4.0 FACILITY REQUIREMENTS AND DEMAND/CAPACITY ANALYSIS

This chapter documents the facilities needed to meet the demand requirements as described in **Chapter 3**, *Aviation Activity Forecasts*. Current facilities were examined to determine if they meet the existing demands of the Airport. Certain items identified in this chapter may have multiple solutions which will be examined to determine the preferred alternatives. These items will be explored in **Chapter 5***, Alternatives Analysis*.

4.1 REGIONAL AIRPORT SYSTEM ROLE

In 2011 CDOT Aeronautics published the Colorado Aviation System Plan (Plan). The Plan evaluated and measured the performance of the Colorado system of publically owned airports and assigned each Colorado airport to one of three functional categories: Major, Intermediate, or Minor. The State currently has RIL classified as a Major General Aviation (GA) airport in the Plan. CDOT evaluated the Airport's current facilities against the Plan's objectives and identified facilities and services that need improvements. RIL meets airport specific objectives identified in the 2011 System Plan.

4.2 AIRSIDE REQUIREMENTS

The airside components evaluated include FAA safety standards, runway, taxiways, navigational and landing aids, airspace requirements, and obstructions.

4.2.1 FAA DESIGN STANDARDS

Table 4-1 summarizes the FAA design standards from FAA AC 150/5300-13A, *Airport Design,* along with the current conditions on existing Runway 8/26. As described in **Chapter 3**, the RDC, formerly designated as the ARC, is a classification given to aircraft based on the maximum approach speed and wingspan of the aircraft. This classification applies design criteria appropriate to operational and physical characteristics of the aircraft types operating at the Airport. As described in **Section 3.11**, based on its current operations, the needs of the critical aircraft are currently D-II and will become D-III. RIL was originally designed to D-III standards, but meets D-II standards since it currently does not have paved runway shoulders (see **Section 4.3.8**), as required by FAA AC 150/5300-13A[29]. Runway and taxiway dimensional standards must meet or exceed the specified widths and clearances specific to the critical aircraft to ensure safe operation for landing, take-off, and taxi. **Table 4-1** lists RDC D-II and D-III design standards in comparison to the existing Runway 8/26.

The airfield currently meets D-II design standards. 20-foot paved runway shoulders are required to meet D-III design standards.

[29] Although FAA AC 150/5300-13A requires a 150-foot wide runway for RDC D-III, RIL will meet D-III criteria with the existing 100-foot runway because the critical aircraft is the Gulfstream 550, which has a maximum takeoff weight less than 150,000 pounds, Runway 8/26 has visibility minimums greater than ¾-mile, a runway blast pad 140 feet wide; however, the Airport will need to provide 20-foot paved shoulders to maintain D-III criteria.

TABLE 4-1 – FAA DESIGN STANDARDS

	RDC D-II ≥ ¾-Mile Visibility Minimums	RDC D-III ≥ ¾-Mile Visibility Minimums	Existing Runway 8/26
Runway Safety Area			
Width	500ft	500ft	500ft/500ft
Length Beyond Departure End	1,000ft	1,000ft	1,000ft/1,000ft
Runway Object Free Area Width	800ft	800ft	800ft
Runway Obstacle Free Zone			
Width	400ft	400ft	400ft
Length Beyond Runway End	200ft	200ft	200ft
Approach Runway Protection Zone			
Length	1,700ft	1,700ft	1,700ft
Inner Width	1,000ft	1,000ft	1,000ft
Outer Width	1,510ft	1,510ft	1,510ft
Departure Runway Protection Zone			
Length	1,700ft	1,700ft	1,700ft
Inner Width	500ft	500ft	500ft
Outer Width	1,010ft	1,010ft	1,010ft
Runway CL to Parallel TW CL	300ft	400ft	400ft
Runway CL to Aircraft Parking	400ft	400ft	>500ft
Runway Hold Line	305ft	305ft	305ft

Source: FAA AC 150/5300-13A, Airport Design

4.2.1.1 Runway Safety Area

The Runway Safety Area (RSA) is a defined surface surrounding the runway that is specifically prepared and suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the paved surface. The standard RSA for a D-II/III airport is 500 feet wide and extends 1,000 feet beyond the end of the runway. The existing RSA for Runway 8/26 at RIL is 500 feet in width and extends 1,000 feet beyond each end of the runway. The original runway was constructed using criteria from a previous version of AC 150/5300-13 that increased runway safety area width by 20 feet for every 1,000 feet above sea level. This requirement was removed by Change 15 on December 31, 2009. When the runway was realigned and extended to 7,000 feet in 2010, the RSA for the extension was built to the standard 500 foot width.

