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# Creating Section 508 Conformant PDFs



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## Creating Section 508 Conformant PDFs

### Notes:

- This document addresses the most common Section 508 checks and common 508 issues encountered when remediating a PDF. This document may not cover all aspects of Section 508 and PDF remediation.
- This document provides one, but not every, way to remediate a PDF for Section 508 conformance.
- Unless specified for a task, do not use the “Reading Order” tool found on the “Accessibility” tool, the “Order” panel, or the “Content” panel for tag order or logical order. This document uses tags to confirm conformance with Section 508.

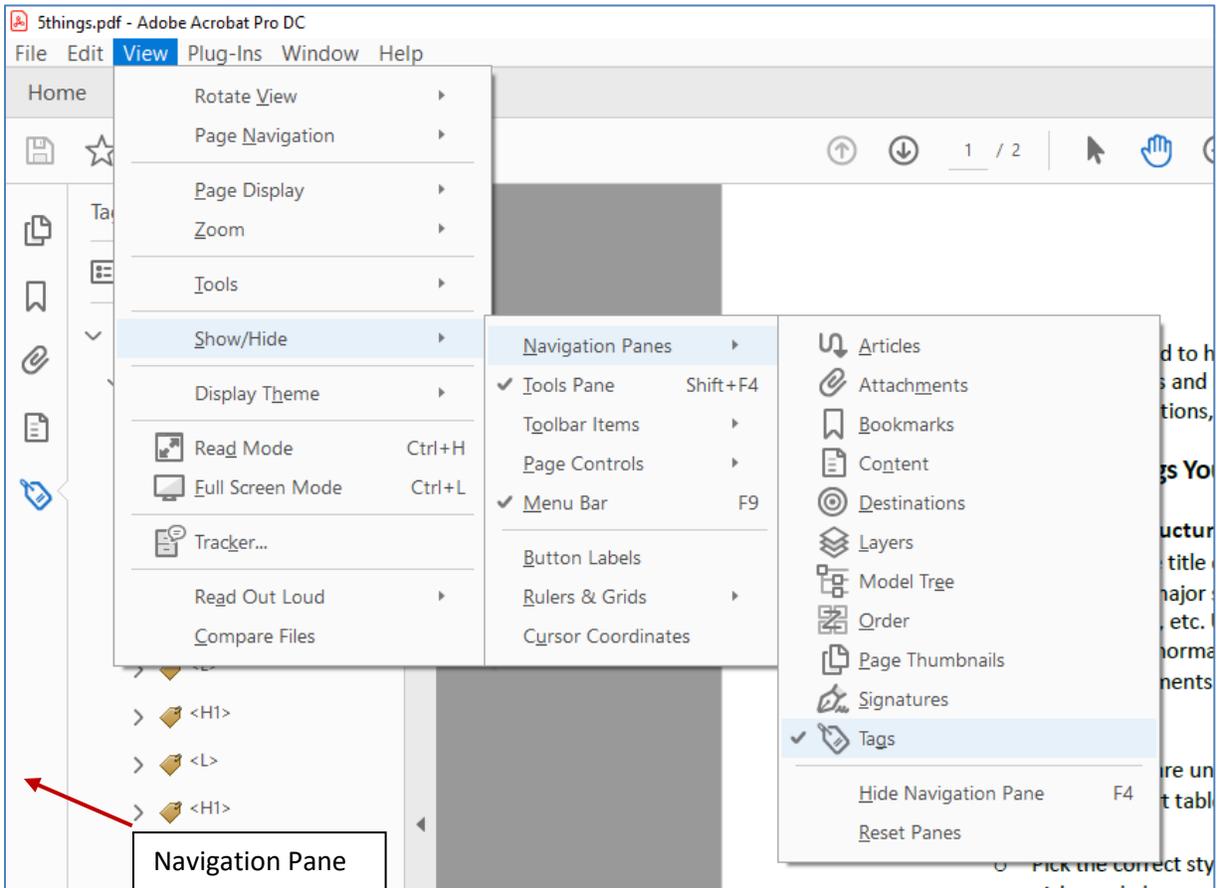
### Working with a PDF

Discussed in below are general, common actions needed to remediate a PDF for Section 508 conformance. This documentation is not a complete discussion on working with Adobe Acrobat. See <https://helpx.adobe.com/acrobat/user-guide.html> for using Adobe Acrobat and find keyboard shortcuts at <https://helpx.adobe.com/acrobat/using/keyboard-shortcuts.html>.

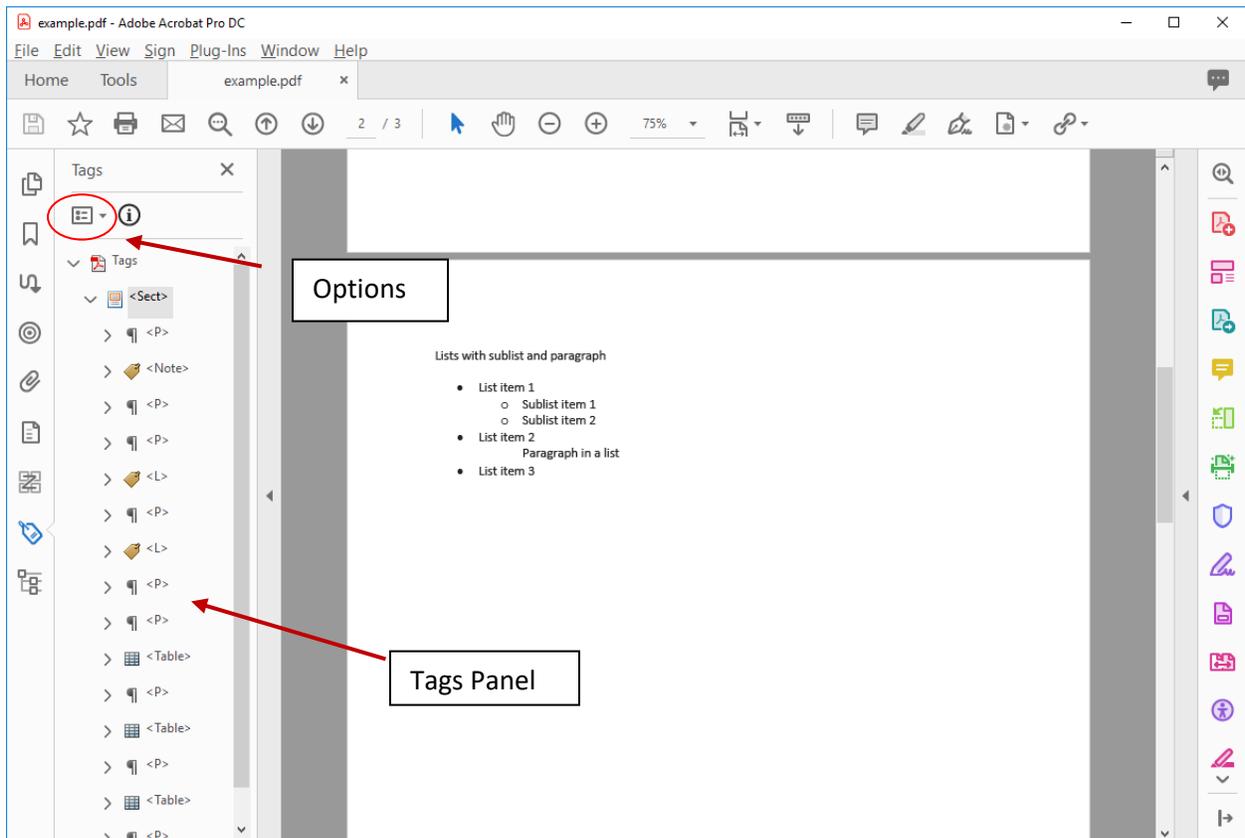
### Navigation Pane Panels

The “Tags” panel found on the “Navigation” pane is used for majority of remediation tasks covered in this document. Other panels such as “Content” and “Order” are used for limited, specific tasks.

Open a panel by selecting the “View” menu item, then select “Show/Hide,” then select “Navigation Panes,” and then select the appropriate panel. The screen shot below shows these steps to select the “Tags” panel in the “Navigation” pane.



The screen shot below shows the “Tags” panel open. Each panel contains an “Options” as highlighted in the screen shot below. Some remediation tasks use the “Options” menu.



## Tools Pane

Adobe Acrobat contains a number of tools. To access these tools, go to the “View” menu item, then select “Tools,” then select the tool to use.

### *Edit PDF tool*

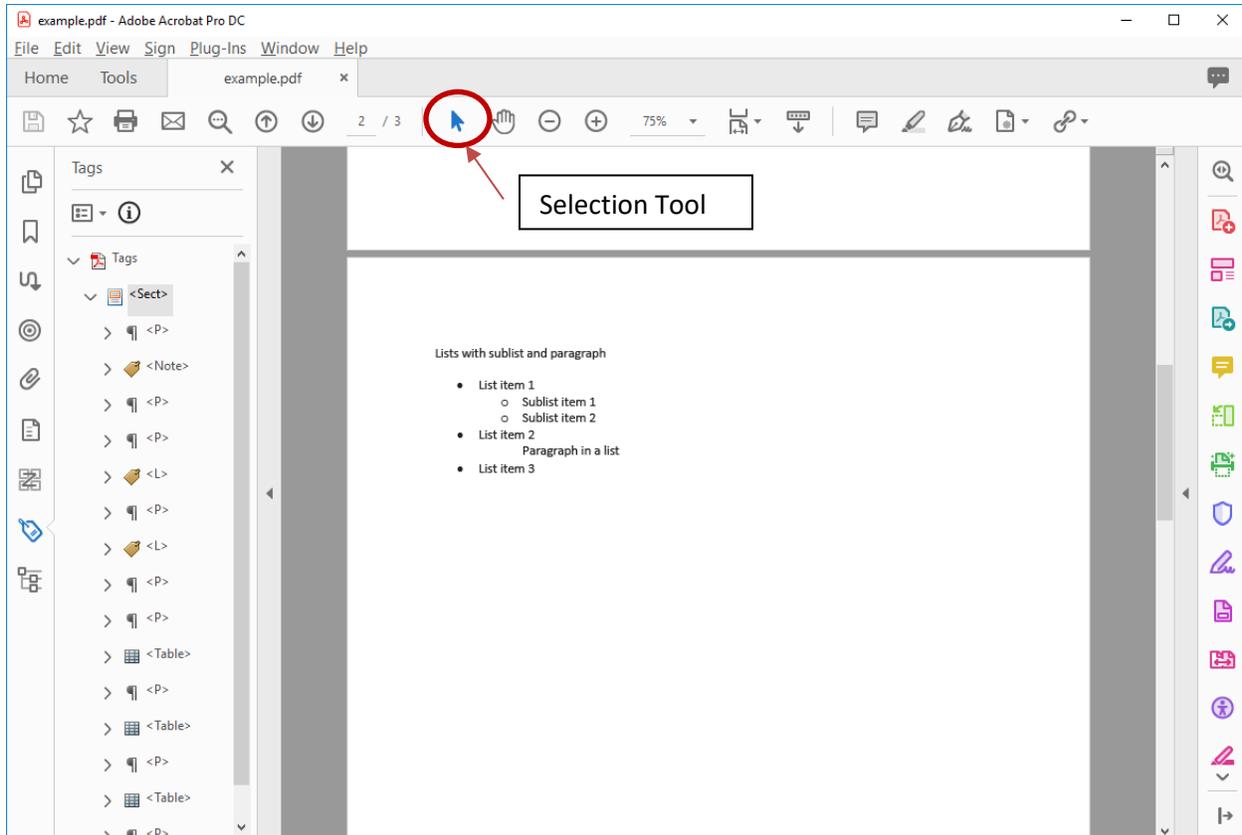
Using the “Edit PDF” tool to edit content may corrupt the tag structure of surrounding content. Recheck the tags after editing any content.

## Working with Tags

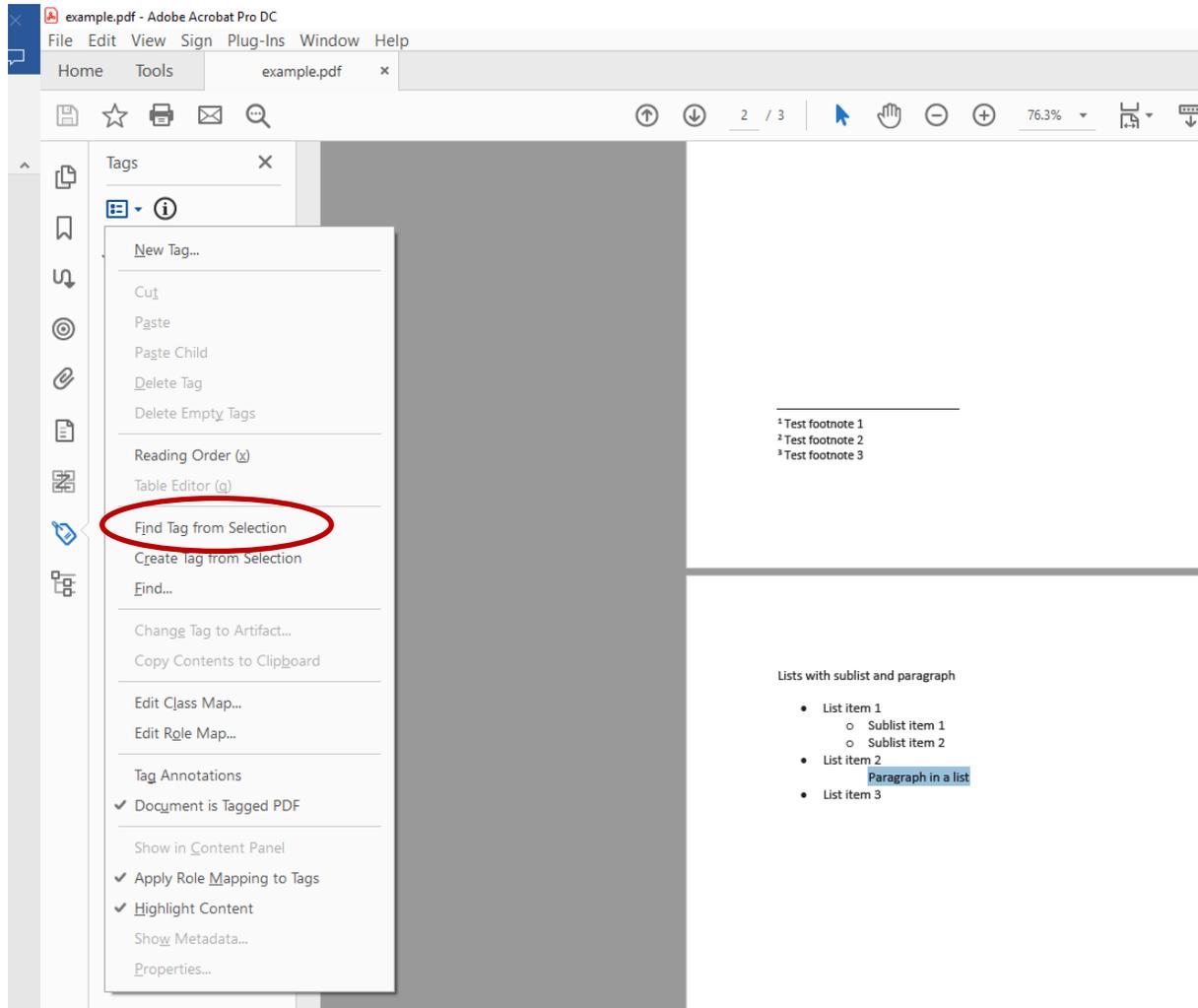
This section provides general instructions for working with tags in a PDF file.

## Finding a Tag

To find the tag for specific content in a document, activate the “Selection” tool. Typically this is found on the “Quick Tools” bar.

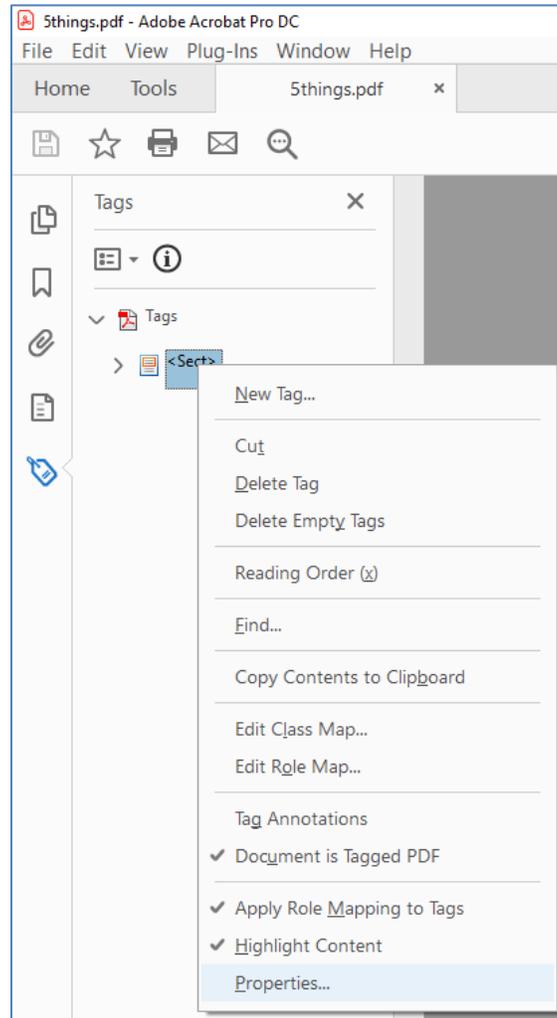


Highlight the content using the “Selection Tool” then select “Find Tag from Selection” from the “Options” menu as shown in the screen shot below. On selection of “Find Tag from Selection,” focus moves to the tag containing the highlighted content and the tag is expanded in the tag tree.

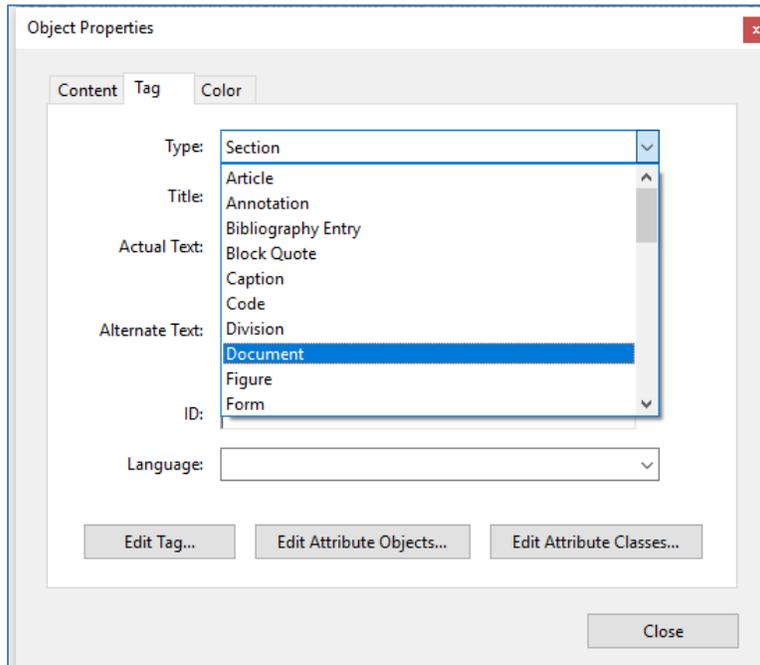


### Changing a Tag Label

If the tag label is not semantically correct, e.g., a “Paragraph” tag is a “Heading,” go to the “Options” menu and select “Properties.”

