

INSTRUCTIONAL MEMORANDUMS

To Local Public Agencies



To: Counties and Cities	Date: June 16, 2016
From: Office of Local Systems	I.M. No. 3.805
Subject: Construction Inspection	

Contents: This Instructional Memorandum (I.M.) includes guidelines and procedures for a Local Public Agency (LPA) as the Contracting Authority, the Person in Responsible Charge, the Project Engineer, and staff, to perform the construction inspection for a Federal-aid project using the Iowa Department of Transportation (DOT) Standard Specifications. This I.M. also includes the following attachments:

- [Attachment A](#) - Preconstruction Inspection Process Flowchart
- [Attachment B](#) - Construction Inspection Process Flowchart
- [Attachment C](#) - Subcontract Review and Authorization Process - Post Award Flowchart
- [Attachment D](#) - Local Public Agency Construction Contract Administration Guidance
- [Attachment E](#) - Iowa DOT Field Inspection Review Report
- Attachment F - Reserved for Sample Scope of Service for Consultant Construction Inspection

Introduction

Throughout this I.M., frequent references will be made to various parts of the Iowa DOT [Construction Manual](#), which is available on-line as part of the Iowa DOT Electronic Reference Library ([ERL](#)). However, any references to Chapter 2 of the Iowa DOT Construction Manual should be directed towards [Attachment D](#) to this I.M. Please note the Construction Manual is written primarily for use by Iowa DOT staff and therefore the terminology it uses reflects the Iowa DOT's organizational structure. For example, references in the Construction Manual to the Resident Construction Engineer (RCE) should be interpreted as referring to the Contracting Authority and/or Project Engineer. Likewise, references to the District Construction Engineer (DCE) correspond to the District Local Systems Engineer (DLSE); or in the case of projects administered by the Office of Systems Planning, the appropriate Grant Program Manager or their designee. The Contracting Authority and Project Engineer should also recognize that some of the procedures described in the Construction Manual are internal to the Iowa DOT and therefore may not be applicable for LPA administered projects.

In most cases, this I.M. will simply provide summary guidance and reference the appropriate parts of the Construction Manual for more detailed information. However, in some instances, this I.M. provides additional information or guidance that is applicable only to LPA projects. Therefore, the Iowa DOT strongly recommends that the Contracting Authority, Person in Responsible Charge, Project Engineer, and staff become thoroughly familiar with the contents of both this I.M. and the Construction Manual. If you have any questions concerning the applicability of procedures in the Construction Manual, contact the Administering Office for assistance.

Definitions

Administering Office: The Iowa DOT's representative who is responsible for oversight of the project. The representative may be a District Local Systems Engineer or from the Office of Systems Planning.

Contract Administrator: The Contract Administrator is the LPA's assigned representative who will be responsible for all aspects of administration and inspection of the construction contract. The Contract Administrator is the person that will be carrying out the day-to-day duties on the project to ensure that the work is in compliance with the contract documents. The Contract Administrator may be the Project Engineer, the PIRC, or any other LPA employee or designee who would be the first point of contact for businesses, residents, contractor, etc.; when issues arise that would need the attention of the PIRC or the Project Engineer. If the inspector encounters issues that need to be dealt with, they may first go to the Contract Administrator for guidance if it involves dispute resolution affecting businesses or residents, or may result in modifications to the contract. If the Contract Administrator is not a full time employee of the LPA, the LPA must designate a PIRC to make final decisions and/or sign any documents pertaining to contract costs, time adjustments, or contractual agreements.

Contracting Authority: See [Article 1101.02](#) of the Standard Specifications.

Contractor: When an upper case “C” is used, the term refers to the individual, firm, corporation, or joint venture contracting with the Contracting Authority for performance of prescribed work, as defined in [Article 1101.03](#) of the Standard Specifications. When a lower case “c” is used, the term refers to contractors in general which includes any contractor that may bid on a contract and subcontractors.

Inspector: See Article [1101.02](#) of the Standard Specifications. Authority and Duties of the Project Inspector can be found in Article [1105.07](#) of the Standard Specifications.

