

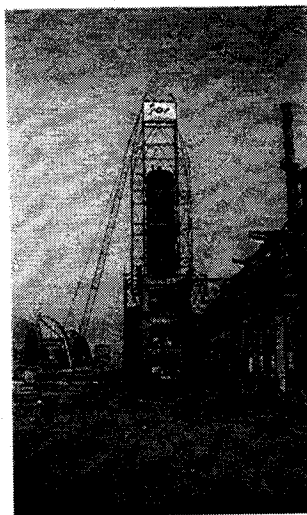
Concrete Repair Strategies for Coker Units



◆ www.structural.net

Structure Elements of Interest within Coking Units

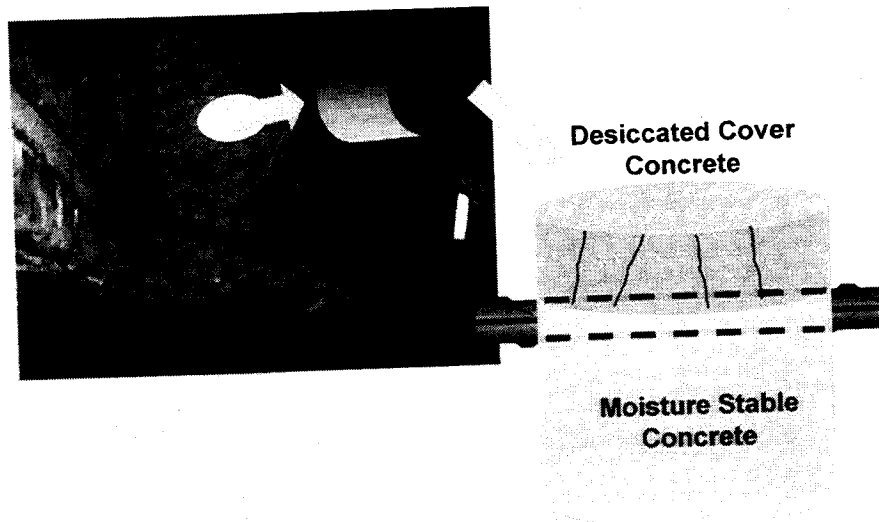
- ◆ Octagonal Penetrations
- ◆ Switch Deck
- ◆ Head Deck
- ◆ Columns
- ◆ Beams
- ◆ Coke Pits
- ◆ Railroad Tracks
- ◆ Anchorages



Deterioration & Damage Mechanisms

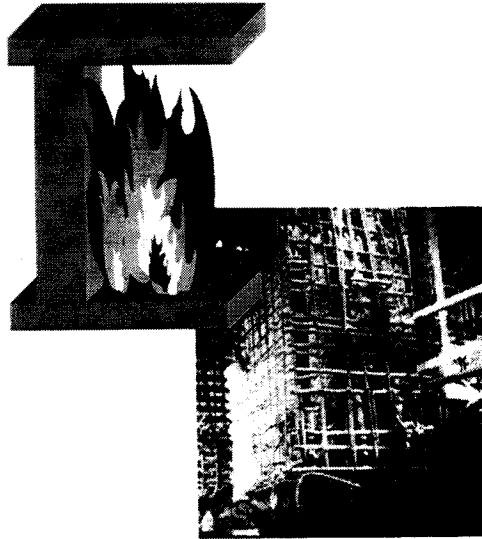
- ◆ Elevated Temperatures
- ◆ Mass Concrete Shrinkage
- ◆ Dynamic Loading
- ◆ Impact Damage
- ◆ Fire Damage
- ◆ Corrosion-Induced Deterioration
- ◆ Failed Patch Repairs

Microcracking of Cover Concrete



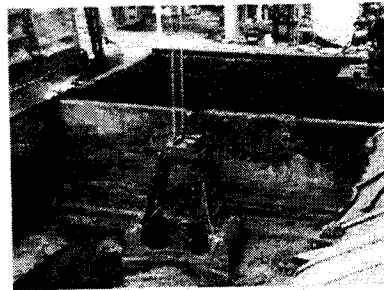
Fire Damage

- ◆ Aggregate swells
- ◆ H₂O to steam
- ◆ Chemical change



Impact Damage

- ◆ Impact of steel bucket edge on coke pit walls and basin



Factors Leading to Corrosion within Coke Support Structures

- ◆ Cast-in-chlorides
- ◆ Air-borne chlorides
- ◆ High temperature
- ◆ Moist/wet conditions inherent to process
- ◆ Shortcut access of elements through cracks
- ◆ High concentration of CO₂

Concrete Repair is a Process!

