MASTER PLAN UPDATE

5

PASSENGER TERMINAL FACILITY
REQUIREMENTS & ALTERNATIVES

GUNNISON-CRESTED BUTTE
REGIONAL AIRPORT

PASSENGER TERMINAL FACILITY REQUIREMENTS & ALTERNATIVES

Passenger Terminal Facility Requirements & Alternatives

Introduction

An important component of the Master Plan Update is the passenger terminal building. The existing terminal is the product of three expansions on a terminal originally built in the 1970's. Although each expansion provided an improvement over the former facilities, continuing growth and changes in aircraft have resulted in many areas becoming overcrowded and functionally deficient.

Developing a terminal facilities program begins with examining the adequacy of each existing component to serve current activity. From that basis, forecast changes in activity are applied to develop recommendations for future planning horizons. These recommendations use actual activity and facilities at Gunnison-Crested Butte Regional Airport as a basis, and are the subject of quantitative, as well as qualitative, analyses. Although some "industry standard" criteria are used, the recommendations for future facilities are based on local conditions and circumstances.

Design Level Activity

Airport terminal facilities are sized to accommodate the peak hour passenger volumes of a design day. Annual enplanements are an indicator of over-all airport size; however, peak hour volumes more accurately determine the demand for airport facilities based upon the specific user patterns of a given airport. Peak hour passengers are typically defined as Peak Hour-Average Day-Peak Month (PHADPM) passengers, and are also often referred to as Design Hour passengers. The Design Hour measures the number of enplaned and deplaned passengers departing, or arriving, on aircraft in an elapsed hour of a typically busy (design) day. The Design Hour typically does not correspond exactly to a "clock hour" such as 7:00-7:59 but usually overlaps two "clock hours", i.e., 7:20-8:19 reflecting airline scheduling patterns.

The Design Hour is typically not the absolute peak level of activity, nor is it equal to the number of persons occupying the terminal at a given time. It is, however, a level of activity that the industry has traditionally used to size many terminal facilities. The number of persons in the terminal during peak periods, including visitors and employees, is also typically related to Design Hour passengers.

Each airport also has its own distinct peaking characteristics due to differences in airline schedules; business or leisure travel; long or short haul flights; the mix of mainline jets and regional/commuter aircraft; originating/terminating passenger activity or transfer passenger activity; and, international passenger or domestic passenger use. These peaking characteristics determine the size and type of terminal facilities. Thus, two airports with similar numbers of annual passengers may have different terminal requirements, even if the Design Hour passenger volumes are approximately the same.

Existing Activity

Since the deregulation of the airlines, most major airlines have developed "hub" and "spoke" route systems such as American's hubs in Chicago and Dallas/Ft. Worth; Delta's hubs in Atlanta and Cincinnati; United's hubs in Chicago and Denver; USAir's hubs in Pittsburgh and Charlotte; etc. At these hubs, there are a number of banks of flights when most passengers change planes to reach their final destination. These banks of connecting flights form a series of peaks during the day - typically 7 to 10.

In contrast, the other cities served by the airlines are referred to as "spokes". Individual airline schedules at the spoke cities are generally tied to the connecting banks at the hub. Most airlines have similar scheduling patterns and these tend to reinforce each other at the spoke airports resulting in, for example, a large number of departures between 7:00 and 7:30 a.m.

The daily pattern of flight activity and passenger peaking at Gunnison-Crested Butte Regional Airport is an unusual form of spoke activity. The dominant carrier United Express (UAX)[1] - operates flights to United's Denver hub with 30-40 seat turboprops on a daily basis all year. During the peak ski season months, these are supplemented with UA narrow-body equipment.

As discussed in the Forecasts section, air service increases significantly in the winter with additional scheduled and charter jets. The number of airlines and the cities served has varied

[1] United Express flights at GUC are presently operated by Mesa Airlines with 37 seat aircraft. In previous years, United Express flights have been flown by Air Wisconsin and others with 19 to 29 seat aircraft.

from year to year. The size of the jet equipment used has also varied from 120 to over 200 seats. Scheduled airlines tend to operate daily with additional sections or cities on the weekends. Charter operations also tend to be concentrated on the weekends.

An analysis of schedules from the OAG for current activity (winter 2004), the base planning year (2002), and 2000 (one of the busiest previous winter seasons) indicate that most of the seasonal jet flights are concentrated around mid-day. This is reasonable in order to time flights around hotel check-in/check-out times at the ski resorts. Discussions with airport staff indicate that charters also tended to concentrate their activity around the same times. For the 2003-04 season, airport management has been able to move charter activity to times outside the peak mid-day period, so as to relieve some terminal congestion.

Projected Design Hour Activity

As noted in the introduction to this section, many terminal facilities are based on Design Hour passengers. At Gunnison-Crested Butte Regional Airport, activity is consistently highest on the weekends. Although an average day of the peak month would typically be used for terminal planning, the unusual concentration of activity on the weekends places unusual stress on Gunnison-Crested Butte Regional Airport's terminal facilities. Thus, it is recommended that a Saturday be used as the Design Day.

Peak Month Passengers. The peak month historically has been March, with January and February closely following. The following table, entitled *HISTORIC ACTIVITY*, illustrates the peak month activity. The peak month has represented between 22% and 26% of annual enplanements since 1997. Due to the dominance of the winter season, it is expected that this pattern will continue. Within the four-month winter ski season, March has accounted for an average of 33% of this seasonal activity.

The forecasts developed for the Master Plan Update use a combination of different scenarios for commuter service and for air carriers. As discussed in the Passenger Enplanement Forecast section, the high range forecasts are appropriate for testing the capacity of terminal facilities. Because Gunnison-Crested Butte Regional Airport's terminal facilities are driven by the demands of air carrier activity, the recommended Master Plan Update forecast has been modified to include the high range forecast (Scenario One) for air carriers and can be viewed in Table E2, entitled *PLANNING FORECASTS*.

For example, in 2012, the Master Plan Update forecast is for 66,400 annual enplanements. The Peak Month (March) is estimated at 23% of annual, or 15,300 enplanements. In 2012, the High air carrier forecast is 42,100 annual enplanements as compared to 39,100 for the Base forecast, or a difference of 3,100 enplanements. Since the air carrier enplanements are all expected to occur in the four-month winter ski season, the share of these occurring in

March is projected to be 33% of the additional enplanements, or approximately 1,000 enplanements. These are added to the Base forecast peak month enplanements for a Design Month of 16,300 enplanements.

Table E1
HISTORIC ACTIVITY
Gunnison-Crested Butte Regional Airport Master Plan Update

Ski Season Enplanements	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**
January	9,467	11,844	11,200	9,405	8,387	6,821
February	11,245	13,310	12,355	11,871	8,667	8,121
March	13,061	13,923	13,191	14,795	10,990	9,674
December	7,057	7,324	6,284	4,697	3,994	3,671
Total	40,830	46,401	43,030	40,768	32,038	28,287
Max month as % of season	32%	30%	31%	36%	34%	34%
Average	33%					
Annual Enplanements	57,382	62,961	59,928	57,172	43,888	41,843
Peak month as % of Annual	23%	22%	22%	26%	25%	23%
Average	23%					

Source: Landrum & Brown

Table E2
PLANNING FORECASTS
Gunnison-Crested Butte Regional Airport Master Plan Update

Planning Forecasts	Base Year 2002	Planning Years 2007	2012	2017	2022
Annual Enplanements	41,843	61,200	66,400	72,000	78,300
Peak Month Enpl. (23%)	9,674	14,100	15,300	16,600	18,000
Base Air Carrier Enplanements	20,551	37,100	39,000	41,000	43,000
High Air Carrier Forecast	20,551	37,100	42,100	47,700	54,100
Annual Net Increase	0	0	3,100	6,700	11,100
Peak Month Net Increase (33%)	0	0	1,000	2,200	3,700
Design Peak Month for Facilities Planning	9,674	14,100	16,300	18,800	21,700
Average Day/Peak Month	310	450	530	610	700
Design Day – Saturday = 30% more than average day	400	590	690	790	910
Peak Hour Passengers					
Percentage of daily activity in the peak hour(1)					
Enplaned	60%	60%	55%	50%	50%
Deplaned	40%	40%	35%	30%	30%
Total	45%	45%	40%	40%	40%
Peak Hour Percentages					
Enplaned	240	350	380	400	460
Deplaned	160	240	240	240	270
Total	360	530	550	630	730

Source: Landrum & Brown
(1)Based on schedule seats, winter 2003-04. Assumed peak hour percentage of daily passengers would be reduced by 10% in 2012, and by 5% in subsequent years.

An Average Day would normally be estimated by dividing Peak Month Activity by 31 days. However, since there are additional flights on the weekends as well as typically higher load factors, the average day enplanements were increased by 30% to account for the higher activity.

Peak Hour Percentages. An estimate of the existing peak hour passenger volume as a percentage of daily activity was made based on scheduled seat analyses for March 2000, 2002, and 2004. This assumes that charter activity can be managed to occur outside of the peaks for scheduled carriers.

Although UAX has flights spread throughout the day (as does Delta in 2004), the limited schedules of UA and the other mainline jet carriers result in very high peak hour percentages. Total peak hour passengers (enplaned plus deplaned) are not the sum of the enplaned and deplaned peaks, since these do not occur during the same elapsed hour.

These peak hour percentages have varied significantly from year to year depending on the size of the aircraft operated by the seasonal airlines on a typical winter Saturday. For example:

- In 2000, there were nine daily departures consisting of seven turboprops and two mainline jets, both B-757s. Both B-757s and one turboprop departed within a peak hour, accounting for 73% of the 538 daily scheduled departing seats.
- In 2002, there were only six daily departures: four turboprops and two mainline jets (one B-757 and one smaller narrow-body). In that year, the scheduled mainline jets did not depart in the same hour, so the peak hour only accounted for 47% of the 436 daily scheduled departing seats (one mainline and one turboprop).
- In 2004, there were 11 daily departures consisting of five turboprops, three regional jets, and three smaller capacity narrow-bodies. The mid-day peak hour consists of two narrow-body departures comprising 39% of the 627 daily seats. However, two of the narrow-bodies are scheduled exactly one hour apart, so the terminal is effectively dealing with all three departures at the same time. This increases the peak hour to 59% of the scheduled daily departing seats.

As this shows, the peak hour percentage has had significant variability ranging from 47% to 73% of daily departing seats. This analysis did not include charter activity, which was not available. It is likely that there will continue to be variability in the future depending on the number of airlines and types of equipment operating during the ski season. While it can be anticipated that airlines will bring back larger B-757s, the use of RJs (as by Delta in the 2003-04 season) could result in a "de-peaking" of activity to some extent. It would, of course, take between three and four RJs to provide seats equivalent to a B-757.

As previously shown in Table E2, the peak hour percentages have been estimated in the middle of the range seen since 2000 and are projected to remain constant in the near-term. Over the longer term, peak hour factors are projected to drop as additional service is added

to other hub cities by smaller RJs operating on more flexible schedules.

Gate Demands

The number of gates needed to support forecast activity is a critical element in determining the over-all size and configuration of the terminal complex. A "gate" has been defined as an aircraft parking position near the terminal, which is used on a daily basis for actively loading and unloading passengers. The existing gates at Gunnison-Crested Butte Regional Airport are a combination of ground loading positions for regional aircraft, and second level loading bridges for mainline jets. Although regional jets use loading bridges at many airports, RJ service thus far has used the ground loaded parking positions.

There are a number of methodologies that can be used to project future gate demands. These include ratios of annual passengers per gate, daily flights per gate, and projecting design day schedules. Due to the highly variable peak season schedules discussed above, daily flights per gate or any type of design day schedule analysis is not considered suitable for Gunnison-Crested Butte Regional Airport. However, a methodology utilizing annual passengers per gate was considered.

In Table E3, entitled *HISTORIC GATE USE*, annual enplanements per gate have been calculated for the period 1997 through 2002. Based on the previous analysis of peak season schedules, airport operations statistics and discussions with airport staff, it appears that, prior to 2001, both of the mainline jet gates were used during the peak hours by B-757 aircraft. Typically, only one of the regional aircraft positions was in use at any given time. In 2002, a single mainline gate was needed. The table shows annual enplanements per gate with the number of gates expressed as Equivalent Aircraft (EQA). Due to the large differences in the seating capacity of regional and mainline jet equipment, this metric is more appropriate than the nominal number of gates. The basis for EQA is discussed in a later section.

Table E3
HISTORIC GATE USE
Gunnison-Crested Butte Regional Airport Master Plan Update

	1997	1998	1999	2000	2001	2002	
Annual Enplanements	57,382	62,961	59,928	57,172	43,888	41,843	
Peak Season Aircraft Gates in Use[1]							
Regional (Group II)	1	1	1	1	1	1	gates
Narrow-body (Group III)							gates
B-757	2	2	2	2	2	2	gates
Total Gates	3	3	3	3	3	2	gates
Total EQA	3.0	3.0	3.0	3.0	3.0	1.7	EQA
Annual enplanements per EQA	19,100	21,000	20,000	19,100	14,600	24,600	

Forecast Gate Demand (EQA)		**Base Year 2002**	**2007**	**2012**	**2017**	**2022**	
Annual Enplanements		41,843	61,200	66,400	72,000	78,300	
	19,000 enpl./EQA	2.2	3.2	3.5	3.8	4.1	EQA
	19,000 enpl./EQA	2.0	2.9	3.2	3.4	3.7	EQA

Source: Landrum & Brown
[1]Gate use for years 1997, 1999, and 2001 based on schedule analysis of the intervening years and discussions with airport staff.

In years with high winter season enplanements, both of the mainline loading bridge gates were occupied by B-757s, with a third B-757 occasionally ground loaded. In 2002 (the base year,) only one jet gate was needed, while the current 2004 schedule requires two gates, but only for smaller narrow-body aircraft.

As shown in the table, prior to 2001, the number of annual passengers per EQA was in the range of approximately 19,000 to 21,000. In 2002, the ratio of passengers per EQA increased significantly because mainline aircraft were scheduled to only require one gate. This 2002 scheduling pattern has not been repeated in 2003 or 2004, so is not considered appropriate for planning.

To provide an estimate of future gate capacity, annual passengers have been divided by the historic range of enplanements per gate. This provides some guidance as to both the number and mix of gates to be used for the terminal program.

