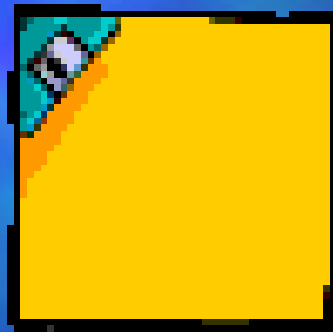


Your Reports in the Electronic Age



Making Information Accessible

Jul 29, 2024
Slide 1

FHWA Policy and Procedures

John W. McCracken
Director
Office of Research and
Technology Services
FHWA

Jul 29, 2024
Slide 2



Transportation professionals who:

- ✓ conduct research, compile data and results, and write research reports
- ✓ use word processing software to create reports or supervise employees who do
- ✓ need to know what aspects to address in making report files accessible

Objectives for Attendees

- ✓ to understand background and requirements for accessibility of electronic information
- ✓ to realize there are different approaches to achieve accessibility
- ✓ to become aware of techniques for making report files accessible
- ✓ to recognize why it's good policy to meet accessibility guidelines

We Will Cover

- ✓ An overview of what accessibility is
- ✓ Ways to make text files accessible
- ✓ How to apply word processing techniques to prepare files
- ✓ Exercises for hands-on practice

Overview of Accessibility



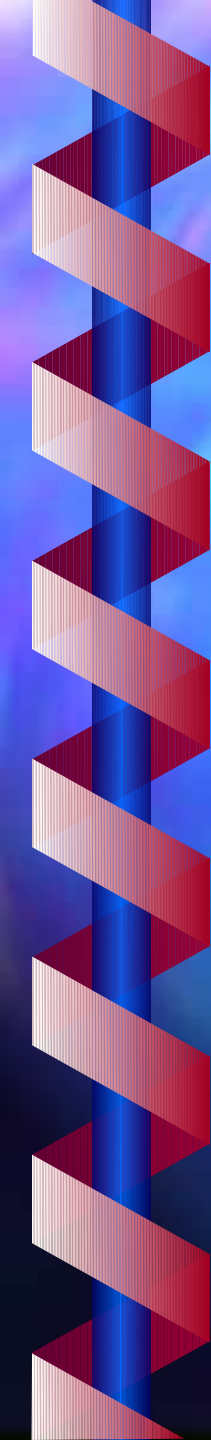
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The definition of “accessible” has yet to be solidified:

- ✓ It means different things to different people.
- ✓ It uses different features for different equipment.
- ✓ It requires different approaches for different software.
- ✓ The definition morphs frequently.

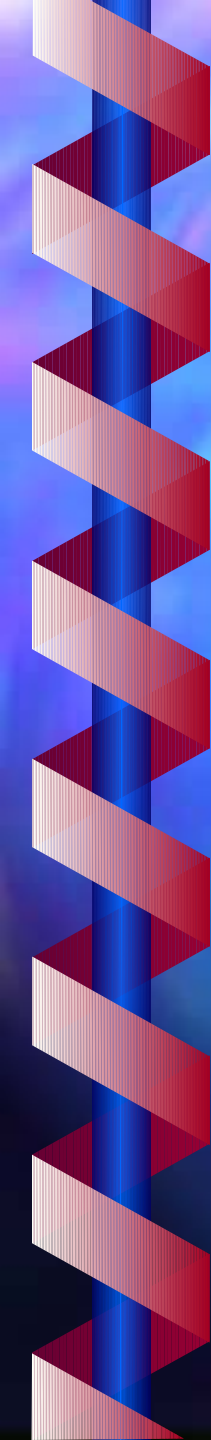
To what formats do accessibility guidelines apply?

- ✓ Applies to:
 - web pages
 - auxiliary files
 - specialized software programs
 - video
 - and more.
- ✓ Virtually anything available to public over the world wide web.
- ✓ May apply to any electronic format.



**Accessibility requires
different approaches for
different methods of
presenting and distributing
electronic information.**

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This presentation presents
potential ways to prepare accessible
report files – *not the only way*.

What is accessibility?

Barrier-free use
of electronic information and technology,
including use
with assistive technology devices
and other equipment.

“Accessibility” and “Usability”

- ✓ Usability = Easy to use
- ✓ Accessibility = Barrier-free as possible

Public information should be both usable by and accessible to the largest possible audience

Assistive Technology

- ✓ Software programs or hardware devices
- ✓ Designed specifically to accommodate an individual's disability or disabilities
- ✓ That work with a computer's operating system and software

Assistive Technology

✓ Examples:

- Devices for those with mobility disabilities
- Screen readers for those with visual or hearing limitations
- Voice recognition and text-to-speech programs for those with vision limitations or reading disabilities

Assistive Technology

- ✓ The challenge is to:
 - Remove obstacles that prevent assistive technology and other equipment from functioning correctly
 - Provide information in a form usable by the widest range of equipment
 - Retain usability for people not using assistive technology

Barriers to Access

User limitations may be:

- ✓ temporary or long-term
- ✓ minimal to severe
- ✓ different types: vision, hearing, mobility, cognitive

Vision Barriers

- ✓ Vision disability does not always mean total blindness:
 - Blindness
 - Weak vision
 - Tunnel vision
 - Dimness
 - Extreme near- or far-sighted
 - Color blindness

