



***“What Makes Durable  
Concrete?”***

***- Production -***

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# Proportioning Concrete Mixes

- Start at the Quarry:
  - Best aggregate for making quality concrete
    - Hard, durable particles with moderate absorption
    - Well graded
      - Some proportion of all sizes from coarse to fine



# Proportioning Concrete Mixes

- Well graded mixes:
  - Higher percentage of aggregate
  - Less cement paste =  
Less water needed
- High strength concrete with less shrinkage, better workability & higher durability



# Proportioning Concrete Mixes

- Theory:
  - All-portland cement mixes make the best concrete
    - Fly ash – just a filler – makes for a cheaper mix for the producers to produce



# Proportioning Concrete Mixes

- Reality:
  - Pozzolans or Supplementary Cementitious Materials (SCM)
    - Fly ash, slag or silica fume in combination with portland cement
  - are far more superior to what all-portland cement mixes can achieve on their own



# Making Concrete

- Good concrete depends on ...
  - Good equipment
    - Plants in good working condition
    - Mixing equipment's blades or fins not worn out
      - Important for mixing
  - Proper blending of the materials
    - Dispensing the correct amount of each material in the proper sequence



# Making Concrete

- Good concrete depends on ...
  - Good control of water addition
    - Have your loader operator work the stockpiles properly
    - Know the moistures of your materials
    - When truck drivers leave water in drum from their previous wash out, it compromises their next load



# Quality Control

- Every Ready-mix producer should have a quality control program.
  - Hard to produce quality concrete without one
  - If you do not know what is leaving the yard – how can you question the results in the field
    - **Test, test and test some more!**
      - How much testing are too much testing?





# Dihydrogen Oxide

- A finisher's best friend!
  - Helps concrete flow down the chute easier
  - Helps fill the forms faster
  - Can make concrete practically self leveling
  - Slows the setting time when temps are hot
  - Helps with the floating and troweling of concrete in any weather
  - Its known by its nickname . . .

“Water”



- Good concrete is a result of good planning involving everyone in the construction chain.
- Manage the variables in ready-mix concrete, and day to day operations too will be manageable

**Concrete is the second most used material on the planet, next to water – lets not be responsible for jeopardizing it's ranking**