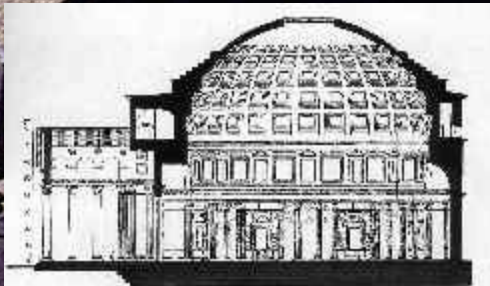


Architectural Technology V

|



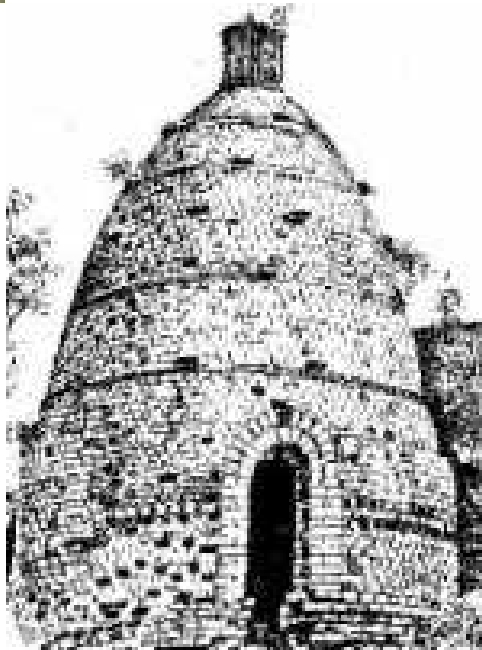
CONCRETE !



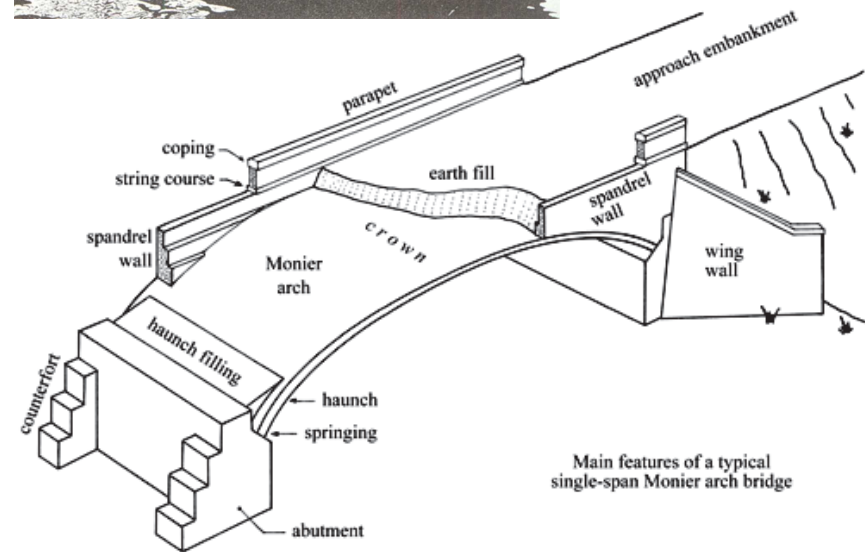
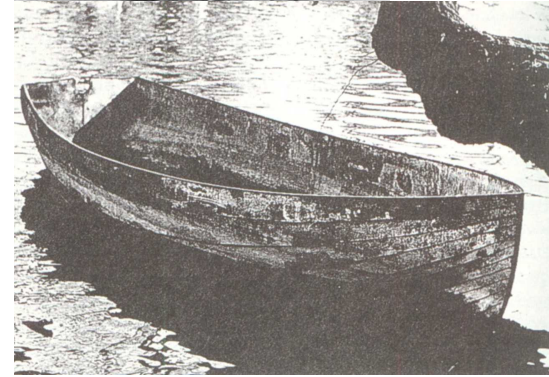
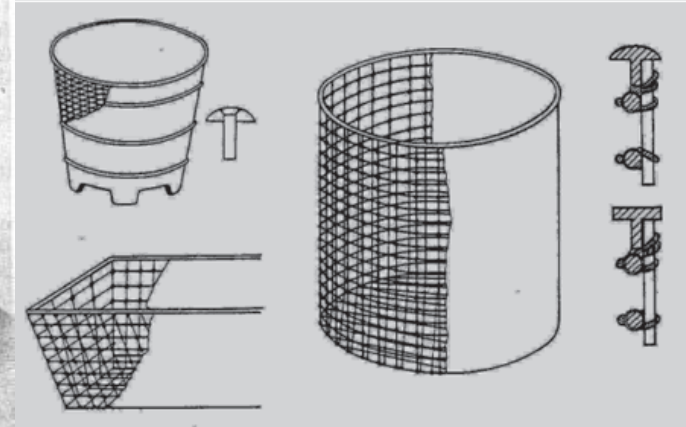
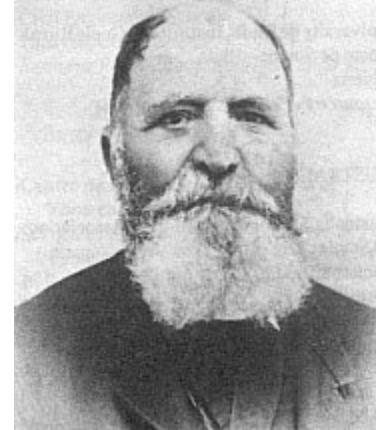


