
CHAPTER FIVE

Development Alternatives

This chapter describes the alternatives analysis conducted to accommodate RIC's projected requirements for future airfield, terminal, landside and other support facilities. The assessment of alternatives began with a range of airfield and terminal options, subsequent selection of a preferred airfield layout, and preferred terminal layout capable of meeting the forecasted activity demands of the airport. The combination of available areas for development, plus the demand for aircraft gates, supported the assessment of terminal development options; final concepts for proposed development areas were determined by analyzing all these aspects. Finally, this analysis resulted in the identification of the preferred airfield, terminal, and ancillary development concepts as addressed in *Chapter Six, Preferred Development Plan*.

5.1 AIRFIELD ALTERNATIVES ANALYSIS

The primary components making up the airfield are the runways, taxiways, and aprons, commonly referred to as the aircraft movement area. These facilities are the focal point of the airfield alternatives analysis and are typically the most land intensive elements of an airport. The characteristics and configurations of various airfield development concepts directly impact the placement of other components that make up an airport community.

The primary goal of the analysis of the airfield concepts is to identify the runway and taxiway configuration that best meets the airfield capacity requirements through the planning horizon.

The previous Master Plan Update and airport layout plan (ALP) completed in 1999 resulted in a recommendation to place an 8,000-foot long parallel runway 16R-34L 7,700 feet south of the existing runway 16-34. It also proposed the extension of the existing runway 16-34 on both ends. The runway configuration provided the necessary capacity for increased aircraft operations during Instrument Flight Rules as well as Visual Flight Rules operations. Due to information provided to the planning team from the airport, the location designated for this future runway, as shown on the 1999 ALP, is also being considered for future development by other regional planning authorities. The airport asked the planning team to validate the need for the parallel runway, its current location, and identify other runway configurations that will meet the needs of the airport without impacting the planned development area to the south. This effort resulted in the identification and analysis of six airfield concepts including the airfield concept from the previous 1999 Master Plan.

5.1.1 ***Initial Airfield Concepts***

The analysis of airfield facility requirements in *Chapter Four, Demand Capacity Analysis and Facility Requirements*, documents that additional airfield capacity is likely to be required to accommodate forecasted operations in the year 2025. Additionally, it was determined that any departure runway should be at least 9,000 feet in length and any arrival runway

should be a minimum of 6,200 feet in length. The airfield concepts presented in this chapter explore a range of options to expand the airfield within and beyond the planning horizon.

A total of six airfield concepts have been identified with the intent of accommodating future demand throughout the planning horizon. These concepts consist of adding a parallel arrival, departure, or mixed-use runway to either Runway 2-20 or Runway 16-34. The concepts were qualitatively evaluated based upon the vision and mission of the Capital Region Airport Commission and the goals and objectives of the Master Plan. Baseline assumptions that the airport will continue its planned extensions to runway 16-34 as demand dictates were made in the analysis of each of the concepts. The descriptions of the airfield concepts follow and are depicted in **Exhibits 5.1** through **5.6**.

5.1.1.1 Airfield Concept One

Airfield Concept One, developed from the 1999 Richmond International Airport Master Plan, consists of a widely spaced runway, parallel to Runway 16-34, as shown in **Exhibit 5.1**. The separation between the two runways is approximately 7,700 feet, with the proposed runway to the south of existing Runway 16-34 and the thresholds for the proposed runway staggered approximately 7,000 feet to the southeast. The proposed parallel runway would be 10,500 feet long and serve as a mixed-use runway. The advantages and disadvantages of Airfield Concept One are:

Advantages:

- Operational efficiency is enhanced due to aircraft not crossing active runways.
- Proposed length and separation provide optimal capacity through independent instrument approaches.

Disadvantages:

- High cost due to land acquisition.
- Necessary to resolve issues of the existing railroad to meet aviation clearance requirements.
- Impact to Interstate 895.
- Unfavorable land use in that implementation would permanently impact future commercial development potential.
- Not considered ideal use of available land in terms of regional planning priorities.
- Unavoidable wetland impact south of existing railroad.
- Encumbers additional development south of airfield.

