



# American National Standard for Financial Services **X9.100-140-2016**

## Image Replacement Document – IRD



Developed by  
Accredited Standards Committee X9, Incorporated  
Financial Industry Standards

**Date Approved: August 19, 2016**

American National Standards Institute

American National Standards, Technical Reports and Guides developed through the Accredited Standards Committee X9, Inc., are copyrighted. Copying these documents for personal or commercial use outside X9 membership agreements is prohibited without express written permission of the Accredited Standards Committee X9, Inc. For additional information please contact ASC X9, Inc., 275 West Street, Suite 107, Annapolis, MD 21401, USA.

**This page intentionally left blank**

## Foreword

Approval of an American National Standard requires verification by ANSI that the requirements for due process, consensus, and other criteria for approval have been met by the standards developer.

Consensus is established when, in the judgment of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made toward their resolution.

The use of American National Standards is completely voluntary; their existence does not in any respect preclude anyone, whether he has approved the standards or not from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standards.

The American National Standards Institute does not develop standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute. Requests for interpretations should be addressed to the secretariat or sponsor whose name appears on the title page of this standard.

**CAUTION NOTICE:** This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken to reaffirm, revise, or withdraw this standard no later than five years from the date of approval.

Published by

Accredited Standards Committee X9, Incorporated  
Financial Industry Standards  
275 West Street Suite 107  
Annapolis, MD 21401 USA  
X9 Online <http://www.x9.org>

Copyright © 2016 ASC X9, Inc.

All rights reserved.

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without prior written permission of the publisher. Published in the United States of America.

**X9.100-140-2016**

<b>Contents</b>	<b>Page</b>
This page intentionally left blank .....	2
Listing of Figures .....	iv
Introduction .....	v
<b>1 Scope</b> .....	<b>1</b>
<b>2 Purpose</b> .....	<b>1</b>
<b>3 Normative References</b> .....	<b>1</b>
<b>4 Terms and Definitions</b> .....	<b>2</b>
<b>5 General</b> .....	<b>1</b>
<b>5.1 Types</b> .....	<b>1</b>
<b>5.1.1 Forward IRDs</b> .....	<b>1</b>
<b>5.1.2 Return IRDs</b> .....	<b>1</b>
<b>6 Information Elements</b> .....	<b>2</b>
<b>6.1 Front Regions</b> .....	<b>2</b>
<b>6.1.1 Required Item Front Image Region: Region 1F</b> .....	<b>2</b>
<b>6.1.2 Required Original Check Truncation Institution Region: Region 2F</b> .....	<b>3</b>
<b>6.1.3 Required Creation Institution Region: Region 3F</b> .....	<b>4</b>
<b>6.1.4 Required Legend Region: Region 4F</b> .....	<b>5</b>
<b>6.1.5 Required MICR Region: Region 5F</b> .....	<b>5</b>
<b>6.1.6 Optional Qualified MICR Region: Region 6F</b> .....	<b>7</b>
<b>6.1.7 Conditional Return Reason Region: Region 7F</b> .....	<b>8</b>
<b>6.1.8 Optional Data Region: Region 8F</b> .....	<b>9</b>
<b>6.2 Back Regions</b> .....	<b>10</b>
<b>6.2.1 Required Item Back Image Region: Region 1B</b> .....	<b>10</b>
<b>6.2.2 Back of MICR Region: Region 2B (Protected)</b> .....	<b>19</b>
<b>6.2.3 Back of Optional Qualified MICR Region: Region 3B (Protected)</b> .....	<b>19</b>
<b>6.3 Dimensional References and Tolerances</b> .....	<b>19</b>
<b>6.3.1 Tolerance on Dimensions to IRD Edges</b> .....	<b>19</b>
<b>6.3.2 Tolerance on Dimensions to Other Data Elements</b> .....	<b>20</b>
<b>7 Design Elements</b> .....	<b>20</b>
<b>7.1 IRD Size</b> .....	<b>20</b>
<b>7.1.1 Forward IRD Size</b> .....	<b>20</b>
<b>7.1.2 Qualified Return IRD Size</b> .....	<b>20</b>
<b>7.2 Paper</b> .....	<b>20</b>
<b>7.3 Perforations</b> .....	<b>20</b>
<b>7.4 MICR Encoding</b> .....	<b>21</b>
<b>7.5 IRD Design Graphics</b> .....	<b>21</b>
<b>7.6 IRD Endorsement Back</b> .....	<b>21</b>
<b>7.7 Security</b> .....	<b>21</b>
<b>8 Master Dimensional Layouts</b> .....	<b>21</b>
<b>Annex A (Normative) Region 7F Return Reason Information Return Reason Codes, Code Description Region 7F Text and Overlay Abbreviations</b> .....	<b>26</b>
<b>Annex B (Normative) Check or IRD Conversions</b> .....	<b>27</b>
<b>B.1 Check or IRD Conversions Matrix Summary</b> .....	<b>27</b>
<b>B.2 Valid Conversions</b> .....	<b>27</b>
<b>B.3 Invalid Conversions</b> .....	<b>28</b>
<b>Annex C (Normative) Conversion Table – Inches to Millimeters</b> .....	<b>29</b>

