Precasterz

HollowCoreSlab

User Manual

AutoCAD 2021 — 2024 · Release 13

Precast hollow-core slab automation for civil and structural engineers

GROUP SPECIALIST ENGINEERS

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QUICK START — YOUR FIRST LAYOUT

This page is the fastest path from zero to a placed layout. Five steps. Subsequent chapters expand each command — come back to those when you need detail.

1 Install the plugin

Drop the HollowCoreSlab.bundle folder into %AppData%\Autodesk\ApplicationPlugins\, then restart AutoCAD. No NETLOAD needed — the bundle auto-loads on every launch.

2 Activate (one time only)

Run HCSFINGERPRINT in the AutoCAD command line. A machine ID is printed and copied to clipboard. Email it for activation. Save the .lic file you receive, then run HCSACTIVATE and pick the file. Activation is offline-validated for life.

3 Create or import your sections

Run HOLLOWCORESLAB. In the dialog, click New to define a section (thickness, standard width, cut bands, length range), or Import to load an existing sections.json. Sections persist across drawings.

4 Place your first layout

In the same dialog, pick a section, set CIS strip ranges (or leave disabled), tick "Show tags now", and click Place Layout. Specify span direction, drag a rectangle, click to commit — the layout appears with pieces, dimensions, and tags.

5 Generate shop drawings + BOQ

Run HCSDETAILSHEET to render an enlarged detail sheet of every unique piece type. Run HCSEXPORTBOQ to export a complete BOQ with area summary as XLSX. Done.

COMMAND MAP — AT A GLANCE

Eight commands cover 95% of daily use. Type any of them at the AutoCAD command line.

HOLLOWCORESLAB	Place a new hollow-core slab layout
HCSEDIT	Edit an existing layout (section, CIS, tags)
HCSOPENING	Add a rectangular or circular opening
HCSCOREFILL	Mark cores filled with reinforcement
HCSGENTAGS	Generate / refresh global element tags
HCSDETAILSHEET	Render enlarged shop drawings (cell-grid)
HCSEXPORTBOQ	Export Bill of Quantities + area summary
HCSACTIVATE	Activate the plugin with your .lic file

HELPER COMMANDS

HCSUI	Open the side palette (alternative to HOLLOWCORESLAB)
HCSFINGERPRINT	Print and copy your machine ID for activation
HCSEDITOPENING	Modify an existing opening on a slab
HCSPIN	Pin pieces so they won't move on rebuild
HCSSWAP	Swap a layout's section for another
HCSDIAG	Print diagnostics about a layout
HCSTAGS	Toggle the HCS-TAGS layer on/off
HCSTOTALQTY	Toggle the TOTAL QUANTITY label layer

03 — COMMAND

HOLLOWCORESLAB — PLACE A LAYOUT

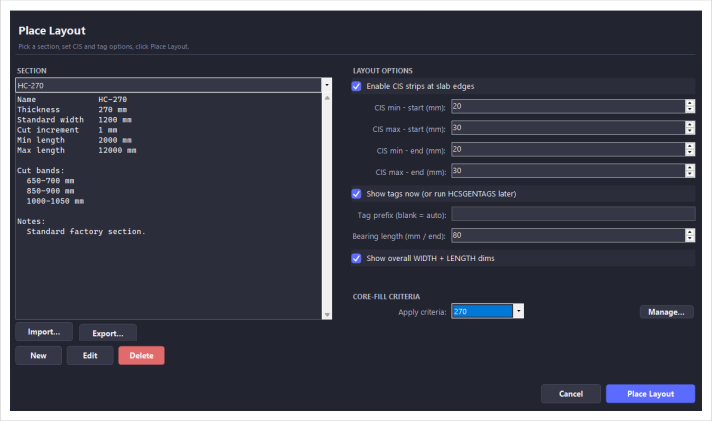
HOLLOWCORESLAB *Type at the AutoCAD command line*

PURPOSE

Open the main Place Layout dialog and start a new precast hollow-core slab layout. This is the entry point for every fresh slab on a drawing. The dialog manages your section library, CIS strip options, tag preferences, and core-fill criteria templates in one screen.

