



U.S. Department of Transportation
Federal Highway Administration



Office of Technical Services

NHI WEB-BASED TRAINING STANDARDS GUIDE

Last updated July 2018

Table of Contents

Introduction	1
Purpose.....	1
General WBT Development Guidance	1
Development Tools	1
Note on 508 Compliance	2
Hosting Site	2
Courseware Testing	2
Additional Guidance.....	2
Standards for WBT Design Plans.....	3
Purpose of a Design Plan	3
Development of a Design Plan.....	3
Typical Design Plan Elements	3
Design Plan Example	4
Screen Formatting Standards	5
Screen Design	5
Text Layout	5
Navigation.....	5
Section 508 Considerations.....	6
Font.....	6
Standards for Media	7
Graphics.....	7
Audio	7
Video	8
Animation.....	8
Standards for Interactivity	9
Standards for WBT Assessments	10
Knowledge Checks.....	10
End-of-Course Assessment.....	10
Scoring and Feedback Requirements	10
508 Compliance of Assessments	10
Question Formats.....	11

Standards for Course Evaluations.....	12
Including Evaluation Instructions in Courseware.....	12
Requesting Evaluation Data.....	13
Standards for Storyboards.....	14
Purpose of a Storyboard.....	14
Development of a Storyboard.....	14
Typical Elements of a Storyboard.....	14
Storyboard Development Tool.....	14
Storyboard Example.....	14
Standards for Prototypes.....	15
Purpose of a Prototype.....	15
Typical Elements of a Prototype.....	15
Format of a Prototype.....	16
Standards for Draft Courseware.....	17
Purpose of Draft Courseware.....	17
Delivery Format.....	17
Required Elements.....	18
Standards for Alpha Courseware.....	19
Purpose.....	19
Required Elements.....	19
Standards for Beta (Pilot) Courseware.....	20
Purpose.....	20
Required Elements.....	20
Contractor Responsibilities.....	20
Standards for the Soft Launch Submittal.....	21
Purpose.....	21
Required Elements.....	21
Contractor Responsibilities for Finalization.....	21
Standards for Final Deliverables.....	22
Delivery Formats.....	22
Source Files.....	22
SCORM Files.....	22
Additional Standards.....	22

Folder Structure and File Naming.....	23
Source Files Folder	23
PDF Files Folder	23
Readme Files Folder	23
Other Files Folder.....	23
File Naming Convention.....	23
Appendix A: Developer Duties during Testing Processes	25
Stage 1: Prototype, Draft, and Alpha	25
Stage 2: Pilot (Beta).....	25
Following Pilot	25
Stage 3: Soft Launch	25
Following Soft Launch.....	25
Appendix B: Sample Storyboard	27

This page is intentionally blank.

Introduction

Purpose

The purpose of this document is to provide a high-level overview of the National Highway Institute (NHI) standards for web-based training (WBT) deliverables.

Any deviations from the standards in this document must be addressed and approved with the NHI Contracting Officer's Representative (COR) before performing work or delivering a product.

General WBT Development Guidance

The following are general standards for NHI WBT development:

- Provide interactive and creative training that adheres to the course learning outcomes.
- Provide learners with information in the fewest steps and shortest time possible.
(Duration is measured by the amount of time it takes an average learner to read through all the presented material, access provided options, answer knowledge checks, and listen to all included audio.)
- Convey content in simple and direct language using simple terms.
- Provide modules or lessons that are chunked logically and do not exceed 60 minutes per Shareable Content Object (SCO).
- Maintain module consistency.
- Develop module welcome screens that illustrate the relevance of the content to the learner. Create a desire to learn by beginning each module with something compelling.
- Include transitions to ensure coherent flow between screens.
- Correlate information on the screen to the slide title.
- Address one concept, procedure, or item of instruction on each screen.
- End each module with a summary that recaps the content and ties it to the learning outcomes.

Development Tools

Various development tools may be used in conjunction with FHWA's Adobe Connect Learning Management System (LMS).

- JavaScript
- Adobe Photoshop

- Adobe Premiere
- Adobe Captivate
- Adobe Acrobat Pro

Any other tools that the developer may wish to use in the WBT development will require approval from the Contracting Officers' Representative (COR). Tools must be capable of creating WBT content that is Section 508 compliant.

