

# CHAPTER 14

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## Plan Preparation

NOTE: This chapter is currently being re-written and its content will be included in Chapter 103 in the future.

<b>Design Memorandum</b>	<b>Revision Date</b>	<b>Sections Affected</b>
13-01	Jan. 2013	14-1.02, 14-2.03, 14-2.05, 14-2.09
13-11	May 2013	14-2.04(01), 14-2.04(09), Figure 14-1E(1), Figure 14-1E(2)
14-13	Sep. 2014	Figure 14-1E, Figure 14-1E(1), Figure 14-1E(2) Figure 14-1E(3)
15-01	Feb. 2015	14-01.02(04), Figure 14-1C
15-05	Mar. 2015	14-1.02(06)
16-07	Mar. 2016	14-1.02(02), 14-1.02(04) through 14-1.02(07)
16-08	Mar. 2016	14-1.02(08)
16-13	Mar. 2016	14-2.05
16-37	Dec. 2016	14-1.02(05)

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# PLAN PREPARATION

Other Parts of this *Manual* provide the designer with uniform criteria and procedures for the design of a highway facility. A design must be incorporated into the construction plans so that it can be clearly understood by contractors, material suppliers, and Department personnel assigned to inspect the construction of the project. An example is that if more than one plan and profile sheet is required, information overlaps of approximately 100 ft should be shown from the previous sheet to the next sheet. To ensure a consistent interpretation of the construction plans, individual sheets should have a standard format and content, and the sequence of plan assembly should be the same. This Chapter provides the general information in conjunction with the Project Development Process (PDP) necessary to prepare a complete set of construction plans for a road, bridge, traffic-signs, signalization, or lighting project. Chapter Eighty-five discusses criteria for the preparation of right-of-way plans. In addition to the information provided in this Chapter, the *INDOT Typical Plan Sheets* provides sample construction plans sheets and guidance on what information should appear on each sheet.

### 14-1.0 PLANS DEVELOPMENT

#### 14-1.01 Responsibilities

Figure [14-1A](#), Sheet Preparation Responsibilities for Road, Bridge, or Traffic Project, illustrates who is responsible for preparing the details for an in-house designed project. For consultant-designed plans, the consultant will be responsible for the preparation of all plans sheets. Minor, or baby, projects related to signs, lighting, or signals should be combined into one generic traffic project, which is associated with the lead project.

The designer will initially complete all plans sheets, computation sheets, quantity estimates, and cost estimates. A second qualified individual will independently review these documents. The qualifications of the reviewer should be commensurate with the item to be reviewed. For example, a second drafter should be qualified to check the preliminary drafting, but an engineer will be required to review the structural details and computations for a bridge design.

At a number of design stages the plans will be submitted to various Department units for review. Section 14-2.0 identifies the construction plans sheets that should be completed at each design stage.

Prior to these submissions, the project manager is responsible for ensuring that all appropriate information has been incorporated onto the plans or is included with the plans; the plans are consistent; all comments from previous submittals have been addressed; all calculations have been checked; and the overall content satisfies the Department's criteria.

### **14-1.02 Project Development [Rev. Jan. 2013]**

The Project Development Process documents the information necessary to equitably and systematically advance a project from the end of planning to the beginning of construction. Using this process will ensure that all appropriate information will be addressed in the construction documents. The following discusses the project development relative to the plan sheets.

#### **14-1.02(01) Project Initiation**

The Office of Planning and Programming is responsible for preparing the Engineer's Report. This Report provides the scoping information the designer needs to initiate the project design.

Prior to beginning design on an existing facility, the designer should review the as-built plans or the final design plans for that previous work. Final design plans are on file, on microfilm, in the Planning Division's Research and Documents Library. The actual as-built plans or microfilm are located in the appropriate district office. The district office is responsible for correcting the final design plans to reflect the as-built conditions.

Although the as-built plans are an important resource, the designer will conduct a field review or have a survey conducted for each road or bridge project. Section 14-3.0 discusses how to incorporate the survey data into the construction plans. For most traffic signing, signalization, or lighting work, a survey will not be performed. However, a field review will be required.

If the design requires a deviation from an INDOT *Standard Drawing*, it may be handled by either of the methods as follows.

1. A detail is included in the plans.
2. Reference is made to an INDOT *Standard Drawing*, which is not applicable to the situation, but is warranted anyway. For example, Standard Drawing 610-DRIV-05 is applicable if the mainline shoulder is paved and 8 ft or greater in width. In a restricted

situation, it may be appropriate to have the drive constructed in accordance with 610-DRIV-04 instead. In this situation, it will be sufficient to add a note in the Pavement Quantities and Approach Table's Remarks column, as follows: *Construct in accordance with Standard Drawing 610-DRIV-04.*

The designer of a lead project should coordinate the combining of multiple projects into one contract. The pay items should be consistent (e.g., if one has QC/QA pavement, the other must also use QC/QA pavement if not otherwise warranted). If there is no lead project (i.e., two independent bridge replacement projects), the INDOT designer or project manager should coordinate the combining of the projects into one contract.

#### **14-1.02(02) Plan Submittals [Rev. Jan. 2013, Rev. Mar. 2016]**

Items to be reviewed at each plan development milestone should be submitted electronically to the Electronic Records Management System (ERMS) via the INDOT Technical Assistance Pathway (ITAP). The designer should notify the appropriate coordinator, project manager, and other offices as appropriate by e-mail.

All submissions are evaluated in accordance with the INDOT Performance Evaluation Guidelines. Additional information, including how to find performance evaluation criteria, is available at <http://www.in.gov/indot/2733.htm>.

#### **Accessing ITAP and ERMS [Added Mar. 2016]**

A first-time user must enroll in ITAP prior to requesting access to ERMS Design Submittals application. Instructions on how to request access to the application are available at <https://itap.indot.in.gov/login.aspx>.

A current ITAP enrollee should request access to the ERMS Design Submittals application. Users can upload files individually via the UCM URL or upload multiple files concurrently using the multiple file upload tool (MFUT). The MFUT is accessed by selecting the File Upload URL. Manuals for use are contained within each of the applications.

#### **ERMS Uploading Requirements [Added Mar. 2016]**

All plans and documents should be uploaded into ERMS.

When uploading design documents using the MFUT, the Design Type should be entered as one of the following: INDOT Planning Oversight Committee (IPOC), Non-IPOC Consultant, or Non-IPOC District. Since the conclusion of the Major Moves program, most projects will be

Non-IPOC. Non-IPOC Consultant should be entered for Local Public Agency (LPA) projects. The maximum file size for each individual file is 50 Mb.

A specific naming convention is required for documents uploaded into ERMS. It follows the format [Submittal] [Description] [Des No.] for [Bridge, Roadway or Contract Services]. For items that are reviewed outside of the typical Road or Bridge project review, the Submittal designation should identify the reviewing Division or Office. The Naming Convention document which includes additional information regarding submittals prior to Final Tracings is available on the Department's Design Manual [Editable Documents webpage](#) under Design Submittal.

For Final Tracings, all files should have the Submittal designation "FT". A specific file type format (PDF, Excel, or Word) and ERMS document type are also required for the Final Tracings submission. Consistency in these fields allows for standard queries to be developed and ensure files can be released for public view on schedule. The file type and ERMS document type are included on the Final Trackings Checklist, and are available on the Department's Design Manual [Editable Documents webpage](#) under Design Submittal.

### **ERMS Coordinators****[Added Mar. 2016]**

There is a coordinator for each district and two in central office who transition project files within ERMS for review or for processing by Contract Administration. Projects should be submitted to the respective district coordinator and will be transitioned to a central office coordinator as required for review. The coordinators are as follows:

1. Coordinator 1—Crawfordsville District (e-mail: [Coordinator1@indot.in.gov](mailto:Coordinator1@indot.in.gov));
2. Coordinator 2—Fort Wayne District (e-mail: [Coordinator2@indot.in.gov](mailto:Coordinator2@indot.in.gov));
3. Coordinator 3—Greenfield District (e-mail: [Coordinator3@indot.in.gov](mailto:Coordinator3@indot.in.gov));
4. Coordinator 4—LaPorte District (e-mail: [Coordinator4@indot.in.gov](mailto:Coordinator4@indot.in.gov));
5. Coordinator 5—Seymour District (e-mail: [Coordinator5@indot.in.gov](mailto:Coordinator5@indot.in.gov));
6. Coordinator 6—Vincennes District (e-mail: [Coordinator6@indot.in.gov](mailto:Coordinator6@indot.in.gov));
7. Coordinator 7—Central Office Roadway Services (e-mail: [Coordinator7@indot.in.gov](mailto:Coordinator7@indot.in.gov));
8. Coordinator 8—Central Office Bridge Services (e-mail: [Coordinator8@indot.in.gov](mailto:Coordinator8@indot.in.gov)).

#### **14-1.02(03) Field Check Stage [Rev. Jan. 2013]**

The designer is responsible for preparing and distributing plans for each field check. This will consist of the following:

1. Scheduling Field Check. The designer is responsible for setting the field check date. The designer must coordinate this effort with the project manager and the district area engineer so that all the appropriate personnel can attend.
2. Notification and Plan Distribution. The designer is responsible for preparing the field check notification letter and submitting electronic plans so that they are received by all parties on the distribution list at least two weeks prior to the field check. The designer should strive for all plans to be distributed electronically. Utilities or other parties not able to accept electronic plans may require the transmission of paper copies. See Figure [14-1B](#), Field Check Notification. An editable version of this form may also be found on the Department's website at [www.in.gov/dot/div/contracts/design/dmforms/](http://www.in.gov/dot/div/contracts/design/dmforms/), under Design Submittal.

**\*\* PRACTICE POINTER \*\***

For work in Gibson, Posey, Vanderburgh, or Warrick county, a copy of the plans and notification letter should be sent to EUTS (Evansville Urban Transportation System). This information is shown on the distribution list on the Designer Forms webpage, at [www.in.gov/dot/div/contracts/design/dmforms/](http://www.in.gov/dot/div/contracts/design/dmforms/).

4. Field Check Report. After the field check has been completed, the designer will be responsible for preparing a report of the meeting and listing the comments from all individuals involved in the field check. Copies of this report will be electronically distributed to all those involved in the field check and to those individuals listed in the distribution in Figure [14-1B](#).

#### **14-1.02(04) Final Tracings Submittal [Rev. Jan. 2013, Feb. 2015, Mar. 2016]**

The designer will electronically transmit the Final Tracings to the project manager. The project manager will submit the Final Tracings package to the Contract Administration Division. All

submissions should be submitted electronically into ERMS in accordance with Section 14-1.02(02). It is the responsibility of the designer handling a lead project to ensure the tracings for all kinned projects are brought together and submitted to the project manager.

The Final Tracings Checklist, Figure [14-1E](#), along with the established naming conventions, is available on the Department's website, at [www.in.gov/dot/div/contracts/design/dmforms/](http://www.in.gov/dot/div/contracts/design/dmforms/), under Design Submittal.

Final tracings which have been developed in metric units will not be accepted.

The plans must be sealed, signed, and dated by an engineer licensed in Indiana with the exception of the cross sections.

The following items should be reviewed and included as required in the Final Tracings package. Failure to submit items marked with an asterisk (where required) may impact the letting date:

1. 10-Week Letter\*. This document is required where building demolition is part of the contract.
2. All Project Commitment Report\*. This document is required for all projects. The All Project Commitments Report is generated from the Commitments Database. Information on accessing the Commitments Database and other project commitments documents is available at <http://www.in.gov/indot/2731.htm>.
3. Asbestos Certification\*. This document is required for new bridge construction, bridge replacement, or bridge rehabilitation projects. This certifies that the designer has not specified any asbestos materials to be used. The Asbestos Certification form is available for download from the Department's [Editable Documents webpage](#), under Bridges.
4. Asbestos Report. This document is required for all bridge projects.
5. Bridge Load Rating Memo. This document is required for bridge replacement, rehabilitation, and for Latex Modified Concrete (LMC) overlay projects. The bridge load rating memo is generated by the Department's Bridge Load Rating Engineer and confirms that a load rating has been performed.
6. Bridge Search Data Form. This document is required for all bridge projects. Multiple structures can be included on a single form. A template for this worksheet is available for download from the Department's [Editable Documents webpage](#), under Bridges.

7. The Contract Preparation Documents to Contract Administration Division Memorandum\*. This document is required for all projects. A template for this memorandum is available for download from the Department's [Editable Documents webpage](#), under Contract Administration.
8. Correspondence Files. This document is intended for project-related correspondence that does not have a dedicated file. For example, correspondence regarding design exceptions, meeting minutes, Woody Revegetation review, or other project decision letters. All documents should be combined into a single file. Correspondence files are not required for LPA projects.
9. Cost Estimate\*. The cost estimate is entered in the Department's Cost Estimate Software (CES). A separate cost estimate is required for each des. number. When submitting a PDF copy, each cost estimate should be a separate file. For a contract containing multiple designation (des) numbers, the designer handling the lead project should ensure that when the cost estimates are combined there are neither conflicting pay items nor variances in how the contractor is paid for items of work. Developing the cost estimate using Bid Tabs Professional is at the discretion of the project manager; however, its use does not preclude submitting the cost estimate in CES.  
  
To complete the cost estimate submission, the group number in CES number should be changed to 12 per CES instructions.
10. Cross Sections\*. A separate file for cross sections is required only when the combined plan sheets and cross sections exceed the ERMS file size limit.
11. Demolition Letter\*. This document is required where building demolition is part of the contract.
12. Design Computations. This document should contain all computations (traffic, lighting, inlet spacing, bridge design, etc.) which are not included with the Level One Controlling-Criteria checklist. Signed forms which are not included as a separate file, e.g. signed Foundation Review form, Hydraulic Approval Memo, should be included. Do not provide output from the pipe-material selection program.
13. Detour Map\*. The map of the official detour route, as developed by the district Office of Traffic, if not already provided on the plans. Do not provide a graphic showing the unofficial detour(s).

14. Environmental Consultation Form. This document is required for all projects. This form is available for download from the Department's [Editable Documents webpage](#), under Environmental.
15. Geotechnical Report or Geotechnical Waiver\*. Either the geotechnical report or geotechnical waiver is required for all projects.
16. Geotechnical Review of Final Check Prints Form. This document is required all projects, except for projects with a Geotechnical Waiver. The form should contain the required signatures. The form is available for download from the Department's [Editable Documents webpage](#), under Bridges
17. Level One Controlling Criteria Checklist and Design Computations. These documents are required for 3R and 4R projects and where applicable for Maintenance of Traffic (MOT). If there are no changes to the plans which affect Level One controlling criteria since the prior submission, it is acceptable to submit the previous checklist and initial and date next to the statement that no changes have been made to the plans that affect Level One controlling criteria.
18. LPA-Project Construction Engineering Agreement. This document is required for LPA projects. The document need not be resubmitted at Final Tracings, but the project manager should confirm the agreement has been executed.
19. LPA-Project Master Contract Signed by LPA. This document is required for LPA projects. The document need not be resubmitted at Final Tracings, but the project manager should confirm the agreement has been executed.
20. Markups. The plans from the previous submission (typically Stage 3 or Final Plans) with responses to all comments should be combined and submitted with the Response to Comments Letter, see below.
21. Pavement Design. Where a pavement design is required, include the final stamped pavement design letter.
22. Permits\*. All permit approvals or permit information should be combined into a single file. For General permits where an approval document is not issued, the general permit conditions should be included in the file. For contracts with multiple des. numbers, use the lead des. number in the ERMS Title and include a summary sheet identifying which permits are applicable to which des. number.

23. Plans - Full Size or Letter Size\*. Full-sized plans may be a single file or multiple files to meet the ERMS uploading requirements for file size. Letter-sized plans should not exceed 50 double-sided sheets or exceed 10 Mb.
24. PSE Checklist\*. The FHWA-Indiana PSE checklist is required for all projects. The INDOT reviewer completes Section 1 at Stage 3. The project manager should complete Section 2 and include it with the Final Tracings package.
25. Proprietary Materials Use Public Interest Finding (PIF)\*. A PIF is required only when proprietary materials are specified.
26. Quantity Calculations. Quantity calculations are required for all projects. Calculations should be initialed and dated by the designer and checker. Include the existing cross section elevations printout with any earthwork quantities.
27. Railroad Agreement\*. This document is required when the project includes railroad involvement.
28. Railroad Coordination Certification\*. This document is required for all projects, regardless of the presence of a railroad within the project limits.
29. Railroad Special Provisions\*. This document is required when the project includes railroad involvement.
30. Response to Comments Letter. This document is required when comments are generated during review of a submission prior to Final Tracings (typically Stage 3 or Final Plans). The previous review plan markups should be combined with the Response to Comments letter and submitted as a single file.
31. Right-of-Way Certification Letter\*. This document is required for all projects. Right-of-Way Certification must be dated and initialed by the certifier and should be one of the following:
  - a. [INDOT OR LPA] No Right of Way Required
  - b. [INDOT or LPA] Right of Way Clear
  - c. [INDOT or LPA] Right of Way with Exceptions
32. Special Provisions Menus\*. This document is required for all projects. Recurring and unique special provisions menus should be submitted as two separate (single) files. Contracts that include multiple des. numbers should have a single recurring provisions

menu and single unique provisions menu that includes all provisions required for each des. number in the contract. The menus are available at <http://www.in.gov/dot/div/contracts/standards/rsp/index.html>

33. Special Provisions - Unique and Modified Recurring\*. Where unique provisions are included in a project, all unique special provisions should be combined into a single file. Unique special provisions must be reviewed by the Specifications Engineer. Where modified or contract-specific recurring provisions (Section II of the Special Provisions Menu) are included in a contract, all modified recurring special provisions (RSPs) should be combined into a single file. Instructions on combining RSPs are available at <http://www.in.gov/dot/div/contracts/standards/rsp/index.html>
34. Summary of Design Exceptions (DE). This document is required for all projects that complete the Level One checklist. The document should list both Level One and Level Two design exceptions. For Level One design exceptions, list the design element, the approval date, and the signed DE coversheet. For Level Two design exceptions, include the brief rationale for the exception as well as any concurrence from local agencies or district personnel.
35. Survey Field Book. This document should include the original survey books or field notes and electronic survey files unless previously submitted.
36. Transportation Management Plan (TMP). A TMP is required for all projects as part of the PSE submittal process. For projects designated as significant, there are three elements that make up the TMP. For projects not designated as significant, the TMP consists of the temporary traffic control (maintenance of traffic) plan. More information is available in Chapter 81 and the Narrative for the PSE Checklist.
37. Transmittal Letter\*. This document is required for all projects. The transmittal letter should be used to identify unique circumstances associated with the submittal, e.g. omitted items. The Responsible Person to receive the evaluation scores should be clearly indicated. Where a subconsultant is responsible for a portion of the work, the subconsultant firm, name, and work for which they are responsible should be clearly indicated.

When notifying the district coordinator the transmittal letter should be attached. The preferred method of notifying the district coordinator is to forward the auto generated email confirmation from ERMS.

38. Utility Coordination Certification\*. This document is required for all projects. The certification form is available on the Department's [Utility Coordination Standard Documents webpage](#).

39. Utility Relocation Plans. Utility relocation plans are required as need for a project. Plans are typically provided to the designer by the utility coordinator.

#### **14-1.02(05) Changes to the Final Tracings Submission [Rev. Mar. 2016, Dec. 2016]**

The procedure for making changes to contract documents and plans after the Final Tracings submission has been transitioned to Contract Administration differs depending on whether or not the contract has been advertised.

1. Preprint Changes. Preprint changes are changes made to a set of plans or contract documents prior to advertising for letting. Letting advertisement (Notice Posted) is typically 30 days prior to the letting date. The Letting Preparation Schedule for 2015-2022 is available at <http://www.in.gov/dot/div/contracts/letting/lettingdates.htm>.

a. Preprint changes to contract documents, except for plans, are submitted via email to Contract Administration. A transmittal letter should be included identifying which items have been submitted. The original document should be marked showing changes and additions highlighted in yellow, information to be deleted highlighted in red and struck through. For items that are originally submitted in a format other than PDF, e.g. cost estimate, recurring special provisions menu, attach a PDF copy of the item marked accordingly to the email. Changes to documents will be made by Contract Administration.

b. Preprint changes to plans should be submitted electronically to ERMS. The designer should notify the district coordinator and copy the project manager. When changes are made to the originally submitted plans (new, revised, or deleted sheets), the existing set of plans in ERMS should be deleted and a new complete set of plans should be uploaded. The plans should not include clouds or revision blocks. The file naming format is the same as that of the original submission.

Example: FT Plans 0900010 for Contract Services  
FT PlansXsect 0900010 for Contract Services

Adequate time must be allowed for transitioning files within ERMS, i.e. documents submitted 30 days prior to letting may not reach Contract Administration the same day.

## 2. Changes after Advertisement, from 30 Days to 8 Days Prior to Letting

- a. Revisions to documents or plan sheets submitted from 30 days to 8 days prior to the letting date must be transmitted to the district Area Engineer for approval prior to submitting to Contract Administration.
- b. Upon approval, the district Area Engineer should transmit the completed Request for Contract Revision form and the new or revised contract documents or plan sheets to Contract Administration. The form is available for download from the Department's [Editable Documents webpage](#), under Contract Administration.
- c. Changes to previously submitted contract documents should be marked in the same manner as preprint changes. See item 1.
- d. Changes to plan sheets should be uploaded into ERMS.
  - 1) The designer should upload only the new or revised sheets, including the index sheet. The designer should notify the district coordinator and copy the district Area Engineer.
  - 2) The file naming convention for both a partial and complete set of plans is the same as that of the original submission:  
  
FT Plans or PlansXsect [Des. No.] for Contract Services.
  - 3) A revision note should be placed in the revision block on the Index Sheet when plan sheets are revised. The revision note should include the date of the revision, the revised sheet numbers, and a short description of the change. The revision block should be clouded. Do not include a revision number in the revision block as the number may not correspond sequentially to the Notice of Revision number for the contract as a whole.
  - 4) A revision note should be placed on the revised sheet in a location that will not restrict its visibility. The revision note should include the date and a description of the change. The revision and the revision note should be clouded.
  - 5) Original plan sheets, other than the Title Sheet, may be replaced with new sheets and numbered exactly as the original deleted sheets, with the

original sheets discarded. New sheets that were not in the original plan numbering that are inserted into an original set of plans will be numbered with a numeric extension as follows. Clouds are not required around the periphery of the new sheet.

1. A new sheet inserted after 22 and before 23, should be numbered 22-1.
2. Three new sheets inserted after 13 and before 14, should be numbered as 13-1, 13-2, and 13-3.
3. A new sheet at the end of a 40-sheet set of plans should be numbered as 40-1.

Adequate time must be allowed for transitioning files within ERMS, i.e. documents may not reach Contract Administration the same day they are submitted.

3. Changes within 7 Days Prior to Letting. No changes are allowed within seven days prior to letting. The letting date, not the plan signing date, controls when and how revisions can be made to the plans.

#### **14-1.02(06) Contract Information Book Certification [Rev. Mar. 2016]**

The designer should receive the Contract Information Book (CIB) via email for review. Within three days after notification from the Contract Administration Division the designer should complete the review. The CIB Certification form should be completed and returned via email. The CIB Certification form is available for download from the Department's [Editable Documents webpage](#), under Contract Administration.

