FOllow-Up Report

Denver International Airport
Airport Capital Assets

April 2022

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Audit Services Division, City and County of Denver
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In keeping with generally accepted government auditing standards and Auditor’s Office policy, as authorized by city ordinance, the Audit Services Division has a responsibility to monitor and follow up on audit recommendations to ensure city agencies address audit findings through appropriate corrective action and to aid us in planning future audits.

In our follow-up effort for the “Airport Capital Assets” audit report issued in December 2020, we determined Denver International Airport fully implemented seven recommendations, partially implemented seven recommendations, and did not implement the remaining three recommendations it agreed to in the original audit report. Despite the airport’s efforts, auditors determined the risks associated with the audit team’s initial findings have not been fully mitigated. As a result, the Audit Services Division may revisit these risk areas in future audits to ensure the city takes appropriate corrective action.

The Highlights page in this report provides background and summary information about the original audit and the completed follow-up effort. Following the Highlights page is a detailed implementation status update for each recommendation. We did not update the status of the two recommendations Denver International Airport disagreed with, as the airport presumably would not have taken action toward implementing those. However, we include these recommendations in the status update section as a reference.

I would like to express our sincere appreciation to the personnel at Denver International Airport who assisted us throughout the audit and the follow-up process. 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
APRIL 2022

Objective
To determine whether Denver International Airport’s asset management program:

1. 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. Ensures the condition of capital assets is properly maintained through preventive maintenance so the airport can effectively budget for future costs.

Background
The 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.

Effective asset management includes methods to determine which assets to acquire or create and how to operate and maintain them.

Airport officials needed to improve internal controls and processes at Denver International Airport to better ensure the airport properly manages its capital assets. In addition, the airport needed 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 needed 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 Needed Improvement to Ensure Capital Assets Are Properly Tracked and Recorded and that Information in Systems Is Complete and Accurate

• The airport’s internal controls needed improvement to ensure it properly oversees its capital assets.
• The airport had inadequate contract monitoring processes and could not ensure airport contractors responsible for asset maintenance complied with contract terms.
• The airport did not adequately communicate processes to all divisions responsible for managing capital assets.

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

• Preventive maintenance activities were backlogged, and the information system lacked accurate data.
• The airport lacked documented processes for scheduling preventive maintenance and other routine activities.

WHY THIS MATTERS
Denver International Airport needs consistent and detailed policies and procedures, stronger contract monitoring practices, and a comprehensive preventive maintenance program to help it better manage and maintain its capital assets.
April 7, 2022

Action Since Audit Report
Airport Capital Assets

19 recommendations proposed in December 2020

Denver International Airport fully implemented seven of the recommendations we made in the original audit report, but 12 others have not been fully implemented or acted upon.

While the airport took steps to address some of the issues we identified, lingering risks remain from the 10 recommendations the airport agreed with but did not fully implement — as well as the two recommendations the airport disagreed with during the original audit.

For example:

- Airport staff started developing a comprehensive preventive maintenance plan for each asset category — but this will take at least five years. And until that is complete, the airport cannot assess appropriate staffing levels and budget needs for preventive maintenance.

- The airport has more work to do to improve data integrity for capital assets in its computerized maintenance management system, Maximo. The airport developed a procedure for how supervisors should review and approve assets added to the system, but this procedure is not included in the airport's policies and procedures. Documenting procedures is critical for ensuring continuity of operations in the event staff leave the city.

- Airport staff made some progress to better monitor contract compliance using Maximo. But the airport still is not adequately enforcing penalties on contractors that do not fulfill contract requirements. Furthermore, while the airport collected $2,100 out of the $2,150 in penalties we identified during the original audit as being owed to the airport, the maintenance contract does not allow staff members to use discretion in deciding which penalties for noncompliance they will enforce. Therefore, the airport should have collected the entire amount.