Architectural Technology V

Joseph Aspdin (1778-1855)



Joseph Monier (1823-1906)

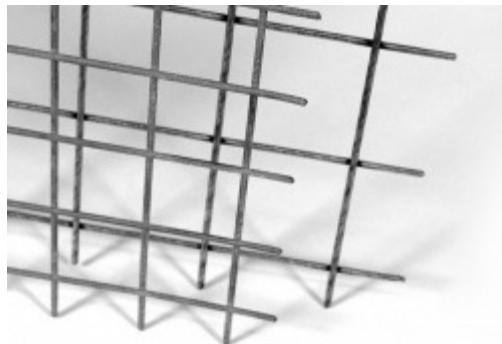
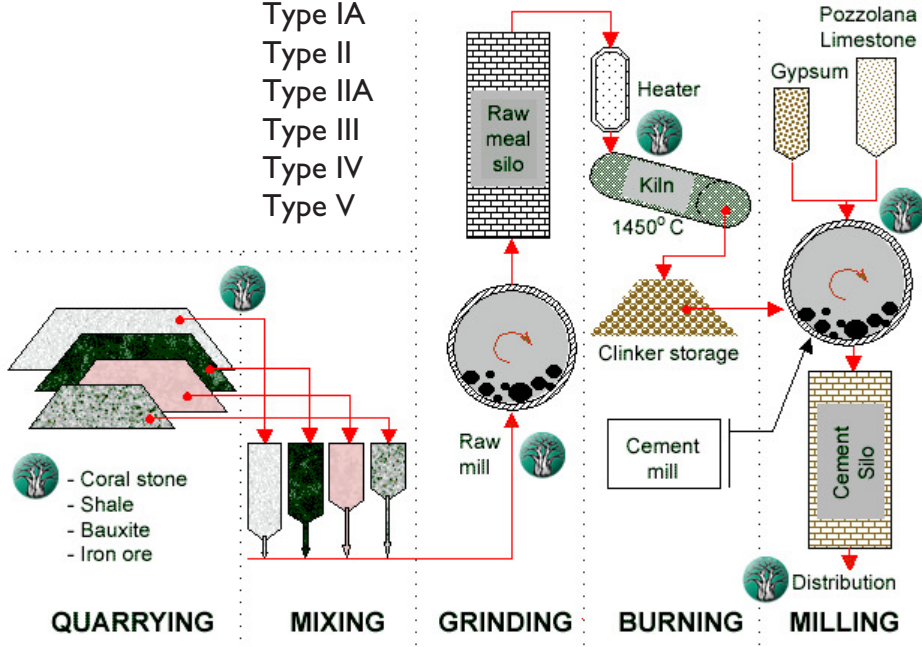




What is Concrete?

Cement

- Type I
- Type IA
- Type II
- Type IIA
- Type III
- Type IV
- Type V



Aggregates and Water

Size Matters!



Admixtures

- Air-entraining;
- Water-reducing;
- Superplasticizers;
- Accelerating;
- Fly Ash;
- Silica fume;
- Slag;
- Pozzolans;
- Workability Agents;
- Corrosion Inhibitors;
- Fibrous Admixtures;
- Freeze Protection;
- Coloring Agents.



