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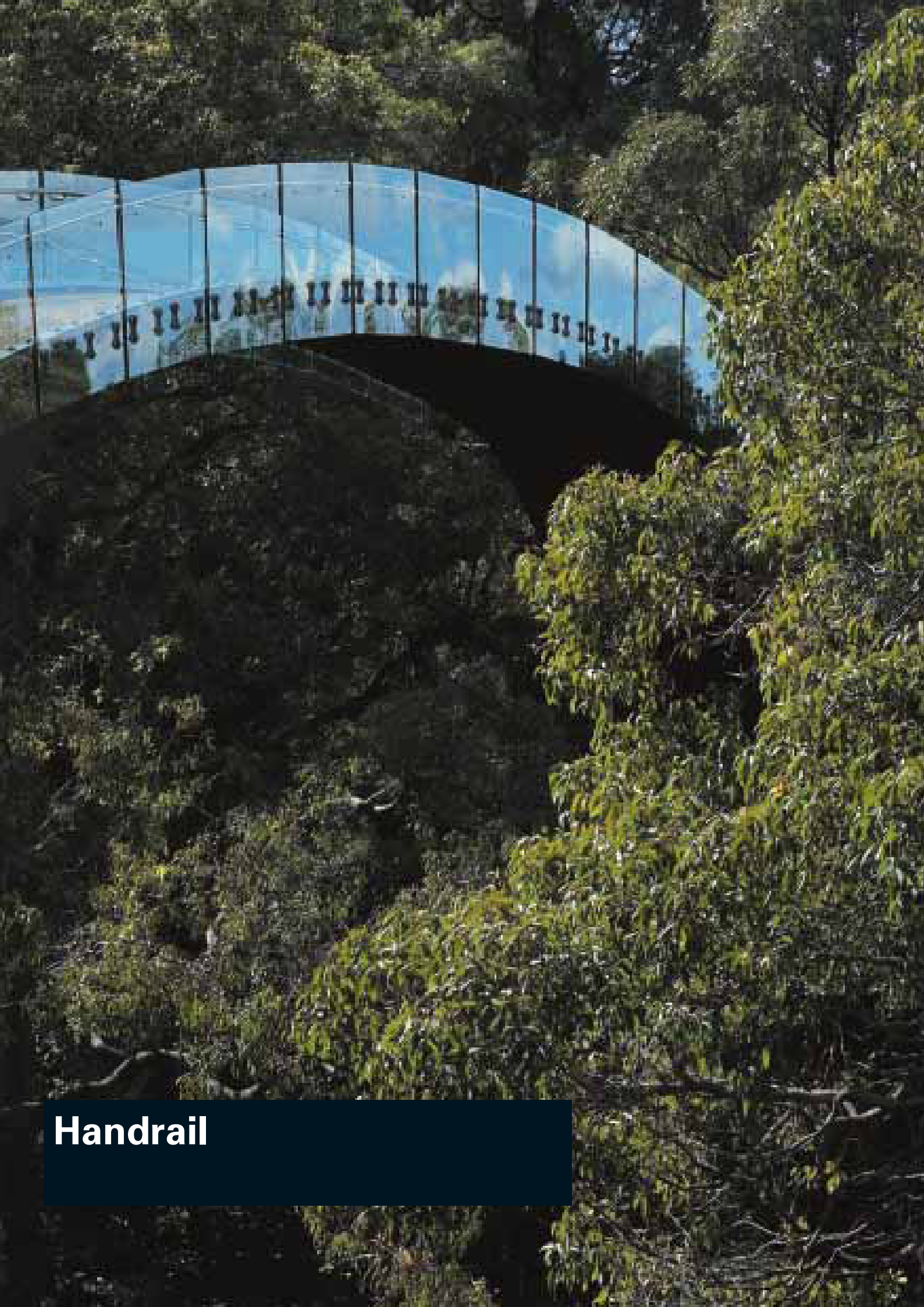
Handrail

Hardware
Bathroom
Washroom
Handrail
Wardrobe
Signs

Project: Lotteries Federation Walkway, Kings Park, Perth, Australia
Architect: Donaldson + Warn Architects, Perth
Credits: Martin Farquharson



Handrail

Project: Philips Breitnercenter Amsterdam
Architect: JHK Architecten
Credits: Brøndum/Poul Buchard

Project: Lexus, Korea
Architect: GROUP-3
Credits: Central Motors INC.

