CASE STUDY

Date: 2020

Works: Licensed Asbestos removal

Sector: Redevelopment

Longcross Studios Building #108, Chertsey

OVERVIEW: Lawson Group was awarded the title of principal contractor for this project located near Chertsey, approximately 25 miles west of London. It involved the demolition of specific buildings and a drainage package within the site. Set in over 200 acres, the area first started life as a Ministry of Defence site. In its MoD days, the site was run as the Military Vehicles and Engineering Establishment (MVEE) which was a British defence research unit. During the 1960's the famous ceramic Chobham armour, along with other armoured vehicle designs, was conceived here. In 2006 the site was taken over by Longcross Film Studios.

Over the years, numerous buildings, office blocks and workshops ranging in size from 2,000 sq. ft to 13,000 sq. ft were built on the site, all of which have recently been used by various leading production companies. Many blockbuster films such as Thor 2, Fast and Furious 6 and Skyfall have been made at Longcross Studios.

This first phase of Longcross studios was approx. 50 acres in size and was referred to as C1 and C2.

CHALLENGE: Before any demolition work could be carried out on this building, licensed asbestos would need to be safely removed.

The quantity of asbestos Insulation board that needed removing was:

- Insulating board panel within ceiling voids 20lm
- Insulating board behind wall cladding 280m²
- Insulating board to wall beams 40lm

Lawson Group presumed AIB to be present to most of the steel frame/beams within this building. For these reasons, the building was fully enclosed.

Fixed scaffolding would need to be erected around the perimeter of the building. The scaffolding would need to be outside of the asbestos enclosure and about 1.5 metres away from the building. It would require ranch boards to the building side of the scaffolding to assist with the enclosure construction.

The scaffolding would need to be screened with Monarflex sheeting and required one boarded lift and a loading bay to the back of the building. This would enable the Negative Pressure Units (NPUs) to be positioned on the scaffolding.

The enclosure would be accessed via an airlock fixed to the external side of the enclosure. Negative Pressure Units (NPU's) would need positioning at the opposite end of the enclosure to the Airlock, on the first lift of the scaffolding. Waste would need to be removed via bag lock and a designated waste route to the enclosed skip.

The perimeter of the site would need to be fully enclosed with Heras type fencing. Removal of asbestos would be under fully controlled conditions as per current CAR Regulations 2012. A Decontamination Unit (DCU) would need setting up and to be operational, enclosures would also have to be formed.

Preformed asbestos removal enclosures would require a smoke test prior to becoming operational. Personal air monitoring would have to be carried out during removal works and following removal works with a 4-stage air clearance test.

All staff would have to adhere to government rules on how to deal with preventing COVID-19 infections.

SOLUTION:

Airlocks were constructed using 1,000-gauge polythene, fixed over square sectioned metal tube frames that were approximately 1m^2 erected to 2m high. All joints and seams were sealed with 75mm tape.

Where there were issues with adhering, a spray glue was used to assist with the adhesion process. A specialist vacuum cleaner was located within the enclosure in close proximity to the air lock. The middle and third compartments of the airlock included washing facilities for personal decontamination, prior to entering the DCU, and were directly connected to the enclosure.

