AUDIT REPORT
Airport Capital Assets
Denver International Airport
December 2020

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AUDITOR’S LETTER

The objectives of our audit of capital assets at Denver International Airport were to determine whether capital assets were properly tracked, recorded, accurate, and complete within information systems and whether the assets were properly maintained. I am pleased to present the results of this audit.

The audit found the airport risks inaccuracies in tracking its capital assets and has gaps in managing asset maintenance requirements. The successful management of over $4 billion in assets is critical to the success of the airport to meet its mission of fiscal responsibility, service, and safety for the public.

The airport needs to add details to policies and procedures, improve documentation within information systems, and improve processes related to lost assets. In addition, the airport lacks a comprehensive preventive maintenance program, and it needs to document processes related to preventive maintenance scheduling and other routine maintenance activities. By formalizing and documenting processes, improving policies and procedures, and improving communication among airport divisions, Denver International Airport will be better equipped to manage and maintain its capital assets.

I am disappointed the airport has chosen to disagree with recommendations that would clearly enhance the airport's ability to manage its capital assets. Further explanation is included in the Auditor's Addendum on page 58.

This performance audit is authorized pursuant to the City and County of Denver Charter, Article V, Part 2, Section 1, “General Powers and Duties of Auditor.” We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

We extend our appreciation to the personnel at Denver International Airport who assisted and cooperated with us during the audit. For any questions, please feel free to contact me at 720-913-5000.

Denver Auditor’s Office

Timothy M. O’Brien, CPA
Auditor
Airport Capital Assets
December 2020

Objective
1. To determine whether Denver International Airport’s asset management program has adequate controls to ensure capital assets are properly tracked and recorded and that information within all systems of record is complete and accurate.
2. To determine whether the airport’s asset management program ensures the condition of capital assets is properly maintained through preventive maintenance so the airport can effectively budget for future costs.

Background
Capital assets are used in operations and have an initial useful life of more than one year. Denver International Airport’s capital assets consist of tangible assets — such as buildings, roadways, taxiway and runway improvements, machinery, equipment, infrastructure, and land — as well as intangible assets such as software. The airport had $4.2 billion in net capital assets as of Dec. 31, 2019.

An effective asset management program includes methods to determine which assets to acquire or create and how to operate and maintain them, as well as detailed and documented processes to repair, decommission, and/or dispose of assets.

REPORT HIGHLIGHTS

Highlights from Audit
Airport officials need to improve internal controls and processes at Denver International Airport to better ensure the airport properly manages its capital assets. In addition, the airport needs a comprehensive preventive maintenance program to ensure consistent and timely maintenance of capital assets to promote continued performance throughout the assets’ lives. Finally, the airport needs to improve processes to ensure its computerized maintenance management system has accurate data, so that it can effectively budget for future costs, such as maintenance and staffing.

Denver International Airport’s Internal Controls Need Improvement to Ensure Capital Assets Are Properly Tracked and Recorded and that Information in Systems Is Complete and Accurate
- The airport’s internal controls need improvement to ensure it properly oversees its capital assets.
- The airport has inadequate contract monitoring processes and cannot ensure airport contractors responsible for asset maintenance comply with contract terms.
- The airport does not adequately communicate processes to all divisions responsible for managing capital assets.

Denver International Airport Lacks a Comprehensive Preventive Maintenance Program to Ensure All Assets Are Maintained and that It Can Effectively Budget for Future Costs
- Preventive maintenance activities are backlogged, and the information system lacks accurate data.
- The airport lacks documented processes for scheduling preventive maintenance and other routine activities.
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BACKGROUND

Overview of Denver International Airport

Denver International Airport opened in 1995. It is the fifth busiest airport in the United States with 69 million passengers traveling through in 2019. Owned by the City and County of Denver, the airport operates as an enterprise — a government entity that operates as a self-sustaining business. The airport must generate enough revenue to cover all its costs to support planning, development, operation, and maintenance of the airport.

The airport generates an estimated $26 billion in economic benefit for Colorado each year. The airport strives to "operate at the highest standards of safety and security" and deliver "consistent, outstanding service" to customers by offering “the highest levels of service and efficiency.”

Capital Assets

Part of providing exceptional service to all customers is maintaining airport facilities, including airport assets. Various types of assets help the airport provide services and ultimately fulfill its mission.

For the purposes of this audit, we focused on the airport’s capital assets. “Capital assets” are tangible and intangible assets used in operations that are valued at $5,000 or greater and have a life expectancy of more than one year. The airport’s capital assets consist of several thousand tangible assets — such as buildings; roadways; taxiway and runway improvements; machinery and equipment, including elevators, power walks, and vehicles; infrastructure; and land — as well as intangible assets such as software.

Capital assets are required to be tracked and recorded in the city's financial system of record, and they can be “acquired through outright purchasing, construction, lease purchase agreements, installment purchase contracts, tax or special assessment, eminent domain, donations, or gifts.”

Thresholds – The city’s fiscal rules establish capitalization thresholds to determine the financial reporting treatment of an asset.

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3 City and County of Denver, “Mayor’s 2020 Budget” Vol. 2, 413.
6 City and County of Denver, Fiscal Accountability Rules, “Rule 4.2 – Capital and Controlled Assets,” 3.
Figure 1 demonstrates the various thresholds assigned to different types of tangible and intangible assets.

**FIGURE 1. Capital Asset Thresholds by Asset Type**

<table>
<thead>
<tr>
<th>Tangible Capital Assets</th>
<th>Intangible Capital Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buildings and Infrastructure</td>
<td>$50,000 and above</td>
</tr>
<tr>
<td>Machinery and Equipment</td>
<td>$5,000 and above</td>
</tr>
<tr>
<td>Works of Art and Historical Treasures</td>
<td>$5,000 and above</td>
</tr>
<tr>
<td>Improvements</td>
<td>$0 and above</td>
</tr>
<tr>
<td>Improvements</td>
<td>$0 and above</td>
</tr>
<tr>
<td>Land</td>
<td>$0 and above</td>
</tr>
<tr>
<td>Software</td>
<td>$0 and above</td>
</tr>
<tr>
<td>Temporary Easements and Water Rights</td>
<td>$0 and above</td>
</tr>
<tr>
<td>Permanent Easements</td>
<td>$0 and above</td>
</tr>
</tbody>
</table>

**Source:** Illustration by Auditor’s Office staff based on the city’s Fiscal Accountability Rule 4.2.

**Estimated Useful Lives** – In accordance with city’s fiscal rules, the city’s financial system, Workday, records capital assets at their purchase cost or at their estimated fair market value when the purchase cost is unavailable. Asset costs are then depreciated monthly over the life of an asset.

Asset repairs and any maintenance costs incurred are typically expensed. These costs are included in the value of the asset only when it improves or extends the life of an asset.\(^7\) Table 1 on the following page shows the estimated useful life across the different asset types that depreciate.

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\(^7\) City and County of Denver, Fiscal Accountability Rules, “Rule 4.2 – Capital and Controlled Assets.”
Rules for Managing Capital Assets – The city Controller’s Office establishes and enforces accounting policies, practices, and procedures through citywide Fiscal Accountability Rules, which set parameters for fiscal activities. The airport follows the city’s fiscal rules for asset procedures to ensure all capital asset activity is properly recorded and reported in Workday.

According to the city Fiscal Accountability Rule related to capital assets:\(^8\)

- Agencies are responsible for managing and protecting their capital and controlled assets.
- Agencies must designate a custodian who is responsible for ensuring complete and accurate documentation for asset additions, transfers, disposals, and inventory.
- Physical inventory of all capital, controlled, and high-risk controlled assets must be conducted and documented on an annual basis.
- Repair and maintenance costs should be expensed when they retain the value of an asset but do not add value, useful life, or productive capacity.
- Capital assets are depreciated using the straight-line method and the estimated useful life is determined by the average life for the group of assets instead of individual assets.\(^9\)

<table>
<thead>
<tr>
<th>Asset Type</th>
<th>Range of Useful Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roadways</td>
<td>30-40 years</td>
</tr>
<tr>
<td>Runways and Taxiways</td>
<td>30-40 years</td>
</tr>
<tr>
<td>Buildings</td>
<td>20-40 years</td>
</tr>
<tr>
<td>Other improvements</td>
<td>15-40 years</td>
</tr>
<tr>
<td>Major system equipment</td>
<td>15-25 years</td>
</tr>
<tr>
<td>Vehicles and equipment</td>
<td>5-10 years</td>
</tr>
<tr>
<td>Intangibles</td>
<td>3-5 years</td>
</tr>
</tbody>
</table>

**TABLE 1. Capital Asset Estimated Useful Lives**

Source: Denver International Airport’s 2019 annual financial report.

\(^8\) City and County of Denver, Fiscal Accountability Rules, “Rule 4.2 – Capital and Controlled Assets.” “Controlled assets” are operable, low-cost assets that are tracked and inventoried. If a controlled asset is susceptible to being lost or stolen, it is considered a “high-risk controlled asset.”

\(^9\) The “straight-line depreciation method” is calculated by subtracting the salvage value of an asset from the purchase price and dividing that total by the years the asset is expected to be used.
Various airport divisions and departments have responsibilities related to managing and maintaining the airport’s capital assets throughout their life cycles. Figure 2 shows the specific airport divisions and departments we focused on during the audit.

**FIGURE 2. Denver International Airport Organizational Chart**

Source: Illustration by Auditor’s Office staff based on information from airport personnel.

Note: This organizational chart includes only those airport divisions and departments involved in managing and maintaining the airport’s capital assets.

**Finance Division** – The airport’s Finance Division records capital asset activity in the city’s financial system, Workday. The Finance Division communicates with the airport’s capital budget team about upcoming and ongoing capital projects. It also works with various airport divisions during the inventory process to assist in locating capital assets. The Finance Division’s responsibilities include recording asset transfers and disposals. Within the division, the airport’s business asset group manages all capital asset activity including physical inventory and maintains financial records related to capital assets.

**Sustainability Division** – As it relates to oversight and management of the airport’s assets, the Sustainability Division includes the Asset Management section, which conducts facility condition assessments and manages construction warranties. The Sustainability Division’s responsibilities also include overseeing the airport’s computerized maintenance management system, Maximo. The system holds a variety of asset information, such as newly installed, replaced, or discovered assets and preventive maintenance schedules for assets.

**Maintenance Division** – The airport’s Maintenance Division includes maintenance administration, facilities maintenance, field maintenance,
and fleet maintenance. Generally, the division's responsibilities include providing customer service to maintenance departments through the airport maintenance control center and conducting maintenance on a variety of the airport's emergency and communication systems. Specific to capital assets, the division's responsibilities include maintenance and repairs to runways, taxiways, vehicles, and equipment.

Development Division – The Development Division oversees the design of capital projects and provides guidance to airport divisions on replacing assets or selecting new assets. Specific areas of responsibility include project management, coordination, construction of airfield and roadway projects, site development and surveying, management of airport project design coordination, tenant development, and engineering standards for the airport.  

Airport Operations Department – While the Airport Operations Department has a variety of responsibilities throughout the airport, this audit focused on the department's Operations and Maintenance Contract Administration Division and its role in administering third-party contracts for asset maintenance. Contract administrators oversee contractors' compliance with maintenance contracts, such as those related to the airport's underground train between concourses and its elevators, escalators, and power walks — more commonly known as “moving walkways.”

Contract administrators use a variety of reports and systems to monitor contract terms affecting asset performance such as preventive maintenance, emergency calls, troubleshooting calls, downtime, and penalties for noncompliance.

Airport Financial Activity

The airport follows U.S. generally accepted accounting principles, and officials prepare the airport's annual financial statements based on these principles. These reports ensure adequate oversight of capital assets and provide reasonable assurance that assets are safeguarded from loss and misuse.

Financial Reports – The airport's annual financial report and the city's Comprehensive Annual Financial Report shows capital assets at their purchase costs — less accumulated depreciation. As shown in Appendix A, the airport's total net capital assets increased by over $398 million, or more than 10%, in 2019 to over $4.2 billion as of Dec. 31, 2019. Asset additions related to capital

projects for Concourses A, B, and C, the Jeppesen Terminal, roadways, and runway and taxiway improvements — as based on the airport's 2018-2022 capital program — contributed to the increase in net capital assets.\textsuperscript{11}

While the airport’s total net capital assets increased in 2019, the airport’s operating expenses — before depreciation and amortization — also increased. As shown in Table 2, they rose to over $584 million as of Dec. 31, 2019 — up by over $110 million, or 23.2%, compared to 2018.

\begin{table}
\centering
\caption{Denver International Airport’s Total Operating Expenses for Fiscal Years 2018 and 2019}
\begin{tabular}{lcccc}
\hline
\textbf{Operating Expenses} & \textbf{2018} & \textbf{2019} & \textbf{Percent Change} \\
\hline
Personnel & $173,979,000 & $194,317,000 & 11.7\% \\
Contractual services & $227,918,000 & $241,264,000 & 5.9\% \\
Repair and maintenance projects & $19,423,000 & $32,296,000 & 66.3\% \\
Maintenance, supplies, and materials & $24,378,000 & $28,649,000 & 17.5\% \\
Hotel & $28,616,000 & $31,446,000 & 9.9\% \\
Legal/claim reserve expenses & $0 & $56,500,000 & 100\% \\
\hline
\textbf{TOTAL OPERATING EXPENSES} & $474,314,000 & $584,472,000 & 23.2\% \\
\hline
\end{tabular}
\end{table}

\textsuperscript{12} Denver International Airport, 2019 Annual Financial Report, 14-19.

In 2019, the airport recorded $32.3 million of its operating expenses to repair and maintenance projects, an increase from $19.4 million in 2018. It also recorded $28.6 million to maintenance, supplies, and materials — an increase from $24.4 million in 2018. Additional roadway and parking lot repairs, as well as costs for snow removal, contributed to the increase in operating expenses.\textsuperscript{12}

\textbf{Finance Procedures} – While the airport follows the city's Fiscal Accountability Rules, the airport’s Finance Division also has its own standard operating procedures to support capital asset processes and accounting. These include:

\begin{itemize}
\item \textbf{Asset receiving and tagging procedures:} When an asset is acquired, the airport’s business asset group determines whether the asset meets capital asset requirements. If the asset is deemed a capital asset, the business accountant records asset information — such as the serial number — and then tags the asset. All mobile assets,
\end{itemize}


\textsuperscript{12} Denver International Airport, 2019 Annual Financial Report, 14-19.
such as equipment, receive an asset tag. Immobile assets, such as buildings, do not receive a tag because the asset’s description is sufficient for identifying the asset.