AC 150/5300-13A indicates that the RSA must extend behind the start of both the takeoff and approach ends of the runway, and that portion of the runway behind the start of the takeoff is unavailable for takeoff distance, takeoff run, and accelerate-stop distance. In order to provide additional runway takeoff length, declared distances are sometimes used to provide the maximum distance available to meet takeoff, landing, and rejected takeoff distances for Jet-Aircraft. The purpose of declared distances is to ensure an equivalent RPZ, Runway Object Free Area, or RSA when providing additional runway takeoff length. Should the Facility Requirements determine that any additional runway length may be beneficial at RIL, declared distances will be examined as a possible method to increase maximum allowable takeoff weight in **Chapter 5**.

RIL meets all RSA requirements for RDC D-III.

4.2.1.2 Runway Object Free Area

A Runway Object Free Area (ROFA) is an area on the ground that is centered on a runway, taxiway, or taxilane centerline, and is provided to enhance the safety of aircraft operations by clearing the area of above-ground objects. Acceptable objects in the ROFA are objects that need to be located in that area for air navigation or aircraft ground maneuvering purposes, or are less than three inches tall. It is important to note that like the RSA, AC 150/5300-13A indicates that the ROFA must extend behind the start of the takeoff and approach end of the runway, and that portion of the runway behind the start of the takeoff is unavailable for takeoff distance, takeoff run, and accelerate-stop distance. As shown previously in **Table 4-1**, RIL meets both existing and future ROFA requirements.

All ROFA requirements are met to accommodate D-III aircraft.

4.2.1.3 Obstacle Free Zone

The Obstacle Free Zone (OFZ) is a volume of airspace intended to protect aircraft in the early and final stages of flight. It must remain clear of object penetrations, except for frangible Navigational Aids (NAVAIDs) located in the OFZ because of their function. For runways serving aircraft with Maximum Takeoff Weight (MTOWs) greater than 12,500 pounds (including the critical aircraft), the OFZ is 400 feet wide and extends 200 feet beyond the end of the runway.

All OFZ requirements for RDC D-III are met.

4.2.1.4 Runway Hold Bars

Runway hold bars are a system of markings and signs in place to prevent aircraft or ground vehicles from entering an active runway. The hold bars are to be positioned so that no part of the aircraft or vehicle penetrates the runway safety area or other airfield airspace surfaces. AC 150/5300-13A stipulates that for airports that have an approach speed class of D, the distance the hold bar must be placed from the runway centerline increases one foot for every 100 feet above sea level. RIL currently operates under approach speed class D, and, in its current condition, is designed to meet this required altitude adjustment. The existing airfield elevation is estimated at 5,537 feet above sea level. Therefore, an extra 55 feet of separation must be added to the standard 250-feet hold bar separation, creating a 305-feet separation.

All runway hold bar requirements are met for D-III aircraft at RIL.

4.2.1.5 Building Restriction Lines

The Building Restriction Lines (BRLs) are lines that run parallel to the runway and offset at a distance that ensures that new construction is below the 14 CFR Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace*. The BRLs at RIL are calculated based on a 35-foot tall structure, and the area surrounding the GA parking apron area has a BRL of 20-feet. Structures that are taller than 35 feet (or 20-feet within the GA parking apron area) will require additional analysis to ensure compliance with the 14 CFR Part 77 surfaces. Currently, all buildings are outside of the BRL.

All buildings are outside of established Building Restriction Lines.

4.3 RUNWAYS

The ability of the runway to meet the requirements of airport users is one of the most critical components to the success of an airport. The runway must have the capacity, length, strength, and proper orientation to the wind to meet the demands of its users. This section will examine several key factors used in the determination of the adequacy of the runway system.

4.3.1 AIRFIELD CAPACITY ANALYSIS

This section addresses the evaluation method used to determine the capability of the airside facilities to accommodate aircraft operational demand. This evaluation is expressed in terms of potential excesses and deficiencies in capacity. The measurement of airfield capacity is based upon the methodology in FAA Advisory Circular (AC) 150/5060-5, *Airport Capacity and Delay*.

