



CONSTRUCTION ENGINEERED

CLIENT GUIDE – STEEL CONNECTION DESIGN

Send the forces. Get the connections.

Delegated connection design to Eurocode 3, modelled and checked in IDEA StatiCa, with a calculation report for every connection.

IDEA **StatiCa**

Eurocode **3** (EN 1993)

PI **£1m**

UK & **Ireland**

SEND US YOUR LOADS

DOWNLOAD THE PDF

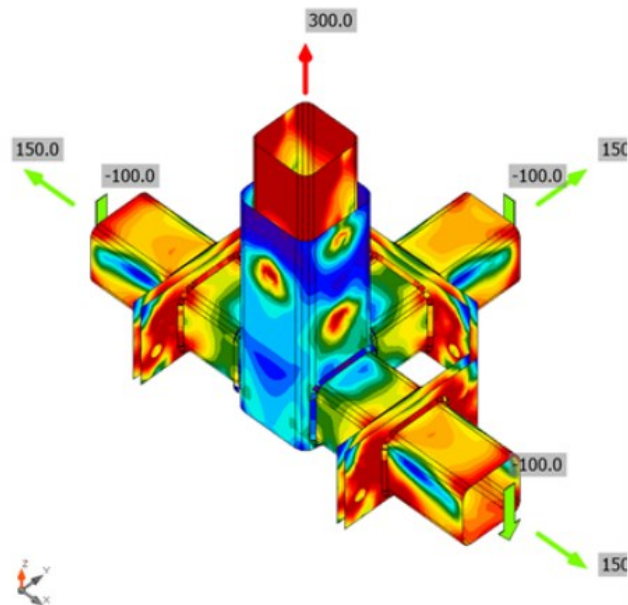
01 — THE SHORT VERSION

What you are actually buying

A designed, checked and documented connection you can fabricate against — and a calculation report the engineer of record can approve.

The responsibility split is clean. You send the member forces; we return designed, checked and documented connections. The engineer of record retains responsibility for member design and the overall structure.

The work is carried by **£1,000,000 of professional indemnity insurance**, so the design is signed off by somebody who stands behind it.

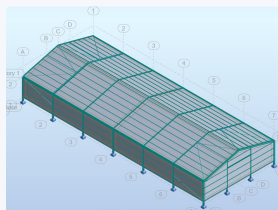


● STRESS AND STRAIN CHECK ON A NON-STANDARD JOINT, IDEA STATICA

02 — HOW IT WORKS

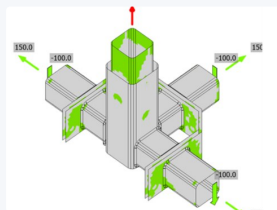
What we need. What you get.

Stages 01–04 are the connection design service. Detailing the checked connection into a fabrication package runs from the same model as an additional service, available on request.



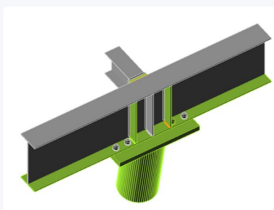
01 Design information

Member sizes, connection forces or a load schedule, structural GAs and the specified execution class.



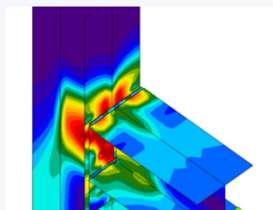
02 Gap check

Incomplete forces are flagged before design starts, rather than assumed.



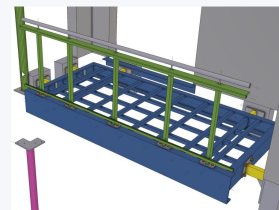
03 Design

Standard joints to the SCI Green Book; non-standard analysed in IDEA StatiCa.



04 Calculation report

A report per connection type, ready for submission to the engineer of record.



05 Detailing

ON REQUEST
The checked connection carried into Tekla and onto the fabrication drawings.

03 — THE CHECKS

What actually gets checked

Standard cases are designed to published capacities. Where geometry or loading falls outside them, the joint is analysed rather than assumed.

EC3

Every connection designed to Eurocode 3 (EN 1993), with a calculation report issued.

£1m

Professional indemnity insurance carrying the connection design.

