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Project: Change of use from offices to form 11 x residential dwellings in existing building & new build section/mansard roof. Guidance notes for existing building only.

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The development is currently an existing commercial building split over 2 floors. It is proposed that 11 residential dwellings - flats are formed by a material change of use over 3 floors, thus creating the need to upgrade the existing separating floor element between ground, 1st & 2nd floors and install acoustic separating floors & walls between the dwellings. These guidance notes relate only to the conversion section of the development as the drawings for the new build are subject to change. A brief statement will be included for the new build at the end of this document.

Separating Floors:

The current floor details comprise of:

- Timber floorboards/T&G Flooring
- Timber Joists
- Plasterboard/Lathe & Plaster Ceiling
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The following treatments are to be installed throughout the development:

- Overboard or replace the flooring (try to bond the floor rather than screw fix)
- Leave the remaining Floor/ceiling system in situ
- Install an MF suspended ceiling on acoustic hangers
- Install 45-60Kg/m3 mineral wool slab insulation on top of ceiling (maintaining air gap)
- 2 x 15mm acoustic/fireline plasterboards to underside of MF ceiling

This ceiling is comprehensive and should offer high levels of sound attenuation, there are standard installation guides to follow to ensure the best possible installation can be achieved. These include:

- Ensure staggered joints between plasterboard layers
- Use acoustic mastic on all holes/gaps on each layer of plasterboard
- Ensure the insulation covers the entire area above the ceiling
- Ensure an air gap is maintained from the top of the insulation to the underside of the ceiling above
- Avoid spotlights if possible (if not use acoustic spotlights)

It is understood that the above ceiling details is to be used throughout the development in all areas, this system allows the services to be run through the void between the ceilings. It is recommended that there are no penetrations through the separating ceiling, but if there are then these need to be independently isolated using the correct materials.

Separating Walls:

It is evident that there are various systems of separating walls to be implemented.

1- Twin Frame Party walls:

- 2 x 15mm acoustic/fireline plasterboard
- 12mm Ply
- Metal/Timber studs
- Cavity
- Metal/Timber Studs
- 12mm Ply
- 2 x 15mm acoustic/fireline plasterboard

It is recommended that if the above system is used then this wall is insulated with acoustic mineral wool (60Kg/m^3), in between each stud (both sides). No sockets etc should be placed on this wall but if they are then they need to be isolated using 'acoustic putty pads' or similar to reduce the noise break through.

Standard installation details apply.

- Insulation to cover entire area (slab insulation better as it is rigid) no gaps.
- Maintain the cavity throughout
- Ensure the two leaves do not come into contact with one another.
- Stagger and seal all joints
- Cavity stop to be used at perimeter junction
- Acoustic sealants etc to be used on all joints and gaps
- Boxing in to be done behind all sockets (using plasterboard box or putty pads) or sockets avoided completely on separating walls.

It is necessary to continue the separating walls below the floor level and in between the timber joists, also this should be performed above the ceiling as well. This should ensure that the separating detail covers the entire area (both above the ceiling and below the floor).

2- Existing masonry and wall lining:

- Existing masonry wall – plaster finish
- Cavity
- Metal/timber stud
- 60Kg/m^3 mineral wool slab insulation between studs
- 2 x 15mm acoustic/fireline plasterboards
- Plaster Finish

3- Existing Timber Walls & Wall Lining:

- Existing timber wall with plasterboard removed
- Insulation placed within existing studs
- 12mm Ply
- 2 x 15mm acoustic/fireline plasterboard
- cavity
- Metal/timber studs
- Mineral wool slab in between studs
- 2 x 15mm acoustic/fireline plasterboards

It is essential that if there are any steels apparent then the steels are independently boxed in, ensuring that none of the encasement is in contact with the steel, using the same insulation and plasterboard (2 layers) ideas listed above.

There are some general installation policies to follow and things to avoid:

- Avoid dot and dab completely on the build
- Ensure each and every hole is filled in each layer of the specification
- Completely isolate all steels
- Complete and maintain the integrity of the separating floors & walls
- When using resilient bars, use the correct length screws so you don't fix into the studs
- Avoid standard wall board
- Stagger all plasterboard joints
- Tape or seal all plasterboard joints
- Avoid spotlights if possible
- Avoid any sockets on timber party walls (if they are installed you can get either 'putty pads' or build a box behind the sockets)
- Stagger these sockets so they are not directly back to back
- Ensure all service voids are filled and isolated
- Ensure all mortar joints are completely filled
- Ensure there are no dry joints on separating elements
- Ensure all joints in every aspect of the build are sealed
- Ensure the correct diameter holes are drilled for service pipes
- Ensure these holes are then filled.

