# Preparing As-built (Final) Plans in Construction Using Bluebeam Revu 2019

The intent of marking up as-built plans, is to markup changes as they occur in the field. The intent is NOT to delete original line drawings and/or details.

This guidance was documented with screen captures by using the main menu; however, there are many toolbars that are handy for expediting the functions necessary for preparing As-Built plans.
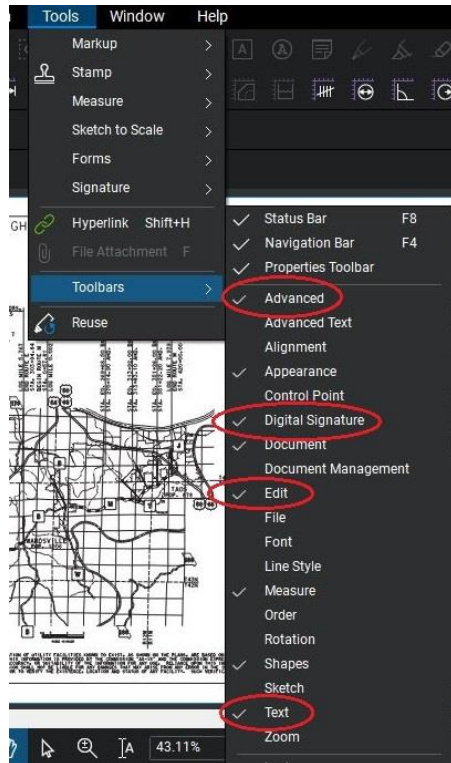
Advanced- helpful tools like Stamps

Digital Signature- insert Signature field and sign a document

Edit- undo/cut/copy/paste/flatten

Text- highlight/textbox

1. Obtain the as-let/awarded contract plans (PDF file) from eProjects SharePoint site, through Harmon IE, or Bluebeam directly.

Be sure to obtain all revised plan sheets as well (see below).

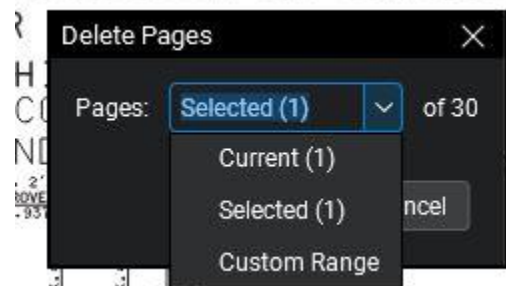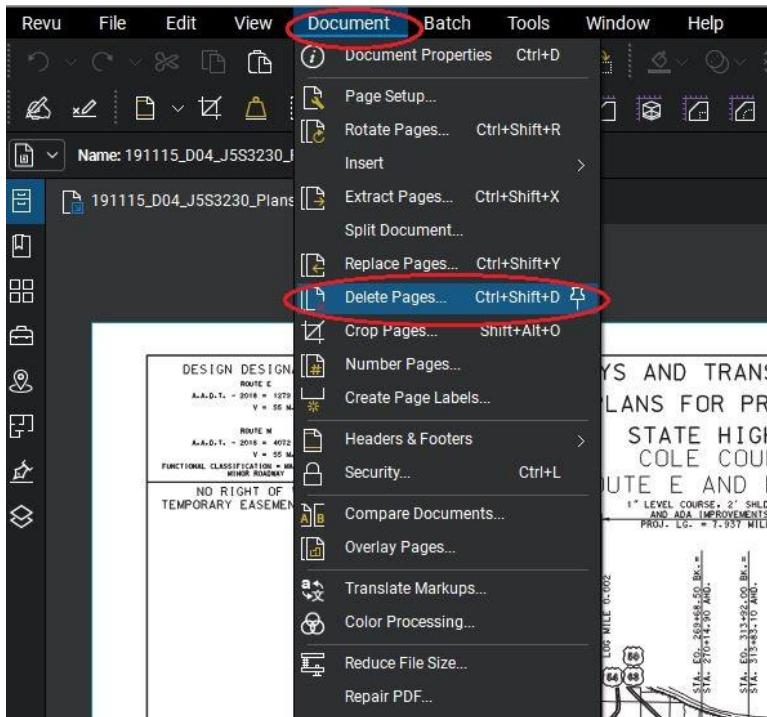| File Name	Content Type	Division
J4P3255_exhibitA.PDF	DE Agreements	DE
201218_C05_J4P3255_Addendum_Letter_R001.pdf	DE Awarded Plans	DE
201218_C05_J4P3255_Bid_Book.pdf	DE Awarded Plans	DE
201218_C05_J4P3255_Bid_Book_R001.pdf	DE Awarded Plans	DE
201218_C05_J4P3255_Plans.pdf	DE Awarded Plans	DE
201218_C05_J4P3255_Plans_R001.pdf	DE Awarded Plans	DE
201218_C05_J4P3255_Roadway_JSP.pdf	DE Awarded Plans	DE
201218_C05_J4P3255_X_Sections.pdf	DE Awarded Plans	DE
201218_C05_J4P325_Electronic_Deliverables.zip	DE Awarded Plans	DE