- The airport took steps to update its policies and procedures for contract monitoring, but those documents still lack all relevant details for how staff should use Maximo as a contract monitoring tool. Similarly, the airport updated its procedures for how to enter assets in Maximo, but those procedures also do not have all necessary details — such as the process for deviating from recommended preventive maintenance schedules.
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

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 ACTION

Original target date for completion: March 1, 2021

Since the original audit, Denver International Airport’s Finance Division updated its policies and procedures to include the necessary detailed information related to the use of and exception to “transfer of property” forms, surplus proceeds activities, and virtual tags.

We compared the updated policies and procedures to the previous version and found a significant amount of detail had been added — such as:

- Disposal types that require a “surplus property” form (formerly called the “transfer of property” form).
- The process for receiving surplus proceeds from assets sold at city auction.
- The types of assets that would use a virtual tag.

These additions help mitigate the risk that airport staff might complete tasks inconsistently or not in line with airport processes.

Therefore, we consider this recommendation fully implemented.

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 ACTION

Original target date for completion: March 1, 2021

During our follow-up, airport staff provided the new “surplus property” form, which was previously called the “transfer of property” form. We compared the new form to the previous one the airport had been using during our original audit, and we found unused fields — such as the lines for materials management and warehouse signatures — were removed.

New fields had been added — such as for approvals by the cost center manager and accounting staff. And we noticed several original fields were updated with a drop-down menu to record where property was being transferred and instructions on how to use the form.

Airport staff members said they began using the new form in December 2021. As of the time we followed up, the last time the airport had disposed of or transferred an asset was in October 2021, a couple months before the airport implemented the updated form.

While we could not verify that airport staff members are adequately filling out the new form for each asset, the form was updated as stated in the recommendation. Therefore, we consider this recommendation fully implemented.

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 ACTION

Original target date for completion: March 1, 2021

In line with implementing Recommendation 1.1, the airport’s Finance Division updated its policies and procedures for properly transferring and disposing of capital assets so that document now includes the necessary details — such as when to use a “surplus property” form.
We reviewed a random sample of 23 out of 74 assets, or 30%, that were disposed of between Jan. 1, 2021, and Dec. 31, 2021, to ensure the airport kept supporting documentation. We confirmed the Finance Division followed its procedure of attaching all supporting documentation — including the previous “transfer of property” form — for each asset in the city’s financial system, Workday.

In addition, the division implemented a tracking spreadsheet to help account for all assets that are lost or stolen and go to online auction. This tracker helps ensure all auction proceeds go back to the airport for accounting purposes and that the airport obtains required documentation — such as a police report — for stolen capital assets.

The Asset Management team also started using a real-time report for decommissioned assets from the airport’s computerized maintenance management system, Maximo. Staff members send this report to the airport’s Finance Division to notify it when an asset has been permanently removed during construction activity, without the Finance Division staff having to rely on the project manager for this information.

Therefore, we consider this recommendation fully implemented.

**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 ACTION**

No action was taken to implement this recommendation because the airport disagreed with the recommendation made in our original report.

This was the airport’s response to the recommendation when the original report was issued in December 2020:

*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.

For the original report, we wrote the following addendum rebutting the airport’s response to both this recommendation and Recommendation 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.

**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 ACTION**

**PARTIALLY IMPLEMENTED**

Original target date for completion: June 1, 2021

The airport’s Finance Division has been working with the city Controller’s Office to update and add new asset locations in the city’s financial system, Workday. Airport management said the new asset locations were implemented Dec. 20, 2021, and all new assets registered after that should get a location in Workday. Management plans to add all existing asset locations during the airport’s annual inventory process, beginning in 2022.

We reviewed a random sample of eight out of 25 new assets, or about 30%, that were registered between Dec. 1, 2021, and Jan. 19, 2022. We confirmed the Finance Division added locations to each asset in Workday. Because the airport’s annual inventory for 2022 is forthcoming, we could not verify existing asset locations at the time of our follow-up.