Passenger Terminal Facilities Planning Criteria

Terminal facility requirements for an airport are a function of the specific and unique characteristics of that airport. These include the design levels of passenger and aircraft activity; the number and type of airlines serving the airport; the operating requirements of the airlines; and, local factors such as the proportions of leisure vs. business travelers, locally originating passengers, etc.

Unlike airfield facilities, the capacity of each element of a terminal facility can vary depending on the level of crowding and/or processing time that is considered acceptable. A passenger traveling on business may be less tolerant of congestion or delay than a passenger traveling for pleasure. In many cases, the degree of acceptability itself may also vary depending on the configuration of the terminal space and the level of amenity provided. Thus, the "capacity" of a terminal can vary significantly.

The approach taken in developing terminal facilities requirements for Gunnison-Crested Butte Regional Airport has been to review the plans and areas of the terminals, make limited observations of passenger activity, and discuss with airport staff how well the present facilities are functioning. These observations - coupled with calculations of area per passenger, per gate, or other determinant of demand - were compared to generally accepted industry planning factors. From these comparisons, a planning factor for each terminal component was determined and used to project facility requirements.

The program areas developed were based on the utilization of existing facilities, and on projected trends as discussed in the previous chapters. Table E6 (shown at the end of this

chapter), entitled *RECOMMENDED FACILITIES*, presents the program data in six columns:

1) **Existing Facilities:** These are the areas measured from architectural plans of the terminal, and the current functions.

2) **Base Year 2002 Activity:** These areas represent the facilities that would be needed to support levels of passenger activity for the base planning year. These values may differ from existing conditions and either point out deficiencies in existing facilities or facilities with excess capacity. These differences are discussed for each item.

3-6) **Recommended Facilities 2007-2022:** These are the areas recommended to support each level of annual enplanements and the associated Peak Hour passengers. The timing of the needed improvements must ultimately be based on the actual passenger growth rates.

It should be noted that the terminal space program represents a starting point for terminal planning. It is generally considered a minimum program that is needed to support the peak hour levels of passenger activity. As such, it does not refer to any specific terminal concept or gate configuration. When a final terminal concept is chosen, the gross terminal area may differ from the square foot total presented in the tables. For example, the amount of secure and non-secure circulation may vary from the program due to the terminal configuration and location of the security checkpoint; whereas, the amount of airline space is relatively independent of the concept selected.

Airport comparisons are frequently made on the basis of passengers per gate, or terminal area per gate, but these lack a consistent definition of the term "gate". To standardize the definition of "gate" when evaluating aircraft utilization and requirements, the consultant has developed a statistic referred to as a Narrow-Body Equivalent Gate (NBEG). This statistic is used to normalize the apron frontage demand and capacity to that of a typical narrow-body aircraft gate. The amount of space each aircraft requires is based on the *maximum* wingspan of aircraft in its respective aircraft group. FAA Airplane Design Groups used to define runway/taxiway dimensional criteria have been used to classify the aircraft as follows:

Table E4
NARROW-BODY EQUIVALENT GATE (NBEG) INDEX
Gunnison-Crested Butte Regional Airport Master Plan Update

FAA Airplane Design Group	Maximum Wingspan	Typical Aircraft	NBEG Index
I. Small Commuter	49'	Metro	0.4
II. Medium Commuter	79'	SF340/CRJ	0.7
III. Narrow-body/Large Commuter	113'	A-320/B-737/MD-80/ATR	1.0
IIIa. B-757	125'	B-757	1.1
IV. Wide-body	171'	DC-10/MD-11/B-767	1.5
V. Jumbo	214'	B-747/A-330,340/B-777	1.9

Source: Landrum & Brown

Group IIIa has been added to more accurately reflect the B-757, which has a wider wingspan than Group III, but is substantially less than a typical Group IV aircraft.

In developing terminal facilities requirements, the apron frontage of the terminal, as expressed in NBEG, is a good determinant for some facilities and allows different terminals to be compared.

The concept of Equivalent Aircraft (EQA) is similar to that of NBEG, i.e., a way to look at the capacity of a gate. EQA, however, normalizes each gate based on the seating capacity of the aircraft that can be accommodated. The EQA measure was originally developed in the early- to mid-1970's as a technique for sizing terminal facilities[2]. At that time, the majority of jet aircraft had 80 to 110 seats, with some larger narrow-bodies of up to 150 seats. The only wide-body aircraft in service were the DC-10-10, L-1011-100 and B-747-100. Consequently, the EQA measure centered on the 80-110 seat range, with an EQA of 1.0. Smaller aircraft had an EQA of 0.6 and larger aircraft fell into seating ranges with the center of the range determining the EQA of that range. One hundred seats were equal to 1.0 EQA. Thus, aircraft in the 211- to 280-seat range had an EQA of 2.4.

In considering the modern fleet mix of regional and jet aircraft, and in order to have some relationship with the physical parameters associated with the NBEG, the basis of EQA has

[2] The Apron & Terminal Building Planning Manual; for US DOT, FAA by The Ralph M.Parsons Company; July 1975.

been revised. The modern Equivalent Aircraft is also a Group III narrow-body jet; however, the larger aircraft in this class typically have 140-150 seats. This establishes a basis of 1.0 EQA = 145 seats. As with the concept of NBEG, smaller aircraft may use a gate, but the EQA capacity should be based on the largest aircraft/seating configuration typically in use.

Table E5
EQUIVALENT AIRCRAFT (EQA) INDEX
Gunnison-Crested Butte Regional Airport Master Plan Update

FAA Airplane Design Group	Typical Seats	Typical Aircraft	EQA Index
I. Small Commuter	25	Metro	0.2
II. Medium Commuter	50	SF340/CRJ	0.4
III. Large Commuter	50	ATR/Dash 8	0.4
III. Narrow-body	145	A-320/B-737/MD-80	1.0
IIIa. B-757	185	B-757	1.3
IV. Wide-body	280	DC-10/MD-11/B-767	1.9
V. Jumbo	400	B-747/A-330,340/B-777	2.8

Source: Landrum & Brown

While most terminal facility requirements are a function of peak hour passenger volumes, some airline facilities are more closely related to the size of the aircraft. For example, while the total number of baggage carts required for a flight is a function of peak hour passengers (and their bags), the number of carts staged at any one time is generally based on the size of the aircraft. Thus, the EQA of the terminal represents a better indicator of demand for these facilities.

In the following program analysis, peak hour passengers, NBEG, and EQA have been used as appropriate to estimate the demand for terminal facilities.

Aircraft Gates and Departure Lounges

The previous discussion of the methodology used to project the demands for aircraft gate positions were in terms of EQA parking, due to the pattern of activity at Gunnison-Crested Butte Regional Airport. Converting this EQA range to a gate mix is necessary in developing a terminal program.

Gate Mix. Of the four existing gates, two are for ground-loaded regional turboprop or jet (RJ) aircraft in a power-out configuration. Two loading bridge-equipped gates can serve up to B-757 aircraft in a push-back configuration. Although many airports have modified loading bridges to serve RJs, this has not been done at Gunnison-Crested Butte Regional Airport.

As noted in pervious sections, the current (2004) and recent winter schedules do not have the number of B-757s as in busier years. As activity increases, it is reasonable to assume that B-757s will return to the fleet and that most of the mainline gates should continue to be sized for the B-757. The number of regional gates is not expected to grow above the current number (two).

Remain Overnight (RON) Aircraft Parking. In addition to active gates, parking may need to be provided for additional RON aircraft or for occasional charter aircraft, which may be on the ground when the mainline gates are occupied. It is recommended for Gunnison-Crested Butte Regional Airport that an RON position be close to the terminal, so that it can be used by a charter operator or for off-schedule operations that may occur during the winter. The RON position should be sized for a B-757.

Departure Lounges. Departure lounges or holdrooms are based on the mix of gates and the average seating capacity of each class of aircraft. The holdroom area consists of the passenger seating/lounge area; the airline's ticket lift podium; and, circulation.

The amount of seating/lounge area is generally based on providing lounge area for 80% of the aircraft capacity. Of these passengers, the percentage of passengers seated varies from 50% to 80%, with the remaining 20% to 50% standing. At Gunnison-Crested Butte Regional Airport, it is recommended that an 80% seated/20% standing ratio be used. The net difference between 50% and 80% seating for Gunnison-Crested Butte Regional Airport would only be 600-650 square feet. Lower seating ratios are more appropriate when alternative secure-side waiting areas are available, such as sit-down restaurants, which may not be provided at Gunnison-Crested Butte Regional Airport.

A 180-square foot (6' wide) deplaning corridor has been added to the lounge area, which assumes an average 30' deep holdroom. The corridor effectively acts as an extension of the 4-5' wide loading bridge door. Each ticket lift podium position is allocated 5' for width, although many airlines use 3-4' wide positions. The depth of the podium and back wall is typically 8' and a 10-15' deep queuing area is provided.

The average aircraft seating capacities and holdroom sizes are:

	Seats	Area (SF)
Regional	50	800
Narrow-body	145	2,000
B-757	185	2,600

All holdrooms are assumed to be grouped to allow better flexibility of use. Although grouping makes it is possible to reduce the total amount of holdroom space at some airports, a reduction is *not* recommended for Gunnison-Crested Butte Regional Airport at this point in the planning process. This is due to the historic pattern of near-simultaneous departures by mainline aircraft.

Airline Space

Airline space includes both exclusive leased areas (for example offices and operations), and joint use space (such as baggage claims).

Airline Ticket Counter (ATO Counter). ATO positions are typically based on the number of peak hour enplaning O&D (origination & destination) passengers, the number of airlines, the time distribution of passengers arriving at the terminal, and the percentage of passengers checking in at the ticket counter vs. using a self-service kiosk. Most of this information has been estimated for Gunnison-Crested Butte Regional Airport. A planning factor was developed that reflects these characteristics, current ATO counter utilization (not necessarily leased positions), and understood excesses and shortfalls.

Of the 18 existing ATO positions, two UA/UAX positions are of limited use due to the lack of queuing, proximity to the security queue, and distance from the bag conveyor. Depending on the number of airlines serving Gunnison-Crested Butte Regional Airport, the demand for ATO positions has also varied significantly. For example, in the 2003 winter season, four positions were not used, while in 2004, all of the positions are being used. The Base Year requirement has been adjusted to account for these assumptions.

The projected demand for ATO positions is limited to typically staffed positions. Additional self-service units may be provided within the ticket lobby or elsewhere, such as Continental has done at Gunnison-Crested Butte Regional Airport.

Most domestic carriers can use a 6-foot double counter plus a shared 30-inch bag well for an average of 4.25 feet per agent. There are also breaks in the ATO counter to allow personnel access to individual ATO office areas, and end counters typically without bag wells. This increases the average ATO counter length for planning to approximately 5.5 LF per position.

Two of the existing ATO counter sections have the typical domestic airline arrangement of a continuous baggage belt parallel to the counters. The ATO counter for UA/UAX has a single conveyor penetrating the back wall, which requires agents to carry bags to that point. The counters have a varying depth including the counters and agent work space. For planning, a standard 10-foot depth with a parallel bag belt has been assumed.

Airline Offices. Airline offices include the ATO offices and other airline administrative spaces. At most airports, the ATO offices are located immediately behind, or adjacent to, the ATO counter to provide support functions for the ticket agents. Typically, these are 25-30 feet deep along the length of the counter. Other offices may include functions such as the airline station manager. The amount of these offices and location (ATO, operations area, office location on a terminal upper level, etc.) is dependent on individual airline requirements and preferences, and space availability.

In the existing terminal, with the exception of two small offices, the bulk of the airline offices are located on the second floor accessed by individual stairways from the bag make-up/operations area behind the ATO counter. Although not as convenient as in a conventional terminal, the amount of office space is adequate for the number of airlines operating during the peak season. For the Program, a 30-foot deep office area has been assumed behind the ATO counter, which is a similar area to ATO frontage ratio as the existing terminal.

Airline Operations. Operations include all of the apron level support spaces for aircraft servicing, and aircraft crew-related support spaces. The demand for operations areas is a function of the size and types of aircraft being operated and individual airline operating policies. Because many airlines do not identify their specific space requirements at this stage of planning, and future airlines cannot be identified, a program area for operations is typically based on the number of gates and airlines at an airport.

At Gunnison-Crested Butte Regional Airport there is not a clear distinction between operations spaces, baggage make-up, and the limited amount of separate office space on the ground floor of the existing terminal. This leads to operational difficulties and conflicts between baggage make-up and other aircraft support functions. The Gunnison area is also one of the coldest locations in Colorado, with overnight temperatures reported at -40^{o} and -20^{o} at mid-day. Due to these extreme temperatures, ground support equipment (GSE) is kept inside to the extent possible, which requires more operations area. For the program,

the dedicated operations area factor has been increased to accommodate some of this equipment storage.

Baggage Make-up. Baggage make-up includes the make-up units, the cart loading areas, and baggage tug/cart (baggage train) maneuvering lanes. The existing baggage make-up systems are all simple run-out belts. The existing area for bag make-up in Table E4 is the gross area of the combined bag make-up and operations area. Due to the mixing of functions, the amount of existing bag make-up area is overstated, and much of the area is also used for GSE storage.

Due to the configuration of the conveyors, all of the bag carts must be pushed into position by hand, but depending on how each airline stages its carts, some can be pulled out directly by bag tugs. In all cases, the amount of make-up conveyor presentation length is considered inadequate and many carts must be staged outside the building. This requires doing bag make-up with the exterior doors open.

Although checked baggage ratios are a consideration, these generally affect the total number of baggage carts in use rather than the size of the make-up area. The number of carts staged at any one time, however, is generally based on the size of the aircraft. Using EQA provides a consistent basis for baggage system planning, since larger aircraft typically require more bag cart staging area than smaller aircraft. The number of staged carts is also a function of individual airline policies for pre-sorting baggage at the spoke airport for more efficient transfer at their hub.

The program area should be able to accommodate individual run-out belts for each airline with adequate tug/cart maneuvering; a shared recirculating make-up unit; or, a combination of the two arrangements. All of the bag make-up functions should be enclosed, heated spaces.

