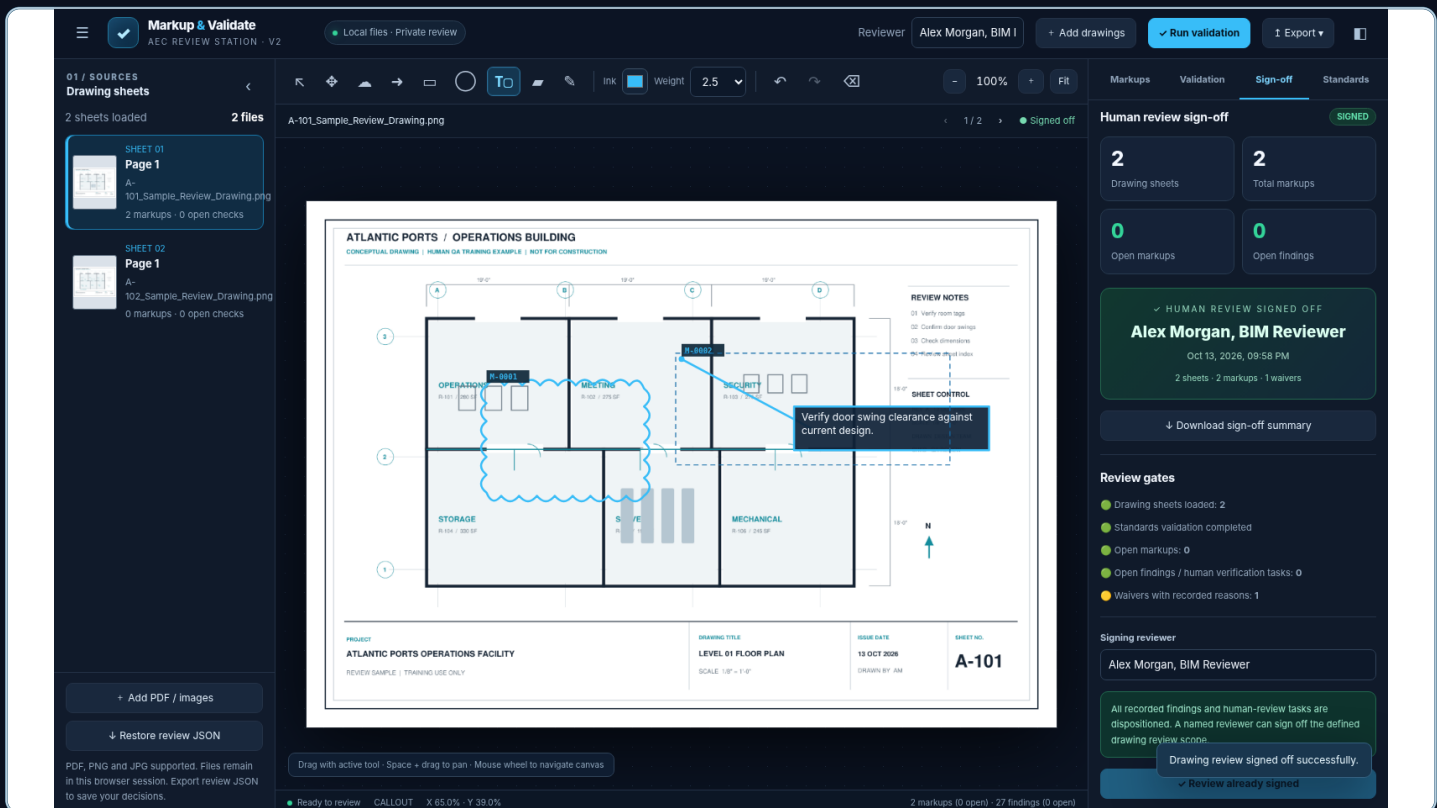


Markup and Validate

ILLUSTRATED USER MANUAL

A practical human-review workflow for AI-generated PDF and image drawing sets: markup, 15-rule AEC validation, documented dispositions, sign-off and export.



SCREENSHOTS FROM THE VERSION 2 APPLICATION

OCTOBER 2026 | LOCAL BROWSER-BASED QA/QC

What changed in Version 2

A new standards engine and stronger evidence requirements - the drawing viewer and markups remain familiar.

NEW IN THIS EDITION

15 AEC rules are available by default; the app classifies rule coverage and creates explicit human-verification tasks when PDF evidence is insufficient.

Findings now require a named reviewer and a written explanation when resolved or waived. The sign-off record includes the standards profile name and version.

WHAT THIS APPLICATION DOES

Supported inputs

Multi-page PDF, PNG, JPG / JPEG.

Markup

Revision clouds, arrows, boxes, ellipses, callouts, highlights and freehand pen.

Review evidence

Markup register, validation findings, rule coverage, evidence notes and waiver reasons.

Outputs

Annotated PDF, complete review JSON, review CSV and plain-text sign-off summary.

KNOW THE BOUNDARIES

The app is **not** a native Revit or IFC validator. PDF text extraction can support checks of title blocks, sheet IDs, required sheets and text heights. Dimension notation gets limited pattern screening. Element identity, dimensional accuracy, model alignment, revision register agreement and office CAD standards require professional verification and supporting source records.

IMPORTANT

The screenshots use illustrative drawings and an example reviewer. They do not constitute a project approval.

The six-step review workflow

Use the same sequence for concept drawing reviews, coordination packages and AI-generated sheet sets.

01**IMPORT**

Load PDF and image sheets; confirm the pages and order.

02**MARK UP**

Cloud, call out, highlight and document issues with a reviewer name.

03**CONFIGURE**

Confirm the office profile, sheet pattern, expected sheets and rule settings.

04**VALIDATE**

Run all enabled rules; separate detected findings from manual tasks.

05**DISPOSITION**

Resolve or waive each finding with a named reviewer and evidence.

06**SIGN + EXPORT**

Complete gates and save PDF plus structured review records.

REVIEW NOTE

Export the complete review JSON during the session. Closing or reloading the page is not a safe substitute for saving review data.

Find your way around the screen

Source sheets on the left, drawing canvas in the middle and the active review tab on the right.

