Welcome
To
Presentation

Subject: Construction Process-1

Subject Code- 26433

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Personal safety

- Personal safety is defined as “an individual's ability to go about their everyday life free from the threat or fear of psychological, emotional or physical harm from others.”

What is personal protective equipment?

- Personal protective equipment, commonly referred to as "PPE", is equipment worn to minimize exposure to hazards that cause serious workplace injuries and illnesses. These injuries and illnesses may result from contact with chemical, radiological, physical, electrical, mechanical, or other workplace hazards. Personal protective equipment may include items such as gloves, safety glasses and shoes, earplugs or muffs, hard hats, respirators, or coveralls, vests and full body suits.

Picture of PPE

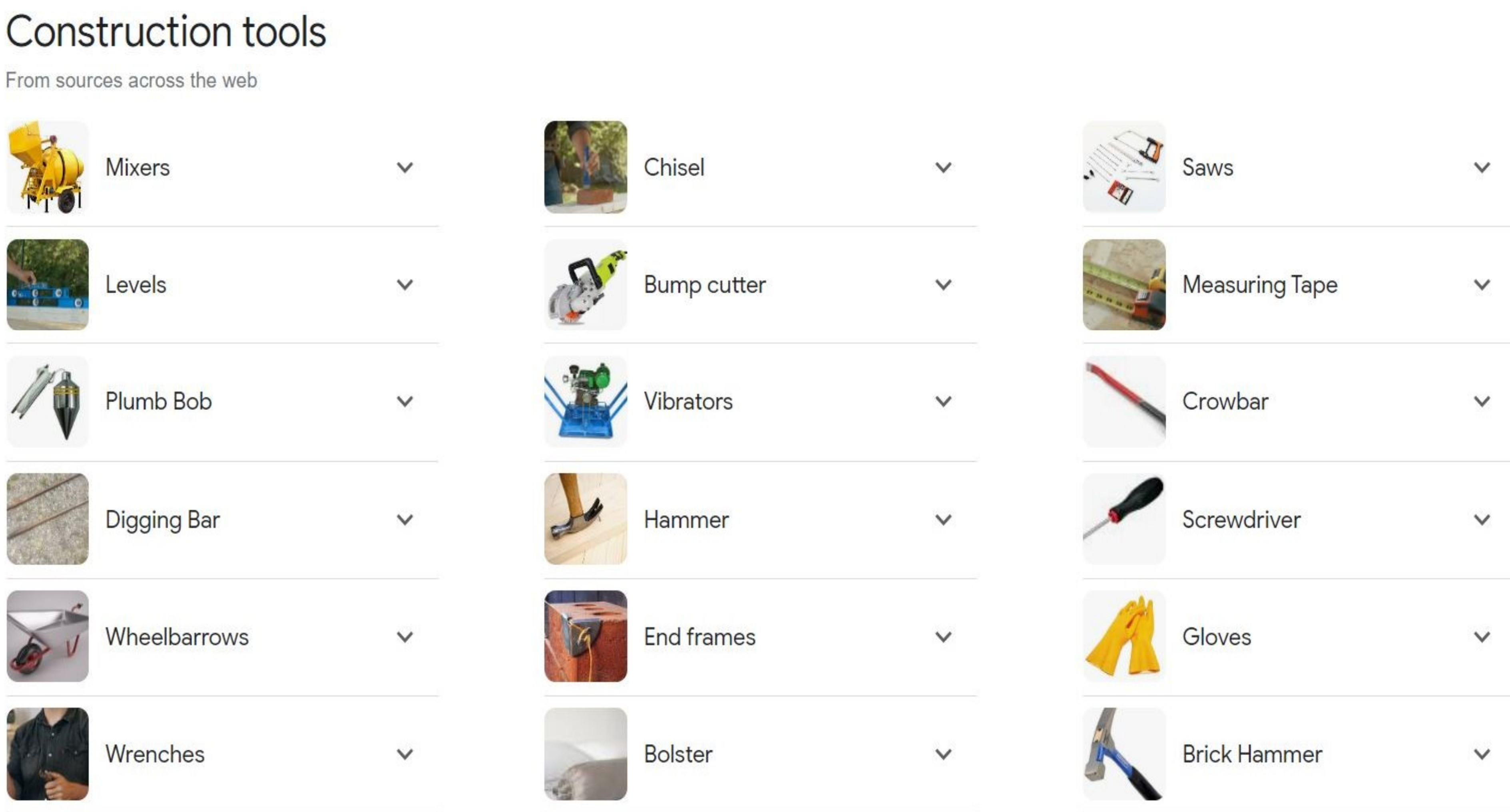
Chapter-2

- Tools and equipment in construction

Tools and equipment in construction

- Very broadly, the term 'tools' refers to instruments that are used by hand. The term 'equipment' generally refers to a set of tools used for a single purpose. The term 'plant' generally refers to heavy machinery and equipment.

2.2 List the tools used in construction work



Construction tools

From sources across the web

Mixers	Chisel	Saws
Levels	Bump cutter	Measuring Tape
Plumb Bob	Vibrators	Crowbar
Digging Bar	Hammer	Screwdriver
Wheelbarrows	End frames	Gloves
Wrenches	Bolster	Brick Hammer

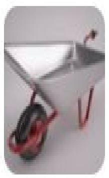
2.4 Explain the procedure to use hand tools and Power tools.

- Tools are so commonplace in our lives that we often forget they may pose a risk when damaged or used differently than their intended design.
- Employees should be trained in the proper use of all hand tools in their workplace. Workers should be able to recognize the hazards associated with several types of tools and the safety precautions necessary to mitigate exposure.

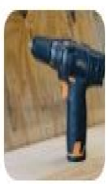
2.6 Explain the maintaining procedure of Tools and Equipment

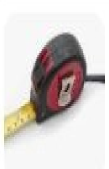
- Clean, Inspect and Care for ToolsMake it a habit to clean tools after each use before you return them to storage. Wipe them down with a rag or old towel and be sure they are free of dust, grease and debris before you put them into their proper places. This is also an opportunity to look for any damage or defects.