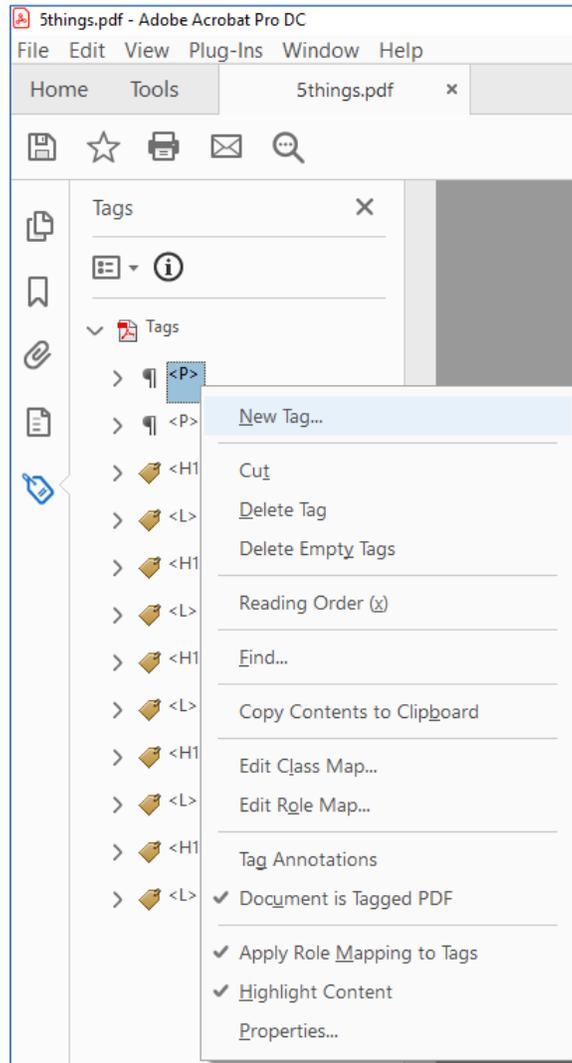


On the “Tag” tab, select the correct tag label type from the “Type” dropdown menu.

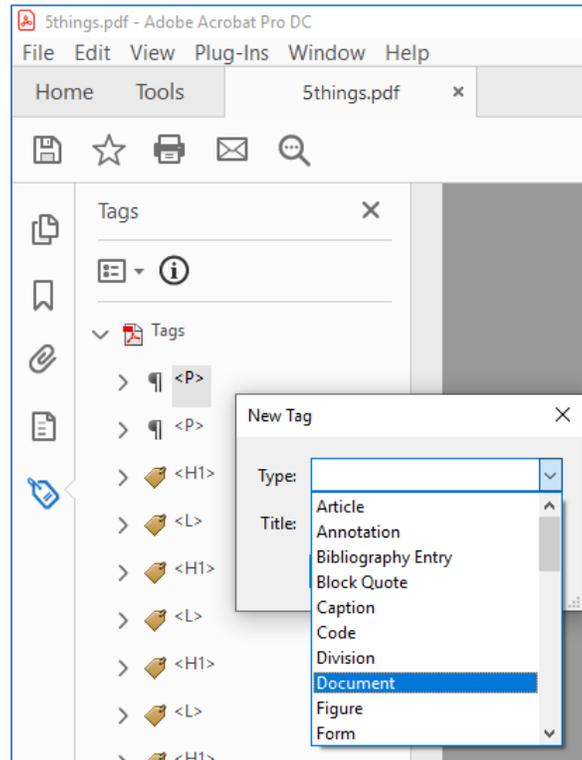


## Inserting a Tag

To insert a tag, select “New Tag...” from the “Options” menu.



In the “New Tag” dialogue box, select the tag type to insert from the “Type” dropdown menu.



### ***Moving a Tag***

Select the tag to move. Move the tag by dragging and dropping into the new location. Alternately, select “Cut” from the “Options” menu. Navigate to tag before where the cut tag is to be pasted. From the “Options” menu, select “Paste.” To nest the cut tag, select “Paste Child.”

### ***Content in a Tag***

To move content, expand the tag and navigate to the content. Follow the instructions above for “Moving a Tag.”

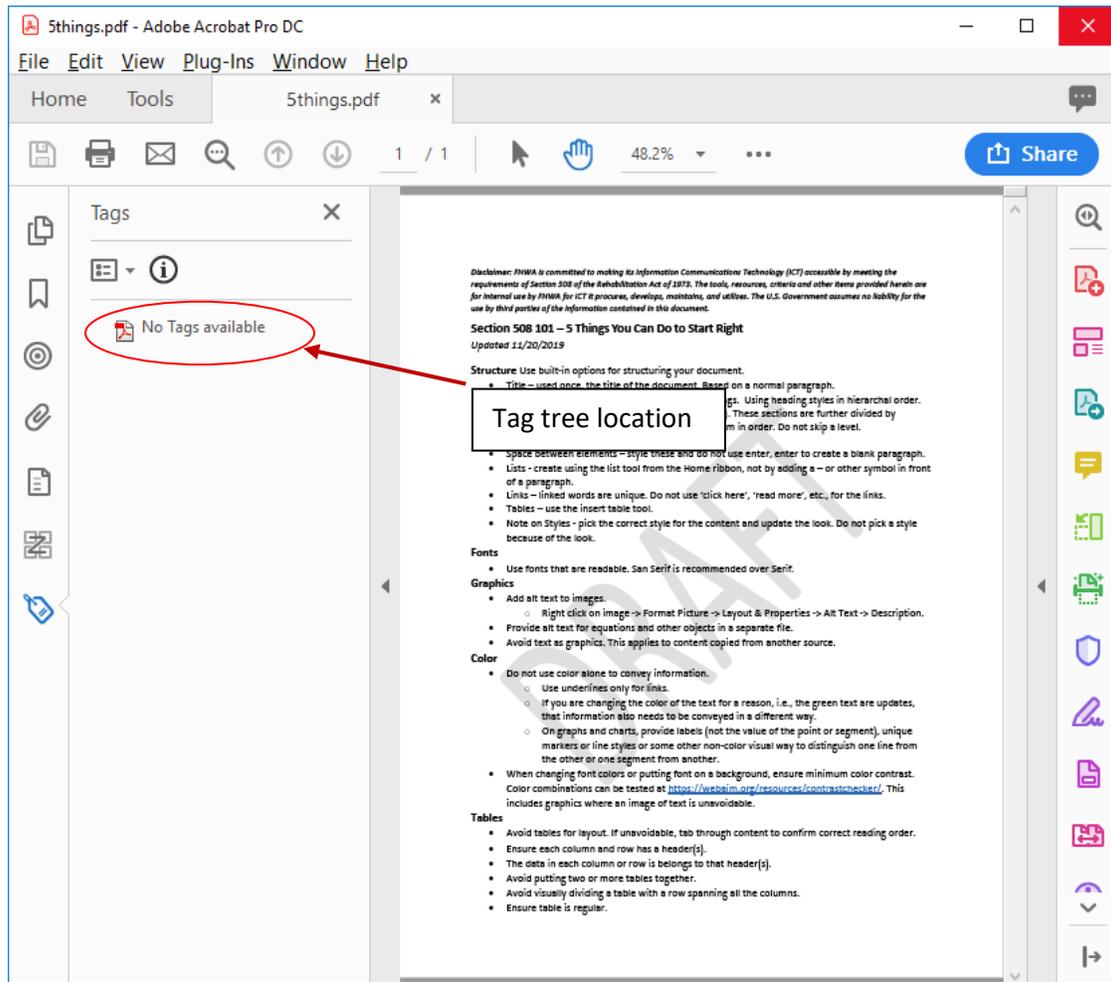
### ***Deleting a Tag***

Select the tag to delete. From the “Options” menu select “Delete Tag.”

## **Tagged PDF**

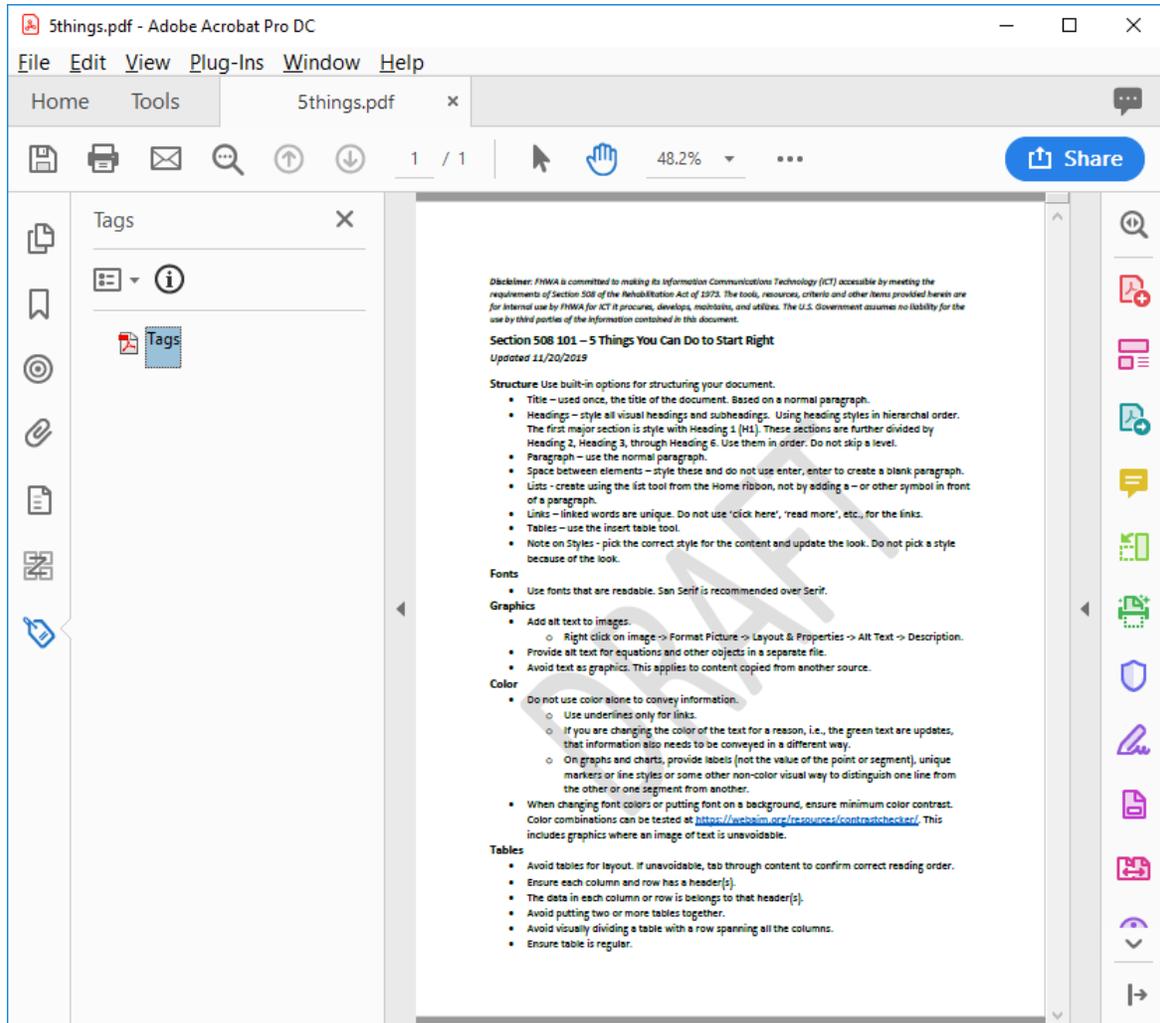
The first step to ensure a PDF is 508 conformant is to confirm the PDF is tagged. One way to determine the logical structure of a PDF is through formatted headings and other visual cues. However, some users cannot decipher the logical structure of a document using visual cues. “Tags” are used to convey the documents structure in a logical manner to assistive technologies, e.g., the big bold font is a heading, the blue underlined text is a link, the content is a list of four item. This logical structure of the tags is called a “Tag Tree.” Tags allow a proper reading of a document regardless of how the content is accessed by the user.

Check for tags by opening the “Tags” panel in the “Navigation” pane.

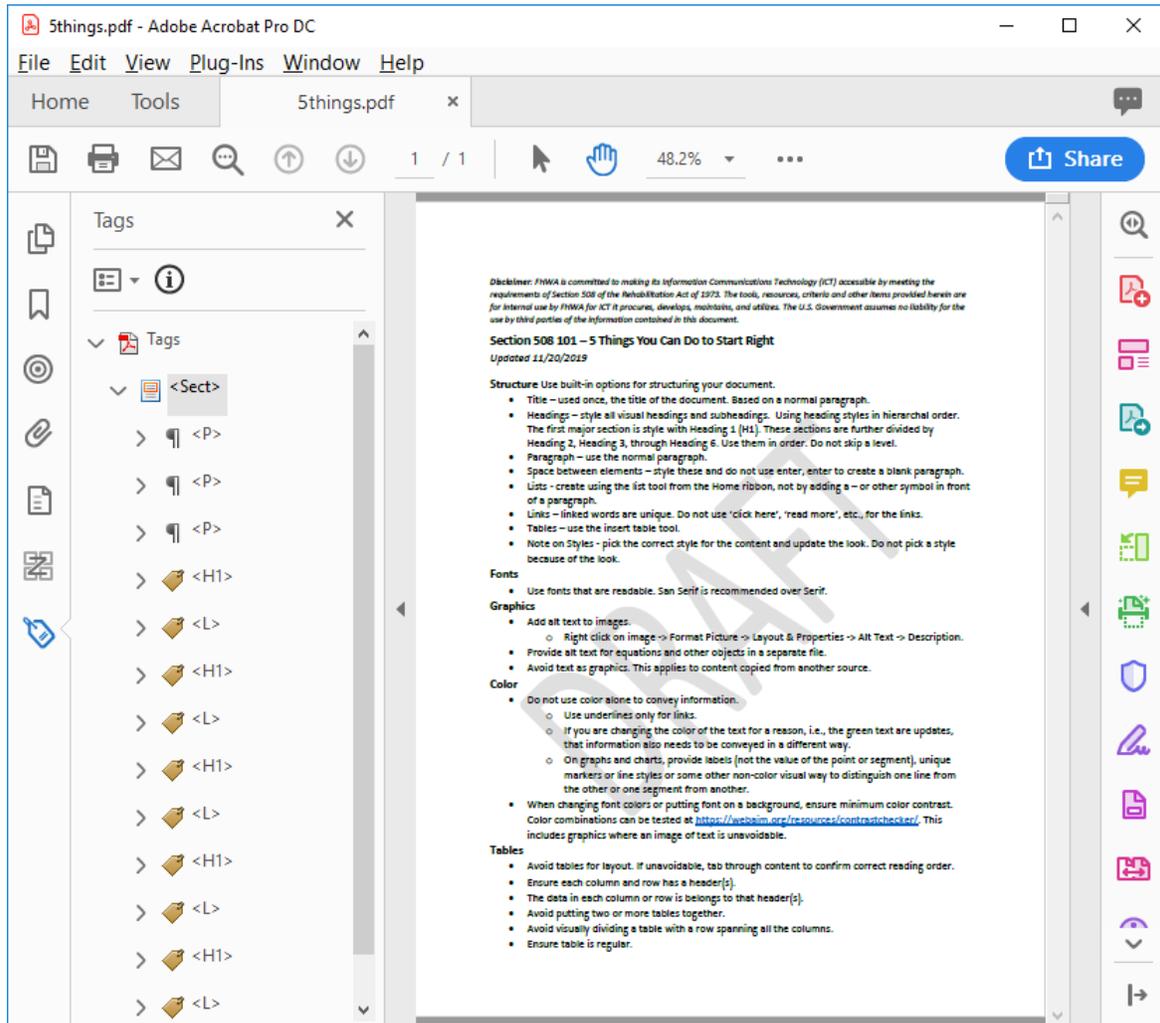


As shown above, in the “Tags” panel the location of the “Tag Tree” says “No Tags available.” This document is not 508 conformant. The file needs tags to remediate. Always create a tagged PDF from the source authoring tool.

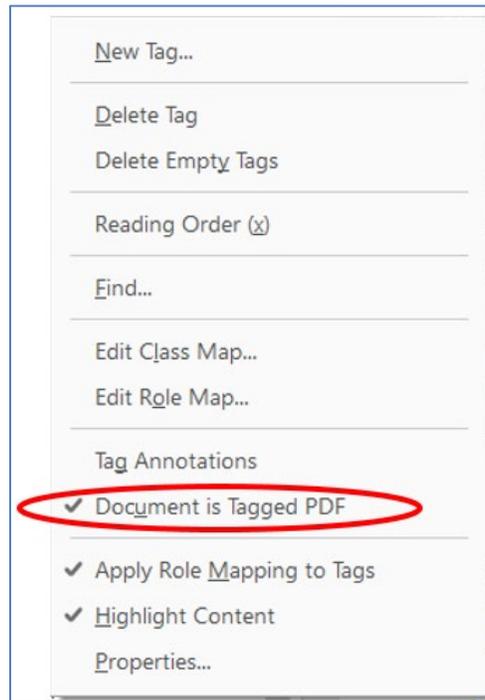
If the “Tags” panel shows “Tags” but the tag tree cannot be expanded either by clicking on the “>” to the left of “Tags” or by navigating to “Tags” and using the right arrow, as shown below, the document does not actually contain tags and is not 508 conformant.



If the tag tree is expandable and contains tags, as shown below, continue checking the document for 508 conformance following the procedures outlined in this document.



From the “Tags” panel, select the “Options” menu. Confirm “Document is Tagged PDF” is checked on the dialogue box. If not checked, select the phrase “Document is Tagged PDF” to check.



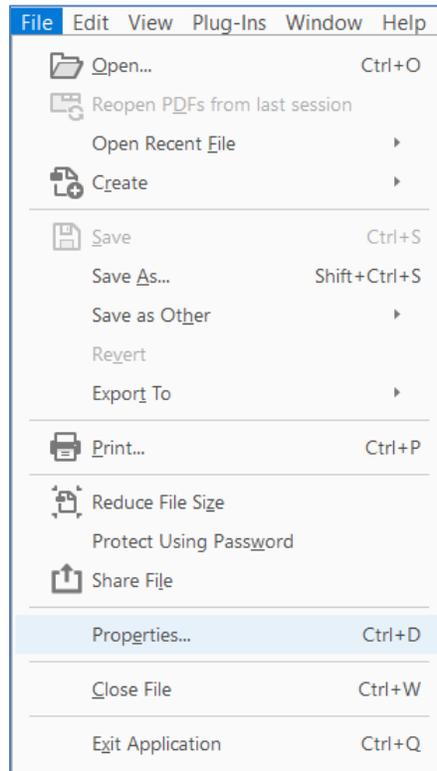
## References

- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/content-structure-separation-programmatic.html>.
- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/content-structure-separation-sequence.html>.