Preprint changes identified during the review should be processed in accordance with Section 14-1.02(05).

#### **14-1.02(07) Construction Change [Rev. Mar. 2016]**

A construction change is made to a set of plans or contract documents following the project letting and subsequent awarding to a contractor.

All construction changes should be submitted electronically into ERMS using the Construction Changes Document Management System link in ITAP. Instructions on how to request access to the application are available at <https://itap.indot.in.gov/login.aspx>.

The file naming format is as follows: [Submittal] [Description] [Des No.] for Contract Services.

Example: ConstChg#1 Plans 0900010 for Contract Services

After the files are uploaded, notify the coordinator, project manager and the Research & Documents Library Team that the construction change has been submitted. After the review process, the Research & Documents personnel prepare a Construction Change Memorandum and the revised plans and documents for distribution. The Construction Change Memorandum template is available for download from the Department's Design Manual [Editable Documents webpage](#), under Contract Administration.

A construction change is processed as follows.

1. Transmittal Letter. A transmittal letter is required and should be attached to the email notification to the coordinator.
  
2. Plan Revisions. Where a change is made to the final tracings, a revision note should be placed in the revision block on the index sheet. This revision note should include the date of the revision, the revised sheet numbers, and a short explanation of the change. A note with the same information should also be placed on the revised sheet or sheets in a location that will not restrict its visibility. No deletions may be made to the original tracings as they are considered a legal contract document at the time of letting. If space allows, the original item to be revised should be hatch-marked through and the revision should be made on the same sheet. The revision should be placed on the sheet in a location that will not restrict visibility and shown in a cloud. If the revision is too large to be shown on the original sheet, the deleted sheet number should be noted in the revision block. This deleted sheet will remain in the original set of plans. The deleted sheet does not need to be included in the revised plan sheets file which will be uploaded to ERMS. Only the revised sheets should be included in the revised plan sheet file.
  - a. Replace an existing plan sheet. If an existing plan sheet is to be replaced, the replacement sheet should be numbered with an alphabetic extension (number-letter) to indicate that it is a replacement sheet. The deleted sheet should be identified in the revision block and will remain in the original plan set for future reference. Clouds should be used on the replacement sheet to indicate the changes made. The replacement sheet number should also be identified in the revision block on the index sheet. Examples of the number-letter extension are as follows.

- 1) Sheet 2 is deleted and Sheet 2-A will take its place.

- 2) Sheet 23 is deleted and Sheet 23-A will take its place.
- 3) Sheet 17-A is deleted and Sheet 17-B will take its place.
- 4) Sheet 15-1 is deleted and Sheet 15-1-A will take its place

The number followed by a letter indicates that an existing sheet has been replaced.

- b. Insert a new plan sheet. If a new sheet is to be inserted into the original plans, the added sheet should be given a numeric extension, number-number, to indicate that it is an added sheet. A new sheet is numbered according to the sheet preceding the insertion. The added sheet should be identified in the revision block on the index sheet. Clouds are not required around the periphery of the new sheet. Examples of the number-number extension are as follows:

- 1) Sheet 15-3 is inserted after Sheet 15-2 and before Sheet 16.
- 2) Sheet 7-1 is inserted after 7-B and before Sheet 8.
- 3) Sheet 40-3 is inserted after 40-2 at the end of the set of plans.
- 4) Sheet 5 is revised and two new sheets are added. The sheet numbers are 5A, the revision to Sheet 5, 5-1, and 5-2, the two new sheets.

3. Quantity Revisions. The designer computes quantity revisions and indicates the changes on a copy of the schedule of pay items from the contract information book. The designer should show revisions by striking through the original quantity and placing the new quantity next to the old quantity and clouding all. For deleted items, strike through the quantity, show a "0", and cloud all. Add new items at the end of the schedule, with item descriptions, including item numbers, quantities, and units, and cloud all. The marked up document will be submitted electronically into ERMS. Mark ups should use the same process as described for preprint changes to a contract document, Section 14-1.02(05).

4. Special Provision Revisions. The designer should indicate which special provisions were deleted, revised, or added by marking up a copy of the special provisions index which is contained in the contract information book. When a special provision is deleted, strike through and cloud the title on the index. If it is revised, cloud the title. If there is an addition, add the title to the end of the index and cloud it. The marked-up index, revised special provisions, with additions and struck-through text for deletions with both clouded,

or new special provisions will be submitted electronically as PDF files. The submittal into ERMS should be the same as shown for the revised plan sheets, described above.

Revisions to items that are not contract documents, e.g. design computations, design exceptions, should not be uploaded as construction changes. These items should be uploaded into ERMS using the Preprint Changes process, Section 14-1.02(05).

The designer should notify the coordinator and the project manager of these revisions.

Any document uploaded as a construction change is placed on the web once released by the Research & Documents Library team. Documents uploaded as construction changes can be viewed by the public or construction personnel via the web.

#### **14-1.02(08) Shop Drawings and Falsework-Review Procedure [Mar. 2016]**

Working drawings as defined in the INDOT *Standard Specifications* include supplementary bridge plans, stress sheets, shop drawings, erection plans, falsework plans, framework plans, cofferdam plans, bending diagrams for reinforcement, or any other supplementary plans, detailed drawings, design drawings, or similar data which a contractor is required to submit for approval.

The following procedure applies to the submittal and review of shop drawings, falsework drawings, or related documents as described below. Specific contact information is available via [Construction Memorandum](#).

LPA Projects. For LPA projects, review of all shop drawings and other items listed herein are the responsibility of the LPA or their designated representative except as follows. MSE wall design calculations and deck pour sequences should be forwarded to the Department for review as indicated below.

State Projects. For State projects, the following procedures have been implemented for submittal and review of shop plans, falsework drawings and related items as described below.

Design-Build Contracts. For design-build contracts, the responsibilities and procedures for shop drawing review and approval should be described in the contract documents.

General Instructions. Working drawings and calculations should use the same measurement units (English) as shown in the contract information book. Regardless of the submittal process described, it is the intent that the contractor communicates directly with the project engineer or

supervisor (PE/S) to keep him or her informed of the status of submittals. All submittals must include the contract number, contractor's name, and a contact person with contact information.

#### Item-Specific Instructions.

1. Structural Members and Related Items. Shop drawings should be submitted by the fabricator or supplier directly to the Department's designated shop drawing review consultant. Shop drawings must be in accordance with the *Standard Specifications* applicable special provisions and project specific design parameters. The following items do not require a professional engineer's stamp for submittal:

- a. structural steel and structural concrete members;
- b. modular expansion joints;
- c. strip seal (SS) joints; and
- d. elastomeric bearings.

For the above items each sheet must contain the signed and dated approval stamp. The review consultant should send approved shop drawings to the Department for distribution to the district construction office. For LPA contracts, the LPA or LPA's representative should forward a copy of the approved structural member shop drawings to the Bridges Division Bridge Rehabilitation Manager.

2. Mechanically Stabilized Earth (MSE) Walls. MSE shop drawings and computations must be stamped by a professional engineer. Shop drawings and computations for MSE retaining walls should be submitted by the contractor or fabricator directly to the engineer of record for review and approval. The designer should forward an electronic copy of the shop drawings and design calculations to the Office of Geotechnical Services manager. Include the contract number as part of the subject line. The Office of Geotechnical Services will review the design calculations for both LPA and State contracts and will provide comments back to the designer. The designer will continue to provide the final approval of the MSE shop drawings and design calculations.

The designer should transmit an electronic copy of the approved shop drawings to the submitter and to the district construction office for further distribution.

3. Sound Barrier Systems. Shop drawings and computations for sound barrier systems must be stamped by a professional engineer. Shop drawings and computations for both State and LPA projects should be submitted by the contractor or fabricator directly to the designer of record for review and approval. An electronic copy of the approved shop

drawing package should be returned to the submitter and the district construction office for further distribution.

4. Precast Concrete Three-Sided Structures and Box Culverts. Shop drawings and design calculations are to be submitted for all precast concrete 3-sided structures and for precast concrete box culverts that have a dimension or design earth cover not listed in Table 1 of ASTM C 1577. Shop drawings and design calculations must be stamped by a professional engineer. Shop drawings for 3-sided structures must include details to provide sufficient horizontal restraint of the structure legs during installation until after the completion of backfill placement unless the design calculations demonstrate such restraint is not required. Load rating calculations must be included for box culverts and 3-sided structures whose span measured along the centerline exceeds 20 ft, except where the height of cover is greater than 8 ft and exceeds the perpendicular span length.

Plans and calculations should be submitted by the contractor to the Project Engineer/Supervisor (PE/S). The PE/S should send the shop drawings directly to the Engineer of Record for review and approval and a copy to the Office of Roadway Review Coordinator. For structures requiring load rating, the designer should forward an electronic copy of the shop drawings, design calculations, load rating calculations and load rating summary (RPD 700-B) to the Office of Bridge Inspection Load Rating Engineer. Load Rating Engineer will provide comments back to the designer.

The approved shop drawings will be distributed by PE/S.

5. Welded-Wire Reinforcement. Most contracts will allow the contractor to substitute welded-wire reinforcement in lieu of the reinforcing bars shown on the plans. If the contractor desires to pursue this substitution, shop drawings and design calculations must be stamped by a professional engineer and submitted to the Bridges Division Office of Bridge Design for review and approval. The Office of Bridge Design will distribute approved shop drawings to the PE/S.
6. Traffic Items. Shop drawings for Signing, Signals, and Lighting will be reviewed and approved by the Office of Traffic Design and Review. These items typically include all overhead sign structures, signal strain poles and cantilevers, high mast lighting, luminaries, and light poles. Plans and calculations should be submitted by the contractor to the Project Engineer/Supervisor (PE/S) and forwarded to the INDOT Office of Roadway Review Coordinator. The coordinator will distribute the plans and calculations to the Office of Traffic Design and Review for review and approval. The coordinator will distribute approved shop drawings to the PE/S.

7. Falsework and Temporary Bridge Drawings. Falsework drawings for the following items should be submitted to the PE/S. Each drawing must be stamped by a professional engineer:
- a. cofferdams;
  - b. deck falsework – temporary;
  - c. coping falsework;
  - d. falsework for reinforced concrete slab superstructures;
  - e. falsework for hammerhead pier caps; and
  - f. temporary bridges for runarounds. Temporary bridge submittals must include design computations.

The PE/S will review drawings for compliance with the *Standard Specifications* and the specific job conditions only. Construction Management Division Field Engineers are available for assistance on any of the above items. Questions should be directed through the Area Engineer and district construction office.

8. Permanent Metal Deck Forms. Working drawings for permanent metal deck forms should be submitted by the contractor to the district construction office for review for compliance with the specifications and the specific job conditions only. Working drawings submitted by the contractor must be stamped by a professional engineer. The Construction Management Division maintains a deck form computation spreadsheet that can assist in review of metal deck forms.

9. Foundation Seals and Deck Pour Sequences. Requests for use of foundation seals not shown in the plans should be submitted to the Office of Bridge Design for review and approval. The submittal must indicate the location and dimensions of the seal. The Office will distribute approved requests.

A request to revise planned deck pour sequences for both INDOT and LPA contracts should be submitted through the PE/S to the Office Bridge Design for review and approval. The submittal must indicate the original and proposed alternate sequence and pour rate. The Office will distribute approved requests.

10. Stream Crossings and Work Bridges. Proposals for stream crossings and work bridges for construction traffic should be submitted to the district construction office for review and approval. If the proposal varies from any of the contract's environmental permit conditions, the contractor must obtain approval for the change from the appropriate agency.

11. Miscellaneous. Shop drawings submittals for miscellaneous items not covered by the above, such as post-tensioning plans and non-standard manholes, should be submitted through the PE/S. The PE/S should work through the district construction office and the Construction Management Division to determine the approval process for these items.

## **14-2.0 PLANS SUBMISSIONS**

### **14-2.01 Road Plans, New Construction or Reconstruction Project**

#### **14-2.01(01) Grade Review Meeting**

A grade review meeting should be held with the project manager prior to the Stage 1 plan review submittal. The meeting is primarily for a Major project and is to be held at the discretion of the project manager. The following plans sheets and overall sheets must be prepared for the grade review meeting.

1. Typical Cross Sections. These should include the following:
  - a. lane and shoulder widths;
  - b. profile grade;
  - c. cross slope;
  - d. curbs;
  - e. sidewalk locations and widths;
  - f. bicycle facilities;
  - g. side slopes;
  - h. shoulder corrugations, if warranted; and
  - i. ditches, in cut and fill sections.
2. Overall Plan View. A sheet showing the overall plan view of the existing topography and preliminary geometrics is required. The overall plan view should be to a scale which is legible for review and discussion at the meeting.

3. Overall Proposed Profile Sheet. A sheet showing the overall proposed profile with the existing ground is required. The overall proposed profile should be to a scale which is legible for review and discussion at the meeting. More than one sheet may be required.
4. Interchange Layout or Overall Layout Sheet. A sheet showing the overall plan view of the existing topography and preliminary geometrics for each interchange is required. The overall plan view should be to a scale which is legible for review and discussion at the meeting. More than one sheet may be required.

#### **14-2.01(02) Interchange-Geometrics Submission to FHWA**

For a project which includes at least one interchange requiring Federal oversight, the proposed horizontal alignment for the interchange may be required prior to the Stage 1 review submission. The following must be considered for Quality Assurance.

1. Geometrics. The plans sheets for the interchange geometrics should be graphically completed including stationing, curve data, bearings, etc. The design speed for each ramp should be shown.
2. Ramp Grades. Investigate ramp grades in as much detail as required to determine their effect on the proposed horizontal alignment.
3. Traffic Elements. The traffic elements to be considered to determine their effect on the interchange alignment are as follows:
  - a. traffic counts and turning movements;
  - b. consideration of signing;
  - c. consideration of signals at ramp terminals; and
  - d. consideration of illumination (high mast or conventional).
4. Design Information. Include all applicable design information (e.g., economic analysis, drainage analysis).

## **14-2.01(03) Stage 1 Review Submission [Rev. Sept. 2011]**

Plans should be approximately 25% complete at this stage.

Place the proposed design information in the computer-aided details file for this submittal. This information will be submitted in pdf format. However, the plans need not be in final form. The designer should place notes on the plans which explain situations or items which are not readily apparent, and which may influence the proposed design. The notes are to be removed in later submissions.

The following sheets and information must be reviewed for Quality Assurance and should be included with the review submission:

1. Conformance. Review the plans for conformance with the Level One controlling design criteria listed in Section 40-8.02(01), and indicate apparent or possible design exceptions. Also, identify discrepancies from the Level Two design criteria listed in Section 40-8.02(02).
2. Abbreviated Engineer's Assessment. Provide a written scope of the project requirements. This will be a short description of the criteria proposed for use in the design of the project.
  - a. If an Abbreviated Engineer's Assessment has been prepared, a copy should be included with the submission.
  - b. If an Abbreviated Engineer's Assessment was not prepared, the designer should provide a brief written description of the project. The description will, at a minimum, include the information as follows:
    - (1) project location;
    - (2) project need and purpose;
    - (3) existing facility;
    - (4) traffic data;
    - (5) identification of proposal;
    - (6) cost estimate;
    - (7) environmental issues;
    - (8) right-of-way impact;
    - (9) traffic maintenance during construction; and
    - (10) concurrence. For an INDOT project, signed by the district production director or the district planning director. For an LPA project, signed by the Project Sponsor.

3. Level One Checklist and Design Computations. The designer should submit a Level One checklist, including computations for the mainline and each S-line. The designer should include computations for the required intersection sight distance at each public road, including each local-service road or frontage road within the project limits. The designer should also submit documentation of the intersection sight distance provided at each public road. Level One Criteria verification is not required for maintenance of traffic at this time.

It is not necessary to submit a Level One checklist for an S-line that does not exceed the work necessary to build the appropriate public-road approach, including the required taper distance to account for transitioning to the existing pavement width. This does not relieve the designer of making the project satisfy all Level One design elements for such an S-line, e.g., maximum grade, vertical stopping sight distance, and intersection sight distance.

The computations for the Level One items and intersection sight distance are to be initialed and dated by the designer and reviewer before submission. The items to be included are as follows:

- a. Level One checklist;
  - b. project-length computations including guardrail lengths and other contributing factors; and
  - c. design computations for determining geometrics.
4. Index and Title Sheet. At this project stage, information on the title sheet should include the following:
    - a. project numbers;
    - b. description (des) number;
    - c. location map;
    - d. project location map including north arrow and scale;
    - e. description of the project work type and location;

**\*\* PRACTICE POINTER \*\***

The location description should be simple and should follow the description on the schedule. For example, *Bridge replacement on State Road 67 over Fall Creek, located 8 miles southwest of the south junction with State Road 39, in Section 13, T-11-N, R-2-W, Ray Township, Morgan County, Indiana.* A legal description should not be used.

- f. design data including design speed, project design criteria, functional classification, terrain, traffic data, urban or rural area, and access control.
  - g. applicable reference point (does not apply to local agency project);
  - h. signature blocks, but not filed in at this stage;
  - i. gross and net project lengths, not including incidental construction or lengths along S-lines;
  - j. an index of plan sheets at this stage. Sheet numbers will change for future submittals;
  - k. list of utility owners and addresses;
  - l. bridge structure information;
  - m. latitude and longitude; and
  - n. appropriate version of Standard Specifications.
5. Typical Cross Sections. Typical cross sections should show only the basic configuration and design features. These include the following:
- a. lane and shoulder widths;
  - b. profile grade, construction centerline, paper-relocation line, and survey-line locations;

- c. basic design features including curbs, sidewalk locations and widths, pavement and shoulder cross slopes, side slopes, ditches, shoulder configurations (if warranted), bicycle facilities, etc.; and
  - d. clear-zone width for 4R project, or obstruction-free-zone width for 3R project.
6. Plan and Profile Sheets. These sheets will include only the preliminary design information. The details that should be addressed include the following:
- a. existing topography;
  - b. beginning and end of project;
  - c. horizontal alignment (e.g., horizontal curve data, PC, PI, PT, bearings);
  - d. vertical alignment and its relationship to grade-controlling features;
  - e. preliminary drainage design;
    - (1) include mainline culverts;
    - (2) include ditch grades only if they must be known to establish the profile grade;
    - (3) need not show storm sewers;
  - f. preliminary public-road approach and drive locations;
  - g. alignment-controlling features (e.g., high-water levels, existing crossroads and bridges, regulated drains, drainage structures, railroads, underdrain criteria, traffic-maintenance considerations, cemeteries, historical buildings, parks, ADA requirements, etc.);
  - h. proposed guardrail limits, only if they affect the project limits; and
  - i. survey reference ties and benchmark data.
7. Details. These should include only the superelevation-transition diagrams.

8. Interchange. If the project includes at least one interchange, the general layout of the interchange should be shown, including the following:
  - a. geometrics;
  - b. preliminary ramp grades;
  - c. horizontal and vertical alignments;
  - d. traffic elements; and
  - e. design information.
9. Cross Sections. The preliminary cross sections should include the following:
  - a. templates of the typical sections placed on the existing cross sections;
  - b. profile-grade elevations; and
  - c. mainline drainage structures.
10. Design Information. In addition to the plans, the designer should include copies of the preliminary hydraulic analysis for each mainline culvert, if applicable, and results of economic analyses that may have been completed for alternative grade lines. The preliminary cost estimate should be developed for the major pay items with percentages for the minor pay items. The hydraulic analysis should be signed and sealed by a professional engineer licensed in Indiana.
11. Quality Assurance Form.
12. INDOT All Project Commitments Report. This should include all known resolutions.

#### **14-2.01(04) Geotechnical Investigation Request Submittal**

Upon approval of the Stage 1 review submission, the Geotechnical Investigation will be requested. Anticipated pavement sections and intended treatment should be provided. The sheets to be included with this request are as follows:

1. title sheet;

2. Typical Cross Sections;
3. roadway plan and profile;
4. bridge General Plan;
5. Layout;
6. Details. This should show approximate location of a noise wall, retaining wall, or high-mast-lighting tower; and
7. cross sections.

#### **14-2.01(05) Preliminary Field Check Meeting [Aug. 2011]**

A preliminary field check meeting should be held after the Stage One review submission and prior to the Stage Two review submission. The preliminary field check meeting is not part of a review submittal. Plan sets should be distributed a minimum of two weeks prior to the meeting (see Figure [14-1B](#), Field-Check Notification).

To hold the Preliminary Field Check meeting, plans should be approximately 40% complete. The following plans sheets and information must be included for Quality Assurance.

1. Previous Reviews. Incorporate comments from the previous reviews.
2. Conformance. The designer should check the plans for conformance with the Level One controlling design criteria listed in Section 40-8.02(01). Apparent or possible design exceptions should be identified. Discrepancies from the Level Two design criteria listed in Section 40-8.02(02) should also be identified. The required documentation for all Level One and Level Two design exceptions should be prepared.
3. Title and Index Sheet.
4. Plat Sheet. A preliminary Plat No. 1 should be included for a project on a Department-maintained route requiring right of way. See Section 85-2.0.
5. Plan and Profile Sheets. In addition to the information described in Section 14-2.03(02), show the following:

- a. project limits;
  - b. elevations and grades of ditches so that accurate right-of-way requirements can be determined;
  - c. construction limits;
  - d. proposed right of way, including temporary right of way;
  - e. public-road approach and drive locations;
  - f. approximate roadside barrier or guardrail locations;
  - g. preliminary curb ramps, sidewalks, bicycle lanes, etc., if not shown on the Details sheets; and
  - h. conceptual storm-sewer layout which includes the trunk line and outlet locations.
6. Details Sheets. Include preliminary layouts for the details as follows:
- a. roadway and shoulder layout for guardrail;
  - b. modified approaches, signs, sign structures, lighting, signals, where applicable. Traffic items should be submitted in a separate set of plans;
  - c. intersection layout details including right- and left-turn lanes with the turning movements indicated;
  - d. retaining walls;
  - e. special drainage structures;
  - f. superelevation-transition diagrams;
  - g. weigh station and associated facilities;
  - h. rest area and associated facilities; and
  - i. if shoulder corrugations are warranted, and the plans include details for non-

standard public-road approaches, drives, etc., each detail should show the extent of corrugations installation required in conjunction with the construction illustrated by the detail. If applicable, the *Standard Drawings* should be used as a guide in determining the limits of corrugations installation relative to the feature shown in the detail.

7. Traffic-Maintenance Details. The conceptual traffic-maintenance scheme and phasing should be outlined. Level One criteria verification is not required at this time. Plans should be developed to satisfy the PDP Manual's Project Constructability Review 1.
8. Cross Sections. The preliminary draft should include the following:
  - a. profile-grade elevations;
  - b. templates of the typical sections placed on the existing cross sections;
  - c. drainage structures;
  - d. approaches and drives; and
  - e. buildings.
9. Design Information. The activities which should occur include the following:
  - a. Geotechnical coordination;
  - b. unique special provisions initiation;
  - c. preliminary woody-revegetation determination; and
  - d. pavement design request submittal.