WHEN TO USE

Run this first thing whenever you need to add a new HC slab to a drawing, or when you want to manage sections and criteria without committing a layout (use Cancel afterwards).



RECIPE

1. Type HOLLOWCORESLAB at the AutoCAD command line and press Enter.
2. In the dialog, pick a section from the dropdown (or click New / Import to add one). Set CIS strip ranges, enable element tags, and attach a core-fill criteria template if you have one.
3. Click Place Layout. The dialog closes and AutoCAD prompts: "Specify span direction".
4. Pick the span direction (Bottom-to-Top or Left-to-Right), drag a rectangle to define the resting area, and click to commit. Pieces, dimensions, and tags appear immediately.

TIPS

- The live preview updates as you drag the rectangle — if it turns red, the current rectangle is infeasible for that section + CIS combination.
- Pinning pieces with HCSPIN AFTER placement preserves them across rebuilds (e.g. when grip-resizing the slab).
- For a side-docked palette instead of the modal dialog, use HCSUI.

04 — COMMAND

HCSEDIT — EDIT AN EXISTING LAYOUT

HCSEDIT *Type at the AutoCAD command line*

PURPOSE

Open the Place Layout dialog pre-populated with the selected layout's current settings, so you can change section, CIS ranges, tag visibility, or attach a core-fill criteria template to an already-placed layout. Re-applies in place.

WHEN TO USE

After grip-resizing a layout, when you need to swap sections, when adding tags after the fact, or when applying a new core-fill criteria template to a layout that was placed before you defined that template.

RECIPE

1. Click any piece in the layout you want to edit (a single click selects the whole layout group).
2. Type HCSEDIT and press Enter.
3. Change any options in the dialog — section, CIS, tags, criteria.
4. Click Apply. The layout rebuilds in place; existing tag numbers are preserved where the piece identity is unchanged.

TIPS

- If your edit changes the piece layout (different section or CIS), the plugin warns and clears any manual core-fills — they cannot survive a structural rebuild.
- Manually-grip-shifted opening dimensions are preserved across HCSEDIT.
- Use HCSEDITOPENING for the opening-only equivalent.

HCSOPENING — ADD AN OPENING

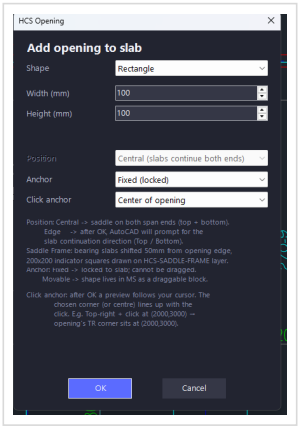
HCSOPENING *Type at the AutoCAD command line*

PURPOSE

Place a rectangular or circular opening on an existing slab layout. Piece edges within the opening footprint are auto-trimmed; aligned dimensions to the piece edges are placed automatically and remain editable via standard AutoCAD grips.

WHEN TO USE

When the slab has a void — stair shaft, mechanical riser, service penetration, or a cut-out for a rooftop unit. Place each opening one at a time; HCSEDITOPENING re-opens the dialog later for modifications.



RECIPE

1. Type HCSOPENING and press Enter.
2. In the dialog, pick Shape (Rectangle or Circle), enter dimensions, set Anchor (Fixed or Movable), and choose which corner of the opening lines up with your click.
3. Click OK. AutoCAD prompts: "Pick opening insertion point".
4. Click on the slab where the opening should sit. The opening renders, dimensions auto-place, and the surrounding piece edges trim to its footprint.