- **Asset transfers and disposal procedures:** The business asset group uses a “transfer of property” form to capture all required asset information when an asset needs to be moved due to a transfer between divisions or an asset disposal. Airport divisions coordinate transfers for their respective assets — except for vehicle transfers, which fleet maintenance coordinates.

When a capital asset needs to be disposed of, airport divisions are supposed to submit a “transfer of property” form to the business asset group, which coordinates with the city’s surplus department to sell assets through online auction. Proceeds are sent back to the airport.

- **Business asset system accounting:** The business asset group ensures capital asset activity is recorded and reconciled in Workday’s business asset module — also referred to as the “subledger” — as well as in the general ledger. Workday notifies the business asset accounting group when an asset over $5,000 is purchased with a trackable spend category. The group then reviews the transaction to determine whether it should be capitalized or expensed to ensure the asset receives the proper accounting treatment.

- **Physical inventory procedures:** With help from each airport division, the business asset group physically counts some airport capital assets each year. Business asset accountants pull a detailed inventory report from Workday, and they select the capital assets to be inventoried based on costs and the last inventory date.

Each year, the airport’s Finance Division physically inventories one-third of buildings and improvements, infrastructure, land improvements, and intangible assets. Staff also inventory 20% of equipment, vehicles, and collections. To reach the required inventory percentage, capital assets registered into service during the prior year are selected first, followed by capital assets not inventoried within the past five years, then four years, and so forth.

The business asset supervisor reviews and approves the final inventory list. The airport’s business asset group accounts for capital assets through physical counts, email and picture confirmation for assets such as software or other assets located in sensitive and secure areas, a vehicle’s GPS, and service records in Maximo, the airport’s computerized maintenance management system. After completing the inventory count, the business asset accountant updates the capital asset entries — such as location and disposals — in Workday.
A city fiscal rule requires an annual physical count of capital assets by Sept. 30 of each year. However, when the rule creates a substantial hardship for an agency and the agency cannot complete a full asset inventory on an annual basis, the agency can request a waiver.

Given the variety of the airport’s capital assets, it is not feasible for the airport to conduct a full physical inventory of all its capital assets each year. Therefore, the city Controller’s Office granted the airport a fiscal accountability waiver for physical inventory of its capital assets.

- **Work-in-progress procedures:** “Work-in-progress” refers to capital project and building costs such as contract labor, materials, and equipment used during construction that is not completed. Once a construction project is finished, capital assets are placed into service and costs are transferred to the airport’s Revenues, Operations, and Maintenance Fund. The capital budget team creates a project in Workday, marks the project as “capital,” and routes it to the business asset supervisor, who decides whether the project should be capitalized or expensed based on the city’s accounting rules.

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**The Asset Management Life Cycle**

The airport’s asset management program encompasses a variety of activities that help optimize an asset’s life cycle from beginning to end. An effective program can improve an asset’s life expectancy and increase the return on investment for the asset in terms of performance and reliability.

As illustrated in Figure 3 on the next page, the airport’s asset life cycle involves a series of stages starting with planning for and/or acquiring a new asset, followed by operating and maintaining the asset, and continuing on to eventually repairing, decommissioning, and/or disposing of the asset.

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Planning, Design, and Acquisition – The airport uses the “design-bid-build” process for designing and constructing capital projects. The process begins by creating a design portfolio that outlines all construction work involved; project managers and airport executives then approve the plan. Once approved, the project is competitively bid, and then the project is built. For assets purchased outside a capital project, the airport coordinates with the Purchasing Division in the city's Department of General Services.

Operation and Preventive Maintenance – Preventive maintenance “involves routine scheduled activities intended to keep a system performing at its best, with goals of preventing its breakdown and extending its useful life.”\textsuperscript{15} The airport monitors and maintains facility and infrastructure assets through preventive maintenance work plans and schedules based on guidance in operations and maintenance manuals set up by planners within the airport’s Asset Management section.

Fleet maintenance planners create job plans for each fleet asset (i.e., vehicle) to instruct maintenance technicians on inspections and service required to ensure standardized maintenance, including what replacement parts the maintenance requires. Fleet assets — monitored and maintained through preventive maintenance frequency schedules — include recommendations for items such as mileage, time, required replacement part availability, labor hour requirements, and the availability of maintenance workers.

Disposal – Decommissioning a capital asset deemed no longer usable, outdated, or inoperable results in the asset being disposed of through the city's surplus department and sold at online auction.

Integral Software Systems

While the airport uses several software systems to manage its assets, this audit focused on the airport's computerized maintenance management system, Maximo, and the city's financial system of record, Workday.

- **Maximo**: Maximo contains asset information — for both capital and noncapital assets — such as description, location, and asset tag numbers used to schedule corrective and preventive maintenance and assign maintenance work to technicians through work orders.

As of May 2020, Maximo contained over 22,000 assets, including retired and decommissioned assets. Upgrades were in progress at the time of the audit to provide a mobile platform that would allow technicians to access the system while on-site. Maximo's capabilities also include the ability to run reports such as “Asset Cost by Work Type,” “Asset Type Preventive Maintenance Detail,” and “Work Order History.”

- **Workday**: Regarding the airport's capital asset management activities, Workday tracks asset additions, transfers, impairments, and disposals — in addition to indicating whether a capital asset is depreciable or non-depreciable.

Workday also provides the airport's Finance Division with the ability to track capital projects under construction and run detailed lists of capital assets when performing inventory. Other activities related to capital assets performed in Workday include registering and placing assets into service, updating the date of last inventory, and reconciling the general ledger and subledgers.
FINDING 1
Denver International Airport’s Internal Controls Need Improvement to Ensure Capital Assets Are Properly Tracked and Recorded and that Information in Systems Is Complete and Accurate

Maintaining airport facilities — which include Denver International Airport’s $4.2 billion worth of net capital assets — is significantly important to airport operations. We found weaknesses in the internal controls for overseeing capital assets as well as weaknesses in how the airport tracks and records capital assets in its information systems. Specifically:

- The Finance Division’s policies and procedures lack details related to some capital asset activities.
- We found inconsistencies with capital asset information between the two systems, Maximo and Workday.
- We found inconsistent documentation for capital asset disposals.
- The airport lacks validating procedures for lost property.

We found the airport’s contract administration division does not have a comprehensive way to track and monitor contractors’ compliance with capital asset maintenance contracts. We also noted airport divisions inadequately talk with one another about processes for proper capital asset management.

Inconsistent application of processes to manage capital assets weakens the control environment and affects the completeness and accuracy of information that could result in assets being lost or misused.

WHAT ARE CAPITAL ASSETS?
Denver International Airport’s capital assets consist of tangible assets — such as buildings, roadways, runway and taxiway improvements, machinery, equipment, infrastructure, and land — as well as intangible assets such as software.

“The Airport’s Internal Controls Need Improvement to Ensure It Properly Oversees Its Capital Assets

“Internal controls” are processes that help an organization achieve its objectives using effective and efficient processes, reliable financial reporting, and compliance with laws, regulations, and policies. Internal controls include detailed policies and procedures, compliance with those policies and procedures, adequate supporting documentation for

We found the airport Finance Division’s policies and procedures lack detail related to capital asset activities — such as the proper use of “transfer of property” forms, the process for auctioning assets, and the use of virtual tags. The airport also lacks supporting documentation for asset disposals. In addition, inconsistencies exist with asset information contained in the information systems used to document activities such as capital asset additions, transfers, lost assets, and disposals. Finally, we noted a lack of procedures to validate claims of lost property.

We reviewed documentation related to capital asset transactions from January 2018 through May 2020. Specifically, we reviewed processes and supporting documentation for capital assets placed in service, disposed of, transferred, lost, impaired, donated, and related to capital projects. We had no findings for transactions related to capital assets donated and none for those related to capital projects. In addition, during the time frame we tested, the airport reported no impaired assets — a permanent reduction of an asset’s value due to damage or other unusual circumstance.

The Airport Finance Division’s Policies and Procedures Lack Detail for Some Capital Asset Processes

We found the Finance Division’s policies and procedures lack detail regarding how airport personnel should use “transfer of property” forms for reporting disposals and transfers to the division. We noted airport personnel inconsistently use the forms, and there is limited detail in the division’s policy for receiving surplus proceeds from assets sold at auction. We also found a lack of details related to how virtual asset tags are defined and used.

Limited Detail and Inconsistencies in “Transfer of Property” Forms –

According to the Finance Division’s policies and procedures, capital assets transferred between airport departments and/or disposed of must be accompanied by a “transfer of property” form that must be immediately forwarded to the airport’s business asset group. However, out of a random sample of 20 capital assets among the 65 disposed of from January 2018 through May 2020, we found only one asset had a property transfer form that indicated the asset went to the city’s surplus department for disposal.

Through discussions with Finance Division staff, we learned their requirement of the form depends on the nature of the asset transfer and/or disposal. Division staff also noted that legacy capital assets — those that existed before the airport’s conversion to Workday in August 2017 from the
airport’s prior accounting system — were registered in groups rather than individual components.

For example, 11 information technology assets associated with local area network upgrades were registered in the airport’s previous accounting system as one asset. When the airport converted to Workday, the 11 assets remained in the group and were assigned a single asset ID number. As a result, the process poses some difficulty for the Finance Division to dispose of the correct asset in Workday within the group.

However, finance personnel said their approach going forward is to ensure new capital assets are registered individually for more accurate tracking. For legacy assets, the Finance Division tracks the individual disposed components within asset groups but oftentimes cannot dispose of the entire group under a single asset ID until it exits service altogether. This results in the asset ID remaining “in service” in Workday even though some assets within the group have been disposed of. Therefore, it becomes even more significant that the Finance Division ensure a “transfer of property” form is retained in Workday for all disposals and transfers and that it contains as much information as possible about an asset.

We also reviewed a random sample of 21, or 12%, of the 171 capital assets transferred from January 2018 through May 2020, and we found one asset did not have a form to document the transfer. Finance Division staff said the asset did not transfer departments, but it did transfer to a new location within the airport. Staff explained the transaction required the completion of a transfer but not the property transfer form, specifically.

The division’s policies and procedures do not contain exceptions to the form’s use, and they are unclear regarding transfers between airport locations.

We also noted the following inconsistencies related to staff’s completion of the “transfer of property” forms:

- Among our sample of the 21 capital assets that were transferred, signature lines were not used for the Material Management and Warehouse divisions on any of the assets. However, we learned the property transfer form is an older one adopted from the city Controller’s Office, and neither division receives or reviews the forms anymore.
- Forms for two of those 21 transfers lacked the transfer location, and the form for one transfer incorrectly recorded the transfer location.

SAMPLING AND METHODOLOGY
For more information on our data analysis, sampling, and methodology, reference Appendix B.
Only five forms contained the business asset supervisor’s initials, indicating their final approval of the transfer.

Limited Detail on Capital Asset Surplus Proceeds and Virtual Tagging Processes – The Finance Division’s policies and procedures contain limited details about the process for receiving and accounting for surplus proceeds from capital assets sold at online auction. Through conversations with personnel in the city’s Purchasing Division, we learned the city’s surplus department calculates proceed totals from disposed capital assets sold through the city’s online auction vendor and then sends an electronic transfer to the city’s accounting services for deposit to the airport based on guidance from the city’s Budget and Management Office.

While the division’s policies and procedures say surplus proceeds should return to the airport for processing, they do not include these details related to the accounting treatment of the proceeds when the airport receives the money.

In addition, the Finance Division’s policies and procedures contain limited details related to the use of virtual capital asset tags. During an on-site inventory of 47 randomly selected capital assets, we noted the airport uses virtual tags for intangible information technology equipment. However, we also noted a type of virtual tag used for other tangible assets, such as components of the airport’s voice communication system as not every piece of the system can be tagged.

Workday contains the tag, along with a list of all capitalized components included within the communication system. While the division’s policies and procedures say assets without a physical tag — such as software and other intangibles — should be tracked with a virtual tag in Workday, the procedures did not fully define the use of virtual tags.

While the division’s policies did not include these details, the Finance Division reviews and updates its policies and procedures annually, and agreed additional detail and clarification would be beneficial.

According to U.S. Government Accountability Office standards, documentation should include the “who, what, when, where and why,” because it preserves organizational knowledge and mitigates the risk of having that knowledge limited to only a few personnel.17 The standards also emphasize the importance of reviewing policies and procedures to ensure objectives and related risks include a level of detail that allow management to effectively monitor activity.18

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18 U.S. Government Accountability Office, paras. 12.03 and 12.05.
Having policies and procedures with limited details increases the risk that staff will complete tasks inconsistently and in ways that are not in accordance with airport practices. This may inherently lead to inaccurate or incorrect capital asset data in the airport’s information systems. In addition, detailed policies and procedures help ensure knowledge is consistently communicated to employees.

The Finance Division Lacks Complete Supporting Documentation for Capital Asset Disposals

We compared supporting documentation for disposed capital assets and found airport staff provided incomplete documentation to support that an asset was properly disposed of when it was disposed of by means other than the city’s surplus department and/or online auction process.

Incomplete Documentation – As mentioned, the Finance Division’s policies and procedures require a property transfer form for disposed capital assets. For the 20 disposed capital assets we sampled, we reviewed supporting documentation to determine whether the assets were disposed of properly. We found only one asset had a property transfer form validating its proper disposal to the city’s surplus department.
Finance Division staff said the remaining assets we reviewed did not require a form because of how they were disposed of. For example, signage original to the airport was capitalized as a “bulk” item, and over the past 25 years, the Finance Division found such items were replaced “multiple times over” and no longer exist.

In addition, documentation was unclear to support taxiway upgrades and replacement, and we found one capital asset transferred to the Denver Police Department was deemed “unsafe” yet documentation did not exist to validate the police department received the item. Officials said the Finance Division did not obtain a receipt because the police department is an internal agency within city government. Finance Division personnel said that once the city’s surplus department disposes of a capital asset, the disposal is complete and they are not notified of how the asset was disposed of, sold, or discarded.

The U.S. Government Accountability Office says documentation is necessary to ensure effective design, implementation, and operating effectiveness of an organization’s internal control system. Further, documentation assists management in “establishing and communicating the who, what, when, where, and why of internal control execution to personnel.”

Incomplete documentation to justify proper disposal and transfer of capital assets to their final location could result in mismanagement or misuse of assets.

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Inconsistent Asset Information – We compared “transfer of property” forms with data entries in Workday and Maximo and found inconsistencies with the asset information documented between the systems. For example, we noted errors in asset information within Maximo, such as a camera mislabeled as “99” rather than “990.”