Given the variety of capital assets at the airport, it is not feasible for the airport to conduct a full physical inventory of all capital assets each year. For every existing asset’s location to be updated, it would take about three to five years, depending on the type of asset. Buildings and improvements will take about three years, because the airport inventories one-third of these assets each year. Remaining asset categories — such as equipment, vehicles, and collections — will take five years, because staff inventory only 20% of these assets each year.

Because the airport’s annual inventory has not yet occurred and because it will take the airport five years to complete the inventory process of updating every existing asset location, we consider this recommendation only partially implemented.
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 ACTION**

Original target date for completion: March 1, 2021

As part of implementing Recommendation 1.1, the airport’s Finance Division updated its policies and procedures for lost and stolen assets so that document now includes all the necessary detail — such as when a police report or “surplus property” form needs to be completed.

In addition, the Finance Division began using a tracking spreadsheet to record all capital assets disposed of through online auction that were deemed lost or stolen. This helps ensure proper investigations are done and police reports are filed.

We reviewed and compared the tracking spreadsheet to a capital asset list from Workday and found only one capital asset recorded stolen in 2021. We reviewed the supporting documentation for this asset and noted that while the asset was reported stolen in December 2019, a police report was not filed until September 2021. Airport management said that was because the situation was not discovered until the July 2021 annual inventory, and the Finance Division was not immediately told the asset was stolen.

Once the division learned of it, staff members ensured a police report was filed and a “surplus property” form was obtained and documented in Workday.

Because the airport implemented a process to validate and track claims of lost capital assets, we consider this recommendation fully implemented.

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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 ACTION**

Original target date for completion: Dec. 1, 2020

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When we followed up on this recommendation, airport managers said they planned to continue enforcing penalties in alignment with contract terms. But they also said they have discretion on when to assess penalties related to monitoring the two asset maintenance contracts we analyzed during the original audit:

- The contract with Bombardier — which maintains the underground train passengers use to travel between the airport’s main terminal and its concourses.
- The contract with Thyssenkrupp — which maintains the airport’s elevators, escalators, and moving walkways.

After our follow-up, we concluded the airport did not implement the recommendation because the airport is failing to enforce penalties for noncompliance with contract terms.

We requested a sample of invoices from April 2021 and August 2021 for both the Bombardier and ThyssenKrupp contracts to determine the companies’ level of compliance. We reviewed each contract and the contractual penalties associated with each. Our review found the airport documented penalties in the invoices, but airport personnel provided only limited supporting documentation for the penalties.

Although the invoices we reviewed supported the penalties the airport did assess, the airport did not provide us with the original, unedited documentation both it and the contractor used to determine those penalties.

According to the airport, staff members review performance metrics supplied by a contractor to determine their accuracy. Once the airport finalizes the numbers, the contractor submits an invoice for billing. While this may be effective for the airport and for the contractor, it is not comprehensive enough for an independent reviewer to compare the initial metrics with the final ones and ensure each contractor fulfills its contract requirements.

Without the original, unedited documentation, an independent reviewer can only trust the summary documents the airport and the contractor developed to support the invoice.

Meanwhile, for both 2020 and 2021, the airport provided us with an incident list related to the Bombardier contract. It specified details such as how long an incident lasted, how long a train was inoperable, and the regular preventive maintenance of the trains based on mileage. The contract has specific requirements for Bombardier to follow regarding each of these metrics.
But we found several issues when reviewing the 2020 and 2021 incident lists:

- **MISSED CONTRACTUAL PENALTIES BECAUSE OF CLERICAL ERRORS** –
  The airport and Bombardier did not accurately identify the penalties that the airport should have assessed for December 2020 and June 2021.

  For example, we found Bombardier twice misclassified a 20-to-30-minute incident as being only a 3-to-10-minute incident — once for the December 2020 invoice and again for the June 2021 invoice. When we uncovered these errors, airport staff members said they were because of clerical errors. The associated missed penalties add up to $3,200.