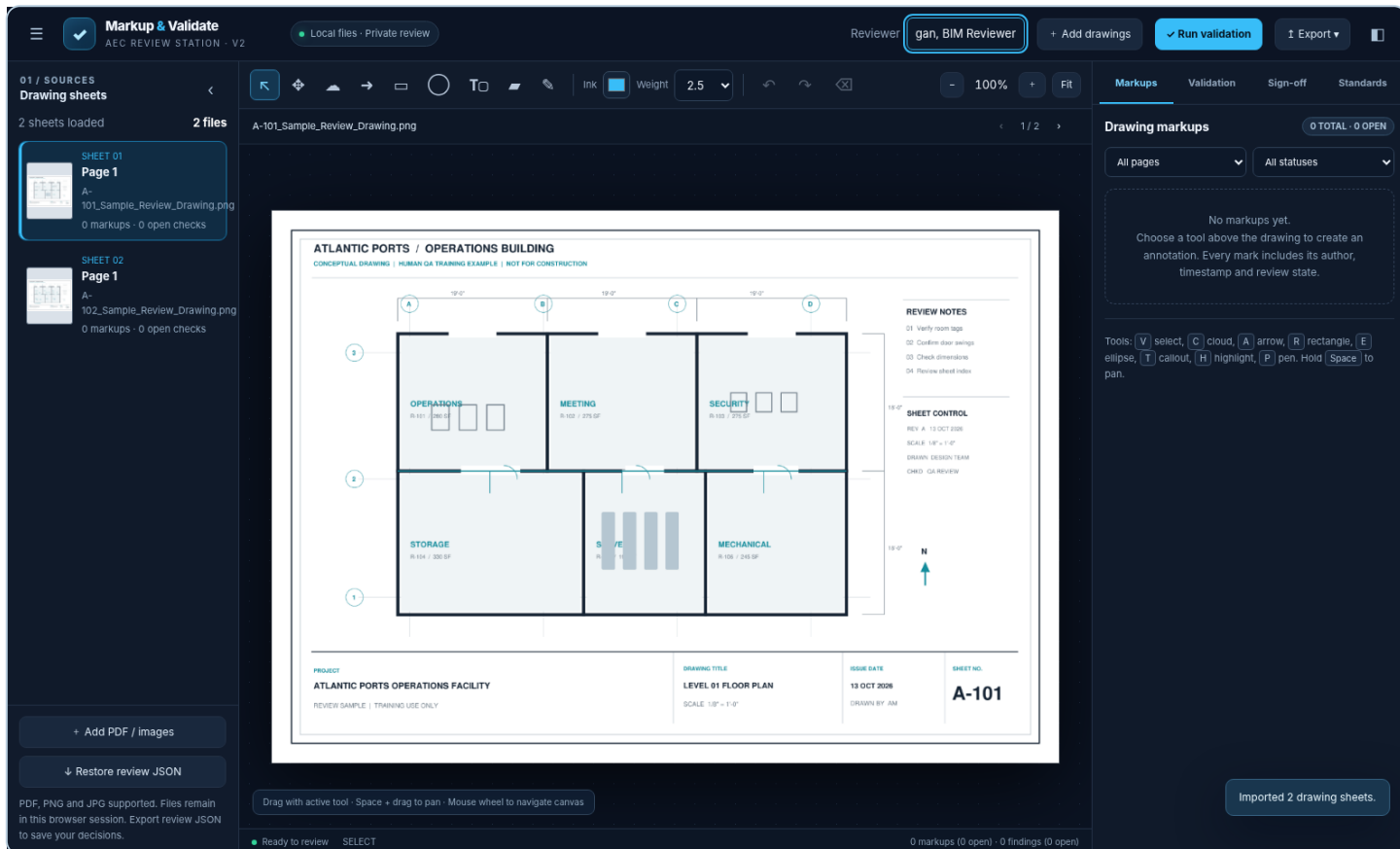


FIG 01. Version 2 with two sample architectural sheets loaded.

1 Top command bar

Enter a reviewer name, add drawings, run validation and export.

2 Sheet navigator

Pick a thumbnail to move between pages or collapse the left side.

3 Drawing canvas

Use the active tool, zoom controls and pan to inspect sheet details.

4 Right review panel

Switch between Markups, Validation, Sign-off and Standards.

REVIEW NOTE

The four right tabs are separate views of the same review record, not four different files.

Load PDFs and images

Import each drawing file; multi-page PDFs expand into individual reviewable sheets.

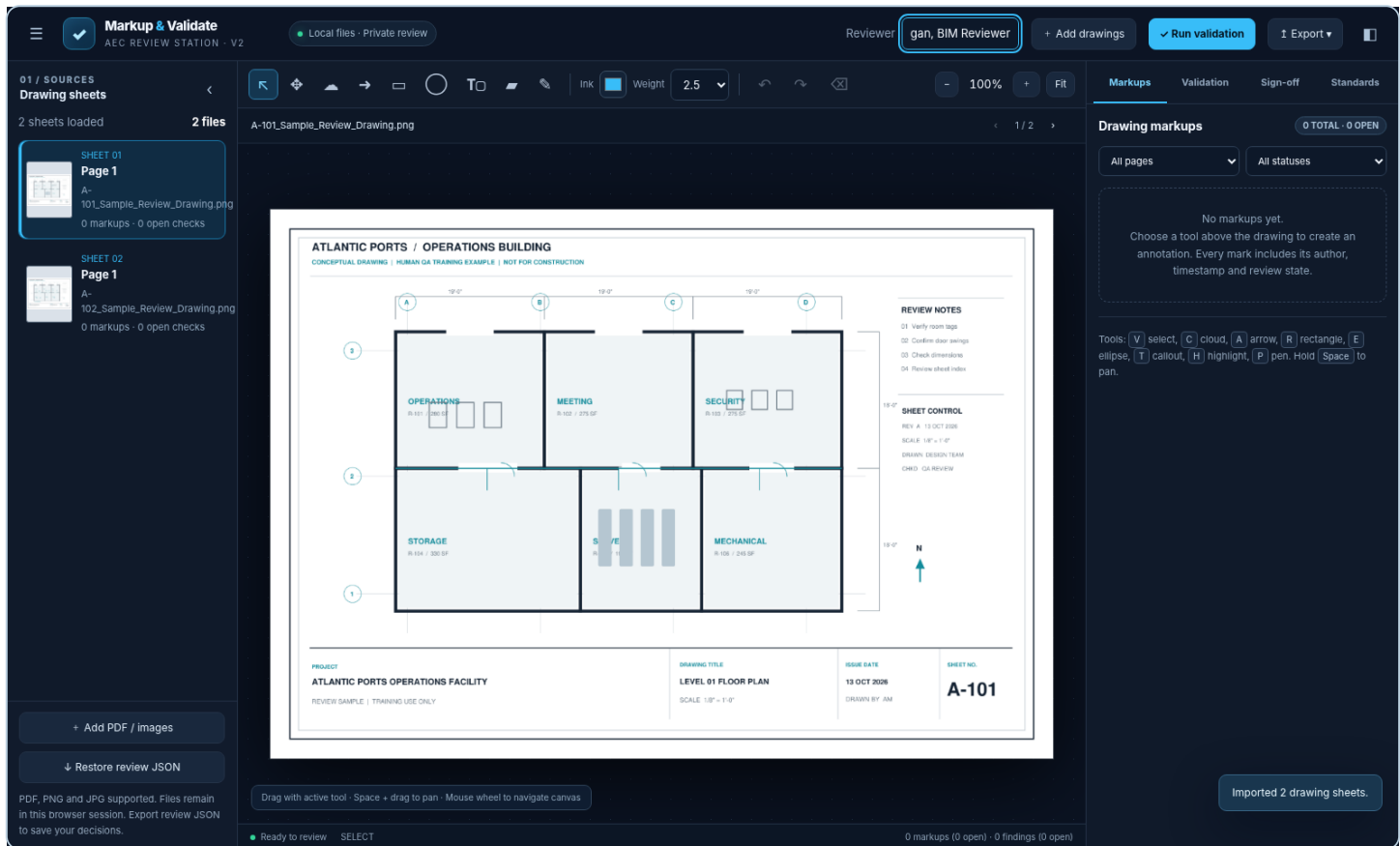


FIG 02. Imported sheets appear as thumbnails, with source and page counts.

- 1 Select files**
 Click Add drawings or Add PDF / images, or drag files into the browser.
- 2 Check formats**
 Supported: PDF, PNG, JPG and JPEG. RVT and IFC are not parsed.
- 3 Inspect coverage**
 Confirm all expected sheets are included and readable.
- 4 Retain source files**
 Keep the original PDF and image files alongside the review exports.

REVIEW NOTE

Searchable PDFs improve automatic text checks. Scans and PNG/JPG sheets produce more human-verification tasks.

Navigate, zoom and pan

Get to the right sheet and region before recording an issue.

