Version by Version Enhancements to TurboCAD Pro and Pro Platinum

Feature	Description	Pro 18	Platinum 18	Pro 19	Platinum 19	Pro 20	Platinum 20	Pro 21	Platinum 21	Pro 2015	Platinum 2015
Drafting/Detailing, Usability :											
Draw by Layer PLUS	A new setting, "Apply general property changes to all tool presets" allows you to draw By Layer and more. When changes are made to the properties (Layer, Pen and Brush) of a selected tool, those changes are made to all tools. The result is a more AutoCAD® like workflow.			●	●	●	●	●	●	●	●
Drawing Compare	Instantly identify the difference between two CAD drawings, raster images, or PDF files.			●	●	●	●	●	●	●	●
Dual Interface Options	Easily switch between a traditional TurboCAD UI and the TurboCAD LTE UI, an AutoCAD work-a-like mode that includes dynamic input and a command line					●	●	●	●	●	●
Entity Marks	Create custom marks to track, or count objects, and add information using Property Sets and Multi-blocks. • Property Set Definitions – Create custom information for objects, and derive custom information from object geometry.• Multi-View Blocks – Define composites of blocks that can vary their appearance depending upon viewpoint.						●		●		●
Block/Group Editing	While in block/group edit mode, snap to objects outside the block or group.										●
ePack File Packaging	Collect all associated files, SHX fonts, and Xrefs into a common folder for easy distribution.				●		●		●		●
Export Coordinate Data	Derive point data from the geometry in models and drawings and export the data in a standard CSV format.						●		●		●
Hatch Pattern Creator	Plug-in for quickly creating repeating patterns now a part of the application			●	●	●	●	●	●	●	●
Sorted Layers in Drop Down Lists	The Layers in the drop down and simple lists are sorted as per the Design Director. If you change the control view order in Design Director the same ordering will be in all other Layer controls.									●	●
Page Layout Wizard	This utility allows you to rapidly create 2D layouts from you existing 3D model/s. Two mode are provided to facilitate optimum results for either Architectual or Mechanical models. Layout preferences can be saved and used for later models.			●	●	●	●	●	●	●	●
PDF Underlay	Ability to import (raster)PDF and use it as a tracing layer with snaps	●	●	●	●	●	●	●	●	●	●
Print Window	Effortlessly create printouts by specifying any desired area of a drawing					●	●	●	●	●	●

Version by Version Enhancements to TurboCAD Pro and Pro Platinum

Feature	Description	Pro	Platinum	Pro	Platinum	Pro	Platinum	Pro	Platinum	Pro	Platinum
Protractor	Place a virtual protractor on your drawing to more easily create construction lines in 2D and 3D.					●	●	●	●	●	●
Purge	Tool to remove unused objects from Model Space and Paper Space	●	●	●	●	●	●	●	●	●	●
Super Selector Modes	• Window Polygon mode - objects completely inside closed polygon will be selected • Crossing Polygon mode - objects crossed by or within a closed polygon will be selected. • Fence mode - objects crossed by an open polygon (fence) will be selected. • Rectangular mode – the standard bi-directional rectangle selector.					●	●	●	●	●	●
Conceptual Selector	Manipulate and modify 3D objects like never before. The totally flexible design of the Conceptual Selector allows users to customize any visual and editing parameters available in the application (eg. Move, scale, or rotate).									●	●
Stellated Polygon	Create star-shaped polygon objects in two clicks, and quickly adjust a variety of properties.					●	●	●	●	●	●
Associative Viewport Dimensions	Add dimensions to an object through a viewport in paperspace and the dimensions will update if the model changes.			●	●	●	●	●	●	●	●
Rotate View with Viewport	Synchronize the rotation of viewports and views while retaining the possibility of discreet rotation.							●	●	●	●
Patterns from Compound Profiles	Use the 2D elements of patterns for 3D object creation via Compound Profiles						●		●		●
Hole Operations	Pattern points defined by 2D patterns can be used for 3D hole operations.						●		●		●
Drafting Object Reference Point	Manually redefine the reference points of drafting objects so you can adapt to changes in the model.					●	●	●	●	●	●
Dimension Function	Linear and angular dimension tools allow users to specify a fixed length for line extensions and the value for that length.					●	●	●	●	●	●
Custom Text Formatting for Dimensioning	Includes bolding, superscript, subscript, italics, support for multiple font scales, and multi-line.							●	●	●	●
Dimension Text	Added to v21 - Edit dimension text from inside the dimension tool using the local menu, for added flexibility and improved productivity. Added in 2015 - Dimension Text can be set to Non-rotatable. With this property selected, dimension text will always face the user no matter the orientation of the drawing.							○	○	●	●
Area Units	Specify Area Units discretely from Linear Units. Example - Measure area in feet and distance in inches. (Metric also)							●	●	●	●

