

Stainless Cable Systems

Part of Macalloy's range of
Adjustable Structural Products

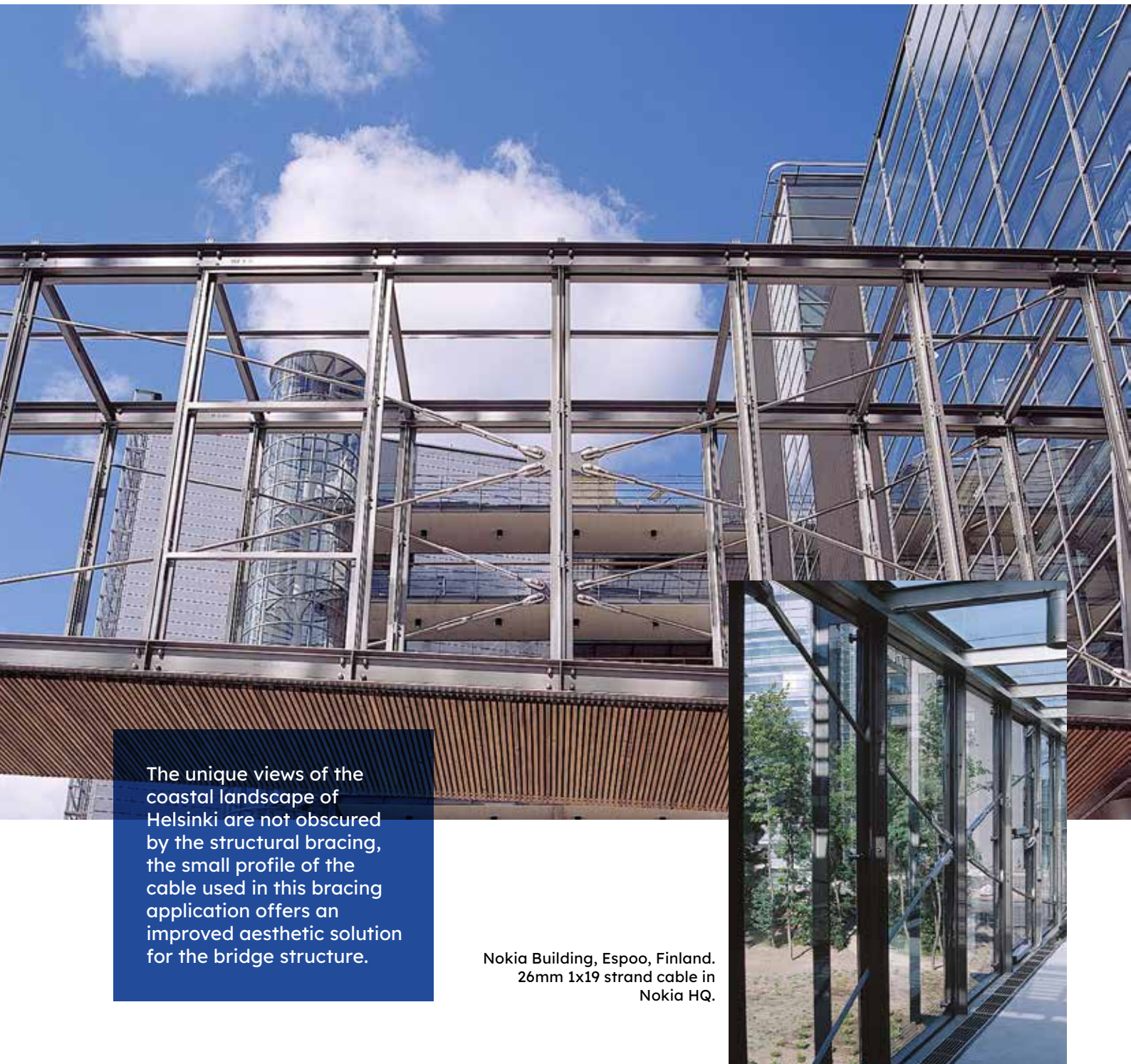
APPLICATIONS:

Used in Cross Bracing applications.

Macalloy cable systems offer a logical extension of the Macalloy bar systems and compression struts available.

These specially designed systems incorporate swaged studs and cable adapters, which allow standard swaged cables to be connected to our range of forks.

The Macalloy Cable system is supplied preassembled and coiled for easy on-site installation and reduced transportation cost.