In addition, we found asset descriptions, asset numbers, and serial numbers...
on property transfer forms did not always match Maximo and/or Workday. Furthermore, we identified instances when dates on the forms did not match the “last issued” or “transfer date” in Workday and additional capital assets noted as “lost” on the forms were not noted as such in Workday.

Finally, while we located the 47 selected capital assets during our own on-site inventory of some airport capital assets, we noted Workday contained vague details about the actual location of each asset.

Finance Division staff explained when an asset ID contains multiple asset numbers, it is discarded as a whole asset and noted as “lost” even when only part of the asset is reported as “lost.” Staff said limitations of the previous accounting system resulted in capital assets being registered in groups rather than as individual components, which complicates the disposal process in Workday.

The division’s approach includes registering new capital assets independently for more effective tracking and disposal and waiting to dispose of grouped legacy capital assets until all components are no longer in use. Finance personnel said airport departments failed to send the property transfer forms to the Finance Division after the Workday conversion in 2017, which resulted in missing forms containing capital assets reported as lost. When we asked the Finance Division about this during our audit, officials said they resolved the issue and are now receiving the forms as required.

Meanwhile, the Finance Division was aware Workday locations are generic, and when we inquired about the locations during the audit, officials said they were in the process of adding information to assets in Workday going forward. During inventory, the Finance Division relies on other airport divisions to help locate capital assets. While the airport does not formally designate asset custodians in each division, the individual divisions are responsible for managing assets, and they rely on the location information in Maximo because the system contains the specific asset location information. Having more location information in Workday may help the Finance Division to conduct inventory more efficiently — which would also reduce staff’s reliance on department contacts for capital asset location information.

We also noted the two systems, Workday and Maximo, do not share common identifiers for all capital assets.

We did find fleet vehicles and equipment have a common identifier in both Workday and Maximo. For example, we found a sweeper in both systems contained the asset number “W-14-022.” However, the absence of this information for most capital assets, prevented us from determining the completeness and accuracy of capital asset details between the two systems. Airport staff said they use the two systems for different purposes: Maximo tracks maintenance of all airport assets, while the Finance Division uses Workday for financial transactions related to capital assets.
The airport’s Asset Management section provided us a list of over 850 assets they discovered this year that were not in Maximo; some were new assets and some were legacy assets. Without a common asset identifier, though, we could not verify whether the assets on the list were appropriately reported in Workday.

Because Asset Management had not shared the information with Finance Division staff, we provided them the list to review and ensure assets identified as capital assets were in Workday, as not all the items on the list were capital assets. Finance Division managers said capital assets on the list were appropriately recorded in Workday, but they were unsure why the assets were not reported in Maximo.

The absence of a common asset identifier in both Workday and Maximo increases the risk that Maximo does not have all necessary capital assets. This limits airport staff’s ability to ensure assets are tracked and properly maintained given the two systems are not integrated. A common identifier would provide airport divisions with the ability to ensure both systems contain all necessary information and that assets are adequately managed.

During our testing — which included reviewing the Finance Division’s procedures and comparing Workday reports to year-end financial statements — we did not identify any issues related to the airport’s financial reporting of capital assets.

U.S. Government Accountability Office standards say that for effective monitoring, data should come from reliable internal and external sources and be “reasonably free from error and bias.”

Inconsistent and inaccurate asset information increases the risk of data integrity and reliability issues. Without a common asset identifier, Finance Division staff do not have specific locations of capital assets when conducting the annual inventory process.

The Finance Division Lacks Procedures to Validate Claims of Lost Property

The Finance Division does not validate claims of lost property to determine whether the reason an item was deemed “lost” was either because another division did not know the proper disposal procedures or because the item might have been stolen.

The Finance Division’s responsibilities include tracking all airport capital assets through its tagging, inventory, and work-in-progress processes. According to the division’s policies and procedures, airport departments

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22 U.S. Government Accountability Office, para. 13.06.
must coordinate with, notify, and submit all required documentation — including a property transfer form — to the Finance Division regarding lost or stolen assets. Typically, when a department identifies lost or stolen assets during the airport’s annual inventory, the Finance Division asks the department to fill out a property transfer form. Finance Division personnel take additional steps only when they determine an asset was stolen, in which case they ensure a police report was filed.

To determine the population of capital assets noted as “lost” in Workday, we ran a query from the system to find all capital assets that said “lost” in the “disposal type” field; this resulted in a list of 22 capital assets. These 22 assets, disposed of between October 2018 and November 2018, consisted of several information technology-type items such as server packages, telecommunication switches, local area network upgrades, and security migration. Finance Division personnel said the division does not verify the cause of lost assets — such as departments’ potential noncompliance with disposal procedures — nor does it seek to determine whether an asset was stolen.

According to best practices from the American Society for Testing and Materials, efficient and effective operations require accurate and reliable financial and operational reporting. Accurate reporting includes a loss report establishing “how, when, and within what timeframes losses are to be reported,” and it includes, at a minimum, the following information:23

- Description and identification numbers.
- Age and condition of the item.
- Acquisition cost and book value.
- Quantity.
- Date and time of occurrence.
- Probable cause of the loss.
- Actions and/or corrective actions taken.

By not verifying an asset’s status beyond its owner and/or division, the airport increases the risk that assets could be reported as “lost” when they may actually be “stolen” and a police report should be filed.

Adequately tracking capital assets reported as “lost” and communicating noncompliance with procedures both could help ensure the airport adequately manages and oversees its capital assets. Although “lost” or “stolen” assets may be fully depreciated within the financial system of record and have no impact on the financial statements, additional costs for replacement may be incurred prior to the end of the assets’ useful lives.

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RECOMMENDATION 1.1

Review and Revise Policies and Procedures – Denver International Airport’s Finance Division should review and revise its policies and procedures to include necessary details related to the use of and exceptions to “transfer of property” forms, surplus proceeds activities, and virtual tags.

Agency Response: Agree, Implementation Date – March 1, 2021

RECOMMENDATION 1.2

Update “Transfer of Property” Forms – Denver International Airport’s Finance Division should update the property transfer forms to remove fields no longer in use and to include information necessary to provide adequate support for the proper transfer and disposal of assets.

Agency Response: Agree, Implementation Date – March 1, 2021

RECOMMENDATION 1.3

Improve Asset Disposal Documentation – Denver International Airport’s Finance Division should retain better supporting documentation for asset disposals to validate proper transfer and disposal of assets and ensure compliance with procedures. This should include retaining receipts that demonstrate transferred and/or disposed assets reach their intended destinations. Applicable policies and procedures should be updated with the revised procedures.

Agency Response: Agree, Implementation Date – March 1, 2021

RECOMMENDATION 1.4

Improve Consistency of Capital Asset Data between Information Systems – Denver International Airport’s Finance and Sustainability divisions should coordinate and determine a common identifier for the airport’s capital assets, such as an asset ID or tag number, to ensure necessary asset descriptions are captured identically in Workday and Maximo and to improve efficiency in capital asset identification between the two systems. In addition, other capital asset information, such as serial or model numbers, should be included in both systems to improve consistency of capital asset information between the systems.

Agency Response: Disagree

Auditor’s Addendum: See page 58
RECOMMENDATION 1.5

Improve Asset Location Information in Workday – Denver International Airport’s Finance Division should document and implement a process to ensure specific asset location information missing in Workday is added and that specific asset location information is revised as assets are transferred and disposed of.

Agency Response: Agree, Implementation Date – June 1, 2021

RECOMMENDATION 1.6

Improve Processes for Validating Assets Reported as Lost – Denver International Airport’s Finance Division should document and implement a process to validate and track claims of lost capital assets. Processes should include, but not be limited to, determining the cause of the lost asset and ensuring Workday information is updated and accurate.

Agency Response: Agree, Implementation Date – March 1, 2021

The Airport Has Inadequate Contract Monitoring Processes and Cannot Ensure Airport Contractors Responsible for Asset Maintenance Comply with Contract Terms

Within the Airport Operations Department, the Operations and Maintenance Contract Administration Division monitors third parties’ compliance with contracts. We found inefficient monitoring practices when we reviewed two asset maintenance contracts the division oversees: those with Bombardier Transportation Inc. and Thyssenkrupp Elevators Inc.

Bombardier maintains the automated ground transportation system, which is the underground train passengers use to travel between the airport’s main terminal and its concourses. Meanwhile, Thyssenkrupp maintains the airport’s “conveyance units” such as elevators, escalators, and power walks — or what are more commonly known as “moving walkways.”

Specifically, we found the airport’s contract administrators lack a comprehensive monitoring tool — such as a tracking spreadsheet — to document monitoring efforts and decisions made related to contractual penalties when the companies do not comply with contract terms. We also noted errors in self-reported documents from the contractors, and we identified data-entry errors, reporting inconsistencies, and several noncompliance issues — for which the airport did not assess the proper penalties.

Rather than use a variety of documents in different places to monitor compliance with several contract terms, a comprehensive monitoring tool provides a contract administrator a way to see all the terms in one place.
In addition, it allows a contract administrator to make notes of discussions with the contractor, record trends of noncompliance, and document their decisions — especially when a decision is discretionary, such as not charging the contractor with a penalty for noncompliance.

**Bombardier Contract** – Denver International Airport entered into a seven-year contract with Bombardier on Jan. 1, 2018. The contract requires the airport’s underground trains to be operational and available 99.75% of the time. While the contract allows for “downtime” events — occasions where a train is down — the contract contains specific lengths of time a train may be down, along with the number of times this may happen during a month.

When these “downtime” events occur beyond the allowed time or monthly occurrences, the airport must charge Bombardier with a penalty. However, when we compared Bombardier's invoices to contract requirements for penalties for noncompliance with operational requirements, we identified three instances when Bombardier was not charged a penalty for its noncompliance.

For example, we reviewed invoices between January 2020 and July 2020 and noted an invoice in January 2020 said a station door malfunctioned for 4 minutes and 19 seconds. According to the contract, this should have resulted in a $50 per minute deduction for the time over 3 minutes. When we asked contract administration staff about this, they referenced a section in the contract and said the penalty was not charged due to another penalty already being charged related to availability. The division determined this would have resulted in a “double penalty” to the contractor.

As a result, at their discretion, division staff did not charge the additional penalty. When we reviewed the invoice again, we did not see the availability penalty the staff mentioned. In addition, we did not find language to support discretion by the contract administrator when charging penalties for noncompliance. The contract section the division referenced says: “In addition to the System Service Availability requirements, deductions will be made from the monthly invoices for Downtime Events that exceed the duration and/or frequency set forth.”

Contract administration division officials explained that while the contract does not specifically discuss “double penalties,” the intention of the contract section pertaining to penalties for noncompliance was not to apply double penalties. Our interpretation is that the “downtime event” penalty should be charged in addition to the penalties for noncompliance with availability requirements. Why the division did not apply the additional penalty remains unclear.

We also did not find language in the division's policies and procedures document related to discretion in charging penalties for noncompliance. Charging penalties according to the contract holds the contractor accountable for ensuring the trains are running properly, as they are
the only mode of transportation for passengers to get to and from the concourses and the terminal.

The Bombardier contract also requires the contractor to complete preventive maintenance on the trains at certain mileage milestones, such as at 6,000, 18,000, and 36,000 miles. The contract allows a 5% mileage cushion for each mileage milestone and provides penalty amounts for every 5% the maintenance is past due. In reviewing maintenance invoices, we noted Bombardier was not charged a $200 maintenance penalty for exceeding the required 18,000-mile preventive maintenance. According to the January 2020 invoice, Bombardier performed maintenance at 19,284 miles, and while the contract provides a cushion of 900 miles, the maintenance was nonetheless overdue by an additional 384 miles. This should have resulted in a $200 penalty for noncompliance.

In addition, we also found a $400 maintenance penalty was not charged for exceeding the 6,000-mile preventive maintenance in May 2020. Bombardier performed the maintenance at 7,734 miles. The contract provides a cushion of 300 miles, which means the maintenance was overdue by an additional 1,434 miles. The contract says a $100 penalty should result for every 5% past due. Therefore, because the maintenance was past due by more than four times the allowed amount, the penalty charged should have been $400. Contract administration officials agreed that penalties were missed; they said adjustments would be made to the July 2020 invoice. We obtained the July 2020 invoice and verified the proper amounts were charged.

Table 3 shows all contract violations and potential missed penalties we found for the Bombardier contract during this audit.

<table>
<thead>
<tr>
<th>Contract Term</th>
<th>Number of Contract Violations</th>
<th>Total Penalty Amount Not Assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single station door malfunction greater than 3 minutes per door has a performance payment deduction of $50 per minute after 3 minutes</td>
<td>1</td>
<td>$50</td>
</tr>
<tr>
<td>18,000-mile vehicle preventive maintenance penalty of $200 assessed for every 5% past due</td>
<td>2</td>
<td>$400</td>
</tr>
<tr>
<td>6,000-mile vehicle preventive maintenance penalty of $100 assessed for every 5% past due</td>
<td>2*</td>
<td>$500</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>5</strong></td>
<td><strong>$950</strong></td>
</tr>
</tbody>
</table>

**TABLE 3. Bombardier Downtime Contract Violations**

Source: Auditor’s Office analysis of the Bombardier contract, invoices, and maintenance reports.

Note: The contract began Jan. 1, 2018, and the Auditor’s Office reviewed documentation from January 2020 through July 2020. The Auditor’s Office noted violations when comparing contract terms, invoices, and maintenance reports.

* The 6,000-mile preventive maintenance was past due by more than four times the allowed cushion. This resulted in a $400 penalty for May 2020 — in addition to another occasion in April 2020, which resulted in another $100 penalty that was not charged.
Meanwhile, when we reviewed self-reported documents from Bombardier, we noted several data errors. We found work orders listed on Bombardier invoices did not match the self-reported documents, and work orders listed on Bombardier invoices were recorded in a different month on the year-to-date reports. The airport's contract administrator said work orders on the weekly report were based on the scheduled date, while the year-to-date report was based on the completion date.

The airport’s standard operating procedure related to monitoring the Bombardier contract lacks an explanation of the reporting process. Airport staff had not noticed until we brought the issue to their attention. The contract administration division corrected the error, which we verified during our fieldwork testing, and officials said all work order reports will use the completion date going forward.

**Thyssenkrupp Contract** – Denver International Airport entered into a contract with Thyssenkrupp on Sept. 1, 2014, which expired August 2020. The airport recently renewed the contract on Sept. 1, 2020, which is set to expire Aug. 31, 2023. We reviewed downtime reports from January 2020 through May 2020 to determine whether the company complied with the requirement that elevators, escalators, and power walks are fully operational at least 99% of the time. For each of the five months we reviewed, we found they were not meeting that required threshold.

