1. Introduction

2. Specification Summary

3. Roof Details

4. Health & Safety

5. Appendix: Expansion Trim Installation Notes
1. INTRODUCTION

The following outline specification is based on application of the 185 System to a new timber deck in conjunction with a warm roof design. Please note that this outline specification is based on preliminary discussions; we welcome the opportunity to discuss your project further to finalise a proposal tailored to your exact requirements.

Further useful information in relation to the 185 system is available from the following website links:

- Literature and third party accreditations: http://polyroof.co.uk/products/185-system/
- Guarantees: http://polyroof.co.uk/about/polyroof-guarantees/

This document is a guide to assist in the production of tender documents only and is not project specific. A site survey is always recommended. It is the responsibility of the client to add and delete clauses, as relevant to the contract. Nothing in this proposal or any other literature produced by, or on behalf of, Polyroof Products Ltd is to be regarded as constituting a contract binding in law between Polyroof Products Ltd and any customer. The only contract which Polyroof will enter into is that contained in the Polyroof guarantee which takes effect only when issued in writing by Polyroof to the customer. Specimen guarantees are available on request.
2. SPECIFICATION SUMMARY

2.1. Overview

The following proposal is for a new waterproofing system in conjunction with thermal insulation to achieve a U-Value of 0.18 W/m²K. The clientspecifier should ensure that this meets the required building regulations standards in terms of conservation of fuel and power.

1. Timber joists at 400mm centres (Plasterboard ceiling installed to the underside)
2. Min. 12mm plywood deck / OSB3 deck
3. Existing waterproof covering made good and retained as an AVCL or 1000 gauge visqueen AVCL laid
4. 120mm Polyroof approved PIR insulation (e.g. Recticel Eurodeck)
5. 18mm Polyroof approved plywood / OSB3 (TG4) deck
6. PolyBase and Polymat 450
7. 185C Flexi-Resin Top Coat
8. Pre-formed Polyroof GRP upstand trim
9. Timber hard edge

Please consult Polyroof Products Ltd Technical Services for further advice and options regarding the following:

• Roofs where there is a high risk of condensation occurring such as a roof above a swimming pool.
• Insulation thicknesses in excess of 150mm as careful consideration should be given due to the potential length of mechanical fixings required.
2.2. Structural Preparation

2.2.1. New Build Projects

Falls & Drainage:
This specification provides for a minimum recommended 1 in 80 fall. Please note that this may not eliminate the risk of standing water occurring.

Although standing water is not detrimental to the 185 system it could be hazardous to foot traffic in icy conditions. Additional consideration should therefore be given to the falls on balconies / walkways.

It has been assumed that the proposed drainage capacity is adequate.

2.2.2. Refurbishment Projects

Falls & Drainage:
Where required the existing falls of the roof may be improved to reduce standing water. Please note that this may not eliminate the risk of standing water occurring.

Although standing water is not detrimental to the 185 system it could be hazardous to foot traffic in icy conditions. Additional consideration should therefore be given to the falls on balconies / walkways.

No provision to improve drainage has been made within this specification. It has been assumed that current drainage capacity is adequate.

Inspection / Removal:
The existing build up is to be stripped and removed from site.

Or,
The existing build up is to be inspected for defects, made good where required and retained. Any areas that are structurally unsound are to be removed and replaced on a like-for-like basis.

This specification assumes that all existing timber work is in good condition and free from any signs of wet/dry rot.

Any Chipboard decks must be removed.

Any existing insulation present between the timber joists is to be removed along with any ventilation to the void.

Any lightning conductors are to be temporarily lifted prior to commencing works and then reinstalled upon completion by competent personnel. IMPORTANT: Lightning conductors must not be fixed directly through the new waterproofing membrane.
2.3. New Construction

2.3.1. Timber Firrings

Where required timber firrings are to be installed to create a minimum recommended 1 in 80 fall using proprietary fixings applicable to the construction and environmental conditions.

2.3.2. Plywood / OSB3 Spreadsheet (Support Layer Only)

New Build Projects:
A 12mm plywood / OSB3 spreadsheet is to be mechanically fixed to the timber joists.

