

NBS SECTION J41 - DESCRIPTION OF WORKS

Section J41 deals with the installation of the Bauder Waterproofing System, comprising coverings of multiple layers of reinforced bituminous membranes laid and jointed using self-adhesive and/or torch application as required. It includes where required, the vapour control layer, thermal insulation, underlayer and capping sheet membranes (root resistant for green roof systems) and presumes the deck substrate and roof falls as stated within the specification below. Accessories are included where relevant.

It is intended for use on projects where the detailed design is completed by the specifier (architect or landscape architect) with technical assistance from the manufacturer as required and should be read in conjunction with any project specific drawings provided.

SCOPE OF WORKS

This section includes:

- The Bauder waterproofing system.
- Related Bauder system accessories
- Thermal insulation that meets the required U Value.

This section does not include:

- Construction of the structural deck.
- Proprietary rainwater drainage / plumbing – refer NBS section R10
- Lead sheet coverings / flashings – See NBS Section H71.
- Lightning protection – refer NBS Engineering Services, Section W60.
- Green Roof landscaping – refer section Q37

J41 REINFORCED BITUMEN MEMBRANE ROOF COVERINGS

To be read with Preliminaries/ General Conditions.

TYPES OF COVERING

110 BUILT-UP REINFORCED BITUMEN MEMBRANE WARM DECK ROOF COVERING

- **Roof area:** Single Storey Extension
- **Substrate:** New Plywood deck (designed and constructed to provide a minimum finished slope of 1°).
 - **Preparation:** As clause 610A.
- **Vapour control layer:** BauderTHERM DS1 Duo, 3.5 mm thick aluminium lined, elastomeric bitumen self-adhesive vapour barrier. Installation as clauses 670A, 710
- **Insulation:** Bauder PIR FA-TE flat board, fire resistant, aluminium foil faced, zero ODP, highly efficient rigid urethane insulation 120 mm thick to achieve the required U value (refer Clause 230). Installation as clause 680A
- **Insulation to upstands:** Vertical upstands to roof light kerbs, access hatches i.e. builders kerbs (but excluding proprietary insulated integrated rooflight units) and changes of level, the Insulation is to be the same thickness and meet the same thermal value as used for the flat area. Installation as clause 681B.
- **Vertical upstands to insulated cavity wall abutments only:** 30 mm thick, Bauder PIR FA-TE flat board, fire resistant, aluminium foil faced, zero ODP, highly efficient rigid urethane insulation. In compliance with Part L of the current Building Regulations, the insulation to wall abutments should be 300 mm in height from the deck surface to the top of the upstand, with

the vertical insulation being installed before the flat, so as to retain the insulation at the base. Installation as clause 681B.

- **Waterproof covering:** BAUDER TOTAL GREEN ROOF SYSTEM
 - **System manufacturer:** Bauder Limited, 70, Landseer Road, Ipswich, Suffolk, IP3 0DH.
Tel: 01473 257 671. **Fax:** 01473 230 761. **Email:** technical@bauder.co.uk
Web: www.bauder.co.uk
 - **Underlayer:** BauderTEC KSA DUO, 3 mm thick, 200g/m² glass-fibre reinforced, elastomeric self-adhesive bitumen underlayer.
Attachment: As clauses 710, 747A
 - **Top layer / Cap sheet:** Bauder Plant-E, 5 mm thick, 250g/m² polyester reinforced, elastomeric bitumen root resistant, torch applied capping sheet, green slate finish.
Attachment: As clauses 710, 750B
 - **Flashings and detail work:** Bauder K5K capping sheet, charcoal grey finish. Install as clause 775A
- **Surface protection:** Extensive green landscaping – refer Q37-130
- **Accessories:** -
 - New internal rainwater outlets (supplied and installed by others), as clause 490A.
 - Bauder Insulation upstand support brackets. Installation, as clause 775A.
 - Bauder 61 mm x 61 mm PIR angle fillets. Installation, as clause 775A.
- **Additional Requirements:** 210, 515, 520, 530, 560, 561, 910A, 940, 950B
- For associated lead work, refer to Section H71 for the following items: -
 - Provision for forming a chase and installing lead counter-flashings to brickwork or concrete upstands (with no DPC present). Refer H71, clause 770.
 - Apply Patination oil to all exposed areas of new lead subject to water run-off, as Section H71 clause 970.

PERFORMANCE

J41/210 ROOF PERFORMANCE

- **General:** Secure, free draining and weather tight.

230 INSULATION

- **Thermal transmittance (U-Value) of roof:** 0.18 W/m²K
- **Finished Surface:** Suitably even, stable and robust to receive roof covering.
- **Insulation compliance:** To relevant British Standard or Agrément certified.