5.1.1.2 Airfield Concept Two

Airfield Concept Two consists of a closely-spaced runway parallel to and north of the existing Runway 16-34, as shown in **Exhibit 5.2**. The separation between the two runways is approximately 1,200 feet to the north of existing Runway 16-34 and staggered approximately 500 feet. The proposed parallel runway would be 8,000 feet in length and service arrival aircraft. The advantages and disadvantages of Airfield Concept Two are:

Advantages:

- Frees up large areas for commercial development south of airfield.
- Ability to implement the project primarily on existing airport property.
- Compatible with long-term land use plans and regional priorities.
- Minimal impact to existing residential and commercial areas surrounding the airport.
- Requires some land acquisition for runway construction and to support RSAs.
- Flexibility to extend to 10,000 feet if demand warrants it without impacting additional facilities (e.g., railroad, surface infrastructure, surrounding communities).

Disadvantages:

- Less than optimal demand/capacity benefit considering a staggered 8,000 foot runway.
- Apparent operational inefficiency as proposed runway would be situated further from terminal area and require aircraft to cross an active runway.
- Potential environmental impacts due to the land acquisition of existing residential and commercial areas.

5.1.1.3 Airfield Concept Three

Airfield Concept Three consists of a closely spaced runway parallel to and south of the existing Runway 16-34 as shown in **Exhibit 5.3**. The separation between the two runways is approximately 1,200 feet to the south of existing Runway 16-34. The proposed parallel runway would be 9,000 feet in length and service departure aircraft. The advantages and disadvantages of Airfield Concept Three are:

Advantages:

- Frees up large areas for commercial development south of airfield.
- Ability to implement the project primarily on existing airport property.
- Compatible with long-term land use plans and regional priorities.
- Minimal impact to existing residential and commercial areas surrounding the airport.
- Requires no land acquisition for runway construction.
- Demand/capacity benefit is optimized as proposed 9,000 foot runway provides adequate length for both arrival and departure capabilities.
- Proposed runway closer to terminal area, thus shorter taxi distances for aircraft.
- No conflict with future regional land use initiatives.

Disadvantage:

- Less operational capacity versus larger 2,500 foot, 3,500 foot, etc., runway separations.

- Runway crossing/intersection with Runway 2-20.

5.1.1.4 Airfield Concept Four

Airfield Concept Four consists of a closely spaced runway parallel to Runway 2-20 as shown in **Exhibit 5.4**. The separation between the two runways is approximately 1,200 feet to the east of existing Runway 2-20. The proposed Runway 2-20 would be initially constructed at 8,000 feet in length and service arrival aircraft. This concept necessitates an extension to the existing Runway 2-20 to accommodate the 9,000 foot length requirement for aircraft departures.

Advantages:

- Frees up large areas for other commercial development south of airfield.
- Compatible with long-term land use plans and regional priorities.
- Proposed runway in close proximity to the terminal area.

Disadvantages:

- Significant environmental impact as the extension of Runway 2-20 would extend into adjacent residential and commercial areas.
- Proposed new runway would constitute a new environmental impact to an adjacent residential area.
- Reduced capacity capability due to 8,000 foot runway length and close proximity of staggered thresholds.

5.1.1.5 Airfield Concept Five

Airfield Concept Five consists of a runway parallel to Runway 2-20 and offset 2,500 feet to the east, as shown in **Exhibit 5.5**. The runway's threshold is staggered approximately 3,000 feet to the south of existing Runway 2-20. The proposed parallel runway would be 9,000 feet in length and serve as a mixed-use runway. The advantages and disadvantages of Airfield Concept Five are:

Advantages:

- Increased capacity resulting from combined benefit of proposed 9,000 foot runway length and 2,500 foot runway separation.
- Operational efficiency as proposed runway would be situated close to terminal area thus less taxiing time for aircraft.

Disadvantages:

- Negative impact to existing road and railroad located to south of the airport.
- Conflict with future regional land use initiatives.
- Proposed runway impacts wetlands located to the south of the existing railroad.

