



APPENDIX D

APPENDIX D

Existing Commercial Passenger Terminal

The existing terminal building as shown in Figure D-1 was built in 1968 of a blend of tan and orange brick. Both the color of the brick and the style of the architecture are indicative of the style that was very popular at the time.

Figure D-1
EXISTING PASSENGER TERMINAL

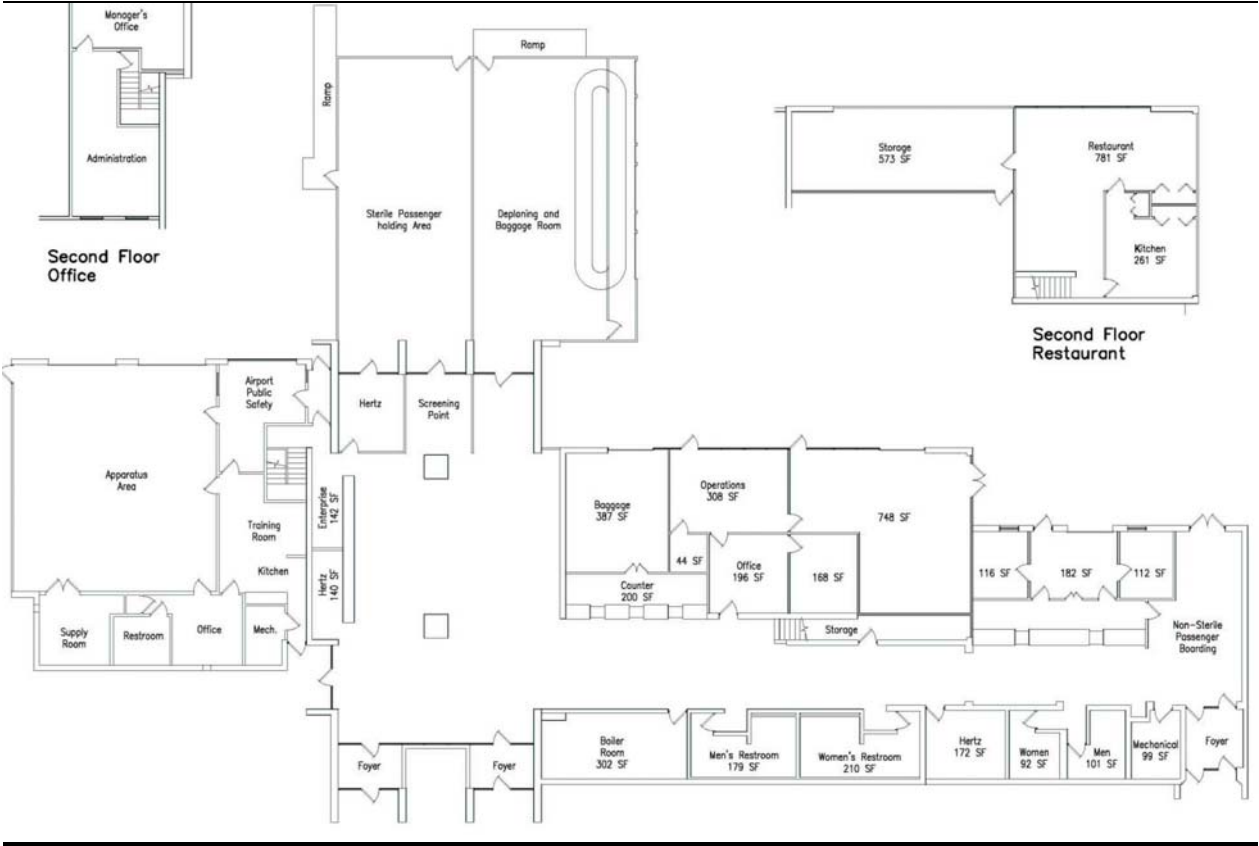


The ground or first floor of the terminal encompasses the public passenger areas, which include two public entrance vestibules, the lobby, two sets of ticket counters, two rental car agency offices and counters, baggage claim area, the deplaning corridor and restrooms. Airline operating spaces include their offices, operations areas, and storage. The security functions of the passenger terminal consisting of the passenger security check point, a secure passenger holdroom, and offices and support areas for the Transportation Security Administration (TSA) are also accommodated on the first floor.

Completing the ground floor are Airport operational areas, which include facilities for the Airport Public Safety Office and the Aircraft Rescue and Firefighting (ARFF) facilities. These facilities include offices, a restroom, a training room/kitchen as well as the apparatus area and supply room.

The second floor is divided into two areas each with its own access. To the northeast, above the Airport Public Safety Office is located the Airport Manager's Office with the administration area stretching to the southwest. The administration area is only accessed via a staircase that begins behind the Enterprise Rental Car counter. On the east side of the building above the airline operational area is the restaurant, kitchen and associated storage. This portion of the second floor is also only accessed via a staircase that begins on the ground floor in the public area between the two sets of check-in counters. A floor plan of the first and second floors is shown in Figure D-2.

Figure D-2
TERMINAL FIRST AND SECOND FLOOR PLANS



As the needs of the terminal have changed over the years, the original terminal has been added onto. Today, this is most evident when the terminal is viewed from the apron as seen in Figure D-3. From this view, the wooden structures that make up the existing holdroom and baggage claim area can more readily be seen.

Figure D-3
VIEW OF THE EXISTING TERMINAL FROM THE APRON



The estimated square foot area of each of the existing terminal functional spaces as well as the overall area of the building is found in Table D-1. These areas were taken from the drawings shown in Figure D-2 and were rounded.