Once the file opens, select File, Save As: save the file back to the eProjects document folder the original document was obtained from with the naming convention: **Contract ID_Primary Job No_As_Built_Roadway_Plans.pdf.** The Division will have to be selected. The other required

metadata (including content type) will need to be added through editing the properties in eProjects. **For roadway plans, the content type shall be: CM As-Built Final Plans-Roadway.**
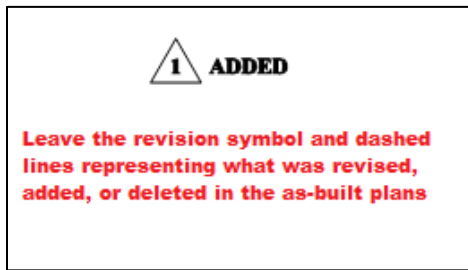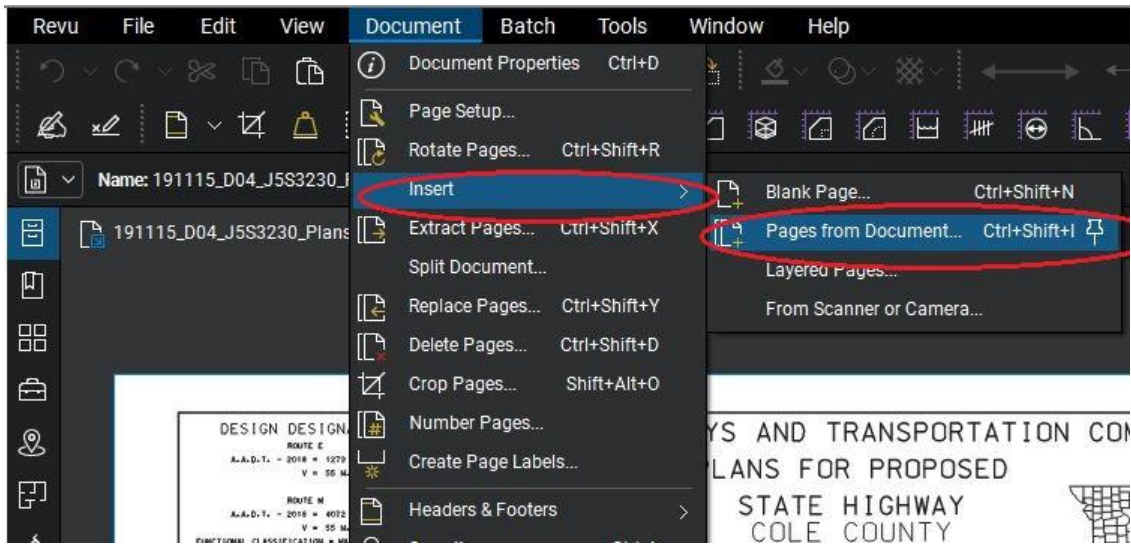
To edit the newly saved document, it will need to be checked out. To check out a document, right click the padlock on the document tab, select Check Out. The tools will remain grayed out until the document is checked out.
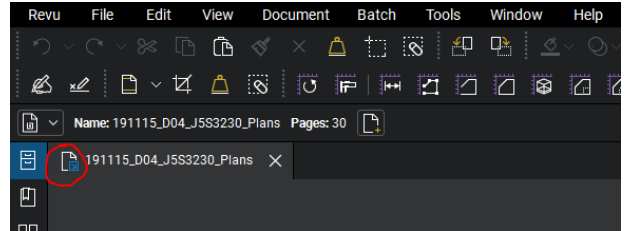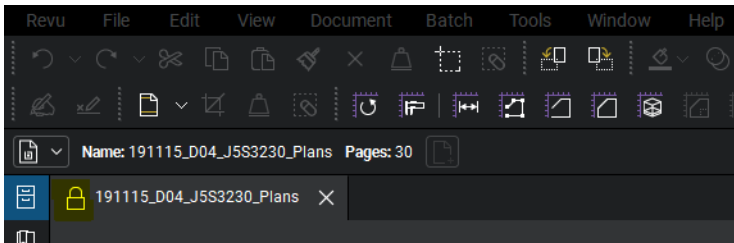
2. Delete the plan sheet(s) the revised sheet(s) will replace. This is easily done with the Delete Pages function under the Document menu. Then select the current page, selected page, or a range of pages.

Then insert the revised plan sheet(s) in their respective order.

Leave the revision symbol and dashed lines representing what was revised, added, or deleted in the as-built plans
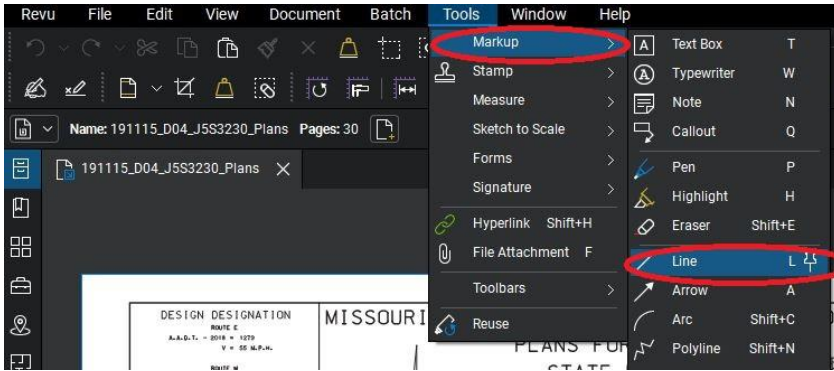
Do not delete, mark through, or alter the revision marks on the plan sheets. The revision marks are part of the contract plans and need to remain on the plan sheet(s).