Checked Baggage Screening. As a result of the Aviation and Transportation Security Act, all checked baggage is subject to screening for explosives. In order to meet the statutory deadline of 12/31/02, the TSA has relied on ETD (explosives trace detection) units located in the lobby of most smaller airports. While low in capital cost, this type of equipment has a slow processing rate and is manpower intensive. For the long-term, the industry consensus is that, for all but the smallest airports, some type of higher speed in-line equipment will be necessary. However, many of the current in-line explosives detection systems (EDS) cannot handle oversized bags such as skis and golf clubs. However, EDS technology is changing and smaller/faster and/or less expensive equipment may be practical for Gunnison-Crested Butte Regional Airport at some time in the future.

Whether Gunnison-Crested Butte Regional Airport will eventually have an in-line installation, or whether it would be practical for its specific passenger characteristics, is unknown at this time. If an EDS based solution is implemented, it would likely be in the form of a stand-alone EDS unit. After screening, bags are then injected into whatever baggage make-up system is developed for the terminal. Based on similar existing installations, a single EDS with related ETD or hand searching of baggage takes approximately 900 square feet.

In the event that an ETD-based lobby system will continue to be used at Gunnison-Crested Butte Regional Airport, a 10-foot deep baggage inspection zone should be added to the ticket lobby area (See Ticket Lobby). The area for the deeper ticket lobby may be greater or similar to the area for a single EDS unit, depending on how it is integrated (or not) into the baggage make-up system.

Baggage Service Offices. Baggage service offices are typically required only by airlines with sufficient activity to warrant staffing. Other airlines will use baggage lock-up areas to store late or unclaimed baggage. At Gunnison-Crested Butte Regional Airport, no airlines have baggage service offices. However, baggage lock-up areas for all carriers are needed. At present, bag storage is limited to a small closet next to the elevator. Additional storage can be in the form of open-front, lockable storage units rather than storage rooms or offices.

Baggage Claim. Baggage claim requirements are based primarily on peak hour deplaned passengers, the concentration of these arriving passengers within a 20 minute time period, and - to a lesser extent - on checked baggage per passenger ratios. Observations at most U.S. airports indicate that the majority of domestic passengers arrive at the baggage claim area before their bags are unloaded onto the claim units. At a small airport such as Gunnison-Crested Butte Regional Airport, virtually 100% of the passengers are waiting prior to first bag delivery. The result is that the claim unit should be sized for the estimated number of passengers waiting for baggage, because most bags are claimed on the first revolution of the claim unit. However, it has also been reported that many passengers delay removing their

bags from the claim unit until they determine which bus they are taking to the ski resorts. This requires that bags be removed from the claim unit and be placed on the floor near the claim unit. Space for these bags is limited.

An analysis of the schedules indicates that the concentration of arrival activity within a peak 20 minute period was approximately 80% of the hourly arrivals, which is very high, but understandable, given the scheduling patterns at Gunnison-Crested Butte Regional Airport. The percentage of passengers who have checked baggage is estimated at 90% during the peak months.

Baggage claim units are recommended to be a minimum of 150 LF of passenger exposure in order to accommodate the larger aircraft with high load factors typical of the peak months. The claim unit size also assumes that most passengers are traveling with other family or friends, which reduces the number of people actually at the claim unit. The existing claim unit has approximately 113 feet of claim frontage. The oversized bag shelf is used on a regular basis by UAX instead of the mechanical claim unit.

The baggage claim area is recommended to be 30 square feet per foot of frontage to provide adequate queuing and circulation space. At present, the claim area averages approximately 20 SF/LF claim frontage, and some of this area can also be considered as circulation space.

Oversized baggage - primarily skis/snow boards during the peak months - can be a significant portion of checked baggage at Gunnison-Crested Butte Regional Airport. Airport staff estimates that a B-757 could have 30-40 oversized bags. The existing 32-foot long bag shelf can become overloaded due to the number of skis/snow boards. It is understood that an exterior ski rack cart has been tried in the past, but required additional staffing for security. Overall, the baggage claim area is undersized by approximately 45%.

Baggage Claim Off-load. These areas include: the portion of a flat plate, direct feed claim unit upon which the bags are placed, or the feed conveyor for a remote-fed claim unit; the adjacent baggage train lane and work area; and, a by-pass lane for baggage trains when there are multiple claim units. The program area would provide adequate space for the off-loading of a baggage train of 2-3 carts.

The existing off-load area is outside, with only the actual claim unit section enclosed. The off-load area does not even have a canopy due to the runway building restriction line. It is recommended that the entire off-loading area be weather protected in the future.

Baggage Train Circulation. A small amount of area (as a percentage of baggage handling space) for baggage train circulation, around and between the bag make-up areas, is included for planning. The final configuration of the terminal may require more or less space.

Concessions

Terminal concessions include all of the commercial, revenue-producing functions that serve the traveling public. At the present time, all of the food/beverage and retail merchandise concessions are located in the non-secure area of the terminal. This was less of a problem prior to 9/11 when security screening was faster. Passengers could stay in the non-secure area longer, or easily return to the non-secure area if a flight was delayed.

With slower, more intensive screening and the prohibition of visitors past security, passengers are reluctant to stay in the non-secure area as long. Unless a flight delay is of a known, long duration, passengers are also reluctant to leave the holdroom to use the concessions in the non-secure area. For most airports, it is recommended that 80-90% of concessions be on the secure side of the terminal. This will be a continuing problem for small airports such as Gunnison-Crested Butte Regional Airport, which may not be able to support concessions in both areas.

Rental Car Counters. Three companies are currently located on-airport. Each has a staffed counter with a very small office in the terminal. For future planning, a fourth on-airport company has been assumed when annual enplanements exceed 70,000. Each company's counter area would be increased to provide additional depth for the office functions.

Ground Transportation Services. Transportation service (Alpine Express) counters are located in the baggage claim area to provide information and ticketing for bus and scheduled limo services. As with rental car counters, an additional operator has been assumed at the 70,000 enplanement level. Passenger waiting areas have been included in the area for public seating.

Food and Beverage Services. Food and beverage concessions presently consist of a combined bar and restaurant on the second floor, but in the non-secure area. This is only open during the peak season. A coffee/snack stand opened for the 2004 season, but it is also on the second floor in the non-secure area originally established for retail sales.

The total area for food/beverage is greater than what the annual passenger volume would typically support, and this is confirmed by the seasonal nature of the concessions. It is recommended that a small coffee/snack stand (300 SF) be open on the non-secure side all year, and that the seasonal bar/restaurant be located in the secure area of the terminal. The all-year coffee stand should be on the ground level, unless a non-secure side elevator is installed.

News/Gift/Specialty. This category includes news stands, gift, retail, and specialty shops. The terminal has three potential news/gift locations on the second floor in the non-secure area, but only one is presently leased. Based on general passenger characteristics, Gunnison-Crested Butte Regional Airport should be able to support a larger retail concessions program as enplanements grow. However, the seasonal nature of the traffic would still limit retail potential.

Concession Support. Concession support consists of storage areas, preparation kitchens, employee lockers, and administrative offices. At present, support space is limited to the kitchen area of the restaurant. For programming, 30% of the customer-serving areas have been used. At a small airport, most of the support space should be integrated into the back-of-house area adjacent to the customer serving spaces, rather than being located remotely.

Public Spaces

Public spaces include most of the non-revenue producing areas of the terminal including queuing areas, seating and waiting areas, restrooms, and circulation corridors. Some of the public space elements are directly related to peak hour passenger volumes; whereas, others are functions of other facility requirements.

Ticket Lobby. The ticket lobby includes a ticket counter (ATO) queuing area and cross circulation. The existing ticket lobby provides approximately 25 feet from the face of the ticket counter to the inner vestibule door. It is 30-33 feet to the front glass wall, but this includes a limited seating area. The depth is reduced to less than 18 feet for the ATO positions at the end of the counter as the queuing/cross circulation functions meets security checkpoint queues.

The minimum dimension from the face of the ticket counter to any obstruction to cross circulation should be a minimum of 35 feet for a small airport. However, since larger aircraft are used during the peak season, a 40-foot minimum depth is recommended. Thus, the existing lobby provides less than what would be recommended.

The current TSA procedures for checked baggage screening has ETD machines and inspection tables located in the lobby, which further reduce the space available for passenger queuing and circulation. As noted in Section II.A.5 (checked bag screening), different options for baggage screening may be available in the future. If the TSA continues to use ETD machines in the ticket lobby, it is recommended that a 10-foot deep screening zone be provided. This would increase the ticket lobby depth to 50 feet.

Public Seating. Public seating areas include general waiting areas near the ticket lobby, baggage claim areas, and concessions. These are typically in non-secure areas of the

terminal. There are no well-defined seating areas in the terminal at present.

Most airports have typically provided seating for 15% of the peak hour enplaned passengers and their visitors, plus visitors for the deplaning passengers at 15 square feet per person. Due to security restrictions, the number of well-wishers has declined dramatically, and most passengers go through security as soon as possible after check-in. Thus, the area for public seating has been limited to that for a smaller percentage of enplaning passengers (5%) and all of the meeter/greeters. The ratios of visitors per passenger have been estimated from other airports surveyed since 9/11.

Rental Car Counter Queuing. Rental car counter queuing is recommended to be a 10-foot deep area facing the rental car counters. Additional space for cross circulation should be provided behind the queuing area, and is accounted for in General Public Circulation. Existing rental car queuing is not well-defined and is simply done within the corridor connecting the holdroom exit and bag claim area.

Restrooms. Restrooms should have at least as many toilets for women as toilets and/or urinals for men. In some jurisdictions, new building codes are mandating 25% to 50% more fixtures for women than for men. These ratios are appropriate for airports when the passenger gender mix approaches 50% female. At present, restrooms in the terminal have equal numbers of fixtures for men and women. All of the restrooms are in non-secure areas of the terminal. There are no restrooms within the holdrooms.

The program area has been divided between the main terminal locations (ticketing, bag claim, and concession areas) and the secure holdroom area. The terminal factor is based on peak hour total passengers and their estimated well-wishers. The holdroom factor is based on providing a restroom appropriate to the size of the aircraft gates. The minimum number of toilets and/or urinals would be 6 per sex for the secure location.

In addition to handicapped access toilets, sinks and urinals, it is recommended in transportation facilities such as airports that companion care restrooms be provided. These unisex restrooms allow an elderly or disabled person to be accompanied into a restroom by another person who assists the disabled person. Although not very large, retrofitting these companion care facilities can be difficult. The program areas include an allowance for such restrooms in both secure and non-secure areas. The Airport already has a companion care restroom near the bag claim.

Secure Circulation. Secure circulation typically consists of the central corridor of the concourses, the security check-points, and associated security office/search room. The existing terminal does not have a traditional corridor arrangement. Secure circulation after the security checkpoint is limited to the stairs and elevator connecting the ground level and

second level holdrooms.

For future planning, a defined circulation zone needs to be provided whether or not the terminal continues to use a single consolidated holdroom, or has a concourse configuration with more than one holdroom area. A 10-foot wide corridor/circulation zone should be the minimum dimension. At this point in the planning process, it has been assumed that consolidated upper and lower level holdrooms would continue to be used. A secure circulation factor of 15% of the holdroom area has been used.

Security Screening Checkpoint (SSCP). With the changes in security inspection procedures, processing rates have been reduced at most airports. The TSA has mandated a new SSCP dual-lane configuration that is approximately 30 feet wide and 40 feet long. To this must be added queuing area, assumed to be 15 feet deep. Thus, the overall SSCP has a 30' x 55' footprint. Although the new SSCP equipment installed by the TSA at Gunnison-Crested Butte Regional Airport does not correspond to the standard configuration, the total area involved is similar. At an average processing rate of 200 passengers/hour/lane, the existing two-lane SSCP should be adequate until near the end of the planning period.

General Public Circulation. Other public circulation includes all of the corridors, vertical circulation elements, and other architectural spaces that tie the public functional elements of the terminal together. The program area is based on 20% of these functional areas. The areas include baggage claim, baggage service offices, holdrooms, concessions (excluding concession support area), and other public areas. The percentage is a first approximation and will also vary with the terminal configuration. The split between secure and non-secure (public) circulation is also a function of the terminal concept.

Other Areas

Information Counter. Most medium and larger airports have information counters, usually staffed by volunteers. In a tourist area, this can be especially useful. The program has provided space for such a counter in the future.

Airport Administration. Airport administration is located on the second floor of the terminal. This includes the main offices in the adjacent ARFF building and a conference room in the main building. Administration space is assumed to be adequate.

ARFF Station. The existing terminal has an attached aircraft rescue and fire fighting (ARFF) facility. A new ARFF building is being built and these functions will be relocated.

Non-Public Circulation. Non-public circulation provides access to airline operations, airport administration areas, concession support, and other areas typically not used by the traveling

public. Existing non-public circulation includes the second floor corridor and internal stairs, which connect the airline offices to the bag make-up/operations areas. The program area is based on 10% of non-public functional areas and includes an area for employee restrooms.

Mechanical/Electrical/Utility. Utilities areas are approximately 3% of the total enclosed functional areas of the existing terminal. This ratio is much lower than most terminals, which are typically 8-12%, depending on the location of boilers and major air handlers. For the program, an 8% ratio has been used.

Janitorial/Storage/Shops. Janitorial and shop space include the building maintenance functions that are required to be within the terminal building. In addition to typical janitorial functions, space must be made available to store any specialized maintenance equipment for the terminal, such as lifts for high ceiling areas. Additional maintenance support may also be provided by facilities outside the terminal complex. A planning ratio of 0.5% has been used to take some of these uses into consideration.

Structure/Non-net Areas. Non-net areas are added to the recommended facility requirements to provide a better estimate of the total gross building area. Although the program areas are in terms of gross space, it is to be expected that there are always areas created in buildings, which are unusable or occupied by special structures.

Summary & Conclusions

The existing terminal has deficiencies to varying degrees in a number of functional areas. Some of the more significant ones are:

- **Airline offices, operations space, and baggage make-up.** Baggage make-up space is inadequate requiring airline personnel to work outside, which is a concern given Gunnison's weather. Inadequate operations space and equipment storage compete with offices and baggage handling.
- **Departure Lounge.** Although the gross area of the holdrooms is reasonable for the size of aircraft serving Gunnison-Crested Butte Regional Airport, the lack of restrooms and concessions is a major issue affecting passenger service.
- **Ticket lobby.** The ticket lobby was considered marginal in size before the TSA began checked bag screening. With ETD equipment located in the lobby, the limited queuing and circulation areas have been further constrained.
- **Passenger security screening checkpoint.** New TSA requirements occupy significantly more space than older configurations and the resulting queues can block circulation in the terminal.

