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Airport Credentialing Office Planning and Design

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Sponsored by the Federal Aviation Administration

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National Safe Skies Alliance (Safe Skies) is a non-profit organization that works with airports, government, and industry to maintain a safe and effective aviation security system. Safe Skies' core services focus on helping airport operators make informed decisions about their perimeter and access control security.

Through the ASSIST (Airport Security Systems Integrated Support Testing) Program, Safe Skies conducts independent, impartial evaluations of security equipment, systems, and processes at airports throughout the nation. Individual airports use the results to make informed decisions when deploying security technologies and procedures.

Through the POST (Performance and Operational System Testing) Program, Safe Skies conducts long-term evaluations of airport-owned equipment to track and document a device or system's performance continuously over its life cycle.

Through PARAS (Program for Applied Research in Airport Security), Safe Skies provides a forum for addressing security problems identified by the aviation industry.

A Board of Directors and an Oversight Committee oversee Safe Skies' policies and activities. The Board of Directors focuses on organizational structure and corporate development; the Oversight Committee approves PARAS projects and sets ASSIST Program priorities.

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The Program for Applied Research in Airport Security (PARAS) is an industry-driven program that develops near-term practical solutions to security problems faced by airport operators. PARAS is managed by Safe Skies, funded by the Federal Aviation Administration, and modeled after the Airport Cooperative Research Program of the Transportation Research Board.

Problem Statements, which are descriptions of security problems or questions for which airports need guidance, form the basis of PARAS projects. Submitted Problem Statements are reviewed once yearly by the Safe Skies Oversight Committee, but can be submitted at any time.

A project panel is formed for each funded problem statement. Project panel members are selected by Safe Skies, and generally consist of airport professionals, industry consultants, technology providers, and members of academia—all with knowledge and experience specific to the project topic. The project panel develops a request of proposals based on the Problem Statement, selects a contractor, provides technical guidance and counsel throughout the project, and reviews project deliverables.

The results of PARAS projects are available to the industry at no charge. All deliverables are electronic, and most can be accessed directly at www.sskies.org/paras.

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SUMMARY

Airport security credentialing services are critical to the operations and security of the airport environment. Every airport worker seeking access to secure areas of the airport must visit the credentialing office. Designing the office so that it supports the credentialing processes can facilitate a more efficient and pleasant process for office staff and customers.

Airport credentialing office personnel and airport planning departments need a consolidated source of strategies, methods, techniques, and practices for designing and constructing or retrofitting a credentialing office. This report highlights practices that have been successful at airports around the country. It also includes examples of unsuccessful practices to help airports avoid known challenges. The report was designed to provide options for any airport credentialing office, regardless of number of credentialed airport workers, available square footage, or resources.

PARAS ACRONYMS

ACRP	Airport Cooperative Research Program
AIP	Airport Improvement Program
AOA	Air Operations Area
ARFF	Aircraft Rescue & Firefighting
CCTV	Closed Circuit Television
CFR	Code of Federal Regulations
DHS	Department of Homeland Security
DOT	Department of Transportation
FAA	Federal Aviation Administration
FBI	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency
FSD	Federal Security Director
GPS	Global Positioning System
IED	Improvised Explosive Device
IT	Information Technology
MOU	Memorandum of Understanding
RFP	Request for Proposals
ROI	Return on Investment
SIDA	Security Identification Display Area
SOP	Standard Operating Procedure
SSI	Sensitive Security Information
TSA	Transportation Security Administration

ABBREVIATIONS, ACRONYMS, INITIALISMS, AND SYMBOLS

ADA	Americans with Disabilities Act
APM	Automated People Mover
BPO	Badges and Permit Office
CBP	Customs and Border Protection
CBT	Computer Based Training
CHRC	Criminal History Record Check
COS	Colorado Springs Airport
CRI	Color Rendering Index
Db	Decibel
DEN	Denver International Airport
HEPA	High Efficiency Particulate Air
HVAC	Heating, Ventilation, and Air Conditioning
IAD	Washington Dulles International Airport
ID	Identification
IDMS	Identity Management System
IES	Illuminating Engineering Society
K	Kelvin
KPI	Key Performance Indicator
LAX	Los Angeles International Airport
LCD	Liquid Crystal Display
LED	Light Emitting Diode
MBO	Main Badging Office
MSO	Missoula Montana Airport
OAK	Oakland International Airport
ORAT	Operational Readiness, Activation, and Transition
OSHA	Occupational Safety and Health Administration
QL	Qualitative

QR	Quick Response
QT	Quantitative
SAN	San Diego International Airport
SBO	Satellite Badging Office
SCS	Security Credentialing Section
SEA	Seattle-Tacoma International Airport
STC	Sound Transmission Class
TA	Trusted Agent

SECTION 1: INTRODUCTION

Airports seeking to enhance their security credentialing services often focus efforts on process improvements to increase customer service, efficiency, and security. It is ideal if the physical design and configuration of the airport credentialing office supports the refined processes. This can be achieved by carefully considering where the facilities are located, as well as how to optimize circulation and eliminate congestion or cross traffic between credentialing office customers and airport passengers. The physical location and layout of the credentialing office have a direct impact on the efficiency of several key functions and processes. Both should accommodate the current demand but also plan for future demand as the airport continues to grow. As much as possible, the design of the credentialing office should enable the efficient performance of critical activities, enhance customer service, and increase office staff workplace satisfaction.

Credentialing requirements are generally similar amongst commercial airports, but each airport has unique considerations based on the airport's size, location, resources, relationships with local governments, significant airline or tenant presence and agreements, technology solutions (e.g., identity management system [IDMS], appointment management systems, virtual queuing), available space, resource levels, co-located functions (e.g., credentialing, visitor passes, and vehicle permits), number of credentialing transactions and anticipated growth, and other factors. Additionally, many credentialing offices face similar challenges, but often address them with a variety of strategies.

This research is a complement to PARAS 0020 and PARAS 0036. PARAS 0036: *Airport Credentialing Efficiency Toolkit* presents strategies, best practices, checklists, and associated considerations to assist airports in assessing their processes and implementing changes to improve the efficiency of their credentialing process.

PARAS 0020: *Strategies for Effective Airport Identification Media Accountability and Control* discusses strategies airports can implement to enhance controls and accountability of airport credentials, including security controls during credential issuance and renewal; audit strategies; suggestions to mitigate lost, stolen, unreturned, and unaccounted-for credentials; strategies to enhance credential retrieval; and Trusted Agent (TA) considerations.

SECTION 2: CONTINUOUS IMPROVEMENT

Airports and aviation security requirements are constantly growing and changing, which requires the credentialing office to grow and adapt. Continuous improvement efforts can help the airport monitor credentialing office activities and determine when changes are necessary to improve operations and performance.

2.1 Needs Assessment

A needs assessment is a critical component of designing a credentialing office. The assessment will help identify opportunities to improve the efficiency of processes, design, and customer service by asking and answering a series of questions. While there is no one-size-fits-all approach, working through questions like these will help the airport determine whether their current credentialing office is meeting their needs, where it is falling short, and how changes to the facility may help improve performance.

Please note that the questions and answers provided here are for reference and can be used as a starting point for the needs assessment. Each airport will have its own distinct set of questions, and the answers to these questions will lead to further questions as root causes are progressively analyzed and addressed.

- What "problem" or "need" are you trying to solve?
  - Difficulty accessing the office
  - Long transaction times
  - Delays in issuing credentials to workers
  - Insufficient parking
  - Long queues or congested areas in the office
  - Insufficient TA workstations
  - Low office staff performance, job satisfaction, morale, and/or productivity
- What is the current state of the process, facility, system, or equipment?
  - There is no convenient access for employees coming from [area] to the office
  - Entering applicant information is a manual process
  - Not enough fully equipped TAs or training workstations to accommodate the demand
  - Inadequate storage for files, supplies, and equipment
- What is the desired outcome? What do your customers and stakeholders expect?
  - No more than 10 people waiting to be served
  - Average transaction times under 10 minutes
  - Addition of two TA workstations
- Do you have data sources to help with decision making?
  - Transaction times from a queue management system
  - Audit data from a credentialing system or IDMS
  - Blueprints or to-scale drawings of the space
  - Customer feedback data
- Why is the current state underperforming?
  - Office location
  - Insufficient signage/wayfinding to facility

  - TAs with no available workstation
  - Insufficient number of computer-based training (CBT) workstations
- What is needed to reach the desired outcome?
  - New office configuration and purchase of equipment and furniture
  - Location near public transportation or airport shuttle route
  - Efficient layout of TA workstations
  - Inadequate employee amenities such as break rooms or lockers
  - Additional infrastructure such as heating, ventilation, and air conditioning (HVAC) / air exchangers, electric power outlets, or IT system access
- How will you measure the success and effectiveness of the new process, facility, system, or equipment?
  - Analysis of wait times
  - Credentialing process metrics/ key performance indicators (KPI)
  - Feedback surveys

A comprehensive needs assessment will encompass both the current state and future planning for the space being reviewed. Activities may include external and internal customer feedback analysis through surveys, focus groups, or comments collected from customers and staff. Identifying common causes of frustration or dissatisfaction can help determine future project priorities. Enlisting a group of relevant stakeholders to walk through an existing facility and provide feedback about what works well and what could be improved can yield valuable insights to inform remodeling or relocation efforts. Credentialing staff are an integral resource; their feedback should be considered and incorporated as appropriate, because they have the deepest knowledge and experience of how the environment they work in helps or hinders their performance and the operation of the entire office.

Data analysis is key to an accurate needs assessment. The data should be collected from a variety of sources (e.g., IDMS, queue management, appointment scheduler, blueprints) to create a more holistic view of the processes in the credentialing office. In particular, data focusing on customer demand levels and transactions times will help determine workflows that may warrant more detailed analysis. When possible, data from different sources should be used to substantiate reported issues before significant resources are committed to resolving them.

Third parties (e.g., consultants, specialists, subject-matter experts) can be engaged to conduct on-site observations and interviews with stakeholders for an objective analysis of the office operation and performance. External resources often bring a new perspective to uncovering and addressing issues that the credentialing staff have come to accept as standard and correct. Performing analyses on the process flow and layout of the office space can identify bottlenecks, inefficiencies, and opportunities for improvement. Common tools used to perform this process analysis include computer simulations, spaghetti diagrams, flowcharts, and trellis charts.

The needs assessment may reveal a need for technology solutions. Engaging the airport's IT department, technology vendors, and other airport operators, as well as attending industry association conferences, can provide information on current and future technology trends. There may be a need to upgrade or add additional technology or infrastructure to accommodate new technology solutions.

KPIs and benchmarks should be identified before implementing or changing processes. Some airports have already established certain KPIs and goals (e.g., 10-minute maximum customer wait time for an agent). Important data points that are commonly used include:

- Number of:
    - Current active credentials
    - Credentials printed per day/week/month/quarter/year[1]
    - Active companies
    - Transactions per day/week/month/quarter/year
        - Overall
        - Per shift/team
        - Per TA
    - Transaction types
        - New applicants
        - Renewals
        - Credential pick-up
        - Fingerprints
        - Visitor pass requests
        - Credential reprints (damaged, lost)
        - PIN resets
    - Appointment reservations, availability, and no-shows
        - Overall
        - By company
    - Criminal History Records Checks (CHRC) reviewed
    - CHRCs requiring interview
    - Errors in applications resulting in rejection or findings
    - Credential failures
    - Denied credentials
    - Suspended and revoked credentials
    - Walk-in customers, no appointment
    - Missed appointments
    - Lost/Unaccounted for badges
    - Authorized signatory training sessions
    - Rap Back notifications
- Times/Durations:
    - First available appointment
    - Processing time, appointment length
    - Time from application to credential issuance
- Average:
    - Transaction times for various transaction types
    - Credentialing processing time from application to credential issuance
    - Wait time for first appointment availability

[1] Comparing the number of fingerprints started to the number of credentials issued within a time frame can provide insight into the attrition rate of airport workers (see Case Study 2).

- Wait time for Security Threat Assessment results
- Wait time for TA availability

PARAS 0036 *Airport Credentialing Efficiency Toolkit* has a Self-Assessment Tool to identify the credentialing office's current efficiency and maturity within each of the major challenge areas identified in the Toolkit.

Case Study 1. Los Angeles International Airport Security Credentialing Section Needs Assessment

The Los Angeles International Airport (LAX) Security Credentialing Section (SCS) processes more than 52,000 security credential requests annually, with demand increasing each year. The SCS retained a consultant in 2016 to assess the SCS processes with the primary goal of identifying capability gaps and process bottlenecks.

The assessment included a review of relevant documents to identify the SCS processes, time studies of each process step, and a study to identify and document the expectations of internal and external stakeholders. A Value Stream Map was developed to document the flow of materials/data, information, and people in the current process. The SCS staff worked with the consultant to classify each step of the process into three categories of value:

- Value added – Steps that move the process closer toward what the customer wants
- Non-value added, but required – Steps in the process that do not add value to the customer, but are required by natural or human laws (e.g., walking to a printer, approval required by the Airport Authority)
- Non-value added – "Waste" or steps in the process that are neither required nor add value to the customer

The data gathered during the assessment and the Value Stream Map were used to develop a simplified computer simulation that estimated the staffing requirement to fulfill the SCS current and future demand.

The assessment identified and prioritized process improvement projects to plan the transformation from the current state to the desired future state. The findings, recommendations, and list of projects identified during the assessment were used during the planning and design of the Security Badge Office that opened in 2023. Key among these was moving the office to a location that is more easily accessible to applicants. The previous office was on the west side of the airport and was not convenient for airport terminal employees. No shuttle service was available, and public transportation was limited to two bus stops per day. The new location is in a transit hub, making it more convenient for all applicants.

2.2 Planning for Future Growth

Futureproofing the credentialing office requires preparation for future projects, trends, technology improvements, and changes to processes. When planning for future growth, airport operators often refer to historical data, including number of applications, fingerprint transactions, newly issued credentials, and renewals.

It is also key to look at the airport's current and projected growth, including number of projected passengers; increased airline service; new concessionaires, passenger service companies, service providers, and ground handling companies; and construction work that will increase the number of workers requiring an airport-issued credential or temporary visitor pass, as applicable. Monitoring contractual and lease changes involving large companies operating at the airport is essential. These operational changes can be disruptive to the credentialing operations responsible for collecting ID media of departing workers and processing the applications of the new workforce.

PARAS 0036 *Airport Credentialing Efficiency Toolkit* has a Staff Forecasting tool that uses historical monthly processing rates to forecast future demand.

Design factors to consider to futureproof the office include:

- Add more infrastructure (power, network, etc.) than currently needed to prepare for new and upgraded technology and equipment
    - More power outlets in all major areas of the office, in locations that allow for multiple layout configurations
    - Separate circuits dedicated for high-energy appliances (e.g., space heaters)
    - Network connection locations for more layout configuration options; wireless access points can reduce or eliminate the need for network connections
    - Cord management systems that keep cables tucked away but allow for easy access
- Develop plans for adding TA workstations without expanding footprint of facility (i.e., build it slightly larger than immediately needed and have a plan to use the additional space)
- Add more queuing and seating space to accommodate growth in customers
- Select adjustable environmental features, such as dimmable lighting and HVAC comfort zones
- Select modular furniture to accommodate layout reconfiguration and expansion
- Provide ergonomic seating and workstations with a wide range of adjustments to accommodate a variety of staff needs
- Plan for adequate storage of required supplies, materials, and redundant equipment
- Choose sustainable and durable construction materials and furniture to delay natural wear and tear requiring replacement or repair
- Implement remote training to reduce the required number of training stations and waiting area seats

The coexistence of updated and legacy equipment, technology, and systems poses a unique challenge for airport credentialing offices interested in deploying new technologies. Integrating the current systems with newly procured technologies can be a time-consuming, expensive, and sometimes impossible challenge. Futureproofing of the credentialing office can be greatly assisted by technology integrators, who can assist with research into new and future technologies. Integrators should be consulted during the needs assessment to determine viable technology options and their benefits and disadvantages. They are also available to assist with integration of the existing and new systems by serving as a central point of contact for the airport and vendor. The technology integrator can work with the vendor to customize the new technology and properly connect the systems.

2.3 Evaluating Changes

Airport operators have two primary methods to help evaluate how certain changes to credentialing processes or layout may impact the efficiency of the credentialing office: systems data analysis and feedback assessments.

2.3.1 Systems Data Analysis

Proper analyses require a benchmark of the current processes. If data that characterizes the current credentialing office processes is not being collected, data collection should begin immediately. Some airports have systems that can provide automatic reports based on filtered options, while others manually enter data into Excel workbooks and Outlook calendar invites. It may be beneficial to start with one data point from one data source (e.g., number of transactions each day for a week) that can be expanded as more data sources and data points are added (e.g., busiest time of the day).

After a test, or pilot, period with the process adjustments, the benchmark data is compared with data collected during the pilot period to identify the impact of the process change. The airport operator can use the data analysis to determine whether the changes improved the process. More adjustments may be needed to find the most effective process for the credentialing office.

Credentialing offices with an IDMS, queue management system, appointment scheduling system, or other data tracking source can use the system's reporting capabilities to track various transactions and activities. When multiple systems are integrated, the office manager may be able to track a single customer from the time they make the first appointment until they are issued a credential, and beyond.

The data set spanning the entirety of the customer experience over the credential's life cycle (from initial application to deactivation) can provide significant insight into the credentialing process and identify inefficient steps that can be eliminated or improved.

Some airport operators use off-the-shelf products, such as Microsoft Power BI, to analyze their data for more complex trends.

A variety of analyses can be conducted based on a multitude of combinations of potential data sources, data tracked, and needs being assessed. Below are some common analyses used at airport credentialing offices, but the examples listed in no way encompass all possible analyses.

- **Customer transactions by type** (e.g., new, renewal, fingerprint) can be tracked each hour of the day throughout the week to identify the peak transaction periods. These peaks can then be used to identify alternate strategies to deploy staff and/or adjust office hours, as necessary. For example, the hour the office is closed for lunch could be adjusted to fall between peak periods, or the office open days could be adjusted to accommodate new shift schedules. Aligning the office hours and number of staff serving customers throughout the day with the peak trends can more efficiently utilize staffing resources and improve customer service since transactions can be completed at times that are convenient to customers.
- **Tracking no-show appointments by customer and company** may identify a need to discuss the impact of no-shows with a specific authorized signatory, or a need for policy adjustments that would penalize the customer or company for failure to show at the appointment.
- **Combining or integrating systems data** can identify more complex trends. For example, tracking the length of time it takes for applicants to complete each stage of the credentialing process may identify bottlenecks and opportunities for improvement. Some airports have used this information to identify the percentage of customers who drop out of the credentialing processes at different stages. This may indicate high turnover in certain populations, or possibly that the time to obtain an airport credential is too long and consequently potential employees seek employment elsewhere.
- **Queue management systems and check-in procedures** (e.g., sign-in list) can track when a customer first arrives at the credentialing office. This data point can be compared to the TA's system to show how long the customer waited for an available agent. The arrival times can be compared to the appointment system to identify the average early and late arrival time. Policy changes may be needed to restrict arrival times to reduce crowding in the waiting room, or to consider a customer a no-show after a certain time frame.

Case Study 2. Washington Dulles International Airport Pass & ID Office – Data Analysis

Washington Dulles International Airport's (IAD) Pass & ID Office Manager conducts regular analyses of attrition rates using data from the queue management system and the IDMS.

The data is pulled into a business intelligence reporting system, and the number of active companies, fingerprints, and credentials printed are used to identify how many applicants completed the full credentialing process, and which companies had the highest number of applicants that did not receive a credential. IAD starts about 6,000–7,000 fingerprinting processes each year, but the credentialed population is not growing by that number. The Pass & ID Office uses the business intelligence reporting system to monitor and report on this data.

2.3.2 Feedback Assessments

Stakeholder feedback is a useful tool for identifying areas of the credentialing office for improvement. It allows customers and staff to share their experiences and suggestions to help improve the credentialing office and processes. This provides additional data points when conducting the needs assessment and indicates areas where additional analysis is needed to determine the causes of inefficiencies.

Feedback assessments examine input from stakeholders to identify areas in need of improvement and innovative solutions. This feedback can be gathered through several methods, and can be quantitative (QT) or qualitative (QL).

QT feedback can provide data that can be measured and compared to past data for insights. However, QT surveys restrict the submitter's response options by requiring a choice among options or a specific type of information. Examples of QT feedback include:

- Scale ratings, such as 1–10 or number of stars out of five
- Yes/No responses
- Agree/Disagree statements
- Multiple choice options, such as a happy, neutral, or mad face
- Specific data in a specified format, such as number of minutes spent waiting in the lobby for a TA

QL feedback is typically composed by the submitter as a custom response to the question. This feedback can provide deeper insight into each submitter's experience, but the responses require more work to analyze and may not be easily compared. Examples of QL feedback include descriptions of experiences, suggestions for improvement, and compliments. This input must be analyzed individually to identify trends in the feedback. This task may require dedicated staff with specialized skills to collect and analyze the data in order to perform a complete assessment with meaningful and actionable results.

A mix of questions designed to elicit QT and QL feedback can provide a much more holistic understanding of the stakeholder's input. An example of a customer experience survey is presented in Appendix A.

Whenever possible, airports should follow up on feedback to inform the submitter of any changes made based on their input, or inform them of the reasons why it could not be implemented. This creates a feedback loop that encourages stakeholders to continue providing feedback. Incentivization can also encourage participation in the feedback assessment. This can be done in a variety of ways, such as small tokens of appreciation (e.g., airport branded items), entrance into drawings for prizes, or recognition of good ideas in a public setting with a certificate.

Some individuals do not feel comfortable sharing honest criticisms with leadership or the person being criticized. Anonymous feedback options provide opportunities for all stakeholders to voice their opinions in a safe and secure environment.

Physical suggestion boxes allow stakeholders to submit written feedback. In many cases, the question is generic (e.g., "How was your experience today?") and the feedback is qualitative. The boxes are often stationed at the credentialing office entrance/exit for maximum visibility, but they may also be placed in common areas such as waiting areas and training rooms. Respondents have the option to submit anonymously, if desired.

Providing ways to submit suggestions virtually may increase the amount of feedback the credentialing office receives. Email is a common form of a virtual suggestion box; the airport operator sets up an email address for stakeholders to send communications. Another option is to subscribe to a virtual suggestion platform, which would allow stakeholders to submit their comments, critiques, observations, and ideas online. These platforms are typically mobile-friendly and enable stakeholders to submit anonymously from any device. Some airport websites and online employee portals have electronic forms that could also be used to gather feedback. The virtual platform can be promoted through signage, reminder notifications, and announcements during security meetings.

Surveys are designed to elicit a specific type of response to a series of customized questions. Responses may be QT and/or QL depending on the information being solicited. Paper surveys can be completed and dropped off in a designated location (e.g., suggestion box). Digital surveys can be accessed by clicking a link in an email or text, scanning a QR code, or accessing a tablet or computer stationed in the credentialing office for the purpose.

Focus groups gather a small selection of stakeholders together to discuss a single topic. The group dynamic can contribute to a productive discussion and offer a variety of perspectives. Many airports conduct informal focus groups to discuss credentialing office changes at stakeholder security meetings.

Some individuals do not feel comfortable speaking up in a group setting but may share feedback in an informal setting, such as during a lunch break or a credentialing transaction. A spreadsheet or document can be created that allows credentialing office staff a place to add comments, suggestions, critiques, and compliments from customers and coworkers throughout the year. The comments can be reviewed during the needs assessment to identify areas for improvement and potential projects.

Design feedback can also be collected by using mock-ups of a possible office layout and asking staff to simulate performing common tasks. This activity would be followed by a discussion of what parts of the layout work well and what parts could use further adjustment. The model can be quickly adjusted and the exercise repeated iteratively until the best practical solution is identified. Multiple airports using this technique praised its ability to make live changes and to determine the optimum credentialing office design by incorporating feedback from the staff. This approach also builds buy-in from staff, smoothing the way for implementation.

SECTION 3: LOCATION CONSIDERATIONS

Office space in airports is a highly sought-after commodity for the multitude of airport departments and tenants, and is sometimes a high-value revenue source. As a result, airport operators rarely have the ability to choose the ideal location for the credentialing office and its associated functions, and often must accept any space that is made available.

There are two significant decisions that need to be made once the airport operator has determined the existing credentialing office no longer meets current or future needs:

1. Can the current space be remodeled to meet the credentialing office traffic and staffing needs while minimizing operational impacts?
2. If not, what is the best location for the majority of airport workers requiring an airport credential, visitor pass, key, or parking permit to easily access via personal vehicle, public transportation, or walking? This is a critical factor in providing convenience to the airport community and reducing operational impact that may result from workers being away from their workstation.

These decisions cannot be made by the credentialing office alone. Partner departments and internal stakeholders may include Real Estate/Properties, Capital Programs/Engineering, Airport Business Office, Planning, and IT. Negotiations with occupants of neighboring spaces, including other lessees, may offer the ability to expand the office footprint.

3.1 Remodel or Relocate

Airport operators should consider the following questions when deciding whether it is more beneficial to remodel the existing space or relocate:

- Would a layout reconfiguration improve workflow and improve the credentialing office's ability to meet customer and staff needs for the foreseeable future?
- Would technology or equipment solutions improve the credentialing processes?
- Is there available space next to the existing office to enable expansion?
- What options are available with the given budget?
- What are the current and future demand and associated staffing considerations?
- Are there environmental concerns (e.g., ventilation, flooding, lighting, or seismic activity)?

To ensure an objective process, the results of the needs assessment should also be used to support the decision.

Many airports reported remodeling credentialing their offices as part of a terminal modernization project, which can create opportunities to remove and add walls to change the office footprint.

3.2 Terminal, Offsite, or Split Operations

When the airport operator determines that relocating is necessary to accommodate increased demand on the credentialing office, the location of the new office becomes a critical decision. Most credentialing office customers visit before or after their shift, or on their lunch break, so the ideal location will reduce the time needed to reach the office for the largest population of credentialed workers. For most airports, this location will be within the public area of the terminal, although an offsite location may be more appropriate if the majority of credentialed workers are tenants around the airport perimeter. Some

airports have addressed these different preferences by offering split operations. Each model has its own unique advantages and disadvantages that must be considered.