## Document Properties

Document properties provide additional information about the document allowing users to quickly access important information about the document, such as the title, author(s), keywords, and default language. This information is also called “metadata.”

Access the “Document Properties” dialog box in Adobe Acrobat by selecting “File” in the menu, then select “Properties.”

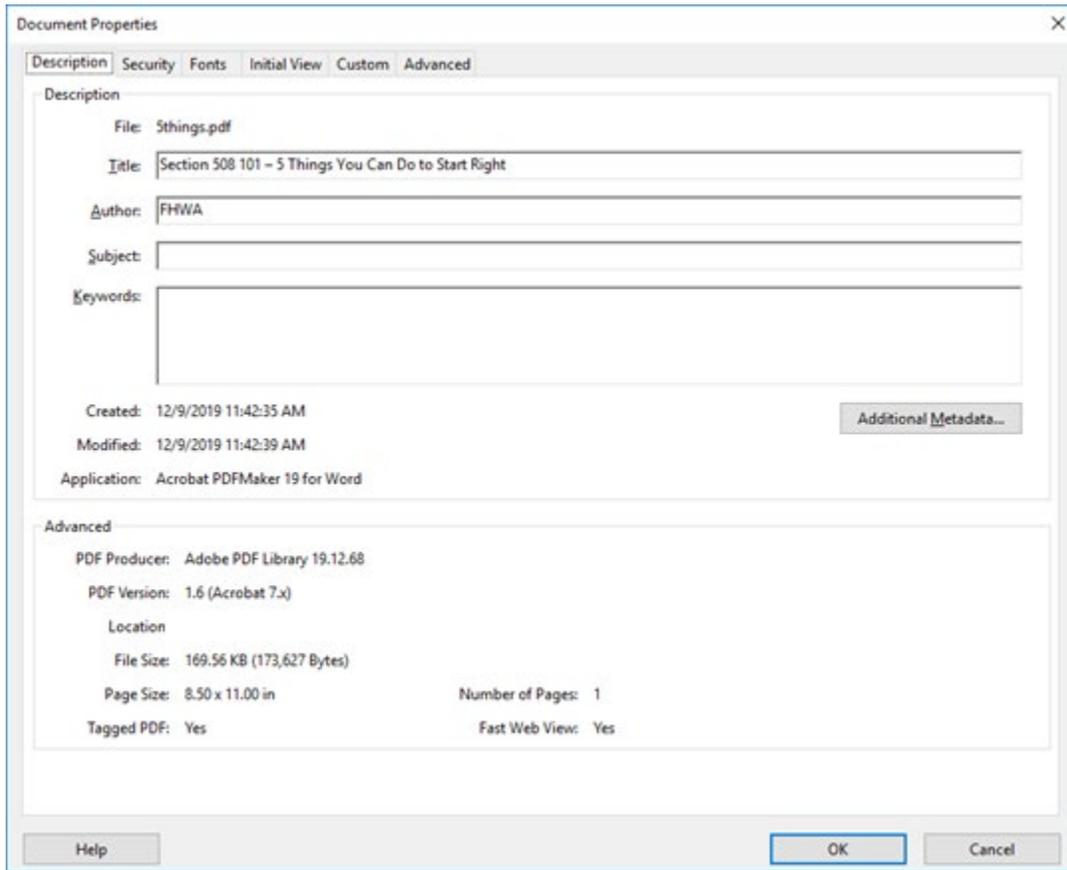


### Description

Select the “Description” tab and ensure the fields are completed as follows:

- Title is correct and complete.
- Author is FHWA (Agency guideline).

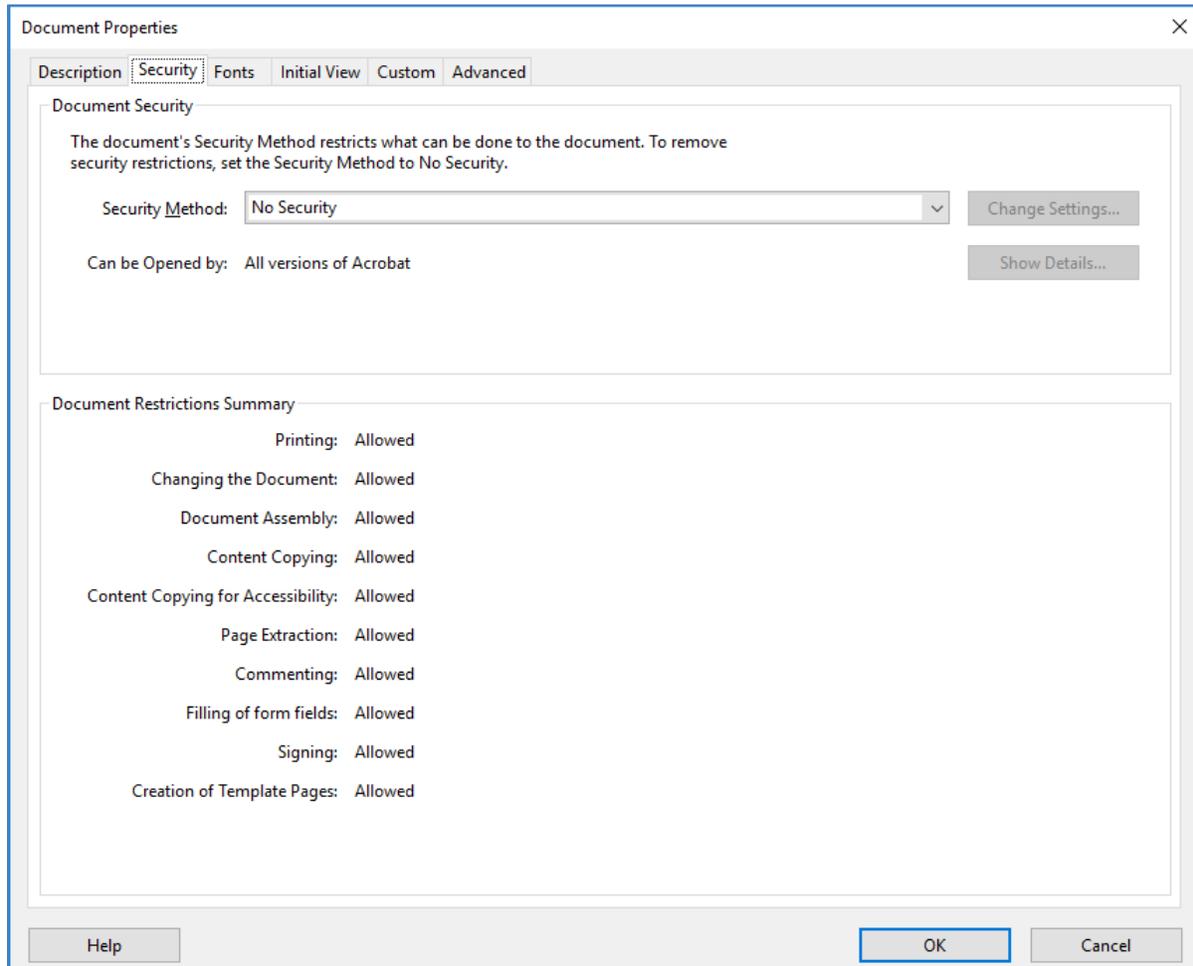
Inspect all the fields to confirm they do not contain references to any vendor or contractor (Agency guideline).



## Security

After the information in the “Description” tab is entered and confirmed correct, select the “Security” tab and ensure the following:

- “Content Copying for Accessibility” is allowed.



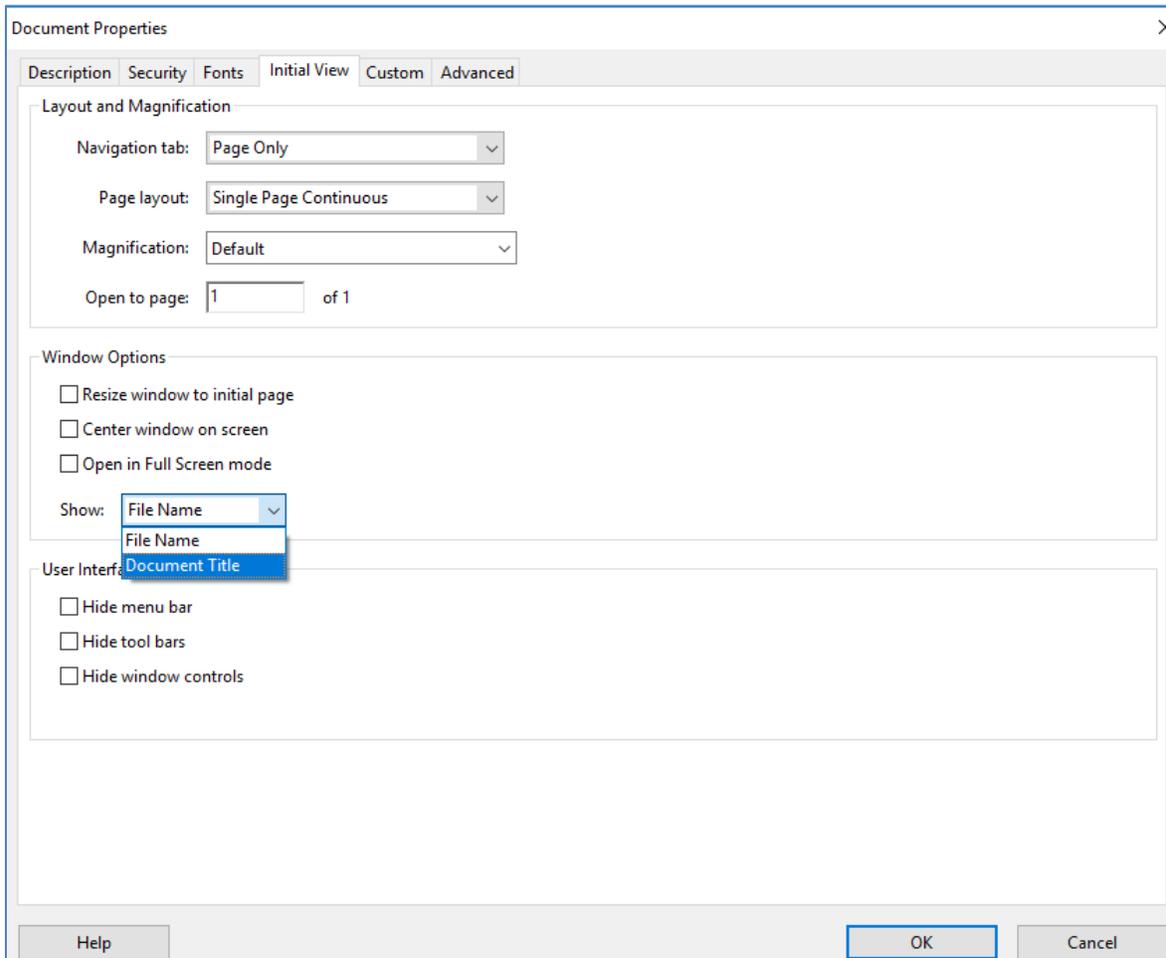
## Fonts

Note: no adjustments are necessary for the “Fonts” tab.

## Initial View

Go to the “Initial View” tab and ensure the document title instead of the file name is shown when opening the PDF by going to the “Windows Options” section then select “Document Title” from the “Show” dropdown menu.

Leave all the other settings for “Layout and Magnification,” “Windows Options,” and “User Interface Options” are as shown below (i.e., leave as their default setting).



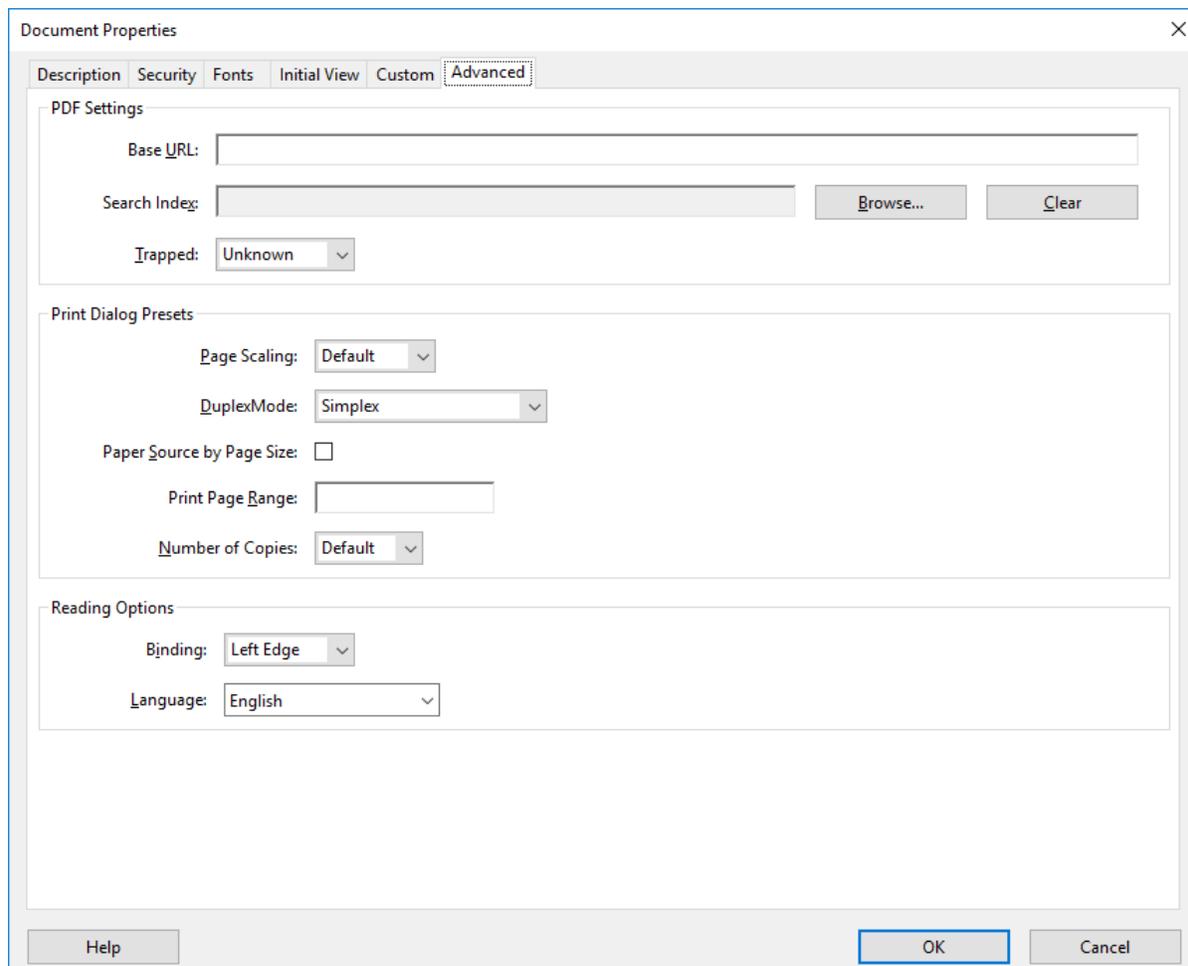
### Custom

Note: no adjustments are necessary for the “Custom” tab.

### Advanced

Select the “Advanced” tab and set the default language of the document by going to the “Reading Options” section and select the appropriate language from the “Language” dropdown menu.

If the document contains content in more than one language, set the default and manually set the language for the specific content using the instructions in the Language of Parts section in this document.



The screenshot shows the 'Document Properties' dialog box with the 'Advanced' tab selected. The dialog is divided into three sections: PDF Settings, Print Dialog Presets, and Reading Options. The PDF Settings section includes a text field for 'Base URL', a 'Search Index' field with 'Browse...' and 'Clear' buttons, and a 'Trapped' dropdown menu set to 'Unknown'. The Print Dialog Presets section includes 'Page Scaling' (Default), 'DuplexMode' (Simplex), a 'Paper Source by Page Size' checkbox, a 'Print Page Range' field, and 'Number of Copies' (Default). The Reading Options section includes 'Binding' (Left Edge) and 'Language' (English). At the bottom are 'Help', 'OK', and 'Cancel' buttons.

## References

- <https://www.w3.org/TR/WCAG20-TECHS/PDF16.html>.
- <https://www.w3.org/TR/WCAG20-TECHS/PDF18.html>.
- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/navigation-mechanisms-title.html>.

## Sensory Characteristics

Do not reference content solely by color, shape, size, sound, or location. Note: “above” and “below” references are acceptable to discuss content before and after a point in the content when presented in logical order. Avoid statements like, “press the green button to continue,” “refer to the list to the right,” “the top-left image shows...,” etc.

## Use of Color

Color alone cannot convey information. This criterion applies to all content, including text, links, and non-text content.

### *Text and Links*

Where the font color changes or is highlighted for a reason (e.g., a color-coded table, the green text are updates, red form fields are required, see the highlighted information), provide another way to uniquely, visually convey this information without color. This includes linked words among other text. See further discussion on links under "[Color Contrast](#)."

### *Non-text Content*

Non-text content includes items such as graphs, charts, and figures. Ensure any information conveyed by a color change is conveyed in another way to uniquely, visually convey this information without color. For line graphs, provide a unique marker, line style, or a descriptor pointing to each line. For charts, provide a unique pattern on each segment or the name of each segment near the segment. Adding the values of a point on a line or segment does not satisfy this criterion.

## Color Contrast

All text color combinations must meet WCAG 2.0 AA minimum color contrast requirements. Large text (i.e., 14 pt bolded and larger or 18 pt nonbolded and larger) must have a minimum color contrast of 3:1. Text not meeting the minimum for large text must have a minimum color contrast of 4.5:1. Minimum color contrast requirements apply to text-background combinations (e.g., black text on a white background) and images of text where the image replaces the text to maintain a certain look such as an infographic or flow chart.

The color contrast requirement does not apply to logos or where the text is incidental to a graphic. Text incidental to a graphic includes decorative text or are part of a graphic containing other significant visual content.

### *Links*

Minimum color contrast applies to linked words among other text where the only difference between the linked words and surrounding text is color (e.g., the underline typically representing a link is removed). In these cases, ensure minimum contrast of 3:1 or greater between the color of the link and the color of the surrounding text. In addition, provide another visual indicator when tabbing to or pointing to the link such as adding an underline or changing the font to bold. Link contrast requirements are in addition to the contrast requirements against the background.

Several websites and tools are available to check color contrast, including the following:

- <https://webaim.org/resources/contrastchecker>.
- <https://webaim.org/resources/linkcontrastchecker>.
- <https://developer.paciellogroup.com/resources/contrastanalyser>.