- **Baggage Claim.** For the dominant aircraft at Gunnison-Crested Butte Regional Airport, claim units of approximately 150 LF would be recommended as compared to the existing 113 LF unit. Space for skis and other oversized bags is also considered inadequate. The input area for the bag claims should also be brought into a weather protected area.
- **Concessions.** The terminal lacks a year-round snack bar and none of the seasonal concessions are located within the secure area.

The existing terminal has a gross area of approximately 38,400 square feet. If a new terminal was to be built to accommodate current levels of activity, the gross area would be approximately 45,000 square feet. Thus, the existing terminal is undersized by approximately 10%. However, once activity returns to pre-9/11 levels (forecast for 2007), the terminal would need to increase to approximately 62,000 square feet. This means that the terminal would need to expand by over 55%, assuming that all of the existing area (including the ARFF building) can be converted to the needed functions.

Because a terminal will take a number of years to design and construct, it is recommended that the Master Plan Update consider a 60-70,000 enplanement, 62-66,000 square feet terminal as a First Phase. A Second Phase would involve a one gate expansion. During more advanced planning and design, it may become more cost effective to build some facilities to the long-term demand levels rather than to do smaller incremental expansions to some functional areas.

Table E6
RECOMMENDED FACILITIES
Gunnison-Crested Butte Regional Airport Master Plan Update

	Existing Facilities	Base Year 2002	2007	2012	2017	2022	
Annual Enplanements		41,843	61,200	66,400	72,000	78,300	
Peak Hour Passengers							
Peak Hour Enplaned Passengers		240	350	380	400	460	
Peak Hour Deplaned Passengers		160	240	240	240	270	
Peak Hour Total Passengers		360	530	550	630	730	
Well-Wishers per Enplaning Passenger		0.05	0.05	0.05	0.05	0.05	
Meeter/Greeters per Deplaning Passenger		0.1	0.1	0.1	0.1	0.1	
Gates							
Aircraft Gates:							
Regional (Group II)	2	1	2	2	2	2	gates
Narrow-body (Group III)							
B-757 (Group IIIa)	2	1	1	2	2	2	gates
Total Gates	4	2	4	4	4	5	gates
Total NBEG	3.6	1.8	3.5	3.6	3.6	4.6	NBEG
Total EQA	3.4	1.7	3.1	3.4	3.4	4.4	EQA
Additional RON Positions	1	0	1	1	1	1	gate
Departure Lounges:							
Regional (Group II)	1,829	850	1,700	1,700	1,700	1,700	SF
Narrow-body (Group III)	0	0	2,000	0	0	2,000	SF
B-757 (Group IIIa)	3,980	2,600	2,600	5,200	5,200	5,200	SF
Total Departure Lounge Area	5,809	3,450	6,300	6,900	6,900	8,900	SF

Table E6 (Con't)
RECOMMENDED FACILITIES
Gunnison-Crested Butte Regional Airport Master Plan Update

	Existing Facilities	Base Year 2002	2007	2012	2017	2022	
Airline Space							
Ticket Counter – Equivalent Positions	18	12	18	20	20	24	pos
Ticket Counter – Length	106	70	100	110	110	140	LF
Ticket Counter – Area	953	700	1,000	1,100	1,100	1,400	SF
ATO Offices	2,919	2,100	3,000	3,300	3,300	4,200	SF
Airline Operations	0	1,500	2,800	3,100	3,100	4,000	SF
Baggage Make-up	3,072	2,600	4,700	5,100	5,100	6,600	SF
Checked Baggage Screening	0	900	900	900	900	900	SF
Baggage Service Offices	0	200	200	200	200	300	SF
Baggage Claim:							
Claim Frontage Required (LF)	---	170	260	260	260	290	LF
Claim Units	1	1	2	2	2	2	units
Claim Frontage Programmed (LF)	113	150	300	300	300	300	LF
Claim Area	2,285	4,500	9,000	9,000	9,000	9,000	SF
Oversized Baggage	510	500	900	900	900	900	SF
Baggage Claim Off-Load Area	365	1,200	2,400	2,400	2,400	2,400	SF
Baggage Train Circulation	0	200	400	400	400	500	SF
Subtotal	10,104	14,400	25,300	26,400	26,400	30,200	SF
Concessions							
Rental Car Counter – Length	33	33	30	30	40	40	LF
Rental Car Lease Area	514	700	600	600	800	800	SF
Ground Transportation Services	710	700	700	700	1,000	1,000	SF
Food/Beverage	1,850	2,200	2,200	2,200	2,200	2,200	SF
News/Gift/Other	651	200	300	300	400	400	SF
Concessions Support Area	300	700	800	800	800	800	SF
Subtotal	4,025	4,500	4,600	4,600	5,200	5,200	SF

Table E6 (Con't)
RECOMMENDED FACILITIES
Gunnison-Crested Butte Regional Airport Master Plan Update

	Existing Facilities	Base Year 2002	2007	2012	2017	2022	
Public Space							
Ticket Lobby	3,130	2,800	4,000	4,400	4,400	5,600	SF
Public Seating/Waiting Area	0	400	600	600	700	800	SF
RAC Queue Area	165	300	300	300	400	400	SF
Restrooms – Terminal Locations	1,130	800	1,200	1,200	1,400	1,600	SF
Restrooms – Concourse Locations	0	900	900	900	900	900	SF
Secure Circulation	797	500	900	1,000	1,000	1,300	SF
Security Screening Units	2	2	2	2	2	3	Units
Checkpoint/Search Area	1,731	1,700	1,700	1,700	1,700	2,500	SF
Other Public Circulation	4,710	3,900	5,800	6,000	6,200	7,200	SF
Subtotal	11,663	11,300	15,400	16,100	16,700	20,300	SF
Other Areas							
Information Counter	0	0	100	100	100	100	SF
Airport Administration/Operations	2,645	2,600	2,600	2,600	2,600	2,600	SF
A.R.F.F. Station	2,819	2,800	0	0	0	0	SF
Non-Public Circulation	1,334	1,300	1,600	1,700	1,700	2,100	SF
Subtotal	6,798	6,700	4,300	4,400	4,400	4,800	SF
Total Functional Area	**38,399**	**40,350**	**55,900**	**58,400**	**59,600**	**69,400**	**SF**
Mechanical/Electrical/Utility	1,230	4,000	5,600	5,800	6,000	6,900	SF
Janitorial/Storage/Shops	184	200	300	300	300	300	SF
Structure/Non-Net Areas	(1)	1,300	1,900	1,900	2,000	2,300	SF
TOTAL TERMINAL GROSS AREA	**39,813**	**45,850**	**63,700**	**66,400**	**67,900**	**78,900**	**SF**
Gross Terminal Area per Gate:	10,000	22,900	15,900	16,600	17,000	15,800	SF/Gate
Revenue Area: (airlines, concessions, and other tenants)	50.1%	48.7%	56.8%	57.1%	56.7%	56.1%	
Non-Revenue Area	49.9%	51.3%	43.2%	42.9%	43.3%	43.9%	

[1] Existing area calculations are gross areas and include structure.

Passenger Terminal Area Development

It was determined early on in the process of developing this Master Plan Update for Gunnison-Crested Butte Regional Airport that, because of landside access issues, the passenger terminal facilities should remain on the north side of the Airport.

The various components of the plan that comprise the terminal area development include the passenger terminal and aircraft apron areas, short and long-term public parking lots, rental car ready-return lot, rental car storage areas, and private and commercial vehicle curbfronts.

The existing terminal building was originally built in the 1970's and subsequently renovated and expanded on three separate occasions. Other smaller renovations have been completed through the years, including the updating of the security screening checkpoint to meet the TSA requirements after the events of September 11, 2001. While certain portions of the terminal building are adequate for today's needs, major portions of the building are inadequate for existing and future passenger demands. In addition, the existing terminal infrastructure may not be compatible with the development of future facilities. For example, the existing structural column grid consists of wooden columns placed 16'-0" on center, instead of a typical 30' column grid, and will potentially limit flexibility in terms of retrofitting the facilities within the shell of the existing terminal building.

For the purposes of the facility requirements presented previously, we have assumed that the requirements are based upon the efficiencies of a new terminal building. If, at the conclusion of the study, a concept that recommends a major expansion and renovation of the existing terminal building is reached, it will more than likely result in a facility that is larger in size than a new facility, due to the inherent constraints of the existing terminal building. It should be noted that the facility requirements are seen as a starting point and general guideline for the development of the concepts, and that the ultimate size of the facility will depend upon site-related considerations and the physical configuration of the terminal.

Given the age of the existing facility, careful consideration will need to be given in order to identify potential thresholds of modifications, which may trigger significant required improvements due to building code revisions. These updates to the building codes may require modifications to mechanical, structural, electrical systems, and access issues pertaining to the Americans with Disability Act (ADA).

It is strongly recommended that a full code analysis of the existing building be conducted to establish the viability and implications of a major terminal expansion and renovation.

Existing Site Issues and Constraints

The passenger terminal development area is defined by Rio Grande Avenue on the north, various storage buildings on the east, the County Road and Bridge Building to the west, and the runway and taxiway system on the south. The potential area for terminal expansion in this location is very limited. The diagram on the following page illustrates the opportunities and constraints that are assumed to influence the development of future terminal facilities. The major issues are as follows:

- The close proximity of the existing terminal building and aircraft parking apron to the existing runway on the south.
- Relocation of the ARFF facility adjacent to the terminal building to allow for expansion to the west.
- The expansion of the General Aviation aircraft parking apron and related facilities immediately to the west of the terminal facilities.
- The close proximity of Rio Grande Avenue and the utilization of the existing access intersections.
- Potential conversion of the County Road and Bridge Building, including the recycling center into airside apron parking areas, terminal development areas and landside related facilities such as long-term parking, rental car overflow areas, etc.

Existing Terminal Constraints

Terminal Constraints

The existing terminal has deficiencies to varying degrees in a number of functional areas. The purpose of the following diagrams is to point out some of the concerns with the existing building. While some of these issues are not major, the exhibit illustrates the amount of space currently available and the amount that is currently projected for normal airport terminal operations. Some of the more significant issues are listed below.

- **Ticket Lobby**. At the present time, the ticket lobby and general seating areas appear to be inadequate. With the implementation of the TSA's Explosive Trace Detection (ETD) units and inspection stations in the lobby, there is inadequate room to accommodate passenger queuing and circulation during peak seasons. The long-term solution at most airports, for 100% baggage screening of checked bags, places the equipment in the baggage make-up

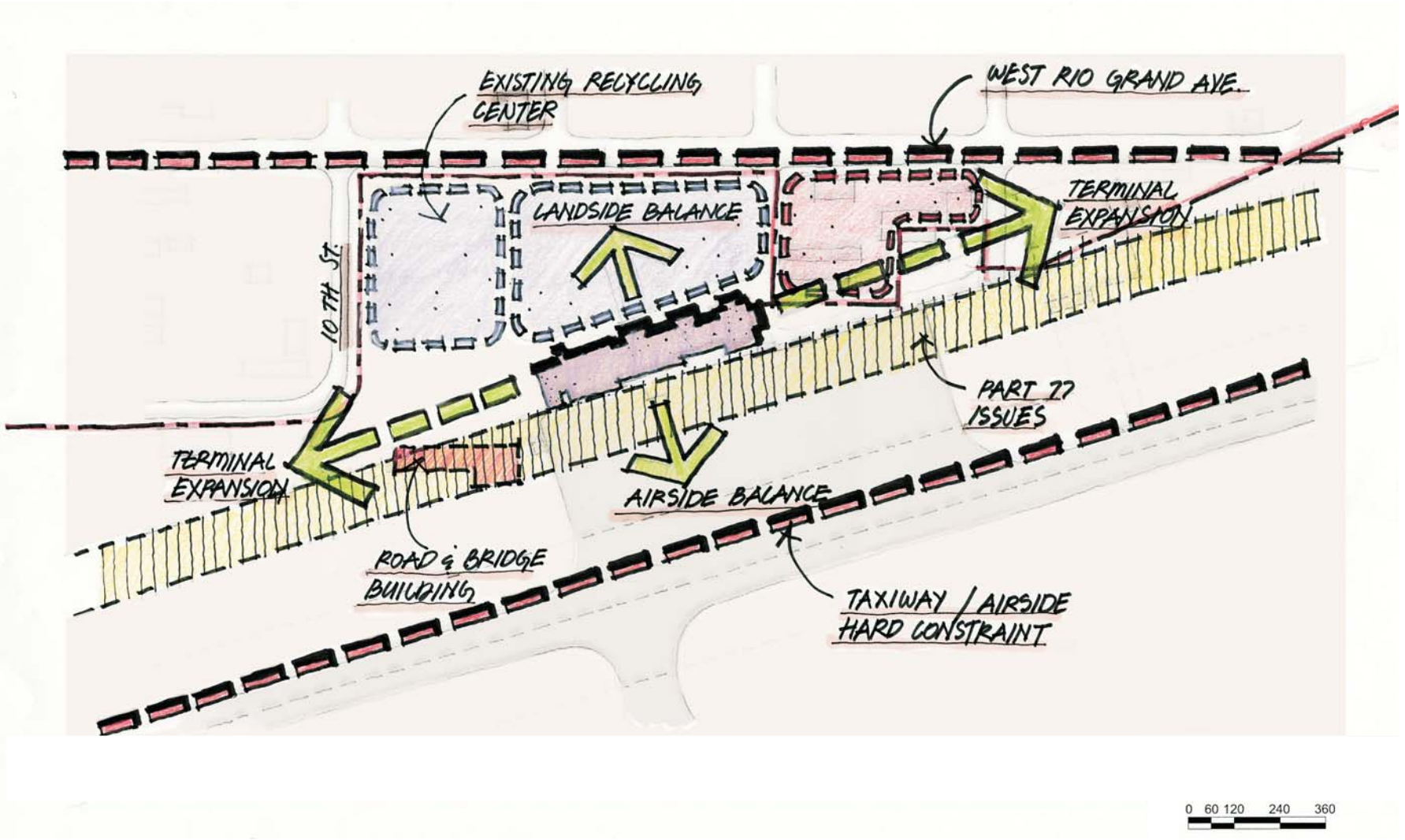

FIGURE E1
Existing Issues and Constraints Diagram

area and, currently, there is not space to do that type of modification. If a new ARFF building is constructed, the existing ARFF building could be converted for use by baggage screening equipment.