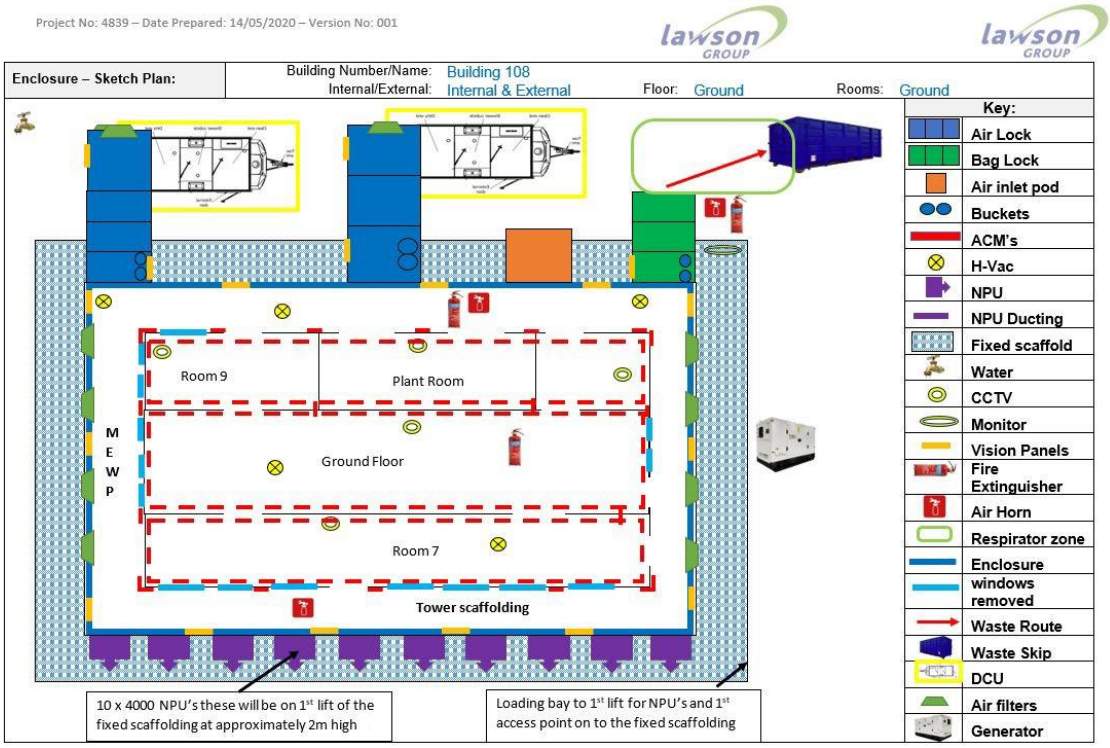
A baglock, for bag transfer, was incorporated onto the enclosure for the safe transfer of waste. This baglock was incorporated on the

external part of the enclosure. The third compartment of the bag lock included cleaning facilities for decontamination and cleaning waste bags before double-bagging.

CCTV and vision panels were installed in the enclosure, as well as the dirty end of the airlock and baglock. No removal works were carried out unless it could be observed from the CCTV and vision panels.

Negative pressure units (NPUs), giving a minimum effect of ten changes per hour, were attached to the opposite end of the enclosures from the entry and exit point. These were located on the first lift of the fixed scaffolding. The size of the NPUs depended on various inputs and this was noted in volume of enclosures where applicable. The NPUs were designed to vent to an external atmosphere.

Two air inlet pods were installed on to the enclosure to help with the air management. The size of each air inlet pod was set at 2m x 2m x 2m ($8m^3$), each allowing approximately 20,000 cubic metres of air per hr into the enclosure. On completion of the enclosure construction, a smoke test was carried out to the enclosure area.



Removal of the AIB from within the building:

Some of the AIB had been screwed on and all screws were visible, these were removed using hand tools and cordless drills. Other sections of the AIB had been nailed on and were also visible. These were also removed using hand tools. All these fixings were removed in conjunction with using shadow vacuum procedures (LEV). Access to the AIB panels was made by tower scaffolding with a max working platform of 6 metres.

Within rooms that had a metal strip cladding clipped together and attached to the wall, a hand removal process was adopted. The cladding was placed onto prepared polythene sheets, these polythene sheets were used to wrap the panels. The wraps were then cleaned and left within the enclosure to be removed after the air test.

Once the first AIB panels had been released, one operative lowered one side in order to make the back of the panel accessible for decontamination. The back of the panel was then carefully

vacuumed prior to carefully applying an application of fibre suppression. All the panels were lowered into the tower scaffolding by a team of two, whilst paying attention to not overload the tower. The panels were lowered to the ground and passed to the ground team; they were then placed onto a prepared polythene sheet. This polythene sheet was used to wrap the panels.

