1. Introduction


Refer to your RFP for specific guidance on your specific project. Please refer any deviations from this document to your COTR.

1.1. Taxonomy and Course Structure

NHI WBT courseware is developed using the following structure: Course, Module.

All courses will include modules; lessons are optional. For purposes of the Sharable Content Object Reusability Model (SCORM), a sharable content object (SCO) is defined at the module level.

1.2. General WBT Development Information

This section covers general development guidance for NHI Web-based training. For additional resources, templates, and examples, refer to the NHI WBT Developer Toolkit, which can be accessed at http://www.nhi.fhwa.dot.gov.

Use the following general standards.

- Provide learners with information in the fewest steps and shortest time possible. The duration is measured by the amount of time it takes an average learner to read through all the presented material, access provided options, and listen to all included audio.
- Convey the content in simple and direct language using simple terms.
• Maintain module consistency.
  – Develop module welcome screens that illustrate the relevance of the content to the learner.
  – End each module with a summary that recap the content and ties it to the learning outcomes.
• Create a desire to learn by beginning each module with something compelling.
• Include transitions to ensure coherent flow between screens.
• Address one concept, procedure, or item of instruction on each page.
• Correlate information on the screen to the slide title.

1.2.1. Platform Standards
Developers should refer to Adobe's technical guidance for Presenter to determine the minimum platform configurations required to develop courseware. See http://www.adobe.com/products/presenter/tech-specs.html.

1.2.2. Hosting
All NHI WBT courseware resides on the FHWA server at https://connectdot.connectsolutions.com.

1.3. Development Tools

All WBT developed for NHI must use Adobe Presenter 8, a PowerPoint to Flash conversion tool. Developers must purchase a developer's license for Adobe Presenter 8 and the Presenter plug-in.

Be sure that all developed products use the latest version of the NHI WBT template, which is available in the WBT Developer Toolkit on the NHI Web site at http://www.nhi.fhwa.dot.gov.

Other non-proprietary development tools, such as those listed below, may be used in conjunction with Adobe Connect.

• Adobe Flash
• JavaScript
• Adobe Photoshop
• Adobe Premiere
• Adobe Captivate
• Adobe Acrobat
Any other development tools require approval from the COTR. The developer should verify that they have the correct version of the NHI template with the NHI TPM prior to beginning courseware development.

1.4. Courseware Testing

The developer must ensure compliance with NHI standards, SCORM, and Section 508. To support compliance and confirm an acceptable product, NHI developed the following testing process. Among other things, the testing process requires:

- 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.

The duties assigned to the contracted developer are listed. Developers should refer to the task order for any specific testing requirements or modifications to this process.

Prior to beginning courseware development, the developer should contact the NHI TPM in order to obtain a user name and password on the NHI Adobe Connect server. The NHI TPM will provide the necessary information on how to complete this process.

This folder is to be used for development and testing purposes only.
1.4.1. Developer Duties during Testing Processes

**Table 1: Developer Duties during Testing Processes**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Stage 1 Alpha</th>
<th>Stage 2 Pilot (Beta)</th>
<th>Stage 3 Soft Launch</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Developer (Contractor) Duties</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Publish WBT courseware to the NHI server as User Content and conduct quality control.</td>
<td>1.</td>
<td>Publish pilot-ready courseware to NHI server as User Content and test.</td>
</tr>
<tr>
<td>2.</td>
<td>Notify NHI when courseware is ready for review and provide links for accessing courseware.</td>
<td>2.</td>
<td>Notify NHI TPM with a written, signed report that the product complies with NHI’s “pilot-ready” criteria.</td>
</tr>
<tr>
<td>3.</td>
<td>Review courseware comments received from NHI.</td>
<td>3.</td>
<td>Review comments received from NHI following pilot.</td>
</tr>
<tr>
<td>4.</td>
<td>Revise courseware based on comments.</td>
<td>5.</td>
<td>Revise courseware based on pilot comments.</td>
</tr>
<tr>
<td>5.</td>
<td>Document resolution of all comments.</td>
<td>6.</td>
<td>Document resolution of all pilot comments.</td>
</tr>
<tr>
<td><strong>Additional Steps</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Publish ancillary files to generate URLs; use those URLs to create hyperlinks within the courseware.</td>
<td></td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Following Pilot</strong></td>
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<td></td>
<td></td>
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<td>4.</td>
</tr>
<tr>
<td></td>
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<td>5.</td>
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<td>7.</td>
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<td></td>
<td></td>
<td></td>
<td>8.</td>
</tr>
</tbody>
</table>

---

1. NHI moves ancillary files from vendor folder to course folder at the end of the development when all courseware is final.
2. It is possible that following the Stage 3 review by Systems Support that no changes would need to be made by the vendor and that the materials would be accepted as final at that point.

