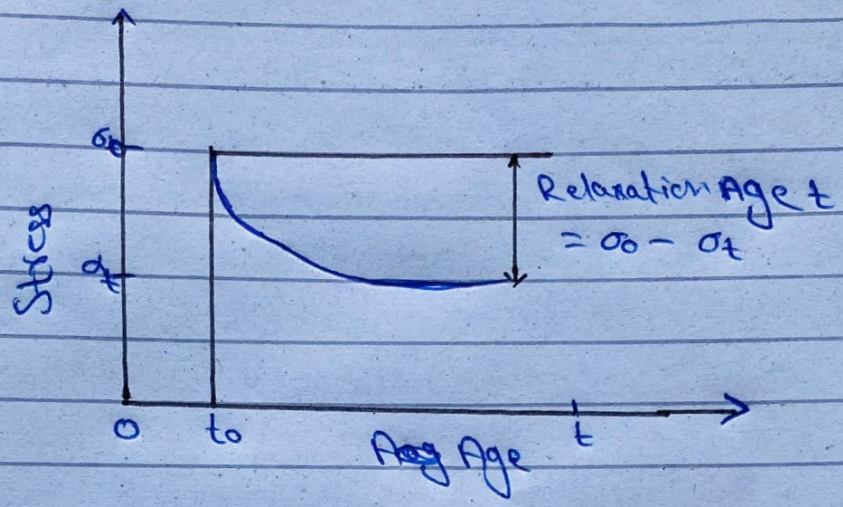
* Difference b/w creep and Strain relaxation

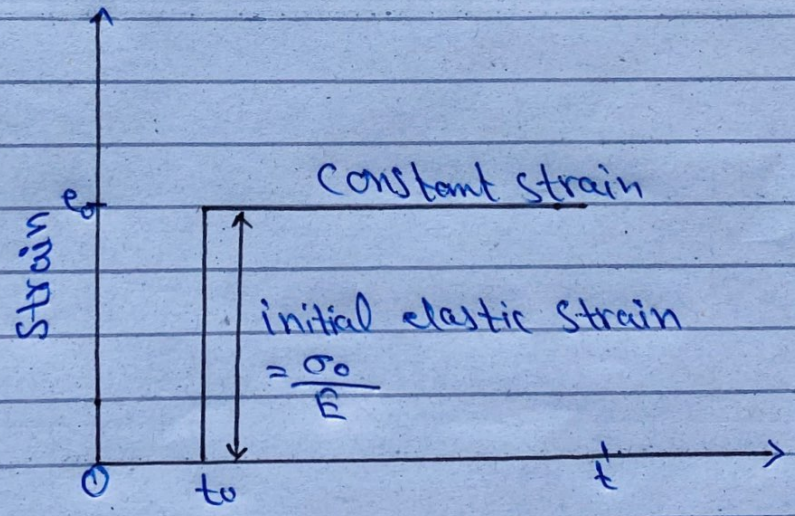
*Creep:-





* Strain Relaxation





Qs What is the difference b/w dry Shrinkage and plastic Shrinkage? Is drying & plastic Shrinkage reversible.

Ans: Plastic Shrinkage:-

⇒ The Volumetric contraction of cement is called plastic Shrinkage and result in 1% reduction per unit Volume of cement paste. This result in tensile stress on surface of concrete, inducing cracks.

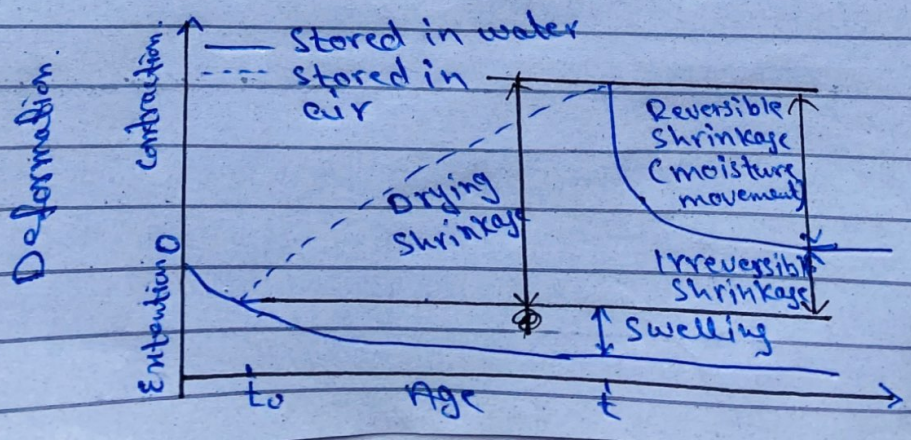
⇒ Plastic Shrinkage increase with increase in temperature. Similarly, plastic Shrinkage increases. ⇒ If the Volume reduction occurs before the concrete hardens, called plastic shrinkage