#### **14-2.01(06) Preliminary Right-of-Way Plans Preparation**

See Chapter Eighty-five for criteria and information that should be included with the Right-of-Way Plans. The designer should review the instructions for Quality Assurance.

## **14-2.01(07) Stage 2 Review Submission [Rev. Sept. 2011]**

Plans should be approximately 55% complete at this stage.

Plans for this submittal should be close to their final form and should be legible and consistent with the quality desired for public viewing at a public-information meeting, if required. The procedure for such meeting should be in accordance with Section 14-02(06). The designer should review the *INDOT Typical Plan Sheets* document to determine what information should be included on each sheet. Review the following sheets and information for Quality Assurance and include them with this submission.

1. Previous Reviews. Include the marked-up plans from the Stage One submittal, changes made from the Preliminary Field Check meeting, and comments from the construction review with this submission. Include revisions to the plans due to Geotechnical Report recommendations, if completed. Include responses to preliminary field check questions.
2. Conformance. The designer should check the plans for conformance with the Level One controlling design criteria listed in Section 40-8.02(01). Apparent or possible design exceptions should be identified. Discrepancies from the Level Two design criteria listed in Section 40-8.02(02) should also be identified. The required documentation for all Level One and Level Two design exceptions should be prepared.
3. Index and Title Sheet. Finalize the title sheet and index sheet for the roadway plans.
4. Plat Sheets. Plat sheets, if required, should be consistent with the plans and finalized.
5. Plan and Profile Sheets. Right of way should be finalized and consistent with the detail sheets. Additional information to be shown is as follows:
  - a. drainage features (e.g., storm sewers, pipe structures, ditch grades, preliminary inlet spacing for storm-sewer trunk line design, etc.) and proposed drainage notes; and
  - b. permanent erosion protection, including paved side ditches, riprap, and sodding limits.
  - c. Finalize curb ramps, sidewalks, bicycle lanes, etc., if not shown on the Details sheets.

6. Structure Data Table. The table should be in a preliminary form and should include structure numbers and locations.
7. Approach Table. The table should be in a preliminary form and should include approach geometrics.
8. Cross Sections.
9. Design Information. Information to be included is as follows:
  - a. hydraulics and storm-sewer calculations, signed and sealed by a professional engineer licensed in Indiana; and
  - b. cost estimate. The preliminary cost estimate should be refined for the major pay items with percentages shown for the minor pay items.
10. Level One Checklists and Design Computations. If there are no changes to the plans which affect Level One criteria since the prior submission, it is acceptable to copy the previous Level One Checklist and add a statement that no changes have been made to the plans that affect Level One criteria. The statement should be initialed and dated for the current submission. The plans must be developed to satisfy the PDP Manual's Project Constructability Review 2.

The designer should submit a Level One checklist, including computations for the mainline, each S-line, and each traffic-maintenance phase. The designer should include computations for the required intersection sight distance at each public road, including each local-service road or frontage road within the project limits. The designer should also submit documentation of the intersection sight distance provided at each public road. This requirement also applies to the traffic-maintenance phases.

11. Quality Assurance form.
12. INDOT All Project Commitments Report. This should include all known resolutions.

#### **14-2.01(08) Right-of-Way Plans Preparation, if done by others**

Chapter Eighty-five provides the criteria and information that should be included with a set of right-of-way plans. The designer should review the instructions for Quality Assurance as follows.

1. Previous Reviews. Incorporate all revisions made during the previous plan submissions.
2. Checklist for Right-of-Way Plans. Complete the checklist shown in Figure 85-2F.
3. Plan Sheets. The required sheets and information are as follows:
  - a. title sheet;
  - b. Index and General Notes sheet;
  - c. plat sheet;
  - d. Location Control Route Survey Plat;
  - e. plan and profile sheets;
  - f. Details sheets;
  - g. Approach Table;
  - h. all sheet cross references; and
  - i. all project-information boxes, including right-of-way project number and sheet numbers.
4. Initiate right-of-way engineering.
5. Quality Assurance form.

#### **14-2.01(09) Hearing Plans Preparation, if required [Sept. 2011]**

If a public-information meeting or hearing is required, provide plans and documents to the Office of Public Involvement for Certification of the Hearing Process. The public-information meeting may be a requirement due to the amount of right of way being taken or deemed necessary by the project manager. The meeting will be held after the Stage 2 plans have been reviewed.

An opportunity for a public hearing will be afforded if a project satisfies at least one of the criteria as follows:

1. more than 0.5 ac of permanent right of way is required;
2. the layout of the improved facility's function is to be substantially changed;
3. it may have an adverse impact on abutting property;
4. it may have a significant social, economic, environmental, or other effect;
5. a ramp within the project limits is to be closed for 7 days or longer;
6. there is impact on a wetland;
7. it involves a significant floodplain encroachment;
8. there is impact on a resource eligible for or included in the National Register of Historic Places; or
9. FHWA has determined that an opportunity should be afforded.

If an opportunity for a public hearing need not be afforded, a public notice must be made available for comment on Section 106 findings.

The following sheets and information should be provided.

1. Stage 2 plan sheets and the revisions from the Stage 2 review.
2. Environmental requirements are satisfied by one of the following:
  - a. the Environmental Impact Statement is complete and the Record of Decision (ROD) has been issued;

- b. the Environmental Assessment is complete and a Finding of No Significant Impact (FONSI) is made by FHWA; or
  - c. the Categorical Exclusion is complete and concurred in by FHWA.
3. Traffic-Maintenance Plan. In preparation for a public information meeting, the designer may be asked to perform the activities as follows.
- a. Displays. Prepare displays that can be used in a coordination meeting or a public information meeting. These include, but are not necessarily be limited to, sketches of the typical cross section for each phase of the construction, and composite drawings showing all ramp closures with traffic-flow arrows indicating the number of lanes to be open during each construction phase.
  - b. Transportation Management Plan (TMP). Address the requirements of a TMP that has been developed for the project.
  - c. Queues. Analyze the capacity constraints due to lane closures, including anticipated queues and user costs. This can be done using the QUEWZ software discussed in Chapter Eighty-one.

#### **14-2.01(10) Final Plans Right-of-Way Plans Preparation**

Chapter Eighty-five provides the criteria and information that should be included with a set of right-of-way plans. This submission is not required for a local public agency project. The designer should review the instructions for Quality Assurance, and perform the following:

- 1. include the marked-up Preliminary Right-of-Way Plans with this submission, if required;
- 2. incorporate all revisions made during the Preliminary Right-of-Way Plans submission review;
- 3. complete all project-information boxes, including right-of-way project number and sheet numbers;
- 4. complete all sheet-numbers cross references; and

5. review the plans against the checklist shown as Figure 85-2F.

#### **14-2.01(11) Final Field Check Meeting [Rev. Jan. 2011]**

A Final Field Check meeting should be held after the Stage Two review submission and prior to the Stage Three review submission. The Final Field Check meeting is not part of a review submittal. The meeting is to be held at the discretion of the project manager for each major project. The meeting should not be required for a minor project. Plans sets should be distributed a minimum of two weeks prior to the meeting (see Figure [14-1B](#), Field-Check Notification).

To hold the Final Field Check meeting, plans should be approximately 80% complete. The following sheets and information must be included for Quality Assurance.

1. Previous Reviews. Incorporate comments from the previous reviews.
2. Plans Sheets. The plans should be nearly complete. Changes resulting from the public information meeting, geotechnical recommendations, and pavement-design recommendations should be incorporated onto the plans. Legends on sheets should be completed and checked for accuracy and consistency with Section 14-3.04. The designer should include the information on the sheets as follows.
  - a. Title Sheet. Complete the Design Data block.
  - b. Index and General Notes Sheet. Check the general notes to ensure that they are current and accurate. Revise the index as necessary.
  - c. Plan and Profile Sheets.
    - (1) Ensure that structure notations are completed; sodding, riprap, and paved sodded ditch locations are indicated; earthwork balances are shown; and removal items identified.
    - (2) Update all property lines based on right-of-way engineering. Add the station-and-offset callout for each right-of-way or property-line break point.
  - d. Details Sheets. Ensure that all details are completed and included. This includes details for traffic maintenance and traffic-design elements (e.g., intersections, signals, signing, and lighting). This also includes details and notes for temporary

erosion and sediment control. The plans must be developed to satisfy the PDP Manual's Project Constructability Review 3.

e. **Tables.** Complete all data tables including the following:

- (1) Structure Data Table;
- (2) Approach Table;
- (3) Underdrain Table;
- (4) Other miscellaneous tables such as guardrail, paved side ditches, sodding, right-of-way markers, monuments, mailboxes, curb ramps, sidewalks, etc.; and
- (5) Earthwork Summary table.

e. **Cross Sections.** Design information should be essentially complete. This includes final structure indications, earthwork areas and volumes, and benching areas and volumes.

3. **Computations.** Include computations for erosion- and sediment-control features design.

#### **14-2.01(12) Stage 3 Review Submission [Rev. Sept. 2011, Feb. 2012]**

Plans should be approximately 95% complete at this stage.

The purpose of this submittal is to ensure that the plans are complete and satisfy the criteria provided in the Engineering Assessment studies. The following should be completed and reviewed for Quality Assurance. Include responses to Final Field Check questions.

For a project that requires only a Stage 3 Submission, all documentation required for Stages 1 and 2, if not previously submitted, must be included in the Stage 3 submittal. Documentation will include the abbreviated Engineer's Assessment, geotechnical report, and pavement-design approval.

1. **Previous Reviews.** Include the marked-up plans from the Stage 2 submittal and changes made from the Final Field Check meeting with this submission. Right-of-way changes

made after Final Right-of-Way Plans are submitted should be processed in accordance with Section 85-3.03.

2. Conformance. Review the plans for conformance with the Level One controlling design criteria listed in Section 40-8.02(01) and indicate approved dates for design exceptions.
3. Plans Set. If a Final Field Check meeting is not held at the discretion of the project manager, all of the plans requirements of Section 14-2.01(10) should be incorporated.
  - a. Erosion Control Plan. Include the completed set.
  - b. Road Summary Sheets. The content and requirements are described below. For a large project for which the standard-sized Summary tables cannot accommodate all of the items, multiple custom Summary sheets should be used to accommodate all the necessary information. The Summary sheet frames, in DGN and XLS format, can be downloaded from [http://www.in.gov/indot/div/cad/v8i\\_downloads.htm](http://www.in.gov/indot/div/cad/v8i_downloads.htm). The Pavement Quantities and Approach Table, Structure Data, Paved Side Ditch Summary, Riprap Ditch and Sodding Table, Underdrain Table, Guardrail Summary Table with guardrail-related pay items, Sign Summary Table, Pipe Material Selection, and mailbox approaches information including required HMA quantities should be completed.
  - c. Cross Sections. The project engineer or supervisor will require the elevations for existing cross sections in order to calculate the final earthwork quantities.

If the project was designed from an electronic survey, the design calculations should include a data table created from the electronic cross-sections which indicates all existing cross-section elevations.

An example data table is shown as Figure [14-2A](#).

4. Quantities. Finalize all quantities.
5. Reports. Ensure that the recommendations from the Geotechnical Report and other reports regarding peat, hazardous waste, special waste, etc. have been incorporated into the plans, specifications, and cost estimate.
6. Cost Estimate. Conduct a detailed review to ensure that all necessary pay items have been included. Finalize the construction cost estimate using Estimator.

7. Level One Checklists and Design Computations. If there are no changes to the plans which affect Level One criteria since the prior submission, it is acceptable to copy the previous Level One Checklist and add a statement that no changes have been made to the plans that affect Level One criteria. The statement should be initialed and dated for the current submission.
8. Special Provisions. Complete the special provisions menu, and include special provisions for non-standard pay items.
9. Rule 5. If required, and not previously submitted in accordance with Section 9-1.02, complete the Rule 5 Submission as described in Chapter 205.
10. Underground-Storage-Tanks Removal. If this work is required, the designer should coordinate such activity with the Office of Environmental Services manager. The designer should complete Figure [14-2B](#), Underground Storage Tanks Removal information request. An editable version of this document may be found on the Department's website, at [www.in.gov/dot/div/contracts/design/dmforms/](http://www.in.gov/dot/div/contracts/design/dmforms/). If a final field check is not required, the coordination should take place six months prior to the Ready for Contract date.  
  
This coordination is to ensure that required pay items such as excavation and handling of contaminated soil are included in the contract.
11. Quality Assurance form.
12. INDOT All Project Commitments Report. This should include all known resolutions.
13. Proprietary Material. If a proprietary material is specified that is not listed the INDOT Approved Materials List on the Department's website, at <http://www.in.gov/indot/div/M&T/appmat/appmat.htm>, the designer must submit for approval a certification or a public-interest finding request. An editable version of this document appears on the Department's website, at <http://www.in.gov/dot/div/contracts/design/dmforms/>.
14. Environmental Consultation Form. Summarization 7-3C should be completed at this submission. An editable version of this document appears on the Department's website, at [www.in.gov/dot/div/contracts/design/dmforms/](http://www.in.gov/dot/div/contracts/design/dmforms/).
15. Traffic-Control-Plan Checklist. See Figure 82-7A for details.

### **14-2.01(13) Final Tracings Submission**

Plan should be 100% complete at this stage. The construction project number should be shown in the box in the upper left-hand corner of the title sheet and the lower right-hand corner of all other sheets.

The project manager will submit the Final Tracings package to Contracts Administration. The submittal should include the items listed in Section 14-1.02(04).

### **14-2.02 Road Plans, Rehabilitation Project with No Additional Right of Way Required**

#### **14-2.02(01) Grade Review Meeting**

A grade review meeting should be held with the project manager prior to the Stage 1 plan review submittal. The meeting is for a major project and is at the discretion of the project manager. The following plan sheets and overall sheets must be prepared for the grade review meeting;

1. Typical Cross Sections. This should include the following:
  - a. lane and shoulder widths;
  - b. profile grade;
  - c. cross slopes;
  - d. curbs;
  - e. sidewalk locations and widths;
  - f. bicycle facilities;
  - g. side slopes;
  - h. shoulder corrugations, if warranted;
  - i. ditches;
  - j. detailed pavement design showing intended pavement treatment, such as resurfacing, crack and seating, rubblizing, replacement, etc.;

- k. underdrains, with locations shown relative to pavement; and
  - l. clear-zone width, if 4R project.
2. Overall Plan View. A sheet showing the overall plan view of the existing topography and preliminary geometrics is required. The overall plan view should be to a scale which is legible for review and discussion at the meeting.
  3. Overall Proposed Profile Sheet. A sheet showing the overall proposed profile with the existing ground is required. The overall proposed profile should be to a scale which is legible for review and discussion at the meeting. More than one sheet may be required.
  4. Interchange Layout or Overall Layout Sheet. A sheet showing the plan view of the existing topography and preliminary geometrics of each interchange is required. The overall plan view should be to a scale which is legible for review and discussion at the meeting. More than one sheet may be required.

#### **14-2.02(02) Stage 1 Review Submission**

See Section 14-2.01(03).

#### **14-2.02(03) Geotechnical Investigation Request Submittal**

See Section 14-2.01(04).

#### **14-2.02(04) Preliminary Field Check Meeting**

See Section 14-2.01(05).

#### **14-2.02(05) Stage 2 Review Submission**

See Section 14-2.01(07).

### **14-2.02(06) Public-Information Meeting**

See Section 14-2.01(09).

### **14-2.02(07) Final Field Check Plans Submission Meeting**

If a final field check is required, see Section 14-2.01(11).

### **14-2.02(08) Stage 3 Review Submission**

See Section 14-2.01(12).

### **14-2.02(09) Final Tracings Submission**

See Section 14-2.01(13).

## **14-2.03 Road Plans, Partial 3R Project**

### **14-2.03(01) Preliminary Plans**

1. Title Sheet. This is the first page and should include the information as follows:
  - a. contract and Des numbers;
  - b. traffic data;
  - c. design data as follows:
    - (1) design speed;
    - (2) project design criteria: Partial 3R (non-freeway);
    - (3) functional classification;
    - (4) rural or urban setting;
    - (5) terrain; and
    - (6) access control;
  - d. project description information as follows:
    - (1) route number;

- (2) county name and congressional township, range, and section;
    - (3) limits described from Department-maintained route intersections and by Reference Post system; and
    - (4) length (gross and net);
  - e. location map, including information as follows:
    - (1) civil boundaries;
    - (2) county, township lines, corporate limits;
    - (3) nearby Department-maintained routes and major local roads;
    - (4) north arrow; and
    - (5) project limits, with stations and highlighted graphics;
  - f. paving exceptions, with stations;
  - g. station equations;
  - h. current INDOT *Standard Specifications* effective year;
  - i. certification block; and
  - j. state location map.
2. Construction Plans Index. The Construction Plans Index is a tabulation and description of the numbered design drawings to be included in the plans document.
3. Strip Map. This is a line drawing which shows the following:
- a. route number;
  - b. beginning and ending stations and reference posts and station equations.  
Consistent units should be used throughout the plans;
  - c. stations and reference posts for intersecting streets, county roads, city or town limits, and intersecting county lines and railroad crossings, bridges, and paving exceptions;
  - d. north arrow;
  - e. location of all recommended construction signs;
  - f. existing utility lines within construction limits; and
  - g. civil townships.
4. Typical Cross Sections. These are composed of the basic parts as follows.
- a. Illustration.

- (1) Existing conditions and dimensions (i.e., pavement width, material type, thickness cross-slope, curb, shoulder, ditches, etc.).
  - (2) Proposed construction and dimensions (i.e., HMA courses with binder grading, overlay cross-slope, widening, curb shoulders, ditches, shoulder corrugations if warranted, etc.).
- b. Legend showing labels and corresponding items. The descriptions shown in the pay item names should be used where applicable.
- c. Title block.
- (1) Route number.
  - (2) limits of section and exceptions.
- d. Supplemental information block (i.e., curve data for superelevation).
5. Typical Approach Details. The INDOT *Standard Drawings* should be used. Existing field conditions not in accordance with the details shown on the *Standard Drawings* will require details to be shown on the plans.
6. Miscellaneous Details. These include all other details not covered by the strip map, typical section, or INDOT *Standard Drawings* (i.e., curb ramp or sidewalk locations and details.)
7. Special Provisions. The designer should follow the guidelines for preparing special provisions described in Section 19-2.0. The designer should not specify the use of proprietary or experimental products or construction methods.

#### **14-2.03(02) Assessing Preliminary Pavement Design**

Once the project has been assessed to be a partial 3R project, the designer should determine an approximate pavement thickness for developing preliminary typical cross sections.

#### **14-2.03(03) Preliminary Field Check [Rev. Jan. 2011]**

The preliminary field check should occur at a point before development of preliminary plans. The preliminary field check should be scheduled with the district-office entities involved with

plan development. The arrangements for scheduling the preliminary field check should be made while plan development is still proceeding, if possible. Copies of preliminary plan documentation should be made available for review prior to the preliminary field check.

The persons who should attend the preliminary field check are as follows:

1. District Personnel.

- a. Design Team leader.
- b. Office of Construction area engineer.
- c. Office of Construction field engineer.
- d. Subdistrict manager or unit foreman.
- e. Designer.
- f. Traffic engineer.
- g. Utilities/railroads engineer.

2. Other Personnel.

- a. Local government agency if applicable.
- b. Local utilities if applicable.
- c. Planning Division's Office of Pavement Engineering manager, if AADT  $\geq$  5000 or trucks percentage  $\geq$  10%.

3. INDOT All Project Commitments Report. This should include all known resolutions.

#### **14-2.03(04) Right of Way**

Right-of-way acquisition should not be required. If it is required, the designer should return to the Engineering Assessment phase to consider the project as full 3R, 4R, or possibly new construction.

#### **14-2.03(05) Public Hearing**

Public involvement should not be required. If it is, the designer should see Chapter Eight.

#### **14-2.03(06) Utilities and Railroads**

The portions of the project limits which may affect existing utilities should also be addressed early in the PPD phase. The designer should stay in contact with the district Utilities/Railroads Team leader to ensure that existing utilities are relocated to avoid delays in the project development. To accomplish this, the district Utilities/Railroads Team leader should have final check prints as early as possible.

If one or more railroad crossings are within the project limits, the district Utilities/Railroads Team leader should be advised. See Chapters 105 and 47.

#### **14-2.03(07) Calculations**

The calculations must follow a systematic and logical methodology. All calculations should be reviewed for accuracy. Systematic calculations make review and verifying quantities considerably more efficient. All calculations should be submitted with the final documents and should remain the property of the Department.

#### **14-2.03(08) Returned Correspondence**

Once input from the district offices of Highway Management, Highway Design and Technical Support, Construction, and Traffic has been received with suggested changes following the preliminary field check, it may be necessary to arrange and conduct a final field check. See Section 14-2.02(07) for the personnel list who should attend this field check.

#### **14-2.03(09) Final Pavement Design**

If the current AADT  $\geq 5,000$  or the trucks percentage  $\geq 10\%$ , a request for a final pavement design should be submitted to the Planning Division's Office of Pavement Engineering. If the AADT  $< 5,000$  or the trucks percentage  $< 10\%$ , the designer performs the final pavement design.

#### **14-2.03(10) Final Check Prints [Rev. Jan. 2011]**

The final check prints should now be completed. These documents are outlined below.

1. Transmittal Letter. This document should include the following:
  - a. date;

- b. To, Thru, From personnel;
  - c. contract number;
  - d. route number;
  - e. county;
  - f. Des number;
  - g. project description and location;
  - h. estimated contract completion date or number of work days;
  - i. estimated costs; and
  - j. letting date.
2. Proposal Book Cover Sheet. This sheet should include the contract number and letting date.
3. Contract Information Book Cover Sheet. This sheet should include the following:
- a. contract number;
  - b. letting date; and
  - c. certifications (approval signatures and seals).
4. Contract Requirements Worksheet. The designer should place project identification information on this sheet. The designer should coordinate with the district construction engineer to acquire appropriate necessary information. The designer will then transmit it Contract Administration. The identification information should include the following:
- a. contract number;
  - b. letting date;
  - c. district;
  - d. project number;
  - e. route number;
  - f. description, including work type;
  - g. location;
  - h. county; and
  - i. effective dates of Standard Specifications and List of Approved Materials.
5. Table of Contents. This should indicate the documents to be identified as follows:
- a. contract number;
  - b. map of official detour;
  - c. Proposal;
  - d. Schedule of Pay Items;

- e. construction plans and number of pages; and
  - f. special provisions.
6. Estimate of Quantities and Cost Estimate. All pay items, including undistributed items, should be referenced in the plans. All pay items are to be worded using the nomenclature shown in the INDOT *Standard Specifications* and authorized-estimating-software listing. The sequence, or order of the pay items, should be numerical by INDOT *Standard Specifications* reference number.
7. INDOT All Project Commitments Report. This should include all known resolutions.

#### **14-2.03(11) Review of Final Check Prints**

After the designer has assembled the final check prints, a copy may be circulated among other designers for review and comment. The final check prints are then forwarded to the district Design Office manager for additional review and comments. Upon completion, the designer will make the appropriate revisions.

A set of the final check prints is to be sent to the appropriate district offices of Program Management, Construction, Highway Design and Technical Support, or Traffic, as required. They are expected to review and return the set to the district Office of Design within one to two weeks. A cover letter should be sent with the set indicating what is expected and when it should be returned.