- **INSUFFICIENT DOCUMENTATION TO JUSTIFY WAIVED PENALTIES DURING PANDEMIC** – In addition, the airport did not charge Bombardier penalties from March 2020 through December 2020 because of the COVID-19 pandemic.

  In a letter providing contractors with pandemic relief from undue costs, the airport wrote to Bombardier that "relief for any Performance Payment Deductions or Maintenance Penalties incurred by Bombardier during this period will be reviewed on a case-by-case basis with the city." The letter does not say penalties would be dismissed.

  The case-by-case review should have included documentation of why the airport charged certain penalties and why it dismissed others. For example, for the July 2020 invoice, the airport charged Bombardier a $2,000 penalty for one incident that lasted more than 30 minutes. But the airport dismissed a second incident of over 30 minutes long during the same month without any documented justification on the invoice.

  U.S. Government Accountability standards say documentation is necessary to ensure effective design, implementation, and operating effectiveness of an organization’s internal control system.\(^1\)

  If the airport charged for one incident but not the other, the airport must have determined that only one penalty was necessary. But no documentation of this decision is included with the invoice, nor was it in the list the airport provided to us of all incidents in 2020. In total, airport staff members declined to assess $3,600 in penalties to Bombardier, citing the pandemic relief letter as their reason.

- **UNALLOWED USE OF DISCRETION IN ASSESSING PENALTIES** – Lastly, in its response to this follow-up, the airport said staff members have discretion in assessing penalties. But the contract with Bombardier explicitly says penalties assessed because of how long an incident lasts are not up for discussion. Such penalties are based solely on how long an incident lasted.

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The contract does not say justifications are allowable to dismiss these contractual penalties. But we found the airport did so on at least two occasions.

The airport did not charge Bombardier any penalties for one incident in August 2021 or for another incident in September 2021 — which would have otherwise carried $3,400 in penalties. The airport said it did not charge the penalties because of extenuating circumstances related to changes in the train operating schedule as well as customer service needs. But using this kind of discretion does not comply with the contract terms.

Based on this evidence, we consider this recommendation not implemented.

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 ACTION

FULLY IMPLEMENTED

Original target date for completion: June 30, 2021

Since the original audit, the airport has added the Bombardier and Thyssenkrupp contracts to its Maximo system for recordkeeping purposes.

We found airport staff enter the contract terms and conditions in Maximo to correspond with contract deliverables, along with associated due dates. Maximo sends reminders and requests to the contractors when deliverables are due. The airport’s program administrator is responsible for checking Maximo on a weekly and monthly basis to ensure contractors are meeting their required deliverables.

We reviewed screenshots from the Maximo system showing airport assets from 2021, and we verified the system serves as a document repository as well as a monitoring tool, as we recommended.

Based on this evidence, we consider this recommendation fully implemented.
<table>
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<tr>
<th>Recommendation 1.9</th>
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<tr>
<td>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.</td>
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**AGENCY ACTION**

Original target date for completion: Maximo Data – Jan. 31, 2016; Power BI – Dec. 31, 2018

Airport officials use two computer systems — Maximo and Power BI — to help them monitor compliance with third-party asset maintenance contracts.²

The airport said when the original audit published in 2020 that they had already addressed the recommendation long before our audit began, but during the audit, we found the airport did not have a central monitoring tool for enforcing contract compliance terms.

Instead, the airport’s contract administrators relied on email notifications, weekly minutes, and a multitude of self-reported documents from contractors. We also found the airport was not using all resources available, such as the Maintenance Control Center’s incident and injury report, and the airport’s own internal audit reports to assist in monitoring compliance with maintenance contracts.

When we followed up on the recommendation, we found the airport is now using Maximo as the central monitoring tool and staff members are also using other available resources to assist in monitoring contract compliance.

