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ELECTION SECURITY: DON'T START WITH FRAUD INVESTIGATIONS, START WITH SECURITY INVESTIGATIONS

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We should be unfaithful to ourselves if we should ever lose sight of the danger to our liberties if anything partial or extraneous should infect the purity of our free, fair, virtuous, and independent elections.

-- John Adams

INTRODUCTION

This is a follow-up report related to the paper "Vulnerability Assessment and Security Audit of Election Day Polling Place Procedures for the April 5th 2011 Municipal Election in Chicago, Illinois" [Journal of Physical Security 5(1), 12-72 (2011)]. In 2011, this audit and subsequent report looked at polling place procedures in place in Chicago precincts both from the perspective of how well the security procedures were followed and how effective the measures were in securing the vote.

The 2011 study involved visiting 239 precincts on Election Day.[i] The findings were that 210 precincts (91%) failed on one or more of the 11 security measures they were evaluated for; most failed on more than one security item. In 139 instances, election judges and Chicago Board employees failed to seal the ballot box. In a follow up review of the procedures, Roger G. Johnston, Ph.D., CPP, expressed the view that the "Chicago Board of Elections security protocols are wholly inadequate in securing the ballot."[ii]

Following the publication of the 2011 study in the Journal of Physical Security, critical security changes were made in election procedures by the Chicago Board of Election Commissioners (CBEC). The CBEC administers elections in the City of Chicago. The Suburban Cook County Clerk, David Orr (D), administers elections to Suburban Cook County, but not to Chicago.

This paper will review these developments and changes, discuss ongoing challenges in security at Suburban Cook County Elections, present information about ongoing investigations and preparations in advance of the 2012 elections, and briefly discuss broader implications and next steps.

DEVELOPMENTS AT THE CHICAGO BOARD OF ELECTION COMMISSIONERS

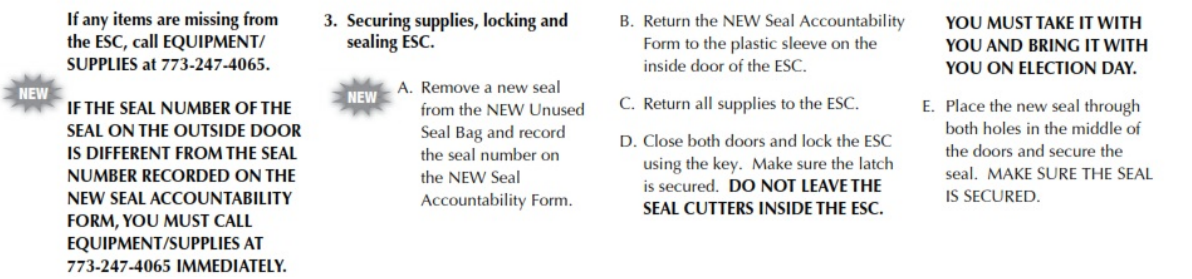
On Wednesday, February 28th, 2011, members from Defend the Vote and other concerned Chicago voters addressed the Chicago Board of Elections Commissioners (CBEC) about security lapses found as a result of the April 5th 2011 audit of 239 precincts in Chicago. At the February CBEC meeting, we were informed that the Board acted on more than one of the critical security changes recommended by Defend the Vote and Dr. Roger Johnston in the Journal of Physical Review. These changes closed some of the holes in security procedures protecting the ballot and the balloting equipment.[iii] These changes impact procedures during Early Voting and on Election Day.

Early Voting: In 2010 investigators discovered that Chicago used non-citizens to operate some early voting sites. This discovery came with the revelation that the CBEC used employees to run early voting sites and that the employment documents for many of these employees were severely deficient. (Federal I-9 Employment Eligibility Forms were not

properly filled out.) In addition, while employees do not have to be US Citizens, election judges do. In the past, employees at early voting sites reported to one person who also wrote their performance reviews. This practice is problematic for a multitude of reasons, not the least of which because it creates a security risk when polling place authority is centralized through one person. The investigation found an instance at an early voting site in Chicago, where the polling place supervisor was a non-citizen and a political activist for open borders.[iv]

Changes implemented at the Chicago Board of Election Commissioners include:

1. All early voting locations in Chicago now have a Republican and Democrat Election Judge overseeing the election.
2. Increased access for party officials to schedule election judges.
3. Chicago Democrat or Republican committeemen now pick the early voting judges.
4. All employees operating the 50 or so early voting sites in Chicago are now registered voters. Registered voters must *a priori* be USA citizens.
5. Implementation of procedures in the Human Resource Department including re-vamping I-9 Employment Verification procedures:
    a. In March 2012, a follow-up FOIA request for the I-9 forms of all employees operating early voting found the new employee verification forms are 99% compliant. This is a complete reversal from 2011 where the forms were found to be 75% non-compliant.
6. New seals with additional bar-code verification procedures assuring that seals are not disturbed.
    a. The ESC (Equipment Supply Carrier) was secured with thin numbered plastic seals, and the numbers were not tracked. The CBEC has implemented a new bar scan code seal tracking system that verifies and tracks the ESC from the warehouse, until the election judges open the equipment, and when returned to the warehouse. The new seal has been upgraded to a strong plastic loop numbered seal that must be clipped open.
    b. These new seals are more difficult to compromise. The serial numbers of the seals are now recorded and verified which closes a major security loophole. In addition, used and unused seals are returned to the election board after the elections. See figures 1 and 2.



If any items are missing from the ESC, call EQUIPMENT/ SUPPLIES at 773-247-4065.

NEW

IF THE SEAL NUMBER OF THE SEAL ON THE OUTSIDE DOOR IS DIFFERENT FROM THE SEAL NUMBER RECORDED ON THE NEW SEAL ACCOUNTABILITY FORM, YOU MUST CALL EQUIPMENT/SUPPLIES AT 773-247-4065 IMMEDIATELY.

3. Securing supplies, locking and sealing ESC.

NEW

A. Remove a new seal from the NEW Unused Seal Bag and record the seal number on the NEW Seal Accountability Form.

B. Return the NEW Seal Accountability Form to the plastic sleeve on the inside door of the ESC.

C. Return all supplies to the ESC.

D. Close both doors and lock the ESC using the key. Make sure the latch is secured. **DO NOT LEAVE THE SEAL CUTTERS INSIDE THE ESC.**

YOU MUST TAKE IT WITH YOU AND BRING IT WITH YOU ON ELECTION DAY.

E. Place the new seal through both holes in the middle of the doors and secure the seal. MAKE SURE THE SEAL IS SECURED.

Figure 1: New instructions from the Chicago Board of Elections Judge Training Guide: March 2012

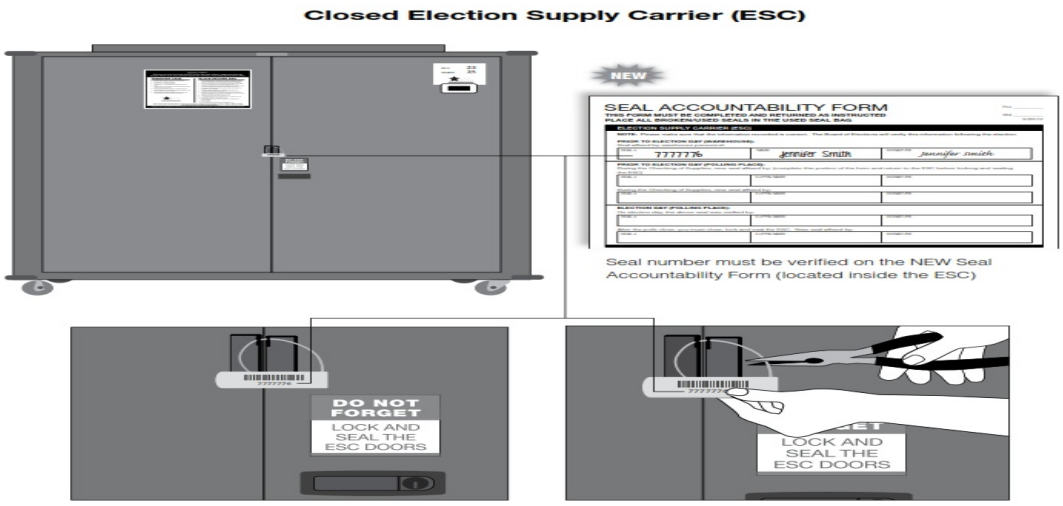


Figure 2: The Equipment Supply Carrier (ESC) and the new Seal Accountability Form. The new plastic seals have a bar-coded number and must be clipped open.