1. Office of Program Management Preliminary Review. A copy of the contract documents is supplied for its use in coordinating local-agency agreements and detours, and updating the production schedule.
2. Construction Review. The area engineer should review the contract documents and indicate errors, inconsistencies, and constructability. The area engineer completes the remaining information required on the Contract Requirements Worksheet such as the field-office requirements or the need for a profilograph, and also establishes the earliest date to begin work and the contract completion time.
3. Roadway Review. The Office of Highway Design and Technical Support reviews the contract documents and suggests additional changes or corrections. The review pertains to small drainage structures or pipes, wedge and level, patching, guardrail, and ditch work.

4. Traffic Review. The Office of Traffic reviews the contract documents and suggests additional changes or corrections pertaining to traffic maintenance or traffic safety. It also verifies and coordinates the locations and impacts to signal loops, detector housings, no-passing zones, pavement markings, etc.
5. Discussion with Design Office manager. After the other Offices have reviewed the contract documents and have offered suggested changes, the designer is to meet with the Design Office manager to discuss the changes and suggestions. The Design Office manager will then decide which corrections are to be made. The designer will then make the appropriate changes.
6. Office of Program Management Final Review. After all changes are made, a copy of the contract documents is sent to the Office of Program Management for final review. The manager may suggest more changes.
7. Office of Testing Review. The materials engineer may suggest changes to the Plant Laboratory recurring special provision.

#### **14-2.03(12) Shelf-Ready Project**

The final check prints are considered shelf-ready after they have been reviewed by the Design Office manager. The documents, now final plans, are to be kept on file until funds are appropriated and a letting date has been established.

#### **14-2.03(13) Signatures and Seals**

Once funds are appropriated and a letting date has been established, the final plans should be reviewed and updated. The final plans should then be signed, sealed, and dated by the appropriate individuals.

#### **14-2.03(14) Contract Documents Package [Rev. Jan. 2013]**

Upon receipt of the approved final plans by the Office of Program Management, they are ready to be transmitted as contract documents to Contract Administration for processing. The package should consist of the following.

1. Plans.

- a. 11 in. x 8½ in. Plans-Sheets Format. The original construction plans and cross sections should be transmitted. If the cross sections are in the 36 in. x 24 in. format, only the originals of the cross sections should be sent.
  - b. 36 in. x 24 in. or 22 in. by 34 in. Plan-Sheets Format. The original construction plans and cross-sections and two sets of prints of the construction plans without cross-sections prints should be transmitted.
2. Estimate of Quantities and Cost Estimate. The estimate of quantities and cost estimate should be generated using the authorized estimating software (CES). A copy of the estimate in PDF format should be uploaded in ERMS. The control group number should be changed to 12 and the Contract Administration Planner should be notified via email.
  3. Special Provisions. The completed Special Provisions Menu should be in Excel format. The completed recurring special provisions should be combined into a single Word document. The unique provisions should be combined into a single Word document. All documents should be uploaded into ERMS.
  4. Detour Map. A map of the official detour and a map of an unofficial local detour, if required, with the approved unofficial-local-detour documents should be transmitted.

The approved package should be sent to Contract Administration, where the documents will be processed and prepared for letting. This step should be completed at least 14 weeks prior to the contract letting date.

#### **14-2.03(15) Review Process**

1. Pre-Letting. Contract Administration may require additional information or further corrections to be made in order for the contract documents to be properly processed. The designer should promptly address these concerns. All responses from the designer should be directed to the district construction engineer.
2. Post-Letting. Following the contract award, a preconstruction conference will be held. The designer should be available upon request to answer questions.

## **14-2.04 Bridge Plans, New Construction or Replacement Project**

### **14-2.04(01) Hydraulics Submittal [Rev. May 2013]**

Submittal of hydraulics information will be required a minimum of 60 days prior to the Stage 1 Review submittal. In preparing this submittal, consider the following.

1. All preliminary plotting should be completed and checked.
2. For a new bridge over a waterway, a structure replacement, or a bridge on a new alignment, provide a Layout sheet with the contours plotted on the plan view. For a consultant-designed project, provide the cross sections used in the model.
3. For a crossing with roadway overflow, include the road plan and profile sheets so that the road profile can be reviewed.
4. For a larger-waterway crossing, include a Details sheet of the plan view with the contours plotted to the survey limits. This information will be used by the Department for review (consultant project) or the hydraulic analysis (in-house project).
5. If the project is consultant-designed, include the hydraulic analysis, scour computations, and recommendations for review. When stream modeling is required by IDNR for a Construction in a Floodway permit, the consultant should include the modeling checklist with the hydraulics submittal. The consultant needs to provide documentation that contact was made with the county surveyor's office to determine if the stream is a regulated drain.
6. The plans sheets will be for information purposes only, except for the Layout sheet which will include the preliminary structure geometrics.
7. A Quality Assurance form is required.
8. The hydraulic analysis and scour calculations should be signed and sealed by a professional engineer licensed in Indiana.

### **14-2.04(02) Stage 1 Review Submission [Rev. Sept. 2011]**

Plans should be approximately 25% complete at this stage.

Place the proposed design information in the computer-aided details files for this submittal. This information will be submitted in pdf format. However, the plans need not be in final form. The designer should add notes to the plans explaining situations or items which are not readily apparent, and which may influence the proposed design. The notes should be removed for later submissions.

The following sheets and information must be reviewed for Quality Assurance and included with this submission.

1. Conformance. Review the plans for conformance with the Level One controlling design criteria listed in Section 40-8.02(01) and indicate apparent or possible design exceptions. Also, indicate discrepancies from the Level Two design criteria listed in Section 40-8.02(02).
2. Abbreviated Engineering Assessment. Provide a written scope of the project requirements. This will be a short description of the design criteria proposed for use in the design of the project.
  - a. If an Abbreviated Engineering Assessment has been prepared, a copy should be included with the submission.
  - b. If an Abbreviated Engineering Assessment was not prepared, the designer should provide a brief written description of the project. This description will, at a minimum, include the information as follows:
    - (1) project location;
    - (2) project need and purpose;
    - (3) existing facility;
    - (4) traffic data;
    - (5) identification of proposal;
    - (6) cost estimate;
    - (7) environmental issues;
    - (8) right-of-way impact;
    - (9) traffic maintenance during construction; and
    - (10) concurrence. For an INDOT project, signed by the district production director or the district planning director. For an LPA project, signed by the Project Sponsor.

3. Level One Checklist and Computations. Include the information and computations as follows.

a. Level One Checklist. The designer should submit a Level One checklist, including computations, with each submission, for the mainline, each S-line, and each traffic-maintenance phase. The designer should include computations for the required intersection sight distance at each public road, including each local-service road or frontage road within the project limits. The designer should also submit documentation of the intersection sight distance provided at each public road. This requirement also applies to the traffic-maintenance phases.

The computations for the Level One items and intersection sight distance are to be initialed and dated by the designer and reviewer before submission.

b. design computations for determining the structure size and geometrics;

c. project-length computations including guardrail lengths and other contributing factors; and

d. waterway-opening calculations for each stream crossing.

4. Economic Analysis. Include a copy of structural economic analyses that may have been conducted to determine the most economic structural alternative. Guidelines for this analysis are listed in Section 59-5.0. A cost estimate should be provided for the selected alternative.

5. Title and Index Sheets. These should include the information as follows:

a. project number;

b. description (des) number (include all des numbers akin to the project);

c. bridge file number;

d. county location map;

e. project location map including north arrow and scales;

f. description of the project work type and location;

\*\* PRACTICE POINTER \*\*

The location description should be simple and should follow the description on the schedule. For example, *Bridge replacement on State Road 67 over Fall Creek, located 8.00 miles southwest of the south junction with State Road 39, in Section 13, T-11-N, R-2-W, Ray Township, Morgan County, Indiana.* A legal description should not be used.

- g. design data including design speed, project design criteria, functional classification, terrain, and traffic data;
  - h. applicable reference point (does not apply to local-agency project);
  - i. signature blocks; the blocks will not be completed at this stage;
  - j. latitude and longitude; and
  - k. an index of plan sheets, as separate sheet 2, at this stage. Sheet numbers will change for future submittals.
6. Typical Cross Sections. Typical cross sections should only show basic configuration and design features. This will include the following:
- a. lane and shoulder widths;
  - b. profile grade, construction centerline, paper-relocation line, and survey line locations; and
  - c. basic design features including curbs, sidewalks, pavement and shoulder cross slopes, side slopes, ditches, shoulder corrugations if warranted, etc.
7. Road Plan and Profile Sheets. At this project stage, these sheets will only include the preliminary design information. Some of the details that should be addressed include the following:
- a. plotting of existing topography should be complete;

- b. beginning and end of project;
  - c. horizontal alignment (e.g., horizontal curve data, PC, PI, PT, bearings);
  - d. vertical alignment and its relationship to grade-controlling features;
  - e. preliminary drainage design including mainline culverts;
  - f. preliminary public-road approach and drive locations;
  - g. approximate construction limits; and
  - h. proposed guardrail limits.
8. Layout Sheet. This should include the preliminary design information for the following:
- a. existing-ground contours;
  - b. horizontal alignment;
  - c. vertical alignment;
  - d. drainage structures;
  - e. public-road approach and drive locations;
  - f. approximate construction limits;
  - g. plan view showing bridge centerline station and skew;
  - h. proposed structure geometrics (span lengths and clear roadway widths in the title block);
  - i. channel protection;
  - j. utility owners;
  - k. existing structure data; and
  - l. hydraulic data.

\*\* PRACTICE POINTER \*\*

The scour elevation to be shown on the Layout sheet should be the scour elevation for  $Q_{500}$ .

9. Channel-Change Layout Sheet. Include this sheet if the extent of the channel change is beyond the general layout. The sheet should include the preliminary design information for the following:
  - a. stream profile;
  - b. new channel geometrics;
  - c. channel typical cross section; and
  - d. slope protection.
  
10. General Plan Sheet. This should include the information as follows:
  - a. plan view;
  - b. elevation view;
  - c. typical bridge cross section;
  - d. design data. A note should be included which reads as follows:
    - (1) Superstructure and substructure designed for HL-93 loading, in accordance with the AASHTO *LRFD Bridge Design Specifications*, \_\_\_*th* Edition, [current-edition year], and its subsequent interims.  
  
Substructure foundation designed for HS-25 loading, in accordance with the AASHTO *Standard Specifications for Highway Bridges*, \_\_\_*th* Edition, [current-edition year], and its subsequent interims; or
    - (2) Designed for HS-25 loading, in accordance with the AASHTO *Standard Specifications for Highway Bridges*, \_\_\_*th* Edition, [current-edition year], and its subsequent interims ; or
    - (3) Designed for HS-20 loading, in accordance with the AASHTO *Standard Specifications for Highway Bridges*, \_\_\_*th* Edition, [current-edition year], and its subsequent interims.

- e. suggested substructure type; and
  - f. minimum vertical clearance.
11. Cross Sections. The preliminary cross sections should include the following:
- a. templates of the typical sections placed on the existing cross sections;
  - b. profile grade elevations; and
  - c. drainage structures.
12. Design Information. In addition to the plans, the designer should include copies of the preliminary hydraulic analysis for each mainline culvert, if applicable, and results of economic analyses that may have been completed for alternative grade lines.
13. Preliminary Cost Estimate. This should be developed for the major pay items with percentages shown for the minor pay items.
14. Quality Assurance form.
15. INDOT All Project Commitments Report. This should include all known resolutions.

#### **14-2.04(03) Geotechnical Investigation Request Submittal**

Upon approval of the Stage 1 Review Submission, the Geotechnical Investigation will be requested. The plans sheets to be included with this request are as follows:

- 1. title sheet;
- 2. Typical Sections sheet, including tabulation of subgrade-treatment information;
- 3. Details sheets. If the project requires a MSE wall, include a preliminary wall layout;
- 4. roadway plan and profile sheets;
- 5. Layout sheet;
- 6. General Plan sheet. Include the anticipated foundation loads. If the structure requires pile loads in excess of 70 tons, the required pile capacity should be shown; and
- 7. Cross Section sheets.

#### **14-2.04(04) Preliminary Field Check Meeting [Rev. Aug. 2011]**

A Preliminary Field Check meeting should be held after the Stage One review submittal and prior to the Stage 2 review submittal. Plans sets should be distributed a minimum of three weeks prior to the meeting (see Figure [14-1B](#), Field-Check Notification).

To hold the Preliminary Field Check meeting, plans should be approximately 35% complete. The following sheets and information must be included.

1. Previous Reviews. Incorporate comments from previous reviews.
2. Index and Title Sheet.
3. Typical Cross Sections.
4. Plat Sheet. Include a preliminary Plat No. 1. See Section 85-2.0.
5. Road Plan and Profile Sheets. In addition to the information described in Section 14-2.04(02), show the following:
  - a. elevations and grades of ditches so that accurate right-of-way requirements can be determined;
  - b. construction limits;
  - c. proposed right of way including temporary right of way;
  - d. public-road approach and drive locations;
  - e. preliminary curb ramps, sidewalks, bicycle lanes, etc., if not shown on the Details Sheets;
  - f. drainage features (e.g., storm sewers, pipe structures, ditch grades); and
  - g. permanent erosion protection, including paved side ditches, riprap, or sodding limits.
6. Details Sheets. Include the preliminary layouts for the details as follows:

- a. roadway and shoulder layout for guardrail;
- b. special elements where applicable (e.g., modified approaches, signs, signals);
- c. intersection layout details including right- and left-turn lanes with the turning movements indicated; and
- d. superelevation transition diagrams.

If shoulder corrugations are warranted, and the plans include details for a non-standard public-road approach, drive, etc., each detail should show the extent of corrugations installation required in conjunction with the construction illustrated by the detail. If applicable, the INDOT *Standard Drawings* should be used as a guide in determining the limits of corrugations installation related to the feature shown in the detail.

7. Traffic-Maintenance Details. The proposed traffic-maintenance scheme and phasing should be outlined.
8. Road Summary Sheet. This preliminary sheet should include the following:
  - a. approach table with type, location, geometric data, and types of materials; and
  - b. Structure Data table with location, size, and type for each structure.
9. Cross Sections. See the information regarding cross sections in Section 14-2.04(02). Finalize the cross sections according to the revisions from the Stage 1 review plans. Also show the public-road approaches and drives.
10. Design Information. In addition to the plans, the designer should complete the following:
  - a. initiate unique special provisions;
  - b. preliminary woody-revegetation determination; and
  - c. submit a request for the final pavement design to the Office of Pavement Engineering.

#### **14-2.04(05) Preliminary Right-of-Way Plans Preparation**

See Chapter 85 for criteria and information that should be included with Right-of-Way Plans.

## **14-2.04(06) Stage 2 Review Submission [Rev. Sept. 2011]**

Plans should be approximately 50% complete at this stage.

Plans for this submittal should be close to their final form. The plans sheets for this submittal should be legible and consistent with the quality desired for public viewing. The right-of-way plans should be consistent with the requirements of Chapter Eighty-five. The following sheets and information must be reviewed for Quality Assurance and should be included with this submission.

1. Previous Reviews. This submission should include the following:
  - a. marked-up plans from the previous submission;
  - b. document changes made from the Preliminary Field Check meeting;
  - c. revisions to the plans due to the Geotechnical Report, if completed; and
  - d. responses to field check questions.
2. Conformance. Review the plans for conformance with the Level One controlling design criteria listed in Section 40-8.02(01) and indicate apparent or possible design exceptions. Indicate discrepancies from the Level Two design criteria listed in Section 40-8.02(02). The required documentation for all Level One and Level Two design exceptions should be prepared.
3. Title and Index Sheets. Finalize the title sheet for right-of-way plans, and include the right-of-way index in a separate sheet 2.
4. Plat Sheets. All plat sheets, if required should be consistent with the plans and finalized.
5. Soil Borings Sheet. Ensure the information is accurate from the Geotechnical Report. Each boring log should include an elevation at each break in the soil strata. The elevations should be shown along the vertical grid so that the elevation of each soil sample can be ascertained. Logs for roadway borings should not be included on this sheet.

\*\* *PRACTICE POINTER* \*\*

Copies of the boring logs included in the Geotechnical Report may be scanned and placed onto the Soil Borings sheet, provided they are still legible once the plans are reduced to half-size.

6. Road Plan and Profile Sheets. Right-of-way should be finalized and consistent with the Details sheets. The sheets should include the information as follows:
  - a. drainage features (e.g., storm sewers, pipe structures, ditch grades, preliminary inlet spacing for storm-sewer trunk line design, etc.) and proposed drainage notes; and
  - b. permanent erosion protection, including paved side ditches, riprap, and sodding limits.
  - c. Finalize curb ramps, sidewalks, bicycle lanes, etc., if not shown on the Details Sheets.
7. Layout Sheet. The Layout sheet should be essentially complete.
8. General Plan Sheet. The General Plan sheet should be essentially complete.
9. Road Summary Sheet.
  - a. Structure data table is in preliminary form and should include structure numbers and locations.
  - b. Approach table is in preliminary form and should include the approaches' design information.
10. Cross Sections.
11. Design Information. In addition to the construction plans, this submittal should include an updated cost estimate. The Department's cost-estimating procedures should be used for the preliminary construction cost estimate; see Chapter Twenty. Quantities will

consist only of major pay items with a percentage added to consider minor pay items. If practical, the traffic-related pay items should be segregated.

12. Level One Checklists and Design Computations. If there are no changes to the plans which affect Level One criteria since the prior submission, it is acceptable to copy the previous Level One Checklist, and add a statement that no changes have been made to the plans that affect Level One criteria. The statement should be initialed and dated for the current submission.

The designer should submit a Level One Checklist, including computations for the mainline, each S-line, and each traffic-maintenance phase. The designer should include computations for the required intersection sight distance at each public road, including each local-service road or frontage road within the project limits. The designer should also submit documentation of the intersection sight distance provided at each public road. This requirement also applies to the traffic-maintenance phases.

13. Foundation Review Form.
14. Permit Information. This should be provided as required.
15. Quality Assurance Form.
16. INDOT All Project Commitments Report. This should include all known resolutions.

#### **14-2.04(07) Hearing Plans Preparation (if necessary)**

See the requirements listed in Section 14-2.01(08)

#### **14-2.04(08) Final Right-of-Way Plans Preparation**

Chapter Eighty-five provides the criteria and information that should be included with a set of right-of-way plans. This submission is not required for a local public agency project. The designer should review the instructions for Quality Assurance, and perform the following:

1. include the marked-up Preliminary Right-of-Way Plans with this submission, if required;
2. incorporate all revisions made during the Preliminary Right-of-Way Plans submission review;

3. complete all project-information boxes, including right-of-way project number and sheet numbers;
4. complete all sheet-numbers cross references; and
5. review the plans against the checklist shown as Figure 85-2F.

**14-2.04(09) Stage 3 Review Submission [Rev. Sept. 2011, Feb 2012, May 2013]**

Plans should be approximately 95% complete at this stage.

For this submittal, finalize the plans and include all roadway, traffic, and bridge details, and check the computations.

For a project that requires only a Stage 3 Submission, all documentation required for Stages 1 and 2, if not previously submitted, must be included in the Stage 3 submittal. Documentation will include the abbreviated Engineer's Assessment, geotechnical report, and pavement-design approval.

Complete the following and review these elements for Quality Assurance.

1. Previous Reviews. Include the marked-up plans from the previous submittal with this submission.
2. Conformance. Review the plans for conformance with the Level One controlling design criteria listed in Section 40-8.02(01) and identify approval dates of design exceptions.
3. Pavement Design. Incorporate the final pavement design into the typical cross section and final quantities.
4. Computations and Quantities. Include the computations and quantities with this submission as follows:
  - a. final approach drainage design;
  - b. superstructure design;
  - c. end bent or abutment design;
  - d. interior substructure design;
  - e. bridge-seat elevations;

- f. screeds at copings, profile grade, each beam line, and each construction joint;
  - g. superstructure quantities;
  - h. end-bent or abutment quantities;
  - i. interior substructure quantities;
  - j. pavement, curb, sidewalks, and related quantities;
  - k. drainage-structure quantities;
  - l. riprap, sodding, and seeding quantities;
  - m. earthwork quantities;
  - n. traffic-related items and designs as discussed and revised from Field Check Plans;
  - o. traffic-maintenance quantities;
  - p. miscellaneous roadway quantities;
  - q. updated construction cost estimate;
  - r. completed special provisions; and
  - s. erosion- and sediment-control features design.
5. Reports. Ensure that the recommendations from the hearing comments, Geotechnical Report, or other reports regarding peat, hazardous waste, special wastes, etc., have been incorporated into the plans, specifications, and cost estimate.
6. Plans. The plans should be nearly complete at this stage and should include the following.
- a. Title and Index Sheets. Complete the Design Data block and update the index as necessary.
  - b. Typical Cross Sections. Add the final pavement design information.
  - c. Plan and Profile Sheets. Ensure that structure notations are completed; sodding, riprap, and paved side ditch locations are indicated; earthwork balances are shown; and removal items identified. Right-of-way station offsets from the final right-of-way plans should be incorporated.
  - d. Details Sheets. Ensure that all details are completed and included with this submission. This includes details for the following:
    - (1) reinforced-concrete bridge approach bill of materials and details;
    - (2) temporary erosion control;
    - (3) traffic-maintenance details; and
    - (4) traffic-design elements (e.g., intersections, signals, signing, or lighting).

- e. Bridge Sheets. Finalize the design for these sheets as follows.
  - (1) Soil Borings sheet.
  - (2) Layout sheet. Ensure that the riprap and slopewall quantities are shown and the earthwork summary is completed.
  - (3) General Plan sheet.
  - (4) End Bent or Abutment Details.
  - (5) Interior Substructure Details.
  - (6) Superstructure Details.
  
- f. Tables. Complete all data tables including the following:
  - (1) Bridge Summary Table;
  - (2) Structure Data Table;
  - (3) Approach Table;
  - (4) Underdrain Table;
  - (5) Paved Side Ditch and Sodding Table;
  - (6) Guardrail Table;
  - (7) Sign Summary Table; and
  - (8) **Curb ramps and Sidewalks Table if not detailed elsewhere.**
  
- g. Cross Sections. Design information should be essentially complete. This includes final structure notations, earthwork areas and volumes, and benching areas and volumes.

7. Level One Checklists and Design Computations. If there are no changes to the plans which affect Level One criteria since the prior submission, it is acceptable to copy the previous Level One Checklist and add a statement that no changes have been made to the plans that affect Level One criteria. The statement should be initialed and dated for the current submission.

The designer should submit a Level One Checklist, including computations for the mainline, each S-line, and each traffic-maintenance phase. The designer should include computations for the required intersection sight distance at each public road, including each local-service road or frontage road within the project limits. The designer should also submit documentation of the intersection sight distance provided at each public road. This requirement also applies to the traffic-maintenance phases.

