ProStructures

Onboarding Guide

Bentley 7/15/21 Version 1

Table of Contents

Contents

1. About ProStructures

ProStructures allows structural engineers, designers, detailers, and fabricators to efficiently create accurate 3D models for structural steel and reinforced concrete structures. ProStructures provides fast creation of design drawings, fabrication details, and schedules, with automatic updates whenever the 3D model is changed.

ProStructures is a structural design application that enables BIM workflows to provide information-rich models for the design, analysis, and documentation of structures.

ProStructures immerses you in a 3D modeling environment and provides site content by referencing reality models. The application shares a catalog of design components across the project team. Built-in clash detection allows engineers to coordinate structural systems.

The federated data approach to modeling and drawing management allows users to work on any size models simultaneously across distributed geographies. Using ProStructures you can:

1.1 ProStructures

Efficiently create accurate 3D models for structural steel, metal work, and reinforced concrete structures. ProStructures lets you create design drawings, fabrication details, and schedules that automatically update whenever you change the 3D model. Complete projects quicker thanks to customizable user standards and the open working environment.

Comprehensive software built by experienced design engineers, **ProStructures**, which includes ProSteel and ProConcrete, can help to increase your productivity and profitability.

- Start designing in 3D to explore ideas with 3D modeling
- Design in context with referenced reality models and point clouds
- Perform in-product clash detection
- Apply company and project standards to models and drawings
- Exchange data in common formats (i.e. IFC, ISM, RealDWG™,)
- Incorporate project documents, media, web links, and more with hypermodeling
- Easily manage data with bidirectional editing in Microsoft Excel
- Share project information with iModels
- Enforce production standards within a ProjectWise managed environment
- Accelerate skillset with access to personalized learning
- Automate coordinated drawings by controlling drafting styles and annotations

Industry Leading Structural Steel Modeling

- More than 300 national and international shape tables and any number of user definable shapes.
- Workshop drawings views, erection drawings, parts lists or NC-data can be created from the model at any time.
- Interfaces to ERP-Systems, the machine control and workshop preparation can be optimized
- Standard parametric connections are included and easily modified. Some of the connections included are: End plate, Base plate, Web angle, Shear plate, Splice joint, Haunch, Stiffener, Purlin connection.
- Element modification tools such as drill holes, bolt, notch, polycut, diagonal cut …
- Structural parametric objects for quick modeling, including staircase towers, handrails, ladders, bracing, portal frames, wall claddings, purlin systems, truss/lattice girders, platforms round and rectangular, walkways.
- Templates and Styles – Recorded settings for sharing and maintaining standards in all the dialog boxes.

World-class Steel Fabrication Drawings

- Quickly extract 2D drawings and automatically update the drawings when the 3D model is changed
- Detail output to CNC machines automates the steel fabrication process
- Output in many file formats such as IFC, ISM, 3D PDF, etc.
- Generate parts lists in single or batch process
- Customize drawing output based on user-defined detail styles and preferences

Interoperability

- Provides integrated tools, minimizes duplication between various software platforms and easily investigate alternative designs.
- Easily exchange information with other disciplines and to allow work in multiple environments.
- Integrated with Bentley and third party software: STAAD, RAM, SDNF 2/SDNF 3, CIS/2 (CIMSTEEL) SCIA ESA-PT, Dlubal RSTAB , KISS , PXF, DSTV-NC, DSTV-PPS , Product interface, Steel (DSTV), AutoPIPE

Integrate Modeling and Documentation Workflows

- Integrates with ProjectWise managed workspace.
- Share personal files including i-models and 3D PDFs directly from your desktop
- Review project details and status, and gain visibility into project performance
- Access personalized learning, communities, and project information
- Coordinate work and share information with real-time project visibility
-

1.2 ProSteel:

- Industry leading Structural Steel Modeling.
- Advanced Miscellaneous Steel Detailing and Connections.
- World-class Steel Fabrication Drawings.
- Ability to Deal with Changes efficiently and Effectively.
- Seamless Interoperability – downstream use of data.

- Design structural steel connections

  Design and detail structural steel connections, including beam-to-beam, beam-to-column, brace end, and complex multi-member connections. Simplify the arrangement of plates, stiffeners, bolts, and welds with a comprehensive library of standard connection types. Easily compare the economy and practicality of connection scenarios.

- Design to international standards

  Extend the reach of your business practice and take advantage of global design opportunities by using a wide range of international standards and specifications in our design products. Complete your designs with confidence thanks to extensive support of international standards.

- Model structural steel

  Model structural steel shapes such as beams, columns, and braces, based on country-specific steel tables or user-defined shapes. Complete your steel design by modeling steel connections, either standard or custom, and automatically adjust based on the connecting members. Model comprehensive steel plate-work, including gusset plates and chute work.

- Produce steel fabrication drawings

  Produce drawings for every steel shape, connection, and plate-work from the 3D model. Easily create comprehensive single-part drawings including dimensions, notes, labels, and part lists. Customize drawings to adhere to your company's standards for all your structural steel projects. Any out-of-date drawings are automatically updated based on changes to the 3D model.