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The Building Blocks of Creative Design

Modular components are the basis of the **d line** Handrail system. **d line** balustrades are crafted from a variety of elements specifically designed to allow the balustrade as a whole to mould itself to the inherent structural variations of staircase geometries.

The primary material used in **d line**'s Handrail system is 316 L stainless steel; a choice based on the superior qualities of hygiene, strength and endurance.

Advantages of Component Based Balustrades

Flexibility: easily assemble or dis-assemble, remove part or all of system in order to repair, alter design, refurbish etc.

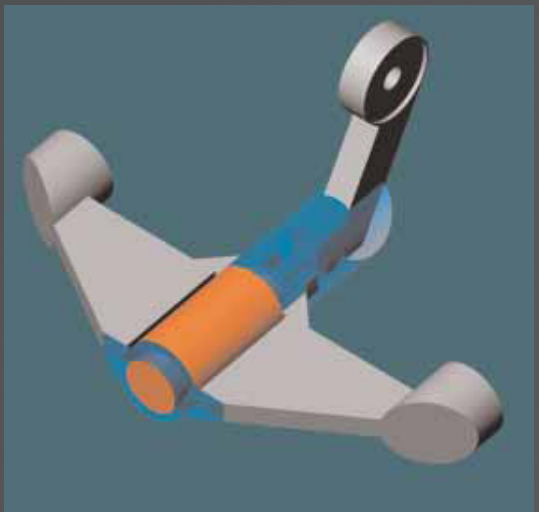
No aesthetic compromises: flawless manufacture prevents damage inflicted by grinding, welding, polishing etc.

Pre-engineered: all facets concerning design, strength, production and installation are integrated into a thoroughly meditated concept.

Speed: readily available components delivered to site in a matter of days. Pre-engineered mounting techniques allow system to fall in place like building blocks.

Minimal site impact: low interference with other trades, and quick installation

Consistent design and quality.



d line offers standard assembly packages with time-honoured credentials. However, the inherent flexibility of the **d line** Handrail system allows for combinations that easily adapt to challenging constructions or retro-fittings.

Because the **d line** design theme is consistent throughout the product line, special combinations or adaptations can be made without compromising the design expression.

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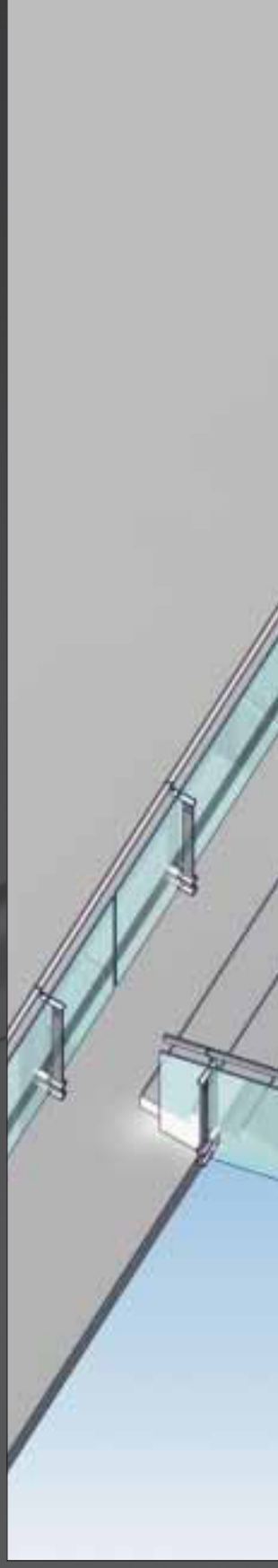
Three Main Options

The **d line** Handrail system may be divided into three distinct design categories:

Upright: **d line** uprights present a seemingly uninterrupted glass surface as opposed to conventional glass balustrades that use glass as infill panels. The combined strength of the steel uprights and the continuous glass guarding provides time and test proven security.