... Reinforcing

Sustainability in Concrete Construction

Negative Characteristics:

Largest consumer of natural resources;

Cement manufacture is a significant polluter;

Quarrying for concrete effects large impact on existing landscapes;

Formwork and Reinforcing require additional resources;

Significant on-site waste;

Positive Characteristics:

Useful as a thermal mass;

Reinforcing uses recycled steel;

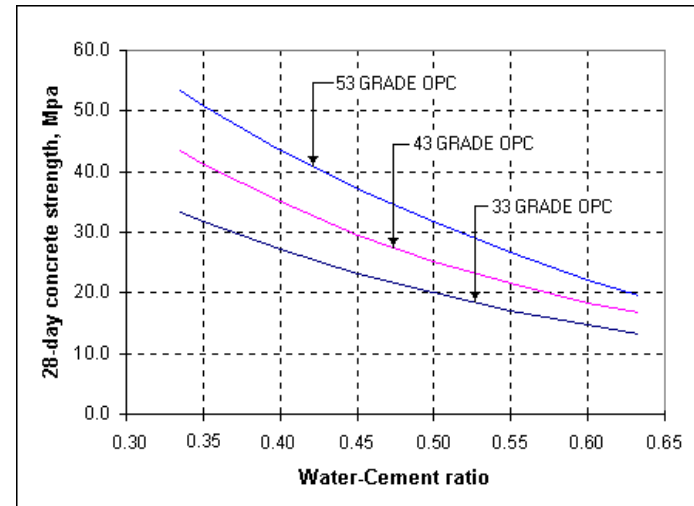
May integrate waste products (fly-ash) in manufacture;

May be recycled for aggregate;

Longer life-span for concrete structures.

Making and Placing Concrete

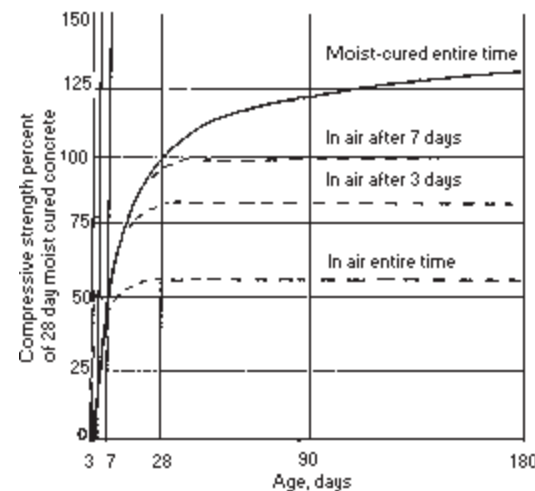
Proportioning Concrete Mixes (Water-Cement Ratio)



Handling and Placing Concrete

Drop Height; Slump; Consolodation; Vibration

Curing





Pouring (Concrete Pump)



Consolidation (Vibration)



