

# Break Test



# Maturity Test

## Destructive Test

- Information is gathered through the casting of cylinders taken from the pour and crushed in a compression machine.
- Testing time could be too early or too late.
- ASTM C39

### Test Procedure

- Results may be affected by improperly prepared, handled, and/or tested cylinders
- Cylinders have small volumes but large surface areas so they retain less heat which results in low breaks.
- Temperature history for cylinders may differ due to curing conditions causing a different rate of strength gain which results in low or high breaks.

### Reliability

- Takes time to send samples to the lab and delay to receive results from the lab.

### Speed

- Technician cost to cast, collect, deliver, test, and repeat the results.
- Additional labour costs due to uncertainty in project scheduling resulted from delays in getting the lab report.
- Extra financing cost due to late completion time in projects.

### Cost

## Non-Destructive Test

- Information is gathered by embedded sensors recording temperature and strength.
- Data is logged and/or retrieved by external device in real-time.
- ASTM C4074, CSA A23.1/A23.2

- The data is logged without interruption, so the results are generally more consistent.
- The maturity method predicts the actual in-place strength of concrete.
- It can show local variation in strength for different structural locations.

- Strength results are collected in real time

- Up to 50% direct test cost saving for determination of in-place strength of concrete done by on-site people.
- Up to \$10,000 labor saving as a result of more accurate job-site planning for each floor of a high-rise building.
- Significant financial saving as a result of early completion of the project. The actual saving varies depending on the size of the project.

