Green Roofs Roof Terraces Constructions



 37
 0.8.cm leminálit ovrkette
 2

 1 Hz. Nic zlážit
 Nic zlážit
 1

 B.cm. al pacte ten
 1
 1

 1 Hz. Nic zlážit
 Nic zlážit
 1

 B.cm. al pacte ten
 1
 1

 I Hz. Nic zlážit
 Nic zlážit
 1

 B.cm. al pacte ten
 1
 1

 I Hz. Nic zlážit
 Nic zlážit
 1

 J. cm ISCVER TUPT hangezgetelée
 24 cm vasbeton lemez

AND IN THE REPORT OF A DESCRIPTION OF A

4,40

9.89



DETAIL INSTRUCTIONS FOR PAGES 8-27

Roof Deck

- 1a Typically Steel, Timber or Concrete Deck
- 1c Screed to Falls
- 1d Timber Roof Board
- **1e** Eaves Profile Retention Support Bracket

Waterproofing and Insulation 6b Perennials, Lawn

- 2a VLT Separation Layer
- **2b** Vapour Control Layer (FLW)
- 2c Waterproofing / Root Resistant Membrane
- 2d Waterproofing Layer (non root resistant)
- 2e Root Resistant Membrane 2f Extruded Polystyrene Thermal
- Insulation 2g Expanded Polystyrene Thermal
- Insulation
- 2i Self-adhesive joint sealing tape
- 2j Pond Liner

Geotextiles

- **3a** VLU Mechanical Protection Laver
- 3b VLF Filter Layer 3c VLS Water Retention and
- Protection Layer 3d VLR Separation Fleece for
- inverted roofs
- Erosion Control Layers
- 3e DiaDomino 3f Jute Netting

Drainage / Reservoir Layers

- 4a DiaDrain-25 Drainage /
- Reservoir Board 4b DiaDrain-40 Drainage /
- Reservoir Board 4c DiaDrain-60 Drainage /
- Reservoir Board

Growing Media 5a SEM Extensive Growing media 5b SRM Lawn Growing media

1b Reinforced Concrete Roof Slab **5c** SIM Intensive Growing media 5d SUM Base Growing media

Vegetation

6a Drought-resistant, Herbaceous Perennials 6c Perennials, Shrubs 6d Small Trees, Bushes

Water Management

7a KSE Inspection Box 7b KSR Inspection Box 7c KSA Inspection Box 7d TRF Terrace Grille with fixed height 7e TRH Terrace Grille with adjustable height 7f TRS Door Access Grille 2h Compatible Thermal Insulation 7g RNS Drainage Channel with diestamped grating 7h RNF Channel with steel grating 7i RNH Channel with adjustable height 7j BLH Adjustable Terrace Outlet 7k Water Level Regulator 7I TGS Heavy Duty Inspection Box 7m Roof Outlet

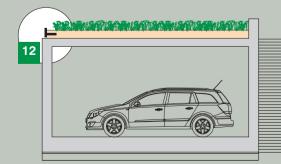
Edges

8a KLR Gravel Board 8b RDL Edge Profile "L" shaped 8c RDA Terrace Kerb "A" shaped 8d BW Concrete Kerb 8e RDT Edge Profile "T" shaped 8f Perforated capping sheet

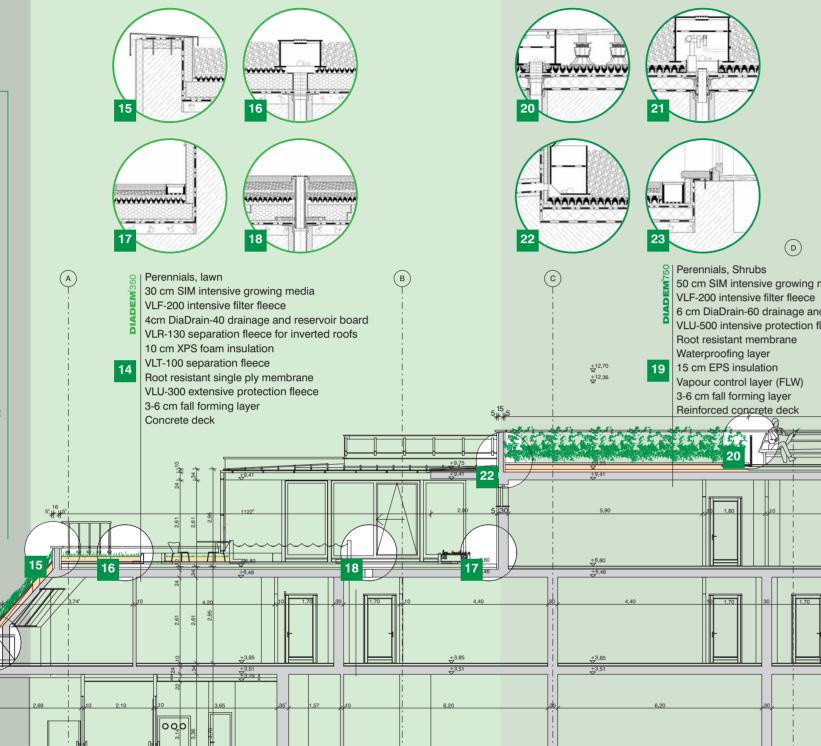
Terrace Construction

9a FK Cross Spacers 9b SLH adjustable height pedestals 9c PGE Plant Containers

Safety Systems 10a DRS Safety Railing System 10b FLG Fall Arrest System







DIADEM®350 SEMI-INTENSIVE GREEN ROOF

ut ut

26

+0,35



-

Root resistant membrane

Vapour control layer (FLW)

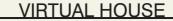
3-6 cm fall forming layer

Reinforced concrete deck

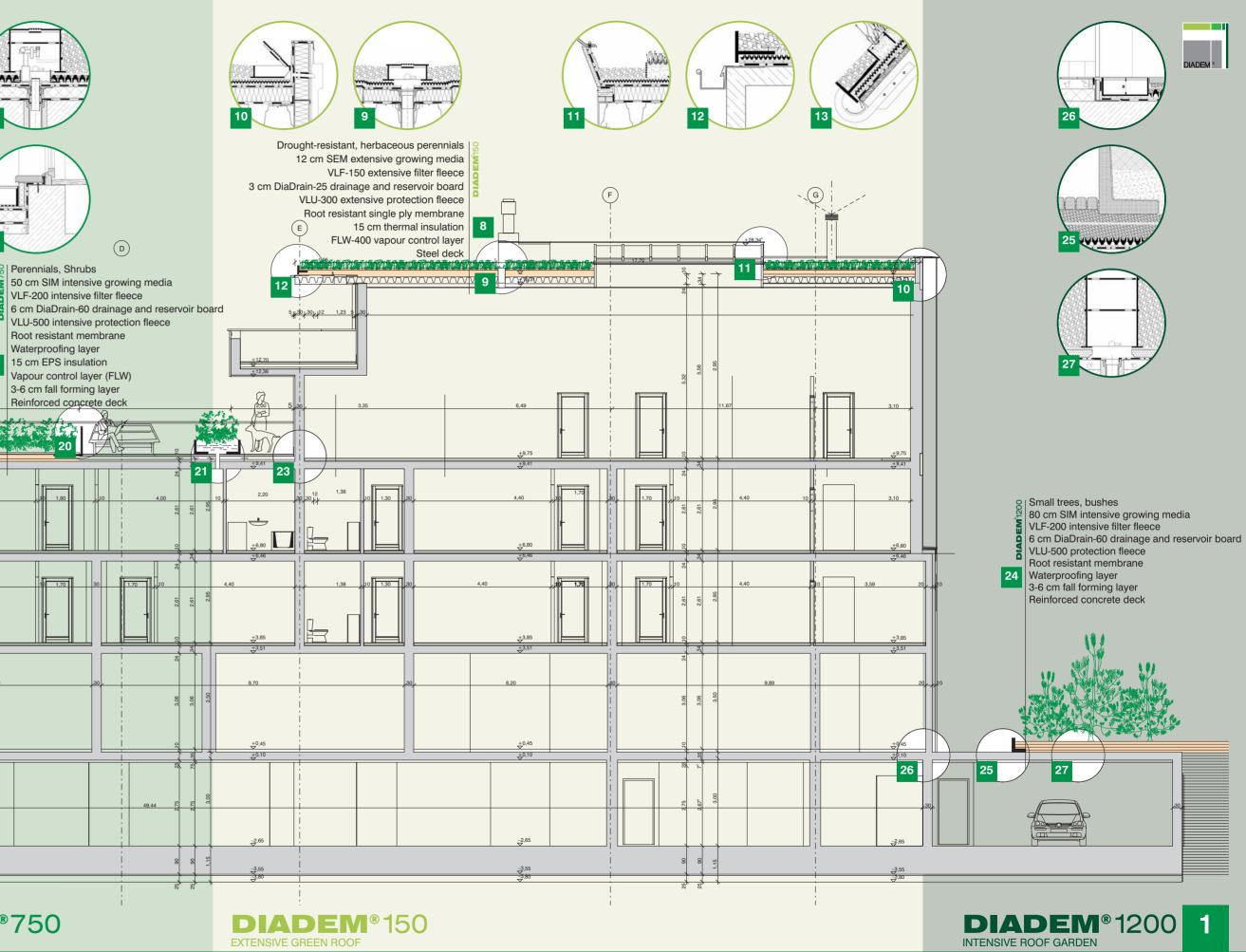
Waterproofing layer

(D)

ROOF GARDEN SYSTEM



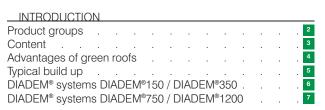
VIRTUAL HOUSE



www.diademroof.com

INTRODUCTION PRODUCT GROUPS

INTRODUCTION CONTENT



TYPICA	L SY	STEM S	SOL	UTI	SNC	5							
DIADEM®	150												8
DIADEM®	150	rainwat	er o	utle	t							.	9
DIADEM®	150	perimet	er w	vall	draiı	nag	e or	OVE	erflo	W			10
DIADEM®	150	roof ma	ainte	nan	ice								11
DIADEM®													12
DIADEM®	150	pitched	roo	of									13
DIADEM®	350												14
DIADEM®													15
DIADEM®	350	outlet											16
DIADEM®													17
DIADEM®													18
DIADEM®													19
DIADEM®													20
DIADEM®											•		21
DIADEM®						OW	insp	pect	ion	box			22
DIADEM®	750	terrace	acc	ess									23
DIADEM®													24
DIADEM®													25
DIADEM®													26
DIADEM®	1200) deep i	nsp	ecti	on ι	Init							27

PRODUCTS

PRODUCIS		
Organic materials, extensive plants		. 28
Organic materials, intensive plants		. 29
Organic materials, extensive growing media.		30
Organic materials, intensive growing media.		31
Layer components, drainage / reservoir boards		. 32
Layer components, geotextiles		36
Layer components, root resistant membrane		38
Organic materials, nutrient supply		. 39
Hydrotechnology, inspection boxes		. 40
Hydrotechnology, water drainage channels		. 44
Hydrotechnology, terrace outlet covers		. 46
Hydrotechnology, terrace grilles		48
Hydrotechnology, terrace grille unit		. 49
Hydrotechnology, automatic irrigation system		50
Edging, gravel boards		. 52
Edging, recycled plastic kerbs		. 54
Edging, concrete kerbs		. 56
Terrace building, adjustable-height pedestals		. 58
Terrace building, cross spacers		60
Safety technology, railing systems		. 62
Safety technology, roof safety fencing		. 65
Safety technology, fall arrest system		. 66
PLANNING GUIDELINES		
How to plan and build a green roof		. 68
-		

REFERENCES

PRODUCT LIST



GREEN

Our vision is a city filled with gardens. We firmly believe that good intentions are not good enough, but must be followed by good deeds if we are to have a greener, friendlier and healthier environment. Our DIADEM[®] products and services are carefully designed to bring a little bit of nature into our increasingly urban lifestyles.

IGREEN ROOF SYSTEMS







Terrace Pedestals Cross Spacers Plant Containers

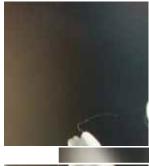
Gravel Boards ecycled Plastic Kerbs Concrete Kerbs

ITERRACES

■ Our company is engaged in the development, component production and marketing of DIADEM[®] green roof systems and accessories. Our products are widely used in all of Europe especially by customers who emphasize safety and quality.

ISAFETY TECHNOLOGY















3

INTRODUCTION

ADVANTAGES OF A GREEN ROOF



INTRODUCTION **TYPICAL BUILD UP**

Planting options

The type of plants used depends on whether a low maintenance extensive Green Roof is chosen or an intensive one with the more formal features expected from gardens. The former is limited to succulents, grasses and herbs, while the latter can be planted in accordance with the wishes of the gardener.

SEM / SIM Growing Medium

The depth of soil mix to use depends on whether the roof is the extensive or the intensive type. Soil depth can start from 40 mm upwards. The content and ratio of organic and mineral material in the mixture depends on the types of plants used

VLF Filter Layer

A filtering sheet to stop leaching of the soil particles. It is made of rot-proof geotextile.

DiaDrain Drainage and Reservoir Boards

Draining excess water from the roof, aeration of roots, suppling water and nourishment to plants all solved by form-pressed drainage boards.

VLU Protection Layer

This sheet is for the mechanical protection of the water insulating layer during construction work. It retains moisture and allows roots to grow through, thus enhancing cohesion of the layers above. At least 300 g/m² weight should be used of this material.

FLW Root Protection Layer

This sheet protects the waterproofing and the building structure itself from damage from roots in situations where the waterproofing is not root resistant. A pre-requisite of this sheet is to have less resistance to moisture than the water proofing below.

VLT Separation Layer

The purpose of this layer is to separate waterproofing from incompatible root protection layer, or to separate any other incompatible materials.

□ Waterproofing Layer



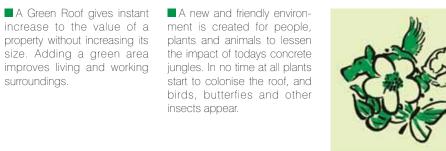
ECONOMIC ADVANTAGES

surroundings.

ENVIRONMENTAL ADVANTAGES

insects appear.







A reduction is possible on drain diameter and sewage charges because much of the sewage system from rainwater is recycled into the overloading. It is a balanced irrigation system of a Green way of water management. Roof

The excellent insulating

properties of a Green Roof

conditioning costs.

A Green Roof gives instant

property without increasing its

size. Adding a green area

Green Roofs retain and recycle water and so free the

The air contains more

moisture and is healthier to

keep buildings warmer in breathe. Temperature

cutting heating and air are the urban hot spots.







■ Noise and particle pollution ■ Many pollutants are is cut. The building stucture absorbed by a Green Roof, and its conventional insulation making the air safer to gains a longer life span.

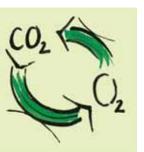
breathe. Even light pollution is reduced to some degree.



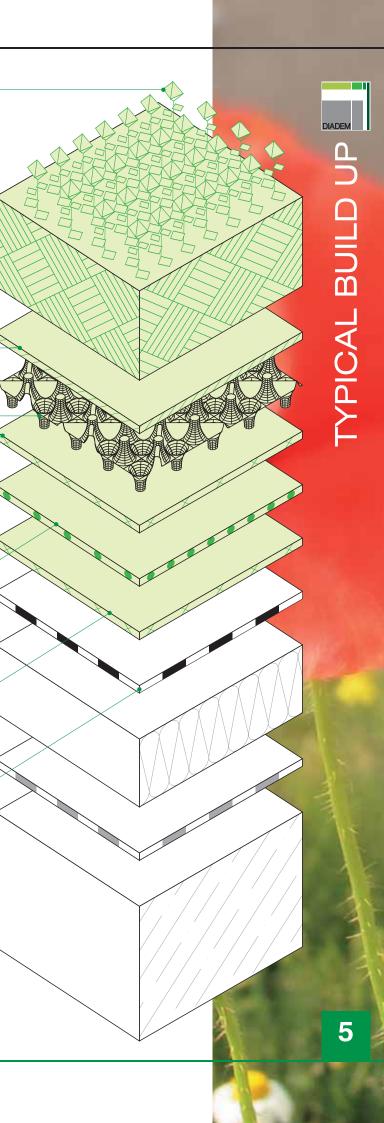


■ A green roof indicates the ■ The photosynthesis of building owners concern for plants is the most efficient the environment.

method known to man to utilise solar energy to best advantage.



winter and cooler in summer, extremes are reduced, and so



INTRODUCTION

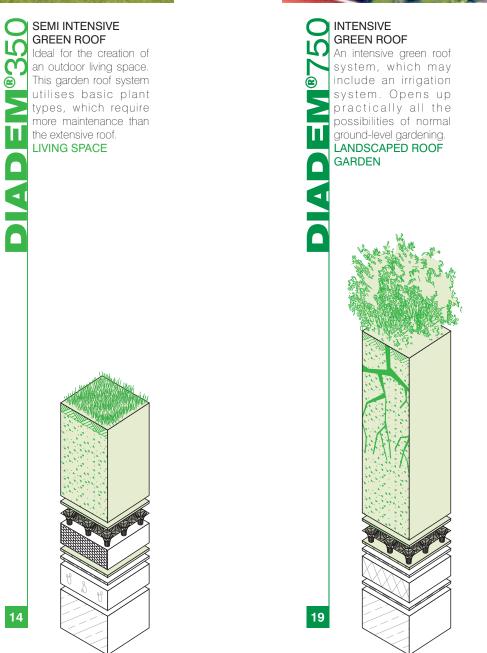
DIADEM[®] SYSTEMS DIADEM[®]150 / DIADEM[®]350

©

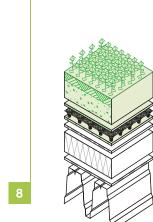


DIADEM[®] SYSTEMS DIADEM[®]750 / DIADEM[®]1200











14

6



GROUND LEVEL GREEN ROOF

O

Т

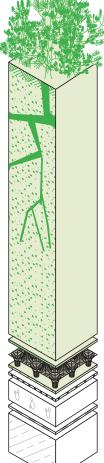
۲

 \geq

24

DIADEM® 1200 is used in circumstances, where substantial planting is realised by the use of neavy mechanical plant and equipment during construction.

UNDERGROUND STRUCTURES







Frequently Asked Questions

occasional weeding.

established?

the time of planting.

conditions.

Typical build up

Do we need to irrigate vegetation?

natural habitat under very harsh conditions.

What type of planting is possible?

📕 Drought resistant perennial plants.

No, the vegetation of Diadem® 150 consists of drought-

resistant herbaceous, perennial plants which grow in their

Once established, these plants are extremely sturdy and

consequently require only minimal maintenance, limited to

How long does it take for the vegetation to become

This depends on the planting method and the conditions at

The sedum/wildflower mix is selected to suit the local

components and with good water permeability characteristics.

What maintenance does the vegetation require?

DIADEM® 150

Product Description DIADEM® 150 is a multi-layer green roof system, comprising protection fleece, drainage layer, filter fleece and mineralrich plant growing media suitable for drought-resistant plants.

Thickness of system: ~120 mm Saturated weight: ~150 kg/m² (without vegetation) Related pages: 9 10 11 12 13 71

Function

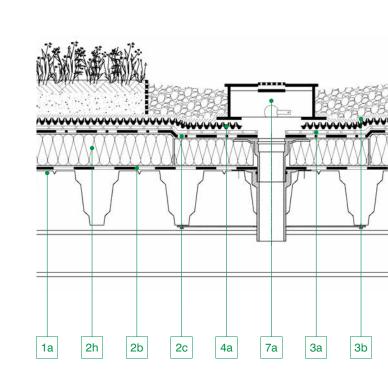
To provide an ecologically sound protection layer to the roof with all the advantages listed below.

Application

Application of the product is recommended for building structures with limited load bearing capacity and in areas with no or minimal regularity of use.

Advantages

Improved thermal insulating ability. Rainwater retention capability, helping to reduce the extent of flash floods. Living space for nature Suitable for most lightweight roof structures



1a Typically Steel, Timber or Concrete Deck Waterproofing and Insulation Vegetation ^{2b} Vapour Control Layer (FLW). 38 ^{2c} Waterproofing / Root Resistant

36

Roof Deck

Membrane

2h Compatible Thermal Insulation

^{3a} VLU-300 Mechanical Protection Layer ³⁶

Geotextile Layers

3b VLF-150 Filter Layer..

