

# *Macalloy*



Golden Jubilee Bridge, London, UK. Both Macalloy 1030 Post Tensioning Bars, and 460 Tension Bars were used on this iconic bridge.

Established 1948...

...Celebrating 70 years



## Macalloy History

In December 1922, McCall and Company (Sheffield) Ltd was formed to supply cut and bent reinforcing steel to the domestic market. Following World War II Donovan Lee and William McCall developed a chrome-alloy bar for use in post tensioning concrete applications, registering the Macalloy name in 1948.

The company grew rapidly, fuelled during this period by the post-war construction boom and McCall's as it was, began exporting product as early as the 1960's.

In the 1980's, Sir Norman Foster was commissioned by the French car company Renault to design a high-tech building for their UK operations. The brief was to maximise the internal space by "hanging" the roof using external bracing.

The building, now a Grade 2 listed building, went on to win numerous design awards and began a trend in wide span structural design using Macalloy products.

Many of the world's leading Architects adopted the design principals in their own innovative structures such as Chicago Arts Institute (Architect Renzo Piano), Louis Vuitton Foundation Paris (Architect Frank Gehry) and 88 Wood Street, London (Architect Richard Rogers).

We at Macalloy continue to develop and innovate to provide more solutions to the structural industry worldwide.

From its purpose built factory in Sheffield, the steel heartland of Great Britain, Macalloy exports to over 50 countries through a network of worldwide Agents and Distributors.

Our Ethos is Experience... Innovation... Quality.



Macalloy's purpose built office and factory complex in Dinnington, Sheffield





Macalloy have been leaders in design, manufacture and supply of threaded bar systems since 1948.

Macalloy supply a range of high strength bar and cable systems.



LIST OF APPLICATIONS:

- AIRPORTS
- GLASS FACADES
- GLULAM STRUCTURES
- BRIDGES
- HIGH RISE
- CANOPIES
- WINDMILL FARMS
- SEQUENTIAL LAUNCHING
- HOLDING DOWN / ANCHOR
- BOLTS
- STADIUMS
- CONVENTION CENTRES
- TUNNELING
- CONTAINER PORTS
- SUSPENDED STRUCTURES
- STRONG FLOOR
- DAM IMPROVEMENTS
- SITE SERVICES
- BALCONIES



The Sculpture "Solhjulet" (The Sunwheel) in Denmark comprises of a wheel made from Macalloy 460 Stainless Steel bars and glass



## Applications

Over the years Macalloy has developed its range of bar and cable products to provide leading edge solutions to many structural applications.

### Macalloy Post-Tensioned Bar

The high-strength chrome-alloy Macalloy Bar used in post-tensioning was first developed in 1948. Conforming to European, French and German standards, this bar is still a favoured brand name with construction companies around the world. More recently, a high strength martensitic stainless post tension bar have been added to the range, along with larger diameter carbon bars.

### Tension Structures

Since the early 1980's, the Architectural Range of Tension Structure Bars have grown in popularity providing Designers an opportunity to offer contemporary designs and solutions. The lighter carbon and stainless bars are used in light weight canopies, façades and suspended structures. The high strength bars provide support for bridge decks in bow string bridges. The good fatigue properties of the bars are an important design feature in road/tram/pedestrian bridges alike.

Other common applications are; bracing of roof structures and walls for Sports Stadia and wide span structures such as Airports. Macalloy has developed many unique products such as the Cross Coupler or Through Coupler as an alternative to a Central Bracing Ring which is widely used. Using our unique inline Techno-Tensioner, Engineers can add very precise loads to a structure offering many possibilities in structural design.

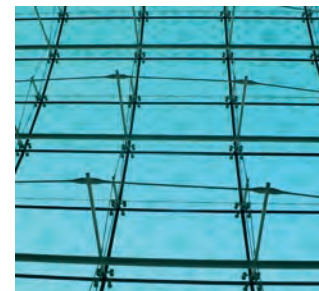
We offer several finishes including; galvanised, painted or unpainted and for stainless polished to various standards offering an aesthetic addition to any structure. Coupled with the easy fixing Architectural Fork, the whole system gives a unique solution that is easy to install, robust and yet aesthetic in appearance.