Version by Version Enhancements to TurboCAD Pro and Pro Platinum

Feature	Description	Pro	Platinum	Pro	Platinum	Pro	Platinum	Pro	Platinum	Pro	Platinum
Delta Distance and Delta Move Angle(s)	Move a selected object simply by specifying distance and a direction.							●	●	●	●
Nudge	Nudge function offers more efficient pick-up and placement of selected object(s) using the numbers pad.									●	●
Auto-Shapes	Quickly sketch out standard shapes (arc, line, box, etc.) and TurboCAD will automatically create the precision shape.							●	●	●	●
Arrow Tools	Rapidly draw arc, curve, line, and polyline arrows. Specify the head and tail or create your own.							●	●	●	●
Dimensional Updating for Drafting Objects	Improved associative interactivity between Drafting Objects and Dimensions, with or without viewports.							●	●	●	●
"Keep Center of Extents" selector mode option	Scales around the center point of an object making changes symmetric.							●	●	●	●
Contact Manger & File Sharing	Users now have the ability to create and maintain contact lists and send files to individuals or groups from within TurboCAD.									●	●
Format Painter Tool	Use the Format Painter to transfer Custom Properties and Property Set Definitions (PSD) from one object to another. This huge productivity improvement is also a crucial feature for extending BIM/IFC models.									●	●
Trim Tools	Ability to trim hatched or closed objects and maintain the hatch or closure.									●	●
Dimension Units Format 'By Drawing'	Globally define dimension units at the drawing level.									●	●
Join Polylne Tool	Join Polyline Tool works on Beziers and splines without converting them to a polyline, so that their original curve status is maintained.									●	●
3D Modeling											
3D ACIS® modeler	Updated ACIS engine and interoperability filters (STEP and IGES) enhancing several solid modeling features based on this engine.	R20	R20	R22	R22	R23	R23	R24	R24	R24	R24
3D Fillet	Tool for filleting 3D polylines	●	●	●	●	●	●	●	●	●	●
Wire Wrapping	Wrap a wire around a 3D solid for use as an extrusion or sweep path.									●	●

Version by Version Enhancements to TurboCAD Pro and Pro Platinum

Feature	Description	Pro	Platinum	Pro	Platinum	Pro	Platinum	Pro	Platinum	Pro	Platinum
Quick Pull Tool	Select any enclosed geometry on a 3D face and press it into or pull it out of the design. Specify draft angle and add a chamfer or fillet. Works with solids or surfaces. Added to v21 - Options to dynamically modify fillets, bends, and/or cylindrical radii. 2015 version added multiple selection, so you can manipulate several co-planar faces simultaneously. Also thicken ACIS surfaces and dynamically switch between Quick Pull and Imprint modes.	◉	◉	◉	◉	◉	◉	◉	◉	●	●
Smooth Surface Meshes, Design and Editing tools	Use existing 3D modeling tools like Box and Sphere to create a smooth surface mesh (SMESH). Users can set values to specify the tessellation, or resolution, of the resulting SMESH. This form of 3D object creation allows for easier and more rapid creation of organic shapes. v19 included editing tools to control smoothness, move the edges and faces, create a crease, merge, evenly split, or refine a face. v20 added the ability to split a face more precisely and extrude a face along a path. Added in 2015 a set of tools for editing a SMESH as symmetrical model.					○	◉		◉		●
ACIS Faceting Algorithm	New algorithm gives more adequate results and adds options to the ACIS faceter properties.							●	●	●	●
Faceter Properties	Control the facet resolution of the display for improved productivity.							●	●	●	●
Slice Any Solid with a (ACIS) Surface	Any flat or curved plane in space can be used to bisect a solid.							●	●	●	●
Drafting Object Break	Use a conventional break to abbreviate the display of long drafting objects. TurboCAD 2015 supports multiple breaks per drafting object.									○	●
Selector Option for 3D Booleans	Use one of the new super selector modes (Rectangular, Window Polygon, Crossing Polygon or Fence) to easily select multiple objects for 3D Boolean operations (3D add, 3D Subtract, and 3D Slice).					●	●	●	●	●	●
Edit Tool option "Node Filter"	Select a subset of nodes on objects with a large number of nodes to optimize performance & ease of use.							●	●	●	●
Edit Tool option "Workplane by 3D object"	On/off 'Workplane by 3D object' option was added to the Edit Tool.							●	●	●	●