Contractors must obtain their own development software licenses.

Note on 508 Compliance

All final deliverables, as specified in the contract or task order (TO), must be Section 508 compliant. Please refer to the contract or TO for specific 508 compliant guidelines and requirements on each project. You may also refer to the NHI Style and Standards guide for additional information on Section 508.

Hosting Site

All NHI WBT courseware reside on the FHWA Adobe Connect server at the following URL: <https://connectdot.connectsolutions.com>.

Contractors must make arrangements to temporarily host and test WBTs on their own server.

Courseware Testing

The developer must ensure compliance with NHI standards, SCORM, and Section 508. To support compliance and confirm an acceptable product, NHI follows a testing process that requires the following:

- Alpha tests on all supported operating systems and browsers
- LMS integration testing
- Quality control testing on published versions of alpha, beta (pilot), and final (soft launch) courseware

A list of testing duties assigned to the contracted developer is found in the appendix of this document. Developers should refer to the contract or TO for any specific testing requirements or modifications to this process.

Additional Guidance

You should also consult the NHI Style and Standards Guide found on the **Developing an NHI Course** page of the NHI website:

https://www.nhi.fhwa.dot.gov/resources/intro_developing.aspx

Standards for WBT Design Plans

Purpose of a Design Plan

A design plan serves as the framework for developing course content. In general, a design plan is developed based on the findings and recommendations from the training needs analysis.

One purpose of the design plan is to establish that the finished training product will meet the training needs of the target audience and be designed in accordance with accepted instructional systems design practices. Design plans ensure the course is instructionally sound, which means it is job-relevant, task-based, problem-centered, interactive, engaging, and well organized.

Development of a Design Plan

Depending on the project, the design plan may be completed in a series of iterations. This may begin with a high-level plan that details basic course content and a course overview. Following, a more detailed plan may include an extensive content outline, explanation of instructional activities, information on graphics and resources to be used, and an overview of the assessment. Refer to the development contract and NHI Training Program Manager (TPM) for additional clarification on what should be included.

Typical Design Plan Elements

Design plans typically contain the following information:

- 1 Introduction
- 2 Course Information
 - 2.1 Title
 - 2.2 Course Type
 - 2.3 Statement of Need
 - 2.4 Description
 - 2.5 Course Level
 - 2.6 Target Audience
 - 2.7 Related Courses
 - 2.8 Estimated Course Time
 - 2.9 Course Goal
 - 2.10 Learning Outcomes
- 3 Course Design
 - 3.1 Structure

- 3.2 Learning Taxonomy
- 3.3 Learner Progression
 - 3.3.1 Sequencing Description
 - 3.3.2 Progression Flowchart
- 3.4 Course Look and Feel
 - 3.4.1 Environment
 - 3.4.2 Theme
- 3.5 Instructional Strategies
- 3.6 Assessment Strategy
 - 3.6.1 Techniques
 - 3.6.2 Format
 - 3.6.3 Alignment
- 3.7 Accessibility Compliance Strategy
 - 3.7.1 Section 508 Strategy
- 4 Instructional Plans
- 5 Course Development
 - 5.1 Development Tool
 - 5.2 Development Process
 - 5.3 Prototype
 - 5.4 Courseware
- 6 Testing and Implementation
- 7 Course Evaluation

Design Plan Example

Consult the design plan example from the **Developing an NHI Course** page on the NHI website:

https://www.nhi.fhwa.dot.gov/resources/intro_developing.aspx

Screen Formatting Standards

Media standards are used to maintain style consistency within the following areas:

Screen Design

- Establish a specific location for the presentation of instructions, completion times, and prompts.
- Provide recurring information in consistent locations.
- Use white space to separate blocks of text.
- Used varied layouts to present text and images in order to add visual interest.
- Create the shortest module titles needed to convey meaning.