## References

- <https://www.w3.org/TR/WCAG20-TECHS/G14.html>.
- <https://www.w3.org/TR/WCAG20-TECHS/G111.html>.
- <https://www.w3.org/TR/WCAG20-TECHS/G182.html>.
- <https://www.w3.org/TR/WCAG20-TECHS/G183.html>.
- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/visual-audio-contrast-without-color.html>.
- <https://www.w3.org/TR/WCAG20-TECHS/G96.html>.
- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/content-structure-separation-understanding.html>.
- <https://www.w3.org/TR/WCAG20-TECHS/G145.html>.
- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/visual-audio-contrast-contrast.html>.

## Text as Text

Render text as text, not images of text. Exceptions to this rule include the following:

- When text is essential to a graphic (e.g., logo, flowchart, infographic, equation).
- The image of text is visually customizable to meet the users need.

## References

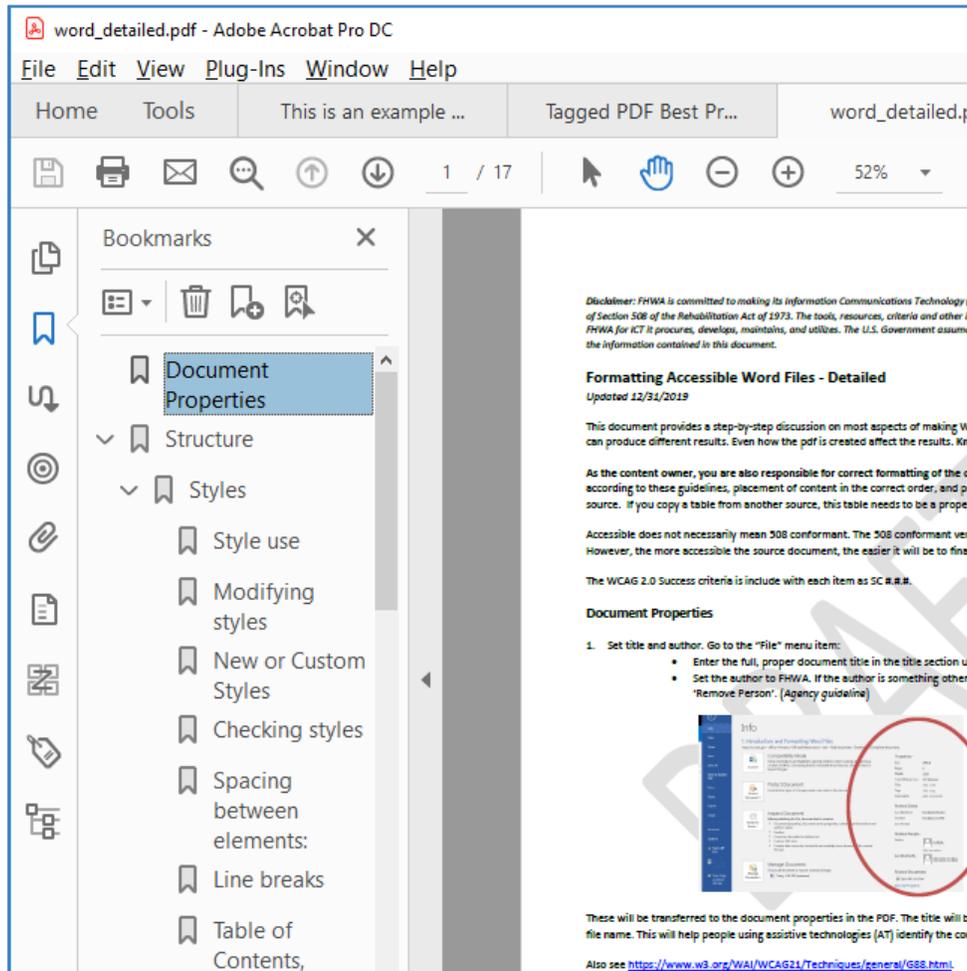
- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/visual-audio-contrast-text-presentation.html>

## Bookmarks

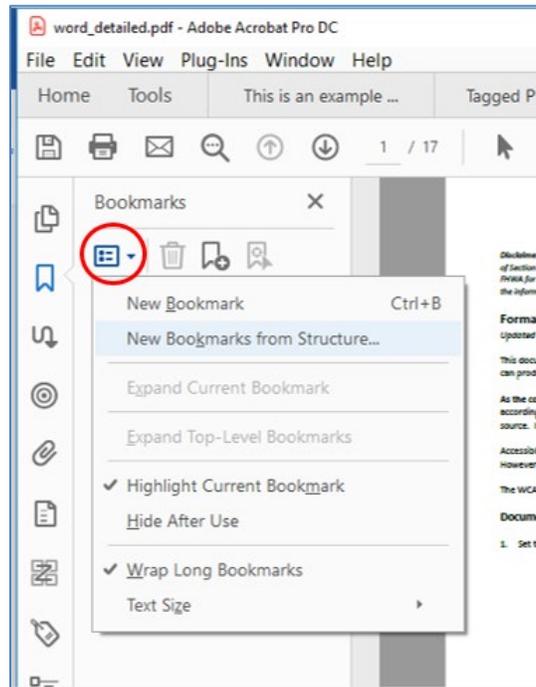
Bookmarks allow users to navigate a document by providing a hierarchal outline of the document.

Documents with more than nine pages require bookmarks. To ensure a document has bookmarks, open the “Bookmarks” panel on the “Navigation” pane, as shown in below. Confirm the bookmarks are

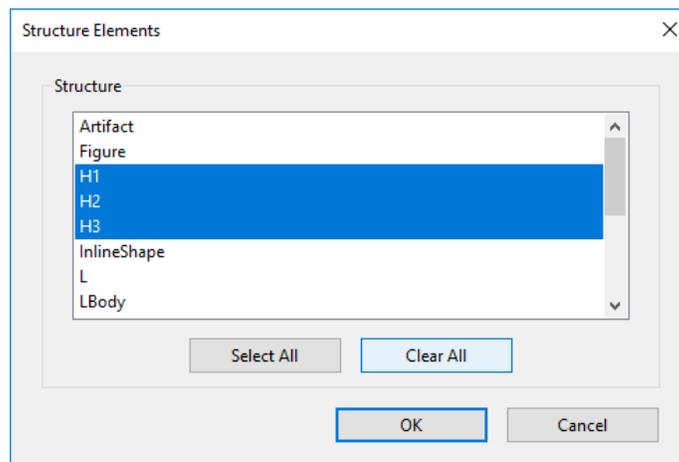
accurate and are representative of the document structure. Rearrange and nest bookmarks as needed using “Cut” and “Paste” commands found in the “Options” menu.



Generate bookmarks as needed. Select the "Options" menu item in the "Bookmarks" panel and select "New Bookmarks from Structure," as shown below.



Select all the available headings as shown below, then select "OK." Shown below, this example document has three heading levels, (i.e., H1, H2, and H3) that are presented in the "Structure Elements" dialogue box.



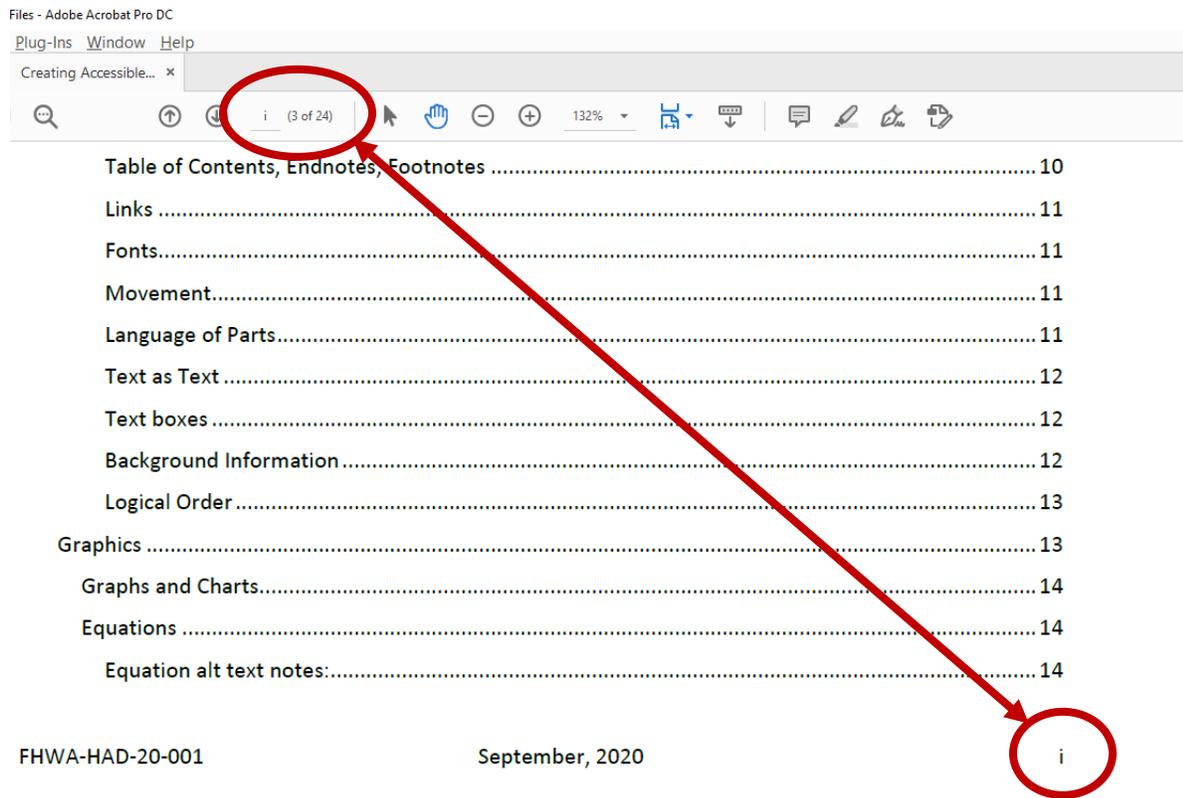
Once the bookmarks are generated, ensure they are correctly nested. Rearrange bookmarks as needed using "Cut" and "Paste" commands found in the "Options" menu.

## References

- <https://www.w3.org/TR/WCAG20-TECHS/PDF2.html>.
- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/navigation-mechanisms-mult-loc.html>.

## Page Numbering

Ensure the page numbering found in the PDF viewer matches the page numbering in the document. The page number in the screen shot is “i” as is the page number in the PDF viewer.



To change the page number displaying in the PDF viewer, navigate to the “Page Thumbnail” panel in the “Navigation” pane. Select the page(s) to be renumbered then select “Page Labels” from the “Page

“Page Thumbnails” on the “Options” menu. In the “Page Numbering” dialog box, set the options found under “Numbering” to match the number(s) in the document.

Page Numbering

Pages

All

Selected

From:  To:  of 24

Numbering

Begin new section

Style:

Prefix:

Start:

Extend numbering used in preceding section to selected pages

Sample: i, ii, iii, ...

OK Cancel

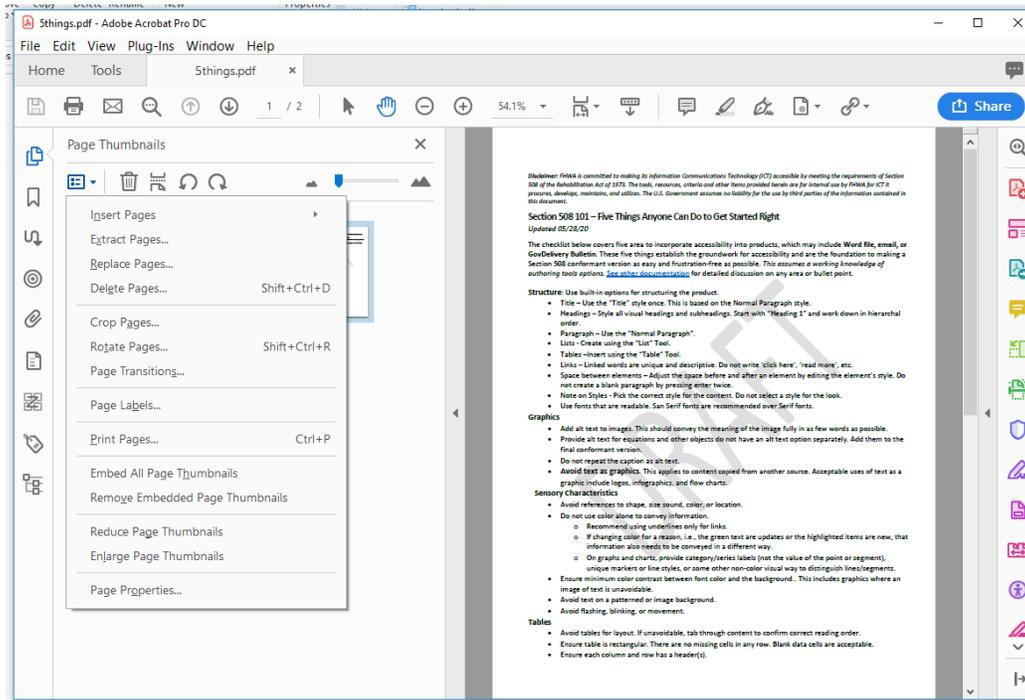
## References

- <https://www.w3.org/TR/WCAG20-TECHS/PDF17.html>.
- <http://www.w3.org/TR/2008/REC-WCAG20-20081211/#consistent-behavior-consistent-locations>.
- <http://www.w3.org/TR/2008/REC-WCAG20-20081211/#content-structure-separation-programmatic>.

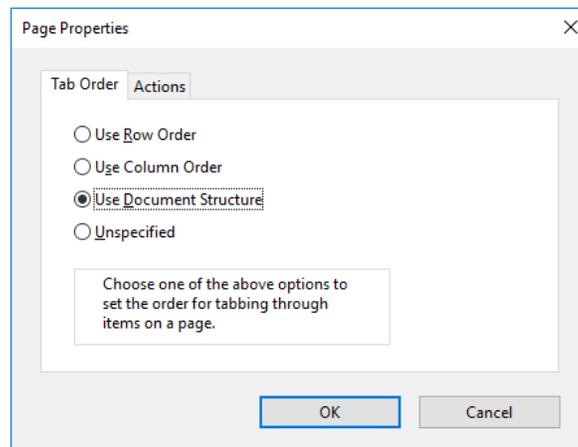
## Logical Tab Order

Specify the tab order for each document to ensure content is read in meaningful and understandable order. To do this, access the “Page Thumbnails” panel. Select all the pages by selecting one thumbnail

and selecting Ctrl + A on the keyboard. Navigate to the “Page Thumbnails” “Options” menu and select “Page Properties” as shown below.



In the “Tab Order” tab of the “Page Properties” dialog box, select “Use Document Structure,” and then select “OK,” as shown.



**References**

- <https://www.w3.org/TR/WCAG20-TECHS/PDF3.html>
- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/content-structure-separation-sequence.html>
- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/keyboard-operation-keyboard-operable.html>
- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/navigation-mechanisms-focus-order.html>

## Tags

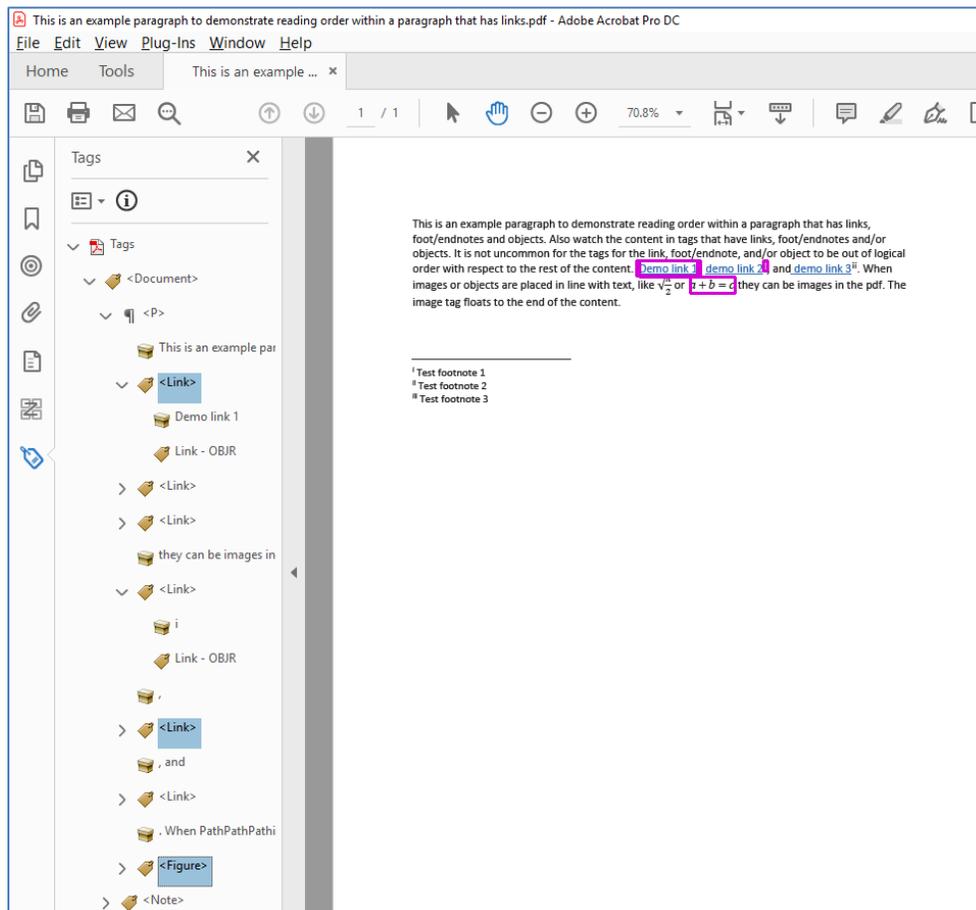
### Tagging Meaningful Content

Confirm all content conveying meaningful information is tagged. Remove any tags for content not conveying meaningful information using the steps in “Deleting a Tag” section. Content not conveying meaningful information includes:

- Blank/empty tags (except empty table data (TD) tags that are needed to keep the table structure).
- Extra hard returns.
- Page numbers.
- Redundant content (e.g., repeating header and/or footer content is tagged once).
- Decorative or background images used only as design elements.

### Content Order Within Tags

Confirm the content within each tag is in logical order, especially with tags containing links, footnotes, and objects elements. The screen shot below shows a paragraph with various elements inside a paragraph tag out of logical order. The links for the footnotes and the second equation are not in logical order because they appear after all the other content.

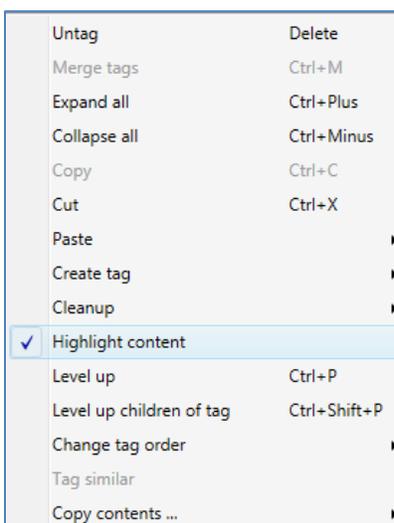


- Rearrange the content within the tags to be in logical reading.
- Reading order also applies to tables with figures (e.g., images, equations, logos) in cells. Commonly, figure tags are outside table tags. Reorder any out-of-order elements using the technique discussed above.