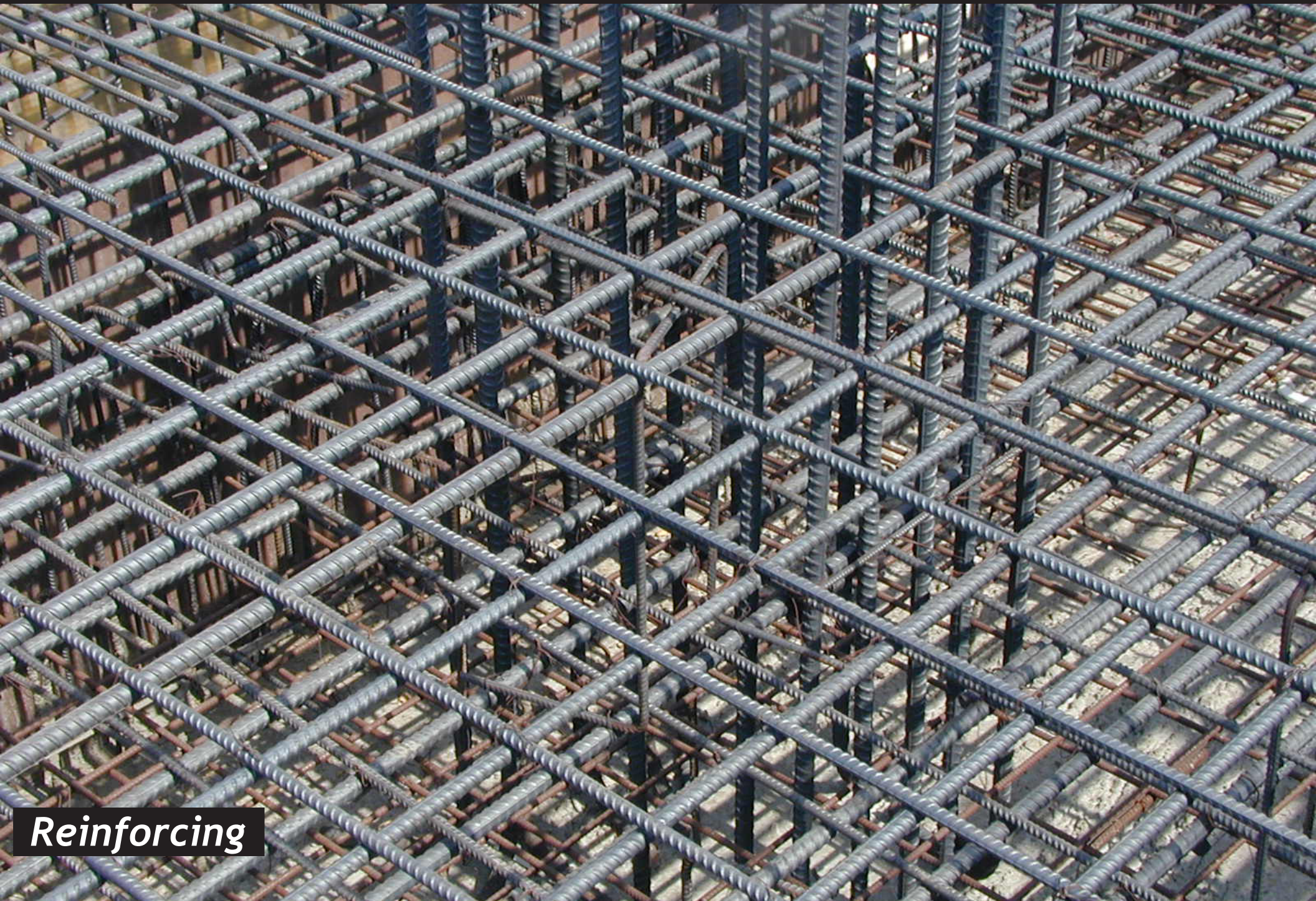
Bracing During Curing



Maintaining Moist Curing

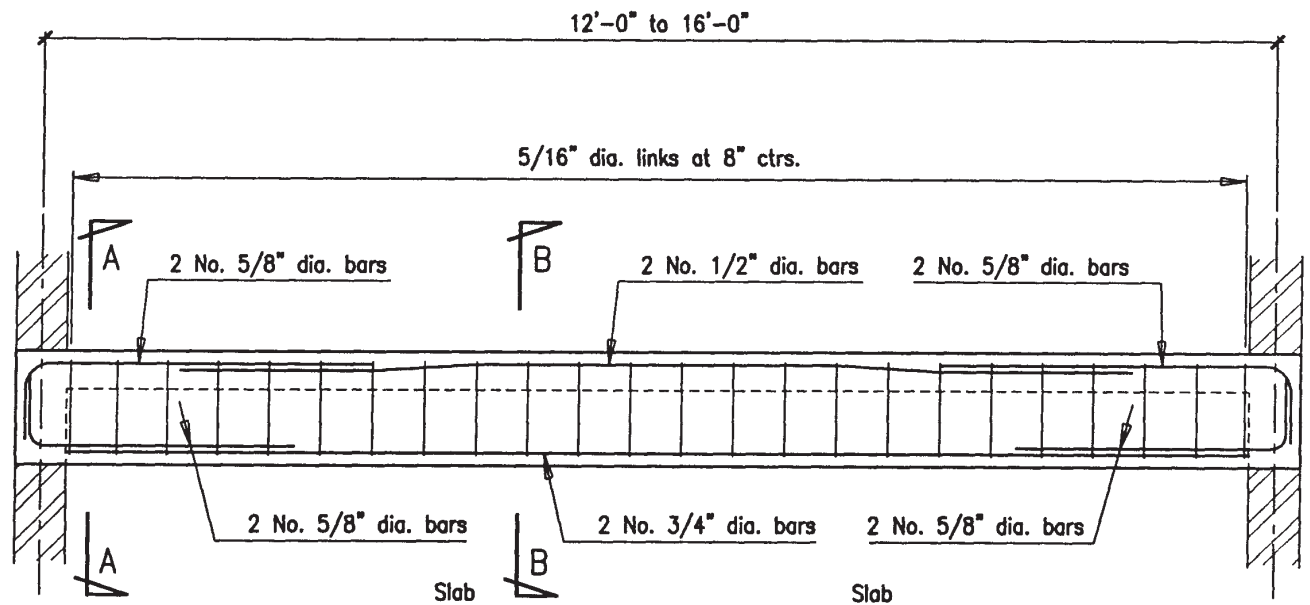