Table D-1
ESTIMATED EXISTING TERMINAL AREAS

Terminal Functional Areas	Existing
<u>Airline</u>	
Number of check-in counters	8
Number of check-in kiosks	0
Check-in counter and kiosk length in lineal feet	54
Number of departure lounges or holdrooms	1
Number of baggage claim devices	1
Lineal feet of baggage claim frontage	45
Total square foot area of check-in counters and kiosks	590
Square foot area of check-in queue	220
Airline office square foot area	590
Airline operational square foot area	1,100
Baggage make-up square foot area	450
Total square foot area of holdrooms	1,230
Inbound baggage input square foot area	220
Total square foot area of baggage claim devices	170
Baggage claim retrieval square foot area	620
Square feet of baggage service offices	0
Subtotal Square Feet of Airline Functional Areas	5,190

Table D-1 continued on next page

Table D-1
Estimated Existing **TERMINAL AREAS**

Terminal Functional Areas	Existing
<u>Security</u>	
Number of security screening checkpoint position(s)	1
Number of ETD machines	1
Total square foot area of security screening checkpoint station(s)	490
Square foot area of security screening checkpoint queue	200
Total square foot area of post security screening check point	150
Square foot area of checked baggage ETD screening	120
Total square foot area of deplaning corridor	0
TSA offices and support space in square feet	<u>140</u>
Subtotal Square Feet of Security	1,100
<u>Terminal Concessions in Square Feet</u>	
Restaurant	780
Bar	0
Restaurant and bar support areas	830
News, gifts and sundries	0
Rental car counters and offices	350
Rental car queue	100
Other concessions	<u>80</u>
Subtotal in Square Feet of Terminal Concessions	2,140
<u>Public Areas in Square Feet</u>	
Non-secure public restrooms	580
Secure public restrooms	0
Administrative offices	550
Waiting and seating	470
Public circulation including lobby and entrance	<u>3,190</u>
Subtotal Public Areas in Square Feet	4,790
<u>Non-Public Areas in Square Feet</u>	
Airport Operations	2,395
Unassigned or unknown spaces	0
Maintenance, storage and janitorial	110
Circulation-non-public	0
Mechanical	400
Building structure	<u>850</u>
Subtotal Non-Public Areas in Square Feet	3,755
TOTAL BUILDING AREA IN SQUARE FEET	<u>16,970</u>

Facility Requirements

The facility requirements for the terminal functional areas is the determination of what facilities and in what quantities will be required by the Airport in the future in order to allow passengers to transition through the terminal in a timely and secure manner, while allowing the serving airlines to operate efficiently and cost effectively. In order to accomplish these goals the projections of facility requirements are made using arithmetical calculations and the base case annual enplanements, peak hour passenger and peak 20-minute passenger forecasts presented in the Aviation Demand Forecast chapter. Within these summaries, some of the most important pieces of information are

the assumptions that were made to develop these facility requirements. These assumptions are for the most part based on industry averages or existing conditions at Columbia Regional Airport today.

The terminal facility requirements are developed to accommodate the peak hour of the average day of the peak month. This allows a reasonable level of service throughout the year without an inordinate expenditure of funds for a facility that could otherwise remain relatively vacant for the majority of a typical year.

The formulas used to calculate the public areas of the terminal are based on those developed by the International Air Transport Association (IATA), which is an international organization founded in 1919 with over 280 member airlines. IATA wrote the *Airport Development Reference Manual*. The January 2004 9th Edition contains updates to many guidelines and recommendations on the sizing of passenger terminal facilities. It also champions the concept of “Level of Service”, which is a range of values or assessments of the capacity of a terminal to meet the demands placed upon it by passengers. These are similar to the standards used in highway traffic engineering. The evaluation criteria and actual standards for each subsystem of the terminal are developed separately, but the basic framework of the Level of Service concept includes:

- Level of Service A – An excellent level of service. Conditions of flow, no delays and excellent levels of comfort.
- Level of Service B – High level of service. Conditions of stable flow, very few delays and high levels of comfort.
- Level of Service C – Good level of service. Conditions of stable flow, acceptable delays and good levels of comfort.
- Level of Service D – Adequate level of service. Conditions of stable flow, acceptable delays for short periods of time and adequate levels of comfort.
- Level of Service E – Inadequate level of service. Conditions of unstable flow, unacceptable delays and inadequate levels of comfort.
- Level of Service F: - Unacceptable level of service. Conditions of cross flows, system breakdowns and unacceptable delays; an unacceptable level of comfort.

It is expected that there will be days and periods of time where a terminal programmed, designed and built to the IATA standard will operate well below the “Level of Service” “C” recommended by IATA. But this number of passengers occupying the terminal simultaneously is expected to only occur occasionally. As long as these events occur only for short, infrequent periods of time, this is considered to be acceptable by IATA.

For purposes of this report, the terminal has been broken down into its various component parts and then totaled. For purposes of comparison, the square foot area for each of the existing terminal components is also shown.

The projected areas that are presented are minimums based on the assumptions and factors laid out in Appendix A. The resulting facility requirements will provide a good but not extravagant level of service to the passenger, airlines and the Airport with conditions of stable flow. There may be some periods of acceptable delays for short periods of time during peak periods of the year, but these will be the exception rather than the norm. While it is possible to build a terminal in which no delays are ever encountered, this is usually not cost effective and is not recommended.

The square foot area of the existing terminal is compared to the projected facility requirements that are based on the projections of peak hour enplanements. The terminal is broken down into functional areas. The overall square foot area required to meet the enplanements of each of the planning years is also shown. The summary of these areas is found in Table D-2.