Contractors enter data in Maximo and that data is exported daily into Power BI dashboards. The airport reviews contractors’ data for accuracy. The data includes schedule creation models, compliance information, and asset management information for tracking. We reviewed screenshots from both systems. We confirmed the airport uses Maximo as a data storage and compliance tool, while it uses Power BI to visualize the data in Maximo.

Regarding the last part of the recommendation about using all resources available to assist in monitoring compliance with third-party asset maintenance contracts:

We learned the airport’s Operations and Maintenance Contract Administration Division receives reports from the Maintenance Control Center when an injury or incident occurs at the airport involving the train or any elevators, escalators, or moving walkways. After receiving the injury or incident report, airport staff verify that mechanics respond to the incident within 10 minutes, in compliance with the contract terms.

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² Power BI displays contract monitoring data in a dashboard format, so airport staff can visualize contractors’ performance.
In addition, the division works directly with the airport’s internal auditors to address findings once internal audits are done. For example, the airport used its findings from a 2018 internal audit of the ThyssenKrupp contract to update the contractor’s scope of work for its 2020 contract.

Based on this evidence, we consider this recommendation fully implemented.

**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 ACTION**

Original target date for completion: Jan. 31, 2021

In response to our follow-up work, the airport said its standard operating procedures for the Bombardier and Thyssenkrupp contracts were up to date as of Dec. 6, 2021.

During the original audit, we found the airport did not provide specific details on how contract administrators should monitor the two maintenance contracts. For example, the policy and procedure did not include language that gave the airport discretion in charging penalties for noncompliance.

We reviewed and compared the revised 2021 procedure with the 2020 procedure the airport provided during the original audit. Although the airport updated the procedure twice — in both October and December 2021 — we found the airport made only some substantive changes to indicate what information staff members need to collect in Maximo and where they can find necessary information in the system to monitor a contract’s deliverables.

For example, the procedure says the airport’s operations and maintenance contract deliverables are in Maximo as of October 2021. But the procedure gives no direction on what required deliverables staff must add to Maximo or where in the system those deliverables should be uploaded.

The procedure also provides no direction on how to use Maximo to monitor a contract. When we mentioned to airport staff members that the procedure lacks details on the day-to-day use of Maximo, they pointed us to the airport’s Business Technologies Division and said we could get the detailed instructions on how to use Maximo from there.
While Business Technologies may be able to provide general guidance on how to use Maximo, that division’s staff members are not responsible for monitoring specific contracts.

The policy also still does not have any language that says airport staff have discretion to enforce penalties for noncompliance.

Meanwhile, we learned the procedure is meant to monitor only the Bombardier contract. The airport has no policy and procedure for monitoring the ThyssenKrupp contract. The airport said no separate procedure exists because the ThyssenKrupp contract has five recurring terms and conditions.

Regardless of whether the terms and conditions are recurring, if a contract administrator leaves the airport, a new employee might find it difficult to learn how to measure compliance, because they will likely be unfamiliar with the contract and the airport’s processes. Having a written policy and procedure would give new employees a roadmap to do their jobs and would assure management that the airport follows a consistent process.

While the airport updated its standard operating procedure for the Bombardier contract to include the new central monitoring tool, the airport did not add details on the day-to-day use of Maximo, which was the intent of the recommendation. In addition, the airport has no procedures on how to use Maximo for overseeing the ThyssenKrupp contract.

Therefore, we consider this recommendation only partially implemented.

**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 ACTION**

**Original target date for completion:** Aug. 14, 2020

In our original audit, we said the airport should review invoices and collect $1,200 for the ThyssenKrupp contract and $950 for the Bombardier contract. During our follow-up, we confirmed the airport collected almost all of the overdue contractual penalties for both contracts.

An invoice shows the airport collected $1,200 from ThyssenKrupp in July 2020.

For the Bombardier contract, the airport said it did not charge penalties the same way as with the other contract. A June 2020 invoice shows the
airport collected $900 of the $950 in late penalties. The airport did not charge the remaining $50, citing its discretion to provide pandemic relief for contractual penalties.

