

TUNNELLING

Tunnel**Vision**

Engineered Fixing Solutions,
Fabricated in Stainless Steels

Ancon[®]

WHO WE ARE

ANCON designs and manufactures high integrity steel components for a wide range of industries including Building, Infrastructure, Water Treatment, Nuclear and Mining. Primarily, our products are manufactured from stainless steels.



Ancon Head Office, Sheffield, UK

Ancon has three UK manufacturing sites and eight overseas operations with additional production facilities located in Continental Europe and Australia. The headquarters are based in Sheffield UK; the city world renowned as the traditional centre of the stainless steel industry.

Ancon is part of a substantial building materials group with a turnover of circa €20billion, operations in 35 countries and approximately 80,000 employees.

Ancon UK

Sheffield (Head Office)
and Deeside

Ancon Austria

Vienna

Ancon Germany

Nuremberg

Ancon Switzerland

Near Bern

Ancon UAE

Dubai

Ancon Australia

Sydney, Brisbane,
Melbourne and Perth

Ancon is a member of the British Stainless Steel Association, Swiss Inox and the Australian Stainless Steel Development Association.



WHAT WE OFFER

Ancon has the in-house engineering design and manufacturing capabilities to meet the specialist fabrication requirements of a diverse range of industries. On a daily basis, Ancon's technical staff liaise with project teams throughout the world, advising on the most cost-effective and practical fixing solutions.

Our production facilities are capable of producing a high volume of standard products on very short lead times and bespoke products specifically engineered to meet individual project requirements. We are well-positioned to supply repeat orders of non-standard products, to exacting quality standards.

ANCON HAS AN IMPRESSIVE INTERNATIONAL PROJECT PORTFOLIO IN THE TUNNELLING SECTOR

Due to its long-life, low-maintenance characteristics, stainless steel offers whole-life costing benefits. Ancon has a wealth of experience of working with a variety of material types and grades, specialising in the fabrication of Austenitic, Duplex and Super Duplex stainless steels. Ancon can advise on the selection of the most suitable material for any fabrication.

Large stocks of standard grade materials are maintained in order to meet urgent deliveries. Project-specific material requirements are efficiently sourced direct from steel producers.

The supply of fabricated components is project-managed and delivered anywhere in the world, to suit the demands of the site schedule.



THE TUNNELLING INDUSTRY

Ancon is a member of the British Tunnelling Society and the Australasian Tunnelling Society. We have an impressive international project portfolio in this demanding Infrastructure sector.



This booklet provides brief details of just some of the projects with which we have been involved.



Fast Track Tunnelling Solutions: **Develop. Engineer. Manufacture. Supply.**



Enquiry

Technical

Knowledge Transfer
Feasibility Assessment
Concept Evaluation

Development

Corrosion Resistance
Regulatory Compliance
Cost Analysis & Quotation

Design & Testing

System Design
Design for Manufacture & Installation
Material Specification
Prototype Fabrication & Testing

Costing

Value Engineering
Supply Chain Management
Low Maintenance Solutions
Life-Cycle Costing Benefits

Manufacturing

Project Management
Short Lead Times
Volume & One-Off Production
Bespoke Engineering

Supply

Site Scheduling
On-Site Support
After-Sales Assistance
100% Recyclable



Excellence in health and safety, quality and environmental management are key priorities at all Ancon operations. In the UK, our systems have been independently assessed and certified to the internationally recognised standards OHSAS 18001, ISO 9001 and ISO 14001.

OHSAS 18001:2007
OHS 548992

ISO 9001:2008
FM 12226

ISO 14001:2004
EMS 505377

Project Profile: North-South Bypass Tunnel, Brisbane, Australia

Tunnel ceiling suspension systems

The CLEM7 Tunnel, known as the North-South Bypass Tunnel during its construction, is a new toll road built under the Brisbane River. It comprises two 4.8 kilometre twin-lane tunnels which bypass the city's central business district, significantly reducing surface traffic congestion.

In addition to being the longest road tunnel in the country, it is also the most advanced with many safety features. In the event of a fire or explosion, a high-tech ventilation system comprising 100 jet fans will rapidly extract smoke to a longitudinal duct high above the road deck.



Ancon designed and manufactured the stainless steel suspension system used to hold the immense concrete slabs which form the duct. Each component of the system performs an essential structural function within a highly corrosive environment. The welded sections were subject to particularly demanding quality



standards and each underwent an intense test and inspection programme prior to despatch to confirm its integrity.

Ancon also fabricated the 33,000 light gauge stainless steel posts used to support the architectural lining around the tunnel walls. A dedicated production cell produced 1,900 posts per week to meet a strict site schedule.