Table D-2

SUMMARY OF PROJECTIONS OF TERMINAL FACILITY REQUIREMENTS

Terminal Functional Areas	Existing	Projections			
		2007	2012	2017	2027
<u>Airline</u>					
Number of check-in counters	8	2	2	2	2
Number of check-in kiosks	0	0	0	0	0
Check-in counter and kiosk length in lineal feet	54	14	14	14	14
Number of departure lounges or holdrooms	1	1	1	1	1
Number of baggage claim devices	1	1	1	1	1
Lineal feet of baggage claim frontage	45	15	15	15	15
Total square foot area of check-in counters and kiosks	590	150	150	150	150
Square foot area of check-in queue	220	110	110	110	110
Airline office square foot area	590	300	300	300	300
Airline operational square foot area	1,100	700	700	700	700
Baggage make-up square foot area	450	700	700	700	700
Total square foot area of departure lounges or holdrooms	1,230	1,200	1,200	1,200	1,200
Inbound baggage input square foot area	220	1,600	1,600	1,600	1,600
Total square foot area of baggage claim devices	170	60	60	60	60
Baggage claim retrieval square foot area	620	160	160	160	160
Square feet of baggage service offices	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Subtotal Square Feet of Airline Functional Areas	5,190	4,980	4,980	4,980	4,980
<u>Security</u>					
Number of security screening check point position(s)	1	1	1	1	1
Number of ETD machines	1	1	1	1	1
Total square foot area of security screening check point station(s)	490	500	500	500	500
Square foot area of security screening check point queue	200	200	200	200	200
Total square foot area of post security screening check point	150	200	200	200	200
Square foot area of checked baggage ETD screening	120	120	120	120	120
Total square foot area of deplaneing corridor	0	0	0	0	0
TSA offices and support space in square feet	<u>140</u>	<u>500</u>	<u>500</u>	<u>500</u>	<u>500</u>
Subtotal Square Feet of Security	1,100	1,520	1,520	1,520	1,520
<u>Terminal Concessions in Square Feet</u>					
Restaurant	780	500	500	500	600
Bar	0	0	0	0	0
Restaurant and bar support areas	830	130	130	130	150
News, gifts and sundries	0	30	40	40	40
Rental car counters and offices	350	500	500	500	500
Rental car queue	100	100	100	100	100
Other concessions	<u>80</u>	<u>80</u>	<u>80</u>	<u>90</u>	<u>100</u>
Subtotal in Square Feet of Terminal Concessions	2,140	1,340	1,350	1,360	1,490
<u>Public Areas in Square Feet</u>					
Non-secure public restrooms	580	500	500	500	500
Secure public restrooms	0	500	500	500	500
Administrative offices	550	400	400	500	500
Waiting and seating	470	600	600	600	600
Public circulation including lobby and entrance	<u>3,190</u>	<u>3,200</u>	<u>3,300</u>	<u>3,300</u>	<u>3,300</u>
Subtotal Public Areas in Square Feet	4,790	5,200	5,300	5,400	5,400
<u>Non-Public Areas in Square Feet</u>					
Airport Operations	2,395	2,395	2,395	2,395	2,395
Unassigned or unknown spaces	0	0	0	0	0
Maintenance, storage and janitorial	110	50	50	60	60
Circulation	0	0	0	0	0
Mechanical	400	400	400	400	400
Building structure	<u>850</u>	<u>800</u>	<u>800</u>	<u>800</u>	<u>800</u>
Subtotal Non-Public Areas in Square Feet	3,755	3,645	3,645	3,655	3,655
TOTAL BUILDING AREA	16,970	16,690	16,800	16,920	17,050

It can be seen that the overall square foot area of the existing terminal calculates to be approximately 280 square feet larger than the calculations would indicate are required to accommodate the number of passenger enplanements that were experienced in 2007. Some individual functional areas also exceed the 2007 minimum requirements. These include the check-in counter area, airline office and operational areas as well the baggage claim area. There are also areas in the terminal that are smaller than the minimum 2007 calculations. These areas are largely located in the security screening areas. Each of these areas will be discussed.

Individual Terminal Functional Areas

While the overall area of a terminal may be sufficient to accommodate the projected number of passengers, it is often individual areas within the terminal that may not be adequate. This inadequacy can be for a number of reasons. The facility is in the wrong location, it is too old, or, most commonly, it is too small. This section describes each of the terminal area functions listed in Table D-1 and Table D-2. It describes the existing capacity of the individual functional area and the demand projected to be placed upon it by the forecast passengers.

Airline Terminal Functional Areas

The airlines are usually the primary tenants of the terminal and their care and processing of the passengers transitioning between ground and air transportation is the primary activity of most airports. In many ways the services that the airlines provide to the passenger reflect directly on the airport and the community it serves. The overall area of the airline spaces in the existing terminal is approximately 5,190 square feet.

Check-in Counters

Check-in counters are used for the check-in of passengers and baggage as well as to sell tickets. These are typically located near the entrance to the terminal. Check-in counters are normally placed in a straight line that runs parallel to the entrance doors such as those at Columbia. However, with the introduction of check-in kiosks at many airports, this is becoming less of a requirement as the kiosks can either be installed into the face of the counters or grouped together in front of the traditional check-in frontage. The traditional counters still provide an interface where checked baggage is delivered to the airline for transport or other travel issues are addressed by an agent.

The area for the check-in counters includes the area behind the counter to the back wall. It also includes the counter itself as well as a distance of approximately three feet in front of the counter for the passenger to stand. At Columbia Regional Airport this total distance measures approximately 11 feet.

Columbia Regional Airport currently has two sets of check-in counters with a total combined length of 54 lineal feet. This equates to a total area of approximately 590 square feet, which is more than sufficient to accommodate the current traffic at the Airport as well as into the future as shown in Table D-3. With the potential increased use of online check-in and kiosks, it is assumed that fewer check-in facilities will be required to meet an increased number of enplanements as both on-line check-in and kiosks can process the passengers more quickly, thereby requiring less space.

Table D-3
CHECK-IN FACILITY REQUIREMENTS

Check-in Facilities	Existing	2007	2012	2017	2027
Number of check-in counters	8	2	2	2	2
Number of check-in kiosks	0	0	0	0	0
Lineal feet of check-in kiosks and counters	54	14	14	14	14
Square foot area of check-in counters and kiosks	590	150	150	150	150
Square foot area of check-in queue	<u>220</u>	<u>110</u>	<u>110</u>	<u>110</u>	<u>110</u>
Total square foot area of check-in facilities	810	260	260	260	260

Check-in Queue

Typically, check-in queues are located between the entrance doors and the check-in area. Sufficient open area should be provided in front of the check-in counters and kiosks so that the longest queue to be reasonably expected during a peak period can be accommodated without blocking circulation to other areas of the terminal. This does not appear to be the case at Columbia, where the queue and the check-in queue appear to occupy the same area at the southeastern end of the terminal.

It is estimated that together, the current check-in queues have approximately 220 square feet. The queue was assumed to run parallel to the check-in counters, have a depth of four feet and a length the same as the check-in counters. The resulting area is more than enough to process the passengers of 2007 and throughout the planning period as shown in Table D-3.

The concern with the check-in queue is not its size, but its placement, as the assumed position of the queue would only leave a three foot wide circulation path between the queue and the wall that separates the restrooms from the circulation at the far southeastern counters. Approximately seven feet would be left between the more northern counters and the wall that separates the circulation from the boiler room.

Baggage Make-up

Baggage make-up is the area where the airline assembles the outbound baggage by outbound flight. Currently, baggage is accepted at the check-in counter and transferred manually to a baggage cart after being security screened by the TSA. Baggage make-up occupies approximately 450 square feet in the existing terminal, assuming that the baggage screening takes up approximately 120 square feet of area as is currently recommended by the TSA for Explosive Trace Detection (ETD) equipment. As shown in Table D-4, the area for the baggage make-up is considered to be only about two thirds of what is recommended to meet the needs of three flights of a 34-seat aircraft per day. However, if the area is currently meeting the needs of the Airport during peak periods, there is little reason to enlarge it as the traffic is not projected to increase substantially over the planning period and baggage make-up is one of the areas that airlines are reluctant to expand if it means increased costs for them.