Water Management

Edge Profile 8a KLR Gravel Board.

Drainage / Reservoir Layer 4a DiaDrain-25 Drainage /... 32 Reservoir Board Good practice requires that all times. A 300-500 mm wide achieved by means of a gravel rainwater outlets are designed to remain free from installed around all roof obstructions, for example penetrations to the thickness of gravel or vegetation. These the growing medium

Separation of the materials is

Diadrain-25 Light Weight Drainage / Reservoir Board. It has good load bearing capabalities and provides for excellent drainage, reservoir and aeration properties.

SEM growing medium, possessing low organic material content made of mostly mineral

The VLF-150 Filter Layer is a superior geotextile, with excellent strength and pressure resistance

properties. Made of polypropylene, it is capable of high vapour and water pemeability.

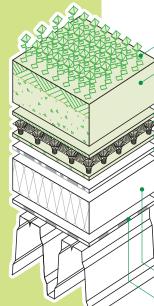
The VLU-300 Mechanical Protection Layer is a specially formulated Polypropylene sheet which has a hard upper and soft under side making it ideal for the protection of the waterproofing membrane.

Root resistant waterproofing membrane.

NOTE: Non root resistant waterproofing membranes require a separate root resistant layer eg. FLW-400.

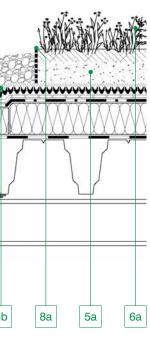
Compatible thermal insulation layer.

Uapour control layer





outlets should be accessible at



Growing Media

5a SEM Extensive growing media...

30

6a Drought-resistant, Herbaceous Perennials 28

7a KSE Inspection Box 50-300 mm height.. 40



gravel border should be board such as KLS. This board also allows rainwater to drain easily to the outlets.





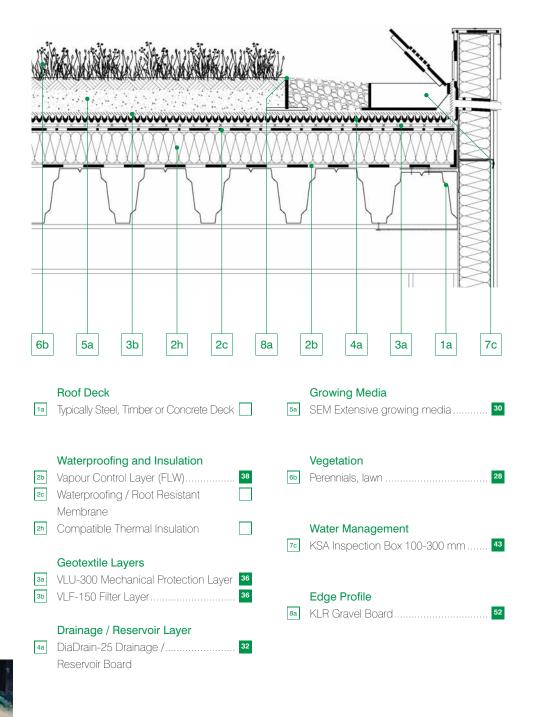


TYPICAL SYSTEM SOLUTIONS

DIADEM[®] 150 ■ PERIMETER WALL DRAINAGE OR OVERFLOW / KSA PERIMETER INSPECTION BOX

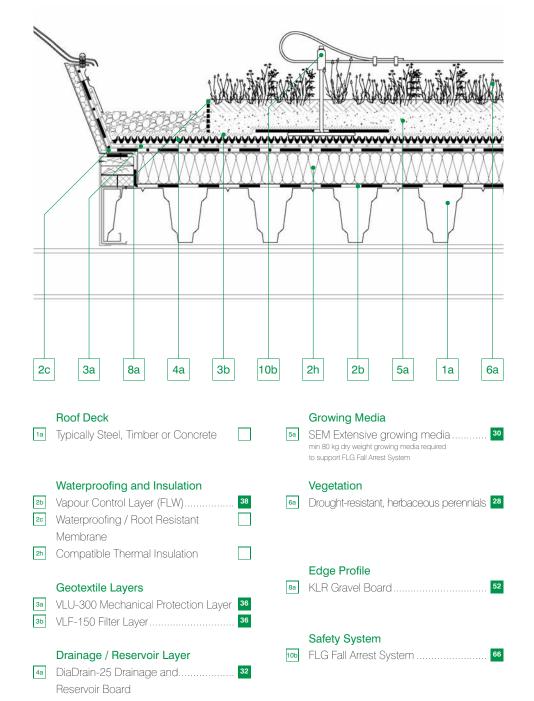
DIADEM[®] 150 ■ ROOF MAINTENANCE/ FLG SAFETY SYSTEM

10



each roof area has a minimum requirement for the installation of two drainage points. Local of an overflow. It is important conditions determine where that these drainage points these are located and may remain free from any

Good practice requires that also indicate an additional obstruction, therefore access should be provided for maintenance purposes.



roof areas should be properly maintained including ensuring that rainwater outlets are kept clear and free of any obstruction. Complementary to this requirement is the need

Good practice dictates that to ensure maintenance the European norms are fully personnel remain safe on the roof. The FLG-30 fall arrest system provides this safety element without the need to penetrate the waterproofing layer. EN 795 and EN 795/A1

complied with. The line system can also be used as an independent lightning protection system.

EM ® 150 EXTENSIVE GREEN ROOF



TYPICAL SYSTEM SOLUTIONS DIADEM[®] 150 ■ TABLE TOP ROOF EDGE / RDT EDGE PROFILE

DIADEM[®] 150 ■ PITCHED ROOF / RDT EDGE PROFILE AND DIADOMINO

3f

36

expert advice should be sought.

In the case of steeper roof

designs >20 degrees it is

essential that a permanent

Geocell soil erosion prevention

layer is installed. This layer

should act independently of the

waterproofing membrane to

avoid the transfer of shearing

3e

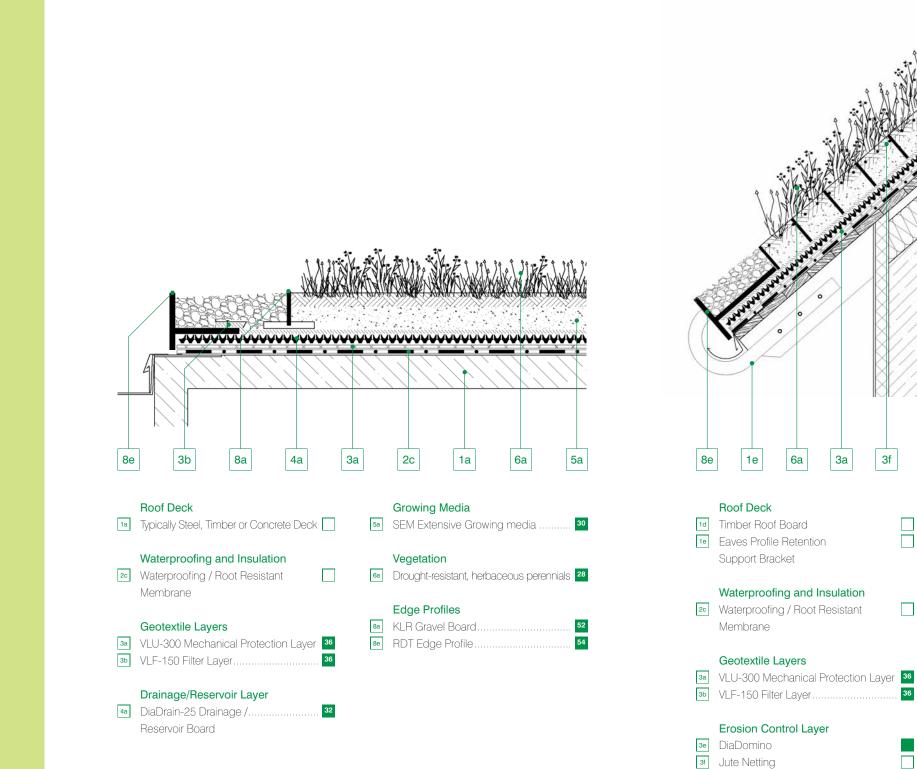
2c

1d

Vegetation

Edge Profiles

will





Where the roof does not rainwater to the drainage have a perimeter parapet wall, the RDT Edge Profile provides one possible solution to the problem of how to retain the garden elements, whilst still allowing the free flow of is achieved by means of

areas. In addition, this profile ensures the edge of the roof garden build up is obscured from view. The required gravel border around the perimeter separating the planted area by the use of the KLR gravel board. The boards also prevent the spread of plants into the gravel border, thereby keeping maintenance to a minimum.

structures between 10 and 20

degree incline, the use of

Diadrain-25 in conjunction with

jute netting provides sufficient

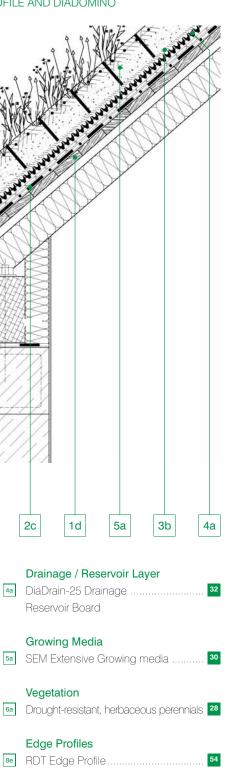
erosion protection. However,

careful consideration should still

be given to the roof edge finish.

All sloping roofs require the

careful choice of growing





In the case of sloping roof medium and vegetation and forces. The roof edge finish has to be designed to withstand the downward forces present. The use of the RDT's profile will satisfy this requirment. A sloping sedum roof construction should not require any special irrigation system however a grass roof









DIADEM® 350

DIADEM® 350 is a semi intensive type of green roof, generally covered with grasses, perennials and shrubs, offering different finishes and uses.

Thickness of system: ~ 300 mm Saturated weight: ~ **350 kg/m**² (without vegetation) Related pages: 15 16 17 18 72

?

Function

In addition to the usual ecologically benefits this type of construction has the added value of providing additional valuable space for recreational use.

Application

This type of installation is recommended where there is the desire to create a pleasant enviroment that can be used by those working or living at the location.

Advantages

Suitable for every day use Property value increases Better use made of available space Wide range of designs are possible Relatively low investment cost Technically sound Improved thermal efficiency Enhanced enviromental benefits Good rainwater retention Installation is more economical than that of a fully landscaped roof garden. Ideal for an inverted roof construction as it provides

the advantage of additional roof membrane protection.

SRM-30 is a nutrient rich soil mix consisting of lava, pumice, recycled crushed clay based products and enriched with compost. SRM is ideal for lawns.

- VLF-200 is a superior geotextile, with excellent strength and pressure resistence properties. Made of polypropylene, it is capable of high vapour and water pemeability.
- DiaDrain-40 is a light drainage/reservoir board. It has good load bearing capabilities and provides for excellent drainage, reservoir and aeration.

Extruded polystyrene thermal insulation boards suitable for inverted roof construction.

- Optional: VLU-300 protection and separation fleece. Note: This layer must be installed where compatibility problems exist between the different layers.
- Broot resistant waterproofing membrane. NOTE: Non root resistant waterproofing membranes require a separate root resistant layer eg. FLW-400.

Screed to falls.

Reinforced concrete roof deck.

Frequently Asked Questions

• What about maintenance?

irrigation and a maintenance program.

• What about lawn maintenance?

It may be that the roof structure cannot support the weight of

This should be considered at the early planning stages and

should include such matters as providing suitable access,

A lawn should be cut often and regularly in order to ensure

that the cuttings remain short and therefore do not need to be

collected. Indeed, these cuttings provide beneficial nutrients

Soil-covering plants with grass types, perennials and shrubs.

a more elaborate fully landscaped roof garden design.

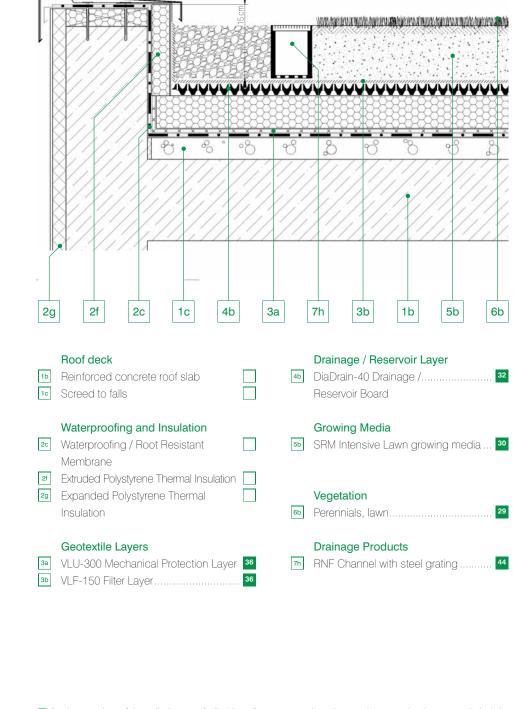
• Why semi-intensive?

for the lawn.

Typical build up

TYPICAL SYSTEM SOLUTIONS

DIADEM® 350 LOW PARAPET / RNS DRAINAGE CHANNEL



An inverted roof installation A limiting factor may be the the required upstand height retro fitting insulation in order current thermal requirements.

can be an efficient method of height of the existing can be measured from the upstands. To help alleviate this base. to bring the building up to problem the RNS Drainage Channel can be installed and

14

က **SREEN** SEMI INTENSIVE

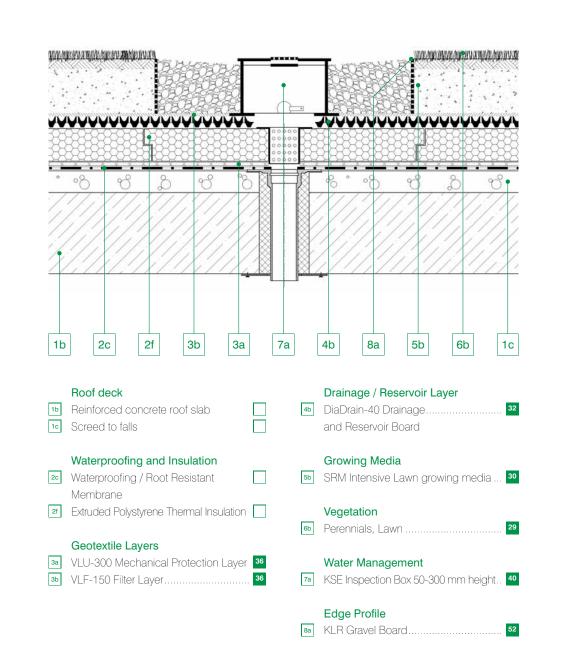


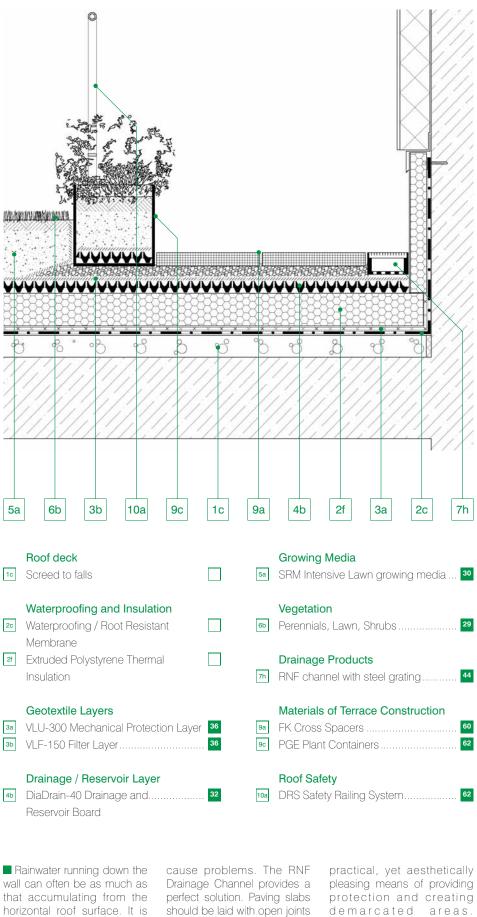
DIADEM[®] 350 ■ OUTLET/KSE INSPECTION BOX

TYPICAL SYSTEM SOLUTIONS

DIADEM[®] 350 ■ ROOF DETAILING / DRS PLANTER AND RNF CHANNEL







and kept permanently

separated by the use of FK

It is important that the and to the same diameter. rainwater is able to flow freely A KSE Inspection Box is then to the drainage points. This is achieved by cutting a hole in the drainage layer and drainage layer. The KSE insulation around the outlet Inspection Box in conjunction

placed above the opening and supported on the

with the KLR Gravel Board and DiaDrain Drainage Layer ensures that the water reaching the outlet is clear of any material that may cause an obstruction.

therefore crucial that at the

junction of these planes water

is prevented from building up

to levels which are likely to

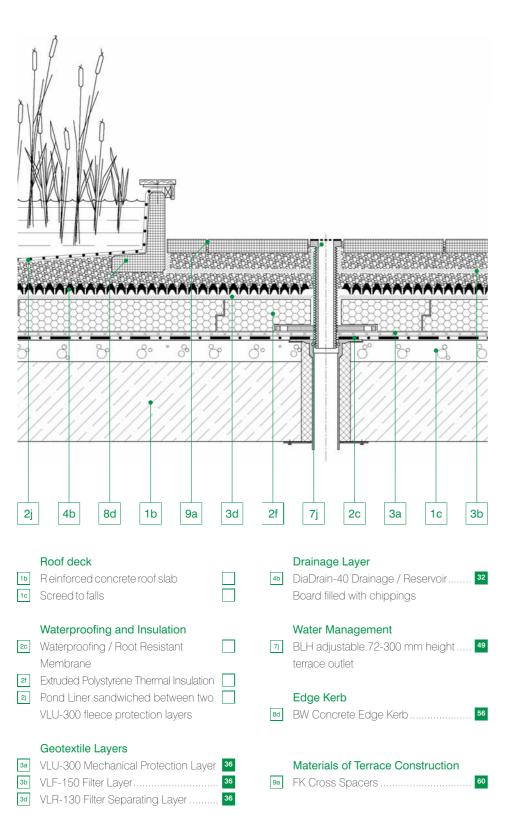
ers													60
aine	ers	<u>.</u> .				 •							62

Maintenance personnel can also use the DRS as an Cross Spacers. The DRS anchor point for safety Safety Railing System is a equipment.

S <u>`</u>@ SEMI INTENSIVE GREEN ROOF



DIADEM[®] 350 ■ TERRACES/ BLH OUTLET AND BW KERB



TYPICAL SYSTEM SOLUTIONS

DIADEM® 750

Product description

DIADEM® 750 is an intensive roof garden, comparable with a ground level natural garden in that its design and planting are similar. By use of a sophisticated yet simple water management system it is possible to plant and grow more demanding vegetation, even trees.



Thickness of system: ~ 560 mm Saturated weight: ~ 750 kg/m² (without vegetation) Related pages: 20 21 22 23

Function

To create a landscaped garden on the roof.

Application

This system is ideal, where a suitable strong load bearing structure is available.

Advantages

- Suitable for every day use
- Property value increases • Best use made of available
- space • Wide range of designs are possible
- Technically sound
- Improved thermal efficiency
- Excellent enviromental benefits
- Better rainwater retention

Frequently Asked Questions

- Can plant roots cause any damage? Modern, root resistant waterproofing membranes prevent root penetration. With some membranes it will be necessary to install a separate root resistant layer such as FLW-400.
- Can I grow large trees on my roof garden? Yes, by applying our root-ball fixing sets.
- Is it possible to construct a pond on the roof? Yes, see page 18 for instructions.
- Who should design my intensive roof garden? The creative aspect can be shared but we recommend that you seek professional assistance from an experienced landscape

architect or qualified horticulturist.

Ground cover plants, shrubs, some trees, grasses, etc...

- SIM-56 is a nutrient rich soil mix consisting of lava, pumice, recycled crushed clay based products and enriched with compost. SIM is ideal for intensive vegetation
- VLF-200 is a superior geotextile, with excellent strength and pressure resistence properties. Made of polypropylene, it is capable of high vapour and water pemeability.