**NOTE:** A Stage 4 (Public Offering) does exist in the NHI process. However, it does not involve developer (contractor) duties unless NHI otherwise notifies the developer. If Stage 4 duties are identified by the contract, contact the NHI TPM to obtain a copy of this table with Stage 4 incorporated.
2. Standards for Design Plans

Design plans contain the findings and recommendations that are usually the result of a needs analysis. Design plans ensure the course is instructionally sound, which means it is job-relevant, task-based, problem-centered, interactive, engaging, and well organized.

Depending on the project, the design plan may be completed in a series of iterations, beginning with a high-level plan that details basic course content and a course overview, and expanding to a more detailed plan that 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 TPM for additional clarification on what should be included in all plans.

Design plans typically contain the following information.

- Introduction and background
- Statement of business need
- Target audience characteristics
- Course goal(s)
- Course learning outcomes (terminal learning objectives, required; enabling objectives, optional)
- Overarching instructional approach, e.g., theme, metaphor
- Delivery method(s)
- Course structure (diagrams of modules that show chunking and sequence of instruction)
- Use of media (animation, audio, video), if recommended
- Description of instructional strategies
- Estimated course duration, by module
- Content and exercises mapped to each course learning outcome (in bulleted or outline format)
- Description of graphics designated to enhance content
- Proposed use of narration, if applicable
- Identification of prototype content
- Projected timelines for tasks and milestones, if not already provided in a project management plan or other documentation
- Evaluation strategy and traceability document
  - The traceability document supports the end-of-course assessment as a Level 2 evaluation.
The traceability document will allow NHI to quickly and easily determine validity of the Level 2 instrument, as well as facilitate later updates of content. It will identify, by objective, that the assessment item effectively tests learner mastery of an objective and the location in the courseware of supporting content.

The traceability document is required for SCORM compliance. It may be collected as a separate final document or revised as part of an update to the overall design plan. Confirm with the NHI TPM as to how this document is to be delivered.
3. Standards for Storyboards

A storyboard is a draft version of Web-based courseware created for the purpose of review. A storyboard presents content sequentially, segmented in accordance with the design plan. The storyboard allows reviewers to confirm 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 508 guidance and Adobe Presenter Quiz settings to the courseware.

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

The designer or developer creates draft storyboards for each module that can include any or all of the following.

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

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 for this deliverable.
4. Standards for Prototypes

The prototype provides a functional sample of the content designed and developed in accordance with the WBT standards and instructional strategies identified in the design plan. A prototype of a module or content segment allows reviewers an opportunity to verify that the presentation of the content coincides with the design plan. Changes at this stage are considerably less time- and cost-intensive than later in the development process.

Developers designate a specific module as the prototype in the design plan. A prototype usually contains an average of 15-20 screens. Rationale for selection of prototype content may include:

- Content for the section is the most stable or best documented in the material.
- All functionality to be included in the project is included in the section.
- The content is the foundation for other content in the project, and its development facilitates the development of other content.

The prototype must be delivered to NHI as a published file. The purpose of the prototype is to illustrate the presence of the following:

- Creativity
- Level of interactivity
- Opportunities for practice
- Writing style
- Understanding of adult learning principles
- Adherence to standards
- Accuracy of content
- Treatment of content
- Resources, such as:
  - Cited documents
  - A bibliography
  - Relevant web resources
  - Similar items

Depending on the project, a series of prototypes may be appropriate. Examples include courses that contain simulations or the use of virtual world technology.
5. Standards for Using the WBT PowerPoint Template

The NHI template establishes the graphical user interface (GUI) for WBT courseware. Use the NHI template to develop a WBT.

Retrieve the template from the WBT Developer Toolkit at http://www.nhi.fhwa.dot.gov. Developers should verify that they are using the preferred template before any development work begins. Any requests for modification to the template must be provided in writing to the NHI point of contact for the course, and must be approved by the COTR.

Using the template provided, save the template as a new file and build the slides and Web-based training product from scratch. This is an important step to maintain the integrity of the source files.

General style and standards guidance on the development of PowerPoint slides exists in the *NHI Style and General Standards Guide*.

### Developer Note

For adaptive technology to work correctly, the training content must appear in the proper sequence in the Outline View and be added to the slide using placeholders.

5.1. Screen Layout Standards

Media standards are used to maintain style consistency within the following areas. Screen layout standards are incorporated into the templates. Build slides in the Outline View using the provided layouts. Add graphics where appropriate.

5.1.1. 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.
- Create the shortest module titles needed to convey meaning.
- Used varied layouts to present text and images in order to add visual interest.
5.1.2. Text Layout

- Present information in a top down, left to right instructional format.
- Layout 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.

5.1.3. Navigation

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

- Add Back and Next buttons directly to each slide in order to activate hyperlinks.
- Ensure intuitive, learner controlled navigation.
  - Buttons should have text description labels (alt tags) that include the URL or slide number.
  - Navigation buttons must display 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. However, the location of navigational buttons is specified in the template. 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.

5.1.4. Section 508 Considerations

- Meet all Section 508 requirements.
- Request NHI 508 Checklists from the NHI TPM.
- Access the most current government guidance at http://www.section508.gov.

Developer Note

Creating a Section 508-compliant WBT first requires production of a compliant PowerPoint product.

