

## Concepts, Alternatives and Development Plan

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### Introduction

The purpose of this chapter is to present the development alternatives and, ultimately, development recommendations for Aspen/Pitkin County airport in terms of concepts and reasoning. This chapter provides a description of the various factors and influences, which will form the basis for the airport's long-term development program.

In concert with the role of the airport and community input received in the planning process, some basic assumptions have been established which are intended to direct the development of the airport in the future.

**Assumption One.** The airport will be developed and operated in a manner that is consistent with the Pitkin County ordinances and codes, federal and state statutes, federal grant assurances and Federal Aviation Administration regulations.

**Assumption Two.** This assumption recognizes the role of the airport. The airport will continue to serve as a facility that accommodates commercial passenger service activity and general aviation activity, as well as a small amount of military activity.

**Assumption Three.** Because of non-standard taxiway/runway centerline separation, pavement strength, and the forecast aircraft types that are expected to utilize the airport in the future, the restrictions related to aircraft wingspan (95 feet) and weight (100,000 pounds) that are currently in place, are expected to remain through the planning period. A copy of the Pitkin County Ordinance limiting wingspan of aircraft operating at the airport is provided in the Appendix.

**Assumption Four.** This assumption relates to the size and type of aircraft that utilize the airport and the resulting setback and safety criteria used as the basis for the layout of airport facilities. It has been determined that the "design aircraft" types for the airport are best represented by the Gulfstream IV (G-IV - a medium to long range corporate jet)

and the BAe 146-200 (a medium range four-engine commercial passenger regional jet). Both of these aircraft regularly utilize the airport. The G-IV has an approach speed of 145 knots and a wingspan of 77.8 feet. In FAA's classification system, this indicates an Airport Reference Code (ARC) of D-II. The BAe 146-200 has an approach speed of 117 knots and a wingspan of 86.4 feet, giving it an ARC of B-III. By combining the approach speed of the G-IV and the wingspan of the BAe 146-200, an ARC D-III is deemed to be appropriate for ASE.

**Assumption Five.** The fifth assumption relates to the need for the airport to accommodate aircraft operations with great reliability and safety. This indicates that the airport's runway system should be developed with instrument approach guidance capabilities and adequate runway length and to accommodate the forecast operations as safely as possible under most weather conditions.

**Assumption Six.** Because landside development area at the airport is at a premium, the sixth assumption is that the Plan for future airport development should strive to make most efficient use the area available for aviation related activities. Aviation use areas should be developed to be compatible with surrounding land uses.

**Assumption Seven.** The seventh assumption focuses on the relationship of the airport to off-airport land uses and the compatible and complimentary development of each. To the maximum extent possible, future facilities will be designed to enhance the compatibility of the operation of the airport with the environs.

## Goals for Development

Accompanying these assumptions are several goals that have been established for purposes of directing the plan and establishing continuity in the future for airport development. These goals take into account several categorical considerations relating to the needs of the airport both in the short-term and the long-term, including safety, noise, capital improvements, land use compatibility, financial and economic conditions, public interest and investment, and community recognition and awareness.

The following goals are intended to guide the preparation of this Master Plan and future development at the Aspen/Pitkin County Airport.

- Provide effective direction for the future development of Aspen/Pitkin County Airport through the preparation of a rational, implementable plan.
- Pitkin County is committed to the development of a safe and high quality Airport. "High quality" in this instance is intended to prescribe the *right sizing* of proposed

development to effectively meet the needs of the community and its visitors in a manner that is in concert with surrounding development and while also addressing aesthetic and environmental concerns.

- The development plan will recognize the role that the airport and its property plays in the multi-modal transportation system programmed for the Roaring Fork Valley, along with the role that it plays as a part of a system of airports serving the resort mountain area in central Colorado.
- Because of the operational requirements of the existing and projected commercial service aircraft fleet, the potential benefits of a runway extension should be investigated. An understanding of the potential types of general aviation and commercial aircraft that the runway extension could benefit is also critical. Positive and negative consequences will be identified in the Master Plan.
- The instrument approach capabilities associated with Runway 15 (serving aircraft making approaches from the north) should be maximized.
- Because of the lack of area on the east side of the airport to accommodate future passenger terminal and general aviation facilities, investigate the potential to develop aviation use facilities on the west side of the airport.
- Plan and develop the airport to be environmentally compatible with the community and minimize environmental impacts on both airport property and non-airport property that is affected or potentially affected by the operation of the airport.
- To the degree possible, the airport master plan should be developed to best address the needs and concerns of the entire community, including surrounding neighborhoods, business/economic development constituents, and the general citizenry.