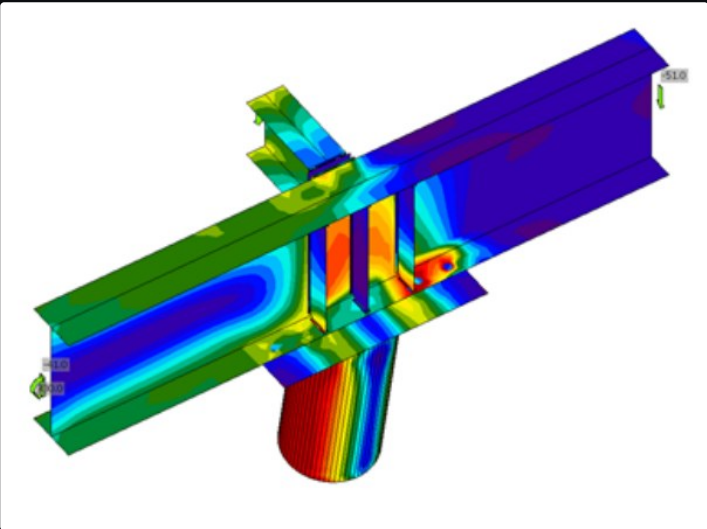
2012

Designing connections for fabricators across the UK and Ireland since.

Non-standard joints are analysed for

Stress & strain	Equivalent stress & deformation
Stiffness	Member capacity
Buckling	Joint resistance

STANDARD	WHAT IT GOVERNS
EN 1993	Eurocode 3 — steel design and connections
SCI Green Book	Simple joints to Eurocode 3
NSSS 5th Edition	Working practice for the detailing that follows



● EQUIVALENT STRESS ON A BEAM-TO-COLUMN JOINT

Standard simple joints are designed to the SCI Green Book — Joints in Steel Construction: Simple Joints to Eurocode 3.

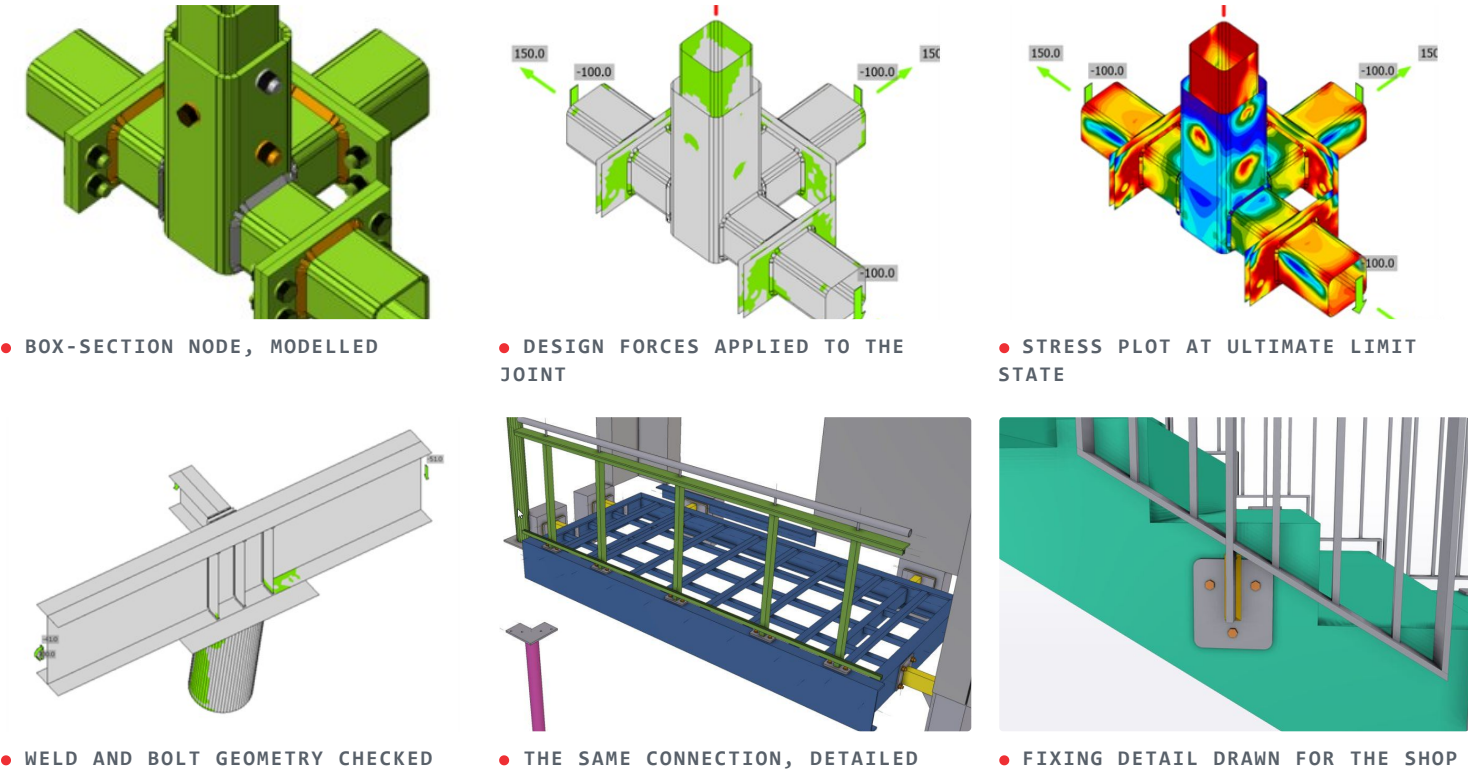
Have the forces but no connection designer on the team?