Person in Responsible Charge (PIRC): If the LPA uses a consultant to perform construction inspection services, [23 CFR 635.105](#) requires the LPA to have a full time employee who is in responsible charge of the project. For counties and larger cities, this person is typically the county or city engineer; however, they need not be a licensed engineer or architect to be the Person in Responsible Charge. For smaller cities that do not have full time employees, the mayor or city clerk may perform this function, with assistance from the Iowa DOT Administering Office. A consultant may not serve as the Person in Responsible Charge for a Federal-aid project.

Duties and functions of the Person in Responsible Charge include the following:

- Administering inherently governmental project activities, including those dealing with cost, time, adherence to contract requirements, construction quality, and scope of Federal-aid projects.
- Maintaining familiarity with day to day project operations, including project safety issues.
- Making or participating in decisions about changed conditions or scope changes that require Change Orders (Form [831240](#)) or supplemental contracts.
- Visiting and reviewing the project on a frequency that is commensurate with the magnitude and complexity of the project.
- Reviewing financial processes, transactions and documentation to ensure that safeguards are in place to minimize fraud, waste, and abuse.
- Directing project staff, agency or consultant, to carry out project administration and contract oversight, including proper documentation.
- Is aware of the qualifications, assignments, and on-the-job performance of the LPA and consultant staff at all stages of the project.

These duties may be shared by several people. A single person may also serve as the Person in Responsible Charge for multiple projects.

Project Engineer: For publicly owned projects, the Engineer is a Professional Engineer licensed in the State of Iowa and authorized representative of the Contracting Authority. For privately contracted projects, with improvements that will become publicly owned, the Engineer is the authorized representative of the public entity ultimately accepting ownership of the improvements. For all other projects, the Engineer is the owner’s authorized representative. Further authority of the Engineer can be found in [Article 1105.01](#) of the Standard Specifications.

Additional Responsibilities for key project personnel can be found in [Attachment D](#) of this I.M., Local Public Agency Construction Contract Administration Guidance

Resources

The Local Public Agency Construction Contract Administration Guidance (see [Attachment D](#) to this I.M.) gives specific guidelines for administration of projects. [Basic Contract Administration for Local Agencies Manual](#) is the manual used for the Basic Construction Administration for Local Public Agencies class and include examples of project documentation from an actual LPA project. Please consult this I.M. for more in-depth guidance than what is found in the [Basic](#) or [Advanced Contract Administration](#) manuals.

[Advanced Contract Administration Manual](#) is the book used for Advanced Construction Administration and includes FHWA-1273; information about the utility process; [I.M. 3.910](#), Final Review, Audit, and Close-out Procedures for Federal-aid Projects; and [I.M. 3.930](#), Interest Payment.

The [Electronic Reference Library](#) (ERL) is the electronic version of many of the standard contract documents and includes several non-contract documents also. Contract documents which can be found on the ERL include the [Standard Specifications for Highway and Bridge Construction](#), [Supplemental Specifications](#), [Materials I.M.s](#), [Standard Road Plans](#), [Standard Culvert Plans](#), [Standard Bridge Plans](#), [Sign Truss Standards](#), [Construction Manual](#) (non-contract documents), [Flagger's Handbook](#), and [SUDAS Standard Specifications](#) (non-contract documents).

SUDAS Standard Specifications: "Refers to specifications developed by the Iowa Statewide Urban Design and Specifications program." Many specifications are jointly developed and maintained by the [Statewide Urban Design and Specifications](#) (SUDAS) staff and Iowa DOT Specifications Section, with approval by their respective Board of Directors and Specification Committee. The jointly developed and maintained specifications are identified in the Standard Specifications with the following first paragraph of the section:

"This section was developed in conjunction with Section *nnnn* of the [SUDAS Standard Specifications](#), with modifications to suit the needs of the Department."

Examples of these modifications are testing frequencies, pipe material allowed within the right-of-way, and backfill materials.

Other sections of the [SUDAS Standard Specifications](#) may be used on the project but not by reference. A Special Provision must have been developed using the desired text and included in the proposal and contract.