DiaDrain-60 is a heavy duty, dimensionally stable drainage/reservoir board. It has both good water retention and drainage properties and can be used in conjunction with the DIADEM® irrigation

Root resistant waterproofing membrane. NOTE: Non root resistant waterproofing membranes 🗖 require a separate root resistant layer eg. FLW-400.

simple pond construction on the roof using the BW VLU-300 Protective Fleece. It concrete edge pieces to form is important that the pond liner the perimeter. This structure is not used as the primary would then be lined with a sandwich construction formed drainage can be achieved by of an underlayer of VLU-300 means of the BLH Terrace

It is possible to create a Protective Fleece, pond liner and a further upper layer of waterproofing layer. Dual

Outlet. An important feature of this product is that it can be adjusted between 60 and 300 mm, giving greater freedom in the design of the terrace build up.





?



- system.
- VLU-500 protection and separation fleece.
 - - Insulation. 🗹
 - Vapour control layer. 🗖
 - Reinforced concrete roof deck.

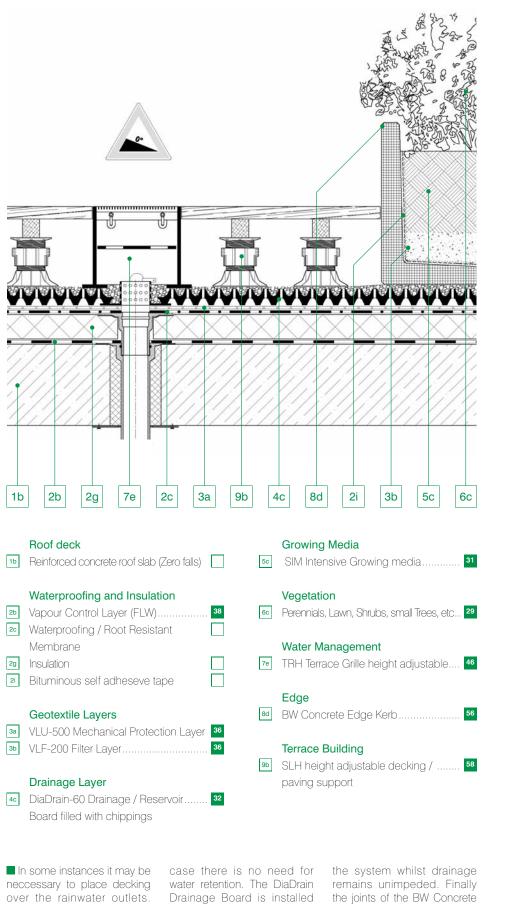


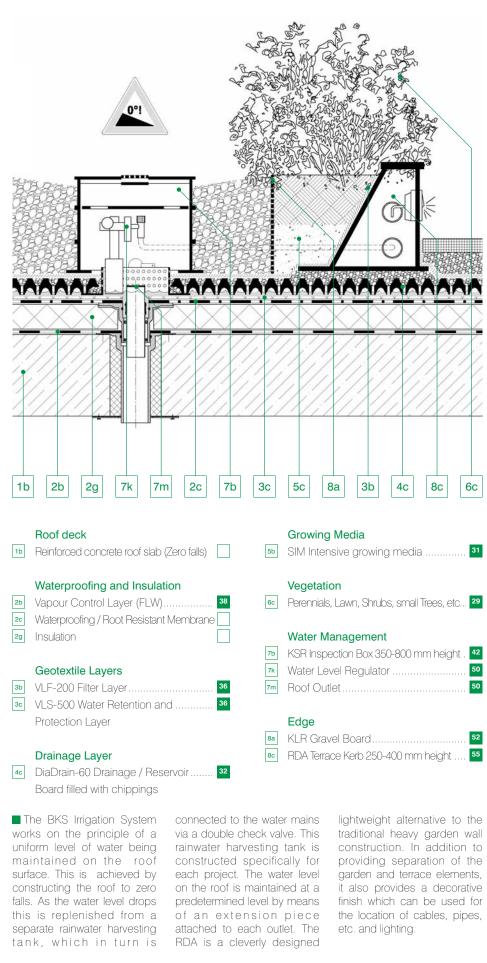


DIADEM[®] 750 ■ TIMBER DECKED TERRACE / SLH, TRF, BW

TYPICAL SYSTEM SOLUTIONS

DIADEM[®] 750 ■ IRRIGATION UNIT / BKS, RDA





20



Access to these outlets is still essential and is easily achieved by means of the TRH Terrace Grating. In this gives added fire protection to

with the venting holes face down. The DiaDrain is then filled with chippings. This

the joints of the BW Concrete Kerb are sealed with a self adhesive bitumen strip.







TYPICAL SYSTEM SOLUTIONS DIADEM[®] 750 ■ KSA PARAPET OVERFLOW INSPECTION BOX

TYPICAL SYSTEM SOLUTIONS

822252222

3b

1b

1c

2c

29 Insulation

4c

Roof deck

Screed to falls

å t

1c

Reinforced concrete roof slab

Waterproofing and Insulation

Waterproofing/Root Resistant Membrane

3a VLU-500 Mechanical Protection Layer.... 36

^{2b} Vapour Control Layer (FLW).

Geotextile Layers

3b VLF-200 Filter Layer.

9a

7e

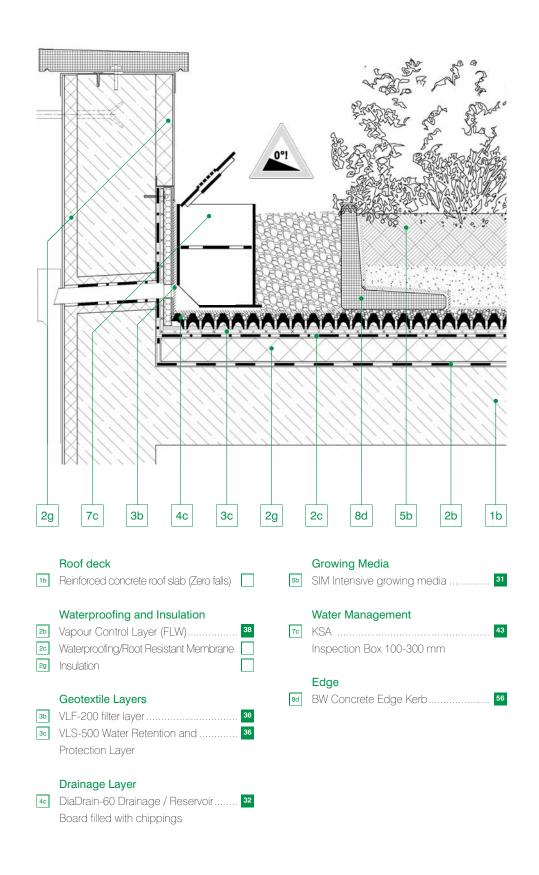
38

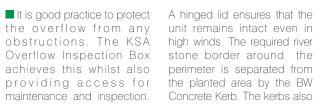
36

2g

3a

DIADEM® 750 TERRACE ACCESS/ RNF RAINWATER CHANNEL AND TRH OUTLET COVER HATCH4



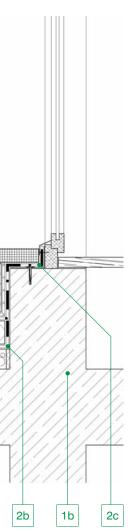


It is good practice to protect A hinged lid ensures that the prevent the spread of plants into the river stone border, thereby keeping maintenance to a minimum.

to levels which are likely to cause problems to the building structure or even water ingress. The RNF Drainage Channel provides a adjustable in order to perfect solution. Paving slabs should be laid with open joints and kept permanently

laid paving.

22



Drainage Layer

7h

4c DiaDrain-60 Drainage / Reservoir Board ... 32 laid up side down and filled with chippings

Water Management

7e TRH Terrace Grille height adjustable.... 46 7h RNF Channel with steel grating 44

Terrace Building

9a FK Cross Spacers. 60

> separated by the use of FK Cross Spacers. The TRH provides a cover for the rainwater outlet and is height accomodate tolerances in the







at ground level.

Function

Application

Advantages

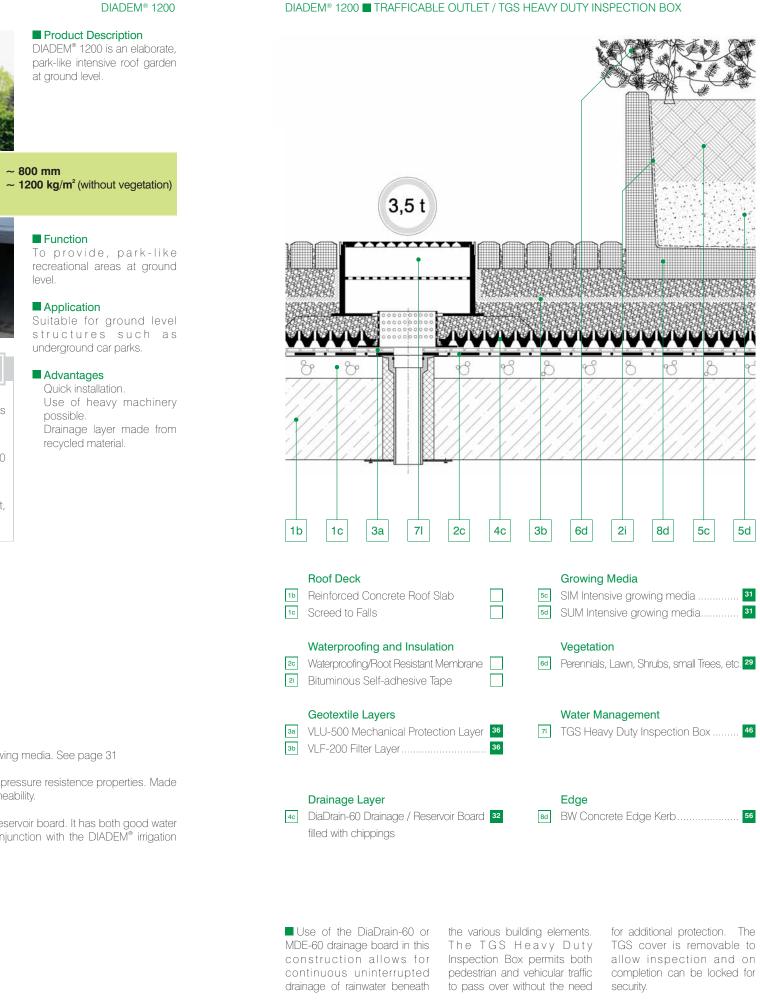
possible.

level.

?

TYPICAL SYSTEM SOLUTIONS

DIADEM[®] 1200 ■ TRAFFICABLE OUTLET / TGS HEAVY DUTY INSPECTION BOX









Frequently Asked Questions

Is the product suitable for public areas?

DIADEM[®] 1200 is ideal for creating park-like recreational areas above underground garages, walkways and tunnels, etc.

Is it suitable for emergency vehicle access?

No, in this case we have another solution using MDE-60 Drainage Board. Please seek our advice.

What is the likely lifespan of the vegetation? The lifespan is as for plants found in their natural habitat, providing they receive proper maintenance.

Typical build up

Ground covering plans, perennials, shrubs and trees

SUM and SIM are the respective base and top layer soil growing media. See page 31

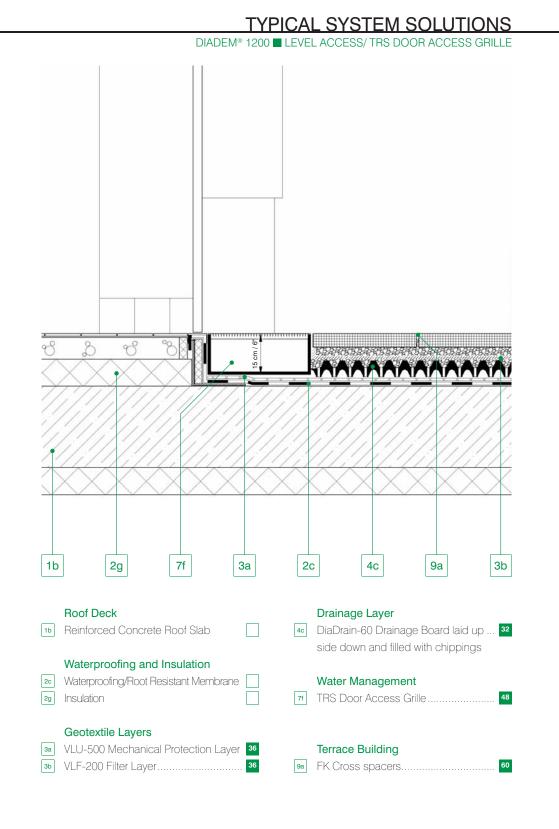
- VLF-200 is a superior geotextile, with excellent strength and pressure resistence properties. Made of polypropylene, it is capable of high vapour and water pemeability.
- DiaDrain-60 is a heavy duty, dimensionally stable drainage/reservoir board. It has both good water retention and drainage properties and can be used in conjunction with the DIADEM® irrigation system.
- VLU-500 protection and separation fleece.
- Waterproofing.
- Screed to falls.
- 🗋 Vapour control layer.

Reinforced concrete roof deck.

EM® 1200 HEAVY PLANTING BY MECHANICAL MEANS

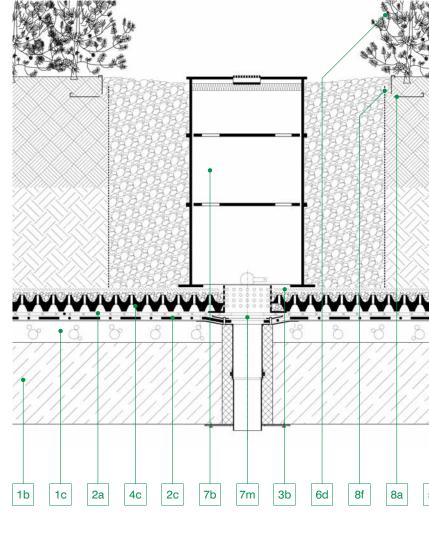


26



TYPICAL SYSTEM SOLUTIONS

DIADEM[®] 1200 ■ DEEP INSPECTION UNIT / KSR EXTENDED INSPECTION BOX AND POP-UP SEPARATION MEMBRANE



Roof DeckReinforced Concrete Roof SlabScreed to Falls	Growing MediaSol SIM Intensive growing mediaSUM Intensive growing media31
Waterproofing and Insulation VLT Separation Layer	Vegetation ^{6d} Perennials, Lawn, Shrubs, small Trees, etc. ²⁹
Geotextile Layers VLF-200 Filter Layer	Water Management7bKSR Inspection Box 350-800 mm height427mDHA-110-D Roof Outlet
Drainage Layer DiaDrain-60 Drainage Board laid up ³² side down and filled with chippings	Edge Ba KLR Gravel Board



for clients to demand level access from their building to the adjoining terrace. This structure removes the danger creates detailing difficulties of any build up in this crucial with regard to ensuring there is area by feeding the rainwater no water ingress. One directly into the drainage possible solution is to use the system. It is essential that

is increasingly common TRS Door Access Grille, which, by the nature of it's extended size and open

proper falls are designed to ensure that rainwater is directed away from the building. In some locations a canopy should be installed above the door.

Locating Perforated build up the required gravel which prevent leaf blockage Capping Sheet around the border. For additional security extended KSR Inspection Box the KSR unit has integral solves the problem of how to perforated protection plates

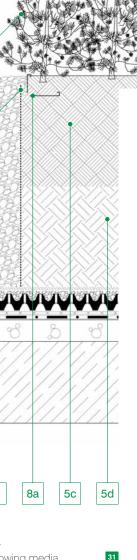
1b 1c

2a

2c

3b

4c





and also add structural strength to the unit.







ORGANIC MATERIALS EXTENSIVE PLANTS



ORGANIC MATERIALS INTENSIVE PLANTS

Intensive plants

Intensive plants are a selection of flora and foliage, which are most suitable to live on a roof environment without endangering the structure of the building. Selecting woody should be placed together. stems create the feeling of a Below is a small sample of the ground level garden. Making plants available for intensive our selection we considered roof gardens.

not only the habits of each species but also their resistence to damage by wind, frost and sun. When choosing the growth medium, plants with similar soil needs

Pinus Mugo "Mops" 📕 Mugo pine 40 - 80 cm, dark green foliage

Pinus leucodermis "Compact Gem" 50 cm, dark green foliage

Pinus sylvestris "Argentea Compacta" 2.0 m, silver

Cytisus purpureus 30-60 cm, VI-VII, e purple stems, yellow bloom

Juniperus sabina "Tamariscifolia" 3-40 cm, blue-green foliage

Ononis repens 20-40 cm, VI-VII, 🛞 lilac

Microbiota decussata 20-40 cm, green foliage

Cotoneaster tomentosus 1.5 m, V-VI, 🛞 rose

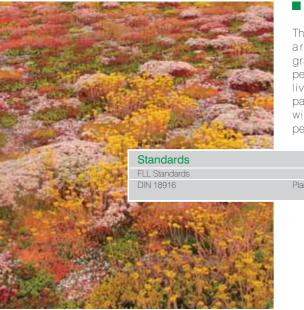
Acer palmatum 3.0-4.0 m, V-VI, 🏵 from green to yellow, bronze, purple and red

Caragana aurantiaca 1.0 m, V, ⊕ yellow

Buxus sempervirens 1.0-3.0 m, IV-V,

□ Ilex aquifolium 0.3-0.8 m, darkgreen foliage

Buddleia davidii 2.0-4.0 m, VII-VIII, 🛞 blue lilac



Extensive plant recommendations

The plants of DIADEM® 150 are mainly succulents, grasses and herbaceous perennials. These plants can live together in a stable partnership when started off with about 16 specimens per m².

Plant Technology in Landscaping









Dianthus deltoides 15 cm, VI-VIII, ❀ bright pink

□ Thymus serpyllum 15 cm, V-VIII, ⊛ purple

Sedum hybridum 10 cm, VI-VIII, 🛞 Gold

Geranium x magnificum 50 cm, VI-VII, ⊗ violet-blue

□ Sedum sexangulare 15 cm, VI-VIII, 🛞 yellow

🛞 white

Sedum spurium 15 cm, VII-VIII, 🛞 white

Origanum vulgare 15 cm, VI-VIII, 🛞 pink

Iberis sempervirens 30 cm, IV-VII,

□ Allium sphaerocephalon 30-70 cm, VI-VIII, 🐵 red

Alyssum saxatile 30 cm, IV-V, ❀ yellow

Cerastium tomentosum 10 cm, V-VI, 🛞 white

Dianthus pontederae 15 cm, VI-VIII, 🛞 pink

Achillea tomentosa 20 cm, VI-VII, 🛞 yellow

Sedum floriferum 15 cm, VI-VIII, 🛞 yellow

Campanula carpatica 🗆 20 cm, VI-VIII, 🛞 blue

> Gypsophila repens 20 cm, VI-VII. white

Festuca glauca 20 cm, V-VI, blue foliage, blooms of green with purple tinge

> Koeleria glauca 🗆 40 cm, VI-VII, blueish green

> Phlox douglasii 10 cm, IV-V, 🛞 pink

Sedum reflexum 20 cm, VII-VIII, ⊕ vellow

Potentilla verna 20 cm, III-VIII, ⊛ yellow

Saponaria ocymoides 🗆 15 cm. V-VII 🛞 rose











28

□ Sempervivum ssp. 10 cm, VI-VII, ⊕ white / rose Sedum album 15 cm, VI-VII,







Forsythia suspensa 0.5-1.5 m IV-V, Cadmium yellow

> Prunus tenella 🗌 0.6-1.0 m, IV-V, 🛞 rose

Berberis thunbergii 🗌 1.5-2.5 m, IV-V, ֎ yellow

> Erica carnea 0.2 m ,III-IV, 🛞 rose

Ligustrum vulgare 0.5-0.7 m. dark green foliage

Potentilla fruticosa 🗆 0.3-1.5 m, V-IX, ֎ yellow

Euonymus fortunei 0.2-5.0 m, VI-VII, lightgreen

> Spirea albiflora 🗆 0.3-1.,5 m, V-VI, 🛞 white

Cotinus coggygria 🗆 2.0-4.0 m, III-IV, 🛞 pink

Viburnum bodantense 2.5-3.0 m, XI-III, ֎ rose

> Cornus mas 🗆 3.0-5.0 m, III-IV, ֎ yellow

Anemone hupehensis 0.7-1.0 m, VII-X, 🛞 white







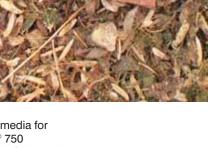


ORGANIC MATERIALS EXTENSIVE GROWING MEDIA

PRODUCTS

ORGANIC MATERIALS INTENSIVE GROWING MEDIA









especially for turfs. It has good aerating and drainage qualities, resists compression and contains the starting amount of lawn fertilzer.

shed also for	dry condition.	
	80-200-700 mg/l	-
У	-	> 120 mmol/l
	6,5 - 8,0	5,5 - 7,0
ontent	1,0 - 3,0 m%	6,0 - 12,0 m%
erals	< 3,5 g/l	< 2,5 g/l
у	15 - 25 Vol. %	45 - 65 Vol. %

SRM

Growing media for DIADEM® 350

A loose mix made up



*Should be established also for dry condition

www.diademroof.com 🛛 📘 🚮







DIADEM[®] 150 A loose, mainly mineral growing media with good drainage properties and low organic content for use on extensive green

Volume weight	in case of WS _{max} < 1200 kg/m ³ *	in case of WS _{max} <1200 kg/m ³
Sediment (<0,0063)	< 15 m%	< 20 m%
Air content	> 70 Vol.%	> 70 Vol.%
Max. water capacity	15 - 25 Vol. %	45 - 65 Vol. %
Water soluble minerals	< 3,5 g/l	< 2,5 g/l
Organic material content	1,0 - 3,0 m%	6,0 - 12,0 m%
pH (CaCl ₂)	6,5 - 8,0	5,5 - 7,0
Absorption capacity	-	> 120 mmol/l
Nutrient NPK	80-200-700 mg/l	-
*Should be established also for	r dry condition.	

