AMPTEAM

GUTTER SPECIALISTS • SITE SURVEYS • DESIGN • DEVELOPMENT • MANUFACTURE • SUPPORT

The UNIFOLD™ Solution

The problem

Apart from the misery they cause, leaking gutters cost British Industry millions of pounds every year in production disruption, stock loss and maintenance costs.

Gutters discharge water into a building predominantly due to joint failure but also due to substrate failure caused by severe corrosion.
Gutters can also become overwhelmed during storm conditions.

The long term repair of leaking gutter joints is extremely difficult and most repairs, which consist usually of bandage and bitumen applications, can only be considered as an emergency contingency whilst a more permanent solution is sought, or at best, one which will last for 1 to 3 years until the process needs to be repeated.

A solution to leaking joints is to line the existing gutter, however, effective access is a common problem due to roof sheet overhang and other obstructions and most rigid gutter lining systems, such as Aluminium or G.R.P., are unable to capitalise correctly on the available space within the existing gutter cavity, leading to a reduction in gutter size with the resultant loss of valuable water capacity.

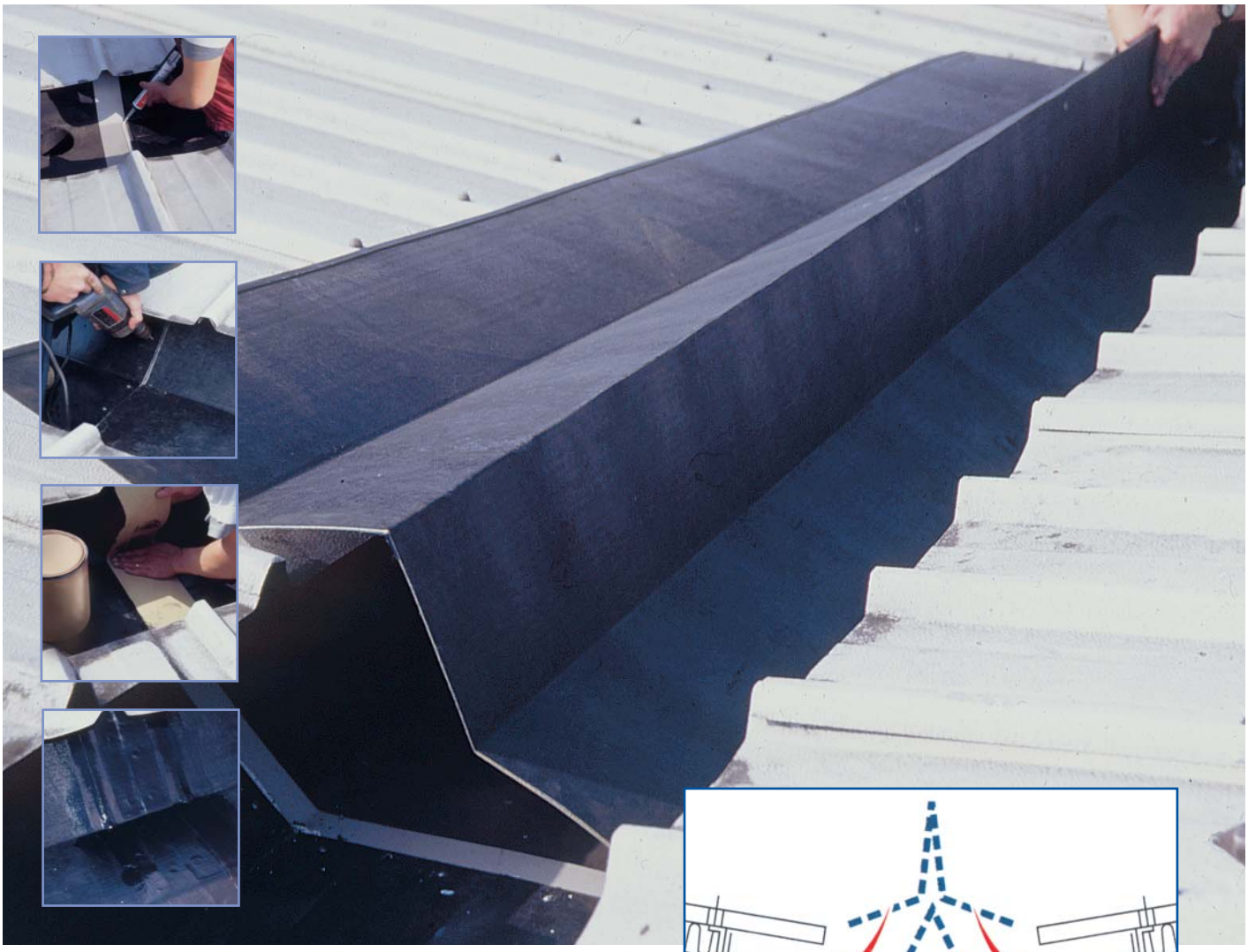
Often continuous flexible lining systems are chosen as they are perceived to have no joints and they are sometimes able to reach the extremes of the existing gutter profile.

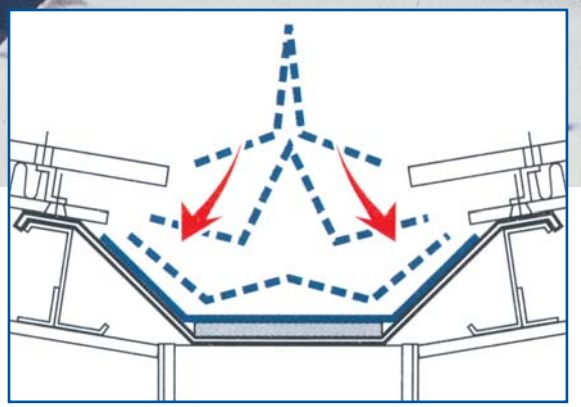
They are, however, very prone to expansion, contraction and retention problems leading to instability and ultimate failure and these systems often cannot cope correctly with existing gutter fabrication such as sumps and side boxes, which are often ignored and corners and tees which require difficult on site fabrication and jointing, made even more difficult as the work is conducted within the restricted confines of the gutter cavity.

Any lining system must be able to correctly address the problems with which it is faced and be able to provide a true, quality assured solution for all the variations of gutter design, both past and present.

What is required is a system that is correctly designed and engineered that will maximise the available space within the existing gutter cavity, will remain rigid and stable in service, will offer an exceptional life span and be guaranteed not to leak.

The solution to the problem is Unifold





UNIFOLD™ gutter lining system

Unifold is a gutter lining system that is rigid in use and as the name suggests, is able to fold, using system hinges, allowing access to the gutter cavity and then re-open, to maximise the available space within. It has an exceptional life span, well in excess of 30 years and is guaranteed for a period of 20 years including the installation.

Unifold is manufactured from an EPDM membrane that is pressure bonded to galvanized and coated steel substrate. During this process the hinges are formed, which are the essence of the system's unique flexibility. They provide the ability to enter the most difficult of gutter cavities, maximising the available space.
The resulting laminate forms a composite sheet to the required girth that is then press formed to the correct profile.

Double sealed Joints

Unifold is manufactured in 2.8m individual lengths and each unit length is securely fixed and sealed to its adjacent length prior to the cold vulcanised application of the Sureseal EPDM joint cover flashing.

This process provides, on initial application, a double sealed joint of immense integrity, however, continuing homogeneous action at the vulcanised surface ultimately provides an un-interrupted "joint free" membrane lining.

Experience has shown that Unifold is completely versatile and is able to replicate existing systems and their accessories with consummate ease.

Manufacture and Fabrication

The system has a complete range of accessory components and techniques which are able to cope with any existing gutter conditions or circumstances including an expansion and contraction joint which may be used to allow Unifold to move in conjunction with the existing gutter as well as coping with normal thermal and building movement.

Every effort is expended to factory fabricate Unifold to its most complete form possible prior to shipment leaving site operatives the simplest of tasks to install the system fully.

Installation

Unifold is installed with the absolute minimum of disruption to processes beneath by fully trained professional contractors, who together with Ampteam, provide a partnership to ensure that every Unifold solution is of the highest quality in every respect.