3. Remember that the original design plan sheets will always be available to future users, so the as-built set only needs to include the basic plan sheets that are deemed pertinent. On these basic sheets, apply "markup" notes and graphics to record any notable changes that were made during construction. Sheets that include engineering design changes should be replaced in their entirety with the revised sheet found on eProjects. Delete all sheets that are **NOT** considered pertinent to the as-built record, including: **Summary of Quantity sheets (Sheet No. 3), Traffic Control Sheets, Erosion Control Sheets, Pavement Marking Sheets, Permanent Signing Sheets, and Cross-Sections**. Use judgment on whether or not to retain any Special Sheets. Sheets that are considered pertinent and should be retained include, but are not be limited to, **Title sheet, Typical Sections, Plan Sheets, Culvert Sections, Signal, and Lighting Sheets.**

For Bridge plans, cross out the word "Estimated" in front of Quantities (see #4 below for line function), update with the installed quantities, and retain all sheets except for plans of the old bridge plans marked "FOR INFORMATION ONLY". The Bridge Division has the older plans on file. Replace any sheets that include revisions from the Bridge Project Manager, which should be in eProjects. Apply any markup notes needed to document pertinent information from observations during construction.
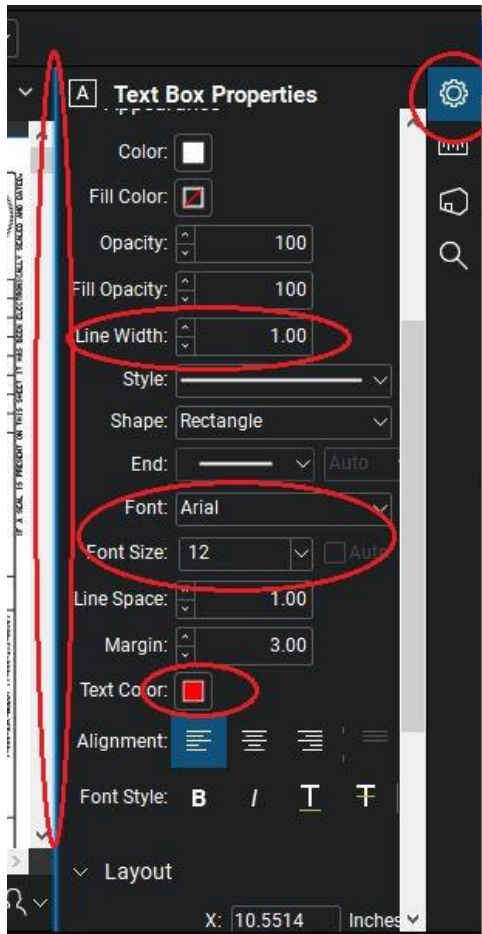
Note: Be sure to save the file often, so not to lose any changes.

4. Cross out the plan sheet(s) that have been removed, on the title sheet. This is done with the Line function under the Tools-Markup menu. Also, cross out "Proposed" on the title sheet (it is not necessary to cross out the word "proposed" elsewhere on the plan sheets).

The attributes for the line are: width =1.0 color = red.

Attribute are found by hovering over the line between the scroll bar and the Gear symbol, it will turn Blue.

This is where the line width, font, font size and text color can all be adjusted.

5. Remove (cover) the Project Manager's seal. This is done with the "Not A Certified Document.pdf" stamp to complete this. Stamps are under the Tools menu.