- **Airline operations space and baggage make-up**. Inadequate or non-existent operations space and equipment storage compete with baggage handling. This creates a less than ideal situation for the airline employees. The structural column spacing of the building does not lend itself to flexibility for equipment and baggage belts.

- **Departure Lounges**. The existing passenger lounges are located on both the upper and lower levels of the terminal building. The lower level holdroom accommodates passengers for flights that utilize commuter and regional jet operations. The upper level holdroom accommodates the seasonal jet activity including up to B-757 aircraft. Existing space in the lower level holdroom has also been lost to expanded security screening requirements. The existing holdroom does not have any defined circulation space for passenger seating areas and creates some confusion for passengers whose flights utilize the upper level holdroom. The existing upper level holdroom area does not currently have emergency egress exits, other than utilizing the existing loading bridges as exits.

- **Passenger security screening checkpoint**. New TSA requirements occupy significantly more space than older configurations and have reduced the area available for the lower level holdroom. The location of the queuing area does not leave proper circulation area in the ticket lobby to the baggage claim hall. It is unknown at this point what future administrative space will need to be provided for the TSA personnel.

- **Baggage Claim**. The baggage claim unit has approximately 113 lineal feet of frontage for active claim. In the peak ski season, airlines operating B-757 sized aircraft provide activity levels for which a claim unit with approximately 150 LF would be recommended. Space for skis and other oversized bags is also considered inadequate. The input area for the bag claims should also be brought into a weather-protected area, or, at a minimum, should provide overhead protection from the elements.

- **Baggage Storage**. Due to the frequency of weather-related flight cancellations, large numbers of late bags must be received and stored.

- **Concessions**. Currently, all of the concessions areas are located on the second floor of the terminal building accessible only by the use of a staircase. There is currently no elevator access to any of the concessions facilities.

While this is not in violation of the American with Disabilities Act, due to the age of the building, any significant modification would probably require that reasonable accommodations to provide ADA access to the concessions areas be made. In addition, there currently are no concessions areas on the secure side of the Airport.

- **Restrooms**. The restroom facilities on the non-secure side of the terminal are adequate for today and the needs for the near future. However, there are currently no restroom facilities on the secure side of the terminal building in the holdroom area. During peak conditions and with possible weather related delays, passengers must leave the secure side of the building to use the restrooms. This type of activity has an adverse effect upon the security screening operation, by increasing the number of passengers that need to be screened during peak periods, and reduces the level of passenger service for the terminal.

The existing terminal has a gross area of approximately 39,800 SF. If a new terminal were to be built to accommodate current levels of activity, the gross area would be approximately 45,000 SF. Thus, the existing terminal is approximately 10% undersized; however, the space that is provided is not always in the right location or proportion. Please see the following two diagrams, Figure E2 and Figure E3, which illustrate some of the existing and potential constraints.

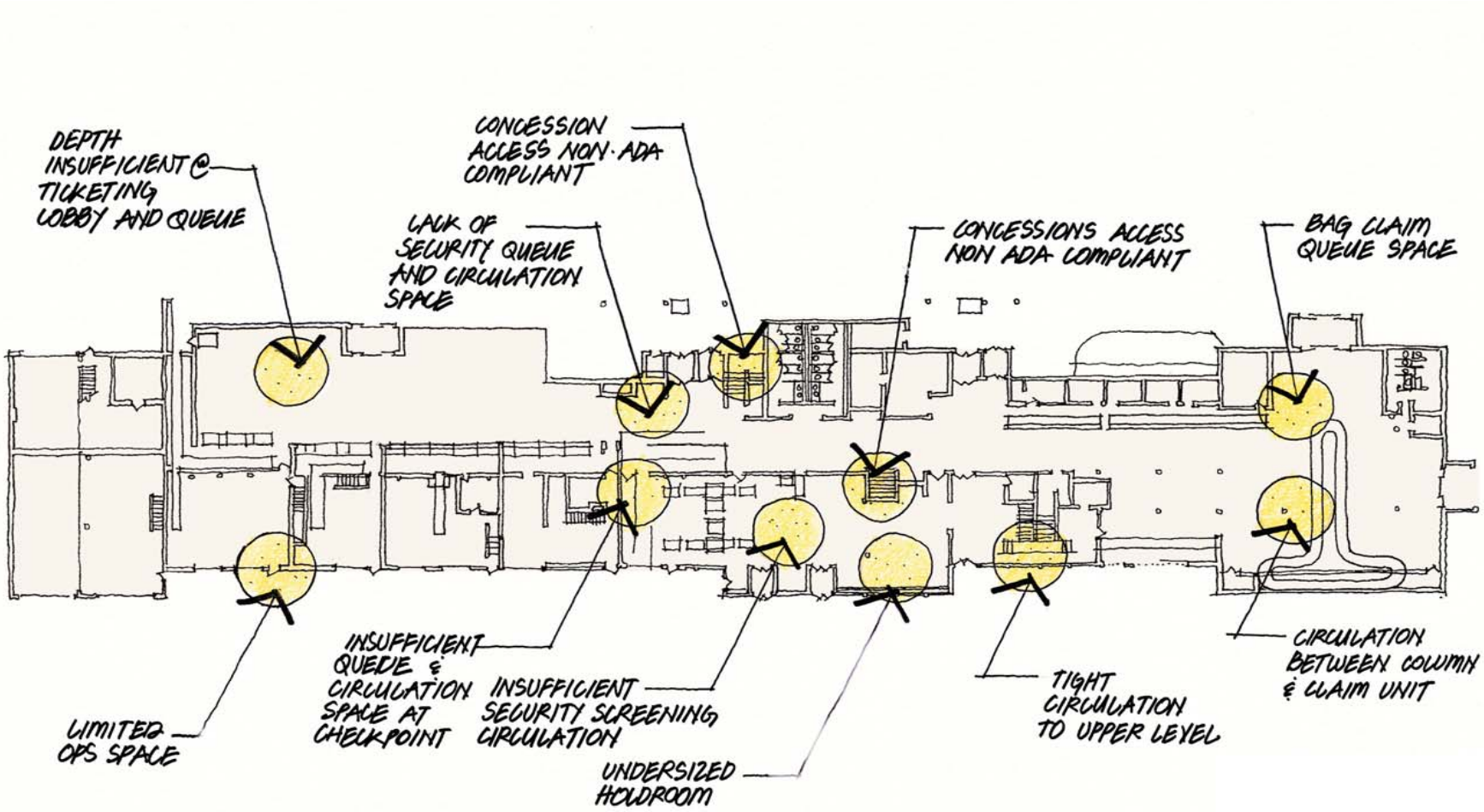

FIGURE E2
Terminal Lower Level Constraints

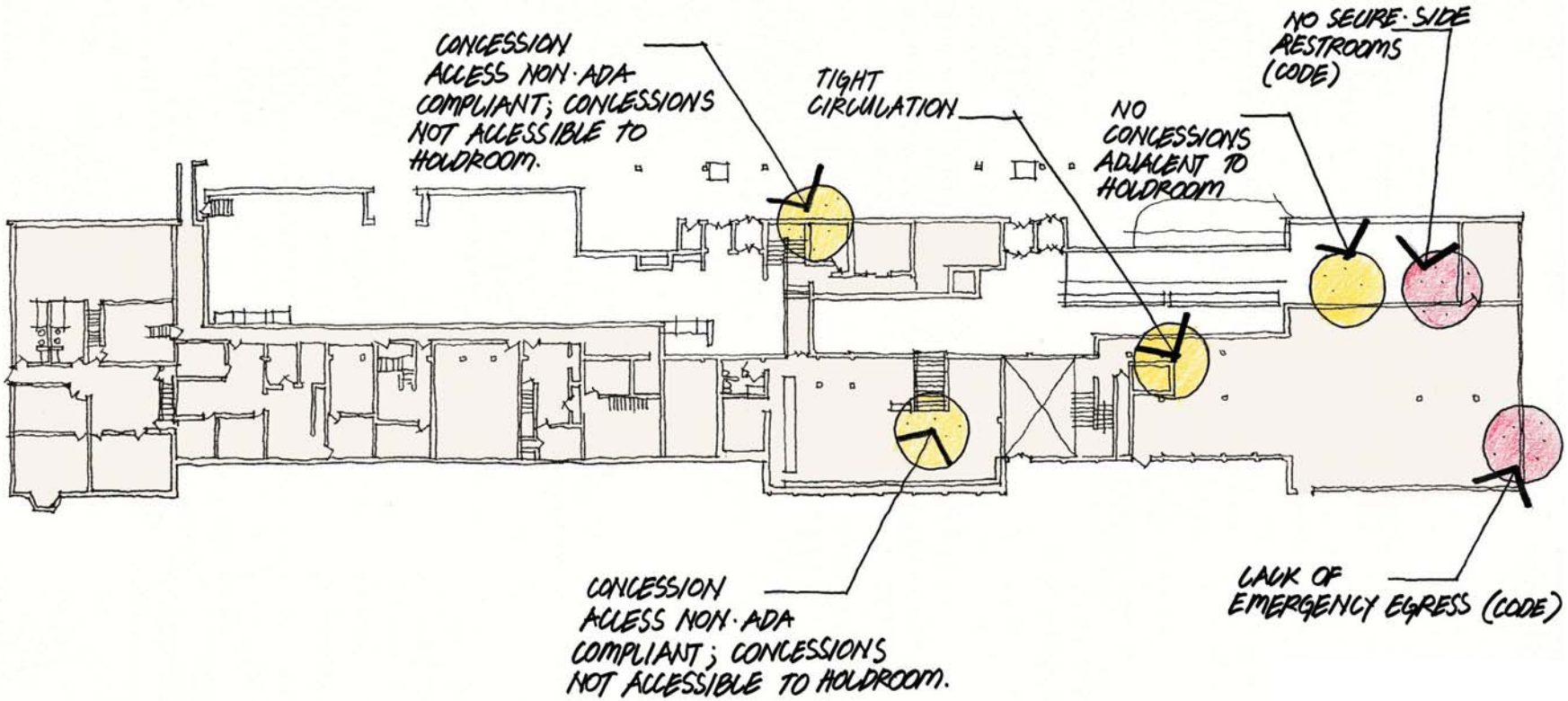

FIGURE E3
Terminal Upper Level Constraints

Goals and Objectives

At the outset of the terminal planning process, a set of goals and objectives were established to use as a guide and the framework to evaluate concepts. These goals are more specifically directed at the development of the passenger terminal and landside access facilities. The new terminal development should:

- *Provide facilities that are flexible, cost effective, and financially feasible.*
- *Be implemented in a phased approach.*
- *Be responsive to the needs all stakeholders.*
- *Improve levels of passenger service and convenience.*
- *Remain compatible to its surroundings.*
- *Reflect the character of airports environs.*
- *Retain and enhance the intimate character of the existing terminal building.*
- *Be flexible to respond to varying security requirements in a reasonable, safe, and efficient manner.*

Terminal Development Options

The illustrations on the following pages are some initial terminal development concepts presented as illustrations to delineating potential terminal expansion options. As previously mentioned, the existing terminal building contains approximately 38,400 square feet, with the current requirement estimated need being approximately 45,000 square feet. Given that the terminal development would not be completed until 2007 at the earliest, the first phase of development would likely be for an additional 17,000 square feet of functional terminal space. The initial concepts range from expanding the terminal building only in the areas that are currently deficient, to building a new terminal building.

Terminal Option One:

Terminal Option One expands the current ticketing lobby to the west and the baggage claim hall to the east. Additional restroom and emergency egress functions would be added to the second level holdroom facility. An elevator would be installed to serve the existing second level concessions areas.

Advantages

- Provides simple operation consistent with the existing facility.
- Could be constructed as a single or dual-level facility.
- Minimal disruption to existing facilities during construction.
- Orientation of facility to available land.

Disadvantages

- Potential building reconfiguration could cause significant building code upgrades.
- Require acquisition of the Road and Bridge Maintenance facility.

Terminal Option Two:

Terminal Option Two constructs a new ticketing hall immediately west of the existing terminal building. The existing terminal entrance would be relocated west to 10th Street and the curbfront would be relocated and lengthened to provide additional capacity. All ticketing baggage make-up and baggage screening will occur in the new portion of the building. The existing portion of the new ticketing hall would be converted into a first level food and beverage facility. The remaining portion would become the queuing area prior to security screening. The baggage claim area would be expanded to the east to provide additional capacity. The existing second level food and beverage facility would be converted into a holdroom facility to meet the 2022 gate requirements. The vertical circulation leading to the second floor holdroom would be improved.

Advantages

- Provides simple operation consistent with the existing facility.
- Utilizes majority of existing facilities.
- Does not require apron expansion.
- Orientation of facility to available land.

Disadvantages

- Potential code issues in redevelopment of existing facilities.
- Requires demolition of existing ARFF facility.

