

1 **Meeting the Needs of Modern Transportation Researchers by Transforming the**  
2 **Iowa Department of Transportation Library - Early Efforts & Results**

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46

1 **ABSTRACT**

2 The Iowa Department of Transportation (Iowa DOT) Library is transforming its  
3 collection, services, and outreach practices to better serve researcher and patron needs. A  
4 robust digitization effort is improving and broadening access to the Iowa DOT's research  
5 output. In the spirit of technology transfer, this work is also aiding other transportation  
6 libraries as they face digitization decisions. The ongoing collection development  
7 activities are enabling greater electronic access as well as providing an opportunity to  
8 update the physical holdings. Combining the results of the Iowa Highway Research  
9 Board TR-670 patron survey with clear collection development strategies drives the  
10 modernization of Library technologies and services, as well as outreach planning.  
11 Through these initiatives, the Iowa DOT Library is becoming a more effective and  
12 efficient tool for Iowa DOT researchers.

13

14 **Keywords: Libraries, Library operations, Information management, Information**  
15 **services, Research, Collection development, Technology transfer, Customer service,**  
16 **Electronic media, Digitization**

17

## 1 **BACKGROUND**

2 The Iowa Department of Transportation (Iowa DOT), and its predecessor, the Iowa State  
3 Highway Commission (ISHC), like most other state DOTs, have had a dedicated library,  
4 departmental “libraries,” or some combination of the two for decades. The ISHC hired its  
5 first degreed librarian in 1970 in order to make professional library services available to  
6 Iowa DOT researchers, engineers, staff, and contractors. This tradition has continued for  
7 45 years. In mid-2012 the Iowa DOT Library gained a new director who recognized that  
8 the information needs and search practices of researchers have changed dramatically over  
9 time. Information seekers, now used to self-guided searching, expect direct electronic  
10 access to the full text of reports and journals at their desktops rather than making a trip to  
11 a library. Modern libraries have quickly changed to meet these needs, by providing online  
12 access to physical and digital collections. This is especially true for researchers with  
13 electronic journal subscriptions. Further, library services that used to take place face-to-  
14 face, such as search training and answering patron questions or information requests, are  
15 frequently completed via email, chat, or Web-based text or video.

16 The Iowa DOT and the Iowa Highway Research Board (IHRB) have built strong  
17 reputations for transportation research over the past century. Recognizing this role, the  
18 Iowa DOT Library as a section of the Office of Research & Analytics, was refocused to  
19 more agilely serve the research needs of the Iowa DOT and IHRB. This has meant  
20 modernizing library infrastructure and collections to meet the expectations of today’s  
21 researchers, improving researcher access and broadening technology transfer by  
22 digitizing Iowa DOT research reports, carefully assessing and updating the existing  
23 collection with an eye to increasing electronic access, and seeking patron feedback to  
24 focus and improve library services. The implementation of these strategies and visions  
25 have shown the current and potential value of the Library to Iowa DOT management,  
26 who now rather than looking to close the Library, are seeking new ways to employ the  
27 unique skills of Library staff to solve Iowa DOT information needs.

## 28 29 **INTRODUCTION**

30 This paper looks at three aspects of Iowa DOT Library operations currently under  
31 transformation: digitizing Iowa DOT research reports to improve access; collection  
32 management activities including deaccessioning items and replacing physical items with  
33 electronic; and, gathering patron feedback to improve services. It is hoped the paper will  
34 offer guidance to other libraries considering similar improvements.

## 35 36 **DIGITIZING IOWA DOT RESEARCH TO IMPROVE ACCESS & 37 TECHNOLOGY TRANSFER**

38 During its first 100 years the Iowa DOT and its various offices and departments have  
39 published thousands of reports. A key Iowa DOT Library goal is the digitization of all past  
40 reports from research projects performed or overseen by the Iowa Office of Research and  
41 Analytics, its predecessors, and the IHRB. Iowa DOT researchers and research contractors  
42 tend to publish research reports as “grey literature,” which is academic or research  
43 literature not formally published by a commercial publisher. From the 1930s to the 1990s  
44 these reports were typically typed on 8 ½ by 11 inch paper and photocopied, or offset  
45 print, and may have been bound with glue, staples, or plastic comb bindings. Most of these  
46 reports are simple text with black & white illustrations. However some are much more

1 complex, including gate-folded maps printed in color, color photography, or multi-page  
2 charts on transparent plastic pages. Much of this research is foundational to current  
3 transportation engineering practice within and outside of Iowa, and is held in print in  
4 transportation organizations or libraries which participate in a sharing program with the  
5 Iowa DOT. However, many of these reports have not been widely accessible  
6 electronically until the onset of this project.

7 Since mid-2012 the Iowa DOT Library has been digitizing born-print research  
8 reports created by the Iowa DOT in order to allow broader access to the output of Iowa  
9 DOT research projects. One major goal is to have a full text link for each Iowa DOT  
10 produced or funded report indexed in TRB's TRID database (circa 1400 reports), as well  
11 as the Iowa state repository, Iowa Publications Online (IPO), <http://publications.iowa.gov>.  
12 Depositing reports into IPO has two major benefits. First, IPO provides stable URI links  
13 which will not break if the local file structures are reorganized. Second, IPO provides  
14 improved international access. For security reasons the Iowa DOT website blocks access  
15 from computers with IP addresses located outside the United States. IPO does not block  
16 these IP addresses, allowing world-wide access to Iowa DOT research.

17 A secondary digitization consideration is ensuring the long-term preservation of  
18 original print reports by creating electronic "use-copies." Once a report has been digitized  
19 and deposited into the repositories, the original is sent to the State Library of Iowa, which  
20 serves as the print repository for all State of Iowa departments and offices per Iowa  
21 legislative requirements. Depositing print versions with the State Library has the positive  
22 outcomes of fulfilling transparency requirements and avoiding duplication of preservation  
23 efforts. This also allows the Iowa DOT Library staff to devote more time to research and  
24 patron needs while increasing access to research output.