Hearing Barriers

- ✓ Hearing disability does not always mean totally deaf:
 - Deaf
 - Limited hearing
 - High/low frequency hearing loss
 - Background/foreground differentiation

Mobility Barriers

- ✓ Mobility disability takes many forms:
 - Repetitive stress injuries
 - Arthritis
 - Stroke
 - Spinal complications
 - Palsy
 - Motion limitation
 - Strength limitation
 - Loss of limbs or digits

Examples of Assistive Technology

- ✓ Screen readers
- ✓ Braille equipment and printouts
- ✓ Voice recognition
- ✓ Text-to-voice conversion
- ✓ Captioning programs
- ✓ Keyboard controls or arrangement
- ✓ Wireless mouse or pointer

Why make information accessible?

✓ Legal basis

- Federal government is requiring now.
- Some state governments are requiring and others will be requiring soon.
- Not just "508." Several different acts deal with access.

Why make information accessible?

✓ Ethical basis

- It makes information available to disabled audiences.
- Government agencies serve the public, which includes a considerable population with physical limitations.

Why make information accessible?

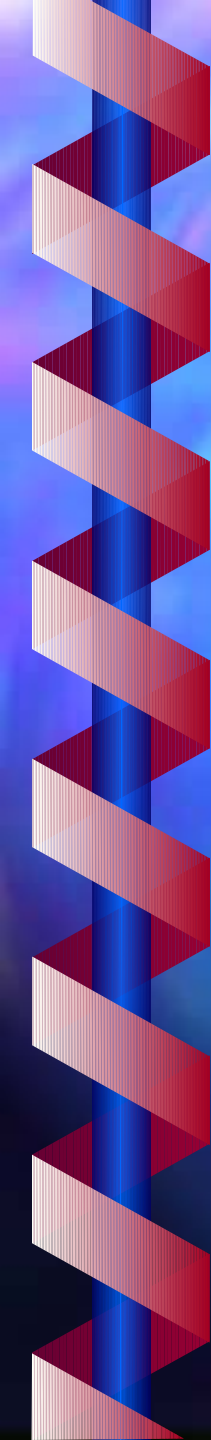
✓ Practical basis

- It makes sense – it gets agency information to wider audience.
- Recent statistics indicate 1 out of 5 people in the general population has a disability that could limit access.

Why make information accessible?

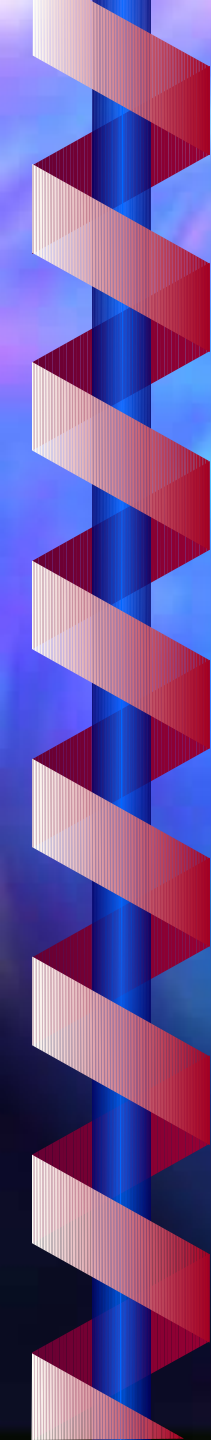
✓ Practical basis

- Workforce contains large number of aging workers.
- Potential exists for loss of expertise and institutional memory.
- Good design for accessibility also constitutes good design for all user groups.



What are the benefits of accessible files?

**Accessible design
benefits all users
if designed for usability.**



What are the benefits of accessible files?

**Accessible design
allows users to choose format
based on personal preference**

More Benefits of Accessible Files

- ✓ Accessible design makes information available on more technology platforms:
 - Assistive technology
 - Older equipment
 - Machines with slow connection speeds
 - Equipment with memory limitations
 - Newer wireless and handheld technology

More Benefits of Accessible Files

- ✓ Get your information to wide audience
- ✓ Meet lead office requirements
- ✓ Achieve legal compliance



The following guideline set is taken from
the World Wide Web Consortium:

<http://www.w3.org/wcag-curric/overgid.htm>

What are the accessibility guidelines?

✓ The Guideline Set

1. Provide equivalent alternatives to auditory and visual content.
2. Don't rely on color alone.
3. Use markup and style sheets and do so properly.
4. Clarify natural language usage.
5. Create tables that transform gracefully.

What are the accessibility guidelines?

- v The Guideline Set (cont)
 6. Ensure that pages featuring new technologies transform gracefully.
 7. Ensure user control of time-sensitive content changes.
 8. Ensure direct accessibility of embedded user interfaces.
 9. Design for device-independence.
 10. Use interim solutions.

What are the accessibility guidelines?

v The Guideline Set (cont)

- 11. Use W3C technologies and guidelines.
- 12. Provide context and orientation information.
- 13. Provide clear navigation mechanisms.
- 14. Ensure that documents are clear and simple.

Accessed 11-12-2003: <http://www.w3.org/WAI/wcag-curric/overgid.htm>

Guideline Priorities

Some guidelines are considered critical while others are considered desirable.