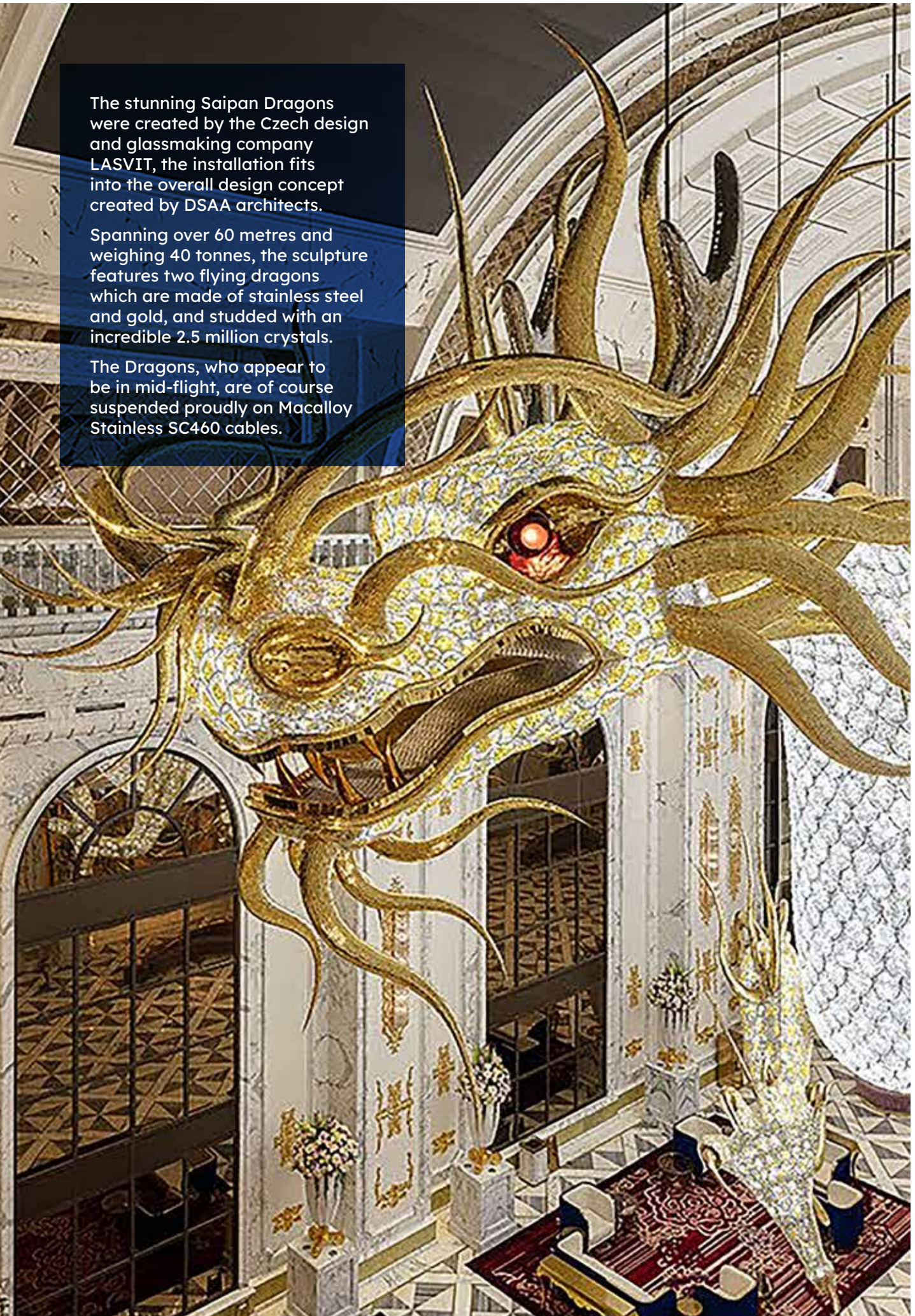
The unique views of the coastal landscape of Helsinki are not obscured by the structural bracing, the small profile of the cable used in this bracing application offers an improved aesthetic solution for the bridge structure.

Nokia Building, Espoo, Finland.
26mm 1x19 strand cable in
Nokia HQ.

The stunning Saipan Dragons were created by the Czech design and glassmaking company LASVIT, the installation fits into the overall design concept created by DSAA architects.

Spanning over 60 metres and weighing 40 tonnes, the sculpture features two flying dragons which are made of stainless steel and gold, and studded with an incredible 2.5 million crystals.