## Airside Development Concepts and Alternatives

### Introduction

Because all other airport functions relate to and revolve around the basic runway/ taxiway layout, airside development alternatives must first be carefully examined and evaluated. Specific airside considerations for this airport include taxiway layout, runway length, and instrument approach capabilities. In the effort to identify the “best” layout of future facilities at the airport, three airside development alternative components have

been prepared and are presented in the following illustrations. Both the forecast operations and the goals of Pitkin County, relative to airport development were incorporated into the planning effort. It is important to note that most of the alternatives components are independent of other alternative considerations. In other words, this chapter provides a menu of alternative considerations and, when formulated, the recommended development plan for the airport will be made up of a compilation of the individual components that are deemed appropriate for future development consideration.

Following a review of these airside development alternatives, the purpose of which is to fulfill *major* facility requirements (basic runway configuration), recommendations for landside development are presented. For purposes of this Master Plan, landside facilities consist of aircraft parking aprons, hangar development areas, terminal area development, and airport access. The conclusion of this chapter will be the presentation of a generalized conceptual airport development plan that will include recommendations for runway and taxiway improvements along with an on-airport land use plan.

## Alternatives

The following alternative characteristics are evaluated.

### **Airside Alternative One: Maintain the Existing Runway Length.**

- The airport's runway will be maintained at its existing length of 7,006 feet.
- The improvements in process and programmed to relocate the east side parallel taxiway (from its existing location to a location with a 320-foot taxiway centerline to runway centerline separation) are incorporated in this alternative.
- Although the effort to improve the instrument approach capabilities associated with Runway 15 will continue, it is not expected that a lower-than 1-mile visibility minimum can be achieved. Therefore, the runway protection zone associated with Runway 15 will remain the same size (500' x 1,010' x 1,700') and no other significant airport physical characteristic will change in consideration of improved instrument approach capabilities. The accommodation of improved instrument approaches could include additional on-airport instrumentation to support Global Positioning System (GPS) or traditional Instrument Landing System (ILS) technology, but any new facilities will be essentially be transparent from a physical development standpoint (a small equipment building and/or a short antennae).

- To facilitate snow removal, paved shoulders are also proposed for the runway. The shoulders will be 25 feet in width and will be located on both sides of the runway. The shoulders will be constructed of asphaltic concrete and will be designed to support the weight of the airport's snow removal equipment, but not aircraft. The runway edge lights will not be relocated. The existing 100-foot runway width will be maintained.

From a runway development standpoint, this alternative represents a do-nothing or null alternative. Positive qualities of this alternative include the fact that no construction is required and there will be no construction impacts. With this alternative, the addition of non-permeable pavement surface is minimized and there is no significant consideration related to changing visual impacts. On the negative side, this alternative offers no potential for the increased safety factor that accompanies a longer takeoff runway and no increase payload benefit for the existing/future passenger service regional jet aircraft fleet.

**Airside Alternative Two: Extend the Runway 1,000 feet to the South.**

- The airport's runway will be extended approximately 1,000 feet to the south. The extended runway will be available for use for takeoffs to the north only.

If the runway extension is constructed, the following runway lengths would be published (as dictated by FAA's declared distances criteria):

	Takeoff Run Available (TORA)	Takeoff Distance Available (TODA)	Accelerate Stop Distance Available (ASDA)	Landing Distance Available (LDA)
Runway 15	7,006'	7,006'	7,006'	7,006'
Runway 33	8,006'	8,006'	8,006'	7,006'

The potential benefits of the extended runway are extensively detailed in the previously presented chapter, entitled *Capacity Analysis and Facility Requirements*.

- The improvements in process and programmed to relocate the east side parallel taxiway (from its existing location to a location with a 320-foot taxiway centerline to runway centerline separation) are incorporated in this alternative.

- Although the effort to improve the instrument approach capabilities associated with Runway 15 will continue, it is not expected that a lower-than 1-mile visibility minimum can be achieved. Therefore, the runway protection zone associated with Runway 15 will remain the same size (500' x 1,010' x 1,700') and no other airport physical characteristic will change in consideration of improved instrument approach capabilities. The accommodation of improved instrument approaches could include additional on-airport instrumentation to support Global Positioning System (GPS) or Instrument Landing System (ILS) technology, but any new facilities will be essentially be transparent from a physical development standpoint (a small equipment building and/or a short antennae).