Refurbishment Projects:
The existing construction will act as a support layer for the new warm roof construction but where this is defective it should be replaced with a new support layer i.e. a 12mm plywood / OSB3 spreadsheet mechanically fixed to the timber joists.

2.3.3. Air & Vapour Control Layer (AVCL)

A 1000 gauge visqueen AVCL is to be fitted and taped in accordance with the manufacturer's recommendations. The AVCL shall be continuous and encapsulate the insulation boards at abutments, penetrations and exposed edges.

2.3.4. Timber Hard Edge

A timber hard edge must be fitted to all exposed perimeter edges of the roof and must be installed in accordance with the: Timber Hard Edge and Trim Fixing Guidance

2.3.5. Insulation

120mm Polyroof approved PIR insulation (e.g. Recticel Eurodeck) is to be fitted. All boards should be laid staggered and should comply with the specification of the manufacturer.

2.3.6. Polyroof Approved Plywood / OSB3 (TG4) Substrate for 185

18mm Polyroof approved plywood / OSB3 (TG4) is to be mechanically fixed to the timber joists to provide a base for the 185 System. Boards must be installed strictly in accordance with the guidance overleaf.
2.4. Polyroof Approved Plywood Substrate and Fixing Guidance (Option A)

2.4.1. Plywood Substrate Suitable Grades

The 185 system must only be applied to CPD approved boards that are CE structural 2+ and have a facing suitable for 185. Suitable grades are as follows:

<table>
<thead>
<tr>
<th>Name</th>
<th>Grade</th>
<th>3rd Party Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metsä Wood</td>
<td>III or +III/III</td>
<td>Fin ply / BBA</td>
</tr>
<tr>
<td>Wisa Spruce</td>
<td>III</td>
<td>BBA</td>
</tr>
<tr>
<td>Wisa Spruce</td>
<td>Spruce Special</td>
<td>BBA</td>
</tr>
<tr>
<td>Southern Yellow Pine</td>
<td>APA-BCX</td>
<td>American Plywood Association</td>
</tr>
<tr>
<td>Rolpin Eco</td>
<td>+III/III</td>
<td>FCBA</td>
</tr>
<tr>
<td>Canadian Softwood Ply</td>
<td>Select tight faced</td>
<td>Can Ply</td>
</tr>
<tr>
<td>Douglas Fir (DFP)</td>
<td>G1S</td>
<td>Can ply</td>
</tr>
<tr>
<td>Sudati P&amp;TS</td>
<td>BCX</td>
<td>BBA</td>
</tr>
<tr>
<td>Guaraply PS</td>
<td>BCX</td>
<td>BBA</td>
</tr>
<tr>
<td>TeboPin Solid</td>
<td>+III/III</td>
<td>CTB-X</td>
</tr>
</tbody>
</table>

NB: If plywood from the list above cannot be sourced, please seek advice from Polyroof Technical Department on 0800 801 890.

2.4.2. Fixing Schedule

18mm Polyroof approved plywood to Timber Joists
Fixing Type          EJOT TKR Range
Minimum Penetration into Timber Joists 40 mm
Minimum Fixings per Board 24 Nr (2400mm x 1200mm board)

NB: All fixings to be capable of withstanding necessary wind uplift pressures and environmental conditions.

2.4.3. Plywood Fixing Guidance

Lay approved boards staggered (brick pattern) with long edges 900 to joists, with 3mm gaps between boards and 20mm at wall abutments. End joints to be centred over joists.

Approved boards should be fixed at each corner and at a maximum of 400mm (16") centres with a minimum of 24 fixings per 2400mm x 1200mm (8’ x 4’) sheet. Fixing heads must always be counter sunk into the
decking and to finish flush with the surface of the plywood. (NB: Do not drive fixings further than 1-2mm below the face of the plywood).

IMPORTANT: Expansion trims will be required for any roof area in excess of 100m² or roofs greater than 15m in length. A 20mm allowance should be made in the plywood board joints at these positions. For expansion trim positions refer to the Appendix.