Note: If using Bluebeam Revu for the first time or a new computer, the stamp files will need to be downloaded/saved before using them. The stamps are available from [EPG 239](#). Once the stamps are located, double click to open the stamp PDF file, then click on File, Save As, then use the following file location: C:\ProgramData\Bluebeam Software\Bluebeam Revu\2019\Stamps. "ProgramData" will need to be manually typed in as that folder is hidden by Windows. If the stamps are not found under the Stamp menu, make sure Bluebeam is looking in the correct folder. Under the Stamp menu, go to the very bottom and select Change Stamp Folder. Select the same folder path (C:\ProgramData\Bluebeam Software\Bluebeam Revu\2019\Stamps) where the stamps are saved.
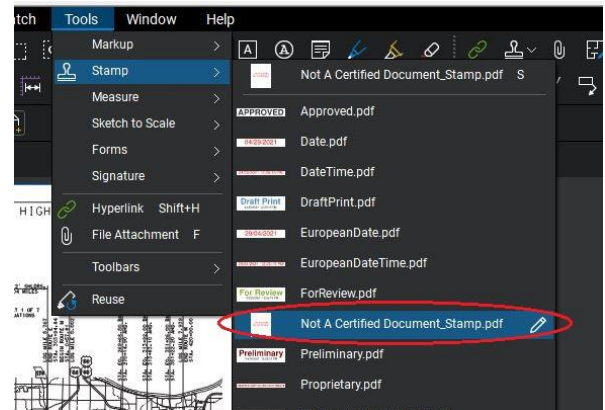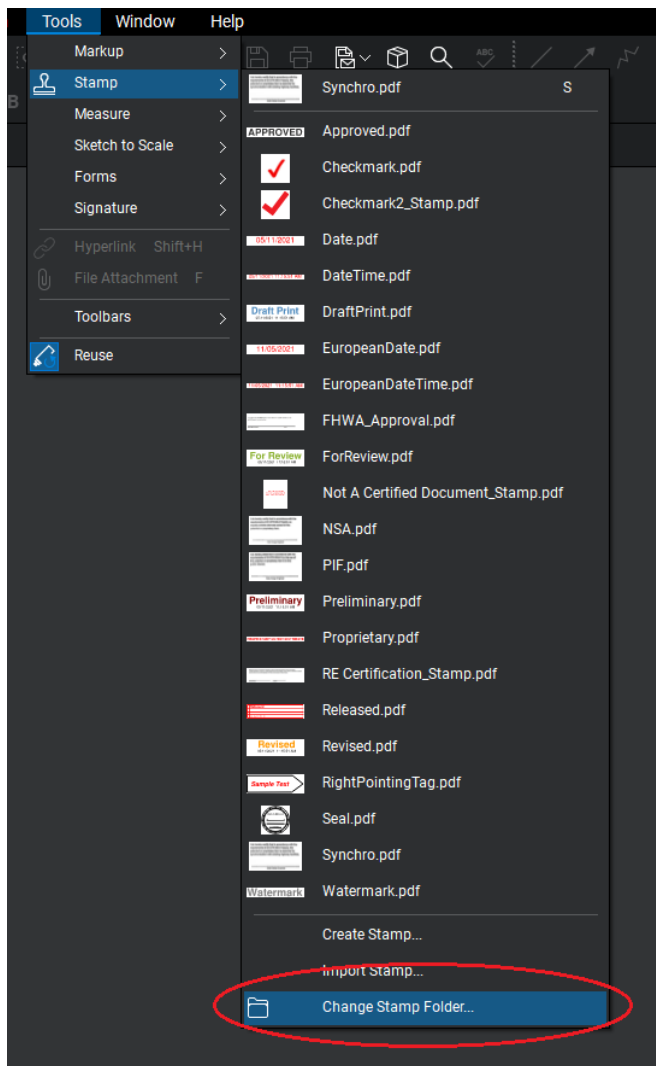
Select the stamp and drag it from the upper left corner of the seal area to the lower right corner (blue outline shows drag area). Be sure to cover the entire seal and text.
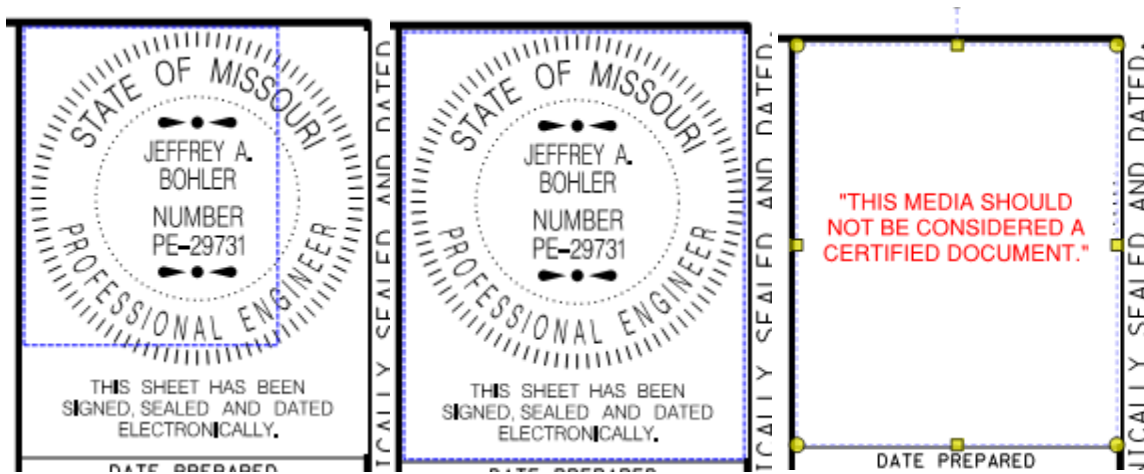
6. Apply "Not A Certified Document.pdf" stamp to all plan sheets. To do this, right click on the stamp that was just added and select apply to all pages. This will automatically place the stamp in the exact same location on every sheet.