In addition, the extension of the runway would require the relocation of the localizer antennae that is currently located approximately 1,000 feet south of the Runway 33 threshold. The exact placement of the relocated antenna will be determined by an FAA study, however, it will likely be no further that 1,000 feet from the new runway end.

- To facilitate snow removal, paved shoulders are also proposed for the runway. The shoulders will be 25 feet in width and will be located on both sides of the runway. The shoulders will be constructed of asphaltic concrete and will be designed to support the weight of the airport's snow removal equipment, but not aircraft. The runway edge lights will not be relocated. The existing runway width will be maintained (100').

The major positive aspect associated with this alternative is increased safety. Up to a point, the provision of a longer runway will always increase safety margins for aircraft operating at the airport. An increased runway length for departures to the north will contribute to providing a safer aircraft operational environment by increasing the distance in which an aircraft can be safely stopped if a takeoff is aborted. As documented in the *Capacity Analysis and Facility Requirements* chapter, a longer takeoff runway will also provide a benefit to the current fleet of passenger service aircraft (i.e., the BAe 146) in terms of allowing them to operate with increase payload weights.

The major negative aspect associated with this alternative is concern about increased utilization of the airport by larger/noisier aircraft. Currently the use of the airport is restricted by FAA requirement and local ordinance to aircraft with wingspans not greater than 95 feet, and with weights not exceeding 100,000 pounds. Because of the non-standard runway to parallel taxiway separation (even after the ESID taxiway is relocation), lack of area to further increase runway to taxiway separation, and pavement strength characteristics; the 95-foot, 100,000 pound restrictions will remain in place. There has been concern expressed that the FAA and County could lift these restrictions; however, because the standards are based on providing a reasonable level of safety in

consideration of physical attributes that will not change, lifting the restrictions is not a viable option without a significant change in FAA's "safety-first" philosophy.

There will be construction and grading impacts associated with the development of an extended runway. The runway extension will add additional non-permeable surfacing at the airport and there will be visual impacts associated with the new pavement. In addition, there has been concern expressed related to changes in aircraft operational patterns and the resulting changes in the aircraft noise affects on surrounding land uses. Preliminary noise contours for existing conditions, along with future conditions without the runway extension and future conditions with the runway extension are provide in the Appendix of the Working Paper.

**Airside Alternative Three: Construct a Partial Parallel Taxiway on the West Side of the Runway.**

- The focus of this alternative is on construction of a west side parallel taxiway. This new taxiway would be required if aviation use is proposed for the west side of airport property. If no development is proposed for the west side of the airport that requires aircraft access, this taxiway would not be necessary and would not be built. In order to not avoid the relocation of Owl Creek Road, the new west side parallel taxiway is programmed to be located with a 320-foot runway centerline to taxiway centerline separation. This matches the non-standard separation that is to be exhibited by the east side parallel taxiway system. The standard is a 400-foot separation, and the need to utilize a non-standards separation will have to be demonstrated to the FAA if this alternative is recommended by this Airport Master Plan.
- The west side parallel taxiway is not related to the runway extension. It can be included as a proposed development consideration with or without the extended runway.
- The improvements in process and programmed to relocate the east side parallel taxiway (from its existing location to a location with a 320-foot taxiway centerline to runway centerline separation) are incorporated in this alternative.

- Although the effort to improve the instrument approach capabilities associated with Runway 15 will continue, it is not expected that a lower-than 1-mile visibility minimum can be achieved. Therefore, the runway protection zone associated with Runway 15 will remain the same size (500' x 1,010' x 1,700') and no other airport physical characteristic will change in consideration of improved instrument approach capabilities. The accommodation of improved instrument approaches could include additional on-airport instrumentation to support Global Positioning System (GPS) or Instrument Landing System (ILS) technology, but any new facilities will be essentially be transparent from a physical development standpoint (a small equipment building and/or a short antennae).
- To facilitate snow removal, paved shoulders are also proposed for the runway. The shoulders will be 25 feet in width and will be located on both sides of the runway. The shoulders will be constructed of asphaltic concrete and will be designed to support the weight of the airport's snow removal equipment, but not aircraft. The runway edge lights will not be relocated. The existing runway width will be maintained (100').

Positive and negative aspects of this alternative are tied to the type of development proposed on the west side of the airport (see landside alternatives discussion at end of this chapter). If there is an aviation use development proposed for the west side of the airport, safety considerations dictate that a partial parallel taxiway must be constructed. The partial parallel taxiway will minimize the need for landing aircraft to taxi across the runway to access the west side aircraft parking apron and for departing aircraft to taxi across the runway to access the south end of the runway in preparation to takeoff to the north. If no aviation development is proposed for the west side of the airport, the new parallel taxiway on that side of the airport will not be required or recommended in this Master Plan.

