

High Pressure Pipework Testing Enclosure Facility

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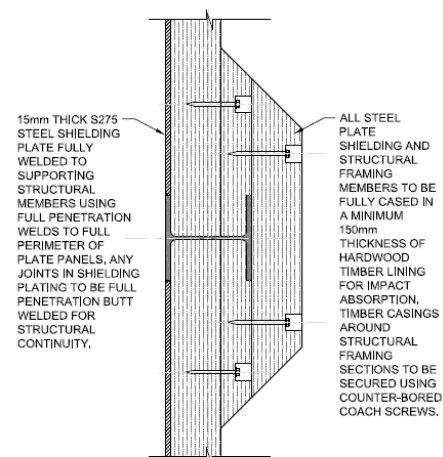
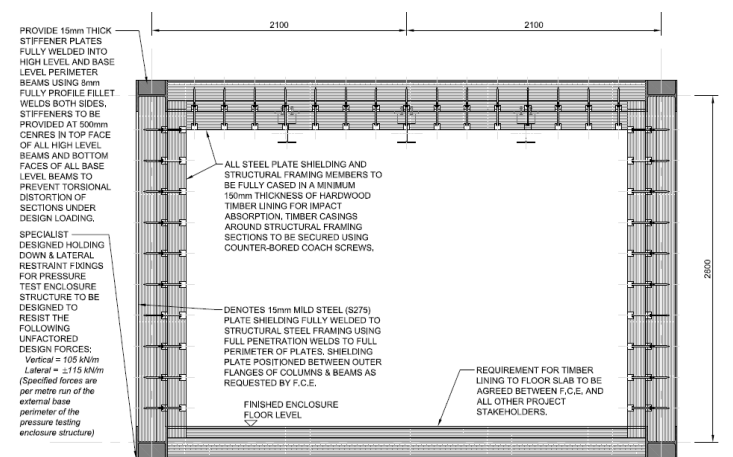
Sector: Industrial
Client: Fluid Control Europe (FCE)
Value: Circa £100,000
Completion: 2014

Technicus Consulting was appointed by Fluid Control Europe (FCE) to provide structural design and consultancy services for development and design of a large steel framed pressure testing enclosure. The enclosure was required to allow safe testing of FCE's high pressure steel pipework and pipe fittings up to pressures of 22,500 psi (1551 bar).

Technicus Consulting researched currently available design guidance, and developed design spreadsheets to allow the expected worst case impact loads on enclosure structure to be assessed. Impact loading and design was carried out in accordance with the current Health & Safety Executive report CRR 168 / 1998 "Pressure Test Safety".

By working closely with the client a range of potential missile objects were defined and numerous calculations undertaken to allow worst case impact forces to be calculated. Once the loads were calculated the structure was designed to contain the defined missile objects should a pressure test failure event occur.

Technicus Consulting developed empirical design formulae to allow the energy absorption benefits of a timber lining to the steel plated walls and roof to be quantified. The sacrificial timber lining acts as a damper to impacting missile objects, and therefore allowed the structural steel enclosure framing to be designed to resist much reduced residual impact energies. This offered significant materials savings for the client, and made the enclosure structure easier to fabricate and construct.



TYPICAL SECTION THRO' PRINCIPAL FRAME MEMBER SHOWING ARRANGEMENT OF STEEL PLATE SHIELDING AND HARDWOOD TIMBER LINING

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