Version by Version Enhancements to TurboCAD Pro and Pro Platinum

Feature	Description	Pro	Platinum	Pro	Platinum	Pro	Platinum	Pro	Platinum	Pro	Platinum
Architectural											
Simple BIM via IFC Support	Added to v21 - Export data to the Industry Foundation Classes (IFC) format, the industry standard for BIM information. In addition to custom data, geometry for walls, doors, windows, slabs, and roofs can be exported. Import added with 2015.									○	●
PPM Objects as Doors and Windows	We've extended parametric scripting such that the resultant objects can be used as doors and windows.							●	●	●	●
Walls	Standard modify tools (trim, split, meet 2 lines, etc.) work with walls.			●	●	●	●	●	●	●	●
Roof Angles	TurboCAD makes it easy to control the rise/run and/or degrees of a roof angle.									◉	●
Advanced Roof Tools	Roof Tools Added: (1) Slab Roof Object Types made available. With one slab, you can quickly create a flat roof, or use in conjunction withroof angles, mitering, and edge cut tools to join several slabs together and create nearly any roof style. (2) Mitering of Roof Slabs - Select two or more roof slabs and have them "meet" automatically. (3) A new "Edge cut" roof property for roof slabs allows users to select different methods of roof building, either plumb or square. (4) Improved Roof Modifier to quickly create holes in roofs for chimney's, skylights, etc. and trim edges of roofs.										●
Geo-location of Drawings, Compass Rose	Add latitude, longitude information; north-pointing compass			●	●	●	●	●	●	●	●
House Wizard	Time-saving tool used to create a preliminary room-by-room design of a home.	●	●	●	●	●	●	●	●	●	●
Mechanical:											
Gear Contour	Quickly create and align gear shaped objects. Adjustment properties include teeth number, diameter pitch, pressure angle, angle of rotation, hole diameter, and thickness (when working with ACIS 3D gear objects).					●	●	●	●	●	●
Associative Arrays / Pattern Tools	Apply patterns to spheres, cylinders, radial patterns, 3D arrays, or along a curve. First introduced with v17 to very simply apply repeating geometries on ACIS objects. Version 20 added support for surface objects, 2D objects, 2D objects, and blocks. Patterns are parametric and can interact with entities through Boolean operations.		◉		◉		●		●		●
Extract Surface from Faces	When using the ACIS tool 'Create Surface from Faces' users can now retain the source object.									●	●

Version by Version Enhancements to TurboCAD Pro and Pro Platinum

Feature	Description	Pro	Platinum	Pro	Platinum	Pro	Platinum	Pro	Platinum	Pro	Platinum
Create Surface from Solid	When using the 'Create Surface from Solids' tool, users can now retain the source object.									●	●
Unbend Tool for Sheet Metal Bodies	Works on objects with a bend or flange added to them. Added in 2015 - ability to request to see the bend lines from the Unbend Sheet Tool.		◉		◉		◉		◉		●
Unfold Tool	Works on ACIS solid and surface objects.		●		●		●		●		●
Rendering/Visualization											
Redsdk Photorealistic Rendering	Added to v19 - Second renderer with some material support and new material editor. Improved in v21 - Full support of Redsdk Environment, Luminances, Render Styles, and HDRI, plus new ability to configure the number of threads for Redsdk raytrace rendering. 2015 - Redsdk updated to the 3.5.0.2 Engine and new Bump Displacement Shader in the RedSDK materials.			○	○	○	○	◉	◉	●	●
Render Manager	A universal tool to manage and edit photorealistic elements for both Redsdk and Lightworks.							●	●	●	●
UV Mapping	Added to v20 - Create more realistic and varied materials for rendering. Use UV mapping to project a 2D image onto a 3D object, where "U" and "V" are the names of the axes of plane. Example: If mapping the earth, increase "U" to move along a line of latitude. increase "V" to move along a longitude line. Improved in v21 - Create segments by edges and proprtional editing.							◉	●	●	●
Unwrapping	A 'least squares conformal maps' algorithm finds the optimum way to take a 3D surface and flatten it with the minimum distortion. For example, take the skin off of an apple without breaking it.									●	●
Material Wizard	Automatically create a new material based on an inserted image. This includes bump maps, image maps, transparency maps and reflection maps.									●	●
Geo-Located Sun	Universal Sun Light calculations and rendering based on: (1) user geo-location, date, and time; (2) longitude, latitude and custom GMT; or (3) angle and azimuth							●	●	●	●
Dynamic Cutaway Plane	Cut away plane, for looking inside a 3D model, works in draft mode, in mixed draft and wireframe, and in mixed draft and hidden line modes.										●
Image Visual Effects	For any image that has been added to a TurboCAD drawing, you can control the brightness, contrast, saturation, and transparency.									●	●