Glass Link: a **d line** upright option that reduces the overall number of uprights, reduces glass panel sizes, and allows equal spacing between uprights.

Structural Glazing: is truly a minimalist balustrade where the steel uprights have been eliminated and the glass guarding is specified to offer equivalent strength and security.



Uprights
Blok Fixing–Full Glass
Blok Fixing
Two Point Fixing
Spigot Fixing

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Glass Link

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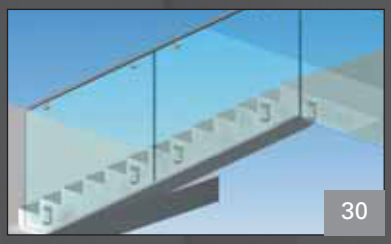
Structural Glazing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Glass Rail **Wall Rail**

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Terminations

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Bends

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Project: Philips Breitnercenter Amsterdam
Architect: JHK Architecten
Credits: Brøndum/Poul Buchard

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Four Upright Options

Blok Fixing–Full Glass
Blok Fixing
Two Point Fixing
Spigot Fixing

Expression
d line uprights defy traditional symmetry. Glass panels are not mounted between uprights but extend panel-to-panel, creating an unimpeded guarding by way of cantilevers.

Function
By definition, each and every structure is unique in its design and geometry. With this in mind, **d line**'s range of fixing techniques allows for flexibility and adaptation without aesthetic compromise.

d line balustrade solutions focus on side fixed systems as these require lower contracting costs for the same guarded space than a floor mounted system does.

Simple fixing and building block assembly make installation time short wherein; possible hindrance to the construction work flow is avoided. Furthermore, the modular nature of the system allows for the installation to take place very late in the construction process.

Economy
The right match of fixing technique to any given structure will reduce labour costs. The flexibility of the **d line** Handrail system means that solutions may be found where complicated stairwells or staircases would otherwise cause problems.
This likely limitation on installation or glass expenses should be weighed against the product price.
Consult your local **d line** partner for making an economical solution.