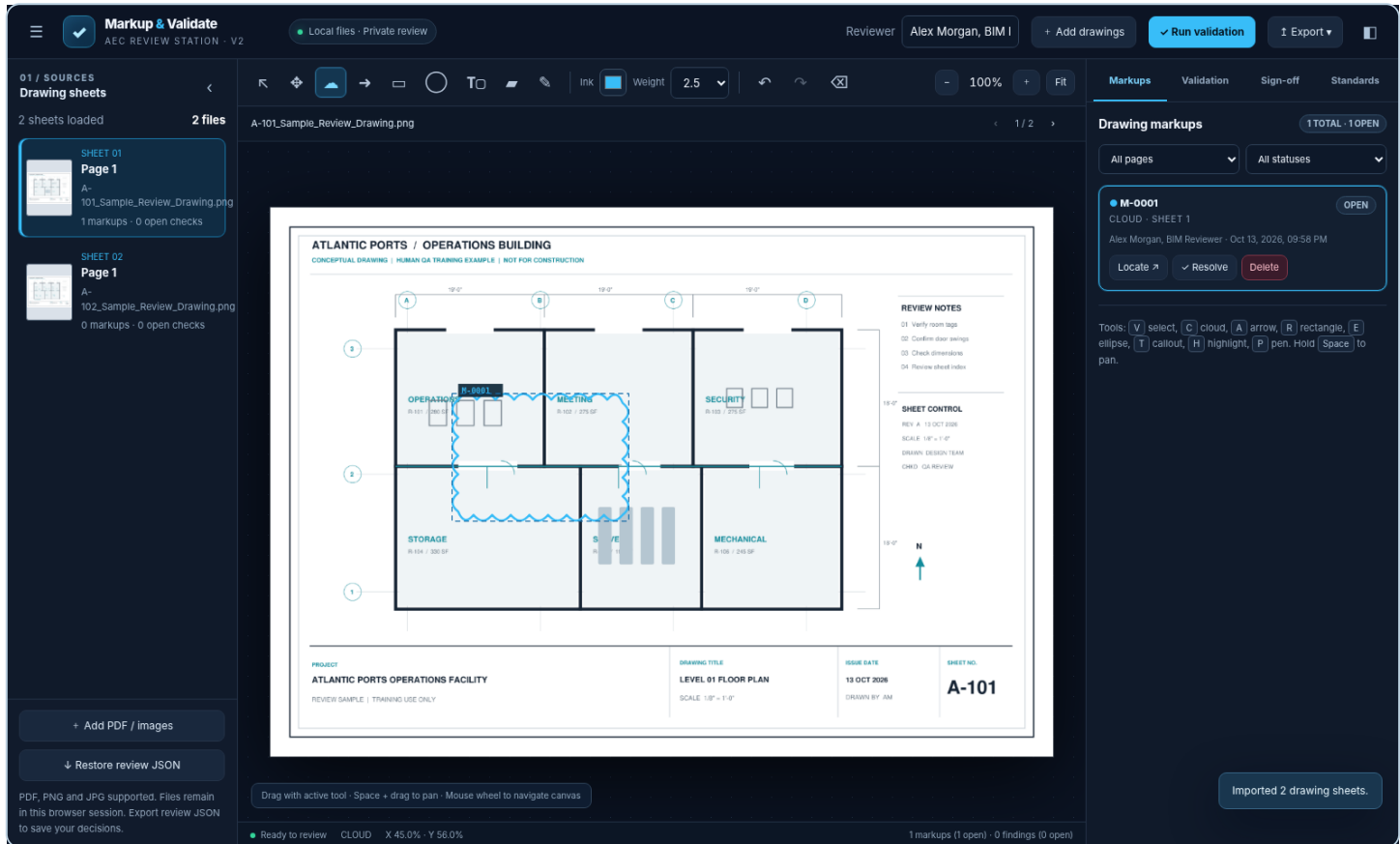


FIG 03. A sample sheet displayed with a cloud markup.

1 Switch sheets

Click a sheet thumbnail or use the left and right arrow keys.

2 Zoom

Use +, -, Fit, or the viewer zoom interaction to inspect details.

3 Pan

Select Pan or hold Space while dragging on the drawing.

4 Jump from panels

Select Locate on any markup or finding to navigate to its sheet.

REVIEW NOTE

Clicking a detected issue goes to its approximate PDF text location when available. Manual tasks may only identify the sheet or review region.

Choose the correct markup tool

Keyboard shortcuts work when you are not typing in a field or dialog.

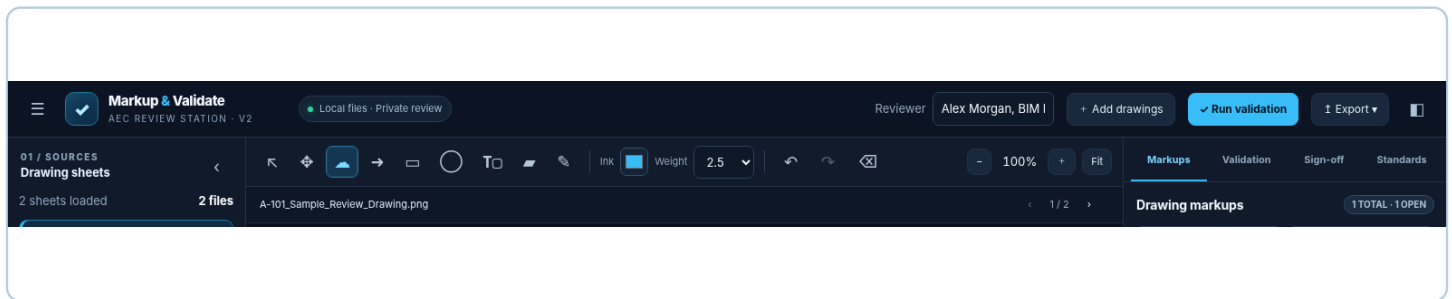


FIG 04. V2 toolbar with selection, drawing, ink, line-weight, history and zoom controls.

V	Select / move	C	Revision cloud	A	Arrow
R	Rectangle	E	Ellipse	T	Text callout
H	Highlight	P	Freehand pen	Space	Hold + drag to pan

MARKUP STYLING

Set **Ink** to choose a markup color and **Weight** for line thickness. Change tools with the toolbar or keys. Select a markup to move it, edit a callout or delete it. Use Undo / Redo to reverse session edits.

REVIEW NOTE

Every created markup is tracked with an ID, author, timestamp, page and open/resolved status.

Cloud and call out a drawing issue

Use clouds to isolate a revision or discrepancy, then add a callout stating what to verify.