3.2.1 Terminal

For most airports, the advantages and disadvantages of a public terminal location include:

Advantages	Disadvantages
Convenient for the credentialed workers working in the terminal	Less convenient for credentialed workers working around the airport perimeter
Public transportation and parking readily available at the terminal	May be displaced in the near future for airport expansion needs or revenue opportunities
Typically, less expensive to build because the infrastructure is already in place; also, often included in a terminal enhancement project without a separate budget	Increased potential for the public to interrupt and increased vulnerability to a potential security threat.
Proximity to law enforcement, and possibly Customs and Border Protection (CBP) to request assistance	Limited space availability and potential for expansion

All of these factors will depend greatly on the airport layout, configuration, and operations. For example, locating the office at the farthest end of the terminal may prevent being forced to vacate for another purpose but may eliminate future expansion opportunities. For another example, locating the office in the primary air carrier's terminal may be convenient for those credentialed workers, but may be inconvenient for workers in other terminals.

Many airport credentialing offices are effectively evicted from their terminal location to repurpose the space for another department, tenant, or revenue-generating space. When identifying potential terminal locations, avoid space that may be needed for future expansion. Some airport operators would prefer an offsite location over a terminal location to avoid being subject to repeated moves.

There are several factors to consider when selecting a terminal location. Decision makers will need to determine whether to locate the office on the public side of the airport to avoid the need for escorting, or on the Sterile side for security and to avoid public interruptions. Most airport credentialing offices are located on the public side to provide more convenient access for new aviation workers who do not have unescorted access to the Sterile Area.

Proximity to law enforcement, such as airport police and CBP, can provide quick response to calls for service or requests to verify identification documents or assist with adjudication questions.

The location of the office should be accessible to customers using mobility devices or with other accessibility needs.

Parking and transportation options will also need to be considered. Many airports instruct customers to use the employee parking lots when arriving for appointments. Parking in airport passenger paid parking lots may or may not be validated depending on the airport's individual policies. Airport shuttles and buses can make stops around the airport property to pick up credentialing office customers and drop them off at the terminal, although the travel time to make all the stops may be significant.

3.2.2 Offsite

Moving the credentialing office to an offsite location on the public side of the property is a much more complex process than moving to a terminal location. Offsite locations will also be highly dependent on available space, but with the added complication that a building may need to be constructed to house the office. However, if there is already a building that is move-in ready, such as a former administration building, the transition is likely to be much less complicated.

For most airports, the advantages and disadvantages of moving to an offsite location include:

Advantages	Disadvantages
Convenient for perimeter tenants	Less convenient for credentialed workers based in the terminal
Accessible to new applicants	Further from law enforcement and CBP if needed for assistance
Potential for more square footage	Public transportation to the office may be limited or unavailable
Less likely to be moved to repurpose the space	May require the airport enter into a lease agreement
Less foot and vehicle traffic from mixing with the public	

Customers will need a method of transportation to reach offsite office locations. Many customers will drive their personal vehicles, but consideration should be given to those customers who will make appointments during their work shift and those who do not have a personal vehicle. Airport shuttle buses can pick up customers from the terminal and drop them off at the office. Public transportation may be an option for customers without a vehicle arriving from outside of the airport. When choosing a location, customer transportation needs should be considered.

Network connectivity will be an important consideration if the office server must be connected to the airport's network. Lag time when accessing information on distant networks should be addressed with the airport IT department during the planning and location-scouting stages. Excessive lag time is highly inefficient for the credentialing process and should be avoided. See Section 5.1 Network and Power Needs for more information.

3.2.3 Split Operations

Some airport credentialing operations have worked under split operations while the new office was being constructed or the old office remodeled, but only a small number of airports have more than one permanent credentialing office. Split operations can be incredibly challenging and expensive to manage. In general, the challenge of managing, equipping, and staffing multiple offices requires more effort than the benefits received.

For most airports, the advantages and disadvantages of splitting credentialing operations include:

Advantages	Disadvantages
Accessible to the majority of the credentialed population	Potential for confusion over directions, office hours, and services offered
More customers can be served in a day	Managing and equipping two staffed offices is a significant resource expenditure
	Communication challenges between offices and decreased sense of staff unity

Split operations become challenging when multiple offices are open and operating at the same time. The multiple offices must each be staffed, supervised, furnished, and equipped to operate as intended. Below are a few strategies to improve the usefulness of split operations while minimizing the disadvantages.

- **Set up a temporary office near a new tenant or construction site to manage the immediate increase in credentialing transactions.** One or more TAs can be assigned to the temporary location to process the new workers. Mobile training stations or instructor-led training at the temporary location can reduce crowding at the permanent location. Once everyone has been badged, the office can be cleared of files and equipment and the TAs can return to the permanent location. This practice can be repeated, if needed, when it is time to renew the credentials.
- **Operate each office for half a day.** The operations can also be split to coincide with change in location. For example, the first location only processes new applicants and fingerprinting, and the second location only processes renewals. In this example, the first location could be located in the public area while the second could be in the Sterile area. Office staff could transition after their lunch hour.
- **Operate each office on different days of the week.** For example, an office in the public area of the terminal is open Mondays, Tuesdays, and Wednesdays to process terminal customers, and an office near the cargo facilities is open Thursdays and Fridays to process perimeter tenants.

Case Study 3. Denver International Airport – Split Operations

As a result of ongoing construction and expansion in services and concessions at Denver International Airport (DEN), the airport is managing around 40,000 credentialed employees, contractors, and tenants. The security and credentialing operations currently use a split operation to serve the large, credentialed population.

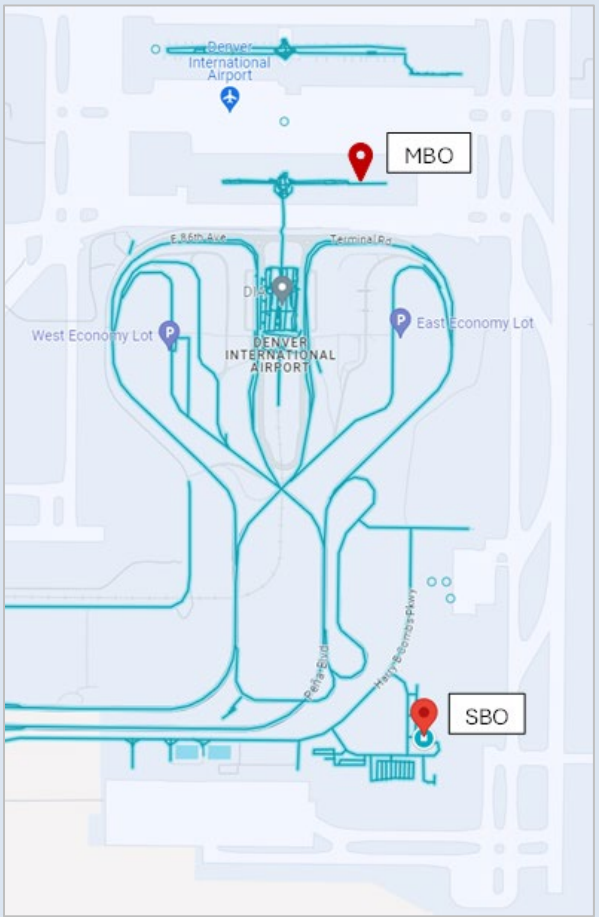
The Main Badging Office (MBO) is located on the Sterile side of the terminal; the Satellite Badging Office (SBO) opened in 2009 and is currently located in a space leased from United Airlines, south of the airport near several cargo facilities. The MBO primarily works with current credentialed workers and those with access to the Sterile Area while the SBO is mainly dedicated to new credential applicants. Figure 3-1 shows the locations of the offices.

Benefits to the Split Operations

Splitting the credentialing operations between two offices helps control the number of transactions and the wait time at each location. Currently, the transactions are split nearly 50/50, with around 400 transactions a day between both offices, and wait times averaging about 20 minutes. Around half of the transactions are considered walk-in; office staff try to accommodate these between scheduled appointments.

It would be difficult to manage the same number of transactions at a single location without a major construction project, adding workstations and TAs. A combined operation would need to be moved to a larger

Figure 3-1. DEN Map with Credentialing Offices



venue in the public area of the terminal or near employee parking lots to accommodate both new and existing customers.

Challenges of the Split Operations

The credentialing office supervisors reported multiple challenges due to the split operations. Most significantly, maintaining two offices requires more personnel and resources to operate.

The staff and supervisors work four 10-hour shifts a week and rotate between the offices every two weeks. This ensures that all TAs can perform every transaction type for flexibility in staffing. DEN has two credentialing office supervisors who each manage an assigned location during their shift. However, they also work a 4/10 schedule, which results in a single supervisor on duty on Mondays and Fridays to cover both locations. This has made staff scheduling a challenge, especially when agents or a supervisor takes time off. The solo supervisor typically works from the SBO and a lead agent helps supervise the MBO. There have been many instances where the supervisor must troubleshoot issues over the phone with agents at the other office because traveling the distance between the two locations would take too long.

The TAs and supervisors alternate offices every two weeks on a staggered schedule that allows the agents to work with all staff members over the course of a few months. This has a negative impact on staff unity because the TAs work with different coworkers every day. TA workstations are not assigned to individual TAs, so personal effects are discouraged (lockers are provided for storage). The two supervisors share offices as well, requiring them to pack up their belongings every time they alternate locations.

Given the large number of cargo operations at DEN, many tenants would prefer to use the SBO location for both new and renewal transactions. If the operations were not split between new and renewal transactions, the SBO would likely take on 70% of the workload. Concessionaires, vendors, and contractors prefer the convenience of the SBO, but services for existing credentialed workers require travel to the terminal MBO.

Free parking is available at the SBO. Employees who use public transportation arrive at DEN’s Main Terminal and ride an airport shuttle bus to the SBO. The shuttles arrive every 30 minutes and travel to 13 stops around the airport, which is inconvenient and time consuming for customers.

SECTION 4: SPACE PLANNING AND LAYOUT

The design process of the office space and layout should consider the following performance and functional objectives:

- **Availability** – The ability of the process, facility, system, or equipment to be ready and available when needed, including redundancy of key systems. Availability is based on the reliability and maintainability of the process, facility, system, or equipment.
- **Reliability** – The ability of the process, facility, system, or equipment to operate as intended without failure.
- **Maintainability** – The ease of providing preventative and emergency maintenance, a critical component of continuous improvement in the reliability of the process, facility, system, or equipment.
- **Scalability** – the flexibility of the process, facility, system, or equipment to be modified in size and capability to meet future demand needs, such as new technology or increased number of credentialed workers. Using modular furniture allows for easy reconfiguration of the layout.

4.1 Specific Area Considerations

No two airport credentialing offices are designed the same, but a majority feature the following areas:

- Waiting and reception area for customers
- TA workstations (typically desks or counters)
- Training room for instructor led classes and/or computer stations
- Back office(s), often set aside for the office manager or specialists performing adjudication tasks
- File and supply storage, appropriately secured to protect customer information and to control credential supplies
- Spaces shared with office staff and, potentially, other airport departments and/or the public (e.g., conference rooms, breakrooms, and restrooms)
- Proximate location for copying and a shredding receptacle

Careful design is needed to maximize the efficiency of each space.

4.1.1 Reception and Waiting Areas

The waiting and reception area is an important space. For some— including board members and other high-profile individuals—this area is their first experience as an employee at the airport. Design in this space should emphasize a welcoming environment, comfortable seating, and clear signage and announcements.

4.1.1.1 Reception and Check-in Desks

Reception desks or check-in counters are common. A receptionist is typically stationed to greet customers and check that they have the correct paperwork and documents. They may also be required to answer the office telephone and schedule appointments.

The receptionist may be a credentialing office employee with a lower security clearance, or an authorized TA who can perform certain transactions at the desk, depending on the equipment available.

If a TA is assigned to perform check-in functions, the office manager will typically rotate the TAs every few hours to reduce complacency arising from performing rote tasks. Some airports station a security guard or police officer in or near this position to support the security of the office.

4.1.1.2 Appointment Scheduling

Airports that accept appointment scheduling for credentialing transactions will require a centralized appointment schedule. The system should be editable and shareable between all authorized credentialing staff to allow the schedule to be edited and viewed as needed.

A paper schedule could be used for offices with very low demand or walk-in only customers. However, given the low cost and high availability of free or inexpensive calendar applications, this method is not recommended. Digital calendars can track appointments for months and years without the need for physical storage space.

See Section 5.2.1 Scheduling Applications for more information on digital scheduling options.

4.1.1.3 Queuing Systems

Queuing systems are a necessity for credentialing offices that accept walk-in customers to ensure equity between the scheduled and walk-in customers. Airport credentialing offices use a variety of queuing systems depending on the number of daily transactions, office space, and technology available.

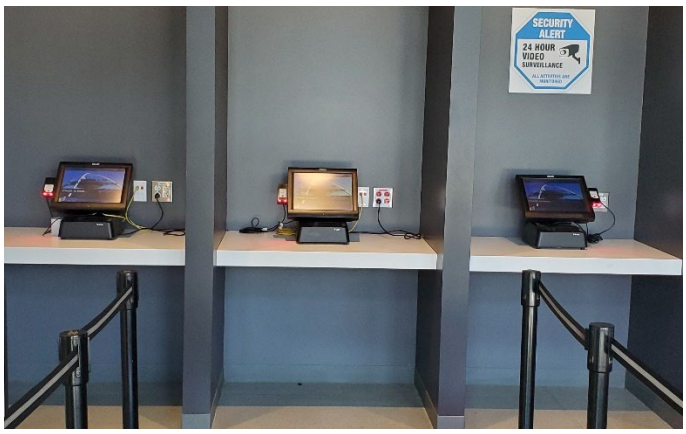
The most basic system has the customers stand in a service queue until it is their turn to approach a TA. These queue systems are most useful for airports who perform a small number of transactions a day. Requiring customers to stand while they wait can lower customer satisfaction rates, and should only be used when the wait will be short. Physical queues will require space for the customers to stand and queue designators, such as stanchions, to clearly mark the beginning and end of the queue (Figure 4-1). This system can reduce the space needed for a large waiting area with seating, allowing that space to be converted for other needs.

Figure 4-1. Queuing System with Stanchions

Paper sign-in sheets are another simple means of queuing, and are used at airports with a small number of transactions per day. The sheets are usually kept at the reception desk. Once signed in, the customer can take a seat in the waiting area until their name is called by the receptionist who manages the queue. Paper systems are rudimentary but can be a low/no-cost alternative to virtual queueing systems for

airports with a small office budget or low demand. One benefit to check-in sheets is the ability to collect several data points for each customer. The sheets can track company, arrival time, wait time, transaction type, and other data points. The data should be entered into a digital database, such as Excel, to allow for further analysis.

Figure 4-2. Check-in Kiosks



Virtual queueing systems allow customers to check themselves into the queue using a designated kiosk or tablet (Figure 4-2). In some cases, the kiosk or tablet can perform initial screening to ensure that applicants have brought the required documentation. Once checked-in, the customer can take a seat or leave the office and wait remotely for a mobile notification. See Section 5.2.1.2 Queue Management Technology for more information.

4.1.1.4 Waiting Area

Nearly every customer will spend some time in the waiting area, and customers may spend a long time waiting for the next available TA or training computer, so design elements should be calming, comfortable, and accessible, while also being interesting and functional (Figure 4-3).

Figure 4-3. Credentialing Office Waiting Area

The waiting area should be close to the workstations. Being able to see how many TAs are working and in service helps customers estimate their wait time. Enclosing the space with interior walls and glazing can make the space feel smaller and reduce air quality. Exterior facing windows can allow customers to watch the airfield or other parts of the airport while they wait. However, this will make the temperature of the space more difficult to control, especially in the summer heat. Seating should also consider locations of air conditioning vents to prevent major temperature discrepancies between seats. See Section 6.3 Ambient Environment for more on temperature and other environmental factors.

Calming design elements should be included in the waiting area to help the customers feel comfortable while they wait. These elements are typically added near the end of a project but should not be overlooked. Color is very impactful on people's emotions, mood, and behavior. Light, neutral tones—such as earth tones, or pale blues and greens—can have a calming and relaxing effect. However, light colors may be difficult to clean; a balance can be accomplished by using durable materials in light colors, or using light colors on walls and darker colors on seating and floors. Artwork should be calming and uncontroversial, such as landscapes and plants. Many credentialing offices have added professional images of the airport.

Proper lighting can promote a warm and inviting atmosphere. Harsh, fluorescent lighting should be avoided. If the space has exterior windows, the lighting design should account for the change in light levels throughout the day. See Section 6.1 Lighting for more information on lighting design.

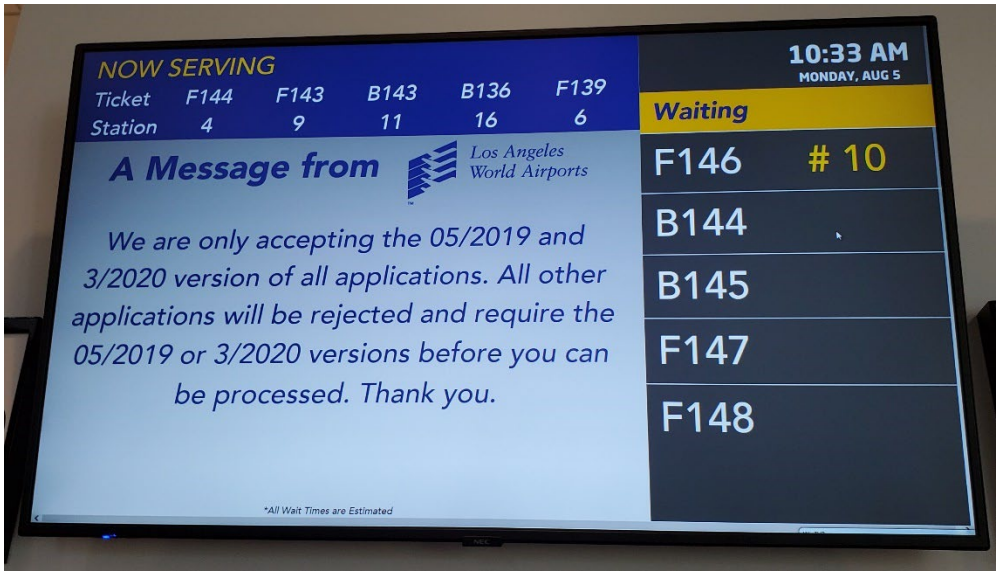
Durable materials should be used on the furniture and floor to reduce wear and tear from regular use and cleaning. Cloth and carpet will suffer from the most wear and tear; some airports replace the carpet in heavy traffic areas every few years using the office budget.

Seating options should be comfortable for all body types and accessible for customers with disabilities. To accommodate different customer preferences and needs, a variety of seating types (tall chairs, standard chairs, cushioned benches, etc.) should be used where possible. Tables and/or counters provide space for customers to complete any missing paperwork. Customers also appreciate the availability of power outlets and wireless connection options in the waiting area.

Adding a refreshment area with water and coffee can improve customer comfort while they wait. The area may also have vending machines for customers to use. This station may require planning during the design stage to ensure there is an availability of water lines for connection to coffee makers, water dispensers, and fountains. Additional outlets may be needed to accommodate the appliances and vending machines. Note that coffee makers may create additional work for the office staff who will need to empty and clean the appliances regularly. Single-serve coffee machines and supplies for them cost slightly more but reduce the housekeeping burden.

Monitors, bulletin boards, and information displays are often in the waiting area to educate customers about the credentialing process, employee recognition programs, airport rules and regulations, and important security information. Slideshow presentations displayed on monitors offer the greatest flexibility to change the messaging as necessary. Information that is not subject to frequent changes (e.g., airport security rules and regulations) could be printed for customers to take with them. If an automated queueing system is in use, monitors may also display the queue status (who is in the queue and the estimated wait time), which will help manage customer wait expectations (Figure 4-4).

Figure 4-4. Queue Status on Monitors

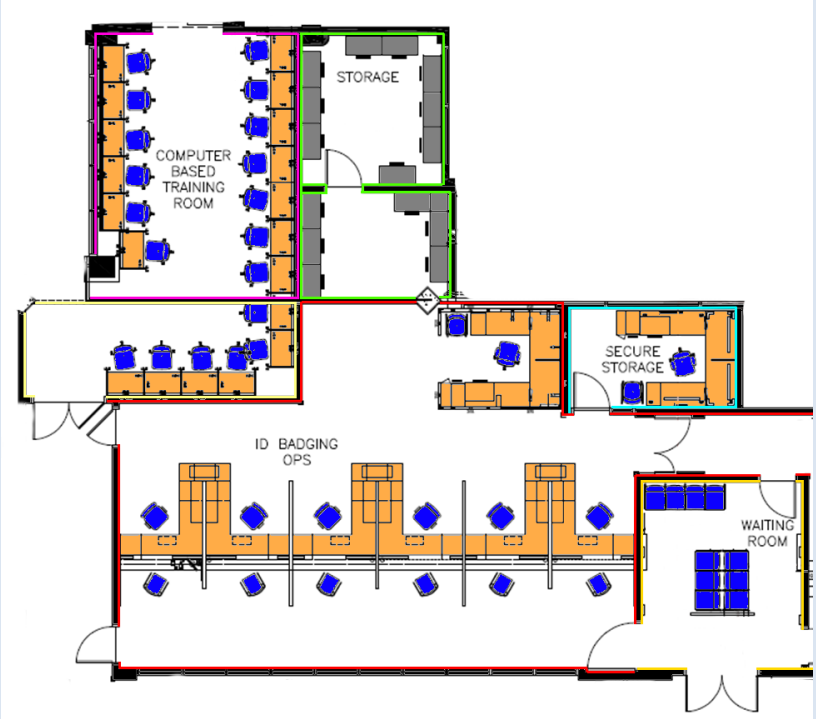


Decorations and activities can distract customers from the monotony of waiting. Monitors and televisions may be tuned to a local news station or popular show. Closed captions should be turned on with the volume low or muted to maintain noise levels. Controversial shows should be avoided (politics, talk shows, etc.). Reading materials, such as magazines and newspapers, offer a quiet way to pass the time. Many industries have added aquariums to their waiting rooms. This has been proven to help lower stress and anxiety of those watching the tank. Maintenance of the aquarium may require a service provider, and office staff may need to take responsibility for daily needs such as feeding the fish.

Case Study 4. Oakland International Airport Badges and Permit Office (BPO) – Waiting Area

The Oakland International Airport (OAK) Badges and Permit Office (BPO) underwent a redesign in 2015 as part of the airport's Terminal 1 Retrofit and Renovation Program. The terminal building needed to be upgraded to replace aging infrastructure and install interior seismic bracing. The renovated BPO was activated in 2017 (Figure 4-5).

Figure 4-5. OAK BPO Layout

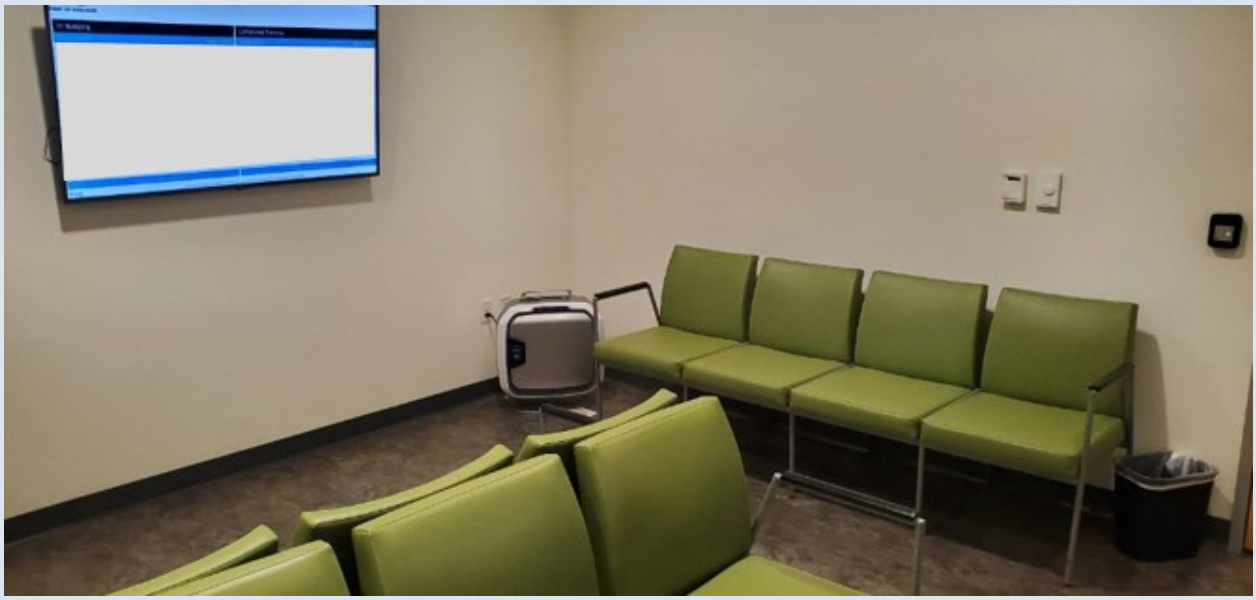


Customers enter the waiting area and check in at a queue management kiosk tablet (Figure 4-6). The virtual queuing system allows customers to schedule appointments remotely and receive mobile notifications as their appointment time approaches. This technology increases efficiency by reducing wait times and minimizing the number of customers in the waiting area. This system enables the BPO to operate efficiently with a 12-seat waiting area while serving a credentialed population of nearly 6,300.

The waiting area has a mounted display showing who is in the queue and the anticipated wait time (Figure 4-7).