25 Over the course of 21 months (December 2013 to August 2015), the creation of a  
26 fairly mature and efficient process has emerged for creating high-quality digital versions  
27 of analog reports. More than 700 reports were scanned and deposited into IPO with links  
28 sent to TRID. A set of scanning standards (see **Digitization Standards** below) based on  
29 the Iowa DOT business environment and digital preservation practices has been used at  
30 the Iowa DOT Library and shared with transportation libraries which are members of the  
31 Midwest Transportation Knowledge Network. Recently a "best-case scenario" scanning  
32 time study was performed to help organizations plan the human and machine resources  
33 required for in-house digitization projects (see Best-case Digitization Time Study Results,  
34 below). Since the Iowa DOT has knowledgeable staff, well-established protocols, and  
35 high-speed bulk scanning hardware and software, all work was done in house by Library  
36 staff.

### 37 38 **Digitization Standards**

39 The Iowa DOT Library staff has developed a small number of standards used in order to  
40 produce a digitized item that can be easily preserved, located, and read, as well as to create  
41 a uniform appearance that is easily repeatable and accessible for both other libraries and  
42 researchers who consume these documents. These standards take into account the tools  
43 and business practices in place at the Iowa DOT combined with current search and  
44 preservation best practices.

45 All documents should:

- 1 • Be scanned at the best possible resolution, based on equipment used and legibility
- 2 of text & images (300 to 600 DPI recommended);
- 3 • Have correct layout and magnification settings;
- 4 • Contain the ability to recognize text through Optical Character Recognition (OCR)
- 5 technology;
- 6 • Have a human-readable filename;
- 7 • Have Document Properties Description metadata fields completed.

8 The standards above impact the digitization workflow described in detail below.

9

## 10 **Digitization Workflow**

11 Even before scanning can take place there are a number of steps that must be followed to  
12 prepare items for digitization. Just as importantly are the steps that follow the scanning  
13 process and ensure the scans are not only available via the internet, but are easily found.  
14 These steps are described below.

15

### 16 *Step 1. Chose Materials for Scanning*

17 Select a reasonably sized, high-impact set of publications to digitize.

18 Since research reports produced by the Iowa DOT and its contractors are possibly  
19 uniquely held by the Iowa DOT Library, and owned by the Iowa DOT without copyright  
20 restriction, they became top priority for digitization

21

### 22 *Step 2. Assessing Materials for Scanning Exceptions*

23 Inspect each chosen report for pages that may cause scanning exceptions.

24 This may include damaged or brittle pages, odd shaped pages, fold-outs, spot color  
25 in an otherwise black and white report, transparencies, etc. Brittle or damaged pages may  
26 cause the scanner to jam which may degrade the scan quality of pages to follow, or may  
27 result in the destruction of the page and loss of information. These pages should be  
28 scanned by hand.

29

### 30 *Step 3. Unbinding items*

31 If possible, cut reports out of bindings, known as destructive digitization, as this will  
32 produce a cleaner edge for high-speed bulk scanners.

33 Staples or plastic comb bindings can be removed and replaced if it is vital to  
34 preserve the print item. The loss of one print item can be justified if the item is held  
35 elsewhere and its sacrifice for scanning improves general access to the information.

36

### 37 *Step 4. Preparing for Bulk Scanning*

38 Schedule in-house or contract bulk scanning for efficient, consistent results.

39 The Iowa DOT has an electronic records management systems (ERMS) office  
40 which performs bulk scanning of paper-based records daily. The ERMS office provides  
41 Iowa DOT Library staff with training on, and access to, bulk scanning hardware and  
42 software. The Library schedules its scanning for an average of once per week.

43 The Iowa DOT ERMS currently uses the Kodak Ngenuity 9000 Series high-speed  
44 bulk scanners. Larger format scanners and flatbed scanners are also available for different  
45 item formats. These scanners can process hundreds of pages per minute depending on scan

1 settings; the lower the resolution, the faster the scanning. The Iowa DOT uses PC running  
2 Windows operating system, and Paperflow v7.78 scanning software.

3 Default scanner settings:

- 4 • Black and White;
- 5 • 400 dots per inch (DPI) scan resolution;
- 6 • Duplex;
- 7 • Front and Back scan.

#### 8 9 *Step 5. Bulk Scan Items*

10 Watch the scanned page previews for exceptions. Exceptions may include very dark or  
11 very light scans or images with a great deal of visible Moiré pattern. Exception pages will  
12 need to be rescanned.

13 Some exceptions that might slow down the scanning process are:

- 14 • Dust on scanner lens, which results in leaving a black streak across an entire page  
15 for many pages.
- 16 • Poor quality paper or paper that has deteriorated over time will tend to stick  
17 together when going through the scanner which results in the scanner stopping.
- 18 • Pages that are larger than the size of the pages in the report and are thus folded will  
19 register in the scanner as more than one page and stop the scanner.
- 20 • If there are pictures, then they will probably have to be rescanned later individually  
21 using the greyscale setting instead of black and white in order to improve image  
22 quality, or in color, if settings were black and white.

#### 23 24 *Step 6. Convert Scanned Images*

25 Export an Adobe PDF version of the master scan images, whether in RAW or TIFF image  
26 format. Using descriptive file names, archive the RAW or TIFF master images for later  
27 use.

28 The Paperflow v7.78 software creates a TIFF file for each scanned side. Using  
29 Adobe Acrobat Standard, each TIFF for a particular document is gathered and is  
30 converted into a PDF.

31 Since scanning time, conversion time, and OCR time (following step) are quite  
32 variable depending on machine configurations, it is recommended that a test sample (100  
33 to 250 pages) be created to set benchmarks.

#### 34 35 *Step 7. Optical Character Recognition*

36 Process each PDF through Adobe's Optical Character Recognition function.

37 OCR processing enables full-text searching and should be implemented before the  
38 PDF is deposited into a repository.