See

<http://www.w3.org/TR/WAI-webcontent/#wc-priority-1>

for priority designations.

Approaches to accessible files

- ✓ Proactive – at design level.

**Proactive
is the preferred,
accepted approach.**

Lifecycle View

- ✓ The lifecycle view is a proactive, design-based approach:

**A lifecycle view
designs electronic information
with accessibility in mind from
concept to ongoing maintenance.**

Stages in Lifecycle View

- Concept – determine whether information technology will be involved, who will need to access, what standards apply

Stages in Lifecycle View

- Planning – estimate time and cost, decide whether to implement in-house or outsource tasks, outline benefits of accessibility

Stages in Lifecycle View

- Development – perform requirements analysis and ensure applicable requirements are addressed in areas of functional technical, data, interfaces, security, and implementation

Stages in Lifecycle View

- Implementation – verify, certify, and document compliance

Stages in Lifecycle View

- Operations management – obtain user feedback, monitor compliance of new postings, educate and update webmaster

Paraphrased from: "508" considerations in the EIT Life Cycle, U.S. Postal Service, AS-508

Approaches to Accessible Files

- ▼ Reactive – when customer requests
 - applies to historical documents, not to newly created ones
 - has not been established as legally acceptable response
 - may be acceptable on limited basis

Approaches to Accessible Files

- ✓ Shadow document – design of two parallel files
 - experience discourages use
 - usually do not provide acceptable access
 - usually do require more maintenance

Determine Desired End Product Type of File

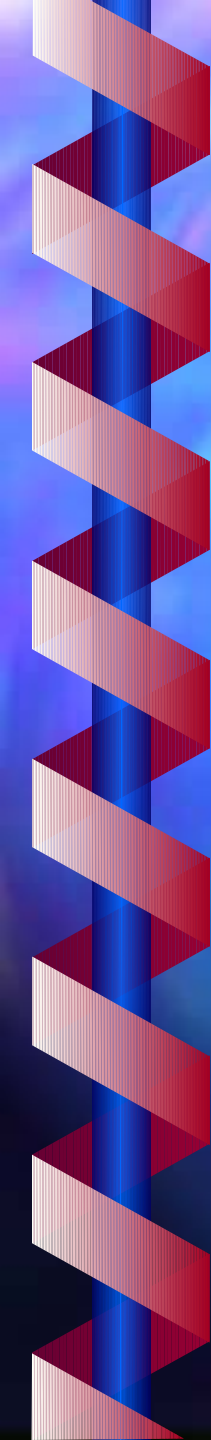
- ✓ Contract or policy may define for you.
- ✓ Considerations:
 - Word files are easier to convert to PDF than to HTML.
 - Maintaining the source file for later use is good practice.
 - Prepare source file for accessible conversion.

For PDF File Choice

- ✓ PDF files are readable by a wide audience.
- ✓ Some PDF files are accessible, others are not. Make sure yours is.
- ✓ When using PDF, prepare as much as possible in source file, then convert and verify accessibility. Add additional features if necessary after conversion.

For HTML File Choice

- ✓ When converting to HTML, be sure the resulting file uses clean code. Verify accessibility.
- ✓ Some conversion programs are available to convert Word files to HTML or to clean up conversions.
- ✓ Word-to-HTML conversion may require additional time and labor.

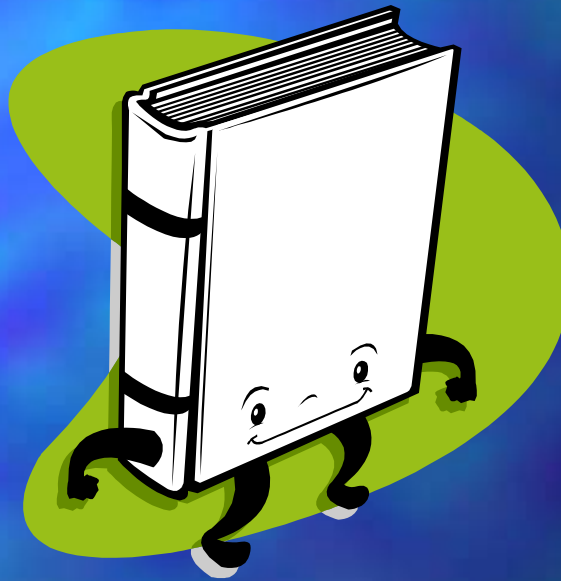
- 
- ✓ Keep all files of origin regardless of final product type, including graphic files, text files, and auxiliary files such as special software, etc.
 - ✓ Keep interim files as appropriate

Recommendation

Create separate file containing alt-text descriptions:

- ✓ Descriptions will be easy to reference later.
- ✓ You can spell check easily, then cut and paste content to report file.
- ✓ Sponsor may require submittal with report files.

Creating Accessible Text Files



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Incorporating Accessibility during File Development

Two types of review are needed during initial report development:

- Editorial review – creating alternate text, subdividing tables, checking subsection organization, etc.
- Mechanical review – formatting files to include correct elements

Editorial Review



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Alternative Text

- ✓ Create descriptions or summaries of any non-text item:
 - Graphics (photos, graphs and charts, drawings, etc.)
 - Equations
 - Tables

Alternative Text

- ✓ Simple captions are not sufficient – must describe visual and its relevance to content.
- ✓ Long alt-text descriptions may need to be handled differently so that standard screen display will not be interrupted (via links to text files, etc).