The Dragons, who appear to be in mid-flight, are of course suspended proudly on Macalloy Stainless SC460 cables.



Stainless Steel Cable Systems

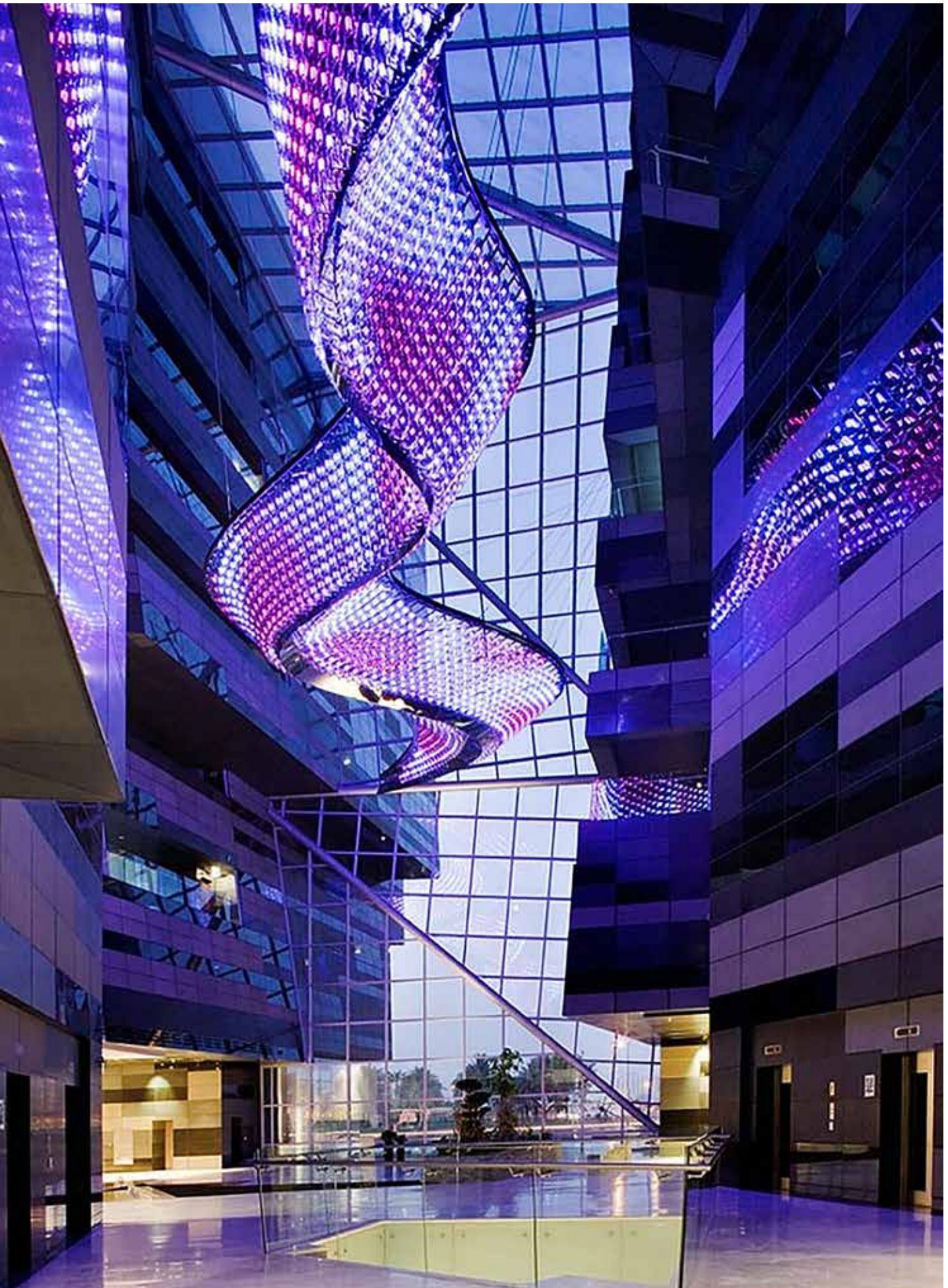
APPLICATIONS:

Suspended Structures using spherical bearings.

The Macalloy SC460 is an extension of the Macalloy Tension System, available in Stainless Steel. The cable system utilises the same fork end as the accompanying Tension Structures range of tension bars and compression struts, allowing for combinations of all three systems.



