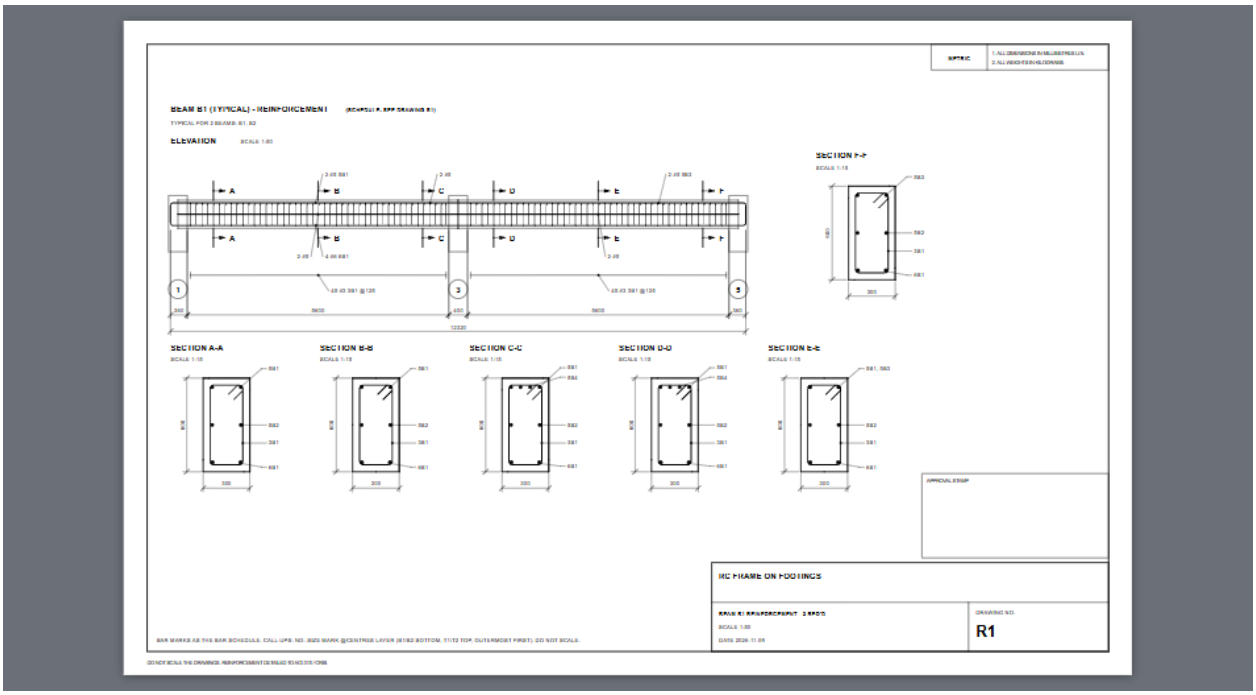
FEA STUDIO

User Manual

Part 4 of 5 · Drawings

Steel and reinforced concrete shop drawings from the model: the drawing set, the drawing viewer, drawing standards and export.



The manual set

Part 1 Modeling
Part 2 Analysis
Part 3 Design
Part 4 Drawings (this book)
Part 5 Reporting

Edition November 2026 · describes FEA Studio as built from the current source

Contents

About this part 3
Making a drawing set 4
Where to find it 4
Steps 5
What the set contains 6
The Drawings panel and Drawing tab 8
Drawings panel 8
Drawing tab toolbar 8
Mouse and keys 9
Moving, scaling and aligning views 9
Sheet and title block 10
Revisions 10
Drawing standards 11
Using the dialog 11
Categories 12
Region and standard 12
Connection drawings 14
Export and print 15
Drawings in the design tabs 16

About this part

FEA Studio makes **shop drawings** directly from the model:

- steel members, plates and connections;
- the reinforced concrete beams, columns, slabs, walls and footings you have designed (Part 3).

Steel and concrete drawings are made together, as one numbered **drawing set**.

> **Note** The drawing set is always made fresh from the model as it is now. If you change the model or a design, make the set again. The set is not saved in the project file, but your sheet, title block and standard settings are kept.