Table D-4
BAGGAGE MAKE-UP FACILITY REQUIREMENTS

Baggage Make-up Facilities	Existing	2007	2012	2017	2027
Baggage make-up square foot area	450	70	700	700	700

Airline Offices

Airline office space is traditionally located behind the check-in counter with access to the baggage make-up area. The location behind the check-in area was a necessity when cash and other monetary products such as ticket stock were in abundance at the check-in counters. Today, with most transactions taking place with credit cards, there is less reason to have the airline offices located directly behind the check-in counters except that tradition dies hard and it is convenient should there be a disgruntled passenger at the check-in area. The adjacency next to the baggage make-up area was used primarily as a break and training area for airline personnel. The office space is used primarily by the agents as a work space, but all of the functions can also be accommodated in a multipurpose room. The airline manager’s office may also be in this location.

The airline offices available at the Columbia Regional Airport currently consist of approximately 590 square feet. There is currently one airline operating from the Airport. Under similar circumstances offices of approximately 200 square feet have been considered acceptable at airports of similar size, number of airlines, and passengers as currently exist at the Airport at this time. Additional airlines as well as additional operations and passengers, could justify the 590 square feet. This area is currently considered to be more than adequate to meet the projected enplanements throughout the planning period.

Airline Operational Areas

Airline operational areas typically are for the airline crews for flight planning, break and locker spaces for ramp personnel, storage areas for aircraft supplies, and limited maintenance space. All of these functions require that the operational spaces be located adjacent or in close proximity to the aircraft parking apron.

The Airport currently has approximately 1,100 square feet dedicated to airline operations. This is more than sufficient to accommodate the airlines and passengers that currently use the Airport and those that are projected throughout the planning period as shown in Table D-5.

Table D-5
AIRLINE OPERATIONS FACILITY REQUIREMENTS

Airline Operations Facilities	Existing	2007	2012	2017	2027
Square foot area of airline operations areas	1,100	700	700	700	700

Departure Lounges and Holdrooms

The terms “departure lounges” and “holdrooms” are used almost interchangeably, however, there is a difference. Departure lounges are those areas located after the passenger security checkpoint and adjacent to departure gates where passengers congregate to wait for their flight to be called and board their plane. They are free to come and go from the departure lounge to use the restrooms and explore the concessions, as long as they do not leave the secure side of the terminal. Holdrooms occur immediately after a security check point and immediately before the departure gate. The passenger is “held” in the room until the flight is called. Typically, there are restrooms directly accessible from the holdroom and occasionally, there may be a snack bar type of a concession located within the holdroom. Where there is not, if a passenger chooses to use restroom or concession facilities, they must be re-screened before re-entering the holdroom.

The Columbia Regional Airport currently has one holdroom that is located immediately after the security check point. The passengers are not allowed to move around much after having been

screened and prior to boarding the aircraft. Thus, they are true holdrooms. They also offer a much lower level of service to the passenger as the passenger is contained in a relatively small area and not able to move about freely. And, in the case of Columbia, there are no adjoining restrooms. The passenger must either wait to get onto the plane or exit against the stream through the security check point to reach the restrooms and then, upon return, must be rescreened. Fortunately, the security check point at Columbia only opens approximately 15 minutes to half an hour prior to the scheduled flight departure, so passengers in a holdroom do not have long to wait.

The total area of the holdrooms is approximately 1,230 square feet. The three daily flights currently operating from the Airport with 34-seat aircraft require approximately 1,200 square feet of departure lounge as shown in Table D-6.

Table D-6
HOLDROOM FACILITY REQUIREMENTS

Holdrooms	Existing	2007	2012	2017	2027
Number of holdrooms	1	1	1	1	1
Total square foot area of holdrooms	1,230	1,200	1,200	1,200	1,200

Inbound Baggage Area

The inbound baggage area is located on the non-public side of baggage claim. This area, located between the aircraft parking area and baggage claim, is used for the off-loading of the baggage carts onto the baggage claim device(s). The area should be a minimum of 12 feet wide. If the baggage carts are maneuvered by tug, an additional ten feet is preferable to allow for cart maneuvering and space for the baggage handler to stand while off-loading the baggage. The length of this area should be at least as long as the baggage claim room, with direct access to the baggage claim room. Ideally, the length of the input area should be at least as long as the baggage cart train, the tug, and maneuvering area. Depending on the aircraft that is being off-loaded, these trains can be as long as four baggage carts and the tug; trains any longer than that become unwieldy and tip over while being pulled. At Columbia Regional Airport, the doors that open onto the input belt have a total width of approximately 37 feet. This is enough length to accommodate approximately three baggage carts, which can easily accommodate a 34-seat aircraft. It is assumed that the tug itself will be pulled forward enough not to block a door.

The 220 square foot area calculated for the existing Inbound Baggage Area is only the area that is within the building. The area outside of the building is not covered, so baggage handlers offloading the baggage carts do so in the rain and snow. If this area were to be covered, but not necessarily enclosed much less heated, it is estimated, with allowing enough maneuvering room for personnel to off-load the baggage, that approximately 1,600 square feet would be required to handle the traffic of today and throughout the planning period. Again, this additional area is not required and if the existing area meets the operational requirements of the Airport, this is another area where airlines are usually willing to compromise if their cost can remain low.

Baggage Claim

Baggage claim can consist of any arrangement that allows a passenger to retrieve their checked baggage after a flight is completed. This can consist of placing the baggage on the apron and allowing passengers to identify and claim their baggage from there to elaborate circulating devices located within the passenger terminal that rotate and allow the passenger to pluck their luggage up as it passes by. The size of the baggage claim is dependent upon the number of seats on the

largest arriving aircraft, the number of deplaning passengers with checked baggage, and the average pieces of baggage per passenger.

The baggage claim retrieval area is the area where the passenger and perhaps their meeters and greeters gather to wait for the checked baggage to be delivered. This area must be immediately adjacent to the baggage claim area and preferably should have immediate access to the arrival curb of the passenger terminal building. It must be sized to accommodate the passengers that have checked baggage, their baggage carts if these are available, and perhaps their meeters and greeters.

The existing baggage claim equipment consists of one flat revolving baggage claim device that takes up approximately 170 square feet within the baggage claim area. The baggage claim retrieval area has approximately 620 square feet, as the entire room is not dedicated to baggage claim. A corridor approximately seven feet wide between the door to the apron and the door to the lobby has been reserved for circulation. Both the baggage claim device and the baggage claim retrieval area are more than sufficient to meet the requirements of the Airport today and for the projections made throughout the planning period as shown in Table D-7.