2.2 List the tools used in construction work

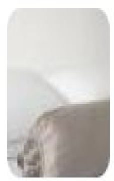

Wheelbarrows


Wrenches


Cordless Drill


Tape


End frames


Bolster


Float


Trowel


Gloves


Brick Hammer

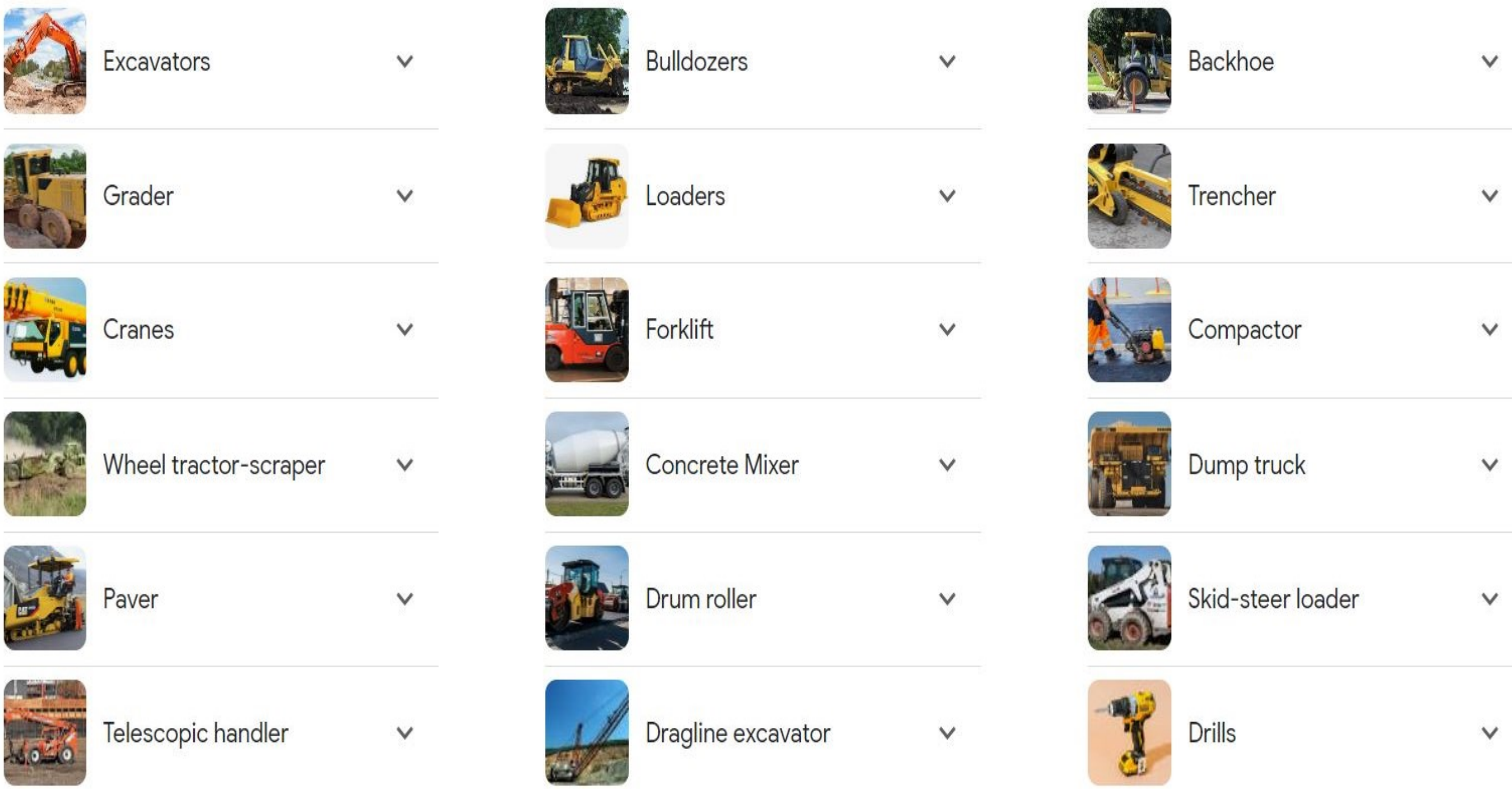

Hoe

Hand Saw

2.3 List the Equipment for Construction work

Equipment used in construction

From sources across the web



Some important construction tools and their uses are listed below:

- Bolster
- Boning rod
- Brick hammer
- Bump cutter/screed
- Chisel
- Circular saw
- Concrete mixer
- Cordless drill
- Crowbar
- Digging bar

End frames
Float
Gloves
Hand saw
Helmet
Hoe
Iron pan
Jack plane
Ladder
Line and pins

Mason’s square
Measuring box
Measuring tape
Measuring wheel
Pick axe
Plumb bob
Plumb rule
Polishers
Putty knife
Rammer

Rubber Boots
Safety glasses
Safety helmet
Sand screen machine
Scratchers
Sledge hammer
Spade
Spirit level
Straight edge brushes
Tile cutter
Trowel
Vibrator
Wedge
Wheel barrow

3.1 The meaning of concrete.

A building material made from a mixture of broken stone or gravel, sand, cement, and water, which can be spread or poured into moulds and forms a mass resembling stone on hardening.

Picture of concrete.

3.2 the different Types of concrete

The 26 Types of Concrete

There are many different types of concrete, some of which can be used for the same purpose. It depends on the goal you wish to achieve. You can choose the appropriate form of concrete to accomplish the task

1. Normal Strength Concrete

- Normal strength concrete is made up of a combination of several fundamental ingredients — aggregate, concrete and sand — in a 1:2:4 ratio. This mixture produces normal strength concrete that can be used for many applications. It takes about 30 to 90 minutes to set, but this is dependent on the weather conditions at the concrete site and the cement’s properties

2. Reinforced Concrete

- This form of concrete is widely used in industry and modern construction. Reinforced concrete gets its strength through the help of wires, steel rods or cables that are placed in the concrete before it sets. A more familiar name for these items is rebar. Lately, people have used fibers to reinforce this concrete. These reinforcements resist tensile forces to avoid cracking or breaking. Meanwhile, the concrete itself resists compressive forces to withstand heavy weight. Together, the two materials create a strong bond against many applied forces, such as vehicles. In essence, they become a single structural element

3. Plain or Ordinary Concrete

- This is another concrete that uses the common mix design of 1:2:4 with its components of cement, sand and aggregates. You can employ it to make pavement or buildings where there is not a high demand for tensile strength. It faces the same challenges as normal strength concrete — it doesn’t stand up very well to vibrations or wind loading. Plain or ordinary concrete is also used in dam construction. The durability rating of this kind of concrete is very satisfactory

4. Prestressed Concrete

- Prestressed concrete units are used for many large concrete projects. To create prestressed concrete, you must use a special technique. Like reinforced concrete, it includes bars or tendons. But these bars or tendons are stressed before the actual application of the concrete.
- When the concrete is mixed and placed, these bars are placed at each end of the structural unit where they are used. When the concrete sets, this unit is put into compression.
- This compression enhances the strength of the lower section of the unit and improves its resistance against tensile forces. However, this process requires skilled labor and heavy equipment. Normally, prestressed units are created and assembled on-site. Prestressed concrete is used to build bridges, heavy-loaded structures or roofs that have long spans.