Runway Capacity is defined by the FAA as, "a measure of the maximum number of aircraft operations that can be accommodated on the Airport or airport component in an hour."[30] Capacity is further divided into two categories: Visual Flight Rules (VFR) and Instrument Flight Rules (IFR). Utilizing guidance contained in FAA AC 150/5060-5, *Airport Capacity and Delay,* the runway capacity for RIL has been calculated to be 55 VFR flights and 53 IFR flights per hour.

Another factor in runway capacity is Annual Service Volume (ASV), which is a reasonable estimate of the Airport's annual capacity. A number of factors that may occur over the period of a year are used to determine ASV. These factors include runway use, aircraft mix, and weather conditions. ASV is calculated using the following criteria:

$$ASV = C_W \times D \times H$$

C_W weighted hourly capacity
D ratio of annual demand to average daily demand
H ratio of average daily demand to average peak hour demand

Using this equation, the ASV for RIL has been calculated to be a maximum of 210,000 annual operations. For 2012, total annual operations were 11,057, well below the maximum ASV. FAA planning standards state that when 60% of the ASV is reached (126,000 annual operations), that airport should start planning to increase runway capacity, including construction of a new runway or the extension of an existing runway. Once 80% of ASV is reached (168,000 annual operations), construction should begin in order to increase capacity of the existing facilities.

However, annual airfield capacity is not the capacity limit at RIL because it is more constrained by airspace. Separation requirements between arriving and departing aircraft limit the hourly flow of aircraft. This is due to the limitations of radar flight tracking conducted by the Denver Air Traffic Control Center (ARTCC). The surrounding mountainous terrain blocks the signal between the radar and aircraft, resulting in loss of

[30] FAA AC 150/5060-5, *Airport Capacity and Delay*

positive radar contact. As a result, the ARTCC limits aircraft operations into mountain airports during IFR conditions. By limiting the amount of aircraft present, the risk of aircraft colliding with each other and with terrain is reduced. However, this can lead to lengthy delays and potential diversions during periods of inclement weather.

Additional impacts to capacity occur through the use of Special Traffic Management Programs (STMPs), as discussed in **Section 2.9.4**. However, STMPs are scheduled to be phased out during the 2013 holiday season.

Existing facilities are adequate for accommodating future hourly and annual demand.

4.3.2 Runway Orientation

Runway orientation is the alignment of the runway in relation to magnetic north. This orientation is primarily influenced by wind direction. The runway orientation at an airport is one that results in the prevailing wind creating the least amount of crosswind operations. Recognizing that there is variable weather conditions, aircraft are designed to land with an acceptable degree of crosswind, referred to as the crosswind component. When conditions are above the maximum allowable crosswind component for a particular type of aircraft, said aircraft must use another runway or divert to another airport. In the case of RIL, having one runway, the only option is to divert to another airport. To reduce the amount of diversions due to wind, the most ideal layout of a runway, or runways, would be one that results in an allowable crosswind component for the design aircraft 95% of the time.