Spigot Fixing

Two Point Fixing

Blok Fixing

Blok Fixing–Full Glass

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Four Upright Options

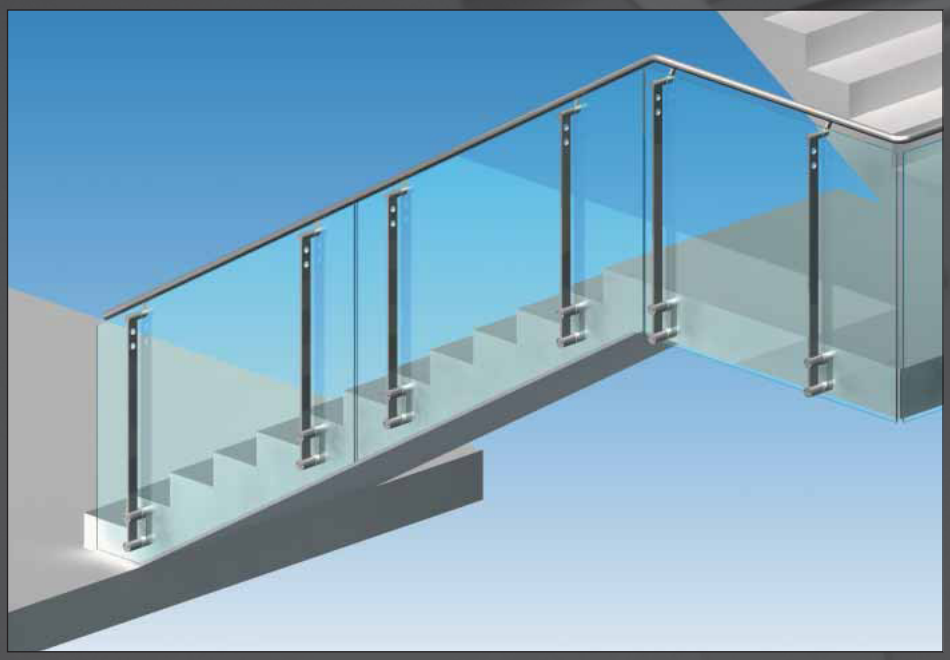
Blok Fixing–Full Glass

Blok Fixing–Full Glass
Blok Fixing
Two Point Fixing
Spigot Fixing

Blok Fixings have level adjustments incorporated in their design. A level baluster is dependent upon having placed fixings accurately. Even slight miscalculations will affect the appearance of the system as a whole.

Blok Fixing with Full Glass differs from the raised glass solution in that the guarding extends below floor level to conceal the structure behind the glass.

The glass extension combined with the uninterrupted guarding creates a spectacular glazed effect. This upright is the only one that cannot be used in combination with Glass Link.



Blok Fixing–Full Glass

Height	Intermediate	End
900mm	14.6032.02.090	14.6033.02.090
1100mm	14.6032.02.110	14.6033.02.110

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PER HEBSGAARD
7 JUNI

Blok Fixing

Blok Fixing–Full Glass
Blok Fixing
Two Point Fixing
Spigot Fixing

The raised glass solution offers all the advantages of the built-in level adjustments inherent to Blok Fixing. However, the glass is mounted to the upright rather than the blok. Although this reduces the glazing effect, it constitutes an aesthetic expression in its own right.

Blok Fixing

Height	Intermediate	End
900mm	14.6061.02.090	14.6062.02.090
1100mm	14.6061.02.110	14.6062.02.110

Project: Council of Representatives Building,Bahrain
Architect: Mohamed Salahuddin Consulting Engineering Bureau
Credits: Shankar

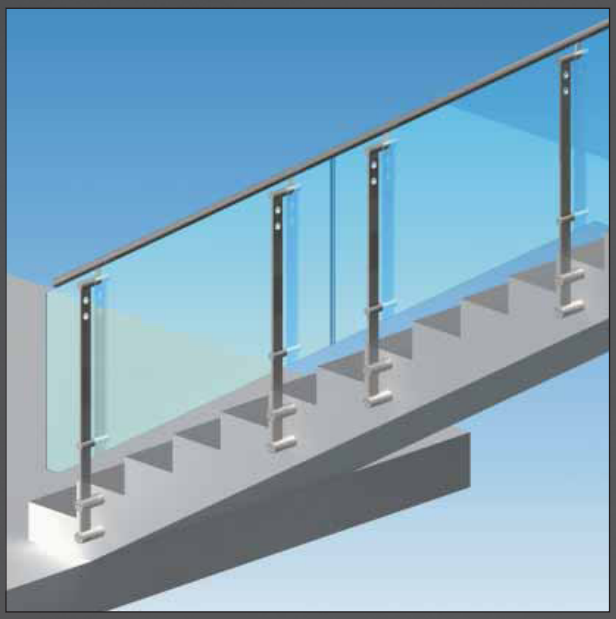
Two Point Fixing

Blok Fixing–Full Glass
Blok Fixing
Two Point Fixing
Spigot Fixing

Design-wise, this fixing is closely related to the Blok Fixing.
The method of levelling requires spacers to be added behind the fixings. This solution is the most flexible within the **d line** Handrail system and easily adapts to a variety of challenging constructions.

Two Point Fixing

Height	Intermediate	End
900mm	14.6051.02.090	14.6052.02.090
1100mm	14.6051.02.110	14.6052.02.110



Project: Victoria House, London
Architect: Perry & Bell Ltd
Credits: Brøndum/Poul Buchard

Spigot Fixing

Blok Fixing–Full Glass
Blok Fixing
Two Point Fixing
Spigot Fixing

Floor mounted fixing set in concrete or joined to steel structures.
A rosette base cover accessory is available.