5.1.1.6 Airfield Concept Six

Airfield Concept Six consists of a widely spaced parallel to Runway 2-20 as shown in **Exhibit 5.6**. The separation between the two runways is approximately 4,300 feet to the west of existing Runway 2-20. The proposed parallel runway would be 9,000 feet in length and service departure aircraft. The advantages and disadvantages of Airfield Concept Six are:

Advantages:

- Increased capacity as a result of 4,300 foot runway separation, allowing for dual simultaneous precision instrument approaches.
- Operational efficiency gained with terminal being centrally located between existing Runway 2-20 and proposed new runway.

Disadvantages:

- High cost to implement new runway.
- Significant environmental considerations given impact to existing commercial areas.
- Proposed runway configuration would be incompatible with long-term land use plans and regional priorities.

5.1.2 Preferred Airfield Concept

Based on the results of the Airfield Evaluation Matrix, as detailed in the **Appendix E**, Airfield Concept Three achieved the best score and was selected as the preferred airfield concept. The primary categories that made this concept more preferable than the other concepts included cost, long-term land use, and alignment with regional planning priorities.

5.1.2.1 Operational Efficiency

In airfield configurations with parallel runways in close proximity to each other, the inner runway becomes the primary departure runway and the outer runway becomes the primary arrival runway. Airfield Concept Three provides a long runway with close proximity to the terminal and it also provides for the fewest runway crossings during ideal operating conditions. The combination of these two characteristics makes Airfield Concept Three an effective design when considering operational efficiency.

5.1.2.2 Demand/Capacity and Timing

A 2,500 foot, 3,500 foot, and/or 4,300 foot runway-centerline-to-centerline separation distance would improve operational capacity over a 1,200 foot runway-to-runway-centerline separation distance. In the case of RIC, these significantly larger separation distances would, in turn, incur considerably larger monetary or other resource allocations, conflict with existing facilities, and have considerable impacts.

Airfield Concept Three strikes the best balance between operational capacity and the use of airfield resources through the addition of a 9,000 foot parallel runway that will be offset 1,200 feet south of Runway 16L-34R. New runway 16R-34L will primarily service departure aircraft, while the existing Runway 16L-34R will primarily service arriving aircraft. The length of Runway 16L-34R has the added flexibility of serving both roles if necessary, such as during inclement weather conditions or during routine maintenance periods. Thus, implementing Airfield Concept Three provides the airport with the flexibility to meet the airport's operational needs throughout the planning horizon.

5.1.2.3 Supporting Projects

Construction of Runway 16R-34L will require the implementation of other projects to assist with the efficiency of the airfield such as the realignment of Taxiway M and L with the addition of high-speed exit taxiways, placement of navigational lighting aides, and relocation of existing tenants (FBO Operators, Army National Guard).

5.1.2.4 Financial Planning/Cost

Airfield Concept Three shows that all construction will be entirely positioned within the existing airport boundary. Therefore, only minimal land acquisition is anticipated to address runway safety area (RSA) needs. As a result of all of the aforementioned factors, Airfield Concept Three is the most prudent option.

5.1.2.5 Environmental Planning Considerations

With any proposed new runway, environmental planning is required. The FAA dictates what level of environmental document must be prepared (e.g., Environmental Assessment or Environmental Impact Statement). As the majority of development associated with Airfield Concept Three is within the existing airport boundary, no major impacts are anticipated. The level and quantity of environmental planning will be determined in concert with the FAA when the project is poised for development.

5.1.2.6 Land Use

Airfield Concept Three requires only minimal land acquisition and does not prevent adjacent land to the existing airport boundary from being developed for other collateral and commercial development needs. In particular, large tracts of undeveloped land south of the airport and the existing railroad would be open to other development that would better serve the region favorably on a long-term basis. This concept also allows for better use of airport property that is adjacent to the airfield operating area (AOA) with easier access to the new runway.

5.1.2.7 Regional Priorities

Similarly to land use, Airfield Concept Three does not interfere with any regional development priorities, as the physical infrastructure for the proposed new runway remains within the existing airport boundary.