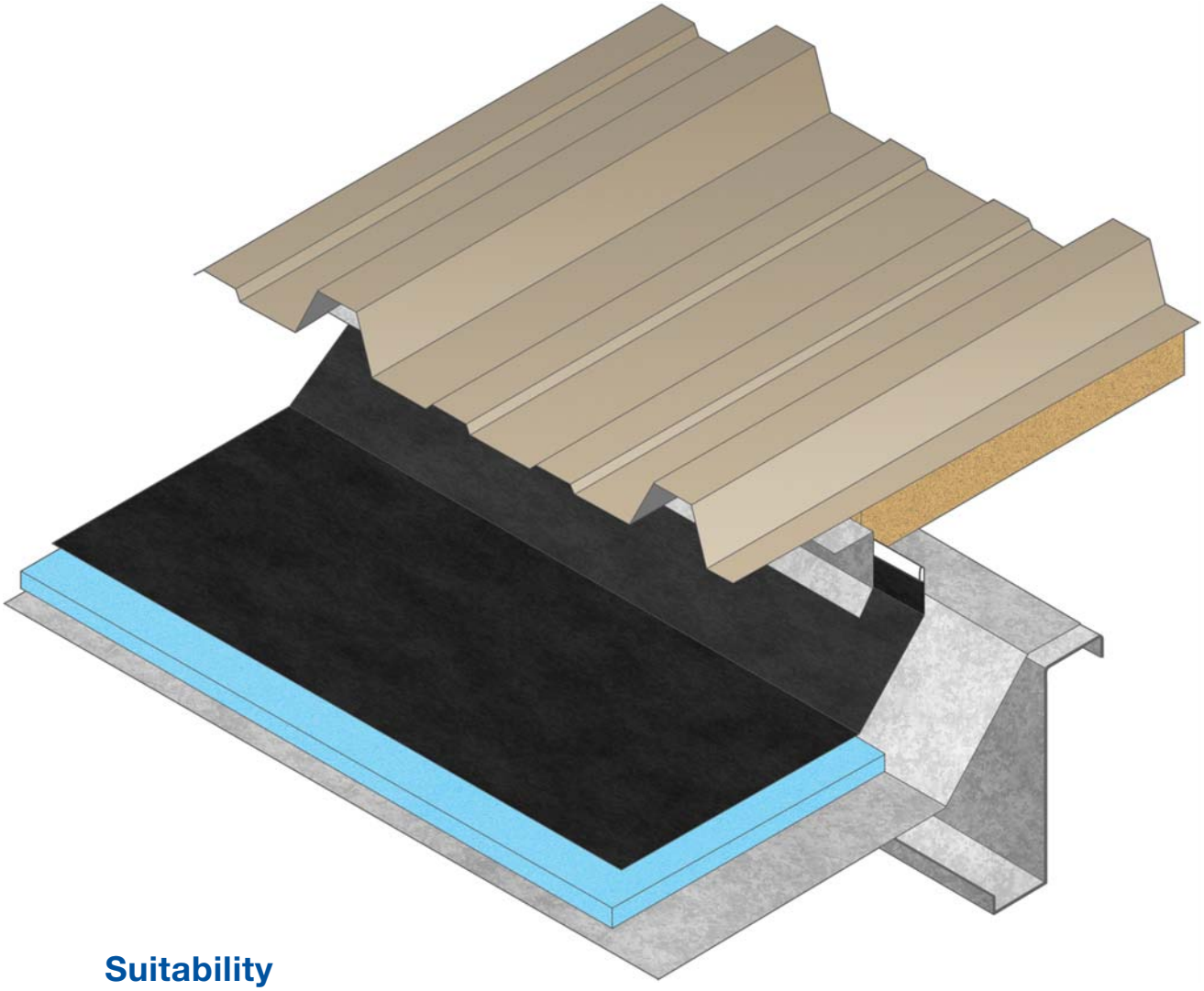
Sole Board

A sole board is usually required beneath Unifold in order to provide a flat level surface for the lining system and to allow for bolt and stud intrusions in the existing gutter.

The minimum thickness required is 10mm which allows for bolt heads, however, thicker boards will be required to allow for stud intrusions if these are not to be removed.

If thicker boards are to be used consideration should be given to gutter capacities.

Sole boards are usually insulation board and Extruded Polystyrene is recommended, however, bitumen impregnated Fibre Board is acceptable.



Suitability

Unifold should not be considered as a second choice to the replacement of an existing gutter with a similar type as the vast majority of existing gutters prove to be more than an adequate host for the system, in fact, Unifold is a superior product in both joint integrity and longevity when compared with the vast majority of gutter systems and types from the past and present.

Few gutter systems, if any, will offer the guarantees of Unifold

Unifold is a fully engineered system that is designed for each specific lining application. No conditions however unusual or complex are beyond its capabilities. Its ability to replicate any existing gutter system is demonstrated by these examples, all of which have received the Unifold treatment many times.

- General Industrial and Commercial applications
- Stepped, Laid to falls and tapered gutters
- Concrete and "Finloc" gutters
- Asbestos Cement Gutters
- "Ogee" section and Eaves gutters
- Listed building work
- Gutters fitted with Siphonic drainage systems

System Capabilities

The Unifold system is able to:

- Improve existing gutter capacities
- Improve outlet flow capacities and easily include extra outlets or the replacement of corroded outlets
- Restore holed "rusted" gutters
- Be used in roof refurbishment programmes, either strip and re-sheet or over-sheeting projects to provide greater capacities and to ensure the critical gutter component is fitted after roof work is complete, providing a new gutter at the end of the contract.
- Provide a correct and permanent "Tie-off" at the party line for two buildings/companies sharing the same gutter.
- To be used in conjunction with pipe-work systems to help relieve drainage problems from the roof and below ground.
- Provide corners, tees, section changes, side boxes, sumps, cylindrical, conical and square outlets, walkway pads and supports for lightening conductors.

Over the years Unifold has been faced with "many variations of a theme" and a multitude of differing gutter conditions and on each and every occasion the unique ingenuity of the system has provided a successful and correctly engineered solution.

Stepped, Laid to Falls and Tapered Gutters

Many existing timber boxed and felt or lead lined gutters are built to falls and some are also tapered on plan. Many terminate in a sump at the outlet.
Unifold can faithfully replicate these conditions, sometimes providing an improvement in performance and capacity.

Due to its unique hinge principle it is possible, when conditions allow, with the strategic placement of hinges in a parallel length of Unifold, for the system to replicate either tapered on plan or laid to falls conditions or both.

Stepped lead gutters are always built to falls and some are also tapered on plan.

Typical lead lined gutters

Unifold can replicate these gutters but unlike these systems Unifold is fully sealed on installation. Each "step" is provided as a factory manufactured fabrication and the Unifold lengths are joined to these.
Unifold creates virtually identical conditions to the existing gutter but with greater security.

Creation of falls

When it is desirable and where conditions allow, it is possible to introduce falls to an existing laid level gutter to remove standing water caused by deflections in the existing gutter or to improve the discharge speed of the installation. This is achieved with the use of cut to falls insulation with Unifold laid over.

Falls are created from stop-ends to outlets and between outlets and always terminate in a sump arrangement at the outlet.

The apex of the falls condition is an ideal position for an expansion joint should it be required.

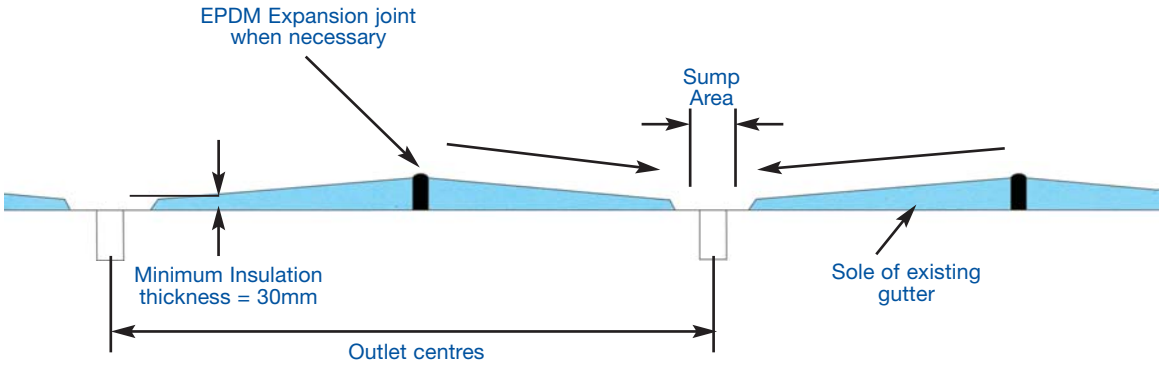
Feasibility

When the creation of falls conditions are contemplated then the installation should be the subject of a feasibility appraisal by Ampteam Technical department.