Figure 4-6. Check-in Kiosks and Waiting Area

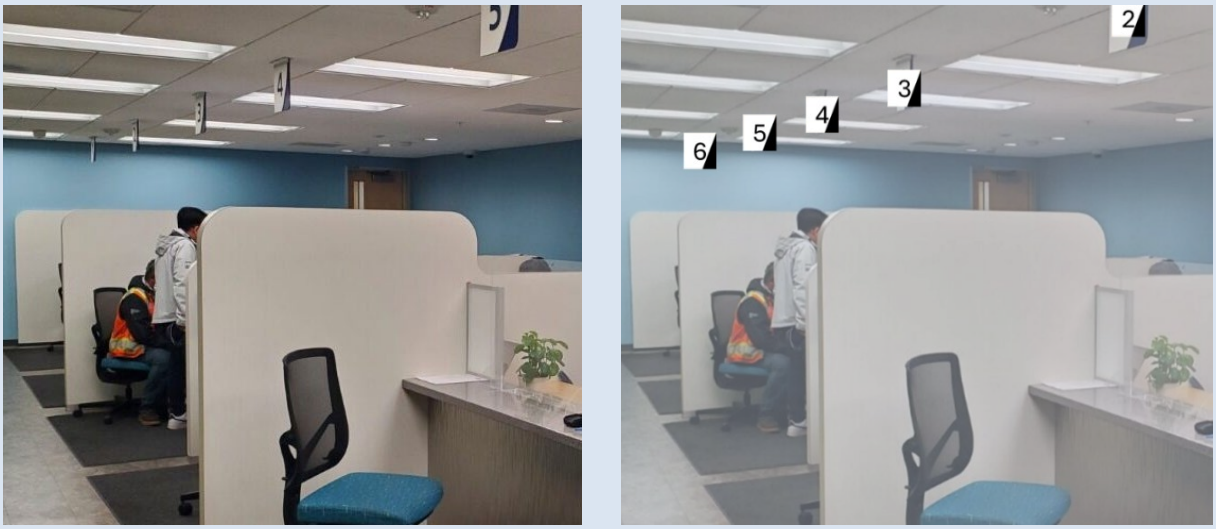
Figure 4-7. Waiting Area



When a customer reaches the front of the queue, they are assigned to a workstation via a public-address system announcement, and the virtual queuing system sends a notification to their phone or mobile device. Station numbers are displayed on signs above each station (Figure 4-8). While the signs are helpful for customers to quickly locate the correct station, some minor alterations would enhance their value. Currently, the signs are parallel to the desk, meaning they can be seen most clearly when standing directly in front of and facing the workstation. The signs could be rotated to face the customer more directly as they enter the workstation area. Additionally, the workstations are numbered in reverse order from the customer's perspective as they enter the office from the waiting area. Hanging the numbers in chronological order creates a more effective visual aid, reduces confusion, and improves customer experience.

The BPO shares space with the airport's Lost and Found, which is not staffed as consistently as the credentialing office. Lost and Found customers often check in to the credentialing queue and become frustrated due to the long wait. This usually results in the Lost and Found customer interrupting BPO staff to inquire about Lost and Found.

Figure 4-8. Workstation Signs with Enhancement Example



4.1.2 Trusted Agent Workstations

The workstation configuration is an important design consideration, as it often determines the available space and layout of adjacent areas.

Determining the necessary number of workstations is not a standard equation for all airports. However, many credentialing offices interviewed reported that they determined an appropriate number by adding one workstation for each TA plus one or two more, as space was available, to allow for growth.

4.1.2.1 Furniture

Workstation furniture can have a great impact on the customer experience and office staff comfort. There are numerous configurations, sizes, and features of workstations available for the credentialing office. The most appropriate option should consider space availability and staff preferences. See Section 6.4 Workstation Ergonomics for additional information on workstation design considerations.

Desk size and shape will greatly impact the office layout and number of desks that can be added to the office. If new desks are purchased, multiple desk shapes and sizes should be tested in mock-ups and blueprints to find the option that works best for the office. Furniture and equipment measurements should be double checked to ensure the desks can accommodate all equipment necessary to support an efficient operation.

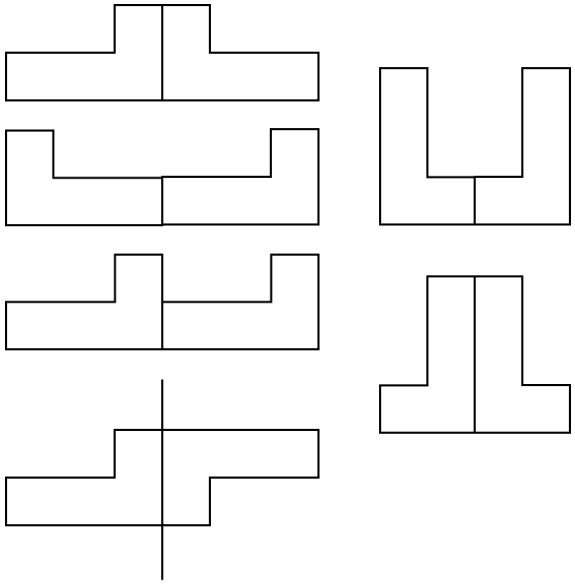
Workstations using counters typically have the TA seated at a lower desk area and the customer standing at a higher counter. This height discrepancy can make it difficult to see paperwork sitting on the higher counter. Use of desk risers and/or adjustable desks allow the TAs to sit or stand to assist the customer.

However, requiring the customer to stand during the transaction should be carefully assessed, especially if the average transaction time is longer than 10 minutes. Consideration should be given to ensuring at least one workstation can meet ADA accessibility guidelines.

A return desk, also known as an L-shaped desk, provides an additional work surface perpendicular to the main desk. These have many benefits for a credentialing office. They can be positioned in a variety of layouts that maximize quadrilateral spaces (i.e., squares and rectangles) while also delimiting the

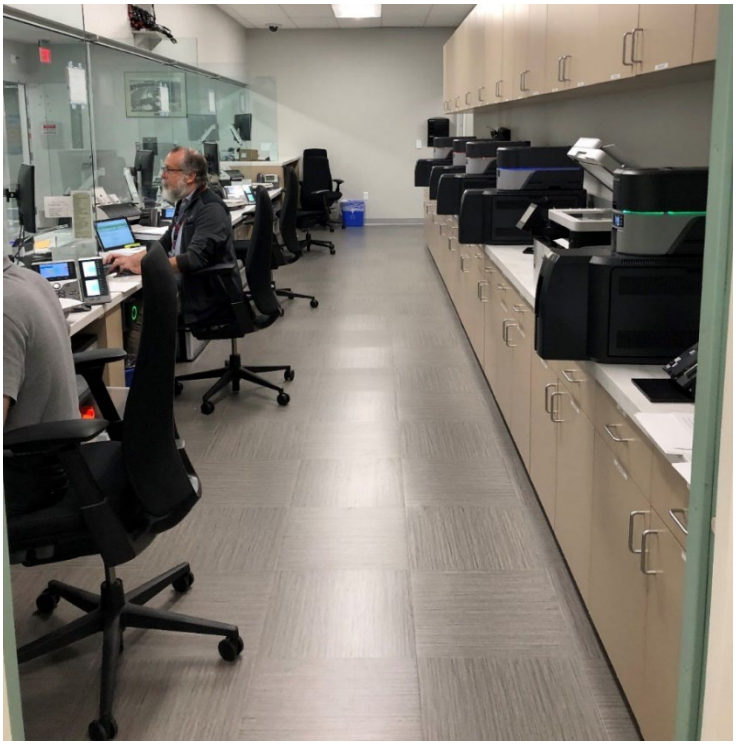
working space of each station. The shape provides more ergonomically friendly options for equipment layout to accommodate shared equipment and/or personal preferences. Some desk designs have equally sized sides of the desk, while others have a long side and a short side. Many have the additional work surface on the right side of the desk, while others have the option to move it to the left. Some designs have a rounded inside corner. A return desk and some examples desk layouts are shown in Figure 4-9.

Figure 4-9. Sit/Stand Return Desk and Example Return Desk Layouts



Straight desks are usually positioned end-to-end to form one extended desk, often with a standing counter in front for customers. Dividers can be used to separate workstations and offer privacy for customers. The desks can also be arranged parallel in rows. Due to the limited working space around the TA, it is common to include a second work surface behind the TA to store equipment such as printers (Figure 4-10), however this is not ergonomically efficient. Combining return and straight desks can provide more layout options to more efficiently use the available space.

Figure 4-10. Printers Stationed Behind the TAs



The workstations need secure storage options for both office supplies and personal effects. Some desk or cubicle designs provide lockable overhead storage cabinets. However, these can make the space feel smaller for the TA and will limit the ability of the staff to speak to each other. Under-desk drawers are

Figure 4-11. Under-Counter Storage

much more conveniently placed for quick access without limiting lines of communication. Some credentialing offices are able to position a short filing cabinet or rolling storage unit under the desk (Figure 4-11). If adding storage options under the desk, ensure there is still enough space to accommodate the chair and person.

Credentialing staff will need a place to securely store their backpacks, purses, phones, etc. Some airports permit the staff to use the storage at their workstation. At airports that prohibit these items near the workstations, alternate secure storage should be offered, such as lockers in the break room.

The chosen furniture should be made of durable materials with an ergonomic design. Avoid furniture with polished surfaces that can reflect light, causing eye strain.

Many credentialing offices installed plexiglass barriers at workstations during the COVID-19 pandemic. Several offices still have these barriers in place as a health safety measure, but also to discourage customers from jumping over the counter (Figure 4-12). A few airports have ballistic glass separating the TAs from customers. Any barrier can impede communication if not designed appropriately, and may require installation of a natural speak-through device or an electronic intercom system.

Figure 4-12. Permanent Plexiglass Barriers

Privacy dividers or half walls between workstations can protect the customer's sensitive information. These are often sound proofed to reduce noise levels in the office. See Section 6.2 Acoustics and Privacy for more privacy considerations. These dividers can also be used as backdrops for ID photos and mounting locations for cameras.

Many TAs prefer assigned workstations where they are the only one using that space. This allows them to arrange the desk and equipment to suit their individual preferences, as well as decorate the space in a more personal manner.

4.1.2.2 Workstation Equipment

In general, there is a preference for every workstation to be equipped to perform every type of transaction. This allows for more efficient processing of customers and provides redundancy in the event a workstation cannot be used. In these instances, office processes are used to ensure separation of duties per TSA regulations, such as randomizing the TA assigned to the customer each visit or separating the processes.

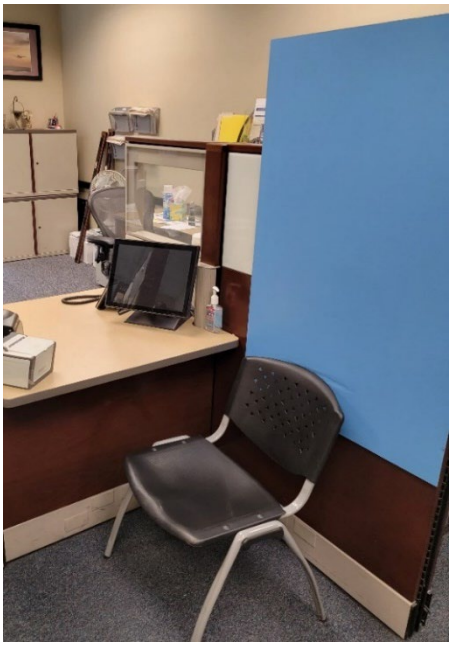
It is not always possible to equip every station for all transactions due to budget or space restrictions. Some equipment, such as printers and fingerprint readers, may be shared between workstations or made available for common use in a separate area. For example, the fingerprint readers may be stored in a small, lockable space for any TA to use when needed, and the office photocopier may be networked to all the computers in the office. Sharing select equipment between two workstations can be a significant space-saving measure. However, the equipment will need to work twice as much, which will lower the equipment's life cycle. Sharing equipment may also result in the inefficiency of staff or customers having to move between locations to complete a transaction rather than being able to do everything from one place.

Credentialing offices can save space by using multifunctional and compact devices where possible, such as combining scanning and printing functions into a single photocopier. All-in-one computers have a much smaller footprint than traditional computer towers and monitor combinations, although they can limit upgrade options. If installing equipment in an existing space, airports should ensure that the electrical and network connections in the space are sufficient for the new equipment.

Desk risers and organizers can be useful for creating vertical space where equipment can be stored above or below other equipment.

A designated photo area can help ensure consistent image quality, save office space, and may be less expensive than equipping every workstation with a camera. Some offices prefer that every workstation have photo-taking capabilities to streamline the process. An inexpensive option would be to equip all workstations with a high-quality web camera and ring light to take the ID photo. Workstation dividers and nearby walls can serve as the backdrop with a piece of cloth or painted square to change the background color (Figure 4-13). Chroma key technology—commonly referred to as "green screen," although any solid color works—can be used to digitally change background colors as well.

Figure 4-13. Photo Backdrop at a Workstation



4.1.2.3 Circulation

Circulation space for the TAs and customers is a critical feature to evaluate, including intersection points and cross traffic. TAs need to move freely behind the workstations, and the customers need to move freely in front. It is also common for TAs to periodically leave their workstation to check on customers in an adjacent training room or waiting room. Many airports use the workstations as a

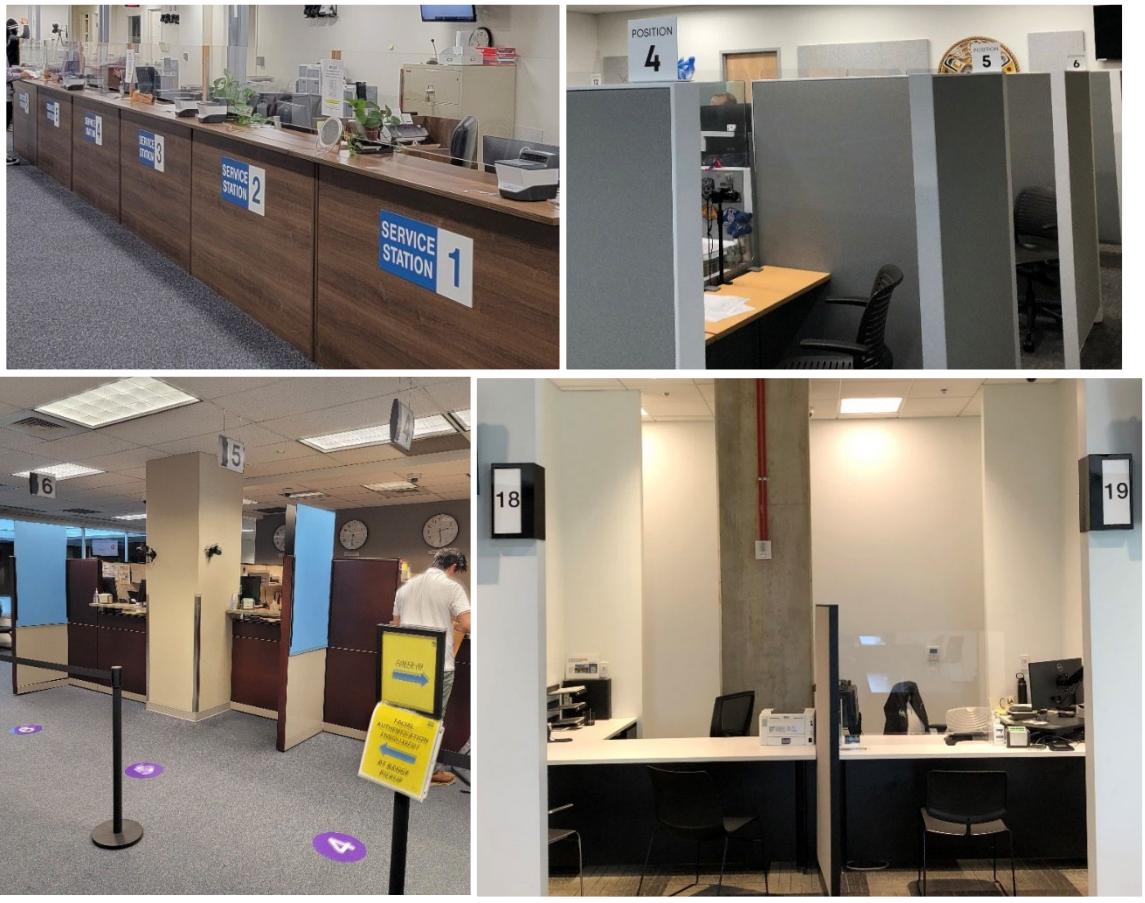
boundary between the customers and the back offices, breakroom, and secure storage. Swing gates may be placed between the end of counters and office walls to delimit the customer and TA sides.

Some degree of privacy should be afforded to customers due to the sensitive nature of discussions, data, and documents that accompany the credentialing process. Arrangement of the workstations should ensure that customers always have their backs to other customers and that they cannot view any TA monitors or other sensitive information.

A major challenge for many credentialing offices is the walking distance between workstations and frequently used equipment and storage. This creates process inefficiencies as transaction times are increased for every customer. Shared equipment and supplies, such as credential printers and filing cabinets, should be centrally located for the TAs, with the most frequently used equipment or supplies near at hand. Many credentialing offices share equipment between two TA workstations to maximize the use of available space and commonly used devices.

Larger credentialing offices with multiple workstations may require signage to direct the customer to the correct station (Figure 4-14). These signs should be highly visible, consistently designed, and sequential without skipping numbers. Signs are most easily seen when mounted high on the wall or ceiling in front of the workstation. The signs should also face the direction the customer is walking. Additional signage can also be used on the floor. All signage should be evaluated from the customer's perspective (i.e., not from the perspective of someone with prior knowledge of the layout or process).

Figure 4-14. Examples of Station Signage

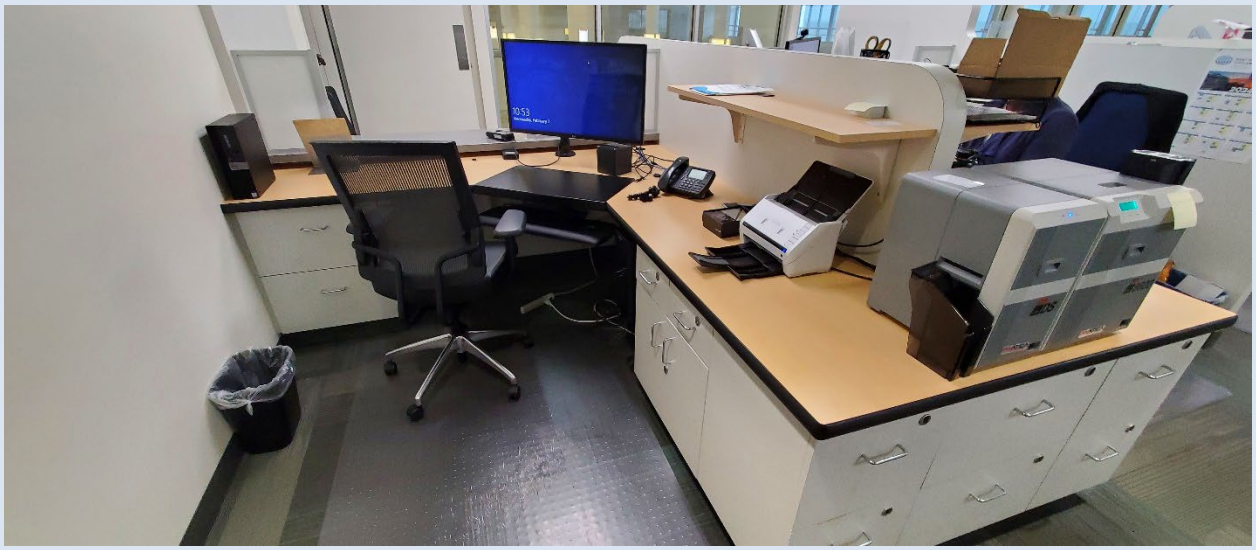


Given the amount of foot traffic around the office, durable flooring, such as sealed concrete, should be used to reduce wear and tear in heavy traffic areas and circulation areas.

Case Study 5. OAK BPO – Trusted Agent Workstations

The OAK BPO workstations have a standardized design and layout to allow any TA to work from any station. The designers built enough stations for each TA to have their own dedicated station. Previously, the TAs shared stations, so they greatly appreciated the ability to personalize the new space with photos and other decor. Each pair of workstations shares a credential printer and storage drawers on the island between them (right side of Figure 4-15).

Figure 4-15. Standard Workstation Layout



The TAs were asked to provide input on the design of the workstations. They expressed their desire for workstations that were similar to “concierge style,” in which the TA and customer sit across from each other as opposed to other styles where the customer stands at the counter and the TA sits.

The TA and customer sides both have typical office chairs on casters. The tile on the customer side caused a customer to fall when the chair slid out from under them, so rolling mats were added to reduce this liability in the future (Figure 4-16). The TA side has carpet with a chair mat at each workstation.

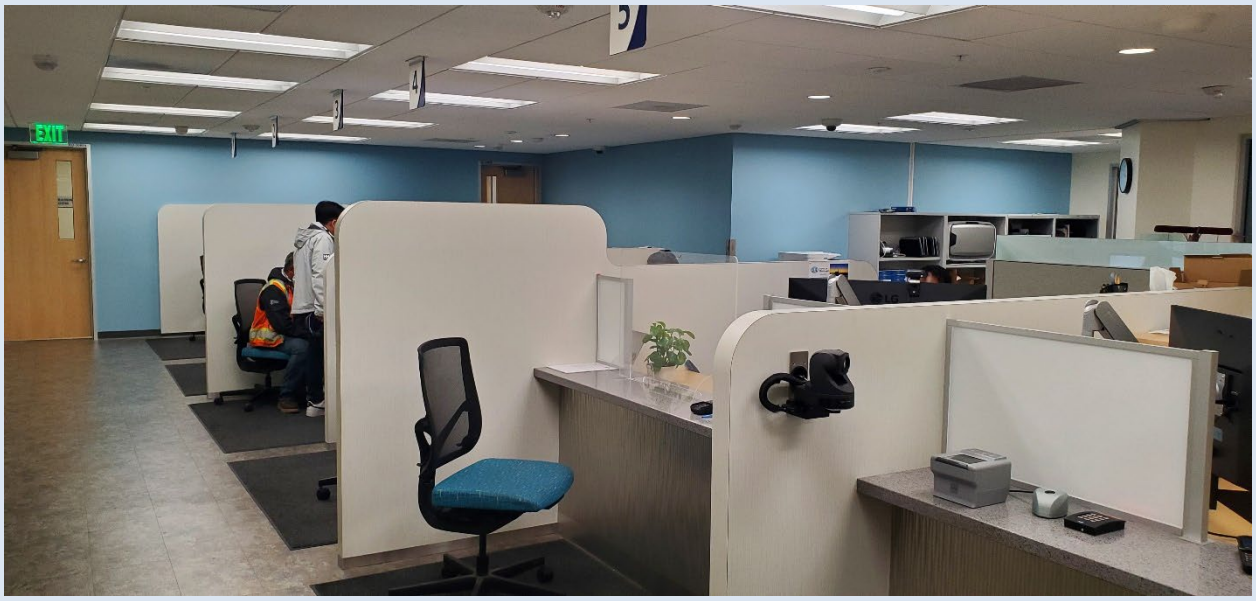
Figure 4-16. Rolling Mats on Tile Floor

The counters on the customer side of the workstations are made of quartz for increased durability and have a small overhang that enables the customer to sit closer to the desk (Figure 4-17).

Figure 4-17. Overhanging Counters on Workstations

Between each workstation is a partition wall that provides privacy during the transaction (Figure 4-18).

Figure 4-18. Privacy Partitions Between Workstations

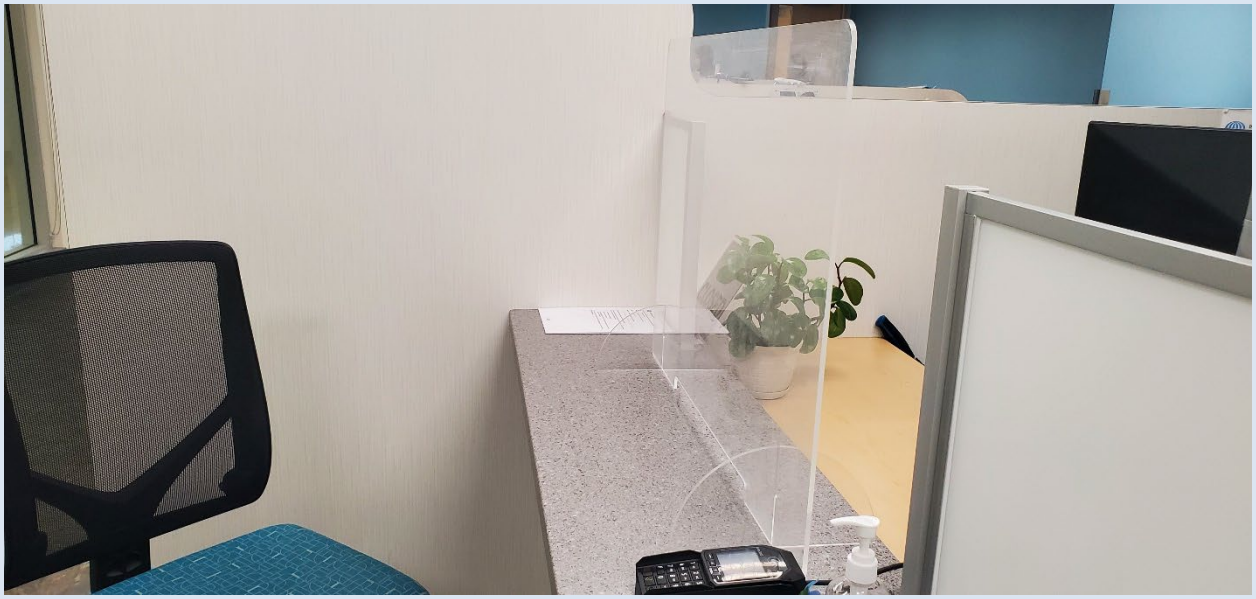


These partition walls and the desk have protective metal baseboards affixed to the bottom, which prevent damage from the rolling chairs and increase the workstation's useful life (Figure 4-19).

Figure 4-19. Metal Wall Protectors Around Workstations

Removable plexiglass barriers were added during the COVID-19 pandemic, and many TAs still have one at their workstation (Figure 4-20).

Figure 4-20. Plexiglass Barrier on Workstation



4.1.3 Training Rooms

The training area in the credentialing office can be a separate room or part of a larger space. There are benefits and drawbacks to each approach. If the space is separate, trainees have more privacy to focus on the training with fewer distractions, but this may also provide more opportunities for cheating. If the training area is part of a larger space, the trainees can be more easily monitored but may have more distractions from other customers and office activities.

Training spaces are most often located near the TA workstations so the staff can monitor trainees to prevent cheating or other inappropriate behavior. The training room layout should balance the needs of

the training environment for trainees while maintaining the integrity of the training and testing process with existing staff.