Preconstruction Inspection Duties

1. Color coding of plans:

If the plans are not printed (or available) in color, it is recommended that the inspector review the plans and use multiple colored highlighters to emphasize key issues that will need to be addressed during construction. For example on the typical cross-sections, highlight pavement slope in one color, widths in a second color, depth in a third color, etc. On the d-sheets, highlight locations of various types of installations, i.e. field entrances, side roads, culvert locations, right-of-way limits, borrow areas, etc. For suggested colors, see Design Manual, Chapter [21E-4](#).

2. Office Task:

- Develop a filing system for each project that will address pre-letting, post-letting, and project close-out requirements.
- Obtain a copy of I.M. 3.910, [Attachment E](#), Pre-audit Checklist, to ensure that the proper documents for each project are included in the project file. The Pre-audit Checklist and the documents required by the checklist can be filed in either an electronic or hardcopy format.
- These checklists may not be all inclusive. If there are more specific files needed for a project, other file folders may be developed.

3. Review [Chapter 3](#) of the Construction Manual for general inspection instruction. Review appropriate chapters in the rest of the Construction Manual for the type of work being inspected.

4. Field tasks (when appropriate):

- Tying section corners.
- Marking stations/linear reference points.
- Identify survey points needed for construction (ie point of curve, PT).
- Mark super-elevated curves for transitions.
- Mark fill areas for leveling courses.
- Identify deviations in roadway crown that may affect overlay thickness.
- Stake structures.

- Mark or identify the locations indicated on plan tabulations to make sure they are correct with field conditions (i.e. subdrain outlets, location of paint markings, mailbox relocations, removal limits, patching locations).
- Preconstruction photos or videos.
- Ensure any environmental or cultural sensitive areas are correctly identified on the plans.
- Communicate with residence, businesses, and services that may be impacted to see if they will have any special access needs during construction.
- Develop preliminary cross-sections for earthwork items.
- If smoothness is not required, verify that a 10 foot straight edge will be available for the inspector to use during construction. (See [Article 2316](#) of the Standard Specifications, the list of Special Provisions in the Proposal, and the Estimate Reference Information or General Notes in the plans to determine if smoothness will or will not be required.)

5. Setting up the field records:

A uniform system of project documentation should be established for construction projects. Uniformity will simplify training of new employees and reduce confusion upon reassignment of inspectors to other projects. It will also facilitate efficient inspection, construction progress documentation, audits, and project reviews. The Person in Responsible Charge will assign staff to inspect the construction project(s). The responsibility for all required documentation must be specifically and clearly communicated to the project inspector(s).

The Contract Administering staff must maintain project records properly, preserve all source documentation, backup electronic files, and make all documentation readily available when needed. A log of all employees providing documentation for a project should be maintained, including their signature and initials. The principles of record keeping discussed in this I.M. apply to all types of documentation, regardless of the media used to save the information. The two options for contract administration are:

FieldBook2 and FieldManager

FieldBook2 is an automated record keeping system that is used by some field staff to document construction progress. It is a PC “front-end” to the FieldManager component that interfaces with the Iowa DOT’s mainframe contractor payment system.

There may be multiple users of FieldBook2 making individual entries for the same contract. The information from each of these users is combined by FieldManager which is then used to document progress of the field work and process payments to the Contractor.

FieldManager gathers information on item progress only; supporting documentation must be maintained separately. Since the supporting documents are not available in FieldManager, they will need to be made available to the inspector either electronically or in hard copy format to track the support information for the individual items that require them. For information on what supporting documents are needed, see the guidance in the Item Progress and Supporting Forms section below.

The [FieldBook Users Guide](#) and [FieldManager Users Guide](#) are available for instructions on using the programs. For training opportunities contact the District Local Systems Engineer. There are also documents named [FieldBook Cookbook](#) and [FieldManager Cookbook](#) which give step by step instructions on how to use the respective programs based on the task you are working on.