5.1.5. Font

Follow NHI general standards for readability as found in the NHI Style and General Standards Guide. The PowerPoint template for WBTs is preset with approved colors and styles. Use of other font type, size, or color must be approved by the NHI TPM.
6. 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.

6.1. Graphics

Refer to the NHI Style and General 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 to any facilitator; 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.

6.2. 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 publish properly in Adobe Presenter.
- Ensure audio volume levels are consistent throughout the course.
• Use one audio talent to narrate all modules within the same course. If role-playing, multiple voice talent may be used, but roles must be consistent.

• Include the following audio edits.
  – Place 1 second of silence at the beginning of every slide.
  – Place 1 second of silence at the end of every slide.

6.3. Video

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

6.4. Animation

• Allow user to control the animation to include start, stop, and replay.
7. 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.

Table 2: Level of Interactivity Descriptions

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

NHI uses formative and summative assessments for Web-based training. The types of assessments are as follows:

- Knowledge check (formative assessment)
  - Knowledge checks provide practice opportunities to reinforce each concept or skill.
  - Practice exercises are evaluated, but the scores are usually not sent to the learning management system.

- Course evaluation (summative assessment)
  - Course evaluation data measure the participants' training experience.
  - The course evaluation is accessible via the NHI My Training page at the end of the training.

- End-of-course assessment or exam (summative assessment)
  - End-of-course assessments evaluate participants’ mastery of the content.
  - End-of-course assessments are loaded to the online curriculum.
  - Participants are instructed to complete the exam at the end of the training.
  - Instructions on completion requirements can be provided in the final training module as needed.
8.1. Test Methods

Adobe Presenter supports the following test question formats.

- 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 using Adobe Presenter in conjunction with other compatible software.

8.2. Adobe Presenter Settings for Knowledge Checks

Create Knowledge Checks using the Adobe Presenter Quiz Manager.

**Developer Note**

You must set up a quiz **before** you can enter the questions.

8.2.1. Quiz Manager Settings

Use the following steps to set up a Knowledge Check.

1. Open the **Quiz Manager** window by selecting **Adobe Presenter → Manage**.
2. Select the **Output Options** tab. Deselect all boxes.

3. Select the **Reporting** tab.

4. Deselect **Enable reporting for this presentation**.
5. Select the **Default Labels** tab.

6. Select all boxes under Default question feedback.

7. Enter question feedback text.

   Provide a “hint” if the learner answers incorrectly on the first try.

   Provide corrective feedback to help enable learning if the learner answers incorrectly the second time.

   Include, at minimum, the following text.

   - **Correct message** field: “Correct. Advance to the next slide for a debrief. Select anywhere to continue.”

   - **Incorrect message** field: “Incorrect. Advance to the next slide for a debrief. Select anywhere to continue.”

   - **Retry message** field: “Incorrect. {Add hint feedback on slide} Select anywhere to try again.”

   - **Incomplete message** field: “You have provided an incomplete answer. Select anywhere to try again.”
See below for an example of a Knowledge Check with generic feedback.
8. Select the **Appearance** tab.

9. Apply the following settings to **Fonts**.

   - **Question**: Arial 18, bold
   - **Answer**: Arial 18
   - **Button**: Arial 18
   - **Message**: Arial 18

   **Note**: These settings are established on the NHI WBT template. Settings can be adjusted as needed.

10. Apply the following settings to **Button placement**.

   - Orientation: Horizontal
   - Position on slide: Bottom right
11. Select **Apply formatting to all existing quizzes**.

---

**Developer Note**

Adobe Presenter automatically adds "Submit" and "Clear" buttons to the Knowledge Check slide but uses a default format. Buttons need to be formatted manually.

Use the NHI WBT template for formatting guidance.

Apply proper formatting to all Knowledge Check slides.
12. Select the **Quizzes** tab.

13. Select the **Edit** button in the **Quiz** to open the **Quiz** window.

14. Select the **Quiz Settings** tab.

15. Enter a unique name for the quiz in the **Name** field.

16. Select “Optional – the user can skip this quiz” from the **Required** dropdown field.

17. Apply the following to **Settings**.
   - Select **Allow backward movement**
   - Select **Allow user to review quiz**
   - Deselect **Include instructions slide**
   - Deselect **Show score at end of quiz**
   - Select **Show questions in outline**
• Deselect **Shuffle questions**
• Deselect **Shuffle answers**

18. Select the **Question Review Messages…** button to open the window.

19. Enter the question review message text.

   Include, at minimum, the following text.

   • **Correct** field “You answered this question correctly.”
   • **Incomplete** field “You did not answer this question completely.”
   • **Incorrect** field “Incorrect. The correct answer is:…”
20. Select the OK button to close the Question Review Messages… window.

21. Select Pass or Fail Options tab.

Unless otherwise directed, use the following settings for this tab.