4.1.3.1 Training Styles

CBT is the most common form of training offered at airports across the country. This requires space for one or several training stations, as well as the ability to monitor the room for cheating. Training stations require a computer with access to the training modules, a mouse, a keyboard, a monitor, and headphones (preferably noise canceling). Station dividers provide some privacy for the trainee (Figure 4-21) and reduce the potential for cheating.

Figure 4-21. Training Workstation with Privacy Dividers and Headphones

Stations are frequently positioned with the trainee facing the outer wall of the training room (Figure 4-22). This provides a central space that a TA or proctor can walk down to check on the trainees. Since power outlets are typically placed along the perimeter, this layout can take advantage of the convenient outlet placement.

Some airports position the stations so that the trainees face each other (Figure 4-23). Monitoring TAs or proctors will need to walk all the way around the bank of stations to see each one. Additional power outlets may be needed in the center of the room to accommodate the computers. Rows of training stations can be oriented to create clear lines of sight across the space and allow TAs or proctors to observe multiple trainees at once, minimizing blind spots (Figure 4-24).

Figure 4-22. Back-to-Back Training Stations Configuration

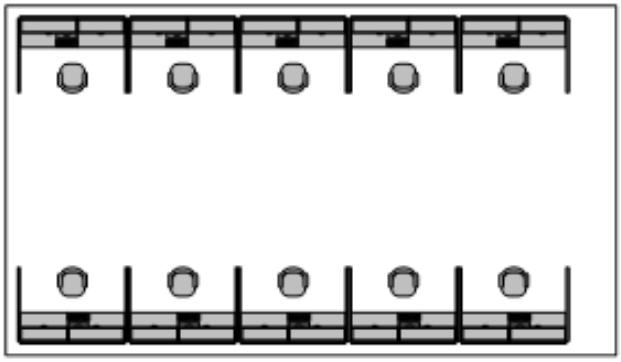


Figure 4-23. Face-to-Face Training Stations Configuration

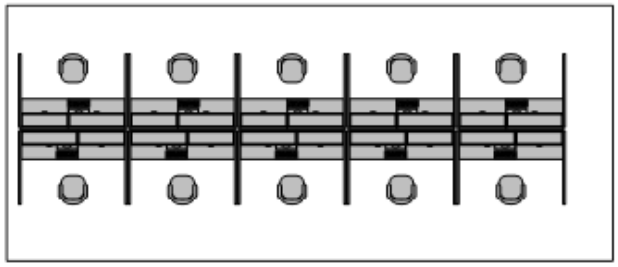
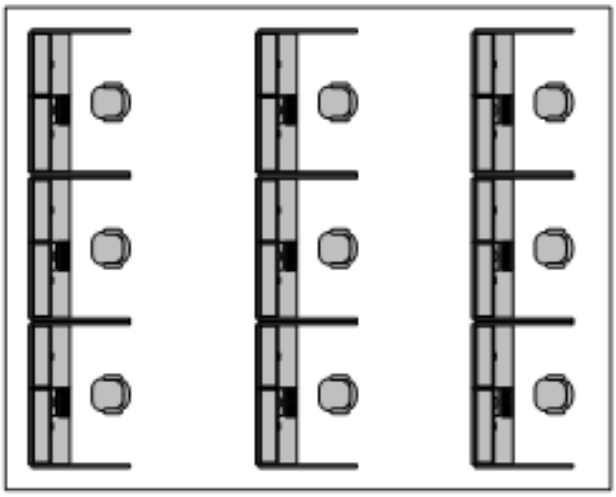


Figure 4-24. Rows of Training Stations Configuration



Some airports have added training stations throughout the campus that allow select airport employees (e.g., first responders) to complete training closer to their base of operations. These auxiliary locations are equipped with access control to limit the personnel authorized to enter the rooms.

Figure 4-25. Instructor-Led Training Room

Instructor-led training is typically conducted in a dedicated classroom space, with tables and a monitor to display the training presentation (Figure 4-25). This delivery style requires a credentialing office staff member to set aside a block of time in their schedule to conduct several hours of training for a group of new hires. The size of the class often depends as much on the number of people who can fit in the training room as it does on how many people need to be trained.

A growing number of airports have worked with their local TSA to allow and implement remote training for select credential holders and recurrent training modules. Remote training has allowed those airports to significantly reduce, or totally eliminate, the number of training stations and space needed to accommodate them in the credentialing office. For some, this has also reduced the average time to issue a credential, as limited appointments for training created a bottleneck in the process. As this technology becomes more accepted and capable of authenticating the individual taking the training, more airports may consider remote training, as it offers a considerable reduction in the office space required.

Case Study 6. DEN Credentialing – Remote Training

The DEN credentialing office has plans to offer remote, online training options for credential renewals by the end of 2024. The airport anticipates that online training will reduce the number of training stations needed by half, potentially creating space for additional workstations or a larger waiting area. When the authorized signatory training moved to an online format, the training room in the SBO was converted to a large breakroom for staff.

The credentialing supervisors are planning a short pilot for the transition to online renewal training to resolve any unexpected challenges or issues, and to ensure a positive customer experience. A small population of customers with credentials expiring in a six-week period will be chosen to participate in the pilot. The online renewal training is set to launch for all current credentialed workers by the end of 2024. After they successfully complete training, employees will be able to pick up their printed credentials at either office with a scheduled appointment.

4.1.3.2 Monitoring

Monitoring the training area is important to ensure trainees are not cheating, especially when a translator is being utilized or the training room is unattended. Many credentialing office managers have their TAs periodically walk through the training room as a deterrent. Some offices assign a proctor to the room to monitor and answer questions during office hours. Surveillance cameras sending live footage to the office manager or a proctor station are also common.

The training stations should be oriented to allow clear lines of sight down aisles or rows when possible to avoid "blind" areas where someone has to walk around to monitor. Orienting the TA workstations to allow TAs to clearly monitor the training stations can reduce the need for a proctor and additional walking.

Small lockers offer a secure space for individuals taking training to leave their belongings to reduce cheating and interruptions (Figure 4-26).

Figure 4-26. Lockers for Customers Taking Training

4.1.4 Back Offices

Back offices in the credentialing office are most often used for the office manager and background specialists. These offices primarily provide privacy to review criminal history records or speak with applicants about sensitive information.

In many cases, the back offices are dedicated to individuals but may be shared by multiple staff members to conserve space. Sharing office space is the most efficient use of space in medium and small airport credentialing offices.

Credentialing offices with a small footprint may not have the space available to create offices; one alternative is to create a private workstation using partitions or half walls for the background specialists to perform their responsibilities. In these cases, the design of the workstations must balance the privacy needs of the customer with the ability to properly monitor and support staff activity.

4.1.5 File and Supply Storage

Storage can be a major concern for airport credentialing offices, especially those that maintain paper copies of paperwork. All credentialing offices require secure storage space to house office supplies. At least one storage area will need controlled access to secure the credential printing supplies and sensitive applicant files. Surveillance cameras can be pointed at the storage door to monitor access.

Filing cabinets consume a large amount of space that continues to grow until the files are destroyed or converted to digital format. Airports that transition to a digital records/paperless environment can eliminate 75–90% of their filing cabinets, opening up space for other critical processes. An alternative for airports that retain physical files is a vertical file storage system that reduces the file storage footprint (see Case Study 7).

The secured storage may also contain safes or cash boxes; credentials that are returned either temporarily while the airport worker is on leave, or permanently until destroyed; and security keys and vehicle permits that authorize presence on the airfield. Dry-cleaned uniforms for TAs can be stored here as well.

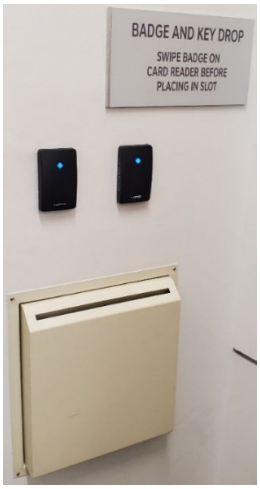
A secured return box outside the credentialing office will provide after-hours drop-off options for customers returning credentials (Figure 4-27). Surveillance cameras pointed at the return box will allow for identification of customers using the box. Putting the return box behind a door with access control creates a log entry in the access control database that can be referenced to identify who used the box.

Alternatively, a credential reader can be mounted near the secure return box and configured in the access control system to disable a credential and record its return prior to it being placed in the box.

Figure 4-27. Secured Drop Box

Public side of drop box

Secured access inside the office



Drop box with credential authentication

Some credentialing offices do not permit after-hours credential returns. Credentialing staff who accept return credentials can provide a receipt to the customer.

General office supplies, such as printer paper, are typically stored separately so they are more readily accessible. If these are secured, it is to discourage theft rather than because of security concerns.

Case Study 7. San Diego International Airport – Airport Credentialing Office Filing System

San Diego International Airport (SAN) Airport Credentialing Office has taken a conservative approach to paper and electronic storage of applicant files. Applications and credentialing processes are completed through and stored in the airport's IDMS. When the process is complete and the credential has been issued, final copies of records are printed and stored in the office's vertical rotating shelf system (Figure 4-28).

Figure 4-28. SAN Vertical Rotating Filing System

Each filing cabinet uses a carousel filing system consisting of a series of rotating file drawers. A control panel allows the user to turn the carousel to the desired file location (Figure 4-29). The system includes lockable doors and the ability to restrict access to certain files with user-assigned codes.

By printing out a single record of the transaction process, the Airport Credentialing Office has been able to reduce their paper files significantly. Previously, the applicant package could be as wide as 0.75 inches; now, the files contain about ten sheets of paper, and each file is smaller than an eighth of an inch.

Figure 4-29. SAN Filing System Control Panel

Additionally, the cabinets have the same capacity as 16 four-drawer filing cabinets. With the cabinets' increased storage capacity, the office is able to store all the files in a much smaller footprint.

The cabinets also provide a worksurface and desk light for office staff to complete tasks as needed.

4.1.6 Shared Areas

Many credentialing offices have a conference room with a large conference table and a monitor. It often serves multiple functions such as a meeting room for the department staff, a private space to discuss criminal history records or other sensitive matters, and a classroom for instructor-led training. The space needs to accommodate a table large enough to seat all staff in the department and/or the maximum number of students in a class. Polished or reflective materials should not be used on conference tables as the overhead lighting can create eye strain.

Some facilities also have smaller meeting or breakout rooms that can be used by office staff or authorized signatories working with their company's staff. Spaces like these also provide privacy for individuals or small group discussions, especially for offices with few interior walls.

Break rooms are common at all airports but are often shared with other airport departments. This allows for the design of a larger space with more seating, appliances, storage, and vending options. Some credentialing offices with a large number of staff have a dedicated break room in or adjacent to the office. Break rooms are typically fitted with kitchen appliances, such as a refrigerator with a freezer and ice maker, a microwave, a sink, a coffee maker, and a water dispenser. Many also include comfortable seating options, a television, and lockers for the staff to secure their belongings during the day. Vending machines can offer a variety of food and drinks for the office staff.

Adding more network and power outlets in the conference room and break room can offer options for future configurations and redundancy. Voltage of the break room outlets should be double checked before appliances are procured to ensure compatibility, as some commercial-grade appliances require a 220-volt circuit rather than the more common 110-volt.

Restrooms dedicated to credentialing office staff are uncommon for offices located in the terminal; it is far more common for the staff to use the closest public restroom. Providing restrooms that are restricted to direct airport employees via access control offers a compromise between efficient use of space and office staff comfort (Figure 4-30).

Figure 4-30. Restroom with Access Control

Restrooms that are dedicated to the credentialing office or shared between direct airport employees are often gender neutral, ADA compliant, single-stall restrooms. This is appropriate if only a small number of individuals have access to the restroom. If the public has access, the restrooms are more often multi-stall, gendered restrooms with one or more ADA compliant stalls, although some facilities use a larger, single, all-user restroom design. The public restrooms often have water fountains and a water bottle refill station nearby.

Furniture and flooring should be made of durable materials to reduce wear and tear, especially in heavily used shared spaces.

Less common shared spaces in or near the credentialing office include:

- Nursing, lactation, or wellness rooms near private restrooms; often a shared space available to direct airport employees
- Law enforcement and CBP offices or substations that allow for quick response for ID and document verification or to attend adjudication meetings
- Spaces for lost and found, parking permits, and other airport services; sometimes staffed by a dedicated staff member, or occasionally performed by the credentialing office staff
- Private investigator's office
- Payment center to accept cash or credit payments for credentials, permits, and other fees
- Workout space or gym for airport/airport authority employees

Figure 4-31. Seismic Brace in a Credentialing Office

4.2 Office Layout Considerations

Space planning will need to account for immovable architectural obstructions, such as seismic braces (Figure 4-31), columns, and windows. Several configuration options may need to be tested to find the most effective layout.

Figure 4-32. Example of a Physical Workstation Mockup

Positioning of workstations, furniture, and equipment can be tested using scale models, temporary work environments, and space-planning software. For instance, a digital mockup of a workstation can help determine the best layout for TA equipment, such as keyboards and document scanners. In a physical mockup, equipment can be represented by other items such as file folders, masking or painter's tape, boxes, or paper cut to the size of the equipment (Figure 4-32). Space for cabling and separation of devices to allow for air circulation should be considered when evaluating a layout.

The following sections present four prototypical layouts for three credentialing office sizes created based on maps and diagrams provided by interviewed airports. All options have a similar functional layout with a reception and waiting area, TA workstations, a training area, spaces for staff, and various support functions. However, the components of the plan can be shaped and sized as required by the configuration of the overall space to be used, the number of customers served, and the number of staff in the department. The number and types of specialized spaces will vary depending on each airport authority's staffing needs, policies, and team member specializations.

Case Study 8. LAX Structural Columns

LAX's Security Badging Office is located on the first floor of a parking garage, which created a challenge for the planners and designers. Large concrete pillars are required to support the weight of the garage, and many of these columns run through the office (Figure 4-33).

The planners and designers were able to mitigate the impact of the columns by adding walkways in this space. However, two of the twenty workstations that were built are unusable because the columns are directly behind the workstation, making them inaccessible to TAs (Figure 4-34). Areas such as these should be evaluated before building out workstations that will be unusable.

Figure 4-33. LAX Concrete Structural Support Pillars

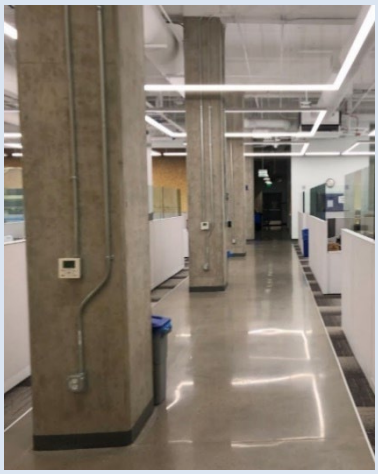
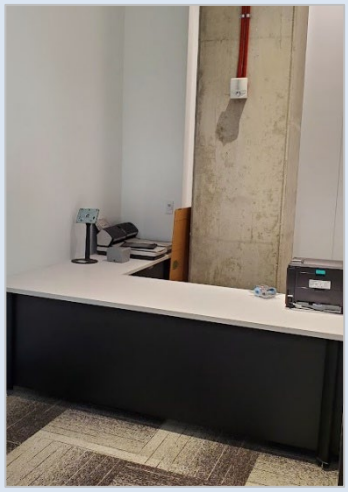
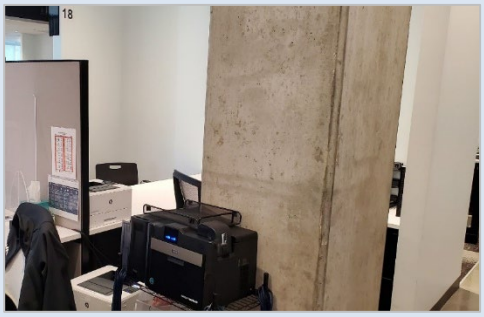


Figure 4-34. Structural Columns Blocking TA Workstation



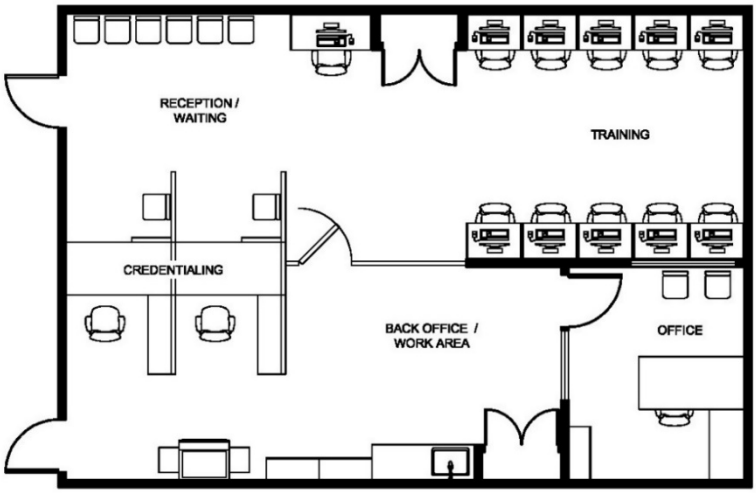


4.2.1 Small Office Options

The small office plans accommodate all the basic credentialing functions (e.g., waiting space, credentialing transactions, fingerprinting, training) in a compact layout. The design allows customer circulation in one zone while staff and office functions occur in a separate zone.

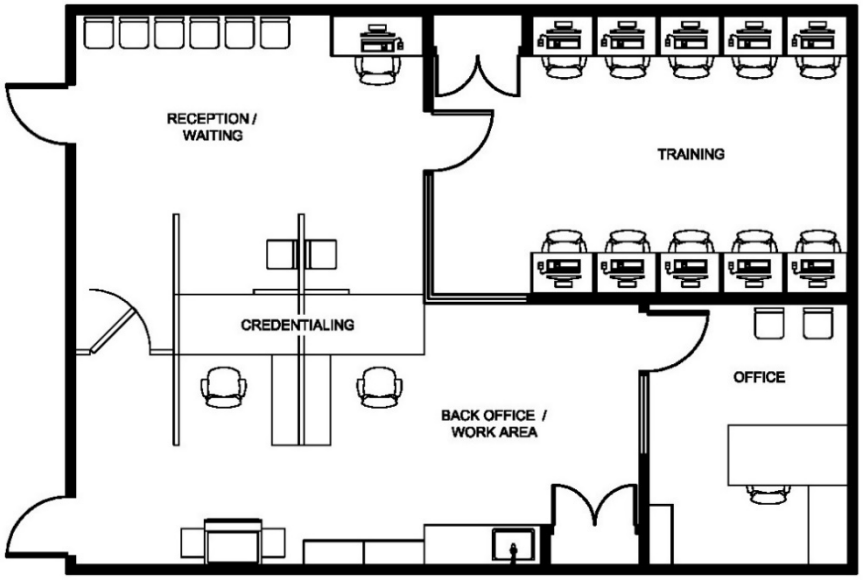
Small Office Option 1 (Figure 4-35) shows two identical TA workstations, each with its own equipment (e.g., computer, printers, fingerprint readers, document scanner). The training area is open to the rest of the office to allow the TAs to easily monitor trainees. Sound dampening headphones can be used to help with trainee privacy and focus.

Figure 4-35. Example Option – Small Option 1 (1,100 SF)



Small Office Option 2 (Figure 4-36) has the same functional layout with significant differences in operations. The two TA workstations now share some of the credentialing equipment. The training area has been enclosed for acoustical privacy and trainee focus, but glazing has been added to allow the TAs the ability to monitor the trainees.

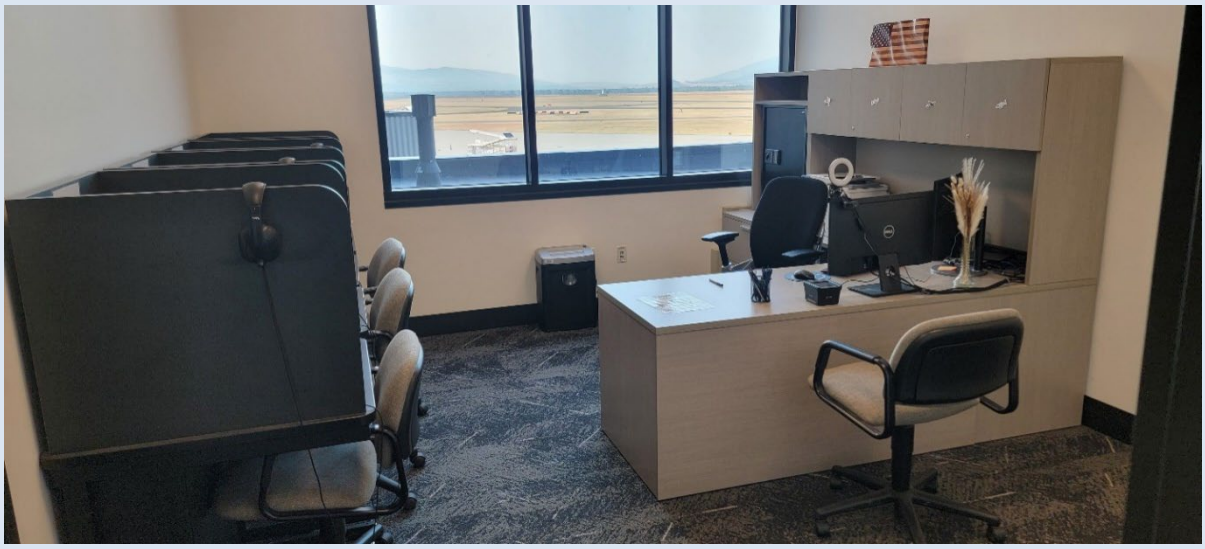
Figure 4-36. Example Option – Small Option 2 (1,100 SF)



Case Study 9. Missoula Montana Airport Compact Credentialing Office

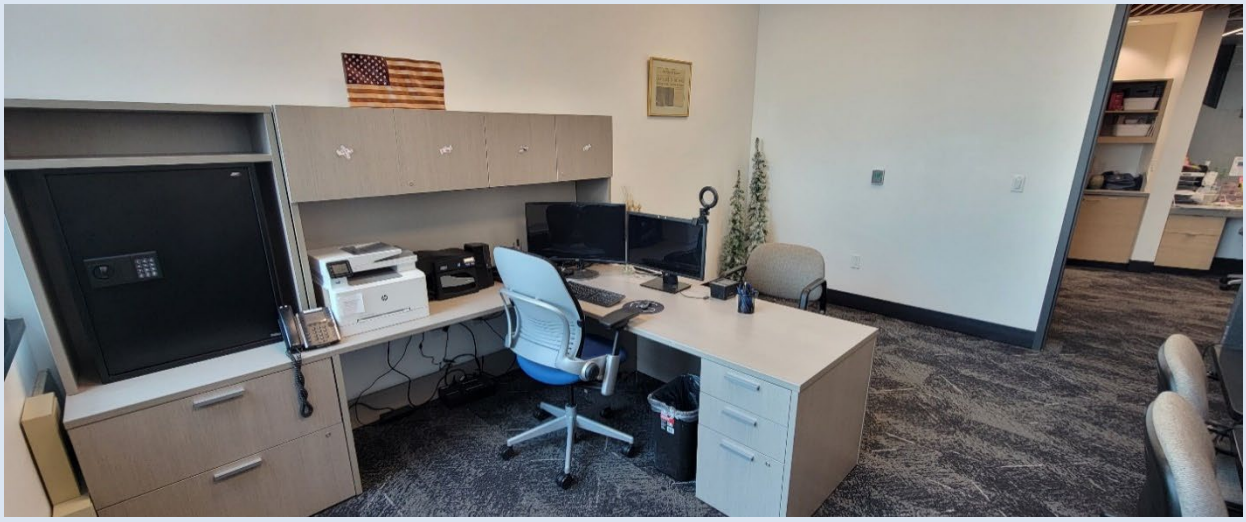
In 2021, the Missoula Montana Airport (MSO) credentialing office moved into the Airport Administration Office, which also accommodates the airport's other administrative and operations departments. All credentialing activities take place in a 13 x 16.5-foot room (Figure 4-37). The airport has about 1,000 credentialed airport workers and the office processes 5–6 credentials a day.

Figure 4-37. MSO Credentialing Office



There is one TA workstation that is capable of performing all credentialing transactions (Figure 4-38). All operations staff are qualified TAs, but only one is assigned to the credentialing office each day; the desk is shared between the agents. A privacy filter screen was added to the monitors to protect customer information.

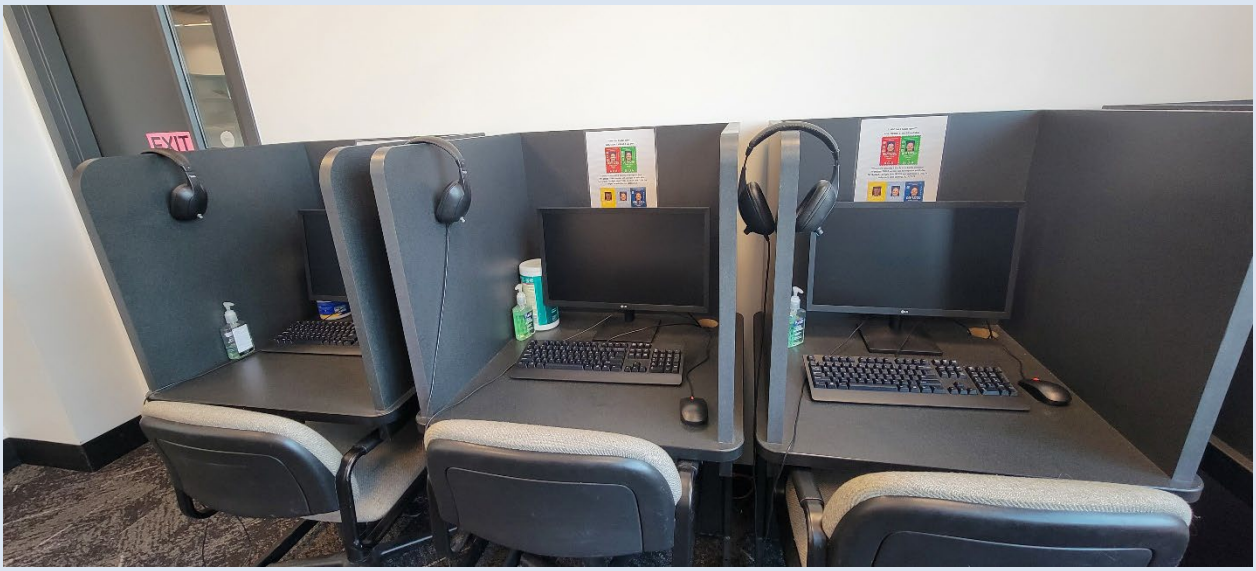
Figure 4-38. MSO TA Workstation



A safe in the corner protects "hard keys" and retained access media. Filing cabinets located outside of the office hold documents needing to be secured. When the office completes the transition to electronic files, the filing cabinets outside of the office will no longer be needed and lockable desk cabinets will be utilized.