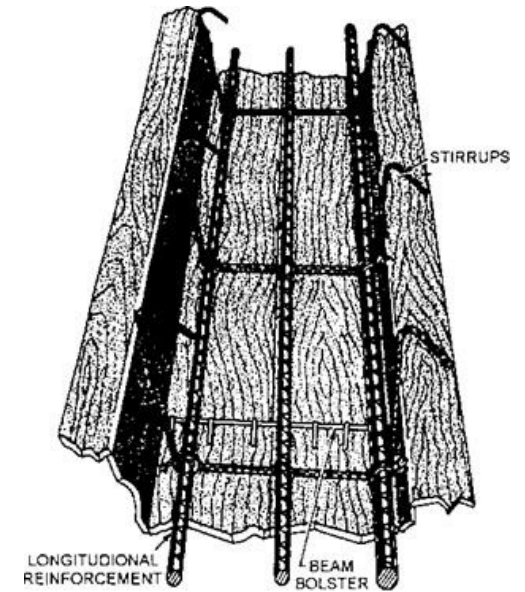
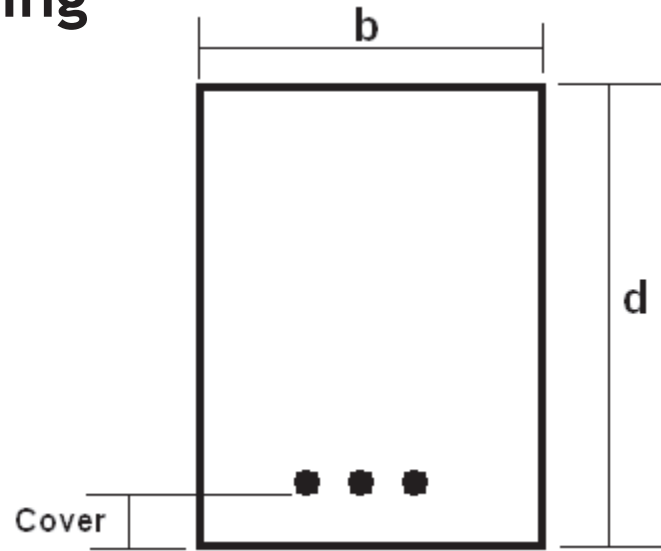
Formwork