### Compression Struts

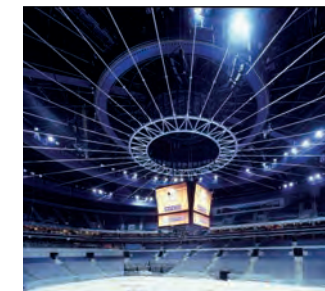
More recently Macalloy has developed Compression Struts for use with compressive loads, using a stainless and carbon hollow tube and the standard end forks design. The system offers, a more aesthetic architectural finish than welded T pieces. These stainless and carbon Compression Struts can be light weight for entrance canopies and heavy weight for bracing and supporting roof structures.



Rostov Arena in Russia; photo at night of the Football Stadium under construction. This is one of the venues for the 2018 FIFA World Cup.



Macalloy Tension Bars support glass facade at Dubai International Airport, UAE.

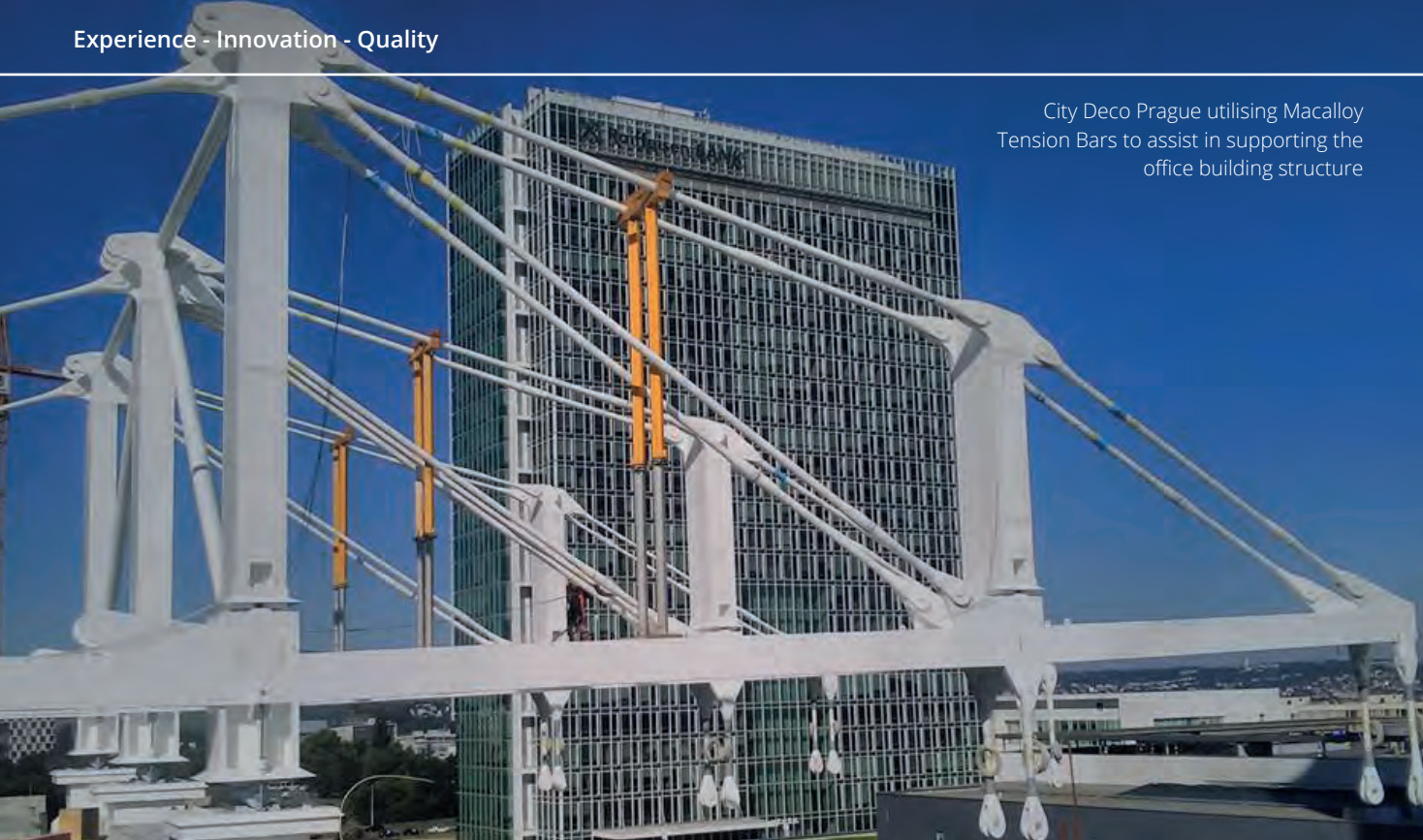


O2 Dome, Czech Republic. Macalloy Tension Bars are used to tension the roof.



Merano Residences, London, UK. The balconies are being supported by Macalloy Tension Bars





City Deco Prague utilising Macalloy Tension Bars to assist in supporting the office building structure



## Tension Bars

Macalloy's tension structures range is 9001 accredited and is approved to European Technical Approval – ETA 17/0849, providing the CE certification. Tension bars are available in 460N/mm<sup>2</sup> and 520N/mm<sup>2</sup> strength in both carbon and stainless. Carbon bars can be supplied primed ready for paint, or hot dipped galvanised to BS EN 1461:2009. All fittings (forks, pins, turnbuckles couplers and lockcovers) are supplied with a galvanised coating. They are designed to give the maximum amount of flexibility and adjustment, but special fittings, can be designed to suit customer requirements.

Cast fittings are UT and MPI tested in accordance with the European technical Approval – ETA 17/0849.

Technical literature is available with design calculations and loadings to design code EC3. Our technical team is always available to assist in specification, installation and design.