The baggage claim frontage is the length of the baggage claim belt from which the passenger retrieves his baggage. It does not include the length that is behind the wall that the passenger can't even see. The baggage claim frontage at the Airport is 45 lineal feet long, but it is calculated that with the current and projected levels of deplanements that only about 15 lineal feet are and will be required throughout the planning period.

Table D-7
BAGGAGE CLAIM FACILITY REQUIREMENTS

Baggage Claim Facilities	Existing	2007	2012	2017	2027
Number of baggage claim devices	1	1	1	1	1
Square foot area of baggage claim devices	170	60	60	60	60
Baggage claim retrieval square foot area	<u>620</u>	<u>160</u>	<u>160</u>	<u>160</u>	<u>160</u>
Total square foot area of baggage claim	<u>790</u>	<u>220</u>	<u>220</u>	<u>220</u>	<u>220</u>

Baggage Service Offices

Where warranted and where the baggage claim area is separated from the check-in area it may be desirable to have a baggage service office. It is here that passengers report baggage that has not arrived on an expected flight. It is also where baggage that has been delayed in arriving or is unclaimed is stored until the rightful passenger has been located. Where a baggage service office is not available, passengers are directed to the check-in counters to report delayed baggage and stored baggage is often securely stored in either the baggage claim area or the airlines operational areas. A baggage service office typically has a counter with a computer for the logging and tracking of baggage and a storeroom for unclaimed baggage.

Columbia Regional Airport currently does not have baggage service offices. Airports twice as large often do not have baggage service offices as airlines do not necessarily man them even when they are available. This often also becomes a function of how far the baggage claim area is from the check-in counters, especially if there is a change in level between the two. It is not necessary for the Airport to have a baggage service office and the area for one has not been included into the total building area. But, should the Airport or airline desire one, it should be approximately 90 square feet in area to accommodate the year 2007 as well as the projected passenger traffic.

Security

All passengers and baggage boarding a commercial aircraft must be screened prior to boarding the aircraft. Security screening is intended to prevent hijackings and deter the transport of explosive, incendiary, or deadly and dangerous weapons on board a commercial aircraft. Non-ticketed visitors are not currently allowed beyond the passenger Security Screening Check Point security check point.

Passenger Security Screening Checkpoint

Consideration must be given to the location and number of screening stations to simplify passenger flow through the terminal and to plan for a minimal number of security personnel. Enough area must be allowed to efficiently and effectively house the required screening equipment, personnel, and passengers while allowing enough flexibility and space to allow the security screening checkpoint to be able to adapt to the ever changing security requirements. At this time, the passenger security check point should be located between the check-in area and the departure lounge or holdroom. It does not need to be directly adjacent to either of these areas, but there must be a clear intuitive path from the check-in area to the passenger security check point and from the passenger security check point to the departure lounges or holdrooms.

Currently, the Airport has a passenger security check point that consists of one lane and approximately 490 square feet. This area, which has been taken out of the terminal lobby, is approximately 10 square feet short of the TSA guidelines to accommodate the traffic of 2007 as shown in Table D-8. In addition there are two large columns around which the equipment and personnel must operate. While the area of the columns has been taken out of the area required for the security check point, the difficulties of operating around the columns increases somewhat the problems associated with operating in an area that was not originally designed to house this function.

Table D-8
SECURITY SCREENING CHECKPOINT FACILITY REQUIREMENTS

Security Screening Checkpoint Facilities	Existing	2007	2012	2017	2027
Number of security screening checkpoint positions	1	1	1	1	1
Square foot area of security screening checkpoint positions	490	500	500	500	500
Post security screening area in square feet	150	200	200	200	200
Square foot area of security queue	<u>200</u>	<u>200</u>	<u>200</u>	<u>200</u>	<u>200</u>
Total square foot area of the security screening checkpoint	840	900	900	900	900

Passenger Security Screening Checkpoint Queue

As passenger security screening becomes more rigorous, it inevitably takes a longer period of time to screen each passenger. This multiplies with the number of passengers and during peak periods queues will form prior to the passenger security check point. The TSA's stated goal is that passengers should not have to wait in line longer than ten minutes when all lanes of the checkpoint are open. The queue should, in general, be sized to accommodate this number of passengers. The security checkpoint queue should be located immediately before the security check point in such a way that it does not block other facilities in the terminal or other flows of traffic. There will be periods of time, such as the Monday's after holidays and certain holidays, when the queue will overflow. This is considered acceptable for short infrequent periods of time.

The existing passenger security check point queue is located between the security check point and the front door of the terminal. While approximately 200 square feet have been allotted to this function in the breakdown of the existing floor plan, the queue as actually formed on a day to day basis probably takes up considerably less space. The 200 square feet can be accommodated within the lobby area and is considered adequate for the 2007 level of peak 10-minute enplanements as well as for each of the planning periods.

Checked Baggage Screening

After the events of September 11, 2001, the screening of all checked baggage for explosives or other incendiary devices was mandated by Congress. At an airport the size of Columbia Regional Airport, it is likely that the process used to screen the baggage will continue to be Explosive Trace Detection (ETD) for the foreseeable future. This operation requires relatively little space; approximately 120 square feet per ETD table. Currently at the Airport, the checked baggage screening takes place out of the view of the passenger in the baggage make-up area. This is likely to continue. The estimate of equipment and resulting area for 2007 is based on the ETD technology continuing to be utilized. Only one ETD machine is projected to be required using the approximately 120 square feet recommended by TSA guidelines throughout the planning period.

Deplaning Corridor

The deplaning corridor is the secure corridor by which arriving passengers leave the plane and travel to the non-secure side of the terminal. Non-passengers are not allowed into this corridor. The corridor is often located adjacent to the passenger security check point, but it can also be remote from the checkpoint where passengers can travel directly to baggage claim. Once a person has traveled to the non-secure side of the terminal via this corridor, they must be re-screened before they can re-enter the secure side of the terminal. TSA monitors the deplaning corridor to make sure that the flow is only one way.

At Columbia Regional Airport, the deplaning corridor does not specifically meet the above definition. At Columbia, the passenger steps directly from the apron into the baggage claim area. Thus, there is no secure corridor, but only a secure door through which passengers are not allowed to travel back to the apron without going through the security check point. It is assumed that this will continue through the planning period so no area has been allotted for this function in the projections of required area.