As discussed in the agency’s action for Recommendation 1.7, the airport provided cost relief to both Thyssenkrupp and Bombardier during the COVID-19 pandemic, with any relief for performance penalties from March 2020 to December 2020 being “reviewed on a case-by-case basis with the city.” The airport’s letter to the contractors did not say all performance penalties would be waived, only that they would be reviewed.

The specific $50 penalty the airport did not charge is related to a single station door malfunction. The airport told us it waived all penalties for single-door malfunctions because of construction on the station doors. But the only evidence the airport provided of waiving that charge was an email sent to staff at the beginning of 2022, long after the grace period for pandemic relief.

The contract with Bombardier is clear that a $50 penalty will be charged for any single-door malfunction that lasts more than 3 minutes. Because the airport did not provide a documented and approved policy for not enforcing that penalty, we cannot consider this recommendation fully implemented.

Therefore, we consider this recommendation only partially implemented.

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 ACTION**

No action was taken to implement this recommendation because the airport disagreed with the recommendation made in our original report.

This was the airport’s response to the recommendation when the original report was issued in December 2020:

> 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.

See page 4 to read our addendum, which applied to both this recommendation and Recommendation 1.4.

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 ACTION

Original target date for completion: March 1, 2021

In line with recommendations 1.1 and 1.2, the airport’s Finance Division updated its policies and procedures for properly transferring and disposing of assets.

While the airport made these documents readily available for airport staff to use and reference, the airport has not finalized training and communication efforts to ensure staff are properly instructed on these processes. Airport management said these should be rolled out in late March or early April of 2022.

As part of these efforts, the Finance Division plans to:

- Present a training.
- Send notifications through the airport’s internal weekly newsletter.
- Post on its internal communication channels.
- Send specific emails to asset custodians.

Because the training will not be mandatory, the airport should confirm that asset custodians and other staff responsible for handling capital assets have received proper instructions so the airport can better comply with the updated policies and procedures.

Although the airport has made progress toward finalizing its training and communication efforts, it has yet to roll them out to airport personnel. Therefore, we consider this recommendation only partially implemented.
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

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 ACTION

Original target date for completion: March 31, 2021

The airport is making progress toward ensuring data integrity, but the job is incomplete.

Airport officials said they document asset discovery, identification, and onboarding requests through policies and procedures as well as service requests in Maximo, the airport’s computerized maintenance management system.

We reviewed the policies and procedures to determine whether they sufficiently address the data integrity issues in Maximo, as called for in the recommendation. Our work revealed two issues:

- **THE PROCEDURE TO ADD ASSETS IN MAXIMO LACKS SUFFICIENT DETAIL** – The procedure to add assets in Maximo provides step-by-step directions and was last revised in June 2021. We found it provides instructions on the minimum required data that airport staff should put in Maximo, as well as instructions for maintenance planners to review and approve each asset’s data.

  However, the procedure does not provide detailed instructions for what reviewers should look for when reviewing and approving an asset in Maximo, as well as how they should verify the accuracy of the data. According to airport officials, maintenance planners verify the accuracy of the data and ensure the staff member who entered an asset also established a work plan for the asset in the system.

  Although airport managers know what reviewers should look for, a new maintenance planner may not without an accurate and complete policy and procedure.

- **TWO OTHER PROCEDURES WERE LAST UPDATED IN 2019, A YEAR BEFORE THE ORIGINAL AUDIT PUBLISHED** – Airport personnel provided us with two procedures to show how they implemented this
recommendation — but the airport last revised both policies in November 2019, over a year before the original audit was published in December 2020.

The procedures relate to importing asset location information across systems and tagging, entering, and reviewing assets. Both procedures provide little detail on the steps airport staff should take in Maximo to complete tasks.

The airport also provided another procedure that provides step-by-step directions for managers and supervisors to remove an asset from service in Maximo. The airport revised the procedure in June 2021, which is three months after the airport said it would implement this recommendation.