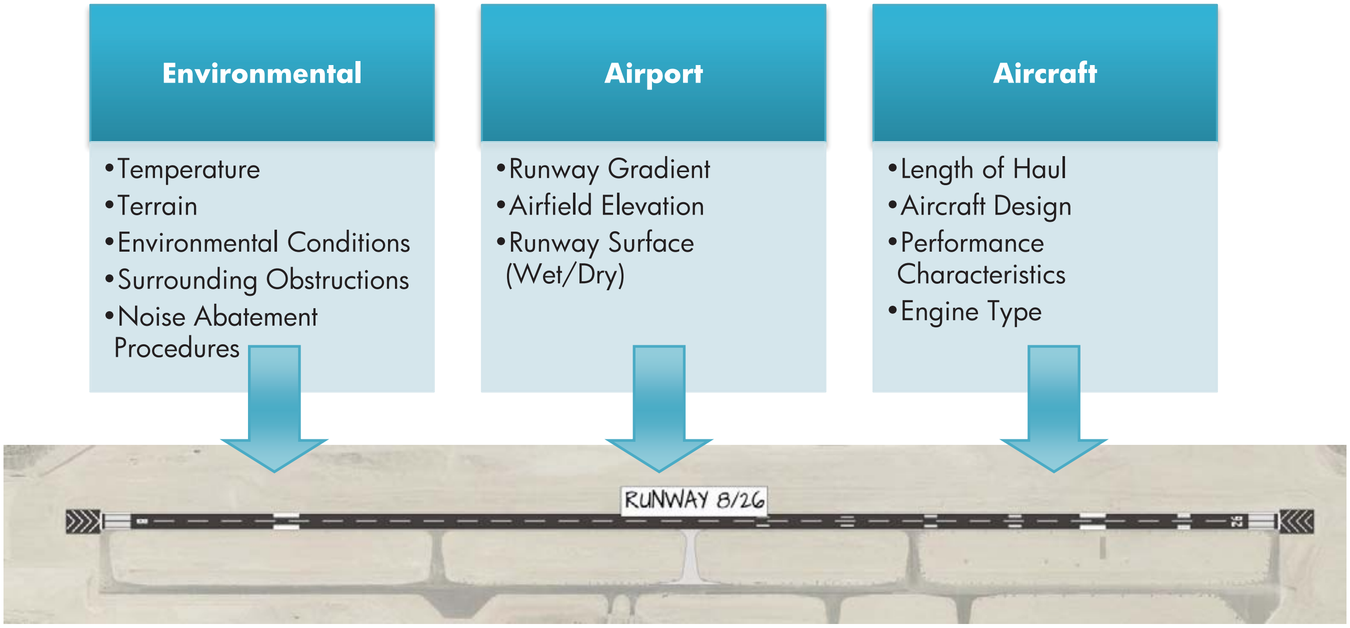
The historic combined wind coverage for RIL, as discussed in **Section 2.4.2**, exceeds the 95% FAA recommended crosswind coverage for all weather, VFR, and IFR conditions with the current runway configuration.

Since RIL has adequate wind coverage and the runway is properly oriented, a study for additional runways is not warranted by the data.

4.3.3 Runway Length

The purpose of the runway length analysis is to determine if the length of the existing runway is adequate for the current and projected aircraft fleet operating at RIL. The current length of Runway 8/26 is 7,000 feet. Runway length is dependent on numerous factors, including: airport elevation, temperature, wind velocity and direction, ambient air temperature, aircraft design, length of haul, runway surface (wet or dry), runway gradient, presence of obstructions, and any imposed noise abatement procedures or other prohibitions. The required runway length at RIL is particularly impacted by the airfield elevation, surrounding obstructions, and runway gradient. The terrain surrounding the Airport also impacts runway length as it limits the amount of space available for runway construction. **Figure 4-1** displays these factors that impact runway length.

FIGURE 4-1 – IMPACTS TO RUNWAY LENGTH



Source: Jviation, Inc.

For design purposes, runway length recommendations at GA airports are generally based upon a combination of the most demanding aircraft or family grouping of aircraft within the GA fleet that are operating, or anticipated to operate at the Airport in the future. At RIL, although the GA fleet includes aircraft that weigh up to 60,000 pounds MTOW and over, the fleet is dominated by small aircraft weighing up to 12,500 pounds. While the FAA does not provide standards for runway length, FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*, provides guidance to assist in determining the recommended runway length for an airport based on the above factors. The process for determining runway length begins with analyzing the operating weight for critical aircraft that are anticipated to account for at least 500 annual operations within the planning period. Based on their weight, aircraft are placed in three categories: aircraft that weigh less than or equal to 12,500 pounds, aircraft weighing more than 12,500 pounds but less than 60,000 pounds, and aircraft weighing 60,000 pounds or greater. Methodology for determining runway length is dependent on which category the critical aircraft belong to. **Table 4-2** shows the recommended runway lengths for small airplanes and large airplanes less than 60,000 pounds.