5. Precast Concrete

- As with most classes of concrete, precast concrete must be made and cast according to specific measurements. These concrete units are eventually transported to the application site and assembled for use.
- You frequently see these units transported to worksites as you drive on highways. Precast concrete is used for:
- Concrete blocks
- Precast walls
- Staircase units
- Poles
- The advantage of using precast concrete is its speedy assembly. Since the units are manufactured in a factory, they are of very high quality.

6. Lightweight Concrete

- Lightweight concrete is any kind of concrete that has a density of less than $1920kg/m^3$. Lightweight concrete is created by using lightweight aggregates. Aggregates are ingredients that add to the density of the style of concrete. These lightweight aggregates are made up of various natural, artificial and processed materials, which include:
- Clays
- Expanded shales
- Scoria
- Pumice
- Perlite
- Vermiculite
- The most important property of lightweight concrete is that it has very low thermal conductivity. Common uses for lightweight concrete include creating long-spanning bridge decks and building blocks. It can also be used to protect steel structures

7. High-Density Concrete

- High-density concrete has a very specific purpose. It is frequently used in the construction of atomic power plants. The heavyweight aggregates used in the creation of high-density concrete help the structure resist radiation.
- Crushed rocks are normally used. Barytes, a colorless or white material that consists of barium sulfate and is the principal ingredient in barium, is the crushed rock most often employed

8. Stamped Concrete

- Also known as imprinted or textured concrete, stamped concrete is designed to realistically replicate the look and pattern of natural stones, tiles, brick and granites. Stamped concrete is often used to construct patios, pool decks, interior floors and driveways.
- This style is achieved by using professional stamping pads to create an impression on the surface of the concrete. To get a natural finish, you can also use various texture work and coloring stains.
- Some of the advantages of stamped concrete include:
- Affordability compared to natural pavers and stone
- Easy maintenance once sealed
- Becomes slip-resistant with a non-skid additive
- Enhances outdoor space and adds value
- Durable and long-lasting
- Extensive pattern and color choices

9. Air-Entrained Concrete

- Some types of concrete hold billions of microscopic air cells in every cubic foot. These tiny air pockets relieve the internal pressure on the concrete. They provide tiny chambers where water can expand when it freezes.
- The air is entrained in the concrete by adding several foaming agents during the mixing process, including:
- Fatty acids
- Resins
- Alcohols
- Because this concrete is mixed at the site of application, the mixing and entraining process requires careful engineering supervision. The entrained air adds up to about 3% to 6% of the volume of the concrete. Almost all concrete used in a freezing environment or where there are freeze-thaw cycles is air-entrained.

10. Ready-Mix Concrete

- Concrete prepared and bathed in a centrally located plant is known as ready-mix concrete. This concrete is mixed as it is transported to the site in the familiar cement trucks seen often on roads and highways. Once the trucks reach the worksite, the cement can be used immediately because it does not need further treatment. Ready-mix concrete is a specialty concrete that is mixed based on specifications developed with great precision.
- Creating ready-mix concrete requires a centralized location where the concrete can be prepared. These locations need to be placed at an adjustable distance from the worksite. If the concrete takes too long to reach the worksite, it will be of no use. In most cases, the worksite to far from the preparation plant. Retarding agents are sometimes used to delay how long the concrete takes to set.
- Ready-mix concrete is preferred to concrete mixed on-site because the mixture has higher precision and having the concrete ready to pour reduces confusion on the worksite. Ready-mix concrete can be used for buildings, roadways, walls and more

11. Self-Consolidated Concrete

- Self-consolidating concrete will compact on its own due to its weight when put in place. This non-segregating, highly flowable concrete will fill the formwork and spread easily into place to encapsulate the reinforcement without the need for vibration or mechanical consolidation. This highly workable concrete is best used for applications and areas where there is thick reinforcement.
- Some benefits of self-consolidated concrete include the following:
- Self-leveling
- Enhanced hardened properties
- Improved consolidation in congested areas
- Safer work environment
- Reduced equipment and labor
- Increased detailing flexibility
- Smoother surfaces
- Reduced noise

12. Volumetric Concrete

- This concrete was created as an alternative to ready-mix concrete to address the problem of long distances between the concrete plant and construction sites. It requires specialized trucks known as volumetric mobile mixers. They carry the concrete ingredients and the water that will be mixed at the construction site.
- Volumetric concrete is extremely useful when a builder requires two different kinds of concrete mix at a single site. Since the concrete can be mixed and delivered as needed, it allows one truck to produce two different mixes of concrete. It is very useful on large sites, basement constructions and multi-projects where you need different types of concrete

13. Decorative Concrete

- Decorative concrete creates visually and aesthetically appealing concrete mixes. Decorative concrete can go through several processes, such as:
- Coloring
- Molding
- Polishing
- Etching
- Applying decorative toppings
- It is ideal for any project in which you want to make an aesthetic statement. It’s also a great way to add a bit of “personality” to dull surfaces or structures. For instance, swimming pools and flooring can make great use of decorative concrete.

14. Polymer Concrete

- Polymer concrete aggregates, compared to those in other concrete types, are bound together in a matrix with polymer instead of cement. This type of concrete is made of limestone gravels, silica, quartz, granite pebbles and other high-compressive strength materials. If these materials are not dry, clean and dust-free, it can have a negative impact on the concrete's binding ability.
- The polymer resin serves as the binder and the aggregate is the compressive stress material. Polymer concrete composites contain a distinct combination of properties in their formulation. Some of these properties include:
- Rapid curing ambient temperatures
- Good adhesion to surfaces
- Long-term durability
- High flexural, tensile and compressive strengths
- Low permeability to water and some solution
- Lightweight formula
- Strong chemical resistance
- Polymer concrete also has a few distinct categories, including:
- Polymer impregnated concrete
- Polymer cement concrete
- Partially impregnated

5. Rapid-Set Concrete

- In a hurry? Then you need rapid-set concrete. It’s ideal when you’re short on time to complete a project. It has faster set times and is very resistant to low temperatures, so it can be used any time of the year. It’s especially useful in winters when the cold weather does not allow you to use many other kinds of concrete

16. Smart Concrete

- As the name suggests, smart concrete is the concrete technology of the future. The creation of this type of concrete makes it easier to monitor the condition of reinforced concrete structures. Smart concrete contains short carbon fibers that are added with a conventional concrete mixer. This process affects the concrete’s electrical resistance when under strain or stress. This kind of concrete can be used to detect possible problems before the failure of the concrete.
- It is very good at sensing tiny structural flaws. While not widely available yet, it promises to be the building material of the future for cities that face repeated earthquake risk. Smart concrete allows engineers in those cities to check the health of structures after earthquakes, providing a far better assessment of their condition than a visual inspection.