- Produce structural construction documentation

  Produce construction documentation such as plans, sections, and details, all automatically linked to the 3D model. Changes made to the 3D model are automatically updated in the drawings. Easily manage changes and revisions to the model with automated flags on drawings that need to be reissued.

- Produce structural design documentation

  Generate structural design documents including necessary plans and elevations that are used to convey the design intent. Changes made to the 3D model are automatically updated in the documentation.

- Produce structural details

  Produce detailed 2D drawings directly from design results established in the structural model. Customize the style and format of the drawings using settings offered within the software.

- Share structural models

  Transfer structural model geometry and design results from one application to another and synchronize changes over time. Quickly share the structural model, drawings, and information with the entire team for review.

- Track and rollback structural design changes

  Manage design changes made to the 3D model, tracking revisions with optional descriptions and timestamps. At any time during the project, selected changes can be rolled back or undone. Explore multiple design scenarios, as well as recover quickly from modeling errors.

- Utilize international section profiles

  Complete your structural model using a vast array of international section profile databases, which are included at no extra charge. Take advantage of global design opportunities around the world.

1.3 ProConcrete

- 3D parametric concrete and rebar modeling
- Drawing creation and sheet composition
- Customized bar bending schedules and quantity reports
- Drawing labeling, dimensioning, notes, cleanup
- Exporting to 3D PDF, ISM/IFC, iModels

- Design reinforced concrete to international design standards

  Extend the reach of your business practice and take advantage of global design opportunities by using a wide range of international standards and specifications in our design products. Complete your designs with confidence thanks to extensive support of international standards.

- Detail and schedule concrete reinforcing

  Produce rebar placing drawings, including sections, plans, details, bar bending schedules, material take-offs and beam/column/footing schedules, all based on the 3D model. All schedules and drawings can be customized to adhere to your company's standards for concrete projects.

- Model reinforced concrete structures

  Model structural members such as beams, columns, slabs, walls, foundations, and rebar. Create complex reinforced concrete shapes, including curves, sloping, or non-orthogonal shapes using intuitive commands. Add steel reinforcing to concrete objects that update automatically as the concrete shape changes.

- Produce reinforced concrete documentation

  Produce structural concrete drawings including sections, plans, and details that are all automatically linked to the 3D model. Quickly create details of reinforcing, including automated rebar labels, dimensions, and notes. Customize all drawings to adhere to your company's standards for all your reinforced concrete projects. Update user-defined bar marking, bar schedules, and drawings automatically as the 3D model changes.

- Share reinforced concrete models

  Transfer structural model geometry and design results from one application to another and synchronize changes over time. Quickly share the structural model, drawings, and information with the entire team for review.

1.4 System Requirements for ProStructures

Operating System	Windows 10 (64-bit) Windows 8 and 8.1 (64-bit)
Processor	Intel® or AMD® processor 1.0 GHz or greater. ProStructures is not supported on a CPU that does not support SSE2.
Memory	16 GB minimum 32 GB recommended. More memory almost always improves performance, particularly when working with larger models.
Hard Disk	24 GB free disk space (which includes the 16 GB install footprint for a complete installation), 10-25 GB depending on additional installations such as Companion Features and Companion Products.
Screen Resolution	1024 x 768 or higher

2. Structural Products Offering

Upon completion, resource should be able to:

- Have a working knowledge of the Structural products offerings and capabilities.
- Understand the Structural products licensing options.

2.1 Structural Products Offering

SL	Topic
1	Bentley Structural detailing products (Bentley webpage)
2	Product Licensing (Bentley webpage)
3	Bentley Communities-ProStructures

3. MicroStation for Structural Designers (optional)

Upon completion, resource should be able to:

- Have a working knowledge of the basic MicroStation functionality and how it applies to Structural products.