As part of assessing implementation, we reviewed examples of asset service requests entered in Maximo, as well as a complete list of 2021 service requests. We found several service requests with incomplete data fields in the spreadsheet. For example, 59.5% of the service requests did not have an asset number and 45.5% had no location for the asset.

Airport officials said they cannot determine how many assets are missing from Maximo. They told us during the original audit that, in 2020, the airport’s Asset Management section identified over 850 assets that were not in Maximo.

Although the airport cannot determine how many assets remain unaccounted for, officials said they are trying to fix this problem by having both airport staff and contractors tag assets that are not already tagged. They do this during ongoing projects and preventive maintenance work to make sure all assets are added to Maximo.

The airport uses an electronic asset data-capture system through Maximo for new assets installed as part of airport construction projects. The airport also assesses assets’ physical condition once every five years, and those walk-throughs also identify assets not already tagged.

Lastly, we reviewed a list of the assets scheduled to receive preventive maintenance. This list had schedules for preventive maintenance — but no actual dates of when the maintenance would be done.

We reviewed a dashboard that shows the percentage of preventive maintenance completed, in progress, and deferred. The dashboard showed about 75% of the work orders were complete, or closed, in 2021. The remaining 25% were still in progress or deferred. The airport said the delays in completing the preventive maintenance in 2021 were because of competing priorities and a lack of available staff and parts.

Airport officials said they manage an estimated 27,000 assets. With such a large portfolio and the number of walk-throughs and visual inspections necessary — while also coping with understaffing — they are challenged in capturing an accurate asset inventory.
Nonetheless, based on the information we reviewed, we consider this recommendation only partially implemented.

**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 ACTION**

*Original target date for completion: July 1, 2021, for fleet, facilities, and maintenance administration assets; Sept. 1, 2021, for field maintenance*

Officials said this recommendation is still in progress, because the airport’s Sustainability and Maintenance divisions have not conducted an analysis to determine the adequate staffing levels needed for preventive maintenance activities.

Airport officials said they cannot determine adequate staffing levels until they make more progress in developing a preventive maintenance program. This includes developing formal policies and procedures for the program by creating standards related to performance metrics and preventive maintenance schedules for each type of asset group.

So far, the airport has completed its evaluation for the automated perimeter security gates, as we will discuss in the airport’s implementation of Recommendation 2.4. However, airport management said the time-consuming process of going through all asset categories will take three to five years.

Meanwhile, airport officials said the city has completed two trades classification studies, which the divisions have used to reclassify positions and raise the pay of over 70% of their employees to help with retention. This study was not a staffing analysis — but because the airport said a lack of staff was a concern in developing a preventive maintenance program, the city’s trades classification studies could help the airport with retaining and recruiting qualified and knowledgeable staff.

Nonetheless, because the divisions cannot determine the adequate staffing levels they need until the airport makes progress on its overall preventive maintenance program, we consider this recommendation not implemented.
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 ACTION**

Original target date for completion: July 1, 2021, for fleet, facilities, and maintenance administration assets; Sept. 1, 2021, for field maintenance

The airport’s Maintenance Division has not yet defined the criteria for a preventive maintenance budget as we recommended. Airport staff members said this recommendation was in progress, but they provided no supporting documentation for us to verify that.

Similar to the airport’s efforts to implement Recommendation 2.2: To determine the criteria for a preventive maintenance budget, the Maintenance Division must evaluate each asset category — which includes developing and implementing policies and procedures for routine preventive maintenance activities. And the airport must do this before it can complete a staffing analysis or determine budget needs.

If the Maintenance Division focused on only critical assets, the airport said it could complete the evaluation within a year. But to comprehensively assess every asset category is expected to take about three to five years.

Because the division cannot determine the budget criteria it needs until the airport makes more progress on the overall preventive maintenance program, we consider this recommendation not implemented.