For example, we noted 4,085 service outages from January 2020 through May 2020 — averaging a 2% downtime for 70 units. Like the airport’s trains, passengers heavily rely on elevators, escalators, and power walks to get to and from their scheduled flights. This increases the importance of the equipment’s reliability and the importance of ensuring the contractor meets and/or exceeds the operational requirements of its contract. The penalties set forth in the contract help the airport hold Thyssenkrupp accountable and also help the airport achieve its mission to “operate at the highest standards of safety and security” and deliver “consistent, outstanding service” to customers.24

Contract administration policies and procedures say that for every month service availability does not meet the 99% threshold, Thyssenkrupp should take immediate corrective action to mitigate the cause, propose a corrective action plan within one month, and document the plan in a report. We found those reports for May 2020 and June 2020 documented underperforming units, but there was no corrective action mentioned.

When we asked about the consistent underperformance, division personnel said the underperformance was “typical” given the number of major repairs conducted during the time frame we reviewed and the increase of maintenance because of wear and tear. Division personnel said they spoke with Thyssenkrupp, but they did not document potential corrective actions regarding the contract violations or adjustments to maintenance routes and technicians' schedules.

We also compared the downtime reports to the penalties assessed on invoices from January 2020 through May 2020, and we noted discrepancies between the number of work orders for each month we reviewed and the number of times the units failed to meet the 99% threshold reported on the invoice. For example, the January 2020 invoice reported 84 occurrences; however, we identified 88 work orders.
According to the contract, each time Thyssenkrupp fails to meet the 99% operational threshold, the invoice should include a $25 penalty. While the January 2020 invoice accurately had a $2,100 penalty for the 84 occurrences, we determined the airport potentially missed another $100 in penalties.

When we asked about this discrepancy, division personnel said some occurrences may be out of Thyssenkrupp's control, resulting in no penalty. However, documentation for these decisions does not exist. Therefore, we could not determine whether the decision to not penalize Thyssenkrupp was justified. Table 4 shows all discrepancies and potential missed penalties we noted for the Thyssenkrupp contract.

TABLE 4. Thyssenkrupp Performance Discrepancies

<table>
<thead>
<tr>
<th>Month</th>
<th>Number of Times Invoices</th>
<th>Number of Work Orders Identified</th>
<th>Penalties Charged</th>
<th>Potential Missed Penalties</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reported Elevators,</td>
<td>during Auditor’s Office Review</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Escalators, and Power</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Walks Failed to Meet the</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>99% Operational Threshold</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>January 2020</td>
<td>84</td>
<td>88</td>
<td>$2,100</td>
<td>$100</td>
</tr>
<tr>
<td>February 2020</td>
<td>74</td>
<td>76</td>
<td>$1,850</td>
<td>$50</td>
</tr>
<tr>
<td>March 2020</td>
<td>58</td>
<td>96</td>
<td>$1,450</td>
<td>$950</td>
</tr>
<tr>
<td>April 2020</td>
<td>38</td>
<td>39</td>
<td>$950</td>
<td>$25</td>
</tr>
<tr>
<td>May 2020</td>
<td>48</td>
<td>51</td>
<td>$1,200</td>
<td>$75</td>
</tr>
<tr>
<td>TOTAL</td>
<td>302</td>
<td>350</td>
<td>$7,550</td>
<td>$1,200</td>
</tr>
</tbody>
</table>

Source: Auditor’s Office analysis of the Thyssenkrupp contract and invoices and work order reports from January 2020 through May 2020.

We were unable to validate the contract administrator’s decisions not to charge Bombardier and Thyssenkrupp for the additional contract violations we identified, because the contract administration division does not have a comprehensive monitoring tool — such as a spreadsheet — that would capture the contract administrator’s monitoring efforts. Instead, the administrator relies on email notifications, weekly minutes, and a multitude of self-reported documents from the contractors. We also found administrators were unaware of the maintenance control center’s report to track compliance with emergency and call responses, which would assist the contract administrator in monitoring contract compliance and provide independent information from the self-reported documents obtained from the contractor.

The airport conducted an internal audit of the ThyssenKrupp agreement in 2018 and found similar issues to those we identify here. That internal audit included recommendations for the contract administration division to
address inadequate processes for capturing and tracking emergency and trouble calls and to address gaps in the conveyance performance reports.

As discussed, U.S. Government Accountability standards say documentation is necessary to ensure effective design, implementation, and operating effectiveness of an organization’s internal control system.\(^{25}\) Furthermore, documentation assists management in “establishing and communicating the who, what, when, where, and why of internal control execution to personnel.”\(^{26}\)

Without a comprehensive way to monitor and track contract compliance and to document decisions made related to contractual penalties for noncompliance, trends in noncompliance may go unnoticed. This could affect the performance and useful life of assets and possibly inhibit passenger traffic if assets are not working properly.

Specifically, if the elevators, escalators, power walks, and trains are not fully operational, passengers traveling through the Denver International Airport could be late for their flights or even potentially miss them. As previously mentioned, the airport is the fifth busiest airport in the United States with 69 million passengers traveling through in 2019.\(^{27}\) Penalties help ensure the contractors’ accountability and responsibility for compliance.

Furthermore, penalties not charged equate to lost funds for the airport, which is especially important given the airport has incurred losses due to the COVID-19 pandemic.

### RECOMMENDATION 1.7

**Enforce Contract Terms** – Denver International Airport’s Operations and Maintenance Contract Administration Division should enforce contractual terms related to penalties for noncompliance.

**Agency Response:** Agree, Implementation Date – Dec. 1, 2020

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\(^{26}\) U.S. Government Accountability Office, paras. 3.10 and 3.12.

RECOMMENDATION 1.8

Develop and Implement Centralized Monitoring – Denver International Airport’s Operations and Maintenance Contract Administration Division should develop and implement a centralized tool for contract administrators to track and monitor third parties’ compliance with contract terms.

Agency Response: Agree, Implementation Date – June 30, 2021

RECOMMENDATION 1.9

Use Available Resources for Monitoring Contracts – Denver International Airport’s Operations and Maintenance Contract Administration Division should identify and use all resources available to assist in monitoring compliance with third-party asset maintenance contracts, such as internal reports developed by other airport divisions.

Power BI: Dec. 31, 2018

RECOMMENDATION 1.10

Update Standard Operating Procedures – With the implementation of recommendations 1.7 and 1.8, Denver International Airport’s Operations and Maintenance Contract Administration Division should update its standard operating procedures to reflect updated monitoring processes.

Agency Response: Agree, Implementation Date – Jan. 31, 2021

RECOMMENDATION 1.11

Collect Prior Missed Collections – Denver International Airport’s Operations and Maintenance Contract Administration Division should review invoices, contractors’ reports, and other necessary documentation and collect contractual penalties not previously assessed.

Agency Response: Agree, Implementation Date – Aug. 14, 2020
The divisions responsible for managing assets at Denver International Airport do not adequately communicate with one another to ensure they properly manage the airport's capital assets.

When the Asset Management section within the Sustainability Division discovers assets that should be added to Maximo, the section does not provide the information to the Finance Division. As mentioned, the airport provided us a list of over 850 assets discovered this year that were not in Maximo. We gave the list to the Finance Division to ensure any identified capital assets on the list were in Workday. Giving the list to finance staff provides them an opportunity to review Workday to ensure applicable capital assets are appropriately recorded in the financial system.

Furthermore, Asset Management personnel told us they do not inform the Finance Division about assets decommissioned in Maximo so that the division could dispose of the assets. Rather, the Finance Division must pull a report from Maximo, which may delay asset disposals. This process also does not comply with the Finance Division’s policies and procedures regarding disposals — such as the requirement that divisions use a “transfer of property” form to let the Finance Division know about assets needing disposal.

Meanwhile, during our review of assets reported as “lost,” Finance Division personnel mentioned small information technology capital assets commonly get thrown away rather than disposed of, because other airport divisions do not follow the proper disposal procedures. When we asked whether the Finance Division attempts to discuss proper procedures with other airport divisions, Finance Division officials said they are not responsible for enforcing compliance.

During our review of the airport’s processes for monitoring third-party maintenance contracts, we found contract administrators also were unaware of a report from the airport’s maintenance control center that tracks compliance with emergency and call responses. As mentioned, contract administrators rely on self-reported documents from the contractors to monitor their compliance with contracts. However, the report from the maintenance control center would provide contract administrators with an independent report of emergency and call responses to provide further assurance of contractors’ compliance with contract terms related to the maintenance of the airport’s elevators, escalators, and moving walkways.

Finally, Finance Division managers said the airport receives surplus proceeds from capital assets sold at auction according to Federal Aviation Administration requirements — but, during a status update meeting between our audit team and airport personnel in August 2020, Maintenance Division officials were unaware of this. Because many of the assets sold are from the Maintenance Division, personnel in that division should be aware of the procedures and the status of proceeds from the sale of the division’s assets.
Adequate communication is key to effective oversight. U.S. Government Accountability Office standards say managers should communicate quality information to all levels of an organization to ensure objectives are achieved and risks are properly mitigated. Likewise, managers should receive quality information from their employees regarding operational processes. In addition, communication to oversight entities in an organization should include information regarding compliance with or changes to aspects of the internal control system, such as policies and procedures.

Without adequate employee training and communication about financial processes related to capital asset activities, the airport’s Finance Division cannot ensure its staff and other airport divisions comply with its policies and procedures — which could affect the accuracy and completeness of capital asset information within the systems. Furthermore, inadequate oversight to confirm whether employees are following all procedures related to capital asset activity inhibits the airport’s asset management process across all divisions and can potentially lead to the mismanagement and misuse of capital assets.

RECOMMENDATION 1.12

**Improve Communication among Airport Divisions** – Divisions responsible for managing Denver International Airport’s assets — including the Maintenance, Sustainability, and Finance divisions — should develop, document, and implement a method to coordinate and communicate concerns with one another when assets are discovered that are not recorded in an information system. Steps should also be taken to identify and document the reason why such assets were not properly recorded in an information system and to resolve the issue by adjusting procedures.

*Agency Response: Disagree*

*Auditor’s Addendum: See page 58*

RECOMMENDATION 1.13

**Develop and Document Communication Method for Procedures** – Denver International Airport’s Finance Division should develop and document proper procedures to let airport divisions know about how to properly transfer and dispose of assets.

*Agency Response: Agree, Implementation Date – March 1, 2021*

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FINDING 2
Denver International Airport Lacks a Comprehensive Preventive Maintenance Program to Ensure All Assets Are Maintained and that It Can Effectively Budget for Future Costs

The airport does not have a comprehensive preventive maintenance program and cannot perform accurate analyses to effectively budget for the program. Specifically, we found a significant backlog in work orders, a lack of accurate data to perform analyses, and a lack of policies and procedures related to preventive maintenance schedules.

Without a comprehensive preventive maintenance program for all its assets, Denver International Airport may overlook assets that require preventive maintenance, and delayed maintenance can reduce an asset’s overall operating life. Assets failing prematurely can increase the airport’s repair and replacement costs. Furthermore, reliable, working assets help the airport achieve its mission to “operate at the highest standards of safety and security” and deliver “consistent, outstanding service.”

We found a significant backlog of preventive maintenance work orders — resulting in assets being returned to “corrective” maintenance rather than them being adequately maintained before a problem occurs. In addition, we found the computerized maintenance management system, Maximo, lacks accurate data, which prevents Denver International Airport from conducting cost-savings analyses and extended-useful-life analyses related to preventive maintenance.

As of Aug. 10, 2020, the airport had a backlog of work orders: 290 for preventive maintenance and at least 6,900 “deferred” dating back to 2018.

Preventive Maintenance Activities Are Backlogged, and the Information System Lacks Accurate Data

Preventive Maintenance Backlog – Regularly scheduled preventive maintenance activities extend an asset’s useful life by detecting and/or minimizing the deterioration of assets and their components, such as regular oil changes to vehicles. On the other hand, “corrective” maintenance occurs after a problem exists with an asset or its components. It is the difference between a proactive approach to maintenance versus a reactive one.

As of Aug. 10, 2020, the airport had a backlog of 290 work orders for preventative maintenance on facilities and at least 6,900 “deferred” work orders for such maintenance dating back to Jan. 1, 2018. According to personnel in the airport’s Asset Management section, backlogged work

orders are converted to “deferred,” or closed, after 90 days so a new work order can be generated. However, staff deactivated the “deferred” function in July 2020 to give the Maintenance Division an opportunity to address the backlog.

Examples of backlogged work orders include preventive check-ups and inspections of electrical generators, passenger loading bridges, restrooms, and a variety of power units. Examples of deferred work orders include inspections of air conditioning units, cameras, and various electrical equipment.

Maintenance Division officials said a lack of staff and a lack of proper funding contribute to the backlog. For example, employee vacancy rates include 41% of plumbers, 33% in access control, 23% in heating, ventilation and air conditioning, and 14% of electricians. These vacancies contribute to the division having a lack of adequate personnel to sustain preventive maintenance routines. The division adjusted shift schedules to afford employees more access during off-peak hours. But, even with these adjustments, the division still lacks enough employees to adequately perform preventive maintenance on airport assets.

Officials also said they cannot compete with salaries in the private sector. They said the city is conducting a trades classification study to help with attracting and retaining personnel, and the study will include a review of compensation to better align with the local and state economy.

Meanwhile, the Maintenance Division does not have a process to accurately quantify its staffing and funding needs through any type of analysis to ensure assets are properly maintained.

In 2017, the airport hired the consulting firm WSP | Parsons Brinckerhoff to conduct a gap assessment of the airport’s asset management processes and practices to identify opportunities for improvement compared to industry best practices, standards, and regulations. The firm’s report mentioned the airport based its budget on prior year expenses rather than actual work requirements necessary to perform preventive maintenance. In addition, the airport had not implemented processes to help determine the condition of equipment to estimate when maintenance should be performed, otherwise known as “predictive maintenance.” Maintenance Division officials base preventive maintenance funding on historical dollar figures built into the operations and maintenance budgeting process. At the time of our audit, the airport was still in the process of addressing the recommendations from the gap assessment.

Many of the airport’s original assets from when it opened in 1995 are still in use. The Airport Cooperative Research Program — which is authorized by Congress and managed by the Transportation Research Board of the National Academy of Sciences — published best practices on preventive maintenance at airports, which acknowledges airports face challenges related to diminishing revenue sources and limited staff and budgets. This
adds to the difficulty of managing aging assets in older facilities. However, the best practice also says effective preventive maintenance programs ensure physical assets operate “reliably and efficiently.”

