



CASE STUDY

Works: Demolition

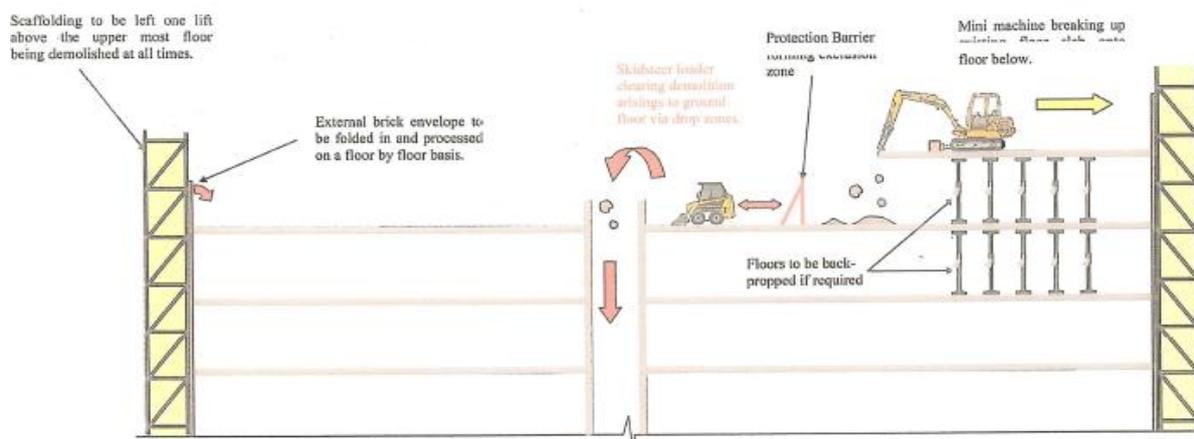
Sector: Regeneration Scheme

17 London Road, Staines

OVERVIEW: Lawson Group were awarded the contract to demolish an office block on London Road, Staines. This was part of a major regeneration scheme in the town.

CHALLENGE: The east wing of the building would have to be demolished using a floor by floor method, the north wing of the building would require the use of high reach machinery. As the site was surrounded by residential areas on all sides, including highways and public footpaths, dust suppression and protection from falling debris would be needed.

SOLUTION: Before any work could start, all plant such as backup generators on the roof were craned down to floor level.



Section showing the use of mini machines for the demolition of the mid level office block progressing on a floor by floor basis with all debris being transported to ground floor level by drop zones within the existing lift shafts.

KEY:-  Encapsulated façade scaffold to exposed elevations.  Existing structure (columns to lower floors omitted for clarity).

The east wing was dismantled using the floor by floor method up to but excluding the central core. A full height access and protection scaffold had been erected to all elevations and incorporated two scaffold fans over London Road.

The scaffolding was encapsulated with 'flame stop' (fire retardant) Monarflex sheeting to prevent the migration of dust arising from the dismantling operations and providing an acoustic screen around the working zones, to protect the general public.

During the on-site establishment phase, trial holes were broken out in the upper floor slabs of the building to investigate floor spans and construction. The existing drawings and any existing trial hole information was used in conjunction with these findings. Load testing was carried out and the permissible floor loadings ascertained. Machine sizes and any necessary back propping requirements could then be determined.



In addition, the condition of the structure and construction techniques were investigated to provide as much information prior to demolition commencing.

The floors were deemed to have sufficient loading capacity, without any additional propping from below, to allow a 13T 360D excavator to be positioned and operate within a structural bay. This was however confirmed again during the on-site establishment phase and the maximum permissible machine size ascertained. However, if it was later found that back propping was required, then it was carried out prior to the machines being lifted to that floor.



This progressive small machine demolition involved the use of up to 13-tonne excavators, equipped with either pneumatic pulverisers or breakers which undertook progressive small machine demolition. Due to weight restrictions, only one machine could be used in any one bay, at any given time (a bay being a floor area usually between four existing columns).