## Tag Order

Ensure tags are in logical reading order. Logical order is checked by inspecting the tags manually.

Check the tag order by expanding the tag tree and going through each tag one-by-one from the start of the tag tree to the end. To highlight the content associated with each tag, select “Highlight content,” from the “Options” menu. This action allows you to see the visual presentation of the elements contained in each tag.



Place any out-of-order tags in their correct, logical reading order.

Logical reading order does not have match identically the order in which content appears on a page. For example, some prefer a figure caption reads before the figure itself. In this case, the caption tag is moved to before the figure tag, where in print the caption appears after the figure. Another example, footnotes are placed at the bottom of a page in print, but the tags associated with each footnote typically are placed directly after they are introduced in a paragraph, which reflects the logical order in which content is read as opposed to the literal order as it appears on the page.

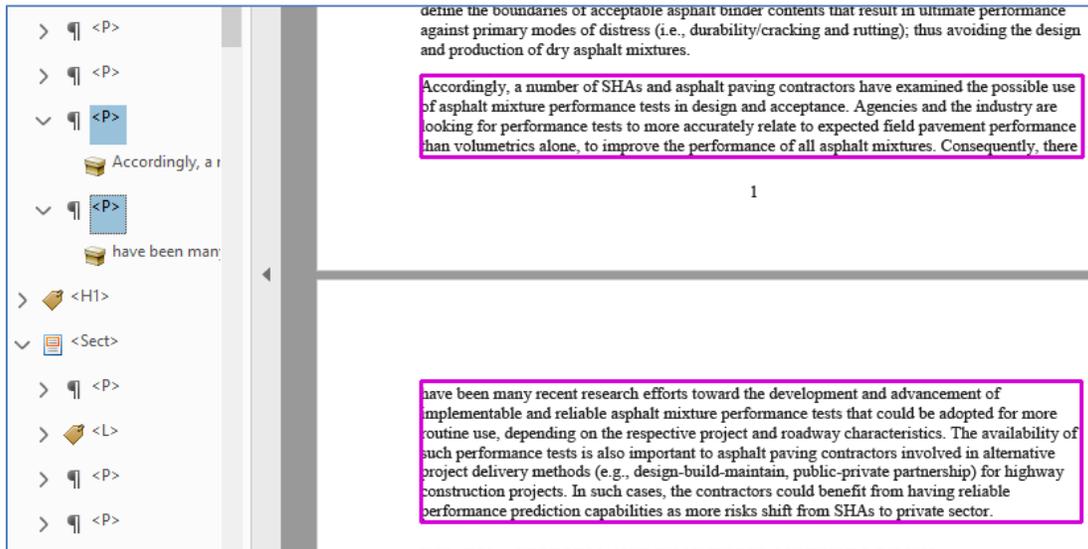
## References

- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/content-structure-separation-sequence.html>.

## Split Content

Be mindful of content spanning more than one page. In some cases, the content on the first page is tagged separately from succeeding pages, as shown below. Merge the separate tags into one tag. Content spanning more than one page is common for paragraphs, tables, tables of contents, and lists.

To merge split content, expand the applicable tags. Move the content from all applicable tags into one tag and ensure the content is in the proper reading order.



### Semantically Correct Tag Usage

Tag all meaningful content in semantically correct tags. Become familiar with the standard PDF tags available at [https://helpx.adobe.com/acrobat/using/editing-document-structure-content-tags.html#standard\\_pdf\\_tags](https://helpx.adobe.com/acrobat/using/editing-document-structure-content-tags.html#standard_pdf_tags). Inspect all tags to confirm they are used correctly (e.g., lists are tagged as lists and not paragraphs, headings are properly defined and provide hierarchal structure to the document). Specific tags are discussed in more detail in the following sections.

Some files may contain tags that are not a standard PDF tag. These tags are called “Nonstandard PDF tags.” See the discussion on “Role maps” in the “[Nonstandard PDF Tags](#)” section for more information on nonstandard PDF tags.

### References

- <https://www.w3.org/TR/WCAG20-TECHS/G115.html>.
- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/content-structure-separation-programmatic.html>

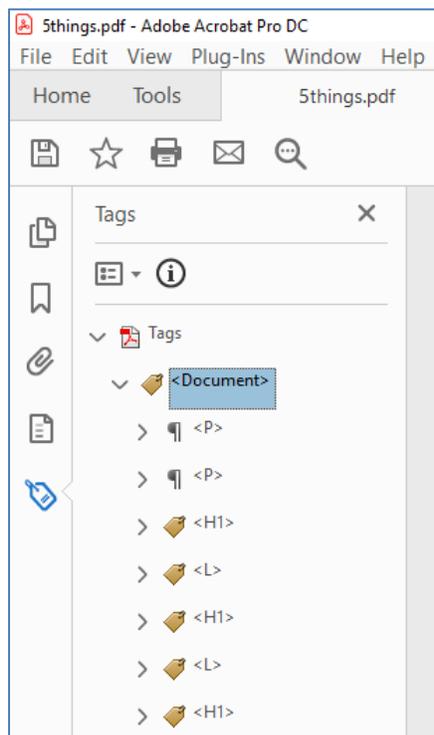
### Container Tags

#### *Document tag*

The “Document” tag is the main container tag. Nest all PDF tags under the “Document” tag so the tag tree will appear as:

- Tags
  - <Document>
    - {All tags}

This is also shown in the screen shot below.



### ***Other Container Tags***

The following are other container tags used to group tags under the <Document> tag.

- Part.
- Art(icle).
- Sect(ion).
- Div(ision).

Use none, one, two, or all the above other container tags in a file, typically in the order listed, to subdivide large content into semantically smaller sections. Use of the other container tags is not required. When used, use consistently (e.g., chapter title consistently in a Part, all subchapters in an Art).

### ***References***

- <https://www.pdfa.org/resource/tagged-pdf-best-practice-guide-syntax>.
- [https://helpx.adobe.com/acrobat/using/editing-document-structure-content-tags.html#standard\\_pdf\\_tags](https://helpx.adobe.com/acrobat/using/editing-document-structure-content-tags.html#standard_pdf_tags).

### **Title**

Tag the title and subtitle, as applicable, of a document as paragraph tags.

## Headings

Confirm all visual headings are tagged with heading tags, the headings are used in hierarchal order and the content within the heading is text. The main division, such as a chapter title, is tagged as H(eading)1. The next major grouping under H1 is H2, and so on.

Heading tags H2–H6 are used as needed in descending order to structure the document. Do not skip a heading level. Do not use the H tag (i.e., H with no number after it).

## References

- <https://www.w3.org/TR/WCAG20-TECHS/PDF9.html>.
- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/content-structure-separation-programmatic.html>.
- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/navigation-mechanisms-descriptive.html>.

## Paragraph

One paragraph is contained in a single paragraph tag. If more than one paragraph is contained in a single paragraph tag, extract the additional elements and nest the content under a separate paragraph tag. Do this as many times as necessary so every paragraph has its own paragraph tag.

## Table of Contents

Confirm tags of tables of contents (i.e., table of contents, list of figures, and list of tables) are tagged and nested correctly. Properly nested TOC tags match the outline or heading structure of the document.

Properly nest tables of contents as follows:

- <TOC> This is the root (main) level under which all TOCI tags are nested.
  - <TOCI> This is level 1 (e.g., chapter 1 or a main heading)
  - <TOCI> This is another level 1 (e.g., chapter 2 or a main heading).
    - <TOC> This is the entire table of contents for the subsections under the above level 1 (e.g., chapter 2)
      - <TOCI> This is the first subsection of level 1 (e.g., Chapter 2.1)
      - <TOCI> This is the second subsection of level 1 (e.g., Chapter 2.2)
      - ....
  - <TOCI> This is level 1.
  - ...

Every level of content in a table of contents is nested under its own TOC tag, i.e., each heading level is a TOCI child tag nested under a TOC parent tag, which is the child of the previous TOCI tag.

Nest each table of contents item in a single TOCI. Each TOCI contains a Reference tag, a Link tag (optional), the text of the TOCI, and a Link-OBJR. This information is nested as follows:

- TOCI
  - Reference
    - Link (Optional)
      - Text of the TOCI
      - Link-OBJR

When the Link tag is omitted, nest the text of the TOCI and the Link-OBJR under the Reference tag.

The screen shot below shows the tag tree for the TOCI “Structure.” Structure is a H1 in the document. “Structure” contains two subheadings, “Styles” and “Formatting” tagged as H2 in the document. These two subheadings are further divided into subsections, “Style Use,” “Headings,” etc.

The screenshot displays the Adobe Acrobat Pro DC interface. The main window shows a document titled "Creating Accessible Word Files" with a "Table of Contents" view. The Table of Contents lists various sections and their page numbers, with "Structure" highlighted in a pink box. The "Tags" panel on the left shows a hierarchical tree structure. The "Structure" tag is expanded, showing a "Reference" tag, which is further expanded to show "Structure" and "Link - OBJR".

Section	Page Number
Table of Contents	i
Document Properties	1
Title and author	1
Language	2
Saving	2
Structure	2
Styles	3
Style use	3
Headings	3
Modifying styles	4
Spacing between elements	6
Line breaks	9
Page Breaks	9
New or Custom Styles	9
Formatting	9
Built-in tools	9
Use built-in tools to create:	9
Table of Contents, Endnotes, Footnotes	10
Links	11
Fonts	11
Movement	11
Language of Parts	11
Text as Text	12
Text boxes	12
Background Information	12
Logical Order	13
Graphics	13
Graphs and Charts	14
Equations	14

### References

- <https://www.w3.org/TR/WCAG20-TECHS/G64.html>.
- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/navigation-mechanisms-mult-loc.html>.
- <https://www.levelaccess.com/table-of-contents>.

## Lists

Confirm all lists are tagged nested and correctly.

- <L> This is the root (main) level under which all LI tags are nested.
- <LI> This is a list item containing all list elements, including the label and list body.
  - <Lbl> This is the list label containing the bullet point or ordered-list number/letter. Use of the Lbl tag is optional.
  - <LBody> This is list body containing all the content of a bullet item. If other elements (e.g., paragraphs, tables, images, properly tagged sublists) appear between items in a list, nest them under this tag.

Be mindful of lists breaking over pages. They may be tagged as multiple L tags or content incorrectly tagged.

Tag each list in only one L tag. Tag each bullet item in only one LI tag. For example, a list of five items is tagged as shown:

The screenshot shows the Adobe Acrobat Pro interface. The main window displays a PDF document titled "Ground Modification Methods Reference Manual – Volume I". The document content includes a section header "1.0 DESCRIPTION AND HISTORY", a sub-section "1.1 Description", and a bulleted list of five items. The first item is highlighted with a blue box. The Acrobat interface shows the "Tags" panel on the left, which displays a tree view of the document's structure, including the list items and their tags.

1.0 DESCRIPTION AND HISTORY

1.1 Description

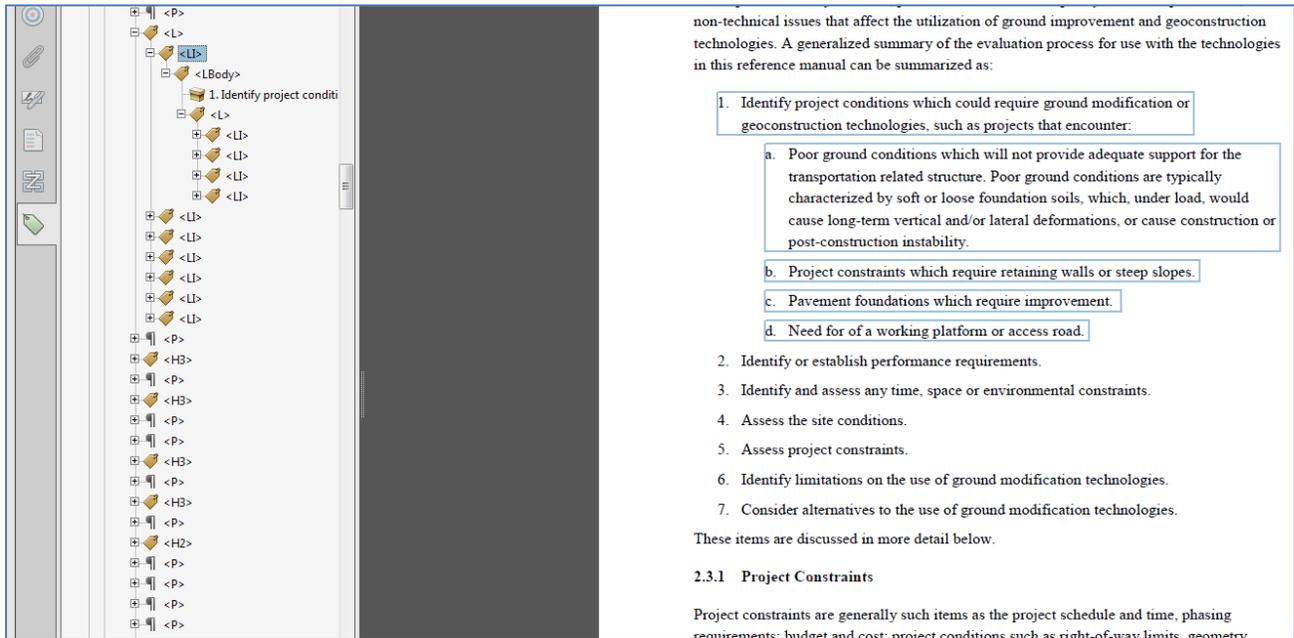
The unit density of most compacted soil fills, consisting of sands, silts, or clays, generally ranges from about 115 to 140 pounds force per cubic foot (pcf). The use of such conventional earth fill material can result in significant settlement or decreased stability on some projects. On some projects, it is desirable to use an alternate fill material with a lower unit density to reduce the magnitude of applied earth loads.

In such situations, the use of a lightweight fill material can result in reduced settlement and/or increased stability. The large variety of lightweight fill materials provides a large range in densities, ranging from less than 1 to about 90 pcf. Lightweight fills are most often used to reduce the applied loads to (after Caltrans 2014):

- Eliminate or significantly reduce magnitude of embankment settlement.
- Eliminate or significantly reduce time required to achieve embankment settlement.
- Reduce lateral pressure behind retaining walls, abutments, and other structures.
- Reduce driving force in landslide repair.
- Increase embankment resistance to seismic loads (low unit weight (density) results in lower seismic inertial forces).

1.2 Historical Overview

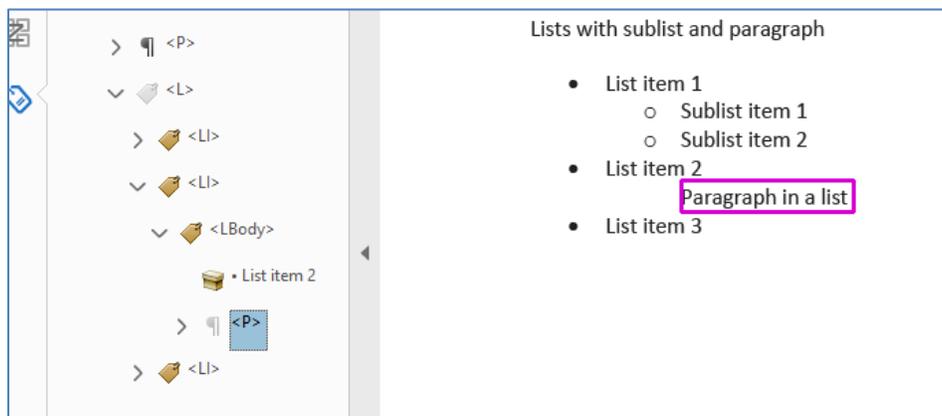
Tag a list of seven items, the first of which contains a sublist of four items as shown:



The screen shot below shows a common issue of lists containing sublists and other elements, such paragraphs, figures, and tables. The first bullet contains a nested sublist, which is tagged correctly and nested in the Lbody tag of the first list item. The second bullet contains a paragraph, which is incorrectly tagged as a list of two items and a separate paragraph. The third bullet is tagged as a list with one item.



To remediate a list broken into separate tags, nest the paragraph tag under the Lbody tag of the second bullet, move the LI tag for the third bullet so it becomes the third bullet under the first L tag, and delete the second L tag (which is now empty), as shown:



### References

- <https://www.w3.org/TR/WCAG20-TECHS/PDF21.html>.

### Tables

Properly tag tables.

Do not add alt text to tables as it can force assistive technology to read the alt text instead of the content of the table.

If a table breaks over two or more pages, ensure column header rows for the second and subsequent pages are untagged. Tag as one table without regard to the page breaks.

Properly structure tables as follows:

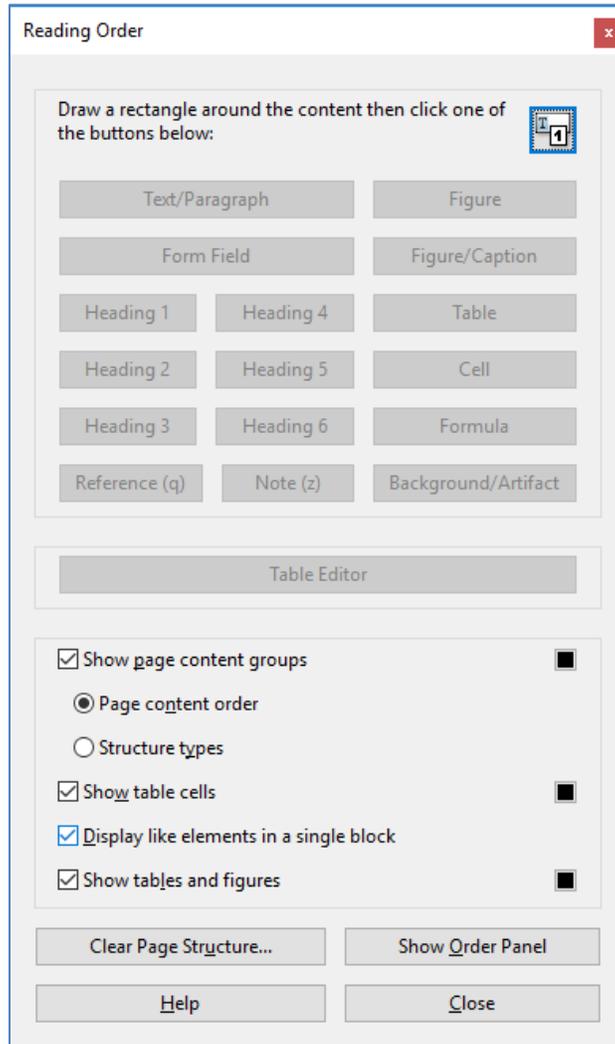
- <Table> This is the root (main) level under which all TR tags are nested.
  - <TR> This is the table row tag, which defines all cells in a horizontal row. <TR> is a child of <Table>.
    - <TH> This is the table header tag, which defines table cells that are column or row headers. TH is a child of TR.
    - <TD> This is the table data tag, which define table cells that contains data. TD is a child of TR.