Making a drawing set

Where to find it

- **Drawings › Create drawings...**. The Drawings menu appears once the model has results, when Simplified menus is on.
- Stage **7 Drawings** in the Explorer: double-click **Create drawings...**.
- The **Create drawings...** button in the empty Drawings panel.

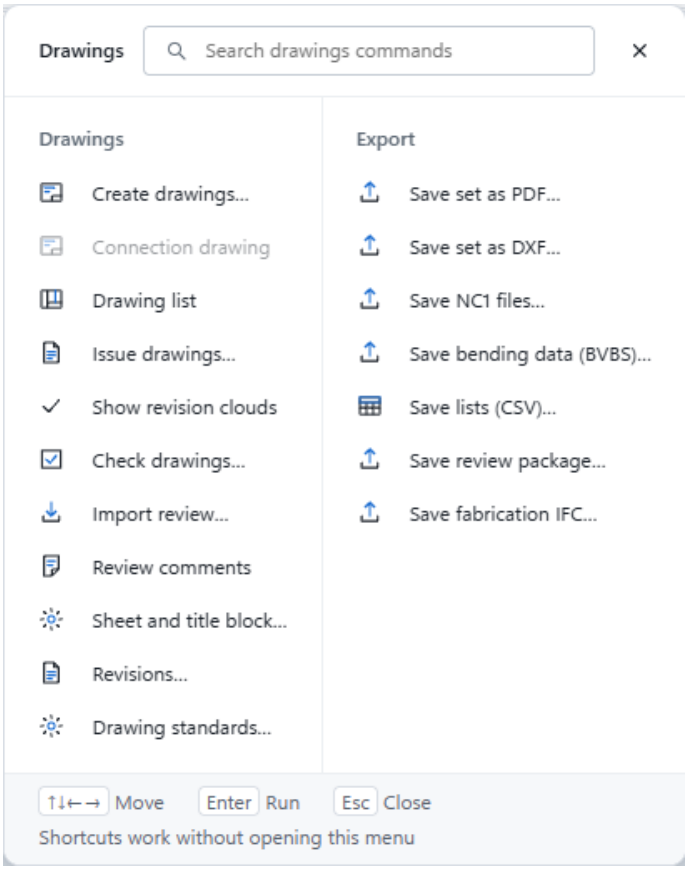


Figure 1. The Drawings menu

Besides making and exporting the set, the Drawings menu handles issuing and review:

Command	What it does
Issue drawings...	Issues the set under a new revision: the drawings new or changed since the last issue take it, and their changes are clouded
Show revision clouds	Clouds what changed on each drawing since its last issue
Check drawings...	Finds what needs cleaning up before issue: text over text, lines through text, views running into each other or the title block, parts without dimensions
Save review package...	Saves the drawings as one HTML page that the engineer or fabricator opens in any browser to mark up, comment on and stamp each drawing
Import review... · Review comments	Brings the comments, markups and stamps back from a review file, shows them on the sheets, and lets you resolve and reply
Save fabrication IFC...	Saves the steel as IFC4 for fabrication: assemblies with their parts, holes and copes, bolts and welds, numbered and marked as on the drawings

Steps

1. Optional: select the members, connections, concrete beams, columns, slabs or footings you want. Only those will be drawn.
2. Choose **Drawings › Create drawings…**.
3. Fill in the **Create drawings** dialog (see below) and click **Create**.
4. A progress card titled **Making drawings** shows each stage, for example "Erection plans · Level 1 · 1 of 3". You can cancel it at any time.
5. When it finishes, two things open:
   - the **Drawing** tab, beside the 3D view;
   - the **Drawings** panel, beside the Explorer.

The Output panel lists how many drawings, members, plates and bars were drawn, with any warnings.