3.1 Introduction to MicroStation CONNECT Edition

SL	Topic	Description	Link
1	Introduction to MicroStation CONNECT Edition Course Introduction	In this video, you will learn about the Introduction to MicroStation CONNECT Edition course	Click Here
2	Welcome to MicroStation	In this video you will learn how to access the Welcome Page, interact with a WorkSpace and WorkSet, open and "brand" MicroStation design file to the active WorkSet and navigate the MicroStation CONNECT user interface.	Click Here
3	The MicroStation CONNECT Edition User Interface	Continuing with our introduction to MicroStation, we find ourselves in need of becoming familiar with the basic layout, tool locations, and functionality found in the MicroStation CONNECT Edition. This video covers that information.	Click Here
4	MicroStation for Structural Designers	This Learning Path contains courses to teach you how to create Structures in accordance with standards using PowerDraft/MicroStation CONNECT Edition.	Click Here
	MicroStation CONNECT Edition Basics for Structural Designers	This learning path contains exercises intended to help a new MicroStation user become familiar with the MicroStation CONNECT Edition. This will be done from the point of view of a Structural designer or drafter working at a design firm, that is new to MicroStation, and has been awarded a design project that they will be involved with.	Click Here
5	3D Modeling in MicroStation CONNECT Edition	This learning path covers the concepts and capabilities of MicroStation CONNECT Edition for modeling of Curves, Surfaces, Solids and Meshes in a 3D design file. It also teaches the basic tools for ease of viewing and navigating in the 3D space. Logical extensions or applications like parametric modeling or animation are touched upon too with examples. Hands on exercises are provided to reinforce the learning.	Click Here
6	Creating Visualizations with Bentley LumenRT in a Structural Project	In this Learning Path, you will learn how to create real-time visualizations with Bentley LumenRT in a Structural Project.	Click Here
	Deliverables – Sheet Creation and Annotation in MicroStation CONNECT Edition	This Learning Path contains courses that help you create the deliverables from your MicroStation design files, such as sheets and annotated drawings.	Click Here
	Producing Deliverables in MicroStation CONNECT Edition within a Structural Project	Want to optimize your designs and organize your projects? Capitalize on the powerful capabilities found in MicroStation CONNECT that will enhance and streamline the process of producing deliverables for your Structural Project -- from design composition to sheet composition. Discover how to browse file contents and index DGN files for quick discovery of data and related information using Explorer. Learn how to batch print your plan set, be it small or large, utilizing MicroStation's Integrated Print Organizer which can reliably produce consistent, intelligent deliverables for your project.	Click Here

4. ProStructures

Upon completion, resource should be able to:

- Have a working knowledge of the basic ProStructures functionality and how it applies to Structural products.
- How to model basic Structural elements such as beams, columns, structural elements and connections.
- Also, user should able to produce plan, section, elevation and fabrication drawings.

4.1 ProStructures Modeling (metric)

SL	Topic	Description	
1	**ProSteel** (ProStructures CONNECT Edition) 3D Modeling	This Learning Path contains courses that will get you started in modeling in ProStructures. Having a good grasp of MicroStation fundamentals is a plus, but is not required	Click Here

4.2 ProStructures Modeling (imperial)

SL	Topic	Description	
1	**ProSteel** (ProStructures CONNECT Edition) 3D Modeling	This Learning Path contains courses that will get you started in modeling in ProStructures. Having a good grasp of MicroStation fundamentals is a plus, but is not required	Click Here
2	**ProConcrete** (ProStructures CONNECT Edition) 3D Modeling	This Learning Path contains courses that will get you started in modeling in ProConcrete. Having a good grasp of MicroStation fundamentals is a plus, but is not required.	Click Here

4.3 ProStructures Detailing (Metric)

SN	Topic	Description	Link
1	ProSteel (ProStructures CONNECT Edition) 2D- General Arrangements Drawings (Metric)	This Learning Path contains courses that will allow you to extract 2D plans and elevations and Material Take-offs with ProSteel. The Modeling class is a pre-requisite, and a good grasp of MicroStation fundamentals is a plus but is not required.	Click Here
2	ProSteel(ProStructures CONNECT Edition)2D Fundamental-Fabrication Drawings-(Metric)	This Learning Path contains courses that will allow you to extract 2D fabrication/shop drawings with ProSteel. The Modeling and General Arrangement classes are a prerequisite, and a good grasp of MicroStation fundamentals is a plus but is not required..	Click Here

4.4 ProStructures Detailing (Imperial)

3	ProSteel (ProStructures CONNECT Edition) 2D- General Arrangements Drawings (imperial)	This Learning Path contains courses that will allow you to extract 2D plans and elevations and Material Take-offs with ProSteel. The Modeling class is a pre-requisite, and a good grasp of MicroStation fundamentals is a plus but is not required.	Click Here
4	ProSteel(ProStructures CONNECT Edition)2D Fundamental-Fabrication Drawings-(Imperial)	This Learning Path contains courses that will allow you to extract 2D fabrication/shop drawings with ProSteel. The Modeling and General Arrangement classes are a prerequisite, and a good grasp of MicroStation fundamentals is a plus but is not required..	Click Here

5. Online Resources for ProStructures

SL	Resource Detail	Description	Link
1	File a new Service request	Use this link to create a new Service Request regarding product issues, problems & any questions. Note: Bentley user login and password required.	Click Here
2	Product Downloads	Use this link to download latest builds Note: Bentley user login and password required.	Click Here
3	ProStructures YouTube Channel	Various channels on Youtube.com for various workflows & steps by step videos. Please subscribe to these channels to get new workflows & videos	Bentley Structural Bentley Institute
4	Bentley Communities & Forums	This is the place to access the information and expert's advice on different topics for Structural products. You can also post your issue or query related to modelling and design of Structures.	Click Here
5	Guide for License Activation	How to activate products under Subscription Entitlement Service	Click Here
6	User Projects Example	Project examples using ProStructures	Click Here
7	Onboarding Wiki Page ProStructures	Wikipage for Onboarders	Click here