### Table Editor Initial Setup

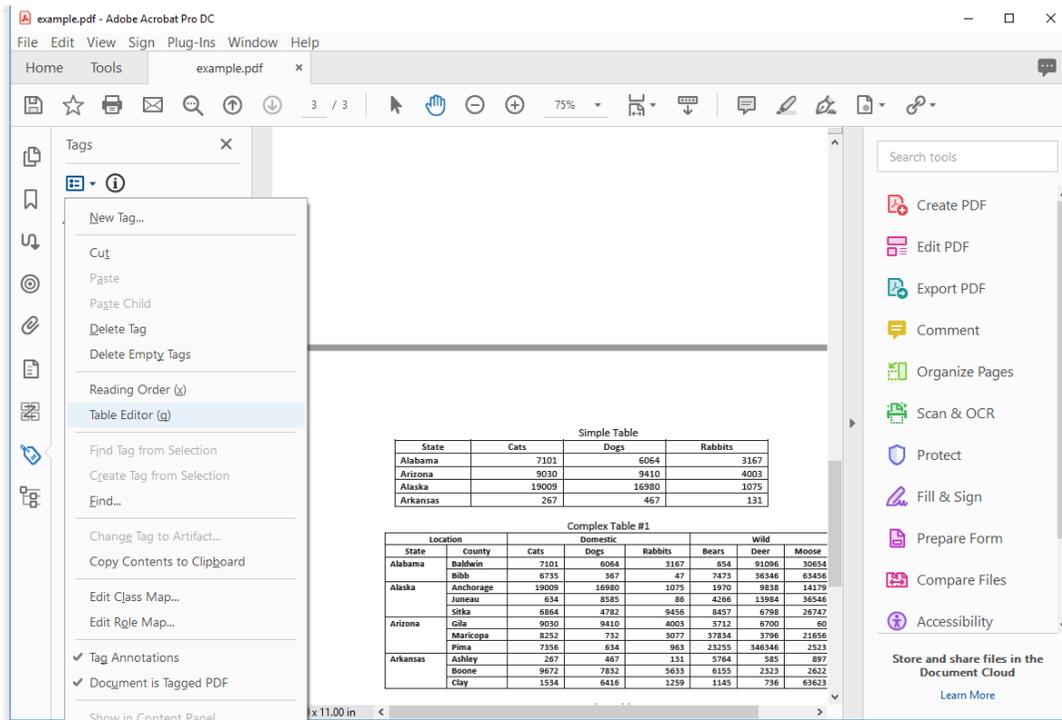
A user only needs to set up the “Table Editor” options in the “Reading Order” tool once; the settings will remain each time a new PDF is opened. In the “Reading Order” tool, confirm the following are checked:

- “Show page content groups.”
- “Show table cells.”
- “Display like elements in a single block.”

- “Show tables and figures.”



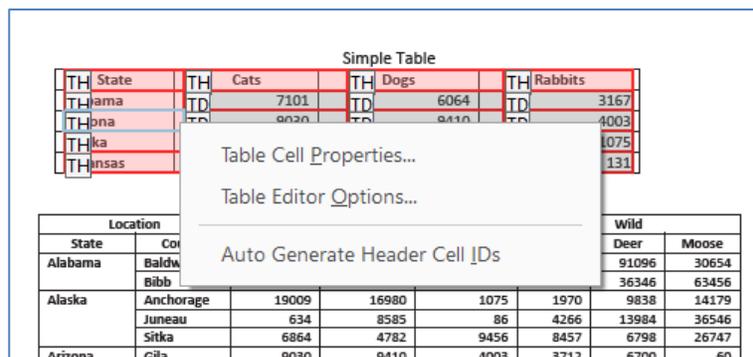
Navigate to a table tag in the “Tags” panel and select “Table Editor” from the “Options” menu.



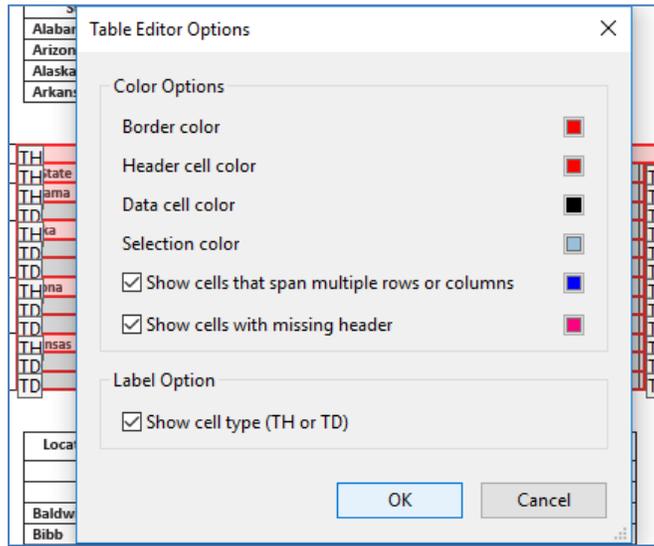
When the “Table Editor” is selected, the table is highlighted. The table header (TH) and table data (TD) cells are identified.

TH State	TH Cats	TH Dogs	TH Rabbits
TH ama	TD 7101	TD 6064	TD 3167
TH ona	TD 9030	TD 9410	TD 4003
TH ka	TD 19009	TD 16980	TD 1075
TH nsas	TD 267	TD 467	TD 131

To edit a cell, navigate to it. Select the context menu by right clicking on it or selecting Shift + F10 then select “Table Editor Options...”



Under Label Option, confirm “Show cell type (TH or TD)” is checked.



**Table Remediation**

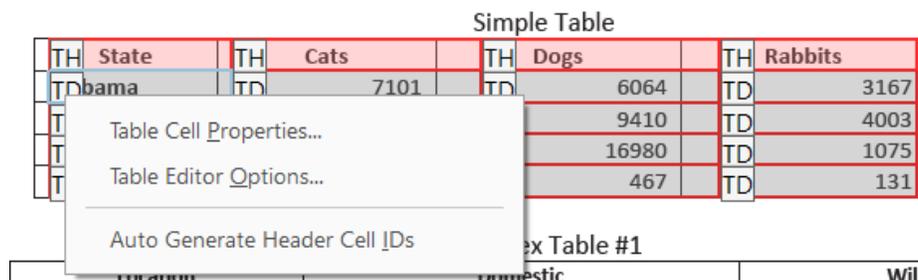
For all tables, confirm all column and row headers are identified as TH with their appropriate scope and all data cell.

The screen shot below shows a table where the row headers are identified as TD instead of a TH.

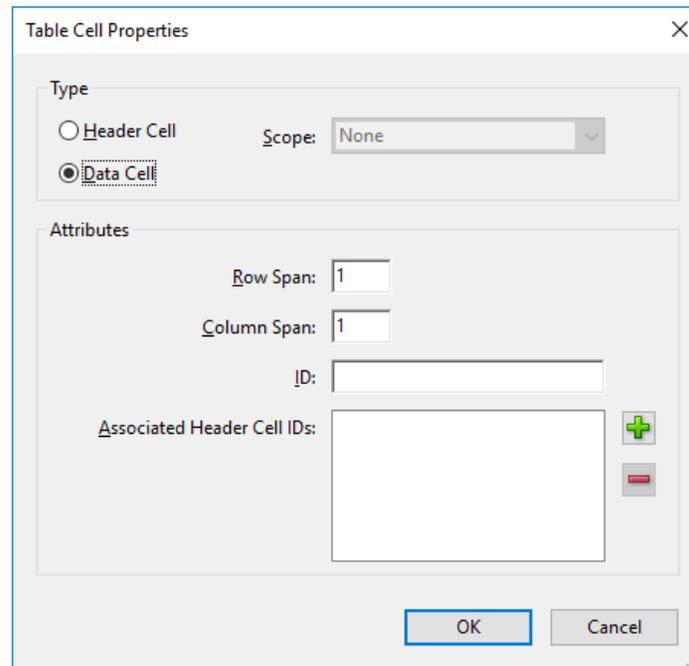
**Simple Table**

TH State	TH Cats	TH Dogs	TH Rabbits
TDama	TD 7101	TD 6064	TD 3167
TDona	TD 9030	TD 9410	TD 4003
TDska	TD 19009	TD 16980	TD 1075
TDansas	TD 267	TD 467	TD 131

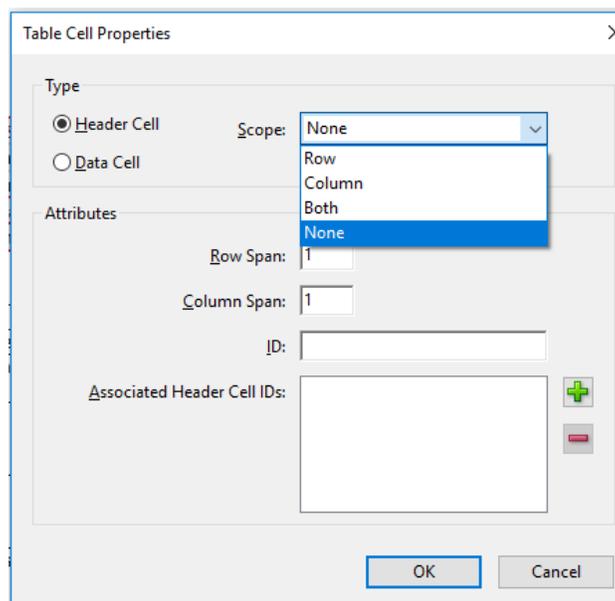
To change a TH to a TD or a TD to a TH, navigate to the cell and select “Table Cell Properties...” from the context menu.



In the “Table Cell Properties” under “Type” select “Header Cell” to change the cell to a TH. Select “Data Cell” to change the cell to a TD.



For all TH cells, identify the “Scope.” The “Scope” specifies if the TH is a header for a column “Scope: Column” or a header for a row “Scope: Row.” The “Scope” is found in the “Type” section of the “Table Cell Properties” dialog box. It becomes active when “Header Cell” is selected.



Select “OK” when edits are completed.

**Simple Tables**

Simple tables have one row of column headers and/or one column of row headers. For tables containing both column and row headers, the first cell in the first column is a column header. All other cells in that column are row headers. Simple tables do not contain any merged cells.

State	Cats	Dogs	Rabbits
Alabama	7101	6064	3167
Arizona	9030	9410	4003
Alaska	19009	16980	1075
Arkansas	267	467	131

Inspect each table to identify row and column headers. Ensure each column header is identified with a TH tag and the “Scope” is “Column.” Ensure each row header is identified with a TH and the “Scope” is “Row.” For each TH with the “Scope” of “Column,” ensure all the data in a column is associated with its header. Do the same for TH with the “Scope” of “Row.” Ensure all the data in a row is associated with its header. If a column or row contains data not associated with its header, it is a complex table needing “Headers” and “ID” to make the associations between data cell and its headers. Adding “Headers” and “ID” to the TH and TD cells is beyond the scope of this documentation.

Simple Table			
TH State	TH Cats	TH Dogs	TH Rabbits
Alabama	TD 7101	TD 6064	TD 3167
Arizona	TD 9030	TD 9410	TD 4003
Alaska	TD 19009	TD 16980	TD 1075
Arkansas	TD 267	TD 467	TD 131

**Complex Tables**

Complex tables have more than one header row for each column header, or vice versa, and often have merged cells. Use “Scope” to markup complex tables only when everything in the column or row is associated with its header as discussed in the “Simple Table” section.

The screen shot below show the same complex table formatted two different ways. The first table is formatted in a manner where “Scope” is used to markup the table. For example, all the data in the

columns under “Domestic” is related to that header. The same goes with the rows associated with Alaska. Set the TH for each column and row header along with its scope.

Complex Table #1

Location		Domestic			Wild		
State	County	Cats	Dogs	Rabbits	Bears	Deer	Moose
Alabama	Baldwin	7101	6064	3167	654	91096	30654
	Bibb	6735	367	47	7473	36346	63456
Alaska	Anchorage	19009	16980	1075	1970	9838	14179
	Juneau	634	8585	86	4266	13984	36546
	Sitka	6864	4782	9456	8457	6798	26747
Arizona	Gila	9030	9410	4003	3712	6700	60
	Maricopa	8252	732	3077	37834	3796	21656
	Pima	7356	634	963	23255	346346	2523
Arkansas	Ashley	267	467	131	5764	585	897
	Boone	9672	7832	5633	6155	2323	2622
	Clay	1534	6416	1259	1145	736	63623

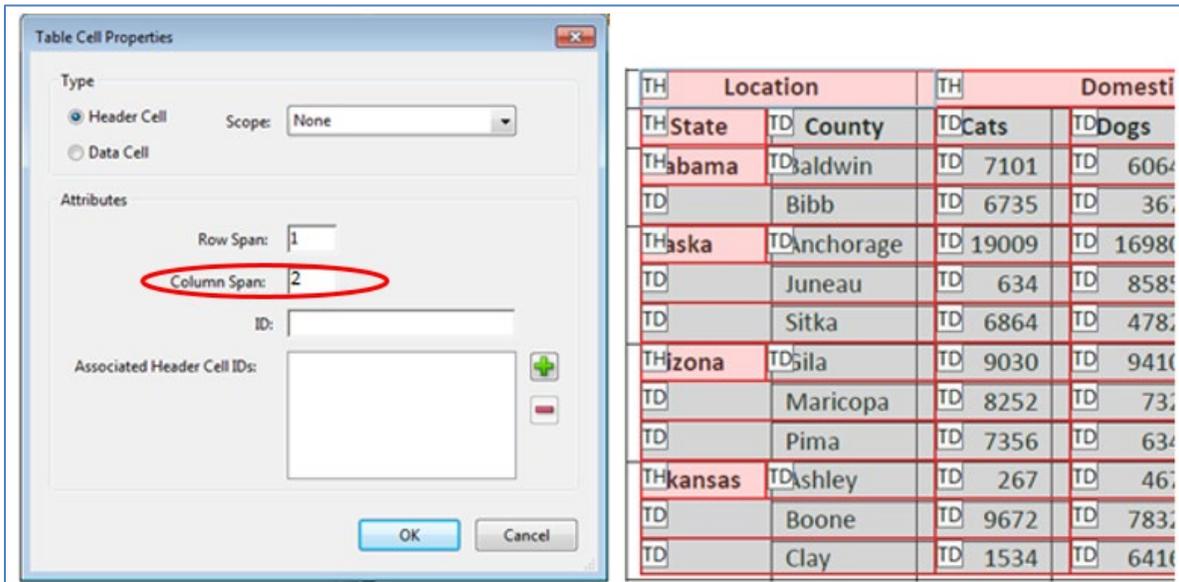
Adjust each cell spanning more than one row or column by typing the appropriate values into the “Row Span” and “Column Span” fields in the “Attributes” section of the “Table Cell Properties” dialogue box.

The image shows the 'Table Cell Properties' dialog box on the left and a table on the right. The dialog box has the following settings:

- Type:  Header Cell, Scope: None
- Attributes: Row Span: 1, Column Span: 1 (circled in red), ID: (empty), Associated Header Cell IDs: (empty)

The table on the right is a simplified version of the one above, with red highlights on the header cells and the first data row for Alabama. The headers are: TH Location, TH Domestic, TH State, TD County, TD Cats, TD Dogs. The first data row is: TH Alabama, TD Baldwin, TD 7101, TD 6064.

Shown above is the “Table Cell Properties” for the cell “Location” in the table. The default shows the “Column Span” is set to “1.” Update that field to match the actual number of columns the cell is spanning, 2 as shown below.



The screen shot below show an alternate format of a complex table. The row headers of Alabama, Alaska, Arizona, and Arkansas are in a separate row with merged cells spanning all columns. This visually separates the data. In this case, all the cells in a column are not associated with the column headers (e.g., Alabama is not data for Domestic Dogs). Also, reading across a row beginning with cities, the states are missing. “Scope” cannot be used. “Headers” and “ID” are needed to make the associations between data cell and its headers. Adding “Headers” and “ID” to the TH and TD cells is beyond the scope of this documentation.

Complex Table #2

Location	Domestic			Wild		
	Cats	Dogs	Rabbits	Bears	Deer	Moose
<b>Alabama</b>						
<b>Baldwin</b>	7101	6064	3167	654	91096	30654
<b>Bibb</b>	6735	367	47	7473	36346	63456
<b>Alaska</b>						
<b>Anchorage</b>	19009	16980	1075	1970	9838	14179
<b>Juneau</b>	634	8585	86	4266	13984	36546
<b>Sitka</b>	6864	4782	9456	8457	6798	26747
<b>Arizona</b>						
<b>Gila</b>	9030	9410	4003	3712	6700	60
<b>Maricopa</b>	8252	732	3077	37834	3796	21656
<b>Pima</b>	7356	634	963	23255	346346	2523
<b>Arkansas</b>						
<b>Ashley</b>	267	467	131	5764	585	897
<b>Boone</b>	9672	7832	5633	6155	2323	2622
<b>Clay</b>	1534	6416	1259	1145	736	63623

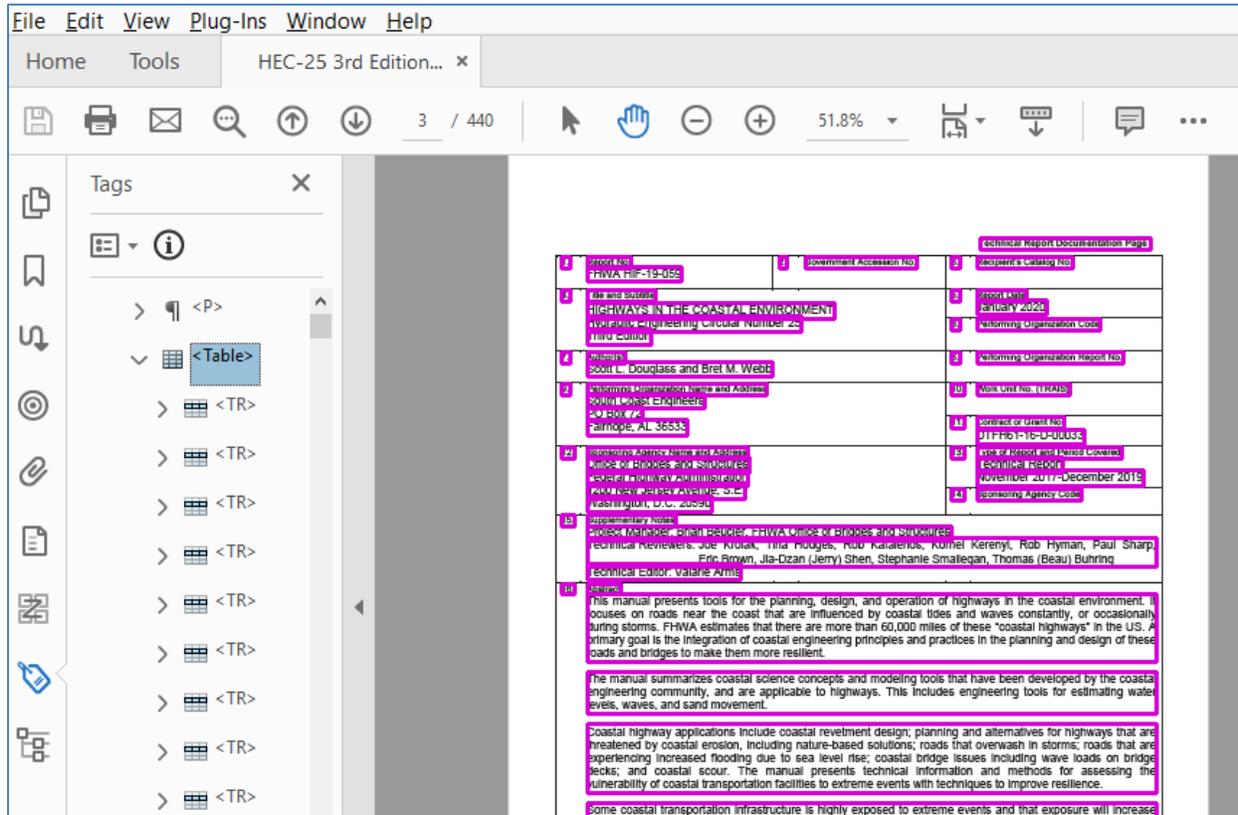
**Irregular Tables**

The tables in the examples above are regular tables. Each row has the same number of columns and each column has the same number of rows, including row and column spans. Irregular tables have cells missing in row(s) or column(s). Avoid irregular tables. An example of an irregular table is shown below. Remediating such tables is beyond the scope of this documentation.