22. Select 0% or more of total score to pass.

23. Select “Go to next slide” from the Action dropdown field under If passing grade.

24. Select “Infinite Attempts” under If failing grade.

25. Select the OK button to close the Quiz window and return to the Quiz Manager window.
Adobe Presenter - Quiz

Pass or Fail Options
Set options for determining a passing score and what actions take place if the user passes or fails the quiz.

Quiz Settings  Pass or Fail Options

Pass/Fail options:
- [ ] 0% or more of total score to pass
- [ ] 0 or more of total score to pass (Maximum score: 0)

Note: Maximum score is the sum of all weighted scores.

If passing grade:
Action:
Go to next slide
Go to next slide:

If failing grade:
Allow user:
[ ] 0 attempts or [ ] Infinite attempts

Action:
Go to next slide
Go to next slide:
8.2.2. Question Settings
After you have set up the quiz, create the question(s) for the quiz.

1. Open the **Quiz Manager** window by selecting **Adobe Presenter → Manage**.

   ![Quiz Manager](image1)

2. Select the **Quiz** to which you are adding a question.

3. Select the drop down arrow next to **Add Question**.

   ![Add Question](image2)
4. Select the type of question from the dropdown menu.

![Dropdown menu]

5. Select the **Question** tab.

6. Enter the following text in the **Name** field: “Learning Outcome {x}.” Indicate which Learning Outcome the question addresses.

7. Enter the question text in the **Question** field.

8. Enter “0” in the **Score** field.

9. Select the **Add** button under **Answers**.
   - Enter, or copy and paste, the text for the answer options.
   - Select the correct answer(s).

10. Select “Single response” or “Multiple responses” from **Type** dropdown.

11. Select lower case characters (a, b, c, . . .) from the **Numbering** dropdown.
12. Select the **Options** tab.

13. Set the following in the **Type** section.
   - Select “Graded – there are right and wrong answers” from the dropdown.
   - Select **Show clear** button.

14. Set the following in the **If correct answer** section.
   - Select “Go to next slide” from the **Action** dropdown.
   - Select **Show correct** message.

15. Set the following in the **If wrong answer** section.
   - Enter “2” in the **Allow user** field. (Set to “1” for True or False or Yes or No questions.)
   - Select “Go to next slide” from the **Action** dropdown.
   - Select **Show error message**.
- Select **Show retry message**.
- Select **Show incomplete message**.
16. Select the **Reporting** tab and deselect **Report answers**.

17. In the **Question** window, select the **OK** button.

18. Repeat for each Knowledge Check.
8.3. Standards for a Knowledge Check Debrief

Knowledge Check debrief slides are a required element to meet Section 508 compliance.

In addition, the debrief slide provides an opportunity for documenting structured feedback on the correct and incorrect answers.

Apply the following guidance when creating debrief slides.

- Insert a debrief slide after every Knowledge Check.
- Match the debrief slide to the Knowledge Check slide in all content with the exception of:
  - Slide title.
  - Answer option buttons or boxes.
  - Question feedback buttons.
  - Navigation buttons.

**Developer Note**

Although the debrief slide matches the Knowledge Check (KC) slide in many ways, do not copy and paste from the KC slide to the debrief slide.

- Format answer options so incorrect answers are grayed-out. Suggested color formatting for incorrect answers is **Gray, RGB color 150, 150, 150**.
- Provide feedback on the answer options.
- At minimum, record the correct answer and answer explanation in the narration.

**Developer Note**

There is a Knowledge Check Debrief layout in the NHI WBT Template. Apply this layout to all Knowledge Check Debrief slides.
Below is an example of a Knowledge Check Debrief slide.

```
Is scaling a type of distress found on a concrete pavement surface? Choose an answer and select the Submit button.

a) Yes

b) No

The correct answer is a) Yes. According to FHWA’s “Distress Identification Manual for the Long-Term Pavement Performance Program”, scaling is a type of distress found in continuously reinforced concrete pavements.
```
8.4. Standards for End-of-Course Assessments

Create the end-of-course assessment using the Adobe Presenter Quiz Manager.

An end-of-course assessment is created as a separate courseware item, and is published and added to the curriculum as stand-alone content.

In order for students to qualify for Continuing Education Credits (CEU), the exams must have the following settings:

- Every question is required.
- There is no feedback.
- Each answer is communicated back to the LMS and tallied.
- The final score must be provided to the student, who must score better than 70% to pass.

Developer Note

Given the constraints listed above, the end-of-course assessment (exam) is not Section 508 compliant.

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

This version is not Section 508 compliant for several reasons.

- A learner using the keyboard to navigate cannot select the different multiple choice options and the Submit button (the mouse must be used.)
- A learner using a screen reader will not know what option has been selected.
- Learners using either a screen reader or the keyboard (or both) to navigate will not be able to obtain a score.
8.5. Adobe Presenter Settings for End-of-Course Assessments

Create the end-of-course assessment as one quiz with multiple questions in a separate PowerPoint file.

Note that you must set up a quiz before you can enter the questions.