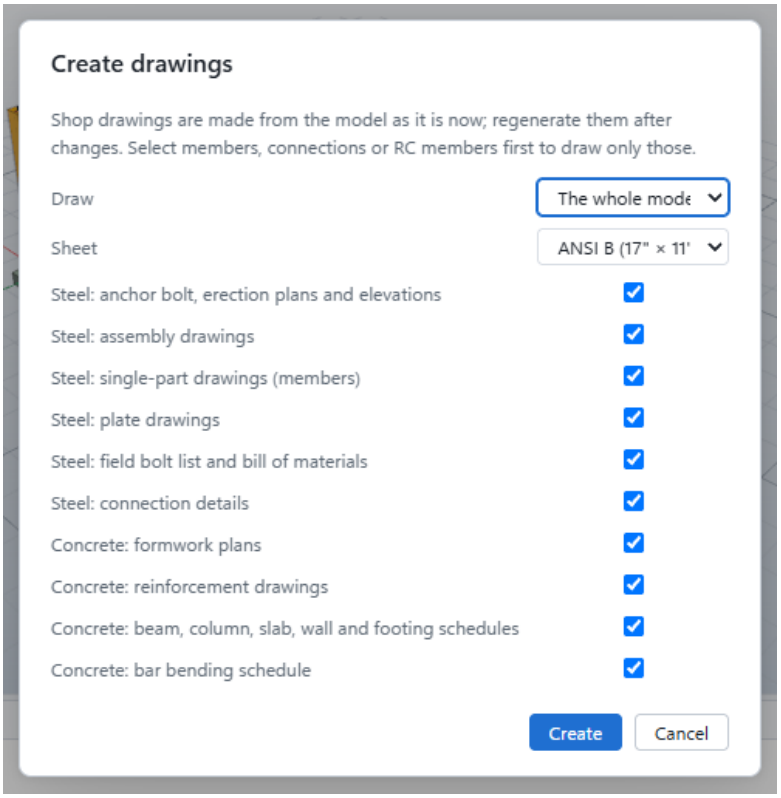


Figure 2. The Create drawings dialog

Field	Choices
Draw	The whole model, or The selection
Sheet	ISO A4 landscape, ISO A3 (default), ISO A2, ISO A1, ISO A0, ANSI B (17" × 11"), ANSI D (34" × 22"), ARCH D (36" × 24")
Steel	Anchor bolt, erection plans and elevations · Assembly drawings · Single-part drawings (members) · Plate drawings · Field bolt list and bill of materials · Connection details
Concrete	Formwork plans · Reinforcement drawings · Beam, column, slab, wall and footing schedules · Bar bending schedule

All the drawing kinds are ticked by default. Untick the ones you do not need.

What the set contains

Drawings are numbered by kind. Kinds that share a prefix share one number series.

Prefix	Drawing	Contents
D0	Drawing list	Number, title, type and location of every drawing; continues on D0A, D0B…
GN	General notes	Steel and reinforced concrete notes
E	Erection drawings	Isometric view; anchor bolt plan with a typical base detail; erection plan per level; elevation per braced grid line (alike grid lines share one)
E	Lists	Connection list; field bolt list with the bolt summary; field weld list (when chosen)
BM	Bill of materials	Every part with weight
CD	Connection details	One per kind of connection: elevation, plan, section and isometric views, with plate, bolt and weld marks and dimensions
B, C…	Assembly drawings	One per assembly mark: elevation, top and end views, sections, weld symbols and the part list
m, p	Single parts and plates	Members and plates nested on as few sheets as possible; members that differ only in length are tabulated
TD	Typical reinforcement details	Typical beam, column, slab, footing and wall details
F	Formwork plans	Slab outline, beams below, cut columns and walls, grids, and each member's R-drawing number. Alike floors share one plan (typ.).
R	Reinforcement drawings	Beams (elevation with sections), columns (elevation with laps and ties, section per storey), footings (plan and section), slabs (top and bottom bar plans) and walls. As many members per sheet as fit.
S	Schedules	Beam, column, slab, wall and pier, and footing schedules; the last one is the bar bending schedule (BS 8666) or bar list (ACI / CRSI)

Identical members are drawn once and marked **(typ.)**, for example "Beam B1, B2 - reinforcement (typ.)".