TSA Offices and Support Areas

The TSA requires some areas adjacent to the passenger security check point for office space, but the majority of the offices, lockers, break and training spaces can be remote from the passenger security check point. They still must be within easy walking distance of the checkpoint, but can be located in an area of less high demand.

Currently, the TSA occupies approximately 140 square feet of offices and support area near the security check point at the Columbia Regional Airport. This is considerably less than the approximately 500 square foot area the TSA guidelines require to serve the 2007 passenger enplanements as well as the projections of future passenger enplanements.

Concessions and Amenities

Concessions are amenities that are provided by merchants or other service providers for the convenience of the passenger through a lease, rental agreement or other arrangement with an airport that allows the service or product provider to offer that amenity on the Airport property usually within the terminal. The operators of the concession typically pay the airport a fee or a share of the profits in order to have access to that airport’s passengers. If the airport is offering these goods or services directly to the passenger, it is considered an amenity rather than a concession. As it is more typical at airports of the size of Columbia that these amenities are run as concessions, this report will refer to the amenities as concessions.

Concessions typically can be broken down into food and beverage, retail, services, or advertising. After the attacks of September 2001, a greater need for food, beverage, and retail concessions on the secure side of the passenger security check point was experienced at many airports due to passengers clearing security and finding that they had large amounts of time before their flight. This is more particularly true of those airports where the passenger security check point is open during all operating hours of the terminal.

At many airports such as Columbia Regional Airport, this is not the case. The security check point only opens about 15 minutes to half an hour before a flight’s scheduled departure. So the passengers remain with their well-wishers on the non-secure side of the terminal and the majority of their time in the terminal is spent on the non-secure side. Therefore, it makes more sense to have the majority if not all of the concessions on the non-secure side.

Food and Beverage

The passenger has come to expect that an airport will at a minimum be able to provide coffee, water, soft drinks, and a few snacks. These can be provided via vending machines at the very smallest airports, but as the airport grows, more selection is expected from sandwiches to fresh, fully prepared, hot meals. Depending on the culture of the community, one or more bars may also become viable.

The Columbia Regional Airport’s terminal houses a restaurant on the second floor that occupies approximately 780 square feet. The support area for the restaurant consists of a kitchen and a storage area that together occupies approximately 830 square feet. Calculations based on the 2007 passenger enplanements and typical airport restaurant use patterns would indicate that only 500 square feet are needed for the restaurant and 130 square feet for the support area as shown in Table D-9. However, as each community is different, so too is the pattern of use of the restaurant and if delivery of supplies is infrequent, the support area may need to be larger than average. Based on average use rates and the projected annual enplanements, these areas are only projected to increase in the year 2027 based on passenger enplanements. At that time the enplaned passenger projections would indicate that approximately 600 square feet would be needed in the restaurant and approximately 150 square feet would be needed for support areas.

Table D-9
FOOD AND BEVERAGE CONCESSION FACILITY REQUIREMENTS

Food and Beverage Concessions	Existing	2007	2012	2017	2027
Restaurant square foot area	780	500	500	500	600
Bar Square foot area	0	0	0	0	0
Square foot area of restaurant and bar support areas	<u>830</u>	<u>130</u>	<u>130</u>	<u>130</u>	<u>150</u>
Total square foot area of food and beverage concessions	910	630	630	630	750

News, Gifts, and Sundries

Again, the passenger has come to expect that at the minimum they will be able to pick up a newspaper at an airport. As an airport grows and the passengers spend more time in the airport, they are looking for a shopping experience. This typically will start at paperback books and magazines and will flow to toiletries and local souvenirs and eventually to specialty retail for clothing and other goods as the airport traffic grows.

Currently, the Airport does not have a news and gifts shop. Attention should be paid to the local passengers to determine when this may become something that the passengers would support, as the support for such a concession varies widely with the culture and demographics of each area. Based on the 2007 enplanements, if the Airport should decide to have a news and gifts shop, only about 30 square feet of space could be conceptually justified, and it probably would not operate more than a couple of hours per day. It is calculated that this would grow prior to the year 2012 to 40 square feet and remain at that level throughout the remainder of the planning period.

Rental Car Counters and Offices

Rental car concessions are almost synonymous with airports. Passengers not local to the community will need transportation. Even where mass transit is available, the typical American would rather drive. Rental car counters, back offices and space for passenger queues should be located along the path of travel of the arriving passenger. Typically, at airports the size of Columbia Regional Airport, this is located within or adjacent to the baggage claim area. Parking for the rental cars themselves is usually located within easy walking distance of the exit door of the terminal. At larger airports, the rental car parking facilities are often located at some distance from the terminal and passengers are shuttled to these facilities.

The Airport currently has two rental car counters, located in the lobby area. Unfortunately, they are somewhat shielded from the deplaning passenger by the security check point. Together, the rental car companies occupy approximately 280 square feet of counter space inclusive of the customer queue area. In addition, one of the companies also leases an area of approximately 170 square feet adjacent to the check-in queue and circulation area. It is anticipated that these areas should be sufficient not only for 2007, but also for the remaining planning years as shown in Table D-10. The 500 square feet shown as projected square foot areas for the rental car counters is typical of most locations where the rental car companies insist on a back office. Similar to the airline offices, where this may at one time have been a necessity due to the companies handling and storing cash and other valuable and easily stolen items, that necessity is no longer applicable with all rental car transactions now requiring credit cards.

Table D-10
RENTAL CAR TERMINAL FACILITY REQUIREMENTS

Rental Car Terminal Facilities	Existing	2007	2012	2017	2027
Square foot area of rental car counters and offices	350	500	500	500	500
Rental car queue square foot area	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
Total square foot area of rental car terminal facilities	530	600	600	600	600

Other Concessions

Any amenity that a concessionaire wants to offer to a passenger can be located at an airport, with the exception of those that might compromise security. Other typical concessions might include

pay telephones, shoe shine stands, postal facilities, ATM's, business centers, video arcades, massage, advertising and event or product displays. Each of these should be placed along the path of the passenger or terminal visitor without impeding the flow of traffic.

Columbia Regional Airport currently has vending machines, newspapers, and a public telephone. Each of these constitutes a concession with a total square foot area of approximating 80 square feet. This is also approximately what can be justified based on 2007 enplanements. This increases incrementally through the planning years until in 2027 when approximately 100 square feet of "other" concessions could be justified based on the projections of enplaned passengers.