8.5.1. Quiz Manager Settings

1. Open the Quiz Manager window by selecting Adobe Presenter → Quiz → Manage.

2. In the Quiz Manager window, select the Output Options tab.
   - Deselect Display question list in quiz pane.
   - Deselect Display current score.
   - Deselect Display passing and maximum score.
   - Deselect Display quiz attempts.
   - Deselect Show incomplete quiz warning.
3. In the Quiz Manager window, select the Reporting tab.

4. Select Enable reporting for this presentation.
   
   • Select Adobe Connect in the Learning Management System field.
5. In the *Quiz Manager* window, select the *Default Labels* tab.

6. In the **Default question button labels** section set:
   
   - **Submit button** text: “Submit”
   - **Clear button** text: “Clear”

7. In the **Default question feedback** section:
   
   - Deselect **Correct message**.
   - Deselect **Incorrect message**.
   - Deselect **Retry message**.
   - Select **Incomplete message**, and enter “You must answer the question before continuing.”
8. In the Quiz Manager window, select the Appearance tab.

9. Apply the following settings to Fonts.
   - **Question**: Arial 18
   - **Answer**: Arial 18
   - **Button**: Arial 18
   - **Message**: Arial 18

   **Note**: These settings are established in the NHI WBT template. These settings can be adjusted as needed.

10. Apply the following settings to Button placement.
   - **Orientation**: Horizontal.
   - **Position on slide** dropdown select “Bottom right.”

11. Select **Apply formatting** to all existing quizzes.
12. In the **Quiz Manager** window, select the **Quizzes** tab.
13. Select the **Edit** button to change the existing quiz.

14. Select the **Quiz Settings** tab.

15. Enter “Course Name” in the **Name** field.

**Developer Note**

Unless otherwise directed, use the following settings for this tab.

16. Select “Required – the user must take the quiz to continue” from the **Required** dropdown.

17. Apply the following to **Settings**.
   - Deselect **Allow backward movement**.
   - Deselect **Allow user to review quiz**.
   - Deselect **Include instructions slide**.
   - Select **Show score at end of quiz**.
   - Deselect **Show questions in outline**.
- Deselect **Shuffle questions**.
- Deselect **Shuffle answers**.

18. Select **Quiz Result Messages** button in **Settings**.

19. Enter the question results message text. Include, at minimum, the following text.
   - **Pass message** field: “Congratulations. You have passed the exam.”
   - **Fail message** field: “You did not pass this exam. If you wish to retake the exam, you must reregister for the course.”

20. Select **Display percent score, e.g., 70%**.
21. Select the OK button to close the *Question Review Messages*… window.
22. Select **Pass or Fail Options** tab.

<table>
<thead>
<tr>
<th>Developer Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unless otherwise directed, use the following settings for this tab.</td>
</tr>
</tbody>
</table>

23. Set "70% or more of total score to pass" under **Pass/Fail Options**.

24. Select “Go to next slide” from the **Action** dropdown field under **If passing grade**.

25. Set Allow user to “1” attempts under **If failing grade**.

26. Select the **OK** button to close the **Quiz** window and return to the **Quiz Manager** window.
8.5.2. Question Settings
After you have set up the quiz, you can create the questions. For the end-of-course assessment, there is one quiz for the assessment, with multiple questions in the quiz.

1. Open the Quiz Manager window by selecting Adobe Presenter → Manage.

2. Select the Quiz to which you are adding a question.

3. Select the drop down arrow next to the Add Question button.
4. Select the type of question from the dropdown menu.

![Dropdown menu showing question types](image)

**Developer Note**

The remaining steps and settings described in this section can be applied universally to all of the question types.

This guide will use the multiple choice question type to illustrate each step.
5. Select the **Question** tab.

6. Enter the following text in the **Name** field: “Learning Outcome {x}.” Indicate which Learning Outcome the question addresses.

7. Enter the question text in the **Question** field.

8. Enter the number of points the question is worth in the **Score** field.
   **Note:** The total number of points for an end-of-course assessment should be 100. Distribute points as evenly as possible throughout the questions.

9. Select the **Add** button under **Answers**.
   - Enter, or copy and paste, the text for the answer options.
   - Select the correct answer(s).

10. Select either “Single response” or “Multiple responses” from **Type** dropdown.

11. Select the lower case characters (a, b, c, . . .) from the **Numbering** dropdown.
12. Select the **Options** tab.

13. Set the following in the **Type** section.
   - Select “Graded – there are right and wrong answers” from the dropdown.
   - Deselect **Show clear button**.

14. Set the following in the **If correct answer** section.
   - Select “Go to next slide” from the **Action** dropdown.
   - Deselect **Show correct message**.

15. Set the following in the **If wrong answer** section.
   - Enter “1” in the **Allow user** field.
   - Select “Go to next slide” from the **Action** dropdown.
   - Deselect **Show error message**.
   - Select **Show incomplete message**.
Select the *Reporting* tab and select **Report answers**.

16. Select the **Quiz Name** from the **Quiz** dropdown.
   - Do not change the Interaction ID.

17. In the **Question** window, select the **OK** button.

18. Repeat for each quiz question.
8.6. Standards for Course Evaluations

NHI assesses the participant’s overall training experience using a standardized, online evaluation.