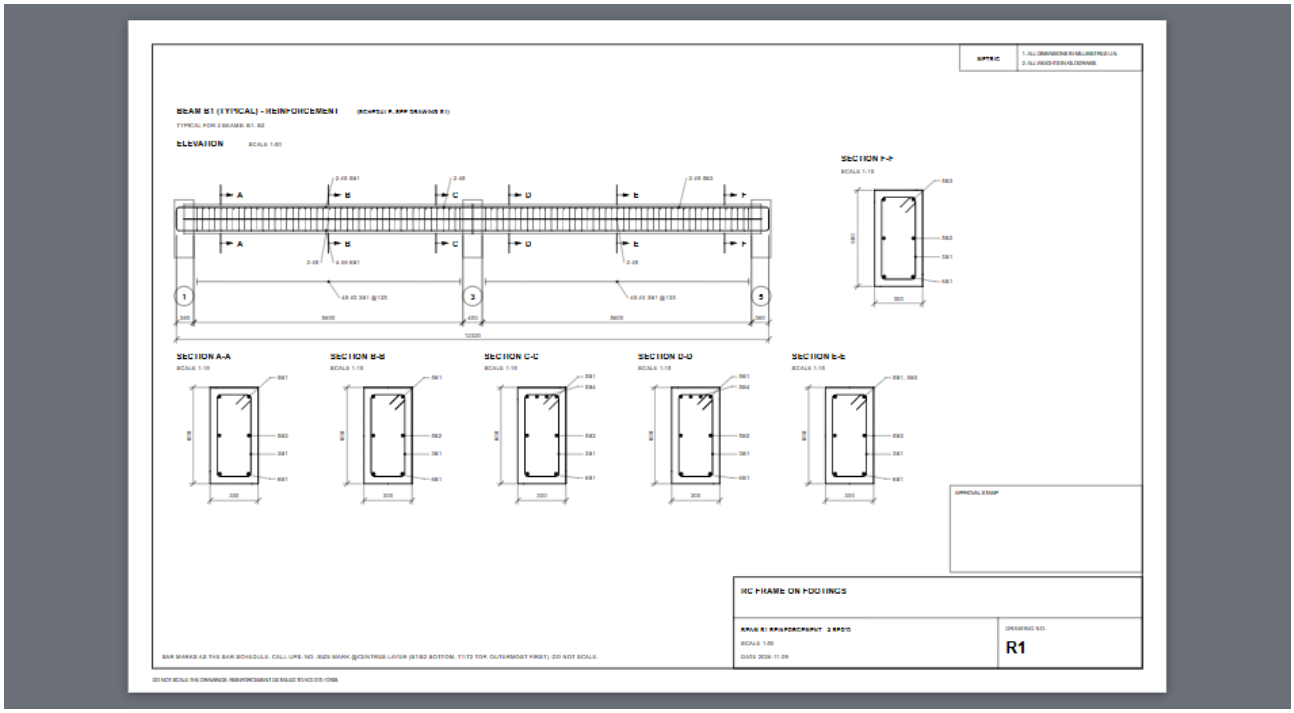


Figure 3. A reinforcement sheet: beam elevations and sections with bar call-ups

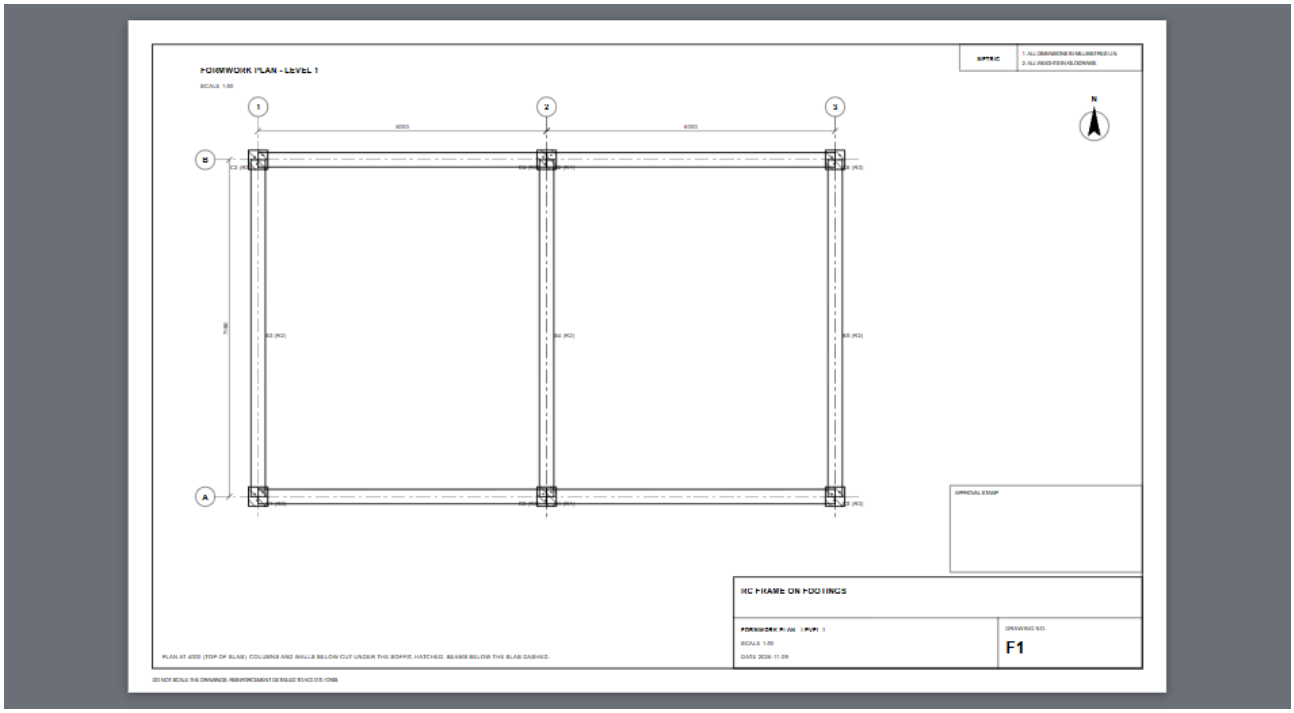


Figure 4. A formwork plan with grids and member marks

The Drawings panel and Drawing tab

Drawings panel

The **Drawings** panel lists the set by group: Index, List, Reinforcement, Bar schedule and so on. Each row shows a drawing number and title.

- Click a row to show that drawing.
- Use ↑ ↓ `Home` `End` to step through the list.

The Explorer's Drawings stage shows the same set. Right-click a drawing there for **Show drawing** or **Save as PDF…**.