Survey

Ampteam personnel undertake a full survey and design following placement of an order.

NB: Any fall less than 1:300 should be considered level and any installation that cannot achieve 1:200, as a minimum should be carefully considered.



Typical falls condition created in a level gutter

Concrete and Finlock Gutters

Concrete gutters

Where they perform generally as valley and boundary wall conditions in commercial and industrial applications, can be treated as normal Unifold installations.

They are, however, often shallow and any increase in depth, which can be achieved, should be considered.

Unifold has often improved the size and performance of these gutters by taking advantage of roof refurbishment programmes or extending the gutter wings further up the roof slope or by using the construction depth of the existing roof in "dry" roof conditions.

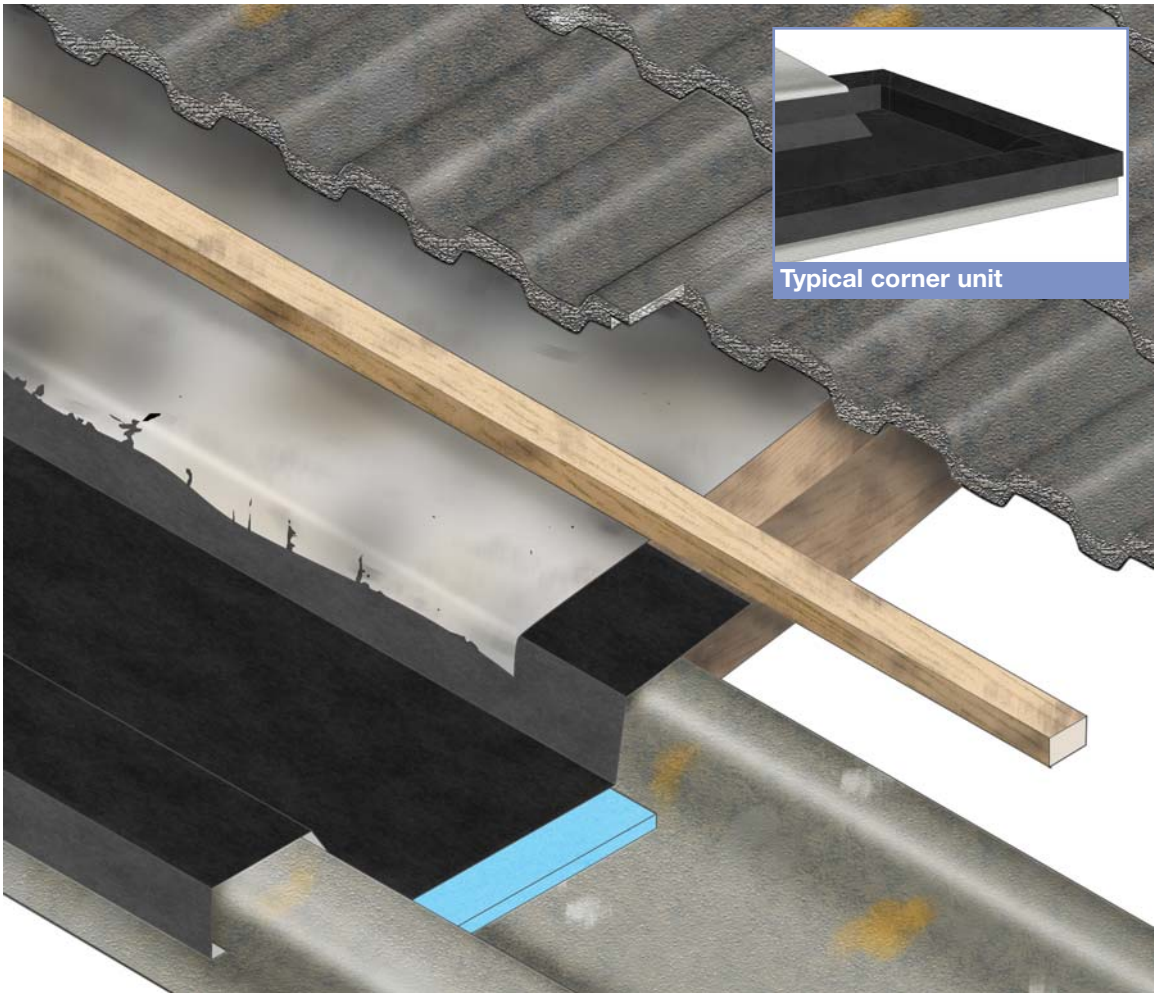
Finlock gutters

As well as on commercial properties, Finlock gutters are often found on domestic buildings where they serve single dwellings to terraced blocks of houses. As these gutters are supported on the external walls of these properties any leaks almost invariably find their way to the inside of the building, causing great discomfort to the occupants and damage to internal walls and decorations.

There are also occasions when these gutters have overflowed into the building.

The Unifold installation to these gutters usually requires the removal of the bottom row of slates or tiles to expose the bottom tiling batten, Unifold is fitted into the gutter and the roof slope leg extends to this exposed batten. Corner sections and stop ends are factory fabricated, as are outlets.

The final installation provides a leak free system, which will not discharge into the building in any way.



Typical corner unit

Asbestos Cement Gutters

Unifold is suitable for all Asbestos Cement gutters and it can be installed without the possibility of disturbing, drilling or cutting the Asbestos in any way by utilising the patented clip joint.

Listed Buildings

Unifold is ideal to restore and preserve the integrity of gutters serving the envelope of listed and historic buildings due to its ability to replicate the existing drainage systems and to accomplish this with the absolute minimum of disruption.

Gutter systems utilising Siphonic Drainage

Siphonic outlets fitted to gutter systems, which also require to be lined, are integrated into the Unifold installation using a Siphonic outlet gutter unit which is a fabricated section of Unifold specifically designed to seal Unifold to the siphonic outlet.

Siphonic Drainage systems are very maintenance sensitive. They must be kept clean in order to operate efficiently.

Problems with these systems usually emanate from the following conditions: -

1) Poor Roof and Gutter maintenance

Quite often siphonic systems are not maintained and as a result the leaf guards and strainers become clogged with debris and in these conditions the siphonic outlets can easily cease to operate.

2) Under-capacity or poorly maintained below Ground Drainage

The main flow of water from siphonic drainage needs to be un-interrupted in any way as disturbances to flow rate within below ground pipes will slow the main volume of water and affect roof drainage to the extent where the performance of siphonic outlets could be impaired.
These disturbances could be collapsed or debris filled drains or other pipes entering the drains too close to the siphonic connection.