<b>Annex D (Informative) Usage Considerations .....</b>	<b>30</b>
<b>D.1 Usage Types.....</b>	<b>30</b>
<b>D.1.1 Forward Original IRD.....</b>	<b>30</b>
<b>D.1.2 Forward Subsequent IRD.....</b>	<b>30</b>
<b>D.1.3 Original IRD Used for Return.....</b>	<b>31</b>
<b>D.1.4 Subsequent IRD Used for Return.....</b>	<b>31</b>
<b>D.2 Acceptable Business Usage.....</b>	<b>31</b>
<b>Annex E (Informative) Examples of IRDs .....</b>	<b>33</b>
<b>Annex F (Informative) Paper Check or IRD Conversions and Image Quality Degradation Factors.....</b>	<b>44</b>
<b>F.1 Example Paper Check and IRD, and Potential Image Degradation Areas .....</b>	<b>44</b>
<b>F.2 Possible Degradation Factors .....</b>	<b>45</b>
<b>Annex G (Informative) Return Endorsements .....</b>	<b>46</b>
<b>G.1 General .....</b>	<b>46</b>
<b>G.2 Suggested Implementation Considerations .....</b>	<b>46</b>
<b>Annex H (Informative) Check Digit Calculation .....</b>	<b>48</b>
<b>H.1 General .....</b>	<b>48</b>
<b>H.2 Calculation .....</b>	<b>48</b>
<b>Annex I (Informative) Symbol Requirements for Routing Transit Numbers .....</b>	<b>49</b>
<b>I.1 General.....</b>	<b>49</b>
<b>I.2 Required Original Check Truncation Institution Region: Region 2F .....</b>	<b>49</b>
<b>I.3 Required Creation Institution Region: Region 3F .....</b>	<b>49</b>
<b>I.4 Back of Image: Region 1B Endorsements .....</b>	<b>49</b>
<b>I.4.1 Region 1B - BOFD Endorsement Overlay Areas for Original and Subsequent IRD .....</b>	<b>49</b>
<b>I.4.1.1 Creator Receives Electronic File.....</b>	<b>50</b>
<b>I.4.1.2 Creator Receives Physical Paper Item or is Processing Physical Paper Item.....</b>	<b>50</b>
<b>I.4.2 Region 1B - Subsequent Endorsement Overlay Areas for Original and Subsequent IRD.....</b>	<b>51</b>
<b>I.4.2.1 Creator Receives Electronic File.....</b>	<b>51</b>
<b>I.4.2.2 Creator Receives Physical Paper Item or is Processing Physical Paper Item.....</b>	<b>52</b>
<b>Annex J (Informative) Difference Between This Standard and Previous Standards.....</b>	<b>53</b>
<b>J.1 Difference between ANSI X9.100-140-2016 and ANSI X9.100-140-2013 .....</b>	<b>53</b>
<b>J.1.1 Changes.....</b>	<b>53</b>
<b>J.2 Difference between ANSI X9.100-140-2013 and ANSI X9.100-140-2008 .....</b>	<b>53</b>
<b>J.2.1 Background.....</b>	<b>53</b>
<b>J.2.2 Changes.....</b>	<b>53</b>
<b>J.3 Difference between ANSI X9.100-140 - 2008 and X9.100-140-2004 .....</b>	<b>54</b>
<b>J.3.1 Background.....</b>	<b>54</b>
<b>J.3.2 Phased Changes with Sunset Date.....</b>	<b>54</b>
<b>J.3.3 Additional Substantive Changes and Clarifications .....</b>	<b>55</b>
<b>J.3.4 Non-Substantive Changes.....</b>	<b>55</b>
<b>J.3.5 Annex Changes.....</b>	<b>56</b>