5.1.2.8 Master Plan Objectives

Since Airfield Concept Three's development occurs on existing airport property with only minor impact to surrounding properties, due to RSAs and approach surfaces, there is little necessity for adjacent land acquisition. This allows property outside of the airport's boundary to be used for other commercial and business opportunities. At the same time, the proposed airfield development is expected to bring long-term economic interest to RIC. In addition to the many benefits that Airfield Concept Three will create, it is also expected to foster opportunities for airport-related development and enhance economic development in the surrounding region.

5.1.3 Operational Refinements

The preferred concept was further developed and refined to improve upon and obtain maximum operational efficiency. To fully appreciate the operational benefit of an additional runway, new parallel and connecting taxiways were recommended. Therefore, the following actions are recommended:

- Reconstruct/Realign Taxiway M

Taxiway M is reconstructed to repair and replace pavement which does not meet ADG D-IV load bearing standard. Also, Taxiway M is recommended to be realigned so that

its entire length has a 600 foot centerline-to-centerline separation with existing Runway 16-34. This separation would allow for high-speed taxiway exits to be implemented safely at any time during the planning horizon or beyond. This recommendation carries the added benefit of freeing currently unusable land that is occupied by the existing alignment and have it converted to other uses, such as aviation related and air cargo development.

- Reconstruct/Realign Taxiway L

Existing Taxiway L is realigned so that it is equidistantly spaced 600 feet between existing Runway 16-34 and the preferred new runway alternative, thus safely servicing both runways and at the same time accommodating future exit taxiways. It is also recommended that proposed Taxiway L span the entire length of existing Runway 16-34 and the entire length of the proposed new runway to improve operational capacity.

5.2 TERMINAL FACILITY ALTERNATIVES ANALYSIS

The primary objective for developing terminal facility concepts is to meet future requirements through the planning horizon. At RIC, terminal facility concepts must accommodate incremental expansion of the terminal area and accommodate changes beyond the planning period. Incremental expansion is handled by phasing planning and is addressed in *Chapter Eight, Implementation and Financial Plan*. This chapter does not address phasing; however, expansion phasing is taken into account in the terminal alternatives analysis. Achieving maximum flexibility to allow RIC to respond to changes in the aviation industry was one of the key objectives in determining possible expansion options. Based on this objective, 19 terminal options were conceptually/qualitatively considered with four viable concepts being further evaluated.

5.2.1 *Initial Terminal Concepts*

The analysis of terminal facility requirements in *Chapter Four, Demand Capacity Analysis and Facility Requirements*, indicates that a total apron frontage of 4,350 to 6,300 linear feet from 2011-2026 respectively, 28 to 41 actual gates from 2011-2026 respectively, and 560,000 to 820,000 square feet from 2011-2026 respectively are required to meet projected demand. The terminal concepts presented in this chapter explore a range of options to expand terminal facilities within the existing terminal area during and beyond the projected planning horizon. All Terminal Concepts have adequate airfield access with improved taxiway infrastructure around the proposed concourse expansion. Additionally, all Terminal Concepts impact existing facilities in some respect; however, there are no apparent impacts to airspace with any of the concepts.

A total of 19 terminal concepts were created with the intent of accommodating projected demand throughout the planning horizon and beyond. Concepts consisted of adding gates to the end of Concourse A and/or Concourse B, adding a satellite terminal north and/or south of the existing terminal, adding a satellite terminal east of the existing terminal, and connecting concourses to the existing terminal processor. The concepts were qualitatively evaluated based upon the vision and mission statements of the Commission and the goals and objectives of the Master Plan. The terminal concepts were short-listed to four and then further evaluated. The descriptions of the short-listed terminal concepts are described in the following section and depicted in **Exhibits 5.7 through 5.11**.

5.2.1.1 Terminal Concept One

Terminal Concept One depicts eight additional gates being added to Concourse A and four new concourse/terminal expansions on the north and south. This concept shows maximum terminal core build-out with new “L-Shaped” concourses with 31 gates on the north and on the south. The terminal processor is expanded and is connected to the new concourses to maximize existing passenger processing infrastructure. The advantages and disadvantages of Terminal Concept One are:

Advantages:

- Expansion adaptability.
- Shortens taxiway distance.
- No impacts to airspace height restrictions.
- Minimal or no environmental site impacts.
- No additional land purchase required.
- No underground people mover required.
- Adequate area for new access roads and parking.
- Adequate area for realignment of curbside operations.