Text Layout

- Present information in a top-down, left-to-right instructional format.
- Lay out content so a screen reader will read the text and alt tags in the correct order.
- Select a layout for each slide and insert text or graphical elements into a placeholder on the layout.
- Design text layout in short segments or phrases.
- Break up blocks of text to make it easier for the learner to scan the content.
- Use bullets, numbered lists, tables, and charts to break up lengthy sentences.

Navigation

Use consistent navigation standards to promote learner satisfaction and retention. The following standards apply to all Web-based courseware:

- Ensure intuitive, learner-controlled navigation.
- Add Back and Next buttons directly to each slide.
- Buttons should have text description labels (alt tags) that include the URL or slide number.
- Navigation buttons must be displayed in the same position on every page.
- Mouse cursor changes and rollover highlights must be consistent within a course.
- Other navigational buttons may be added, as appropriate. Make buttons, such as Submit and Clear, consistent within each course.
- Navigation elements provide one-click access to learners. Examples include Resources, Help, and Glossary.
- Provide clear instructions or cues for all required learner activities.

- Allow modules to be completed in any order unless the instructional design requires sequential accomplishment. If sequential accomplishment is required, provide instructions to the learners.
- Document links to other pages within the course or to external Web pages or other sites.
- Describe internal links in the narration. For example: “For more information, please navigate to slide 38.” Otherwise, place linked slides directly after the slide that references it so that a user navigating with only the keyboard can access the information in a logical way.
- Document external links in the outline and include the link description in the narration.
- Use external links sparingly so learners are not distracted from existing content.

Section 508 Considerations

- Meet all Section 508 requirements.
- Access the most current government guidance at <https://www.section508.gov/refresh-toolkit> .

Font

Follow NHI general standards for readability as found in the NHI Style and Standards Guide.

Standards for Media

Media standards provide a consistent look and feel to courses. They also increase the likelihood that the media will function as intended on the training platform.

For each module, utilize the most suitable medium to support and reinforce the subject material or interactive components. Media include computer graphics, photographs, video, animation, and graphs or tables.

Graphics

Refer to the NHI Style and Standards Guide for general graphics requirements.

- Use custom illustrations and interactions to teach complex concepts.
- Recreate tables and graphs wherever possible instead of inserting as an image. Scanned graphics should be avoided entirely.
- Use the most modern technology generally available to generate visuals, including computer-generated graphics.
 - Be aware that any computer software required for the visual aids must be readily available; do not use proprietary software.
- Alt tags for charts and other complex graphics should reflect their complexity. A sentence or two is not always sufficient.
- Data that is presented in a table must be included in the general narration or provided as a table description.
 - The information or data must make sense when presented in a narrative format. Redundant or repeated information should be presented logically and not simply repeated.

Audio

- Avoid phrases that are not meaningful on their own or apply only to a select group of users.
- Include a semi-colon after each item in a narrated list, add the word “and” after the penultimate item, and place a period after the last item. This ensures that a screen reader can identify the items as a list.
- Avoid special characters in the narration (notes) section; they do not always publish properly.
- Ensure audio volume levels are consistent throughout the course.
- Use one voice talent to narrate all modules within the same course. If role-playing, multiple voice talent may be used, but roles must be consistent.

- Place 1.0 second of silence at the beginning and end of every slide.

Video

- Avoid techniques such as zooming, panning, transitional wipes, dissolves, and fast motion subjects.

Animation

- Allow user to control the animation to include start, stop, and replay.

Standards for Interactivity

Exercises, calculations, skill practice, and other experiential work provide an opportunity to test understanding and relate training content to work-related scenarios.

It may be appropriate to design modules within the same course for different levels of interactivity.

Level of Interactivity	Description
Level I—Passive	<p>The learner acts solely as a receiver of information.</p> <p>The learner progresses linearly through course reading text from the screen, viewing video, or listening to audio.</p>
Level II—Limited Interaction	<p>The learner makes simple responses to instructional cues.</p> <p>The responses may include answering multiple choice or true or false questions.</p> <p>Example: Knowledge Checks</p>
Level III—Complex Interaction	<p>The learner actively engages with the content using technically complex activities that support challenging instructional methods.</p> <p>Example: Building a model or diagram</p>

Table 1: Level of Interactivity Descriptions

Standards for WBT Assessments

NHI uses both formative and summative assessments for Web-based training. Formative assessments include knowledge checks. Summative assessments include end-of-course assessments and course evaluations.