#### 39 40 *Step 8. Name file, add Document Metadata and Set Document Properties*

41 Name the file, add metadata, and set the preferred initial view of the document.

42 Often file names are generic ("fulltext.pdf") or made of a DOI or other number  
43 that has little meaning for researchers and patrons. The Iowa DOT Library creates file  
44 names that are "human-readable;" composed of enough complete words that patrons can  
45 associate each PDF to the citation or reference they were seeking. The Iowa DOT Library  
46 employs the following guidelines:

- 1 • If the Iowa DOT or one of its offices is the publisher or sponsor of a report, file
- 2 names should start with **IADOT\_**;
- 3 • Use underscores (\_) instead of spaces between words and in place of hyphens (-);
- 4 • Use an Iowa DOT project number if available;
- 5 • If the report was produced for the Iowa DOT by a contractor, such as InTrans,
- 6 follow **IADOT\_** or the project number, if available, with **InTrans** or other appropriate
- 7 signifier;
- 8 • Use the last name of the main author, if available or necessary (*not required*);
- 9 • Use as much of the title as needed to allow patrons to connect the file to a citation.
- 10 Reasonable abbreviations, dropped vowels, and omitted articles are allowed;
- 11 • Always include “Phase” or “Part” number if available;
- 12 • Include the publication year at the end of the file name;
- 13 • Drop any punctuation in the title, do not use any periods except the one in the file
- 14 extension **.pdf**;
- 15 • Double check spelling before uploading.

16  
17 **Example report citation:** Cher Carney; Dan V. McGehee; Michelle L. Reyes.

18 *Prevalence and Distribution of Young Driver Distraction Errors in Naturalistic Driving*,

19 TPF-5(207), University of Iowa Public Policy Center, 2014.

20  
21 **Example file name:**

22 IADOT\_TPF\_5\_207\_UIowaPPC\_Prevalence\_Distribution\_Young\_Driver\_Distraction\_2

23 014.pdf

24 While this does produce a long file name (82 characters), the file name uniquely

25 identifies the digital file to a human reader and creates a shorter file name than the

26 maximum 207 characters set by ISO 9660:1999 (Level 2).

27 Metadata is added in the PDF “Document Properties.” Basic metadata, which is

28 found in the “Description” tab, includes Title, Author, Subject, and Keywords, with the

29 option to add additional metadata if desired. Iowa DOT Library practice is to fill out the

30 four basic metadata fields.

31 The “Initial View” tab controls navigation and screen response. The Iowa DOT

32 Library preferred settings are:

- 33 • Navigation tab: Page Only
- 34 • Page layout: Single Page
- 35 • Magnification: Fit Page

36  
37 *Step 9. Ingest Final Document into Digital Repository*

38 Final processed scans should be ingested into an open access digital repository.

39 The Iowa DOT Library uses Iowa Publications Online, an EPrints installation, as

40 its digital repository. IPO has a fairly simple ingestion interface and provides a stable URI

41 to the deposited report.

42  
43 *Step 10. Catalog Final Document*

44 In order to improve document discover and retrieval, the document should be cataloged or

45 its link added to an existing library catalog record.

1 Add the repository link to an existing Online Computer Library Center (OCLC)  
2 record for the print item by adding 530 (Additional Physical Form Available) and 856  
3 (Electronic Location/Access) fields or derive a new record for the electronic item based on  
4 the existing physical item record.

5  
6 *Step 11. Send Document Information to TRID and Other Transportation Libraries*  
7 Since TRID is the most largest transportation research database, and likely has an existing  
8 record of the item you have scanned, the repository link to newly scanned document  
9 should be sent to TRID.

10 In the event of scanning large quantities, it is best to communicate with TRID staff  
11 in advance. The workflow established with TRID and the Iowa DOT Library involves  
12 sending a spreadsheet of approximately 50 TRID accession numbers and document titles  
13 with a column of new links.

### 14 **Best-case Digitization Time Study Results**

15 Using the above digitization workflow and a test sample of documents, staff performed a  
16 “best-case” time study to assist others in estimating project time.

17  
18  
19 *Step 1.* For this time study, a set of bound journals was selected with permission of the  
20 publisher, who was provided scans copies to include in their digital portal. (Up to this  
21 point the digitization project has avoided copyright issues as most materials were created  
22 by or for-hire for the Iowa DOT. A broader discussion of copyright in digitization, while  
23 important, is beyond the scope of this paper.)

24  
25 *Step 2.* Each page is black and white and of uniform size with no exceptions.

26  
27 *Step 3.* The approximately 1500 pages were unbound and guillotined to produce square  
28 edges at 8 ½ inch X 11 inch (215.9 mm x 279.4 mm). Pages were mostly text with few  
29 images.

30  
31 *Step 4.* Scanner settings were set to preferences above.

32  
33 *Step 5.* The scanning time for each 100 pages, front and back, at 400 dpi, was 1 minute.

34  
35 *Step 6.* The amount of time it takes to convert from TIFF to PDF after scanning can vary  
36 depending on the computer processing power. The processing time of two different  
37 computer configurations were tested:

38 **Trial 1**(faster processor): Adobe Acrobat Standard Edition on an i7-4770  
39 @3.40GHz computer with 8GB of RAM and a 1TB Solid State Drive.

- 40 ○ 30 seconds processing time for 100 pages.

41 **Trial 2** (slower processor): Adobe Acrobat Standard Edition on an Intel Core 2  
42 @2.66GHz with 4GB of RAM and 160GB Hard Drive (not solid state).

- 43 ○ 1 minute processing time for 100 pages.

44  
45 *Step 7.* Performing OCR on a high resolution scan can be time and processor intensive.  
46 OCR performance will also be impacted by computer hardware and software.



1       **Trial 1**(faster processor): Adobe Acrobat Standard Edition on an i7-4770 @3.40GHz  
2 computer with 8GB of RAM and a 1TB Solid State Drive.

- 3           ○ 2 minutes for OCR processing for 100 pages.

4       **Trial 2** (slower processor): Adobe Acrobat Standard Edition on an Intel Core 2  
5 @2.66GHz with 4GB of RAM and 160GB Hard Drive (not solid state).

- 6           ○ 4.5 minutes for OCR processing for 100 pages.

7  
8       *Step 8.* The total time for naming, adding metadata, and setting properties was 2 minutes  
9 for each report. If 100 pages are divided between 10 shorter reports rather than 1 long  
10 report, time spent adding metadata would be approximately 20 minutes.

11  
12       *Step 9.* The total time for adding the final PDF into IPO is 4 minutes per document.  
13 Therefore, if 100 pages are divided between 10 shorter reports rather than 1 long report,  
14 time spent adding metadata would be approximately 40 minutes, at best case.

15  
16       *Step 10.* In the best case when scanning historic born-print reports, each document would  
17 already have been cataloged in its print form. The Iowa DOT Library prefers to add 530  
18 and 856 fields to the existing record because it can be done more quickly and at lower  
19 cost. This takes about 2 minutes per OCLC record.