## **Listing of Figures**

Figure 1 – Image Replacement Document – Master Layout, Front.....	22
Figure 2 – Image Replacement Document Used for Return – Master Layout, Front .....	23
Figure 3 – Image Replacement Document – Master Layout, Back .....	24
Figure 4 – Image Replacement Document Used for Return – Master Layout, Back.....	25
Figure E.1 – Forward Original IRD of Personal-Sized Check, Front .....	34
Figure E.2 – Forward Original IRD of Personal-Sized Check, Back.....	35
Figure E.3 – Forward Subsequent IRD of Personal-Sized Check, Front .....	36
Figure E.4 – Forward Subsequent IRD of Personal-Sized Check, Back.....	37
Figure E.5 – Forward Original IRD Used for Return of Personal-Sized Check, Front (Qualified Return Strip is not Used).....	38
Figure E.6 – Original IRD Used for Qualified Return of a Business-Sized Check, Front .....	39
Figure E.7 – Original IRD Used for Qualified Return of a Business-Sized Check, Back.....	40
Figure E.8 – Forward Subsequent IRD of a Business-Sized Check, Front After Re-presentation & Payment.....	41
Figure E.9 – Forward Subsequent IRD of a Business-Sized Check, Back After Re-presentation & Payment .....	42
Figure E.10 – Return Subsequent IRD of a Business-Sized Check, Front After Re-presentation & Non-Payment (no qualified return strip) .....	43

## Introduction

This introduction is not part of X9.100-140.

This standard provides the financial industry with a specification for an Image Replacement Document (IRD) that provides for a machine readable substitute document created from the image that is made from the front and back of the original check.

Financial institutions have searched for ways to promote check truncation with electronic data and image exchange. Electronic Check Presentment (ECP) with or without paper to follow has produced savings and efficiencies. Savings and efficiencies have also been obtained from paying bank safekeeping programs, in which the check is sent to the paying bank, but not returned to the paying customer. Many of these programs continue the movement, sorting and reconciliation of the paper checks, as well as require agreements with individual customers and financial institutions; these factors can be an impediment to check truncation at the point of presentment.

The Payments System Development Committee (PSDC), which was formed in 1999 and was chaired by Roger Ferguson (then Vice Chairman of the Federal Reserve Board) and Cathy Minehan (then President of the Federal Reserve Bank of Boston), had been working with the banking industry, in part, to facilitate electronic check exchange. Under the auspices of the PSDC, the Federal Reserve Board forwarded proposed legislation to Congress called the Check Truncation Act (CTA). The proposed Act was signed into law on October 28, 2003 and is cited as the "Check Clearing for the 21<sup>st</sup> Century Act" or the "Check 21 Act" (Act). This Act facilitates truncation of checks earlier in the forward collection and return process than had typically occurred in the industry at that time. The Check 21 Act allows a depository institution to substitute and deliver machine readable copies of checks to depository institutions that do not agree to accept checks electronically. The development of this standard is a necessary step in the successful implementation of the Check 21 Act. The Federal Reserve amended Regulation CC to implement the Check 21 Act and specifically identified ANSI X9.100-140 as the standard for substitute checks.

The substitute check defined in Regulation CC must conform in paper stock, dimension, and otherwise, to generally applicable industry standards. Current ANSI standards related to check creation and printing are followed and are referenced in this standard. However, this standard allows identification of the unique characteristics and uses of a substitute check and allows for variations from current standards. This standard defines an IRD which can be used as a substitute check as defined in Regulation CC.

The IRD has brought significant benefits to the financial community as they embraced electronics. Checks can be imaged at the point of sale, automated tellers, bank branches, lockbox operations or check capture operations and then handled electronically for the downstream processing. As outlined in Regulation CC an IRD can be used at any point in the process that a physical check might be needed, including the return of an IRD, re-presentment and inclusion in customer statements. The ability to electronically create an IRD has the potential to make exception processing and statement rendering timelier and less costly.

This standard is a revision to X9.100-140-2008. The changes to this standard are not substantive; a summary of the changes can be found in [Annex J](#).

The revisions from the X9.100-140-2004 to X9.100-140-2008 were more substantive; a summary of those changes can be found in [Annex J](#).

There are ten annexes in this standard. Annexes A, B, and C are normative and considered part of this standard. The remaining annexes are informative and not considered part of this standard. The standard does not address the numerous implementation considerations a financial institution needs to address to fully implement the standard.

**X9.100-140-2016**

Note that this document now includes many embedded hyperlinks to aid navigation. To return to a “launch” location from a linked location within this document, simply hold the Alt key on your keyboard and press the left arrow key.