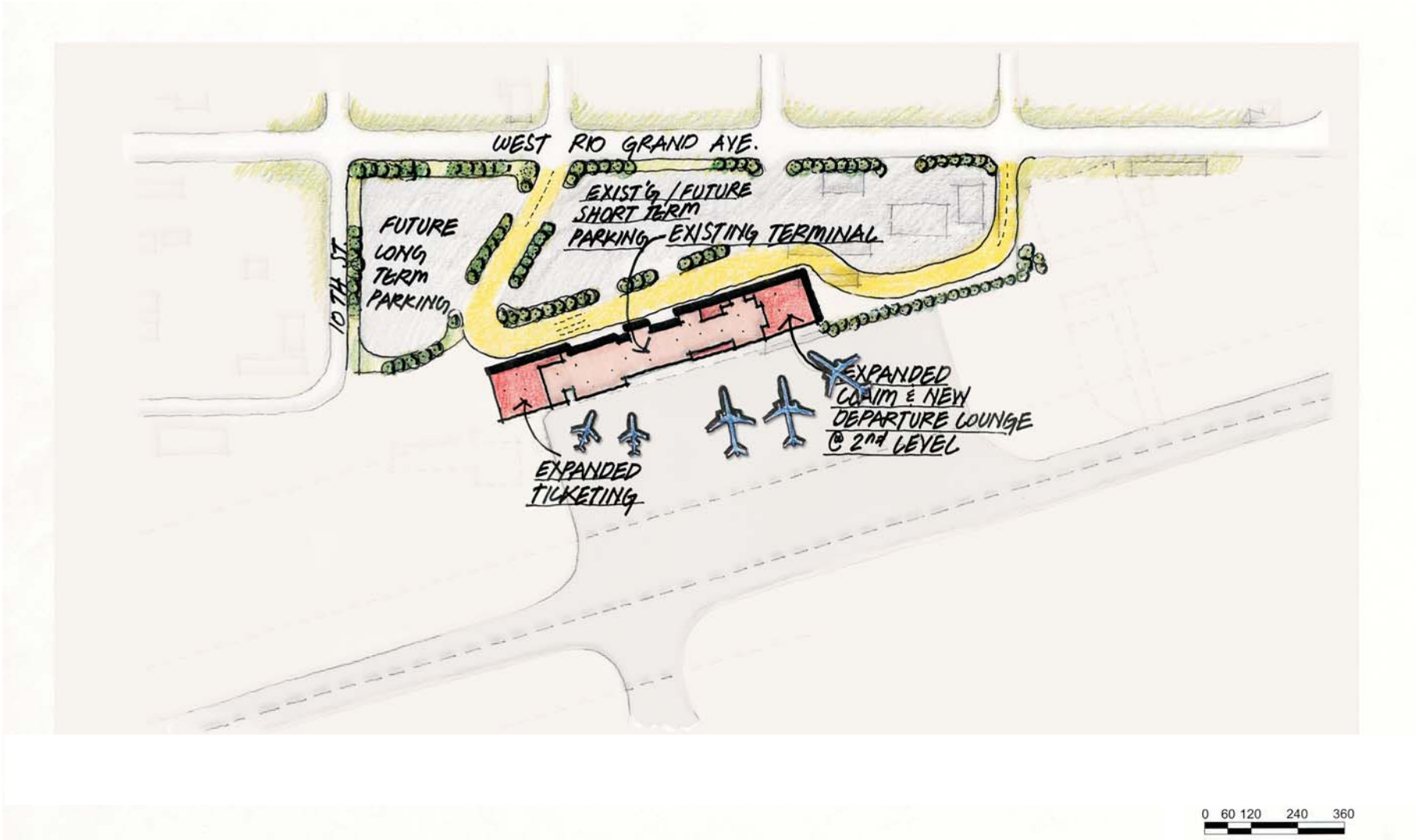

FIGURE E4
Terminal Development
Option 1

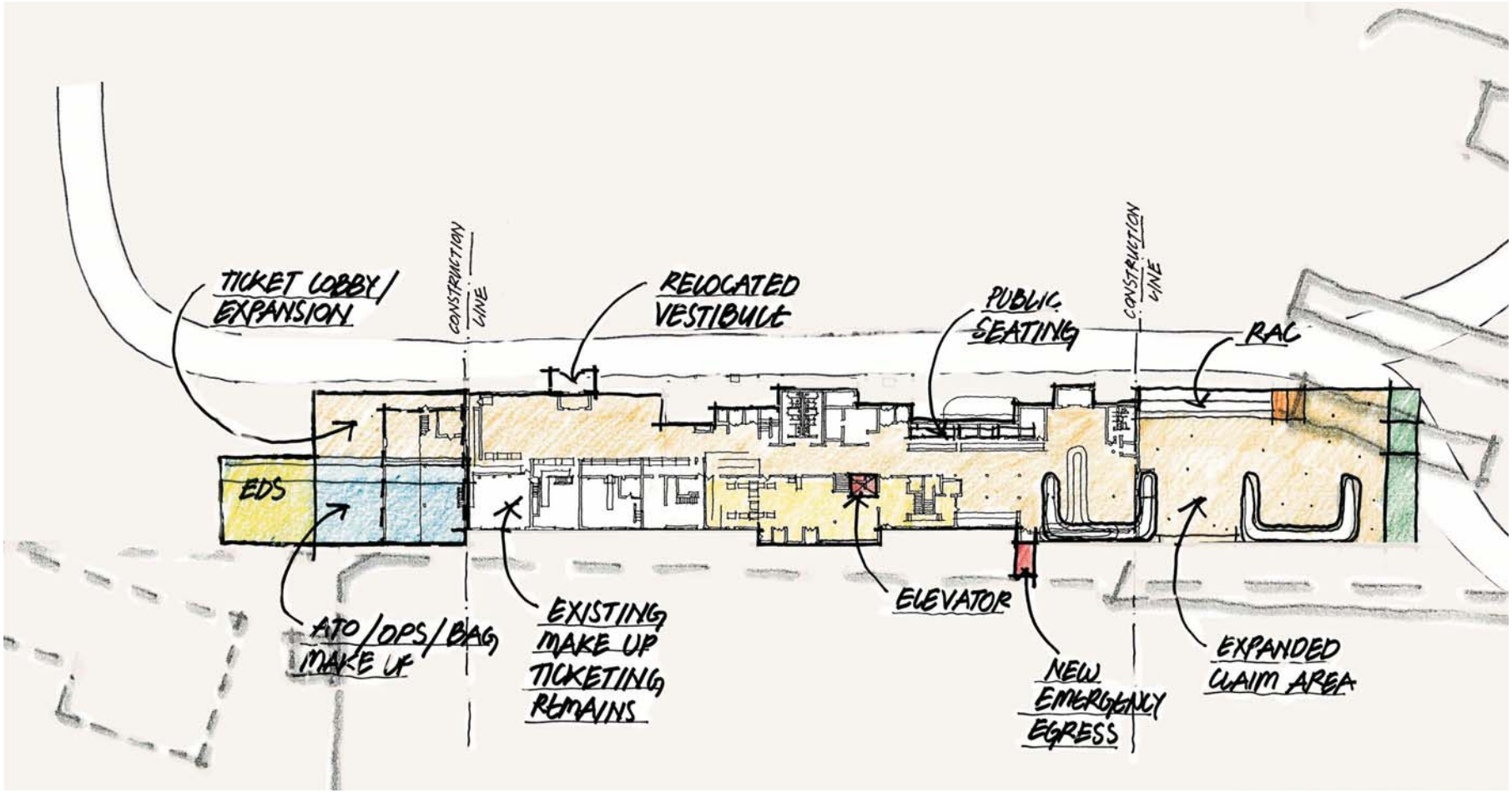

FIGURE E5
Option 1
Lower Level Floor Plan

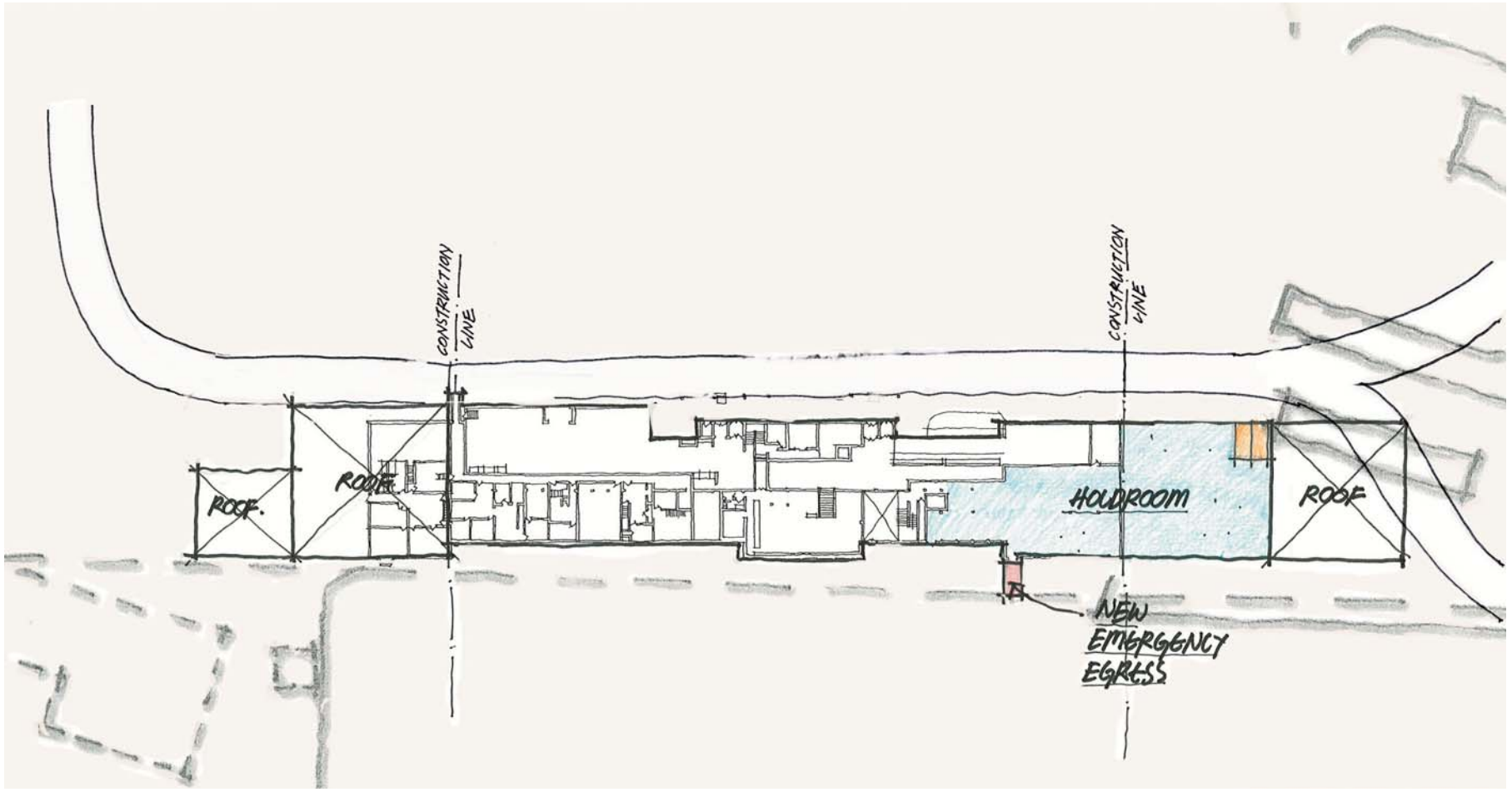

FIGURE E6
Option 1
Upper Level Floor Plan

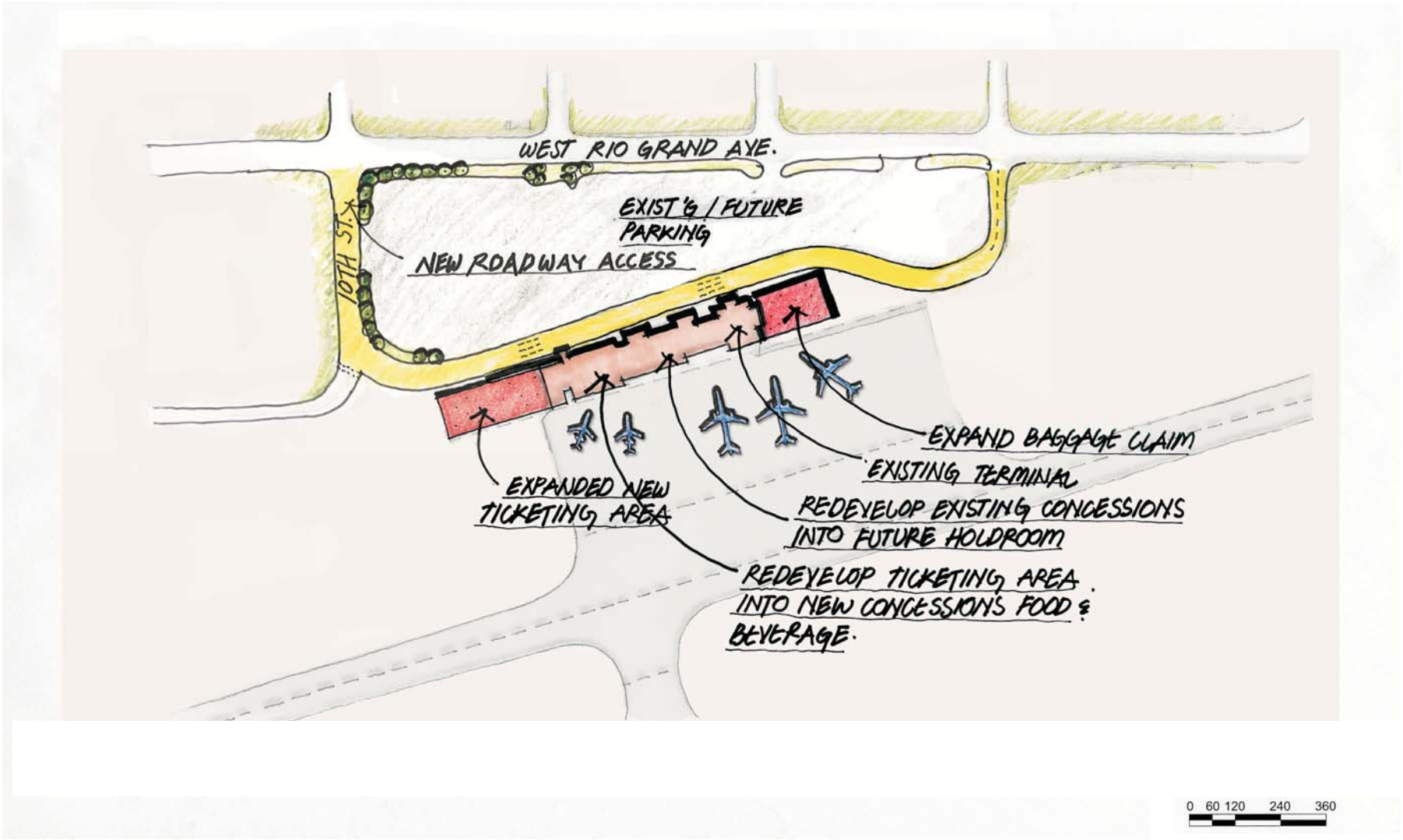

FIGURE E7
Terminal Development Option 2

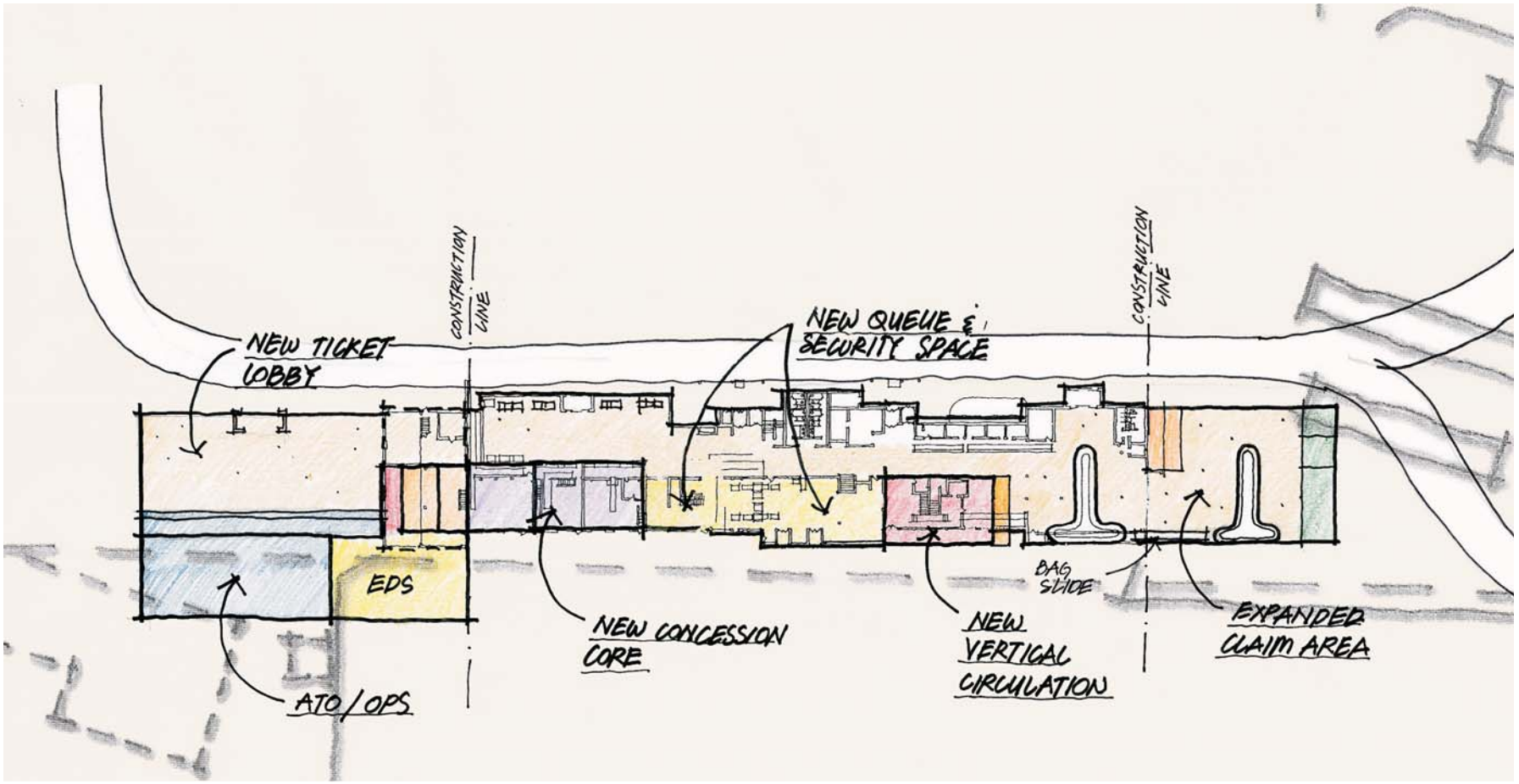

FIGURE E8
Option 2
Lower Level Floor Plan

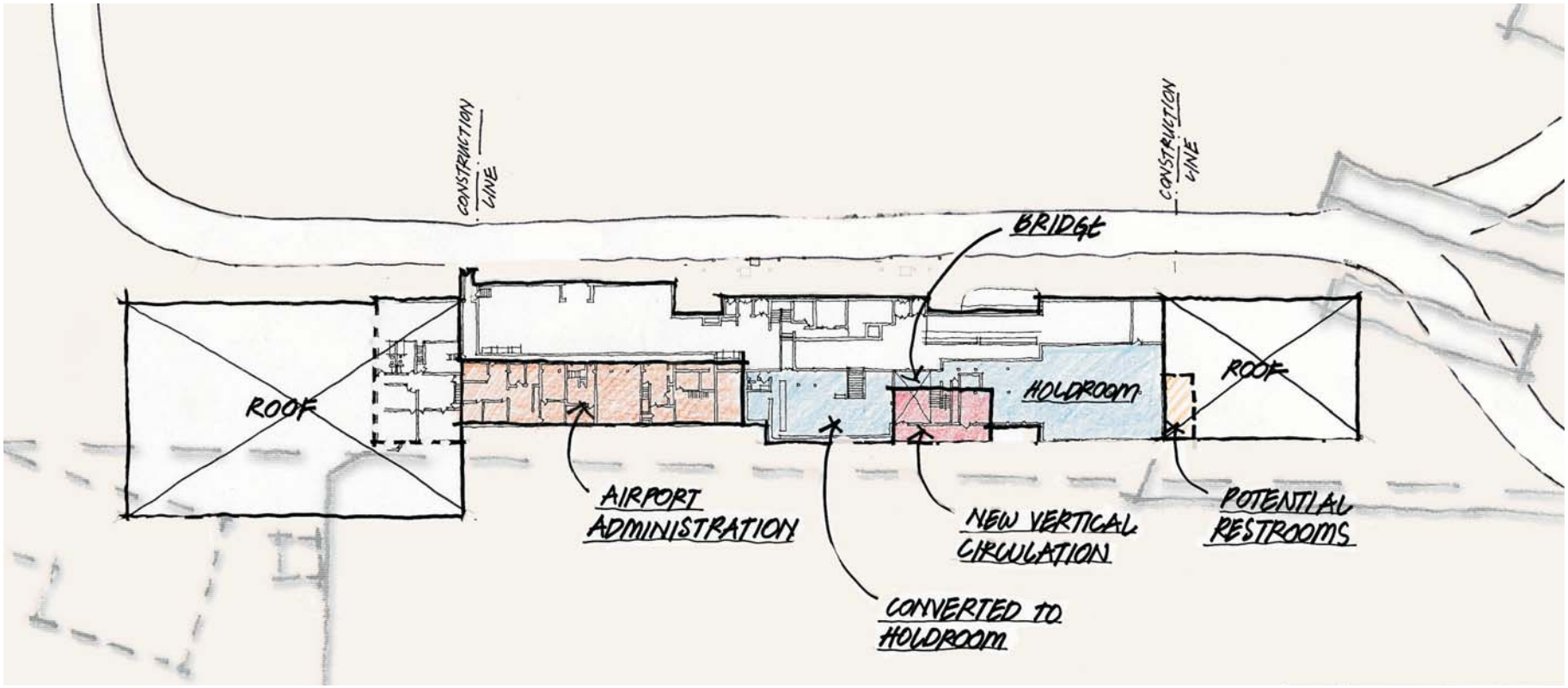

FIGURE E9
Option 2
Upper Level Floor Plan

Terminal Option Three:

Terminal Option Three constructs a new ticketing hall, first and second level holdroom area, and airline operations area in a new section of building. The ticketing hall would be turned perpendicular to the existing building and would relocate the aircraft parking positions further from the central line of the runway to help alleviate the Part 77 tail clearance issues with the B-757 aircraft. The existing ticketing hall could be redeveloped to provide first level concessions space and serve as the expansion area for the baggage claim hall.

Advantages

- Provides simple operation consistent with the existing facility.
- Could be constructed as a single or dual-level facility.
- Minimal disruption to existing facilities during construction.
- Orientation of facility to available land.

Disadvantages

- Potential code issues in redevelopment of existing facilities.
- Requires demolition of existing ARFF facility.
- Requires additional apron area.

Terminal Option Four:

Terminal Option Four constructs a new ticketing facility to the west of the existing facility. After completion of the ticketing hall, the existing ticketing hall would be demolished and a new concession/security screening holdroom area would be constructed in its place. Upon completion of the second phase, a new baggage claim facility would be constructed in the location of the existing security screening area. The terminal curbfront would be relocated and lengthened to provide additional capacity. Due to its proximity to the existing terminal building, this option could be developed in multiple phases as financial limitations dictate.

Advantages

- Allows for incremental expansion of building components.
- Ability to minimize building footprint area.
- Orientation of building to available developable land.
- Provides completely new terminal building upon completion.

Disadvantages

- Potential disruption to passengers during construction.
- Highest cost.
- Requires temporary facilities during construction.

Recommendations

Given the age and type of construction of the existing facility, it is strongly recommended that a full code analysis of the existing building be conducted to establish the viability and implications of a major terminal expansion and renovation. If the results of the analysis find that the expansion and renovation of the existing terminal building are feasible, our preliminary recommendation is to redevelop the terminal in a manner consistent with Terminal Option Two. If the code analysis recommends a completely new terminal building, then Terminal Option Four should be pursued.