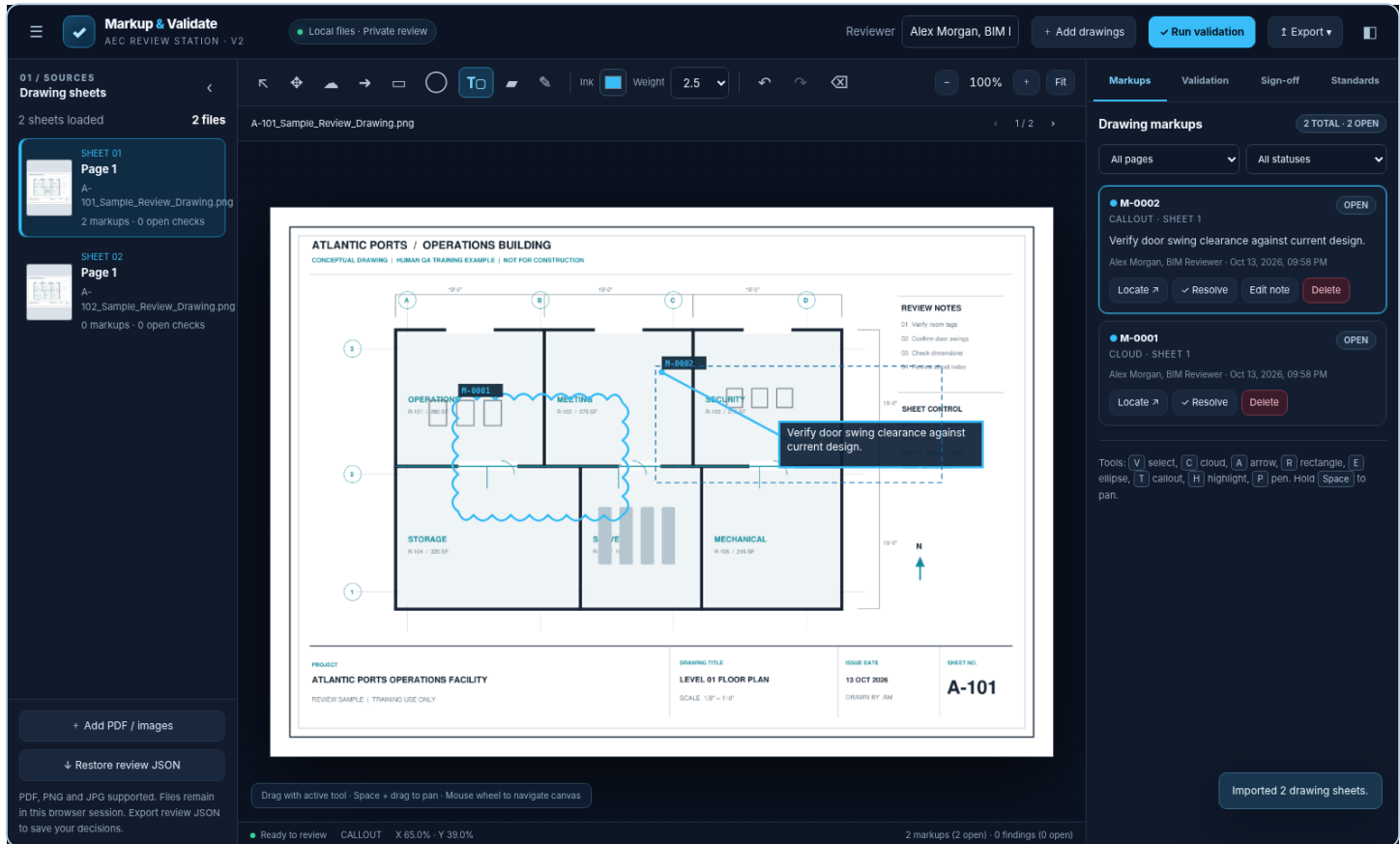


FIG 05. Cloud plus callout added to the sample plan.

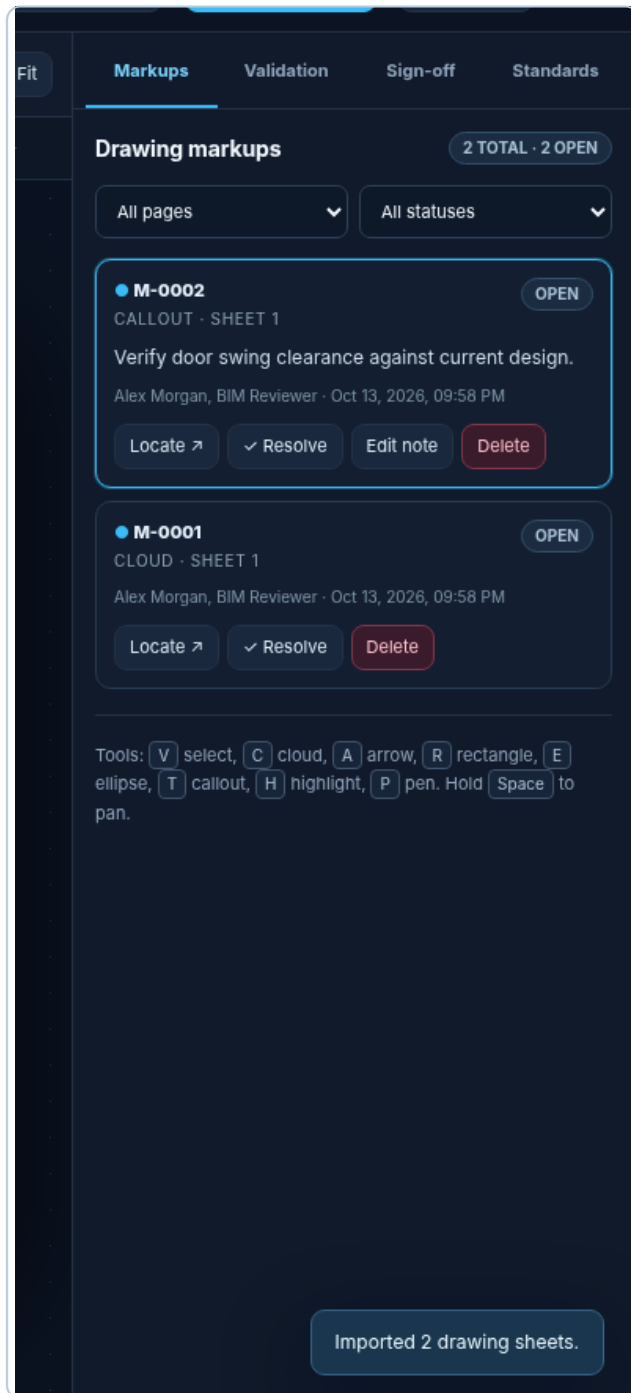
- 1 Select a tool**
 Use C for cloud, A for arrow or T for text callout.
- 2 Drag the boundary**
 Press and drag across the relevant drawing region.
- 3 Enter callout text**
 Describe the discrepancy or review request and save the dialog.
- 4 Use reviewer identity**
 Enter your name before markup so records identify their author.

REVIEW NOTE

Do not rely on a cloud alone for technical meaning. Add a callout or issue description with the required correction or verification.

Track and resolve markups

Use the Markups tab as the review register across the entire drawing set.



1 Filter

Filter by sheet or by open/resolved status.

2 Locate

Select a markup row or Locate to jump to its page.

3 Resolve

Use Resolve once the underlying drawing concern is closed.

4 Reopen

Reopen a previously closed markup when new evidence appears.

5 Delete or edit

Use supported row actions; removing a markup changes the review state.

FIG 06. Markup register with open entries and action buttons.

REVIEW NOTE

Markup resolution is a status change. Keep substantial verification detail in callout text or the exported audit record.

Open the AEC standards profile

The built-in profile contains all 15 named rules from the supplied AEC Drawing Set QA profile.

AEC standards · 15 rules v1.0

Victor Acosta · Derived from the 'AI-Powered Digital Delivery for BIM & AEC Professionals' course, Module 4: Drawing Production & QA at Speed. Every rule is machine-readable: what to check, the data source that answers it, and the exact fail condition. One rule runs through everything: the machine checks, a person decides.

Original wording is included. Rules without verifiable PDF evidence produce explicit human-review tasks, not false passes.

Profile name
AEC Drawing Set QA - Default Profile

Profile version
1.0

Sheet setup parameters

Sheet ID pattern (regex)
^[A-Z]{1,2}-[d]{3}\$

Expected sheet numbers (one per line)

G-001
A-101
A-201
A-301

Example IDs in the source profile are suggestions, not mandatory sheets until you enter them here.

Required title block fields

☒ Project name ☒ Project number
☒ Sheet number ☒ Sheet title
☒ Issue date ☒ Drawing scale

Imported 2 drawing sheets.

1 Open Standards

Select the Standards tab at the upper right.

2 Name the profile

Edit Profile name and Version for a project or client standard.

3 Review the baseline

Use the built-in AEC Drawing Set QA - Default Profile v1.0.

4 Check parameters

Confirm title-block fields, sheet ID pattern and printing thresholds.

5 Apply changes

Click Save standards profile; validation must be rerun.

FIG 07. Standards panel, profile metadata and sheet setup.