7. Updated seal procedures:
    a. A new bag for "unused seals" is located on the door of the ESC. After the polls close, this bag is returned in the sealed ESC.
    b. A new bag for "used seals" is located on the door of the ESC. All used seals must be included. After the polls close, this bag, along with the seal accountability form, is returned in the sealed black bag that contains other critical items such as memory devices.
    c. Three new seal accountability forms were added. These forms are started at the warehouse when the equipment is sealed; custody of these forms is maintained through the sealed ESC. The judges or the PPA (Polling Place Administrators, who are Board employees) verify seals before the election open. After the election, the forms are returned and sealed inside the black bag.
    d. New seal procedures include verification of the numbers on seals protecting the election equipment. This is now complaint with Illinois statutes. See figure 3.
    e. Seal procedures require notification of the election officials if they are compromised.

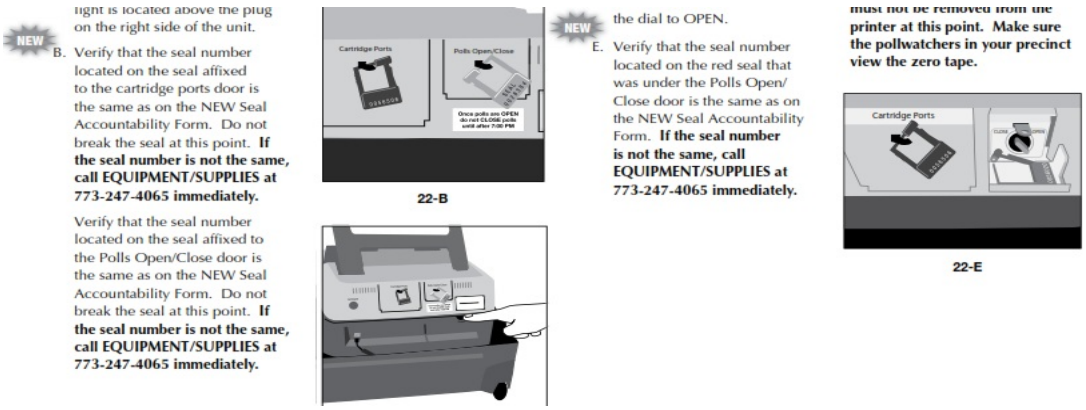


Figure 3: New seal procedures in the March 2012 Election Judge Training Guide require election judges verify seal numbers and report if it is not the correct number.

f. Instructions for sealing the ballot box now include pictures. The audit investigation learned that most election judges were not aware they had to seal the ballot box. Enhanced instructions close that gap in training, especially when combined with the new processes of seal recording, verification, and returning used and unused seals to election authorities. See figure 4.

Figure 4: Instructions illustrating how seals are attached, requiring seal numbers are recorded.

SECURITY CHALLENGES - SUBURBAN COOK COUNTY BOARD OF ELECTIONS

There are very specific Illinois laws in place specifying how election equipment is to be managed. These laws serve to provide a measure of system-wide security throughout the Illinois voting system. In March 2012, while comparing some of these laws with Suburban Cook County Elections' procedures, Defend the Vote investigators uncovered that Suburban Cook County procedures were not complaint with Illinois statues. The Defend the Vote investigation concluded that elections in Suburban Cook County Elections are being conducted unlawfully because they technically fail to comply with Illinois statute. The legal remedy these statues provide for is the following: either the poll shall not open or the ballot shall not be counted until the deficiency is corrected.

These deficiencies are system-wide and require a change in procedures for Suburban Cook County Elections to be lawful[v].

In brief, a few of the legal issues:

i. **Voter Supply Carriers:** Suburban Cook County Elections' Voter Supply Carrier (VSC) is similar to Chicago's ESC. They contain election material before, during, and after voting. When stored at in-precinct voting centers, the VSC's are not required to be stored in a locked room. The VSC's are delivered to these locations approximately a week before the elections. There isn't a paper or seal tracking system securing the chain of custody of the equipment during this time period.

   Illinois law attempts to secure the ballot inside all election supply carriers by strictly securing the key locking these containers, and by sealing the VSC along with sealing each voting device within it.

In Suburban Cook County, the VSC has a universal key securing the election materials and the equipment stored inside. This key is sent home in unsealed envelopes with Equipment Manager Judges for lengths of time of up to 10 weeks. The VSCs are locked with this universal key, but are not sealed.