Example of Standard Alternative Text



Traffic cones improve safety and traffic flow



Traffic cones improve safety and traffic flow

Photo: Shows traffic cones placed in student drop-off zone in front of school. Some schools use traffic cones to improve safety and traffic flow in loading zones.

Example of Standard Alternative Text



Slope failure



Slope failure

Photo: Slope failure demonstrated by mounded turf on embankment near roadway overpass. Slope failure like that shown here illustrates the need to investigate long-term strength of high-plasticity clays.

Example of Long Alternative Text

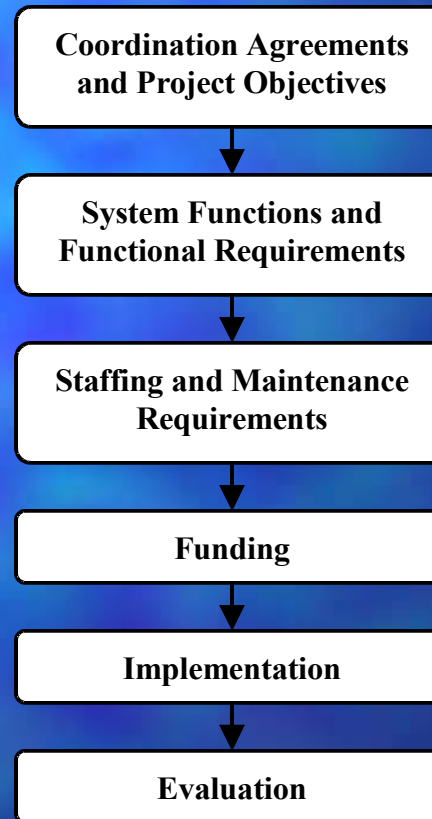


Figure 6. Steps in Development of a Regional Transit Information System.



Figure 6. Flowchart. Steps in Development of a Regional Transit Information System.

Six boxes show six sequential steps for development. They are:

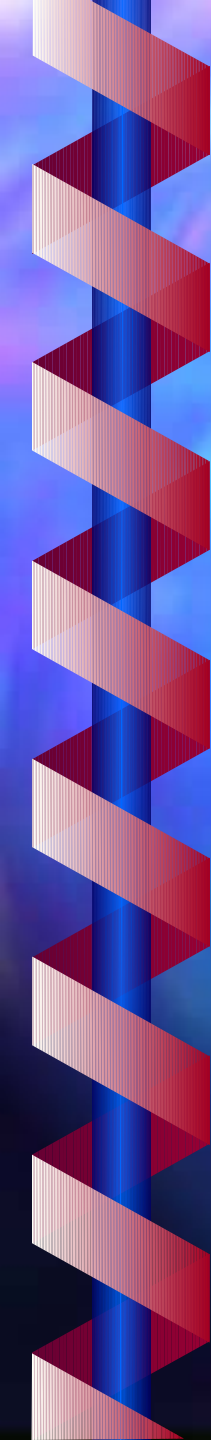
1. Coordination agreements and project objectives
2. System Functions and Functional Requirements
3. Staffing and maintenance requirements
4. Funding
5. Implementation
6. Evaluation

Accessible Tables

- ✓ Simplify tables. Use:
 - Clear and limited-wording headings
 - Simple format (no more than one level nested)
 - All headers (column and row) marked with appropriate styles
 - All table text marked with styles

Example of a Complex Table

CAT CATEGORIES																						
Owner	Type of Cat																					
	Siamese						Burmese				Himalayan				Maine Coon							
	Peach Point		Seal Point		Choc Point		Silver		Chocolate		Peach Point		Seal Point		Choc Point		Calico		Brindle		Solid	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Rhonda																						
Previously shown/awards	1/1	2/0		2/2	1/0													2/0		1/0		1/0
Not shown	1		2			1																
Sam																						
Previously shown/awards							1/1	2/1										1/1			1/0	
Not shown		2								2									1			
Khara																						
Previously shown/awards	2/0						1/1		2/0									2/2		1/1	1/1	
Not shown		1							1									3	2	1		

- 
- ▼ Several characteristics of this table will cause accessibility problems:
 - nested column headings
 - double-entry information within one column (number of cats shown/number of awards won)
 - names of owners on separate rows from relevant data
 - duplicate columns headings (the M and F column headings under each cat type)

Simpler Tables that Present the Same Information

SIAMESE CAT PERFORMANCE							
Owner	Category	Peach Point – Male	Peach Point – Female	Seal Point – Male	Seal Point – Female	Chocolate Point – Male	Chocolate Point – Female
Rhonda	Number previously shown	1	2	0	2	1	0
	Awards won	1	0	2	2	0	1
	Owned, not yet shown	1	0	0	0	0	0
Sam	Number previously shown	0	0	0	0	0	0
	Awards won	0	0	0	0	0	0
	Owned, not yet shown	0	2	0	0	0	0
Khara	Number previously shown	2	0	0	0	0	0
	Awards won	0	0	0	0	0	0
	Owned, not yet shown	0	1	0	0	0	0

BURMESE CAT PERFORMANCE					
Owner	Category	Silver – Male	Silver – Female	Chocolate – Male	Chocolate – Female
Rhonda	Number previously shown	0	0	0	0
	Awards won	0	0	0	0
	Owned, not yet shown	0	0	0	0
Sam	Number previously shown	1	2	0	0
	Awards won	1	1	0	0
	Owned, not yet shown	0	0	0	2
Khara	Number previously shown	1	0	2	0
	Awards won	1	0	2	0
	Owned, not yet shown	0	0	1	0

HIMALAYAN CAT PERFORMANCE

No Himalayan cats were shown, owned, or won awards.