Project: Science Park at Pak Shek Kok Phase 1a Building 1 & 2, Hong Kong
Architect: Simon Kwan & Associates Ltd.
Credits: Arcfoto Photography/John Butlin

■ Spigot Fixing

Height	Intermediate	End
900mm	14.6058.02.090	14.6057.02.090
1100mm	14.6058.02.110	14.6057.02.110

Project: Magasin/Metro in Cph, Denmark
Architect: KHRAS arkitekter
Credits: Brøndum/Poul Buchard

Værd
at vælge
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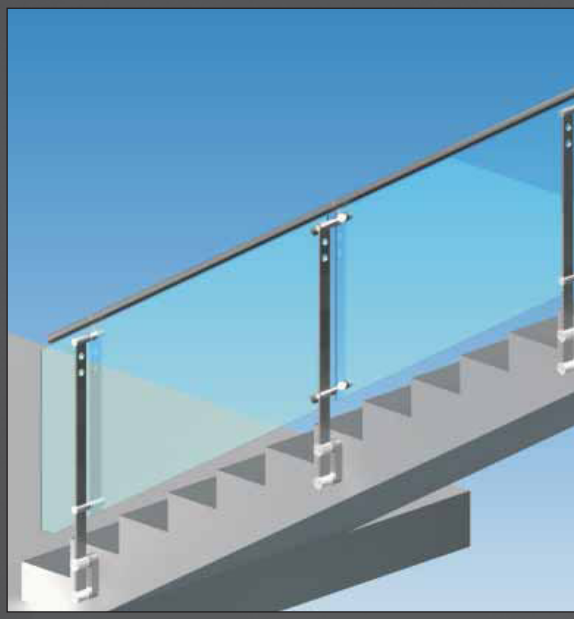
Glass Link

This solution enables an upright to act as a support between two glass panels.
d line glass panels are usually supported by midsection uprights creating a continuous glazing effect.
Great attention has been paid to maintaining this effect by minimizing the gap between the two Glass Link panels, and by allowing for combinations of Glass Link panels and **d line** cantilever uprights.

Glass Links are especially applicable on a stairway flight where the number of uprights may be reduced. The Glass Link's ability to rotate means that it can be mounted parallel to the given angle of any staircase.

- Glass Link

Top	14.6059.01.100
Bottom	14.6059.01.200



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Structural Glazing

The main characteristic of this elegant solution within the **d line** Handrail system is that specially dimensioned glass panels, by virtue of their inherent strength, make uprights superfluous. This minimalist expression is distinctly **d line**.

d line provides fixings for the glass and handrail that have been security tested to the same standards as **d line**'s balustrade with steel uprights, ensuring that the security demands imposed by **d line** on all its products are met.

Project: 7/15 Fleet Street , London
Architect: BBF Fielding Architecture
Credits: Philip Vile

- Structural Glazing
  Top Bracket See glass brackets pg. 33
  Bottom Fixing 14.6031.02.025

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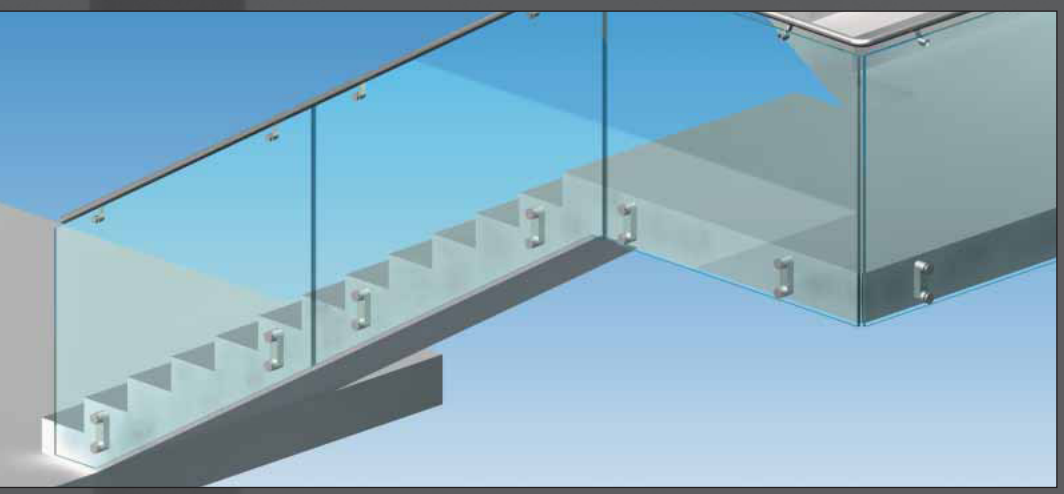