Version by Version Enhancements to TurboCAD Pro and Pro Platinum

Feature	Description	Pro	Platinum	Pro	Platinum	Pro	Platinum	Pro	Platinum	Pro	Platinum
Interoperability, Programmability:											
3D Printing	Automatically exports /STL file to Axon software to convert to format compatible with BfB printers			●	●	●	●	●	●	●	●
COLLADA (.DAE) Import/Export	COLLADA file format works well with SketchUp™, Google Earth, andother platforms. Improved with v20, file import added and greater export accuracy and performance.	◉	◉	◉	◉	●	●	●	●	●	●
Microstation (.DGN) Filter	Updated in v19 - The DGN file filter for working with MicroStation has been completely re-written to open and save DGN files through v8.			●	●	●	●	●	●	●	●
.DWG/.DXF	Improved in v16 - Support Xrefs. Added to v17 - Index color support. Define line weight for import. Import Multi-Leader objects and styles. Support Layer Filters. Added in 2015 - the latest Teigha engine for the conversion of .dwg and .dxf files to/from different versions. Dynamic blocks are imported as simple blocks.	◉	◉	◉	◉	◉	◉	◉	◉	◉	●
Network License Support	Registration/activation license keys which control number of authorized users	◉		◉		◉		◉		◉	
Ruby Language Support	Ruby scripting with .NET support	◉	◉	●	●	●	●	●	●	●	●
.SKP (SketchUp)	Added to v16 - Export added while .SKP import (v5, v6, v7) creates a paper space with a viewport set to proper visibility for each scene. Added to v17 - Improved export filter. Added to v21 - Update of both Read and Write filter based on the new SU2013 APIs. Added in 2015 - Import/export of SketchUp 2015 files	○	○	○	○	○	○	◉	◉	●	●
Software Developers' Kit (SDK)	New example code, additional function, updated documentation, and object definitions. Added to v18 - new samples and .NET support.	●	●	●	●	●	●	●	●	●	●
3D PDF / U3D Export	Export 3D models to 3D PDF or .U3D which can be embedded in 3D PDF files. The 3D object can then be interactively visualized by Acrobat Reader (since version 7).					●	●	●	●	●	●

Version by Version Enhancements to TurboCAD Pro and Pro Platinum

Feature	Description	Pro	Platinum	Pro	Platinum	Pro	Platinum	Pro	Platinum	Pro	Platinum
Performance, UI											
64-Bit Support	Load, process, and render much larger CAD files			●	●	●	●	●	●	●	●
Bi-Directional Selector	Left and Right Drag selection of objects with mouse, comparable to AutoCAD and TurboCAD LTE. Left drag selects all objects contained completely within the (blue-colored) selection fence; while Right drag selects any object partially enclosed within the (green-colored) selection fence.	●	●	●	●	●	●	●	●	●	●
Multi-Threading Support	ACIS operations that include two and more objects (i.e.e Boolean operations, face to face lofting, extrude to face, imprint, etc.) now support multi-threading, so these operations execute much faster now	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉
Drawing Performance	Huge speed improvement in panning, zooming, and rotating objects with addition of Redway engine which takes advantage of GPU-based graphics cards so speed increases in wireframe mode. Added to v18 - Support in hidden line, draft rendering, and wireframe modes. Added to v20 - "Show object while dragging", rapid update, faster undo/redo, and manipulate "heavy" bodies in real-time. Improved in v21 - The selector dragger drawn as a RedSDK object in RedSDK mode. This got rid of the blinking when moving the camera or scrolling.	◉	◉	◉	◉	◉	◉	●	●	●	●
Modern User Interface	Updated program icons and menu colors to a more contemporary look, with option to return to the classic UI. Added in 2015 - Resize dialog boxes as needed for the design environment. Adjust the screen size, resolution, and more. Works with the majority of dialog boxes including general property pages, multiline text, dimensions, program setup, and Drawing options pages.			◉	◉	◉	◉	◉	◉	●	●

LEGEND

Partial Implementation   ○

More work can be done to improve feature   ◉

Full feature implementation   ●