8. Environmental Consultation Form.

9. Rule 5 Submission. If required and not previously submitted, submit in accordance with Section 9-1.02.
10. Limited Review Certification Form.
11. Quality Assurance Form.
12. Bridge Load Rating. For each bridge on an INDOT route, a copy of the bridge plans, excluding cross sections, with a cover letter indicating the designer's name, design firm (if applicable), telephone number or e-mail address, and other necessary information should be transmitted to the Production Management Division's load rating engineer. This requirement will not apply to a box, three-sided, or local public agency structure.

The load rating engineer will run the available bridge load rating program and will notify the project manager of the results within 30 days.

If the analysis shows an inventory rating less than 1.0, the project manager will transmit the information to the designer to review, comment, and revise the design and plans, as necessary, or resolve rating-input errors.

The project manager should submit to the load rating engineer a copy of changes or revisions to the bridge plans, including those due to a cost-reduction proposal that may affect the load capacity rating after the load rating is completed.

The project manager will provide the bridge inspection engineer with the structural calculations including computer output if the bridge is one of the types as follows:

- a. post-tensioned concrete beams; \*
- b. segmental concrete; \*
- c. three-sided structure; \*\*
- d. oversize box culvert; \*\* or
- e. other as requested by the Bridge Inventory Team.

\* The designer will notify the bridge inspection engineer of this structure type as soon as practical after receipt of design approval.

\*\* No submission of final check prints will be made for this structure type. Calculations will be furnished after shop plans are approved.

13. INDOT All Project Commitments Report. This should include all known resolutions.

#### **14-2.04(10) Final Tracings Submission**

See the requirements listed in Section 14-1.02(04).

#### **14-2.04(11) Bridge within Limits of Road Project**

Plans for a bridge which is complementary to plans for road work must be developed as described below. Each structure which is assigned a bridge file number must also be assigned a Des number.

1. **INDOT-Route Project.**

- a. New or Replacement Beam or Slab Bridge. A separate set of plans should be developed for each bridge. However, plans for an overflow structure may be included in the set for the main-channel structure.
- b. New or Replacement Three-Sided, Box, or Pipe Structure. These may be incorporated into the road plans. The structure file number and Des number for each such structure included in the road plans should be shown on the title sheet.

A separate set of plans with only one title sheet may be developed for one or more of these structures.

2. **Local-Public-Agency Project.** Bridge plans may be incorporated into road plans or developed as a separate set per the requirements of the local public agency. However, the structure file number and Des number for each structure included in the road plans should be shown on the road title sheet.

## **14-2.05 Bridge Plans, Preservation Project [Rev. Jan. 2013, Rev. Mar. 2016]**

A Bridge Preservation project can include work activities classified as either preventative maintenance or rehabilitation. See Chapter 412 for types of preservation treatments considered preventative maintenance and treatments considered rehabilitation. The following may not be applicable to all Bridge Preservation projects and should be evaluated for each project individually.

### **Scour Analysis**

Each Rehabilitation project crossing a waterway requires a scour analysis. The need for scour analysis for a Preventative Maintenance project should be determined in accordance with Chapter 412. The designer should contact the Bridges Division, Office of Hydraulics to determine if a scour analysis has been completed previously or should be completed as part of the current project. The determination should be documented in the Bridge Scoping Report (Rehabilitation project) or Initial Field Check Meeting Minutes (Preventative Maintenance project).

When a scour analysis is completed as part of the project, it must be signed, sealed, and dated by a professional engineer licensed in Indiana and submitted for review at least 30 days prior to the Preliminary Plans Submission. A template for documenting scour calculations is available from the Department's [Editable Documents webpage](#), under Hydraulics.

### **Load Rating**

For a Preventative Maintenance project, the need for the existing load rating should be determined at the field inspection. Utilizing an LMC or other rigid overlay requires a load rating, but a polymeric or thin overlay does not. Other treatments that add significant deadload, e.g. replacing an aluminum railing with a concrete railing also require a load rating. For a Rehabilitation project a load rating is required regardless of the preservation treatment proposed.

The load rating request should be submitted via email to Coordinator 8 and the Bridge Load Rating Engineer copied. Relevant plans sheets that are too large to email should be uploaded to ERMS. The Load Rating Request Form and Load Rating Summary are available for download from the Department's [Editable Documents webpage](#), under Bridges.

### **Asbestos Report**

An Asbestos Report is required for all Bridge Preservation projects. The designer should contact the project manager early in the development of the project to determine if the report is on file or must be completed. It is the responsibility of the District Bridge Inspection Engineer to complete

the Asbestos Report for each of the INDOT-maintained bridges within their district. For LPA projects the designer is responsible for coordinating the obtaining of the report with the LPA.

#### Environmental, Utilities & Railroads, and Right of Way

Each Bridge Preservation project is subject to NEPA and permitting requirements, utility and railroad coordination, and right-of-way acquisition requirements.

#### **14-2.05(01) Initial Field Check and Bridge Scoping Report [Rev. Mar. 2016]**

An initial field check and bridge scoping report should be completed for each Bridge Preservation project. For a Preventative Maintenance project, multiple bridges within a single contract may be submitted in the same report. For a Bridge Rehabilitation project, a report should be completed for each crossing. The content and format of the bridge scoping report will vary depending on the classification of the work as Preventative Maintenance or Rehabilitation. A template is available for the Bridge Scoping Report and Initial Field Check meeting minutes on the the Department's [Editable Documents webpage](#), under Bridges.

The following should be reviewed in accordance with Quality Assurance procedures and included as applicable in this submission.

1. Transmittal Letter. Identify any unique circumstances for the submittal, e.g. omitted items, the Responsible Person to receive the evaluation scores as well as any subconsultants and their work responsibilities.
2. Bridge Scoping Report. For a Preventative Maintenance project meeting minutes are submitted in lieu of the Bridge Scoping Report. See Section 412-2.01(02).
3. Level One Design Exception Request and Documentation. As required for Rehabilitation projects. Evaluation of Level One controlling criteria is not required for Preventative Maintenance, except for MOT. ADA and Bridge Railing should be evaluated in accordance with Sections 412-3.01(04).

Level One documentation is required for MOT for all Bridge Preservation projects.

4. Level Two Design Exception Documentation. As required for Rehabilitation projects. See Section 412-2.02. Evaluation of Level Two criteria is not required for Preventative Maintenance projects.

#### **14-2.05(02) Scope-of-Work Approval [Rev. Mar. 2016]**

Once the Bridge Scoping Report or Preventative Maintenance meeting minutes have been reviewed and approved, the designer will be requested to proceed to the Preliminary Plans submission.

#### **14-2.05(03) Preliminary Plans Submission [Rev. Jan. 2011, Rev. Mar. 2016]**

A preliminary plans submission is required for all Rehabilitation projects. For a Preventative Maintenance project, the need for a preliminary plans submission is at the discretion of the Bridge Rehabilitation reviewer.

Plans for multiple bridge rehabilitations which are complementary to plans for road work may be combined into one set of bridge plans. Plans for multiple bridge preventative maintenance projects may be combined into one set of bridge plans. The structure numbers and Des numbers for all such structures should be shown on the title sheet.

The following should be reviewed in accordance with Quality Assurance procedures and included in this submission.

1. Transmittal Letter. Identify any unique circumstances for the submittal, e.g. omitted items, the Responsible Person to receive the evaluation scores, as well as any subconsultants and their work responsibilities.
2. Plan Set, Rehabilitation project. Rehabilitation projects should be developed on full size sheets. See item 3 for a Preventative Maintenance project.
  - a. Title Sheet.
  - b. Index Sheet. Include the information as follows:
    - 1) an index of plan sheets (at this stage); and
    - 2) a revision table.
    - 3) a list of utility owners, addresses, contact names, and phone numbers or e-mail addresses.
  - c. Maintenance of Traffic (MOT) Details. The proposed MOT scheme and phasing should be outlined with preliminary details.

d. Detail Sheets. These preliminary details should include, but not be limited to, typical cross sections, asphalt wedge details, guardrail details, and approach work details as appropriate.

e. Layout Sheet. A Layout Sheet should be included when the rehabilitation work is significant enough to warrant a full survey or is part of a larger 4R project.

f. General Plan Sheet. This sheet should include the following:

1) plan view;

2) elevation view;

3) typical bridge cross section;

4) design data relative to original design structural elements. The following note should be included:

Originally designed for \_\_\_\_ loading, in accordance with the AASHTO \_\_\_\_ Specifications, \_\_\_\_ Edition, and subsequent interims through \_\_\_\_ [year].

Design data for new elements, such as a new bridge deck, should be indicated separately;

5) design loadings;

6) suggested substructure type;

7) minimum vertical and horizontal clearances;

8) minimum low structure, Q100, flowline, low water and ordinary high water mark elevations, as available;

9) related general notes;

10) general rehabilitation recommendations including, but not limited to, legend, material notes, and required stormwater- pollution-prevention retrofits; and

11) all recommendations outlined in the Bridge Scoping Report.

3. Plan Set, Preventative Maintenance project. Preventative Maintenance projects may be developed on letter-sized plan sheets. If a Preventative Maintenance project utilizes full size plans, the plan sheet development should be in accordance with item 2 above.

a. Title Sheet.

1) Project Description. The project description should include the work type, e.g., Polymeric Overlay and Joint Repair.

2) Project Location Maps. Include a State map, hatching the various counties included in the project and note the INDOT district. A separate project location map or enlarged detail should identify general locations of the various structures within the counties.

3) Bridge Index Table. The table should summarize the list of structures, including des. number, bridge file number, and county.

4) Contract number. The contract number should appear in the upper right hand corner of the sheet. This allows the number to be visible when the contract book is printed and bound.

5) Standard Specifications Reference. Indicate which version of the Department's *Standard Specifications* apply to the project. The *Standard Specifications* are published every two years.

6) Signature Block and Professional Engineer's Seal. The engineer's seal, signature of the engineer, and date signed is required on each sheet for consultant-developed plans and on the title sheet and detail sheets for in-house-developed plans. The seal may vary within the plan set depending on which engineer prepared the sheet. For the title sheet, "Indiana Department of Transportation", should be shown under the Approved for Letting signature line.

b. Project Location Sheet. This sheet is a tabled summary of structures, including des number, structure number, route and facility crossed, and location (referenced from the nearest State route, US route, or interstate), latitude and longitude, reference post and county.

- c. Work and Quantities Sheet. This sheet identifies the work to be completed for each structure, references to applicable details within the plans, reference to applicable maintenance of traffic *Standard Drawings*, and an estimate of quantities.
  - d. Detail Sheets. Include preventative maintenance treatment details and maintenance of traffic details not covered by the *Standard Drawings*
4. All Project Commitments Report. The All Project Commitments Report is generated from the Commitments Database. Information on accessing the Commitments Database and other project commitments documents are available at <http://www.in.gov/indot/2731.htm>.
  5. Level One Controlling Criteria Checklist and Design Computations. For a Preventative Maintenance project, a Level One controlling criteria checklist is required only for MOT. ADA and Bridge Railing Test Level should be addressed in accordance with Section 412-3.01. For a Rehabilitation project, the checklist is required for both the permanent condition and MOT.

If there are no changes to the plans which affect Level One controlling criteria since the prior submission, it is acceptable to submit the previous checklist and initial and date next to the statement that no changes have been made to the plans that affect Level One controlling criteria. See Section 40-8.02. A checklist should be prepared for each phase of the proposed MOT.
  6. Traffic Control Plan Checklist. The checklist will be incomplete at this stage, but should reflect MOT decisions from the initial field check.
  7. Scour Analysis Memo. Include the approval letter from the Office of Hydraulics, where applicable.
  8. Unique Special Provisions. Begin coordination for unique provisions and unique pay items. Unique provisions should be reviewed by the Specifications Engineer prior to the Final Plans submission.
  9. Proprietary Materials. Submit justification for the use of proprietary materials. See Chapter 17.
  10. Cost Estimate.

11. Permits Determination Request. For both Rehabilitation and Preventative Maintenance projects, the designer should coordinate with the Waterway Permitting Office to establish the need for a permits determination and items to be submitted.

### **Additional Preliminary Plans Information**

The designer should coordinate with the project manager to have preliminary plans reviewed by the Division of Utilities and Railroads.

Upon approval of the preliminary plans a geotechnical investigation request should be submitted. If a geotechnical investigation is not required a Geotechnical Waiver should be obtained.

Upon completion of the preliminary plan review and NEPA approval, required permit applications should be completed and submitted to the Environment Services Division for review. Information on permit application requirements and permitting time frames are included in the *Indiana Waterway Permits Manual*, at: <http://www.in.gov/indot/2522.htm>.

### **14-2.05(04) Final Plans Submission [Rev. Jan. 2011, Rev. Mar. 2016]**

The following should be reviewed in accordance with Quality Assurance procedures and included in this submission. Information required for the Preliminary Plans Submission should be included in this submission, if not previously submitted.

1. Transmittal Letter. Identify any unique circumstances for the submittal, e.g. omitted items or items that are not applicable, the Responsible Person to receive the evaluation scores as well as any subconsultants and their work responsibilities.
2. Response to Comments. Include the Preliminary Plans comment letter and marked up plans with responses to all comments. These items should be combined into a single document.
3. Plan Sheets. Ensure plan sheets required in previous submittals are included as applicable. The Final Plans should include specific measures proposed by the Railroads, Utilities, Environmental, Geotechnical, or Hydraulics offices. The following additional sheets should be included as applicable.
  - a. Soil Borings Sheets.
  - b. Maintenance of Traffic (MOT) Details. Finalize MOT details.

- c. Detail Sheets. All necessary plans details required to adequately define the required repairs. Details could include, but not be limited to, floor details, superstructure details, substructure details, railing details, reinforced-concrete bridge approach details, and temporary erosion- and sediment-control measure details.
  - d. Tables. Include a bridge summary, guardrail summary and other tables as applicable.
4. Quantity Calculations. Finalize all quantities. Designer and checker initials and date should be shown on each sheet.
  5. Design Computations. Finalize design computations. Designer and checker initials and date should be shown on each sheet. Include the Hydraulics Approval and Scour memos from the Office of Hydraulics, where applicable.
  6. Cost Estimate. Conduct a detailed review to ensure that all necessary pay items have been included.
  7. Special Provisions. Complete the special provisions menus and include unique special provisions for non-standard pay items. Unique special provisions should be reviewed by the Specifications Engineer.
  8. Geotechnical Report. Include the report or indicate its location within ERMS in the transmittal letter.
  9. Geotechnical Review of Final Check Prints Form. This form is available for download from the Department's [Editable Documents webpage](#), under Geotechnical. For projects for which the geotechnical investigation was performed by a consultant, note on the Transmittal Letter that the plans and the form have been transmitted to the geotechnical consultant. For projects for which the geotechnical investigation has been performed by the Department, the form, with plans, should be uploaded into ERMS for review by the Office of Geotechnical Services.
  10. Foundation Review Form. This form is available for download from the Department's [Editable Documents webpage](#), under Bridges.
  11. Environmental Document. Indicate the status or the location within ERMS in the transmittal letter.

12. Environmental Consultation Form. This form is available for download from the Department's [Editable Documents webpage](#), under Environmental.
13. Permits. Approved permits do not need to be submitted for review, but all necessary permits should be applied for. The status of permits should be indicated on the Environmental Consultation Form.
14. All Project Commitments Report. The All Project Commitments Report is generated from the Commitments Database. Information on accessing the Commitments Database and other project commitments documents are available at <http://www.in.gov/indot/2731.htm>. All know resolutions should be included.
15. Level One Controlling Criteria Checklist and Design Computations. For a Preventative Maintenance project, a Level One controlling criteria checklist is only required for MOT. ADA and Bridge Railing Test Level should be addressed in accordance with Section 412-3.01. For Rehabilitation projects, the checklist is required for both the proposed condition and the MOT. If there are no changes to the plans which affect Level One controlling criteria since the prior submission, it is acceptable to submit the previous checklist and initial and date next to the statement that no changes have been made to the plans that affect Level One controlling criteria. See Section 40-8.02. A checklist should be prepared for each phase of the proposed MOT.
16. Load Rating Memo. Include the Load Rating Approval Memo
17. Proprietary Materials. Include approved request for the use of proprietary materials. See Chapter 17. Approved proprietary material justification is required for proprietary materials that have federal participation.
18. Asbestos Report.

#### **14-2.05(05) Final Field Check [Rev. Mar. 2016]**

A final field check is at the discretion of the project manager in consultation with the Bridge Rehabilitation review upon completion of the final plan review. The purpose of the field check should be as follows:

1. to confirm the condition of the structure and appropriateness of the plans; and
2. to allow the district representative to review the MOT scheme and construction procedures.

The attendees from the initial field investigation should be invited to the final field check.

All corrections noted at the final field check should be included in the Final Tracings Submission.

The Constructability Review at this stage is at the discretion of the the project manager. See the *Constructability Guide Book* at <http://www.in.gov/indot/2697.htm>. At the discretion of the project manager, constructability and utility items may be discussed at the final field check and documented the Final Field Check Minutes.

#### **14-2.05(06) Final Tracings Submission**

All revisions resulting from the Final Field Check and Final Plans review will be completed for this submission. See the requirements listed in Section 14-1.02(04).

### **14-2.06 Traffic Plans, Signing Project**

Separate traffic-signs plan sheets, including Title sheet, Index, and General Notes sheet, etc., are provided for each road project where a separate Des number is used for the traffic-signs portion of the project. This occurs if the project is 1 mi or longer, or for a major project including an interchange.

**\*\* PRACTICE POINTER \*\***

Existing traffic-signs plans for a non-Interstate route are not required unless instructed otherwise.

#### **14-2.06(01) Preliminary Plans**

Preliminary plans will consist of plan sheets with the information as follows:

1. mainline geometry and all intersecting roadways;
2. North arrow on each sheet; and
3. mainline and each intersecting roadway labeled, and centerline stationing.

#### **14-2.06(02) Preliminary Field Check Plans Submission [Rev. Jan. 2011]**

For this submittal, the plans should include the sheets as follows.

1. Title Sheet. Include the layout map and show the project location on the location map.
2. Index and General Notes Sheet. The index blocks should be completed to indicate the sheet numbers for the plans at this stage. The sheet numbers will change for future submittals.
3. Signs Plans Sheets. These sheets should include the information as follows:
  - a. plan view of the roadway;
  - b. route numbers and street names;
  - c. right-of-way limits;
  - d. north arrow;
  - e. stationing, identification number, and message of all existing sheet signs, ground-mounted panel signs, and overhead panel signs;
  - f. stationing and identification number of each proposed sign;
  - g. proposed panel-sign messages; and
  - h. the applicable legend; see Section 14-3.04.
4. Sign Summary Table. The sign location (station) and type (sign code) should be shown. However, the sign size, summary, and post size need not be completed at this stage.
5. INDOT All Project Commitments Report. This should include all known resolutions.

#### **14-2.06(03) Final Field Check Plans Submission [Rev. Jan. 2011]**

The plans should be in their final form. However, some changes still may occur. Plans should include the following.

1. Title Sheet. This sheet should be essentially complete except for signatures.
2. Index and General Notes Sheet. This sheet should include a list of all utilities and a complete list of general notes.
3. Existing Signs Plans Sheets. These sheets will provide the stationing, identification number, and message for each existing sign.
4. Proposed Signs Plans Sheets. In addition to the criteria for Preliminary Field Check plan sheets, these sheets should include the information for overhead-sign lighting as follows:
  - a. service point;
  - b. cable duct;
  - c. cable duct marker; and
  - d. handhole.
5. Sign Layout Sheets. These sheets should include the following:
  - a. size of sign;
  - b. sign border;
  - c. corner radii;
  - d. height of message or legend;
  - e. stationing and identification number;
  - f. code for route shield;
  - h. size of arrow and degree of slant; and
  - g. notation for special color combinations (e.g., black copy on yellow background).
6. Cross-Sections. These sheets should include the following:
  - a. for each box truss, monotube span, tri-cord, or cable-span structure, the full roadway cross section;
  - b. for each cantilever structure, half cross section from the lane lines for a multilane facility or the centerline for a 2-lane facility to the front slope;

- c. for each ground-mounted panel sign, the cross section from the edge of the traveled way to the right-of-way line;
  - d. Cross section sheets for each ground-mounted panel sign will include the following:
    - (1) size of sign;
    - (2) sign message;
    - (3) size and length of posts;
    - (4) horizontal clearance from the edge of traveled way;
    - (5) vertical clearance from the edge of traveled way or ground line;
    - (6) footing dimensions;
    - (7) identification number; and
    - (8) stationing.
  - e. Cross section sheets for each overhead-sign structure will include the following:
    - (1) size of sign;
    - (2) legend;
    - (3) luminaire and spacing, if required;
    - (4) structure dimensions;
    - (5) identification number;
    - (6) stationing; and
    - (7) type of roadside protection.
7. Details Sheets. The details sheets to be included are as follows:
- a. completed Sign Summary Table;
  - b. proposed route-marker-assembly details;
  - c. sheet sign details;
  - d. traffic sign details;
  - e. foundation details; and
  - f. any special design details.
8. Other Documents. Other documents that should be included with this submission may include structure and foundation calculations, special provisions, and cost estimates.
9. INDOT All Project Commitments Report. This should include all known resolutions.

#### **14-2.06(04) Final Check Prints Submission**

The purpose of this submittal is to ensure that the plans are complete. Those items which were revised at the Final Field Check should have been addressed. All quantities should be finalized and a bound copy of the computations should be included with the submittal. Conduct a detailed review to ensure that all necessary pay items have been included and that a special provision is provided for each non-standard pay item. A finalized cost estimate should also be included.

#### **14-2.06(05) Final Tracings Submission**

The Final Plans submittal will include all necessary revisions from the Final Check Prints submittal. Section 14-1.02(04) discusses what is required for the Final Tracings submission.

#### **14-2.07 Traffic Plans, Signalization Project**

##### **14-2.07(01) Preliminary Plans**

Preliminary plans will consist of plan sheets with the information as follows:

1. mainline geometry and all intersecting roadways;
2. north arrow on each sheet;
3. outline of signalized intersections; and
4. centerline stationing.

##### **14-2.07(02) Preliminary Field Check Plans Submission [Rev. Jan. 2011]**

For the Preliminary Field Check submittal, the plans should include the following.

1. Title Sheet. Include the layout map and show the project location on the location map.
2. Index and General Notes Sheet. The index block should be completed to indicate the sheet numbers for the plans at this stage. The sheet numbers will change for future submittals.
3. Signalization Plan Sheets. These sheets should include the information as follows:

- a. plan view of the intersection including intersection geometrics, curbs, shoulders, and building lines;
  - b. route numbers and street names;
  - c. right-of-way limits;
  - d. north arrow;
  - e. commission number for signal (State highway only);
  - f. all existing features (e.g., controller cabinets, signal poles, mast arms, foundations, sidewalks, curbs, pavement markings, utilities, etc.);
  - g. proposed signal installations (e.g., types of signal supports, location of controller cabinet, pavement markings, lane restrictions, intersection dimensions, roadway width, position and direction of signal heads, phase diagram, detector locations, conduit locations, number of wires in each cable run, power service location, detector housing, hand holes, disconnect hangers, etc.);
  - h. other applicable information includes the location of any pertinent signs, panel sign messages, approaches near the intersection, bus stops and loading zones, drainage structures, curb ramps, and utilities;
  - i. the applicable legend; see Section 14-3.04; and
  - j. posted speed limit.
4. INDOT All Project Commitments Report. This should include all known resolutions.