- The course evaluation is accessible to participants via the NHI My Training page once the training is complete.
  - Direct participants to the course evaluation link on one of the final screens of the training module.

An example of directions to participants for accessing the course evaluation follows.

![Course Evaluation Direction Example]

**Developer Note**

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

The settings established in this section, in conjunction with the NHI WBT template, establish a consistent graphical user interface (GUI) for the courseware. Use the instructions in Section 9.1 to 9.3 to input required presentation settings. Confirm that this information is correct before publishing WBT courseware.

Use the instructions in Section 9.4 to complete the publication process. See Section 1.4 of this guide for more specific guidance on where to publish content during the WBT development process.

9.1. Presentation and Application Settings

The following guidance does not address all of the functionality available in the Presenter tool bar. Only the areas with required standard settings are addressed so the navigation experience is consistent for users throughout all of NHI’s Web-based training products.

9.1.1. Presentation Settings

1. Open the Settings window by selecting Adobe Presenter → Settings.

2. Select the Appearance subheading under Presentation heading.

3. Enter “Module Title” in the Title field.
4. Select the **Playback** subheading.

5. Set the following in the **Playback Options** section.
   - Select **Auto play on start**.
   - Deselect **Loop presentation**.
   - Select **Include slide numbers in outline**.
   - Select **Pause after each animation**.
   - Deselect **Use PPTX Slide Time**.

6. Set “5.0” in **Default slide duration (in seconds)**.
7. Select the *Quality* subheading.

8. Set the following in **Publish Quality** section.

   - Select “Adobe Connect Pro” in the **Publish for** dropdown.
   - Under **Audio Quality**
     - Select **Publish Audio**.
     - Select **CD Quality**.
   - Under **Image Quality** select **High**.
   - Under **Control Preloading** deselect **Disable preloading of embedded Flash content**.
   - Select **Use these settings for new presentations**.
9. Select the Attachments subheading. Here you will attach a PDF version of the presentation. If you have not done so already, create a 508-compliant PDF version of the presentation.

10. Select the Add button.

11. Enter “Course Number_Module {x} PDF” in the Name field.

12. Select “File” in the Type field.

13. Select the file folder icon.
   - Navigate to the PDF and select it.
   - Choose the Open button to select the PDF.
   - Select the OK button to save the attachment in the Location field.

14. Select the OK button to save your settings and exit the Presentation Settings.
9.1.2. Application Settings

1. Open the **Settings** window by selecting **Adobe Presenter → Settings**.

2. Select the **Presenters** subheading under **Application** heading.

   At this time NHI is not using this feature of Adobe Presenter. The developer can make recommendations about the use of this field to NHI during courseware design as appropriate.

3. Select the **Servers** subheading under **Application** heading.

4. Select the **Add** button.

5. Enter “FHWA” in the **Name** field.

6. Enter “URL” in the **URL** field.
7. Select the **Audio Source** subheading under **Application** heading.

8. Set the following in **Audio Input Source** section.
   - Select **Microphone**.
   - Select **Always prompt to set microphone level before recording**.
9. Select the **Preview** subheading under **Application** heading.

10. Set “5” for **Preview Next** under **Preview Default**.

11. Select **Okay** button.
9.2. Theme Settings

Theme settings should be set prior to publishing courseware. The settings can be saved and reapplied to the same product or new products as needed.

1. Open the Theme Editor window by selecting **Adobe Presenter → Theme**.

2. Select the **Save as...** button and enter “My Current Theme.”

3. Select the **OK** button to overwrite existing settings.

4. Select **Enable Mode Switching** under **Customize**.
   - Select “Default” from the **Display** dropdown.

5. Select **Show Sidebar**.
   - Select “Right” from the **Location** dropdown.

6. Deselect all boxes under **Presenter Info**.
   - Select the **Outline Pane** checkbox.
7. Select **Outline, Notes, and Search** under **Panes**.

8. Select “Notes” from the **Default** dropdown.

9. Select “Verdana” from the **Notes Pane Font** dropdown.

10. Select “10” from the **Size** dropdown.
11. Deselect **Use PowerPoint Theme Colors**.

12. Select the **Modify Text Labels** button under **Appearances**.

13. Enter “Narration” in **Notes tab text** in the **Custom Text** column.

14. Select the **OK** button to return to the **Theme Editor** window.
15. Select each colored box under Appearance.

16. Enter the following settings under More Colors or select the color indicated.
   - **Font**: “White”

17. Select the OK button to return to the Theme Editor window after adjusting each color setting.
9.3. Slide Manager Settings

Before publishing the PowerPoint file, modify the Slide Manager settings as follows.