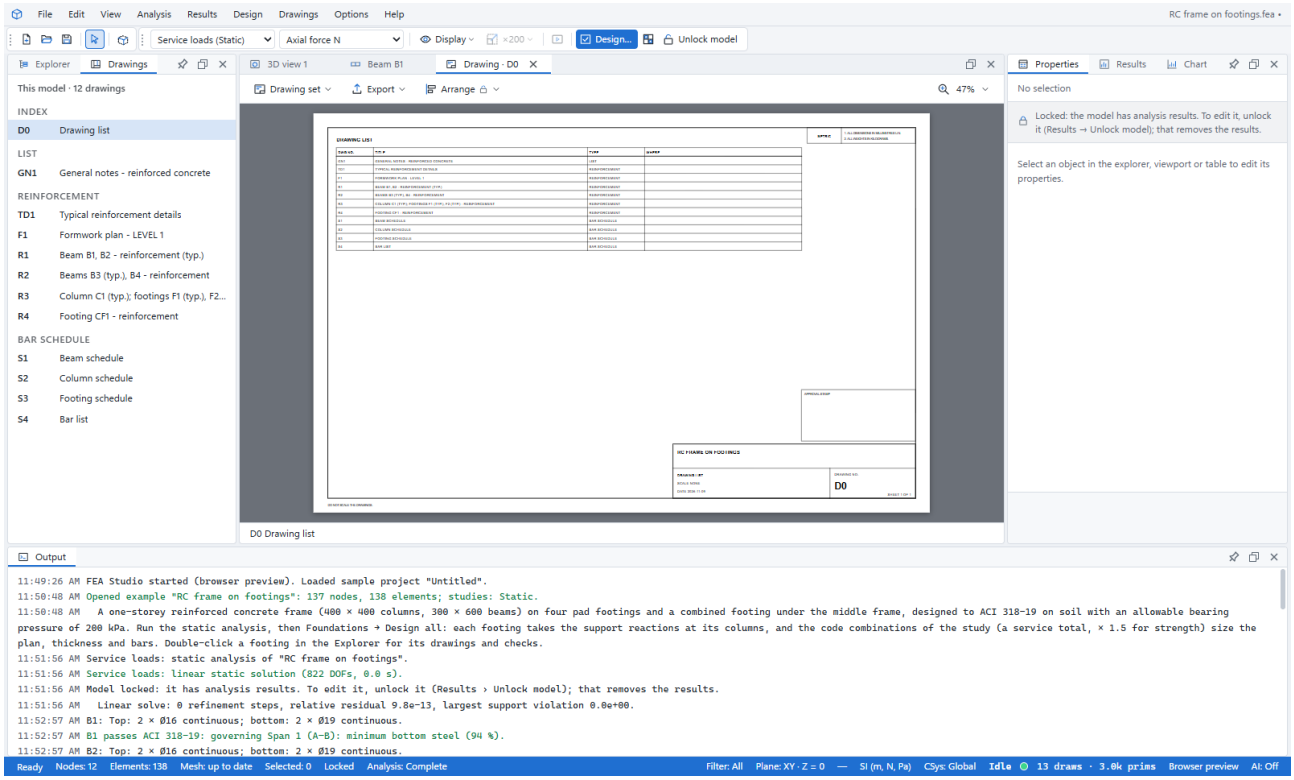


Figure 5. The Drawings panel beside the Explorer, and the Drawing tab showing the drawing list

Drawing tab toolbar

Menu	Commands
Drawing set ▾	New set…, Regenerate, Sheet and title block…
Export ▾	PDF (all drawings or this drawing), DXF (all sheets in a ZIP, or this drawing), Fabrication (NC1 files, bending data BVBS, bill of materials and bar schedule CSV), Print this drawing
Arrange ▾	Align left / center / right / top / middle / bottom; Distribute horizontally / vertically; Align to sheet or Align selected views; Lock view positions
Zoom ▾	Zoom in, Zoom out, Fit sheet, Fit width, 10 % to 800 % (100 % = actual paper size)

Mouse and keys

Action	How
Zoom	Mouse wheel, or + / –
Pan	Drag, or middle-drag anywhere
Zoom to a view	Double-click the view
Fit the sheet	Double-click empty paper
Previous / next drawing	↑ / ↓
Sheets of a multi-sheet drawing	`Page Up` / `Page Down`
Select all views	`Ctrl+A`
Clear the selection	`Esc`
Nudge selected views	Arrow keys: 1 mm, or 10 mm with `Shift` (views must be unlocked)

Moving, scaling and aligning views

Views start **locked**: you can scale them but not move them. To move views, untick **Arrange › Lock view positions**.

- **Move** a view by dragging it.
- **Scale** a view by dragging its corner handle. It snaps to the nearest standard scale.
- **Right-click a view** to:
  - pick a nearby standard scale;
  - **Zoom to view**;
  - **Reset position and scale**;
  - **Reset all views on this sheet**.
- **Select several views** with `Ctrl+click`, `Shift+click` or a `Ctrl` -drag box. Then use **Arrange › Align** or **Distribute**:
  - With one view selected, or with **Align to sheet** on, views line up with the sheet's drawing area.
  - Distribute needs three views or more; the outer two stay put.

Your changes are kept when the set is regenerated, and they are used for print, PDF and DXF.

Sheet and title block

Drawings › Sheet and title block...

Field	Choices or default
Sheet	ISO A3 by default
Units	Metric (mm) or Imperial (ft-in)
Projection	First angle or Third angle
Job number, Client, Fabricator	Text
Drawn by, Checked by, Approved by	Names for the title block
Legal owner (firm)	The firm that owns the drawings (ISO 7200)
Document status	Preliminary, For approval, Approved, Approved as noted, For fabrication, For construction, For erection, As built
Revision	Used until you keep a revision history (see below)

These details go on every sheet. Saving the dialog regenerates the open set.

> **Note** Imperial drawings are usually third angle, and metric drawings first angle. The project region sets the default (see "Region and standard").

Revisions

Drawings › Revisions... keeps the revision history shown above every title block.

- The columns are **Rev**, **Date**, **Description**, **By**, **Chk** and **App**.
- **Add revision** fills in the next index, today's date and a description: "ISSUED FOR APPROVAL" for the first revision, "REVISED" for later ones. By, Chk and App come from the title-block names.
- Revisions are listed oldest first.
- Drawing standards › Revisions and numbering sets how many revisions are shown and whether the By / Chk / App columns appear.