#### **14-2.07(03) Final Field Check Plans Submission [Rev. Jan. 2011]**

For this submittal, the plans should be in their final form. However, some changes still may occur. Plans will include the following.

1. Title Sheet. This sheet should be essentially complete except for signatures.
2. Index and General Notes Sheet. This sheet should include a list of all utilities and a complete list of general notes.

3. Signalization Plan Sheets. Include all revisions from the Preliminary Field Check and finalize the sheets.
4. Details Sheets. All necessary details sheets should be included with this submission.
5. INDOT All Project Commitments Report. This should include all known resolutions.

#### **14-2.07(04) Final Check Prints Submission**

The purpose of this submittal is to ensure that the plans are complete. Those items which were revised at the Final Field Check should have been included. All quantities should be finalized in the Estimate of Quantities, with a bound copy of the computations included in the submittal. Conduct a detailed review to ensure that all of the necessary pay items have been included and that a special provision is provided for each non-standard pay item. A finalized cost estimate should also be included.

The Details sheets should include the following:

1. intersection alignment and proper number of lanes;
2. all approaches with posted speeds clearly identified;
3. all drives;
4. all property lines;
5. all right-of-way lines;
6. all edges of pavement and shoulders;
7. locations of curbs, sidewalks, and curb ramps;
8. all pertinent pavement markings, including lane lines, crosswalk lines, and stop lines;
9. all existing and proposed guardrail locations;
10. underground and overhead utilities locations;
11. Legend, Phase Diagram, and Loop Tagging Table; and
12. route number including street name, if any.

Traffic diagrams should not be included.

### **14-2.07(05) Final Tracings Submission**

The Final Plans submittal will include all necessary revisions from the Final Check Prints submittal. Section 14-1.02(04) discusses what is required for the Final Tracings submission.

### **14-2.08 Traffic Plans, Lighting Project**

The lighting-plans portion to accompany plans for a road or bridge project should be submitted as a separate set of plans, including the title sheet, Index and General Notes sheet, etc.

#### **14-2.08(01) Preliminary Plans**

Preliminary plans will consist of plan sheets including the information as follows:

1. mainline geometry and all intersecting roadways;
2. north arrow on each sheet;
3. mainline and all intersecting roadways labeled; and
4. centerline stationing.

#### **14-2.08(02) Preliminary Field Check Plans Submission [Rev. Jan. 2011]**

For the Preliminary Field Check submittal, the plans should include the following.

1. Title Sheet. Include the layout map and show the project location on the location map.
2. Index and General Notes Sheet. This sheet should include a list of all utilities and a complete list of general notes. The index block should be completed to indicate the sheet numbers for the plans at this stage. The sheet numbers will change for future submittals.
3. Plan Sheets. These sheets should include the information as follows:
  - a. plan view of the roadway;
  - b. route numbers and street names;
  - c. right-of-way limits;
  - d. north arrow;
  - e. stationing and identification number of proposed light standards;
  - f. identification of overhead-sign lighting, if required;

- g. applicable legend; see Section 14-3.04; and
  - h. service point location and type.
4. Design Data. The following design data to be included is as follows:
- a. initial lamp lumens;
  - b. average maintained illumination;
  - c. lamp lumens depreciation factor;
  - d. luminaire dirt depreciation factor;
  - e. uniformity ratio;
  - f. mounting height;
  - g. luminaire classification; and
  - h. pavement classification.
5. INDOT All Project Commitments Report. This should include all known resolutions.

#### **14-2.08(03) Final Field Check Plans Submission [Rev. Jan. 2011]**

For this submittal, the plans should be in final form. However, some changes still may occur. Plans will include the following.

1. Title Sheet. This sheet should be essentially complete except for signatures.
2. Index and General Notes Sheet. This sheet should include a list of all utilities and a complete list of general notes. The index block should be completed to indicate the sheet numbers for the plans.
3. Lighting Plans Sheets. In addition to the criteria for Preliminary Field Check plans sheets, these sheets should include the following:
  - a. cable duct;
  - b. circuit number;
  - c. cable duct marker, if required;
  - d. handhole, if required; and
  - e. main breaker and circuit breaker rating.
4. Summary Table. This should include the following:
  - a. luminaire or tower number;

- b. connection type;
  - c. circuit connection;
  - d. pole set-back distance from edge of traveled way, taper, or ramp;
  - e. mast-arm length (conventional lighting);
  - f. luminaire effective mounting height (E.M.H.); and
  - g. top foundation elevation with respect to the edge of traveled way.
5. High-Mast Tower Plans. These should include the details as follows:
- a. pole data schedule;
  - b. highway illumination tower detail;
  - c. high-mast tower miscellaneous details;
  - d. external winch concrete pad;
  - e. lightning rod typical details; and
  - f. tower retrofit details, if required.
6. Other Documents. Other documents may include the following:
- a. voltage drop and breaker rating calculations;
  - b. design calculations;
  - c. special provisions; and
  - d. cost estimates.
7. INDOT All Project Commitments Report. This should include all known resolutions.

#### **14-2.08(04) Final Check Prints Submission**

The purpose of this submittal is to ensure that the plans are complete. Those items which were revised at the Final Field Check should have been included. All quantities should be finalized and a bound copy of the computations should be included with the submittal. Conduct a detailed review to ensure that all of the necessary pay items have been included and that a special provision is provided for each non-standard pay item. A finalized cost estimate should also be included.

#### **14-2.08(05) Final Tracings Submission**

This submittal will include all necessary revisions from the Final Check Prints submittal. Section 14-1.02(04) discusses what is required for this submission.

## **14-2.09 Sidewalk and Curb Ramps Project [Rev. Jan. 2013]**

This section applies to all sidewalk projects, including Safe Routes to School Projects. See Chapter 51 for sidewalk design criteria. The plans should consist of the information as follows.

1. Title Sheet.
  - a. Project type as sidewalk
  - b. Brief project location description
  - c. Des number and project number
  - d. Latitude and longitude
  
2. Index Sheet.
  - a. Plans sheets index
  - b. Utilities information
  - c. Revision block
  
3. Traffic-Maintenance Details. These should be included as needed.
  
4. Typical Cross Section Sheet.
  - a. Sidewalk width and cross slope
  - b. Location of sidewalk relative to adjacent travel lane
  - c. Widths of travel lanes
  
5. Plan and Profile Sheets.
  - a. Existing curbs and separations
  - b. Protruding objects such as fire hydrants or utility poles, with horizontal and vertical clearances
  - c. Profile Grade survey (PG)
  - d. Widths of all existing and proposed sidewalks
  - e. Proposed longitudinal sidewalk grade
  
6. Detail Sheets.
  - a. Curb ramp locations and detailed or tabulated component design criteria for each curb ramp, e.g. widths, length, cross slopes, running slopes and flared slope.
  
7. Cross Sections. These should be included as needed

## **14-3.0 DRAFTING GUIDELINES**

### **14-3.01 Drafting Methods**

All project drafting will be performed using Microstation. The *INDOT CADD System User Guide* provides information on the Department's Microstation system. For a consultant not using INDOT's Microstation system, Chapter Sixteen, once developed, will provide the Department's criteria for translating the CADD files to the Department's system.

The Department's preferred practice is to use only Microstation drafting. However, for a small in-house or consultant-designed project, manual drafting may be acceptable. For a manually-drafted project, the designer/drafter should use the criteria described in the *INDOT CADD System User Guide*, and Chapter Fifteen for line weights, topography symbols, plotting accuracy, etc.

Where manual plotting is used, the drafter must consider line weights and text sizes to ensure that, once the plans size is reduced, the plans will still be readable. The minimum text should be at least 5/8 in. height. Letters should be open and formed with a dense but not wide line.

### **14-3.02 Plotting Survey Data**

The designer is responsible for plotting all survey data received as an electronic file. The *INDOT CADD System User Guide* discusses how to plot the survey data. Each consultant should plot the survey data according to the procedures provided with the CADD software package.

In plotting survey data, the following accuracies should be used to show elements on the plans sheets.

1. Show horizontal alignment data (e.g., curve information, equations, reference-point tie-ins, section corner tie-ins) to the nearer 0.01 ft.
2. Show existing roadway elevations used for pavement tie-ins and vertical clearance computations to the nearer 0.1 ft. Show benchmark elevations to the nearer 0.01 ft.
3. Horizontal pluses, offsets, physical feature dimensions, and locations, etc., may be shown to either the nearer 0.05 ft or 0.01 ft. The nearer 0.01-ft accuracy is preferred.
4. The survey should be plotted for 300 ft beyond the project limits. At a minimum, the survey should be plotted for 150 ft beyond the project limits.

### **14-3.03 Sheet Size [Rev. Jan. 2011, Apr. 2012, July 2012, Mar. 2016]**

The plans-sheet sizes which may be used are as follows.

1. 8½ in. by 11 in. This size may be used for a partial 3R or other type of project that does not require a significant amount of detail. This size may be used only if there are 100 pages (50 sheets double-sided) or fewer. File size is limited to 10 Mb.
2. 24 in. by 36 in. or 22 in. by 34 in. Full size plans should be used where mark ups will be applied to as-built plans, when complex design elements are shown, and when larger drawings are needed to provide legibility. The same sheet size should be used for all sheets in a set of plans. File size is limited to 50 Mb.
3. 11 in. by 17 in. Plans sheets should not be initially developed, and final tracings should not be submitted, in this size. Plans sheets of 24 in. by 36 in., if reduced to this size, will not be exactly at half scale. Such plans sheets may be reduced to this size during the development or construction processes for use convenience. Final tracings submitted in this size will be rejected and a resubmission as 24 in. by 36 in. or 22 in. by 34 in. sheets will be required.

### **14-3.04 General Guidelines**

The following provides general guidelines for plotting survey data and design details on the plan sheets.

#### **14-3.04(01) Dimensions**

In dimensioning, the following should be considered.

1. Measurement Units. Show all dimensions in english measure. Do not use dual metric and english units. Each unit symbol should be lower-cased and exponentiated, if required, in accordance with english-units customary practice. A period should follow only the symbols in. and gal.

2. Bridge Plans. Show all bridge-plans detail dimensions including span lengths, floor slab widths, etc., in feet and inches. Show all non-structure dimensions on the General Plan and Layout sheets in feet.
3. Road Plans. Road-plans sheets will be prepared using feet and decimals of a foot.
4. Traffic Plans. Traffic-plans sheets will use either feet and inches, or feet and decimals of a foot, depending upon the element shown. However, if the large majority of the dimensions of a drawing or detail are all in one unit method or the other, show all dimensions using one method.
5. Common Units. Where all or most of the units are shown in one set of dimensions (e.g., either feet or inches), a footnote may be added to the sheet stating this fact. For example, *All dimensions are in inches (in.) except as noted*. Remove the ft or ', or the in. or '' symbol from the plans to improve the sheet clarity.
6. Spacing. Provide a space between the value and abbreviation symbol (e.g., 12 ft or 12.25 ft or 6 in.). Do not provide a space between the value and punctuation symbol (e.g. 12' or 6''). Provide a hyphen between a feet-and-inches value using punctuation symbols (e.g. 12'-6'').
7. Value Less Than 1. For a decimal value, place a zero before the decimal marker (e.g., 0.75 ft). For a fractional value of less than one inch in a feet-and-inches value using punctuation symbols, include a zero ahead of the fraction (e.g. 12'-0½'').
8. Large Number. For a number larger than three digits, use a comma to separate blocks of three digits (e.g., 12,000 ft<sup>2</sup>). For plan dimensions, it will be satisfactory to either insert or omit the comma as desired.

#### **14-3.04(02) Symbols and Legends**

Chapter Fifteen will provide the Department's electronic-drafting symbol library. These symbols should be used in the preparation of manually- or electronically-drafted plans. To obtain a copy of this library, the designer should contact the CADD Support Team.

Figure [14-3A](#), Recommended Plans Legends, provides the legends that may be used on plans. Chapter Fifteen will describe traffic symbols and legends that should be used within a set of plans. A circle with either a letter or number inside it may be used to indicate various construction items or materials. Where additional items are similar but with different thicknesses, layers, weights, etc., use an alphanumeric combination [e.g., (A1) 14-in. Plain

Cement Concrete Pavement, (A2) 10-in. Plain Cement Concrete Pavement]. The legend should be consistent throughout a set of plans (i.e., each number or letter applies to an individual item throughout a set of plans). Do not renumber the legends on each sheet to account for the unused legends. List the legends used on a sheet in an open area on the sheet.

### **14-3.04(03) Text**

Chapter Fifteen will provide the Department's criteria for text sizes, fonts, and line weights. For each sheet type, use uniform text sizes and line weights. For example, all of the text for notations in the plan view should be of the same size and weight. However, the text for the summary table may be in a different text size. The font type should be uniform throughout the plans.

Words should not be abbreviated so should therefore be completely spelled out. However, this is not always practical. Figure [14-3B](#), Plans Abbreviations, provides the common abbreviations that should be used where it is necessary to abbreviate words. Spell out the words for those terms not listed in Figure [14-3B](#).

### **14-3.04(04) Plan Notes**

Specific plan notes (e.g., dimensions, clarifications) should be placed directly on the applicable sheet. General notes which apply to the whole project or several sheets should be placed on the Index and General Notes Sheet. The types of notes that are acceptable for placement in the plans are as follows:

1. a specific reference to a drawing on a sheet;
2. a note with an arrow drawn to a part of a drawing it complements;
3. utility owners;
4. soil-borings information;
5. cross references to other plan sheets or *INDOT Standard Drawings*;
6. hydraulic data;
7. earthwork table or balance information;
8. bridge-seat calculation procedure;
9. legends;
10. screed instructions;
11. benchmark data;
12. traffic-signal diagram description;
13. Sign Summary description notes;
14. all tables; and

15. Structure Data sheet remarks.

Notes which describe the particular work, material requirements, construction requirements, method of measurement, or basis of payment are considered to be specifications and should not be included on a set of plans. These notes should be included in the *INDOT Standard Specifications*, recurring special provisions, or unique special provisions. Chapter Nineteen provides guidance on the use and preparation of these specifications.

### **14-3.04(05) Miscellaneous**

The following provides guidelines which the designer should consider in preparing a set of plans.

1. Stationing. An english-units station of 100 ft is used, which is shown to two decimal places (e.g., 1 + 00.00). Show tic marks at 100-ft intervals. The tic marks are shown on the survey left side of the centerline. Indicate a full station at every 500-ft interval with plus stations at 100-ft intervals. For an example, see *INDOT Typical Plan Sheets*.

For example, Sta. 12+27.96 indicates a point 27.96 ft forward of english-units Sta. 12+00. The location of the first even-hundred station on a new alignment is arbitrary.

2. Cross-Section Intervals. Use 50-ft cross-section intervals where the alignment is maintained over existing embankments and through rolling terrain. A larger interval may be used where uniform templates are used over flat terrain. Provide additional cross-section intervals where there are abrupt changes in either the typical section or the existing ground.
3. Angles. Express angles in degrees, minutes, and seconds.
4. North Arrow. Provide a uniform north arrow on the finished set of plans. Chapter Fifteen illustrates the appropriate north arrow that should be used.
5. Reduction. A full-sized set of mylar (reproducible) plans is required for construction and contract letting. Section 14-3.03 discusses the sheet sizes that are used by the Department. Scales used for drafting the full-size sheets are no longer accurate once the plans are reduced. Once the plans are reduced, readability of the plans may become critical. The minimum text sizes that should be used are provided in the *INDOT CADD System User Guide*, and Chapter Fifteen.

6. Limits. The limits of plan coverage on a road-project plans sheet will vary according to the plan and profile scale selected and type of plans sheet selected. Section 14-3.05 discusses the scales that should be used.
7. Plans Sheets. The Department's typical plans sheets can be obtained from the INDOT CADD library.
8. Alignment Placement. Where the horizontal alignment is on tangent, the centerline or survey line should parallel the top border and be centered vertically in the plan-view space. Where the horizontal alignment is on a curve, tangents should be angled to produce reasonable balance. Keep an entire curve on the same sheet.
9. Soil Boring Logs. In plotting soil-boring logs for a bridge project, elevations should be shown along the vertical grid for each boring log so that the elevation of each soil sample can be ascertained. Road-boring logs should not be included in the plans.

Boring logs may be scanned and placed onto the Soil Borings sheet, provided such logs are legible when reduced to half-size.

10. Project Block. Each sheet will have a project block along the bottom of the sheet. The project block will vary from sheet to sheet. These are illustrated in the *INDOT Typical Plan Sheets* document. The following information, from left to right, should be included in the project block.
  - a. Design Information. In the lower left-hand corner of each plan and profile sheet, include the horizontal-alignment references. For most other sheets, this area will be left blank.
  - b. Engineer's Seal. The engineer's seal is required on each sheet along with the signature of the engineer and date signed. The seal location may vary within the plans sheet depending on which engineer prepared the sheet.
  - c. Signatures. The signature block will include the signatures for the design engineer, designer, drafter, and checkers.
  - d. Sheet Title. Each sheet should be labeled.
  - e. Scales. Where applicable, identify the scales used on the drawing in the lower right-hand corner.

- f. File Numbers. Show all applicable files and references including contract number, bridge file, Des number, survey book number, etc., in the lower right-hand corner.
- g. Sheet Numbering. Provide the sheet number and the total number of sheets for the set in the lower right-hand corner of each sheet. Number all sheets sequentially including the title sheet. Sheets that are added after the sheet numbers have been placed should be designated as described in Section.14-1.02(04), and identified in the index. The additional sheets are not included in the total number of sheets. The sheet numbering should be the last thing the designer does prior to submitting the final tracings to the Research and Documents Library Team.
- h. Survey Lines. If there are multiple survey lines, indicate the line designation with the sheet title (e.g., Plan and Profile Line “S-1-A”).

#### **14-3.04(06) Title Sheet [Rev. Jan. 2011]**

The information block should be in accordance with the format shown in Figure [14-3C](#). Part V includes geometric design tables which reflect the scope of project construction. The applicable design criteria in such tables are based not only on traffic volume characteristics, but also on road classification, rural or urban setting, type of terrain, and access control. The information block will have all of these design controls defined in one location. A person looking at the plans will immediately know which geometric design table and what design criteria were used in the project development.

In the signatures box, the words Indiana Department of Transportation should be shown under the Approved for Letting signature line, as shown in Figure [14-3C\(1\)](#). Nothing else should be shown.

#### **14-3.05 Scales**

The following provides the recommended drawing scales that should be used in developing a set of plans. The selected scales should be shown in the project block on each sheet. Where scales are not used, this should be shown in the project block.

### **14-3.05(01) Road Project**

For a road project, use the following scales.

1. Title Sheet. For the location map, a 1" = 2000' scale should be used. A location map for an urban area may use a 1" = 1000' scale for better clarity. For a longer project, a scale of 1" = 4000' may be necessary.
2. Typical Sections. The scale for the typical-section figures, commonly ¼" = 1'-0", is at the designer's discretion. The scale selected should adequately show the necessary features. Although not desirable, the scale may vary from typical section to typical section. The vertical scale may be exaggerated to adequately show the pavement cross section.
3. Right-of-Way Sheets. The appropriate scale will depend on the plat sheet used. The following will apply.
  - a. Route Survey Plat. Use a scale of 1" = 200'.
  - b. Plat No. 1. For a rural area, use a scale of 1" = 400'. For an urban area, use 1" = 100'. For a spot improvement project (e.g., small structure replacement, sight distance improvement, etc.), a scale of 1" = 200' may be used.
  - c. Plat No. 3. For a rural area, use a scale of 1" = 400'. For an urban area, use 1" = 100'. For an intermediate area, a scale of 1" = 200' may be used.
4. Plan and Profile Sheets. Plan and profile views will be shown together on one sheet, with the plan view on top and profile view on the bottom. The following scales are used.
  - a. Plan View, Rural. A scale of 1" = 50' should be used. For a longer rural project, a 1" = 100' scale may be used.
  - b. Plan View, Urban. Depending upon the complexity of the location and work to be accomplished, a scale of 1" = 20' or 1" = 50' should be used.
  - c. Profile View, Horizontal. This will be the same scale as the plan view.
  - d. Profile View, Vertical. The vertical-profile scale will be 1" = 5' or 1" = 10' depending on the complexity of the project and the plan-view scale selected. A

1" = 10' scale will be used with a plan-view scale of 1" = 100'. A 1" = 5' scale will be used with a plan-view scale of 1" = 50' or 1" = 20'.

Other scales, as necessary, may be used to provide better clarity or more practical layouts. If a detail cannot be adequately viewed in the selected scale, show the element on a Details sheet.

5. Superelevation-Transition Sheet. The selected scale is left to the designer's discretion. Select a scale which will adequately show the necessary features.
6. Details Sheet. The selected scale will vary based on the complexity of the detail and room available on the sheet. The following provides the scales that are commonly used.
  - a. Construction Details. Use a plan-view scale of 1" = 20'.
  - b. Intersection or Approach Details. Use a plan-view scale of 1" = 20'.
  - c. Spot-Elevation Sheet. Use a plan-view scale of 1" = 20'.
  - d. Signing Details. The plan-view scale will be 1" = 50' for an urban area or 1" = 100' for a rural area.
  - e. Signal Details. The plan view scale will be 1" = 20'.
  - f. Pavement Markings. The preferred plan-view scale is 1" = 50'. Where significant detail is required, use a plan-view scale of 1" = 20'.
  - g. Traffic-Maintenance Details. Use a plan-view scale of 1" = 50' or 1" = 100'.

The designer may select an alternative scale for one of the above details based on the complexity of the detail and space available on the sheet. For those details not listed, the designer will determine the scale as required.

7. Cross Sections. The horizontal and vertical cross-section scales will be 1" = 10'. A larger scale may be used where a greater cross-section width or height is required.

### **14-3.05(02) Bridge Project**

Many of the sheets for a bridge project (e.g., index and title sheet, Typical Cross Sections, Right-of Way Plat, Plan and Profile sheets, cross sections) will use the same scales as listed in Section 14-3.05(01) for a road project. The scales for the structural details will vary according to the complexity of the drawing and space available on the sheet. The designer should select a scale which will adequately show the necessary detail and still allow the detail to be readable at a reduced scale. The scale for the Layout sheet should be 1" = 30', 1" = 40', or 1" = 50'. For a complex urban project or a project in a steep rural area, a 1" = 20' scale may be used.

### **14-3.05(03) Traffic Project**

For a traffic-signs, signalization, or lighting project, the following scales should be used.

1. Title Sheet. For the location map, a 1" = 2000' scale should be used. The location map for an urban area may use a larger scale for better clarity. For a longer project or for a project scattered throughout a district, it may be necessary to use a scale of 1" = 5000' or smaller.
2. Plans Sheets. The selected scale will depend upon the type of project selected.
  - a. Traffic-Signs Sheets. The plan-view scale will be 1" = 50' for an urban area. For a rural area, depending on the project complexity, the scale will be 1" = 100' or 1" = 200'.
  - b. Signalization Sheets. The plan-view scale for signalization at an intersection will be 1" = 20'. Where details are required for work between intersections (e.g., interconnect details), the scale may be 1" = 100' or 1" = 50'.
  - c. Lighting Sheets. The plan-view scale will be 1" = 50' in an urban area. For a rural area, depending on the project complexity, the scale will be 1" = 100' or 1" = 200'.
3. Details Sheets. The selected scales will be determined depending on the complexity of the detail and space available on the sheet.
4. Cross Sections. Where cross sections are required, the horizontal and vertical cross-section scales will be 1" = 10'. A larger scale may be used where a greater cross-section width or height is required.