Macalloy 520 tension rod system has been used in bridge hangers on Troja Bridge in Czech Republic

## Compression Strut System

Macalloy offer two types of Compression Struts; the Architectural Strut Range with an elongated cone and the Standard Compression Strut System with a shorter cone. Both the Architectural Strut and the Standard Compression Strut are offered with either: galvanised, stainless or carbon steel finish.

Alternatively they can be primed, ready for on-site painting before or after installation.



Gardens by the Bay in Singapore



Macalloy's Architectural Adjustable Compression Struts have been used at 88 Wood Street, London, UK



Macalloy Stainless Cable used in Steel Arch  
James Joyce Bridge; Dublin, Ireland



## Cables

The Macalloy SC460 system gives a cable option with the same clevis fork connectors. Cables are available in 1x19, 7x19 and compact strand depending on the application.

This specially designed system incorporates cable adapters, which allow the standard metric threaded swaged cables to be connected to the standard Macalloy S460/520 range of forks.

Download our brochures for more information. Read more about the Tension Structures range here...

The suspended LED chandelier "Reflective Flow" in Qatar, Macalloy provided stainless cables to suspend the sculpture.







Groundwork Engineering Mersey Gateway, Cheshire, UK  
– includes both Macalloy 1030 Post Tensioning Bar and  
Macalloy Sheet Piling System



## Groundwork Engineering

The Macalloy Sheet Piling Tie Bar System provides a comprehensive range of yield strengths, diameters and components.

Steel Tie Bars in the Macalloy Sheet Piling Range are available in 4 different yield strengths; from 460 to 700N/ mm<sup>2</sup>. Thread diameters from M42 to M105 are available as standard with thread diameters up to M150 available by special order.

For corrosive environments Macalloy can provide a range of protection solutions including Galvanising and Denso-Tape wrapping.