Products to use:

The following list is guidance on the products to use to try and improve the sound attenuation at the site.

- Insulation - Rockwool RW3 mineral wool slab insulation is 60kg/m^3 and is 1200x600mm slabs with varying thickness, ensure the insulation doesn't come into contact with the original ceiling.
- Fireline plasterboard (15mm fireline plasterboard) - British Gypsum
- British Gypsum resilient bars
- Acoustic and fire sealant, this should be used on all holes and gaps
- Ensure all trades understand the importance of correct workmanship and they take care when laying each and every layer
- Ensure the correct length screws are used when fixing plasterboard to resilient bars, it is essential that they only fix into the bars and not through the bars into the joists or studs.
- Ensure the insulation is covering every inch of the ceiling or wall void assuring complete separation
- Ensure the leaves of the party walls do not touch one another
- Ensure flexible closers are fixed into cavities with perimeter walls.

It is essential that the separating elements are installed in the correct manner and at the correct time.

The following should apply:

1. Install new twin frame separating walls completely, the underside of existing ceiling and to structural floor, also the treatment should be applied underneath the floorboards, between the floor joists
2. Install separating ceilings through out all areas, these are fixed to perimeter walls and party walls
3. Install any wall linings to perimeter of building once the separating ceilings have been installed so complete separation can be achieved. The wall linings for the party walls can also be installed afterwards if required as the junction between the ceiling and lining should be adequate.

Conclusion:

Please note - The guidance notes listed within this report are for guidance only, and the systems listed have already been decided upon. They are all very good systems and providing they are installed correctly and effectively then they should meet the requirements of ADE, 2003. Sound insulation testing procedures will be required once the development is completed to ensure compliance to Approved Document E - The resistance to the passage of sound' 2003 edition. Airtight & Noisecheck Ltd take no responsibility if the site fails to meet the necessary standards.

The separating walls get built completely first, from underside of existing ceiling to top side of existing floor, then the suspended ceiling and floors can be installed leaving a 5mm gap to be filled with acoustic sealant or edging isolation strip. Once the ceiling & floors have been installed then the independent wall lining system can be installed around the perimeter.

The level and standard of workmanship when installing these elements is essential to achieving the highest possible level of sound attenuation and great care and attention should be made when installing these systems.

New build Section & mansard roof:

It is undserstood that there is to only be one flat per floor in the new build section (with a further 2 x flats in the mansard roof area) so the party wall details won't apply to the new build section. However an important aspect to think about is flanking transmission whereby the sound can flank up the perimeter walls. It is essential that dense concrete blocks are used on ALL perimeter walls. Thermalite blocks MUST NOT be used as they are very poor acoustically, if they are to be used for a weight/thermal issue then an independent wall lining system must be installed (after the party walls and ceiling have been installed). This wall liner should comprise of:

Cavity
Metal Studs with 60kg/m3 insulation placed between studs
2 x 12.5mm acoustic plasterboards

If there is not enough space then an alternative system can be installed, comprising of:

All walls rendered/pargecoat applied
Resilient bars fixed to walls
2 x 15mm acoustic plasterboards

Thermalite blocks and dot & dabbed plasterboards must not be used on this development.

The separating floor details are unknown at this time but these can be discussed and reviewed at a later date.

Mansard Roof:

The exact details of the perimeter section of the mansard roof is unknown at present but the separating floors below must be completed to ensure the sound cant flank up behind this area, then mass and isolation must be applied to the perimeter walls to minimise the sound transmission path in this location. It may be necessary to use acoustic plasterboard to all perimeter walls to ensure density in this location and if required a resilient bar system also implemented.

If there are any steels installed then they need to be completely isolated, ensuring that none of the isolating boards contact them as this will reduce the possibility of resonance through the steels and into the structure of the building.

Further specification and guidance can be discussed once the new drawings have been implemented and this section of the build is being constructed.

Please note that this document is for guidance only and the final level of sound attenuation will be determined by the workmanship used when installing and ensuring each element is installed correctly and efficiently.

Below is a brief sketch to show the guidance details, these have already been shown on the plans but they have been added to show the make up of the recommended details. They have not been annotated as these details are on the drawings, but some possible upgrades to the party floor could be to install some insulation between the joists also when the floor is removed and reinstated.