Disadvantages:

- Proposes separate terminal operations areas.
- Existing facilities must be relocated sooner.
- Long walking distances.
- New concourse development required.

5.2.1.2 Terminal Concept Two

Terminal Concept Two depicts six additional gates on Concourse A and 11 additional gates on both Concourses A and B. Similar to Concept One, this concept shows two satellite terminals and concourses north and south with 18 gates on each for maximum build-out. Terminal Concept Two represents a situation where it is assumed that the existing terminal processor has been maximized and new terminal/concourse construction is planned with satellite terminals consisting of terminal processors that are not connected to the existing terminal building. The advantages and disadvantages of Terminal Concept Two are:

Advantages:

- Expansion adaptability.
- Shortens taxiway distance.
- Minimal impact to existing terminal facilities.
- No apparent impacts to airspace height restrictions.
- Minimal or no environmental site impacts.
- No additional land purchase required.
- No underground people mover required.
- Adequate area for new access roads and parking.
- Adequate area for realignment of curbside operations.

Disadvantages:

- Proposes separate terminal operations areas.
- Long walking distances.
- New concourse development required.

5.2.1.3 Terminal Concept Three

Terminal Concept Three depicts eight additional gates being added to Concourse A, and shows expansion of the ticket counter area that connects to two “U-Shaped” concourses on the north and south with each of those concourses showing 35 additional gates on each. This concept took the idea on Concept One and put it in more of a linear design to maximize apron area. The advantages and disadvantages of Terminal Concept Three are:

Advantages:

- Expansion adaptability.
- Shortens taxiway distance.
- Minimal impact to existing terminal facilities.
- No apparent impacts to airspace height restrictions.
- Minimal or no environmental site impacts.
- No additional land purchase required.
- No underground people mover required.
- Adequate area for new access roads and parking.
- Adequate area for realignment of curbside operations.

Disadvantages:

- Requires separate terminal operations areas.
- Existing facilities must be relocated sooner.
- Longer walking distances.

5.2.1.4 Terminal Concept Four

Terminal Concept Four depicts 15 additional gates on Concourse A and 11 additional gates on Concourses B. In working to preserve support/ancillary facilities near the terminal core, this concept shows one satellite concourse with 22 gates east of the existing terminal that is connected to the existing terminal via an automated people mover. The existing terminal processor and connector bridge area that connects to the main atrium area and concourses are expanded to allow for additional passenger processing and a consolidated security checkpoint area. The advantages and disadvantages of Terminal Concept Four are:

Advantages:

- No apparent impacts to airspace height restrictions.
- Minimal or no environmental site impacts.
- No additional land purchase required.
- Adequate area for new access roads and parking.
- Minimal impact to curbside operations.
- Minimal impact to existing facilities.

Disadvantages:

- Requires remote terminal area.
- Requires longer taxiing distance to hardstand locations.
- Longer walking distances.
- Remote concourse development required.
- Underground people mover required.

5.2.2 Preferred Terminal Concept

Terminal Concept Two and Three were combined and edited to create the Preferred Terminal Concept (**Exhibit 5.11**) due to its operational, environmental, financial, and engineering benefits compared to the other Terminal Concepts.

5.1.3.1 Operational Efficiency

The Preferred Terminal Concept, as seen in *Chapter Six, Preferred Development Plan*, accommodates future demand with the addition of future gates at the ends of both Concourses A and B, making way finding easier for passengers. The expanded apron area promotes good airfield access with gates near the runway ends. Additionally, the expanded apron area can accommodate remote aircraft parking for hardstands or diversion aircraft.

5.1.3.2 Cost Considerations

Compared to the other Terminal Concepts, the preferred Terminal Concept has inexpensive site preparation and terminal development due to the other concepts depicting satellite terminals to accommodate future demand within the planning horizon.