20  
21       *Scenario assumptions:*

- 22       • Experienced digitizer scanning 100 pages, bulk scanned;
- 23       • Sample set of 10 research reports, of 10 pages each;
- 24       • Black & white text;
- 25       • Black & white images;
- 26       • 400 dpi resolution;
- 27       • Documents chosen have existing OCLC and TRID records;
- 28       • Time spent selecting items from collection and assessing for exceptional pages or  
29 content NOT included in this estimate.

30  
31       *Best-case scenario average task times for 100 pages representing 10 reports:*

- 32       • 5 minutes to unbind items;
- 33       • 5 minutes to prepare bulk scanner;
- 34       • 1 minute to bulk scan items;
- 35       • 30 seconds to convert scanned images into PDF;
- 36       • 2 minutes to run OCR on all 10 scanned reports using “In Multiple Files” option;
- 37       • 20 minutes to add document metadata and set document properties;
- 38       • 40 minutes to ingest final document into digital repository;
- 39       • 20 minutes to catalog final documents.

40       Total: 93.5 minutes for 10 documents. Or approximately 9 to 10 minutes total per 10 page  
41 document.

42  
43       **Efforts and Early Impacts**

44       As can be seen, digitizing born-print research reports to ensure findability and quality  
45 does take time and effort. By employing standards and practices such as those above, an  
46 agency can estimate project time and plan accordingly. The reports produced by the

1 research office of the Iowa DOT and IHRB have served as phase one of a larger  
2 digitization plan, and has aided the Iowa DOT Library to improve access to these reports.  
3 Further, the Iowa DOT Library has seen encouraging results from its efforts to improve  
4 digital access to Iowa DOT research reports. While a full analytical report is not yet  
5 available, IPO administrators report the number of refer clicks through to IPO that  
6 originate at TRID are increasing. A fuller report will be needed to quantify the impact.

## 7 8 **LIBRARY COLLECTION MANAGEMENT TO INCREASE ACCESS & 9 IMPROVE CIRCULATION**

10 In December 2014 the Iowa DOT Library began to look at aspects of collection  
11 development that have not been addressed in decades. No articulated collection  
12 development policy (CDP) was in effect in 2012 and the collection had not been  
13 systematically weeded. Weeding is a healthy and necessary part of collection  
14 management. According to Baumbach and Miller “weeding is selection in reverse. It is  
15 deselection. Weeding is the act of reevaluating items in the collection and removing any  
16 that are inaccurate, out of date, misleading, inappropriate, unused, in poor condition...”  
17 (*J*). To this could be added “or available in formats more aligned to patron needs.”  
18 Weeding the collection allows it to be refocused toward transportation research and  
19 patron needs. Library staff began a comprehensive collection assessment program to  
20 assess how the 16,000 held items may or may not be serving patron needs.

### 21 22 **Creating a Collection Development Policy and Deaccessioning Decision Tree**

23 The first step in the collection development project was to develop and implement a  
24 CDP. This policy clearly outlines the Iowa DOT Library’s acquisition goals, retention  
25 guidelines, and deselection criteria. The CDP defines the collection scope, indicating  
26 special collections, and allows a reassessment of the collection in terms of usefulness to  
27 patrons.

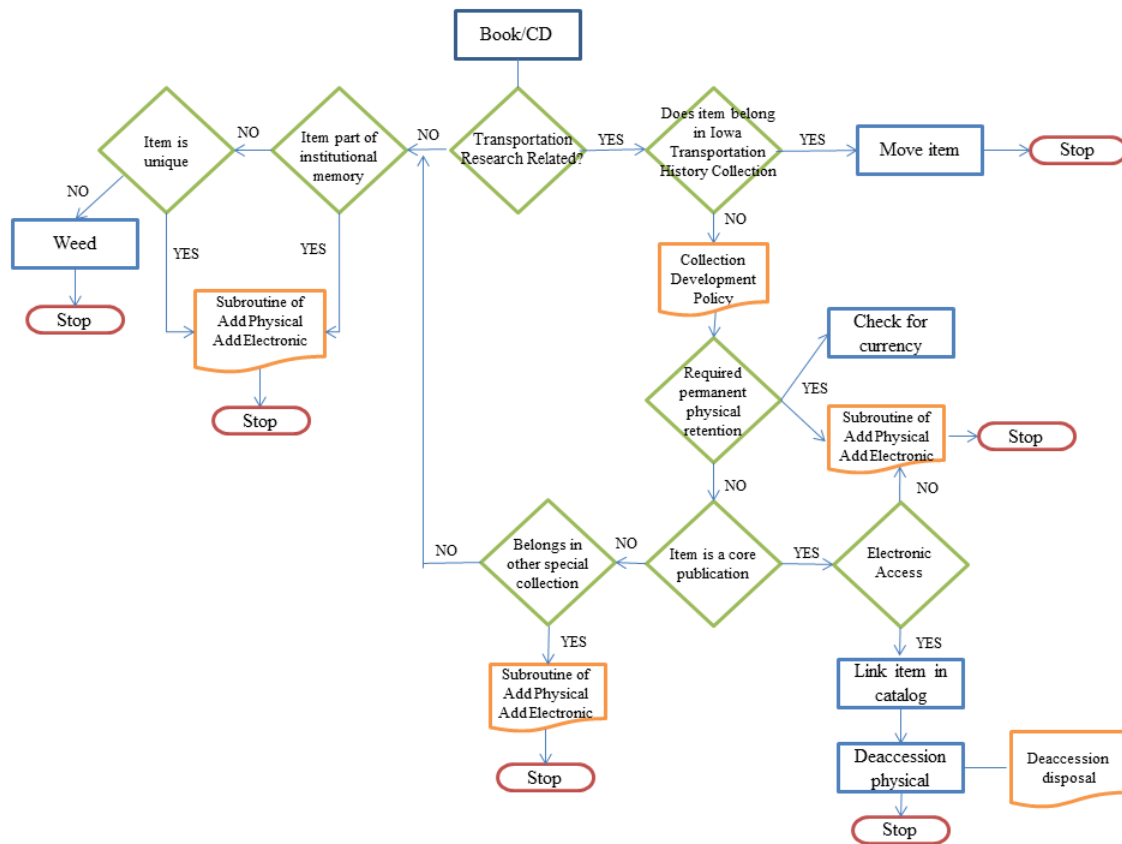
28  
29 The questions asked of each item were as follows:

- 30 • Does the item fit the Iowa DOT Library mission?
- 31 • Is the item digitized and easily accessible by patrons?
- 32 • Is the physical item available for loan at a minimum of six other libraries?
- 33 • Does the Iowa DOT Library have multiple copies or current editions of the item?
- 34 • Is the item out of date?
- 35 • Is the item in poor condition?
- 36 • Does the item better fit the mission of another library?
- 37 • Has the item been borrowed frequently or recently?
- 38 • Is the Iowa DOT Library a repository for the specific item?