Project: Royal Garden, Shanghai

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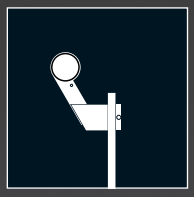
Glass Rail

d line offers a handrail that is mounted on glass. This is an elegant solution for partitions and balustrades.

Available in three variations:
Short bracket: glass runs below the handrail, providing sufficient space for the hand.
Long bracket: where glass continues above the handrail, space for the hand must be increased.
Back-to-back rail: two brackets opposing each other connected by bolt through glass.



Project: Science Park at Pak Shek Kok Phase 1a Building 1 & 2, Hong Kong
Architect: Simon Kwan & Associates Ltd.
Credits: Arcfoto Photography/John Butlin

Glass Rail

	Short	Long	Back-to-Back
End	14.6041.02.400	14.6041.02.600	14.6041.02.200
Intermediate	14.6041.02.300	14.6041.02.500	14.6041.02.100

Wall Rail

The wall rail displays the same design characteristics as the balustrade.
Thus, the combination around stairwells appears seamless.

Available in two varieties:
Rosette fixing: ideal for soft wall construction and staircases with high volume traffic.
Secret fixing: minimalist design most applicable on concrete or hard wall construction.

■ Wall Rail

	Rosette	Secret Fixed
End	14.6036.02.110	14.6036.02.120
Intermediate	14.6036.02.010	14.6036.02.020

Terminations

Where a balustrade or handrail terminates, **d line** offers a variety of solutions.

Straight termination: the cantilever of the termination complements the cantilever of the glass panel to which it is connected. Available in 50mm increments 150mm to 350mm.

32 degree termination: cantilevered with a slight 32 degree bend of handrail tube toward floor as an indicator that stair will end. Available in 50mm increments 150mm to 350mm.

Straight into wall: intended where balustrade or handrail ends into a perpendicular wall. Available in 300 and 800mm cut to size.

90 degree return to wall: intended where balustrade or handrail ends in parallel wall as an indicator that rail will end. Available in 300 and 800mm cut to size.

Terminations (examples)

Handrail straight end	350mm	14.6043.02.350
32 degree returned end	350mm	14.6044.02.350
Handrail straight end to wall	800mm	14.6045.02.800
90 degree end to wall	800mm	14.6046.02.800

OmniBend

- Bends

OmniBend	14.6042.02.100
90 degree	14.6030.02.310
45 degree	14.6030.02.325

Project: Philips Breitnercenter Amsterdam
Architect: JHK Architecten
Credits: Brøndum/Poul Buchard

The intelligently engineered OmniBend is a specialized component that enables handrails to easily change direction, e.g. where angle staircase meets horizontal landing.

The ability to adjust the angle (between 30 and 40 degrees) on site from a readily available component means that the **d line** Handrail OmniBend can be installed within a very short timeframe.

