Demolition of De Mineralization Plant: A Case Study

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The De Mineralization (DM) Plant, built in the late1950s, is located in Torrent Power Plant, Sabarmati Ahmedabad, India. The plant provides treated water to the entire power plant. The primary objective of the client was Abcon Tech & Build Aids Pvt Ltd, Bangalore was awarded the contract by Advanced Construction Technologies (ACT) Chennai, who were appointed as main contractors for Demolition of various Dilapated Structures at Torrent power plant premises. ACT off loaded this portion of the contract to Abcon who have been associated with them for 15 years, for safe removal of DM Plant by Diamond cutting Technologies and other Selective Demolition Techniques.

The job was to remove an entire DM plant of 50mtr x 26mtr x 8mt keeping intact the overhead water tank located in the centre of the building and water treatment pressure vessels. The job included removal of RCC Slab, beams, columns and brick wall of approximately 1000 cum.

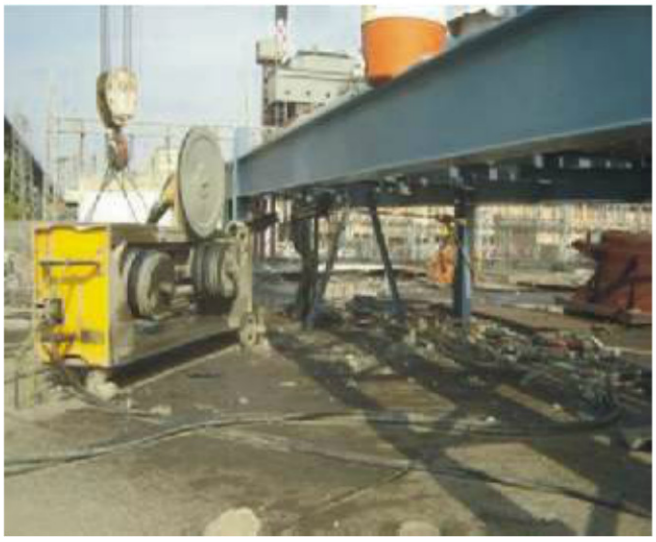
Alternative methods for the cutting of the concrete were reviewed, but ABCON TECH felt in order to maintain the structural integrity, large water treatment vessels below cutting area to be unaffected, and complete the work within the required time frame, Diamond Cutting Technologies would be the preferred process rather than the use of jack/electrical hammers or hydraulic equipment.

Floor sawing in progress showing the View of over head water tank to be retained After demolition of dm plant

Pictures of DE Mineralization Plant before start of the job showing the Pressure Vessels etc.,

Wire Sawing of Beams

Wall Sawing of RCC Slab



Wire Sawing of RCC Slab showing the complexity of cutting due to many pipes running in the cutting area

Lifitng and Lower of cut pieces after cutting

For primary demolition of RCC elements, Diamond cutting by floor/wire/wall saw was opted resulting in least disturbance to the structure and removal of large cut pieces with no harm of flying debris as in other demolition methods. The secondary demolition of cut pieces was done by hydraulic breaker in the dumping yard.

The greatest challenge was the space constraint in the cutting area as the space was very limited with pipe racks running all across the building. The pipes were fully functional. Abcon had planned the placing of each cutting equipment much ahead of the job to ensure continuous progress of the work. In addition to this, there was space constraint all around the building to move the crane. Cranes could be positioned only in three positions, resulting in cutting more segments.

In consideration of the amount of concrete to be removed in shortest duration, Abcon deployed 4 nos of wire saws, 1 wall saw, 4 floor saws apart from other core drilling machines etc.. for the job. Two cranes of 60-ton crane were used to aid the cutting team with their range of maneuvers etc., for holding the piece while cutting and lowering the same to the ground. One hydra was used to remove the large cut pieces after lowering the cut pieces and to shift the same to the dumping yard.

Before starting the job the pressure vessels were completely protected by temporary staging and diamond cutting was commenced later.

Abcon succeeded in diamond sawing around 900 sqm of concrete to create 380 cut sections of different size, maximum size weighing around10 tons. Numerous holes

Two Cranes Working in Tandem

Pic showing part of Veseels and Pipe Line Arrangements below cutting area

Picture of Slabs After Diamond Cutiing

Final Picture of DM Plant After Demolition

were core drilled for slinging and pilot holes to complete the said project within time.

During the course of the works, ABCON maintained a high level of safety ensuring all persons working at height used body harnesses and that everyone on site had the appropriate Personal Protective Equipment (PPE) to carry out their work in a safe manner. Despite the limited time frame allocated to them, ABCON completed the works as scheduled to a high standard in 45 days. However, the project was a new challenge for ABCON and their team worked.

Abcon Tech & Build Aids Pvt ltd, specialize in controlled dismantling of concrete structures. Abcon has pioneered the latest Diamond Cutting Technologies in CONCRETE SURGERY in India.

Dismantling of RCC structures SAFELY, while preserving basic structural integrity is a job requiring in depth site experience and an excellent understanding of basic structural concepts. Quick and safe solutions for modification of RCC structures are demanded by clients today. ABCON executes such jobs in a highly professional manner by using modern machinery and state of the art techniques with minimum downtime. Two decades of dedicated site work has earned us accolades and appreciation for our speed of execution and precise cutting while fulfilling all structural requirements safely.

At Abcon we strive to make a difference. We are a team of experienced, safety conscious skilled professionals who take pride in what we do □

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