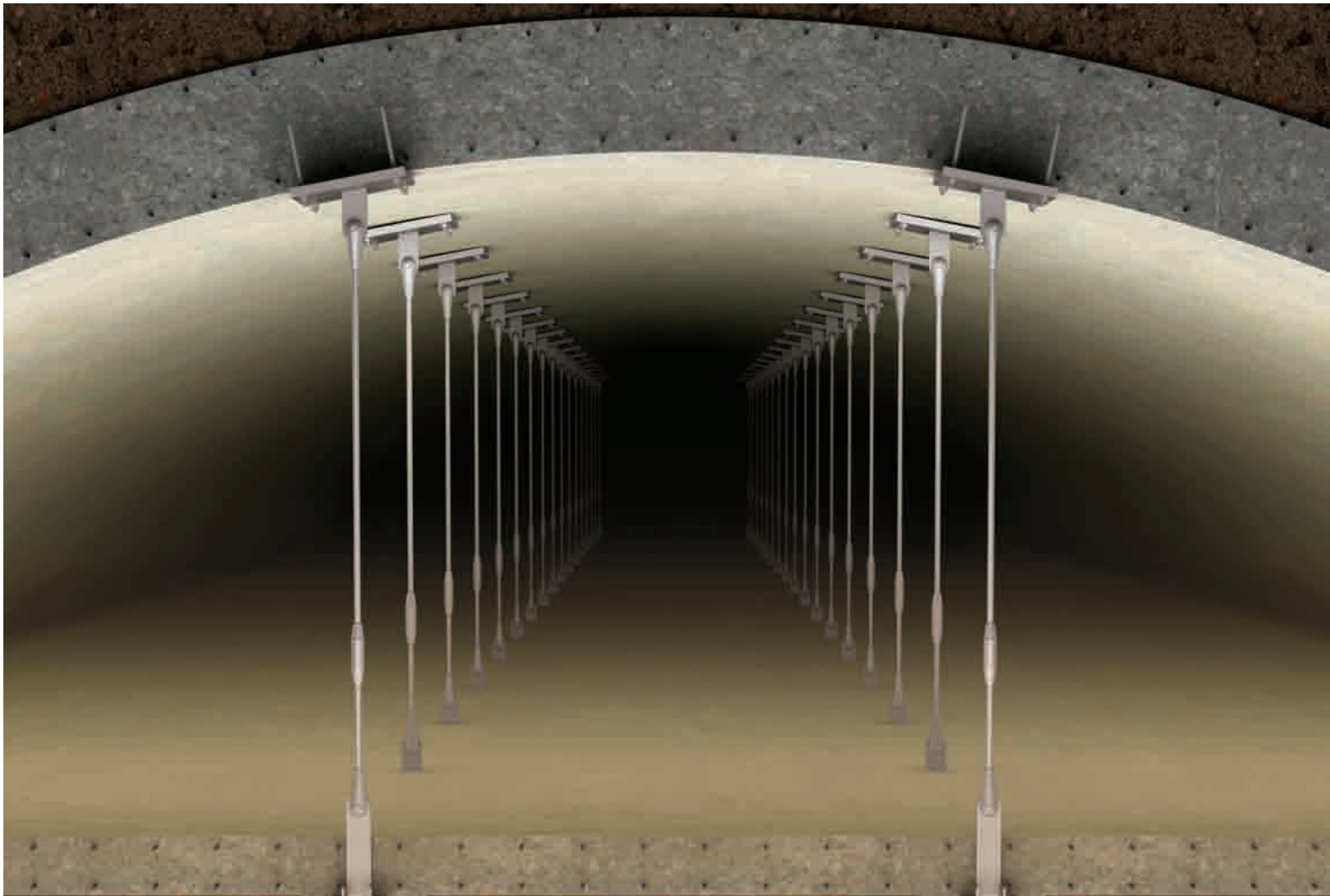
Project: CLEM7 Tunnel
(North-South Bypass Tunnel)

Client: River City Motorway Limited /
Brisbane City Council

Contractor: Leighton Contractors,
Baulderstone/Bilfinger Berger
Joint Venture

Stainless Steel: Duplex, grade 1.4462

Key Features: 2no. 4.8km, twin-lane tunnels
Advanced smoke extraction
into longitudinal duct
Tunnel ceiling suspended from
high integrity stainless steel
system





Project Profile: Clyde Tunnel Refurbishment, Glasgow, UK

Fire-resistant tunnel lining and support frame

The 762 metre long Clyde Tunnel has been a major transport link between north and south Glasgow for almost 50 years. On average 65,000 vehicles travel through it daily.

Contractor Byzak undertook the refurbishment contract that involved stripping the tunnel's existing secondary lining back to the cast iron structure and replacing it with a new architectural fire-resistant version. To minimise traffic disruption, the maintenance work was carried out at night to a strict schedule, 7 days a week.