Opposite the workstation are four training stations. Three of the stations are equipped with computers and headphones for customers to take their assigned training modules (Figure 4-39). The fourth workstation is not equipped with a computer and is used as temporary storage for trainee property and filling out paper applications, if needed. All three stations are rarely in use simultaneously.

Figure 4-39. MSO Training Stations



The credentialing office shares space with many other airport departments. Unescorted access to the office is limited by the access control system to personnel with authorized credentials. This allows the credentialing office manager to secure the space to attend to tasks outside the office.

The Airport Administration Office is on the third floor of the airport terminal and consolidates several departments into a single space. This allows the airport to provide well-equipped shared spaces within the Administration Office space, such as a conference room, printing and office supply room, gendered restrooms, water fountains, water bottle refill station, and a kitchen and breakroom (Figure 4-40).

Figure 4-40. MSO Airport Administration Office Kitchen

The MSO Airport Administration Office also has a shared check-in reception desk and waiting areas that serve all the departments (Figure 4-41). Credentialing office customers can check in for their appointment with the receptionist and wait to be called by the TA.

Figure 4-41. MSO Airport Administration Office Check-In Lobby

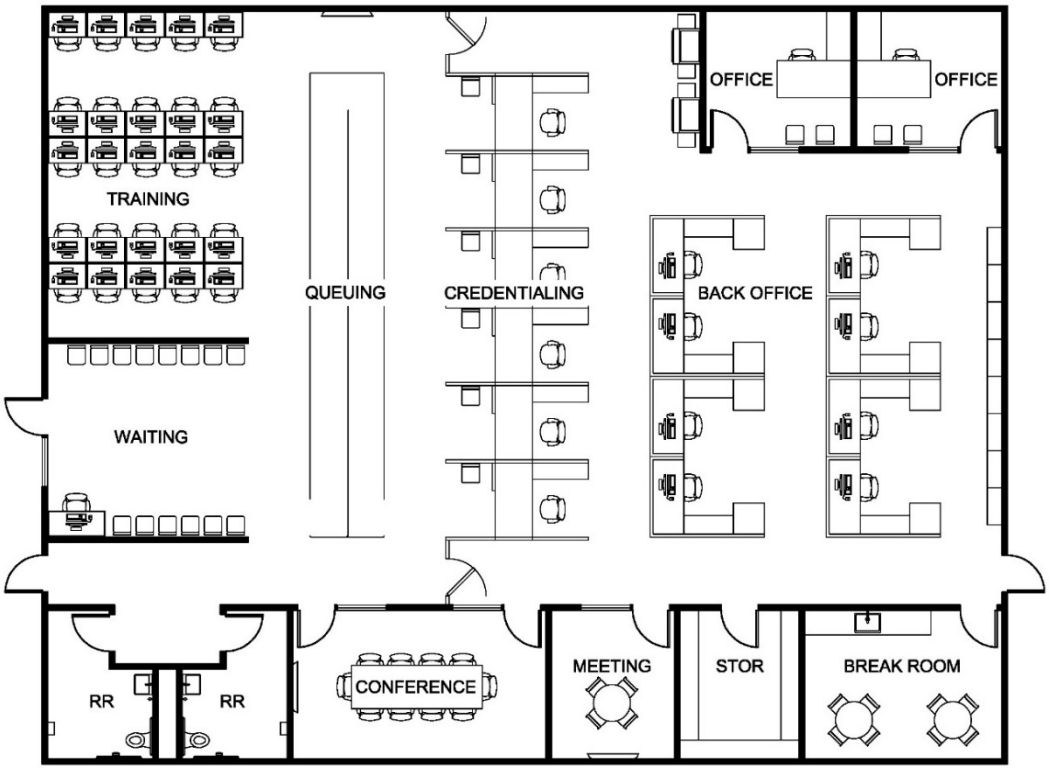
4.2.2 Medium Office Option

The medium office plan (Figure 4-42) has a row of identical, flexible service counters and separate zones for customers and staff.

The waiting area includes a workstation with a printer for customers to complete necessary paperwork. There is a queuing area in front of six fully equipped workstations. The workstations are positioned to allow the TAs to monitor the training area. On the public side of the office are two unisex, ADA-compliant restrooms and access to a conference room for in-person training sessions, staff meetings, and new company setups.

The staff side of the office is blocked with swinging gates to prevent customers from accidentally walking into the space. The staff have access to eight private workstations, two private offices, secure storage, a breakroom, and a small meeting room.

Figure 4-42. Example Option – Medium (4,800 SF)



Case Study 10. Colorado Springs Airport Credentialing Office

The Colorado Springs Airport (COS) credentialing office is located on the far east end of the upper level of the airport terminal, and serves about 2,600 credentialed airport workers.

The 1,146 square foot credentialing office includes two TA workstations, a training room with 10 stations, a supervisor's office, a break room, and a large, secured storage closet (Figure 4-43).

The TA workstations are fully equipped to complete all credentialing transactions (Figure 4-44). The desks are designed for the TA to be seated while the customer stands; this height discrepancy can make it difficult for the TA to see paperwork and ID cards sitting on the counter. Adjustable desk risers were added to allow the TA to raise the computer monitor, keyboard, and mouse to standing height.

Figure 4-43. COS Credentialing Office Layout

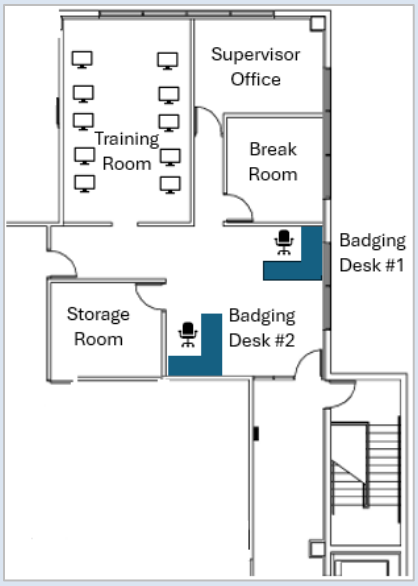


Figure 4-44. COS TA Workstation

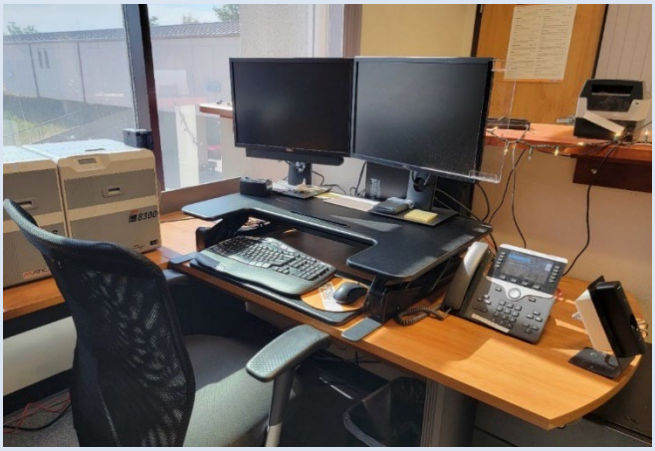


Figure 4-45. COS Credentialing Office

The desks are arranged around the main office space to create a small lobby space (Figure 4-45). This is where the customer stands during the credentialing transaction and is also where ID photos are taken. The space is too small for photos to be taken at one desk while transactions are being conducted at the other desk; in these rare instances, the customer not taking a photo must step out of the office briefly and wait in a small waiting space in the public area of the terminal (Figure 4-46). Appointments are carefully staggered throughout the day to avoid clusters of customers arriving simultaneously. Customers are permitted to arrive a maximum of ten minutes before their scheduled appointment to ensure no more than two people are in the lobby area at a time.

Windows on one side of the office create inconsistent and uneven lighting that greatly impacts the photo quality. Ring lights were added to help even out the lighting. Moving the photo area away from the windows would be one strategy to help maintain consistent light levels, but would require significant rearrangement of the office furniture. Window curtains, blinds, or tinted film could also be added to reduce the impact of ambient light on ID photos.

Figure 4-46. COS Credentialing Office Waiting Area

The airport is currently going through a concourse modernization project, which has added around 400 new credentialed construction workers. With such a spike in credentials, a third station and another TA could help manage the office demand, as the supervisors currently spend more time on customer transactions than the role's assigned administrative tasks. Potentially, there is enough space in the secured storage closet to add another fully equipped workstation while retaining sufficient storage space, but construction would be necessary to remove and add walls.

Adjacent to the TA workstations is the 339-square-foot training room with ten computer stations arranged along the opposite walls, five on each side with users facing the walls (Figure 4-47). Directly opposite the entrance is a large window, allowing natural light into the room. The openness of the space allows the TAs and office staff to quickly check in on all trainees in the room. A Wi-Fi hotspot provides access to the training website while access to all other sites is blocked.

Figure 4-47. COS Credentialing Office Training Room

Access to the training room is by appointment only, and up to ten trainees can sign up for one of two training blocks each day; the first is shortly after the office opens (08:30) and the second is when the office opens after lunch (13:30).

If there is a mass hiring event, such as the start of a new construction project, the authorized signatory can work with the credentialing staff to set aside a block of time for all the applicants to complete the training at the same time.

The credentialing office entrance is locked during non-business hours, including lunch, using a standard lock and key system. Only Colorado Springs Department of Aviation employees have the key to unlock the entrance. There is a “back” door at the end of a short hallway that leads to other airport departments and offices, as well as non-public restrooms. Access through this door is controlled with access control management tied to the user’s credentials, and is often used by custodial staff after hours. The office staff would like to add a credentials reader to the entrance as well to eliminate the need for physical keys.

Multiple cameras monitor the credentialing office, including a camera facing the entrance and one facing the storage closet. Footage from these cameras is available to the supervisor from their office so they can monitor who enters the credentialing office and have a record of who entered the secured supply storage.

In the center of the credentialing office is a small breakroom and kitchen with a sink and refrigerator. A shared conference room is available for airport employees to reserve as needed.

4.2.1 Large Office Option

The large office option (Figure 4-48) offers an approach that aims to optimize the use of available space based on staff specialization. In this layout, customer and staff circulation zones are separated to allow for oversight and communication between staff members while providing efficient customer circulation and privacy for transactions.

The waiting area is designed around the use of a virtual queuing system, so there is no need for a separate queuing area, and the space is designed to feel more like a lounge. Tables are available for customers to fill out paperwork or use while they wait, and a bank of monitors shows the queue and wait time. A separate reception desk area is located at the entrance for initial review of documents and to answer general questions.

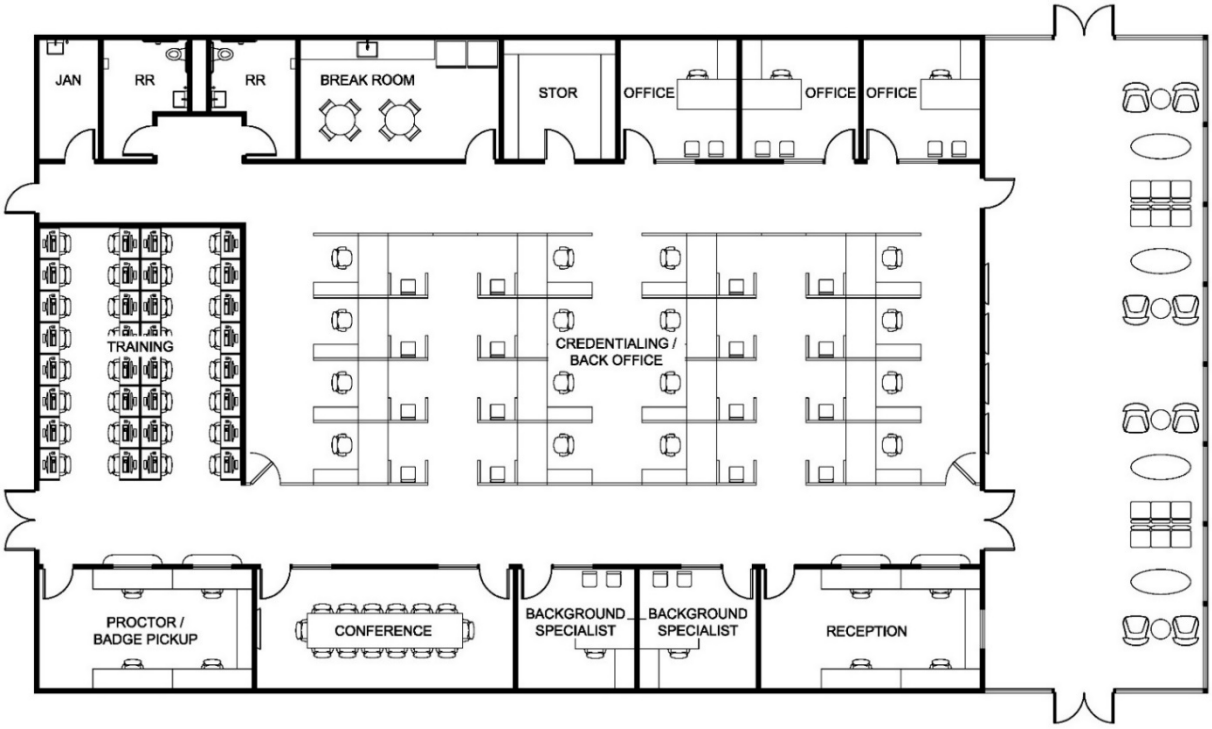
The center of the office is dedicated to fully equipped TA workstations. The number of workstations allows each TA to customize the space for their own comfort and personal expression. Customers always have their backs to other customers to enhance privacy. Half walls and swing gates are also placed at the end of the aisles to prevent customers from accidentally entering the staff side of the office.

The training area is at one end of the office with an adjacent door for trainees and individuals picking up a credential to bypass the waiting area. The proctor’s office is positioned to allow the proctor to monitor the entire training room with lines of sight down both aisles.

Two offices along the customer circulation route are dedicated to background specialists to allow for private background resolution work. Three offices are available for supervisors, managers, or other needs, and a conference room allows for larger customer and staff group meetings.

The plan also includes two unisex, ADA-compliant restrooms, a breakroom, and secure storage space.

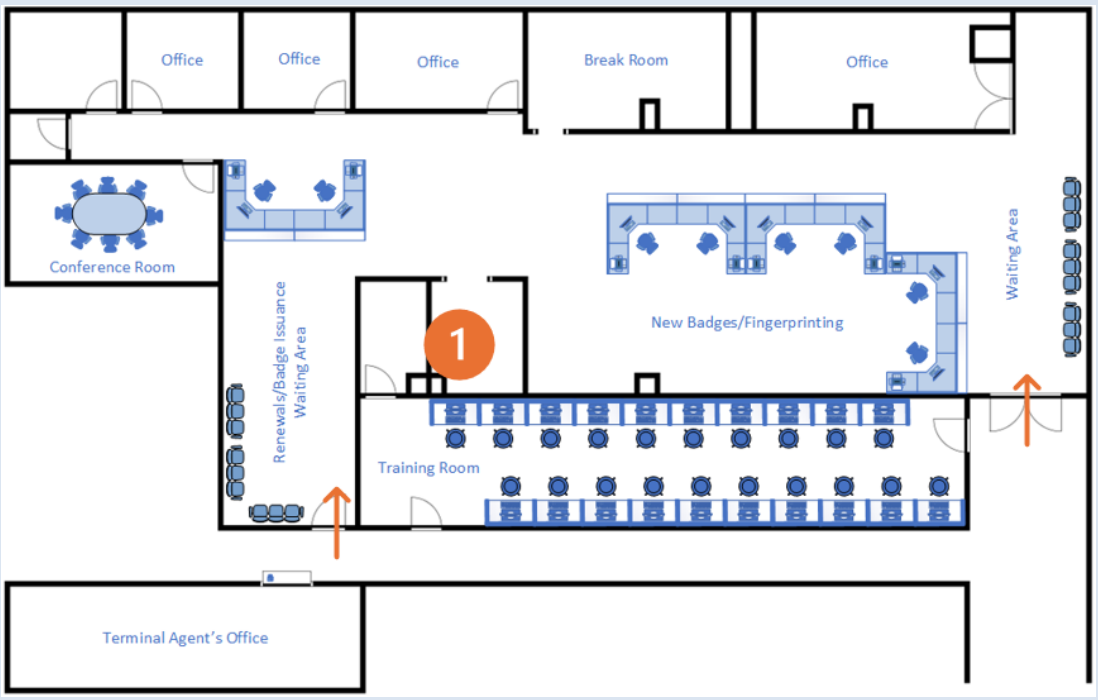
Figure 4-48. Layout Option – Large (7,600 SF)



Case Study 11. IAD Pass & ID Office Layout

In 2019, IAD decided to remodel the Pass & ID Office in order to create more efficient credentialing processes and improve customer experience. In the original layout (Figure 4-49), the Pass & ID Office was functionally divided into two spaces: new credentials/fingerprinting and renewals/credential issuance, with a small storage space (1) splitting the physical space into two separate waiting areas. This separation reduce risk in the credentialing process by ensuring that customers could not work with the same TA for all credential issuance functions (e.g., fingerprinting and credential issuance). However, the layout created a significant amount of wasted space and, while the office was fully connected, multiple doors leading into the office created confusion for customers.

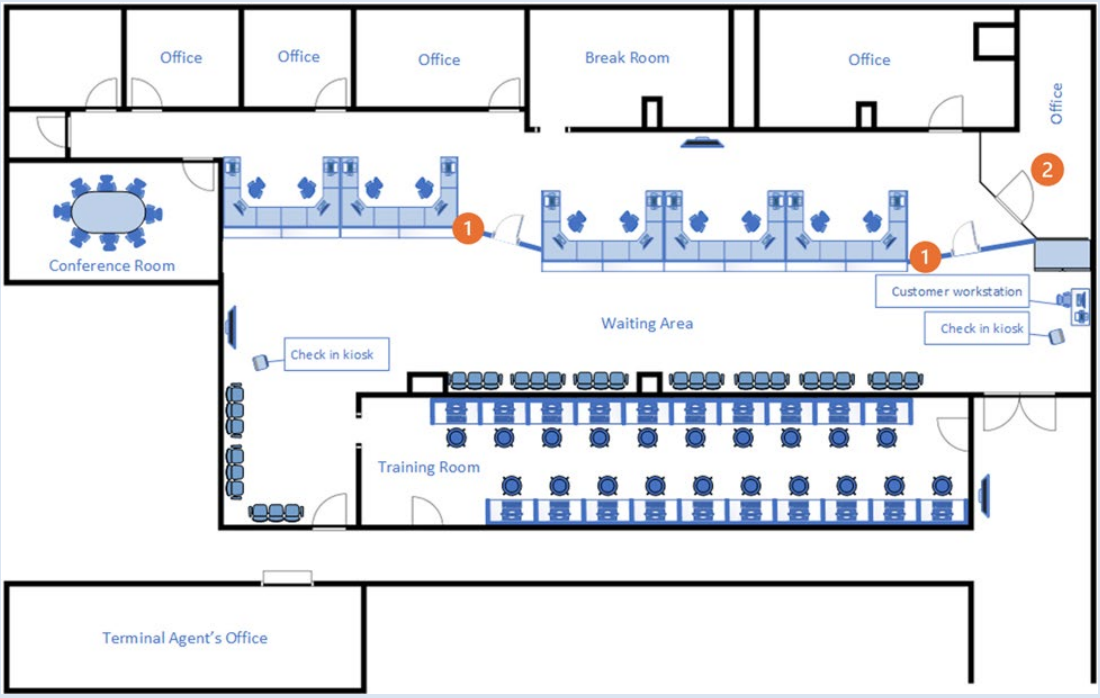
Figure 4-49. Original Pass & ID Office Layout



**Furniture layout and number are approximate.*

In the redesign (Figure 4-50), the storage space was removed to create one large waiting area for all customers. The TA workstations were rearranged to create one long counter space, and each workstation was equipped to complete all credentialing transactions. This allows any TA to process any customer, reducing overall customer wait time.

Figure 4-50. Current Pass & ID Office Layout



**Furniture layout and number are approximate.*

After the remodel was complete, barriers with swinging gates (Figure 4-51) were installed in the space between the workstations and walls (Figure 4-50 [1]) to prevent customers from unintentionally walking behind the workstations.

A portion of the original waiting area (2) was converted into a new office for the lead TAs to manage company on-boarding processes, such as new authorized signatory training and company paperwork. The lead TAs also manage the access control clearance codes, electronic key systems, CHRCs, and SIDA verifications in this office, so increased privacy is beneficial.

Figure 4-51. Barrier with Swinging Gate

4.3 Signage and Wayfinding

Signage and wayfinding for the credentialing office are important to reduce confusion for customers as they locate the office and go through the credentialing process. This is especially important for customers who are not familiar with the airport or credentialing process.

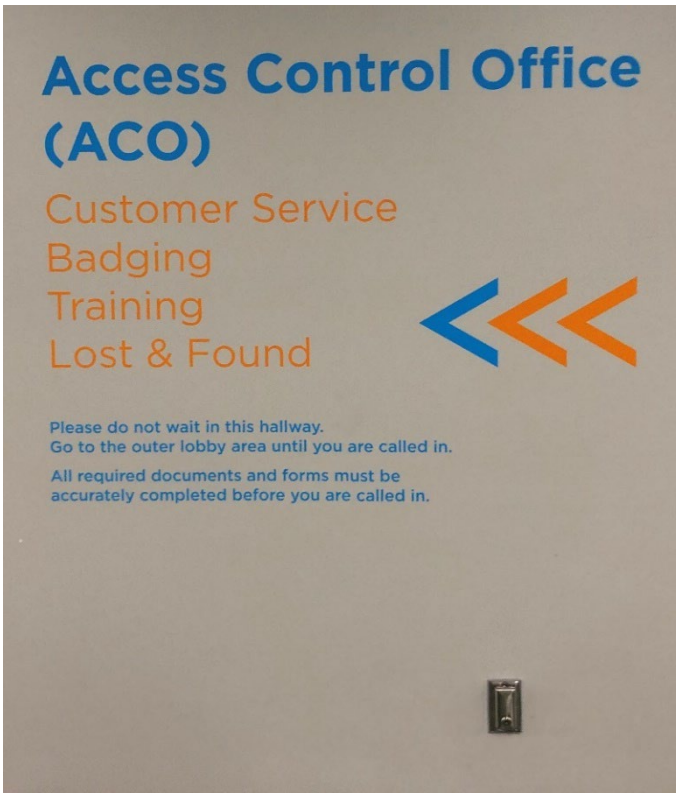
Signage inside the credentialing office is often process focused, such as for the check-in desk and station numbers. Considerations when designing the signage within the office include:

- Customers tend to look up toward the ceiling for identifying station numbers
- Signs and monitors should be angled to face the waiting area or approaching customers
- Consider ADA accessibility in the design of wayfinding and other signage
- Instructional signage (e.g., “Don’t lean on desk” and “Wait until called”) can be helpful for common mistakes or issues, but too many signs may result in customers ignoring all the signage
- Signage location, verbiage, and design should always be considered from the perspective of a customer who is not familiar with the office, the industry, or the process
- Airports with substantial populations whose primary language is not English may want to consider multilingual signage, or digital signage that can cycle among multiple languages

Signage in the terminal area is typically limited to the area immediately surrounding the credentialing office to limit signage in the passenger areas. This can be confusing for customers who have never been to certain floors or sections of the terminal. Signage directing customers to the credentialing office can be strategically placed in high visibility areas, such as employee access portals, inside elevators (Figure 4-52) and at the top of stairs and escalators, parking lots or garages, and at any junctions where the corridor splits into divergent paths (Figure 4-53).

Figure 4-52. Elevator with Office Label

Figure 4-53. Instructional Signage on Wall



Offsite credentialing offices can be challenging for customers to locate without adequate signage. Roadways may not have names (or may have multiple names), the address may not show up on navigation applications, or the office may be in an office complex with multiple tenants. Placing signage at road junctions can indicate the correct direction to the office.

Signage indicators, such as color, mounted location, shapes, icons, and fonts, can differentiate employee signage from passenger signage in the passenger areas of the terminal and along roadways.

Wayfinding is also important to assist customers, especially if the office has recently moved locations. Visual site maps accompanied by written directions offer the most clarity for the majority of customers. These are often emailed to authorized signatories with the expectation that they will then forward the maps and directions to new hires as necessary. The maps and directions can also be added to the credentialing office webpage.

If the office is located outside of the terminal and the building has its own address, verify that the address is correct in navigation applications; an airport representative may need to work with the application developers to move or adjust the address.

Conducting walk- and drive-through audits of the terminal, employee parking lots, and roadways can help identify signage or wayfinding challenge areas. These “customer perspective” audits can identify areas with missing signage at key decision points, hidden or difficult to find signage, and signage that needs to be replaced due to wear and tear or damage. This allows the airport to proactively address any potential points of confusion.

Case Study 12. OAK BPO – Signage

OAK's BPO was relocated to the opposite side of the terminal and down a corridor, which sometimes makes it difficult for customers to locate. To help mitigate this, OAK installed wayfinding signage in the elevator and in the corridor (Figure 4-54).

Figure 4-54. Elevator and Corridor Signage

Case Study 13. IAD Pass & ID Office – Signage

IAD has created effective and visible signage to help Pass & ID Office customers navigate the various credentialing processes. This signage is placed in the hallway leading to the Terminal Agent's Office, Pass & ID Office, and the Training Room. The ABC signage (Figure 4-55) identifies the three Pass & ID Office functional areas and instructions for the customers. These colors are used throughout the office and immediate area to reinforce the signage messages.