39 The answers to these questions had direct impact on the decision to retain or  
40 deaccession each item.

41 To assist Iowa DOT Library staff in weeding decisions, a deaccession decision  
42 tree (FIGURE 1) was developed. This allowed each item to be subject to the same  
43 decision process. Main candidates for weeding were outdated or irrelevant to  
44 transportation research. The majority of patrons use the Library to access transportation  
45 related reports that assist them with their daily work. In an ongoing effort to fulfill

- 1 patron's needs the Library is focusing its collection on the most up-to-date transportation  
 2 research materials.  
 3



4

5 **FIGURE 1 Iowa DOT Library Deaccession Decision Tree.**

6

7 The Iowa DOT Library began the weeding project with a shelf assessment in  
 8 Alcove 4, containing materials defined by the Library of Congress Classification (LCC)  
 9 System. Classes included A (General Works) through K (Law), with the bulk of holdings  
 10 classified in HE, Social Science: Transportation and Communication. Each item was  
 11 individually assessed by retention and deselection criteria outlined in the CDP. Weeding  
 12 was a large part of the collection development project. The Library's shelves were  
 13 crammed full of outdated and irrelevant materials that were no longer appropriate for the  
 14 collection. Major goals included replacing outdated titles with current transportation  
 15 materials, increasing access with an expanded digital collection, improving physical  
 16 space through deaccessioning, and updating the Iowa DOT Library's OCLC WorldCat  
 17 and Online Public Access Catalog (OPAC) holdings.

18

### 19 **Replacing Print Items with Electronic Surrogates**

20 The continued focus of the Iowa DOT Library is increasing patron access to the  
 21 information they need. To accomplish this, the Library is switching its physical holdings  
 22 to digital where appropriate. This allows patrons to reach information from personal  
 23 workstations, at any time and as frequently as needed. During the shelf assessment and

1 weeding project, all items were searched for a digital version. While many digital  
2 surrogates were located, careful consideration was given as to which entity or repository  
3 held the digital copy and what access level (full access, search-only, fee-based, etc.) was  
4 allowed, and how that access level could affect patron access to the information item.  
5 Digital repositories, such as HathiTrust, might allow full-viewing options, but block full  
6 document downloading based on copyright considerations. A policy was created to  
7 distinguish when an item could be replaced by a physical copy. Repositories such as  
8 HathiTrust could be used, and a physical item replaced, if it was available for full-  
9 viewing and otherwise met retention guidelines. For publications by the United States  
10 Department of Transportation (USDOT) or The Federal Highway Administration  
11 (FHWA), the physical copy was only weeded if it had been digitized and was held by a  
12 trusted source such as the National Transportation Library (NTL).

### 13 14 **Preserving the Intellectual Record**

15 Another consideration for deaccessioning was whether the item was unique. All items  
16 were viewed in OCLC WorldCat to ensure they were held by other institutions. If  
17 numerous other transportation libraries held the item, and it was available digitally  
18 through a trusted source, the physical was discarded and the digital linked to the catalog.  
19 As the official repository for the Iowa DOT Library, the State Library of Iowa received  
20 many deaccessioned Iowa DOT-produced reports. Other items were set aside to be sent to  
21 other state DOTs or universities, when appropriate. If the Iowa DOT Library was found  
22 to be the unique holder, or the item was held by very few libraries, the physical item was  
23 preserved to ensure the intellectual record.

### 24 25 **Results**

26 At the conclusion of weeding Alcove 4, approximately 1300 items were deaccessioned,  
27 freeing 79 linear feet of shelving, allowing easier browsing and increased accessibility.  
28 The top and bottom shelves now remain empty and there is shelf space to face  
29 particularly eye-catching covers face out towards patrons. An immediate increase in  
30 collection use was observed. While circulation statistics for Alcove 4 have not yet been  
31 run, anecdotally, staff has seen patrons stopping more frequently and browsing face-out  
32 titles.

33 Another goal of the shelf assessment and weeding project is the unification of  
34 Iowa DOT Library OCLC holdings, online public access catalog (OPAC) holdings, and  
35 actual holdings, which have diverged by as many as 4000 items over the years, according  
36 to item counts of OCLC and OPAC holdings. Approximately 1200 records were updated  
37 in OCLC to correct mistakes, such as an item listed as “not held” but found on the shelf,  
38 an item listed as “held” but lost or missing, or to change from print to digital holdings.  
39 Another 1800 items were added to OPAC holdings. Working towards catalog agreement  
40 will continue as the remainder of Library holdings are assessed and digitized. Having  
41 unified holdings increases patron access and understanding of the collection, and  
42 improves Library staff ability to fulfill requests.

43 Besides offering patrons digital access to transportation reports and publications,  
44 the collection development project is offering patrons access to digital versions of  
45 journals and trade magazines. Currently the Iowa DOT Library subscribes to hundreds of  
46 transportation related journals and magazines that are physically routed. This process is

1 burdensome on staff and patrons, who may wait weeks for a publication when at the end  
2 of a routing list. To mitigate this, periodical circulation is moving to digital editions when  
3 possible, allowing patrons to receive information by email as it becomes available. As  
4 State employees, Iowa DOT employees have access to the State Library of Iowa's online  
5 databases of magazines and journals such as EBSCOhost. Many of the periodical titles  
6 offered to patrons are available digitally through EBSCOhost. A test group of patrons  
7 were issued Iowa DOT Library cards and provided information on how to access  
8 periodicals through the State Library of Iowa. Automatic alerts were set up and access  
9 became immediate. Back issues of subscribed periodicals are available, as well as limited  
10 issues of unsubscribed periodicals. As follow-up, Library staff plans to reach out to the  
11 test group to gauge user satisfaction. General issue of library cards and electronic journal  
12 access for Iowa DOT employees will roll out after analyzing patron feedback.