## Macalloy Post-Tensioning System

The Macalloy Post-Tensioning System consists of high-tensile alloy bars in diameter from 25mm to 75mm with cold rolled threads for part or full length, together with a range of fittings. Stainless bars and fittings are available in diameters 20mm to 75mm. Bars are supplied in accordance with DS4486 and undergo rigorous inspection and testing including proof loading up to 90% of the working load under factory conditions, to ensure consistency of product and product quality.

For corrosion protection, in addition to standard ducts, Macalloy can also supply bars with factory applied Denso-Tape.

Galvanising is not recommended for this product.

Read more about the Post-Tension Structures range here.



Macalloy 1030 bars in 75mm and 40mm have been used as part of the anchorage system to anchor/tension the stay cables which provide provisional support to the arch of Almonte Bridge in Spain



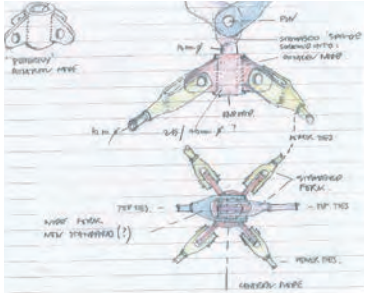
Twin Sails Bridge, Poole, UK uses Macalloy 1030 bars in 75mm stainless steel.



## Engineering Support

### EXPERIENCE

Our experienced Engineering Team are here to answer your technical enquiries and assist in the design and development of your project.



From your first initial design, our team of experienced Engineers can assist in putting your ideas into practice.

We can design and model 2D/3D drawings for projects and develop solutions tailored to your specific needs.

We also provide a wide range of Stressing Equipment for hire or to purchase including our own unique Techno-Tensioner. Our qualified Site Services Team can

provide training, assistance or a full stressing and advice service depending on your requirements. Please contact us at [technical@macalloy.com](mailto:technical@macalloy.com), or call us on 01909 519200

### INNOVATION

The Duplex Ball (pictured) is just one of our most recent solutions for a suspended footbridge inside the Jewel Changi Airport, Singapore. It was a requirement of the Designer, and allows movement in the bridge in all directions.

Our Engineering Team designed and engineered the matching nut and seating to go alongside tension bars and the ball nut that was specified. The washer was Teflon coated to ensure smooth movement and avoid any potential galling between mating stainless faces.



Gardens by the Bay, Marina Bay Sands, Marina Bay Financial Centre, Ocean Tower, Singapore Flyer





## QUALITY



The Macalloy Tension Rod System is approved under - ETA 17/0849 – which includes Bi-annual Audits of our Factory Production Control (FPC)

- Castings using lost wax process and to Casting Spec C9 with 100% MPI and Visual, UT tested to the Macalloy Quality Management System (MQMS)
- Bars are specified to our own specification with Mill certification and NDT in accordance with BS EN10204:2004
- Macalloy Compression Struts are to EN1090 – Execution Class 3 - EC3 Applicable to bridges/residential-office buildings/roof structures

Highpoint – Elephant & Castle, London, UK –has utilised Macalloy M16, M30, M56 and M85 Tension Bars. These have been used to help the balconies on this residential project remain stable in adverse weather conditions

- Macalloy 1030 – ETA07-0046/ASQPE
- FPC surveillance audit BBA/ASQPE – Bi-annual audits
- Testing – stress corrosion/relaxation and fatigue/tensile/single element.