Smaller panels were placed into red bags and sealed and put neatly to one side until they were ready to be removed from the enclosure. Larger panels were left within the enclosure and removed after the air test.

After the first panel had been removed, the void was accessed, and the back of the panels were vacuumed as far as could be reached. Then a water and surfactant mixture was applied by a handheld manual pump spray to the rear face of the remaining panels, and left to penetrate. All the voids were then inspected for any apertures to adjoining areas and were sealed as necessary. Once this had been done, the remaining panels were also removed in a sequential manner.

Any MMMF insulation products located within the voids were sprayed with surfactant and double-bagged for disposal as contaminated waste. The panels that were screwed or nailed into timber joists and batons, were drilled using a cordless drill or removed where possible. These were then also disposed of as contaminated waste. The drilling of holes was done in conjunction with using shadow vacuum procedures (LEV).

Removal of the AIB from outside of the building:

Enclosure - ACM photos:

									
Photo 1	Description: Airlock & baglock fixed to scaffolding	**Photo 2**	Description: 10 x 4000 NPU on 1st lift of scaffolding at the rear of the building.	**Photo 3**	Description: Access side of the building with scaffolding over the wall to the wall.	**Photo 4**	Description: Rear of building NPU location scaffolding and loading bay	**Photo 5**	Description: AIB to beam within building
									
Photo 6	Description: AIB behind metal wall cladding within the building	**Photo 7**	Description: AIB panel to beam	**Photo 8**	Description: AIB to beam behind tin cladding	**Photo 9**	Description: AIB to beam behind tin cladding	**Photo 10**	Description: AIB to beam behind tin cladding

The external AIB to the beams were located behind tin cladding, this was removed only where needed to provide access to the AIB panels. The cladding was removed using hand tools to split the cladding along the seam. If this was not possible, then a reciprocating saw was used.

The AIB here had also been screwed or nailed on. These were removed using hand tools and cordless drills after the cladding had been removed. The fixings were removed in conjunction

with using shadow vacuum procedures (LEV). Access to the cladding and AIB panels was via a combination of MEWP and tower scaffolding with a maximum working platform of 6 metres.

Once the tin cladding had been released, a Lawson Environmental operative applied an application of fibre suppression to the back of the tin columns and AIB. The cladding was carefully lowered to the ground and placed on a prepared polythene sheet. This polythene sheet was used to wrap the panels. As before, these wraps were cleaned and left within the enclosure and removed after the air test.

Once the first AIB panels had been released, an operative lowered one side to make the back of the panel accessible for decontamination. The back of the panel was then carefully vacuumed prior to carefully applying an application of fibre suppression. The panel was lowered into the MEWP or tower scaffolding by a team of two, paying attention to not overloading anything. The panel was lowered to the ground and the panels were passed to the ground team who then placed them onto a prepared polythene sheet. The panels were then wrapped in this polythene sheet. Smaller panels were placed into red bags, sealed, and placed neatly to one side until ready to be removed from the enclosure. Larger panels were left within the enclosure and removed after the air test like the others.

Following the removal of the first panel, the void was accessed, and the back of the panels were vacuumed as far as could be reached. A water and surfactant mix was applied by a handheld manual pump spray to the rear face of the remaining panels and left to penetrate. All voids were inspected for any apertures to adjoining areas and were sealed, as necessary. Once this had been done, the remaining panels were also removed in a sequential manner.

Any MMMF insulation in the voids was sprayed with surfactant and double-bagged for disposal as contaminated waste. The drilling of holes was again done in conjunction with using shadow vacuum procedures (LEV).

Waste Removal

All waste such as asbestos insulating board, dirty Tak-rags, coveralls etc were bagged immediately. If the tin cladding or AIB were too big to be bagged, then they were double-wrapped in 1,000g polythene and a red bag – displaying an “a” for identification purposes. All waste materials were removed from the enclosure via a bag lock, double-bagged/wrapped or were left within the enclosure and removed after the air test.

RESULT: All licensed asbestos was removed from the all areas of the building. This meant that the structure could now be safely demolished in the next phase of these works.

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