#### Recommended Airside Development Plan

Following discussion and input from the Airport Master Plan's Study Advisory Committee, the Pitkin County Board of County Commissioners, and the Federal Aviation Administration, a recommended long-term airside development plan for the airport has been identified.

Based on a through examination of the potential benefits and consequences, it is recommended that a future take-off use only runway extension of approximately 1,000 (as described in *Airside Alternative Two* above) be shown as part of this Airport Master Plan. A review of the major benefits, potential negative aspects and general concerns related to the potential runway extension is provided below.

## Benefits Associated With Runway Extension

- *Safety.* An important point to emphasize here is that aircraft operate safely now at the airport in consideration of the existing runway length and, if the runway is extended, aircraft will operate safely in consideration of the future runway length. It is the pilot's responsibility to take runway length, airport elevation, local conditions and aircraft operational capabilities into consideration before deciding to land or take-off. If the proposed runway extension is constructed, it will allow the aircraft that are currently operating at the airport to safely takeoff with additional payload. The runway extension will also provide an additional safety margin for aircraft in case of an emergency in certain situations (e.g., an aborted takeoff or a long landing run).
- *Operational Capability – Existing Air Carriers.* In consideration of existing commercial passenger service aircraft that are being utilized at the airport, the BAe-146 that is operated by Air Wisconsin will be most benefited by a 1,000-foot longer take-off runway. Please refer to the preceding chapter, entitled *Capacity Analysis and Facility Requirements*, for a detailed description of the runway length analysis. In addition, please refer to the *Aspen/Pitkin County Airport Summer 2001 Air Wisconsin Passenger Loading Restrictions* table in the Appendix. This record was compiled by local Air Wisconsin personnel in consideration of actual temperature and the maximum number of passengers that might be carried on aircraft departures from Aspen/Pitkin County Airport. Similar data was recorded in the summer of 2002; however, the format was less formal and was unavailable at the time of the publication of this Memorandum.

Air Wisconsin staff uses this historical operating data to estimate the number of passenger seats that will be available at certain hours of the day on certain days of the year. In other words, because historically in the middle of the summer during the mid-day hours, an aircraft is normally restricted to less than a full load of passengers/baggage, the airline will not sell all the seats on that aircraft. This is done to avoid denied boardings to the extent possible. The airline wants to avoid the ill feelings that naturally occur when ticketed passengers are told that they will not be able to depart on the schedule that they have booked. The airline believes that a denied boarding situation is a result of poor planning unless there are unusual circumstances involved. Thus, historical circumstances become reality with regard to the number of seats available for sale on a certain flight at a certain time of day on a departing aircraft from Aspen.

Most airports rarely if ever experience the need to limit the number of passengers on a departing commercial service flights because of aircraft operational capabilities. Granted, airports are not designed to accommodate every aircraft;

however, the design of every airport is based on the desire to provide adequate facilities to accommodate the aircraft fleet that regularly uses the airport without significant operational constraints. The airlines that provide service to a specific airport then have the ability to operate with a specific aircraft that best matches the locality's operational characteristics. Unfortunately, the challenging local operational environment (high elevation and mountainous terrain) severely restricts the types of commercial passenger service aircraft that can operate at Aspen/Pitkin County Airport.

With this information as background, the benefit of the 1,000-foot runway extension can be estimated in terms of the additional summer-time passengers that might be carried by Air Wisconsin. During the June 1 to September 1 time-frame, the 1,000-foot takeoff runway extension would allow Air Wisconsin to carry an additional five passengers on departures occurring between 8:00 am and 8:00 pm. This would result in approximately 4,000 additional passengers being transported. It should be noted that this does not consider any winter-time benefit; however, although to a lesser degree, there would be benefit in the winter also.

*Operational Capability – Future Regional Air Carrier Aircraft.* It is likely that the runway extension will also benefit some of the new generation Regional Jets (i.e., the ERJ-190). Inquiries have been made to aircraft manufacturers and airlines regarding these new aircraft; however, until an airline actually proposes the use of one of these aircraft at Aspen/Pitkin County Airport, an in-depth analysis of the plane's operational capabilities in consideration of Aspen's specific conditions will not be completed.