REVIEW NOTE

Profile settings may persist in the browser. Export the JSON profile to preserve and share an approved standard.

Set parameters before checking

An expected sheet list is not automatic merely because the default profile contains examples.

Fit Markups Validation Sign-off **Standards**

Example IDs in the source profile are suggestions, not mandatory sheets until you enter them here.

Required title block fields

☒ Project name	☒ Project number
☒ Sheet number	☒ Sheet title
☒ Issue date	☒ Drawing scale
☒ Drawn by	☒ Checked by

Minimum printed text (inches)

Max text findings per sheet

Expected dimension notation

Min dimension text samples

Rule definitions [Click to edit](#)

SHEET SETUP

- ☒ **Title block completeness** ERROR
PDF text checks - title-block-complete
- ☒ **Sheet numbering follows the office standard** ERROR
PDF text checks - sheet-numbering
- ☒ **Required sheet list is complete** WARNING
PDF text checks - required-sheets-present

ANNOTATION

- ☒ **Minimum plotted text height** WARNING
PDF text checks - min-text-height

1 Sheet numbering

The default pattern is `^[A-Z]{1,2}-\d{3}$`. Edit for your naming convention.

2 Expected sheets

Enter one number per line, such as G-001, A-101 or A-301.

3 Required fields

Select from eight title-block fields including checker and project number.

4 Text threshold

The default minimum is 0.125 plotted inches (9 pt).

5 Dimension notation

Choose automatic mixed-notation screening or an expected format.

FIG 08. Sheet ID regex, required fields, text height and dimension notation.

REVIEW NOTE

The four example sheet numbers in the source JSON are illustrative. Add expected sheets to the editable list to enforce them.

Edit a rule and its severity

Each rule retains its name, method wording, data source and fail-condition text.

Fit Markups Validation Sign-off **Standards**

Expected dimension notation

Detect mixed

Min dimension text samples 3

Rule definitions Click to edit

SHEET SETUP

☒ **Title block completeness** ERROR

PDF text checks - title-block-complete

Rule name

Title block completeness

Severity

Error

What to check

Every sheet carries a filled title block with all required fields: project name, project number, sheet number, sheet title, issue date, scale, drawn by, checked by.

Data source

Text extracted from the title block region of each plotted PDF page.

Fail condition

Any required field is missing, blank, or a placeholder (e.g. 'TBD', '---'). One finding per sheet per missing field.

Imported 1 drawing sheet.

Machine-evaluable where selectable PDF text is available.

1 Expand a rule

Click its title in the Rule definitions section.

2 Enable or disable

Use the checkbox next to its name.

3 Set severity

Choose error, warning or info.

4 Review exact wording

Edit What to check, Data source and Fail condition as needed.

5 Save and rerun

Save the profile and run validation to recalculate findings.

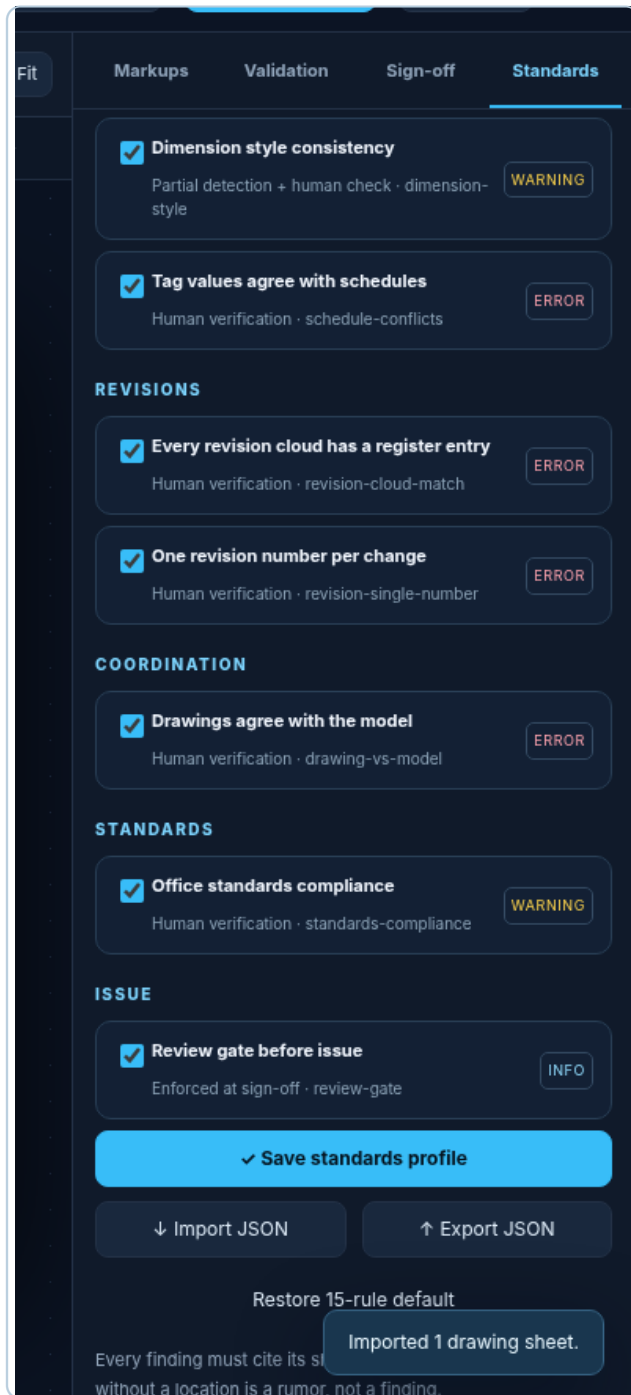
FIG 09. Expanded rule definition inside the Standards tab.

REVIEW NOTE

Changing wording does not create new geometric detection code. Unsupported checks remain evidence-based human tasks.

Import and export standards JSON

Keep profile configurations reproducible across reviewers and projects.



1 Save locally

Select Save standards profile to apply and retain edits.

2 Export JSON

Download your current settings and all 15 rule definitions.

3 Import JSON

Use Import JSON to load a supported source or Version 2 profile.

4 Restore default

Reset to the built-in baseline after confirming the dialog.

5 Rerun validation

Any imported or changed profile invalidates prior findings and approval.

FIG 10. Save, Import JSON, Export JSON and Restore 15-rule default controls.

REVIEW NOTE

Do not use an imported profile for sign-off before checking its version, enabled rules and expected sheets.

15-rule reference / 1 of 3

Each rule uses its source profile intent; check the method before treating any result as verified.

01

Title block completeness

PDF text + manual fallback

Project name, project number, sheet number, sheet title, issue date, scale, drawn by and checked by must be populated.

Evidence: Inspect title-block field and location; flag missing or placeholder values.

02

Sheet numbering

PDF text + manual fallback

Sheet identifiers must follow the configured regex and be unique in the uploaded set.

Evidence: Record the exact sheet ID and duplicates.

03

Required sheets

PDF IDs vs expected list

Compare discovered sheet numbers with the project-specific expected list.

Evidence: The list must be entered; examples are not enforced automatically.

04

Minimum plotted text

PDF text extraction

Flag extractable plotted text under 0.125 in by default, with per-sheet finding cap.

Evidence: Image-only drawings or unextractable text need visual measurement.

05

Annotation style

Human verification

Compare keynotes, tags and symbols against an office legend and approved reference sheet.

Evidence: Record sheet, symbol/tag and standard used.

15-rule reference / 2 of 3

Each rule uses its source profile intent; check the method before treating any result as verified.

06

Duplicate tags

Human verification

Confirm an element does not carry two identical tags of the same type.

Evidence: Element identity is not reliably available in PDFs.