Note: applying markups to all plan sheets is a handy function and can be used in other aspects of PDF files.
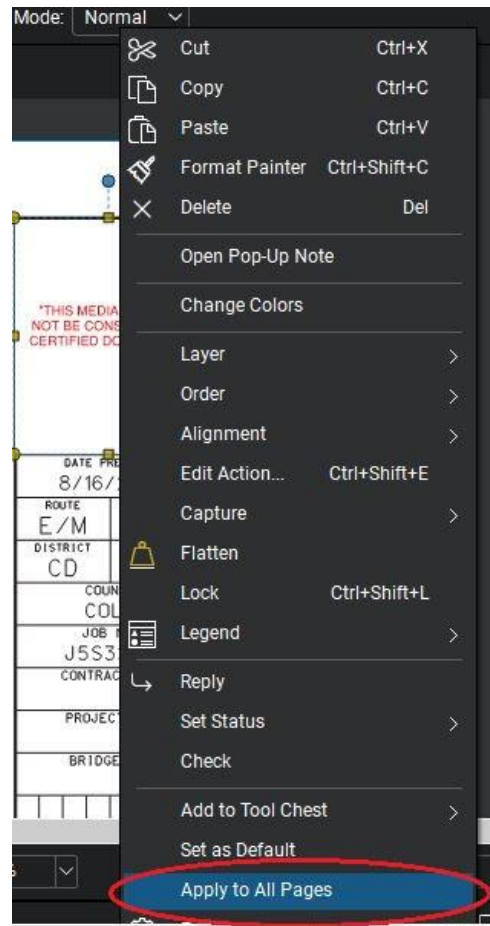
7. Now apply the "AS-BUILT PLANS" stamp to all plan sheets. Place the text in the lower right-hand corner using the text box function under the Markup menu. Make sure the text is Arial font, font size 12, and colored red.
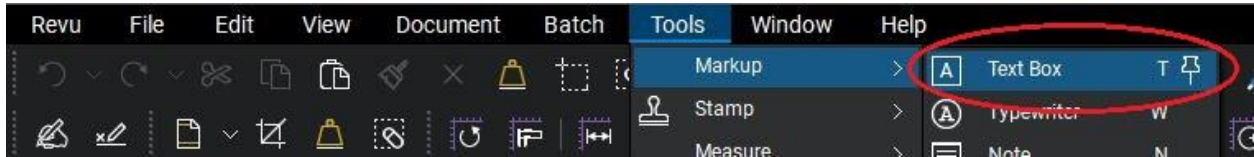

8. Copy "AS-BUILT PLANS" to all plan sheets using the same procedure in #6 above.

9. Add the applicable contract ID and bridge number to all plan sheets using the procedure in #6 above. The font size can be changed to fit within the contract/project/bridge boxes.
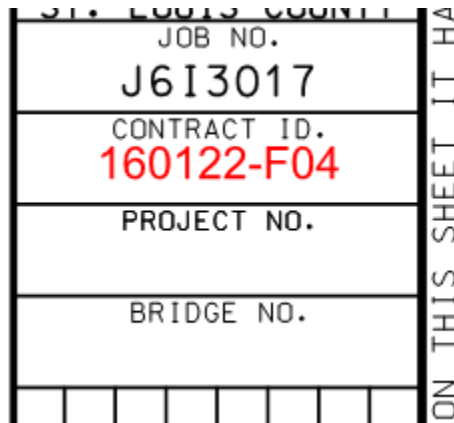
10. Apply the field changes and notes to the plan sheets using the text box, text call out, and cloud shape (below are some examples).

Tools   Window   Help

Markup   >   [A] Text Box   T
Stamp   >   (A) Typewriter   W
Measure   >   [≡] Note   N
Sketch to Scale >   [↱] Callout   Q
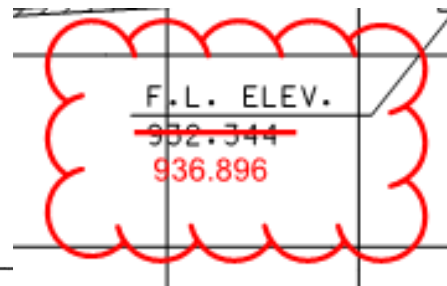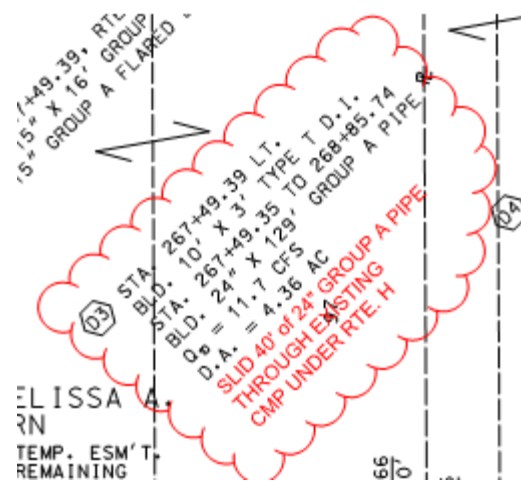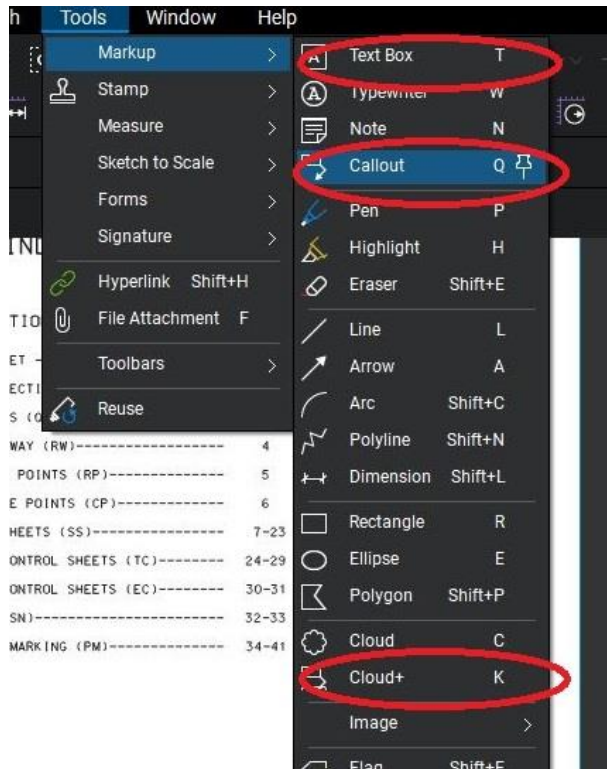Forms   >   Pen   P
Signature   >   [✎] Highlight   H
Hyperlink Shift+H   [⌀] Eraser   Shift+E
File Attachment F   /   Line   L
Toolbars   >   ↗   Arrow   A
Reuse   (Arc   Shift+C
                        ↲   Polyline   Shift+N
                        ↔   Dimension   Shift+L
                        □   Rectangle   R
                        ○   Ellipse   E
                        ◁   Polygon   Shift+P
                        ✿   Cloud   C
                        ↲   Cloud+   K
                        Image   >
                        Flag   Shift+F