The floors were examined for any inconsistencies before use (openings through the floors, changes in construction, existing cracks/damage or signs of previous repairs). Any such findings were reported to the Temporary Works Engineer prior to using the machines on these floors.

The soffits were also inspected regularly and frequently (at least twice daily) - any signs of distress, sagging or cracking were reported to the Temporary Works Engineer and the machine use was immediately suspended until cleared to carry on.

The existing roof to the east wing was constructed of precast concrete planks supported on Metsec beams. When the scaffold was completed to this level, it was necessary to break open

the roof slab by handheld breakers to allow the demolition plant to be lowered to the 9th floor slab.



Only with the above activities completed or in place could demolition work commence of the existing structure. To facilitate demolition of the structure, up to 13T 360° excavators and 3 tonne bobcats were lifted to roof level and onto the 9th floor slab using a mobile crane.

The immediate area around the demolition zone was cordoned off and warning signs erected. Drop zones within the demolition area were established in lift shafts and further demarcation

established. The staircases directly below the working level were closed off and lower levels were temporarily decked out with timber. Access to the upper levels for operatives and tools etc. were via the tower staircase and scaffold or ladder.

The roof slab was broken through by the 13-tonne excavators onto the 9th floor slab and removed by bobcat to the drop zone. The 13-tonne excavators held the steel trusses whilst the steel columns were sit cut with oxy - propane equipment and the columns were folded onto the floor slab where they were cut up and removed to the drop zone as before.

The floors from 9th floor down were demolished as follows:

It was ensured that only one 360° excavator was in any one bay at any one time, the superstructure was demolished onto the floor level below by using the 360° excavator fitted with a hydraulic pulveriser attachment.

Marks were painted on the floor slab to indicate to each machine operator of the permitted track locations. These were given by the structural engineer as 1.5m from the centre of the columns on the North elevation and 1m from the centre of columns on the south elevation.



Each operator was inducted specifically to his or her tasks and instructed to remove the keys when leaving the machine to prevent unauthorised use. The debris was processed and separated to increase the efficiency of its removal from site and the bobcat then collected and transported the debris to the drop zone. Some of the debris was used to form a ramp to the floor below to allow the plant to transfer between floors. Once on the floor below, the excavator pulverised the slab of the floor above down onto the level on which he was standing, and the process was repeated down through the building

Immediately upon reaching the new level, the demolition arisings were loaded away via the drop zone at the earliest opportunity to reduce the imposed loading on the slab This operation was executed in a controlled manner, ensuring that no single item of demolition was excessive in size or weight. At ground level, the materials were removed by excavator and or loading

shovels and taken to the crusher for processing. The process was repeated on a floor by floor basis until the east wing was cleared to the top of the ground floor slab.



The remainder of ground floor slab was broken onto the basement slab. Walls and columns in the basement were then reduced to 150mm above the existing adjacent ground bearing slabs. Plant working in the basements were provided with a minimum 600mm mat of demolition debris or crushed concrete laid over the slab as protection.

Demolition by High and Medium Reach Machinery

The north section of the tower, the central core, the octagon building, and the ground floor slab were demolished by specialist demolition high and medium reach excavators.

This method enabled plant to work under the control of trained and competent banksmen, remote from the structure to be demolished; in secure well signed demolition zones that were strictly controlled to prevent unauthorised access. The equipment used on the excavators was the latest hydraulic concrete processing equipment in the form of pulverisers, crackers and hammers. Demolition arisings were further processed at ground level before being taken to the onsite crusher.

RESULT: Both the east and north wings of the structure were successfully and safely deconstructed, and the site was handed back to the client ready for the next stage of redevelopment.



To find out more on how Lawson Group can help with your next demolition or asbestos removal project, call 01793 782000, email estimating@lawsongroup.co.uk or visit www.lawsongroup.co.uk