PRODUCTS

J41/320A FAST DRYING PRIMER

- **Type:** Any commercially available fast drying Bituminous Priming Solution meeting characteristics of BS 8217, clause 5.6.2., supplied by an approved installer.

J41/330 TIMBER TRIMS, ETC

- **Quality:** Planed. Free from wane, pitch pockets, decay and insect attack (except ambrosia beetle damage).
- **Moisture content at time of covering (maximum):** 22%.
- **Preservative treatment:** Please note organic solvent based timber preservatives are not permitted, as these attack bitumen based materials.

EXECUTION GENERALLY

J41/515 ADVERSE WEATHER

- **General:** Do not lay coverings in high winds, wet or damp conditions or in extremes of temperature unless effective temporary cover is provided over working area.
- **Unfinished areas of roof:** Keep dry, protect edges of laid membrane from wind action.

J41/520 INCOMPLETE WORK

- **End of working day:** Provide temporary seal to prevent water infiltration.
- **On resumption of work:** Cut away tail of membrane from completed area and remove from roof.

J41/530 APPLYING PRIMERS

- **Coverage per coat (minimum):** As per manufacturer's recommendations.
- **Surface coverage:** Even and full.
- **Coats:** Fully bond. Allow volatiles to dry off thoroughly between coats.

560 GENERAL WORKMANSHIP REQUIREMENTS

- Installation of the Bauder waterproofing system may only be carried out by trained and certified operatives approved by Bauder Ltd and who carry current ID badges. These should be available for inspection at all times.
- Workmanship must comply with Codes of Practice BS 8217:2005 (or alternatively Bauder Ltd.'s specification where otherwise stated). Non-compliant workmanship will not be permitted, even if the system is watertight. The client will be told that all such faults must be remedied, before the Guarantee is issued.
- All waterproofing materials and system components must be supplied by Bauder Ltd, unless otherwise stated. Any sub-standard materials or un-authorized alternatives will be rejected. Any building work which is the responsibility of the roofing contractor and has a bearing on the life of the Bauder System must be carried out by properly trained and qualified tradesmen.
- Any structural damage, peculiarities or details discovered that might affect the performance of the Bauder system, should be reported immediately to the client's representative and Bauder Limited in order that they may assist in overcoming the problem.
- The contractor is to ensure water tightness of the roof at all times. Proper day joints must be formed at the end of each working day to provide a temporary seal. No mopping or loose covers will be permitted.
- Where building works are to be carried out by other trades, following completion of the waterproofing, the contractor must make adequate provision for supplying protection to prevent damage to the new membranes. The final inspection will not be carried out by the Bauder Site Technician or the Bauder nominated Independent surveyor until all associated trades are complete and the roof areas are clear from all debris and protection layers.
- It is imperative that the Bauder Approved Contractor conforms to the workmanship criteria as listed above. Any deviation will result in the contract being considered unguaranteeable.
- All mechanical and electrical work to plant and equipment should be carried out by competent mechanical and electrical qualified tradesmen. All plant is to be reinstated and re-commissioned on completion of the roofing works in accordance with the client's detailed specification.

- Where building works are to be carried out by other trades, following completion of the waterproofing, the contractor must make adequate provision for supplying protection to prevent damage to the new waterproofing.
- If any items of plant/equipment are to be situated on the finished roof, a sacrificial layer of Bauder capping sheet is to be loose laid beneath. This is to extend a minimum 25mm past the point of contact on all sides. In the case of heavy items it may be necessary to introduce a load-spreading slab, please contact Bauder for further advice.
- All lead work to be carried out by skilled tradesmen and in accordance with current codes of practice and the recommendations of the Lead Development Association.

561 SITE INSPECTIONS

- Bauder Site Technicians will carry out regular inspections of the project during the course of the works. The Approved Contractor must give reasonable notice to Bauder of their intention to commence laying capping sheet. This will allow a discretionary inspection of the underlayer to take place, so that any remedial treatment necessary can be carried out prior to installing the capping sheet. This is particularly important when tapered insulation has been used to ensure that any areas of standing water that may remain can be addressed.
- Bauder must be notified when the roof is ready for final inspection and all related works and snagging complete. See also clauses 910A or 910B (Landscaped roofs).