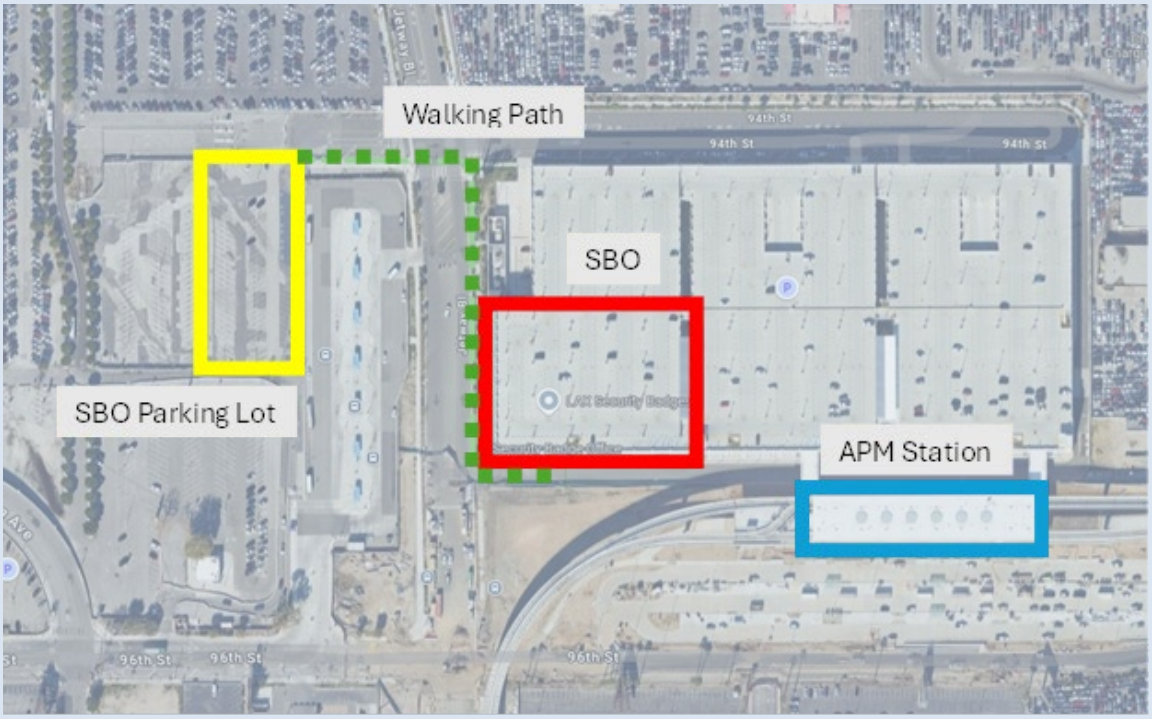
Figure 4-55. ABC Signage

PASS AND ID – WHERE TO START?	
A	Terminal Agent Please proceed directly to the agent cashier window for: • Parking permits, • Lost and found fees, • Lockshop fees, • And other agent cashier transactions
B	Pass & ID Office Please proceed to the Pass & ID Office. Check into our reservation kiosk to be called. • Please make sure your documents are completed and signed by your certification official. • Please have your two (2) forms of ID ready.
C	Training Room Please proceed to the training room. • Complete any required training before badge renewal or pick-up. • Training is to be completed alone. Not assistance accepted. • Please turn off cell phone and all electronics. Use of electronics is prohibited.

Case Study 14. LAX Security Badging Office Signage and Wayfinding

LAX opened their Security Badging Office in 2023 on the first floor of the LAX Economy Parking Garage (Figure 4-56). This location was chosen in part because of its proximity to multiple transit stations and parking lots for ease of access for customers.

Figure 4-56. LAX Security Badge Office Map



There was some confusion when the office moved from the west side of the airport to the east side because entering the new address into some navigation applications initially sent the customer to another city. LAX's Airport Operational Readiness Team worked with the applications to update the address location. Directions were also included on the Security Badge Office website.

Unfortunately, the address and directions to the office take the customer to the Economy Parking Garage, where customers are notified that parking fees will not be validated or reimbursed. A no-cost surface parking lot for SBO customers is provided nearby. The airport has worked with navigation applications (e.g., Apple Maps, Waze, Google Maps) to update their information and routing, but those third parties each have their own update processes that take time.

Some signage was added along the main roadway (Figure 4-57) to direct customers to the correct parking lot with signage at the lot indicating only customers are permitted to park in the lot (Figure 4-58).

Figure 4-58. LAX SBO Parking Lot Signage

Figure 4-57. LAX Roadway Signage

Figure 4-59. LAX SBO Walkway Signage

Signage on fences and signposts has been added along the walking path from the Employee Lot to the office (Figure 4-59). This helps the customer navigate the dedicated SBO parking to the entrance, which is across a street and around a corner, about a 0.2-mile walk.

There are airport shuttles that run between the terminal and garage and employees can use this option to reach the Office. In 2026, the airport expects to complete the construction of the Automated People Mover (APM) with a stop at the Economy Parking Garage. This will allow customers to take the APM from the terminal to the garage without the need to find parking and walk.

SECTION 5: TECHNOLOGY CONSIDERATIONS

Purposefully deployed technologies can greatly improve scheduling, information capture, and other steps in the credentialing process. The potential work capacity and efficiency of the credentialing office will continue to grow as new technologies are developed and employed. Conversely, outdated technology and related infrastructure can hinder the efficiency of the credentialing operation.

5.1 Network and Power Needs

Availability of infrastructure, such as network and power connections, is crucial to ensuring that technology solutions can operate without interruption and can connect to the airport network and internet, as necessary. Redundancy in the systems can greatly improve the office's resiliency. Ample power outlets, strong wireless coverage, and fast network speeds will provide great benefit to the office staff and customers.

5.1.1 Network Considerations

Network capabilities greatly affect the credentialing office's ability to access local databases and transmit information to their Designated Aviation Channeler. Many credentialing offices use the airport's primary network, which reduces the need for separate servers, maintenance, etc. However, this requires the airport IT department to establish security standards and protocols on the office server and computers to protect the security of the network the sensitive data involved in credentialing. These security protocols may cause delays as information is transferred to and from remote servers. Additionally, networked equipment, such as photocopiers, can be a challenge to set up while still complying with increasingly stringent cybersecurity protocols required by the IT department.

Credentialing servers and the data stored on them need to be secured from cyberattacks and data loss. The airport's IT department can protect the data with firewalls and security protocols. Access to data stored on the servers should be limited to a select group of managers; the IT department can assign access privileges to the user logins to accomplish this.

All server devices, racks, cables, and related equipment should be secured behind a locked door to limit access, as well as to prevent damage. Heat is detrimental to electronics, so the space containing the server equipment should be kept at an ambient temperature between 68 and 71 degrees, and humidity should be minimized. This will help extend the equipment's operating life and avoid system crashes due to equipment failure. Dedicated air conditioning units and dehumidifiers can help maintain ideal operating conditions.

Wireless network and internet access will require a wireless router with sufficient signal coverage and bandwidth for the entire office. For larger offices, routers with a longer range or range extenders can ensure the entire space is covered. During deployment, the staff should work with the airport IT department or network service provider to make sure that there are no dead zones in the office.

Customers will appreciate access to a wireless network while they wait; the IT department can create a public or guest network for customers and a private network for the credentialing office to protect sensitive data. Such guest networks can be equipped with content filters to make sure no customers are abusing the network by viewing inappropriate materials.

If the office is not using a wireless network, the number and locations of network drops will need to be considered to ensure all necessary devices can be connected. Additional drops should be added to enable

future growth and office reconfiguration. The IT department is often responsible for modifying or adding network cables and drops during credentialing office remodeling projects. If a new office is being built, the adjustments may be made by the contracted builder.

Because files continue to increase in both number and size, it is wise to install the fastest network infrastructure that can be accommodated.

5.1.2 Power Considerations

Adequate power is a necessity to maintain uninterrupted operations. Credentialing offices located in the terminal will run off the terminal's main power source; terminal offices should be hooked up to an emergency or backup power source, such an uninterruptable power supply that reacts immediately to power outages.

Credentialing offices located offsite typically have their own power source. Backup power sources are critical to offsite locations to provide enough power to safely shut down critical systems, as sudden system crashes can result in data loss and corrupted files. To ensure that backup power sources are allocated to essential systems, such as TA computers and servers, they can be segregated from non-essential systems, such as lighting.

Sufficient power circuits, including extras for redundancies and growth, will be necessary to prevent overloading the circuits. Many office staff bring space heaters to the office, which can trip the circuit breaker and cause power outages. Break rooms need special consideration as the voltage of commercial appliances, such as refrigerators and microwaves, may not conform to standard office power standards. One airport interviewed reported that they had to downgrade the break room refrigerators and shared printer/copiers because the appropriate 220-volt electrical circuits were not included in the construction of their new facility.

Each workstation, training station, and piece of equipment will require access to power. Power outlets are typically installed in walls, which can greatly limit reconfiguration options and growth potential. Additional power outlets can be installed in the floor and ceiling to offer more options if the office needs to be reconfigured, although this is most easily done during new construction. In a cubicle arrangement, power often runs through a cable chase along the bottom of the wall panels. To facilitate different equipment arrangements, outlets should be provided on all panels, not just the rear or along one side.

Customers appreciate access to power outlets to charge their mobile devices while they wait. Adding plenty of outlets in the waiting area can ensure outlets are available for multiple customers. Some newer credentialing office have installed outlets that contain both standard electrical plugs and USB charging ports. All circuits should be protected with surge protection appropriate for the devices being powered; priority should be given to critical systems, such as the TA computers and office server.

Power requirements for lighting is another key consideration. The drop locations for light fixtures should be planned carefully to ensure minimal glare on screens and surfaces. Workstations and CBT stations should have plenty of light, and the areas used to take ID photos should avoid shadows that could impact photo quality. The lighting needs to be spaced to reduce bright pools of light, which can cause eye strain. More information on lighting design can be found in Section 6.1 Lighting.

During remodels, the airport's maintenance department is often responsible for modifying or adding power outlets and lighting. Power modification and addition during new construction is typically made through the contracted builder.

Case Study 15. IAD Pass & ID Office Utility Modification

In order to facilitate removal of the storage space in the middle of the IAD Pass & ID Office (Case Study 11) and rearrangement of the TA workstations, many of the office utilities had to be relocated. This required support from the airport maintenance and IT departments, as well as the airport's electronic security systems contractor.

Maintenance staff removed several walls and adjusted the lighting grid and power drops from the ceiling to ensure there was enough lighting in the now open area where the storage space had been. Maintenance also rearranged the workstations into their new locations. The IT department worked with the electronic security systems contractor to remove the old network cabling, and IT installed the new cabling to connect the Pass & ID Office servers to the airport network.

Unfortunately, maintenance did not have time to completely finish the ceiling (Figure 5-1) or walls (Figure 5-2) where the storage space walls were before COVID-19, and put these tasks on hold.

Figure 5-1. Ceiling Height Discrepancies

Figure 5-2. Unfinished Wall

Case Study 16. DEN SBO – Utilities as a Tenant

The DEN SBO space is leased from United, so United must approve and complete any building modifications.

Windows cover one wall, allowing the sun to heat the office to unacceptable temperatures in the summer (Figure 5-3). United has provided four large, portable air conditioning units connected to the air vents to help reduce the temperatures. However, heat waves in the Denver area frequently strain the equipment's capacity. Only two of the air conditioning units can be used at a time. If all four units are on at the same time, the circuit breaker will trip and United Building Maintenance must come out to reset it.

The SBO also needs additional backup power equipment because it is not connected to the airport's backup power. Occasionally, the office experiences power outages that can shut down the SBO for an entire day.

Figure 5-3. SBO Windows

Case Study 17. Seattle–Tacoma International Airport Employee Service Center

At the Seattle–Tacoma International Airport (SEA) Employee Service Center, a single HVAC zone encompasses the main open office space. This creates a challenge when trying to make the space comfortable for everyone. Some staff have brought in portable heaters and plugged them into the outlets and surge protectors under their desks. Unfortunately, this has led to multiple incidents of the heaters overloading the electrical circuits and tripping breakers that also power the computers and equipment at the workstations. In one event, a tripped breaker shut down half of the workstations. It is likely that the space does not have enough redundant power sources or separate circuits with sufficient capacity to prevent this type of outage.

5.2 Planning for New Technology Deployment

Credentialing offices can leverage a variety of technology solutions to assist with the credentialing process, including appointment scheduling, queue management, IDMS, and fee collection terminals.

Careful consideration should be given to integrating new solutions with legacy systems, as many legacy systems are not compatible with newer technologies. Airport operators should determine if updating older associated equipment (e.g., fingerprint readers) needs to be included in the procurement process for new technology.

Vendors and manufacturers can be required to demonstrate that their product can be integrated with the airport's current systems with minimal or no customization. This could be included as a major decision criteria when comparing available solutions. Using a technology and systems integrator can help research and identify potential issues and solutions before a product is purchased or an agreement is signed.

Another consideration is the physical size of equipment needed to support the new technology. Larger equipment may require a reconfiguration of the office layout or workstation setup, while smaller equipment may provide extra space that can be used for another purpose. New furniture may be warranted if significant size differences allow considerably better or more efficient use of available space.

Redundancy should be built into the technology design to futureproof the credentialing office. Equipment failures may decommission a piece of equipment for a significant period while repair or replacement is arranged. An inventory of spare critical equipment should be maintained to avoid supply chain delays. Extra equipment can replace the decommissioned equipment to support business continuity. If the spare equipment permanently replaces the decommissioned equipment, another should be procured to serve as the new spare equipment.

5.2.1 Scheduling Applications and Queue Management Technology

Scheduling applications and queue management technology allow the credentialing office to maximize efficiency by controlling the number and flow of customers in the office.

5.2.1.1 Scheduling Applications

Credentialing offices without scheduling technology may rely on the TAs to schedule the appointments or accept walk ins; airports with larger credentialed populations will find these methods insufficient to keep up with demand. Appropriately configured scheduling technology removes the need for the credentialing staff to manually manage the volume of transactions each day, enabling them to focus on their core credentialing responsibilities.

Some smaller airports use a shared Outlook calendar to make and track appointments. Most office employees will already be familiar with Outlook or other digital calendars, so the learning curve is not as steep as with less familiar options. Digital calendars are most useful to offices with low demand or only a small number of staff; overlapping appointments make a simple schedule difficult to manage effectively. Such digital calendars for home and office users also have limited reporting capabilities.

More sophisticated appointment scheduling applications use the same calendar features as a digital calendar, but offer many more appointment-focused organization, management, and reporting options. Many vendors provide appointment scheduling applications for specific industries (e.g., health care, beauty services, realty, etc.). Careful research should be conducted before procuring any scheduling application to ensure it will provide the features needed without an excess of unused features. Common attributes valued by airport credentialing offices include:

- Easy to modify, cancel, and reschedule appointments
- Able to link additional people to an appointment, such as a TA, the customer's employer, or an authorized signatory
- Appointments show the type of transaction to be performed
- Reporting options with multiple filters (e.g., number of appointments scheduled by day, company, or transaction type; number of no-shows for a company)

Some applications provide the customer with a self-service option to schedule an appointment in the system through a third-party link or with an online portal. Customers or Authorized Signatories are able to schedule an appointment based on the type of service they need (e.g., fingerprinting) without requiring assistance from the TAs.

Many scheduling application vendors have transitioned from flat fees to subscription models that charge based on the number of users and/or number of appointments. This should be taken into consideration when comparing solutions. Airports using an IDMS may inquire with their system vendor about any built-in scheduling capability or available add-ons. Linking the data from the IDMS and the appointment system will reduce the amount of redundant data entry and greatly improve data analysis capabilities.

5.2.1.2 Queue Management Technology

Standard queue management technology allows the customer to check in and wait to be called to the next available TA. Once checked in, the customer can take a seat, partake in a refreshment, etc. until they are called to a workstation.

In many credentialing offices, a self-service, tablet-style kiosk is set up near the office entrance so that it is one of the first things a customer sees when they arrive. If this is to be used, airports should consider customers who approach from other directions such as side doors; prominent "Check in Here" signage may prove helpful. Some airports have tied the system to a display monitor to show each customer's places in the queue and estimated wait time. To protect privacy, these monitors typically display only a first name and last initial or the last digits of the customer's provided phone number.

Virtual queuing systems have remote check-in options that can send notifications and updates to the customer's mobile device. This allows the customer to wait offsite or remain at their work location until closer to their appointment. The amount of customer waiting space may be reduced by implementing such a system, but the notification times may need to be adjusted to avoid large numbers of customers arriving too far in advance of being served.

There are costs associated with a virtual queuing system, including initial procurement, implementation, support services, and potentially subscriptions. Interviewed airports that had implemented virtual queue solutions generally reported that they had been worth the investment.

Case Study 18. IAD Pass & ID Office Queue Management System

aA self-service kiosk (Figure 5-4) stands on each end of the IAD Pass & ID office that allows customers to check in to their appointment and wait in a virtual queue. The kiosk asks the customer a short series of questions to ensure they have completed all the required steps before placing them in the queue (i.e., if they brought two forms of acceptable ID and if they have completed the required training associated with their credential). If the customer affirms all the questions, a ticket is dispensed showing the customer's place in the queue. A confirmation notification is also sent to the customer's email and/or phone number.

If the customer answers "no" to any of the questions, they are directed to complete the missing step before proceeding. A workstation (Figure 5-5) next to the kiosk is provided for customers to complete and print the application.

The system includes a QR code (Figure 5-6) that the customer can scan to complete the check-in process on their mobile device. The questions are the same on the kiosk and the mobile link; either will place the customer in the virtual queue.

The queue management software also provides features and data that the Pass & ID Office Manager uses to monitor the office's efficiency. Operational metrics enable the manager to review wait times for each credential transaction reported hourly to identify bottlenecks, trends, and irregularities in processing times. The manager can use trends, peak hours, and other diagnostic metrics to evaluate the need for adjustments to the Pass & ID Office hours and staffing if operational metrics fall short of desired goals.

Figure 5-4. Check-in Kiosk

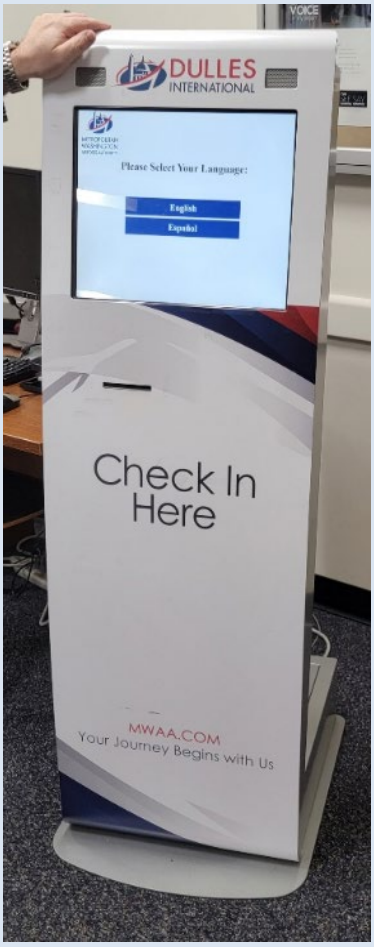


Figure 5-5. Application Workstation

Figure 5-6. Check-in QR Code

The Office Manager did not fully understand the volume of transactions the TAs were completing until the queue management system had been in place for about a year; even though they have fewer than 20,000 credentialed airport workers, the office has consistently completed more than 45,000 transactions every year since the system was activated in 2018, and has grown to 57,000 transactions in 2023. The data facilitates a more accurate understanding of the actual throughput, capacity, and demand on the office and its resources.

5.2.1.3 Analyzing Scheduling and Queue Management Data

Scheduling and queuing solutions may be procured as two separate and siloed systems, but they offer the greatest increase in efficiency when they are integrated. When linked together, the systems can send

updates, reminders, and notifications to the customer from the time the appointment is made until they are called to the workstation. This integration helps manage customer wait-time expectations. The system creates a database entry for each customer that tracks multiple data points in the customer's credentialing process that can be analyzed. See Section 2.3.1 Systems Data Analysis for more information on using the data for planning.

5.2.2 IDMS

Many airports have seen great value in using an IDMS to help manage their credentialing process in a more efficient and secure manner. These systems offer several benefits to airport credentialing offices:

- **Reduce errors when entering information** – TAs confirm information entered by applicants and authorized signatories rather than entering it themselves during the encounter. The system automatically populates fields, checks for missing information, and is programmed to detect and resolve errors (e.g., a phone number missing digits, an address where the city and ZIP code do not match).
- **Reduces or eliminates duplicate data entry** – Data is entered once and then re-used if it is needed in multiple parts of the credentialing process.
- **Reduces transaction times** – Applicants or authorized signatories enter the application information before the first appointment.
- **Reduces time spent checking status** – Can be programmed to notify the TA and adjudication staff of new CHRC results, outstanding tasks, and important reminders.
- **Significantly reduces or eliminates paper files** – Eliminating filing cabinets creates more usable office space.
- **Tracks process times** – Records data on the time required for each customer or TA to complete each step in the credentialing process.
- **Identify impending surges in transactions** – A sudden influx of transactions, perhaps as a result of expiring credentials or new applications to support a major project, can overwhelm the credentialing office. The ability to identify these surges ahead of time can enable office managers to temporarily extend office hours or open a new office location if necessary.
- **Streamlines related processes** – Law enforcement and CBP can review records and approve seals directly in the system.

PARAS 0038: *Airport Guidance for Identity Management Systems (IDMS)* provides best practices and lessons learned to enable the most efficient and effective delivery of an IDMS.

Case Study 19. IAD Pass & ID Office – IDMS

The IAD Pass & ID Office Managers initially reviewed the office policies and procedures to identify opportunities to improve efficiency, streamline processes, and improve the customer flow. Specifically, they looked for strategies to shorten the turnaround time between application and credential issuance using technology solutions. With an average of 220–300 transactions a day, the goal was to reduce the maximum transaction time to less than 10 minutes.

The first phase involved transitioning from paper records to digital. An IDMS was implemented and the TAs were paid overtime to work extra hours scanning hard copies into the system. Before the transition, filing cabinets took up almost 25% of the office footprint; after the transition, only two filing cabinets were needed to store company specific documents (e.g., sponsor letters, designation of authorized signatory letters) and paperwork for individuals denied a credential.

In the years since the implementation of the IDMS, the Pass & ID Office staff have identified several features and modules that would further improve process efficiency.

The addition of an authorized signatory portal would allow the signatory to enter the applicant's information into the IDMS before the first visit to the Pass & ID Office. Currently, the TA manually enters the application information into the IDMS during the first visit, which takes a significant amount of time to complete. This enhancement would decrease the amount of time that the customer spends in the office and enable the TAs to verify the information rather than perform the data entry.

With an update to the IDMS, the Pass & ID Office staff hope to add the option to attach files to a company profile to eliminate the cabinet used to store the hard copies of company-specific documents.

The Pass & ID Office staff have also looked into electronic signature pads to eliminate the need to scan signatures into the system. Previous attempts to implement digital signatures were unsuccessful, but an upgrade to the IDMS may accommodate the necessary equipment.

Data transfer time was a major challenge discovered after the Pass & ID Office was remodeled in 2019. Before the remodel, the Pass & ID Office server was on a standalone network and physically air gapped from the airport network. Processing time to search and retrieve records from the IDMS was only 2–3 seconds. The server was incorporated into the airport network during the remodel, requiring the IT department to logically gap the server and apply additional cybersecurity policies. Now that the data must be encrypted and pass through firewalls, the processing time for record searches and retrievals has increased by 20–30 seconds. This significantly reduces process efficiency and increases transaction time. The Pass & ID Office Manager intends to collaborate with the IT department during the IDMS upgrade to address improving the data transfer rate.

5.2.3 Fee Collection Terminals

Many airports charge customers for credentialing, permits, fines, and other fees. Some airports accept airline vouchers and cash, but customers paying with a credit/debit card require a fee collection terminal to complete the transaction.

Mounting a terminal at every workstation allows the customer to pay the fee as part of the overall transaction. Customers who must leave the workstation will experience increased wait times and transaction times, as well as lower satisfaction with the process.

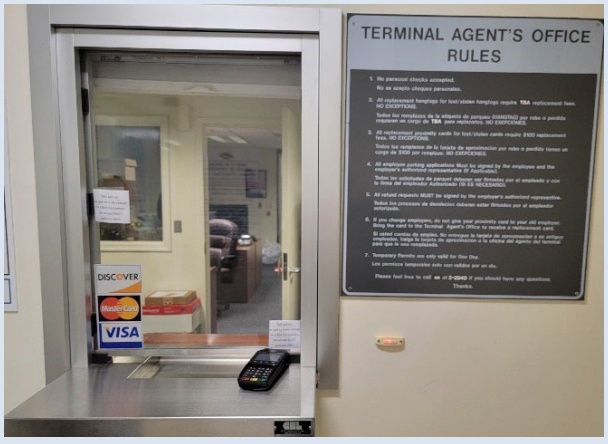
Fee collection terminals shared between multiple TAs can save on equipment costs and space. Terminals should generally be located in view of customers to avoid accusations of credit/debit card theft or abuse.

Case Study 20. IAD Pass & ID Office – Fee Collection Terminal

IAD charges applicants and credentialed workers for credential processing, parking permits, fines, etc., which requires the Pass & ID Office to accept credit/debit card payments and airline vouchers. The Terminal Agent's Office is currently responsible for managing these transactions and has the only fee collection terminal to collect payments (Figure 5-7).

The Terminal Agent's Office is located directly across the hall from the Pass & ID Office, but the location and availability of a single fee collection device creates a significant bottleneck in the transaction process and increases the appointment time. The customer must walk out of the office to the Terminal Agent window, submit their payment, return to the Pass & ID Office, and check back into the virtual queue.

Figure 5-7. Terminal Agent's Office



This bottleneck is a concern for the IAD Pass & ID Office as they identify strategies to create a more efficient customer and transaction flow. There are plans to procure a new fee collection system and terminals, which would allow customers to complete the payment step at the Pass counter.