NB: Plywood boards should be overcoated as soon as possible, ideally the same day. If the boards cannot be waterproofed then they should be suitably protected from the weather at all times to avoid the possibility of becoming wet.
2.5. Polyroof Approved OSB3 (TG4) Substrate and Fixing Guidance (Option B)

2.5.1. OSB3 (TG4) Suitable Grades

The 185 system must only be applied to CPD approved boards that are CE structural 2+ and have a facing suitable for 185. Suitable grades are as follows:

<table>
<thead>
<tr>
<th>Name</th>
<th>Acceptable Grade(s)</th>
<th>3rd Party Control</th>
<th>CPR / CPD Compliance</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smartply Europe Ltd</td>
<td>Smartply OSB3 Smartply Roof (OSB3)</td>
<td>BBA Cert 98/3488</td>
<td>CE Marked Structural 2+</td>
<td>Square Edge or T&amp;G Commonly available in merchants</td>
</tr>
<tr>
<td>Norbord Ltd</td>
<td>Sterling OSB3 Sterling Roofdeck (OSB3)</td>
<td>BBA Cert 01/3857</td>
<td>CE Marked Structural 2+</td>
<td>Square Edge or T&amp;G Commonly available in merchants</td>
</tr>
<tr>
<td>Kronospan Ltd</td>
<td>Kronospan OSB3 Board</td>
<td>BBA Cert 07/4498</td>
<td>CE Marked Structural 2+</td>
<td>Square Edge or T&amp;G</td>
</tr>
<tr>
<td>Egger</td>
<td>Eurostrand OSB3 Board</td>
<td>BBA Cert 08/4546</td>
<td>CE Marked Structural 2+</td>
<td>Square Edge or T&amp;G</td>
</tr>
<tr>
<td>Norboard NV</td>
<td>Sterling OSB3 - Conti</td>
<td>BBA Cert 10/4802</td>
<td>CE Marked Structural 2+</td>
<td>Square Edge or T&amp;G</td>
</tr>
<tr>
<td>Kronofrance SA</td>
<td>Kronoply OSB / 3</td>
<td>BBA Cert 04/4093</td>
<td>CE Marked Structural 2+</td>
<td>Square Edge or T&amp;G</td>
</tr>
</tbody>
</table>

**IMPORTANT:** For Flame Retardant (FR) grades of OSB3, contact Polyroof Technical Services for advice.

NB: If OSB3 (TG4) boards from the list above cannot be sourced, please seek advice from Polyroof Technical Department on 0800 801 890.

2.5.2. Fixing Schedule

18mm Polyroof approved OSB3 (TG4) to Timber Joists

Fixing Type: EJOT TKR Range
Min Penetration into Timber Joists: 40mm
Minimum Fixings per Board: 20 Nr (2400mm x 600mm board)
NB: All fixings to be capable of withstanding necessary wind uplift pressures and environmental conditions.

2.5.3. OSB3 (TG4) Fixing Guidance

Lay approved boards staggered (brick pattern) with the larger gap in the T&G joint face up (writing side up on most boards). A minimum 20mm expansion gap should be provided at wall abutments.

Approved boards should be fixed at a maximum of 200mm centres (4 fixings across the board width) and into every joist. A minimum of 20 fixings per 2400mm x 600mm board will be required. Fixing heads must always be counter sunk into the decking and to finish flush with the surface. (NB: Do not drive fixings further than 1-2mm below the face of the boards).

IMPORTANT: Expansion trims will be required for any roof area in excess of 100m² or roofs greater than 15m in length. A 20mm allowance should be made in the OSB3 (TG4) board joints at these positions. For expansion trim positions refer to the Appendix.

NB: OSB3 (TG4) boards should be overcoated as soon as possible, ideally the same day. If the boards cannot be waterproofed then they should be suitably protected from the weather at all times to avoid the possibility of becoming wet.

2.6. 185 Application

2.6.1. Overview

The 185 Waterproof system consists of glass fibre reinforced polyester resin, cold applied on site by hand lay giving a seamless, joint-free construction. The System should be applied in accordance with the 185 Application Guide and the British Board of Agrément Certificate 91/2604.