Technical data



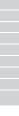
EXTENSIVE GROWING MEDI



DIADEM® 1200 "subsoil"

A sterilised mix of deep growing media used as a base layer to provide for excellent drainage and aeration to roofs.

DIADEM OWING ME TENSIVE GR











LAYER COMPONENTS DRAINAGE / RESERVOIR BOARDS



Product nam DiaDrain-25 DiaDrain-40

heavy duty polystyrene. The surface is shaped on both sides and perforated on the top. Product number 310125

DiaDrain-60 Standards EN 964-1 **DIN EN ISO 12958** NF T 56-101 FLL guidelines 7.2./2002 Related pages

What does the CE marking mean?

market their products in Europe.

safety

8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 25 26

Application

Water draining capacity

Load bearing strength

310115

310159

Sizing

Product description The DiaDrain a water drainage

and reservoir board made from

The DiaDrain product family is formulated for continuous drainage of green roofs. Depending on the product choosen it can take the weight of pedestrian or even heavy vehicle traffic (such as fire engines or furniture vans). The boards can be filled with various materials to enhance the load-bearing capacity of the product.



DiaDrain-60

capacity reservoir and draining boards suitable even for flooded green roofs. The boards provide a sound framework to support roads and kerbs, while giving

• The CE marking (an acronym for the French "Conformite

Europeenne") certifies that a product has met EU health, safety, and environmental requirements, which ensure consumer Manufacturers in the European Union (EU) and abroad must meet CE marking requirements where applicable in order to

By affixing or having affixed the CE marking, the manufacturer continuous drainage. indicates that he takes responsibility for the conformity of the product with all applicable requirements set out in the relevant

Technical data	Dim	DiaDrain-25	DiaDrain-40	DiaDrain-60
Product Number		310125	310115	310159
Height	[mm]	25	40	60
Width	[mm]	900 ± 5	900 ± 5	900 ± 5
Length	[mm]	1960 ± 5	1960 ± 5	1960 ± 5
Fill up volume	[l/m²]	10,1	14,3	24,3
Weight	[kg/m ²]	1,30	1,42	2,15
Compressive strength	[kN/m ²]	442,8	256,2	439,6
Water retention capacity	[l/m²]	7,0	10,3	16,1
Water draining capacity DIN 4095	[l/min/m]	243	392	486
Water draining capacity DIN 4095	[l/m×s]	4,0	6,5	8,1
Water draining capacity i=1	[l/m/s]	0,8	1,31	1,62
Material		recycled polystyrene	recycled polystyrene	recycled polystyrer
Colour		black	black	black
Number in packaging	[m²/pallet]	529,2	441	352,8
Laying at 2-3° incline		overlapping	overlapping	overlapping

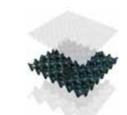
Community harmonisation legislation providing for its affixing.

The DiaDrain drainage boards are CE certified.

In accordance with DIN 4095 Guidelines. (0.3 I/m² in front of walls; 0.03 I/m²×s on roofs; 0.003 I/m²×s below paving) All technical data are averages of results which the various examining bodies have measured. We reserve the right to change technical data.

LAYER COMPONENTS DRAINAGE / RESERVOIR BOARDS

DiaDrain-25 25 mm high drainage/reservoir boards for extensive roof gardens.



DiaDrain-40 40 mm high drainage/reservoir

board for extensive and semi intensive green roof gardens.



Advantages Simple and quick installation Low structural weight • Excellent load bearing capacity Increased water-draining

- and venting capacity Good stability in retaining its
- form Economical storage and transport
- Continuous aeration
- Extends the lifespan of green roofs
- Made of recycled polystyrene material and can be recycled
- DIN EN 12225 Certification for microbiological resistance

Installation instructions

When not using them on an inverted roof, the boards should be laid on a protection boards but care must be taken fleece type VLU-300. It is not to damage any advised to have an overlap of 1 or 2 rows. Above the position of drain pipes the board should be cut away to enable inspection. It is necessary to weigh down the boards if roof installation is made in stages.

С

Frequently asked questions

· Why do you recommend a draining layer shaped on both sides?

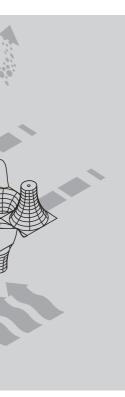
A double moulded layer ensures that there are two ways for air to get in and water to get out enhancing the efficiency of drainage and ventilation.

• Why polystyrene?

Polystyrene retains its shape well in high summer temperatures and tests support the view that even after 50 years of use it will not alter its form substantially.

. Which side up should the boards be installed?

At planted areas the diffusion holes should point upwards. Under paved or boarded areas the holes should be pointing downwards.



Operational diagram

The primary function of flat roof drainage/ reservoir boards is to drain the excess of sudden torrents into the drainage system (A). A secondary function is to allow air to access the roots (B). Finally, while having good water retaining and load bearing qualities, to supply water to plants by diffusion (C) in the dry periods.



Tools needed for installation

A sharp knife will cut the waterproofing below.

Packing, Transport and

Storage instructions The product is to be protected from protracted sunlight.





LAYER COMPONENTS DRAINAGE / RESERVOIR BOARDS



Product name MDE-60 Standards EN 13252:2001 EN 964-1 Sizing DIN EN ISO 12958 FLL guidelines 7.2./2002; 5.3./2002 **Related pages**

Product description These water drainage and reservoir boards are made of

ABS material and shaped on both sides. In spite of the minimal weight the product is suitable to fix roof fittings without breaking through the roof structure.

Product number
10117
rainage systems
etermination of thickness at specifi ressures
ater flow capacity
rainage layers

Application

One of the main functions of the MDE-60 board is to act as a receiving layer onto which additional roof structure can be attached to without drilling through the water-proofing layer (such as trees, solar panels or air conditioning equipment). In spite of their low weight they provide suitable secure anchorage together with the weight of the green roof for distribution of both pulling or pushing weight. Under very heavily loaded roads (e.g. fire protection roads, furniture delivery roads), this built in layer ensures the continuous drainage.

Installation instructions

When not using them on an inverted roof, the boards should be laid on a protection fleece type VLU-300. It is advised to have an overlap of one to two rows. Above the position of drain pipes the board should be cut away to enable continuous water flow. It is necessary to weigh down the boards temporarily if roof installation is made in stages.

Packaging, transport and storage instructions

The product must be protected from strong sunlight.

Advantages

- Simple and quick installation
- Low structural weight Very high load bearing
- capacity
- Exceptional water drainage and storage capacity
- Continuous aeration
- Good stability, maintains shape very well
- Economical storage and transport

Tools needed for installation

A sharp snap-off knife will cut the boards, but care must be taken not to damage any waterproofing below.

PRODUCTS

LAYER COMPONENTS DRAINAGE / RESERVOIR BOARDS

Product description

Diabolo is a drainage channel at the level of the water flow, into which water is able to enter from three directions. It ensures unobstructed water drainage and continuous aeration. The product is made of polystyrene drain board with large load bearing capacity in the middle and it is covered with geotextile.



water drainage capability drainage lavers water flow capacity drainage layers

Installation instructions

The drainage boards covered

connect linear water drain

order to help water flow into the

drain pipes. They are placed

adjacent to each other to

channels to single outlets in

Application

Product name

DIN EN ISO 12959

DIN EN ISO 12958

FLL guidelines

Diabolo-40

DIN 4095

Standards

• The water collection area is enlarged around the drainage channels, inspection boxes and ensures the unobstructed water flow even in long distance.

• Installing under pebble / grave layer it accelerates the water flow and makes water drainage lengths possible to connect. calculate.

 For terraces Diabolo acts as water drain channel between the watershed area and water terraces are usually the drainage channels, terrace arills, outlet covers.

• Diabolo can also act as water drainage and reservoir on metal roofing. In such case the Diabolo's width should be determined according to the width between two folds of the metal roof, so it snugly fits in it.

Technical data

Water retaining capacity

Compressive strength

Water draining capacity DIN 4095

Water draining capacity DIN 4095

Water draining capacity i=1

Product Number

Height

Width

Length

Weight

Material

Colour

Tools needed for installation

A sharp snap-off knife will cut drainage area. The water the boards, but care must be drainage areas in case of taken not to damage any waterproofing below.

Diabolo-40

310146

40

150 + 5

 1960 ± 5

18.0

0.34

330

3,92

6,5

1,31

rec. polystyrene covered with geotextile

black

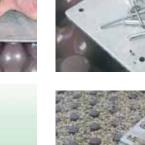




Technical data	Dim	MDE-60
Product Number		310117
Height	[mm]	60
Width	[mm]	900 ± 5
Length	[mm]	1960 ± 5
Volume	[l/m²]	28,5
Weight	[kg/m²]	2,70
Compressive strength	[kN/m ²]	560
Water draining capacity DIN 4095	[l/min/m]	486
Water draining capacity DIN 4095	[l/m×s]	8,1
Water draining capacity i=1	[l/m/s]	1,62
Material		ABS
Number in packaging	[m²/pallet]	264,6
Laying at 2-3° incline		overlapping

In accordance with DIN 4095 Guidelines. (0.3 $\textrm{l/m}^{\textrm{2}}$ in front of walls; 0.03 $\textrm{l/m}^{\textrm{2}}\times\textrm{s}$ on roofs; 0.003 l/m²×s below paving) All technical data are averages of results which the various examining bodies have measured. We reserve the right to change technical data.









Dim

[mm]

[mm]

[mm]

[l/m²]

[kg/m]

[kN/m²]

[l/min/m]

[l/m×s]

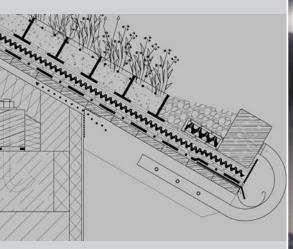
[l/m/s]



Advantages Simple installation in VLU-300 protective • Low structural weight geotextile are used under • Large load bearing capacity terrace drainage channels, to • Exceptional water drainage and storage capacity • Good stability, maintains shape very well









LAYER COMPONENTS GEOTEXTILES

Product description The VL fleeces are geotextiles made of polypropylene thread using a needle felting method.

Product number
320101
320601
320201
320202
320416
320302
320405
320402
Water permeability
Tensile strength
Elasticity
Resistence to penetration
Opening width
Protecting and filter layers

8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

Application

VL geotextiles have many different uses on green roofs but their main functions are filtering and mechanical protection.

VLT geotextiles are made for separating incompatible materials. Lighter weights are suitable between manufactured layers and heavier weights for incompatible growing mediums.

VLR geotextiles are suitable for inverted roofs above the thermal insulation layer, for both protection and filtering. Approx. weight 130 g/m².

Technical data	Dim	VLT-100	VLR-130	VLF-150	VLF-200	VLU-300	VLU-500	VLS-300	VLS-500
Product number		320101	320601	320201	320202	320416	320302	320405	320402
Surface weight	[g/m ²]	100	130	150	200	300	500	300	500
Thickness	[mm]	1,3	1,5	2,0	2,2	1,8	2,5	3,0	4,0
Tensile strength length ways	[kN/m]	5,0	7,0	8,5	10,5	2,7	5,4	2,6	4,4
Tensile strength across	[kN/m]	5,0	7,0	8,5	10,5	3,7	7,2	3,6	6,0
Elasticity	[%]	70 / 85	60 / 75	75 / 80	75 / 80	75 / 65	75 / 65	100 / 95	100 / 95
CBR-test	Ν	1000	1300	1500	2000	1000	2300	1000	3300
Durability classification	GRK	2	2	3	3	2	3	2	4
Opening size	[mm]	0,12	0,10	0,10	0,10	0,13	0,09	0,12	0,09
Water-permeability	[mm/s]	100	100	90	90	95	48	90	50
Material		PP	PP	PP	PP		100% synth	netic thread	
Thickness	[g/cm ³]	0,9	0,9	0,9	0,9	0,9-1,38	0,9-1,38	0,9-1,38	0,9-1,38
Melting point	[°C]	165	165	165	165	110-260	110-260	110-260	110-260
Method of production		one side heat treated	both sides heat treated	not treated	not treated	both sides l	neat treated	not treated	not treated
Roll width	[m]	2	2	2	2	2	2	2	2
Roll length	[m]	100	100	100	100	50	50	50	50
Roll size	[m²]	200	200	200	200	100	100	100	100
Roll weight	[kg]	20	26	30	40	30	50	30	50
Roll diameter	ca. [mm]	300	350	400	450	370	450	400	500
Colour		black	black	black	black	multicolour	multicolour	multicolour	multicolour

PRODUCTS

LAYER COMPONENTS GEOTEXTILES

VLF geotextiles enable good drainage and are efficient filters without getting blocked. Approx. weight 150-200 g/m².

VLU geotextiles are thermally hardened and are used for mechanical protection and to retain water to a degree. Approx. weight 300-500 g/m².

VLS geotextiles are water retentive and protect too. Manufactured from a mixture of threads, without thermal treatment. Approx. weight $300-500 \text{ g/m}^2$.



Advantages

- Resistant to both acidic and basic substances
- Due to its elasticity withstands heavy weights on points
- Excellent water permeability Easy to cut

Installation instructions

Remove debris and check that the surface is clean and sound. Roll out the geotextile and leave at least 100 mm protected by black overlap at the ends and 300 polyethylene bags, secured mm at sides. These sheets by a cap. Transport the rolls should be weighted if left laying down. Move the rolls exposed. Wetting the sheets provides a degree of weight wire through the spools and lift but if left for longer periods sandbags or paving slabs should be used.

?

Tools needed for installation Sharp blade, cutter.

Frequently asked questions

• Are VL geotextiles root-resistant?

Roots were meant to grow through the VL layers and by intertwining, strengthen the entire system. Mature root growth is therefore more desirable than fresh planting.

- Does a VL layer have to be joined to the layer below it? No, but it should be weighted against wind uplift if left exposed.
- How long can the products be stored in open air? UV stabilized products, in general, can be exposed to direct sunlight for about 4 weeks.
- Up to what height should this protective layer be drawn over the waterproofing?

It should fully cover and protect the waterproofing layer.

Packing, Transport and Storage Instructions

Geotextile rolls are delivered on spools of cardboard, with a forklift truck or thread a with a crane.

- RAN





LAYER COMPONENTS ROOT RESISTANT MEMBRANE



Product description FLW, a root resistant layer made from either PVC or Polyethylene.

Product number 340101 340102 FLL guidelines 5.3/2002 Protector- and Filtering Layers



FLW-800

Cold welding:

seams.

a brush

roller

Installation instructions

suitable for joining the

Apply the welding agent with

• Press the seam together

and roll at once with a silicon

FLW-800



Technical data	Dim	FLW-400	FLW-800
Product number		340101	340102
Approx. thickness	[mm]	0,4	0,8
Material		PE-LD	PVC-P
Colour		black	brown
Weight	[kg/m²]	0,37	1,03
Tensile strength weft	N / mm ²	>20	24,3
Tensile strength warp	N / mm ²	>18	23,0
Elasticity weft	%	>600	359
Elasticity warp	%	>500	365
Tear resistance weft	%	>75	95
Tear resistance warp	%	>85	90
Cold folding	-	wit	hout cracking
Diffusion resistance			8506
Test for root breakthrough			8506
Test reports to Standards		DIN 16938	DIN 16938
Quality standard		ISO	9001, ISO 9014
Other observations		rolled	not UV or bitumen
		4-ply	resistant
Width of roll	[m]	1,5	1,3
Length of roll	[m]	25	35
Surface area of roll	[m ²]	150	45,5
Weight of roll	[kg]	56	47
Diameter of roll	approx.[mm]	330	210
Pallet units	roll / pallet	10	22

Hot welding:

Product

FLW-400

FLW-800

8.2/2002

Standards

- Both hot and cold welding is At least a 20 mm clean and dry overlap is necessary · Allow the material to warm
 - uр • Lead the welding nozzle over the 20 mm overlap and pay particular attention to theedge of the upper layer. (The nozzle must also travel 2-3 mm beyond the edges
 - to be joined) • Pressing surfaces together at once, roll over with a silicone roller using even pressure

FLW-800 Advantages

- Root resistant
- · Easily installed

Frequently Asked Questions

• Does the root protection layer need to be protected in turn?

Yes, with protection fleece.

• How can one be sure about the protection a product offers against roots growing through?

The FLL carries out tests after a 2 year, and a 4 year period for root penetration. Certificates are given only after these tests are completed.

· What are the recommended uses for the FLW-400 laver?

The use of FLW-400 is recommended on roofs where conventional waterproofing is applied for instance on green roofs that are installed on garage decks. Due to its excellent vapour resistance properties and its high tensile strength qualities, it may also act as a vapour control layer on the warm side of any thermal insulation

FLW-400 Applications

The product is particularly recommended for additional protection against water and root breakthrough on extensive roofs. Ideal when renovating smaller garage roofs or outbuildings and a perfect answer for lining planting beds.

FLW-400

Installation instructions Ensure a 1.5 m overlap at all seams.

FLW-400 Advantages

- Polystyrene- tar- and oil resistant
- Suitable for heavy duty use as slip layer
- Root resistant

• Large, 6×25 m pieces

Product name OSMOCOTE Exact

Standards FLL 11.5./2002

Related pages 6 7 68

PRODUCTS

Product description

nutrient release.

OSMOCOTE Exact is a

regulated release NPK fertilizer

granulate, which ensures even

growth of plants due to its biological activity and gradual

ORGANIC MATERIALS NUTRIENT SUPPLY

Applications

Special attention should be paid to the provision of nutrients to the roof garden substrate. The release rate of nutrients of these resin-encased fertiliser granules only depend on soil temperatures and the thickness of the covering resin. At above 0 C° the osmotic pressure builds and the granules start releasing the nutrients through the semipermeable resin wall. The thicker the resin coating, the slower the nutrient release. Nutrient release is not influenced by water content, PH or bacterial activity and remains constant in changeable environmental conditions.

Product accessories

Hand driven fertiliser spreader

Advantages

Product number

Delivery, upkeep

500110

- Nutrient release meets plant genus requirements
- Better colour of foliage and blooms
- Suitable both for soft stem and woody stem perennials
- Even nutrient release for entire growth period Environmentally friendly
- One annual application
- Application guide

Application depends on current levels of nutrients in the soil, as well as the type and purpose of the green roof installed. At the start and during subsequent applications 60 g/m. Osmocote Exact Standard fertiliser should be used for intensive green roofs and 35 g/m, for the extensive types. Best time for fertilisation is March, the beginning of the growing season. Using the hand driven spreader, an even distribution of fertiliser can be ensured with 2-3 light applications.

Tools needed

- Hand driven fertiliser spreader
- Weighing scales













Frequently asked questions



• For how long will the fertiliser have an effect?