### 13 14 **Moving Forward**

15 The collection development project will continue into the remaining alcoves. The same  
16 collection development policy and weeding criteria will be used to determine what items  
17 may remain. Continued emphasis will be placed on digital access. The collection  
18 development policy commits the Iowa DOT Library to "move towards providing patrons  
19 with as much online and/or digital access to resources as possible." By automating  
20 electronic journal distribution and increasing electronic holdings the expectation is to  
21 shift Iowa DOT Library staff to devote more time to high-impact services, such as  
22 research literature searches, locating difficult-to-find materials, patron outreach, as well  
23 as patron education and training.

### 24 25 **GATHERING PATRON FEEDBACK TO IMPROVE LIBRARY SERVICES**

26 In 2014 the Iowa DOT and the IHRB sponsored IHRB Project TR-670, an evaluation of  
27 the Iowa DOT Library, its services, and its ability to meet the needs of transportation  
28 researchers and Library patrons. Maggie Sacco and David Hemingway-Turner, of HS  
29 InFocus, conducted a survey of all aspects of services, assessed the Iowa DOT Library's  
30 collections, and evaluated its technological infrastructure. The results are a report titled  
31 "Iowa DOT Library Services, Collection, & Technology Assessment" (2).

32 Approximately 2,700 Iowa DOT employees were invited, via email, to participate  
33 in the survey, with 267 responding, or nearly 10%. Based on comments from respondents  
34 and a general assessment of the Iowa DOT Library and its services, TR-670 gave  
35 recommendations for staff to improve services and update functionality, including  
36 updating technology. The two most interesting findings were: 1) Satisfaction with service  
37 is high among patrons; and 2) Many Iowa DOT employees do not know the Iowa DOT  
38 has a library.

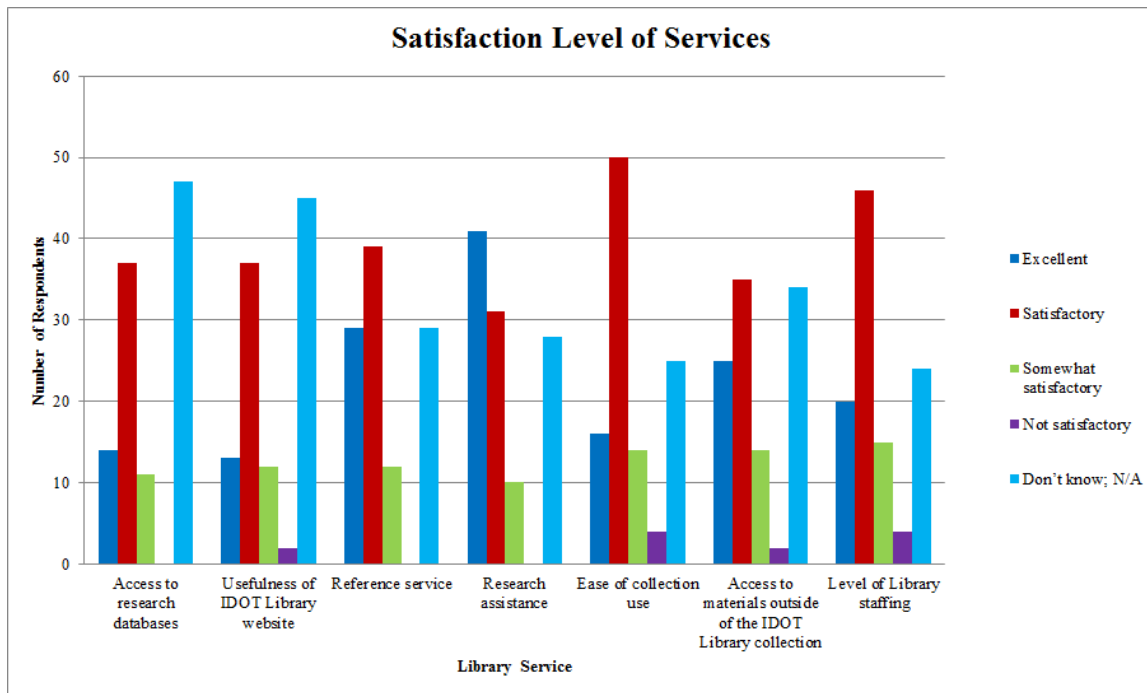
39 The most frequent recommended response to this last phenomenon is for the Iowa  
40 DOT Library to be involved in outreach and self-marketing. "The engineering (research,  
41 design, build, safety, environmental, etc.), policy and legal departments report the highest  
42 level of need for information and knowledge services. It is crucial to have outreach  
43 activities tailored to the specific needs of these units (2, page 5)." Specific outreach for  
44 specific departments of the Iowa DOT allows easier understanding of how the Iowa DOT  
45 Library can aid employees and engineers with their work. General outreach should also  
46 be expanded into new employee orientation. The concept of the embedded librarian,

1 where the librarian uses the resources of the Library to work with researchers during  
 2 every aspect of a project, was also highly recommended.

3  
 4 **Survey Results**

5 The majority of TR-670 focused on a survey of Iowa DOT employees. The most repeated  
 6 concern was the desire for more online access to resources, and the belief that any desired  
 7 information can be found through the internet and search engines, such as Google. A total  
 8 of 267 people responded, of which only 4 used the Library daily, 18 used it weekly, 19  
 9 used it monthly, 79 used it less than once per month, and 147 people never used the  
 10 Library during the 24 months preceding the survey. Of those who used the Library,  
 11 knowledge of its existence and services was through outreach by the librarian or working  
 12 nearby.

