Cedar Chase Weatherboards Replacement Specification

This document should be read alongside the Roof Replacement Specification. It is necessary to change the size of the roof slightly to make the weatherboard insulation possible.

Specification

Replace the black weatherboards at first-floor level on the back of the house, providing 50mm of new solid insulation in a structure that is air-tight, water-tight, and resistant to wasps and rodents. The insulation must be a branded product with lambda value 0.023 W/mK or less and having foil facings both sides. The finished appearance must be as close as possible to the original (but thicker) and must use a compatible paint system. Building-Control approval is required as this is renovation of a thermal element. It will be necessary to co-ordinate with a simultaneous roof replacement.

Important Points

1. Cedar Chase is in a Conservation Area, it is of architectural importance and is also protected by strong covenants. We *must* preserve the existing appearance of the buildings. Small changes may be acceptable where they cannot be avoided, but details *must* be agreed by the Residents' Society in advance.
2. This is a once-in-a-generation opportunity to make improvements. We want to do it to the highest possible specification. Do not substitute lower-spec, no-name or unknown-performance materials.
3. The bitumen layer behind the existing boards contains asbestos. It is a low-risk material very similar to roofing felt but it must be handled and disposed of correctly. Contractors must provide appropriate method statements.

Existing Weatherboards

Wherever you see black weatherboards in Cedar Chase you will find a solid (no cavity) aircrete-block wall behind them. In some areas (particularly above the main living-room windows) there is a void and a steel beam.

The structure, from outside to inside, has these elements:

1. Wide vertical boards (specified 1” by 7” but actually varying in size). Nailed to:
2. Narrow vertical boards (same thickness but about 70mm wide). These are nailed through to the aerated-concrete blocks.
3. Bitumen paper / roofing felt

4. 6” aircrete blocks. Specification not known. They are holding existing nails strongly but they crumble if you try to put in wall-plugs or conventional expanding bolts.
5. Plaster skim.

Design

See detailed plans on the Cedar Chase website:

https://www.cedar-chase.org.uk/cc/?page_id=1672

This design uses the rainscreen-cladding principle, so there is a gap behind the fascia and the insulation is sealed so that any water getting into the gap will run down and out at the bottom. Ventilation is provided top and bottom so that any water that does get in will eventually dry out.

The gap would make a wonderful chimney, so to achieve fire safety we do two things:

1. The insulation boards are phenolic resin (Kingspan K15) *not* PIR or PS.
2. The actual weatherboards are mounted on 12mm cement board so that there is very little combustible material in the vertical air-gap.

Resistance to wasps and rodents is achieved by screening all ventilation openings with stainless-steel mesh.

Air-tightness is achieved by careful attention to edges, corners, and vapour barriers. The insulation boards provide a second barrier, but they are permeable so will only stop major draughts.

Water-tightness is achieved by careful attention to drainage routes, by taping all joints in the insulation, and by keeping the majority of the water away from the inner layers with the outer cladding.

Cement board is heavy and the aircrete blocks are weak, so the fixing system is critical. This is based on Rawlplug’s R-KEM-II polyester resin anchor system with 8mm stainless-steel threaded rods, installed by drilling through the insulation after tacking the battens in place.

To minimise visible screw-heads, units of two boards are constructed with the screws on the inside. These units are screwed to battens keeping the fixing screws in the gaps between boards where they will be less visible. This is perhaps the weakest part of the design, as the mounting holes are very close to the edge of the cement boards.

The void above the living-room window goes right through to the pelmet board, so it needs extra insulation. The space is irregular and quite large. The easiest approach is to fill it with layers of rock wool cavity-wall batts after installing a thick polythene vapour-barrier.

Paint

Most of the components should be painted before construction starts. It is important to use the right materials because Cedar Chase external painting is handled by the Residents’ Society and all houses are expected to use the same system.

Weatherboards: these are treated rough-sawn timber, and should be painted with Solignum Architectural Ebony (Solvent-based). They need two coats all round (or at least one on the back and two on face and edges). This will need about 15 litres.