MAINE COON CAT PERFORMANCE

Owner	Category	Calico – Male	Calico – Female	Brindle – Male	Brindle – Female	Solid – Male	Solid - Female
Rhonda	Number previously shown	0	2	0	1	0	1
	Awards won	0	0	0	0	0	0
	Owned, not yet shown	0	0	0	0	0	0
Sam	Number previously shown	0	1	0	0	1	0
	Awards won	0	1	0	0	0	0
	Owned, not yet shown	0	0	1	0	0	0
Khara	Number previously shown	0	2	0	1	1	0
	Awards won	0	2	0	1	1	0
	Owned, not yet shown	0	3	2	1	0	0

Content and Organization

- ✓ Clear organization helps place headings and subheadings logically.
- ✓ Clear, simple text improves understanding and retention of all readers, especially those relying on audio readouts.

Content and Organization

- ✓ Keep heading levels limited, distinct, and in order.
- ✓ Check subsection organization for clarity.
- ✓ Keep content and organization clear and simple.
- ✓ Create table summary for alt-text.

Use of Color

- v Eliminate use of color to convey content.
- v Check graphics for color-based symbols and change to color-neutral.
- v Color may not be used as means of identification or navigation. Do not say:
 - The blue areas represent....
 - Click the red button.

Mechanical Review



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Mechanical Review

- ✓ Check formatting, enter alternative text, verify conversion, and perform other routine functions

Format

- ▼ Apply language identification

Template Use

- ✓ Create or use a template if available to save time, avoid lapses, and promote consistency.

Format

- ✓ Check the document for appropriate use of format commands:
 - Correct column formatting
 - All items tagged with styles
 - Tabbed info only in tables
 - No text boxes
 - Standard word-processing features

Format

- ✓ Use consistent styles and apply styles to all parts of file including body text.
- ✓ Can use predefined Word styles.
- ✓ Can create customized styles to fit your document.

Format

- ✓ Remove extraneous characters from the document (e.g., unnecessary lines returns between paragraphs after text styles are applied).
- ✓ Use styles to achieve desired spacing.

Captioning

- ✓ Make captions styled text, not part of the figure or table.
- ✓ Do not enclose in boxes.
- ✓ Use automatic captions for best conversion.

Group Graphics

- ✓ If graphics or equations are made up of separate elements, group as one unit.

Use Automated Features

v Use automatic formatting features such as:

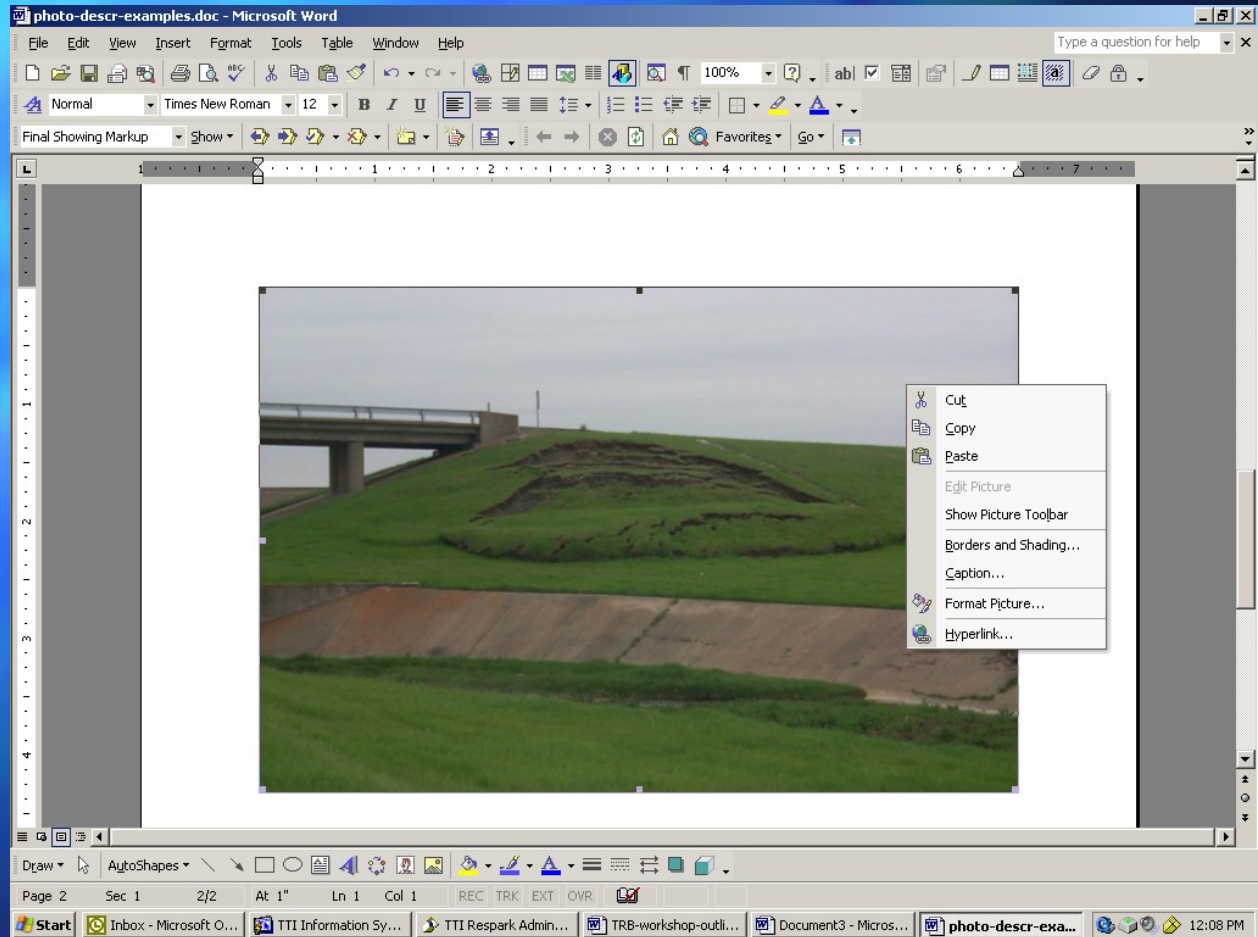
- autogenerated lists
- autoinsertion of endnotes and footnotes
- automated captioning and callouts