- *Preserve The Opportunity.* Perhaps the critical issue to be addressed in this Airport Master Plan with regard to the runway extension is to understand if there is enough potential benefit to show the improvement as a recommendation, so the ability to build it is preserved if demand provides adequate justification, if potential environmental impacts are appropriately addressed, and if financial feasibility is established. It is recognized that if the runway extension is not shown as a potential project in this Master Plan, the probability that it will be shown on a future plan is not great.
- *Less Noise for Areas North of the Airport.* As can be noted in the noise contour analysis contained in the following *Environmental Review and Land Use Considerations* chapter, with the runway extension to the south, noise is reduced for adjacent land uses south of the airport.

## **Potential Negative Aspects Associated With Runway Extension**

- *More Noise for Areas South of the Airport.* As can be noted in the noise contour analysis contained in the following *Environmental Review and Land Use Considerations* chapter, with the runway extension to the south, noise is increased for adjacent land uses south of the airport. Specific concerns relate to housing units on the southeast side of Highway 82 (i.e., MAA Housing), the bike trail that runs across the southern portion of airport property, and the Buttermilk Ski Area base facilities. Preliminary analysis indicates the noise impacts in the areas south of the runway are either within acceptable thresholds or can be mitigated. The noise impact questions related to the potential runway extension will be addressed extensively in the environmental documentation that will be required before the project is cleared for construction.
- *Visual Impacts.* If the runway extension is deemed to be an appropriate improvement, the exact gradient of the new pavement will be determined during engineering design and take into consideration all FAA design criteria (i.e., gradient standards for the first and last ¼ of the runway length, vertical curves for the intersection between old and new pavement, etc.), along with site characteristics such as cut/fill quantities. However, an initial “planning level” analysis indicates that the end of the extended runway will be approximately 14 feet higher than the existing runway end. There will be a visual impact associated with the extended runway if viewed from Highway 82.

## **General Concern Associated With Runway Extension**

*The Runway Extension Will Allow the Airport to Be Utilized by Larger Passenger Service Aircraft.* This concern has been expressed throughout the process of developing the Airport Master Plan; however, the runway extension should have no effect on the size of aircraft operating at the airport.

The wingspan of aircraft that are allowed to use the airport is restricted by County Ordinance (see Appendix) and by FAA mandate. The FAA wingspan restriction is based on an approved Modification of Standard that was required to allow the future 320' runway centerline to taxiway centerline separation that will be in place following the relocation of the eastside parallel taxiway. Both the local and federal restrictions on wingspan are related to safety standards. The FAA specifies minimum setbacks between runways and parallel taxiways. Based on the type of aircraft that use the Aspen/Pitkin County Airport, a 400-foot runway centerline to taxiway centerline separation would normally be required. The actual separation today is 220 feet. Following the completion of the ESID improvements, the separation will be 320 feet (less than the 400-foot standard).

For the FAA to approve a Modification of Standard, an acceptable level of safety must be demonstrated. The acceptable level of safety for the 320' runway to taxiway centerline separation was determined to be demonstrated only if aircraft using the airport are restricted to those with wingspans no greater than 95 feet. Because the distance between the parallel taxiway centerline and the runway centerline cannot be practically increased beyond 320', the modification of standard and the wingspan restriction will remain in place in order to provide the required acceptable level of safety. The runway to taxiway separation cannot practically be increased beyond 320' because of the resulting loss of development area between the taxiway and Highway 82.

In addition, the weight of aircraft using the airport is restricted by the strength of the aviation use pavements (runway, taxiways, and aprons). The strength of pavement as defined in FAA documents is specified with regard to the number of wheels that an aircraft has in its main landing gear [i.e., single (one wheel on each side), dual (two wheels on each side), and dual-tandem (four wheels on each side)]. The pavement strength for the Runway at Aspen/Pitkin County airport as declared in official FAA documentation (the *Airport/Facilities Directory*) is capable of accommodating single wheel landing gear aircraft with weights up to 80,000 lbs. (modern single wheel landing gear airplanes are primarily small aircraft weighing less than 12,500 pounds), dual wheel gear aircraft with weights up to 100,000 lbs., and dual-tandem gear aircraft with weights up to 160,000 lbs. Consultant research indicates that the smallest aircraft with a dual-tandem gear configuration are similar to a Boeing 757 (wingspan 124.8 feet, maximum takeoff weight 255,000 pounds).