NOTE: In the near future the Office of Local Systems will be implementing a contract administration automation process. If you are not currently using FieldBook2/FieldManager, it is recommended that you wait to automate until the Office of Local Systems has completed the new process.

Setting up a Field Book

In the past project records have been kept manually on paper forms or on pre-developed Excel spread sheets, what are referred to as “field books”. For each item available for use on a contract, forms have been developed using Excel to record item progress and any item specific information pertinent to the installation/construction of that item. These forms can be utilized in either an electronic or paper format. The forms are available on the Office of Local Systems [Project inspection](#)

[and administration](#) webpage; click on “Inspection worksheets (Excel format)”. To see the list of items and forms associated with each item, click on “[Index](#)”. Do not print this list because the column for the support forms may not be wide enough in a printed version to show all the required form for some items. Also, this index of forms is updated every letting that an item code is added or deleted, so a printed copy may be obsolete as early as the next letting.

When setting up a book for a project that was let previously there may be items that no longer appear on the current list. At the bottom of the spreadsheet there are two tabs, one is “Current” and the other is “Obsolete”. If the item you are looking for does not appear on the “Current” list, click on the tab “Obsolete” to find it. The items on these lists are numerical based by the item code and should appear in the same order as they are on the contract. An easy way to get a list of the forms you will need is to make a table of all the items on your contract and then go through the list of items on the index and write down the forms you will need for each item. The table may include columns for “Line No.”, “Item Code/Item Description”, “Unit”, “Form”, and “Support Forms”. Once this list of forms is complete, go back to the [Office of Local Systems Project Inspection and administration](#) webpage. If the list of forms is not visible under “Inspection worksheets (Excel format)”, click on it again to expand the list to show all of the forms. You can download a copy of each form you will need.

From the list that is developed, print each of the forms needed for each item. These should be inserted into a 3-ring binder for use in the field to document the project. In lieu of hardcopy forms, the electronic versions of the forms, in Excel format, can be used to document daily activities and item progress. The advantage of using electronic documentation is that many of the forms have internal quantity calculations built into them and will require the use of a mobile electronic device in the field.

A. Loose Leaf Forms (hard copy and electronic formats)

- 1) There are six standard forms that are used on every project:
 - a. Project Index forms - “[Project Index](#)” and “[Project Index-A](#)” (page 2 of the form if more than one page is needed for all of the information):
 - i. If setting up books in a hard copy format, this page will not be needed if each of the items in a binder is tabbed for easy access. This eliminates the need to renumber the pages on the index when additional pages are added to the book.
 - ii. If using electronic format (Excel) for field documentation, make a new tab (sheet) for each item. On the first tab (sheet) make an index to list the item number and the tab label under which the information for each of the items can be found.
 - b. [Project Information](#) form: This sheet included information on the contract period and key personnel that will be working on the project and their contact information. If utilizing hard copy forms include a printed name, signature, and initials. If utilizing electronic forms include name and initials. If using an electronic signature on any documents, also include that. Anyone who is going to be making entries into books, picking up tickets, or signing documents in the field needs to be included on this sheet.
 - c. [Inspector's Checklist](#) form: The Inspector's Checklist as with many of the support forms serves as a reminder to the inspector of duties they need to perform during the inspection of the project.
 - d. Daily Diary forms - “[Daily 1](#)” and “[Daily 2](#)” – two formats are available depending on how much information will be written each day.
 - i. The Daily Diary is used to document information needed to complete the Weekly Report of Working Days ([Form 830238 \(Word\)](#)).
 - ii. Daily Diaries must be legible and complete. These inspector's diaries are legal documents and may be used to resolve claims and disputes. Entries should be strictly factual and remain objective in nature. Do not include opinions. This documentation may be used in a court of law. Each inspector must also keep a diary that includes a description of activities accomplished during each day.

iii. Preparing a Daily Diary:

- a. Who - Contractor, subcontractors, utilities on site.
- b. What - Items of work, weather, problems encountered.
- c. Where - Exact location by station and offset of work performed, problem, or event.
- d. When - Time of major event.
- e. How - Specialized equipment or methods used.
- f. Sketches and computations - Dimensions are critical and neatness counts.
- g. Visitors - Name, purpose of visit, and discussions held.
- h. Modifications - Authorization for modifications to the contract documents and any substitutions allowed.
- i. Author's signature

2) Item Progress and Supporting Forms:

- a. Item progress forms begin with "E0xx" where xx is the form number. For every item there is a form E0xx and a form E0xxA. As with Index and Index-A, if there is too much information for one sheet, the A sheets are used to continue the documentation for that item and do not include the footers shown on the first page. Every item progress form includes a space/field for documenting the Article where the Method of Measurement and Basis of Payment for each item can be found. Enter the appropriate Article number in the space provided on each form.
- b. Supporting documentation forms are used begin with "E1xx" where xx is the form number. These forms are used to document field test results, samples, measurements, temperatures, observations, etc. for individual items. Not all items require a support form and some items require multiple support forms. If the same support form is required for more than one item, a separate form shall be included for each of those items. For example, if there is more than one concrete item on the contract, [Form E115](#) (which is used to document results of entrained air and slump test) would be included for each concrete item. Note: Form E115 is also available as [Form 830242E \(Excel\)](#), Structures Weekly Grade Report, and [instructions](#) on completing the form.
- c. When using a notebook or pad of paper in the field for documentation of progress or events:
 - i. Hardcopy forms: Do not discard this original document after entering the information on the loose leaf forms in the 3-ring binder. Three-hole punch the paper and insert in your project binder, so if there is a mistake in transferring information the original source documentation is not lost.
 - ii. Electronic forms: Do not discard this original document after entering the information in the electronic loose leaf forms. Scan the original document and attach it to the electronic record so if there is a mistake in transferring information the original source documentation is not lost.

B. Other documents to include in your field book:

In addition to the loose leaf forms listed above, obtain copies of the documents listed in [Attachment E](#) to this I.M., under Inspectors Records and Office Files. The "Type of documents being used to record project progress" and "Are entries for all items" under the Inspectors Records section refer to the items discussed in Section A above. All other documents listed in [Attachment E](#) to this I.M. are in addition to the item progress sheets.

The bullet items listed in I.M. 3.910, [Attachment E](#), Pre-audit Checklist, Contract Documents, are items that shall be in the project file at the time of final review. Some of these documents will be used in the field by the project inspector and be included in the project file. Please review I.M. 3.910, [Attachment E](#), prior to the start of the project to identify any additional forms that may be needed in the field books for completion on the project site.

Preconstruction Meeting

After a contract has been awarded, a Preconstruction meeting should be scheduled. Directions on the content of this meeting are available in Section 2.11, Preconstruction Meeting, in [Attachment D](#), to this I.M.