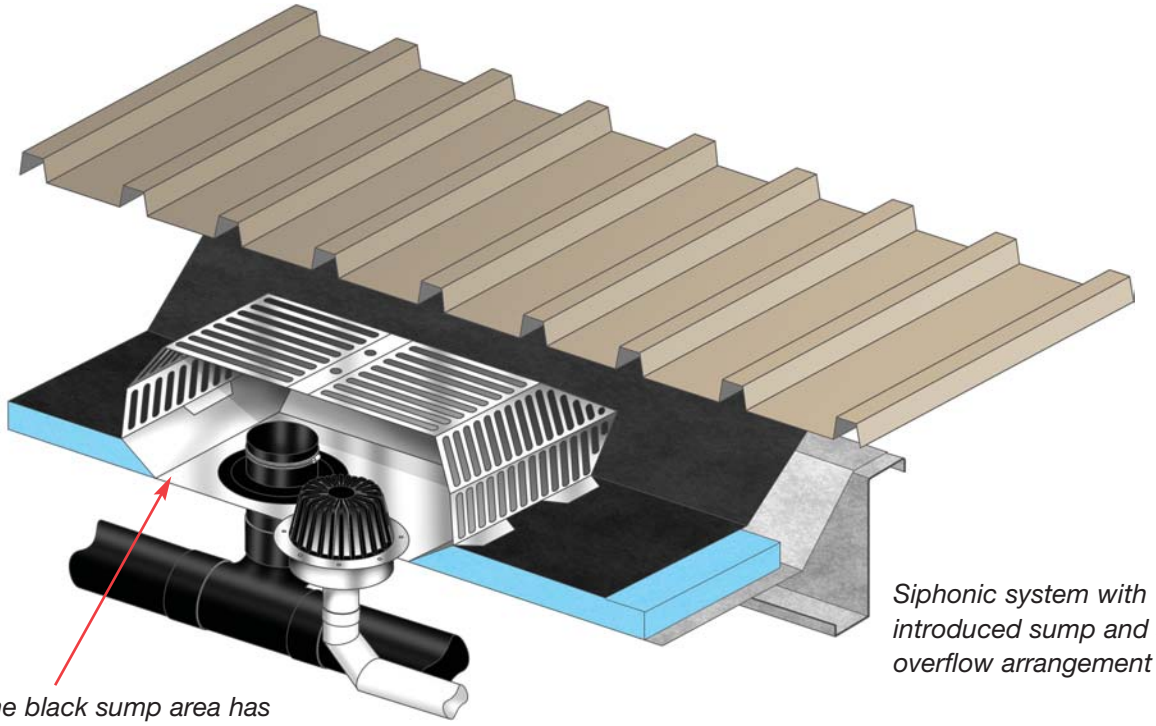
3) Siphonic Drainage Design

It is quite possible for an early siphonic system to be under-designed, particularly as the changes to our weather systems in recent years has brought different rainfall patterns and increases in rainfall intensity. Such a system could become overwhelmed in the severe storm conditions of today.

Unifold is able to help solve these problems in the following ways: -

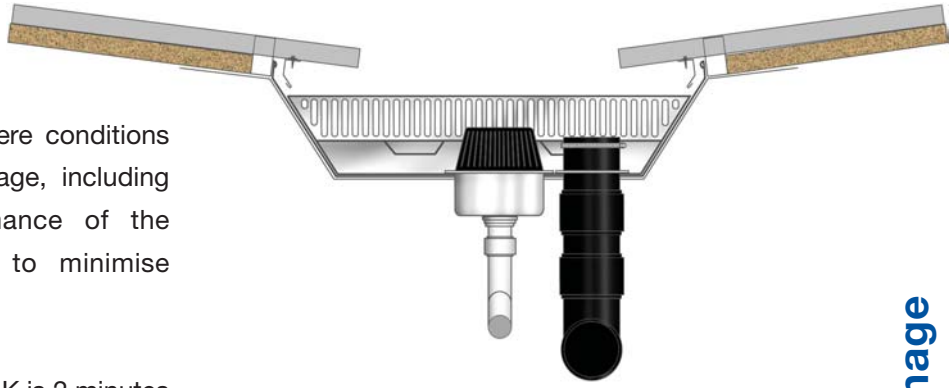
1.To introduce "Snorkel" overflows into the system as close as practically possible to each existing siphonic outlet with each snorkel overflow set at an effective design height so that as the siphonic system becomes overwhelmed the overflow system becomes operational and removes the excess water.

2.Where practical, to increase the "holding" capacity of the gutter, by utilising the construction depth of the roof to extend the height of the Unifold installation, thereby increasing the overall depth of the gutter.



The black sump area has been coloured for clarity

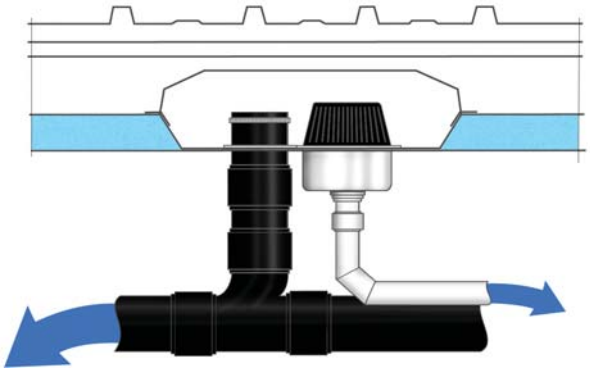
Siphonic system with introduced sump and snorkel overflow arrangement



3. The inclusion of sumps: where conditions allow, can be of great advantage, including improvement of the performance of the siphonic system to helping to minimise maintenance.

The design rainfall event in the UK is 2 minutes (the most intense period of a storm), and so a siphonic system must be designed to function in half of this time.

If the sole of the existing gutter can be insulated to provide a depth of, say 50mm, this depth could be used to introduce Unifold sumps at the outlet positions.



The siphonic outlets at the bottom of the sump fill more quickly and become "fully operational" with only relatively light rainfall.
This also helps if the siphonic outlet is positioned at the side of the gutter or in a side box, a common situation when the sole of the gutter is directly above the eaves beam. The sump will help to concentrate water at the outlet and so improve performance.

These sumps can be fitted with large leaf guards/strainers covering the entire sump area. They provide a much greater surface area than the siphonic outlets and are less liable to blockage, reducing the maintenance sensitivity of the system.

Gutter Capacities

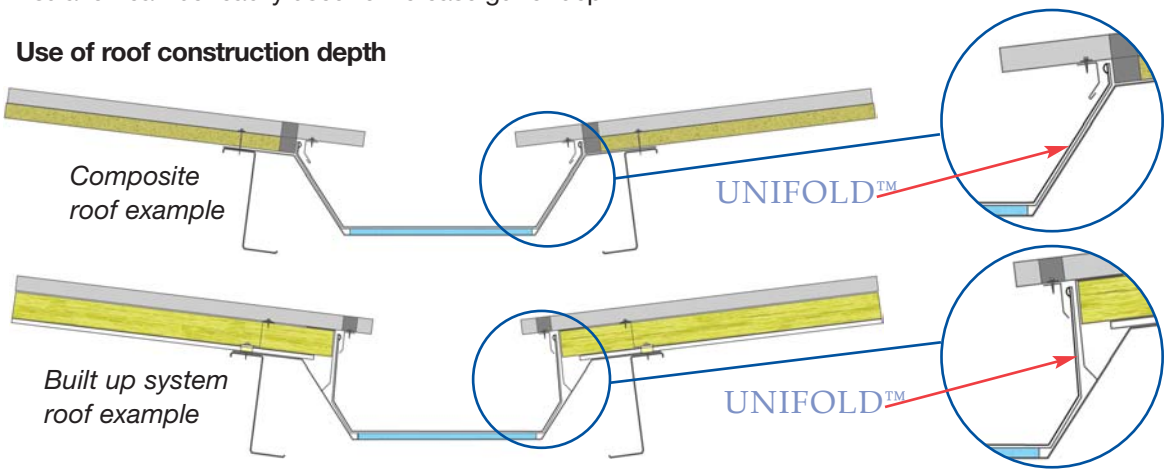
Unifold can be used to improve either the water containment capacity and/or the drainage efficiency of the gutter and outlets by a variety of means.

In ideal conditions, for **built-up roof systems**, given ample water capacity and sufficient access, any gutter lining system will be installed to discharge the liner tray as well as the roof itself.

In practice, however, access beyond the eaves closure/drip flashing to the internal roof structure can be extremely difficult without major roof work so it is sometimes inevitable that the gutter lining is installed "gutter side" of these flashings.

More significantly, even if access is available to the roof construction at the eaves, if there is an overwhelming need for depth improvement to the existing system due to existing gutter capacity problems, then in order to achieve this, it may be necessary to ignore the condensation discharge from the liner tray as being "the lesser of two evils".
Composite roof systems are not subject to interstitial condensation problems so the depth of insulation can be readily used to increase gutter depth.

Use of roof construction depth

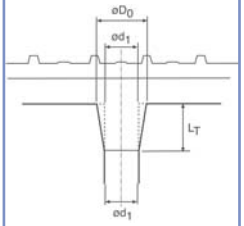


Improvements to systems may use one or more of the following methods: -

1. Gutter capacities can be improved on many occasions by using the roof construction depth and allowing the wings of the Unifold to extend to the underside of the roof sheet, installing a new eaves closure with a sealed filler above, to close the construction.