Illinois statutory procedures for these keys include that all election judges sign off after observing the unsealing of the package containing the key. This procedure is not followed. Illinois law requires a verified chain of custody and specifies the polls shall not open if the procedures as set out in the statute are not followed. (10 ILCS 5/24-13 from Ch. 46, par. 24-13)[vi]

ii. **Unsealed Memory Devices:** The memory device in the ballot scanner is unsealed. On the eve of elections, the training instructions tell Cook County election judges to leave this unsealed ballot scanner out overnight as part of the polling place set-up procedures. The scanner is partially contained in the locked VSC. The locked VSC is not sealed and has a universal key.

Following the election, the same memory devices-now containing the record of the scanned paper ballots-are returned to election authorities in unsealed bags.

iii. **Sealing of the Ballot Box:** Suburban Cook County Elections set-up procedures instruct that ballot boxes are to be set-up, sealed, and left out overnight. The seals on these ballot boxes are recorded the night before the election, but are not verified at any point during the election process.

These ballot boxes are not opened and declared empty in the public space in front of pollwatchers, as Illinois law requires.[vii]

iv. **Sealing of the Voted Paper Ballot:** According to Suburban Cook County Election procedures, paper ballots are initially counted in unsealed wrapped packages the night before the elections. These unsealed wrapped ballots are stored in the unsealed VSCs before the election.

Voted paper ballots are transported after the election, unsealed and unwrapped, in an unlocked but sealed carrying case.

> "Ballots returned to the office of the election authority are not signed and sealed as required by law **shall not** be accepted by the election authority until the judges returning the ballots make and sign the necessary corrections." (emphasis added) 10 ILCS 5/24A-10.1 from Ch. 46, par. 24A-10.1

After the election, Illinois law requires voted paper ballots to be wrapped with tape in a cross like pattern and sealed with all of the judges' signatures affixed before being placed in a sealed and locked carrying case so the ballots can be moved without being disturbed. This mandated security procedure is ignored in Suburban Cook County.[viii] See figure 5.

Figure 5: Ballots should be returned to the election authorities in a sealed bag, such as this one containing voted ballots at the Chicago Board of Election Commissioners Pershing Ave Warehouse.

The blue case is locked and sealed by election judges before leaving the polling place.

v. **Voter Privacy:** The Voter Verified Paper Audit Trail (VVPAT) on the electronic voting machines acts as another layer of security. Presumably, this paper trail ensures the voter's choice is correctly recorded and allows for voters to verify and observe the printing of this paper ballot as their vote is recorded. The machine records this vote electronically and on the paper scroll inside the printer. The voter does not get a copy.

Investigations have uncovered that Suburban Cook County Elections generates PDF copies of this VPPAT scroll, which is electronically searched while auditing votes during candidate challenges. This raises another security issue, which is the privacy of the vote.

Electronically, everything is coded and traceable with search parameters. Access to this data is controlled, but is it secure? If voter choices can be traced to their electronic ballot based on the digital code that is associated with their ballot, then what security measures are in place to protect voter privacy from the operators of the system or from electronic hackers?

The broader question is have we moved into electronic voting with sufficient controls to ensure the privacy and integrity of the vote? Our ongoing investigations examine this.

ONGOING INVESTIGATIONS AND PREPARATIONS FOR THE 2012 ELECTIONS

1) Polling Place Security Assessment Forms: Following the April 2011 audit, Defend the Vote initiated a program to audit the security of elections across the state of Illinois. To accomplish this, assessment criteria must accommodate individual election jurisdictions' procedures.

The administration of elections is conducted at the election jurisdictional level. However, the Illinois State Board of Elections (ISBE) has clear oversight and approval over all instruction manuals which are used to instruct Illinois election judges. Consequently, there will be similar state-wide procedures overall, with local variations that must be approved by the ISBE.

The framework to accomplish this security assessment has been set up. A base form has been designed which is then adapted for specific election jurisdictions. These forms are designed based on Illinois State Board of Elections' instruction manuals and the type of equipment

used[ix], and based on individual election jurisdictions' procedures. One of the challenges in this project is to design forms in synergy with election jurisdictions. Many times, they are in the process of re-designing procedures right before an election; there are always last minute changes!

The distribution of Polling Place Security Assessment Forms is another one of our challenges. Our objective is to distribute forms to as many polling places across Illinois as possible. We also want to inform while we are assessing because this encourages a security culture in the polling place.