07

Orphan tags

Human verification

Confirm every leader or tag identifies an element that exists.

Evidence: Cite tag and target on the drawing.

08

Dimension mismatch

Human verification

Compare dimension strings with the actual measured geometry or authoritative model.

Evidence: PDF dimension text alone cannot prove geometric accuracy.

09

Dimension style

Partial text screening + review

Screen for mixed architectural/metric/decimal notation, then inspect arrowheads, text, units and precision.

Evidence: Text patterns do not establish CAD dimension-style compliance.

10

Schedule conflicts

Human verification

Compare door, window and room tags against schedule entries.

Evidence: Reference both tag sheet and schedule sheet.

15-rule reference / 3 of 3

Each rule uses its source profile intent; check the method before treating any result as verified.

11**Revision cloud/register****Human verification**

Match revision clouds and deltas to register number, date, description and affected sheets.

Evidence: Provide the revision register to the reviewer.

12**One revision number****Human verification**

Confirm one number per change across affected sheets and the revision register.

Evidence: Cite conflicting identifiers, if found.

13**Drawing vs model****Human verification**

Compare plan, sections and elevations with authoritative model; cross-check sheets if model unavailable.

Evidence: Document both sides of any disagreement.

14**Office standards****Human verification**

Check layer/view names, symbol usage and text styles against office standards.

Evidence: PDFs may not contain original CAD layer or view data.

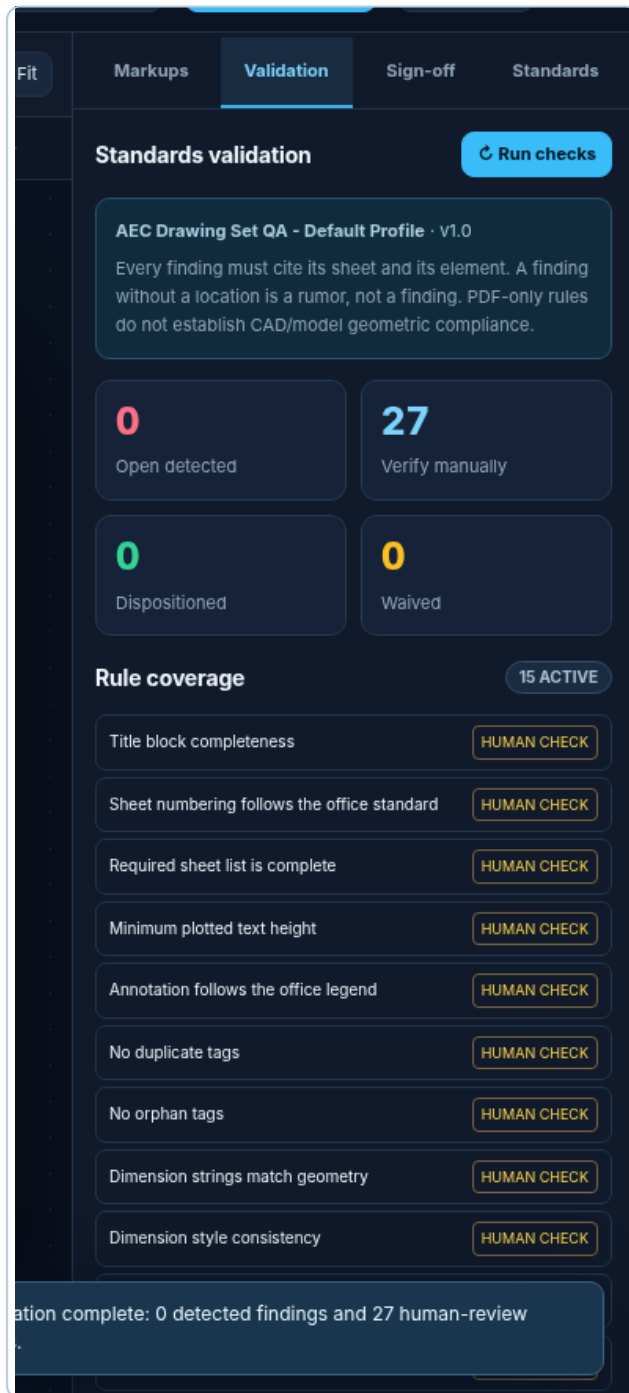
15**Review gate****Sign-off enforcement**

Require uploaded sheets, a validation run, named signer and no open markup or finding.

Evidence: Waivers and manual verifications must be dispositioned.

Understand rule coverage

The coverage list indicates check capability or an observed finding. It is not a certificate of conformance.



- 1 **Run checks**
Use the top Run validation button or the control in the Validation tab.
- 2 **Open detected**
Potential nonconformances from extractable PDF evidence.
- 3 **Verify manually**
Unverified items that must be inspected and documented.
- 4 **Rule coverage**
HUMAN CHECK, FINDING, NO FINDING and GATE ACTIVE describe assessment status.
- 5 **Dispositioned**
Counts findings resolved/verified or waived with justification.

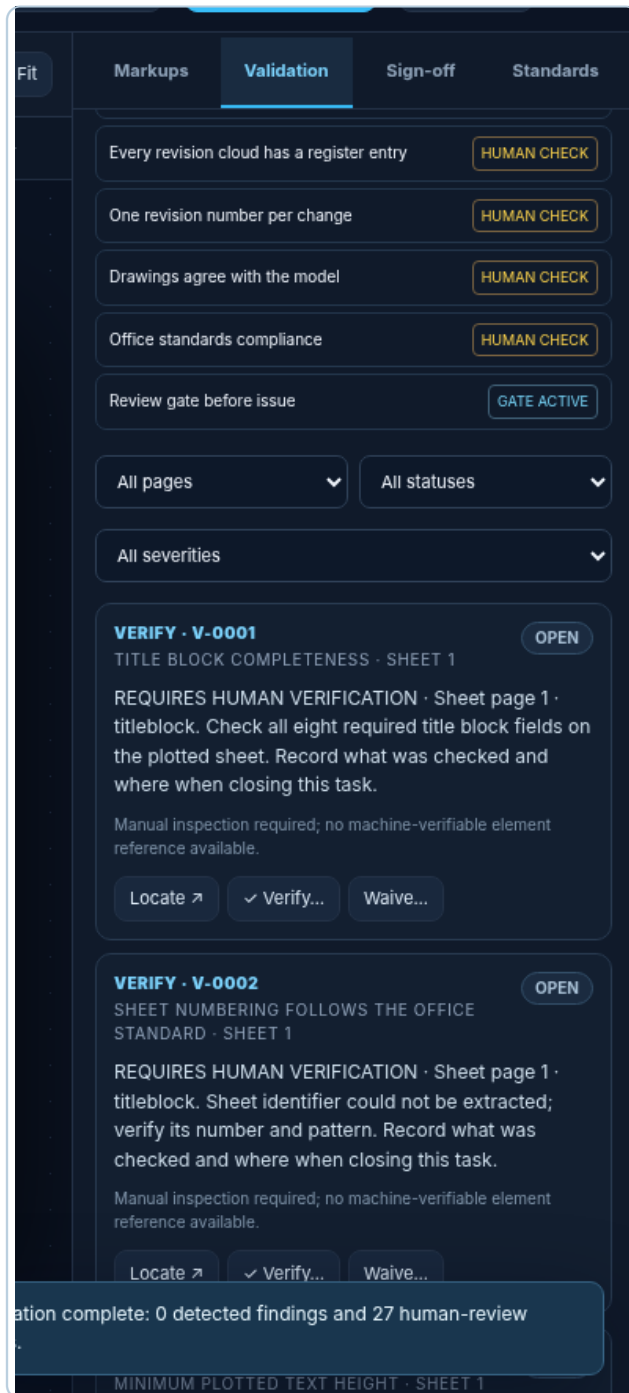
FIG 11. Coverage badges and counts following a validation run.