2. Gutters, particularly ones with wide sole dimensions, are rarely freely discharging.
This situation can be corrected or at least improved, by cutting out and removing the existing outlet and replacing it with a Unifold metal and membrane coned orifice.

Conversion of square shouldered spigot outlet to a coned orifice



D_1=Existing outlet dia
D_0=New effective dia=1.5
L_T=D_0

This action will dramatically improve the drainage performance of the outlet, which will discharge more quickly and in doing so, will relieve the water containment load in the gutter.

3. Extra outlets are easily added to a Unifold installation to greatly improve the gutter efficiency. There is, of course some internal disruption whilst pipe work is installed to serve these.

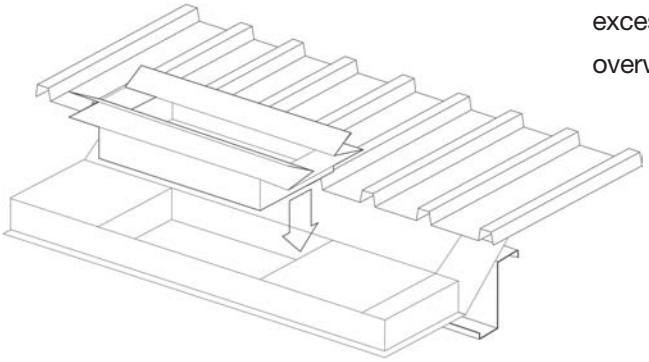
Nb: Additional outlets are provided with a blanking plate to ensure the integrity of the Unifold‘ system until the connection of pipe-work underneath is completed. Once the serving pipe-work is complete it is a simple matter to open the outlet and render it fully operational.

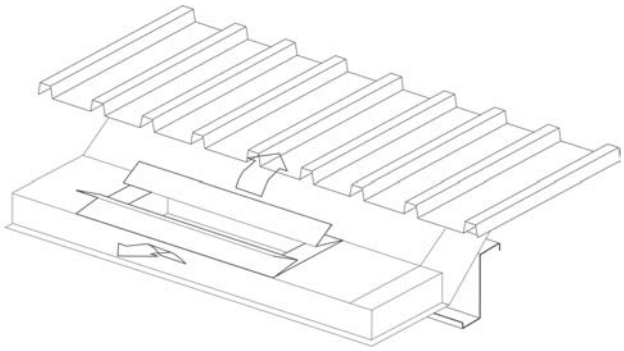
Inclusion of Sumps

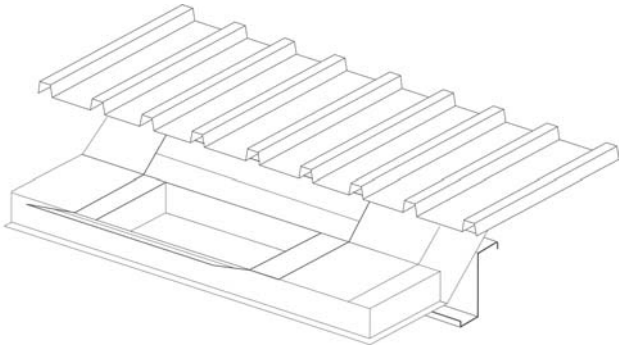
4. Inclusion of sumps at outlet positions. The use of sumps in gutter runs greatly improves the efficiency of the outlets served by the sump, concentrating water at the outlet and helping to increase the water to air mix, allowing more water into the down pipe.
These sumps have great benefits; they improve the flow capacity of the gutter at the outlet position, ensure the gutter is freely discharging and improve the general efficiency of the whole system.

They can be installed quite easily either by: -

a) Utilising the space between the top of the down pipe socket and the sole of the existing gutter and by cutting the required amount out of the existing gutter to allow the Unifold sump and outlet to enter and mate with the existing down pipe socket.





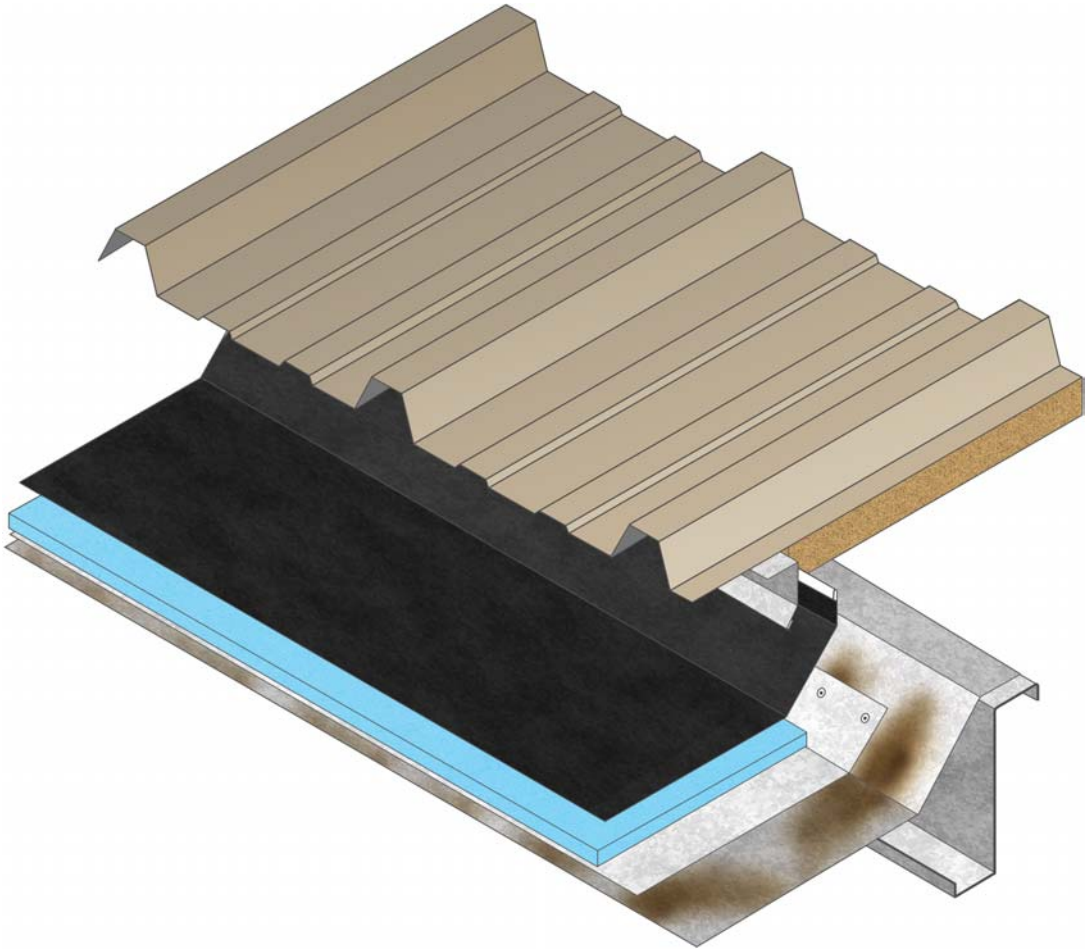


Sump installation progression

Typical sump unit serving a side box outlet

b) When Unifold is laid above rigid insulation board the thickness of the insulation board can be used as the sump depth. Even a 20mm deep sump across the sole of the gutter will provide some improvement to flow rates.

5. **Inclusion of wiers, chutes and overflows.**
A Unifold installation allows the greatest flexibility to correctly include a variety of wiers, chutes and overflows either as "tell tales" for blocked outlets or as a means of removing excess water during storms which threaten to overwhelm the existing outlets.



Restoration of “holed” rusted gutters

On occasions the extent of corrosion in a gutter can be extreme enough to "hole" the gutter and localised sections can also become unstable and not safe to traffic.

These conditions are usually found when the gutter is cleaned, probably for the first time in many years.

It is rare for the corrosion to extend continuously along the length of the existing gutter and is most often isolated in localised sections.