### **14-3.06 Plans-Dimensions Accuracy**

The accuracy of plan dimensions should be consistent with data upon which they are based. Accuracy for dimensions to be shown on plans is as follows.

#### **14-3.06(01) Road or Traffic Plans**

The following accuracies should be observed.

1. Stationing. Show all stationing to the nearest hundredth of a foot (i.e., 0 + 00.01). This will include PVI, PC, PI, PT, equation stations, etc.
2. Angle. An angle or bearing should be shown to the nearest second (i.e., 0° 00' 01").
3. Horizontal-Alignment Data. Figure [14-3D](#), Horizontal-Curve Data on Plans Sheets, provides the order and rounding accuracy that should be used to describe curve data.
4. Vertical-Profile Data. The following vertical-alignment accuracies should be used.
  - a. PVI. Stationing. Show each PVI at an even station.
  - b. Vertical-Curve Length. Round the length to the nearer 10 ft.
  - c. PVI Elevation. Show the elevation to the nearer 0.01 ft.
  - d. Grade. Show each vertical grade to the nearer 0.001%.
  - e. Vertical Clearance. Show each vertical clearance to the nearer 0.01 ft.
5. Elevation. The following elevation accuracies should be used.
  - a. Bench Mark. Show the elevation to the nearer 0.01 ft.
  - b. Flow-Line Elevation. Show each elevation to the nearer 0.01 ft.
  - c. Pavement Elevation. For existing pavement, show each elevation to the nearer 0.01 ft.

- d. Ground Line. Show the existing ground line to the nearer 0.01 ft.
  - e. Other. Show all other vertical elevations, breaks in ditch grades, pipe invert elevations, etc., to the nearer 0.01 ft.
6. Contour Interval. The contour interval will be in 1-ft increments. Each fifth contour should be emphasized and identified. Intermediate contours will not be identified unless they represent a high or low contour. In rugged terrain or on a steep slope, the intermediate contour lines may be removed for clarity.
7. Topography Features. Show the location of all proposed features to the nearer 0.1 ft, or the nearer 0.01 ft where practical.
8. Typical Cross Section Elements. The following will apply.
- a. Width. Show all typical-cross-section elements in increments of 6 in. This includes lane or shoulder widths, ditch widths, bench widths, median widths, sidewalks, etc.
  - b. Cross Slope. Show each cross slope to the nearer 0.1%, including superelevation rates.
  - c. Pavement Depth. HMA pavement-course density should be shown to the nearer 10 lb/yd<sup>2</sup>. Show all other pavement elements (e.g., concrete-pavement thickness, aggregate or subbase depth, special-subgrade-treatment depth, underdrain dimensions, etc.) to the nearer inch.
8. Cross-Sections Elements. Show the profile-grade elevation to the nearer 0.01 ft.
9. Miscellaneous Features. For the following features, show the dimensions to nearer increment indicated as follows:
- a. drive location to the nearer 1 ft;
  - b. culvert location to the nearer 1 ft;
  - c. guardrail to the nearer 0.1 ft
  - d. ditch-grade break to the nearer 1 ft.

### **14-3.06(02) Bridge Plans**

In addition to the plan accuracies discussed for road plans, use the following accuracies on bridge plans.

1. **Bridge Elements**. Bridge elements should be shown in increments of 3 in. (e.g., footing length, span length, beam spacing, pier height, etc.). Where increments of 3 in. are not practical, use 2-in. or 1-in. increments.
2. **Reinforcing Bars**. Where practical, show the length of each straight bar to the nearer 3 in. For a bent bar, show the individual dimensions to the nearer ½ in. The total length of a bent bar should be rounded to the higher inch. Show spacing of reinforcing bars to the nearer 2 in.
3. **Dimensions**. Use the following accuracy.
  - a. **Concrete Details**. These should be shown in increments of 1 in. (e.g., deck thickness, column section, wall thickness, cap dimension, footing width, pile spacing, etc.). Where increments of 1 in. are not practical, use ½-in. increments.
  - b. **Camber and Deflection Details**. Show these to the nearer 0.001-ft increment.
  - c. **Structural Steel Details**. For designations, dimensions, and properties of structural shapes, see ASTM A 6M and the AISC english-shape tables. Other dimensions on Details sheets (e.g., plate width, plate length, splice detail, hole spacing, steel-shoe-assembly size, etc.) should be dimensioned to the nearer 1/8 in. Plate thickness may be shown to the nearer 1/16-in. increment.
  - d. **Precast Prestressed-Concrete Members**. Show all cross-section dimensions for these elements to the nearer ¼ in.
  - e. **Manufactured Items**. Accuracy for detailed dimensions for these items (e.g., expansion joints, bearing devices, etc.) should be in accordance with industry standards.
  - f. **Horizontal Alignment Tie-Up**. Show these dimensions to the nearer 0.01 ft.

4. Elevation. Show each structure elevation, including top-of-bearing-plate elevation, to the nearer 0.01 ft, except as follows.
  - a. Top-of-Pile Elevation. Where a pile is encased in a concrete cap, show the top-of-pile elevation to the nearer 0.1 ft. Where superstructure beams are attached to the piling, show the top-of-pile elevation to the nearer 0.01 ft.
  - b. Existing Structure. Show each existing-structure elevation or concrete-removal-line elevation to the nearer 0.1 ft.
  - c. Ground Elevation. Show each of these (e.g., berm, channel clearing, upper limit of wet excavation, etc.) to the nearer 0.01 ft.
5. Bridge Quantities. Chapter Seventeen provides the rounding criteria for bridge quantities that are also shown on bridge plans.

#### **14-3.07 Plans-Sheets Organization**

To provide consistency from project to project, the plans sheets should be assembled in the sequence listed below for the applicable project type. Not all plans sets will include all sheets, and some sheets can be combined together (e.g., Details sheets). For a project type not listed below, the sequence shown for a road project should be used.

##### **14-3.07(01) Road Project**

The recommended plans-sheets sequence is as follows:

1. Title sheet;
2. Index and General Notes;
3. Typical Cross Sections;
4. Plat No. 1 or Plat No. 3;
5. Geometric Tie-Up sheet;

6. Traffic Maintenance Details. A sheet is not required for an official-detour route. A diagram thereof should be included in the Contract Information Book;
7. Plan and Profile;
8. Superelevation-Transition Diagram
9. Details sheets, in the order as follows:
  - a. Construction Details;
  - b. Intersection Details;
  - c. Spot Elevation Details;
  - d. Channel Details;
  - e. Geometric Details;
  - f. Right-of-Way Details;
  - g. Grading Plan;
  - h. Drainage Details;
  - i. Erosion Control Details (plan view);
  - j. Retaining Wall Details; and
  - k. Wetland Mitigation Details.
10. traffic-work details, in the order as follows:
  - a. Signs (if separate traffic-sign plans are not required);
  - b. Signals;
  - c. Lighting (if separate lighting plans are not required); and
  - d. Pavement Markings.
11. miscellaneous tables;
12. Approach Table;
13. Underdrain Table;
14. Guardrail Summary Table;
15. Structure Data Table;
16. Pipe Materials sheet; and

17. cross sections.

### **14-3.07(02) Bridge Project**

The recommended plans-sheets sequence is as follows:

1. title sheet;
2. index
3. Typical Cross Sections;
4. Traffic Maintenance Details. A sheet is not required for an official-detour route. A diagram thereof should be included in the Contract Information Book;
5. Road Plan and Profile;
6. Superelevation-Transition Diagram;
7. Roadway Details, in the order as follows:
  - a. Construction Details;
  - b. Intersection Details;
  - c. Spot-Elevation Details;
  - d. Geometric Details;
  - e. Right-of-Way Details;
  - f. Grading Plan;
  - g. Drainage Details; and
  - h. Erosion-Control Details (plan view);
8. traffic-work details, in the order as follows:
  - a. Signs (if separate traffic-sign plans are not required);
  - b. Signals;
  - c. Lighting (if separate lighting plans are not required); and
  - d. Pavement Markings.
9. Soil Borings;

10. Channel Change Layout;
11. Layout;
12. General Plan;
13. structure-details sheets, in the order as follows:
14. Coping Offsets and Tie-up Dimensions;
  - a. Abutment/Bent/Pier Details and Bill of Materials;
  - b. Framing Plan and Girder Elevation;
  - c. Structural-Steel Details or Precast-Concrete Beam Details;
  - d. Jacking Frames;
  - e. Bearing Details;
  - f. Floor Details;
  - g. Corner Details and Floor Bill of Materials;
  - h. Railing Details;
  - i. Expansion Joint Details; and
  - j. Screeds (optional).
15. Reinforced-Concrete Bridge Approach Details;
16. Bridge Summary;
17. miscellaneous tables;
18. Approach Table;
19. Underdrain Table;
20. Guardrail Summary Table;
21. Structure Data Table;
22. Pipe Materials sheet; and
23. cross sections.

### **14-3.07(03) Traffic-Signs Project**

The recommended plans-sheets sequence is as follows:

1. title sheet;
2. Index and General Notes;
3. Signing Plan;
4. Sign Layout;
5. cross sections;
6. Footing Details; and
7. Structural Details.

### **14-3.07(04) Signalization Project**

The recommended plans-sheets sequence is as follows:

1. title sheet;
2. Index and General Notes;
3. Signal Plan; and
4. Signal Details.

### **14-3.07(05) Lighting Project**

The recommended plans-sheets sequence is as follows:

1. title sheet;
2. Index and General Notes;
3. Lighting Plan; and
4. cross sections.

SHEET	Road, Bridge, or Traffic Project Manager	Traffic Signs Team	Traffic Signals Team	Highway Lighting Team
Title	X			
Index and General Notes	X			
Typical Sections	X			
R/W Plats	X			
Geometric Tie-Up Sheet	X			
Plan and Profile	X			
Superelevation Transition	X			
Details	X			
Construction Details	X			
Intersection Details	X			
Spot Elevation Details	X			
Channel Details	X			
Geometric Details	X			
Right-of-Way Details	X			
Grading Plan	X			
Drainage Details	X			
Erosion Control Details	X			
Traffic Details				
Signs	X	X		
Signals			X	
Lighting				X
Pavement Markings	X	X		
Traffic-Maintenance Details	X	X	X	X
Soil Borings	X			
Layout	X			
Bridge Structure Details	X			
Bridge Summary	X			
Miscellaneous Tables	X	X	X	X
Approach Table	X			
Underdrain Table	X			
Structure Data Table	X			
Pipe Materials	X			
Sign Structure Table	X			
Guardrail Summary Table	X			
Cross Sections	X			

**SHEET-PREPARATION RESPONSIBILITIES  
FOR ROAD, BRIDGE, OR TRAFFIC PROJECT**

**Figure 14-1A**

**FIELD CHECK NOTIFICATION**

, 20

Preliminary  Final  Field Check Notification

Work Type:

Route:

Des No.

PE Project No.

R/W Project No.

CN Project No.

Bridge File:

Over

Location: , mi  km of , in County

A Preliminary  Final  Field Check for this project has been scheduled for . The meeting will be held at at the project site. Anyone wishing to provide input into the design of this project should plan to attend.

Utilities with facilities within the limits of this project should review the plans to determine if their existing facilities are accurately shown. Utilities that believe that their facilities will need to be adjusted should attend this meeting. This meeting could provide opportunities for design changes that could eliminate some utility conflicts. Utilities will be contacted by the INDOT Utilities and Railroads Division’s Utilities Team leader at a later date concerning the project schedule and relocation coordination. The Team leader can be contacted at (317) 232-5308.

Project Manager

The distribution of this notification is as follows:

INDOT CENTRAL OFFICE DISTRIBUTION					
Recipient	PFC	FFC	Letter	Plans	X- Sec.
Environmental Policy Manager, Environmental Services Div. (C)	X	X	X	X	
Geotechnical Design Engineer, Geotechnical Services Div.	X	X	X	X 2 sets	X 2 sets
Major-Project Manager, Project Management Div. (C)	X	X	X	(2)	(2)
Railroads Team Leader, Utilities and Railroads Div. (C)	X		X	X	
Acquisition Team Leader, Real Estate Div.	X	X	X	(3)	
Real Estate Administrative Services Team Leader, Real Estate Div.	X	X	X		
Real Estate Property Mgmt. Team Leader, Real Estate Div.	X		X	X (4)	
Utilities Team Leader, Utilities and Railroads Div. (C) (5)	X	X	X		
Field Engineer, Construction Management Div.	X		X		
INDOT DISTRICT DISTRIBUTION					
Bridge Inspection Engineer (11)	X	X		X	
Construction Engineer	X	X	X	X 2 sets	
Design Office Manager (D) (6)	X	X	X	X	X
Environmental Scoping Mgr. (D)	X	X	X	X	
Highway Maintenance Director	X	X	X		
Planning and Programming Director	X	X	X		
Production Director	X	X	X		
Program Coordinator	X	X	X		
Railroads Team Leader (D)	X		X	X	
Real Estate and R/W Pgm. Dir. (D)	X	X	X	X	
System Assessment Mgr. (D)	X	X	X		
Testing Office Mgr. (D)	X	X	X	X	X
Traffic Operations Mgr.	X	X	X	(7)	
Utilities Team Leader (D)	X	X	X	X	X
NON-INDOT DISTRIBUTION					
City officials (8)	X	X	X		
County Road Spvsr. or Hwy. Engr.	X	X	X	(9)	
FHWA Area Engineer	X	X	X	(10)	
U.S. Fish and Wildlife Service	X	X	X		
Utility companies	X	X	X	X	X

Notes:

(C) Central-Office-developed project only

(D) District-developed project only

(1) only for project other than Interstate-route bridge rehabilitation

(2) only if plans do not change from initial submittal

(3) only if additional right of way is required

(4) 2 sets plans if additional right of way is required

(5) only if Major Moves or Major New project

(6) only if district-developed, or if signs, pavement markings, signals, or lighting are involved

(7) only if traffic project

(8) only if metropolitan area is affected

(9) only if legal drains, etc., are involved

(10) only if project requires FHWA oversight

(11) only if bridge project

[CONSULTANT LETTERHEAD]

, 20

Preliminary  Final  Field Check Notification

Work Type:

Route:

Des No.

PE Project No.

R/W Project No.

CN Project No.

Bridge File:

Over

Location: , mi  km of , in County

Our firm is under contract with the Indiana Department of Transportation for the design of the referenced project. A Preliminary  Final  Field Check for this project has been scheduled for . The meeting will be held at at the project site. Anyone wishing to provide input into the design of this project should plan to attend.

Utilities with facilities within the limits of this project should review the plans to determine if their existing facilities are accurately shown. Utilities that believe that their facilities will need to be adjusted should attend this meeting. This meeting could provide opportunities for design changes that could eliminate some utility conflicts. Utilities will be contacted by the INDOT Utilities and Railroads Division's Utilities Team leader at a later date concerning the project schedule and relocation coordination. The Team leader may be contacted at (317) 232-5308.

Project Manager

The distribution of this notification is as follows:

INDOT CENTRAL OFFICE DISTRIBUTION					
Recipient	PFC	FFC	Letter	Plans	X- Sec.
Environmental Policy Manager, Environmental Services Div. (C)	X	X	X	X	
Geotechnical Design Engineer, Geotechnical Services Div.	X	X	X	X 2 sets	X 2 sets
Major-Project Manager, Project Management Div. (C)	X	X	X	(2)	(2)
Railroads Team Leader, Utilities and Railroads Div. (C)	X		X	X	
Acquisition Team Leader, Real Estate Div.	X	X	X	(3)	
Real Estate Administrative Services Team Leader, Real Estate Div.	X	X	X		
Real Estate Property Mgmt. Team Leader, Real Estate Div.	X		X	X (4)	
Utilities Team Leader, Utilities and Railroads Div. (C) (5)	X	X	X		
Field Engineer, Construction Management Div.	X		X		
INDOT DISTRICT DISTRIBUTION					
Bridge Inspection Engineer (11)	X	X		X	
Construction Engineer	X	X	X	X 2 sets	
Design Office Manager (D) (6)	X	X	X	X	X
Environmental Scoping Mgr. (D)	X	X	X	X	
Highway Maintenance Director	X	X	X		
Planning and Programming Director	X	X	X		
Production Director	X	X	X		
Program Coordinator	X	X	X		
Railroads Team Leader (D)	X		X	X	
Real Estate and R/W Pgm. Dir. (D)	X	X	X	X	
System Assessment Mgr. (D)	X	X	X		
Testing Office Mgr. (D)	X	X	X	X	X
Traffic Operations Mgr,	X	X	X	(7)	
Utilities Team Leader (D)	X	X	X	X	X
NON-INDOT DISTRIBUTION					
City officials (8)	X	X	X		
County Road Spvsr. or Hwy. Engr.	X	X	X	(9)	
FHWA Area Engineer	X	X	X	(10)	
U.S. Fish and Wildlife Service	X	X	X		
Utility companies	X	X	X	X	X

Notes:

(C) Central-Office-developed project only

(D) District-developed project only

(1) only for project other than Interstate-route bridge rehabilitation

(2) only if plans do not change from initial submittal

(3) only if additional right of way is required

(4) 2 sets plans if additional right of way is required

(5) only if Major Moves or Major New project

(6) only if district-developed, or if signs, pavement markings, signals, or lighting are involved

(7) only if traffic project

(8) only if metropolitan area is affected

(9) only if legal drains, etc., are involved

(10) only if project requires FHWA oversight

(11) only if bridge project

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Contract Preparation Document is available for download at  
<http://www.in.gov/dot/div/contracts/design/dmforms/>, Summary 14-1C

**Contract Preparation Documents to Contract Administration Division  
Figure 14-1C**

## ASBESTOS CERTIFICATION

Route:

Des. No.:

Contract No.:

Project No.:

Structure No.:

Over:

County:

I hereby certify that no asbestos-containing material was specified in a construction document as a building material for this project.

\_\_\_\_\_  
(signed) Designer

Date

INDOT location or consulting firm

:

This figure deleted [SEP 2014]

The Final Tracings Checklist is available for download at  
<http://www.in.gov/dot/div/contracts/design/dmforms/>, Checklist 14-1E

**Final Tracings Checklist**  
**Figure 14-1E**

This figure deleted [SEP 2014]

The FHWA – Indiana PS&E Checklist is available for download at <http://www.in.gov/dot/div/contracts/design/dmforms/>, Checklist 14-1E(1)

**FHWA – Indiana PS&E Checklist**  
**Figure 14-1E (1)**

This figure deleted [SEP 2014]

The Narrative for the PS&E Checklist is available for download at <http://www.in.gov/dot/div/contracts/design/dmforms/>, Checklist 14-1E(2)

**Narrative for PS&E Checklist**  
**Figure 14-1E(2)**

This figure deleted [SEP 2014]

The PS&E Documentation Required is available for download at  
<http://www.in.gov/dot/div/contracts/design/dmforms/>, Checklist 14-1E(3)

**PS&E Documentation Required**  
**Figure 14-1E(3)**

**CONTRACT INFORMATION BOOK CERTIFICATION**

(Return to INDOT in 48 hours)

INDOT contact person, \_\_\_\_\_, Project Coordinating Engineer,  
Office of Estimating, Contract Administration Division

Letting Date:

Contract No.:

Route:

Des. No.:

County:

I certify that I have reviewed the plans and the Contract Information book (CIB), and have verified that they are correct as compiled, based on design submittals received by Contract Administration prior to the compilation of the CIB.

\_\_\_\_\_  
(signed) project designer

INDOT location or consulting-firm name

Date,

**OR**

The plans or CIB include errors. The designer is responsible for documenting the errors, and for noting which errors were caused by omissions or misinterpretations by INDOT based upon the original material, or based upon new material. The designer shall transmit the documentation to the contact person identified above.

\_\_\_\_\_  
(signed) project designer

INDOT location or consulting-firm name

Date,

## CONSTRUCTION CHANGE

Date:

Contract No.:            Work Type:  
Route:            Des No.:            Location:            of  
Structure No.:            Project No.:

TO:

District Deputy Commissioner

ATTN.:

District Construction Office Manager

FROM:

Project Manager

Transmitted herewith are copies of the above-referenced contract's revised plans sheets, numbered . These sheets were revised on . The revision involved the following:

Please have the Project Engineer or Supervisor prepare a Change in Plans, Form IC-626, addressing revised pay quantities, if applicable.

Two sets of the revised sheets are for your files and two sets each are to be delivered to the Contractor and Project Engineer or Supervisor. The FHWA is being provided with a half-size set of the revised sheets for its files (if applicable).

Note: Quantities revisions are to be computed and transmitted by the designer with this memorandum to the Project Engineer or Supervisor for aid in preparing Form IC-626.

DATE: 14JUN04. TIME: 08:58:37  
MOSS

REPO SECTIONS

DESIGN

MODELNAME	RECORD	SECURITY	LAST UPDATED
Sections	195	Free	14 Jun 04, 08:11:52
Design	194	Free	14 Jun 04, 08:37:04

LABEL	SUBREF	CONTENTS	NO. PTS.	X-MIN	Y-MIN	X-MAX	Y-MAX
G001	MBRA	7705	24	4843	4801	4936	4874

CHAINAGE 2100.000

Point	---X---	---Y---	---Z---	OFFSET	LABEL CUT
1	4843.480	4873.250	783.566	-58.220	BNDR
2	4843.597	4873.159	783.578	-58.072	TRIA
3	4849.094	4868.863	783.709	-51.096	BNDR
4	4857.378	4862.390	783.784	-40.582	*TR*
5	4865.662	4855.916	783.858	-30.068	BNDR
6	4870.090	4852.456	783.252	-24.449	DLL1
7	4870.323	4852.274	783.292	-24.153	TRIA
8	4870.603	4852.055	783.322	-23.798	TRIA
9	4873.658	4849.668	783.634	-19.921	TRIA
10	4878.029	4846.253	784.052	-14.374	ESL1
11	4881.321	4843.680	784.194	-10.196	TRIA
12	4881.836	4843.277	784.211	-9.542	TRIA
13	4881.930	4843.204	784.214	-9.423	EPL1
14	4890.246	4836.705	783.901	1.131	TRIA
15	4890.299	4836.664	783.899	1.199	RC01
16	4890.359	4836.617	783.895	1.274	TRIA
17	4899.115	4829.774	783.278	12.387	EPR1
18	4900.460	4828.724	783.283	14.093	TRIA
19	4902.977	4826.756	783.239	17.288	ESR1
20	4904.728	4825.389	782.875	19.510	BNDR
21	4913.940	4818.190	782.961	31.202	BNDR
22	4919.066	4814.184	784.485	37.707	TRIA
23	4933.653	4802.785	784.324	56.219	TRIA
24	4935.277	4801.516	784.460	58.281	BNDR

LABEL	SUBREF	CONTENTS	NO. PTS.	X-MIN	Y-MIN	X-MAX	Y-MAX
G002	MBRA	7705	21	4854	4814	4958	4898

CHAINAGE 2125.000

Point	---X---	---Y---	---Z---	OFFSET	LABEL CUT
1	4854.682	4897.293	782.607	-64.367	BNDR

**EXISTING ELEVATIONS FROM  
ELECTRONIC CROSS SECTIONS DATA**

**Figure 14-2A**

**UNDERGROUND STORAGE TANKS REMOVAL**

, 20

**MEMORANDUM**

**TO:**

Environmental Services Office Administrator  
Production Management Division

**THRU:**

- Roadway Services Manager, Production Management Division
- Structural Services Manager, Production Management Division
- District Design Manager

**FROM:**

Project Manager

**SUBJECT:** Underground Storage Tanks Removal

Route: Des. No.:  
 Project No.: : PE County:  
 Description and Location:

Transmitted herewith is one set of plans for the above-referenced project.