We suggest a fertiliser with a release phase of 8-9 months, as this corresponds with the growing season.

• What are the signs of lack of nutrients?

Shortening flowering periods are an indication. Eventually blooming could stop altogether and a strong moss build up could appear.

• Could damage be caused by overdosing?

Even a 20-30% overfeed of Osmocote Exact fertiliser causes no demonstrable damage.



39



HYDROTECHNOLOGY ■ INSPECTION BOXES



Product description The KSE inspection box is manufactured from UV resistant plastic.
Product number
110111
110112
110113

110114 load bearing gutter system

Product name

KSE 10 KSE 15

KSE 20

KSE 30 Standards

EN 124:1999

FLL guidelines 5.5./2002

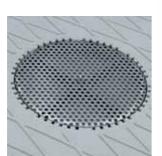
Related pages

Applications

The KSE products ensure the draining of green roofs and the maintenance and inspection of the water outlet is unhindered. These products are suitable for installing an irrigation system, positioning a water level regulator and storing accessories. By using a 100 mm extension ring, the depth of the growing medium can be matched.







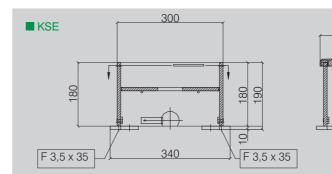


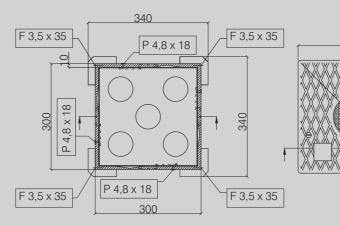
Technical data	Dim	KSE-10 / 15 / 20 / 30	KSE+extension element
Product number		110111/110112/110113/110114	100211
Width	[mm]	300	300
Length	[mm]	300	300
Height with cover	[mm]	100 / 150 / 200 / 300	100
Outlet surface area	[mm ²]	900	-
Weight	[kg]	1,64 / 2,19 / 3,47 / 4,85	
Fixing quality standard		DIN 7505 A2	DIN 7505 A2
Drain pipe connection		4 pieces, d=52 mm	-
Drain pipe clamp		part of construction	-
Heat-insulated cover		can be ordered (30 mm extruded PS)	-
Extension element		can be ordered (height 100 mm)	-
Transport packaging		on pallets: 2 items of KSE-10/box	in cardboard boxes
Material		UV resistant PP	UV resistant PP
Colour		RAL 7032	RAL 7032



PRODUCTS

HYDROTECHNOLOGY ■ INSPECTION BOXES





Advantages

- Chip and UV resistant material
- Can be used with various water-draining systems, including drainpipes
- Lockable
- Filters water entering the system
- Keeps sunlight out of the drains
- Suitable for all types of green roof outlets
- Extension element available for easy height adjustment

Installation instructions

• Warm roof: The inspection boxes are simply placed over No special tools required. the rainwater outlet.

 Inverted roof: The inspection boxes in this case can be • Thermal cover placed on the top of • KSE extension element insulation.

• General: The drainage boards and fleeces should be taken to the edge of the inspection box.



Frequently asked questions

· Why is the use of inspection boxes recommended for green roofs?

The most ideal conditions for plants on a green roof are near the water outlets and this product enables both inspection and maintenance without dismantling any parts.

• Why is a gravel strip needed around the manhole?

By constructing a gravel strip vegetation can be kept at a distance from the outlet which greatly helps draining surface water.

• What should determine the chosen height of the product?

The uppermost point of the inspection box should be 10-20 mm above the surrounding area with or without a cover plate, to prevent blocking the interior with debris.

40

DIADEM

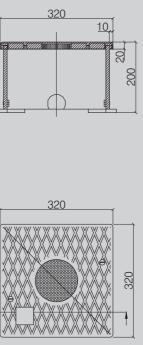
10/15/20/30

Ш

(



?



Tools needed for installation

Product accessories

 Cast iron cover for heavy traffic areas



HYDROTECHNOLOGY ■ INSPECTION BOXES

Product description The KSR inspection box is manufactured from UV

resistant plastic.
Product number
120111
120112
120113
120114
110211
110212
110213
110214
gutter system

Applications

Product name

KSR 35

KSR 45

KSR 55

KSR 65

KSA 10 KSA 15

KSA 20

KSA30

Standards EN 1433:2002 DIN 19580 FLL guidelines 5.5./2002 Related pages

21 27

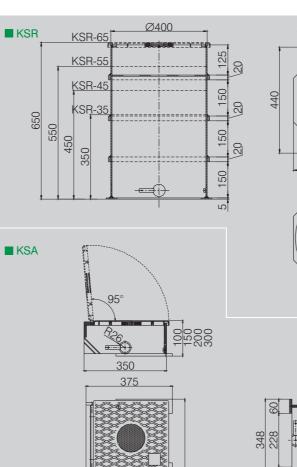
The KSR inspection unit enable unobstructed water drainage, inspection and easy cleaning of rainwater outlets. These products are also suitable for installing an irrigation system by positioning a water level regulator and storage accessories. By using extension rings, the depth of the growing media can be matched.

Advantages

- Can be used on any type of green roof with any type of outlet
- UV resistant
- Lockable
- Accepts fittings for irrigation systems
- Filters entering surface water
- Stops sunlight getting into the outlet

	F	2)	D	J	С	Ι	S	5	
	 	_	-		 			-		

HYDROTECHNOLOGY ■ INSPECTION BOXES



Product description

The KSA inspection box is manufactured from UV designed inspection boxes for resistant plastic. Lid is permanently attached to the structure on one side (see illustration above).

Application

KSA products are especially simple intensive and also for extensive green roofs with external down pipes located at the parapet. They ensure clear access to the drainage mechanical protector layer. In system.

2

Frequently asked questions

• KSE or KSR inspection boxes?

KSE products are manufactured for up to 300 mm total layer thickness. Above this thickness the use of KSR is advised because of the product's superior ability to withstand pressure to the sides.

• Why is a gravel strip needed around the manhole?

By constructing a gravel strip because vegetation can be kept at a distance from the outlet and this also greatly helps the draining of surface water.

• What should determine the chosen height of the product?

The uppermost point of the inspection box should be 10-20 mm above the surrounding area with or without a cover plate, to prevent blocking the interior with debris.

Thermal cover





Technical data	Dim	KSR-35 / 45 / 55 / 65	KSR+ext. element	KSA-10 / 15 / 20 / 30
Product number		120111 / 120112 / 120113 / 120114	100201	110211 / 110212 / 110213 / 110214
Width	[mm]	d=400	d=400	300
Length	[mm]	-	-	350
Height with cover	[mm]	350 / 450 / 550 / 650	50 / 100	100 / 150 / 200 / 300
Outlet surface area	[mm ²]	900	-	900
Fixing quality standard		DIN 7505 A2	DIN 7505 A2	DIN 7505 A2
Drain pipe connection		4 pieces, d=52 mm	-	3 pieces, d=52 mm
Drain pipe clamp		part of construction	-	part of construction
Thermal cover		can be ordered (30 mm extruded PS)	-	can be ordered (30 mm extruded PS)
Extension element		can be ordered (KSR+)	-	-
Material		UV resistant PP	UV resistant PP	UV resistant PP
Colour	RAL	7032	7032	7032



42





Installation instructions

Inspection boxes can be positioned directly above the drainage boards when they have enough capacity. Using fill up systems however, they must be positioned on the the latter instance drainage can be hastened by placing looped drainpipes in the immediate vicinity of the manholes. On inverted roofs the inspection boxes are placed on the thermal insulation layer and a separating layer is used to create the gravel division pocket around it. Care must be taken with the filtering layers around the manhole and it is advisable to bring up all geotextiles right to the edge of the manholes.

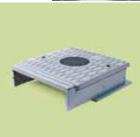
Tools needed for installation

No tools are needed to put this product in position.

Product accessories

• Extension element (KSR+) Cast iron cover for heavily trafficked areas (KSR)







PRODUCTS

HYDROTECHNOLOGY ■ WATER DRAINAGE CHANNELS



Product description The RNH drainage channels are manufactured from UV resistant plastic with galvanized steel or stainless steel grille cover. Product name Product number RNH 8-12 210201 RNS-03 210305 RNS-05 210301 RNS-08 210302 RNF-05 210101 RNF-08 210102

HYDROTECHNOLOGY ■ WATER DRAINAGE CHANNELS

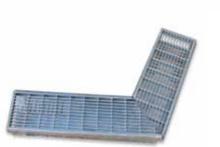
RNF-10 210103 **Related specifications** EN 1433:2002 technical components of surface water draining DIN 19580 drainage FLL guidlines 5.5./2002 gutter system **Related pages** 15 17 23

Applications

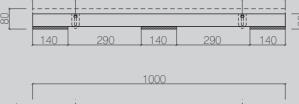
The RNH drainage channels should be positioned along terrace doors, low windows and at terrace-wall junctions. Their use should particularly be considered, where there are large vertical surface areas as these also transfer a substantial amount of rainwater.

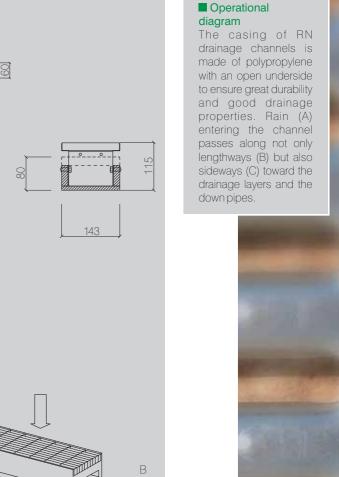




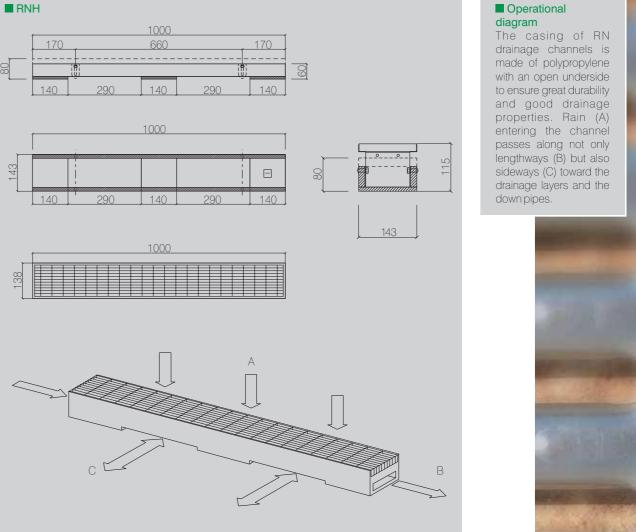


Technical data	Dim	RNH 8-12	RNS-03 / 05 / 08	RNF-05 / 08 / 10
Product number		210201	210305 / 210301 / 210302	210101 / 210102 / 210103
Height	[mm]	80-115 adjustable	30 / 50 / 80	50 / 80 / 100
Width	[mm]	145	135	150
Length	[mm]	1000	1000	1000
Type of grate		mesh (size: 40×10 mm)	die-stamped grating	mesh (size: 40×10 mm)
Type of channel casing		UV resistant PP, RAL colour: 7032	UV resistant PP, RAL colour: 7032	UV resistant PP, RAL colour: 7032
Durability classification		A15	A15	A15
Stainless steel finish		optional	optional	optional
Weight	[kg]	5,92	3,07 / 3,52 / 4,55	3,75 / 4,57 / 5,40
Products include 2 end niec	es and 2 co	onnecting nieces		









Advantages

- Low installation profile
- Easy to clean • Strong polypropylene
- housing Adjustable height
- Two way drainage

Product accessories

- Corner piece
- End piece

required

- Connecting piece
- Half meter sized channel
- Metal leaf and dirt collection mesh
- Lockable variety
- Closed bottom variety Custom made sizes as
- Rubber mallet

corrosion.

together if necessary. Care should be taken to ensure any cut galvanized steel sections are sprayed to prevent

- Tools needed for
- Metal cutter

installation

Screwdriver

Installation instructions

The channel can be laid beside or on the top of the

drainage board. Channels are

strengthened and stabilized

by overlapping the top grille to

connect the channel. Additional stability can be

achieved by fixing channels

44

5/8/1

RNF

3/5/8

5

RNH8

NF5/8 2/8 ک () () ()

?

DIADEM

 \bigcirc

Frequently asked questions

• Why is the underside of RNH products left open?

An open underside to these products ensures fast water drainage both lengthways to a drainage pipe and sideways to the drainage boards.

• Steel or polypropylene channel housing is best?

The advantage of polypropylene channel housing is good stability, durability and low heat conduction. The latter protects the watercourse from thermal damage. Steel housing could be used when only very small height is available for installation.

• Which type of grate to choose?

The mesh-type grate is most suitable for places with high splash back of rain, and the ribbed grate type is most suitable where low overall height is a problem. The cast iron grate has the best load bearing characteristics.



PRODUCTS HYDROTECHNOLOGY ■ TERRACE OUTLET COVERS

cover.

210601

210602

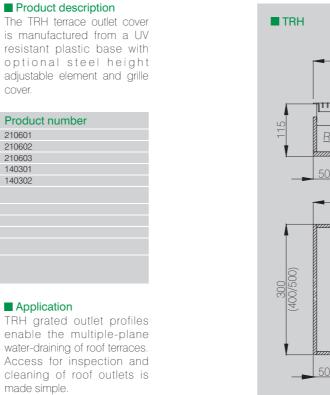
210603

140301

140302

PRODUCTS

HYDROTECHNOLOGY ■ TERRACE OUTLET COVERS





Product

TRH-30

TRH-40

TRH-50

TGS-30

TGS-40

EN 1433:2002 DIN 19580 FLL guidelines 5.5./2002

Related pages 20 23 25

Related specifications

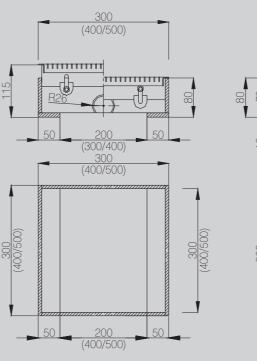




The vandalism resistant solution

TGS is used to ensure unobstucted water drainage as well as professional maintenance of the water outlets. TGS also protects the outlets from severe external effects. TGS products can be used on both public places and places where there are a heavy traffic of lighter vehicles.

Technical data	Dim	TRH-30	TRH-40	TRH-50	TGS-30	TGS-40	
Product number		210601	210602	210603	140301	140302	
Height	[mm]		80-125 (variable height)		300	300	
Width	[mm]	300	400	500	300	400	
Length	[mm]	300	400	500	300	400	
Type of grate		ł	not-dip galvanised steel gril	iron cover grate	iron cover grate		
Grid grating	[mm]		40×10		5×200	5×300	
Grid body			UV-resistant PP				
Drain pipe connection			4 db, d=52mm (only above 5 cm height)				
Adjustability		hot-dip galvanised slipper insert, steplessly adjustable in 4 cm zones					
Colour		RAL 7032					
Weight	[kg]	3,5 6,2 9,7			11	22,3	
Durability classification		A15	A15	A15			



Advantages

- Suitable for all terrace outlets • Safe for pedestrian traffic
- Sturdy plastic frame
- Fits flexibly to local height conditions
- Can be ordered in stainless steel

Installation instructions

Place the terrace grille centrally over the rainwater outlet on the top of the drainage layer. The grille • Steel saw should be placed prior to the laying of the paving. Cutting should be kept to the minimum.

Leveller

?

Frequently Asked Questions

• What is the load-carrying capacity of cover plates? TRF covers can be used on terrace surfaces with pedestrian traffic. They conform to loadability class A15.

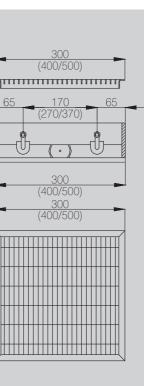
· Can they be ordered in stainless steel?

Yes, the grids can be ordered in hot-dip galvanized or stainless steel.

• What tool is needed for setting the height?

A leveling board and a fork wrench are needed for the task.

46



Tools needed for installation

 Spanner Rubber hammer

Product accessories

Stainless steel construction

DIADEM **S** 30/40 30/40/5



60/75/



Applications

Frequently Asked Questions

smaller ones?

after replacement.

stainless steel versions.

• Where should the large grilles be used and where the

In front of terrace doorways a small grille is insufficient in a

downpour and generally speaking one should always use the large sizes for safety. Any grilles with trays which need to be

plumbed in must also be the larger type. The smaller ones

Grille inserts are attached by steel clips. The cleaning brushes

are exchangeable by releasing the clips and repositioning them

Grilles are made of galvanised steel but can also be ordered in

should only be used where space is limited.

• Are shoe cleaning brushes replaceable?

• Can I order stainless steel grilles?

External door entrances.

PRODUCTS

HYDROTECHNOLOGY ■ TERRACE GRILLES

Product description

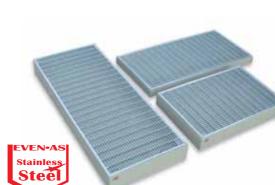
The TRS doorstep grille is manufactured from UV resistant plastic with a choice of steel grille cover. The TRS

Product number
10403
10404
10405
rainage
rainage facilities

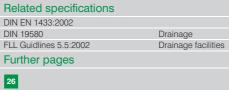
terrace grille is available in three different sizes each of which can be ordered in individual heights. The grilles can be supplied with or without a welded collection tray. Drainage can be direct to the outlet or into the drainage slipping no soiling and less

Advantages

- Three heights available The version without a bottom tray enables drainage into a
- Easy to clean
- housing
- · Mesh available also in



Technical data	Dim	TRS-60	TRS-75	TRS-100
Product number		210403	210404	210405
Length	[mm]	600	750	1000
Width	[mm]	400	500	500
Height	[mm]	50	50	50
Grille mesh size	[mm]	40 × 10	40 × 10	40 × 10
Material of housing			UV-resistant PP	
Material of grille		hot-dip galvanised steel		
Durability class		A15		
Weight	[kg]	6,67	10,35	14,00



Product name

DIN EN 1433:2002

Further pages

Installation instructions

The grille should be placed on

the top of the drainage layer.

Removal of the four small

circular pre-cut sections at the

base of the grille will allow

drainage directly into drainage

layer. Alternatively the large

central pre-cut circular section

can be removed and the grille

rainwater outlet.

Accessories

Drainage outlet pipe

Custom made sizes

?

located directly above the

Metal leaf, dirt collection mat

TRS-60

TRS-75

TRS-100

DIN 19580

layers. The product ensures no splash marks near doorways.

- water drainage layer
- Changeable mud brushes for shoe cleaning
- Long lasting hard plastic
- stainless steel

Lockable variety



main draining system even on those roof terraces, which are Installation instructions After laying a protection fleece upon the waterproofing, the adjustable terrace grille should be placed over the rainwater

Product number

220106

Drainage

Drainage facilities





2

Frequently Asked Questions

PRODUCTS

Product description

Product name

DIN EN 1433:2002

Further pages

Applications

built of many layers.

FLL Guidlines 5.5:2002

Related specifications

These units are suitable for

collecting surface water into the

outlet. Care should be taken to

ensure that the adjustable

element does not block the

outlet. Once final height

adjustment has been made the

paving can be laid and should

form a tight butt joint to the unit.

grille.

BLH-30

DIN 19580

18

Height-adjustable, hard plastic

outflow pipe with stainless steel

HYDROTECHNOLOGY ■ TERRACE GRILLE UNIT

• When should the Terrace Grille Unit be used? Wherever positive surface drainage is required on a multi layer build up.

• How can the height adjustable element be shortened?

This can be shortened by simply cutting to size with a hacksaw.

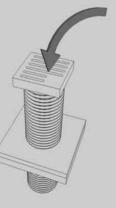
• Can one inspect the state of the drain below the grille?

Yes, the grille is kept in place by four stainless steel screws in the corners, in the pre-drilled holes. These can be unscrewed and replaced after inspection.









Advantages

- Robust stainless steel 150 × 150 mm grille
- Quick and easy installation and maintenance
- Suitable for connecting drainage network to main drainage
- · Can be set flush with paving · Evenly adjustable height between 72 and 300 mm · Prevents birds nesting
- in drains

Diagram

The excess surface water will drain through the stainless steel grille.



hnical data	Dim	BLH-30
uct number		220106
ht	[mm]	72-300 infinitely variable
size	[mm]	150 × 150
orting base plate size	[mm]	250 × 250
material		stainless steel
plate material		UV-resistant PP
r diameter of threaded pipe	[mm]	125
r		RAL 7032
ht	[kg]	3,08



Product description This Complete Rainwater

Management System provides

an economical and convenient

solution for irrigating green

water storage and additional watering

The BKS Irrigation System works on the principle of a uniform level of water being maintained on the roof surface. This is achieved by

roofs in an ecological way.