SEND US YOUR LOADS

04 — DESIGN TO STEEL

What it looks like

The analysis model, the checked joint and the steel it becomes — all from the same practice.



Designed to be fabricated.

A connection that passes its checks but cannot be welded, bolted or erected is not a design. Ours are drawn by the people who detail them.

05 — ONE ROOF

Design and detailing that cannot drift apart

Most fabricators run connection design and steel detailing as two separate supply chains, then spend programme time reconciling them.

TWO SUPPLY CHAINS	WITH OD3
• Connection designer sits outside your programme • Detailer interprets a design somebody else produced • RFIs bounce between designer and detailer • Approval cycles wait on a third party • Calculation report and drawing can disagree	• Same practice designs the joint and details it • Same geometry, same bolts, same welds • Fewer RFIs between designer and detailer • Faster approval cycles, inside one programme • What the report describes is what the drawing shows

06 — RESPONSIBILITY

Where the line sits

Delegated design only works if everybody knows who owns what. This is the split, in plain terms.

OD3 owns

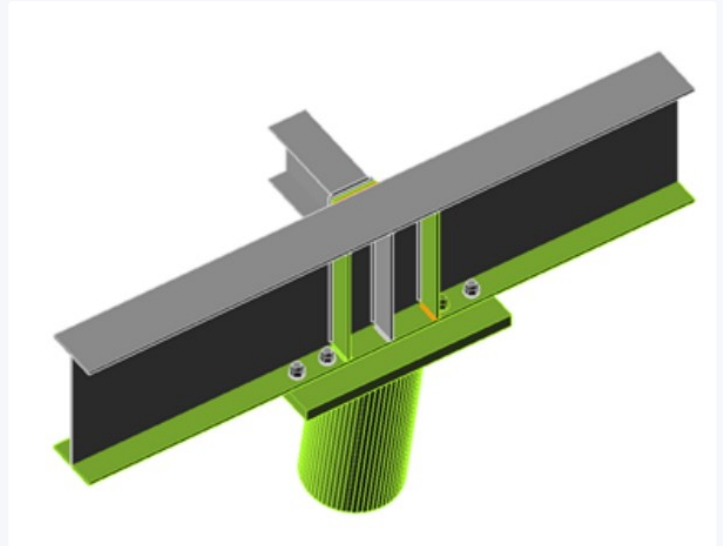
The connections themselves — designed to Eurocode 3, issued with a full calculation report, and backed by £1m professional indemnity insurance.

The engineer of record owns

Member design and the overall structure. We design to the forces and member sizes their design provides.

Nobody assumes

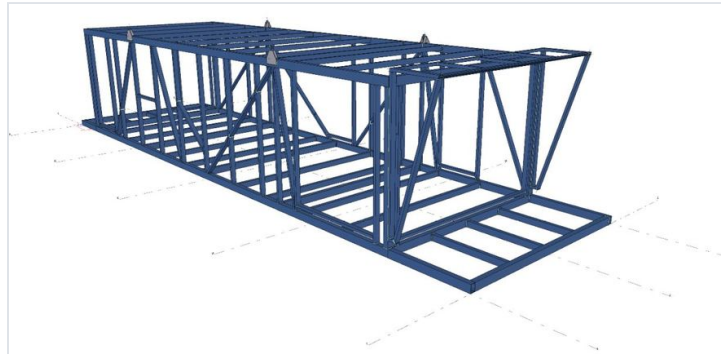
If the forces we receive are incomplete, we flag the gaps before design starts rather than filling them in ourselves.