2.6.2. Approved Contractors

185 should only be applied by contractors in possession of a current approval certificate. The contractor must provide an approved applicator to supervise the 185 work and the approved applicator must remain on the site until the works are complete. Confirmation of approval can be sought by calling Polyroof Products Ltd Technical Services on 01352 735135. A final inspection shall be carried out by a Polyroof technician prior to a guarantee being issued.
2.6.3. Weather Considerations

The system should not be applied if the air temperature is outside the range of 5degC - 30degC (NB: The system can be installed down as low as 1degC deck temperature with the addition of Product Accelerators). The system must not be applied in damp or cold conditions which could cause surface condensation; during frost or if there is a risk of rain.

2.6.4. Pigment Colour

185 is available in a range of colours. Please refer to product literature for further details.

2.6.5. Board Joints

Local reinforcement will not be required to interlocking OSB3 TG4 board joints provided they are adequately filled with PolyBase and providing a closed, pinhole free surface can be achieved.

IMPORTANT: To all square edged and cut board joints local reinforcement will be required. Apply PolyBase and 75mm wide Polymat 450. Allow to cure.

2.6.6. Detailing

**Pre-formed Polyroof GRP Trims:** Pre-formed Polyroof GRP trims must be mechanically fixed on the horizontal fixing arm to the timber deck at 150mm maximum centres using 18mm galvanized clout nails (large headed). In addition, drip or upstand trims with a face depth equal to or greater than 150mm must be mechanically fixed to the trim support batten at 300mm maximum centres using 18mm galvanized clout nails (large headed). All angles shall be mitred and all joints reinforced with PolyBase and 2 layers of 75mm wide Polymat 450. Allow to cure.

Important Notes:
- For drip or upstand trims additional support must be provided in the form of trim support battens and butt straps at the trim joints.
- On exposed sites all trims must be face fixed regardless of size.

For further guidance please refer to the: [Timber Hard Edge and Trim Fixing Guidance](#)

**Expansion Trims:** Pre-formed Polyroof Expansion Trims have special requirements and must be fixed, taped and coated strictly in accordance with the Polyroof Expansion Trim Installation Notes (please refer to the Appendix).

**Other Details:** To any other details requiring local reinforcement apply PolyBase and 75mm wide Polymat 450. Allow to cure.
2.6.7. Base Coat

Apply PolyBase and Polymat 450 at a minimum coverage rate of 1.2Litres/m² (0.84m²/Litre). Allow to cure.

2.6.8. Top Coat

Apply 185C Flexi-Resin at a minimum coverage rate of 0.6Litres/m² (1.68m²/Litre). Allow to cure.

2.6.9. Anti-Slip Finish (Optional)

185 is designed to accept pedestrian foot traffic associated with normal maintenance operations; optional anti-slip finishes are available for balcony surfaces upon request. Consult Polyroof Technical Services for information regarding heavy duty walkways.

2.6.10. Inspection

On completion of each coat check for pinholes / misses and rectify.

2.6.11. Protection of Finished Membrane

In the event of other trades working on or adjacent to the roof area, the client must make adequate provision to prevent damage to the roofing system, by other trades. Site specifics should be discussed with the Approved Contractor.

2.6.12. Additional Items

Should the client wish to install additional items such as paving slabs or timber decking please consult Polyroof Products Ltd Technical Services prior to the commencement of any project.

Prior to the installation of additional items the contractor should ensure that Polyroof Technical Services are contacted and given the opportunity to inspect the membrane before it is covered. Please note that should an inspection of the Protec System ever be required in the future it would be the client’s responsibility to remove the additional items back to the membrane.
3. ROOF DETAILS

Please note site investigation may be required to identify all roof details and to determine the required action to ensure they are left in a fully watertight condition. A range of CAD details are available for download from: http://polyroof.co.uk/products/185-system/

Detailing Notes:
- Roof termination details should have a minimum 150mm upstand height above the finished surface of the roof and should be terminated into a chase or have a suitable cover flashing or weathering flange. Any details where this cannot be achieved will require periodic inspection and maintenance.
- Care should be taken to ensure all roof details are fully prepared and primed in accordance with the current application manual.
- All redundant roof details are to be removed prior to the commencement of works. The roof area underneath is to be made good as required, ensuring that it matches the build-up of the surrounding roof area.
- Pre-formed Polyroof GRP trims will be required at exposed perimeters.
4. HEALTH & SAFETY

4.1. Risk Assessments / Method Statements

It is the responsibility of the contractor to ensure that adequate risk assessments (including COSHH assessments), and method statements are carried out prior to commencement of works.