For example, one of the best practices’ principles for preventive maintenance programs relates to ensuring management commits appropriate resources to perform preventive maintenance — including funding and personnel. To determine funding and personnel necessary for the preventive maintenance program, management needs to prepare an annual budget that includes staffing, materials, tools, equipment, and any other significant costs related to preventive maintenance. The best practice says management should also track and monitor all preventive maintenance activities. In addition, management should prepare for the retirement and exit of key staff and for critical times when staff are unable to go to work, impacting the ability to perform preventive maintenance.

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PREVENTIVE MAINTENANCE AT DENVER INTERNATIONAL AIRPORT

When auditors visited Denver International Airport, we noted various fleet equipment and vehicles with a “Down for Maintenance” sign. (Photos by Auditor’s Office staff.)

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32 National Academy of Sciences, v.
33 National Academy of Sciences, 12.
34 National Academy of Sciences, 9.
35 National Academy of Sciences, 13.
By conducting regular preventive maintenance, assets at Denver International Airport will operate more safely and efficiently, resulting in reduced costs and increased satisfaction from both airport employees using the equipment and passengers who travel through the airport. According to preventive maintenance best practices, airports simply cannot staff or plan for reactive maintenance, and multiple asset failures reduce staff availability and revenue, as well as impact services. But planning and scheduling for preventive maintenance allows airports to assign staff appropriately.  

**Lack of Accurate Data** – The Maintenance Division lacks accurate and standardized data in Maximo — the airport’s database for tracking all maintenance — that the division needs to perform staffing and funding analyses and obtain information related to specific resources the division needs to ensure assets are properly maintained. While trending statistics are available for the past five years — which provide the percentage of reactive maintenance by asset class and type of work — the information contains inaccurate data for the first two years because of data integrity issues with Maximo, delaying the division from conducting accurate staffing and funding analyses.

Meanwhile, the Asset Management section provided us with reports detailing the number of assets that required preventive maintenance, along with another report detailing the frequency of preventive maintenance. We reviewed the reports and compared the number of assets on the reports and identified discrepancies between the number of assets listed. For example, one report identified 10,648 assets, while the other report detailing frequency of preventive maintenance identified only 6,783 assets.

When we compared a judgmental sample of specific assets from both reports to information in Maximo, we noted discrepancies in the totals there, too. For example, one report mentioned 236 air compressors, while the other report noted 127 and Maximo contained 154. In addition, we noted both reports listed only 32 generators, while Maximo contained 62.

Asset Management personnel said the discrepancies were because some assets are incorrectly assigned preventive maintenance, and other assets required maintenance at multiple frequencies, such as monthly, quarterly, and annually. Those assets were counted in each frequency category, such as the air compressors, resulting in them being counted multiple times. Additionally, they said discrepancies with the generator information could be attributed to separate departments performing performance maintenance on the same asset.

Officials said the timing of when the reports were run may also have contributed to the discrepancies, along with some assets being without preventive maintenance assignments. However, Asset Management officials recognized airport assets were not always properly added to and tracked in

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36 National Academy of Sciences, 4-5.
Maximo. Maintenance Division and Asset Management staff said discovery of these assets is an ongoing process, and they have taken steps to enter the missing assets as staff discover them.

For example, since 2015, the Asset Management team has entered over 9,600 assets and it has decommissioned over 4,800 assets in Maximo. In addition, in 2016, Asset Management personnel submitted a memo to airport executives outlining the amount of time personnel would require to find all of the undiscovered assets at the airport, given the staffing levels at the time. Personnel said that since the memo, preventive maintenance staff levels have not increased from the three maintenance planners, and the airport has steadily increased its infrastructure.

As mentioned in Finding 1, Asset Management identified over 850 assets for 2020 that were not in Maximo; this included newly purchased assets, as well as legacy assets. However, officials did not provide evidence that they conducted an analysis to determine whether preventive maintenance was in place for the legacy assets or to determine the potential impact of these assets not being maintained before staff discovered they were not tracked in Maximo.
Federal standards say relevant and reliable data contributes to organizations having quality information, and such information assists management in making informed decisions and accurately evaluating performance to achieve objectives and address risks. Unreliable data and a lack of relevant analyses to quantify preventive maintenance staffing and funding needs at Denver International Airport inhibits the airport’s ability to ensure it has adequate resources available to address preventive maintenance.

The data integrity issues in Maximo impact the completeness and accuracy of information the airport has regarding preventive maintenance — which results in discrepancies in preventive maintenance reporting.

Furthermore, the Maintenance Division’s lack of resources increases the preventive maintenance backlog and may ultimately result in assets failing before the end of their expected life. This increases replacement costs.

Especially when considering Denver International Airport’s reduced revenues and passenger traffic because of the COVID-19 pandemic, airport officials must make sure they control costs as much as possible by ensuring the airport’s capital assets last their entire life expectancies.

RECOMMENDATION 2.1

Improve Data Integrity in Maximo – Denver International Airport’s Sustainability and Maintenance divisions should develop, document, and implement procedures to address data integrity issues in Maximo.

Agency Response: Agree, Implementation Date – March 31, 2021

RECOMMENDATION 2.2

Determine Staffing Needs – Denver International Airport’s Sustainability and Maintenance divisions should determine the adequate staffing levels they need for preventive maintenance program activities — including discovering and entering assets in Maximo, scheduling preventive maintenance, and addressing the backlog of preventive maintenance work orders.

Agency Response: Agree, Implementation Date – July 1, 2021, for fleet, facilities, and maintenance administration assets
Sept. 1, 2021, for field maintenance

RECOMMENDATION 2.3

Define Preventive Maintenance Budget Criteria – Denver International Airport’s Maintenance Division should define the criteria for preventive maintenance budgeting, to include actual work requirements such as staffing, materials, equipment, and other significant costs. This information will help the airport quantify the resources it needs to ensure preventive maintenance is performed consistently and in a timely manner.

Agency Response: Agree, Implementation Date – July 1, 2021, for fleet, facilities, and maintenance administration assets
Sept. 1, 2021, for field maintenance

The Airport’s Asset Management Section Lacks Documented Processes for Scheduling Preventive Maintenance and Other Routine Activities

While Denver International Airport has some processes for performing preventive maintenance on facility assets, the airport has not documented these processes. Specifically, the Asset Management section within the Sustainability Division lacks documentation related to how it develops preventive maintenance schedules, as well as other routine maintenance activities. In addition, Asset Management does not have a central repository to hold information about airport assets, such as their warranty documents.

Lack of Documented Procedures – The airport has documented processes for conducting preventive maintenance activities for fleet-type assets, such as vehicles — but we found the airport lacks documentation for processes related to facility-type assets, such as its heating, ventilation, and air conditioning systems.

The documented procedures for fleet assets include processes for initiating a job plan with instructions for inspecting and servicing vehicles, for developing a preventive maintenance schedule, and for managing and executing the preventive maintenance program. While Maintenance Division officials agree the policy for fleet assets could use some clarification, we found that overall it provides guidance for the preventive maintenance of fleet assets.

But when we asked about processes for facility assets, officials confirmed they had processes but that they were not documented.

While the Maintenance Division maintains assets, we were originally told planners within the Asset Management section and technicians within the Maintenance Division set the schedules for how frequently assets should be maintained based on operations and maintenance manuals and manufacturers’ addenda, along with Federal Aviation Administration circulars. Once technicians determine the correct maintenance frequencies, planners load the checklists into Maximo.
However, when we compared the operations and maintenance manuals to the maintenance conducted as reported in Maximo for a judgmental sample of 10 assets, we found eight of the 10 assets we sampled were not maintained as the manuals recommended. Specifically:

- Quarterly maintenance occurred for two air compressors according to work orders documented in Maximo from February 2018 through May 2020. However, we did not find evidence of maintenance occurring daily, weekly, or monthly as the manuals recommended.

- Monthly maintenance occurred for two generators according to work orders documented in Maximo from January 2018 through May 2020, excluding July 2018 for both assets. However, we did not find evidence of maintenance occurring daily or weekly as the manuals recommended.

- Maintenance occurred for one transformer in July 2019. However, we did not find evidence to verify maintenance occurred at least annually as the manuals recommended.

- Maintenance occurred for another transformer once every three years. However, we did not find evidence of maintenance occurring at least annually as the manuals recommended.

- Maintenance occurred every January and July for one of the rooftop heating, ventilation, and air conditioning units from 2018 through 2020 and quarterly for the other rooftop unit from December 2017 through March 2020. But we did not find evidence of monthly maintenance occurring as the manuals recommended.

When we asked about these deviations, officials said planners and technicians often deviate from the operations and maintenance manuals based on their experience and analysis to avoid over-maintaining assets. However, staff do not document the deviations.

Maintenance Division officials said manufacturers base recommendations for operations and maintenance on risk and legal guidance, which can lead to over-maintenance. The airport’s planners and technicians try to balance “risk with reality” when developing the airport’s preventive maintenance schedules. But the Maintenance Division’s inadequate staffing levels hinder its ability to perform preventive maintenance and contribute to the decisions planners make.

While we recognize the airport sometimes needs to deviate from preventive operations and maintenance recommendations, the Maintenance Division should document such deviations — and the procedures for doing so — within the division’s policies to ensure consistency in preventive maintenance.

Airport officials recognized the need to develop formal standard operating procedures for routine maintenance activities in their 2017 gap assessment report, but they have not yet developed these procedures.
No Centralized Repository for Warranty Documentation – We also reviewed the airport’s preventive maintenance warranty procedures and found warranty documents were not in a central repository available to all personnel responsible for managing airport assets.

The city’s own standards require mechanical fixed equipment — such as chillers, air handlers, and air conditioners — to have a two-year warranty under the contractor. The standards require contractors to repair and replace components that fail due to faults or defects during the warranty period. The contractor is also supposed to absorb the cost of repair and replacement as covered by the warranties.

We obtained a list of all capital assets in Maximo with a manufacturer’s warranty and randomly selected 10 assets to obtain warranty documentation for, so we could determine whether warranty work was conducted from January 2018 through May 2020. Of the 10 assets selected, only one asset had warranty work conducted for improper wiring within the time frame reviewed.

However, when we asked for warranty documentation for the 10 selected assets, officials could provide documentation for only seven of the 10 assets. Asset Management personnel could not tie the remaining three assets to a project and, therefore, could not provide the warranty documentation. They said they had to look “far and wide” through document repositories to find the warranty documentation for the seven assets, because Maximo does not function as a document repository.

When we asked them about the airport’s document retention policy for warranty documentation, personnel in the airport’s Development Division said they follow the city’s document retention guidelines. However, documentation related to retention does not exist in any airport policy or procedure that explains specific procedures for airport staff to follow to ensure compliance with the city’s guidelines.

Asset management standards set by the International Organization for Standardization explain managers’ responsibility for developing and ensuring the policies and objectives for asset management align with organizational objectives. Additionally, federal guidelines also say documentation assists management in communicating guidelines to personnel and retaining organizational knowledge.

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The lack of a documented comprehensive preventive maintenance program could result in Denver International Airport inconsistently performing preventive maintenance — which may lead to assets not performing as needed or not lasting their entire expected lives. The importance of preventive maintenance increases for the airport’s aging assets. Inoperable assets may result in delays for airport passengers, safety hazards, and extra replacement costs.

In addition, necessary personnel's inability to access warranty information in a central repository may result in added costs to the airport for maintenance that should otherwise be covered under warranty.

Again, the loss of both passenger traffic and revenue because of the COVID-19 pandemic makes it even more important that the airport ensure proper and consistent maintenance of its assets to ensure they last their entire expected lives.

**RECOMMENDATION 2.4**

**Develop a Comprehensive Preventive Maintenance Program** – Denver International Airport’s Sustainability and Maintenance divisions should develop a comprehensive preventive maintenance program for facility assets and address the recommendations in the 2017 “Asset Management Observations and Gap Assessment Report.” As processes are finalized, the divisions should also use the analyses performed from Recommendation 2.3 to help determine adequate resources and budgeting necessary to implement an effective preventive maintenance program. Results should be documented and shared with airport officials to ensure proper funding is considered during budget activities.

*Agency Response: Agree, Implementation Date – July 1, 2021*

**RECOMMENDATION 2.5**

**Develop Policies and Procedures for Routine Maintenance Activities** – Denver International Airport’s Sustainability and Maintenance divisions should develop, document, and implement policies and procedures for routine maintenance activities for all necessary assets. Policies and procedures should include, but not be limited to, the process of deviating from operations and maintenance manuals when developing preventive maintenance schedules.

*Agency Response: Agree, Implementation Date – Sept. 1, 2021*
RECOMMENDATION 2.6

Define a Central Documentation Repository – Denver International Airport's Sustainability and Maintenance divisions should define a central repository for key asset documentation, such as warranties, and ensure necessary personnel have access.

Agency Response: Agree, Implementation Date – March 31, 2021
RECOMMENDATIONS

The agency narratives below are reprinted verbatim from the agency’s response letter, shown in the next section of this report.

1.1 **Review and Revise Policies and Procedures** – Denver International Airport’s Finance Division should review and revise its policies and procedures to include necessary details related to the use of and exceptions to “transfer of property” forms, surplus proceeds activities, and virtual tags.

   **Agency Response:** Agree, **Implementation Date** – March 1, 2021

   **Agency Narrative:** DEN Finance updates procedural documents annually but will conduct an interim enhancement to clarify language surrounding transfer of property forms, surplus proceeds, and virtual tags.

1.2 **Update “Transfer of Property” Forms** – Denver International Airport’s Finance Division should update the property transfer forms to remove fields no longer in use and to include information necessary to provide adequate support for the proper transfer and disposal of assets.

   **Agency Response:** Agree, **Implementation Date** – March 1, 2021

   **Agency Narrative:** DEN Finance will update the property transfer form based on the recommendation.

1.3 **Improve Asset Disposal Documentation** – Denver International Airport’s Finance Division should retain better supporting documentation for asset disposals to validate proper transfer and disposal of assets and ensure compliance with procedures. This should include retaining receipts that demonstrate transferred and/or disposed assets reach their intended destinations. Applicable policies and procedures should be updated with the revised procedures.

   **Agency Response:** Agree, **Implementation Date** – March 1, 2021

   **Agency Narrative:** DEN Finance will update policies and procedures to address the initial recommended documentation for disposals and transfers.

1.4 **Improve Consistency of Capital Asset Data between Information Systems** – Denver International Airport’s Finance and Sustainability divisions should coordinate and determine a common identifier for the airport's capital assets, such as an asset ID or tag number, to ensure necessary asset descriptions are captured identically in Workday and Maximo and to improve efficiency in capital asset identification between the two systems. In addition, other capital asset information, such as
serial or model numbers, should be included in both systems to improve consistency of capital asset information between the systems.