Shard, London. 4 x 10mm stainless steel cables with M16 forks

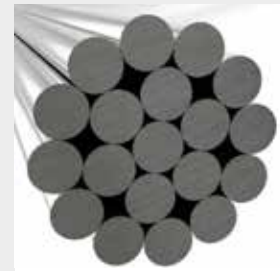


Hitmi Property Building - The LED chandelier 'Reflective Flow' in Qatar was suspended using 14mm stainless cables.

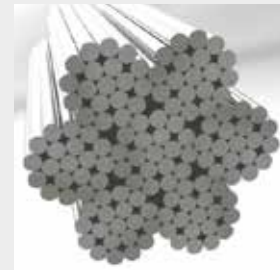
Stainless Cable Systems

Macalloy's stainless steel cable is manufactured from high tensile, high quality austenitic stainless steel, grade 1.4401 (S316) providing excellent corrosive resistance, and offer three different types of stainless steel cables in a range of sizes:

1 x 19 Strand is the most common cable used. A rigid strand, with a high minimum break load and low stretch characteristics. The wires have a smooth bright finish. All Macalloy cable tendon fittings are designed to match the breaking load of the 1 x 19 strand cable.



7 x 19 Strand is the most flexible of the cable types available. It has the lowest break load of the three cable types but it is often used in low load applications where the flexibility is required.



Compact Strand is the most rigid of cables with very low stretch characteristics and high tensile strength. This cable has a high resistance to damage and in sizes 6mm and above offers a breaking load approx. 25% higher than the 1x19 wire strand. It has a smooth and attractive flattened outer layer and offers improved corrosion resistance.



STANDARD COMPONENTS

There are a range of different standard components available, each to suit different architectural preferences and different budgets. Irrespective of the system chosen, all components are made from austenitic or duplex stainless steels. Swaged fittings are factory swaged to the cable. All components for our cable systems are designed to match the minimum break load of the 1x19 strand cable.



Cable Stretch

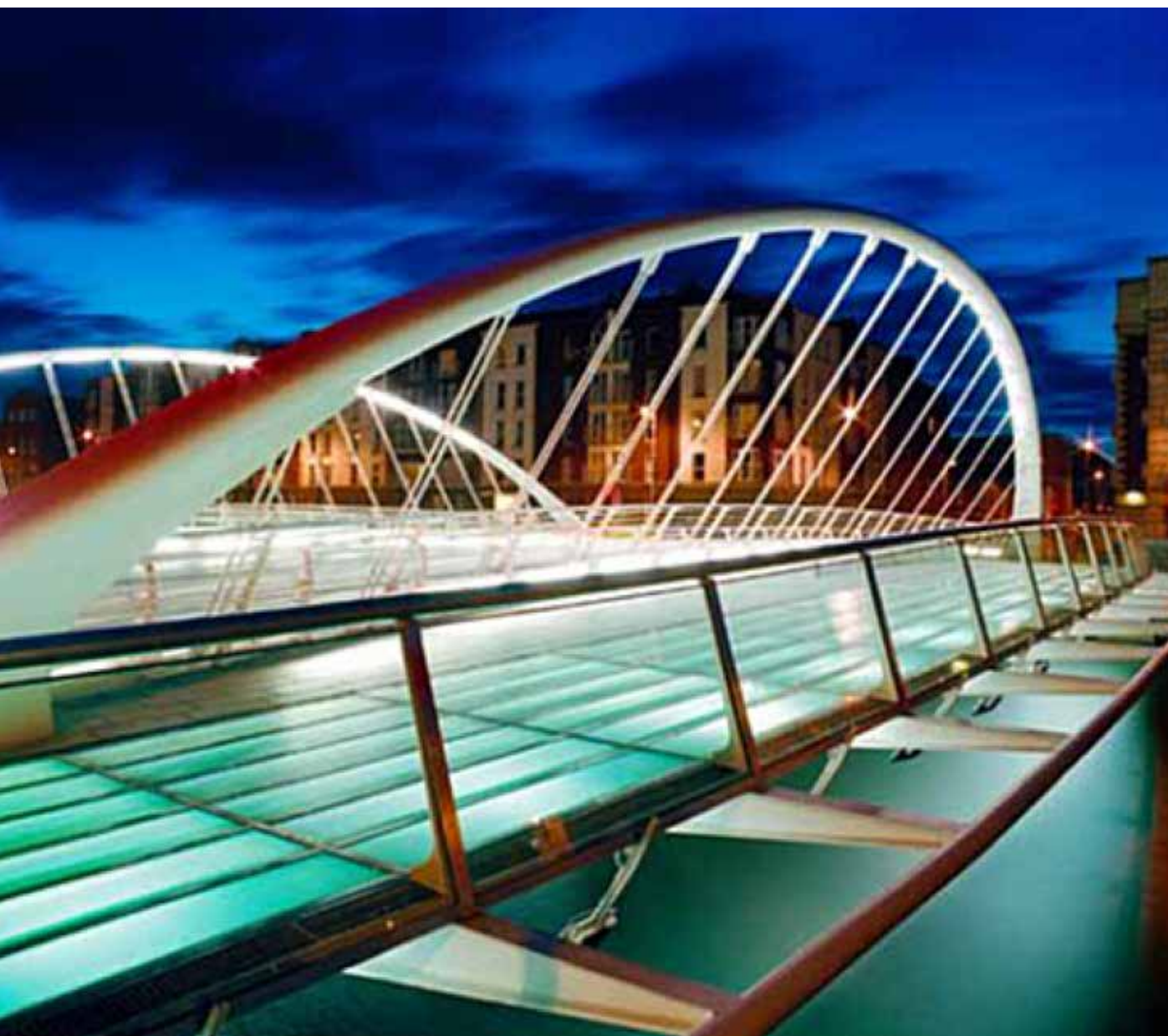
Cables undergo an initial, permanent stretch. This can be between 0.10% and 0.75% dependent on the loading and type of cable. Further elastic stretch will then be proportional to the load applied and cable used. Elastic stretch can be calculated using the following formula:

$$d = \frac{\text{Load (kN)} \times \text{Length (mm)}}{E \text{ (kN/mm}^2\text{)} \times \text{Cross Sectional Area (mm}^2\text{)}}$$

Where E =

7 x 19 Strand =	85 kN/mm ²
1 x 19 Strand =	107 kN/mm ²
Compact Strand =	133 kN/mm ²

All cables are supplied non pre-stretched, if pre-stretched cables are required please request at time of the enquiry or order



James Joyce Bridge, Dublin, Ireland
Architect - Santiago Calatrava

Assembly and Installation

Macalloy stainless cables are always supplied fully assembled. See the below drawings for details of components and check your order information to see what you have been supplied

SC460 Swaged Fork / Tensioner

1. Remove pins using suitable allen key and screw conical nuts away from all components as far as the thread will allow.



2. Position cable in place and secure with pins, tighten with suitable allen key.



3. Swaged tensioner and inline tensioner adjustments, turn tensioner using open ended spanner until correct level of adjustment or tension is achieved.



4. Then screw conical nuts back against the components assembly and installation are complete.

SC460 Swaged Adjustable Fork

Follow steps 1, 2 and 4 of the above installation instructions

3. For Swaged Adjustable forks use open ended spanner on each adjuster and simultaneously turn each one to induce load / adjustment, until correct level of tension is achieved.



Where a set load is required, the use of a torque wrench would be suitable, please contact Macalloy's technical team, technical@macalloy.com or siteservices@macalloy.com, for details on the torque and equipment.

Fork / Gusset Plate Misalignment



Forks should be kept in plane and perpendicular to each other on all Macalloy Cable Systems.



Use of horizontal gusset plates should be avoided to prevent loads in gusset plates due to cable weight.

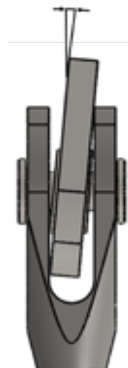
Spherical Bearings

Max= 0.5°



Standard arrangement

Max= 5.9°



Additional misalignment with spherical bearing

The standard Macalloy fork allows for misalignment between gusset plates of up to 0.5 degrees. Where greater adjustment is required or there is potential movement exceeding 0.5 degrees, larger forks can be put on the cable and a spherical bearing can be inserted providing up to 5.9 degrees of misalignment/movement.