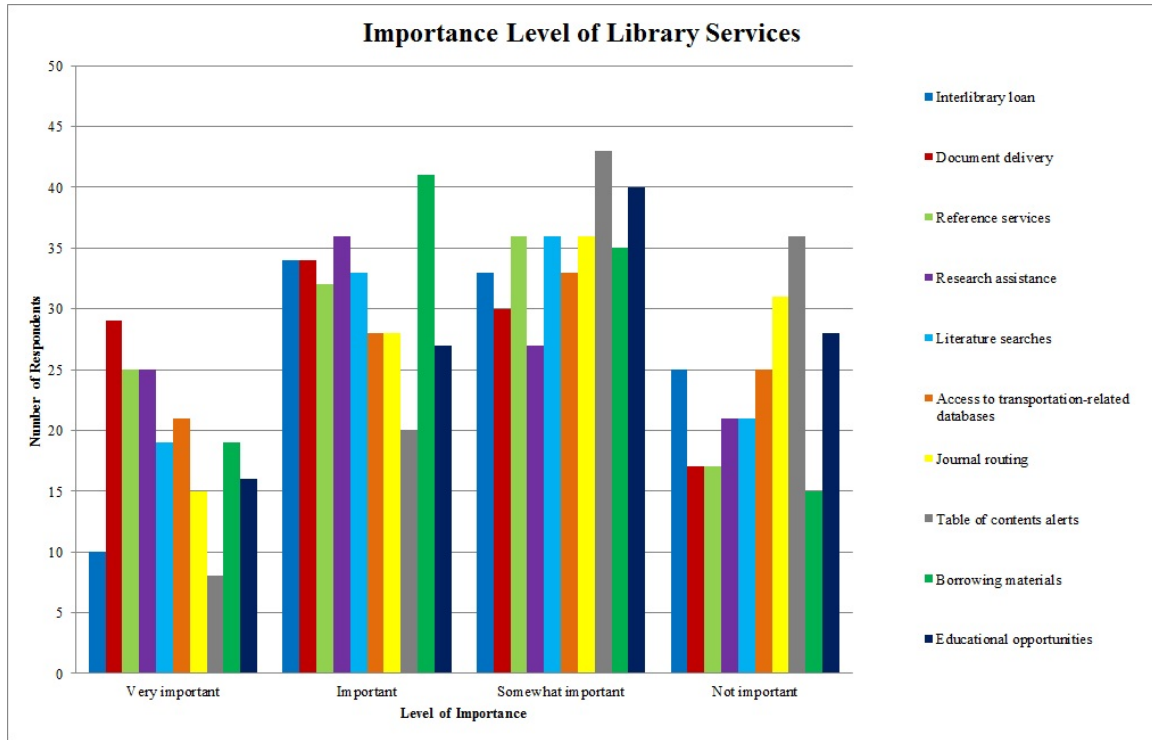
13 Two of the most enlightening questions pertained to the overall satisfaction with  
 14 resources and the perceived importance level of services. When asked about overall  
 15 satisfaction with Library services 78% responded “Very satisfied” (2, page 9). When  
 16 asked about specific services, answers become more nuanced and revealing. Overall  
 17 satisfaction with services and resources is excellent or satisfactory (FIGURE 2).  
 18  
 19



20  
 21 **FIGURE 2 Satisfaction with Iowa DOT Library Services.**  
 22

23 An immediate reaction to seeing such high satisfaction rates would be to believe the Iowa  
 24 DOT Library is accomplishing its service goals. In fact, all library services ranked  
 25 majority excellent or satisfactory. The only exception is the “Don't know; N/A” category,  
 26 which is relatively high on all services and assumed to be the response of those who have  
 27 not used the Library, its resources, or any of its services. While the high level of  
 28 satisfaction is good to see, the high level of unknowns is concerning and emphasizes the  
 29 need for more staff.

1 When asked to rate Library services, the responses varied. Most responses were  
 2 focused in the very important, important, and somewhat important categories. Only  
 3 journal routing, table of contents, and educational opportunities had more responses in  
 4 the not important category over other categories (FIGURE 3). Write-in responses to  
 5 desired services included different media, such as audio-visual materials, and subject  
 6 specific materials, such as Iowa history and leadership coursework materials.  
 7



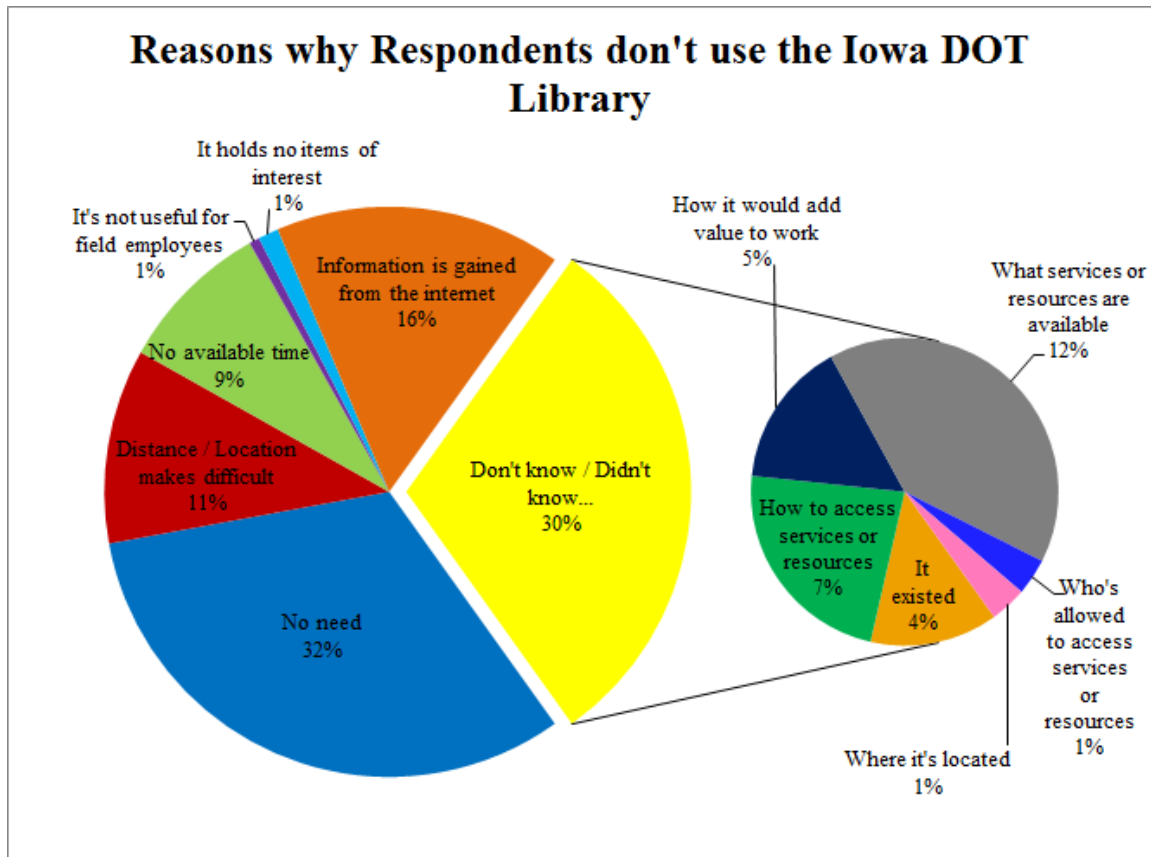
8 **FIGURE 3 Patron Importance Rankings of Library Services.**