BONUS! Automated features improve accuracy as well as prepare files for conversion.

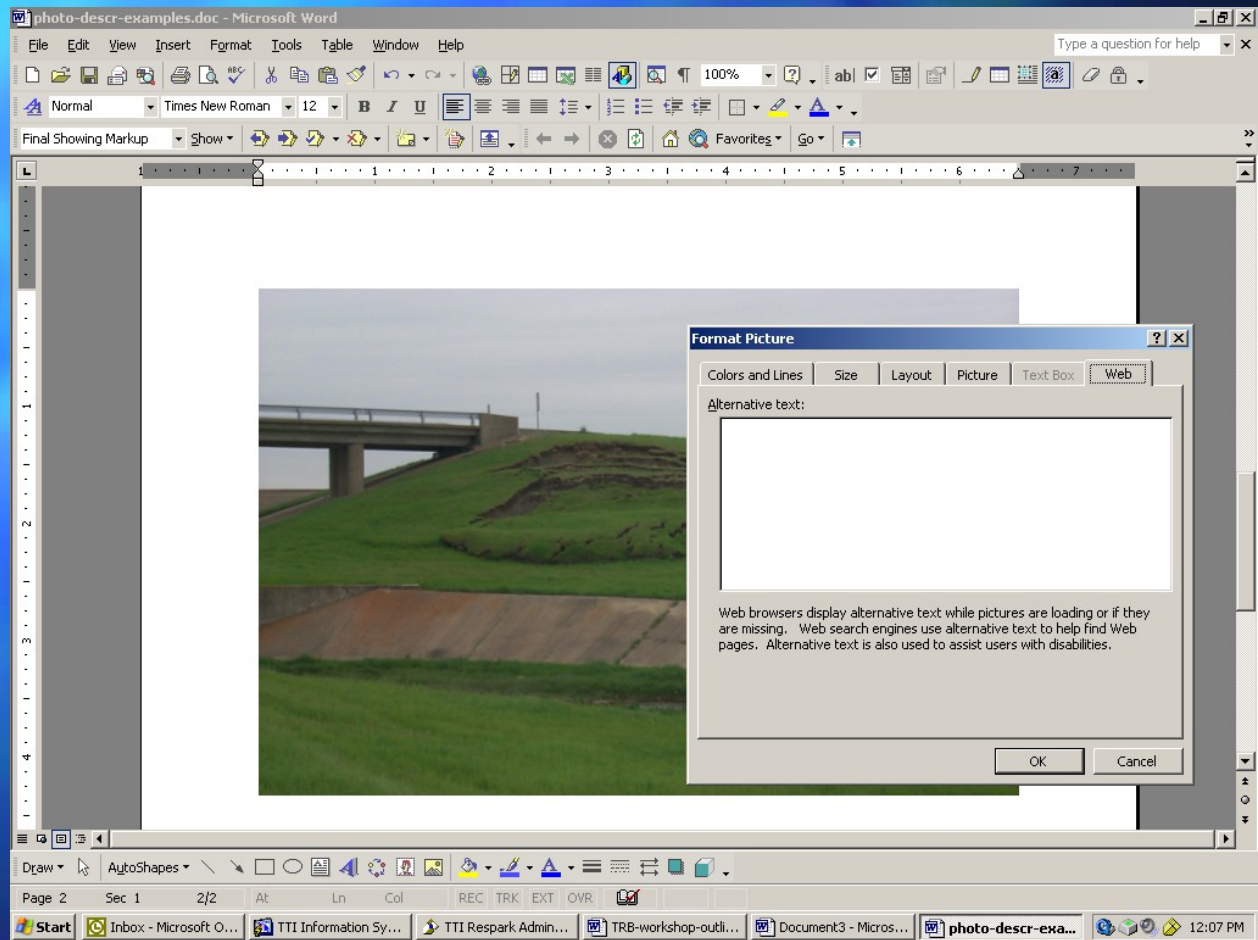
Check for Problem Areas

- ✓ Check for items that need attention.
For example: If your report has text boxes that need conversion to graphic format or equations that need grouping, you want to take care of those items before adding alternative text.