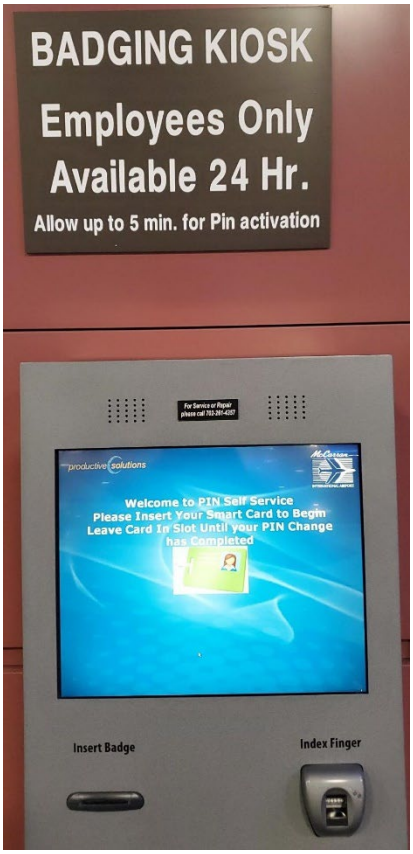
5.2.4 Self-Service Kiosks

Self-service kiosks allow customers to complete select transactions, such as credential renewals or PIN changes (Figure 5-8), without assistance from a TA.

Case Study 21. IAD Pass & ID Office – Self-Service Kiosks

The IAD Pass & ID Office has researched self-service options for credential renewal customers to further improve the office's efficiency. One possible solution would be to replace the former renewal waiting area with a bank of kiosks monitored by a single TA. The kiosk would flash a red light to alert the TA when they are needed for regulatory tasks (e.g., ID verification) or to assist the customer. The kiosk could print the credential after the TA's approval. While researching solutions, the Pass & ID Office Manager identified language barriers and customers not proficient with technology as challenges that would impact how the technology is deployed and managed.

Figure 5-8. Self-Service Credential Kiosk



SECTION 6: HUMAN FACTORS CONSIDERATIONS

Human factors are important considerations when designing or modifying the credentialing office to ensure alignment between the people performing the work, their equipment, tasks, and environment. Prioritizing the comfort and well-being of the office staff can increase employee efficiency and productivity, improve job satisfaction and morale, and reduce turnover due to poor work conditions or an undesirable work environment. Many studies have been conducted on human factors in office environments, and the FAA published a manual on human factors for all departments.[2]

Key aspects to human factors engineering for office environments include:

- Lighting design
- Acoustical design
- Ambient environment
- Workstation ergonomics
- ADA compliance and accessibility
- Safety and security

Other human factors standards, such as the WELL Building Standard,[3] can be reviewed when building and designing a credentialing office as a means to improve the office work environment, and the health and wellness of the employees.

In general, the credentialing office should create a positive impression on customers and should reflect the airport's values, brand, and culture. It should also provide a positive experience for the staff that work there.

Case Study 22. SEA Employee Service Center WELL Design

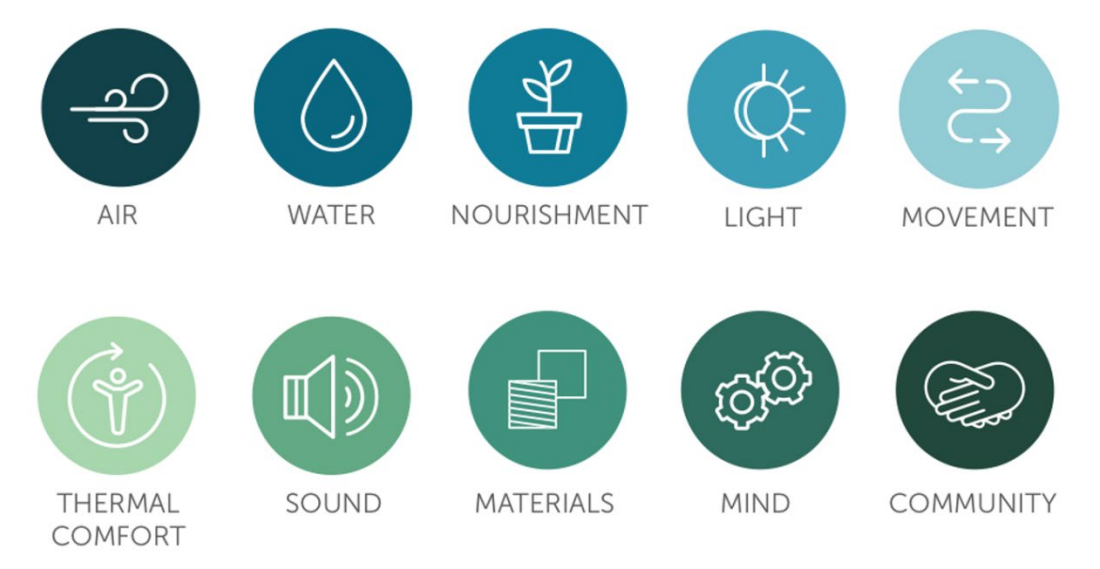
SEA's Employee Service Center opened in 2022 to provide one-stop access to training, credentialing, parking permits, and other essential employee services. The project sponsors wanted to improve the daily experience of the service center employees and customers by incorporating design elements to positively impact the environment. Consultants assisted the sponsors and airport environmental department with research into human factor design elements and attaining WELL Certification.[4]

WELL Certification is earned by implementing various policy, design, and operational strategies to meet performance outcomes defined in the WELL Standard. Buildings are awarded one of four levels of certification based on points earned for features promoting the ten design concepts (Figure 6-1).

The sponsors and designers of the SEA Employee Service Center implemented six of the ten Well Standard features.

[2] FAA Human Factors Design Standard (HF-STD-001), https://hf.tc.faa.gov/hfds/download-hfds/
[3] The WELL Building Standard, https://standard.wellcertified.com/well
[4] International WELL Being Institute, https://www.wellcertified.com/

Figure 6-1. WELL Certification Ten Design Concepts



Mind and Community

The sponsors wanted those using the Center to feel comfortable while working or visiting. The office was designed to be open and welcoming without enclosed spaces that can feel restrictive and claustrophobic. Half walls and glass contribute to this open feeling (Figure 6-2).

Figure 6-2. SEA Employee Service Center Open Concept Design

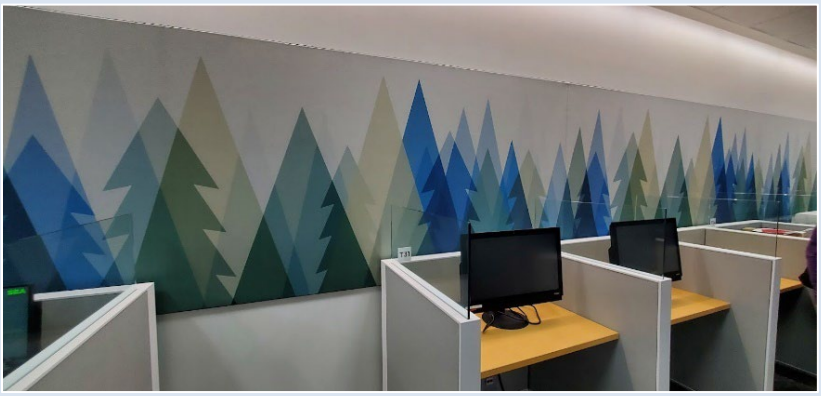
Sound

The Employee Service Center is a 4,100-square-foot open-concept design, so noise and privacy was a significant concern. Sound dampening panels of various sizes have been mounted where space is available on the walls to absorb the ambient sounds (Figure 6-3). Decorative sound dampening panels were added around the office to provide interesting visuals in addition to attenuating ambient sound (Figure 6-4). Carpeted floors, fabric cubicle walls, and padded furniture further absorb noise and muffle conversations.

Figure 6-3. SEA Employee Service Center Sound Dampening Panels

A white noise generator was added for sound masking throughout the office. All these elements address privacy and noise concerns while supporting the open concept layout design.

Figure 6-4. Decorative Sound Dampening Panels



Air

Air quality monitors were installed to provide real-time measurements of temperature, relative humidity, pressure, carbon dioxide, and other atmospheric factors (Figure 6-5). Air filtering machines were added to eliminate air contaminants. The system can be monitored and controlled via an iPad.

Figure 6-5. Air Quality Monitor

Light

The lighting system in the center was designed to use circadian lighting cycles that mimic the natural brightness and color transitions of sunlight throughout the day. Research suggests that circadian lighting can improve health and promote better sleep. The system replaced the harsher fluorescent lighting in the previous credentialing office, which compelled some staff to wear hats and sunglasses. The center has no exterior facing windows, and the sponsors wanted to make the staff more comfortable.

Although the circadian lighting is intended to create a more comfortable work environment, it cannot be configured for individual preferences or needs. Some staff prefer their workspace to be very bright, while others find bright light uncomfortable; some staff have experienced headaches that have been attributed to the lights. One staff member set up an overhead canopy above their workstation to limit the amount of light on their work surface.

Control panels to preset lighting levels have been mounted strategically around the space to provide four levels of lighting adjustment (Figure 6-6).

The lighting system can be controlled through a mobile application. Initially, a tablet was mounted at each of the entry doors to allow staff to adjust the lighting. However, the tablets were quickly removed and designated for supervisor-only use due to concerns over device theft. Additionally, the web application needed to control the system does not integrate well with SEA's networking and firewall protocols. Airports considering such a system should work closely with their IT groups to ensure that desired features of the system will comply with applicable standards.

Movement

The project sponsors and designers conducted an ergonomic assessment of the workstations. They wanted to ensure that staff had the opportunity to incorporate movement throughout their day since the workstations were fully equipped to perform all transactions and would not require walking to shared equipment.

The workstations have two work surfaces. One is a non-adjustable counter connected to the customer counter and the other is a height-adjustable sit/stand desk positioned perpendicular to the counter. This creates a return-style desk (see Section 6.4.1) that can accommodate two work surface levels. This encourages staff to take a break from sitting occasionally throughout the day.

Not every human factor measure was successful in SEA's goal of making staff and customers comfortable within the Employee Services Center, but after many months of gradual adjustments, the office has reached a balance that accommodates the staff.

Figure 6-6. Light System Control Panel

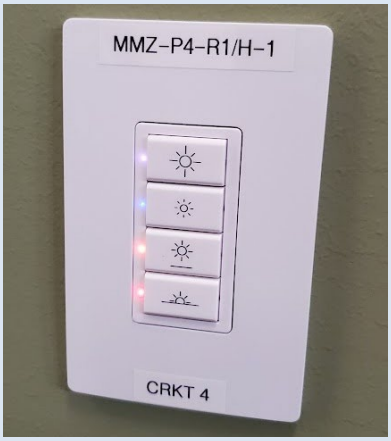
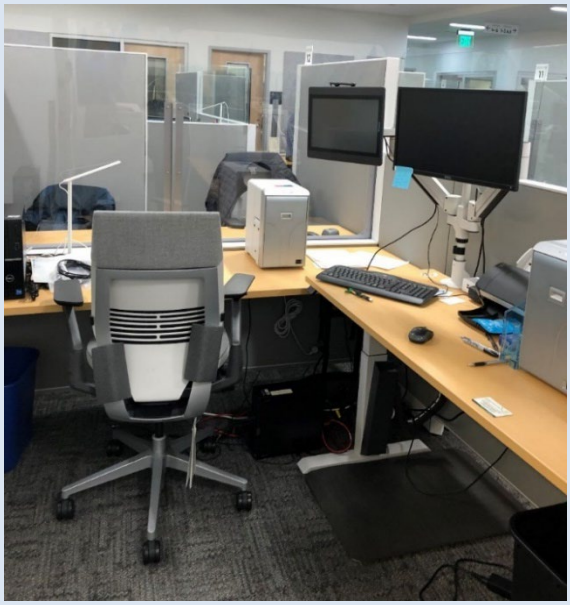


Figure 6-7. SEA Employee Service Center Workstation Setup



6.1 Lighting

Providing sufficient lighting to perform office functions without causing discomfort from harsh light levels, glare, or reflection is an important balance for the credentialing office.

6.1.1 Office Lighting

Overall office lighting needs to be carefully planned to support office activities without creating unnecessary eye strain. The locations and angles of light fixtures should be arranged to reduce or eliminate glare on displays, especially at the TA workstations. Indirect lighting and diffuser sheets allow for plenty of illumination while reducing harsh shadows, glare, and light intensity (Figure 6-8). Bare bulbs can be very harsh to the eye and should be recessed from view. Light emitting diode (LED) light sources have longer life cycles and more efficient energy usage, resulting in lower overall costs than incandescent lights, despite higher initial costs.

Figure 6-8. Indirect Lighting Design

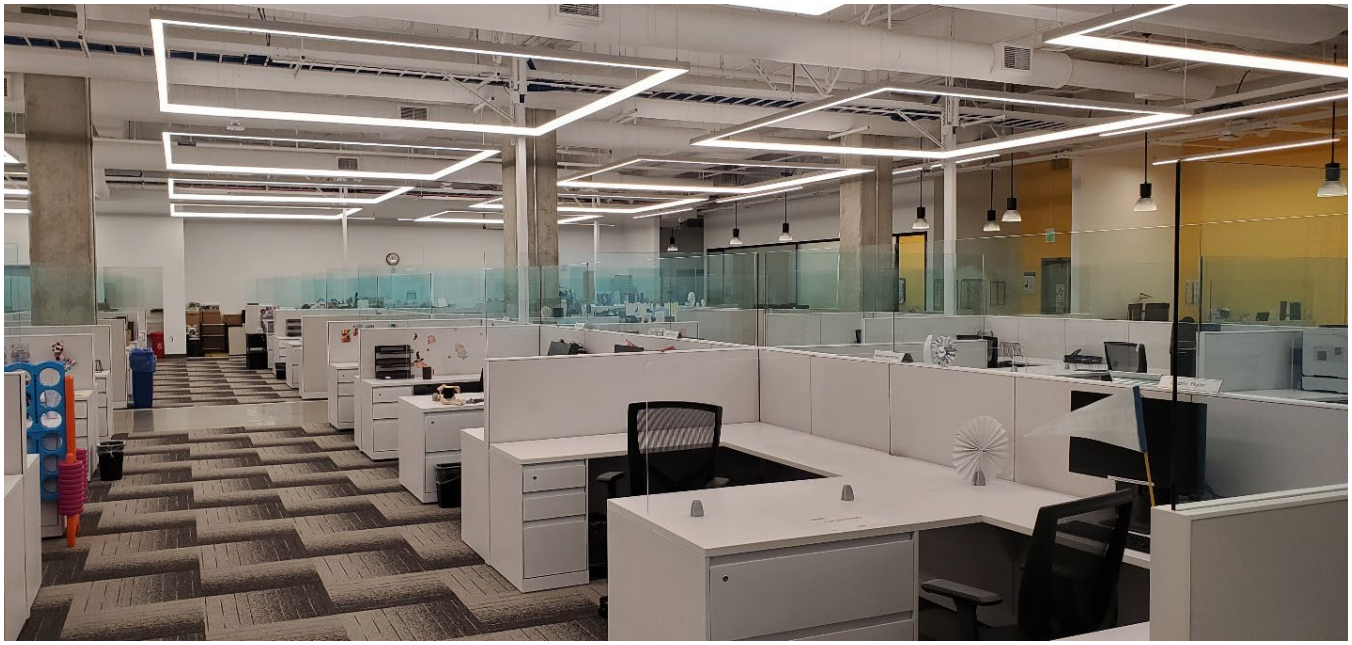


Figure 6-9. Multiple Small Light Fixtures

Replacing large light fixtures with multiple small fixtures spreads light more uniformly across a space, reducing harsh shadows and bright spots (Figure 6-9). Creating lighting zones with separate power switches enables the office staff to choose when and which lights are turned on throughout the day. Motion-sensing switches can automatically turn off lights in areas that are not being used, but care should be taken to select sensors that will not turn off when there is not enough movement.

Exterior facing windows can improve staff productivity and morale. However, they can also create extremes in light levels throughout the day. Adding window shades, blinds, screens, or tints can reduce the amount of light from outside, as well as mitigate temperature variance.

For more information on lighting power requirements, see Section 5.1.2 Power Considerations.

6.1.2 Task Lighting

Task lighting allows office personnel to adjust the light levels at their workstations to meet their individual needs. Often, task lighting is a desk lamp, under-cabinet light, or LED panel that can be turned on as required, such as when examining an ID document or searching a drawer.

The addition of task lighting allows the overall illumination of the office to be slightly lower, and each TA can adjust their workstation illumination to suit their preference and needs.

6.1.3 Illumination Levels

Standards have been defined to help designers determine the most appropriate lighting design for various designated spaces.

Table 6-1 has been adapted from the Illuminating Engineering Society's (IES) light guide to show recommended illumination in common office spaces. Light intensity is measured in footcandles; one footcandle is equivalent to one lumen of light per square foot. This information can be provided to designers to ensure the design meets the office staff's requirements and needs.

Table 6-1. Adapted IES Footcandle Light Guide

Building Area	Maintained Horizontal Footcandles		Comments
	Average (FC^2)	Range (FC^2)	
Open Office	40	30–50	@30" above desk
Reception Area	10	10–20	@floor level
Private Office	40	30–50	@30" above desk
Conference Room	30	30–50	Matte surface reflectance for the table 40% recommended
Restroom	18	7.5–30	
Break Room	15	5–20	

Source: Energy Trust of Oregon and the Lighting Design Lab

The amount of light produced by a fixture is measured in lumens; a typical LED light bulb produces 75–110 lumens per watt.

Proper illumination is particularly critical where ID photos are taken. Obstructions and high ceiling-mounted lights can create harsh shadows and reflections that will create poor photo quality (Figure 6-10). Installing ring lights or panel lights in the photo areas can help ensure a more consistent illumination level.

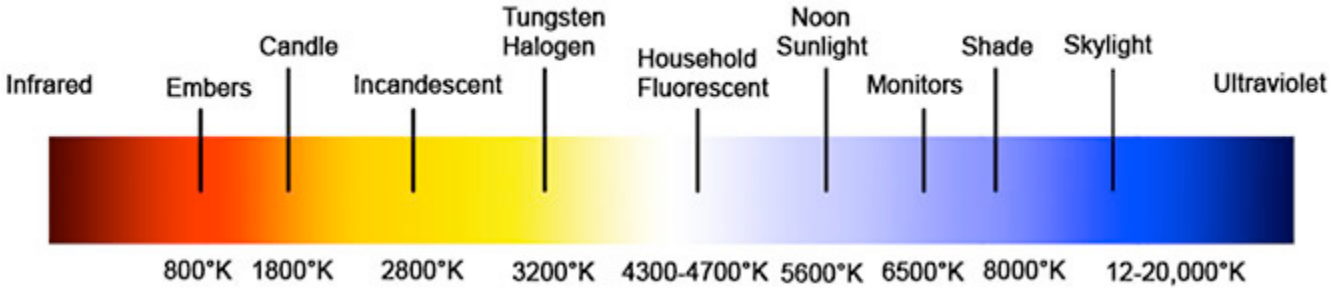
Figure 6-10. Web Camera and Ring Light

6.1.4 Color Temperature

The color temperature of the light can impact not only the comfort of the individuals in the space, but also the color rendering of objects (e.g., documents and IDs) and people under the light.

Color temperature is expressed in kelvins (K); lower temperatures indicate warm colors in the yellow or orange spectrum and higher temperatures indicate cooler colors in the blue spectrum (Figure 6-11). Warm and cool temperature lighting should not be mixed in a single room as it can create strain on the eyes.

Figure 6-11. Light Temperature Scale



Source: Lighting Design Studio

LED light sources can be purchased in a range of color temperatures to mimic other types of lighting. Some LED fixtures even allow selection of color temperature after installation.

The airport's governing authority may have set design standards that must be followed but, in general, color temperature is a matter of preference. Typically, office lighting is around 4000K or "neutral/natural white." The American Medical Association recommends keeping ambient lighting under 5700K to reduce the light's impact on the human circadian rhythm and sleep patterns. Some individuals develop headaches in warmer or cooler light temperatures, so it is critical to work with the TAs and other office staff to find the most appropriate color. Accommodation may be required for some staff if the selected color is one that causes issues for them. This may be accomplished through furnishings (shades) or by allowing staff to wear visors.

Newer lighting systems can adjust the color throughout the day to mimic the natural sunlight outside. This could be beneficial for staff in credentialing offices without exterior-facing windows.

6.1.5 Color Rendering

True color rendering is important during the ID photo process to ensure each photo accurately represents the individual indicated on the credential.

The Color Rendering Index (CRI) indicates how true colors look under a light source. A perfect score of 100 is equivalent to natural sunlight. Airport credentialing offices should maintain a CRI of at least 85-89 to reduce eye strain and enhance ID photos.

Wall and furniture colors can also play a role in the CRI. Bright and bold colors on nearby walls can reflect onto surfaces and people. Soft and subdued colors are preferred to reduce the reflecting colors. In some cases, colors associated with an airport's brand may not be suitable for areas where photos are produced. These areas may require an exception from such brand preferences.

6.2 Acoustics and Privacy

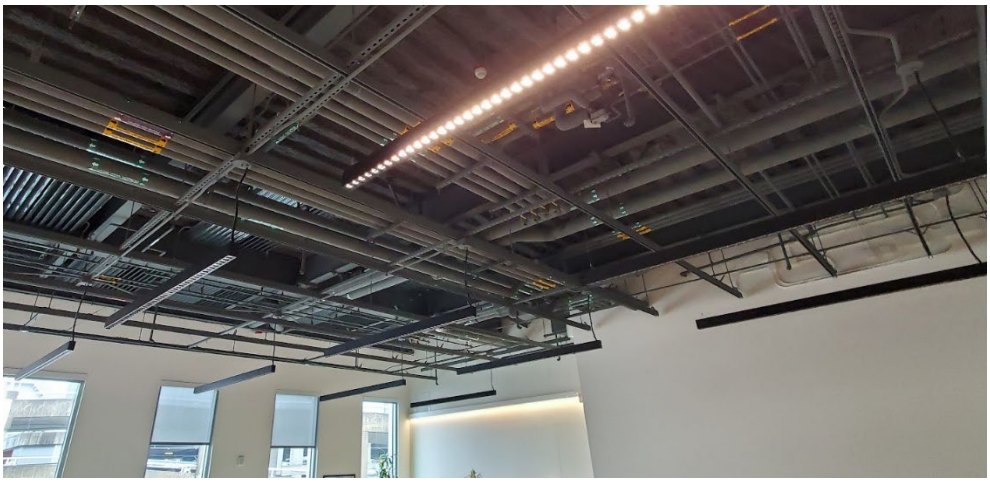
Managing the sound levels and privacy of customers can be a challenge, especially for small and enclosed credentialing offices. Careful acoustic design can help dampen conversations to enhance privacy and lower overall noise levels.

Sound absorbing materials, such as carpet and fabric, can be installed around the office on the walls, floors, and furniture to dampen sound waves, thus lowering the office volume. Hard surfaces, such as glass and tile, will bounce the sound and increase the ambient noise in the office. Adding acoustic panels or textured artwork on canvas to walls can improve the noise volume (see Case Study 22). Some

vendors produce acoustic panels with custom pictures. When possible, ensure walls between offices, conference rooms, breakrooms, and restrooms are insulated and designed to reduce sound transmission between these spaces.

Ceiling height and exposed duct work or beams will greatly impact the acoustics of the office (Figure 6-12). High ceilings and exposed beams will create echoes and reverberations that magnify the noise in the office. Exposed pipes and duct work should be enclosed or given an acoustic treatment to muffle the noises they generate. Sound gaskets should be added to back office and conference room doors to enhance privacy when the door is closed, especially if the gap between the door and floor is significant.

Figure 6-12. Noisy Open Duct Work



White noise or sound masking systems can help obscure conversations to provide privacy. Note that some individuals do not like white noise, so all office staff should be consulted before using. Sound masking systems that cancel out noise in certain frequency spectrums may be an alternative solution.

Partitions and workstation dividers can be used to physically separate workstations for visual privacy, but can also separate conversations and muffle voices. Noise canceling headsets for training stations are critical to reduce distractions for trainees, especially if the training area is near the waiting area or workstations.

6.2.1 Decibels

Some governing authorities, including the Occupational Safety and Health Administration (OSHA), have set standards for acceptable noise levels based on decibels and length of exposure. A decibel (dB) measures sound level; Table 6-2 shows decibels with equivalent examples. Note that the decibel scale is not linear but logarithmic—an increase of 3 dB effectively doubles the noise level.

Table 6-2. Decibel Equivalents

Tolerability	Decibel	Example
Comfortable	0	Absolute Silence
	20	Ticking Watch
	30-50	Average Home Noise
	60	Air Conditioner
Loud	70	Average Office Noise
	80	Inside an Airplane

Extremely Loud	90	Lawnmower or Hairdryer
	100	Automatic Hand Dryer
	110	Chainsaw
	120	Siren
Painful	130	Jet Engine
	140	Gunshot
Intolerable	150	Firecrackers
	170	Space Shuttle Launch
	180	Explosion

Credentialing offices should strive to maintain ambient noise below 45 dB for a calm and professional environment.

6.2.2 Privacy

Privacy is a continuum, and each space within the credentialing office will require different privacy minimums to protect customer information and private conversations. Two measures that can help understand the expected privacy of a facility are its Sound Transmission Class and its Articulation Index.

Sound Transmission Class (STC) measures sound transmission in a space. A higher STC represents higher levels of privacy. An STC of 52–55 is recommended for normal levels of privacy; greater than 55 is recommended for confidential conditions. The Articulation Index quantifies privacy as a percentage of unfamiliar sentences that can be understood correctly. An index of 0.05–0.15 is recommended for normal privacy levels; 0–0.05 is recommended for confidential situations. The recommended privacy levels are shown in Table 6-3. These can be provided to designers.

Table 6-3. Privacy Levels

Privacy Level	STC	Articulation Index
Normal Privacy	52–55	0.05–0.15
Confidential Privacy	>55	0–0.05

Case Study 23. SAN Glass Divider

SAN has installed a pane of glass in front of the TA workstations as an added health and safety measure (Figure 6-13). The glass fits between the workstation counter and the ceiling, which can make communication between the TA and customer difficult.

To facilitate better communication, an intercom system was added at each station (Figure 6-14). This allows the TA and customer to hear each other clearly despite the barrier.

Figure 6-13. Glass at SAN Workstations

Figure 6-14. SAN Intercom System

TA Microphone and Speaker

Customer Microphone and Speaker

6.3 Ambient Environment

The credentialing office should promote staff and customer comfort and well-being through the ambient environment, including air quality, temperature, and humidity. The HVAC system is one of the costliest components of any facility, but also vitally important to comfort. Careful planning and design will create a system that works well for the credentialing office and allow for expansion in the future.