Public Areas

Public areas are those areas of the terminal not already discussed where the general public is free to go even if they are not a passenger. While these areas also accommodate passengers, they are generally where the majority of the people who are seeing passengers off on a flight: well-wishers, or people who are waiting for a passenger to arrive on a flight: meeters and greeters, will typically spend most of their time.

Public Restrooms

Public restrooms must be available for both the passengers and the terminal visitors. Typically, there are restrooms on the secure side of the security check point for the convenience of screened passengers, but there must be restrooms on the non-secure side of the terminal. The non-secure side restrooms should be centrally located between check-in and baggage claim where the terminal is small enough that separate facilities are not warranted or the areas are on different levels. If they are separated by level or considerable distance, the restrooms should also be split to be able to serve both the inbound and outbound passengers and their respective terminal visitors.

The Columbia Regional Airport currently has two sets of restrooms in the terminal both located on the non-secure side of the terminal across the corridor from the check-in counters. These restrooms are considered to be non-secure as they are placed prior to security. Currently, there is approximately 580 square feet of non-secure restrooms. This is slightly larger than required to serve the 2007 enplanements as well as those of the each of the planning years as shown in Table D-11.

Table D-11
RESTROOM FACILITY REQUIREMENTS

Public Restroom Facilities	Existing	2007	2012	2017	2027
Square foot area of non-secure public restrooms	580	500	500	500	500
Square foot area of secure public restrooms	<u>0</u>	<u>500</u>	<u>500</u>	<u>500</u>	<u>500</u>
Total square foot area of public restrooms	550	1,000	1,000	1,000	1,000

There currently are no restrooms on the secure side of the terminal. It is anticipated that 500 feet of secure restrooms would be needed for the 2007 enplanements and each of the planning years if the passengers were allowed to pass through security more than a few minutes prior to boarding the aircraft. Because the TSA currently only opens the passenger security check point 15 minutes to half an hour before the aircraft is scheduled to depart, the lack of secure restrooms may occasionally be an inconvenience to the passenger, but they are not particularly necessary.

Administrative Offices

The airport administrative offices technically are considered public use areas, although the large majority of passengers rarely take the opportunity to visit these offices. Because they are considered public, the administrative offices should be accessible to the public. It is practical to have the administrative offices located within the terminal in order for the staff to take care of the day to day operation of the Airport. However, having the administrative offices on the main level of the terminal in a highly visible area is contra productive, as it encourages the public to drop by unannounced to air complaints that might better be taken care of by the airlines. For this reason, the administrative offices are quite often located within the terminal on another floor or in an unobtrusive corner.

At Columbia Regional Airport, the administrative offices occupy approximately 550 square feet and are located on the second level of the building. They are not handicapped accessible as there is no elevator. Administrative staff must descend to meet with handicapped members of the public. However, the building is not considered to be in compliance with the 28 CFR Part 26 *the American's with Disabilities Act (ADA) for Nondiscrimination on the Basis of Disability by Public Accommodations and in Commercial Facilities* as potential employees would have to be able-bodied. The building, having been built prior to the Act, may be "grandfathered", but any significant remodeling or addition to the building would force the entire building to come into compliance.

With the enplanements of 2007, approximately 400 square feet of administrative offices would on average be required, but in this area in particular each airport is different and the existing 550 square feet of administrative space is not considered to be out of line. With each increase in enplanements, the requirement for this area would also increase until, in 2027, the average administrative office area for an airport of the size of Columbia would be about 500 square.

Waiting and Seating

Sufficient seating should be provided for the terminal visitors who are waiting for passengers to either check-in or who have not yet arrived. This is particularly important as America's population grows older and returning military personnel are increasingly disabled. In airports of a size and operation similar to Columbia Regional Airport, where the security check point does not open until approximately half an hour or less before the flight departure time, enough seating should also be provided to accommodate all of the passengers that could be traveling on the flight or flights as well as their well-wishers. Where terminals are small or the deplaning corridor is adjacent to the security check point, the waiting and seating area should be placed in the vicinity of the non-secure side of the security check point in such a way as to have a clear view of the deplaning corridor without impeding the flow of the corridor or the security check point queue. Where the deplaning corridor is located away from the security check point, the terminal has more than one level, or the distances do not allow both areas to be viewed from one waiting area, the waiting areas are typically separated.

There are currently two waiting and seating sections at the Airport. One is at the far southeast area of the terminal in the area labeled Non-sterile Passenger Boarding. This area is no longer used for the boarding of aircraft and can be used by those waiting for others to check-in and as a relatively quiet place to sit. The second section has two seating areas. One is immediately across the corridor from the westernmost check-in area and the other is located between the western terminal entrance and the security check point. Both of the seating areas in the second seating section allow the well-wishers, the meeter greeters and the passengers to view both the security check point and the exit from the baggage claim area.

The total area of the waiting and seating is approximately 470 square feet. This is less than the 600 square feet considered to be optimum for the 2007 passenger enplanements. The optimum 600 square feet of waiting and seating is anticipated to remain constant throughout the planning period.

Circulation

Circulation is all of the areas such as halls, lobbies, plazas, stairs, and where available elevators, and escalators that allow passengers, employees, and terminal visitors to travel from one functional area to another. The circulation distances should be kept as short as possible while still being able to accommodate the full peak hour population of the terminal with a condition of stable flow, acceptable delays for short periods of time, and adequate levels of comfort.

The circulation areas of the Columbia terminal amount to approximately 3,190 square feet. It is calculated that approximately 3,200 square feet of circulation would be required for the enplanements of 2007, which is virtually the same. With the anticipated increase in enplanements over the planning years, there will be a corresponding increase in the need for circulation space from 3, 200 square feet in 2007 to 3,300 square feet in 2017 and 2027 as shown in Table D-12.

Table D-12
PUBLIC CIRCULATION FACILITY REQUIREMENTS

Public Circulation	Existing	2007	2012	2017	2027
Total square foot area of public circulation	3,190	3,200	3,200	3,300	3,300

However, circulation is a function of the layout of a terminal as well as the total of the functional areas that are required to meet the projected enplanements. So, while the existing circulation area is virtually the same as the calculated requirement for 2007, there are a few areas where when the terminal will be experiencing the projected forecast number of peak hour passengers, there could be areas that are tight. Review of the terminal floor plan indicates that these could occur between the check-in queue and the through circulation at the southeast end of the terminal, as well as in the lobby area where the security check point, waiting and seating, the entrance to the terminal, and the queue for the security check point are all competing for space.