TABLE 4-2 – RECOMMENDED RUNWAY LENGTHS FOR RIL

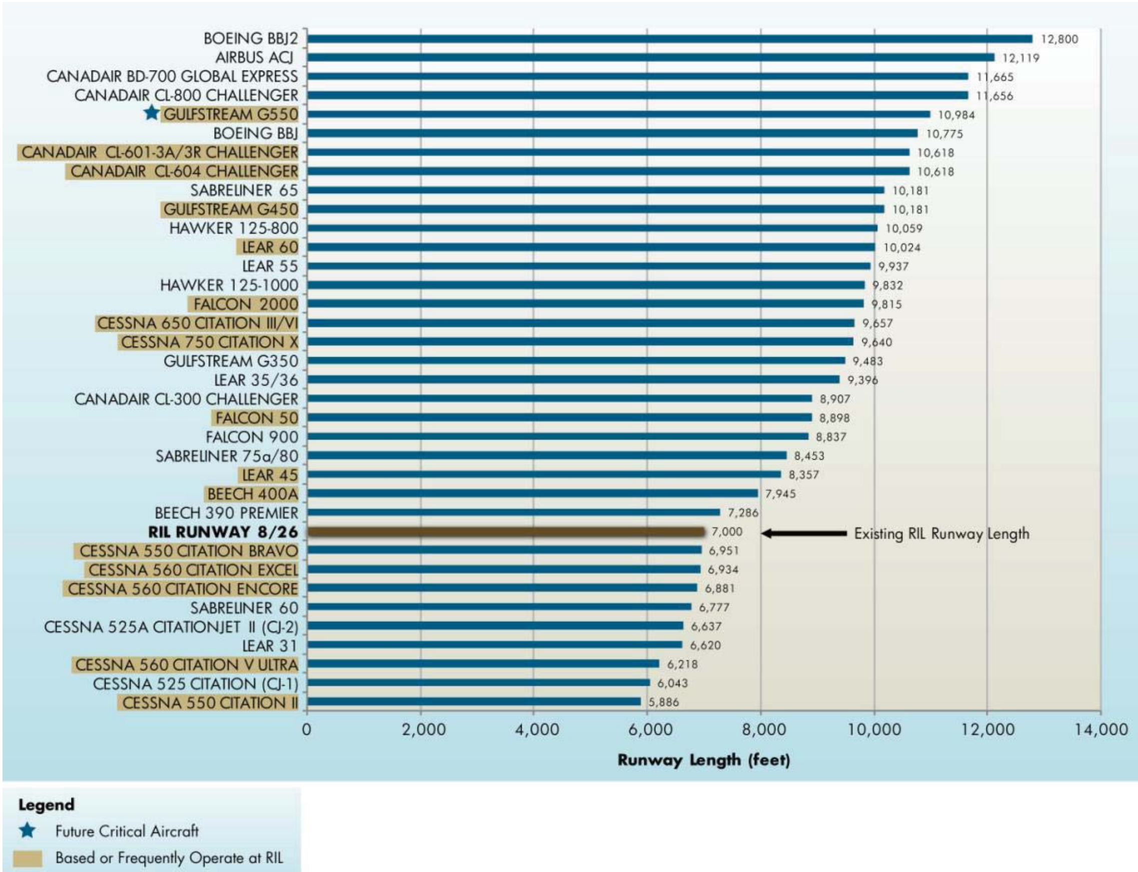
Runway Lengths Recommended for Airport Design	
Small airplanes with approach speeds of < 30 knots	470 feet
Small airplanes with approach speeds of < 50 knots	1,240 feet
Small airplanes with < 10 passenger seats	
75% of these small airplanes	4,910 feet
95% of these small airplanes	6,970 feet
100% of these small airplanes	6,970 feet
Small airplanes with > 10 or more passenger seats	6,970 feet
Large airplanes with ≤ 60,000 pounds	
75% of these large airplanes at 60% useful load	7,630 feet
75% of these large airplanes at 90% useful load	9,270 feet
100% of these large airplanes at 60% useful load	11,670 feet
100% of these large airplanes at 90% useful load	11,670 feet

Source: FAA AC 150/5325-4B, Runway Length Requirements for Airport Design

As **Table 4-2** shows, RIL currently accommodates 100% of the small airplane fleet; however, for aircraft weighing equal to or more than 60,000 pounds, there is insufficient runway length to accommodate the large Jet-Aircraft fleet. It is important to note that Runway 8/26 is short due to terrain constraints. For aircraft to clear terrain in close proximity to the airfield, operators must reduce payload to allowable takeoff weight. For larger business Jet-Aircraft, the existing runway length is less than the requirement for maximum takeoff weight.

Several GA business aircraft were examined to determine the general runway length requirements for business jets that weigh up to and over 60,000 pounds MTOW. **Figure 4-2** represents the general runway length requirements for a large majority of the existing business jet fleet.