REVIEW NOTE

NO FINDING means the limited check found no issue. It is not equivalent to a full professional pass.

Review the findings register

Each finding includes a severity, reference ID, sheet scope, description, status and possible action.



1 Filter results

Filter by page, status and severity.

2 Check severity

Error, warning and info classify the rule impact; manual tasks show VERIFY.

3 Locate a finding

Click a row or Locate to jump to its approximate drawing position.

4 Decide disposition

Choose Resolve / Verify or Waive with an explanation.

5 Confirm traceability

Include sheet, element and proof source in your notes.

FIG 12. Per-sheet and set-wide validation tasks with evidence text.

REVIEW NOTE

Rule findings are heuristics. If a reported field is actually present, document where it appears before resolving the false positive.

Close a manual-review task

Manual tasks are not silently passed; they require a named reviewer and documentary evidence.

Confirm manual verification ✕

V-0001 · Title block completeness

REQUIRES HUMAN VERIFICATION · Sheet page 1 · titleblock. Check all eight required title block fields on the plotted sheet. Record what was checked and where when closing this task.

Reviewer name (required)

Alex Morgan, BIM Reviewer

Where and how was this verified?

E.g. Checked on sheet A-101, keynote 4 matches office legend; or corrected drawing issued 10/13...

Your name, review evidence and timestamp are saved in the review report.

Cancel Record verification

FIG 13. Verification dialog with reviewer and evidence fields.

- 1 Choose Verify**
 Open a task labeled VERIFY in the findings list.
- 2 Name the reviewer**
 Use the reviewer field in the dialog.
- 3 Describe evidence**
 State what was checked and where, such as a legend, dimension or schedule.
- 4 Record verification**
 Save a meaningful note to close the task.

REVIEW NOTE

Verification evidence needs at least 8 characters in Version 2. A generic "looks fine" is poor QA practice.

Record a controlled waiver

A waiver is an accepted exception, not proof the drawing meets the underlying standard.

Waive validation finding

V-0002: REQUIRES HUMAN VERIFICATION · Sheet page 1 · titleblock. Sheet identifier could not be extracted; verify its number and pattern. Record what was checked and where when closing this task.

Reviewer name (required)

Alex Morgan, BIM Reviewer

Required written waiver reason

Explain why this deviation is being accepted, with sheet/element references...

This reason and reviewer appear in the exported review and sign-off summary.

Cancel Record waiver

FIG 14. A waiver requires a name and a written justification.

- 1 Select Waive**
 Choose Waive for a finding that will be formally accepted.
- 2 Explain the reason**
 Cite the sheet, affected element and basis for acceptance.
- 3 Name the reviewer**
 Enter a reviewer authorized to disposition the finding.
- 4 Save or reopen**
 Waivers remain visible and can be reopened for further action.

REVIEW NOTE

Do not waive model coordination, field safety or statutory requirements without the appropriate project authority.

Sign-off starts blocked

Version 2 prevents completion while findings or markups remain open.

Fit | Markups | Validation | **Sign-off** | Standards

Human review sign-off PENDING

2 Drawing sheets	2 Total markups
2 Open markups	25 Open findings

Review gates

- Drawing sheets loaded: 2
- Standards validation completed
- Open markups: 2
- Open findings / human verification tasks: 25
- Waivers with recorded reasons: 1

Signing reviewer

Alex Morgan, BIM Reviewer

Sign-off is blocked until all 2 open markup(s) and 25 open finding(s) have been resolved or, for findings, waived with an explanation.

✓ Sign off drawing set

Waived items 1

V-0002 · Sheet numbering follows the office standard
Accepted as a documented exception for concept review only. Sheet A-101 title block verified against transmittal.

ation complete: 0 detected findings and 27 human-review
Sign-off is a documented review decision, not a professional engineering seal or cryptographic signature. Changing the review invalidates its sign-off.

1 Review counts

See source sheets, markups, open markups and open findings.

2 Complete validation

Run checks after the latest standards edits or drawing changes.

3 Close markups

Resolve every markup in the register.

4 Close findings

Verify/resolve or waive every detected and manual task.

5 Name the signer

Enter the final responsible reviewer in the Sign-off panel.

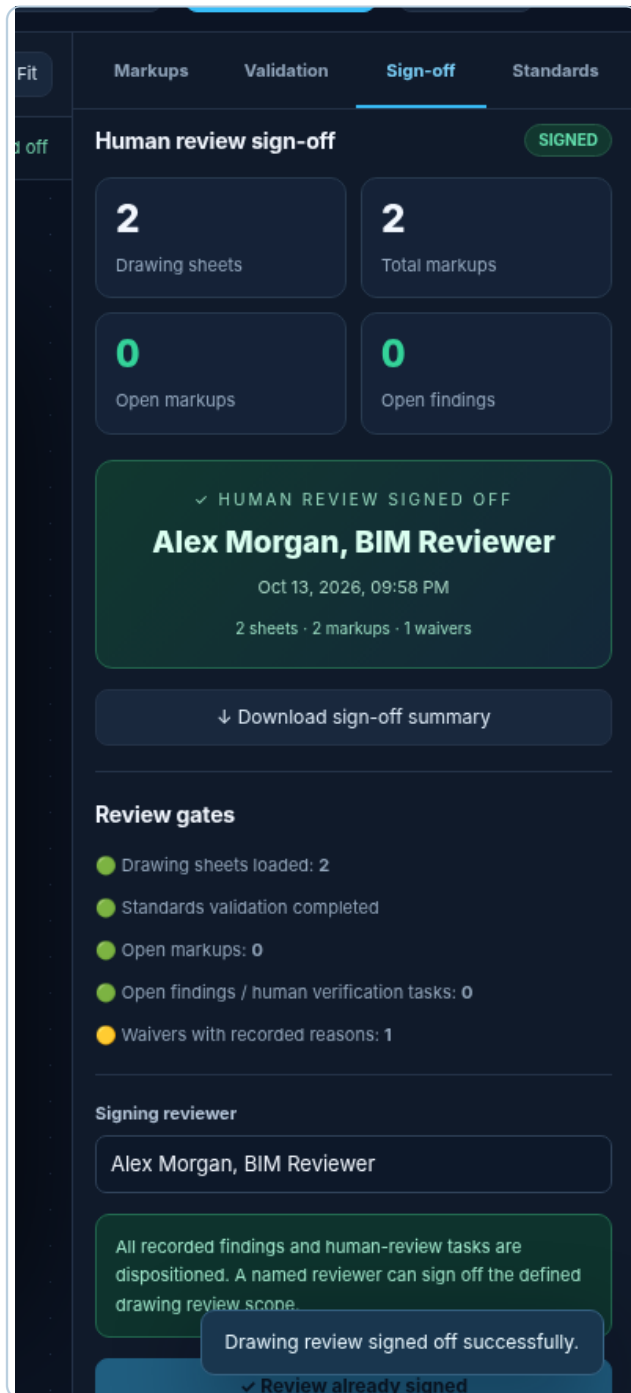
FIG 15. Sign-off status before all review items are dispositioned.

REVIEW NOTE

Version 2 blocks sign-off on any open issue, including manual-review tasks even when their severity is "info".

Record the completed review

Once all gates are clear, Version 2 can stamp the name, date and review scope.



1 Check readiness

The panel must show zero open markups and zero open findings.

2 Select Sign off

Confirm the name and accept the approval dialog.

3 Inspect the stamp

The record includes date/time, sheets, markups and waivers.

4 Preserve evidence

Export review JSON, annotated PDF and sign-off summary.

5 Rerun after edits

Any later review changes invalidate the current sign-off.