The structural strength of these areas can be restored by the inclusion of 1.5mm - 2mm galvanized steel trays or flashings, which only extend partially up the sides of the existing gutter but close enough to the existing profile to be mechanically attached to "good" substrate material. Existing gutter brackets also assist in this respect providing the tray spans bracket to bracket.

Following this treatment Unifold can be installed normally over the top.

Use of Unifold during roof refurbishment

Often, during an over-roof project or a strip and re-sheet, gutters are removed and replaced. This is usually a difficult, dangerous and expensive operation requiring the new gutter to be installed before any re-roofing work can commence. This new gutter will then be used as the walkway and work platform for the duration of the contract period.
Unifold used instead of a replacement gutter offers several notable advantages: -

1. There are very few, if any "new" gutters which will compare with the longevity, integrity and offer the guarantees of Unifold

2. The existing gutter remains as the work and walkway platform and any damage or leaks caused by working processes are irrelevant, as Unifold will "repair" these when fitted.

3. Re-roofing operations begin much earlier and there is much less disruption to the building.

4. Unifold is fitted after roofing work is complete thereby avoiding any damage to the Unifold "wet" surface from working processes.

5. There is an ideal opportunity to redesign at the eaves to provide a greater capacity Unifold gutter and/or to insulate the gutter system.

Thermal Issues, Air-tightness and Approved Document L

Regulations concerning the energy efficiency of buildings were revised and implemented in 2002.

These regulations, specified within Approved Document L2 – Conservation of Fuel and Power, doubled our previous insulation levels and introduced a far greater emphasis on energy losses due to cold bridging and air changes.

These regulations are applicable to both new build and refurbishment programmes.

Unifold has been used within roof refurbishment programmes where the requirements of Approved Document L2 have been applicable.

Following an extensive and detailed survey, careful design consideration is obviously necessary for any roof refurbishment within the requirements of these regulations.

Eaves and gutter design are particularly relevant, as extra capacity and particularly depth, is required in the gutter to accommodate insulation levels and to retain or improve gutter capacity. The eaves arrangement needs to accommodate the new system.

These conditions are dependent on several factors including: -

1. New roof type: Built-up or Composite roof system

2. Whether the roof is to be over-skinned or stripped and re-sheeted.

3. Retention or replacement of the existing gutter.

Built-up Roof System – will require the new liner tray to discharge to the gutter to drain any interstitial condensation.

This provides some design restrictions when attempting to include the necessary insulation depth within the gutter, unless a roof over-skin system is contemplated.

Composite Roof System – As there is no liner tray to discharge, the depth of insulation within the composite roof sheet can be utilised and will usually provide sufficient capacity to include the necessary insulation levels within the existing gutter.

Roof Over-skin – If the roof is to be over-skinned it is possible to use the original construction depth of the roof, plus the profile depth of the existing roof sheet, to increase original gutter depth, allowing insulation to be included to requirements.

Roof Strip and Re-sheet – there is probably very little opportunity to increase the existing gutter sizes to accommodate the insulation levels required unless a composite roof system is used. Careful design, calculation and computer modelling will most likely be required to "prove" the arrangement.

Retention or Replacement of the existing Gutter - Whether the gutter is retained or replaced is often dependant upon which roofing system is used.

If a roof over-skin system is used, the original gutter is retained, unless the gutter substrate material has degraded or corroded beyond its useful, structural, life.

Thermal Issues, Air-tightness and Approved Document L

Continued.

Conversely, as the opportunity presents itself, the gutters are quite often changed when the existing roof is stripped and re-sheeted.

The use of Unifold in Document L2/J2 designs – whichever system of re-roofing is used and whether or not the gutters are retained or changed there is an opportunity to use Unifold and there are many advantages to its use: -

1, The gutter can be installed after the roof has been completed, preventing the damage usually caused during roof work.

2. The gutter capacity can most easily be increased to include the necessary levels of insulation.

3. Positive air sealing can be achieved without complication.

4. The continuous cold bridge normally associated with metal gutters can be removed or at least drastically reduced.

5. The opportunity exists to improve the drainage performance of the existing gutter and outlets by utilising some or all of the insulation thickness available to introduce sumps within the system. (NB: as this will cause localised cold bridging at outlet positions, "trade – off" calculations may be necessary to prove the design.)

6. The system will provide a guaranteed solution with great longevity.

Design – It is essential when considering Unifold for use in these installations, that Ampteam Technical Department is consulted in the early stages of the design cycle, as the gutter and eaves conditions are critical for the effective and correct use of the system to conform to the regulations.

Building Sciences
The Building Envelope Consultants

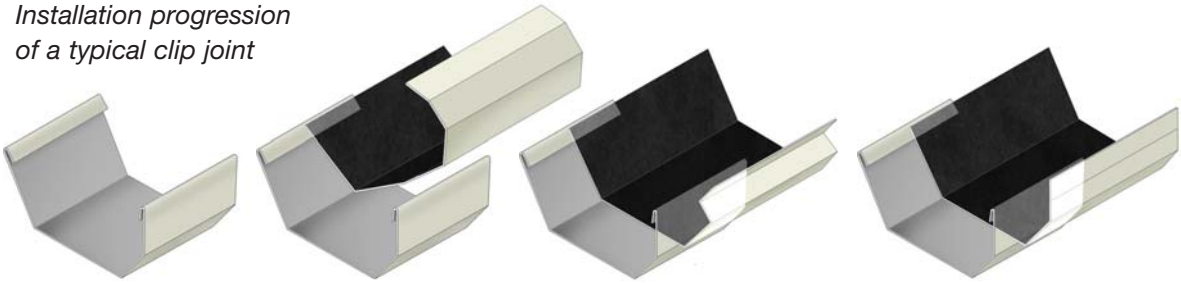
Building Sciences Ltd., leading independent building envelope consultants for thermal bridging, air leakage and roofing have made calculations for Ampteam to demonstrate compliance with the stringent criteria required to satisfy the Conservation of Energy sections of the Building Regulations for England & Wales, Scotland and Northern Ireland.

System Components

Unifold Clip Joint System

Unifold Clip Joint System is a patented system used to allow the installation of Unifold in difficult access situations where the gutter is narrow, small or where sheet overhang is excessive and prevents access to the extremes of the Unifold or where drill and rivet penetrations are un-desirable. Patent Number 2376481.

Installation progression of a typical clip joint



Outlets are provided to suit any existing configuration in either membrane only, as outlet liners, or metal/membrane for additional or replacement outlets

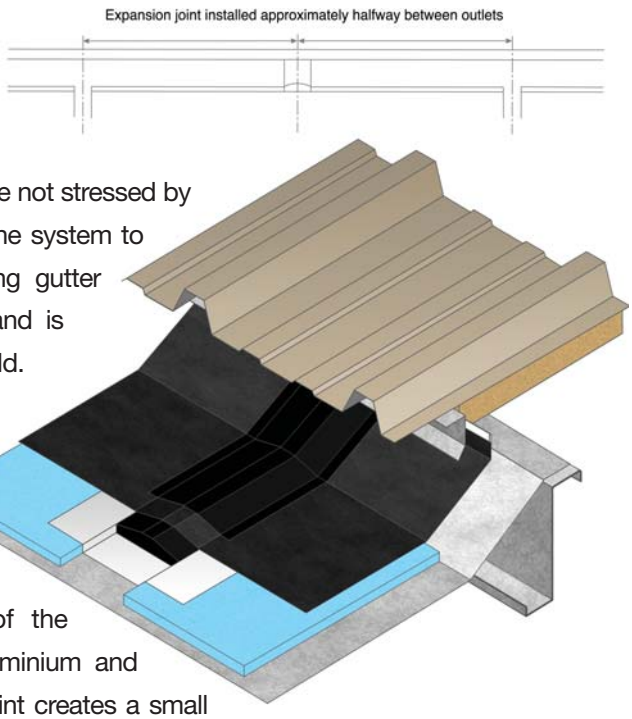
Nb: When extra outlets are required all unifold outlet types can be provided with an easily removable blanking plate to allow the outlet to be fitted but only to become operational when pipework serving the outlet has been installed.

Corners are factory fabricated units, provided in two parts, split along the centre-line of the Unifold gutter sole to ensure ease of site installation and sealing. The gutter profile is factory sealed.