A copy of the 1984 County ordinance that restricts aircraft by weight is provided in the Appendix. This resolution restricts aircraft with a certificated maximum allowable gross take-off weight in excess of 90,000 pounds from operating at the airport. As was noted in the previous chapter entitled *Capacity Analysis and Facility Requirements*, to prevent the enforcement of this ordinance from being viewed as discriminatory by the FAA, it should be coordinated with the actual runway pavement strength (100,000 dual) and should be based on aircraft operating weight (not on certificated maximum allowable gross take-off weight). The FAA is currently reviewing the pavement strength and aircraft weight restriction issue on a nationwide basis. It is recommended that Pitkin County's ordinance be reviewed and revised to bring it in line with current FAA policies.

## Landside Development Concepts

### Introduction

With the framework of the airport's ultimate airside development identified (the runway will remain in its existing position and landside development recommendations will not be effected by the extension of the runway), the placement of landside facilities can now be analyzed. In general, landside facilities consist of terminal area development, aircraft parking aprons, support facility development, hangar development areas, and airport access. The overall objective of the landside development planning at the airport is the provision of facilities, which are conveniently located and accessible to the community, and which accommodate the specific requirements of airport users.

As identified in the previous chapters, there is current demand for improved passenger terminal facilities, additional area to park general aviation aircraft, and a need for additional aircraft storage hangars. In addition, the development program associated with the relocation of the east side parallel taxiway (ESID) has development implications and recommendations for the Fixed Base Operator's facilities (aircraft parking areas and maintenance facilities), along with the airport support facilities [the Aircraft Rescue and Fire Fighting/Snow Removal Equipment (ARFF/SRE) building and the Air Traffic Control Tower (ATCT)]. With the exception of the passenger terminal development concepts, which are addressed in the next chapter, each of these factors is considered in the formulation of development alternatives for the airport.

### General Aviation and Support Facility Development

The other landside development issues are discussed in this section. Obviously, the ultimate configuration and location of the passenger terminal facilities will have an effect on the layout of general aviation and support facilities on the east side of the airport.

### **Landside Alternative One: The ESID Development Plan**

The East Side Infrastructure Development (ESID) prepared in 2001, provided a plan for the reconfiguration of the airport's landside facilities in consideration of the relocation of the parallel taxiway and the removal of aircraft parking from the FAA specified Runway Object Free Area (this resulted in the loss of approximately 96 aircraft parking positions). The ESID improvement project is in progress and the current funding/phasing schedule indicates that it will be complete in approximately five years. Recommended ESID improvements:

- Relocate the parallel taxiway from its existing location (221 feet of separation from the runway centerline to taxiway centerline) to a location that has 320 feet of separation. This work is in progress.
- Expansion of the general aviation aircraft parking apron into the area previously occupied by the long-term passenger/employee parking area. This work is partially complete.
- Relocation of the ARFF/SRE building from its existing location on the east side of the runway to a location on the west side of the runway. This work has not started.
- Demolition of the north FBO hangar and relocation of FBO facilities to the existing ARFF/SRE facility. This work has not started.
- Reconstruct the circulation and parking facilities in front of the Main Terminal. This work has not started.
- Relocate 93 employee parking spaces to the Intercept Lot. This work is complete.
- Construct a new deicing pad and glycol collection system near the south end of the runway. This work has not started.
- Reconfiguration of the Rental Car Storage Lot to replace square footage displaced by the Deice Apron and glycol system. This work has not started.
- Relocation of the Air Traffic Control Tower. This work has not started.

Because the ESID plan has been approved by both Pitkin County and by the Federal Aviation Administration and improvements are in progress, from a general aviation/support facility standpoint, this plan represents the status quo alternative. *LANDSIDE ALTERNATIVE ONE: THE ESID DEVELOPMENT PLAN* is illustrated in the following figure.

The primary cause and effect element of the ESID plan is the relocation of the parallel taxiway. As stated earlier, the purpose of the relocation of the parallel taxiway is to improve safety by increasing the separation between the runway and the taxiway/aircraft parking areas. This primary element will not be revised. However, this primary element also brought with it some secondary ‘domino’ type affects including displacing some aviation use and airport support facilities. Some of these secondary recommendations are

examined below as part of this alternative analysis process. This is intended to ensure that the secondary ESID recommendations are appropriate in light of the more comprehensive airport development analysis provided by this Airport Master Plan.

### **Landside Alternative Two: West Side General Aviation Development.**

In consideration of the limited amount of development area on the east side of the airport and the existing and forecast demand for additional general aviation aircraft parking area and storage hangars, the potential use of the west side of the airport for future general aviation facilities is an important alternative consideration.

Airport facilities that might be accommodated on the west side:

- Transient general aviation aircraft parking.
- General aviation storage hangars.
- FBO facilities.
- The ARFF/SRE building (as approved in ESID).