Ancon's stainless steel support framework was fixed directly to the cast iron tunnel structure. The new lining was attached to the frame and

joined with a stainless steel retaining strip. In the event of a fire the integrity of the structure must be protected, and as temperatures could reach over 1000°C in the case of a fuel tanker incident, the tunnel lining is designed to keep the temperature within the tunnel below 300°C.

A reputation for high quality stainless steel bespoke solutions, coupled with a proven track record in the tunnelling sector, made Ancon the obvious choice for this demanding contract.

Project: **Clyde Tunnel Refurbishment**
 Client: **Glasgow City Council**
 Contractor: **Byzak**
 Engineer: **Faber Maunsell**
 Stainless Steel: **Austenitic, grade 1.4401**

Key Features: **New architectural, fire-resistant secondary lining**
Stainless steel frame fixed to cast iron primary lining



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Project Profile: City West Cable Tunnel, Sydney, Australia

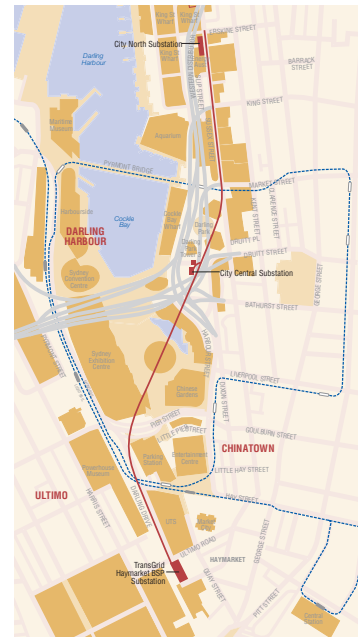
Transmission Cable Support System

The City West Cable Tunnel was constructed by Thies as part of EnergyAustralia's major upgrade of the electricity infrastructure of Sydney.

The new tunnel, measuring 1.7 kilometres long and 3.5 metres wide, carries transmission cabling across the city's central business district. Stainless steel brackets support the heavy duty cables along the full length of the tunnel.

The maintenance-free life and proven integrity of stainless steel, combined with Ancon's fabrication expertise, means no costly remedial measures will be required for the life of the structure.

Ancon was selected to manufacture this high specification support system due to its proven track record of supplying volume orders of standardised components.



Project: **City West Cable Tunnel**

Client: **EnergyAustralia**

Contractor: **Thies**

Engineer: **Maunsell / AECOM**

Stainless Steel: **Austenitic, grade 1.4401**

Key Features: **New 1.7km transmission cable tunnel**

Heavy duty, corrosion-resistant support brackets





Project Profile: East Tunnel Refurbishment, Dartford, UK

Road deck endplates



Spanning the river Thames, the Dartford River Crossing forms a vital part of Britain's busiest orbital road, the M25. The Crossing comprises two dual-lane tunnels carrying traffic to the north and a four-lane cable-stayed bridge carrying traffic to the south. Essential remedial work on the East Tunnel required more than 1 kilometre of road deck to be replaced.

The new road deck was installed in 4.5 metre sections. To enable a fixing to be made with the adjacent section, each road slab was cast with a specially designed stainless steel plate at either end.

Ancon manufactured the 474 endplates required. Each measured over 7 metres in length and was fabricated from 25mm thick plate. Together, they totalled almost 400 tonnes of stainless steel.

Two road sections were replaced each night. Quick and accurate installation of the replacement deck was essential as the tunnel had to be available to the public from 5.30am.



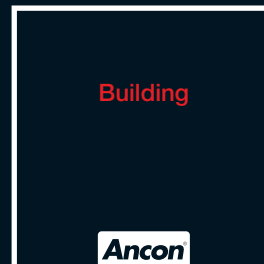
For a perfect fit with the adjacent slab, the endplates were supplied as match-drilled pairs. This guaranteed the precise positioning of 34 bolts at each shear connection. Ancon's dedicated production team ensured all units were delivered to site over a 10 month period to suit the casting yard schedule.

Project: **Dartford East Tunnel**
 Client: **Dartford River Crossing**
 Contractor: **Kvaerner / Skanska**
 Stainless Steel: **Austenitic, grade 1.4401**

Key Features: **Road deck replaced in 4.5 metre sections**
Bespoke endplates supplied as match-drilled pairs

Engineered Fixing Solutions, Fabricated in Stainless Steels

In the same series: Tunnelling, Water, Building



Project References:

- Brisbane North-South Bypass, Australia
- City West Cable Tunnel, Australia
- Kogarah Cable Tunnel, Australia
- Perth City Metro Rail Tunnel, Australia
- Blackwall Tunnel, UK
- Clyde Tunnel, UK
- Dartford River Crossing, UK
- Heathrow Express, UK
- Waterloo International Terminal, UK
- Thessaloniki Metro, Greece
- Plabutsch Tunnel, Austria
- Gotthard Tunnel, Switzerland
- Horburg Tunnel, Switzerland

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