Tees are similar to corners but provided in three parts, split along the centre-line of the Unifold gutter sole.

Sumps and Side Boxes are factory fabricated, sealed and installed within a small section of Unifold. These small sections of Unifold are usually multi-hinged to ensure maximum ease of access and installation.

Expansion and Contraction joint



Lining systems need expansion and contraction joints in certain circumstances to ensure that outlet liners remain in position and fabrications are not stressed by thermal or structural movement and to enable the system to move in complete conjunction with the existing gutter beneath. It is an integral part of the system and is manufactured within an individual length of Unifold.

It is used to coincide with building expansion joints, when Unifold installations exceed 100 metres or when Unifold must be induced to move with the existing gutter in installations where the thermal movement of the existing gutter is greater than Unifold. eg. Aluminium and G.R.P. gutters. The provision of an expansion joint creates a small raise in the sole of Unifold and therefore should be positioned between outlets or discharge points.

Section changes

Section changes are factory fabricated and sealed sections that are hinged to provide maximum ease of installation.

N.B.

It is essential that Unifold is provided to site in its most complete form to ensure the system can be installed as easily as possible. To facilitate this and whenever possible, all fabrication is provided as a sealed unit installed within a small section of Unifold gutter. This ensures that site operatives have the simplest of operations to fit the system, which enables the highest quality installation.

Permanent "Tie-off"

Where a gutter is shared by two buildings or companies and a division is required at the party line or when lining the entire length of a gutter is not required, then a permanent "tie-off" unit can be provided to attach and weather the Unifold to the existing gutter.

Emergency "Tie-off kit"/Overnight seals

It is highly undesirable to allow water to enter the cavity between the existing gutter and Unifold during installation. To ensure that this cannot occur "Tie-off kits" are provided for emergency and overnight seals.

Emergency / overnight Tie-off

Walkway Pad System

Unifold can withstand, without problem, the foot traffic sustained during normal maintenance operations. There are occasions, however, when the gutters are to be used on a more regular and intensive basis. These requirements are met with the Unifold Walkway Pad System, manufactured from re-constituted rubber, 6mm thick and provided in rolls 10metres long and to the required girth.

These pads are fully adhered to the surface of the Unifold using a splice adhesive.

Lightening Conductors

When it is necessary to traverse lightening conductors across or along the length of Unifold then saddle clips can be provided which fully adhere to the membrane of the gutter and securely hold the conductor correctly and at a short height above the Unifold surface.

Site Survey

Whilst many gutters are similar in size and profile and there are many standard profiles in existence, there are very few, if any, where the roof sheet and eaves condition relationship with the gutters are the same.

We have, therefore, in the vast majority of instances, dissimilar arrangements that require an exclusive solution for the gutter liner to accommodate.

To facilitate these unique conditions Ampteam technical staff and the Approved Contractor Network, provide on site surveys to ensure a correct solution.

Detailed dimensions of gutters, eaves conditions and lengths are taken along with specific measurements of roof areas discharging to gutters with outlet positions and types of outlets being recorded.

Ampteam technical department translate this information and produce detailed drawings of the Unifold solution together with calculations, where necessary, to prove the design.

This is normally presented, together with a supply and install quotation from an approved contractor.

Calculations

All calculations are conducted using BS EN 12056-3:2000 Gravity Drainage Systems inside Buildings, Part 3: Roof drainage, layout and calculation.

Specification

Please see the Model Specification and Gutter Components Specification Listing.

When required Ampteam technical department will produce a detailed customised specification for the entire installation.

"Try" Samples

In order to prove a Unifold solution, particularly where access is deemed to be difficult, "try" samples are available to test fit the gutter. These are free of charge and are usually available within 48 hours of notification.

Cleaning and Maintenance

As with all gutters, Unifold requires inspection and cleaning. This should be on a planned schedule, which considers the local environment and the frequency of debris build-up in the gutters. A log should be kept of all roof activity.

For detailed instructions on maintenance please refer to the Care and Maintenance guide.
Through Ampteam Limited, the Approved Contractor Network is available to clean, inspect and effect necessary repairs should this service be required.

Twenty year Guarantee

The Unifold system is backed by comprehensive 20 year guarantee. This guarantee warrants that the gutter lining is free from defects in material, manufacturing workmanship and installation.

Model Specification

The following Model specification details the standard/basic components and installation method for Unifold. To customise your specification please select components as required from the accessories listing

Unifold Gutter Lining System as manufactured by Ampteam Ltd., Turner Street, Dudley, West Midlands DY1 1TX

Telephone No: 01384 252777 Fax No: 01384 252888

COMPRISING: An E.P.D.M Synthetic Rubber Membrane 1.14mm thick permanently factory bonded to 0.7mm galvanized steel sheet.

To include necessary bends and hinge(s) to provide maximum ease of installation.

Gutter lining sections provided in standard 2800mm lengths, fixed with butt straps provided and fully sealed in accordance with manufacturers instructions.

OUTLETS: Patch type - supplied loose and cold vulcanised in position fully in accordance with manufacturers instructions.

STOPENDS: Supplied loose, fixed and fully sealed in accordance with manufacturers instructions.

Installation Procedure

1. Clean and reasonably dry the existing gutter(s)
2. Lay sole board (Extruded Polystyrene or similar approved) between and not over, existing gutter joints. (Thickness to suit height of bolt/nut/stud intrusions)
3. Install Unifold stop-end at commencement of run and lay Unifold gutter lining system fully in accordance with manufacturers instructions. Note: Sole board to be installed together with the Unifold and at a similar pace.
4. Determine position of existing outlets as lining progresses, cut hole in Unifold 5mm- 10mm larger in diameter than existing and fit system outlets fully in accordance with manufacturers instructions.
5. Cold vulcanize Sureseal Pressure Sensitive membrane flashings, 150mm wide and to the complete girth of the Unifold, over each joint area, fully in accordance with manufacturers instructions.
6. Provide system Tie-off kits (1 no per 50 metres) as provided by Ampteam Ltd, to be used for over-night weathering of incomplete runs and as emergency measures to prevent storm water penetrating the Unifold and existing gutter cavity.

7. Following completion and final inspection provide Unifold 20 year guarantee.

Gutter Components Specification Listing

To customise and complete the model specification please select the items as required from the following components list

SUMPS: Factory fabricated and sealed and supplied as part of a section of Unifold gutter.
Install fully in accordance with manufacturers instructions.

SIDE BOXES: Factory fabricated and sealed and supplied as part of a section of Unifold gutter. Install fully in accordance with manufacturers instructions.

SECTION CHANGE: factory fabricated and sealed to include a small section of each gutter. Install fully in accordance with manufacturers instructions

EXPANSION / CONTRACTION JOINT: Manufactured as an integral part of a Unifold section to be installed between two fixed points ie:- two outlets / one outlet and at the stop-end / corner or junction. To be fitted fully in accordance with manufacturers instructions.
System drawing number 1024

SIPHONIC OUTLET SECTIONS: Manufactured as an integral part of a Unifold section. To be fitted fully in accordance with manufacturers instructions.
System drawing number 1026

CORNERS: factory fabricated and sealed. To be fitted fully in accordance with manufacturers instructions
System drawing number 1027

TEES: Factory fabricated and sealed. To be fitted fully in accordance with manufacturers instructions.
System drawing number 1028

PERMANENT TIE-OFF ASSEMBLY: Supplied in component kit form to permanently terminate Unifold within the length of the gutter ie:- at the party line of two buildings sharing the same gutter. Install fully in accordance with manufacturers instructions.
System drawing number 1017

PVCU OVERFLOW UNITS 50mm DIAMETER x 300mm LONG: Supplied as a factory fabricated unit. Install fully in accordance with manufacturers instructions.
System Drawing number 1035

SNORKEL OVERFLOW UNITS (For flashing existing overflows): Supplied as a factory manufactured unit. Install fully in accordance with manufacturers instructions.
System drawing number 1025

SNORKEL OVERFLOW UNITS (For the insertion of new overflows): Supplied as factory fabricated unit. Install fully in accordance with manufacturers instructions

System drawings may be obtained from Ampteam on request.