9  
 10  
 11 While encouraging seeing that those served by the Iowa DOT Library are  
 12 generally satisfied and consider the majority of services offered important, on the other  
 13 hand, these results also show the focus needs to be on service impact. If a service, such as  
 14 table of contents alerts, shows a majority believing it unimportant, should the staff focus  
 15 its energies on another service, or should the service continue for those who believe it  
 16 important? This type of question was at the forefront while staff attempted to update the  
 17 collection and services.

18 TR-670 also attempted to find what Iowa DOT employees want to have access  
 19 to, but have been unable to find in the collection. The most desired new service, with a  
 20 response of 57 out of 82, was mobile access to online resources. Of those resources,  
 21 online access to Construction Design; journals on architecture, history, and archaeology;  
 22 AASHTO standards; ANSI standards; ASTM; safety videos; electronic newspapers and  
 23 an updated “new additions” page were mentioned. For most desired resources in the  
 24 physical collection, responses included construction or maintenance, magazines, research  
 25 reports, reference books, railroad history, machinery handbook, user guides for software  
 26 products, and safety topics. Many of these needs are already answered by the existing

1 collection, yet as shown by the survey, patron knowledge of the collection and how to  
 2 search it are low and will need to be addressed through training and outreach.

3 While the Iowa DOT Library strives to serve its patron base in every aspect they  
 4 would find useful, not everything is possible for a small library. Some desired services  
 5 and resources are already available to patrons, but are difficult to access, and some  
 6 services, though desired online are not available to anyone in that format.



9  
10 **FIGURE 4 Reasons Iowa DOT Employees Gave for Not Using the Library.**

11  
12 A question on why people do not use the Library was open ended and allowed  
 13 respondents to fill-in their reasoning. A total of 172 specific reasons were tallied  
 14 (FIGURE 4). Thirty percent included patrons lacking information on available services,  
 15 how to access those services, location of the Library, etc. Thirty-two percent stated no  
 16 need to use the Library. The remaining reasons included difficulty with accessing the  
 17 physical Library or believing that any needed information can be found on the Internet.  
 18 These reasons become exemplars of how some may believe the services and resources  
 19 offered by the Library are unimportant.

20 When asked to give examples of materials that would be useful, many examples  
 21 given are already available. As the weeding and digitization projects continue, access and  
 22 availability of resources and services is increasing for all current and potential users of  
 23 the Iowa DOT Library.  
 24



## 1 **Technology Assessment**

2 A secondary part of TR-670 was its assessment of technology. Until August 2012 the  
3 Library had been operating with an incomplete card catalog. Creating an accurate OPAC  
4 in correlation with comprehensive barcoding would improve access. TR-670 also  
5 suggested taking full advantage of services offered by the OPAC, especially mobile  
6 access and marketing tools. Other suggestions included the availability of a self-check  
7 station, and obtaining barcode scanner hardware that would increase the ease and  
8 efficiency of checking out materials. Some of these systems are now in place and patron  
9 education on their use is beginning, while others are still in the development phase.

10

## 11 **Focusing the goal**

12 TR-670 has been influential at the Iowa DOT Library because it brought to light what  
13 needs were not being met and helped focus goals and projects. The written responses to  
14 survey questions were enlightening; especially how many respondents did not know what  
15 kinds of services were available or how to use them to benefit their work. A primary goal  
16 of the Library is to become a vital aspect of Iowa DOT researchers' working habits of.  
17 TR-670 aids this goal by showing what services, resources, and functions need to be  
18 adjusted in order to accomplish the Library's vision.

19 The gap in understanding how to use and access resources underscores the  
20 digitization and weeding projects. While online search engines, databases, and other  
21 Internet sources are readily available and easy to use, they will not necessarily lead to the  
22 most authoritative resources and information. By improving digital access to foundational  
23 and curated transportation research resources, the Library can give Iowa DOT researchers  
24 greater confidence in the quality of transportation information they access. The weeding  
25 project is ensuring materials are up-to-date, relevant, and accessible. Each of these  
26 projects is vital to the process of updating the Library. While still in progress, access to  
27 materials is improving and the services offerings are changing to meet Iowa DOT  
28 employee needs.

29

## 30 **Future Goals**

31 While the Iowa DOT Library has engaged in a number of small outreach projects in the  
32 past three years, a broad and sustained effort is needed. As seen from Figure 3, 32% of  
33 people surveyed believe they have no need of the Library or its services. Informing  
34 everyone who could benefit from the services offered by the Library, ensuring they are  
35 aware of the services and resources offered and how to access them will be key to the  
36 Iowa DOT Library's success. Now that the digitization and collection development  
37 projects are well established, launching a marketing project highlighting these past  
38 projects, as well as new services and technologies is timely.

39

## 40 **CONCLUSIONS**

41 The Iowa DOT Library is transforming its collection, services, and outreach practices to  
42 better serve research and patron needs. A robust digitization effort is improving and  
43 broadening access to the Iowa DOT's research output. The collection development  
44 activities enable greater electronic access as well as provide an opportunity to update  
45 some and eliminate other physical holdings. The results of the IHRB TR-670 patron  
46 survey show that we are moving in the right direction, although we still have a distance to

1 travel. Through these initiatives, the Iowa DOT Library is becoming a more effective  
2 and efficient tool for Iowa DOT researchers.

3

#### 4 **ACKNOWLEDGEMENTS**

5 The authors would like to thank the Iowa Department of Transportation Office of  
6 Research & Analytics and the Iowa Highway Research Board for their support, and for  
7 funding TR-670.

8

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