17. Pervious Concrete

- This is one of the most common kinds of concrete used to build roads and pavements. It is designed to deal with the problems of stormwater runoff and pools of water and puddles on roadways or airport runways.
- Other concrete absorbs water. Roadways that use pervious concrete have fewer problems with hydroplaning, tire spray and snow buildup. It also reduces the need for curbing and storm sewers.
- It is composed of a mixture of cement, water and coarse aggregates. It contains no sand, which creates an open-scale, porous structure. This allows water to pass through the layers more easily. Some kinds of pervious concrete will pass several gallons of water through its surface per minute.

18. Vacuum Concrete

- In certain applications, such as deck slabs, parking lots and industrial floors, concrete will have a higher water content than necessary when poured into the formwork. In these cases, the excess water must be removed with a vacuum pump before the concrete begins to set. Compared to a normal construction method, the vacuum technique can help make the concrete platform or structure ready to use sooner

19. Pumped Concrete

- If you've ever wondered what types of cement mixtures used in the flooring of a very tall building are, the answer is probably pumped concrete. The secret to pumped concrete is that it is very workable, so it can be conveyed easily via a pipe to an upper floor. This pipe will be a flexible or rigid hose that discharges the concrete to the required area.
- Pumped concrete can also be used:
- To create superflat floors on lower structures
- In construction projects like roadways and bridges
- For more personal items, like swimming pools
- It is a reliable, efficient and economical way to apply concrete and is often the only way that concrete can be placed in certain locations. Very fine aggregates are used in pumped concrete. The finer the aggregate used in the mix, the freer the concrete flows from the pipe.

20. Limecrete

- This concrete uses lime instead of cement, along with lightweight aggregates like glass fiber or sharp sand. It’s mainly used for the construction of floors, vaults and domes. Limecrete has many environmental benefits because it is so easily cleaned and is renewable. It can also be used with radiant floor heating.

21. Roll Compacted Concrete

- It's a familiar sight on many American highways — a heavy roller compacting a layer of concrete. Roll-compacted concrete is a strong, dense concrete used on heavily trafficked highways with vehicles that carry large loads. This concrete emits fewer emissions during the production process, which benefits the environment.
- Roll compacted concrete can be found in roadworks, airport runways, car parks, pavements and industrial servicing

22. Glass Concrete

- Another, more modern form of concrete, glass concrete features the use of recycled glass. This form of concrete is used when aesthetic appeal is an important element in the design of the concrete.
- Commonly used in the large-format slabs found in flooring or on decorative façades, this concrete can have shining or colored glass embedded during the mixing process to give it a distinctive splash of color or sparkle

23. Asphalt Concrete

- More commonly known as “asphalt” or “blacktop,” this is a form of concrete often used for constructing sidewalks, roads, parking lots, airport runways and highways— almost anywhere pavement is needed. Asphalt is a dark mineral composed of bitumens, which are a form of hydrocarbons.
- The desire for asphalt grew along with the automobile industry. Known for its durability, workability, skid resistance, stability, fatigue resistance, flexibility and permeability, it still requires a properly designed mixture. It is a composite mixture of aggregates and asphalt. The different mixtures of asphalt are used for different purposes.

24. Shotcrete Concrete

- Shotcrete differs from other forms of concrete primarily in the way it is applied. Shotcrete is shot through a nozzle onto a frame or formwork. Since this application requires higher air pressure, the compaction process takes place at the same time as the placing.
- Shotcrete can be used to repair damaged wood, concrete or steel structures. It is also commonly used when access to a work area is difficult or when formwork is impractical or cost-prohibitive.

25. High-Strength Concrete

- High-strength concrete is any concrete mix that is greater than 40 megapascal (40MPa), which is the tensile strength of concrete. High-strength concrete that meets this determinant can handle much more stress and pressure compared to concrete at 20MPa or 30MPa.
- This type of concrete can withstand strenuous conditions before it shears, cracks or breaks. The increased strength in this concrete is accomplished by reducing the water-cement ratio to a low rate.
- High-strength concrete above 40MPa is often used for civil and commercial construction, which includes buildings and infrastructure projects, structural beams, columns, loadbearing walls and any other application where increased capacity and durability are required.

26. High-Performance Concrete

- Though all high-strength concrete can be labeled as high-performance, not all high-performance concrete (HPC) will be in the high-strength category. HPC meets particular efficiency standards, such as:
- Easy placement
- Heat of hydration
- Environmental standards
- Longevity and durability
- Life-term mechanical properties
- Strength gain in early age
- Toughness
- Permeability and density factors
- However, HPC may be limited in strength in some cases, depending on the application you plan to use it in.

List the uses of concrete in the construction industry.

- Concrete is used in the following: basic foundations, exterior surfaces, superstructures, floor construction, wastewater treatment facilities, and parking lots/structures. To determine the quality of cement, the factors include the accuracy of placement, appearance, and consolidation. ndustry.

Ingredients of different Types of concrete.

- Concrete is a mixture of cement, air, water, sand, and gravel–it's as simple as that! Not exactly. The typical concrete mix is made up of roughly 10% cement, 20% air and water, 30% sand, and 40% gravel. This is called the 10-20-30-40 Rule–though proportions may vary depending on the type of cement and other factors.

3.4 Functions of ingredients of concrete.

- Cement binds the aggregate into a solid mass, fills up voids present in aggregates (fine as well as coarse) & gives strength to concrete on setting & hardening when it's mixed with water.
- Aggregates : fine aggregates reduces shrinkage & cracking, fills voids present in coarse aggregates & helps in hardening of cement. Coarse aggregates increases the crushing strength of concrete, makes concrete solid hard mass, reduces cost of concrete by occupying major volume in concrete. Also it should be noted that coarse aggregate plays major role in transition zone.
- Water : Basic requirement to take place hydration process. Maintains workability, helps in spreading paste.
- Admixtures (plasticizers, superplasticizers, retarders, accelerators, air entraining agents etc)
  - plasticizers and superplasticizers helps to improve workability by maintaining the fluidity in concrete by releasing the water (from floc) which is entrapped during initial mixing.
  - Accelerators helps to set the concrete at faster rate (cold regions very helpful).
  - Retarders slows down the setting of concrete i.e, hydration process will take place slowly.
  - Air entraining agents, even though these will affect the strength but in cold regions air entraining agents helps to prevent freezing and thawing cycles.