FIGURE 4-2 – BUSINESS JET RUNWAY LENGTH REQUIREMENTS (100% USEFUL LOAD)



Source: Jviation, Inc.

Note: Runway requirements are approximate and based only from manufacturer Balanced Field Length or Takeoff Field Length adjusted for a mean max temp (90.9 degrees Fahrenheit) and field elevation (5,537 feet) with a 66.6 foot runway gradient. These lengths are not a substitute for calculations required by individual aircraft operators; however, these calculations provide an estimate of runway length needed for these aircraft types to operate at RIL at 100% useful load.

As **Figure 4-2** indicates, RIL can only handle approximately 25% of the GA jet fleet at 100% without some reduction in operating weight. Aircraft that require more than 7,000 feet may have operational limitations at RIL, which equates to less fuel, fewer passengers, or shorter distances flown. In consideration of the Airport's role with the State as a major general aviation airport, any additional runway length would be beneficial to the region as RIL could then accommodate more of the large GA fleet. Further, as shown above, the existing runway length of 7,000 feet is well below the runway length requirement for the future critical aircraft (Gulfstream 550) to takeoff at full payload on a hot day. The terrain surrounding the Airport presents a challenge to extending the runway even to 7,630 feet for 75% of large airplanes (under 60,000 pounds) at 60% useful load. However, given the existing constraints, the Alternatives Analysis will examine if it is feasible to add more length to Runway 8/26.

Runway extension alternatives will be examined in the Alternatives Analysis.

4.3.4 Runway Width

With a future RDC of D-III, the minimum required runway width for RIL is 150 feet. However, the FAA indicates for ADG D-III runways with a critical aircraft MTOW less than 150,000 pounds and approach visibility minimums of ¾-mile or greater, a standard runway width of 100 feet is allowed. Additionally, this 100-foot runway width is permitted with 20-foot wide runway shoulders and a runway blast pad 140 feet wide. For RIL, the existing runway width is 100 feet, with approach visibility minimums greater than ¾-mile, 140-foot wide blast pads on both ends of the runway, and a MTOW of 91,000 pounds for the future critical aircraft (Gulfstream 550). To achieve RDC D-III, the Airport can either provide 20-foot paved shoulders, or increase the runway width to 150 feet. From a cost savings standpoint, constructing 20-foot wide paved shoulders is recommended for the near term. **Table 4-3** below shows the RDC design standards comparison with the existing Runway 8/26.

20-foot runway shoulders are recommended for Runway 8/26 to meet future ARC D-III standards.

TABLE 4-3 – RUNWAY DESIGN STANDARDS

	ARC D-II ≥ ¾-Mile Visibility Minimums	ARC D-III ≥ ¾-Mile Visibility Minimums	Existing Runway 8/26
Runway Width	100ft	150ft*	100ft
Runway Shoulder Width	10ft	25ft*	None
Blast Pad Width	120ft	200ft*	140ft
Blast Pad Length	150ft	200ft	200ft
Runway CL to Parallel TW CL	300ft	400ft	400ft
Runway CL to Aircraft Parking	400ft	400ft	>500ft
Runway Hold Line	305ft	305ft	305ft

**Airplane Design Group III aircraft with MTOW of 150,000 feet or less and approach visibility minimums of greater than ¾-mile, the standard runway width is 100 feet, runway blast pad width is 140 feet, and the runway shoulder width is 20 feet.*
Source: FAA AC 150/53-00-13A, Airport Design.

4.3.5 Runway Line of Sight

The Runway Line of Sight standard requires that two points, five feet above the runway centerline be mutually visible for the entire length of the runway. However, if there is a parallel taxiway, the two five-foot points must be visible for one-half of the runway length. The existing full length parallel taxiway (Taxiway A) and taxiway grades allow for mutual visibility of two five-foot points for half of the runway length.

All Runway Line of Sight requirements on Runway 8/26 are met.