Approval of this Standard by the Accredited Standards Committee X9 does not necessarily imply that all the committee members voted for its approval.

At the time this standard was approved, the **X9** committee had the following members:

Roy C. DeCicco, X9 Chairman  
 Claudia Swendseid, X9 Vice Chairman  
 Steve Stevens, X9 Executive Director  
 Janet Busch, Program Manager

<b>Organization Represented</b>	<b>Representative</b>
ACI Worldwide.....	Mr. Doug Grote
ACI Worldwide.....	Doug Grote
American Bankers Association .....	Diane Poole
American Express Company.....	David Moore
Bank of America.....	Daniel Welch
Bank of New York Mellon.....	Bryan Kirkpatrick
BlackBerry Limited .....	Daniel Brown
Blackhawk Network.....	Anthony Redondo
Bloomberg LP.....	Corby Dear
Capital One .....	Marie LaQuerre
Citigroup, Inc. ....	Karla McKenna
CLS Bank .....	Ram Komarraju
Conexxus, Inc.....	Michael Davis
Conexxus, Inc.....	Gray Taylor
CUSIP Service Bureau.....	James Taylor
DeLap LLP .....	Darlene Kargel
Deluxe Corporation .....	Angela Hendershott
Diebold, Inc. ....	Bruce Chapa
Discover Financial Services.....	Michelle Zhang
Federal Reserve Bank .....	Mary Hughes
Federal Reserve Bank .....	Claudia Swendseid
FIS.....	Stephen Gibson-Saxty
Fiserv.....	Dan Otten
FIX Protocol Ltd - FPL.....	Jim Northey
Futurex .....	Ryan Smith
Gilbarco .....	Bruce Welch
Harland Clarke .....	John McCleary
Hewlett Packard .....	Susan Langford
IBM Corporation .....	Todd Arnold
Independent Community Bankers of America .....	Cary Whaley
Ingenico.....	Rob Martin
ISITC .....	Genevy Dimitrion
J.P. Morgan Chase .....	Roy DeCicco
KPMG LLP .....	Mark Lundin
MagTek, Inc.....	Roger Applewhite
MagTek, Inc.....	Mimi Hart
MasterCard Europe Sprl .....	Mark Kamers
Merchant Advisory Group .....	Liz Garner
NACHA The Electronic Payments Association.....	Priscilla Holland
National Security Agency.....	Paul Timmel



NCR Corporation .....	David Norris
Office of Financial Research, U.S. Treasury Department .....	Justin Stekervetz
PCI Security Standards Council .....	Troy Leach
RouteOne.....	Chris Irving
RouteOne.....	Jenna Wolfe
State Street Corporation .....	David Blaszowski
State Street Corporation .....	Sharon Cournoyer
SWIFT/Pan Americas .....	Frank Vandriessche
Symcor Inc. ....	Debbi Fitzpatrick
TECSEC Incorporated.....	Ed Scheidt
The Clearing House.....	Sharon Jablon
U.S. Bank.....	John King
USDA Food and Nutrition Service .....	Kathy Ottobre
Vantiv LLC .....	Patty Walters
VeriFone, Inc. ....	Dave Faoro
VISA.....	Kim Wagner
Wells Fargo Bank .....	Mark Tiggas

At the time this standard was approved, the **X9AB Payments** subcommittee had the following members:

Daniel Welch, Chairman  
 Jackie Pagán, Vice Chairman  
 John McCleary, Vice Chairman  
 Alan Thiemann, Vice Chairman

<b>Organization Represented</b>	<b>Representative</b>
All My Papers.....	Ray Higgins
All My Papers.....	Larry Krummel
All My Papers.....	Brett Nelson
American Bankers Association .....	Diane Poole
AQ2 Technologies LLC.....	Shawn Box
BancTec, Inc.....	Peter Caporal
BancTec, Inc.....	Tim Ullrich
Bank of America .....	Andi Coleman
Bank of America .....	Colleen Powers
Bank of America .....	Will Robinson
Bank of America .....	Matthew Sharp
Bank of America .....	Daniel Welch
Bank of New York Mellon .....	Kevin Barnes
Bank of New York Mellon .....	Arthur Sutton
BlackBerry Limited.....	Daniel Brown
Citigroup, Inc.....	Luis Meneses
Comerica.....	Paul Burns
Deluxe Corporation .....	Angela Hendershott
Deluxe Corporation .....	Margiore Romay
Diebold, Inc. ....	Rick Brunt
Diebold, Inc. ....	Bruce Chapa
ECCHO .....	Ellen Heffner
ECCHO .....	Phyllis Meyerson
Federal Reserve Bank .....	Mark Kielman
Fifth Third Bank .....	Craig Jones
Fifth Third Bank .....	Mark Woodward
FIS .....	Stephen Gibson-Saxty
Fiserv .....	Allen Heimerdinger