SUBSTRATES / VAPOUR CONTROL LAYERS / WARM ROOF INSULATION

J41/610A SUITABILITY OF SUBSTRATES (PLYWOOD)

- **Substrates generally:** Secure, clean, dry, smooth, and free from frost, contaminants, voids and protrusions. The new 18 mm thick WPB plywood should be BBA certified, conforming to BS EN 1995 & CPD/CE compliant, fixed directly to either the joists or firings using non corroding ring shank nails or recommended screw fasteners.
- **Falls:** Where provided, the falls/cross-falls should be designed to 1:40 to achieve minimum finished falls of 1:80 to comply with drainage requirements of BS 6229:2003 and current codes of practice BS 8217:2005. No deflections or back-falls present if the deck is designed to achieve a 0° level finished surface (e.g. when using tapered insulation to provide falls).
- **Preliminary work:** Complete including:
 - Formation of upstands, kerbs, box gutters, sumps, grooves, chases and expansion joints.
 - Fixing of battens, fillets and anchoring plugs/strips.
- **Moisture content and stability of substrate:** Must not impair roof integrity.
- **Preparation:** All such items to be rectified as necessary to eliminate the possibility of puncturing the new waterproofing system.
- **Taping of board joints:** Tape centrally over board joints with 200mm wide strips of Bauder R333 taping strip. These can be retained temporarily in place with clout nails, prior to the self-adhesive vapour barrier being laid.
- **Priming:** Prime all areas receiving the new waterproofing with fast drying bitumen primer, as clause 320A, and ensure this is thoroughly dry before applying the new waterproofing.

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J41/640 FIXING TIMBER TRIMS

- **Fasteners:** type/length appropriate and suitable to particular deck substrate.
- **Fixing centres (maximum):** 500 mm.

J41/670A LAYING VAPOUR CONTROL LAYER

- **Attachment:** Cold applied and fully bonded to substrate in accordance with manufacturer's requirements.
- **Side and end laps:** minimum 100 mm, laid red over blue with all laps torch sealed to provide a 5-10 mm bitumen bead extrusion. Installation methods as recommended by manufacturer.
- **Penetrations:** Fully seal using bonding methods recommended by manufacturer.

- **Edges of insulation at roof edges, abutments, upstands, kerbs, penetrations and the like:** Enclose, with vapour control layer:
 - Dressed up 150 mm above surface of insulation, thus providing 100 mm (minimum) seal when overlapped by the roof covering.
 - Care should be taken to ensure adhesion when the temperature is below + 5° C.
- **Please note:** If BauderTHERM DS1 DUO Vapour barrier is left exposed for longer than two weeks as a temporary waterproof layer, the burn off release foil and surface of the torch-activated adhesion stripes will be effected by the exposure to ultra violet. This minor issue can be resolved by using more heat to activate the bitumen stripes, but the process will be slightly slower than when using newly laid material.

J41/680A LAYING WARM ROOF INSULATION

- **Setting out:**
 - **Long edges:** Fully supported (if metal deck - run at right angles to metal deck troughs)
 - **End edges:** Fully supported.
 - **Joints:** close butted together.
 - **End joints:** Stagger.
- **Bedding:** Fully bed into torch activated bonding stripes of vapour control layer surface.
- **Multiple board layers:** Where the total thickness of insulation required is greater than can be achieved by a single standard board, then additional boards of the same product can be adhered to make up the total thickness required. These additional boards should be bonded using Bauder Insulation Adhesive, either in linear stripes or snake bonded, achieving no less than a minimum overall bond of 50%.
- **Protection to exposed edges of insulation:** Reduced thickness treated timber batten as clause 640 (or equivalent plywood construction), a minimum width of 150 mm and 10 mm less in thickness than the insulation to accommodate the build-up of the waterproofing layers – all securely fixed to the deck. Outer edges chamfered at changes in level.
- **Completion:** Boards must be in good condition, well-fitting and stable.

681B INSTALLING WARM ROOF INSULATION (INSULATED UPSTANDS)

- **Bedding:** Fully bonded to the vapour control layer by torch activating the membrane surface profiles. Board joints to be close butted. Upstand insulation boards should be installed before the insulation to the flat areas so that the vertical upstand insulation is retained both at the base and at the top. At vertical wall abutments that are cavity insulated, retention is obtained by mechanical fixing of the Bauder insulation support bracket.
- **Protective hard edges:** treated timber battens or Bauder Insulated upstand brackets (as appropriate to given detail situation) must be used at all right angled edges e.g. top edges of parapet walls or abutment upstands.
- **Encapsulation seal:** Provision must be allowed for forming a minimum 100 mm lap seal between the vapour control layer and underlayer, where the insulation finishes.

WATERPROOF COVERINGS/ ACCESSORIES

J41/710 LAYING REINFORCED BITUMEN MEMBRANES GENERALLY

- **Direction of laying:** Unrolled up the slope.
 - Where practicable, install so that water drains over and not into laps.
- **Side and end laps (minimum):** 100 mm, with the exception of mineral surfaced membranes, where side laps are 80 mm, but the head laps to remain 100 mm.
- **Head and side laps:** Offset.
- **Intermediate and top layer/Capping sheet:** Fully bond.
- **Successive layers:** Apply without delay. Do not trap moisture.
- **Strips of bitumen membrane for 'linear' details:** Cut from length of roll e.g. gutter sole pieces.