Reinforcing

Concrete Beam Reinforcing



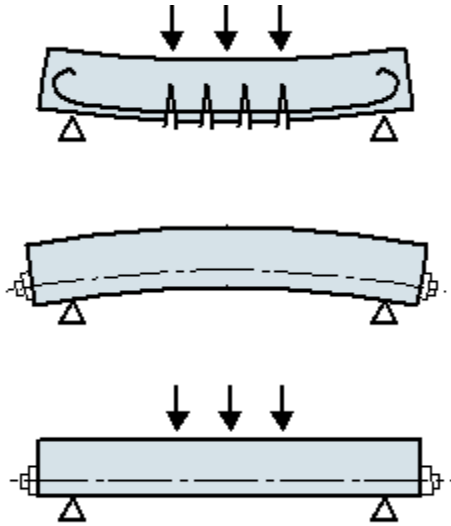
Concrete Slab Reinforcing



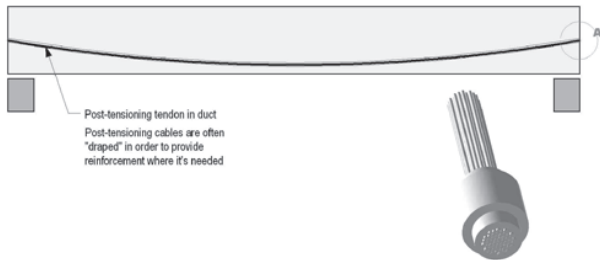


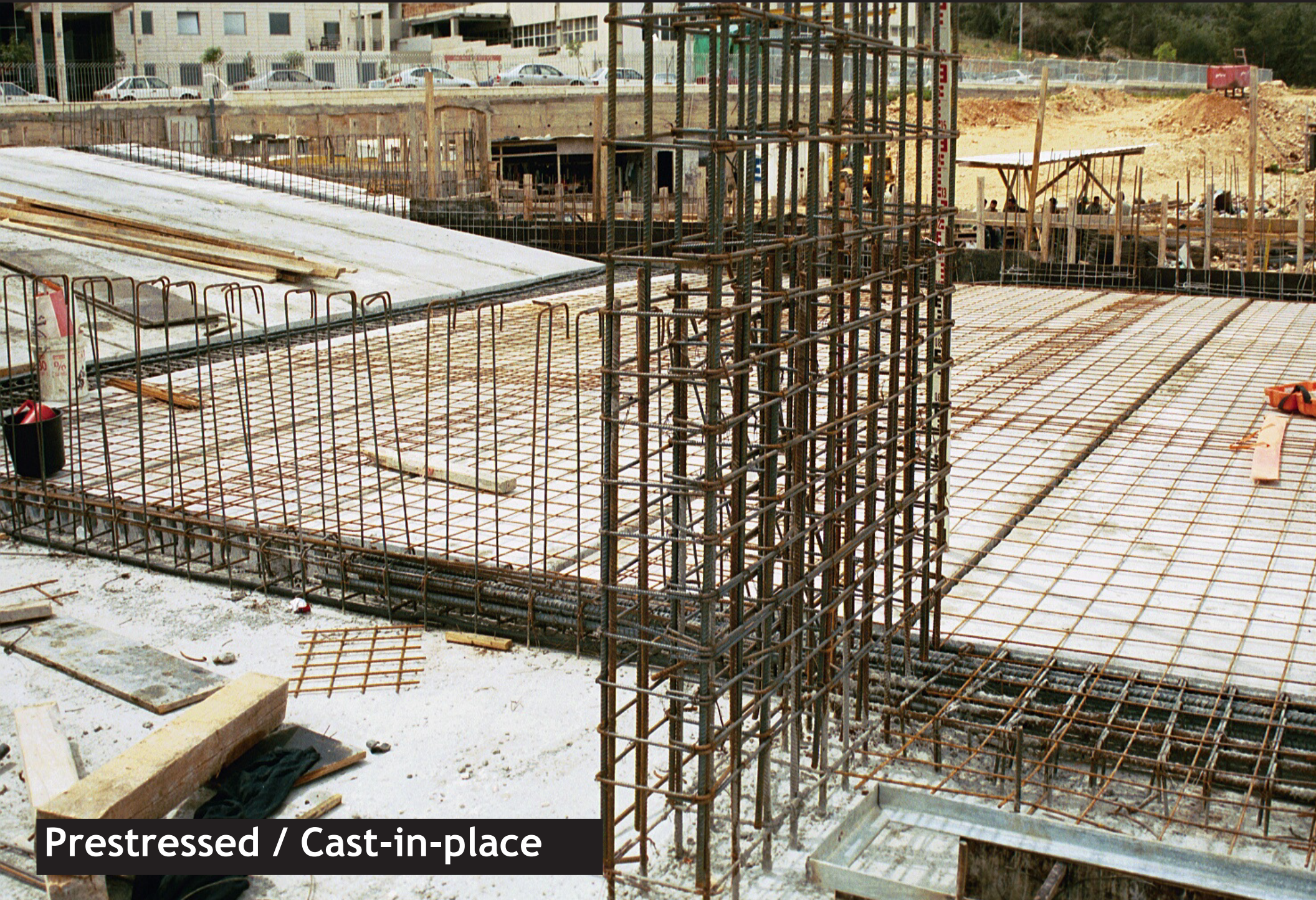
Concrete Column Reinforcing

PreStressing



Posttensioning





Prestressed / Cast-in-place

ACI 301: Specifications for Structural Concrete in Buildings

Formwork; Reinforcement; chairs and bolsters; concrete mixtures, handling and placing of concrete; lightweight concrete; prestressing; the use of concrete in exposed Architectural Surfaces.

CSI Masterformat Section Numbers for Concrete Construction

03100	[03 10 00]	Concrete Formwork
03200	[03 10 00]	Concrete Reinforcement
03210	[03 21 00]	<i>Reinforcing Steel</i>
03220	[03 22 00]	<i>Welded Wire Fabric</i>
03230	[03 23 00]	<i>Stressing Tendons</i>
03300	[03 30 00]	Cast-in-place Concrete
03400	[03 40 00]	Precast Concrete