This project has underground storage tanks to be removed at the locations as follows:

Station:	Offset:	left	right
Station:	Offset:	left	right
Station:	Offset:	left	right

Please provide the list of pay items and required special provisions. Also provide us with additional details that may be needed to accomplish the task.

If you need further information, please contact me at or e-mail.

Attachments/Enclosures

- 1.
- 2.

:

cc:

- (A)     (thickness)     in. Plain PCCP
- (A1)     (thickness)     in. Plain PCCP
- (C)     (thickness)     in. PCCP for Driveways
- (D)      lb/yd<sup>2</sup> HMA for Approaches     (type)     on      mm  
     Compacted Aggregate Base     (type)    ,     (size)
- (D1)      lb/yd<sup>2</sup> HMA Surface     (type)     on  
          lb/yd<sup>2</sup> HMA Base     (type)     on  
          mm Compacted Aggregate Base     (type)    ,     (size)
- (D2)      lb/yd<sup>2</sup> HMA Surface     (type)     on  
          lb/yd<sup>2</sup> HMA Base     (type)
- (F) Concrete Sidewalk
- (J)      lb/yd<sup>2</sup> HMA Shoulder
- (J1)     (thickness)     in. Plain PCCP Shoulder
- (J2)      in. Compacted Aggregate for Shoulder
- (K) Full Depth HMA Pavement
- (K1) Breakdown of Quantities, e.g.,      lb/yd<sup>2</sup> HMA Surface on  
          lb/yd<sup>2</sup> HMA Intermediate on  
          lb/yd<sup>2</sup> HMA Base on  
          in. Compacted Aggregate Base     (type)
- (N)      in. Compacted Aggregate for Surface     (size)
- (O)      in. Compacted Aggregate Base     (type)    ,     (size)
- (P)      Prime Coat
- (P1)      Seal Coat
- (P2)      Tack Coat
- (R)      lb/yd<sup>2</sup> HMA OverlayTack Coat
- (R1)      lb/yd<sup>2</sup> HMA Surface on  
          lb/yd<sup>2</sup> HMA Intermediate on  
          lb/yd<sup>2</sup> HMA Base
- (R4)     (thickness)     in. PCCP for Resurface
- (U)     (size)     Underdrain
- (X) Construction Sign, Type A

- (X1) Construction Sign, Type B
- (X2) Construction Sign, Type \_\_\_\_\_
- (Y) Barricade, Type \_\_\_\_\_
- (Y1) Barricade, Type \_\_\_\_\_
- (1) 33 in. Concrete Barrier
- (2) 45 in. Concrete Barrier
- (2A) Modified Concrete Barrier
- (3) Longitudinal Joint
- (5) Butt Joint
- (6) Construction Joint
- (7) Keyway Joint
- (8) 1 in. Expansion Joint with Load Transfer
- (9)     (width)     in. Preformed Joint Filler
- (12) Impact Attenuator, Type \_\_\_\_\_
- (13) Concrete Curb
- (14) Integral Concrete Curb
- (15) Concrete Curb and Gutter
- (16) Concrete Curb Type B
- (18) Integral Concrete Curb and Gutter, Type \_\_\_\_\_
- (20) Contraction Joint, Type \_\_\_\_\_
- (21) Longitudinal Construction Joint
- (22) Concrete Center Curb, Type \_\_\_\_\_
- (23) Asphalt Curb
- (24) Ear Construction, Type A
- (25) Ear Construction, Type B
- (26) Sodding

- (27) Cement Concrete Header, Type \_\_\_\_\_
- (28) Retrofitted Tie Bar
- (31) Temporary Concrete Barrier
- (32) Impact Attenuator, CZ, Type \_\_\_\_\_
- (33) Snowplowable Raised Pavement Marker
- (34)     (width)     in. Solid White Paint Line
- (35)     (width)     in. Solid Yellow Paint Line
-  Concrete Curb Ramp  
(Type is indicated by letter inside hexagon)
- (36)     (message)     Preformed Plastic Pavement Message Marking
- (37)     (message)     Thermoplastic Pavement Message Marking
- (38)     (width)     in.     (type)         (color)     Thermoplastic Transverse Marking
- (39)     (width)     in.     (type)         (color)     Preformed Plastic Transverse Marking
- (40)     (width)     in. Solid White Preformed Plastic Line
- (41)     (width)     in. Solid Yellow Preformed Plastic Line
- (42)     (width)     in. Broken White Preformed Plastic Line
- (43)     (width)     in. Broken Yellow Preformed Plastic Line
- (44) 24 in. Solid White Preformed Plastic Line
- (45) 24 in. White Stop Line, Preformed Plastic
- (46)     (width)     in. Solid White Thermoplastic Line
- (47)     (width)     in. Solid Yellow Thermoplastic Line
- (48)     (width)     in. Broken White Thermoplastic Line
- (49)     (width)     in. Broken Yellow Thermoplastic Line
- (50) No Change Required to Existing Sign and Supports
- (51) Remove Existing Panel Sign from Ground Mounted Supports
- (52) Remove Existing Sheet Sign from Supports
- (53) Remove Existing Panel Sign from Overhead Sign Structure

- (54) Remove Existing Sheet Sign from Overhead Sign Structure
- (55) Remove Existing Sign Foundation
- (56) Remove Existing Sheet Sign and Supports
- (57) Remove Existing Ground Mounted Panel Sign, Supports and Foundations
- (58) Remove Existing Overhead Sign, Supports and Foundations
- (59) Existing Sheet Sign on New Supports
- (60) Existing Panel Sign on New Supports
- (61) Existing Panel Sign on New Overhead Structure

### **RECOMMENDED PLANS LEGENDS**

**Figure 14-3A**

&	And	℄	Baseline (ST_BOUNDLINE in
@	At		IN_Symbols.cel)
Δ	Delta or Deflection Angle	Bldg.	Building
=	Equals	Blk	Block
	Fish	Blktp.	Blacktop
	Parallel	Blvd.	Boulevard
%	Percent	Bm.	Beam
⊥	Perpendicular	B.M.	Bench Mark
∅	Phase or Diameter	Bndry.	Boundary
⌞	Begin L.A. R/W	Bot.	Bottom
⌟	End L.A. R/W	Br.	Bridge
A.A.D.T.	Annual Average Daily Traffic	Brg.	Bearing
AASHTO	American Association of State Highway and Transportation Officials	Brk.	Brick
Ab.	Abrupt	Br. S.	Bridge Seat
Abut.	Abutment	B.S.	Backsight
Ac	Acres	B. Spk.	Boat Spike
A.C.	Aluminum Cap/Asphalt Cement	B.S.T.	Bituminous Surface Treatment
A.C.L.	Access Control Line	Bur.	Buried
Add. Exc.	Additional Excavation	Calc.	Calculated
Adj.	Adjusted	C.A.P.	Corrugated Aluminum Pipe
Aggr.	Aggregate	C.A.T.	Crash Cushion/Attenuating Terminal Guard Rail End Treatment
Ah.	Ahead	Cb.	Curb
Alum.	Aluminum	C.B.	Catch Basin
A.P.	Anchor Plate	Cb.In.	Curb Inlet
App. Exist. R/W	Apparent Existing Right-of-Way	Cb.L.	Curb Line
App. P. L.	Apparent Property Line	C.B.W.	Concrete Block Wall
Appl.	Application	C.C.	Corn Crib
Appr.	Approach	C-C	Center to Center
Approx.	Approximate	Cdtn.	Condition
Art.	Article	Cem.	Cemetery
Asph.	Asphalt	C.G.M.P.	Corrugated Galvanized Metal Pipe
ASTM	American Society for Testing Materials	Ch.	Channel or Chain
Ave.	Avenue	Chan. Chg.	Channel Change
Avg.	Average	Chd.	Chord
AWG	America Wire Gauge	C.I.	Cast Iron
Az.	Azimuth	C.I.P.	Cast Iron Pipe
B.	Barn	Cir.	Circle
B.E.	Bridge End	℄	Centerline (ST_CENTERLINE in IN_Symbols.cel)
Beg.	Begin	Cl.	Class or Clearance
B.I.P.	Boiler Iron Pipe	Clr.	Clear
Bit.	Bituminous or Bitumen	C.L.	Corporation or City Limits
Bk.	Back or Bank	C.L.T.F.	Chain Link Type Fence
		C.M.B.	Concrete Median Barrier
		C.M.P.	Corrugated Metal Pipe
		Co.	County or Company

## PLANS ABBREVIATIONS

**Figure 14-3B (1 of 5)**

C.O.	Clean Out	E.M.	Edge of Metal (surface)
Col.	Column	Emb.	Embankment
Comp.	Compacted or Composite	E.P.	Edge of Pavement
Conc.	Concrete	Eq.	Equation
Conc. P.	Concrete Pipe	Esmt.	Easement
Conn.	Connection	E.T.L.	Edge of Traveled Lane
Const.	Construction or Construct	E.T.W.	Edge of Traveled Way
Cont.	Continuous	Exc.	Excavation
Cor.	Corner	Exist.	Existing
Corr.	Corrugated	Exp.	Expansion
Cov.	Cover	Ext.	Extension
C.P.	Catch Point	Fa.	Face
Cr.	Crushed or Creek	F.A.	Federal Aid
Crs.	Course	F.B.C.P.C.S.	Fully Bituminous Coated Perforated Corrugated Steel
C. Stn.	Crushed Stone		
Ct.	Court	F.Div.	Field Division
Ctr.	Center	Fdn.	Foundation
Cu.	Cubic	Fe.	Fence
Cul.	Culvert	Fert.	Fertilizer
Cyd	Cubic Yards	F-F	Face to Face
C.Z.	Clear Zone or Construction Zone	F.F.	Front Face
D	Distribution of Traffic	F.F.T.F.	Farm Field Type Fence
Dbl.	Double	F. Hyd.	Fire Hydrant
Defl.	Deflection	Fig.	Figure
Desc.	Description	Fin.	Finish
Dest.	Destroyed	Fix.	Fixed
Det.	Detour or Detail	Fl.	Flush
Detc.	Detector	FL	Flow Line (ST_FLOWLINE in IN_Symbols.cel)
D.H.	Drill Hole		
D.H.V.	Design Hourly Volume	Flg.	Flange
Dia.	Diameter	F.O.	Fiber Optic
Diaph.	Diaphragm	F.P.	Fence Post
Dim.	Dimension	F.R.	Frontage Road
Dist.	Distance or District	F.S.	Far Side or Foot of Slope
Dn.	Down	F.T.	Farm Tile
Dp.	Deep	ft	Feet
D.S.	Downstream	Ftg.	Footing
Dr.	Drain or Drive	Fut.	Future
Dt.	Ditch	Fwy.	Freeway
Drwg.	Drawing	G.	Garage
E	East	Galv.	Galvanized
Ea.	Each	G.B.A.	Gravel Barrel Array Impact Attenuator
E.B.	Eastbound		
E.B. L.	Eastbound Lane	G.B.E.S._ _	Grated Box End Section (Pipes)
E.F.	Each Face	Gdr.	Girder
E.G.	Edge of Gutter	Geod.	Geodetic
Elec.	Electric	G.L.	Gas Line
El. or Elev.	Elevation	G.P.	Guy Pole

## PLANS ABBREVIATIONS

Figure 14-3B (2 of 5)

G.P.S.	Global Positioning System	L.A.R/W.	Limited Access Right of Way
G.R.	Guard Rail	Lb	Pounds
Grav.	Gravel	L.C.	Long Chord
G.R.E.A.T. ___	GREAT Unit (Bays)	L <sub>c</sub>	Length of Circular Curve
G.R.E.T.	Guard Rail End Treatment	L.D.	Loop Detector
G.R.T.	Guardrail Transition	Leng.	Length or Lengthen
Grnd.	Ground	Ln.	Lane
Gr.Sep.	Grade Separation	LRFD	Load Resistance Factor Design
G.S.	Gravel Surfacing	L.S.	Land Surveyor
G.S.P.	Galvanized Steel Pipe	L.S.R.	Local Service Road
Gut.	Gutter	Lt.	Left
G.V.	Gas Valve	Lt. P.	Light Pole
H.H.	Hand Hole	L.W.	Low Water
Hdw.	Headwall	Mac.	Macadam
H.I.	Height of Instrument	Matl.	Material
H.	House	Max.	Maximum
Horiz.	Horizontal	Mbox.	Mailbox
H.P.S.V.	High Pressure Sodium Vapor	Mdwl.	Mudwall
H.S.	High Strength	Meas.	Measured
Ht.	Height	Med.	Median
H.W.	High Water	Mh.	Manhole
H.W.L.	High Water Line	Mi	Miles
Hwy.	Highway	Min.	Minimum, Mineral or Minute
I	Interstate	Misc.	Miscellaneous
I.C.	Incidental Construction	Mkr.	Marker
I.D.	Inside Diameter	ML.	Mainline
I.F.	Inside Face	Mncpl.	Municipal
IMSA	International Municipal Signal Association	M.O.	Mid Ordinate
in.	Inches	Mom.	Moment
In to In	Inside to Inside	Mon.	Monument
Inc.	Incorporated	M.P.C.	Mid-Point of Curve
Incl.	Included	N	North
Inlt.	Inlet	N.B.	Northbound
Instr.	Instrument	N.B.L.	Northbound Lane
Inters.	Intersection	N.C.	Normal Crown
Intch.	Interchange	N.E.	Northeast
Inv.	Invert	Neg.	Negative
I.P.	Iron Pipe	NEMA	National Electrical Manufacturers Association
I.P.B.	Iron Pipe Buried Below Plow Depth	N.E.P.L.	No Evidence of Property Line
I.P.F.	Iron Pin Flush	N.F.	Near Face
I.P.L.	Iron Pin Lightly Buried	N.G.	Natural Gas
I.P.N.F.	Iron Pin Not Found	N.G.S.	National Geodetic Survey
Jct.	Junction	Nl.	Nail
Jt.	Joint	Nly.	Northerly
L	Length of Curve, Liter or Loop	No. or #	Number
L.A.	Limited Access	N.S.	Near Side
		N.W.	Northwest

## PLANS ABBREVIATIONS

**Figure 14-3B (3 of 5)**

O.C.	On Centers or Overhead Crossing	P.V.I.	Point of Vertical Intersection
O.D.	Outside Diameter	Pvm't.	Pavement
O.F.	Outside Face	P.V.T.	Point of Vertical Tangent
Off.	Offset	Pwp.	Powerpole
Oh.	Overhang or Overhead	Pwr.	Power (Lines)
O-O	Out to Out	Q	Peak Discharge (Water)
O.P.O.C.	Offset Point on Curve	R.	Range or River
O.P.O.S.T.	Offset Point of Semi-Tangent	Rad. or R.	Radius
O.P.O.T.	Offset Point on Tangent	R.C.	Rapid Curing, Reinforced Concrete or Remove Crown
Out.	Outlet	R.C.P.	Reinforced Concrete Pipe
Oz	Ounces	Rd.	Road
P	Power Cable or Pipe	Rdl.	Radial
P. or Pg.	Page	Rd. N.	Road Nail
P.B.	Pull Box	Rd NF.	Road Nail Flush
P.C.	Point of Curve (Beginning of Curve)	Rd NL.	Road Nail Lightly Buried
P.C.C.	Point of Compound Curve or Portland Cement Concrete	Rdwy.	Roadway
Ped.	Pedestrian	Rec.	Record or Recommended
Pen.	Penetration	Ref.	Reference
Perf.	Perforated	Reinf.	Reinforcement, Reinforcing, Reinforced
P.G.	Profile Grade	Req'd.	Required
P.I.	Point of Intersection	Ret.	Retaining
	Plate (ST_PROPLINE in IN_Symbols.cel)	Rev.	Revised
	Property Line (ST_PROPLINE in IN_Symbols.cel)	R.M.	Reference Monument
Plas.	Plastic	R.P.	Reference Point
P.M.P.	Perforated Metal Pipe	R.P.M.	Raised Pavement Marker
P.O.C.	Point on Curve	R.R.	Railroad
Pos.	Positive	R.R. Spk.	Railroad Spike
P.O.S.T.	Point on Semi-Tangent	Rt.	Right or Route
P.O.T.	Point on Tangent	Rte.	Route
P.O.V.C.	Point on Vertical Curve	R/W	Right-of-Way
Pp.	Pages	R/W Mkr.	Right-of-Way Marker
P.P.B.	Pedestrian Push Button	Rwy.	Railway
P.R.C.	Point of Reverse Curve	S	South
Prest.	Prestressed	S.	Shed
Priv.	Private	San.	Sanitary Sewer
Proc.	Processing	S.B.	Southbound
Proj.	Project or Projected	S.B.L.	Southbound Lane
Prot.	Protect, Protector or Protection	Sched.	Schedule
P.S.D.	Paved Side Ditch	Sdwk.	Sidewalk
Pt.	Point	S.E.	Southeast
P.T.	Point of Tangent (End of Curve)	SE	Superelevation
Pub.	Public	Sec.	Section or Second
Pv.C.	Polyvinyl Chloride	Sec. Line	Section Line
P.V.C.	Point of Vertical Curve	Ser. Rd.	Service Road
		S.G.	Subgrade
		Sht.	Sheet

## PLANS ABBREVIATIONS

**Figure 14-3B (4 of 5)**

Shldr.	Shoulder	T.O.	Top of Opening
Sig.	Signal	T.O.B.	Top of Bank
S.L.D.	Sea Level Datum	T.O.P.	Top of Pipe
Sly.	Southerly	T.O.S.	Top of Slope
Spa.	Spaces, Spacing	Topog.	Topographic
Spec. Prov.	Special Provision	T.P.	Turning Point
Spk.	Spike	Trans.	Transmission Line or Transition
Spl.	Special or Splice	Trav.	Traverse
Sq.	Square	T.T.	Transmission Tower
Sft	Square Feet	Twp.	Township (as Center Township)
Sq. in.	Square Inches	T.W.L.T.L.	Two-Way Left-Turn Lane
S.R.	State Road or State Route	Typ.	Typical
S.S.	Stainless Steel	U.	Unit
St.	Street	Ug.	Underground
Sta.	Station	Uncl.	Unclassified
Std.	Standard	U'pass.	Underpass
Std. Spec.	Standard Specifications	U.S.	Upstream
Stiff.	Stiffener	U.S.C. & G.S.	U.S. Coast & Geodetic Survey
Stk.	Staked or Stake	U.S.Co.E.	U.S. Corps of Engineers
Stl.	Steel	U.S.F.S.	U.S. Forest Service
Str.	Structure, Structural	U.S.G.S.	U.S. Geological Survey
Subd.	Subdivision	U.S.P.L.S.	U.S. Public Land Survey
Subgr.	Subgrade	V	Design Speed or Velocity
Substr.	Substructure	V.C.	Vertical Curve
Supstr.	Superstructure	Veh.	Vehicle, Vehicular
Surf.	Surface or Surfacing	Vert.	Vertical
Surv.	Survey	W	West, Wide Flange Beam or Water
S.W.	Southwest or Sidewalk	W/	With
Sym.	Symmetrical	W.B.	Westbound
T.	Tangent Length or Township (as T-6-N)	W.B.L.	Westbound Lane
T	Ton	Wd.	Wood
Tan.	Tangent	W.L.	Water Line
T.B.	Test Boring	Wly.	Westerly
T.B.M.	Temporary Bench Mark	W.P.	Working Point
Tbr.	Timber	Wt.	Weight
Tel.	Telephone	W.T.	Water Table
Tel.C.	Telephone Cable	W.V.	Water Valve
Tgp.	Telegraph Pole	W.W.	Wing Wall or Woven Wire
Tfp.	Telephone Pole	Xing.	Crossing
Temp.	Temperature or Temporary	Xsec.	Cross Section

## PLANS ABBREVIATIONS

Figure 14-3B (5 of 5)

TRAFFIC DATA	
A.A.D.T. (20___) ①	V.P.D.
A.A.D.T. (20___) ②	V.P.D.
D.H.V. (20 ___) ②	V.P.H.
DIRECTIONAL DISTRIBUTION ③	%
TRUCKS ④	% A.A.D.T
	% D.H.V.
DESIGN DATA	
DESIGN SPEED	mi/h
PROJECT DESIGN CRITERIA	⑤
FUNCTIONAL CLASSIFICATION	⑥
RURAL / URBAN	(7)
TERRAIN	(8)
ACCESS CONTROL	(9)

① Current year and count

② Design year and count

③ Current-year figure

④ Design-year figures

⑤ is ONE of the following:

NEW CONSTRUCTION (FREEWAY)  
 NEW CONSTRUCTION (NON-FREEWAY)  
 COMPLETE RECONSTRUCTION (FREEWAY)  
 PARTIAL RECONSTRUCTION (4R) (FREEWAY)  
 RECONSTRUCTION (NON-FREEWAY)  
 3R (FREEWAY)  
 3R (NON-FREEWAY)  
 PARTIAL 3R (NON-FREEWAY)

⑥ is ONE of the following:

PRINCIPAL ARTERIAL  
 MINOR ARTERIAL  
 STATE COLLECTOR  
 LOCAL AGENCY COLLECTOR  
 LOCAL ROAD  
 LOCAL STREET  
 RECREATIONAL ROAD

(7) is ONE of the following:

RURAL

URBAN (SUBURBAN)

URBAN (INTERMEDIATE)

URBAN (BUILT-UP)

(8) is ONE of the following:

LEVEL

ROLLING

(9) is ONE of the following:

FULL

PARTIAL

NONE

### **TITLE SHEET INFORMATION BLOCK**

**Figure 14-3C**

PLANS PREPARED BY:	_____	PHONE NUMBER
CERTIFIED BY:	_____	DATE
APPROVED FOR LETTING:	_____	DATE
INDIANA DEPARTMENT OF TRANSPORTATION		

SIGNATURE BLOCK

Figure 14-3C (1)

DATUM	ACCURACY
PI	0 + 00.01
$\Delta$	00° 00' 01"
<i>R</i> , existing alignment	0.01 ft
<i>R</i> , new alignment	10 ft
<i>T</i>	0.01 ft
<i>L</i>	0.01 ft
<i>E</i>	0.01 ft
SE	0.1%

**HORIZONTAL-CURVE DATA ON PLAN SHEETS**

**Figure 14-3D**