2016 Professional Practices Program

Ballot Box Tracking System:
Chain-of-Custody Made Easy

Boulder County, CO

Submitted by:

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Overview of Ballot Box Tracking System
Ballot Box Tracking System is a web-based application that tracks the physical whereabouts and ensures an electronic chain-of-custody log for every ballot box in Boulder County. It delivers a real-time snapshot of where ballot boxes are and provides ease of check in and check out for ballot box couriers. This innovative application provides increased track-ability, easy audit functionality, and increases the transparency of ballot box tracking for Boulder County voters. Colorado is a mail ballot state and 40% of ballots are returned through the mail and this system ensures secure retrieval of voted ballots from the post office and from all ballot drop-off locations.

Why Boulder County Elections had to act
Boulder County Elections Division needed to align and modernize our ballot box tracking process with the all-mail ballot voting model and get ready for what is anticipated to be the largest voter turnout in Boulder County history this November. Hence, the Elections Division partnered with County IT in early 2015 to develop a new, secure web-based application to track the over 600 ballot boxes anticipated to be in circulation leading up to and on Election Day. These ballot boxes collect and house over 98% of the ballots cast in Boulder County, including the ballots we pick up from the postal service. The only ballots not collected in some form of a ballot box are those cast on electronic voting machines at Voter Service and Polling Centers. Thus, it is absolutely critical to know the whereabouts of each box at all times and to have chain-of-custody documentation for each ballot box transported to and from voting locations.

In past elections, this tracking was all done through detailed spreadsheets in combination with labels and paper chain-of-custody logs. But, anything that requires multiple manual data entry steps and the transferring of label information is open to human error. Even the most well-trained ballot box courier would sometimes inadvertently miss a step or transpose information when checking in multiple ballot trays or boxes. A minor error used to cause hours of unnecessary re-tracking of ballot boxes. Human errors like this are virtually eliminated now that we have our new Ballot Box Tracking System.

Ballot Box Tracking System – How it works
Each ballot box has its own unique barcode. Additionally, security locks and seals all have a unique barcode. Finally, each person working with ballot boxes has their own set of credentials that includes a unique user identification and pin number.

Before any ballot box leaves our Ballot Processing Center, the ballot box or “asset” is assigned to a destination, and then checked out via a scan process to bi-partisan courier teams using a scan wand and iPad. The couriers scan their credentials identifying who they are and then scan the ballot box barcode. This creates the first entry in a chain-of-custody log in the Ballot Box Tracking System. Next, when the couriers deliver the ballot boxes to their destinations, they are scanned in at each location, creating the next entry in the system. Another electronic entry in the chain-of-custody log is created when the ballot box is then sealed and ready for voted ballot collection. As noted above, each security tag has its own barcode and is then scanned by the team collecting the ballots.
To ensure consistency, chain-of-custody workflow is defined in the application. For instance, a ballot box at a Voter Service and Polling Center would be sealed and scanned by the receiving election judges at the Center. In another instance, couriers collecting voted ballots from a 24-hour box have a workflow that is set up for immediate collection of voted ballots and allows the bi-partisan courier team to add the security seals and scan the information – adding an electronic entry in our tracking system that the box is now in ballot collection mode.

The next entry in the chain-of-custody log is created when the ballot boxes are picked up. Couriers scan the ballot box codes when they are picked up and again when they are delivered back to our Ballot Processing Center. Each scan includes the electronic credentials – their unique username and barcode/pin – at each juncture. The sealed security tags are also scanned at each point and the application verifies that no changes were made in the security seals after they were applied. If a mismatch is detected, the system administrator is alerted and the appropriate compliance action is initiated.

Security access roles are also defined in the application and align with the pre-defined workflow process for each person working with our application. Access to the Ballot Box Tracking System application includes a two-step security authentication process. The authentication security safe-guard is modeled after the same process you encounter when logging into online banking. This helps ensure the security of the system and limits application access to authorized users.