5.3 SUPPORT/ANCILLARY FACILITY ALTERNATIVES ANALYSIS

The primary objective for developing Support/Ancillary Facility Concepts is to accommodate future growth as projected in *Aviation Demand Forecasts and the Demand Capacity Analysis/Facility Requirements, Chapters Three and Four*. Additionally, Support/Ancillary Facility Concepts are developed due to the fact that they will be impacted by the preferred airfield and terminal concepts, which would require the relocation of the Support/Ancillary Facilities.

5.3.1 **Support/Ancillary Facility Development Concepts**

Upon the selection of the preferred airfield and terminal development concepts, Support/Ancillary Facilities should be placed throughout the airport to accommodate projected growth, future development plans, to enhance operational efficiencies, and the relocation of facilities that are being impacted by the preferred airfield and terminal development concepts. The Support/Ancillary Facilities that will be discussed are: Airport Traffic Control Tower, Air Cargo Facilities, Airline Aircraft Maintenance, Flight Kitchen, Airport Maintenance, General Aviation/Fixed Base Operator Facilities, ARFF Facilities, and Utilities. **Exhibit 5.12** depicts all Support/Ancillary Facility Development that has been impacted by airfield and/or terminal concepts.

5.3.1.1 Airport Traffic Control Tower

Chapter Four, Demand Capacity Analysis/Facility Requirements indicated that the Airport Traffic Control Tower (ATCT) is adequate throughout the planning horizon and the increase in operations throughout the planning horizon is not expected to result in the facility being outgrown. Additionally, *Chapter Four* stated that the location of any future runway(s) may warrant the relocation of the ATCT due to line-of-sight issues. Initial analysis indicates that the proposed Airfield Concept Three, parallel runway (16R-34L), does not pose any line-of-sight issues for the ATCT. Therefore, the current siting of the ATCT should be adequate to accommodate future airfield operations

5.3.1.2 Air Cargo Facilities

Air Cargo Facilities dedicated to freight forwarding should be located adjacent to the runways; however, facilities dedicated to belly cargo should be located near the terminal building to improve operational efficiency for airlines in terms of loading and unloading cargo. Based on the forecasted demand identified in *Chapter Four*, the airport will require approximately 120,000 additional square feet of air cargo space. Additionally, the terminal expansion, as well as the expansion of the apron, requires the relocation of Air Cargo facilities. The development concepts include an area just south of the terminal core as well as approximately 520,000 square feet of space located along Taxiway M. These areas will be specifically designated for Air Cargo Development.

5.3.1.3 Airline Aircraft Maintenance

There are two airline aircraft maintenance facilities that need to be relocated. The terminal expansion, as well as the expansion of the apron, requires the relocation of the Airlines' Aircraft Maintenance Facilities. Though *Chapter Four, Demand Capacity Analysis and Facility Requirements*, indicated no new Airline Aircraft Maintenance facilities, approximately 520,000 square feet of space has been preserved for these types of facilities along Taxiway M.

5.3.1.4 Flight Kitchen

Chapter Four did not indicate a need for Flight Kitchen Facilities; therefore, development concepts were not considered for this facility. It is noted that there are existing Flight Kitchen Facilities in the terminal area available for use should the demand present itself.

5.3.1.5 Airport Maintenance

Currently, RIC's Airfield Maintenance Facilities are located east of Runway 7-25. The current Airfield Maintenance Facilities consist of three covered structures, which house the equipment and vehicles for the airport. Due to the proposed parallel runway to Runway 16-34, RIC will need additional Airport Maintenance facilities. Two structures, providing approximately 20,000 square feet of additional space, are shown in the development concepts.

5.3.1.6 General Aviation/Fixed Based Operator (FBO)

The Forecast of Aviation Activity as well as the Demand Capacity/Facility Requirements indicates that General Aviation (GA) operations will grow through the planning horizon. Additionally, the Commission and the existing GA/FBO operators have indicated a desire to expand the FBO terminal and one hangar facility at RIC. Due to the proposed Runway 16R-34L, all existing FBO facilities will relocate to the new East Airside Development Area. Any new FBO operators will be located in this area as well.