GENERAL SPECIFICATION & MAINTENANCE INSTRUCTIONS

UNIFOLD gutter systems are manufactured from a composite sheet consisting of a synthetic rubber membrane fully bonded to a galvanised steel sheet using a high pressure bonding process.

The resulting bond is unaffected by the extremes of heat, cold or moisture normally experienced on roofs and buildings.

The lining and its metal substrate form a composite sheet giving optimum wet life performance with the strength, workability and handling qualities of steel.

UNIFOLD employs CARLISLE SYNTEC "SURESEAL" EPDM which is a fully cured, single ply synthetic roofing membrane made of ethylene, propylene, diene, terpolymer which is renowned for its very long term stability and lifespan in excess of 50 years. "Sureseal" EPDM membrane is covered by British Board of Agrément Certificate No 92/2791, copies of which are available on request.

TECHNICAL SPECIFICATION - MATERIALS & COMPONENTS

1. CARLISLE SYNTEC "SURESEAL" EPDM MEMBRANE

A Black ELASTOMERIC MEMBRANE with a good combination of high elasticity and tensile strength.

Temperature stability from -45 degree centigrade to + 130 degrees centigrade retaining elasticity at low temperatures and resistance to temperature shocks up to 250 degrees centigrade.

SURESEAL has excellent resistance to U.V radiation and ozone concentration base.

2. STEEL SUBSTRATE. HD Galvanised mild steel to E.N.10142-1991– FE PO2G / BS 2989/1982 Z2/G275, 0.7mm thickness.

To provide further protection for the galvanised steel substrate, it is provided, as a minimum specification, with a heat cured, high performance polyester topcoat over a corrosion resistant primer.

UNIFOLD STANDARD COMPONENT LENGTH - 2800mm

3. SOLE BOARD (closed cell Insulation Board) Extruded Polystyrene "STYROFOAM" I.B board (or similar approved) minimum density 28kg/m3 and thermal conductivity value 0.033 w/mk. Insulation thickness to suit gutter bolt head/stud intrusion height and thermal requirements.

4. JOINTS: mechanical means utilising butt straps join Unifold gutter systems. There are two types of butt straps. Type 1 - fixed with A.D.68 Blind rivets. Used for normal installations

Type 2 – Clip joint – Used for difficult access situations

Both types are sealed with P40 polyurethane mastic which is permanently flexible. Mastic service temperature, - 40 degrees centigrade to + 80 degrees centigrade (dry) & + 50 degrees centigrade (wet).

Following installation joints are further protected by an EPDM membrane strip, covering the whole joint and fixings which is cold vulcanised in position. Normal width of membrane strip is 150mm.

5. OUTLETS:
1) E.P.D.M Elastoform factory fabricated in a spigot format to suit specified down pipe sizes. Positioned through a cut hole into the Unifold gutter and spliced (cold vulcanised) into position in accordance with splicing instructions.

2) EPDM Sureseal Metal/Membrane factory fabricated in a spigot format to suit specified downpipe sizes. Used to replace corroded outlets or to provide new outlets. Also used as a security point each side of an expansion joint for Unifold.

All outlets can be manufactured to suit any existing outlet type

6. FABRICATION: Items to complement the system such as Sumps, Side boxes, section changes are fabricated and sealed in the factory. These items are most often manufactured within a small section of Unifold to enable the simplest of operations to install.

7. HANDLING & PROTECTION: EPDM can easily withstand without damage, limited foot traffic and light concentration loads associated with installation and maintenance. All maintenance or repair crews should be advised that the gutters are EPDM membrane lined and that care should be exercised to prevent damage. Any possible damage should be reported immediately. Ampteam Ltd recommends that a log is kept of all roof top activity.

To avoid damage by sharp objects during roofing work programmes and particularly where the gutter is to be used as a walkway or work platform during these programmes then the gutter should first be cleaned in the prescribed manner, and then adequately protected by boards.
On work completion and removal of boards the gutter must be inspected for damage.

8. MAINTENANCE *(Please see Unifold Care & Maintenance Guide available on request from Ampteam)*

A)

The roofs of all buildings should be inspected at regular intervals as part of a planned maintenance programme, particularly where the building is in or near a wooded area, subject to high winds, or there are industrial pollutants which may accumulate in the surface water run-off.

B) CLEANING

1. EPDM gutter should be fully swept out and cleaned by hosing down and swept with a soft broom.
2. Shovels or metal scrapers should never be pushed or pulled along the surface of the EPDM.
3. Following sweeping, the EPDM surface should be inspected for signs of surface damage particularly at joints or seams.
4. Remove, clean and replace all balloon gratings. Exercise care to prevent damage to EPDM membrane outlets.

C) DAMAGE REPAIR:

EPDM can be repaired throughout its extensive life using the following procedure.
1. Clean around the damaged area.
2. When repairing membrane which has been in service for some time, it is necessary to remove accumulated dirt by first scrubbing the membrane with a brush and warm soapy water.
3. After rinsing with clean water and drying, a second cleaning is required using a splice primer to prepare and reactivate the membrane.
4. Cut a patch of membrane that extends minimum 80mm on each side of the boundaries of the damaged area.
5. Round all corners of the repair piece.
6. Install the splice fully in accordance with splicing procedures.

9. APPROVED CONTRACTORS:

Our network of approved installation contractors are available to effect repairs, clean gutters and to inspect for damage should this service be required.

ACKNOWLEDGMENTS

Patent Number 2313385

EPDM Membrane Technical Specifications

Physical Properties	Method	Result	Dimension
Specific weight	Direct measurement	1.38	K.g/m
Shore A durometer	ASTM - D -2240	65+-10	
Tensile Strength	MOAT 46 - UE ATC		
Unaged		8.0	N./mm
Heat aged *		9.6	N./mm
Elongation	MOAT 46 -UEATC		
Unaged		380	%
Heat aged *		300	%
Tear resistance	MOAT 46 - UEATC	11.7	N./mm
Modulus at 100% strain	MOAT 46 - UEATC	2.81	N./mm
Dimensional Stability**	MOAT27 - UEATC	0.1.0.2	%
Low temperature flexibility	DIN 7864	Crack free at 30	Degrees C
Water absorption	MOAT 46 - UEATC	0.21	%
M-factor(vapour resist)		58.000	
Ozone resistance	DIN 7864	Crack free	
UV resistance	ASTMG53 - 84	Crack free	
Bitumen compatibility	MOAT 46 - UEATC	In accordance with requirements	
***84 days at 80 degrees centigrade**			
****24 hours at 100 degrees centigrade**			

Service Performance	Method	Result	Dimension
Static indentation	MOAT 27 - UEATC		
Concrete		L4	
Expanded Polystyrene		L3	
Dynamic Compression	MOAT 27 - UEATC		
Chipboard		13	
Perlite		14	
Expanded polystyrene		14	
Peel Resistance	MOAT 27 - UEATC		
Chipboard		22	N
Concrete		27.8	N
Polyurethane		41	N
Wind uplift			
Fully adhered system (Bonded to polyurethane)	UEATC - Directives	Resist to 7000	Pascal (N./m)
M.A.S system (on hard rockwool)	UEATC - Directives	Resist to 5500	Pascal (N./m)
B.I.S system	UEATC - Directives	Resist to 4500	Pascal (N./m)
***FR - Fire retardant**			

The company persues a policy of constant product development and information contained in this publication is therefore subject to change without notice.

AMPTEAM is a knowledge-based specialist in the provision of Unifold gutter lining systems. Our product combines the culmination of many years of technical and engineering expertise within the roofing industry coupled with the highest quality materials to provide a complete gutter lining solution which is engineered specifically to suit organisations' individual needs.

The over-riding mission for AMPTEAM is to become the UK's leading gutter lining solutions provider. With our team of highly focused, skilled and knowledgeable people we aim to ensure our customers find bespoke solutions to their individual requirements. Our continued investment of finance and skills on this single area of essential building maintenance provides our customers with the knowledge that they are working with an industry recognised solutions provider who have a complete success record and offer guaranteed peace of mind after every installation.

In short, through our continued commitment to quality and customer care we aim to forge lasting relationships within the industry based on long-term business development, engineering excellence and technical expertise, which will help organisations, meet their ever-evolving business needs.

Robert Mantle FIoR

Managing Director

August 2005

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