Drawing standards

Drawings › Drawing standards... controls how every sheet is drawn. A **preset** sets about 150 options at once:

Preset	Based on
ISO / Eurocode	EN 1090, ISO 2553, ISO 3766
UK	BS EN, IStructE, BS 8666
US	AISC, AWS, ACI 315 / CRSI
Thailand	ACI-based, TIS 24

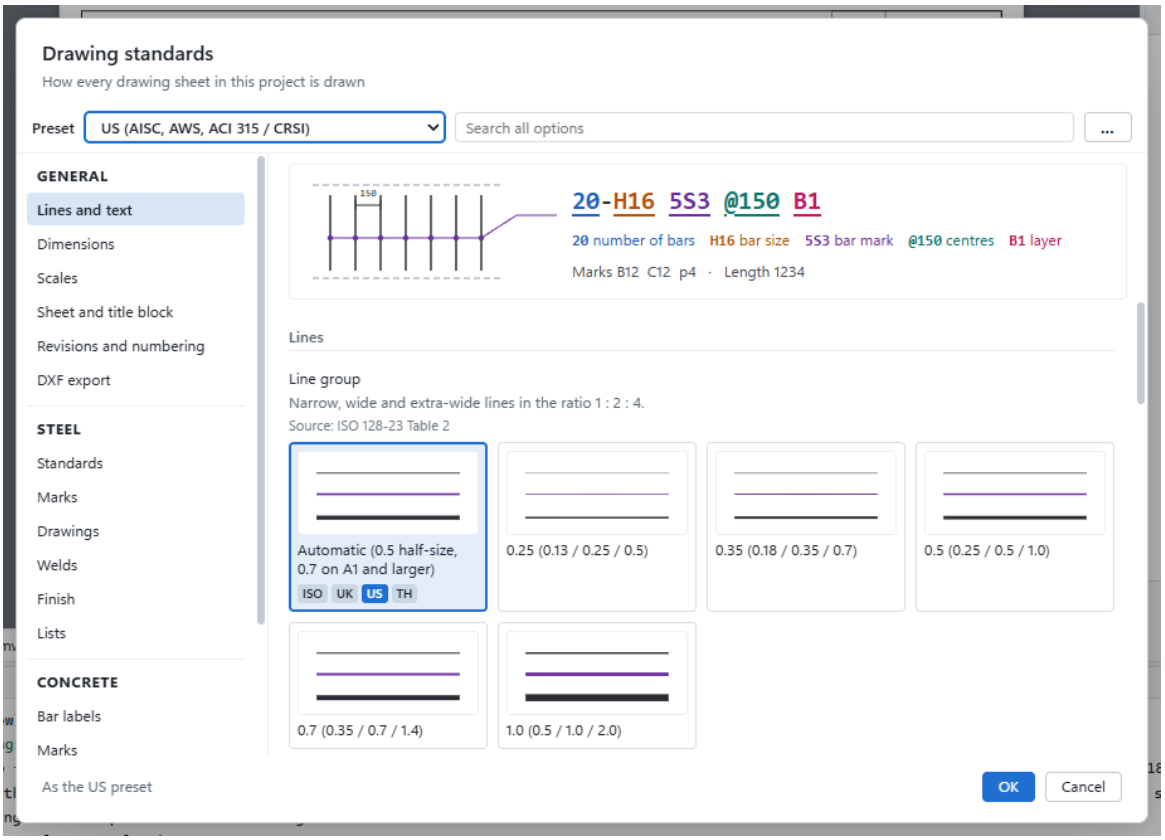


Figure 6. Drawing standards: presets, categories, a live preview of the bar call-up, and picture cards for each choice

Using the dialog

- Pick a category on the left, or search all options with **Search all options**.
- Many options are **picture cards**. Each card shows how the choice looks on a sheet, and tags (ISO, UK, US, TH) show which presets use it.
- The preview at the top shows a slab plan and a bar call-up, coloured part by part.
- An option you change is shown in **bold**, with the preset value and a **Reset** link. The footer counts how many options differ from the preset.
- The **...** menu offers:
  - **Reset all to the preset**;
  - **Export standard...**, which saves your office standard as a file;
  - **Import standard...**, which loads one.