Advantages and limitations of concrete

- **ADVANTAGES:-**
- ● We can do this test very easily.
- ● It is too much accurate.
- ● We can get results into three parts .
- ● we can find out Strength and Durability of concrete .
- **LIMITATIONS:-**
- ● We should clean the inner portion of the slump cone .
- ● We have to used tamping rod for tamping after filling with concrete mixture.
- ● We shouldn't wait more than 15 sec. (approximately) after filling.
- ● We shouldn't shake the slump cone at removing time.
- ● We should measure slump height at the top of the slump

Characteristics of materials used in concrete.

- Increased fineness gives increased spread area. This allows for more area to be covered, thus more strength to the concrete.. It also fills in more gaps in the surface, lessening the effects of the atmospheric and underground pollutants.
- However, the heat of hydration increases with increased fineness, for the same quantity of cement. This is because water penetrates only to a certain depth into each cement particle, thus quantum reacting in finer particles is more.

Chapter-2

- Properties of Concrete
- Strength
- Durability,
- Workability,
- Laitance
- Segregation.

2.1 Defination : strength, durability, workability, laitance and segregation

- Compressive strength can be defined as **the capacity of concrete to withstand loads before failure**.
- Durability of concrete may be defined as the ability of concrete to resist weathering action, chemical attack, and abrasion while maintaining its desired engineering properties.

- Concrete workability basically refers to how easily freshly mixed concrete can be placed, consolidated and finished with minimal loss of homogeneity. Generally the workability of concrete is determined by how fluid the mix is (i.e. the cement to water ratio)
- Laitance is the weak, milky or powdery layer of cement dust, lime and sand fines that appear on the surface of concrete. These fines rise to the surface of concrete that was over-watered, or allowed to dry prematurely in the absence of curing membranes or other good curing practices.

Segregation

- Segregation of concrete refers to the separation of the constituent materials in freshly mixed concrete. This occurs when the heavier aggregates settle down due to gravity, leaving behind the lighter cement and water mixture on top.

2.2 Meaning of water-cement ratio

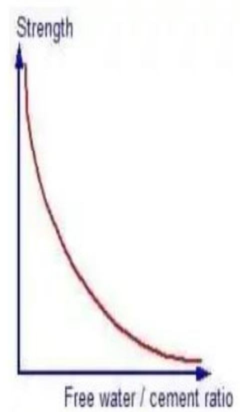
- Water Cement Ratio means **the ratio between the weight of water to the weight of cement used in concrete mix**.
- Water-to-cement (w/c) mass ratio is important because it controls the mechanical properties and durability of hardened concrete. When problems occur and/or non-compliance with the specification is suspected, it is often desirable to be able to determine the w/c ratio

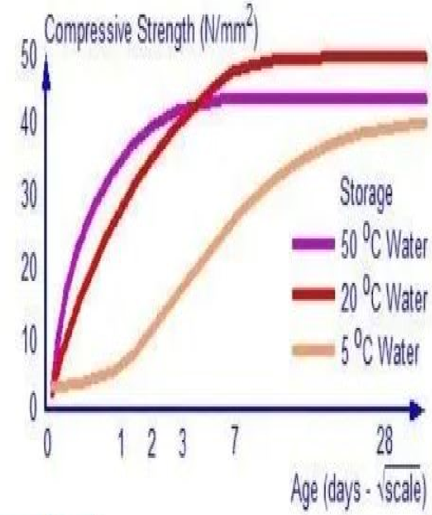
2.3 Factors affecting the strength of concrete.

- Cement
- Aggregates
- Mixing method
- Water Cement ratio
- **Relative humidity**
- Use of Admixture
- Placing And Transportation
- Curing

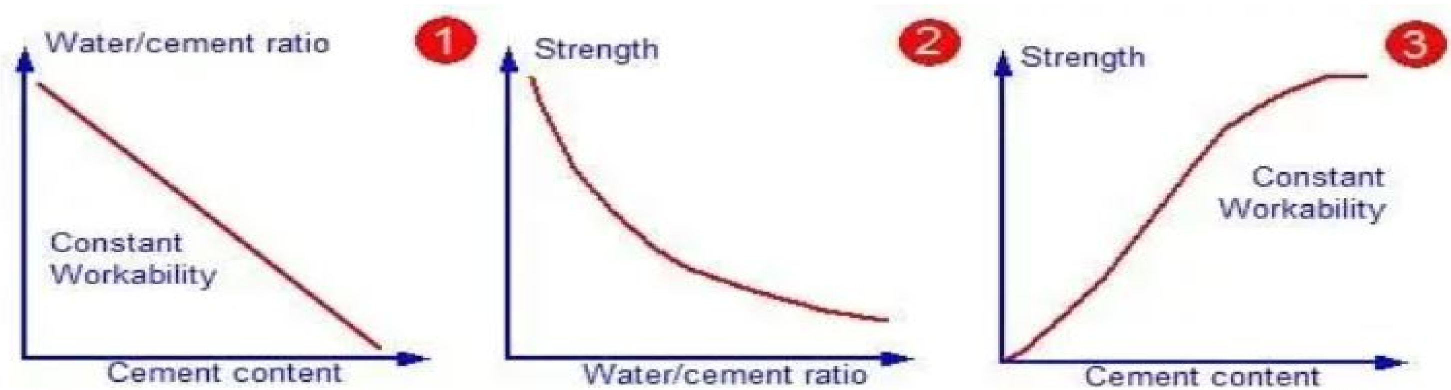
Water / Cement Ratio

The relation between water cement ratio and strength of concrete is shown in the plot as shown below:

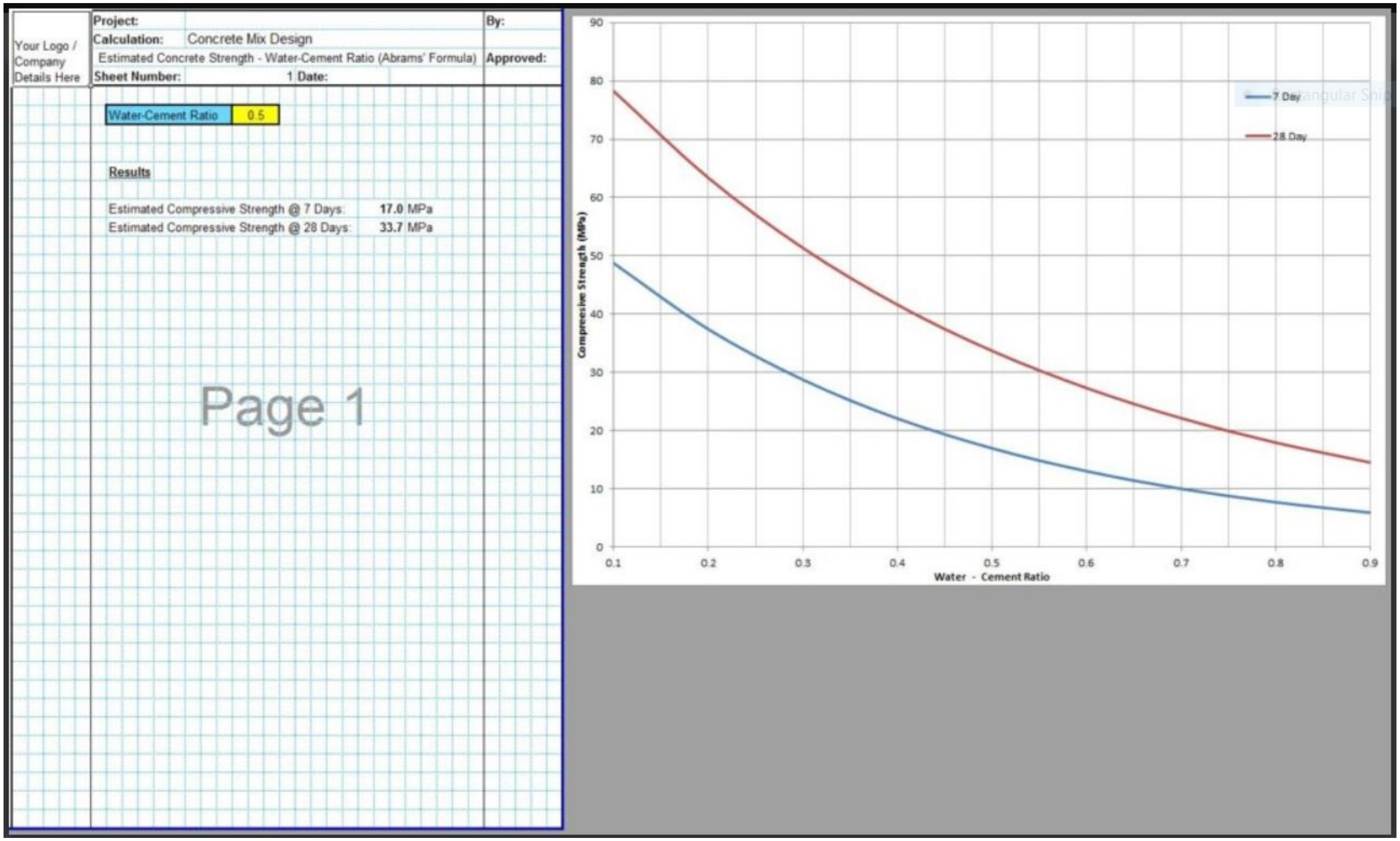




Relative humidity

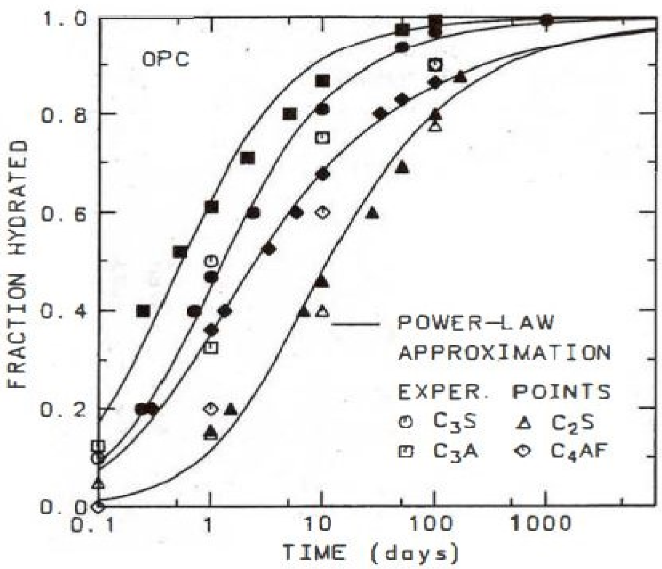


Compressive Strength of Concrete



2.4 Factors affecting the durability of concrete

- Physical and Chemical Characteristics Affecting the Durability of Concrete



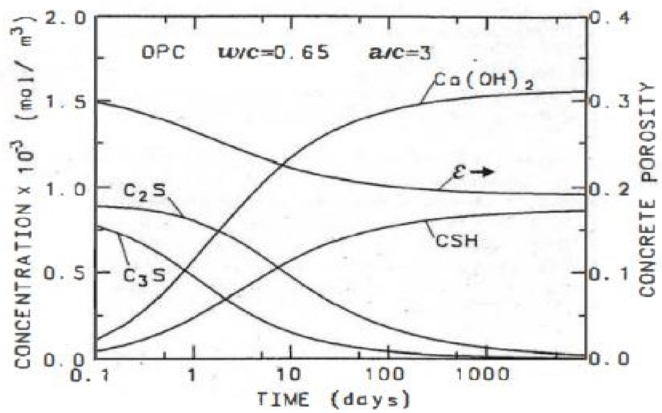


Fig. 2—Evolution with age of the molar concentration of the carbonatable constituents and porosity of OPC

2.5 Factors affecting the workability of concrete.

- Water Content
- Mix Proportions
- Size of Aggregates
- Shape of Aggregates
- Grading of Aggregates
- Surface Texture of Aggregates
- Use of Admixtures
- Use of Supplementary Cementitious Materials
- Time
- Temperature