* Drying Shrinkage:-

⇒ Withdrawal of water from hardened concrete causes drying shrinkage.

⇒ The Volume reduction that occurs primarily due to moisture loss after the concrete has hardened is known as drying Shrinkage.

⇒ A part of drying Shrinkage is reversible through moisture movement (40 – 70%) (Drying Shrinkage is reversible)



Q6B:
Ans: Solution:-

(i) Specified 28 days strength = x+y+15
= 4+7+15 = 26 MPa.

(ii) The mean strength use to fall aggregate 5%. k=?

$$k = \frac{1.96 + (1.50 - 1.96) \times (5.0 - 2.5)}{6.6 - 2.5}$$

$$k = 1.64$$

⇒ Standard deviation is 4.2

The mean strength
= 26 + 1.64 × 4.2
= 32.88 MPa

The maximum w/c ratio is 0.52

The minimum water cement ratio is adopted = 0.5

⇒ The slump of 50mm and aggregate size is 25mm, the mixing water is 180 kg/m³

⇒ Required cement content
$= \frac{180}{0.5} = 360$ kg/m³

⇒ For 25m course aggregate, bulk volume is 0.69

Weight of coarse Aggregate =
$= 0.68 \times 1600 = 1088 \text{ kg/m}^3$

⇒ Density of fresh concrete

For 25mm is 2375 kg/m^3

The weight of all ingredient

weight of water = 180 kg/m^3
weight of cement = 360 kg/m^3
weight of CA = 1088 kg/m^3

weight of fine aggregate is

$= 2375 - (180 + 360 + 1088)$
$= 747 \text{ kg/m}^3$

Absolute volume of all known ingredients.

①	cement	$\frac{360}{3.15} \times 10^3$	$114.28 \times 10^3 \text{ cm}^3$
②	water	$\frac{180}{1} \times 10^3$	$180 \times 10^3 \text{ cm}^3$
③	course aggregate	$\frac{1088}{2.7} \times 10^3$	$403 \times 10^3 \text{ cm}^3$

Proportion.

Cement	Fine agg	CA	Water
$\frac{360}{360}$	747	1088	180
	$\frac{747}{360}$	$\frac{1088}{360}$	$\frac{180}{360}$
1	2.075	3.022	0.5

⇒ wt of material for 1 bag mix

Cement	FA	CA	Water
50kg	50x2.075	50x3.022	50x0.5
1	103.75	151.1	25

⇒ Surface Moisture 2% in fin Agg.

$\frac{2}{100} \times 747 = 14.94$ kg/m³

wt of FA in field condition = 747 + 14.94

= 761.94 kg/m³

Coarse Agg absorb 1% water

$= \frac{1}{100} \times 1088 = 10.88$ kg/m³

wt of CA in field condition =

= 1088 - 10.88

= 1077.12 kg/m³

So FA contain 14.94 kg/m³ water and CA contain 10.88 kg/m³ water

So 10.88 kg water is absorb by CA = 14.94 − 10.88
= 4.06 kg

4.06 kg extra water contributed by aggregate should substract from total water =
180 − 4.06 = 175.94 kg

Quantities of all material after connection of free moisture Surface.

Cement = 360 kg
FA = 761.94 kg
CA = 1077.12 kg
Water = 175.94 kg

Field density of fresh concrete
= 360 + 761.94 + 1077.12 + 175.94
= 2375 kg/m³.