

Major of Sust

Portland cement origins from a ladder road
Portland not in USA.
England \rightarrow UK



Fly ash: byproduct toxic

Hydraulic cement: cement does not harden

Curing: liquid to solid

Vibration: water mixture / cure / wet

concrete admixtures:

Slump test: to test the concrete mixture

Cylinder test: to test concrete strength

Ribbed \rightarrow steel reinforcing bars

cover: 3 inches between steel and concrete

(exp: concrete will move over time)

28 days

not strong for concrete/2

Potable water
- can you drink it
filtered water
- Gray water
- sea water

Don't



water to cement ration 45%
 20%

All materials in arch. expand and contract

• Are the bays square? vs two way system

two way flat plate

• How long the span = 25' to 30' two way flat plate
 $> 30'$ - one way twist system

• How heavy the load = Heavy load thicker slab one way slabs,

• Finished ceiling below the slab: NO must consider the aerodynamics of the system.