INL

WAY (RW)------------------   4
  POINTS (RP)--------------   5
E POINTS (CP)-------------   6
HEETS (SS)----------------   7-23
ONTROL SHEETS (TC)-------- 24-29
ONTROL SHEETS (EC)-------- 30-31
SN)----------------------   32-33
MARKING (PM)-------------- 34-41

F.L. ELEV.
~~932.344~~
936.896

"AS BUILT DRILLED SHAFT" DATA

SHAFT NO.	BOTTOM OF DRILLED SHAFT (Elev.)	BOTTOM OF ROCK SOCKET (Elev.)	REMARKS
			BENT 2
1	998.00	970.50	
2	998.00	970.50	
3	998.00	970.50	
4	998.00	970.50	
5	998.00	970.50	
6	998.00	970.50	

~~Estimated~~ Quantities

Item		Substr.	Superstr.	Total
Class 1 Excavation	cu. yard	30		30
Removal of Bridges (X0417)	lump sum			1
Bridge Approach Slab (Minor Road)	sq. yard			110
Drilled Shafts (3 Ft. 0 in. Dia.)	lin. foot	~~56.0~~ 83		~~56.0~~ 83
Rock Sockets (2 Ft. 6 in. Dia.)	lin. foot	24.0		24.0
Video Camera Inspection	each	4		4
Foundation Inspection Holes	lin. foot	64		64
Sonic Logging Testing	each	4		4
Galvanized Structural Steel Piles (12 in.)	lin. foot	~~208~~ 213		~~208~~ 213
Pre-Bore For Piling	lin. foot	28		28
Pile Point Reinforcement	each	8		8
Class B Concrete (Substructure)	cu. yard	56.3		56.3
Slab on Concrete I-Girder	sq. yard		493	493
Type B Barrier	lin. foot		375	375
Type 2 (32 in.), Prestressed Concrete I-Girder	lin. foot		653	653
Reinforcing Steel (Bridges)	pound	9160		9160
Steel Intermediate Diaphragm For P/S Concrete Girders	each		9	9
Slab Drain	each		30	30
Vertical Drain at End Bents	each			2
Plain Neoprene Bearing Pad	each		24	24

Often, there are many options within the plans, be sure to mark which option was selected, or mark through the option that was not selected in all locations:

OPTIONAL PAVEMENT

HMA DESIGN:
10" BIT. PAVEMENT
1.75" BP-1 W/ PG 64-22
8.25" BB W/ PG 64-22

JPCP DESIGN:
8" UNREINF. CONCRETE
W/ 15' JOINT SPACING
1.25" DOWELS & TIE BARS

MoDOT Construction personnel will indicate the bridge approach slab used for this structure:
☐ Concrete Bridge Approach Slab
☒ Asphalt Bridge Approach Slab

1 Layer of 30-lb (Min.) Roofing Felt or Bituminous Pile Point (Typ.)

percent.

Drain pipe may be either 6 inch diameter corrugated metallic coated steel pipe underdrain, 4 inch diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4-inch diameter corrugated polyethylene (PE) drain pipe.

The 2014 efficiency team intended to speed up the process and changing the language from future to past tense such as "shall be, use, install, cut, to be, etc." are not necessary mark ups anymore (see Final Plan Efficiency Team document). For markup purposes, it is not necessary to cross out the Removal note (R) on the as-built plan sheets. Doing so indicates the intended removal did not take place during construction.