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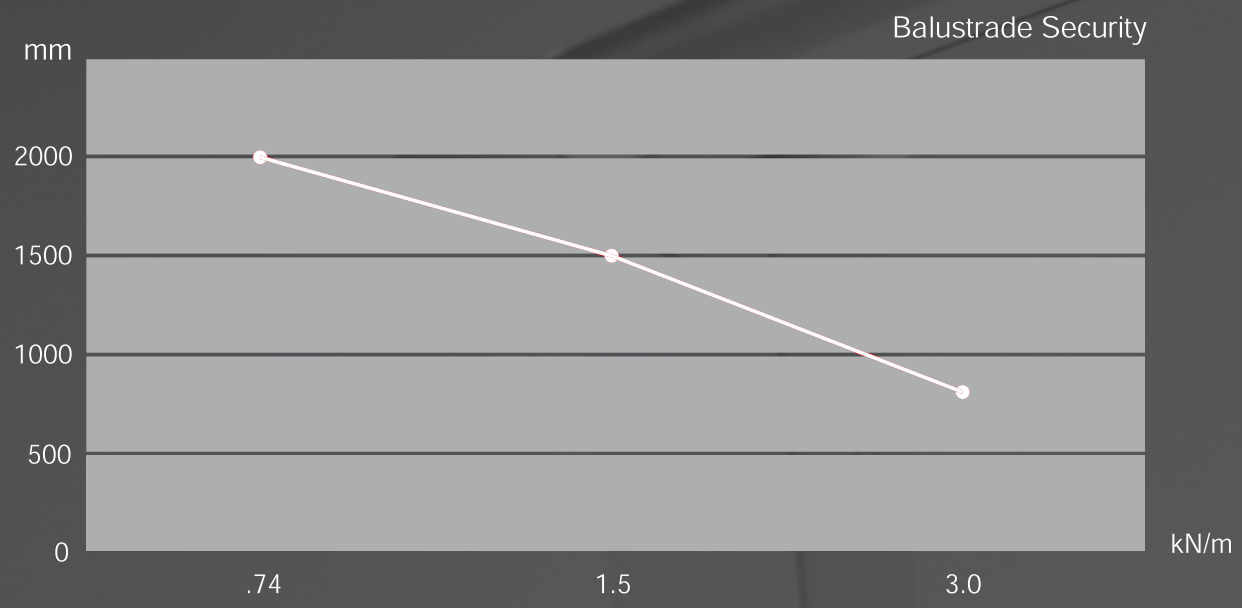
Project: Philips Breitnercenter Amsterdam
Architect: JHK Architecten
Credits: Brøndum/Poul Buchard

Custom Bends

Striving to meet the demands of all projects, **d line** will manufacture bends according to any given specification. Single angle bends, compound bends, and curved radius bends; all are possible.

Guidelines for Security and Safety

Security
d line's minimalist design has in no way sacrificed security.
d line is constantly testing and updating its balustrades in order to comply with the various global standards.
In this process, **d line** draws on the expertise of independently credentialed authorities such as BSI, TüV and AISI.



Safety
Safety in balustrade is primarily related to load and impact resistance. The above graph shows the relation between loading and the amount of space between fixings.

d line has adopted our measure of security from the British Standard Institute (BSI) for static load deflection and the Deutsches Institut für Bautechnik (DI Bt) for glass impact and analytic calculation.

Learn more about **d line** safety compliance at our website www.dline.com. Follow our guidelines on how to specify a fail-safe balustrade in your part of the world.

Project: Royal Garden, Shanghai

Project: Glaxo Smith Klein, Headquarter, London
Project Manager: Gardiner & Theobald Management Services
Construction Manager: MACE Shell & Core Architects Hillier/RHWL
Interion Architect: Swanke Hayden Connell
Credits: Marcus Hilton

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Project: Victoria House, London
Architect: Perry & Bell Ltd
Credits: Brøndum/Poul Buchard

Documentation photos in
Handrail
from following locations:

Lotteries Federation Walkway
Philips Breitnercenter
Lexus
Council of Representatives Building
Victoria House
Science Park
Magasin/Metro
7/15 Fleet Street
Royal Garden
Glaxo Smith Klein
Carl F as

Hardware
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Satin and bead blasted stainless steel (AISI 316 WST 1.4435)