**Agency Response: Disagree**

*Agency Narrative: Workday and Maximo are used for different purposes and both have different definitions of an asset. Workday captures the acquisition costs of capital assets (i.e. building, infrastructure, equipment, etc.) and depreciates these assets over the estimated useful of the capital assets (net capital assets) for financial statement reporting. These acquisition costs could include both hard and soft costs. The definition of capital assets used in Workday is determined by General Accepted Accounting Principles, Governmental Accounting Standards Board pronouncements, and the City Fiscal Accountability Rules. Maximo is a Computerized Maintenance Management System (“CMMS”) used to track maintenance work orders and costs regardless of whether the asset is capitalized for accounting purposes. Maximo often includes non-capitalized assets as well as components of a constructed asset. There is not always a one-to-one relationship between the two systems. One exception is fleet assets. These assets are capitalized within Workday and maintained in Maximo with the prevailing City and County of Denver nomenclature.*

**Auditor’s Addendum:** See page 58.

1.5 **Improve Asset Location Information in Workday** – Denver International Airport’s Finance Division should document and implement a process to ensure specific asset location information missing in Workday is added and that specific asset location information is revised as assets are transferred and disposed of.

**Agency Response: Agree, Implementation Date – June 1, 2021**

*Agency Narrative: DEN Finance will identify a more robust list of locations for use in Workday. New locations will be used for all new assets registered and existing assets will be updated to new locations when inventoried during the next cycle.*

1.6 **Improve Processes for Validating Assets Reported as Lost** – Denver International Airport’s Finance Division should document and implement a process to validate and track claims of lost capital assets. Processes should include, but not be limited to, determining the cause of the lost asset and ensuring Workday information is updated and accurate.

**Agency Response: Agree, Implementation Date – March 1, 2021**

*Agency Narrative: DEN Finance division will update the policies and procedures regarding processes for validating and tracking claims of lost capital assets.*

1.7 **Enforce Contract Terms** – Denver International Airport’s Operations and Maintenance Contract Administration Division should enforce contractual terms related to penalties for noncompliance.
Agreement, Implementation Date – Dec. 1, 2020

Agency Narrative: Airport Operations will continue to enforce penalties commensurate with contract terms.

The Contract Administrator holds monthly meetings with Thyssenkrupp (TKE) to determine whether each unit has met the monthly performance standard. During the regular meetings, DEN and TKE collaboratively determine if non-compliance is due to any one of the listed contractual performance objectives or, if the downtime was the result of an "outside or uncontrollable" reason. Any downtime caused by vandalism, damage or misuse of a conveyance, or any proven power-related event, does not warrant a penalty, regardless of the number of Maximo work orders. The division has discretion to penalize or not based on the monthly review as outlined in the contract.

Under the Bombardier contract, the airport does not have the ability to use discretion with regards to downtime penalties. The airport should have (and ultimately did) penalize Bombardier for the station door failure. The contract does allow discretion for overdue preventative maintenance. Our goal is to have all maintenance completed in the prescribed time periods, but operational requirements allow for our contract administrators to not penalize for overdue maintenance.

1.8 Develop and Implement Centralized Monitoring – Denver International Airport’s Operations and Maintenance Contract Administration Division should develop and implement a centralized tool for contract administrators to track and monitor third parties’ compliance with contract terms.

Agency Response: Agree, Implementation Date – June 30, 2021

Agency Narrative: In response to a recommendation in a DEN administered internal audit, Airport Operations has been working to use Maximo to store inspection records for Airport Operations contracts. The division investigated several software programs and ultimately decided to use Maximo. The division has piloted the use of Maximo for this purpose on three small contracts and has had initial success. Airport Operations is targeting the end of Q2 2021 to incorporate the conveyance and AGTS contracts.

Assuming that effort is successful, the division will continue to add additional contracts.

1.9 Use Available Resources for Monitoring Contracts – Denver International Airport’s Operations and Maintenance Contract Administration Division should identify and use all resources available to assist in monitoring compliance with third-party asset maintenance contracts, such as internal reports developed by other airport divisions.


Agency Narrative: Airport Operations previously used Crystal Reports and Power BI dashboards to monitor contract compliance. Power BI has matured to the point that we are able to discontinue the use of Crystal reports. Power BI has become the program’s primary resource for monitoring TKE’s performance, which is fed by Maximo.
The division will work with other entities at the airport to identify other resources available to assist with monitoring compliance with third-party contracts.

1.10 **Update Standard Operating Procedures** – With the implementation of recommendations 1.7 and 1.8, Denver International Airport's Operations and Maintenance Contract Administration Division should update its standard operating procedures to reflect updated monitoring processes.

**Agency Response:** Agree, Implementation Date – Jan. 31, 2021

**Agency Narrative:** The standard operating procedure is the guiding document for contract compliance review. This procedure is reviewed by Airport Operations and updated semi-annually.

1.11 **Collect Prior Missed Collections** – Denver International Airport's Operations and Maintenance Contract Administration Division should review invoices, contractors' reports, and other necessary documentation and collect contractual penalties not previously assessed.

**Agency Response:** Agree, Implementation Date – Aug. 14, 2020

**Agency Narrative:** For the current budget year, invoices have been reviewed to determine if contractual penalties were not previously assessed. As stated, "Contract Administration officials agree that penalties were missed; they said adjustments would be made to the July 2020 invoice." Airport Operations reviewed the July 2020 invoice and verified the proper penalties were assessed.

TKE's June invoice contained backdated performance deductions for failed inspections in the months of April and May 2020, totaling $12,000 in recouped penalties.

1.12 **Improve Communication among Airport Divisions** – Divisions responsible for managing Denver International Airport's assets — including the Maintenance, Sustainability, and Finance divisions — should develop, document, and implement a method to coordinate and communicate concerns with one another when assets are discovered that are not recorded in an information system. Steps should also be taken to identify and document the reason why such assets were not properly recorded in an information system and to resolve the issue by adjusting procedures.

**Agency Response:** Disagree

**Agency Narrative:** Although communication between the divisions is open regarding assets inventory processes used by the Finance Division, the two information systems mentioned (Workday and Maximo) are used for two different purposes as noted in response to Recommendation 1.4.

**Auditor's Addendum:** See page 58.
1.13 Develop and Document Communication Method for Procedures – Denver International Airport’s Finance Division should develop and document proper procedures to let airport divisions know about how to properly transfer and dispose of assets.

Agency Response: Agree, Implementation Date – March 1, 2021

Agency Narrative: As part of the response to Recommendation 1.2, the DEN Finance division will provide instructions and directions on how to properly transfer and dispose of assets.

2.1 Improve Data Integrity in Maximo – Denver International Airport’s Sustainability and Maintenance divisions should develop, document, and implement procedures to address data integrity issues in Maximo.

Agency Response: Agree, Implementation Date – March 31, 2021

Agency Narrative: DEN Sustainability Asset Management (“Asset Management”) and DEN Maintenance will work together to develop, document, and begin implementation of procedures to improve Maximo data by building upon the activities identified in the Strategic Asset Management Plan that was commissioned by Asset Management in 2018.

In order to improve the discovery of legacy DEN assets in Maximo, Asset Management, in conjunction with DEN Business Technologies, has developed a mobile asset data capture application that can be used by anyone with a flydenver.com email to discover and forward asset core information. Asset Management and Maintenance personnel are developing a SOP to manage this process.

Additionally, Asset Management recently piloted a comprehensive new facility equipment identification, tagging, and automated onboarding process to ensure that new assets are added to the Maximo system. In collaboration with construction quality assurance partners, Asset Management has established and commissioned an electronic asset data capture and Maximo tagging platform for these assets.

2.2 Determine Staffing Needs – Denver International Airport’s Sustainability and Maintenance divisions should determine the adequate staffing levels they need for preventive maintenance program activities — including discovering and entering assets in Maximo, scheduling preventive maintenance, and addressing the backlog of preventive maintenance work orders.

Agency Response: Agree, Implementation Date – July 1, 2021, for fleet, facilities, and maintenance administration assets
Sept. 1, 2021, for field maintenance

Agency Narrative: A study of staffing-level requirements for DEN’s Preventive Maintenance Program will be conducted to ensure adequate staffing exists or conversely to justify staffing shortfalls to senior leadership.
2.3 **Define Preventive Maintenance Budget Criteria** – Denver International Airport’s Maintenance Division should define the criteria for preventive maintenance budgeting, to include actual work requirements such as staffing, materials, equipment, and other significant costs. This information will help the airport quantify the resources it needs to ensure preventive maintenance is performed consistently and in a timely manner.

**Agency Response:** Agree, Implementation Date – July 1, 2021, for fleet, facilities, and maintenance administration assets
Sept. 1, 2021, for field maintenance

**Agency Narrative:** While much of this data already exists, DEN Maintenance will perform a study specific to each maintenance section and asset to qualify the material costs of DEN’s Preventive Maintenance Program and incorporate the staffing requirement findings of Recommendation 2.2 (e.g. Determine Staffing Needs) into a comprehensive document that outlines all costs associated with the program for budgetary planning purposes.

2.4 **Develop a Comprehensive Preventive Maintenance Program** – Denver International Airport’s Sustainability and Maintenance divisions should develop a comprehensive preventive maintenance program for facility assets and address the recommendations in the 2017 “Asset Management Observations and Gap Assessment Report.” As processes are finalized, the divisions should also use the analyses performed from Recommendation 2.3 to help determine adequate resources and budgeting necessary to implement an effective preventive maintenance program. Results should be documented and shared with airport officials to ensure proper funding is considered during budget activities.

**Agency Response:** Agree, Implementation Date – July 1, 2021

**Agency Narrative:** With that in mind, DEN Maintenance will develop programmatic protocol’s for DEN’s Preventive Maintenance Program and incorporate the findings of Recommendation 2.2 (e.g. Determine Staffing Needs) and Recommendation 2.3 (e.g. Define Preventive Maintenance Budget Criteria) to formalize this program.

2.5 **Develop Policies and Procedures for Routine Maintenance Activities** – Denver International Airport’s Sustainability and Maintenance divisions should develop, document, and implement policies and procedures for routine maintenance activities for all necessary assets. Policies and procedures should include, but not be limited to, the process of deviating from operations and maintenance manuals when developing preventive maintenance schedules.

**Agency Response:** Agree, Implementation Date – Sept. 1, 2021

**Agency Narrative:** In July of 2020, DEN Maintenance and DEN Sustainability began a process improvement project focused on identifying the existing asset data and attributes for each asset, process flow to establish work order control, and the desired end state of the data. This project is ongoing. This project will be taken on in the form of “Operating Instructions” or “SOPs” in parallel with Recommendation 2.4 (e.g. Formalize the Preventive Maintenance Program). Recommendations 2.2, 2.3, 2.4 and 2.5 are heavily intertwined and will need to be addressed together.
2.6 **Define a Central Documentation Repository** – Denver International Airport’s Sustainability and Maintenance divisions should define a central repository for key asset documentation, such as warranties, and ensure necessary personnel have access.

**Agency Response: Agree, Implementation Date – March 31, 2021**

Agency Narrative: Key asset warranty documentation is uploaded by the DEN Project Manager or the General Contractor (GC) to the Unifier document repository through a construction submittal process. AIM Development will confirm that all relevant staff have the appropriate access to those documents in order to facilitate construction warranty activity by March 31, 2021.

Key asset Operating and Maintenance (O&M) documentation is reposed by Asset Management within the corporate-licensed SharePoint platform. Asset Management spent three years to obtain all available legacy facility equipment O&M manuals and established a central facility equipment O&M library. Key asset O&M documentation associated with new projects is uploaded by the DEN Project Manager or the General Contractor (GC) to Unifier. Asset Management will ensure new O&M manuals are uploaded to the SharePoint repository on a consistent basis, finalize the SOP pertaining to Asset Management governance of this process, and ensure that all users receive access to and notification regarding the O&M library by December 31, 2020.
AGENCY RESPONSE TO AUDIT RECOMMENDATIONS

December 3, 2020

Auditor Timothy M. O’Brien, CPA
Office of the Auditor
City and County of Denver
201 West Colfax Avenue, Dept. 705
Denver, Colorado 80202

Dear Mr. O’Brien,

The Office of the Auditor has conducted a performance audit of Airport Capital Assets.

This memorandum provides a written response for each reportable condition noted in the Auditor’s Report final draft that was sent to us on November 23, 2020. This response complies with Section 20-276 (c) of the Denver Revised Municipal Code (D.R.M.C.).

AUDIT FINDING 1
Denver International Airport’s internal controls need improvement to ensure capital assets are properly tracked and recorded and that information in systems is complete and accurate.

<table>
<thead>
<tr>
<th>RECOMMENDATION 1.1</th>
<th>Denver International Airport’s Finance Division should review and revise its policies and procedures to include necessary details related to the use of and exceptions to “transfer of property” forms, surplus proceeds activities, and virtual tags.</th>
</tr>
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<tbody>
<tr>
<td>Agree or Disagree with Recommendation</td>
<td>Target date to complete implementation activities (Generally expected within 60 to 90 days)</td>
</tr>
<tr>
<td>Agree</td>
<td>03/01/21</td>
</tr>
</tbody>
</table>

Narrative for Recommendation 1.1
DEN Finance updates procedural documents annually but will conduct an interim enhancement to clarify language surrounding transfer of property forms, surplus proceeds, and virtual tags.

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<tr>
<td>Agree</td>
<td>03/01/21</td>
</tr>
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</table>

Narrative for Recommendation 1.2
DEN Finance will update the property transfer form based on the recommendation.
RECOMMENDATION 1.3
Denver International Airport’s Finance Division should retain better supporting documentation for asset disposals to validate proper transfer and disposal of assets and ensure compliance with procedures. This should include retaining receipts that demonstrate transferred and/or disposed assets reach their intended destinations. Applicable policies and procedures should be updated with the revised procedures.

<table>
<thead>
<tr>
<th>Agree or Disagree with Recommendation</th>
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<th>Name and phone number of specific point of contact for implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>03/01/21</td>
<td>Michael Biel, (303) 342-2158</td>
</tr>
</tbody>
</table>

Narrative for Recommendation 1.3
DEN Finance will update policies and procedures to address the initial recommended documentation for disposals and transfers.