11. Once all the comments, notes, and other markups are added to the plan sheets, the document will need to be flattened. This will "embed" the changes into the document. To do this, click on the Flatten function under the Document menu.
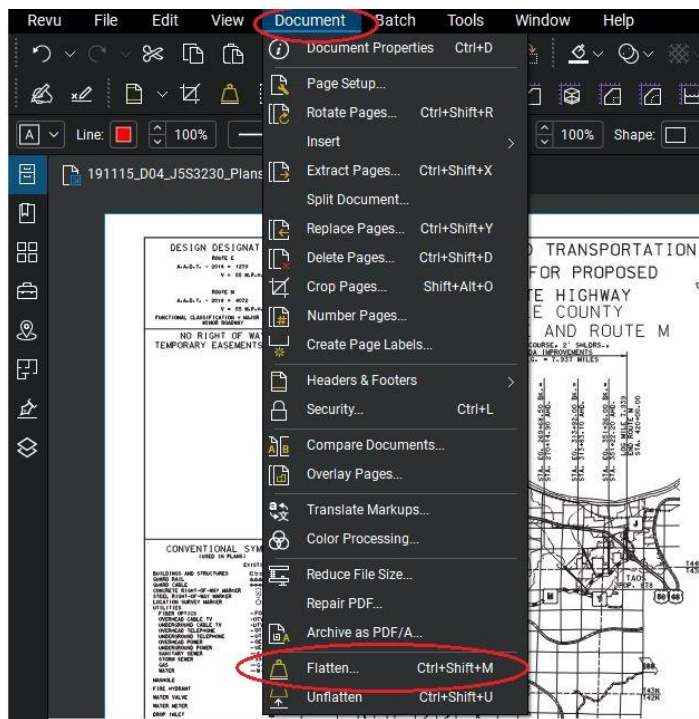
Click on Flatten, the Flatten Markups menu will pop up. Be sure to select: Allow Markup Recovery (Unflatten), All Markups, All Pages, and then click on the Flatten button.
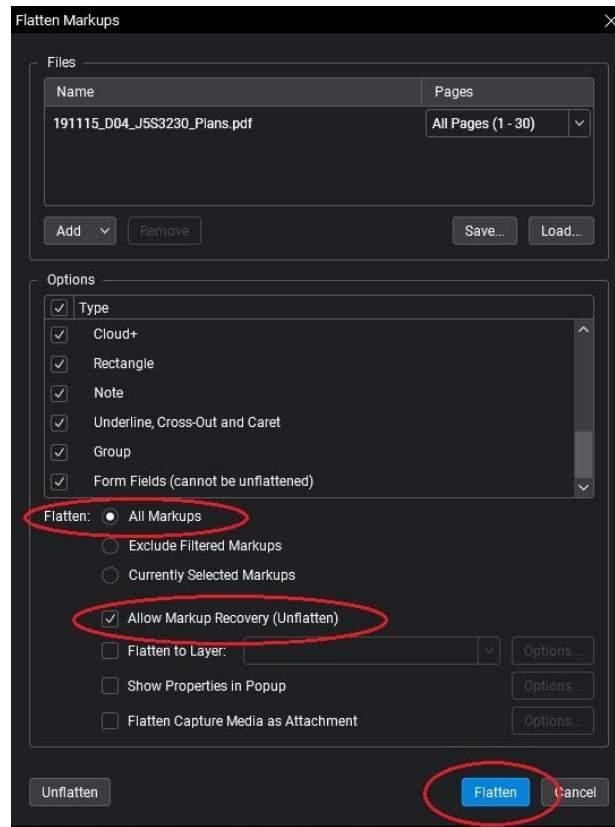

12. If the project includes multiple roadway plans and/or bridge plans, the plan sheets will have to be separated into separate documents; roadway plans and bridge plans. This is for the purpose of making roadway as-built plans publicly available in the future without the bridge plans. Skip to Step 14 if the project does not include bridge plans or multiple projects (multiple J numbers).

The easiest way to separate the plan sheets is to extract pages using the Extract Pages function under the Document menu.
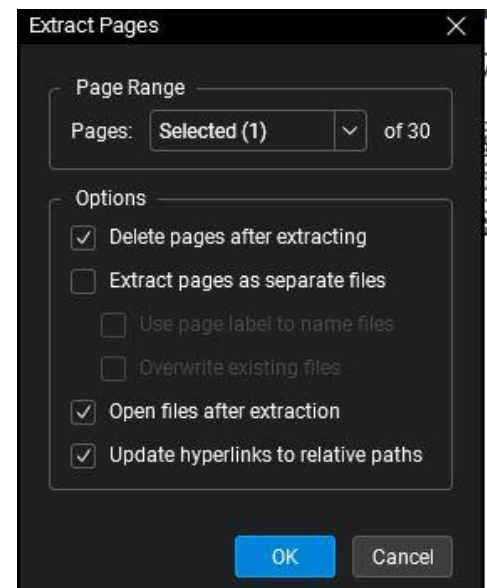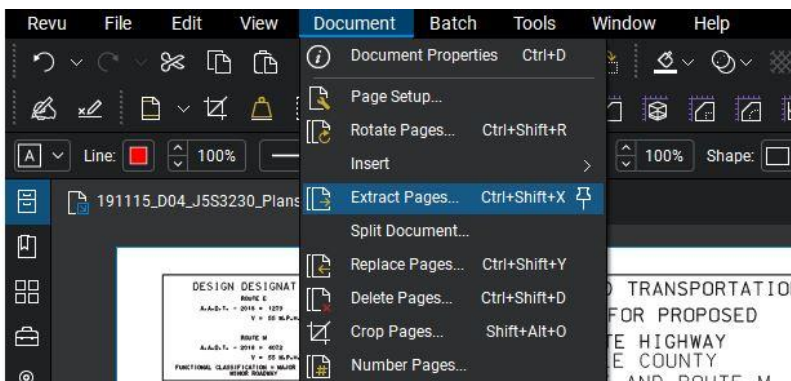
To choose the range of pages to extract, select the down arrow in the pages box and click on Custom Range.
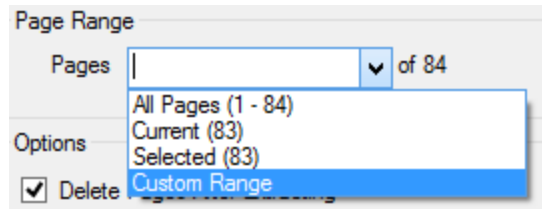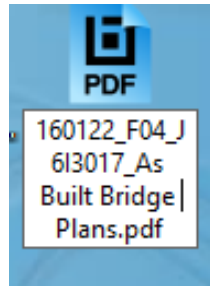

Be sure to enter a range of pages. In the example below, pages 83 through 84 are going to be extracted. Click on: Delete Pages After Extracting (this will delete the bridge plan sheets from the original document), Open File After Extraction (this will show the pages and ensure the correct sheets have been extracted), and Update hyperlinks with relative paths. Then Click on OK. A box will appear asking where to file the extracted file.

