SECTION 582 - REMOVAL AND REPLACEMENT OF STRUCTURAL CONCRETE

582-3.02 Removal of Unsound Concrete

Concrete is usually evaluated by “sounding” it with an approximately 1.36 KG (3 lb.) hammer. When struck, sound concrete will produce a “solid” sound, while unsound concrete will produce a “hollow” sound. A rough surface, however, makes this more difficult (the hammer hits and breaks protrusions, instead of hitting a flat surface), and thus more care is needed to detect unsound areas.

In many construction situations, it is too noisy to hear very well. Another technique to detect unsound areas is to place your hand flat on the concrete surface. Then, hit the surface close to your hand with a hammer. Vibrations from unsound areas will be readily felt by your fingers. No vibrations will be felt in sound areas. Move your hand along the surface as you hit the concrete to find the limits of delaminated areas. Closing your eyes forces you to concentrate on the vibrations and where they end. Of course, be careful you don’t accidently hit your fingers.

Unsound concrete is also characterized by the following:

1. After chipping, pieces can be pulled off with a finger or pried off with a knife.
2. After blast cleaning, pieces can still be pulled off with a finger or pried off with a knife.
3. Abrupt (right angle) recessed corners with visible lines at the bottom. These lines indicate fracture planes.
4. Fractured aggregate faces that contain discolorations or rings.
5. Discolored concrete or closely spaced visible cracks.
6. Any “hollow” sounding areas detected on a prepared surface. (Always resound areas ready for repair.)

Also see Exhibit 582-A, B, and C for guidance on concrete scaling, spalling and cracking.