Non-public Areas

Non-public areas of the terminal are those areas that would not normally be accessible by the public. These include but are not limited to Airport operations areas; maintenance, storage and janitorial areas; unassigned or vacant areas of the terminal; non-public service hallways, stairs and elevators; mechanical spaces; and the building's structural elements.

Airport Operations

The Airport operations areas included within a terminal vary widely from airport to airport. At the Columbia Regional Airport, the airport operations areas include both the Airport Public Safety office and the Aircraft Rescue and Firefighting facility (ARFF). The size of Airport Public Safety facilities are largely a function of the annual enplanements that an airport handles. The size of the ARFF facility is based on the longest aircraft serving the airport with an average of five or more departures per day. Neither of these parameters is projected to increase sufficiently over the planning period to warrant an increase in the size of the current Airport operations facilities.

Maintenance, Storage, and Janitorial

Areas should be provided either within the terminal or nearby to house maintenance shops, storage of supplies, and to provide janitorial services. At larger airports, the maintenance shops and bulk storage can often be better located away from the terminal, but small day storage areas will still be beneficially located within the terminal as well as perhaps a small maintenance area for day to day repairs. Janitorial closets need to be provided for each level of the terminal building and separate closets should be provided before and after security to keep the transfer of the janitorial carts through the security check point to a minimum. Often, janitorial areas and supplies are successfully located adjacent to the restrooms.

There are currently no areas within the terminal that are identified solely for the purpose of maintenance and janitorial activities. There is one area that is identified as a storage area, which has approximately 110 square feet. Approximately 50 square feet for all of the maintenance, storage and janitorial would typically serve the passengers of 2007 and this is anticipated to be sufficient throughout the planning period. Perhaps all three functions are currently located in the area marked storage. However, this area is located beneath the stairs that rise from the terminal check-in area to the restaurant above. This location is not recommended for storage of any kind, especially the combustible materials often associated with janitorial and maintenance supplies. In the jurisdictions with building codes that allow storage beneath stairs, the area beneath the stairs must be constructed with a fire-rated construction; usually of at least one hour. While it is possible that the storage area has been constructed with a one-hour fire rating, the age of the terminal would indicate that it is not likely.

Unassigned Spaces

It is relatively normal to have some unassigned spaces in a passenger terminal. When a terminal opens, it should be able to accommodate the growth that would be expected to occur within the airport terminal for at least five years after the opening of the new facilities. The space beyond that forecast to be required on opening day would be included into the category of unassigned space. To have little or no unassigned space available means that the terminal is reaching capacity and that plans need to be made to expand, renovate or build new terminal facilities.

The Columbia Regional Airport terminal does not appear to have any unassigned or unused spaces, although some areas, such as the lobby may be more heavily used than others, such as the airline office spaces. While there is no unassigned or unoccupied spaces within the terminal, relatively little enplanement growth is projected in the aviation forecasts throughout the planning period. The amount of space that is typically allotted for unassigned or unknown areas is two percent of the total of all useable areas of the terminal, which excludes such areas as mechanical spaces and the building structural spaces. This is a relatively small percentage, but it gives the Airport sponsor some room to be able to accommodate unforeseen circumstances and would in the case of Columbia Regional Airport amount to approximately 300 square feet.

Circulation

Non-public circulation encompasses all of the hallways and stairs, and in larger airports elevators, that are not open to the public. These areas are used by the airport to access areas of the terminal not open to the public whether secure or not. Ideally, the non-public circulation should be kept to a minimum while still providing sufficient access to the facilities and egress in the case of fire or other evacuation. In the terminal at Columbia, there are no areas that can be attributed to non-public circulation.

Mechanical Spaces

Sufficient room must be allowed to adequately house the mechanical equipment that provides the heating, cooling, ventilation, electricity, communications, data, and plumbing needs of the building. Consideration should also be given to the plenums and chases that distribute these services from the equipment room or rooms to the remainder of the terminal. For this reason, the mechanical room or rooms should be located as centrally as possible while still allowing access for equipment to be replaced and maintained periodically without disturbing the public or interrupting the functioning of the terminal. For these reasons, the mechanical equipment rooms are often placed on an outside wall of the terminal and directly accessed from the outdoors via one or more large doors.

The mechanical and boiler rooms of the Columbia terminal each have one wall on an exterior wall; however there is no access to the exterior. The mechanical room has 99 square feet of area and the boiler room has 302 square feet. It can also be seen in Figure D-1 that some equipment has been placed on the roof of the terminal. With the setback areas for mechanical equipment and the strongly suggested work areas around equipment today, it is anticipated that the area required to house and maintain the modern mechanical equipment for a terminal sized to accommodate the passengers of 2007; could require as much as 1,850 square feet.

While the area of the mechanical equipment appears to be undersized, the area required is largely a function based on the individual configuration of a terminal building and the type and size of the mechanical equipment. For that reason, the current area of the mechanical equipment rooms was advanced across the range of planning years as shown in Table D-13. This will hold true as long as the existing or comparable equipment remains in the terminal or a new terminal is built. As equipment is replaced due to age, it may be found that insufficient space can be found within the existing structure, especially if the recommended work areas and set back areas for each piece of equipment are observed.

Table D-13
MECHANICAL EQUIPMENT FACILITIES

Mechanical Facilities	Existing	2007	2012	2017	2027
Total square foot area of spaces for mechanical equipment	400	400	400	400	400

Building Structure

The building structure is generally the difference between the gross, overall size of a building and the addition of the area of each individual room. This difference represents the area of the columns, walls and other structural supports of the building.

The building area of the existing terminal was measured to be approximately 850 square feet. The building structural area for a terminal sized to accommodate the 2007 passengers is calculated to be approximately 800 square feet. The small difference between the two is largely due to the masonry construction of the building.

Total Terminal Area

The total area of a passenger terminal may be adequate to meet the demands that the passengers, airlines, administration, and terminal visitors place upon it. However if those facilities

are not placed correctly to work together, or certain areas are inaccessible, the facility will not be able to operate efficiently or successfully.

The total building area of the Columbia Regional Airport terminal measures approximately 16,970 square feet. It has been calculated that about 16,650 square feet of area are required to meet the 2007 enplanements. By the year 2027, the projected enplanements will require approximately 17,010 square feet. This is still within less than one percent of the total existing building area available in the terminal today.