If the incorrect sheets were extracted, close the newly extracted file and from the original file, select Undo (Edit menu, History, Undo) and repeat the process (delete the newly created/extracted files too).
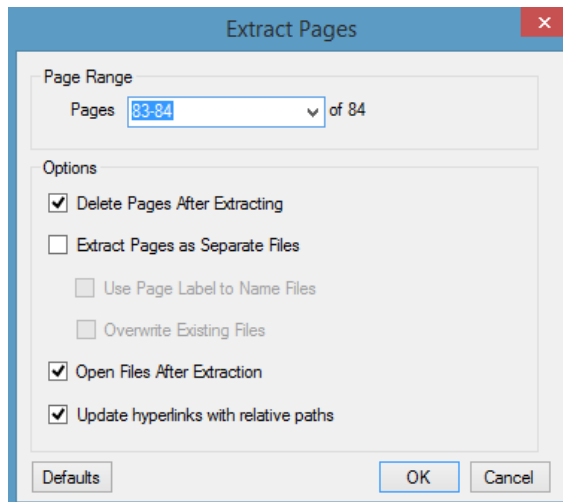

13. The extracted files are given distinct names. Select File, Save As: save back to the folder in eProjects with the following naming convention: **ContractID_JobNo_As_Built_Bridge_Plans.pdf** (or Roadway Plans if there is an additional project number/J number associated to the contract, ex. **Contract ID_Job No_As_Built_Roadway_Plans.pdf**). The Division will have to be selected. The other required metadata (including content type) will need to be added through editing the properties in eProjects. **For bridge plans, the content type shall be: CM As-Built Final Plans-Bridge.**

14. Placing the RE's certification stamp is the next step. Similar to Step 5 above, place the RE Certification.pdf stamp on the title sheet. *It is not required to have the RE's certification on the bridge plans.*

Drag the stamp area in the location the RE's certification is to appear. Make sure the stamp area will be large enough for the RE's digital signature. Keep in mind the text part of the stamp does not have a clear background and will cover line drawings.
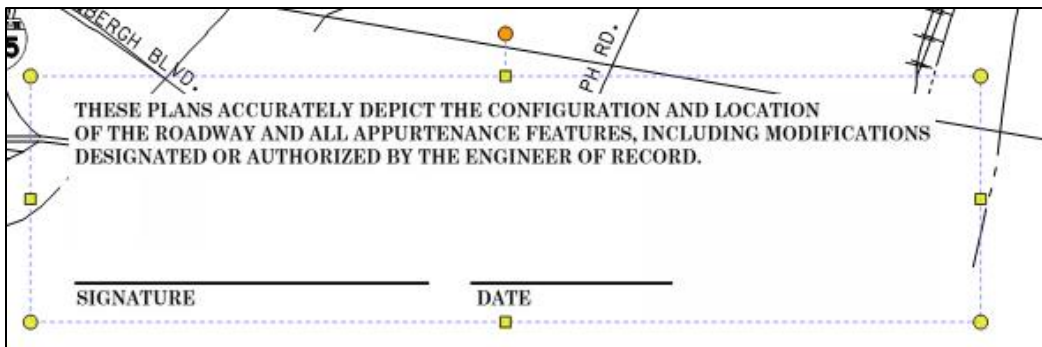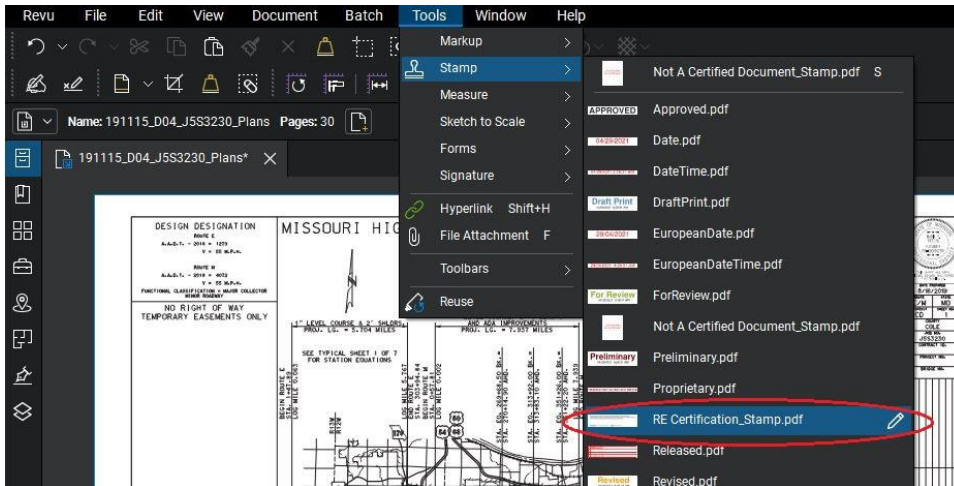
15. Once the RE has digitally signed the plan sheets, they can be sent to and further processed by the District Final Plans and Reports Processor.