The following infrastructure will be required to support facilities that do not need access for aircraft:

- Utilities (water, sanitary sewer, electric, etc.).
- Ground vehicle access and parking.

In addition, to support aircraft-access facilities the following is required:

- A partial parallel taxiway providing access for taxiing aircraft between the south end of the runway and to the north end of the west side development area. (As stated previously the west side parallel taxiway is only needed to support aviation development on the west side of the airport. If aviation development on the west side is not ultimately a recommendation of this Master Plan, the west side parallel taxiway will not be recommended either.)

Although an understanding of the potential for aviation uses to be located on the west side of the airport is important, it is also critical to understand that this is a long-term consideration. To minimize the need for taxiing aircraft to cross the runway (a significant safety concern) west side aviation-use development can only occur following the construction of a west side parallel taxiway system. In consideration of the airport's existing capital improvement and financial commitments, it reasonable to assume that the west side taxiway will not be constructed within five years and it could be over ten

years before the project would be financially feasible. With this timeframe in mind, it will not be productive for this Master Plan to provide a detailed development plan for the area. Instead, it is more appropriate for the development plan alternatives and concept analysis to focus on site characteristics and constraints that will lead to the identification of land on the west side of the airport that might be developable for aviation uses. The following illustration, entitled *LANDSIDE ALTERNATIVE TWO: WEST SIDE GENERAL AVIATION DEVELOPMENT*, provides a graphic depiction of site development considerations, constraints, a conceptual layout of the taxiway system layout, a conceptual layout of the landside access layout, and the identification of the areas that are most feasible for eventual development of aviation use facilities.

#### Positive Aspects Potentially Associated With Landside Alternative Two:

- Additional development area for general aviation facilities (aircraft parking apron, aircraft storage hangars, FBO facilities, etc.).
- The additional area to park transient aircraft will prevent the need on peak days for some aircraft to drop off passengers, depart, and return to pick up passengers.
- Increase safety by reducing the need to crowd parked aircraft onto minimally sized existing apron area.

#### Negative Aspects Potentially Associated With Landside Alternative Two:

- Better general aviation aircraft parking area is feared by some as an incentive for more/quicker growth in the use of the airport by general aviation aircraft.
- Environmental impacts associated with development near Owl Creek.
- Visual impacts associated with new development on west side of airport.

Activity at Aspen/Pitkin County Airport has historically been unique with regard to general aviation use. With creative parking schemes for general aviation aircraft and “passenger drop off/depart/return to pick up” activity, it is uncertain whether a lack of general aviation parking area has significantly affected the number of general aviation operations. Any development on the west side of the airport would be carefully programmed with regard to minimizing potential visual impacts and appropriately addressing any potential environmental impacts before any construction can be initiated. As indicated in the illustration entitled *LANDSIDE ALTERNATIVE TWO: WEST SIDE GENERAL AVIATION DEVELOPMENT*, the critical need to properly address environmental and aesthetic issues is recognized.

### **Other Landside Alternative Considerations.**

These considerations are less significant than the big picture alternatives listed above; however, it is important to consider these “smaller” physical development issues as the conceptual development plan is being formulated.

*Aircraft Rescue and Fire Fighting/Snow Removal Equipment (ARFF/SRE) Building* As discussed above, the ARFF/SRE structure is currently located on the east side of the runway, north of the passenger terminal building. With the relocation of the parallel taxiway system and the removal of aircraft parking from the Runway Object Free Area, the area usable for general aviation facilities has been significantly reduced. The approved ESID plan recognized this fact and to compensate, recommended that the ARFF/SRE be relocated to the west side of the airport. This relocation would allow the existing ARFF/SRE building or site to be used for general aviation purposes.

If west side development of general aviation facilities could occur in the near-term (unlikely) the need to relocate the ARFF/SRE should be reexamined. Given the current circumstances and likely phasing of improvement projects, the relocation of the ARFF/SRE building to the west side of the airport is recommended, although consideration of interim solutions will be important, particularly as related to the “best” short-/mid-term location for general aviation uses, along with airport management and maintenance offices/shops (particularly if space becomes more of a premium in the existing terminal building).

*Phasing Of Terminal Parking/Access Improvements.* When the passenger terminal building undergoes a significant reconstruction or redevelopment, its landside parking and access facilities will also be redeveloped. Depending on demand, community support and financial feasibility, the total redevelopment of the passenger terminal at Aspen/Pitkin County Airport will be several or many years in the future. The parking and landside access system will likely need some improvement before a terminal building redevelopment project is initiated. The ESID plan contained recommendations for short-term passenger terminal parking/access improvements, which are tentatively programmed to take place within the next five years. When this Airport Master Plan’s recommendations are formulated, the phasing of parking/access improvements will be coordinated with the phasing program for passenger terminal improvements.