Product number

040301 100138

draining

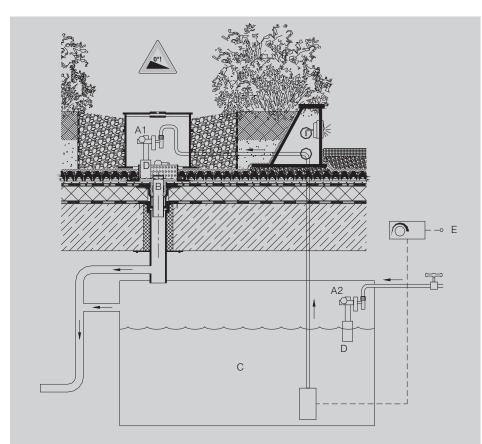
watering

Application

HYDROTECHNOLOGY ■ AUTOMATIC IRRIGATION SYSTEM

PRODUCTS

HYDROTECHNOLOGY ■ AUTOMATIC IRRIGATION SYSTEM



System components

- DHA-110-D Gully with height adjustable cylinder
- DHA + Extension elemnent • Frees the sewig system • ASG40-PVC-93 Gully for from overloading various roof outlets with • Simple and quick 93 mm diameter installation
- ASG40-PVC-140 Gully for various roof outlets with 140mm diameter
- Corner valve
- Run through valve Inspection box
- Drainage and reservoir board DiaDrain 60
- Growing media

• Easy operating and maintanance • Does not contain expensive elements

Advantages

ecologically

the facade

particles

costs

Saving on screed to falls

• The most eficient way of

utilizing rainwater both

economically and

• Irrigation without polluting

• Reduction of airborne

Exemplary rainwater management

Frequently Asked Questions

• What quantity of water is held? There is standard rule, that the third part of the drainage layer should leave clear from the floating.

- Could the system be used for refurbishment? If the falls are connected to zero falls.
- Should operation continue during winter? At the end of the vegetation period it is recommended to stop
- - the waterflow for the winter and restart the operation at spring.



Product

Overflow element

Mechanical water-level controller

Related specifications

FLL guidelines 4.8/2002

FLL guidelines 4.9/2002

FLL guidelines 6.4/2002

Related pages

21





DHA-110-D Roof Outlet with height adjustable water level control





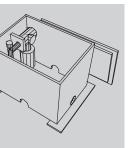


Related Products

• KSE-30

• KSR-35 / 45 / 55 / 65

50





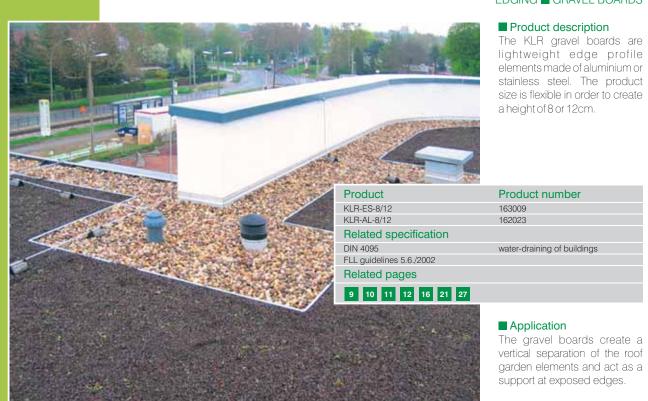
Operational skeleton diagram

The operating features of the system is the water-level controll valve (A), which in case of lower water level permits the floating on the roof from the pipelines, or from the reserving tanks (C). The task of the lock cap (B) is to adjust the water level, by assuring the drain of the excess.





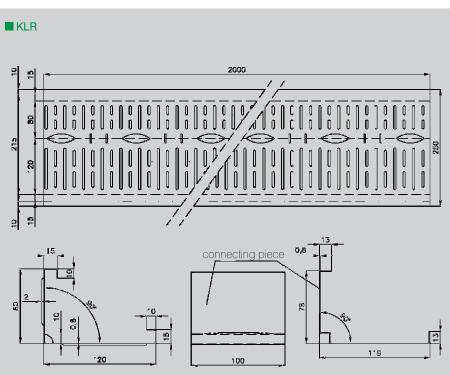




EDGING GRAVEL BOARDS

PRODUCTS

EDGING GRAVEL BOARDS



Advantages

draining

Long-lasting

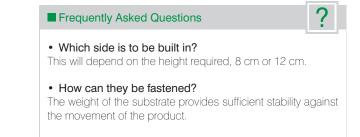
- No need for bedding Can be quickly constructed
- Does not prevent water
- elements are laid butt jointed and butt straps used for

another.

Instalation instuctions

The separating profile

- connecting one piece to



Corner formation?

Formation of 90° corners can be created with special corner pieces or by cutting on site.





Technical data	Dim	KLR-ES-8/12	KLR-AL-8/12
Product number		163009	162023
Element length	[mm]	20	00
Foot size/element width	[mm]	8	0
Height	[mm]	12	20
Material thickness	[mm]	0,	8
Mass	[kg/m]	1,40	1,0
Material		stainless steel	aluminium
Accessories		binding elements	s (1 pc/2 r. meter)



Tools needed for installation Tin-ware handtools for cutting.

Product accessories • Joining element • Corner element

DIADEM ()1 \cap m Ē GRA





EDGING RECYCLED PLASTIC KERBS

Product description

The RD product range of edge kerbs are manufactured

PRODUCTS

RDL

RDA

EDGING RECYCLED PLASTIC KERBS

190

190 100 10

300



	from recycled plastic with a variety of finishes available.
Product	Product number
RDL-12	160201
RDL-19	160202
RDA-25	160301
RDA-40	160302
RDT-12	160401
Standard	
FLL guidelines 5.11./2002	edging
Related pages	
12 13	

Advantages

Long-lasting

installation

tools

screw

continuous jointing of the • Stainless steel connecting

Screwdriver

Quickly constructed

Tools needed for

No local concreting needed

General garden-building

• Front-piece coloured according to RAL colour

Product accessories

Application

RDL and RDA edge pieces can be used, in the edging of terraces and green roofs. They are important distinctive pieces in the development of a garden layout. In addition these units can be used to house, trunking for electrical cabling. For decorative purposes lighting can be installed.

Related products

- RDL-UNI (12)
- made shapes available.







Installation instructions

To secure the continuity of

water drainage, a level and

compacted base made up of mineral rubble is made on a

heavy duty DiaDrain layer on

to which the RDL kerb is then

placed. Preformed corner

pieces are available. For

stability metal capping profiles

the kerb. This also allows

are slipped on to the top of

pieces.

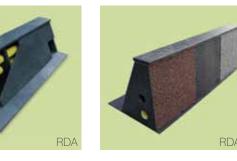




Technical data	Dim	RDL-12	RDL-19	RDA-25	RDA-40	RDT-12		
Product number		160201	160202	160301	160302	160401		
Element length	[mm]			1150				
Width	[mm]	190	240	300	480	190		
Height	[mm]	120	190	250	400	180		
Weight	[kg]	6,10	8,14	11,30	20,27	7,10		
Outside corner (L \times W \times H)	[mm]	$1150 \times 190 \times 120$	$1150 \times 240 \times 190$	$300 \times 300 \times 250$	$480\times480\times400$	1150×190×180		
Inside corner (L \times W \times H)	[mm]	$1150 \times 190 \times 120$	$1150 \times 240 \times 190$	$600 \times 600 \times 250$	$960 \times 960 \times 400$	1150×190×180		
Colour			black (anthracite)					
Material		recycled PS						
Outside surface			rhombus pattern					
Frost resistance				ves				

- Corner unit
- Curved and other tailor-





Frequently Asked Questions

• What provides product stability?

- A properly prepared base as described in Installation Instructions will provide the necessary stability. This can be enhanced by screw fixing one kerb to another.
- Can the product be ordered in different finishes? Yes, simply specify the RAL colour and finish required.
- What is the purpose of the metal profile on the upper edge of the product? The profile, allows connection of neighbouring kerbs.

• Corner-forming?

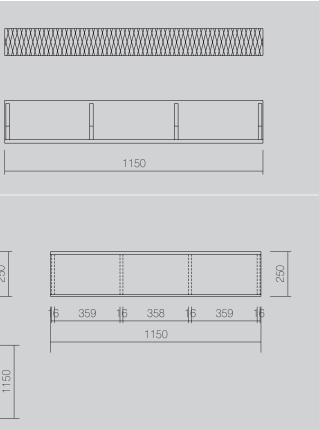
For the forming of 90° corners RDL-UNI products are available to form internal or external corners.

Local cutting?

With traditional woodworking tools pieces can be cut to the required size.

54





1150

359

16

358

1150

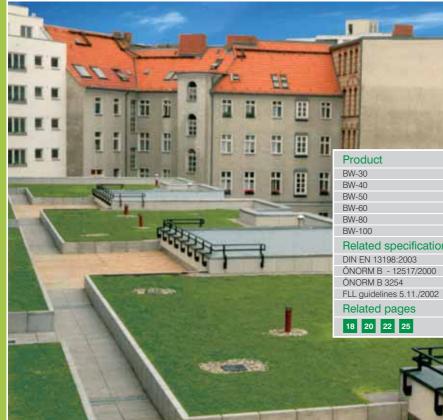








BW 30/40/50/60/80/100



PRODUCTS

EDGING CONCRETE KERBS

Product definition BW, edge kerbs are manufactured from precast

concrete.

Product number 161002 161006 161013 161003 161004 161005

Related specifications

Edging

18 20 22 25



Frost resistance Load-bearing capacity Experts' opinion on stability

Application

BW edge pieces can be used for separating areas with varying thicknesses, for supporting higher superstructures and for the formation of separate garden areas.





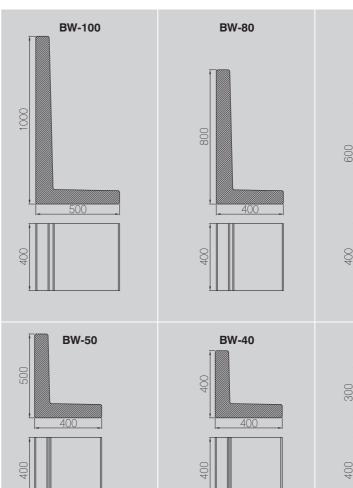


Photos for illustration purposes only.

Technical data	Dim	BW 30	BW 40	BW 50	BW 60	BW 80	BW 100	
Product number		161002	161006	161013	161003	161004	161005	
Element length (A)	[mm]	400	400	400	400	400	400	
Foot width (B)	[mm]	300 / 200	400	400	400	400	500	
Height (C)	[mm]	200 / 300	400	500	600	800	1000	
Thickness	[mm]	60-90	80–100	80–100	80-100	100	100	
Weight	[kg]	29	55	64	72	96	126	
Concrete quality				C20-C25				
Frost resistance		yes						
Requirement	[pc/rm]			2,5				
Feature		concrete product manufactured with pressed technology						
Loadings		recommended for gardening applications						
External corner		can be ordered						
Colour		grey	grey	grey	grey	grey	grey	
Packaging	pc / pallet	48	24	24	24	12	6	

PRODUCTS

EDGING CONCRETE KERBS



Advantages

- No local concreting needed
- Can be constructed quickly
- Long-lasting
- Frost resistant

Installation instructions To secure the continuity of

water draining, a bedding made up of mineral gravel with a thickness of min. 5 cm and with grain sizes of 4-8 mm is to be made on a heavy-duty drain layer on which the elements can be placed

?

Frequently Asked Questions

• Which side is up?

According to stability experts, the product can be laid on either side.

• How are the concrete kerbs fixed?

Concrete kerbs do not need to be fixed when both sides are supported e.g. where paths adjoin planted terraces or where you have on one side the vegetation and on the other, gravel, or other material. In this situation the gritted bedding and the weight of the growing media on the kerbs provides sufficient stability against the movement of the kerbs.

• Construction of corners?

It is simple to construct 90 degree corners by using combinations of interior and exterior corner elements.

• How can the elements be protected from discolouring? Special sealing tapes are a simple and effective way to seal the joining lines on the inside, therefore any growing media wash



through and discolouring can be avoided.







directly after leveling and compating. For forming of corners separate corner pieces are also available. In case of direct edging of covers, joints between the pieces are to be sealed with a long-lasting self-adhesive sealing tape, thus discolouring of the cover can be avoided.

Tools needed for installation

General garden-building tools

Related product

Self-adhesive joint sealing tape







PRODUCTS

P1=42-60 mm

Use of C1 element

P1-P4

SLH 60-600 FK assembly

T1

Special heights with the lining of C1 element

TERRACE BUILDING ADJUSTABLE-HEIGHT PEDESTALS



1	
1	Product SLH-60 SLH-75 SLH-120 SLH-200 SLH-200 SLH-200 SLH-310 SLH-400 SLH-500 SLH-600
	Related s FLL guidelin Related p 20

1	■ Product description SLH, height adjustable pedestals are manufactured from polypropylene.
uct	Product number
)	610131
i de la companya de l	610105
0	610104
0	610106
0	610109
0	610110
0	610111
0	610112
0	610113

TERRACE BUILDING ■ ADJUSTABLE-HEIGHT PEDESTALS

standards ines 5.12./2002

pages

Application

Forming of walkable covers

Ideally suited for situations where varving dogra height in ord deck.











Product name	Product number	Adjustable height (mm)		ise nent	Height ac eler	djustmer nent
SLH-60	610131	42-60	B1	1	-	-
SLH-75	610105	50-75	B2	1	-	-
SLH-120	610104	75-120	B3	1	-	-
SLH-200	610106	120-200	B4	1	-	-
SLH-270	610109	190-270	B4	1	C1	1
SLH-300	610110	240-300	B4	1	C1	1
SLH-400	610111	300-400	B4	1	C1	2
SLH-500	610112	350-500	B4	1	C1	3
SLH-600	610113	420-600	B4	1	C1	4
	All pe	destals are available	with a cros	s spacer o	on top.	

e varying degrees of
it adjustment is required
der to achieve a level

Base

support

T1 1 T2 1 T3 1

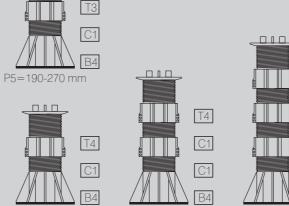
T4 1

T3 1

T4 1 T4 1

T4 1

T4 1



P6=240-300 mm P7=300-400 mm

P8=350-500 mm

T4

C1

C1

C1

P3=75-120 mm

T2

P2=50-75 mm

Advantages

- Easily assembled
- Good load bearing capacity
- (1000kg/pedestal) Minimal additional weight
- Eases rainwater runoff
- Resist chemicals

in every corner point of the set area, then prescribed height is covers. to be set with a level board. Pieces in-between can be divided, for example, along a tightened string and also set the height at the same time. After placing the pillows there is still a possibility for fine adjustments, then the level

chipboard screw.

Installation instructions

First, from the feet with pre-set

heights one should place one

can be set with the help of a

1 N.	SLH-200	61
-	SLH-270	61
	SLH-300	61
	SLH-400	61
	SLH-500	61
-	SLH-600	61

^ ≣ <	www.diademroof.com





Tools needed for installation

Level board and tools necessary for making of

Frequently Asked Questions



59

• At what distances should feet be placed?

Statical measurements can give exact data in connection with needed supports, on plank terraces with private traffic pillows are sufficient to be supported, in general, at every 70 cm.

• Should the supports be fastened to structures?

Not necessary, but it can happen in special cases. In these cases it is better to fasten the head piece instead of the foot base.

• With modular covers how can the support of points different from the raster be solved?

This question appears with modular terrace covers and difficult-to-solve situations can arise.

Ask your dealer for a detailed construction guidelines booklet.



TERRACE BUILDING CROSS SPACERS



	Product Number
	610114
	610102
	610101
	610103
	610116
	610117
	610118
	610119
	610121
tandards	
	water-draining of buildings
delines	
02	Formation of walkable covers
bages	
3 26	
1 mars	

FK / FKK Replacement

Since the DIADEM® joint

crosses are wedge between

designed, it is easy to reinsert

the concrete slabs. Always

install the joint crosses, with

the wedge on the top.

FK / FKK Installation

The cross spacers should be

installed as the paving

progresses with the wedge

shape uppermost. The

quantity of spacers needed

will depend upon the layout

pattern of the paving and the

FK-1.5

FK-3 FK-5

FK-10

FKK-3

FKK-5

FKK-10

FKU-5

Related s

DIN 4095

Building gui FLL 5.12./20

Related r

17 18 23

Paving slabs for terraces on

building structures must be

loose laid with permanent

spacing between the slabs.

Providing a permanent space

between slabs enhances

drainage properties even on

natural soil or substrate,

ensuring equal spacing

between the slab and

increasing the aesthetic value

of the overall paving layout by

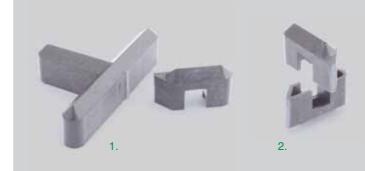
forming a distinctively clear

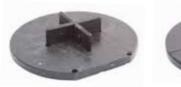
and even pattern.

FKK-1,5

PRODUCTS

TERRACE BUILDING ■ CROSS SPACERS





The FKU-5 cross spacer with

base plate consists of

70×70×20 mm cross

spacer. There is a 69 mm

straight cut on one side of the

base plate (see photo above).



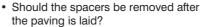
FKU-5 Spacer with Base Plate

FKU-5 Product Description FKU-5 Application

Whether terraces are formed on built structures or on a Ø 142 mm, 10 mm thick natural ground, FKU-5 cross black recycled polystyrene spacers with a base plate round plate and a 5 mm thick ensure the necessary gaps for water drainage in between and under the paving slabs. They also help to provide an aesthetic and even appearance for the surface paving. On even surfaces with only a few millimetres of difference in the level of the ground, laying the slabs is made easy and very quick.

?

FK / FKK Frequently Asked Questions



When paving slabs are loose laid, without mortar or grout filling the joints, the open gaps facilitate better and faster drainage. Cross spacers will also secure the slabs against movement that might narrow the drainage gaps. Consequently, spacers should not be removed after paving slabs are laid down.

· What quantity should be ordered?

The quantity of spacers needed depends upon the layout and dimensions of the paving. However, when laid in a diamond pattern, calculate on one spacer per slab.

• Can cross spacers be installed between paving slabs laid on a natural substrate?

The use of cross spacers between slabs on natural substrates is recommended because they help speed up the installation and enhance the aesthetic value of the paving.

FK / FKK Product description

The FK cross spacers family speeds up the process of laying down pavement slabs and secures the permanent spacing between the paving slabs, thereby increasing the aesthetic appearance of the terrace and encouraging better surface water drainage.

FK / FKK Advantages

- Can be used as cross and T-ioint spacers · Purposely broken spacers
- can be reused • Available in 4 joint sizes
- · Available in transparent and
- black colours · Future slab repairs can be
- carried out more easily







size of the slabs.

FKK Transparent Spacers

Technical data	D '			EK o				FK 40		
Technical data	Dim	FK-1,5	FKK-1,5	FK-3	FKK-3	FK-5	FKK-5	FK-10	FKK-10	FKU-5
Product number		610114	610116	610102	610117	610101	610118	610103	610119	610121
Size (L \times W \times H)	[mm]	50×50×18	50×50×18	50×50×18	50×50×18	70×70×20	70×70×20	80×80×20	80×80×20	Ø 142×30
Thickness of legs	[mm]	1,5	1,5	3	3	5	5	10	10	5
Unit	[pcs / pack]	100	100	100	100	100	100	100	100	200
Packaging	[pcs / box]	4000	4000	3000	3000	1600	1600	1000	1000	200
Weight	[kg / box]	13	13	17,5	17,5	23,4	23,4	15	15	26
Material need *	[pcs / m²]	4–10	4–10	4–10	4–10	4–10	4–10	4–10	4-10	4–10
Material need **	[pcs / m ²]	6,25-15	6,25–15	6,25–15	6,25-15	6,25–15	6,25–15	6,25–15	6,25–15	6,25–15
Material need ***	[pcs / m ²]	11,10-26	11,10-26	11,10-26	11,10-26	11,10-26	11,10-26	11,10-26	11,10-26	11,10-26
Base material		recycled PS	PS	recycled PS	PS	recycled PS	PS	recycled PS	PS	recycled PS
Colour		black	transparent	black	transparent	black	transparent	black	transparent	black

* for a slab size of 50×50 cm | ** for a slab size of 40×40 cm | *** for a slab size of 30×30 cm • Required quantity depends on the patterns applied.