One of our strategies to do this is to develop non-partisan security-based training videos for election judges and poll watchers, and to make these videos available in October. We will reach out though the various political parties and encourage them to use these videos and related information as part of their GOTV and election judge campaigns. We will also distribute these videos to the election jurisdictions and to community groups. They will be viewed online and through DVDs. The Chicago Board of Election Commissioners has agreed to link to these training videos from their website. We will encourage other election jurisdictions to do the same.

Along with these training videos, we will distribute the Polling Place Security Assessment Forms. Our distribution strategy includes sending them out to election authorities, both political parties, and a variety of community groups, and by making them available online. These security assessment forms are designed to be filled out by pollwatchers and election judges because they have greater access to view election equipment than the average voter.

2) Voter Assessment Forms: In October 2012, we will distribute Voter Assessment Forms that specifically asks voters to provide feedback on their voting experience. The objective of these forms is to encourage voters to be aware of security in their polling place and to set up a process by which voters can assess and report back about their voting experience. Defend the Vote piloted this form in the 2012 Primary, and has adapted the form for the November election. The Voter Assessment Form will be published online and sent out through various community and political groups beginning in September. These forms are non-partisan and will be available regardless of political affiliation.

In addition to the Voter Assessment Form, we will produce "Voter Awareness" videos that provide insight into what to look for in the polling place. These videos will begin distribution in early September.

3) Vulnerability Assessment of Cook County, Chicago and Across Illinois: Beginning at the end of August and going through September, Defend the Vote has arranged for Argonne National Laboratory's Vulnerability Assessment Team to work with Chicago and Cook County to review their election systems strictly from a security perspective. Also participating, the Illinois State Board of Elections has provided information on the certification of election equipment used throughout Illinois. They will continue to provide information as needed during this assessment period. Ultimately, Defend the Vote wants to assess all election systems and procedures in Illinois strictly from a vulnerability and security perspective. It will take more than one election cycle to conduct this assessment state-wide.

The overall strategy of this vulnerability assessment is to work with local election officials and state legislators to increase election security in Illinois. The impact is to increase the security and the security culture in elections, and to increase voter confidence in the integrity of elections.

BROADER IMPLICATIONS

Elections are a local matter with national consequences. Securing elections is not a simple matter, and it requires establishing a culture within the State: an election security culture. Across Illinois, voters entrust election security to the political parties and to their elected County Clerks or Election Commissioners. Our investigations show that election law is not uniformly practiced or enforced in Illinois. Citizens have an essential role in election security.

Establishing a security culture in Illinois elections cannot be accomplished in one election, nor can we ever consider election security to be a done deal. It is an evolving process. This process is complicated by the increasingly complex (and changing) ways the vote is cast. Access to information is key to developing an open election security culture.

Besides looking at the processes for Election Day voting, there are numerous ways to cast the ballot that are designed to encourage voter access to voting. In Illinois, voters can cast a ballot by voting early, absentee voting, grace period voting, and provisional voting. These different methods of voting have different security risks associated with safe guarding the vote. These risks include chain of custody of the ballots and the security of the software and machines tallying these votes.

As Defend the Vote investigates election security in Illinois, we will be looking at the entire process which includes ballots, machines, software, warehousing, transportation, and repair of election equipment and materials. We will work with this information to encourage a security culture as we design next steps.

NEXT STEPS

Next steps include working with election jurisdictions on security. We are researching physical and electronic security, and processes and procedures involved in securing the vote. We are encouraged that many election authorities are willing to have their procedures reviewed. It has been our experience that County Clerks in Illinois do care about the integrity of the vote they safeguard.

We are also launching election judge, pollwatcher and voter education programs. We believe an informed electorate is the first line of defense in ballot security. Open access to information is key to developing a security culture in elections.

A fresh look at the integrity of the vote through studying, refining, and enforcing security procedures in place will make a difference in not only securing the vote, but also in assuring the public that the integrity of the vote means their vote DOES matter. Nothing destroys voter enthusiasm and consequently voter participation in elections more than a belief that their vote doesn't count.

Overall, the success of these citizen-based election integrity investigations in Illinois is a great story. These successes reinforce that election security is always a local matter requiring voter participation as part of the equation that keeps their vote secure.

Our advice is simple: Don't start with fraud investigations, start with a security investigation!