*Air Traffic Control Tower (ATCT).* As identified in the ESID plan, a new Air Traffic Control Tower is programmed for the airport. In order to provide air traffic controllers with the best view of aircraft on the arrival flight track, the future air traffic control tower will likely be in the same general location as the existing facility. It is anticipated that, the new ATCT cab will likely have a top-of-structure height similar to the existing,

approximately 75 feet above ground level. It should be noted that an FAA study will be required before a location, height, and size for the ATCT can be accurately established.

*Mass Transit Facilities.* Throughout the Master Plan process attention has been paid to the fact that the Aspen/Pitkin County Airport is an important multimodal transportation nexus for the Upper Roaring Fork Valley. Due to its location close to downtown Aspen and between Snowmass Village and Aspen along Highway 82 and its proximity to the Buttermilk Ski Area and Aspen Airport Business Center, the Airport offers many advantages for a multimodal transportation transfer station. However, there are also significant limitations in terms of what can be accommodated at the Airport, most notably, the fact that the Airport has severely limited developable land. In addition to its physical limitations, the available land at the Airport is encumbered by federally regulated restrictions related to its primary function as an airport. These restrictions, together with a variety of practical site design and environmental considerations, limit the type of transportation facilities that can be accommodated on the Airport property. The development alternatives that have been studied in association with this Master Plan reflect concerted efforts to balance the Airport's primary role with the desire to preserve the ability to incorporate a broad range of multimodal transportation facilities for the future.

One example of a facility that presents difficult challenges in terms of the ability to accommodate it at the Airport site is the commuter intercept parking that was discussed in the Entrance to Aspen Federal Record of Decision. The Record of Decision includes a recommendation for 3,600 commuter parking spaces in the area of the Airport. This recommendation was made without any detailed study of the physical and regulatory limitations of the Airport property. A surface parking lot large enough to accommodate 3,600 vehicles would cover an area approximately 32 acres in size. This is roughly ten times the area of the existing Intercept Lot or just under half the area of the entire east side of the Airport (developed portion of the Airport site between the Building Restriction Line and Highway 82). It's physically impossible to accommodate this much parking at the Airport in a surface lot convenient to Highway 82 and economically impractical to consider a parking structure for this many spaces. Therefore, no attempt was made to incorporate a commuter parking facility of this magnitude in the development alternatives for the Airport.

As part of the transportation planning work that has been done in association with improvements to State Highway 82 and the Entrance to Aspen, a transportation corridor has been preserved on the west side of State Highway 82 along the length of the Airport property frontage. The corridor is intended to allow for the installation of a future transit system that may include rail. Allowance for this corridor has been incorporated into alternative layouts. In addition, an area will continue to be preserved to accommodate a transfer platform for a future transit system. While these improvements

are unlikely to be constructed within the term of this Master Plan (20 years), the importance of preserving room for a potential transit system was clearly recognized. Other improvements, such as providing a better pedestrian connection between the Airport Terminal and existing/future transit facilities have also been taken into consideration in the formulation of a long-term development plan for the airport.

### Conceptual Airport Development Plan

Following discussions with the Study Advisory Committee, the Board of County Commissioners, and the Federal Aviation Administration, components of the alternative analysis provided above have been selected for inclusion on the recommended long-term Conceptual Development Plan for the airport. The Conceptual Development Plan has been utilized as the basis for the Environmental Review, the development of detailed Airport Plans, and the development of the Implementation Plan. The recommended layout of airside facilities is described above (in the *Recommended Airside Development* section of this chapter).

On the east side of the airport, the Conceptual Development Plan is built around the ESID recommendations for the relocation of the parallel taxiway and the resulting rearrangement of the general aviation aircraft parking aprons. On the west side, the Conceptual Development Plan identifies the potential long-term future need for aviation use development. The types of facilities most likely to be developed on the west side include general aviation aircraft parking apron, aircraft storage hangars, a second FBO facility, etc. The documentation and drawings in the Master Plan (including the ALP) label the west side for “future aviation use” but does not show a conceptual layout of hangar, apron, or taxiway facilities. Please refer to the text in the *Landside Alternative Two* section above for a more detailed description of the concept for the potential development of the west side of the airport.