	Cats	Dogs	Rabbits
Alabama	7101	6064	3167
Arizona	9030	9410	4003
Alaska	19009	16980	1075
Arkansas	267	467	131

**Layout Tables**

When tables are used for layout, remove the table structure tags, leaving only the properly tagged content. The screenshot below shows a form using a table for layout. The second screen shot shows the same content after removing the table tags. While both tables appear visually identical, they have different tag structure.



File Edit View Plug-Ins Window Help

Home Tools HEC-25 3rd Edition... x

3 / 440 58.6%

Technical Report Documentation Page

1. Report No. FHWA HIF-19-059	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle HIGHWAYS IN THE COASTAL ENVIRONMENT Hydraulic Engineering Circular Number 25 Third Edition	5. Report Date January 2020	6. Performing Organization Code
7. Author(s) Scott L. Douglass and Bret M. Webb	8. Performing Organization Report No.	
9. Performing Organization Name and Address South Coast Engineers PO Box 72 Fairhope, AL 36533	10. Work Unit No. (TRAB)	11. Contract or Grant No. DTFH81-16-D-00033
12. Sponsoring Agency Name and Address Office of Bridges and Structures Federal Highway Administration 1200 New Jersey Avenue, S.E. Washington, D.C. 20590	13. Type of Report and Period Covered Technical Report November 2017-December 2019	14. Sponsoring Agency Code
15. Supplementary Notes Project Manager: Brian Beucler, FHWA Office of Bridges and Structures Technical Reviewers: Joe Krolak, Tina Hodges, Rob Kafalenos, Kornel Kerenyi, Rob Hyman, Paul Sharp, Eric Brown, Jia-Dzan (Jerry) Shen, Stephanie Smallegan, Thomas (Beau) Buhning Technical Editor: Valarie Arms		
16. Abstract This manual presents tools for the planning, design, and operation of highways in the coastal environment. It focuses on roads near the coast that are influenced by coastal tides and waves constantly, or occasionally during storms. FHWA estimates that there are more than 60,000 miles of these "coastal highways" in the US. A primary goal is the integration of coastal engineering principles and practices in the planning and design of these roads and bridges to make them more resilient.  The manual summarizes coastal science concepts and modeling tools that have been developed by the coastal engineering community, and are applicable to highways. This includes engineering tools for estimating water levels, waves, and sand movement.  Coastal highway applications include coastal revetment design; planning and alternatives for highways that are threatened by coastal erosion, including nature-based solutions; roads that overwash in storms; roads that are experiencing increased flooding due to sea level rise; coastal bridge issues including wave loads on bridge decks; and coastal scour. The manual presents technical information and methods for assessing the vulnerability of coastal transportation facilities to extreme events with techniques to improve resilience.  Some coastal transportation infrastructure is highly exposed to extreme events and that exposure will increase		

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7. Author(s)  
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8. Performing Organization Report No.

9. Performing Organization Name and Address  
South Coast Engineers  
PO Box 72  
Fairhope, AL 36533

10. Work Unit No. (TRAB)

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DTFH81-16-D-00033

12. Sponsoring Agency Name and Address  
Office of Bridges and Structures  
Federal Highway Administration  
1200 New Jersey Avenue, S.E.  
Washington, D.C. 20590

13. Type of Report and Period Covered  
Technical Report  
November 2017-December 2019

14. Sponsoring Agency Code

15. Supplementary Notes  
Project Manager: Brian Beucler, FHWA Office of Bridges and Structures  
Technical Reviewers: Joe Krolak, Tina Hodges, Rob Kafalenos, Kornel Kerenyi, Rob Hyman, Paul Sharp, Eric Brown, Jia-Dzan (Jerry) Shen, Stephanie Smallegan, Thomas (Beau) Buhning  
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This manual presents tools for the planning, design, and operation of highways in the coastal environment. It focuses on roads near the coast that are influenced by coastal tides and waves constantly, or occasionally during storms. FHWA estimates that there are more than 60,000 miles of these "coastal highways" in the US. A primary goal is the integration of coastal engineering principles and practices in the planning and design of these roads and bridges to make them more resilient.  
  
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Some coastal transportation infrastructure is highly exposed to extreme events and that exposure will increase

**Artifacts**

The outlines of cells in a table are artifacts. While cells on the page are outlined visually, it is unnecessary to have their artifacts in the table tag tree. To remove artifact tags, expand the tag tree under the table tag. Navigate to the artifact tag and delete by selecting “Delete Tag” from the “Options” menu.

State	Cats
Alabama	7101
Arizona	9030
Alaska	19009
Arkansas	267

Location	Cats
Baldwin	7101
Bibb	6735
Anchorage	19009
Juneau	634
Sitka	6864
Gila	9030
Maricopa	8252
Pima	7356
Ashley	267
Boone	9672
Clay	1534

**References**

- <https://www.w3.org/TR/WCAG20-TECHS/PDF6.html>.
- <https://www.w3.org/TR/WCAG20-TECHS/PDF20.html>.
- <https://www.w3.org/TR/WCAG20-TECHS/H51.html>.
- <https://www.w3.org/TR/WCAG20-TECHS/H43.html>.
- <https://www.w3.org/TR/WCAG20-TECHS/H63.html>.

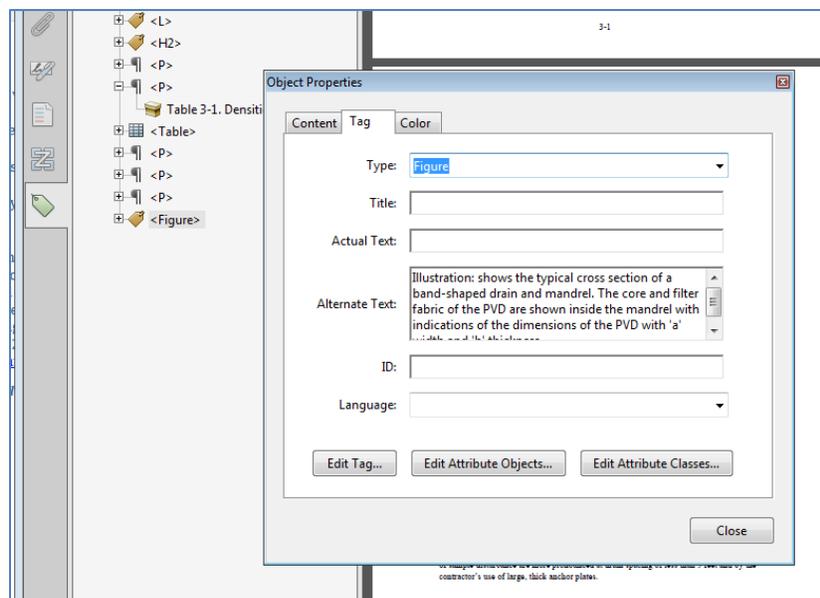
## Figures

Non-text content includes, but are not limited to, images, figures, equations, and symbols. Typically, these are tagged in a Figure tag.

### **Alternate Text**

All non-text content conveying information needs “Alternate Text” or a description stating the meaning of that content. To check the alternate text of the non-text content, go to “Properties” on the “Options” menu for the tag. Alternate text is entered in the fourth field under the “Tag” tab of the “Object Properties” dialog box, as shown below.

If the non-text content is redundant (e.g., a logo repeated on the front and back cover), tag it once. Set decorative, non-text content not conveying information as background (i.e., remove the tag).



Best practices for alternate text include the following:

- Confirm the alternate text does not repeat the caption or surrounding text or contain information not in the non-text content.
- Use alternate text to describe the non-text content in a level of detail matching the level of detail the figure is conveying in context.
- When one graphic is tagged with multiple Figure tags, merge them into a single Figure tag. Add the alternate text to the single Figure tag.
- Avoid images of text unless they are essential to the presentation (e.g., flowchart, infographic).

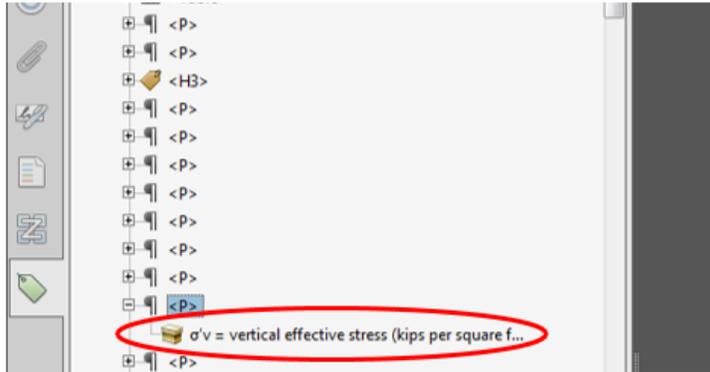
### **Actual Text**

Use Actual text on the rare occasion where text is a graphic (e.g., a symbol converted as an image, text not recognized in scanned document). Do not use both actual text and alternate text in the same tag.

## Equations and Symbols

How equations and symbols are tagged in a PDF varies widely and depends on how they are entered in the source document, the software version of the source document, and how the PDF is created.

If the equation or symbol is correct as text (i.e., the proper Unicode symbol was used for each symbol) and in the proper reading order within the tag, as shown in below, no further remediation is needed.



$C_N$  = overburden correction factor =  $[0.77 \log_{10}(40/\sigma'_v)]$ , and

$\sigma'_v$  = vertical effective stress (kips per square foot, ksf)

$ER$  = Energy Ratio, or hammer efficiency, expressed as a delivered by the hammer system actually used. If specific  $ER$  can be taken as 60% for safety hammer using rope an and 40% for a donut hammer using rope and cathead.

$N$  = uncorrected or field SPT N-value (blows per foot, bpf)

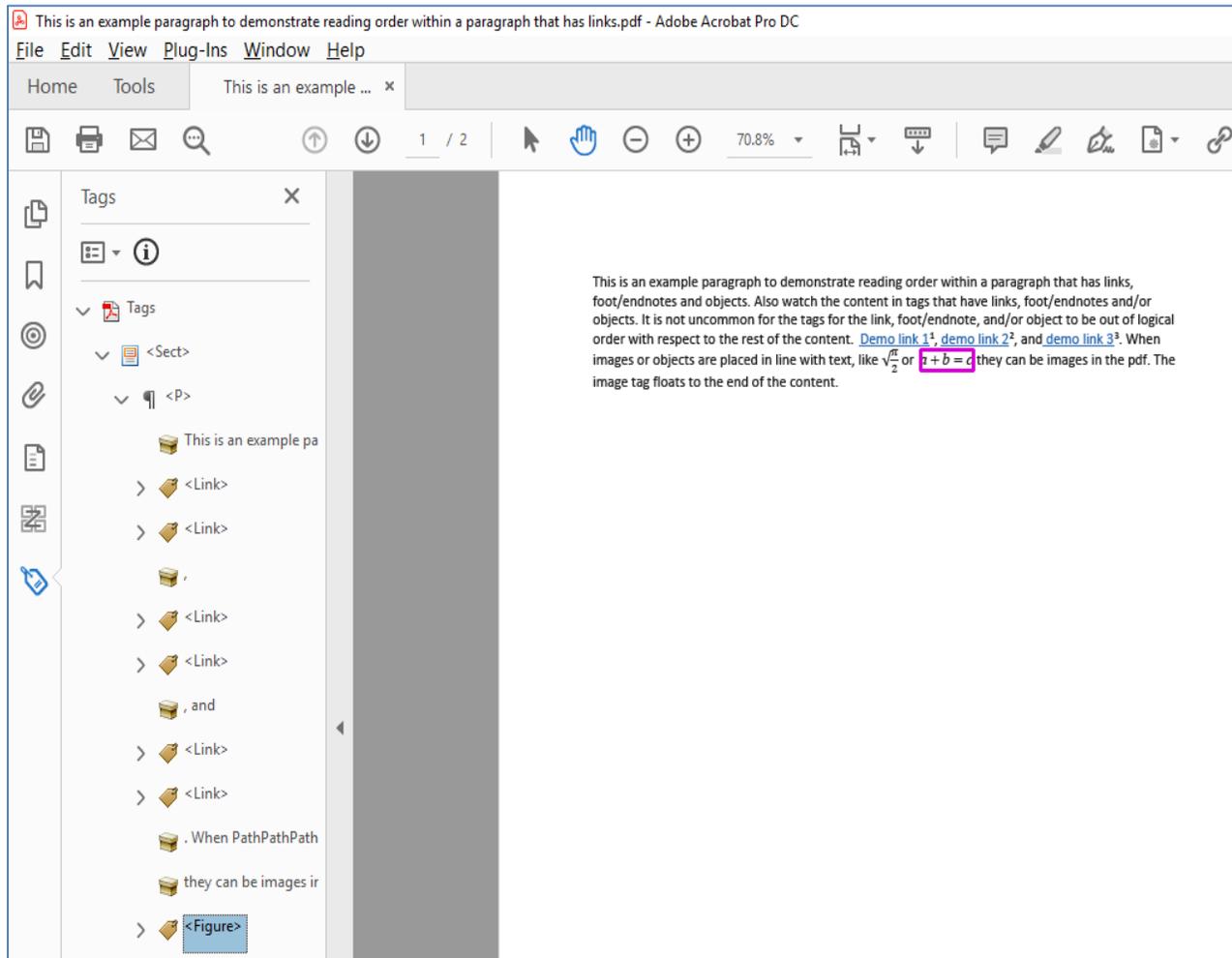
The vertical effective stress can be estimated using an approx Section 3.4.3, and groundwater observations, discussed in Se

The corrected  $N_{1_{62.5}}$  values are used to correlate parameters for with corrected  $N$  values are presented in subsequent sections appropriate for use in the LRFD design platform. Other correla However, care must be exercised when using other published may be inherently more conservative or more favorable than ti AASHTO LRFD bridge design specifications.

To find the equation or symbol within the tags, navigate to the “Content” panel. Use the same instructions as “Finding a Tag” except select “Find Content from Selection” on the “Options” menu.

If the equation is non-text (e.g., tagged as a <Figure>), ensure it is in the proper reading order within the tag. As discussed previously, some content within a tag can be out of order which is especially true for non-text equations and symbols. In the screen shot below, the figure for the equation  $a + b = c$  is out of

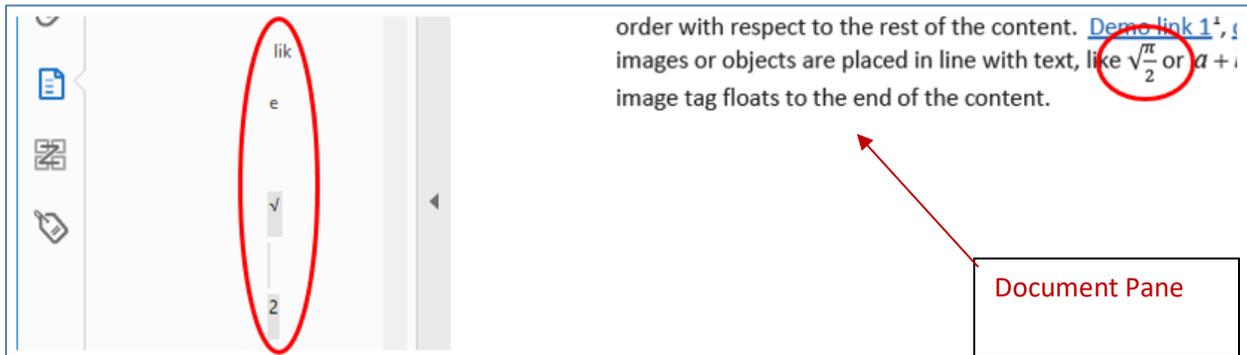
order since it is the last item nested under the paragraph tag. To fix this, select the figure tag and move it to the correct location as discussed in the “Moving a Tag” section.