**Ballot Box Tracking System – Benefits**

Developed in 2015 and used in the November election, our innovative Ballot Box Tracking System application has transformed the way Boulder County manages ballot box assets. It has provided an auditable electronic chain-of-custody record and complete tracking mechanism for all our ballot boxes. This is especially important on election night to ensure all ballot boxes have been returned from all locations. The application is easy to use with minimal training and virtually eliminates all human error. The technology allows our ballot processing team to spend less time tracking the whereabouts of ballot boxes, as they can quickly and easily access a web-based dashboard that provides an at-a-glance view of all our ballot box assets from one central location.

Additionally, when a ballot box returns to our Ballot Processing Center, the boxes are weighed providing an estimate of the number of ballots contained in the box. This helps our office plan current and future election staffing and ballot return forecasting. The system data can also be analyzed and used to make decisions about the need and placement of future ballot collection sites.

In addition to the increased tracking accuracy and transparency of the chain-of-custody of our ballot boxes, our new tracking system has sped up the process of delivering, retrieving and checking-in ballot boxes during the election. And, with a system that everyone can access simultaneously, paperwork and process bottlenecks no longer occur.

In summary, the application allows us to define and use a consistent and effective ballot box tracking process that is transparent, efficient and supports the Colorado mail ballot model. The real-time dashboard and reporting tools available in our application have made our tracking and reconciliation of assets a much easier and efficient process – saving time and providing Boulder County voters with the best in public service.
Supporting Document 1:
Security Features – Access Roles and Personalized Authentication

In our web-based Ballot Box Tracking System, we can assign users different permissions:

Once added to the System, a user then sets up a personal authentication, a security safe-guard similar to the process used in the banking industry:

**Ballot Box Tracking System**
Each bi-partisan courier team receives an iPad and scanner. When transporting ballot boxes, a courier first scans their username barcode and pin barcode, and then scans the barcode for the ballot box or “asset” they are checking out:
Supporting Document 3: Manual Ballot Box Tracking System

Example of Previous Master Spreadsheet to track all ballot box assets:

Example of Previous “Chain-of-Custody” log:
Supporting Document 4: 
Tracking with Ballot Box Tracking System
Web Application

Ballot Box or “Asset” tracking screens:

Sample Electronic “Chain-of-Custody” log:
Supporting Document 5:
Ballot Box Tracking System – Dashboard analytics and reporting

Ballot Box Tracking System provides an easy at-a-glance summary view of all type of ballot box locations:

Sample Chain-of-Custody Report:

<table>
<thead>
<tr>
<th>Trip ID</th>
<th>Asset ID</th>
<th>Location</th>
<th>Date</th>
<th>Time</th>
<th>Seals</th>
<th>Verified Electronic Signature</th>
<th>Verified Electronic Signature</th>
<th>Step Name</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>41</td>
<td>S020</td>
<td>BPC</td>
<td>6/2/2016</td>
<td>11:10 AM</td>
<td>022864</td>
<td>ksteen</td>
<td>akneebone</td>
<td>HCF TEAM - Checkout from BPC &amp; Seal Asset for Collection</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>USPS</td>
<td>BPC</td>
<td>6/2/2016</td>
<td>9:45 AM</td>
<td>55552469,55552460</td>
<td>dbrock</td>
<td>akneebone</td>
<td>WAREHOUSE - Checkin to BPC &amp; Record Ballot Count</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>USPS POS 801D</td>
<td>BPC</td>
<td>6/2/2016</td>
<td>9:39 AM</td>
<td>55552469,55552460</td>
<td>dbrock</td>
<td>akneebone</td>
<td>Take Custody of Trays</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>G006</td>
<td>BPC</td>
<td>6/2/2016</td>
<td>9:28 AM</td>
<td>001819.001819</td>
<td>akneebone</td>
<td>dbrock</td>
<td>WAREHOUSE - Checkin to BPC &amp; Record Ballot Count</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>G006</td>
<td>Boulder C&amp;R 24hB</td>
<td>6/2/2016</td>
<td>9:23 AM</td>
<td>001819.001819</td>
<td>akneebone</td>
<td>dbrock</td>
<td>COURIER - Pick up Ballots - Return to BPC</td>
<td></td>
</tr>
</tbody>
</table>