1. Open the Slide Manager window by selecting Adobe Presenter → Slide Manager.

2. Choose the Select All button.
3. Select the **Edit** button.

4. Select **Advance by User**.

5. Select the **OK** button.
   - All of the slides should now say “yes” next to **Advance by User**.

6. Select the **OK** button to save the settings and exit **Slide Manager**.
9.4. Publishing Content to the FHWA Adobe Server

It is possible to publish courseware locally (your desktop) or to an Adobe Connect external server. This guide provides standard protocol for publishing to the NHI Server.

If courseware is published locally, the .zip file produced during local publication can be uploaded to the NHI Server to allow public viewing. Follow the directions provided in Section 9.4.3 to learn more.

Published courseware is referred to in the Adobe Presenter environment as “Content.”

9.4.1. Publish Content

1. Open the Publish Presentation window by selecting Adobe Presenter → Publish.

2. Select “Adobe Connect” on the left side of the Publish Presentation window.

3. Select "FHWA" from the Server drop down menu.

4. If “FHWA” is not shown in the Server field, select the Edit Servers button to add or change the server.
5. Select the **Add** button to open the **Edit Server** window.

6. Enter "FHWA" in the **Name** field.

7. Enter "https://connectdot.connectsolutions.com/" in the **URL** field.

8. Select the **OK** button.
9. Select the **OK** button to close the **Servers** tab and return to the **Publish Presentation** window.

10. Under **Output Options**, deselect “Upload source presentation with assets.”

11. Select the **Settings** button to change information as needed under **Project Information**.

   - Set **Theme** setting defaults to “My Current Theme.”

12. Default is set to "View output after publishing."

13. Select the **Publish** button.
14. Enter your assigned user name and password in the *Publish to Adobe Connect* window to login to the NHI Server.

![Publish to Adobe Connect Window]

**Developer Note**

You are only able to publish content to your assigned folder in "User Content" on the NHI server.
15. Select the **Publish to This Folder** button if publishing to User profile folder.

- Select the **New Folder** button to create a subfolder within the User profile folder.
- Input "Course Number-Course Name" in the **Folder Name** field.
- Select the **Save** button.
- Select the **Publish to This Folder** button.
16. Enter the content title in the **Title** field using the NHI file naming conventions below.

<table>
<thead>
<tr>
<th>Content Type</th>
<th>Content Title</th>
<th>Custom URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content Module</td>
<td>NHI-CCCCCC Module X</td>
<td>nCCCCCCmodx</td>
</tr>
<tr>
<td>End of Course Exam</td>
<td>NHI-CCCCCC End of Course Exam</td>
<td>nCCCCCCCexam</td>
</tr>
</tbody>
</table>

17. Enter a custom URL in the **Custom URL** field using the NHI file naming conventions cited in the previous table.

18. Select the **Next** button.

19. Select the **Customize** button.
20. Select "Allow public viewing." The setting is saved automatically.

21. Select the Next button.

**Developer Note**

You must select “Allow public viewing.” If public viewing is not selected, participants cannot view the content.
If content has been published previously, this message will display.

22. Select the **Publish Now** button.

23. Select the **OK** button in the pop-up window stating, “You have successfully published your project to the Adobe Connect Pro server.”

24. Select the URL next to “URL for Viewing” to view the published presentation.
9.4.2. **Delete Content**

1. Login to the FHWA Adobe server.
2. Navigate to content.
3. Select the content to delete.
4. Select the **Delete** button.

---

**Developer Note**

*Deleted content cannot be retrieved or restored!*
A warning box will appear if other content, courses, or curricula are associated with the item.

You have selected the following items to delete:

![test2](image)

* - This item has other items linked to it. If you delete this item, then the links that point to this item will also be broken. Please verify that this is what you want to do before proceeding.

To permanently delete the items listed above, click on the “Delete” button. Deleting a folder will permanently delete all of the items within it, and may break links that are associated with these items.

9.4.3. Add Ancillary Files

Ancillary files are course content uploaded to the server without publishing. Ancillary files, such as a PDF, are uploaded as content and can be added to the course curriculum. Glossary and resource files are examples of ancillary files. Once added as content to the course folder, each ancillary file receives a unique URL. Ancillary files can be used to create embedded hyperlinks in the courseware or can be added directly to a curriculum.

Add ancillary files using the following guidance.

1. Login to the FHWA Adobe server.

2. Select the **Content** tab on the navigation bar.
3. Select the **User Content** tab.

4. Select the **User Content** folder.

5. Navigate to the vendor folder.

6. Select the **New Content** button from **Content List** options.

7. Select the **Browse** button in the **File** field to locate the file.

8. Enter the title in the **Title** field using the NHI file naming conventions below.

   **Table 4: NHI Adobe Content File Naming Conventions**

<table>
<thead>
<tr>
<th>Content Type</th>
<th>Title</th>
<th>Custom URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content Module</td>
<td>NHI-141045 Module A</td>
<td>n141045moduleA</td>
</tr>
<tr>
<td>Resources</td>
<td>NHI-141045 Resources</td>
<td>n141045resources</td>
</tr>
<tr>
<td>Glossary</td>
<td>NHI-141045 Glossary</td>
<td>n141045glossary</td>
</tr>
<tr>
<td>End-of-Course Exam</td>
<td>NHI-141045 Exam</td>
<td>n141045exam</td>
</tr>
</tbody>
</table>

9. Enter a custom URL in the **Custom URL** field using the NHI file naming conventions cited in the previous table.
10. Select the **Save** button.