Categories

Category	Main options
Lines and text	Line group (pen widths), wide or narrow outlines, hidden lines, bar line weight, black or colour by role, text height, letter case
Dimensions	End marks (oblique strokes, arrows, dots), text direction, decimal mark, imperial precision and format
Scales	Scale bar, preferred scales, scale range per view kind (for example connection details 1:5–20, erection plans 1:50–200)
Sheet and title block	Layout (Compact or ISO 7200), logo, extra rows, margins, grid reference zones, projection symbol, "Do not scale", approval stamp, protection notice
Revisions and numbering	Revision index (letters, numbers, P1…C1), revisions shown, drawing number prefix, digits, prefix per kind
DXF export	Layer names (by line weight, by role, ISO 13567, US National CAD Standard), DXF version (R2000 or R12)
Steel: Standards	Steel standards, execution class, bolt tightening, slip class, extra field bolts, holes, AESS, grout, levelling, extra notes
Steel: Marks	Assembly and part prefixes, case, numbering, opposite hands
Steel: Drawings	Running or chain dimensions, NS / FS marks, hole call-outs, grade on parts, column faces, slopes
Steel: Welds	Weld symbol standard (AWS A2.4, ISO 2553 A or B), fillet size, tail, CJP welds, inspection symbols, field welds, quality level
Steel: Finish	Surface preparation, coating, dry film thickness, corrosivity category
Steel: Lists	Net or gross weights, bill of materials columns
Concrete: Bar labels	Call-up template (for example `20H16-03-150 B1` or `12-#5 5S3 @300 T1`), bar size notation, centres, layer codes
Concrete: Marks	Mark style, straight bars marked, numbering per member or through the job
Concrete: Graphics	How sets of bars are drawn on plans, far-face bars, bar-end strokes, cover dimensions
Concrete: Views and scales	Separate or combined slab plans, which members are drawn one by one, fitted or fixed scales
Concrete: Schedule	BS 8666 or ACI / CRSI bar list, mass column, cut-length method and rounding, stock length
Concrete: Notes	First link position, anchorage and lap table, layer notation sketch, extra notes

Click **OK** to apply the changes. An open set is regenerated.

Region and standard

The project region (Part 1) picks the default preset, sheet and projection:

Region	Preset	Sheet	Projection
United States, Canada	US	ANSI B	Third angle
Korea	ISO	ISO A3	Third angle
Philippines	US	ISO A3	Third angle
Australia	UK	ISO A3	Third angle

Region	Preset	Sheet	Projection
Europe, India, China	ISO	ISO A3	First angle

The units follow the project, so US units give imperial drawings. Your changes to sheet, units, projection and standard are remembered for each region. The title-block names are shared by all projects. The Thailand preset has no region of its own; choose it in Drawing standards.

Connection drawings

You can draw one connection on its own, without making the whole set:

- Select a connection and choose **Drawings › Connection drawing**.
- Or right-click a connection and choose **Connection drawing**.
- Or click **Drawing** in the connection editor.

The drawing shows views, dimensions, bolts, welds and the connection's parts.

Export and print

Output	Command	Result
PDF	Drawings › Export › **Save set as PDF…**, or Export ▾ › PDF	One page per sheet at its own paper size; the whole set or one drawing
Print	Export ▾ › **Print this drawing**	The system print dialog
DXF	**Save set as DXF…**	One DXF file per sheet, in a ZIP; AutoCAD R2000 by default, or R12 (see DXF export in Drawing standards)
NC1	**Save NC1 files…**	DSTV NC1 files per part, plate DXF outlines and the bill of materials, in a ZIP
BVBS	**Save bending data (BVBS)…**	Bar bending data for bending machines (.abs)
CSV	**Save lists (CSV)…**	Bill of materials and bar bending schedule, in a ZIP

Default file names start with the project name, for example "Project - drawings.pdf". In the desktop app, a bar appears after each save with **Open folder** and **Open file**.

> **Note** In the browser version, PDF output goes through the print dialog: choose "Save as PDF" as the printer. Shop drawing sheets are not exported to Word.

Drawings in the design tabs

The concrete beam, column, slab and steel member tabs (Part 3) draw their own 2D elevations, sections and plans. Use their **Print**, **PDF** and **Word** buttons to print a member's drawings together with its checks. Footing calculation reports include a Drawings section with the plan and section.