<u>ເ</u>

FK Black Spacers





T-joint use

A distinctive feature of the DIADEM® FK cross spacer family is that one leg has a notch cut into it. When you need a Tjoint spacer, the weakened leg with the notch can be easily snapped off, creating a T-joint. T-joint spacers can be used along edges and at corners. The snapped legs can also be reused to create new, smaller cross spacers if required.



FKU-5 Advantages

• May be used as a cross- or T-shaped spacer, so the FKU-5 cross spacers allow for any kind of paving design • The base plate provides firm support for the paving slabs

• It is economical: there is no need for a gravel layer underneath

• Eliminates small differences in uneven surfaces and even in the height of the slabs through the use of the self-adhesive leveling mat

FKU-5 Accessories

Self-adhesive leveling mat

FKU-5 Frequently Asked Questions

• Do I need a gravel layer for outdoor tiling with FKU-5 cross spacers?

The greatest advantage of the cross spacer with base plate is that it does not require a gravel underlayer. Therefore you can save on the cost of material and labour of a gravel layer.

• Can I use the base plate by the wall?

Its special design easily enables you to use them by the wall. Simply break off the weakened leg of the cross spacer and reattach the remaining T-shaped cross to the edge of the plate. It can now be placed by the wall for firm support. When used in a corner, use the base plate under the slab without a cross spacer.

• Where can I use the self-adhesive leveling mat?

To raise the level of an uneven slab, affix a piece of the mat onto the top of the base plate (the smooth side) in the required place. To level out uneven surfaces underneath the outdoor paving tiles or stones (e.g. overlapping water insulation or protection textile layer), affix the required sized mat onto the bottom of the base plate. The leveling mat may be used in several layers on top of each other.



?



SAFETY TECHNOLOGY RAILING SYSTEMS



Product description

The DIADEM® DRS-Light is a safety cordon system for fencing off parts of a roof. It consists of modular elements, the weighting of which provide its stability. As a result, installation takes place without dismantling or penetrating the roof sealing layer. The two main elements the Fencing Panels and the Planting Containers, which provide the necessary

Product number	
710501	
encing systems	
all-guard	

weighting can be erected on the spot. The choice of interchangeable modules and the variable length spacing elements (0-12 cm) enable the cover of many different shapes and sizes of roof garden. If the installation is more than 2.5 m from the perimeter of the roof, the product is also suitable for the prevention of falls.

Application

The DRS-Light product serves diverse safety fencing needs of terraces and other roof areas used by people, without the need for penetrating the sealed roof. However, at the starting and finishing points it must be fixed securely to existing masonry.

Technical data Dim DRS-Light Product Number 710501 Test certificate EC Certificate of Safety Technology Components Fencing Panels, Planting Containers, Corner Fence Panels, Spacers, Tie Elements, Fixing Screws Anchorage to masonry Necessary Length of Planting Container [mm] 900 Width of Planting Container [mm] 350 Height of Planting Container [mm] 365 Length of Module 1000 [mm] Width of Module 350 [mm] 1100 Height of Fencing Panel [mm] Fencing Panel materiall hot-dip galvanised steel (also available in stainless steel) Planting Container material recycled polystyrene anthracite (also available in a choice of RAL colours)

Product

DRS-Light

Further pages

Related specifications IBC 1607.7.1.1/2003 EN 795/1997 EN 795/A1

62

DIADEM

DRS LIGHT

🚮 🗏 🚺 www.diademroof.com

PRODUCTS

SAFETY TECHNOLOGY RAILING SYSTEMS



Advantages

- Installation without disturbing sealed roof layers
- Simultaneous fall-guard provision
- Easy and guick installation
- Great adaptability

Installation instructions

Before installation, the Manufacturer must approve customer plans for the new DRS-Light System. Excess water must be prevented from accumulating on the loadbearing surface by spreading a layer of at least 5 cm gritting of a strong mineral base of grain size 4-8 mm, followed by the necessary levelling and compressing before the compost.

100

30-120

elements can be erected. Next the Planting Modules should be positioned according to the plans. Then using the appropriate spacers of the Fencing Modules, the Planting Containers should be joined together. To make corners, Corner Modules are available. The System can only be used as safety barrier. The Planting Containers are filled with

Frequently Asked Questions

• How is the System stabilised?

The Planting Containers stabilise the System by their weight, and by securing the fence at starting and finishing point to masonry.

• How can individual designs be achieved?

By choosing the appropriate length (0-12 cm) of stainless steel spacer elements between the Planting Containers, arbitrary shapes and forms of garden or paths are achievable. The spacer elements can be cut to size on the spot, all at once.

• Are there special heights of Fencing Panels available? Yes, special height panels are available on demand.

www.diademroof.com 🚺 🗎 👫

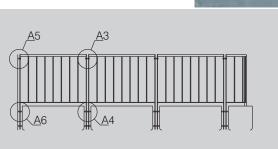


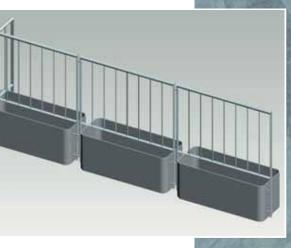


Т С L S C L

Tools needed for installation Spirit level Tape measure

Boltwrench







Installation instructions

DRS standard: (see brochure)

DRS light: Where the system

is used as safety barriers the

plans and design should be

approved by the Manufacturer.

NOTE: In both cases the

system should be set 2-5

Application of technology

when used especially for

This product is licensed as

suitable anchorage when used

according to regulations EN

795 and EN 795/A1. This

necessitates that the snap-link

of personal safety equipment is

attached directly to the upright

rods of the barrier to avoid falls.

If the system is used not only for

fencing but also to provide

secure anchorage points,

regulations of EN 975 must be

followed in usage. E.g.

minimum distance from the

perimeter of the roof, use of

warning boards and annual

checks by authorised

personnel.

meters from the roof edge.

safety anchorage

(see brochure p.63)

SAFETY TECHNOLOGY RAILING SYSTEMS

Product description

The DRS safety barriers come in two main types: DRS Standard, which comprises the railings and a base framework onto which ballast is placed and DRS light which combines the railings with planters which when filled provide the necessary ballast for stability.

Product number 710503

Fall-guard

DRS-Standard Standars reference EN 795, EN 795/A1

Product name



DRS-Standard is suitable for all flat roofs of up to 5° gradient, for marking off an area and for fall

Applications

prevention. Both types act as full prevention barriers and or lines of separation.

Advantages

- Installation without disturbing sealed roof layers · May be used as safety
- anchorage point
- Easy and quick installation
- Various ways to arrange Available in stainless steel



Technical data	Dim	DRS-Standard
Product number		710503
Test certificate		EN 795 / EN 795/A1
Components		Support Plates, Frames, Fencing Panels, Special Screws. The Plant Containers and Concrete Slabs will be charged additionally.
Anchorage to masonry		not necessary
Container size	[mm]	$500 \times 500 \times 365$
Approx. lenght of module	[mm]	1000
Approx width of module	[mm]	1000
Height of fencing panel	[mm]	1100
Fencing panel material		hot-dip galvanised steel
Container material		polystyrene
Colour		anthracite (also available in a choice of RAL colours)

Frequently Asked Questions

• Does the Fencing system need to be fixed to the building?

No, the complete system is self supporting by the weight.

· Can the system be placed directly onto the upper roof layer?

In most cases the System needs to be placed upon grit-filled Drainage Trays. It is necessary to have a drainage layer below the System

• Should the Containers have a drainage layer below them?

Yes, the Containers should be placed on 40 mm high polystyrene Drainage Trays positioned over a filtering fleece.

• Do the Containers have factory made overflow holes?

No, the Containers are watertight. The customer can drill holes on the side of the Container or on its base for invisibility. Alternatively the Manufacturer will make a small surcharge for this work.

• Can gates be built into the System?

Yes, it is often the wish of our clients to supply gates when the railings are not erected directly at the roof's perimeter.

PRODUCTS

SAFETY TECHNOLOGY ADZ ROOF SAFETY FENCING

AD7

Product description

The DIADEM[®] ADZ is a safety fencing system comprising the fencing MDE 60 H.D.P.E. base and fixing brackets.

Applications

The fencing is suitable for cordoning off secure areas, can be used to prevent falls and act as a anchorage point for personal safety.

Advantages

- Installation without disturbing sealed layers
- Simultaneous fall-guard provision
- Easy and guick installation • Great freedom of movement
- on both sides of barrier Large installation units, fast repositioning

Tools needed for installation

- Bolt wrench
- Drill
- Spirit level
- Tape measure
- Rivet gun



Installation instructions

The System must be installed

onto a sealant-protected

surface. First place the MDE 60

drainage trays along the line of



Application of technology when used especially for safety anchorage

adjustments to the System

should the bolts be finally

tightened.

This product is licensed as suitable anchorage when used according to regulations EN 795 and EN 795/A1. This necessitates that the snap-link of personal safety equipment is attached directly to the safety fencing to avoid falls. If the system is used not only for fencing but also to provide secure anchorage points, regulations of EN 975 must be followed in usage. E.g. employment of warning boards and annual checks by authorised personnel.

Frequently Asked Questions

to the building?

· Does the Fencing system need to be fixed

No, the complete system is self supporting the ballast weight.

Produ Test o Com

?

Tech

Anch Appro Appro Fenci Wire Wire Post : Post : Fenci



STANDARD

5

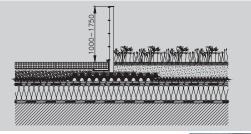












hnical data	Dim	ADZ
uct number		710601
certificate		EN 795 / EN 795/A1
ponents		MDE 60 Drainage Trays, Post Supporting Plates, Fencing Posts, Fencing element, Round headed, self-spreading, blind Rivets
orage to masonry		not necessary
ox. length of module	[mm]	2510
ox. depth of module	[mm]	60
ing height	[mm]	1230
mesh grid	[mm]	50×200
gauge horizontal/vertical	[mm]	8 / 6
size	[mm]	$60 \times 40 \times 1800$
support	[mm]	$408 \times 140 \times 110$
ing material		hot-dip galvanised steel

\mathbf{O} \bigcirc Ŏ



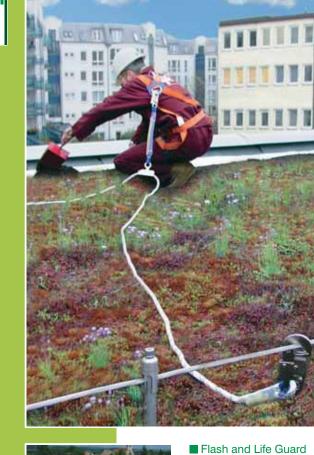
PRODUCTS

SAFETY TECHNOLOGY FALL ARREST SYSTEM

Branching to the

lightning conductor

Light dome



		Product description The FLG is a combined Fall Arrest and Lighting Protection system relying purely on ballast for its installation.
	Product	Product number
	FLG-30 Line System	130085
OW INCOME.	FLG-50 Line System	130082
	FLG-30 Single Point System	130083
and a second	FLG-50 Single Point System	130080
100	Related specifications	
Sec. 1	DIN EN 795 /1997	protection from falling
	Related pages	
A STATISTICS	11	
and the second	and the second second	

system	and Lighting relying purely stallation.	
Produc	ct number	
130085		
130082		
130083		
130080		
protectio	n from falling	

SAFETY TECHNOLOGY FALL ARREST SYSTEM

Application

The system is suitable for use on flat roofs with up to 5 degrees slope and having suitable ballast with a dry weight of not less than 80 kg/sqm.

The FLG Line System is the only lightning-protection installation which simultaneously serves as a lightning conduction fall-prevention system. Installation of the system does not require either penetration of the roof insulation or mechanical fixing to the fabric of the roof. The FLG Line System is held in place by its system, on the other hand, own weight and may be used on green, gritted, or paved roofs with up to 5° inclination. The Flash and Life Guard has particular points across the been tested against relevant roof. In this case, the minimum standards for safety on most requirements for the roof are types of superstructures and dimensions of $5m \times 8m$. All

is suitable for roofs with a minimum load of bulk goods of 80 kg/m2. The advantages of the combined fall and protection system are used to full advantage when they are included in the initial design stage of the roof garden. There is no maximum length for the system. The "Single" permits for one or several independent attachment points to be placed at roof installations. The system system components are

corrosion-proof and rot-proof. APP's Flash and Life Guard System: Fall Prevention, Lightning Protection and Kinetic Energy Absorption System has been approved to Class E standard according to DIN EN 795 and 795/A1 and has been patented as a registered design. The system must be installed to an approved design and plan provided by the manufacturer.

	Part of the system		Dim	FLG-30 Line System	FLG-50 Line System	FLG-30 Single Point System	FLG-50 Single Point System
	Product Number			130085	130082	130083	130080
	Anchor post	Material	-	stainless steel	stainless steel	stainless steel	stainless steel
		Supporting area	[mm]	Ø250	Ø250	Ø250	Ø250
		Height	[mm]	300	500	300	500
	Locking head	Material	-	stainless steel	stainless steel	stainless steel	stainless steel
	Fastening and lightning	Material	-	stainless steel	stainless steel	stainless steel	stainless steel
	conductor cable	Measure (diameter)	[mm]	8	8	8	8
	Threaded cable clamp	Material	-	stainless steel	stainless steel	stainless steel	stainless steel
		Measure (diameter)	[mm]	8,5	8,5	8,5	8,5
	Fall arrest mat	Width	[m]	5	5	5	5
		Lenght	[m]	50	50	8	8
		Tensile strenght weft	[kN/m]	11,5	11,5	11,5	11,5
		Tensile strenght warp	[kN/m]	11,5	11,5	11,5	11,5
		Water permeability	[l/m²×s]	105	105	105	105
	Dampening plate	Material	-	recycled plastic	recycled plastic	recycled plastic	recycled plastic
		Measure	[mm]	1200×1000	1200×1000	1200×1000	1200×1000
		Thickness	[mm]	10	10	10	10

•

•

Advantages

- Simple construction • No need to break through
- roof weathering
- No "heat bridge" developing Able to take on forces /stress from any direction
- Integrated with lightning conductor system

Installation instructions The FLG installation requires

oading carpet Cable-lead Roof edge

Lightning conductor

15,0 m^{conductor} cable

the connect build up of the various layers and elements of the system to a plan that must first be approved by the manufacturer.

Product accessories

- Anchorpost Locking head
- Fall arrest mat
- Dampening plate
- Fastening and lightning conductor steel cable
- Fastening ring Threaded cable clamp
- Inspection tag
- Carabiner
- Documentation

Tools needed for

- installation • Hammer
- 18 mm puncher scissors
- Underlay plank fork wrench
- no. 10 Pulling nail with internal keying no. 8

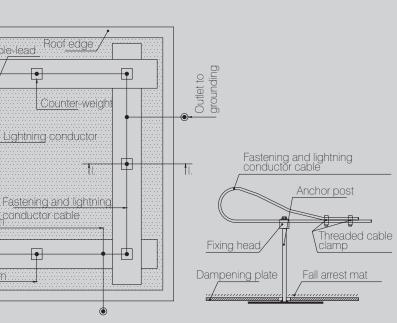


The system perfectly integrates the fall-prevention function and the lightning conductor tasks. After construction the system is to be tied to the lightning conductor and earthing/grounding - keeping to prescribed specifications -. • What type of maintenance is needed?

results.

30/50

5 1





67









Frequently Asked Questions

· Should the system be fastened to the building structure?

System stability is secured by loading of the roof.

· How should the system be connected to the lightning conductor?

The FLG fall-protection system is to be checked by a qualified contractor every 12 months who records the inspection

PLANNING GUIDELINES

HOW TO PLAN AND BUILD A GREEN ROOF

A GREEN ROOF HOW TO PLAN AND BUILD



Wind load

Because of the wind, buildings are exposed to pushing, sucking and frictional/shear forces and their intensity depend on the speed of the wind, its flow direction, as well as the height and shape of the building. Layers of green roofs are to be formed that during construction and in the finished stage they will be resistant to wind loads.

Resistance of the surface of green roofs is increasing with Any work done at height the capability of intensive rooting of plants. We can list 3 areas according to various strengths of wind loads:

corner areas with very high loads edge and border areas with

heavy loads central fields with lesser

loads (here proper measures are to be executed).

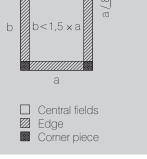
requires vigilance and strict adherence to Health and Safety procedures. This applies equally to the installation of a Roof Garden. Relevant 'Work at Height'

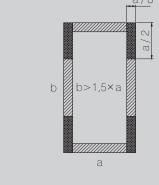
Accident prevention

guidelines should be followed at all times and only operatives with appropriate certification / training should be used.







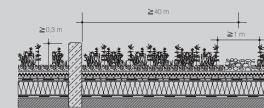


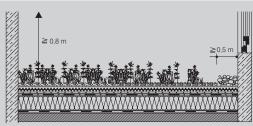
Technical data	Dim			
Building height	[m]	height < 8	8 < height < 20	20 < height
Central fields	[kg/m ²]	45	75	
Edge	[kg/m ²]	130	210	special solution needed
Corner piece	[kg/m²]	225	360	

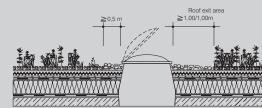
🚮 🗏 🚺 www.diademroof.com

PLANNING GUIDELINES

HOW TO PLAN AND BUILD A GREEN ROOF







Fire protection

Green roofs are to be resistant to wild fire and radiant heat. We consider - from the point of view of fire protection those surfaces resistant or hard-covered which fulfill the following requirements:

Those intensive roof gardens which are watered and maintained regularly or were made with a thicker soil layer, are resistant to wild fire and are considered hardcovered roofs. Those extensive green roofs low-growth plants (Sedum, Festuca,...) can be qualified only in case if they fulfill the following requirements: growth medium, min. 3 cm

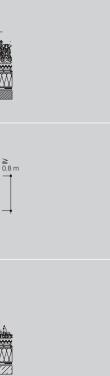
which are covered mostly by

thick, having organic content of not higher than 20 m%,

building parts separated by fire walls where the length of one area does not exceed 40 m, and material of the separating structure is not flammable, its height is 30 cm, or its width is at least 1 m,



www.diademroof.com 🚺 🗎 👫



in front of openings looking to roof surfaces and around fanglights a protecting strip of 0,5 m wide is to be built out of coule gravel or out of concrete tables,

in buildings constructed with a partition-wall to each other, a strip is to be built out of non-flammable material, at least 1 m wide according to a horizontal projection which will not be now or subsequently filled with plants.





PLANNING GUIDELINES

HOW TO PLAN AND BUILD A GREEN ROOF



On extensive green roofs, after final cultivation and handing-over, the natural development dynamics of plants begin. We can influence this only to a small extent with the help of cultivating interferences such as clear-cutting or with the elimination of certain plants. Certain species, newcomers, tall-growing ones, the ones which stifle domesticated plants, for example, some papilionaceous plants work. (Fabaceae) should be eliminated at an early stage.

■ In case of extensive green roofs caring after the planting lasts up to a limited time after handover, until reaching 90% covering level. This can stretch for longer than 2 years depending on the vegetation planting method and on the state of development. In this period the securing of nutrients' supply is important primarily for the growth medium of one-layer green roofs. Checking once or twice a year usually is sufficient to ascertain what steps are needed to do the upkeep work.

of the predetermined soil

Measures in connection with upkeep and post-planting works of extensive green roofs can be:

nutrients' supply,

elimination of tree shoots



and other non-desirable plants,

- cut-backs for rejuvenation,
 re-sowing on larger-sized barren areas.
- addition of plants on largersized barren areas,
- addition of growth medium in case of erosion,
- clearing of technical installations of vegetation,
- clearing of safety paths and of covered surfaces of leaves and of vegetation which obstruct their function.