RECOMMENDATION 1.4
Denver International Airport’s Finance and Sustainability divisions should coordinate and determine a common identifier for the airport’s capital assets, such as an asset ID or tag number, to ensure necessary asset descriptions are captured identically in Workday and Maximo and to improve efficiency in capital asset identification between the two systems. In addition, other capital asset information, such as serial or model numbers, should be included in both systems to improve consistency of capital asset information between the systems.

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</tr>
</thead>
<tbody>
<tr>
<td>Disagree</td>
<td>MM/DD/YY</td>
<td>Michael Biel, (303) 342-2158 and Scott Morrissey, (303) 342-2836</td>
</tr>
</tbody>
</table>

Narrative for Recommendation 1.4
Workday and Maximo are used for different purposes and both have different definitions of an asset. Workday captures the acquisition costs of capital assets (i.e. building, infrastructure, equipment, etc.) and depreciates these assets over the estimated useful of the capital assets (net capital assets) for financial statement reporting. These acquisition costs could include both hard and soft costs. The definition of capital assets used in Workday is determined by General Accepted Accounting Principles, Governmental Accounting Standards Board pronouncements, and the City Fiscal Accountability Rules. Maximo is a Computerized Maintenance Management System (“CMMS”) used to track maintenance work orders and costs regardless of whether the asset is capitalized for accounting purposes. Maximo often includes non-capitalized assets as well as components of a constructed asset. There is not always a one-to-one relationship between the two systems. One exception is fleet assets. These assets are capitalized within Workday and maintained in Maximo with the prevailing City and County of Denver nomenclature.

RECOMMENDATION 1.5
Denver International Airport’s Finance Division should document and implement a process to ensure specific asset location information missing in Workday is added and that specific asset location information is revised as assets are transferred and disposed of.

<table>
<thead>
<tr>
<th>Agree or Disagree with Recommendation</th>
<th>Target date to complete implementation activities</th>
<th>Name and phone number of specific point of contact for implementation</th>
</tr>
</thead>
</table>
NARRATIVE FOR RECOMMENDATION 1.5
DEN Finance will identify a more robust list of locations for use in Workday. New locations will be used for all new assets registered and existing assets will be updated to new locations when inventoried during the next cycle.

<table>
<thead>
<tr>
<th>Agree or Disagree with Recommendation</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>06/01/21</td>
<td>Michael Biel, (303) 342-2158</td>
</tr>
</tbody>
</table>

NARRATIVE FOR RECOMMENDATION 1.6
DEN Finance division will update the policies and procedures regarding processes for validating and tracking claims of lost capital assets.

RECOMMENDATION 1.7
Denver International Airport’s Operations and Maintenance Contract Administration Division should enforce contractual terms related to penalties for noncompliance.

<table>
<thead>
<tr>
<th>Agree or Disagree with Recommendation</th>
<th>Target date to complete implementation activities (Generally expected within 60 to 90 days)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>12/01/2020</td>
<td>Sherry Grams, (303) 342-2857</td>
</tr>
</tbody>
</table>

NARRATIVE FOR RECOMMENDATION 1.7
Airport Operations will continue to enforce penalties commensurate with contract terms.

The Contract Administrator holds monthly meetings with Thyssenkrupp (TKE) to determine whether each unit has met the monthly performance standard. During the regular meetings, DEN and TKE collaboratively determine if non-compliance is due to any one of the listed contractual performance objectives or, if the downtime was the result of an “outside or uncontrollable” reason. Any downtime caused by vandalism, damage or misuse of a conveyance, or any proven power-related event, does not warrant a penalty, regardless of the number of Maximo work orders. The division has discretion to penalize or not based on the monthly review as outlined in the contract.

Under the Bombardier contract, the airport does not have the ability to use discretion with regards to downtime penalties. The airport should have (and ultimately did) penalize Bombardier for the station door failure. The contract does allow discretion for overdue preventative maintenance. Our goal is to have all maintenance completed in the prescribed time periods, but operational requirements allow for our contract administrators to not penalize for overdue maintenance.

RECOMMENDATION 1.8
Denver International Airport’s Operations and Maintenance Contract Administration Division should develop and implement a centralized tool for contract administrators to track and monitor third parties’ compliance with contract terms.

<table>
<thead>
<tr>
<th>Agree or Disagree with Recommendation</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>06/30/21</td>
<td>Sherry Grams, (303) 342-2857</td>
</tr>
</tbody>
</table>

**Narrative for Recommendation 1.8**

In response to a recommendation in a DEN administered internal audit, Airport Operations has been working to use Maximo to store inspection records for Airport Operations contracts. The division investigated several software programs and ultimately decided to use Maximo. The division has piloted the use of Maximo for this purpose on three small contracts and has had initial success. Airport Operations is targeting the end of Q2 2021 to incorporate the conveyance and AGTS contracts.

Assuming that effort is successful, the division will continue to add additional contracts.

**RECOMMENDATION 1.9**

Denver International Airport’s Operations and Maintenance Contract Administration Division should identify and use all resources available to assist in monitoring compliance with third-party asset maintenance contracts, such as internal reports developed by other airport divisions.

<table>
<thead>
<tr>
<th>Agree or Disagree with Recommendation</th>
<th>Target date to complete implementation activities (Generally expected within 60 to 90 days)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>Maximo Data – 01/31/16 Power BI – 12/31/18</td>
<td>Sherry Grams, (303) 342-2857</td>
</tr>
</tbody>
</table>

**Narrative for Recommendation 1.9**

Airport Operations previously used Crystal Reports and Power BI dashboards to monitor contract compliance. Power BI has matured to the point that we are able to discontinue the use of Crystal reports. Power BI has become the program’s primary resource for monitoring TKP’s performance, which is fed by Maximo.

The division will work with other entities at the airport to identify other resources available to assist with monitoring compliance with third-party contracts.

**RECOMMENDATION 1.10**

With the implementation of recommendations 1.7 and 1.8, Denver International Airport’s Operations and Maintenance Contract Administration Division should update its standard operating procedures to reflect updated monitoring processes.

<table>
<thead>
<tr>
<th>Agree or Disagree with Recommendation</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>01/31/21</td>
<td>Sherry Grams, (303) 342-2857</td>
</tr>
</tbody>
</table>

**Narrative for Recommendation 1.10**

The standard operating procedure is the guiding document for contract compliance review. This procedure is reviewed by Airport Operations and updated semi-annually.
RECOMMENDATION 1.11
Denver International Airport’s Operations and Maintenance Contract Administration Division should review invoices, contractors’ reports, and other necessary documentation and collect contractual penalties not previously assessed.

<table>
<thead>
<tr>
<th>Agree or Disagree with Recommendation</th>
<th>Target date to complete implementation activities (Generally expected within 60 to 90 days)</th>
<th>Name and phone number of specific point of contact for implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>08/14/20</td>
<td>Sherry Grams, (303) 342-2857</td>
</tr>
</tbody>
</table>

Narrative for Recommendation 1.11
For the current budget year, invoices have been reviewed to determine if contractual penalties were not previously assessed. As stated, “Contract Administration officials agree that penalties were missed; they said adjustments would be made to the July 2020 invoice.” Airport Operations reviewed the July 2020 invoice and verified the proper penalties were assessed.

TKE’s June invoice contained backdated performance deductions for failed inspections in the months of April and May 2020, totaling $12,000 in recouped penalties.

RECOMMENDATION 1.12
Divisions responsible for managing Denver International Airport’s assets — including the Maintenance, Sustainability, and Finance divisions — should develop, document, and implement a method to coordinate and communicate concerns with one another when assets are discovered that are not recorded in an information system. Steps should also be taken to identify and document the reason why such assets were not properly recorded in an information system and to resolve the issue by adjusting procedures.

<table>
<thead>
<tr>
<th>Agree or Disagree with Recommendation</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Disagree</td>
<td>MM/YY</td>
<td>Michael Biel, (303) 342-2158 and Scott Morrissey, (303) 342-2836</td>
</tr>
</tbody>
</table>

Narrative for Recommendation 1.12
Although communication between the divisions is open regarding assets inventory processes used by the Finance Division, the two information systems mentioned (Workday and Maximo) are used for two different purposes as noted in response to Recommendation 1.4.

RECOMMENDATION 1.13
Denver International Airport’s Finance Division should develop and document proper procedures to let airport divisions know about how to properly transfer and dispose of assets.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Agree</td>
<td>03/01/21</td>
<td>Michael Biel, (303) 342-2158</td>
</tr>
</tbody>
</table>

Narrative for Recommendation 1.13
As part of the response to Recommendation 1.2, the DEN Finance division will provide instructions and directions on how to properly transfer and dispose of assets.

AUDIT FINDING 2
Denver International Airport lacks a comprehensive preventive maintenance program to ensure all assets are maintained and that it can effectively budget for future costs.

RECOMMENDATION 2.1
Denver International Airport’s Sustainability and Maintenance divisions should develop, document, and implement procedures to address data integrity issues in Maximo.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Agree</td>
<td>03/31/21</td>
<td>Scott Morrissey, (303) 342-2836</td>
</tr>
</tbody>
</table>

Narrative for Recommendation 2.1
DEN Sustainability Asset Management (“Asset Management”) and DEN Maintenance will work together to develop, document, and begin implementation of procedures to improve Maximo data by building upon the activities identified in the Strategic Asset Management Plan that was commissioned by Asset Management in 2018.

In order to improve the discovery of legacy DEN assets in Maximo, Asset Management, in conjunction with DEN Business Technologies, has developed a mobile asset data capture application that can be used by anyone with a flydenver.com email to discover and forward asset core information. Asset Management and Maintenance personnel are developing a SOP to manage this process.

Additionally, Asset Management recently piloted a comprehensive new facility equipment identification, tagging, and automated onboarding process to ensure that new assets are added to the Maximo system. In collaboration with construction quality assurance partners, Asset Management has established and commissioned an electronic asset data capture and Maximo tagging platform for these assets.

RECOMMENDATION 2.2
Denver International Airport’s Sustainability and Maintenance divisions should determine the adequate staffing levels they need for preventive maintenance program activities — including discovering and entering assets in Maximo, scheduling preventive maintenance, and addressing the backlog of preventive maintenance work orders.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Agree</td>
<td>07/01/21 for Fleet, Facilities, and Maintenance Administration assets. Field Maintenance will be completed by 09/01/21</td>
<td>Kyle Lester, (303) 342-2770</td>
</tr>
</tbody>
</table>

Narrative for Recommendation 2.2
A study of staffing-level requirements for DEN’s Preventive Maintenance Program will be conducted to ensure adequate staffing exists or conversely to justify staffing shortfalls to senior leadership.
### RECOMMENDATION 2.3
Denver International Airport’s Maintenance Division should define the criteria for preventive maintenance budgeting, to include actual work requirements such as staffing, materials, equipment and other significant costs. This information will help the airport quantify the resources it needs to ensure preventive maintenance is performed consistently and in a timely manner.

<table>
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<tr>
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<td>Kyle Lester, (303) 342-2770</td>
</tr>
</tbody>
</table>

### Narrative for Recommendation 2.3

While much of this data already exists, DEN Maintenance will perform a study specific to each maintenance section and asset to qualify the material costs of DEN’s Preventive Maintenance Program and incorporate the staffing requirement findings of Recommendation 2.2 (e.g. Determine Staffing Needs) into a comprehensive document that outlines all costs associated with the program for budgetary planning purposes.

### RECOMMENDATION 2.4
Denver International Airport’s Sustainability and Maintenance divisions should develop a comprehensive the preventive maintenance program for facility assets and address the recommendations in the 2017 “Asset Management Observations and Gap Assessment Report.” As processes are finalized, the divisions should also use the analyses performed from Recommendation 2.3 to help determine adequate resources and budgeting necessary to implement an effective preventive maintenance program. Results should be documented and shared with airport officials to ensure proper funding is considered during budget activities.

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<td>Kyle Lester, (303) 342-2770</td>
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### Narrative for Recommendation 2.4

With that in mind, DEN Maintenance will develop programmatic protocol’s for DEN’s Preventive Maintenance Program and incorporate the findings of Recommendation 2.2 (e.g. Determine Staffing Needs) and Recommendation 2.3 (e.g. Define Preventive Maintenance Budget Criteria) to formalize this program.

### RECOMMENDATION 2.5
Denver International Airport’s Sustainability and Maintenance divisions should develop, document, and implement policies and procedures for routine maintenance activities for all necessary assets. Policies and procedures should include, but not be limited to, the process of developing and managing manuals as operations and maintaining schedules.
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<tr>
<td>Agree</td>
<td>09/01/21</td>
<td>Kyle Lester, (303) 342-2770</td>
</tr>
</tbody>
</table>

**Narrative for Recommendation 2.5**
In July of 2020, DEN Maintenance and DEN Sustainability began a process improvement project focused on identifying the existing asset data and attributes for each asset, process flow to establish work order control, and the desired end state of the data. This project is ongoing. This project will be taken on in the form of “Operating Instructions” or “SOPs” in parallel with Recommendation 2.4 (e.g. Formalize the Preventive Maintenance Program). Recommendations 2.2, 2.3, 2.4 and 2.5 are heavily intertwined and will need to be addressed together.

**RECOMMENDATION 2.6**
Denver International Airport’s Sustainability and Maintenance divisions should define a central repository for key asset documentation, such as warranties, and ensure necessary personnel have access.

<table>
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<tr>
<td>Agree</td>
<td>03/31/21</td>
<td>Scott Morrissey, (303) 342-2836</td>
</tr>
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</table>

**Narrative for Recommendation 2.6**
Key asset warranty documentation is uploaded by the DEN Project Manager or the General Contractor (GC) to the Unifier document repository through a construction submittal process. AIM Development will confirm that all relevant staff have the appropriate access to those documents in order to facilitate construction warranty activity by March 31, 2021.

Key asset Operating and Maintenance (O&M) documentation is reposed by Asset Management within the corporate-licensed SharePoint platform. Asset Management spent three years to obtain all available legacy facility equipment O&M manuals and established a central facility equipment O&M library. Key asset O&M documentation associated with new projects is uploaded by the DEN Project Manager or the General Contractor (GC) to Unifier. Asset Management will ensure new O&M manuals are uploaded to the SharePoint repository on a consistent basis, finalize the SOP pertaining to Asset Management governance of this process, and ensure that all users receive access to and notification regarding the O&M library by December 31, 2020.

Please contact Michael Biel at (303) 342-2158 with any questions.