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 ACTION

Original target date for completion: July 1, 2021

The airport’s Sustainability and Maintenance divisions are developing a comprehensive preventive maintenance program for facility assets. Airport personnel have been working to clean up discrepancies of assets by moving data to proper locations based on organizational structure. This involves moving assets, employees, and financial data.

In addition, the airport developed a preventive maintenance quality control checklist for supervisors and processes related to enhancing the efficiency of work orders for preventive maintenance.

As discussed in relation to previous recommendations, airport managers said they have been developing asset program documents for the various capital asset categories.

As mentioned in the agency’s implementation efforts for Recommendation 2.2, the airport created a document for its automated perimeter security gates and is using that as a template for all other asset categories.

We reviewed that document and found it provides a variety of information — such as a definition for the asset and what performance metrics it manages, any corrective and preventive maintenance, and any deviations from recommended preventive maintenance schedules. Airport management said once each asset category has a similar asset program document, those documents would be combined into a comprehensive preventive maintenance program.

As discussed, however, airport officials said the individual asset program documents need to be done before the airport can assess its staffing and budget needs for overall preventive maintenance. The effort already made with the asset program documents will be used as a template for future progress.

Because of these efforts, we consider this recommendation partially implemented.

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 schedule.

**AGENCY ACTION**

**Original target date for completion: Sept. 1, 2021**

While the airport’s Sustainability and Maintenance divisions updated their procedures for entering assets in Maximo, the procedures do not specify the process for deviating from recommended preventive maintenance schedules.

As discussed in the agency’s action for Recommendation 2.4, the divisions are developing asset program documents for the various capital asset categories. We reviewed a copy of the asset program document for the automated perimeter security gates and noted it includes a section about deviating from the operations and maintenance manuals.

But as previously discussed, airport management said it will take three to five years to go through all assets and create a comprehensive preventive maintenance program.

Meanwhile, the airport has a new process to document preventive maintenance changes the Maintenance Division requests. But we found the data in this report was often incomplete and it did not always include key asset attributes — such as the asset number, location, and types of services that were or need to be done.

Because the divisions are making progress and ensuring asset program documents for the various asset categories will include a section about deviating from the operations and maintenance manuals, we consider this recommendation partially implemented.

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**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 ACTION**

**Original target date for completion: March 31, 2021**

The airport’s Sustainability and Maintenance divisions defined a central repository — called Unifier — to house key asset documentation, such as
warranties. They also ensured necessary staff, including those who work on warranty-related issues, have access to the platform.

The divisions’ policies and procedures outline the process for staff to upload project documents to Unifier once a project is almost done. The Airport Infrastructure Management Division manages all project submittals in Unifier and notifies the Asset Management team when a project is substantially complete, so that warranty documents and operations and maintenance manuals can be found by Asset Management staff who work on warranty issues.

We obtained a list of all capital assets in Maximo that had an active warranty, and we randomly selected 20 out of 467 assets. When we asked for the warranty documentation for these 20 assets, airport staff provided documentation for 17 of them. The remaining three were tied to a project that was still in progress, and airport staff members said the warranty documentation would not be available until the project was done.

We requested these warranty documents to ensure Asset Management personnel could provide them in a timely manner. During the original audit, we were told they had to look through several document repositories and were unable to provide all warranty documentation.

Meanwhile, the divisions’ policies and procedures list all staff who should have access to Unifier — such as maintenance planners, project managers, contract administrators, and the Asset Management team. We reviewed a list of all staff with access to Unifier and confirmed the list aligned with those who should have access.

Airport staff members said Unifier administrators review system reports — such as a report of staff’s last logins — every three months to detect and remove all inactive accounts.

Because the airport provided all available warranty documentation we requested and because the divisions ensure all necessary staff have access to the repository as outlined in the policies and procedures, we consider this recommendation fully implemented.
The **Auditor** of the City and County of Denver is independently elected by the residents 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.

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