ISOLATION

Structures with dissimilar metals such as carbon and stainless steel must be separated to prevent bimetallic corrosion. Macalloy offer isolation washers for the fork and isolation sleeves for the pins as a buffer if a stainless-steel cable is connected to a carbon steel structure





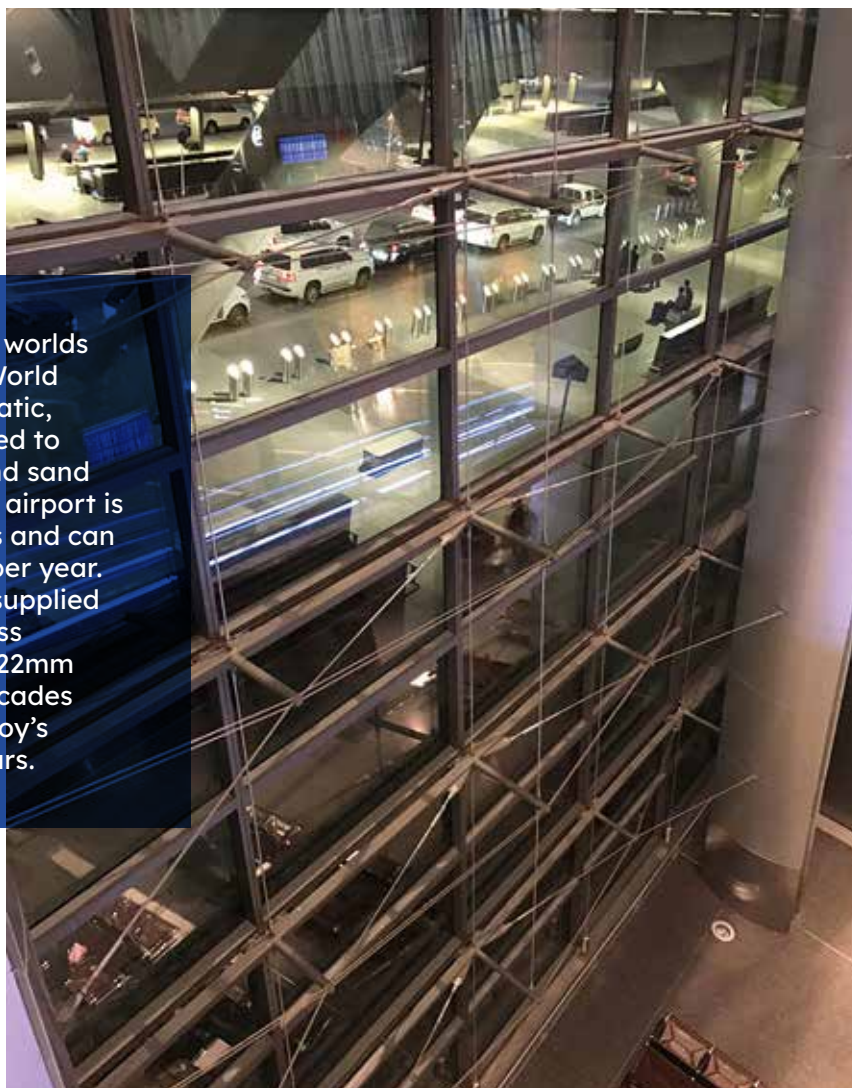
Macalloy supplied Stainless Cables for this highly innovative piece of modern art.

It uses light to generate power, with additional power sourced from a hydrogen fuel cell and wind turbine. It also uses harvested rainwater for irrigation and cooling, making it fully self-sufficient. At night, the whole structure is transformed into a spectacular light sculpture.

Designed by the cutting-edge architect Laurie Chetwood, this 12-metre-high kinetic structure is designed to demonstrate sustainable energy production within an urban setting.

The sculpture mimics the design of a growing flower, with photovoltaic 'petals' which open when exposed to the sun.

The airport was voted the worlds best in the 2021 Skytrax World Airport Awards. The dramatic, curving building is designed to represent ocean waves and sand dunes. Doha international airport is the home of Qatar airlines and can handle 29 million visitors per year. On this project, Macalloy supplied three diameters of stainless cables; 12mm, 16mm and 22mm that supports the glass facades in conjunction with Macalloy's stainless 24mm tension bars.



Hamad International Airport, Doha, Qatar



This is a stunning mesh canopy, designed to provide shade in the courtyard area of the new International Birmingham Campus Hub in Dubai.

Macalloy supplied 42 No. 26mm 316 stainless steel cable systems, complete with a fixed M36 fork at one end, and a swaged tensioner/ M36 fork at the opposite end to Khansaheb construction company.

Birmingham University, Dubai



ETA - 21/0053 Tension Rod Systems
BSEN ISO 9001: 2015



Macalloy | **100 years**
1921-2021

For further information call +44 (0)1909 519200
email sales@macalloy.com or visit macalloy.com

Caxton Way, Dinnington, Sheffield, S25 3QE, U.K.

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