● JOINT GEOMETRY, BEFORE THE CHECKS ARE RUN

07 — WHERE IT EARN'S ITS MONEY

Sectors and use cases

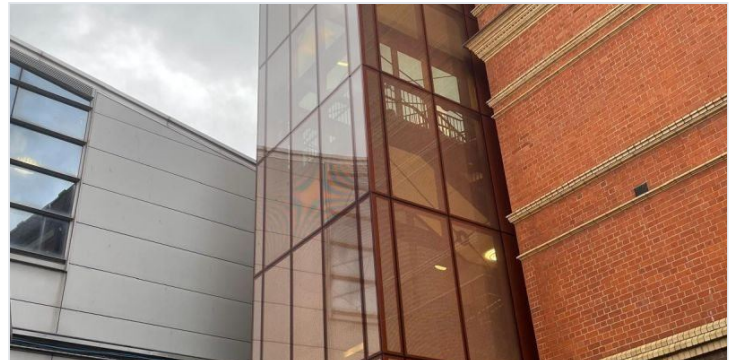


Steel fabricators

- Delegated connection design on tender or contract
- Standard joints to the SCI Green Book
- Non-standard joints analysed in IDEA StatiCa
- Calculation reports for the engineer of record

WHAT WE NEED

Member sizes, connection forces or a load schedule, GAs, and the specified execution class.



Main contractors

- Connections for frames, alterations and extensions
- New steel tied into existing structure
- Design and detailing carried by one party
- Approval submissions handled through the cloud

WHAT WE NEED

The engineer's design information and the structural GA drawings.

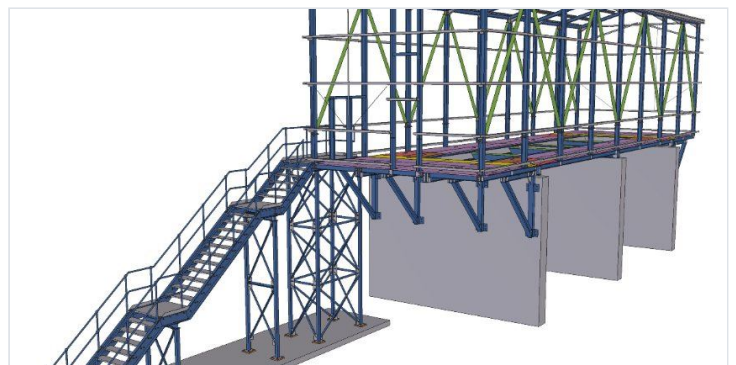


Architectural metalwork

- Balcony and screen support connections
- Repeating fixing details across a block
- Interfaces with cladding, glazing and slab edges
- Connections designed around visible finishes

WHAT WE NEED

Loads, the supporting structure, and the finishes the fixing has to live with.



Plant, process & machinery

- Support steel, platforms and machinery frames
- Baseplates and holding-down arrangements
- Connections into existing plant structures
- Non-standard geometry analysed, not assumed

WHAT WE NEED

Equipment loads, the existing structure, and any access constraints.

08 — DELIVERABLES

What lands in your inbox

The design and its calculation report are standard. Carrying the checked connection through into a fabrication package is an additional service, available on request.

The connection design

Designed to Eurocode 3, ready for the engineer of record to approve.

Calculation report

A full report for each connection type, issued with the design.

IDEA StatiCa checks

Stress, strain, stiffness, buckling and joint resistance on non-standard joints.

Issued through the cloud

Models, reports and approval comments move through Trimble Connect.

Fabrication package

ON REQUEST

The checked connection detailed in Tekla, with drawings, NC files and lists.

Setout & verification

ON REQUEST

The same model driving robotic total station setout and as-built checks.

Deliverables are the design itself plus a calculation report for each connection type, ready for submission to the engineer of record for approval.

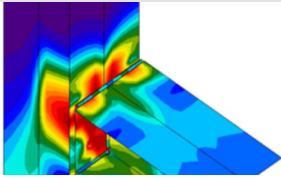
Send the member sizes and a load schedule — you get a fixed price back.

EMAIL [INFO@OD3.CO.UK](mailto:info@od3.co.uk)

09 — FULL CAPABILITY

Everything else OD3 does

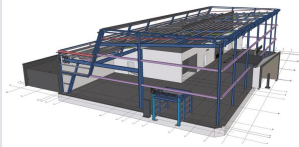
Connection design sits inside a single digital thread — the same model that carries your designed connections flows into detailing, NC output, setout and verification without being rebuilt.