Cement board: paint with two coats of Sadolin Superdec Black before construction of cladding units. Be very careful to paint the edges well. It is not essential to paint the whole back of the board, but the lower 100mm should be black as it will be visible from inside the house.

Gutters: if these need repainting, strip to a good surface, prime with Zinsser 1-2-3, and finish with two coats of Zinsser Allcoat Black.

Downpipe: if this needs repainting strip to a good surface, prime with Zinsser 1-2-3, and finish with two coats of Zinsser Allcoat in BS colour 12 B 21 to match nearby woodwork.

The Job

This description is based on the pilot installation at #2. See plans and photos on the Cedar Chase website for details. You don't have to follow this sequence, but it does provide some idea of what you will find and might help when estimating the amount of work involved.

1. Order 6 sheets of Kingspan K15 insulation board. There is some bureaucracy involved as the manufacturers are scared of being party to another Grenfell Tower disaster, so allow more time than usual to get this. K15 is a phenolic board, which has much better fire safety than the more common PIR and PS boards.
2. Obtain timber and cement board. Cut timber to width and roughly to length, and start painting with Solignum. This takes a few days.
3. Erect scaffolding as required for access.
   This will also be needed for the roof, but should have a platform set just below the bottom of the existing weatherboards as well as one just below gutter level.
4. Remove and preserve gutters. The original rectangular-section gutters can be re-used and are perfectly adequate if kept clear of moss and leaves.
5. Remove existing boards, bitumen paper, and other things fixed to the wall. This should include trim pieces around windows. Do not plan to re-use any of the timber as it is now very old and brittle.
6. Inspect the void above the living-room windows. There is probably a part of the original window-frame running across the top. Originally this would have supported the pelmet on the inside, but if the windows have been replaced it might now be unsupported. Provide support at the ends to avoid internal damage.
7. Install new beams along the top of the walls to support the edge of the new roof.
8. Install a polythene vapour barrier against the inside of the void, to cover the whole area from the RSJ at the top to the window-frame at the bottom. Make sure that any water which gets that far will drain towards the outside.

9. Install RSJ clamps and long stainless rods to support the old window frame and also a new beam which will hold up the new soffit above the windows (which can also be installed now). See cross-section drawings and photos.
10. Install cavity-wall batts or similar to fill the void above the windows.
11. Install new trim around window openings. Take care to define water barriers and drain routes.
12. Install window-cill extensions. At #2 these were second cills under the original and designed to resemble the tile cills seen downstairs. Alternatively it may be possible to replace the actual cills with wider ones.
13. Install trim against the brick pillar holding the downpipe.
14. Measure and record the location of horizontal mortar lines so that you can avoid them when fixing battens later.
15. Install insulation boards (using sticky foam) and tape all the joints. Form a drip at the bottom with aluminium tape.
16. Prepare the vertical battens: they will need holes for screws and counter-bored holes for bolts so that the bolts do not project above the surface of the batten when installed.
17. Start installing the vertical battens and weatherboard units. It is probably best to start at a window edge using a wide batten and then work left and right from there rather than starting at the very edge of the insulated area. Fix the battens initially with screws through to the wall-plate and other timbers, then drill and install the resin-anchored bolts.
    Do two or three battens, install the flyscreen mesh top and bottom, then make and install the first weatherboard units. Once the first units are in place on each wall you have a good base to measure from when doing the rest.
18. Check around all the edges to make sure that there are no gaps where mice and wasps can get in. They must be stopped before they get to the insulation boards.
19. Fill the joints between weatherboard units with black mastic.
20. Seal the edges of window frames with mastic matching the paint colour.
21. Adjust the downpipe location: it will need moving forward by about 60mm. **Do not** put an elbow in the downpipe. It must be straight with no visible joints and parallel to the wall all the way down. This means that the drain at the bottom will also need adjusting, and the support clips will need replacing or extending.
    If the pipe and/or clips need replacing, see the ‘Gutters and Downpipes’ page on the Cedar Chase website.
22. Re-install gutters.
23. Remove all rubbish from site.