Knowledge Checks

- Provide practice opportunities to reinforce each concept or skill
- Include feedback on correct answers
- Scores typically not sent to LMS

End-of-Course Assessment

- Created and published as a separate, stand-alone course content item
- Never titled as a lesson
- Loaded to online curriculum
- Introduced by appropriate completion instructions provided at the end of the training
- Evaluates participants' mastery of the content
- Requires every question to be answered
- Sends answers to LMS to be tallied
- Provides final score to learner
- Includes any additional course completion requirements as needed

Scoring and Feedback Requirements

NHI recommends that a score of 70 percent be required for passing status; however, please consult your TPM or COR for the specific requirements of your project.

In addition, the method for providing feedback on correct responses for the final assessment is also project-specific. Consult with your TPM or COR.

508 Compliance of Assessments

The assessment is not Section 508 compliant for several reasons. Some of those reasons are because a learner using:

- The keyboard to navigate cannot select the different multiple choice options and the **Submit** button. (The mouse must be used.)
- A screen reader will not know what option has been selected.

Any qualified learner who cannot complete the assessment should contact NHI Training (NHITraining@dot.gov), and an NHI representative will provide a verbal equivalent or other accommodation to the assessment.

Question Formats

The following question formats may be used:

- Multiple choice
- Matching
- True or False
- Completion or “fill in the blank”
- Short answer
- Likert
- Sequence
- Hot spot (user identification)

Other testing types, including performance testing (skill demonstrations) and critical thinking (case studies), can be accommodated.

Standards for Course Evaluations

NHI assesses the participant’s overall training experience using a standardized, online evaluation, which is accessible to participants via the NHI My Training page once they complete the training.

(NHI produces and administers this assessment. It is not the developer’s responsibility.)

Including Evaluation Instructions in Courseware

Direct participants to the course evaluation link on one of the final screens of the training module. A text example of directions to participants for accessing the course evaluation is shown below. This example “pass” slide would be viewed by the participant at the end of the end-of-course assessment after receiving a passing score.

Conclusion

Congratulations! You have completed NHI-1341090 Base and Subbase Stabilization and Repair WBT.

Return to the “My Training” page, as shown below, to complete a course evaluation and print a certificate of completion.

	Course Title	Course Number	Type	Purchase Date	Progress	Launch	Evaluation/ Certificate
+	Effective Target Setting	138013	WBT	2/8/2018	Completed	Launch	Take Evaluation View Certificate Download Certificate

Select the “X” in the upper right corner of your browser to close this module.

The developer also should create, within the assessment, a “fail” slide for instances in which the participant does not pass the end-of-course assessment.

You did not pass the end-of-course assessment.

Please return to “My Training” to re-take this assessment. You have a maximum of X attempts to pass this assessment.

If this is your final attempt, please contact NHI to reset your access to this course so that you can attempt the course again, from start to finish.

Select the “X” in the upper right corner of your browser to close this module.

Requesting Evaluation Data

NHI manages the collection and analysis of course evaluation data. The developer can request copies of this data from NHI.

Standards for Storyboards

Purpose of a Storyboard

A storyboard is a draft version of Web-based courseware created for the purpose of review, which presents content sequentially and segmented in accordance with the design plan. The storyboard allows reviewers to confirm that technically accurate and sufficient content is being presented via text, narration, on-screen graphics, or another medium. It also allows NHI to confirm that the developer is correctly applying Section 508 guidance and other programmatic settings to the courseware.

Development of a Storyboard

The development of storyboards is project-dependent. The development contract dictates whether storyboards are required as part of courseware development.

Typical Elements of a Storyboard

For each module, the designer or developer creates draft storyboards that can include any or all of the following:

- On-screen text
- Visuals, such as royalty-free photos, diagrams, or descriptions of planned animation
- Narration script
- Video
- Script for new video
- Desktop simulations
- Knowledge checks and debrief (remediation) slides
- Embedded links
- Rough cut (scratch) or text-to-speech (TTS) audio
- End-of-course assessment questions and answers

Storyboard Development Tool

Storyboards are delivered as unpublished content, typically as a PowerPoint file. The developer should confirm with the NHI TPM that this is the preferred delivery method.