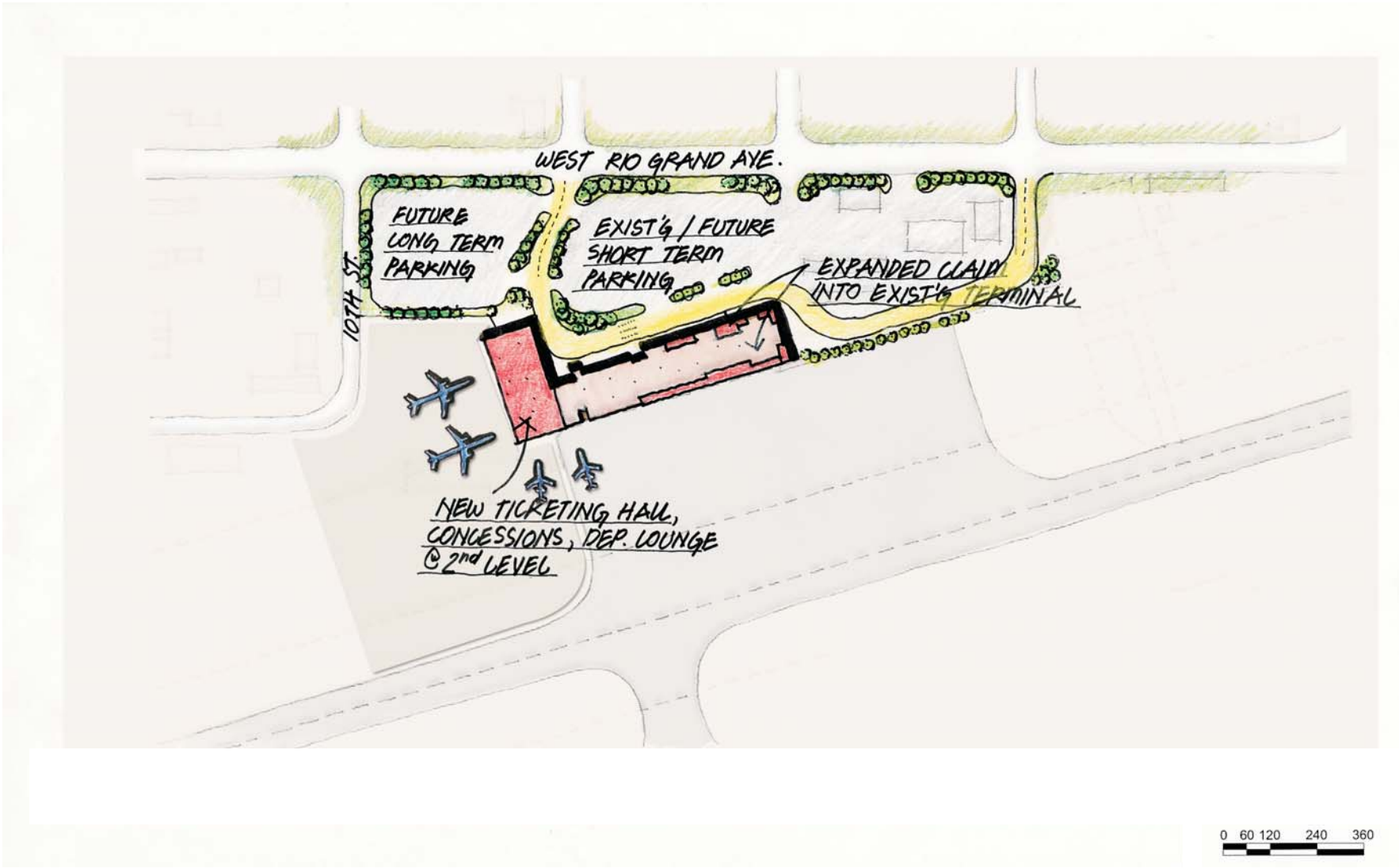

FIGURE E10
Terminal Development Option 3

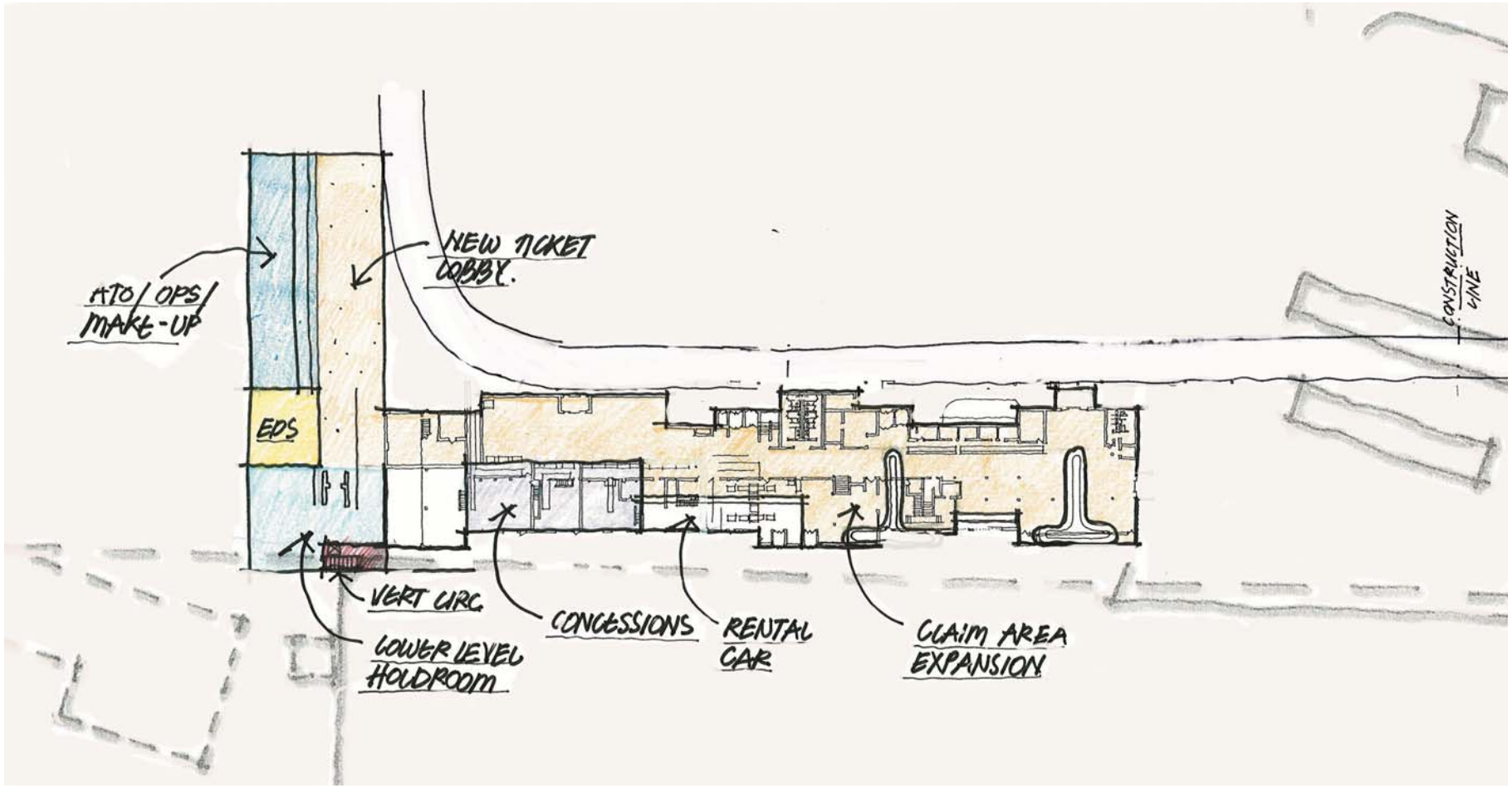

FIGURE E11
Option 3
Lower Level Floor Plan

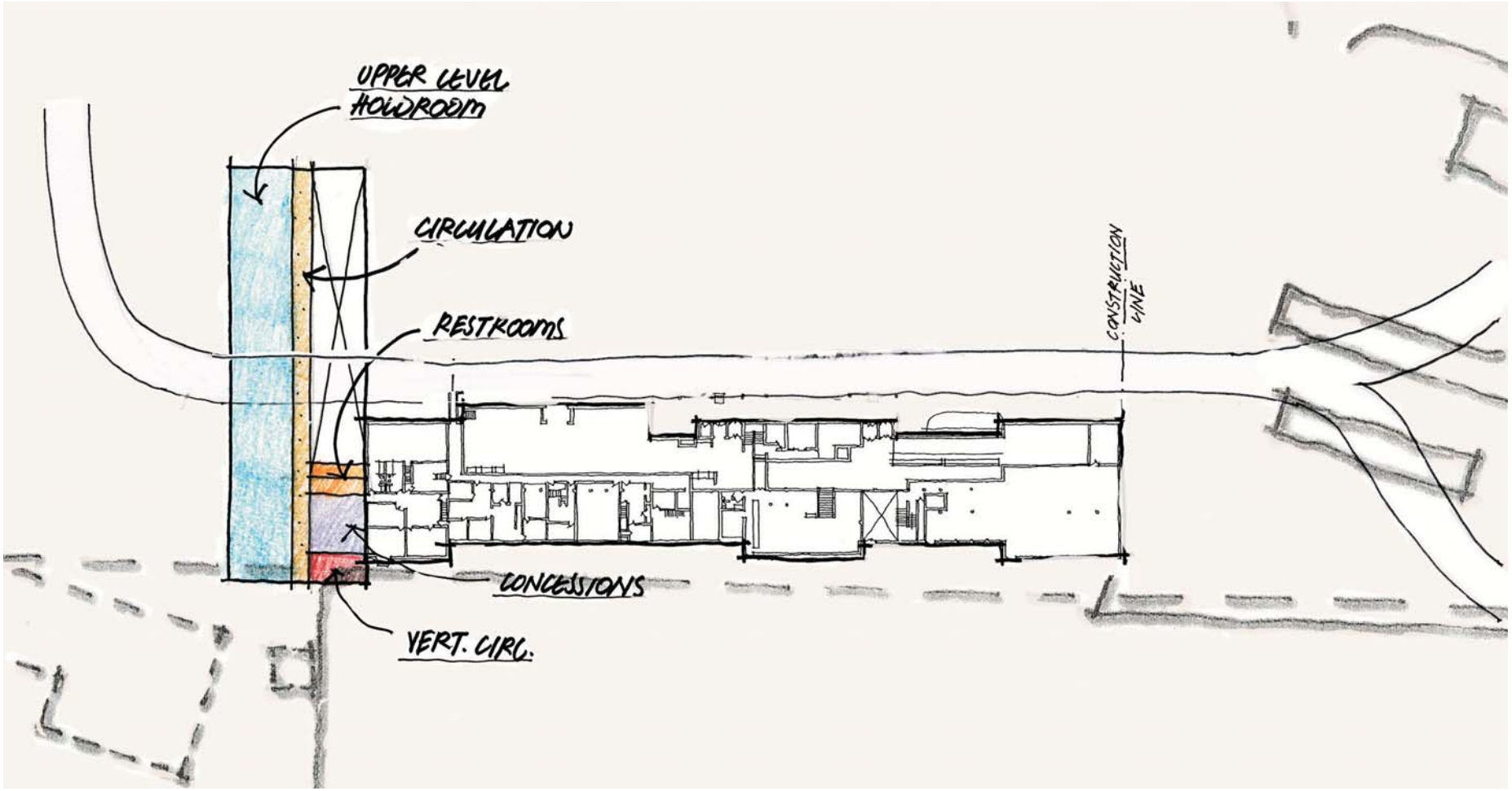

FIGURE E12
Option 3
Upper Level Floor Plan

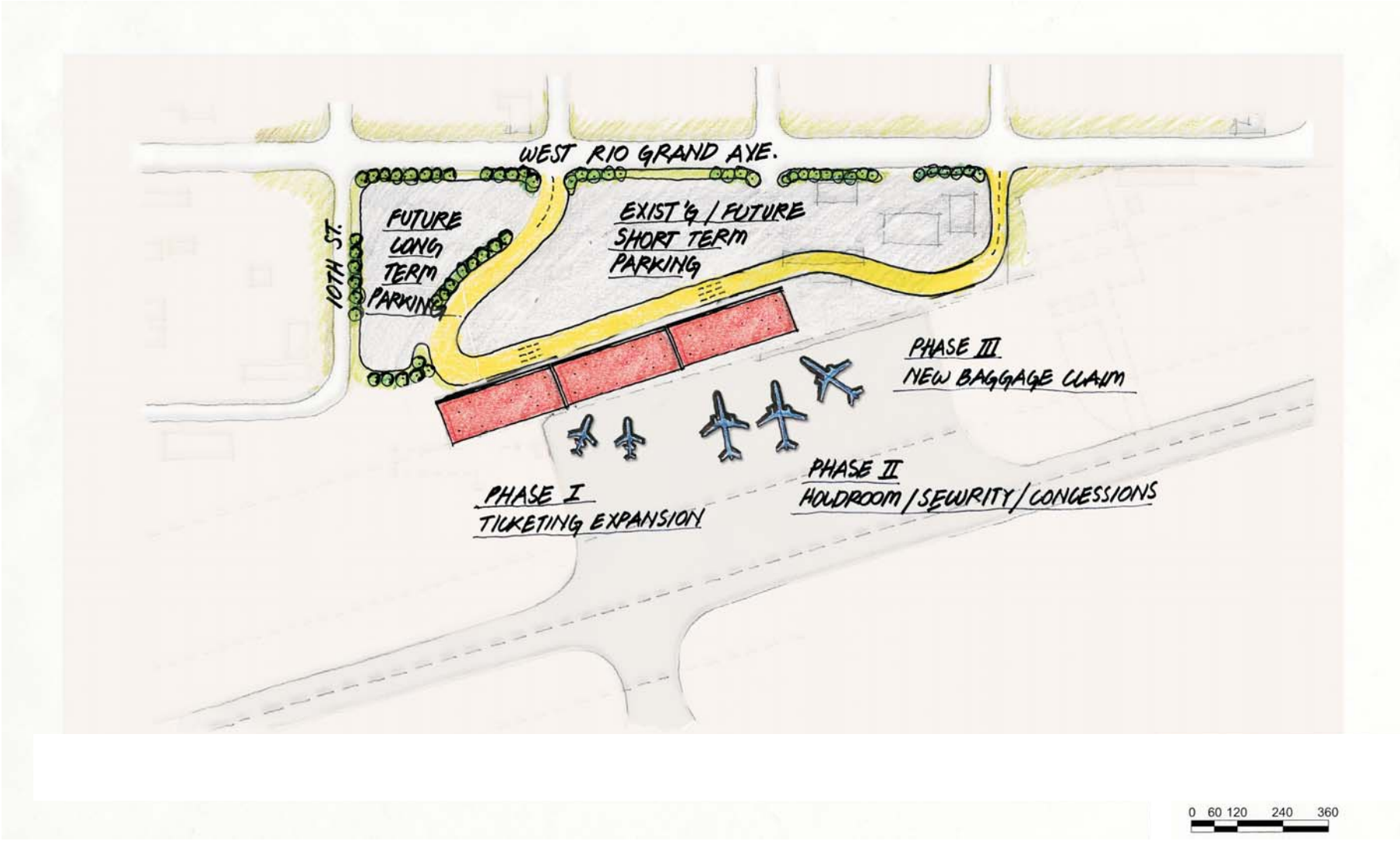

FIGURE E13
Terminal Development Option 4

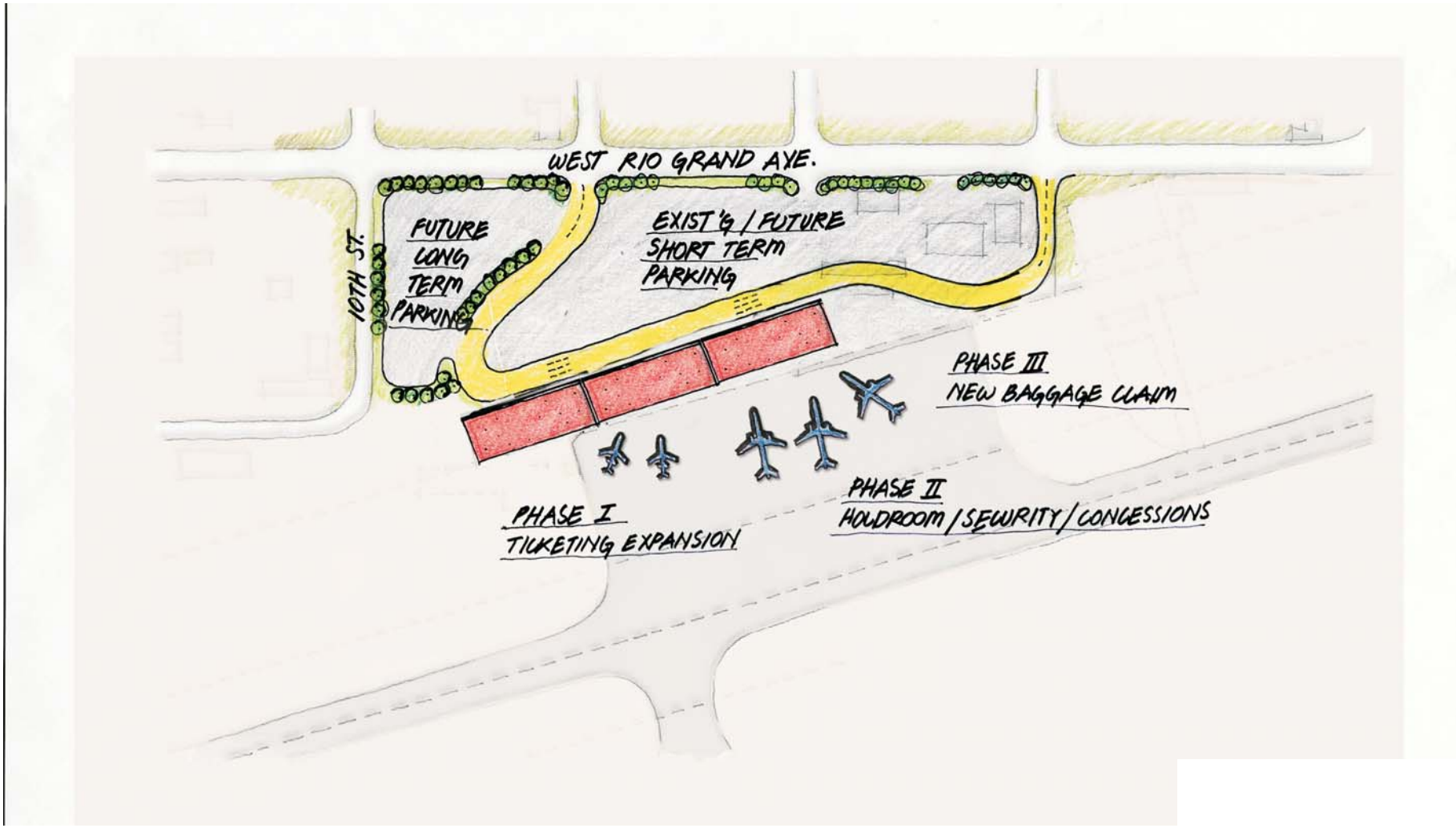

FIGURE E14
Option 4
Single Level Floor Plan