Aviation-related development is also anticipated along Taxiway M, which also includes a site dedicated to GA/FBO expansion with four hangar facilities, and includes an FBO terminal and associated ramp space.

5.3.1.7 Aircraft Rescue and Firefighting (ARFF) Facilities

The Commission is moving the ARFF station to the perimeter of the airfield near Runway 16 to better serve future growth of the airfield. This is being driven by the fact that the current access to the ARFF station requires airfield crossings by vehicles which present a safety concern. During the recent FAR Part 139 inspection, the FAA recommended that the ARFF station be relocated to the perimeter of the airfield to eliminate those frequent runway crossings.

5.3.1.8 Deicing/Diversion Apron

To improve operational efficiency, deicing operations will transition over time to a deicing/diversion apron. This will require new aircraft deicing pads with adequate drainage and storage systems to collect and store spent deicing fluid so that it can be properly handled. Additionally, the deicing pad will serve as a parking location for diverting and remaining-over-night aircraft.

5.3.1.9 Other Facilities

As interest and demand increases for non-aviation related development on the airport, planning will be initiated to accommodate these facilities. Initial space reservation for conference meeting space and office/warehouse space (Airport Business Park) has been identified.

5.4 GROUND ACCESS FACILITY ALTERNATIVES ANALYSIS

This section details the various concepts considered for each landside element of the Ground Access Facilities. **Exhibit 5.13** illustrates the impacted areas for Ground Access Facilities.

5.4.1 **Roadways**

Ensuring continued ease of access to RIC by the surrounding communities is a priority to the Commission both for the convenience of passengers as well as the efficient movement of goods. Convenient access to RIC within the region promotes the health of the airport by encouraging travelers to utilize RIC rather than driving to other facilities.

Currently, an extension to Airport Drive connecting to Interstate 895, located in Area 5, is being considered by regional planning authorities to aid in more efficient flow of vehicles into and out of the airport corridor.

A new access road leading to the Aviation/Air Cargo related development, located in Areas 3 and 4, along Taxiway M is being considered to service the new business in this area.

Regional planning authorities are also contemplating a regional rail connection to the proposed consolidated rental car facility located off of Airport Drive.

5.4.2 **Public Parking**

Public parking is typically provided adjacent to the terminal building to be conveniently located near ticketing and baggage claim areas, with overflow parking accommodated in remote lots. At projected demand levels throughout the planning horizon, the airport will require approximately 2,700 additional long-term and 4,100 additional short-term parking spaces to accommodate future demand. When constructed, these additional spaces will bring the airport's parking space inventory to 6,700 long-term parking stalls and 10,100 short-term parking stalls¹. Additional parking will be shown in *Chapter Six, Preferred Development Plan*, with the creation of an additional surface parking area off of South Airport Drive and two additional parking garage structures. The first structure, which will mirror the existing parking garage that is now serving as the Rental Car Ready Return area, and the second structure will be built south of the current parking garage structure.

5.4.3 **Employee Parking**

Currently, employees park south of the public parking garages. If there are no changes in the demand, the airport will still require 545 additional employee parking spaces to accommodate future demand. The preferred development plan includes an expansion to the existing employee parking lot.

¹ In June of 2009, the Airport will complete construction of its fourth parking garage, bringing the inventory of parking stalls to 10,075 long- and short-term parking stalls.

5.4.4 Rental Car Facilities

Currently, the rental car agencies (RACs) have customer service counters and offices located on the lower level of the terminal building. Ready/return vehicles for customers are housed in a consolidated Rental Car Garage located on the north side of the terminal. The findings in *Chapter Four* determined that over the planning horizon, 1,665 additional square feet of counter and back office space will be required, along with 16 additional acres, and 407 additional ready/return parking spaces. To accommodate these future space requirements, all of the development alternatives include an expansion option that places a consolidated rental car facility (CONRAC) to the west of the South Airport Drive. The proposed CONRAC facility includes a 147,456 square foot building and will require 8.6 acres of land, which is proposed to be located in Area 2 as shown on the exhibit.