![Content Information](image)

**Title:**

NHI-131137 Design Example

**Custom URL:**

https://connectdot.connectsolutions.com/

(Leave this field blank for a system-generated URL or include a unique URL path. Please use only alpha/numeric characters or hyphens. For example, "product-demo" will result in https://connectdot.connectsolutions.com/product-demo/)

**Summary:**

(Up to 1000 characters)

* indicates required fields

11. Select the desired file in the **Content List** tab.

12. Select the **Set Permissions** tab.

![Content List](image)

***NH-131137 Design Example***

**Type:** Acrobat PDF

**Date Modified:** 01/24/2012 4:50 PM

**Size (KB):** 915.5

13. Select the **Customize** button.

*Current Setting:* Same as parent folder

![Customize](image)

**Cancel** **< Previous** **Next >** **Finish**
14. Select "Allow public viewing." The setting is saved automatically.

The NHI template includes three buttons: Glossary, Resources, and Help. If these items are developed as part of the courseware, hyperlink each button and add the hyperlinked buttons to each slide. Hyperlinks embedded on the Master slide are not active once the file is published.

The hyperlink for the "Help" button is https://connectdot.connectsolutions.com/wbthelp. Add this button to each slide in the presentation.
10. Standards for Deliverables

10.1. Delivery Formats

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

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

- CD-ROM of all source files, including any or all of those listed below
  - Presentation and exam in Microsoft PowerPoint 2010 format (may be segmented by module if files are large)
  - Adobe .PPC files or raw audio files, such as .WAV or MP3
  - Video as compressed digital files in .FLV or .AVI
  - Animation in Flash as .FLA
  - Other resource materials, such as spreadsheets or tables, that are accessed via external links
  - Graphics as compressed, processed files and .PSD with layers preserved
- CD-ROM in .PDF format
  - Presentation materials (provided print-ready as separate files for each module; this file should also be attached to the published file)
  - Reference manual (provided print-ready as one complete document)
  - Other materials required for course delivery
- Published files
  - Adobe .PPTX files (published presentation)
  - Adobe .PPCX files (published audio)
- Copies of all copyright releases and letters granting permission for use from the authors or artist, if applicable
- Any written approvals for modifications
10.2. CD-ROM Labels

- U. S. Department of Transportation-Federal Highway Administration logo
- NHI logo
- Date (month and year)
- NHI course number
- NHI course title
- Type of document, e.g., facilitator guide, participant workbook, reference manual
- IACET logo (if applicable)
- “P” or “W” to distinguish PDF from source file (Word) CD-ROMs
- Publication number (specific to each course deliverable, and provided to the contractor by the NHI TPM or ISD)

10.2.1. Use of Logos and Company References

- Company logos will not be included on any deliverable to NHI.
- References to the company or persons developing, designing, or delivering the course will not be included in any PW, IG, RM, or visual aids. Document exceptions on Technical Report Documentation Page. Obtain a template of this page from the NHI TPM.
10.3. Standards for Electronic File Submissions

The U.S. Department of Transportation (DOT) Standard indicates that all printed materials, including visual aids, must be developed using Microsoft Office 2010 format. This requirement allows NHI to edit all documents delivered by the developer.

- NHI currently accepts Microsoft Office 2010 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.

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

10.3.1. Source Files Folder
- Presentation materials
- Reference manual
- Test materials
- Supplemental materials

10.3.2. PDF Files Folder
- Presentation materials
- Reference manual
- Supplemental materials

10.3.3. Readme Files
- If a course shares materials with another course, document that need in the readme file.
- Additional information on use of materials or printing requirements is included in this file, as well.
10.3.4. File Naming Convention

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

- Course number
- Publication type
  - RM (reference manual)
  - PP (PowerPoint presentation)
  - EX (exam, test, assessment, evaluation instrument, answer key)
  - SM (simulation)
  - VD (video)
  - AU (audio)
  - BK (book)
  - OM (other materials)
- Publication number (if applicable)
  - Obtain from NHI (XX-XXX)
- Revision date formatted in a two-digit month and year
  - 0512
  - 1212
- File description (short description of the file, if necessary)
  - ExamA
  - ExamB
- Application Extension
  - PDF (Adobe Acrobat)
  - DOC (Microsoft Word)
  - PPT (Microsoft PowerPoint)
  - PPC (Auto-generated audio file by Adobe Presenter)
  - WAV or MP3 (Audio file)
  - FLV or AVI (Video file)
  - If use of other software has been approved, use standard application extensions
Following are two examples of file names using the convention *Course Number_Type_Pub #_Date_Desc.*

- 130053_PW_09-116_0512.PDF
- 141031_EX_0712_TestA.DOC (where no publication number is assigned)
11. References