Sincerely,

Chris McLaughlin
Chief Operating Officer

cc: Valerie Walling, CPA, Deputy Auditor  
Dawn Wiseman, CRM, Audit Director  
Sonia Montano, Audit Supervisor  
Kim Day, CEO  
Penny May, Acting CCO  
George Karayiannakis, Acting Deputy CFO
Michael Biel, SVP Financial Accounting
Scott Morrissey, SVP Sustainability
Dave Laporte, SVP Airport Operations
Kyle Lester, SVP Maintenance
AUDITOR’S ADDENDUM

The Auditor’s Office feels it necessary to address Denver International Airport’s responses to the audit recommendations to which it disagreed: recommendations 1.4 and 1.12.

As highlighted in the report, best practices say that for effective monitoring, data should come from reliable internal and external sources and be “reasonably free from error and bias.” Having quality information in the organization’s information systems supports management’s ability to make informed decisions. Likewise, adequate communication is key to effective oversight and ensures objectives are achieved and risks are properly mitigated.

However, in their responses to the audit recommendations, airport officials did not agree with certain recommendations regarding the software systems used to manage airport assets and communication among divisions about assets not recorded in all information systems.

While we agree and acknowledge the two systems are used for different purposes, both track assets and are used to manage the life cycle of airport assets. Maintaining Workday and Maximo as siloed systems ignores the inconsistencies that exist, as uncovered by this audit.

In addition, because the physical locations of capital assets within Workday are vague, the airport’s Finance Division must go into Maximo and search for the specific location and/or rely on the department contact who oversees the asset when conducting inventory. If this information was in Workday and updated as inventory is conducted year over year and when new capital assets are acquired, Finance Division staff would not have to take the time to search for the asset, when — as acknowledged by the airport — the asset information in both systems is different.

Finally, having a common identifier for capital assets in both systems would help the airport communicate when capital assets are found through discovery or acquired in Workday to provide assurance capital assets are also added to Maximo for preventive maintenance purposes. It would also provide assurance that assets are properly recorded in Workday for financial accounting purposes.
OBJECTIVE

1. To determine whether Denver International Airport’s asset management program has adequate controls to ensure capital assets are properly tracked and recorded and that information within all systems of record is complete and accurate.

2. To determine whether the airport’s asset management program ensures the condition of capital assets is properly maintained through preventive maintenance so the airport can effectively budget for future costs.

SCOPE

The audit assessed internal controls related to Denver International Airport’s management of its capital assets. Specifically, the audit assessed processes for tracking and recording assets in systems of record, as well as the completeness and accuracy of asset information. In addition, the audit assessed the effectiveness of the airport’s preventive maintenance program — including processes to ensure third-party contractors comply with asset maintenance contracts.

We reviewed documentation to support practices and internal controls, compliance with policies and procedures, and maintenance conducted between January 2018 and July 2020.

METHODOLOGY

We used several methodologies to gather and analyze information related to the audit objectives. The methodologies included but were not limited to:

• Interviewing and observing:
  ○ Personnel from various airport divisions including:
    • Internal Audit.
    • Sustainability.
    • Finance.
    • Maintenance.
    • Development.
    • Operations.
    • Material Management.
    • Infrastructure Management.
  ○ Personnel from BKD LLP.
• Observing the information systems, Maximo and Workday.
• Reviewing the following criteria:
  ○ City and County of Denver executive orders 8, 24, 64, and 134.
  ○ City and County of Denver Fiscal Accountability Rules 2.1, 4.2, and 7.2.
  ○ Title 18 of the City and County of Denver’s “Standard Specifications for Construction General Contract Conditions” (2011), related to warranties, guarantees, and corrective work.
  ○ The airport Finance Division's internal standard operating procedures.
  ○ Governmental Accounting Standards Board statements and implementation guides.
  ○ The American Society for Testing and Materials' international standards and guidance related to asset management.
  ○ International Organization for Standardization 55000 and 55001.
  ○ The Airport Cooperative Research Program's preventive maintenance best practices for airports.
  ○ Denver International Airport's internal audit report on conveyances.
  ○ San Francisco International Airport's and Dallas-Fort Worth International Airport's best practices for preventive maintenance — specifically their policies, procedures, program structure, financial information, and funding.

• Analyzing the following:
  ○ Denver International Airport's annual financial reports for 2018 and 2019.
  ○ Denver International Airport operating budgets for 2018 through 2020.
  ○ Asset lists from the information systems, Workday and Maximo.
  ○ The airport Finance Division's capital asset inventory for fiscal year 2019.
  ○ “Transfer of property” forms for disposals, transfers, and lost assets.
  ○ Asset warranty documents.
  ○ The airport's operations and maintenance manuals.
  ○ Preventive maintenance frequency schedules and detail reports by asset type.
  ○ Maintenance contracts with Bombardier Transportation Inc. and ThyssenKrupp Elevators Inc., as well as supporting maintenance documentation.
  ○ Maintenance work orders.
  ○ Backlogged and deferred work orders.
  ○ The organizational structure of airport divisions responsible for capital assets and maintenance.
  ○ Selected assets' physical locations compared to information reported in Maximo and Workday.

• Performing sampling and testing against reviewed criteria as detailed in Appendix B.
APPENDICES

Appendix A – Comparison of Airport Capital Assets for 2018 and 2019

As shown in Figure 4 below and in Figure 5 on the following page, the airport reported $3.8 billion net capital assets in 2018 and $4.2 billion in 2019 — an increase of 10.4%.

Additions include assets bought and placed into service from completed capital projects. Reductions include asset retirements, impairments, and dispositions as necessary. The airport reported no impairments for 2018 or 2019.

FIGURE 4. Value of Airport Net Capital Assets in 2018

<table>
<thead>
<tr>
<th>Depreciable:</th>
<th>January 1, 2018</th>
<th>Additions</th>
<th>Transfers and reclassifications</th>
<th>Reductions</th>
<th>December 31, 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buildings and Improvement</td>
<td>$4,220,383,000</td>
<td>$170,000</td>
<td>$127,025,000</td>
<td>($9,825,000)</td>
<td>$4,337,753,000</td>
</tr>
<tr>
<td>Machinery and equipment</td>
<td>$885,000,000</td>
<td>$284,000</td>
<td>$38,044,000</td>
<td>($14,355,000)</td>
<td>$908,973,000</td>
</tr>
<tr>
<td>Infrastructure and land improvement</td>
<td>$1,219,512,000</td>
<td>$4,078,000</td>
<td>$12,698,000</td>
<td>($22,027,000)</td>
<td>$1,214,261,000</td>
</tr>
<tr>
<td>Intangibles</td>
<td>$27,052,000</td>
<td>$0</td>
<td>$2,080,000</td>
<td>($1,008,000)</td>
<td>$28,124,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$6,351,947,000</strong></td>
<td><strong>$4,532,000</strong></td>
<td><strong>$179,847,000</strong></td>
<td><strong>($47,215,000)</strong></td>
<td><strong>$6,489,111,000</strong></td>
</tr>
</tbody>
</table>

| Less accumulated depreciation and amortization | ($3,242,642,000) | ($193,581,000) | $0 | $35,782,000 | ($3,400,441,000) |
| **Total capital assets**                | **$3,109,305,000** | **($189,049,000)** | **$179,847,000** | **($11,433,000)** | **$3,088,670,000** |

| Non-depreciable:                       |                 |          |                                 |            |                   |
| Art                                   | $7,165,000      | $0       | $1,000                          | $0         | $7,166,000        |
| Capacity Rights                       | $12,400,000     | $0       | $0                              | $0         | $12,400,000       |
| Construction in progress              | $226,616,000    | $381,613,000 | ($179,848,000) | ($5,796,000)| $422,585,000      |
| Land, land rights, and air rights     | $295,766,000    | $0       | $0                              | $0         | $295,766,000      |
| **Total capital assets**              | **$3,651,252,000** | **$192,564,000** | **$0** | **($17,229,000)** | **$3,826,587,000** |

**Source:** Denver International Airport’s 2018 annual financial report.
FIGURE 5. Value of Airport Net Capital Assets in 2019

<table>
<thead>
<tr>
<th></th>
<th>January 1, 2019</th>
<th>Additions</th>
<th>Transfers and reclassifications</th>
<th>Reductions</th>
<th>December 31, 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Depreciable:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buildings and Improvement</td>
<td>$4,337,753,000</td>
<td>$42,000</td>
<td>($31,587,000)</td>
<td>($6,677,000)</td>
<td>$4,299,531,000</td>
</tr>
<tr>
<td>Machinery and equipment</td>
<td>$908,973,000</td>
<td>$398,000</td>
<td>$90,370,000</td>
<td>($25,045,000)</td>
<td>$974,696,000</td>
</tr>
<tr>
<td>Infrastructure and land improvement</td>
<td>$1,214,261,000</td>
<td>$0</td>
<td>$93,211,000</td>
<td>($1,467,000)</td>
<td>$1,306,005,000</td>
</tr>
<tr>
<td>Intangibles</td>
<td>$28,124,000</td>
<td>$0</td>
<td>$5,100,000</td>
<td>($792,000)</td>
<td>$32,432,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$6,489,111,000</td>
<td>$440,000</td>
<td>$157,094,000</td>
<td>($33,981,000)</td>
<td>$6,612,664,000</td>
</tr>
<tr>
<td><strong>Less accumulated depreciation and amortization</strong></td>
<td>($3,400,441,000)</td>
<td>($203,321,000)</td>
<td>$0</td>
<td>$30,771,000</td>
<td>($3,572,991,000)</td>
</tr>
<tr>
<td><strong>Net</strong></td>
<td>$3,088,670,000</td>
<td>($202,881,000)</td>
<td>$157,094,000</td>
<td>($3,210,000)</td>
<td>$3,039,673,000</td>
</tr>
<tr>
<td><strong>Non-depreciable:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Art</td>
<td>$7,166,000</td>
<td>$0</td>
<td>$178,000</td>
<td>$0</td>
<td>$7,344,000</td>
</tr>
<tr>
<td>Capacity Rights</td>
<td>$12,400,000</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$12,400,000</td>
</tr>
<tr>
<td>Construction in progress</td>
<td>$422,585,000</td>
<td>$613,919,000</td>
<td>($157,272,000)</td>
<td>($9,717,000)</td>
<td>$869,515,000</td>
</tr>
<tr>
<td>Land, land rights, and air rights</td>
<td>$295,766,000</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$295,766,000</td>
</tr>
<tr>
<td><strong>Total capital assets</strong></td>
<td>$3,826,587,000</td>
<td>$411,038,000</td>
<td>$0</td>
<td>($12,927,000)</td>
<td>$4,224,698,000</td>
</tr>
</tbody>
</table>

Source: Denver International Airport’s 2019 annual financial report.
Appendix B – Data Analysis Sampling and Methodology

We randomly sampled 24, or 3%, of 787 capital assets that Workday said were placed in service from Jan. 1, 2018, through May 31, 2020. We verified whether the historical cost met the capitalization threshold according to city Fiscal Accountability Rules. We also physically verified the assets were tagged, and we verified whether unique identifiers matched information in Workday. Of the 24 selected, four of the assets in the sample were related to the capital interest associated with an asset and, therefore, were not tested.

We randomly sampled 25, or 20%, of 127 assets transferred into service from Jan. 1, 2018, through May 31, 2020. We reviewed the date of acquisition, the date placed into service, and the date registered to ensure appropriate accounting treatments and that documentation requirements were met.

We randomly sampled 19, or 2%, of 896 assets from Workday not classified as capital assets that were added and/or procured from Jan. 1, 2018, through May 31, 2020. We verified whether the assets were appropriately not classified as capital assets according to city Fiscal Accountability Rules.

We randomly sampled 20, or 31%, of 65 asset disposal transactions from Jan. 1, 2018, through May 31, 2020. We reviewed information in Workday to determine appropriate accounting treatments and compliance with documentation requirements.

We reviewed all 22 assets reported as lost in Workday from Jan. 1, 2018, through May 31, 2020. We reviewed documentation supporting how each asset was confirmed as “lost” or “stolen,” and we analyzed whether procedures were adequate for identifying lost or stolen assets.

We randomly sampled 15 of 3,920 assets from Workday and 10 of 6,899 assets from Maximo that were in service from Jan. 1, 2018, through May 31, 2020. We also analyzed 22 capital assets from other testing samples—including capital assets added in that time frame as well as transferred assets. We visually verified each sampled asset’s existence at the airport.

- The Workday population from which the 15 sampled assets were selected excluded bridges, buildings, land, jetways, runways and taxiways, software, and streets.
- We used our professional judgment to also select a sample of six in-service assets, and we traced each asset back to information in Maximo and Workday to verify the accuracy of the asset information.

We randomly sampled 21, or 12%, of 171 capital assets Workday said were transferred between locations and airport departments from Jan. 1, 2018, through May 31, 2020. We reviewed the associated property transfer forms for completion and proper approval, and we verified the existence of the transferred asset in the new location or cost center.

We reviewed contracts for airport assets maintained by Bombardier Transportation Inc. and ThyssenKrupp Elevators Inc. We obtained the contracts, noted maintenance requirements, and analyzed whether maintenance was being conducted according to the contract and that management was monitoring compliance with contract requirements.

We randomly sampled 10, or 7%, of 143 assets with a manufacturer’s warranty from Jan. 1, 2018, through May 31, 2020. We reviewed warranty documentation for evidence that claims were filed in a timely manner and that documentation requirements were met.
We used our professional judgment to select five facility asset types, or 6%, of 89 asset types. We reviewed appropriate preventive maintenance schedules based on documented guidance. Of the five facility asset types, two assets were selected per type. We compared the preventive maintenance schedule in Maximo to the recommendations in the airport’s operations and maintenance manuals.

We used our professional judgment to select five, or 21%, of 24 fleet assets assigned a preventive maintenance schedule from Jan. 1, 2018, through May 31, 2020. We reviewed appropriate preventive maintenance schedules based on documented requirements.

Lastly, we obtained lists of 7,517 capital assets in Workday and 29,469 assets in Maximo. Not all assets in Maximo are capital assets. We attempted to match the asset information in both databases using key words, common words, matching descriptions, unique numbers, asset numbers, model numbers, and serial numbers.
Office of the Auditor

The Auditor of the City and County of Denver is independently elected by the citizens of Denver. He is responsible for examining and evaluating the operations of City agencies and contractors for the purpose of ensuring the proper and efficient use of City resources. He also provides other audit services and information to City Council, the Mayor, and the public to improve all aspects of Denver’s government.

The Audit Committee is chaired by the Auditor and consists of seven members. The Audit Committee assists the Auditor in his oversight responsibilities regarding the integrity of the City’s finances and operations, including the reliability of the City’s financial statements. The Audit Committee is structured in a manner that ensures the independent oversight of City operations, thereby enhancing citizen confidence and avoiding any appearance of a conflict of interest.

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