FIG 16. Example signed review record for illustrative sample drawings.

REVIEW NOTE

The app records a review decision. It is not an engineering seal, secure digital signature or independently authenticated identity.

Export the reviewed drawing package

Four complementary formats preserve the annotated sheets and evidence history.

OPEN THE EXPORT MENU

Choose Export at the top-right of the application. Each format serves a different review-delivery purpose; for a complete QA record, save all four.

For a signed review, the annotated drawing PDF can include the appended sign-off sheet.

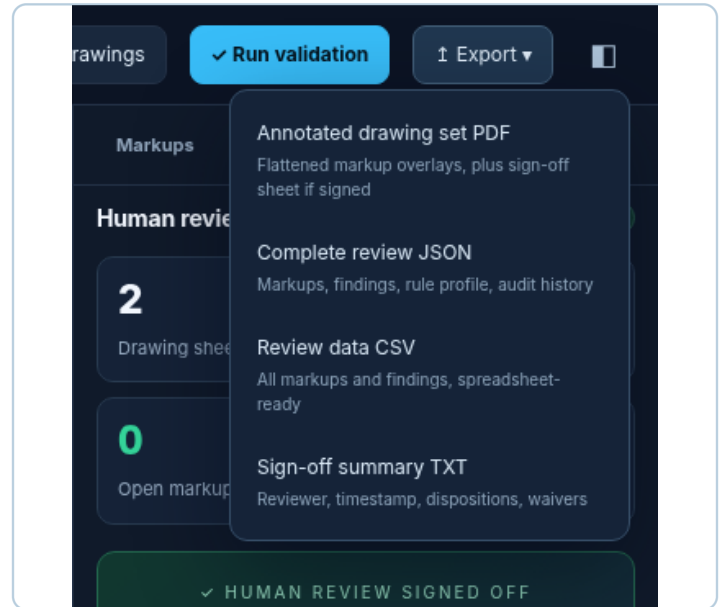


FIG 17. The Version 2 Export dropdown.

Annotated PDF

Flattened rasterized drawing pages with markup overlays. If signed, append the review sign-off summary.

Complete review JSON

Sources, markups, profile, findings, coverage, waiver evidence, sign-off and audit history.

Review CSV

Spreadsheet-ready markup and validation rows with statuses, reviewer evidence and reasons.

Sign-off summary TXT

Reviewer, date/time, sheets, status counts, resolved checks and accepted exceptions.

IMPORTANT

PDF export requires the PDF library from the CDN. Flattened drawing pages are not editable CAD geometry.

Restore the review from saved JSON

Use the export as your portable review record; source files are needed again to render the sheets.

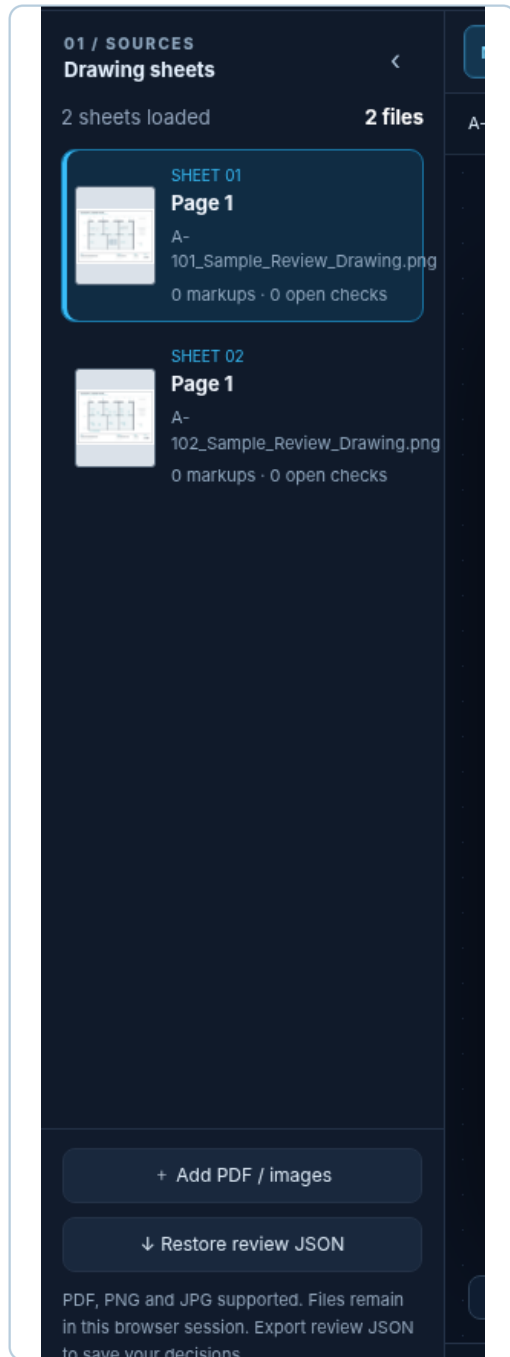


FIG 18. Restore review JSON sits at the bottom of the Sources panel.

1 Reopen the HTML file

Open Version 2 in the browser where you intend to resume work.

2 Load matching sources

Import the original PDFs/images with matching filenames and source page numbers.

3 Restore review JSON

Click Restore review JSON at the bottom of the sheet panel.

4 Confirm matched records

Review the matched markups and findings, then confirm replacement.

5 Revalidate as needed

Confirm drawing versions and recheck findings against the current standard.

6 Sign again

The previous sign-off is not restored as an active authenticated approval.

REVIEW NOTE

Before starting a new review session, export both review JSON and standards profile JSON. Local browser state is not a document archive.

A complete QA/QC review example

Illustrative scenario: two architectural image sheets generated by an AI drawing workflow.

01

Load

Import A-101 and A-102 image drawings. Confirm both thumbnails display and the author field is populated.

02

Mark up

Cloud a proposed door swing on A-101; add a callout: verify clearance and applicable door schedule.

03

Set standards

Open Standards. Set the expected sheets for this package. Save the 15-rule profile with a project-specific version.

04

Run validation

The image sheets cannot supply extractable PDF text, so title-block and annotation requirements become manual tasks.

05

Review evidence

Verify sheet title blocks, compare dimensions, check tags/schedules and reconcile the revision register if applicable.

06

Disposition

Resolve the cloud after correction; verify the manual task using a sheet reference and named reviewer. Explain any accepted waiver.

07

Sign off

Confirm there are no open items, then enter the signing reviewer and complete the review gate.

08

Export

Save annotated PDF, review JSON, CSV and sign-off TXT. Keep originals in the delivery folder.

Shortcuts and troubleshooting

Save this page as a quick-reference checklist for reviewers.

KEYBOARD SHORTCUTS

V Select	C Cloud	A Arrow
R Rectangle	E Ellipse	T Callout
H Highlight	P Pen	Space + drag Pan
Esc Return to select	Delete Delete selected	Left / Right Previous / next sheet
Ctrl/Cmd + Z Undo	Ctrl/Cmd + Shift + Z Redo	Ctrl/Cmd + Y Redo

IF SOMETHING SEEMS WRONG

PDF does not open

Check internet connectivity for the PDF.js CDN; reopen the HTML and retry.

Too many manual checks

Use a searchable, properly exported PDF and provide sheet/office standards evidence.

Required sheets not flagged

Enter actual expected IDs into the profile; default examples are not enforced.

A title block looks complete

Text detection is heuristic. Inspect the exact field and record evidence before resolving.

Sign-off is disabled

Run validation; close all open markups and findings, including manual checks.

Review missing after restart

Reopen sources and restore the exported review JSON. Sign again if needed.

REVIEW PRINCIPLE

Every finding must cite its sheet and element where possible. The software assists with detection; a qualified human reviewer makes the final technical decision.