- **Detail flashings:** to be cut from width of roll.
- **Completed coverings:** Firmly attached, fully sealed, smooth, weather proof and free draining.

J41/747A **SELF-ADHESIVE BONDING OF REINFORCED BITUMEN UNDERLAYER**

- **Bond:** Full over whole surface, with no air pockets.
- **Underlayer:** Cold applied and fully bonded by removing the release foil sheet and installing in the approved Bauder manner, using the Bauder long handled roller to extrude a 5-10 mm bead of bitumen. Head laps to be 100 mm side laps to be 80 mm, lapping red strip over blue and torch sealing. All laps to upstands, edge details, flashings, etc., to be 100 mm. The underlayer must be taken up all upstands, edge details, in accordance with current British Standards and the manufacturer's recommendations.
- **Underlayer inspection:** The Approved Contractor must give reasonable notice to the nominated Bauder Site Technician of their intention to commence laying capping sheet. This will allow a discretionary inspection of the underlayer to take place, so that any remedial treatment necessary can be carried out prior to installing the capping sheet.

750BJ41/ **LAYING REINFORCED BITUMEN TORCH-ON CAPPING SHEET**

- **Bond:** Full over whole surface, with no air pockets.
- **Excess compound at laps of top layer/ capping sheet:** Leave as a 5 mm - 10 mm continuous bitumen bead extrusion.
- **Laying top layer:** Fully bonded to the underlayer by torching in the approved Bauder manner. Head laps to be 100 mm, side laps to be 80 mm. All laps to upstands, edge details, flashings, etc. to be 100 mm.
- **Final Inspection:** No landscaping is to be applied until the root resistant capping sheet has been thoroughly inspected by the Bauder Site Technician. This is to ensure that any remedial treatment that is necessary can be carried out prior to laying the landscaping elements. Failure to ensure the instigation of this inspection will result in the issuing of the Bauder guarantee being put in jeopardy.

J41/775A **SKIRTINGS AND UPSTANDS**

- **Insulated upstand brackets:** Bauder insulated upstand support brackets must be used at all vertical abutment wall upstands (where the wall cavity is insulated) in conjunction with 30 mm Bauder insulation. These are to be fixed at 400mm centres using suitable fixings through the vapour barrier, so that the top edge is a minimum of 300mm above the surface of the deck. A 3mm gap should be left between adjacent sections. The detail is to be carried out in accordance with the Bauder detail drawing, where provided.
- **Angle fillets:** Bauder PIR angle Fillets (61 mm x 61 mm) must be used at all right angled upstands, provisionally bonded in Bauder PUR membrane adhesive and subsequently retained once the underlay detailing is applied. Under no circumstances must fillets of an alternative material be incorporated (i.e. cork, fibre, etc.) as this would invalidate the guarantee.
- **Layers of bitumen membrane:** Carry in staggered formation up the upstand, with each layer fully bonded.
- **Upstands:**
- **At ends of rolls:** Underlay layer only, form with bitumen membrane carried up without using separate strip.
- **Elsewhere:** Form with matching strips of bitumen membrane, maintaining laps.
- **Additional fixing of bitumen membranes:** Mechanically fix the top leading edge of all upstand details in excess of 250 mm in height using appropriate fasteners. In the event of doubt, Bauder should be consulted regarding any specific requirement.
- **Upstand details (minimum height):** 150 mm. This must be taken from the surface of the finished landscaping. Special attention should be paid to all structures, such as rooflights, counter-flashings, window and door cills, pipes etc. Bauder cannot take responsibility for water ingress over waterproofing details constructed below the recommended minimum height.

- **Flashings:** Separate flashings must always be formed. Capping sheet taken up the upstand in one piece will not be permitted.

COMPLETION

J41/910B INSPECTION

- **Interim and final roof inspections:** in accordance with the manufacturer's requirements for guarantee.
- **Notification:** It is the responsibility of the approved contractor to advise Bauder Ltd when the roof is ready for Final Inspection. The 'Final Inspection' of the waterproofing must be carried out and approved by Bauder Ltd prior to any landscaping products/materials being installed, otherwise a guarantee cannot be issued.
- **Other requirements:** Please also refer to preliminaries / general conditions.

J41/940 COMPLETION

- **Roof areas:** Clean.
- **Outlets:** Clear.
- **Work necessary to provide a weather tight finish:** Complete.
- **Storage of materials on finished surface:** Not permitted.
- **Completed membrane:** Do not damage. Protect from chemicals, traffic and adjacent or high level working.

950B GUARANTEE

- A 20 year product and workmanship guarantee is to be provided upon completion following a Final Inspection by Bauder. Details regarding the full terms and conditions are available separately from Bauder Ltd upon request. This system must installed by a Bauder Approved Contractor, to be eligible for guarantee.