4.2. Materials Safety Data Sheets

It is the contractor’s responsibility to ensure that all relevant material safety data sheets are on site at all times. Additional copies of these sheets are available on request from Polyroof Products Ltd.

4.3. VOC Control

Most products contain volatile components, such as solvents; these components evaporate from the system during and post application. Some of these volatiles have a strong odour and some require hazard control measures. Some hazardous VOCs (Volatile Organic Content) are assigned a ‘Workplace Exposure Limit’ (WEL): the maximum concentration in the air that an individual should be exposed to within a prescribed period of time. Some of these hazardous materials have also been assigned a ‘Derived No Effect Level’ (DNEL): a concentration in the air above which humans (workers or otherwise) should not be exposed to under any circumstances. Historic tests carried out on typical flat roofs indicate that neither the operatives fitting the system nor people within or in the vicinity of the building to which the system is applied, will be exposed to concentrations in excess of the WELs or DNELs; the actual concentrations will be significantly lower.

It should be borne in mind that, whilst some of these VOCs have a strong odour and can be detected at low concentrations, that they can be smelt does not mean individuals are exposed to hazardous levels.

The contractor carrying out the work is obliged to carry out a risk assessment and ensure sensible precautions are taken, such precautions would include checking the isolation of air intakes to the building and ensuring the avoidance of working within confined spaces: both could otherwise increase the exposure levels beyond those of our testing. To assure the occupants of the building, who may be concerned about an unfamiliar smell, warn them of the likelihood before work commences.
4.4. VOC Measuring

In sensitive areas it is usually possible to monitor the atmosphere for levels of VOC’s, and potentially hazardous fumes by using specialist testing equipment. With most products portable site testing equipment may be used that will give an immediate indication of the concentration of specific solvents in the atmosphere. This can show that the appropriate WEL or DNEL, is not being exceeded. In rare circumstances the services of specialist industrial hygiene companies may be required.

The contractor’s risk and COSHH assessments should identify if there is a need for atmospheric monitoring.
5. APPENDIX: EXPANSION TRIM INSTALLATION NOTES

IMPORTANT: The Polyroof Approved Contractor must consult Polyroof Products Technical Services on 0800 801 890 to confirm the expansion trim layout prior to commencement of works. Please consult Polyroof Technical Services if positioning of expansion trims affects drainage in any way.

Polyroof pre-formed expansion trims must be fitted strictly in accordance with the Polyroof expansion trim guidance sheet (supplied with trims). A summarised version of the guidance is below for reference.

1. A 20mm gap is to be left between the plywood / OSB3 (TG4) board joints at the position of the Expansion trim.
2. On the main roof deck the Expansion trims should be overlapped (not butted) by a minimum of 50mm.
3. Expansion trims are to be chamfered appropriately against mansard and fillet details.
4. Expansion trims must be taken to the very edge of the roof. This includes Parapet Wall details.
5. At the perimeter trim junction i.e. upstand, drip, fillet trims should be fitted with a 10mm gap left.
6. Expansion trim joints must then be double taped using Polyroof Expansion Trim Resin and 75mm wide Polymat 450. The perimeter trim joint is to be jointed in the same way. Never use PolyBase to tape expansion trims.
7. The 185 System is then to be taken onto the flange of the trim just past the fixing points only. Note: Do not take all the way to the ridged section.
8. The curved section of the Expansion trim (the whole flat area in the case of flat expansion trims) should be top coated using Pigmented Expansion trim resin only. Note: Under no circumstances must standard 185 Topcoat be used as cosmetic hairline cracks will appear.

9. Masking tape should be used to avoid overlaps between the 185 topcoat and the special Expansion Trim Resin.

Should you require clarification on any of the above points please contact the Technical Department on 0800 801 890.