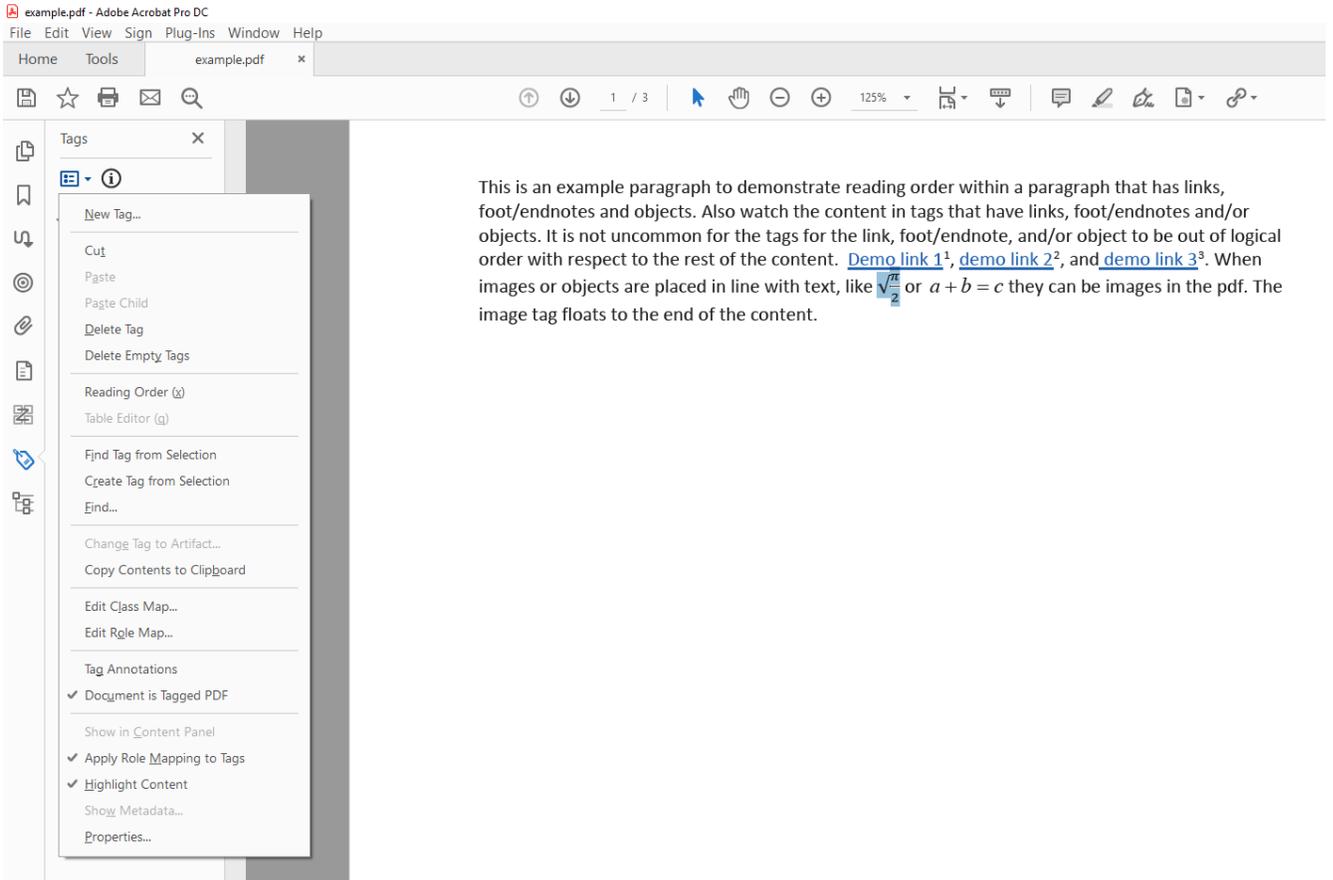
After the proper reading order is determined, confirm the alternate or actual text for the equation is correct. Appropriate alternate text for an equation is a verbal representation of the elements making up the equation. Do not add extra information or explanations, such as definitions of variables or qualifying statements. For the equation  $a + b = c$ , the alternate text reads “a plus b equals c.” Do not define the variables in the alternate text unless this is part of the image. Ensure the case of the symbols in alternate text is correct (e.g., the alternate or actual text for “ $\gamma$ ” is “gamma”), the alternate or actual text for “ $\Gamma$ ” is “Gamma.” Using the wrong case for symbols can change the meaning of an equation. When a lowercase symbol (i.e., a letter from the English alphabet or a spelled-out Greek symbol) starts the alternate or actual text, do not capitalize it.

If an equation or symbol is text and the proper Unicode symbol was not used in the source document, the symbols may not carry over when converted to PDF. Sometimes, symbols are replaced with an empty box or another incorrect character.

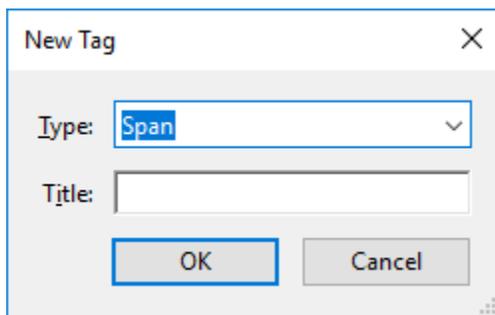
As shown below the  $\pi$  symbol does not display in the “Content” panel of the “Navigation” pane. Although it visually appears correct in the “Document” Pane, a screen reader or other assistive technology will read this as “square root of two” instead of “square root of pi divided by two.”



To correct an issue like the symbol not displaying correctly, highlight the content. On the “Tags” panel navigate to the “Tags” item in the tag tree. Select “Create Tag from Selection” from the “Option” menu.



A “New Tag” dialog box will pop up. Select “Span.”



Move the span tag to the correct reading order and add alternate or actual text as previously discussed.

### References

- <https://www.w3.org/TR/WCAG20-TECHS/PDF1.html>.
- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/text-equiv-all.html>.
- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/visual-audio-contrast-text-presentation.html>.

### Caption

Tag table and figure titles in caption tags. Do not nest caption tags under the parent table or figure tag. Instead, place captions at the same hierarchy as the table or figure tags in the tag tree. Captions can come before or after their respective tables or figures, depending on the style of the document and the reading order in which they are placed.

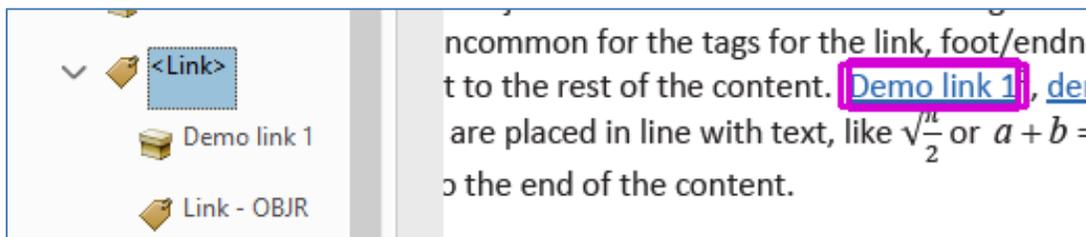
### References

- <https://www.w3.org/TR/WCAG20-TECHS/H39.html>.

### Links

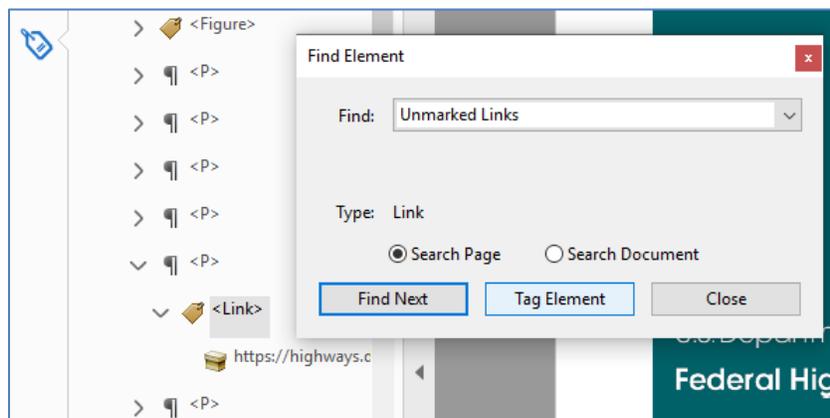
Ensure links meet contrast requirement as needed.

Nested under the link tag are the words in the document associated with the link and a Link- OBJR, as shown below.



If no Link- OBJR is present, add it. Navigate to the link, tag missing Link- OBJR, then from the “Tags” panel “Option” menu, select “Find.” Then, from the “Find Element” dialogue box, select “Unmarked Links”

from the “Find” dropdown menu, as shown below. Then, select “Find” and then select “Tag Element.” The Link-Objr is then nested under the appropriate link tag. Repeat as necessary by page or for the entire document by selecting the “Search Page” or “Search Document” radio buttons, respectively.



Ensure only one link tag is used per link. When a link spans two or more lines, it is not uncommon that each line is tagged separately. When one link is tagged in two or more link tags, merge the link tags by moving the elements from under the extra link tags to the first link tag in proper reading order. Each line the link spans will contain one Link-Objr. A link spanning two lines will contain two Link-Objrs. Remove the empty, extra link tags.

Avoid nesting figures under link tags. When a figure is nested in a link, ensure the description of the image is the same as the link destination.

Alternate text is not needed for links since the destination of the link is spelled out in the text (i.e., links do not say “Click here for more information”). Use alternate text on ambiguous or repetitive links. Include alternate text on link tags containing only a nested figure tag without nested text.

### References

- <https://www.w3.org/TR/WCAG20-TECHS/PDF11.html>.
- <https://www.w3.org/TR/WCAG20-TECHS/PDF13.html>.
- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/keyboard-operation-keyboard-operable.html>.
- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/navigation-mechanisms-refs.html>.

### Acronyms and Abbreviations

Acronyms and abbreviations do not need alternate text. When using acronyms and abbreviations in alternate text, do not add spaces between the letters (e.g., use FHWA, not F H W A).

### Footnotes and Endnotes

Tag footnotes and endnotes using Reference and Note tags. The cross-reference in the body text is nested in a reference tag, while the footnote/endnote itself is nested in a note tag.

Do not tag something as a note because it says “note” in the text. Similarly, do not tag something as a reference because it provides additional information about a topic. See the [“Semantically Correct Tag Usage”](#) section.

There is no standard placement for the note tag as long as it is in logical reading order. Place the note tag directly after the tag containing the footnote/endnote, immediately following the Reference tag, as the last item read on a page, or at the end of the document. Do what makes sense for the content, which is usually the former. Wherever the note tag is placed, do so consistently throughout the document.

### **Header/Footer/Watermark Content**

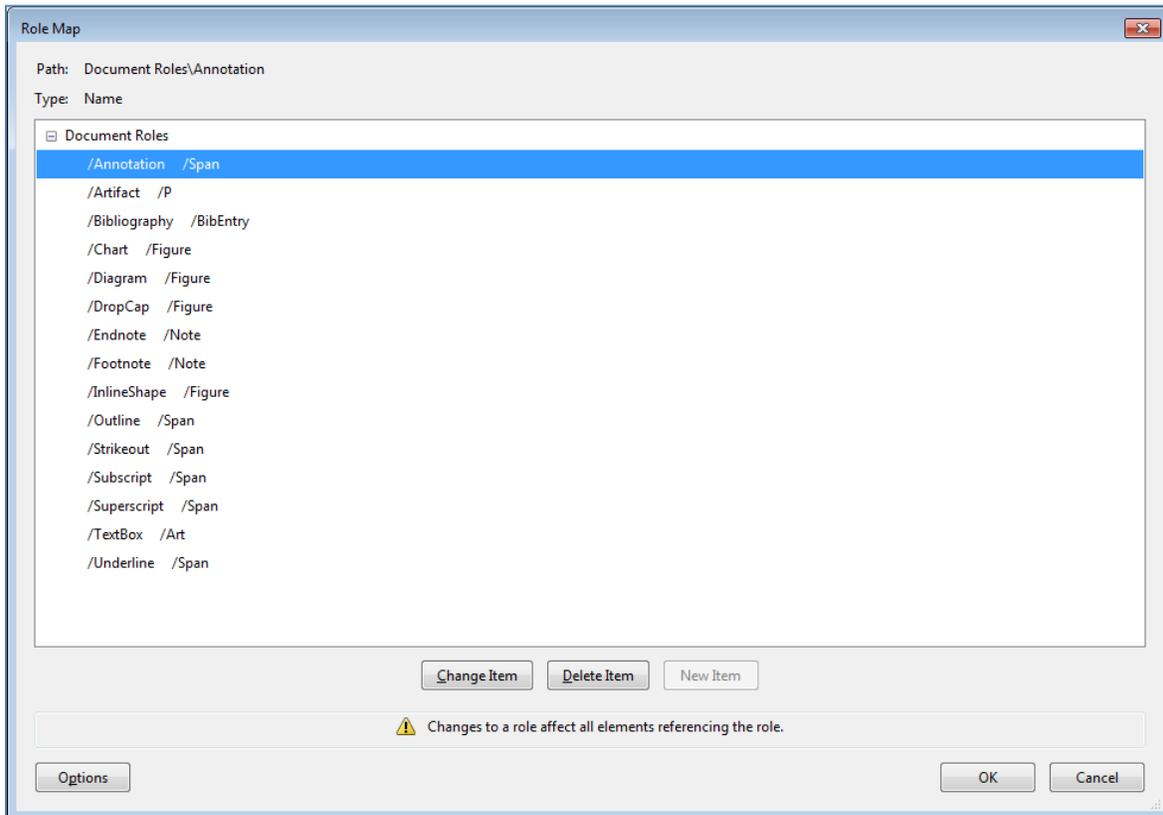
Do not tag page numbers. Untagged/deleted any tagged page numbers. Tag any meaningful header, footer, and watermark content, aside from page numbers, such as “Draft,” publication date, etc., not tagged in the body of the document, once. Do not tag every use on every page.

### **Nonstandard PDF Tags**

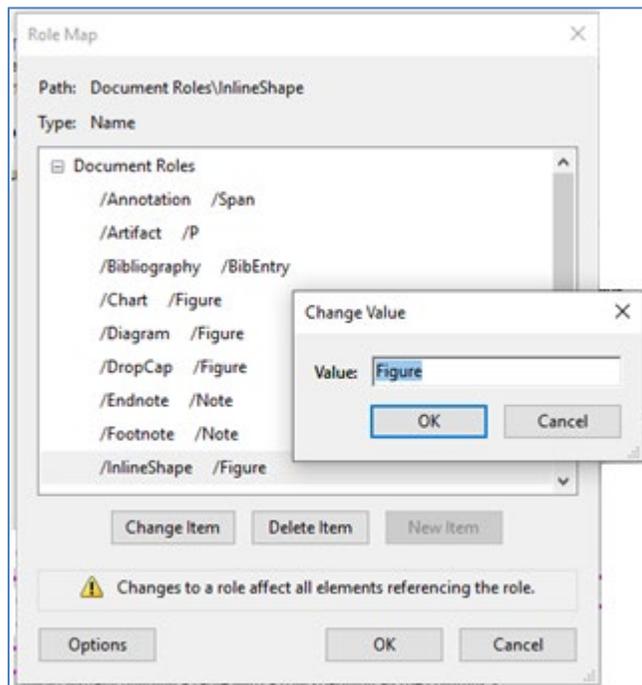
Ensure nonstandard tags are mapped to the correct PDF tag in the “Role Map” so they are semantically correct.

To access the “Role Map” select “Edit Role Map” from the “Tags” “Option” menu. In the “Role Map” dialogue box, expand “Document Roles.” Word objects such as an equation are often tagged as

InlineShape, so ensure they are mapped to a figure so screen readers or other assistive technologies will treat them like a figure.



If any tag is incorrect, highlight it and select “Change Item.” Then, type the correct value into the Value field on the Change Value dialogue box, as shown in below.



### Language of Parts

When using a word or phrase from a language different from the default human language, confirm the language of the word or phrase is tagged as the correct human language. To change the language for an entire tag, navigate to the tag and select “Properties” from the “Tags” panel on the “Option” menu. Select the appropriate language in the “Language” dropdown menu under the “Tag” tab in the “Object Properties” dialogue box.

If only some of the content in a tag needs the default language changed, insert a span tag. Nest the content in the different language in this span tag. Change the language on the span tag as discussed above.

### References

- <https://www.w3.org/TR/WCAG20-TECHS/PDF19.html>.
- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/meaning-other-lang-id.html>.

### General Tag References

- <https://www.pdfa.org/resource/tagged-pdf-best-practice-guide-syntax>.
- <https://www.w3.org/TR/WCAG20-TECHS/G115.html>.
- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/content-structure-separation-programmatic.html>.

## Flashing

Ensure the document is free from any blinking or flashing content.

### References

- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/seizure-does-not-violate.html>.
- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/seizure-three-times.html>.

## Zoom

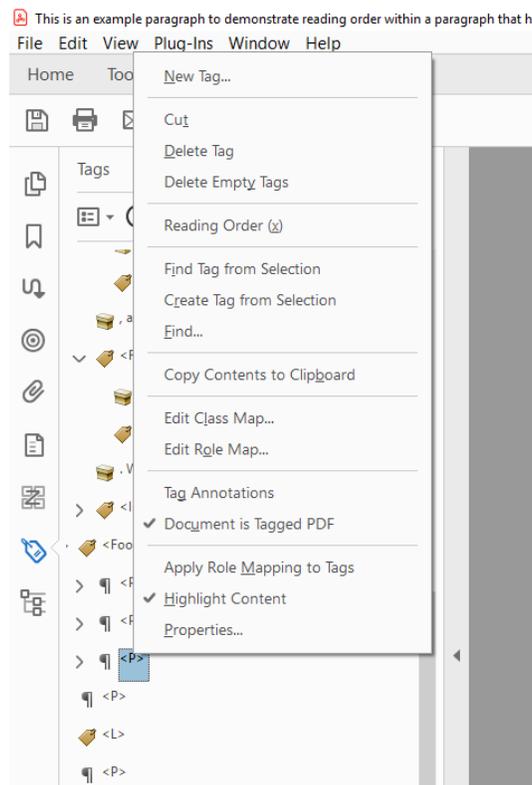
Except for images of text (if included) and captions, ensure all content is readable when zoomed in to 200 percent.

### References

- <https://www.w3.org/TR/WCAG20-TECHS/G179.html>.
- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/visual-audio-contrast-scale.html>.

## Optical Character Recognition (OCR)

If a document was scanned and converted to text using an optical character recognition (OCR), ensure the content is recognized correctly. Save the document as text and check that version. To correct, go to the tag with the error and select “Copy Contents to Clipboard” from the “Tags” panel on the “Option” menu.



Return to the same tag. Select “Properties” from the “Tags” panel on the “Option” menu. Paste into “Actual Text” and correct the errors.

## References

- <https://www.w3.org/TR/WCAG20-TECHS/PDF7.html>.
- <https://www.w3.org/TR/UNDERSTANDING-WCAG20/visual-audio-contrast-text-presentation.html>.

## Validators

A variety of validators available. Some are for Section 508, while others are for different accessibility requirements. Any validator finds less than 40 percent of Section 508 problems in a document, so a clean validator report does not mean the document is 508 conformant.

Validators are good at some things, like determining if a figure has alternate text. However, they cannot tell if the figure has appropriate alternate text. While validator results provide a good baseline of 508 compliance and often point out items requiring additional remediation, the majority of validating for 508 conformance requires manual checks.

## Forms

Forms and form-fillable fields are beyond the scope of this discussion.

## General Resources

- <https://www.access-board.gov/ict/>.
- <https://taggedpdf.com/508-pdf-help-center>.
- <http://www.access-for-all.ch/en/pdf-lab/pdf-accessibility-checker-pac.html>.
- <https://www.hhs.gov/web/section-508/making-files-accessible/index.html>.
- <https://www.section508.gov/best-practices>.
- <https://www.w3.org/TR/WCAG20-TECHS/complete.html>.
- Department of Education Remediating PDFs:
  - Part 1 <https://youtu.be/PJvDoArpZ0g>;
  - Part 2 <https://youtu.be/2YL6PkIVgag>.
- <http://www.hhs.gov/web/508>.
- <http://webaim.org/standards/508/checklist>.
- <http://www.access-board.gov>.
- <http://www.section508.gov>.
- [http://www.ssa.gov/accessibility/508\\_overview.html](http://www.ssa.gov/accessibility/508_overview.html).
- <http://www.ssa.gov/accessibility/bpl/default.htm>.
- <https://www.hhs.gov/sites/default/files/pdf-tagging.pdf>.
- <https://www.hhs.gov/web/section-508/making-files-accessible/finding-and-fixing-backend-errors.html>.