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"I am an active supporter of Defend the Vote and encourage voters and groups across the state to expand our investigations by joining in the first citizen-run audit of Illinois elections." Jack Roeser**,** Publisher of Champion News, President of the Family Taxpayers Foundation and Chairman of Otto Engineering

Roger G. Johnston, Ph.D., CPP, head of the Vulnerability Assessment Team (VAT) at Argonne National Laboratory, was invaluable for his advice and expertise on election security.

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NOTES

[i] The Journal of Physical Security 5(1), 12-72 (2011), http://jps.anl.gov/

[ii] Meroni, Sharon. Chicago Board of Elections is "Wholly Inadequate" in Protecting the Vote! October 5, 2011 www.DefendtheVote.com This web article discusses the first audit.

[iii] Meroni, Sharon. Kudos to the Chicago Board of Election Commissioners March 9, 2012. www.defendtheVote.com . This article goes into greater depth on the changes made by the Chicago Board of Election Commissioners.

[iv] Eloise Gersten. Chicago GOP Letter to the Chicago Board of Elections. June 13, 2011. www.DefendtheVote.com. and Meroni, Sharon. Early Voting Polling Places in Chicago are Being Run by Non-Citizens. June 13, 2011. Both articles reference in greater detail the problems uncovered at early voting locations in Chicago in 2011.

[v] Meroni, Sharon. David Orr Disregards Illinois Law. February 29th, 2012. www.DefendtheVote.com .

[vi] There are two passages to involved in 10 ILCS 5/24-13 from Ch. 46, par. 24-13

"No precinct election official shall break the seal of such envelope except in the presence of all members of the precinct election board, and such envelope shall not be opened until it shall have been examined by each member of the precinct election board to see that it has not been previously opened. Such envelope shall not be opened until it shall have been found that the numbers and records recorded thereon are correct and agree in every respect with the numbers and records as shown on the machine. "

And

"... that the machine is otherwise in perfect order and they shall compare and record the number on the metal seal with which the voting machine is sealed, with the number furnished them as recorded on the envelope containing the keys, by the election authority, and if the number on the seal and the number on the protective counter do not agree with the numbers supplied to them, they shall not open the polls"

[vii] There are at least two statutes involved. 10 ILCS 5/17-3 from Ch. 46, par. 17-3 and 10 ILCS 5/24-8 Ch. 46, par. 24-8.

(a) Before voting begins, the ballot box shall be publicly opened and exhibited, and the judges shall see that no ballot is in such box; after which the box shall be locked and the key delivered to one of the judges, and shall not be again opened until the close of the polls. This paragraph (a) applies whenever permanent type ballot boxes are used, and does not apply when non-permanent type ballot boxes are used in accordance with section 15-1, paragraph (b).

(b) When non-permanent type ballot boxes are used in accordance with section 15-1, paragraph (b), prior to the commencement of voting and before any ballots are deposited therein, the judges shall examine each sealed ballot box, show it to those present and insure that it is in fact sealed and empty; the sealed slot shall be broken open before those present and the box inspected to insure that it is empty and such ballot box shall not be removed from public view from the time it is so inspected until after the close of the polls. The sealed opening on the side of the box shall not be unsealed or opened until after the close of the polls. 10 ILCS 5/17-3 from Ch. 46, par. 17-3

Pollwatchers as provided by law shall be permitted to carefully check the voting machine and its protective devices, and ballot labels and registering counters, before the polls may be declared open on election morning, and they shall be permitted to remain in the polling place at all times throughout the conduct of the election if desired, and after the close of the polls, to be present and check the protective devices and registering counters of each voting machine, and the official return sheets thereof. 10 ILCS 5/24-8 Ch. 46, par. 24-8

[viii] ...however, that such container must first be sealed by the election judges with filament tape provided for such purpose which shall be wrapped around the container lengthwise and crosswise, at least twice each way, in such manner that the ballots cannot be removed from such container without breaking the seal and filament tape and disturbing any signatures affixed by the election judges to the container. (10 ILCS Sec.24A-10.1) and (10 ILCS 5/24B-10.1) and (10 ILCS 5/24B-15.01)

[ix] Illinois uses 7 election systems which are certified and currently in use in various combinations across Illinois: The M100, AutoMARK, Accuvote, TSX, Edge2Plus, InsightPlus, and eSlate. Election systems in use can be viewed at http://www.elections.il.gov/votinginformation/votingeq