TIPS

- Use Movable anchor when the opening will need fine-tuning after placement; it lives as a draggable block in ModelSpace.
- Aligned dimensions you drag-shift are remembered across rebuilds (HCSEDIT preserves them).
- Edit later with HCSEDITOPENING — pick the opening, change dimensions or shape, the piece trims update automatically.

06 — COMMAND

HCSCOREFILL — MARK FILLED CORES

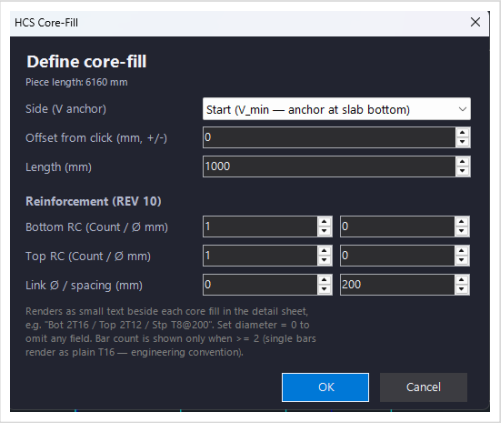
HCSCOREFILL *Type at the AutoCAD command line*

PURPOSE

Define a core-fill on a single piece — concrete poured into specific hollow cores along the piece length, with optional top/bottom rebar and links. Renders as an annotation in the detail sheet next to the piece, e.g. "Bot 2T16 / Top 2T12 / Stp T8@200".

WHEN TO USE

When ad-hoc reinforcement is needed on a specific piece — spot reinforcement at supports, edge piece strengthening, point loads. For factory-wide rules that apply to every cut piece automatically, use a core-fill criteria template attached via HOLLOWCORESLAB or HCSEDIT instead.



RECIPE

1. Type HCSCOREFILL and press Enter. AutoCAD prompts: "Pick a piece".
2. Click the piece on which to add the core-fill.
3. In the dialog, set Side (Start / End anchor), Offset, Length, and rebar (Bottom Count/Diameter, Top Count/Diameter, Link diameter and spacing).
4. Click OK. The core-fill is recorded on the piece and rendered when you run HCSDETAILSHEET.

TIPS

- Bar count is shown only when ≥ 2 (single bars render as plain T16 — engineering convention).
- Set diameter to 0 to omit a field (e.g. zero Top diameter for bottom-only reinforcement).
- Manual core-fills coexist with criteria-template fills and survive HCSEDIT, but a structural rebuild that changes piece widths clears them.

07 — COMMAND

HCSGENTAGS — GLOBAL ELEMENT TAGS

HCSGENTAGS *Type at the AutoCAD command line*

PURPOSE

Generate or refresh element tags across every layout in the drawing using a single global numbering scheme. Tags follow the format <Section>-<LayoutNo>-<Row><Col>, e.g. 270-01-A03. Once locked, the same piece identity in any layout shares the same tag number.

WHEN TO USE

After all layouts are committed and before producing shop drawings or BOQ. Re-run after adding new layouts to extend numbering. Use HCSRESETTAGS to start over from scratch.

RECIPE

1. Make sure every layout in the drawing is committed and edited as you want it.
2. Type HCSGENTAGS and press Enter.
3. Confirm the tag prefix (auto by default) and starting number when prompted.
4. Tags are generated, locked into the drawing's tag identity registry, and rendered on the HCS-TAGS layer.

TIPS

- Tag numbers are sticky: the same piece identity (section + width + length + kind + opening cut) reuses the same number across rebuilds.
- Cut pieces include the actual width as a suffix, e.g. 270-01-A06 (380), to distinguish them from full pieces.
- Use HCSTAGS to toggle tag visibility without erasing the tags themselves.