Storyboard Example

A sample of a storyboard is provided in the appendix of this document.

Standards for Prototypes

Purpose of a Prototype

A prototype is a fully functional sample of the content designed and developed in accordance with the WBT standards, screen design, and instructional strategies identified in the course design plan. Developers recommend a specific module to be designated as the prototype in the design plan, and the prototype usually contains an average of 15-20 screens.

A prototype of a module or content segment allows reviewers an opportunity to verify that the presentation of the content follows the course design plan. Changes at this stage are considerably less time- and cost-intensive than later in the development process.

Typical Elements of a Prototype

The prototype may be selected based on:

- Content for the section that is the most stable or best documented in the material
- A sampling of all course functionality present in the course

The prototype should demonstrate the presence of the following:

- Creativity
- Level of interactivity
- Opportunities for practice
- Writing style
- Application of adult learning principles
- Adherence to standards
- Accuracy of content
- Resources (documents, bibliography, websites, etc.)

Depending on the project, the course content, and the intended target audience, a series of prototypes may be appropriate. Examples of other prototypes may include, but are not limited to:

- Simulations
- Customized video or multimedia

Format of a Prototype

The prototype must be delivered to NHI as a published, SCORM-conformant file for upload to the FHWA Adobe Connect Server.

Standards for Draft Courseware

Once the contractor receives final written approval of the prototype, the contractor may begin the process of creating the draft WBT content for review. Refer to the contract or TO for details on standards for the submittal(s) of draft WBT courseware.

Purpose of Draft Courseware

The draft content provides a functional sample of the training that is designed and developed in accordance with the WBT standards, screen design, and instructional strategies identified in the course design plan.

The purpose of the draft courseware is to illustrate the presence of the following:

- On-screen content
- Text narration and how it relates to the on-screen content
- Navigation
- Access to associated attachments or ancillary files
- General content flow and pace
- Adherence to learning outcomes
- Embedded multimedia
- Knowledge checks
- End-of-course assessment questions and answers

NHI recommends that the draft delivery include scratch audio or text-to-speech (TTS) audio narration. Inclusion of draft audio provides a more authentic reviewing experience, allowing reviewers a better opportunity to experience the course and catch script-related errors, prior to final narration recording.

Delivery Format

Draft courseware is intended to be developed to 100 percent completion. However, refer to the contract or TO for details on standards for the submittal(s) of draft WBT courseware.

The delivery of the draft content may be divided into a few or several modules. The decision on how these "chunks" of draft WBT content are submitted may be defined and determined in a number of ways:

- In the TO
- At the kickoff meeting
- By the contractor (with approval of the COR)

The draft material must be delivered to NHI as a published SCORM-conformant file for upload to the FHWA Adobe Connect Server.

Required Elements

The submittal of the draft courseware for review includes:

- WBT sources files (e.g., Presenter, Captivate, etc.)
- Published SCORM-conformant .zip files
- Printer-friendly, 508 Accessible WBT lessons in PDF format
- Multimedia Model Release Form(s) and written permission for copyright material (if applicable)
- Other Ancillary Files and their associated source files (if any)

Refer to the contract or TO for specific guidance on every project. Discuss any deviations from this document with the NHI COR before performing work or delivering a product.

Standards for Alpha Courseware

Purpose

The Alpha courseware provides a more detailed treatment of the content designed and developed to completion. The Alpha courseware reflects all content that has been revised by the vendor that incorporates comments from the technical panel and NHI.

The submittal of the Alpha courseware provides the technical panel a final opportunity to review the updated content and narration for technical treatment and accuracy prior to the Pilot phase.

Required Elements

The submittal of the alpha courseware for review includes:

- WBT source files (e.g., Presenter, Captivate, etc.)
- Published SCORM-conformant .zip Files
- Printer-friendly, 508 Accessible WBT lessons in PDF format
- Multimedia Model Release Form(s) and written permission for copyright material (if applicable)
- Other Ancillary Files and their associated source files (if any)

In this phase, the courseware may include scratch audio or TTS narration.