2.6 Effect of water-cement ratio on the strength of concrete

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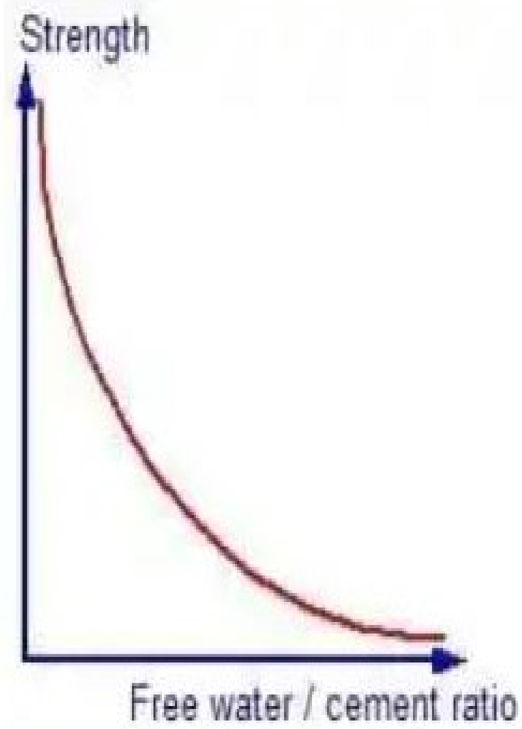
- The higher the water/cement ratio, the greater the initial spacing between the cement grains and the greater the volume of residual voids not filled by hydration products. There is one thing missing on the graph. For a given cement content, the workability of the concrete is reduced if the water/cement ratio is reduced. A lower water cement ratio means less water, or more cement and lower workability. However if the workability becomes too low the concrete becomes difficult to compact and the strength reduces. For a given set of materials and environment conditions, the strength at any age depends only on the water-cement ratio, providing full compaction can be achieved

Effect of Water Cement Ratio

Water / Cement Ratio

The relation between water cement ratio and strength of concrete is shown in the plot as shown below:



Chapter-3

- **Techniques of proportioning, mixing, transporting, placing and compaction of concrete.**

Proportioning

- The proportions in which the cement, fine aggregate, and coarse aggregate are mixed may be either by volume or by weight. In volumetric ratios 1:2:4 means one part by volume of cement, two parts by volume of fine aggregate, and four parts by volume of coarse aggregate.

3.2 Methods of concrete mix design

- Arbitrary Properties Method of Concrete Mix Design.
- Maximum Density Method of Concrete Mix Design.
- Fineness Modulus Method of Concrete Mix Design.
- Surface Area Method of Concrete Mix Design.
- Standard Method of Concrete Mix Design.

- **Batching**
- Batching is the process of measuring concrete mix ingredients either by volume or by mass and introducing them into the mixture. Traditionally batching is done by volume but most specifications require that batching be done by mass rather than volume. Percentage of accuracy for measurement of concrete materials as follows

Mixing

- The mixing operation consists of rotation or stirring, the objective being to coat the surface the all aggregate particles with cement paste, and to blind all the ingredients of the concrete into a uniform mass; this uniformity must not be disturbed by the process of discharging from the mixer.

3.5 Ready mix concrete

- **Ready-mix concrete** (**RMC**) is concrete that is manufactured in a batch plant, according to each specific job requirement, then delivered to the job site

Ready Mix Concrete Plant

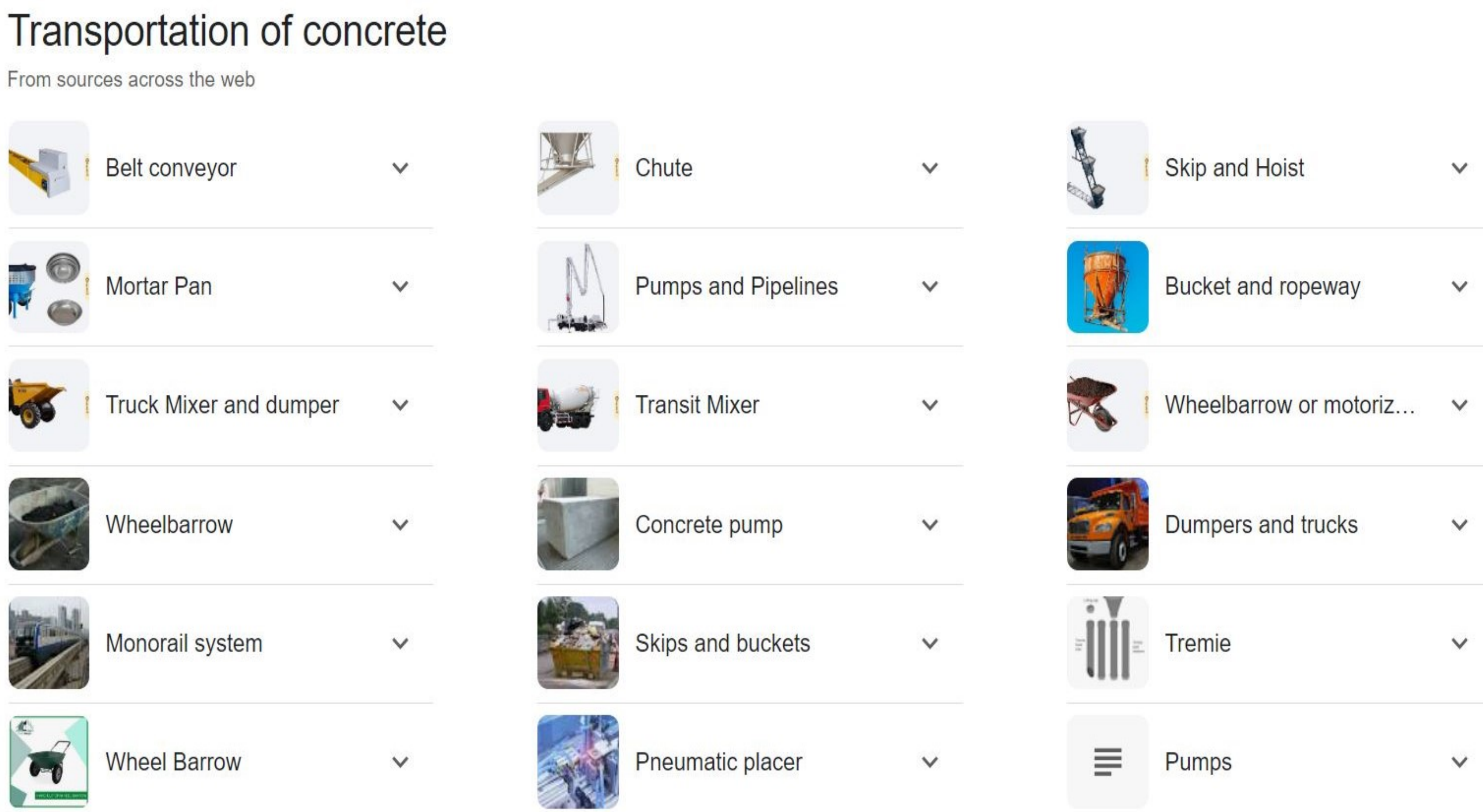
3.6 Advantages and limitations of ready mix concrete.