08 — COMMAND

HCSDETAILSHEET — SHOP DRAWINGS

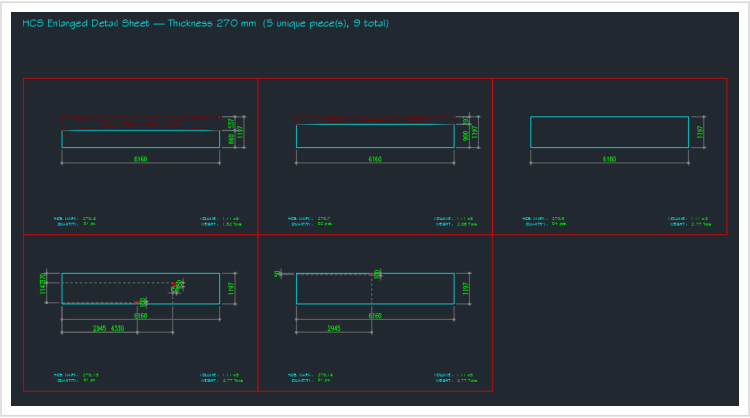
HCSDETAILSHEET *Type at the AutoCAD command line*

PURPOSE

Render an enlarged Detail Sheet with a cell-grid layout: one cell per unique piece type, auto-dimensioned, annotated with HCS Mark, Quantity, Volume, and Weight. Includes core-fill rebar callouts where defined.

WHEN TO USE

When you are ready to produce fabrication drawings. Run after all tags are generated. Re-run after edits — the sheet regenerates from scratch each time, so manually-edited detail-sheet text will be lost on the next rebuild.



RECIPE

1. Type HCSDETAILSHEET and press Enter.
2. Choose scope when prompted: "All layouts in drawing" or pick a selection of layouts.
3. Specify the insertion point for the detail sheet — top-left of the cell grid.
4. The plugin renders one cell per unique piece type, with dimensions, mark, quantity, volume, and weight. The TOTAL QUANTITY line sits on its own toggle layer (HCSTOTALQTY).

TIPS

- Use HCSTOTALQTY to toggle the partial-scope TOTAL QUANTITY line on/off.
- The HCSCFDISPLAY toggle hides core-fill strips on the layouts but keeps them visible in the detail sheet — useful for cleaner GA drawings.
- Detail sheets reuse the same piece data as the BOQ — if quantities don't match, regenerate both.

HCSEXPORTBOQ — BOQ EXPORT

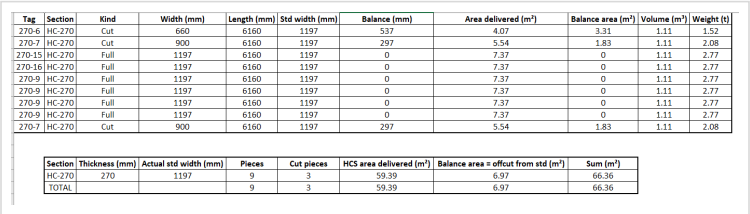
HCSEXPORTBOQ *Type at the AutoCAD command line*

PURPOSE

Export a complete Bill of Quantities to XLSX: one row per piece with Tag, Section, Kind, Width, Length, Std Width, Balance, Area Delivered, Balance Area, Volume, and Weight. A second table summarises by section: pieces, cut pieces, HCS area delivered, balance, and total area.

WHEN TO USE

When you are ready to submit quantities to the contractor or project owner. Run after HCSGENTAGS so every row carries its final tag.



Tag	Section	Kind	Width (mm)	Length (mm)	Std width (mm)	Balance (mm)	Area delivered (m²)	Balance area (m²)	Volume (m³)	Weight (t)
270-6	HC-270	Cut	660	6160	1197	537	4.07	3.31	1.11	1.52
270-7	HC-270	Cut	900	6160	1197	297	5.54	1.83	1.11	2.08
270-15	HC-270	Full	1197	6160	1197	0	7.37	0	1.11	2.77
270-16	HC-270	Full	1197	6160	1197	0	7.37	0	1.11	2.77
270-9	HC-270	Full	1197	6160	1197	0	7.37	0	1.11	2.77
270-9	HC-270	Full	1197	6160	1197	0	7.37	0	1.11	2.77
270-9	HC-270	Full	1197	6160	1197	0	7.37	0	1.11	2.77
270-9	HC-270	Full	1197	6160	1197	0	7.37	0	1.11	2.77
270-7	HC-270	Cut	900	6160	1197	297	5.54	1.83	1.11	2.08