Refer to the contract or TO for specific guidance on every project. Discuss any deviations from this document with the NHI COR before performing work or delivering a product.

Standards for Beta (Pilot) Courseware

Purpose

The Beta (Pilot) courseware provides a 100 percent fully functional version of the content, including all Alpha-related edits and corrections as identified by NHI and includes audio-recorded narration. This “pilot-ready” courseware will be released to a sample of participants that reflect the stated target audience identified in the course design plan.

The submittal of the Beta (pilot) courseware also provides the technical panel a final opportunity to review the updated content, including narration, for technical treatment and accuracy prior to the submittal of the final deliverable.

Required Elements

The submittal of the Beta (pilot) courseware for review includes:

- WBT source files (e.g., Presenter, Captivate, etc.)
- Published SCORM-conformant .zip files
- Printer-friendly, 508 accessible WBT lessons in PDF format
- Multimedia Model Release Form(s) and written permission for copyright material (if applicable)
- Other ancillary files and their associated source files (if any)

Contractor Responsibilities

The contractor is expected to run the pilot, in cooperation with NHI. All pilot comments from participants are to be collected, processed, organized, and analyzed by the contractor.

Refer to the contract or TO for specific guidance on every project. Discuss any deviations from this document with the NHI COR before performing work or delivering a product.

Standards for the Soft Launch Submittal

Purpose

The soft launch courseware provides a 100 percent fully functional courseware that has been updated based on comments and edits from the pilot phase. This “production-ready” courseware will be launched upon final approval from the COR.

Required Elements

The submittal of the final courseware for soft launch includes:

- WBT source files (e.g., Presenter, Captivate, etc.)
- Published SCORM-conformant .zip files
- Printer-friendly, 508 accessible WBT lessons in PDF format
- Multimedia Model Release Form(s) and written permission for copyright material (if applicable)
- Other ancillary files and their associated source files (if any)

Contractor Responsibilities for Finalization

The courseware must be tested for functionality on the FHWA Adobe Connect Server. It will be tested by the designated NHI ISD and technical lead. If the soft launch courseware passes the soft launch test, the COR will provide formal acceptance of the deliverable.

If not, the requested changes must be made by the contractor, and the updated final courseware must be resubmitted for a second round of testing. Once the courseware passes the soft launch test and formal acceptance is received by the contractor, the courseware is deemed final.

Refer to the contract or TO for specific guidance on every project. Discuss any deviations from this document with the NHI COR before performing work or delivering a product.

Standards for Final Deliverables

Delivery Formats

Deliverables for WBT courses include all electronic files. Deliver the products required by the contract as final deliverables in the following formats:

- WBT source files (e.g., Presenter, Captivate, etc.)
- Published SCORM-conformant .zip Files
- Printer-friendly, 508 accessible WBT lessons in PDF format
- Graphics as compressed, processed files and .PSD with layers preserved (if created from scratch)
- Other ancillary files and their associated source files (if any)
- Other resource materials, such as spreadsheets or tables that are accessed via external links
- Multimedia Model Release Form(s) and written permission for copyright material (if applicable)
- Any written approvals for modifications

Source Files

- NHI shall hold ownership of the final courseware (source files), including PowerPoint files and all final and raw audio, video, graphic files, and other media files.

SCORM Files

- The output resulting from publishing a given module or lesson is a SCORM-conformant .zip file. This resultant .zip file will be uploaded to the FHWA Adobe Connect server once delivered from the contractor to NHI.
- For details on creating a SCORM-conformant .zip file, refer to the development software's technical manual.

Additional Standards

- The U.S. Department of Transportation (DOT) Standard indicates that all printed materials, including visual aids, must be developed using Microsoft Office. This requirement allows NHI to edit all documents delivered by the developer. Refer to your TO for required software versions.
- Documents should not be delivered in read-only, presentation-only, or password-protected format.
- Keep the use of macros and other complex formatting to a minimum.

Folder Structure and File Naming

Use the requirements below to create folders for files delivered to NHI.