**X9.100-140-2016**

Fiserv.....	Lori Hood
Harland Clarke .....	John McCleary
Huntington Bank.....	Jim Posani
IBM Corporation .....	Rod Moon
Independent Community Bankers of America .....	Viveca Ware
Independent Community Bankers of America .....	Cary Whaley
Independent Community Bankers of America .....	Cheryl Yavornitzki
iStream Imaging/Bank of Kenney.....	Mike McGuire
J.P. Morgan Chase .....	Jackie Pagán
M&T Bank.....	Nate Roland
Navy Federal Credit Union.....	Vicki Shapiro
NCR Corporation.....	David Norris
NCR Corporation.....	Jamie Rossignoli
Paychex Inc.....	Carl Tinch
RDM Corporation .....	Bill Faulkner
Source Technologies .....	Wally Burlingham
Source Technologies .....	Chuck Freeman
Standard Register Company.....	Melissa Kirk
Symcor Inc. ....	Hiren Joshi
The Clearing House .....	Henry Farrar
U.S. Bank .....	Michelle Copher
U.S. Bank .....	Pamela Dinzebach
U.S. Bank .....	Maureen Latendresse
U.S. Bank .....	Tom Powers
U.S. Bank .....	Christopher Stickney
U.S. Bank .....	Deb Tayerle
Viewpointe.....	Richard Luchak
Wells Fargo Bank.....	Jeff Harmon
Wells Fargo Bank.....	Ann Kirk
Wells Fargo Bank.....	Scott Meloun
Wells Fargo Bank.....	Alan Nguyen
Wells Fargo Bank.....	Mark Tiggas
Xerox Services LLC .....	Frank Bov

Under ASC X9, Inc. procedures, a working group may be established to address specific segments of work under the ASC X9 Committee or one of its subcommittees. A working group exists only to develop standard(s) or guideline(s) in a specific area and is then may be disbanded. A new X9AB3 work group was not formed for the development of ANSI X9.100-140-2016.

**Editors for 2016 review/revision:**

Bank of America.....	Daniel Welch
ECCHO .....	Phyllis Meyerson

# American National Standard for Financial Services – Image Replacement Document – IRD

## 1 Scope

This standard establishes the construction, layout, data elements, data content, and printing specifications for Image Replacement Documents (IRD). An IRD is a substitute image copy of a check or a replacement for a previous IRD that includes a machine readable MICR line. An IRD that conforms to this standard and meets the requirements of a Substitute Check within Regulation CC is considered the practical and legal equivalent of the original paper check or of a previous IRD. This standard does not address operational, implementation, or settlement issues. These issues may include but are not limited to: the use of security features that are available after imaging, image compression, conversion methods, and IRD printing techniques. The informative annexes attached to this standard provide information that may prove useful to those planning on implementing the standard.

## 2 Purpose

The purpose of this standard is to provide a structure to facilitate the conversion of original checks to an electronic form for operational processing and exchange by supporting the ability to convert the electronic data into a physical document via the IRD. This converted document will contain a reproduction of the original check, incorporating data indicating the location of the truncated check, IRD creator, and subsequent endorsements. An IRD may be used for forward presentment and return and re-presentment processing. In addition to the conversion of the image of an original check, this standard provides for the conversion of an IRD into a Subsequent IRD.

## 3 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the specific edition cited applies. For undated references, the most current edition of the referenced document (including any amendments) applies.

ANSI INCITS-17[R2000] (X3.17), *Character Set for Optical Character Recognition (OCR-A)*

ANSI X9.100-110 (X9.7), *Document Imaging Compatibility*

ANSI X9.100-10, *Paper for MICR Documents*

ANSI X9.100-20, *Print and Test Specifications for Magnetic Ink Printing (MICR)*

ANSI X9.100-111, *Physical Check Endorsements*

ANSI X9.100-151, *Check Correction Strips*

ANSI X9.100-160-1, *Magnetic Ink Printing (MICR). Part 1: Placement and Location*

ANSI X9.100-160-2, *Magnetic Ink Printing (MICR), Part 2: EPC Field Use*

ASC X9 TR 2, *Understanding, Designing and Producing Checks*

ASC X9 TR 6, *Guide to Quality MICR Printing and Evaluation*