6.3.1 Temperature

Temperature is vital for human comfort and equipment life cycle. Excessively hot or cold temperatures can also reduce staff productivity, morale, and job satisfaction. OSHA recommends maintaining ambient temperature in the range of 68–76° F. Because each individual has varying tolerance levels, it will be important to work with the credentialing staff to find the temperature range that works best for most people, and to allow accommodation for those who need it.

Ideally, the temperature of the credentialing office should be able to be adjusted and controlled independently of neighboring office spaces. This will allow the staff to adjust the temperature as needed without negotiating acceptable temperatures with other offices.

Automatic temperature control systems monitor the ambient environment and will automatically turn on the cooling or heating systems to adjust the temperature within a defined range. For the most accurate readings, temperature sensors should not be mounted near exterior walls, windows, or doors; direct sunlight; air supply vents; mechanical fans; heaters; or any significant sources of heat or cold.

Many people dislike having air blowing directly on them, whether it is warm or cool. Air vent deflectors are inexpensive and simple to install (Figure 6-15). The plastic deflector redirects air flow toward or away from a specific space.

Figure 6-15. Air Vent Deflector

The airport can help credentialing office staff manage the temperature of their immediate space by providing small desk fans, chairs with mesh seats, and/or cooling seat cushions. Heating devices, such as space heaters and heated seat cushions, can present a fire and electrical hazard. If these devices are permitted

in the office, it is recommended that a dedicated circuit for the devices be added to prevent power outages. Airport-branded jackets, blankets, and other cold weather accessories can be provided as an alternative.

Credentialing offices with exterior facing windows can have significant challenges maintaining the desired ambient temperature. Window coverings, such as blinds or shades, and window tinting or reflective film can help reduce the amount sunlight entering the office. In extreme cases, portable AC units may be necessary to supplement the primary HVAC system.

6.3.2 Humidity

Humidity is an often overlooked but important aspect to the comfort of a space. Low humidity can cause static electricity to build, which can damage sensitive electronics, while high humidity can cause condensation in equipment and encourage mold growth. The average comfortable humidity range is in the range of 30–60%, although this is highly dependent on climate in the area and altitude. Mechanical systems, such as humidifiers and dehumidifiers, can maintain the desired humidity range by adding or removing moisture from the air as needed.

Absorptive materials, such as carpet, fabric, insulation, and cardboard, can contribute to the humidity in a space if they are exposed to moisture. Use moisture-resistant materials in bathrooms, kitchens, and anywhere water lines are present to reduce moisture build up and mold development.

6.3.3 Air Quality

Air filtering systems are key to maintaining good air quality in the credentialing office. High quality air filters can minimize the spread of illness within the credentialing office. High efficiency particulate air (HEPA) filters can remove up to 99.7% of dust, pollen, model, bacteria, and other airborne particles greater than 0.3 microns in diameter. Living plants can help improve the office air quality by removing excess carbon dioxide.

Construction-related pollutants can be minimized by sealing ducts during construction and cleaning them before installing registers, grills, and diffusers. Floor mats at the entrance to the office can reduce the transfer of dirt and pollutants, especially if the entrance leads directly outside. Positively pressurizing the office and venting return air outdoors can reduce the pollutants brought in from outside, especially smoke, which can pass through some filters.

6.3.4 Biophilic Design

Biophilic design is the concept of bringing nature inside buildings to feel connected to the outdoors. This can reduce stress and improve the overall health and wellbeing of those in the space. Stephen Kellert, the social ecologist who helped advance biophilic design, identified six elements to help apply biophilic design in the built environment:[5]

1. Environmental features representing characteristics of the natural world (color, water, air, sunlight, plants, animals, natural materials, views and vistas, façade greening, geology and landscape, habitats and ecosystems, fire)

[5] Thermory. “The six elements of biophilic design.” https://thermory.com/blog-and-news/the-six-elements-of-biophilic-design/.

Kellert, Stephen and Heerwagen, Judith and Mador, Martin. (2008). Biophilic Design: The Theory, Science, and Practice of Bringing Buildings to Life.

2. Natural shapes and forms that simulate or imitate organic forms in nature (botanical and animal motifs; tree and columnar supports; shells and spirals; egg, oval, and tubular forms; arches, vaults, and domes)
3. Natural patterns and processes seen in nature but not typically inside (sensory variability such as sights, sounds, smells, textures; spaces with defined boundaries; transitional passageways between bounded areas; sense of pattern)
4. Light and space to create a link between indoor and outdoor spaces (natural, filtered, and diffused illumination; reflections; color temperatures; purposefully designed light variances with shadows and pools of light)
5. Place-based relationships that link buildings with the people, culture, and ecology (historical references, designs that reflect the local landscape, local plants and materials, local artisan decorations)
6. Reflection of the human-nature relationship (sense of safety and security, balance of variety and consistency, exploration and discovery)

Consideration of biophilic design or other similar design approaches can help guide the design of a space that is pleasant, inviting, and calming for staff and customers.

6.4 Workstation Ergonomics

Designing TA workstations to minimize strain caused by repetitive movements will greatly improve the comfort and wellbeing of the credentialing office staff, and will allow them to be more productive. Additional discussions on design elements of workstations can be found in Section 4.1.2 Trusted Agent Workstations.

6.4.1 Workstations

Credentialing offices should invest wisely in workstations that work best for the TAs and fit into the available space. Ergonomic standards that should be considered when choosing furniture include:

- Seated work surfaces should be approximately 25–34 inches from the floor
- Standing work surfaces should be approximately 36–46 inches from the floor
- Knee wells (the space under the work surface) should be at least 30 inches wide by 19 inches deep to allow freedom of movement

Adjustable height desks allow the TA to raise or lower the worksurface to accommodate sitting or standing. An alternate option is to use adjustable desk risers, to transform non-adjustable desks or tables into sit/stand desks, and may provide an acceptable compromise. Equipment on adjustable work surfaces may require longer cords to reach power outlets and network connection points. These longer cords will need to be managed so that they do not create trip or snag hazards when the work surface is adjusted. The desks should be able to accommodate the weight of all the equipment resting on top. TAs who stand for long periods of time should be provided anti-fatigue mats to minimize stress on the legs and feet.

Rounded or padded corners on furniture can prevent injury where people frequently collide with the furniture. Similarly, rounded or recessed drawer pulls can prevent injuries from bumping against them.

Matte finishes on the work surface will minimize light reflections and eye strain.

6.4.2 Chairs

Quality seating for the TAs is crucial to minimize muscle and joint stress and strain. Lumbar support, adjustable armrests (height, width, and possibly depth), and a reclining backrest will help maintain correct posture for computer work. Height and tilt of the seat pan should be easily adjustable, especially to accommodate clearance under the workstation. Some seats also allow for adjustment of the seat pan depth or provide additional support under the thighs when seated.

Swivel chairs provide freedom of movement to access nearby objects without unnecessary bending, flexing, or twisting of arms, wrists, and hands. Rolling chairs can help minimize strenuous movements in the space around workstation, but will require a non-slip rug under them if the floor is uncarpeted.

Reclining chairs should have locks that can prevent undesired recline and enough resistance to provide adequate support even when reclining. The base of such chairs should be sufficiently wide to prevent the chair from tipping over when it is reclined.

Chairs with mesh backs and seats allow for air flow to help regulate body temperature, which can provide a cooling effect for staff without adjusting the thermostat.

6.4.3 Equipment

TA workstations have a variety of equipment needed to complete the various credentialing transactions throughout the day. The equipment should be arranged around the TA to minimize bending, flexing, or twisting of arms, wrists, and hands that can lead to work injuries—often called repetitive stress injuries . The most frequently used equipment, such as mouse and keyboard, should be closest to the user to minimize reaching movements. A return desk with the individual sitting in the corner is the most ergonomic option to minimize unnecessary straining, as it provides easier direct access to more areas of the desk and its equipment.

Monitors should be placed at least arm’s length away (approximately 18–28 inches). If two monitors are used, the primary monitor should be directly in front of the user with the secondary directly next to it to minimize neck strain. To reduce glare, monitors should be perpendicular to windows and major light sources. Blue-light blocking screens can be added to monitors to filter out blue light frequencies known to disrupt sleep patterns and negatively impact overall health. Encourage staff to take regular breaks from computer work to rest their eyes and move around. Clean the monitors at least once a week to improve clarity and prevent the spread of germs.

Cordless mice and keyboards allow the user to move freely, but will require periodic charging or replacement of batteries. Document holders, either screen-mounted or freestanding, can be used to help TAs enter information from a paper application or ID document and minimize neck strain. Help prevent the spread of germs by providing each office staff member with their own keyboard and mouse or providing cleaning wipes.

Cord management is essential to enhance safety, efficiency, and the longevity of both the cords and the devices they connect (Figure 6-16). Properly managed cords reduce the risk of tripping hazards and accidental unplugging. This also prevents cords from becoming frayed or damaged due to tangling or excessive wear. Cords are easier to maintain and upgrade when they are organized for quick identification, access, and removal/replacement if necessary. Additionally, neat cord management contributes to a more polished and professional look while keeping workspaces tidy and clutter-free. Cord management accessories such as cable ties, cable troughs, and covers are readily available in a variety of styles and functions (Figure 6-17).

Figure 6-16. Poor Cord Management

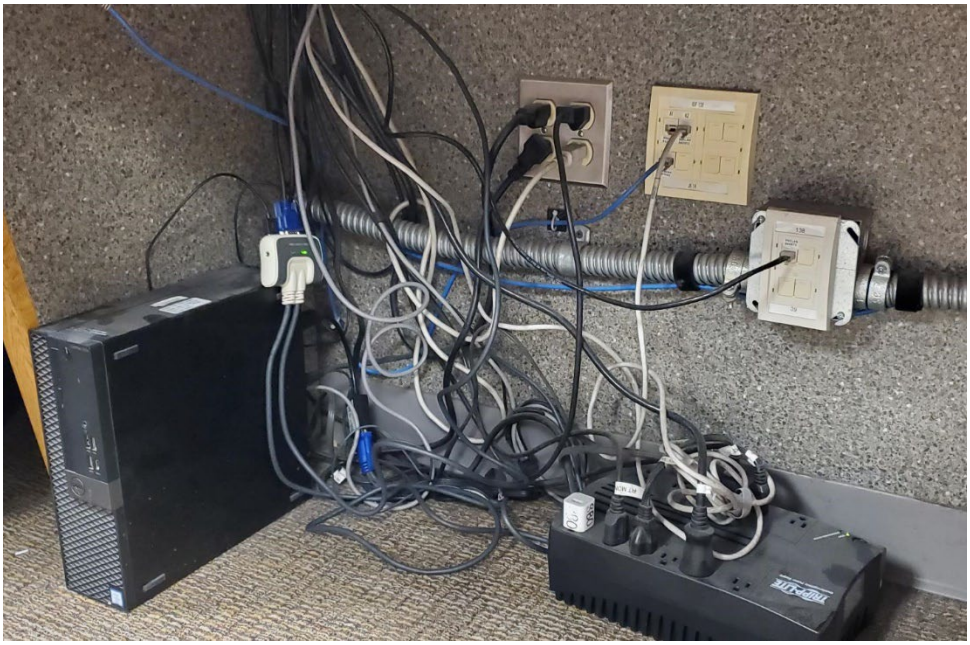


Figure 6-17. Under-Desk Cord Management System

Task lighting, such as desk lamps, should be provided to credentialing office staff so they can control light levels in their space. Light fixtures with adjustable light levels and diffused light sources offer the most ergonomic option.

6.5 Accessibility Guidelines

Credentialing offices need to accommodate all types of accessibility needs. Multiple guidelines and standards have been developed for architects and designers to follow, and requirements vary between jurisdictions. The project designers can help ensure accessibility is built into the design to accommodate both customers and office staff. Considerations to help improve accessibility in the credentialing office include:

- Provide multiple seating sizes and styles in the waiting area to accommodate different body sizes and physical needs
- Install automatic door-opening devices along main circulation routes
- Ensure that workstations and training stations are provided to meet any accessibility requirements for both customers and office staff; ADA compliant station(s) should include all the equipment necessary to complete all transaction types
- Ensure circulation routes, floor space, door clearances, etc. accommodate wheelchair maneuverability
- Design restrooms to comply with accessibility requirements
- Create alternate methods of presenting information to customers who may be visually impaired, colorblind, or have hearing loss

6.6 Safety and Security

Safety and security of the credentialing office staff and customers is a high priority for many airport operators. The office is often located in a high traffic public space that can be accessed by anyone, including an individual with hostile intent.

Access control on the entrance door can restrict access to only authorized individuals. This may be a system that requires an airport credential with authority to access, or a deadbolt or electronic lock that must be opened with a key or from inside the office. Office staff can unlock the door for customers to enter.

Locating credentialing offices on the Sterile side of the airport will ensure the customers have been vetted and granted access to secure areas of the terminal, or that they are being escorted by someone with airport credentials and have obtained a visitor's pass. However, this may create an excessive burden on escorts and a negative impact on the customer experience if customers are required to complete screening before they access the credentialing office.

One airport has an elevator that leads to the only authorized entrance to the credentialing office. Once in the elevator, the customer must use the courtesy phone to alert the office staff of their presence. The office staff must then enable the elevator to travel to the correct floor.

Figure 6-18. Panic Button Under Desk

Offsite locations need access control and alarm systems in place to secure the office after hours and during an emergency.

Installing covert panic alarms at TA workstations and back offices used for interviews can silently notify law enforcement of a problem in the credentialing office (Figure 6-18). Adding a camera and microphone that automatically begin recording when the button is pushed can further enhance security in these areas. Some systems allow the audio and/or video recording features to be activated separately for collection of evidence (e.g., proof of inappropriate customer conduct) without activating the panic alarm. Security surveillance cameras are often installed to monitor the entire credentialing office, especially the waiting area, TA workstations, back offices, secure storage, and training areas. The office manager may have access to view the footage.

Panic alarms at offsite locations are beneficial because law enforcement patrols are not always nearby.

Some airports have installed ballistic glass at the reception/check-in desk. The need for protective partitions should be carefully assessed as they can greatly reduce sound and voice clarity and can be deemed not customer friendly.

Staffing the reception/check-in station with a security guard can act as a deterrent to customers who may become angry and abusive to the office staff. The presence of a guard can encourage people to behave in a civil manner. This individual can also check documentation, verify appointments, and perform other helpful tasks while providing a security presence. Locating the office near a police or CBP substation can ensure a quick response from an armed law enforcement officer, if needed.

Designing the office with at least two access doors can ensure occupants can safely evacuate the office in an emergency. The second door often leads to more offices or the Sterile Area. Some building codes or jurisdictions may also require additional exits.

SECTION 7: DEVELOPMENT PLANNING

While proper planning does not guarantee smooth execution, poor planning almost always guarantees problems that could have been avoided.

New construction on credentialing offices is often part of another airport project, such as a terminal renovation or new terminal build. As a result, the projects are typically led by the airport's Planning, Construction, or Capital Programs/Engineering departments. This can be beneficial because these departments are skilled and experienced with both large- and small-scale projects that will help the credentialing office project run smoothly in coordination with other ongoing projects. It is crucial, however, that they understand that a credentialing office is a specialized space with specific requirements that may not be needed in typical office spaces. Credentialing leadership should be involved early in the process, and ideally remain involved throughout design.

7.1 Phasing Considerations

Phasing decisions will vary greatly depending on whether the office is being remodeled or relocated, if it is part of a larger airport project or a standalone project, whether operations can be suspended and for how long, etc.

In the planning phase, airport operators should consider:

- Determining minimum operating requirements for the office during the transition (closed period, interim facilities, duplicate equipment, etc.)
- Working with the IT department to prepare a cut-over plan, if necessary
- Staffing requirements to prepare (e.g., digitize documents) and transition to a temporary and/or new location
- The need to purchase new equipment or reuse existing equipment

In the design phase, airport operators should consider:

- Creating a list of specific requirements for the new design (e.g., five networked and powered TA desks, access-controlled storage closet)
- Identifying relevant stakeholders and eliciting feedback on their desired experience through surveys, forums, etc.
- Researching technology solutions that can help streamline processes; engaging a technology integrator to support this effort

If there is a need to temporarily relocate the credentialing operations, other factors need to be considered. Filing cabinets, secure supply storage, CCTV, and all credentialing equipment need to be moved into or near the temporary operations. This will minimize TA walking distance and reduce overall transaction times.

Moving equipment, such as computers and printers, can be a logistical challenge. The IT department should be involved with the teardown and setup of the equipment in temporary and new locations. This will ensure the equipment is properly transported and correctly set up. Purchasing new equipment can alleviate some of the moving challenges (e.g., packing), and reduce operational downtime needed to make the transition. The IT department should oversee the installation and configuration of any new technology equipment.

Case Study 24. OAK BPO – Transition to IDMS

When the OAK BPO staff moved into their temporary office space, the office increased the number of workstations from four to six. OAK used this opportunity to replace all the credentialing equipment and computers, which was installed and prepared before the staff moved in. This strategy significantly reduced the transition period and service downtime. OAK repeated this practice in the newly renovated BPO, and the staff were able to move into the space over a weekend

Prior to 2024, OAK used Microsoft SharePoint to secure credentialing information. In December 2023, the BPO launched its first IDMS to replace SharePoint. The IDMS offers the BPO several benefits and solutions to previous challenges, which positively impacted the office design and efficiency:

- The data stored in SharePoint was transferred over to the IDMS, including all the files and copies of IDs attached to each credentialed worker
- Paper records were significantly reduced during the move to the new BPO, but the IDMS reduced them even further
- Implementation of an electronic signature module eliminates the need for wet signatures and storing related forms
- A connected document scanner automatically populates the information in the appropriate fields in the IDMS and identifies security features built into the documents

As with the previous two moves, the BPO staff received new equipment and computers when the IDMS was launched. This ensured that the equipment would integrate with the new system and the BPO was able to transition with minimal disruption to service.

Go-live testing of the new systems was conducted in nearby work rooms. The equipment was moved via rolling carts to reduce disruptions to regular operations.

In the future, the BPO intends to incorporate a feature with their IDMS and fingerprinting software that would allow the TAs to identify individuals when they return for additional visits.

7.2 Operational Readiness, Activation, and Transition

Operational Readiness, Activation, and Transition (ORAT) is the process of transitioning a new or redeveloped facility from construction to full operation. ORAT can be simple, or it can be very involved; each airport will have its own needs and should tailor their ORAT process accordingly. The benefits of using an ORAT approach to a credentialing office project include:

- Vetted resources and tools to minimize risks associated with launching new facilities and/or equipment
- Process-driven approach to operational preparedness
- Methods to define, enhance, and test systems and processes
- Comprehensive oversight and operational risk management
- Systematic approach to training and acclimatization of staff
- Strengthened relationships with stakeholders and resolution of issues
- Supported business continuity during transition
- Improved customer experience and favorable customer perception

Implementing ORAT requires several activities be performed throughout the planning, design, construction, and transition phases. These may include:

- Identify requirements and define operational needs
    - Queue space
    - Accessibility
    - Common or shared areas
- Collaborate with stakeholders to document their requirements
    - Define key stakeholders; credentialing staff are critical to success
    - Define the people and processes for making critical design decisions throughout the project
    - Create plywood or cardboard mockups of proposed workstation designs
- Develop phasing plans to move operations to a temporary location and/or the new location
    - What are the minimum operating requirements during the transition?
    - What equipment will be needed? Can it be repurposed upon completion?
- Monitor project progress and update stakeholders regularly
    - Keep a decision log to avoid repeatedly evaluating the same problems
    - Communicate often and encourage stakeholders to ask questions
- Identify, evaluate, and mitigate risk to the operation
    - Keep a risk register and share it with stakeholders
    - Focus on mitigating risks rather than determining blame or responsibility
- Prepare the community for changes in operation
    - Communicate with stakeholders throughout the process
    - Newsletters, existing meetings, public relations campaigns
- Acquire new technology, if necessary, and schedule deployment
    - Leverage or implement asset management to enable data-driven decisions rather than relying on instinct or opinion
    - Consider the need for spares
- Integrate new and existing systems with IT oversight
    - Consider how new systems integrate with legacy ones
    - Resolve any conflicts with stakeholder involvement
- Test new equipment and technology to detect and resolve issues early
    - Involve the credentialing staff who will be using the equipment
    - Work with systems integrators and vendors to customize systems
- Create new SOPs to document changes to processes, if necessary
- Train stakeholders and users on new equipment, technology, or processes
    - TAs
    - Credentialing support staff
    - Management
    - Authorized signatories
- Run operational trials to ensure that customer and staff workflows and processes achieve the desired results
    - Create an issues log to track and resolve issues that are discovered

    - Test minor adjustments before settling on a final workflow or process
- Inform community of changes to operations

The underlying goal of any ORAT process is to ensure a successful transition to the new facility with minimal downtime. The considerations above are a starting point and are not meant to be an exhaustive or prescriptive list. A specific airport may use none, some, or all of them—or they may use an entirely different approach that works better for them.

7.3 Stakeholder Outreach and Engagement

Stakeholder engagement can provide unique insights and solutions to common credentialing office challenges. Customers and staff stakeholders understand their specific needs and processes in the credentialing office, and can provide insights into practical requirements, such as workspace layout, circulation, technology needs, and privacy considerations. Their input ensures that the office design supports key functions and meets their needs. Stakeholders can also help anticipate future needs to ensure the office design remains relevant and adaptive to new technology and growth needs.

Engaging stakeholders also improves buy-in for the design in the early project stages. Early buy-in helps address potential concerns and minimizes resistance or dissatisfaction later in the project when changes are more difficult or costly to implement.

Airport operators gather feedback from their internal and external stakeholders through several methods discussed in Section 2.3.2 Feedback Assessments.

As the project reaches completion, changes to the credentialing office location or process should be communicated to airport stakeholders to minimize confusion. This can result in fewer calls to the credentialing office asking for directions, as well as reduce late arrivals or failures to show up for appointments.

Strategies used by airport operators to communicate information about the credentialing office include:

- Discussions during monthly/quarterly or regularly scheduled stakeholder meetings
- Emails sent to authorized signatories and tenant managers
- Updates on the airport's mobile application or employee portal
- Notices posted to the airport website and social media accounts
- Flyers and maps posted on bulletin boards in break rooms or other employee areas
- Credentialing office newsletters distributed to the airport community

The following is an inexhaustive list of airport credentialing office internal and external stakeholders:

- Credentialing office staff – TAs, office managers, analysts, trainers, and training proctors
- Authorized signatories
- Other airport departments – security, operations, IT, engineering/capital programs, airport business office, customer experience, contracts, finance, real estate, risk management
- Executive staff – Airport Director, Chief Executive Officer, Board of Directors, Chief Financial Officer
- Regulators and law enforcement – TSA, CBP, law enforcement
- Tenant managers – airline station managers and passenger service companies, concessions, ground handling managers, cleaning contractor managers, etc.

- Customers – credentialed airport workers, applicants seeking a credential
- Construction contractors with a large presence at the airport

Airport operators may consider consulting the following experts to ensure the office is ideally designed under the given constraints:

- Design experts – architecture, engineering, wayfinding and signage, etc.
- Construction experts – cost estimating, constructability reviews, phasing, etc.
- Maintenance department – understanding and planning for ongoing maintenance needs
- IT department – networking, cybersecurity, CCTV, access control, etc.
- Technology integrators – new technology or equipment, integration with existing systems
- Human factor/ergonomic designers – furniture choices, biophilic design, WELL building standards, etc.
- Customer experience – customer feedback, signage audits
- Procurement/Properties department – purchasing, logistics

7.4 Budget and Cost Considerations

Credentialing office builds or redesigns are often included in larger terminal construction projects. This makes it difficult to estimate the portion of the budget related specifically to the office redesign or new build. Additionally, the cost of the project will vary greatly depending on several factors, such as the airport's proximity to resources (e.g., lumber, glazers, experts) and the amount of construction necessary.

Design decisions can greatly impact the initial and recurring costs for the credentialing office. Initial costs incurred during the project may include:

- Construction and material costs
- Labor costs, including overtime
- Infrastructure expansion costs (e.g., networking, power, HVAC)
- Planning, design, and consulting fees
- New equipment, furniture, and technology procurement costs, including customization and warranties
- Temporary office space expenses
- Credentialing staff overtime costs to prepare for transitions
- Redundant equipment and furniture

Some choices made will require recurring costs once the project is complete. Recurring costs are often built into the credentialing office's annual budget. Maintenance costs may be necessary for certain equipment, especially if warranties are not included. Maintenance services may be on a schedule for preventative maintenance or as needed when the equipment fails.

Subscriptions for technology are typically based on the number of users and special features. The credentialing office will need to remain subscribed in order to use the product, but the subscription typically includes user support and software updates. Some vendors will charge for software updates in lieu of a subscription.

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APPENDIX A: EXAMPLE CUSTOMER EXPERIENCE SURVEY

1. What service did you receive at the credentialing office today?										
	Fingerprints			Authorized Signatory Assistance						
	Renewal			Training						
	New Credential			Reprint						
	AOA Permits			Other (please specify):						
2. Please rate the ease of joining the queue:										
Please rate on a scale of 1-10	1	2	3	4	5	6	7	8	9	10
	Extremely Dissatisfied				Average					Extremely Satisfied
3. Were you greeted upon arrival?										
	Yes			No						
4. What was your wait time before you were seen for your service at the credentialing office?										
	Number of minutes:									
5. Please rate the Agent(s) that assisted you today.										
Please rate on a scale of 1-10	1	2	3	4	5	6	7	8	9	10
	Extremely Dissatisfied				Average					Extremely Satisfied
	Name(s) of Agent(s) assisting you:									
6. Please rate the cleanliness of the credentialing office.										
Please rate on a scale of 1-10	1	2	3	4	5	6	7	8	9	10
	Extremely Dissatisfied				Average					Extremely Satisfied
7. Did you experience any issues during your visit to the credentialing office?										
	Yes (please specify):			No						
8. Overall, how satisfied are you with your visit to the credentialing office?										
Please rate on a scale of 1-10	1	2	3	4	5	6	7	8	9	10
	Extremely Dissatisfied				Average					Extremely Satisfied

9. Additional Feedback – Please leave contact information if you would like to receive a response.
10. Do you like the current credentialing office hours (days and hours)? Yes No (please provide recommended days and/or hours):