Source Files Folder

- Presentation materials
- Reference manual
- Test materials
- Supplemental materials

PDF Files Folder

- Presentation materials
- Reference manual
- Supplemental materials

Readme Files Folder

- Included Readme.txt file with directions or notes on how to navigate through the submittal.
- If a course shares materials with another course, document that need in the readme file.
- Additional information on use of materials, if any.

Other Files Folder

- Other files that cannot be classified in any of the three file folders can be added in this folder.

File Naming Convention

Following are file naming conventions for each deliverable. Separate each item in the file name with an underscore (_).

- Course number
 - Example: 130101
- Submittal type
 - MOD (module)
 - LESSON (lesson)
 - PDF (PDF)
 - PPT (PowerPoint presentation)
 - EOCA KEY (end-of-course assessment answer key)

- EOCA (end-of-course assessment)
- RM (reference manual)
- SM (simulation)
- VD (video)
- AU (audio)
- OM (other materials: specify short description in ALL CAPS)
- Publication number (if applicable)
 - Obtain from NHI (XX-XXX)
- Revision or submittal date, formatted as follows (month, day, year):
 - 05122016
 - 12122016
- File description (short description of the file, if necessary)
 - ExamA
 - ExamB
- Application Extension
 - pdf (Adobe Acrobat)
 - docx (Microsoft Word)
 - pptx (Microsoft PowerPoint)
 - wav or mp3 (Audio file)
 - If use of other software or other file formats has been approved, use standard application extensions.

Following are two examples of file names using the convention *Course Number_Type_Pub #_Date_Desc.*

- 148000_PDF_FHWA-NHI-09-116_05122016.pdf
- 148001301_OM_12122016_Job_Aid.doc (where no publication number is assigned)

Appendix A: Developer Duties during Testing Processes

Notations are provided in parentheses for each step below to identify the responsible party who completes each numbered item.

Stage 1: Prototype, Draft, and Alpha

1. Post WBT courseware to NHI server. (NHI)
2. Publish ancillary files to generate URLs; use those URLs to create hyperlinks within the courseware. (NHI)
3. Notify panel and developer when courseware is ready for review and provide links for accessing courseware. (NHI)
4. Conduct quality check on final courseware via NHI server. (Developer)
5. Review courseware comments received from NHI. (Developer)
6. Revise courseware based on comments. (Developer)
7. Document resolution of all comments. (Developer)
8. Submit final resolution of comments to NHI and Technical Panel lead. (Developer)

Stage 2: Pilot (Beta)

1. Post pilot-ready courseware to NHI server as user content and test. (NHI)
2. Notify NHI TPM that the product is complete and complies with NHI's "pilot-ready" criteria. (NHI)

Following Pilot

1. Review comments received from reviewers. (Developer)
2. Revise courseware based on pilot comments. (Developer)
3. Document resolution of all pilot comments. (Developer)
4. Submit final resolution of pilot comments to NHI and Technical Panel lead. (Developer)

Stage 3: Soft Launch

1. Post post-pilot revised courseware to NHI server as user content and test. (NHI)
2. Notify NHI TPM and ISD once courseware is ready for internal NHI testing. (NHI)

Following Soft Launch

1. Review comments submitted by NHI tester. (Developer)
2. Revise courseware based on soft launch comments (Developer).
3. Repost courseware to NHI server as User Content. (NHI)

4. Document resolution of soft launch comments. (Developer)
5. Conduct second soft launch. (NHI)
6. Review comments from second soft launch submitted by NHI. (Developer)
This is an iterative process until all issues have been addressed and reflected on the server through testing.
7. Submit final resolution of soft launch comments to NHI TPM and ISD. (Developer)
8. Submit source files to NHI TPM and ISD following guidelines provided in this guide. (Pay particular attention to file naming conventions.) (Developer)

Appendix B: Sample Storyboard

Below is a sample storyboard.

Course Name:		Module Name:	
Dropdown Menu Title: Click to add text.		Rev. Date: xx/xx/xx	Slide: 2
Click to edit [Page-Title]			
Click to edit content		Click icon to add picture	
			
Directions to Graphics:	Alt tag:	Directions to Developer:	SME Comments:
Click to add text	Click to add text	Click to add text	Click to add text