Activities listed in the above column are always to be coordinated.

In case of extensive roofs, the supply of nutrients is done during cultivation after planting for a predetermined time period. The use of longlasting, covered artificial fertilizers is recommended, for example, NPK, in doses of 5 g N/m2 per year. In case of green roofs which have few nutrients, for example, possessing only one layer or with a thin order of lavers, it can be very important to do the supplementary fertilizing in every 2-3 years in order to maintain the predetermined vegetation picture and the blossoming aspect.

At the time of post-planting and upkeep works, maintenance of technical installations is also to be performed. In connection with these, the following especially should be taken into consideration:

- operating capability of irrigation and/or water draining installations located in the roof run-offs or in inspection manholes,
 elimination of dirt and
- deposits in inspection manholes, on irrigation equipment with drainpipes and in run-offs,
- stability of edges, of surface fixings and of other

architectural elements. Plant parts and deposits blocking the functioning of gravel fills around technical installations, of separating gravel paths and of connections and closings are to be eliminated in 2-3 year cycles.

REFERENCES

ZSOLT TAKÁCS 🗖 GY🛛 R CULTURAL CENTER



The institution got some breathing space. Succulents and excitement in the cultural center.

■ Mr. Zsolt Takács, director of the Petlfi Sándor Cultural Center in Gylr, belongs to those who not only heard of a green roof but could experience in real life as an operator of a green-roofed house, how is it. How did it fit in? Do you love it or hate it?

Zsolt Takács: After a long digestion period we got to a point that we considered green roofs at all. Our 35 years old building was due for renovation and of all possibilities we finally selected this solution. Our financial means did not produce for us an entire green roof, only on about 60% of it. It also helped our determination that parallel with the renovation, with the purpose of eliminating obstacles, an elevator was also installed which we had built in a way that later it could be extended also up to the roof. There we will build a roof terrace and first step of this is this extensive green roof. Another important consideration was to lighten



the burden on the rain-water draining system of the former building, most of the rainwater to remain on the roof, thus we could avoid the expensive changing or expansion of internal drains. Based on our experience on the planted part of the roof, these problems disappeared.

So, between the two sides does the green roof perform better?

Zs. T.: Yes, and this is to be emphasized since it was an important part of the decision. Further advantage was that also in cooling during the summer, in heat-conservation during winter the structure is better, we can feel that the climate is better in the green roof portion of the building.

With the solving of old problems, did not old ones come up? How expensive is upkeep?

Zs. T.: We got some extra work that mainly in the initial period some weeds grew out of flying seeds but that was solved easily. Now vegetation is saturated and fewer such jobs come up. Planted seedlings are becoming stronger.

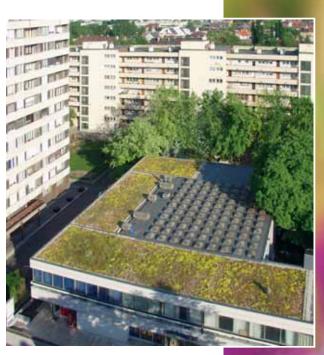
Was the roof planted with

buds of succulent plants? Zs. T.: Yes, we did not have money for seedlings, buds are cheaper, but grow slower, still in about 2 years the roof was ready.

How much chaos was created by the construction? Was the institution in operation during construction?

Zs. T.: Of course, it was in operation, and there was no





stoppage of any kind. There was no need for stopping or reorganizing programs. Only once we had to fit in the program the lifting of materials in large quantities to the roof but that was only a day or two. Construction was not a problem.

■ You are, users of the building, satisfied with the planted roof. How did your visitors react?

Zs. T .: The people visiting us did not really notice it. Our plan of us able to go on to the roof did not get fulfilled yet. One can not see on to the roof. It is more interesting that the cultural center is surrounded by buildings with 6-10 stories from where people indicated to us: their view improved. It has a certain positive radiation. We also organized a conference on green roofs in our center. Among the institutions in Gyl many are interested in this example, some of the managers of kindergardens come back regularly to see what happens.

Are you planning to plant the remainder 40%, too?

Zs. T.: We would like to transform the remainder to be an intensive roof, a roof garden. We believe in the realization of this, we would like to build there a cafe shop with an outside terrace. If we find a willing investor, this can also be realized.



DIADEM® 150 GREEN ROOF

71

REFERENCES

TAMÁS LUKÁCSI 🔳 LAJTA HOUSING PROJECT, MOSONMAGYARÓVÁR



GARDEN

ROOF

RESIDENTAL

750

72

Do you have opportunities to try this structure on medium-sized projects, on family houses, on collective housing projects?

Tamás Lukácsi: Fortunately not only to try it but to use it quite frequently. The start of a planning process is getting to know the builder-owner and for a joint effort it is apartment with nearly 100 m² indispensible to build a trustful to which a roof garden of relationship. This is the stage when the builder-owner can be made open and sensitive to new things since green roofs are still considered novelties. Sometimes the first mass sketch, conception plan brings with it the possibility of using green roofs, thus it is important to familiarize the builder-owner with green roofs in the first stage of planning with presentation of plans and of reference buildings. I am happy to say on this that I am able to work with more and more builder-owners where there is possibility to plan-in green roofs.

■In the Lajta Housing Garden Community how did it happen that a green roof was constructed?

T. L.: We have been working together with the investor of the collective apartment complex in the Laita Housing Garden Community for a long time with much success. He understands and accepts such technical solutions which 70 m^2 is attached. The do not help the quick, direct return on investment but improve quality and create new value. Thus, also in this project we could plan in larger units of a higher standard in addition to sellable standard apartments. One of such apartments is a second-storev

investor was sceptical about selling it but the market contradicted the initial pessimism. The apartment was guickly sold and thanks to this the owner also could participate in the planning, forming of a roof garden, then with the participation of Mr. Gábor Varga (APP) a very nice solution was created.



We got used to the fact that green roofs are built mainly on larger real estate investments, on office buildings. Tamás Lukácsi architect in Mosonmagyaróvár.

REFERENCES TAMÁS LUKÁCSI 🗖 LAJTA HOUSING PROJECT, MOSONMAGYARÓVÁR

Are there also other, practical, even planningtechnological advantages of a mass closing with a green roof?

T. L.: In the process of planning needs of not only the customer and builder/owners are to be met but have to comply with city regulations and building standards, too. One such a standard condition is the average building height. OTÉK source describes more or less exactly the method of its computation. Since we are talking of average building height, some facades of the building can be planned higher, some lower, thus connecting points of higher and lower masses give us excellent opportunities to form roof gardens. That is something we can call planning-technological advantage. As a practical advantage, I would mention its excellent architectural-physical characteristics.

Thus, on these surfaces we do not have to think of some kind of "shelling". If the architect decides for the green roof, how much trouble does he/she take on in solving of detailed problems?

T. L.: Fortunately, the



profession got specialized in Hungary, too, so there are professional specialists who know about green roofs. In planning of all green roofs, we coordinate with professionals of the manufacturer which might even involve a sketch plan. With their help we can decide which surface we have to build extensive, on which intensive or flooded roof, and what solutions for parts or material we should consider.

Flooded sounds a bit frightening. What does it mean?

T. L.: We design flat roofs where in the water-holding layer a water surface of 2-3 cm high, can continuously be maintained, what secures water re-supply in dry weather, in the frost-free period, in the design. In my latest plan, we winter one should drain the will use the system not only on water with a safety valve. This solution was developed to satisfy special needs with the needed outlets, valves and with ready-made details. There are typical junctions, but there are system solutions for individual problems, too.

If the system is that complete, how flexible is it, how can it follow changing needs?

T. L.: Manufacturers continuously develop their products, thus, for example, APP too, widens its product range with several new system parts every year. This year, for example, with a lightning rod

🚮 🗏 🚺 www.diademroof.com



fastening piece which makes fastening possible without a break-through of membranes. During the regular designer consultations, which help development, new problems always come up, a need for re-developing a junction, which the manufacturer maximally considers in detail.

Can we hope that the system will be more and more handy and complex?

T. L.: Certainly. We are noticing a widening of a circle of customers who are open for new things. We expect that more and more horizontal surfaces of family houses, of smaller housing projects will be used this way, thus green roofs will become more and more a part of architectural horizontal surfaces, but also on a half-saddle roof with a steeper-slope, a system supplemented with special elements developed for this purpose.





PRODUCT LIST

SUMMARY TABLE

Page

...8

..14

.19

...24

Page

..28

...28

..30

..30

..31

Page

32

...32

...32

.34

.35

..36

...36

..36 ..36

..36

.36

36

..38

..38

Part no

.810101

.810202

.810103

.810104

.130091

Part no.

.500101

.500103

500108

.500109

.410501

...410601

.410701

..410801

Part no.

310125

.310115

.310159

.310117

.310146

.320101

.320601

.320201

320202

320416

.320302

.320405

320402

....340102 .

...340101

[kg]/unit

1200 / m³

.1200 / m³

1200 / m³

.1500 / m³

[kg]/unit

.....0.10 / m².

....0.13 / m²

..0.15 / m²

 $0.20 / m^2$

.0.30 / m²

..0.50 / m²

.0.30 / m²

..0.50 / m²

....0.37 / m²....

PRODUCT LIST

SUMMARY TABLE

Terrace channels (plastic channel-base with hot RNS-03 /fixed height, with die-stamped grating/ RNS-05 /fixed height, with die-stamped grating/ RNS-08 /fixed height, with die-stamped grating/ RNF-08 /fixed height, with mesh/ RNF-08 /fixed height, with mesh/ RNF-10 /fixed height, with mesh/ Viennese Rigole /extra wide channel/ RNH-8-11.5 /adjustable height, with mesh/	$\begin{array}{c} 100 \times 13.5 \times 03 \\ 100 \times 13.5 \times 05 \\ 100 \times 13.5 \times 08 \\ 100 \times 15 \times 05 \\ 100 \times 15 \times 08 \\ 100 \times 15 \times 08 \\ 100 \times 15 \times 10 \\ 100 \times 15 \times 10 \\ 100 \times 25 \times 05 \\ \end{array}$	cast irol 3.07 / 3.52 / 4.55 / 3.75 / 4.57 / 5.40 / 5.60 /
Accessories: Half-meter long channel Connecting screw Channel wall end-piece with screws Full channel base Surcharge of stainless steel (mesh) Surcharge of stainless steel (die-stamped gratin Cast iron grid		0.10
Balcony outlet • adjustable height BLH-30, stainless steel Doorstep grilles with, hot-dip galvanized stee TRS-60 (fixed-height, with mesh) TRS-75 (fixed-height, with mesh)	l or stainless steel $$	meshed 6.67
TRS-100 (fixed-height, with mesh) Terrace grilles, hot-dip galvanized steel or sta TRF-30 (fixed-height, with mesh) TRF-40 (fixed-height, with mesh) TRF-50 (fixed-height, with mesh)	$\begin{array}{l} 100 \times 50 \times 5 \\ \text{ainless steel (fixed I} \\ 30 \times 30 \times 05 \\ 40 \times 40 \times 05 \\ 50 \times 50 \times 05 \\ \end{array}$	14.00 height) .2.35 .3.79 .5.24
Terrace grilles, hot-dip galvanized steel or sta TRH-30 (adjustable height, with mesh) TRH-40 (adjustable height, with mesh) TRH-50 (adjustable height, with mesh)	30 × 30 × 08-11.5 40 × 40 × 08-11.5	53,50 56,20

TRH-50 (adjustable height, with mesh)	
Irrigation systems	
Water level adjustment made of plastic	
Water level adjustment made of steel	D=23 × 652.56 kg/pc040304
DHA-110-D	
DHA-110+	D=11 × 15017 kg/pc100196

EDGING	L×W×H [cm]	[kg]/unit	Part no.	Page
Gravel boards		[ky]/unit	Fait IIU.	Faye
KLR-ES-8/12 stainless steel		1.40 / rm	163009	
KLR-AL-8/12 aluminium				
Edge pieces				
RDL-12	115 × 19 × 12	6.10 / rm	160201	54
RDL-19	115 × 24 × 19	8.14 / rm	160202	54
RDT-12				
RDA-25		/		
RDA-40				
RDA-25-AE /outside corner/				
RDA-25-IE /inside corner/				
RDA-40-AE /outside corner/				
RDA-40-IE /inside corner/ Accessories:	96 × 96 × 40	24.57 / pc .	160306	
Stainless Steel Screws			020204	
Coloured coating (RAL)				
Concrete edge kerbs				
BW-30	$40 \times 20 \times 30$	29.00 / pc	161002	56
BW-40				
BW-50				
BW-60				
BW-80				
BW-100	40 × 50 × 100	.126.00 / pc	161005	56
Corner pieces of concrete edge kerbs				
BW-30 AE /outside corner/				
BW-40 AE /outside corner/				
BW-50 AE /outside corner/				
BW-60 AE /outside corner/				
BW-80 AE /outside corner/				
BW-100 AE /outside corner/	40 × 40 × 100	. 170.00 / pc		



SYSTEMS

DIADEM[®] 150 Extensive roof garden.

Plants, plant layers, artif. fertilizer

DIADEM[®] My Garage

ORGANIC MATERIALS

Sedum with root ball

Sedum pre-cultivated mat .

SEM extensive growing media...

SIM intensive growing media.

Drainage and reservoir boards

MDE-60 mounting and drainage board ...

Diabolo-40 drainage channel...

VLT-100 separation layer...

Root resistant membrane FLW-800 (thickness 0,8 mm)

SUM sublayer of intensive growing media.

DiaDrain-60 drainage board form-pressed on 2 sides

VLR-130 separation layer for inverted roof.

VLF-150 filter layer for extensive green roof.

VLF-200 filter layer for intensive green roof

FLW-400 root-resistant, vapour-closing foil

VLU-300 protection layer for extensive green roof.

VLU-500 protection layer for intensive green roof.

VLS-300 protection and water retention layer (extensive) .

VLS-500 protection and water retention layer (intensive).

Seed grain mix

Sedum sprouts.

Growing-media

Nutrient supply

LAYER COMPONENTS

Geotextiles

DIADEM® 350 UK Simple Intensive Roof Garden Inverted Roof

DIADEM[®] 1200 Roof garden on top of underground garage.

SRM intensive growing media for lawn and small bushes ...

DIADEM® 750 Intensive roof garden with water level adjustement

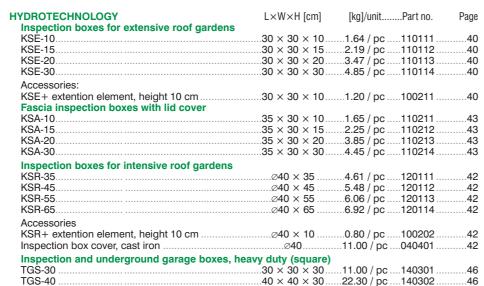


PRODUCT LIS









L×W×H [cm]

L×W [cm]

10000 × 200 ...

 10000×200 .

 10000×200 .

 10000×200

.5000 × 200

.5000 × 200 .

.5000 × 200 .

 5000×200

...2500 × 600

..196 × 90 × 6,02.15 / m²

 $.196 \times 90 \times 6,0$ 2.70 / m²

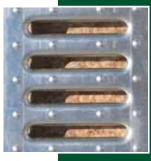
.196 × 15 × 4,00.34 / m .

🖬 🗏 🚺 www.diademroof.com

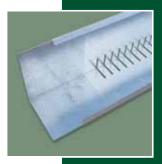
/×H [cm]	[kg]/unit	Part no.	Page
ed steel or c 13.5 × 03 13.5 × 05 13.5 × 05 13.5 × 08 < 15 × 08	3.52 / rm 4.55 / rm 3.75 / rm 4.57 / rm 5.40 / rm 5.60 / rm		
0 × 14) × 13,5 0 × 15	0.10 / pc 1.50 / pc 2.80 / pc 1.80 / pc	.030601	
15 × 7-30 less steel n < 40 × 5 < 50 × 5 × 50 × 5	neshed gra 6.67 / pc 10.35 / pc	ting 210403 210404	
eel (fixed h 30 × 05 40 × 05 50 × 05 eel (adjusta 0 × 08-11.5.	eight) 2.35 / pc 3.79 / pc 5.24 / pc 	210501 210502 210503	46
0 × 08-11.5 0 × 08-11.5 0 ×15	6,20 / pc 9,70 / pc	210602	46 46
23 × 65 5 × 21	2.56 kg/pc	040304	

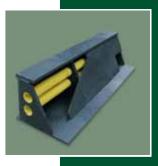
...50

















PRODUCT LIST SUMMARY TABLE

170003

190102







Spill-valve

Coloured acc. to RAL

Caster wheels for planting containers



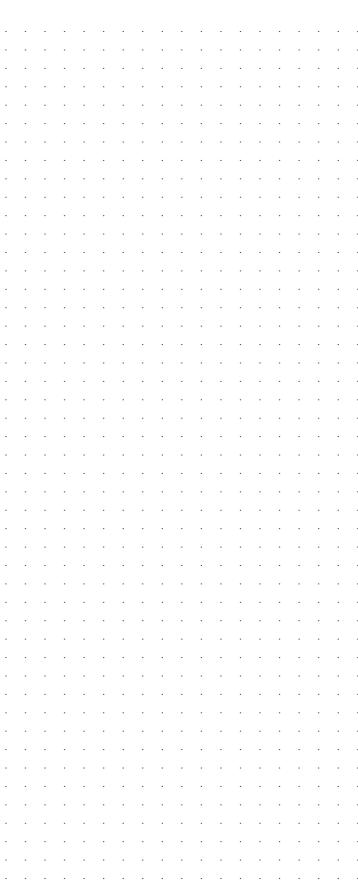




76

			SUIVIIVIART	TABLE
ERRACE BUILDING	L×W×H [cm]	[kg]/unit	Part No.	Page
Terrace pedestals • adjustable heigh	t, heavy-duty, made of rec	ycled plastic		· ·
SLH-60.		0.25 / pc	610131	58
SLH-75		0.33 / pc	610105	58
SLH-120	Ø200 × 75-120	0.45 / pc	610104	58
SLH-200	ø200 × 120-200	0.63 / pc	610106	58
SLH-270	Ø200 × 190-270	0.79 / pc	610109	58
SLH-300		0.89 / pc	610110	58
SLH-400		1.16 / pc	610111	58
SLH-500		1.43 / pc	610112	58
SLH-600	ø200 × 420-600	1.69 / pc	610113	58
Cross spacers				
FK-1.5		0.32 / 100 pc	610114	60
FK-3				
FK-5		1.40 / 100 pc	c610101	60
FK-10		1.40 / 100 pc	c610103	60
FKU-5		13.00 / 100 p	c.610121	60
FKK-1.5		0.32 / 100 pc	610116	60
FKK-3				
FKK-5		1.40 / 100 pc	610118	60
FKK-10				
Flower containers				
PGE-68 /round/	Ø50 × 35	5.25 / pc	170201	
PGE-86 /square/				
PGE-88 /square/				
PGE-110 /square/				
PGE-111 /hexagon/				
Accessories:		, pe		
Water level regulating equipment		0.66 / nc	040301	
Water level regulating equipment				
Spill volvo			170002	

L×W×H [cm]	[kg]/unit	Part No.	Page
100 × 100 × 110	45.00 / rm .	710503	64
100 × 35 × 110	17.20 / rm .	710501	62
100 × 35 × 110	17.35 / rm .	710701	62
	25.68 / rm .	710601	65
		190102	
		130085	66
			66
		130083	66
		130080	66
	0.40 / pc	130216	66
			66
	1.90 / pc	130087	66
	.100 × 100 × 110 .100 × 35 × 110 .100 × 35 × 110 .250 × 6 × 123 .250 × 6 × 123 .20 × 6.2 × 20 .40 × 28.5 × 19	.100 × 100 × 110	



0.0804 • 09010902 • #3084b

nted by APP for their use in any for

•	•	•	•	•	•	
•	•		•			•
•	•	•	•			•
•						
						•
						•
	•					•
•	•	•	•		•	
•	•		•			•
•	•					•
						•
						•
						•
•	•					
•	•					•
	•					
•	•	•	•	•	•	
•	•	•	•	•		
•			•			•
•	•					•
						•
					•	
•	•				•	•
•	•					•
	•	•	•			
•						•
	•					•





Your Distributor:

Nominal charge <mark>for Guide: 6.00 €</mark> 4 .00 8 .00 \$

題

* 835 KACES