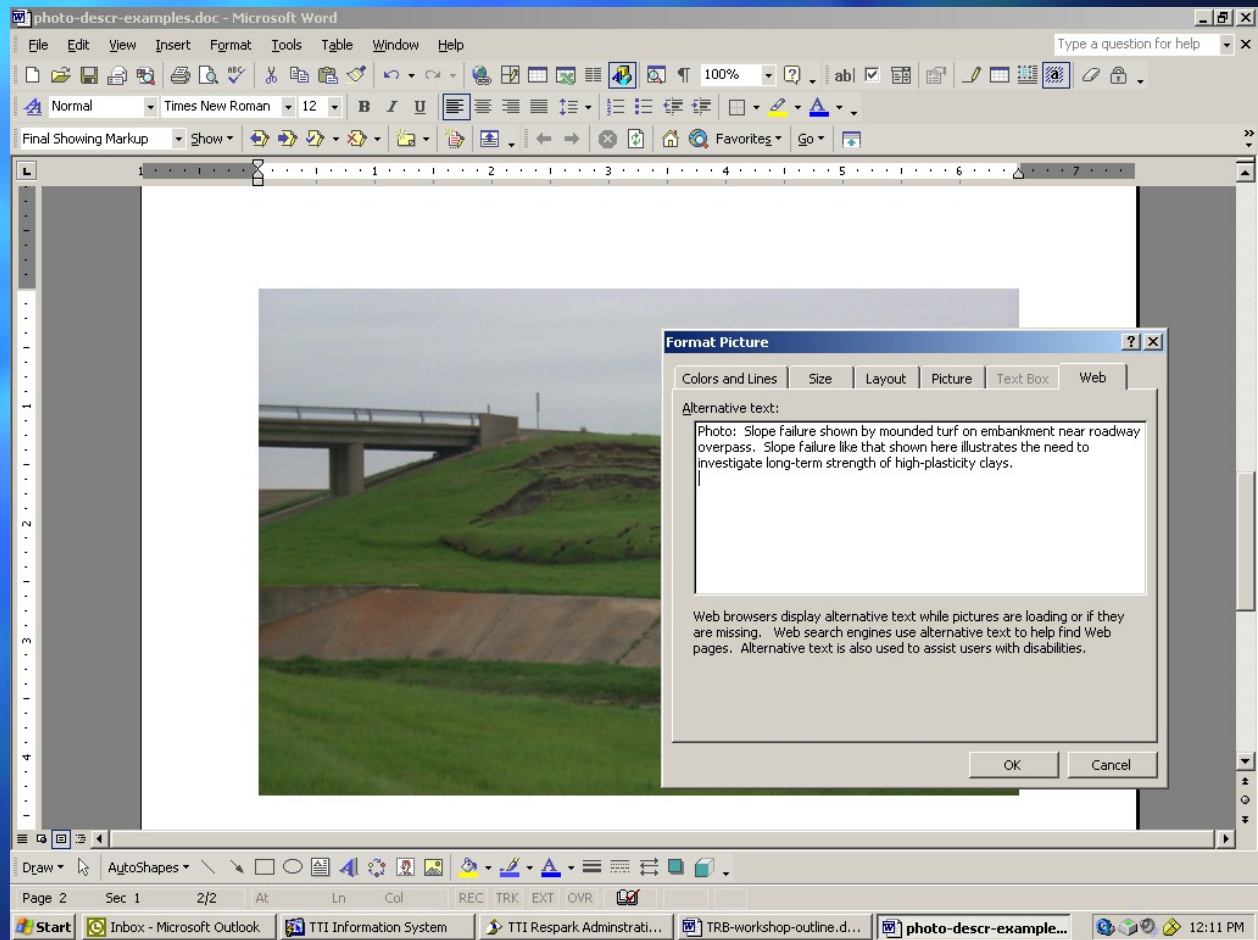
Adding Alternative Text to File



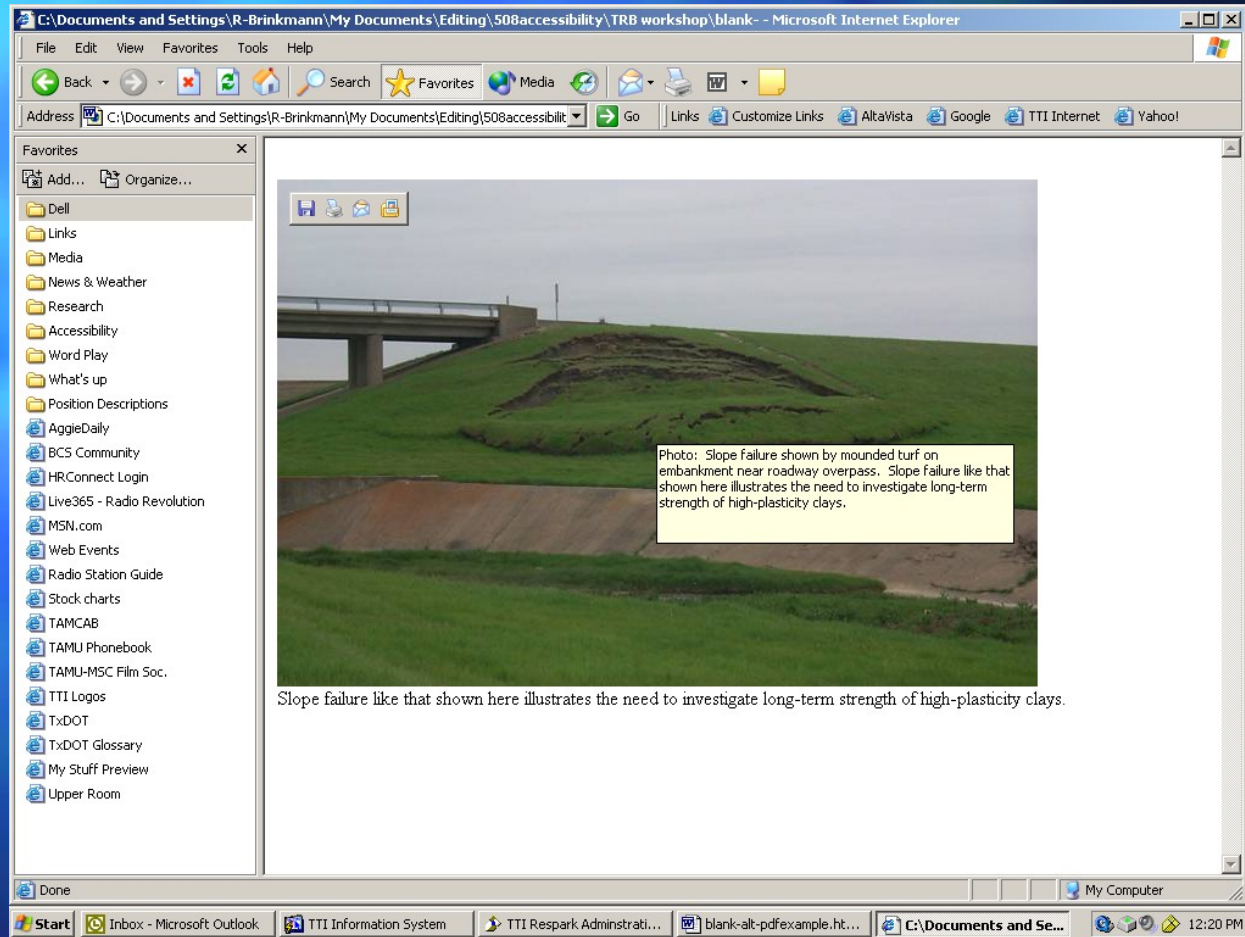
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Review Color

- v Verify appropriate use of color and effects:
 - Color may be used as simple visual enhancement.
 - Remember that with some types of visual impairment bright colors blur or produce discomfort for users.
 - Check for use of color to ensure shades used together are discernable in monotone.

Review Color

- Check your document by viewing in monotone (on monitor or printed page) to verify that colors and/or shading do not obscure content.
- Avoid special effects such as flickering and flashing.

Links and Cross References

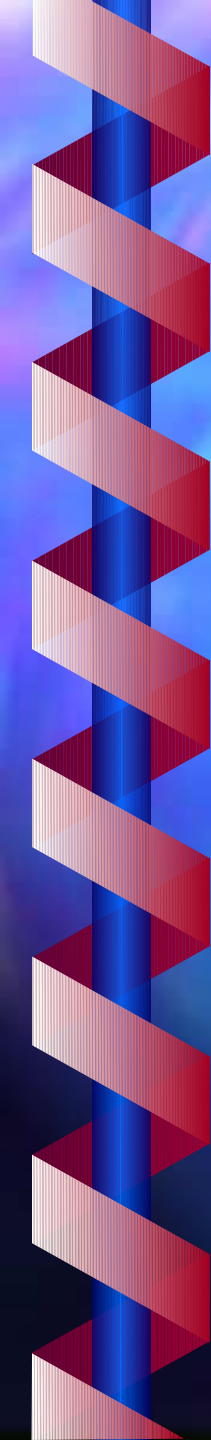
- ✓ Check all links and cross references for accuracy.
- ✓ Style as hyperlinks.
- ✓ Consider user notification when leaving your site.

Review for File Accessibility

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Check File for Accessibility Preparation

- ✓ Good usability of file
- ✓ Proactive lifecycle approach to file design
- ✓ Creation and insertion of clear, complete alternative text for graphic features
- ✓ Simple construction in tables

- 
- ✓ Appropriate use of color/effects
 - ✓ Clear content organization
 - ✓ Verification of workable links, both internal and external
 - ✓ Application of styles and use of autogenerated features
 - ✓ Verify accessibility using accepted practice

Information and Coordination

✓ Resources

- People, websites, publications, examples

✓ Coordination and verification

- Individuals and groups both internal and external to your organization

Questions?



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Microsoft Word® Techniques



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