Construction Inspection Duties

- Inspect Contractor's Poster Board to verify compliance and record inspection results on Project Engineer's EEO Project Site Inspection/Wage Rate Report form ([Form 650170](#)).
- If [Section 2602](#) of the Standard Specifications is included in the contract documents (there is an item code that begins with 2602) then an Erosion Control Implementation Plan (ECIP) is required. Using information provided in the ECIP, identify all planned and emergency mobilizations so appropriate payment can be applied.
- If a Pollution Prevention Plan is included in the plans, insure erosion control methods are established before work that could result in erosion begins. Conduct joint inspections and record on Storm Water Site Inspection form ([Form 830214](#)) as specified in the Pollution Prevention Plan.
- If Davis-Bacon Wages apply, ("FEDERAL AID - PREDETERMINED WAGES ARE IN EFFECT" as stated on the first page of the Contract) perform wage rate reviews as specified in Section 2.24, Davis-Bacon Wage Requirements, Project Engineer's Involvement, A. Field Procedure, in [Attachment D](#) to this I.M. The correct version of the Wage Rate is found on the first page of the Contract and is listed as an addendum (i.e. IA14-1.1). This is the version that should be found on the Contractor's Poster Board and should be used to check the payrolls for compliance.
- For all DBEs working on the contract, complete a Commercially Useful Function Checklist ([Form 507014](#)).
- As materials are delivered to the site:
 - Obtain the appropriate documentation for those materials, as required by the contract documents.
 - Review documents for accuracy and compliance with the requirements of the contract documents.
 - Organize Materials Certifications as submitted.
- Observe work being performed by the Contractor and subcontractors. Document quantities of items installed and record daily activities in the Daily Diary.
- Perform tests and obtain materials samples as directed by [Materials I.M. 204](#).
 - For samples to be submitted to other labs for testing, complete an Identification of Sample for Test form ([Form 820193](#)) and attach to the sample before submitting.
 - Obtain test results from testing labs and include in field records.
- If there are any deviations from the contract requirements that will require either correction or price adjustment, these deviations shall be recorded on Non-Compliance Notice form ([Form 830245](#)) (Notice) (see [Attachment D](#), Section 2.53, Price Adjustment Guide for Reasonably Close Conforming, Reasonably Acceptable, and Deficient Work, to this I.M.).
 - The Contractor's representative should sign the Notice.
 - If the Contractor's representative will not sign the Notice, record name, date, and time of presentation of the Notice.
 - Provide the Contractor a copy of the Notice. If the Contractor is not on site, and the Notice is given to a subcontractor, also send the Contractor a copy of the form.
 - Negotiate between the PIRC, Project Engineer, and Contractor on method of corrective action or price adjustment.
 - If field correction is agreed upon, record date, time, and method of correction in field records.
 - If Price Adjustment is agreed upon, complete a Change Order ([Form 831240](#)) to address the change.
 - If no correction is agreed upon, record basis for that decision in field records.

- Record item progress quantities on the appropriate loose leaf pages or in FieldBook.
- Complete a Weekly Report of Working Days form ([Form 830238](#)) ([Word](#)) and submit to Project Engineer for signature and distribution.

LPA Construction Reviews

- Local Systems Field Reviews - On an annual basis, the Office of Local Systems will select a sample of projects to review. These reviews will occur during the construction of the project and will utilize the Iowa DOT Field Inspection Review Report (see [Attachment E](#) to this I.M). This checklist includes all of the documents that should be present in the Project Engineer's files, project inspector's records, and observations from the project site. The purpose of these reviews is to verify a project was developed and is being constructed in accordance with the procedures outlined in the Federal-aid Project Development Guide ([Guide](#)) and Instructional Memorandums to Local Public Agencies ([I.M.s](#)), thereby ensuring that Federal requirements are being met.

Any deficiencies that are identified at the time of the field review will be discussed with the LPA to assist them in correcting these issues. This review and correction of any deficiencies will aid in the expedition of the project closeout and final review process. This should also aid in the administration and inspection of future projects to ensure that the documentation will be complete and the project will be in compliance with the contract documents.

- Systems Planning Field Reviews - contact the Office of Systems Planning.
- FHWA Field Reviews - On an annual basis, FHWA will select a sample of projects to review. These reviews will occur during the construction of the project. These are formal reviews and a report is written to document the findings. FHWA does have the authority to rescind funding of a project.
- Work Zone Safety Reviews – On an annual basis, representatives from FHWA and DOT, review a sample of projects currently under construction for compliance of traffic control and flagging procedures.

File Format, Location, and Retention

Project files may be in either paper or electronic format. It is helpful, but not necessary, to have all of the documents in the same location (i.e., the same file folder, binder, drawer, cabinet, or electronic storage equivalent). If documents are stored in different locations, those locations should be clearly identified and easily located. In all cases, documents should be readily accessible for inspection by authorized Iowa DOT, other State agencies, Federal Highway Administration (FHWA), or other Federal personnel. For practical purposes, this means hard copies are either present in the file or can be printed upon request.

If the construction inspection is conducted by a consultant, these documents may be stored at the consultant's office during construction. However, after the project has been closed out, these records should be turned over to the LPA for the duration of the record retention period (see [I.M. 3.910](#), Field Review, Audit, and Close-out Procedures for Federal-aid Projects).