01

Connection Design

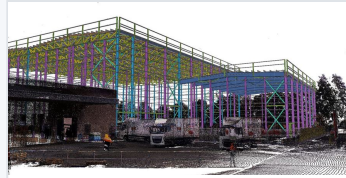
Delegated design to Eurocode 3 in IDEA StatiCa, with full calculation reports and PI-backed sign-off.



02

Steel Detailing

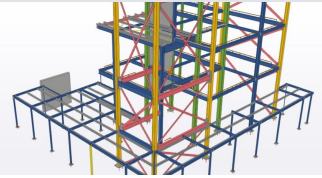
Tekla fabrication packages, workshop and erection drawings, NC/DSTV output and material lists.



03

Survey & Reality Capture

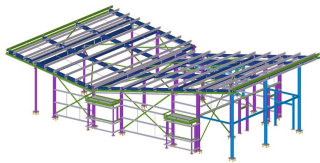
Trimble X7 scanning, measured building survey, point-cloud-to-Tekla and as-built verification.



04

BIM & Digital Construction

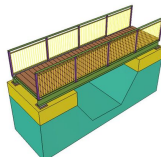
Scan-to-BIM, federation, clash detection, MEP and plant coordination, digital twins.



05

Cladding & Facade Detailing

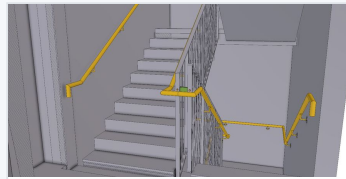
Cladding, facade and secondary steel detailing, coordinated against the frame before fabrication.



06

Digital Estimation & Take-off

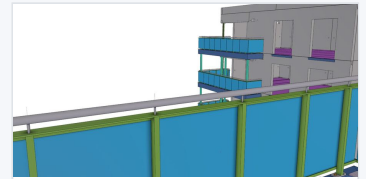
Model-based take-off and tender estimation from drawings or a Tekla model.



07

Construction Set-Out

Robotic total station setout direct from the model, holding-down bolts, grids and as-built sign-off.



08

Project Delivery

4D planning, RAMS administration, bid visuals and construction technology, delivered on Redpen.

10 — STRAIGHT ANSWERS

The questions clients ask first

Who carries design responsibility?

We do, for the connections themselves — designed to Eurocode 3, issued with a full calculation report, backed by our £1m professional indemnity insurance. The engineer of record retains responsibility for member design and the overall structure.

What software do you design in?

IDEA StatiCa for connection analysis and design checks, with the connections modelled in Tekla Structures for detailing. Because both happen in-house, the checked design and the fabrication model never drift apart.

What do you need to start?

Member sizes, connection forces or a load schedule, the structural GA drawings, and the specified execution class. If forces are incomplete we flag the gaps before design starts rather than make assumptions.

Can you handle non-standard connections?

Yes. Standard simple joints are designed to the SCI Green Book; non-standard geometry or loading is analysed in IDEA StatiCa, with checks for stress and strain, equivalent stress and deformation, stiffness, member capacity, buckling and joint resistance.

Do you work outside Northern Ireland?

Yes — connection design is delivered remotely across the UK and Ireland. Models, calculation reports and approval comments move through Trimble Connect, so location has no effect on programme.

How is the design issued?

Through Trimble Connect, so there is no courier-and-markup cycle and your engineer always has the current issue.

11 — WHY OD3



• THE SAME TEAM DESIGNS, DETAILS AND VERIFIES

One digital thread, one accountable party

Designers who detail steel

The connection that passes its checks is the connection that appears on the fabrication drawings.

No third-party dependency

No waiting on a connection designer who sits outside your programme.

Technology we build ourselves

A practising consultancy and a software company. The tools on your project are the ones we use daily on our own.

NEXT STEP

Send us your loads.

Member sizes, connection forces or a load schedule, the structural GAs and the execution class. You get a fixed price and a return date — and if anything is missing, you hear about it before design starts.

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OD3 Group — a Northern Ireland structural engineering consultancy and digital construction specialist. Reality capture, BIM, connection design, steel detailing, set-out and construction technology. Serving the UK & Ireland.

All imagery is OD3 project work. Connection design to Eurocode 3 (EN 1993), analysed in IDEA StatiCa, with standard simple joints to the SCI Green Book.