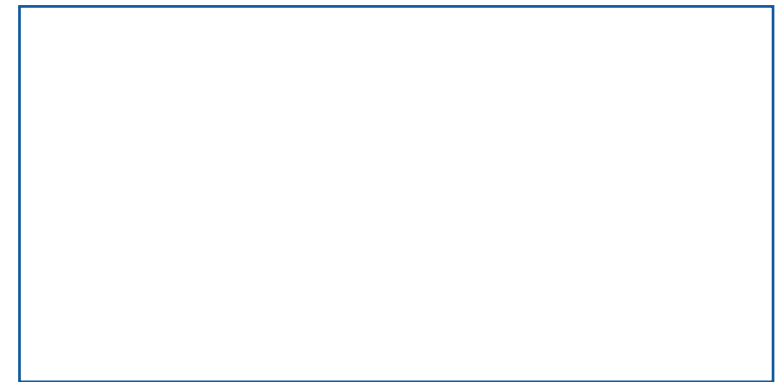
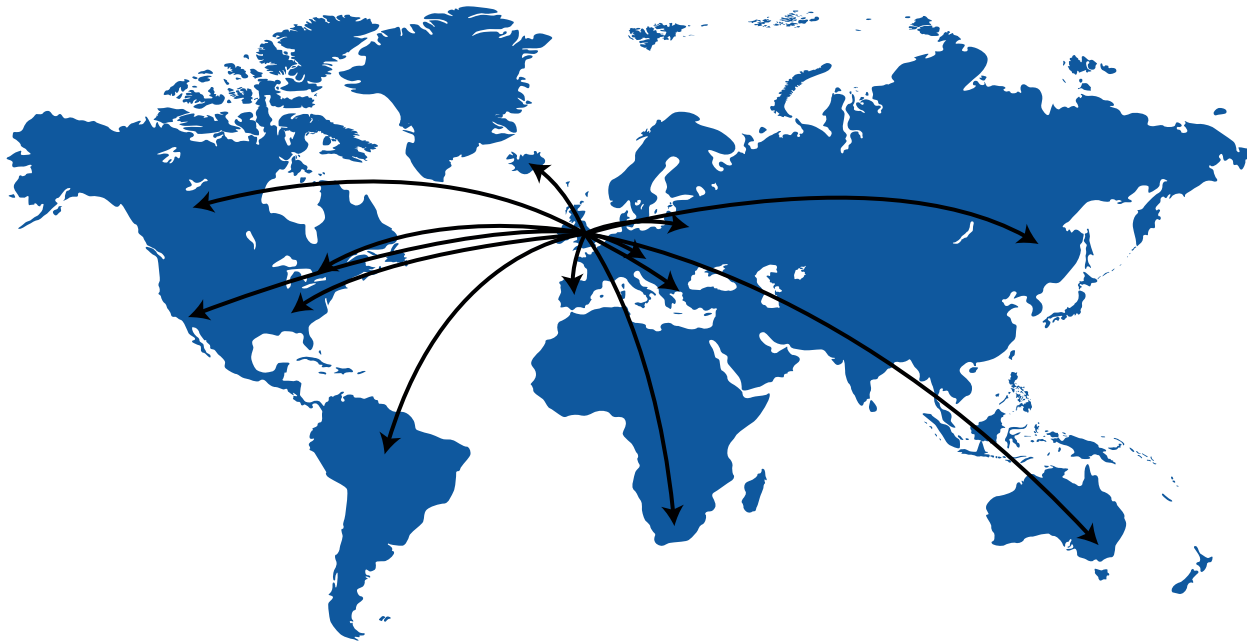
Our quality standards mean that we are approved to supply our product for:

- Residential and office buildings
- Large-area roof structures overhanging places of public assembly/stadiums
- Buildings with more than 15 floors
- Pedestrian and bicycle bridges
- Roadway bridges
- Railway bridges
- Fairground rides
- Towers and masts including antenna support structures
- Crane tracks
- Cylindrical towers such as steel smoke stacks





We have Agents across the globe who can help with your requirements...



Elizabeth Quay Bridge, Perth, Australia. Macalloy supplied Stainless Macalloy 1030 Post Tensioning Bar.



Boxpark – Croydon, UK. M42 Galvanised Tension Rods at 9.9 metres long were used, with central turnbuckles for extra tensioning



Al Ain Stadium, Al Ain – Macalloy 460 30mm, 42mm & 48mm galvanised bars used as bracing

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**Macalloy**