Section	Thickness (mm)	Actual std width (mm)	Pieces	Cut pieces	HCS area delivered (m²)	Balance area = offcut from std (m²)	Sum (m²)
HC-270	270	1197	9	3	59.39	6.97	66.36
TOTAL			9	3	59.39	6.97	66.36

RECIPE

1. Type HCSEXPORTBOQ and press Enter.
2. Choose scope: "All layouts" or a selection.
3. The plugin writes the XLSX to %TEMP% and opens it directly in Excel — no save prompt.
4. In Excel, use File > Save As to store the workbook in your project folder.

TIPS

- Cut pieces show their actual width and a non-zero Balance — this is the offcut from the standard width.
- The bottom-of-sheet TOTAL row sums area, balance, volume, and weight across every piece for that section.
- For multi-section drawings, the section summary appears once per section so the totals are clear.

10 — COMMAND

HCSACTIVATE — LICENSE ACTIVATION

HCSACTIVATE *Type at the AutoCAD command line*

PURPOSE

Install the .lic file you received by email. The plugin verifies the signature, confirms it matches your machine fingerprint, and unlocks all gated commands. Activation is offline-validated — no internet needed once activated.

WHEN TO USE

Once per machine: on first install, after a Windows reinstall, or after a hardware change that invalidates the old fingerprint. License renewal also runs through this flow — replace the .lic file with the new one.

RECIPE

1. Run HCSFINGERPRINT in AutoCAD. Your machine ID is printed and copied to the clipboard. Email it for activation.
2. Save the .lic file you receive by reply somewhere convenient (Desktop is fine).
3. Type HCSACTIVATE in AutoCAD.
4. In the file picker, select the .lic file and click Open. The plugin verifies and confirms: "Activated for <Customer>. Expires <date>." Done.

TIPS

- The license is per-machine — separate machines need separate .lic files.
- Lost your .lic? Email us with your machine ID — we re-send the same file.
- A fingerprint mismatch error means the .lic was issued for a different machine. Run HCSFINGERPRINT, send the new ID, and you will get a fresh .lic.

TIPS & TROUBLESHOOTING

Issues that come up on real projects, with fixes. If your situation is not listed, run HCSDIAG (it prints a summary of the selected layout to the command line) and email the output.

Layout preview shows red

The current rectangle is infeasible for the section + CIS combination. Either widen the rectangle, broaden the CIS range, or pick a section with finer cut bands.

Tags don't render

Either the HCS-TAGS layer is off (run HCSTAGS to toggle), or no tags have been generated yet (run HCSGENTAGS).

Detail sheet quantities don't match BOQ

You edited the layout after exporting one of them. Re-run HCSDETAILSHEET and HCSEXPORTBOQ in the same session.

Opening dimensions drift after grip-resize

Aligned dimensions live in ModelSpace and respect manual shifts; they re-anchor on the next HCSEDIT. Run HCSEDIT once to re-anchor them at their default positions, then drag back to where you want.

Plugin command not recognised after install

Restart AutoCAD. The bundle auto-loads on launch. If it still doesn't load, check that the bundle folder sits directly under %AppData%\Autodesk\ApplicationPlugins\ (one level deep, not nested).

"License signature invalid" on activation

The .lic file is corrupted (often due to email re-encoding). Reply asking for a fresh copy as a zip attachment.

"License is for machine X, but this machine is Y"

The .lic was issued for a different fingerprint. Run HCSFINGERPRINT and email the new ID — we will re-issue.

CONTACT

For licensing, support, customisation, or training requests, reach out via the channels below. Replies typically arrive within one business day.

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