- **Advantages of ready mix concrete**
- Ready mix concrete is also more environmentally friendly than on-site concrete mixing. On-site concrete mixing often generates a lot of dust, which can harm the environment. Ready mix concrete is delivered in a truck, so there is no on-site mixing or dust generation. Additionally, ready-mix concrete plants are typically located near construction sites, so there is less need for transportation and associated emissions.
- While on-site concrete mixing requires more manual labour, it does have some advantages over ready mix concrete. One advantage is that on-site concrete mixing generally produces a higher quality product. This is because the ingredients can be more carefully monitored and controlled when mixed on-site. Additionally, on-site concrete mixing allows for greater flexibility in terms of timing and location.
- Overall, ready mix concrete has several advantages over on-site concrete mixing, including being less labour-intensive, more time-saving, and more environmentally friendly. However, ready mix concrete can be more expensive to deliver, and the quality of the concrete may not be as high as on-site concrete mixing. When choosing between the two methods, it is important to consider convenience, cost, quality, and labour.

Disadvantages of ready mix concrete

- There are a few disadvantages of using ready mix concrete, such as:
- The cost of ready mix concrete can be higher than traditional site-mixed concrete.
- There can be a lack of control over the quality of the concrete, as it is not made on-site.
- The transit time from the plant to the construction site can delay the concrete’s use, impacting the project’s timeline.
- There is a risk that the concrete can become segregated if not properly mixed, which can impact the quality of the finished product.

3.7 Various methods of transporting concrete.



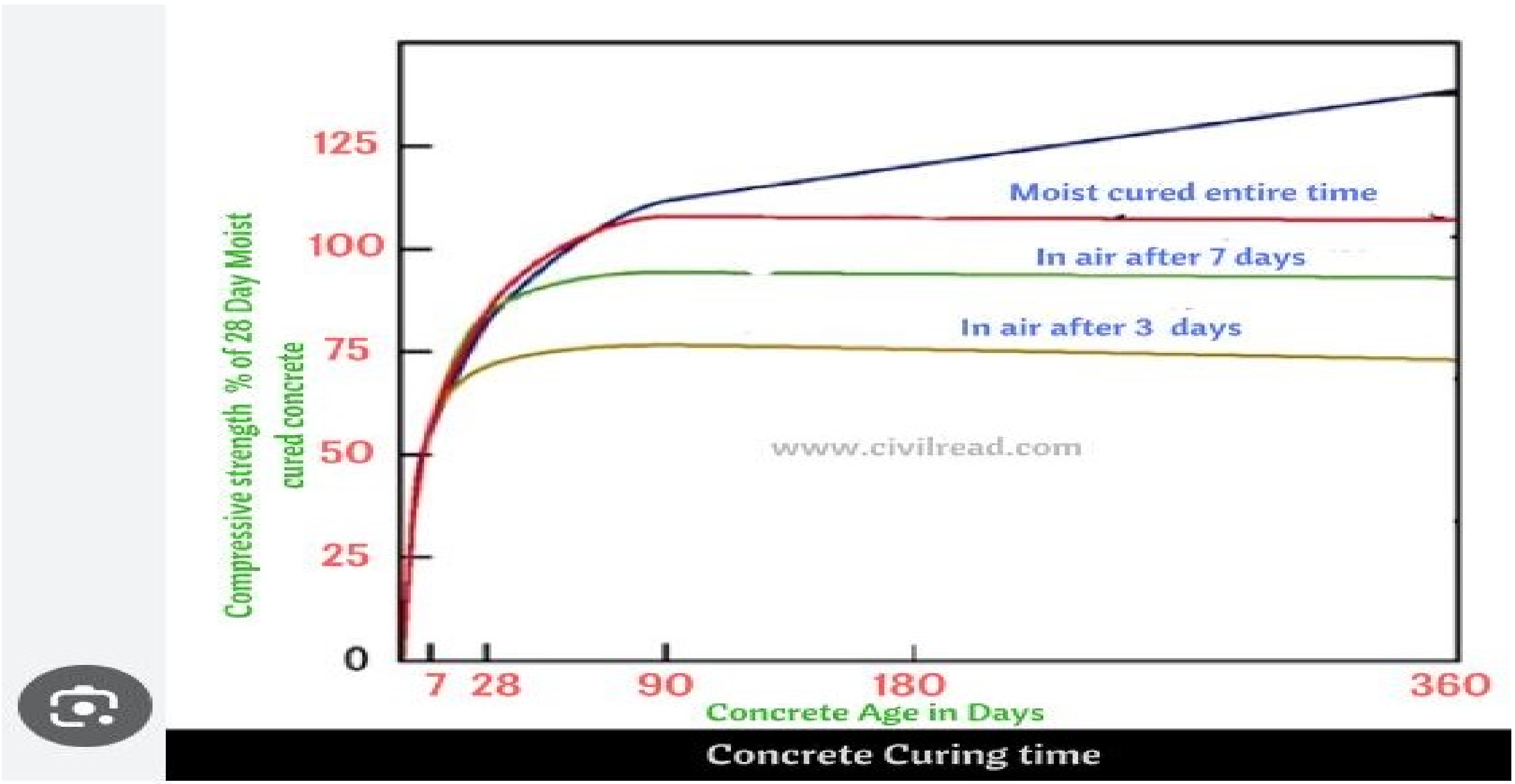
3.9 Processes of compaction of concrete.

- **Following are the different methods of compaction of concrete, which are given below.**
- Manual Compaction(Hand Compaction) ...
- Concrete Compaction by Pressure and Jolting. ...
- Concrete Compaction by Spinning. ...
- Mechanical Compaction by Vibration. ...
- Internal Vibrator for Concrete Compaction.
- (a) Flexible shaft type internal vibrator.

Chapter-4: Concept of curing of concrete.

- Concrete curing is the process of maintaining adequate moisture in concrete within a proper temperature range in order to aid cement hydration at early ages. Hydration is the chemical reaction between cement and water that results in the formation of various chemicals contributing to setting and hardening.

4.3 curing process affects the strength of hardened concrete



Curing of Concrete | Curing time & Duration | Methods of curing | Purpose

4.4 Different methods of curing

Methods of curing

From sources across the web

- Steam curing
- Water curing
- Sprinkling
- Wet covering
- Combination curing
- Covering
- Spraying water
- Membrane curing
- Membrane curing of concrete
- Curing by infrared radiation
- Chemical curing
- Fogging
- Covering the surface
- Ponding
- Electrical curing
- Shading
- Wet hessian or gunny bags curing
- Thermal curing
- Plastic sheets