4.3.6 Runway Strength

According to FAA AC 150/5335-5B, *Standardized Method of Reporting Airport Pavement Strength - PCN*, the Pavement Classification Number (PCN) is a single unique number used to express a pavement's weight bearing capacity that is not specific to a particular aircraft and is without detailed information on pavement structure. The PCN is a five-part number that states the numerical value for PCN, type of pavement (fixed or rigid), subgrade category [ultra low (D), low (c), medium (B), and high (A)], allowable tire pressure [very low (Z), low (Y), medium (X), and high (W)], and the method used to determine PCN [results of a technical study (T), using aircraft (U)]. The PCN for RIL is 43/F/B/X/U.[31]

The runway at RIL has pavement design strength of no greater than 90,000 pounds for Single Wheel Gear (SWG) equipped aircraft, 200,000 pounds for Dual Wheel Gear (DWG) equipped aircraft, and 250,000 pounds for Dual Tandem Wheel Gear (DTW) equipped aircraft, as described in **Section 2.13.1**.

TABLE 4-4 – RUNWAY WEIGHT CAPACITY

Gear Configuration	Weight (lbs)	Aircraft Classification
SWG	90,000	Most GA Aircraft including small and mid-sized business jets.
DWG	200,000	Narrow body aircraft such as Boeing 737 and Airbus A320 aircraft.
DTG	250,000	Large narrow body and small wide body aircraft, such as the Boeing 757.

Source: Airnav.com

The heaviest aircraft that occasionally operates out of RIL is the Boeing Business Jet with a MTOW of 154,500 pounds. Given the amount of flights that occur daily, coupled with the fact that the aircraft rarely operate at full capacity, pavement loading is not an issue for the runway.

At this time there is no anticipated need for any runway strengthening as current operations are conducted below the published weights.

4.3.7 Runway Surface

As discussed in **Section 2.13.1**, the runway at RIL is constructed of dense graded asphalt with a grooved surface. The pavement was completely reconstructed as part of the runway realignment and extension project in 2010.

Routine maintenance, including crack seal/repair, should continue to be performed regularly to extend the pavement life of the runway.

4.3.8 Runway Shoulders and Blast Pads

RIL currently does not have paved shoulders for Runway 8/26. There are also no shoulders on any of the taxiways and taxiway connectors. Chapter 3 of AC 150/5300-13A, *Airport Design,* recommends paved shoulders for runways, taxiways, and aprons accommodating ADG-III aircraft. Additionally, blast pads 200 feet wide are recommended for runways serving ADG-III aircraft, unless approach visibility minimums are greater than ¾-mile, and the MTOW of the critical aircraft is less than 150,000 pounds. The Runway 8/26 140-foot wide blast pads are acceptable for RDC D-III runways. As mentioned previously, Runway 8/26 currently has140-foot wide blast pads on each runway end.

It is recommended that paved shoulders be installed on Runway 8/26, and Taxiways A1, A2, A4, A5, B1, and B2.

[31] As reported by www.airnav.com dated 03/17/2014.

4.4 TAXIWAYS

Taxiways are designed to provide movement from the runways of an airport to the developed aviation related areas. Ideally, the taxiway system should allow an aircraft to taxi to an associated runway in the most direct manner without having to change speed, or cross active runways. Additional recommendations for taxiway layout were recently included in AC 150/5300-13A. As such, compliance with these recommendations is now mandatory.

The taxiway design standards for width and separation are dictated by ADG and Taxiway Design Group (TDG). The ADG includes the tail height and wingspan of the critical aircraft. The TDG takes into account the ADG, Main Gear Width (MGW), and the Cockpit to Main Gear (CMG) of the largest aircraft operating at an airport on a frequent basis. At RIL, the existing TDG is 3 for the Gulfstream IV. However, the future ADG-III/TDG-3 (based on a Gulfstream 550) is used to establish the criteria for the current system and for any planned future taxiways. All taxiways require a taxiway width of Taxiway Safety Area (TSA) and Taxiway Object Free Area (TOFA). These standards allow for the safe movement of aircraft without the threat of striking any objects or other aircraft. **Table 4-5** below compares the existing parallel Taxiway A with ADG-II/TDG-2 and ADG-III/TDG-3 taxiway design standards.

TABLE 4-5 – TAXIWAY DESIGN STANDARDS

	ADG D-II/ TDG 2	ADG D-III/ TDG 3	Parallel Taxiway A
Taxiway Width	35ft	50ft	50ft
Taxiway Safety Area Width	79ft	118ft	118ft
Taxiway Object Free Area Width	131ft	186ft	186ft
Taxiway Centerline to Fixed or Moveable Object	65.5ft	93ft	>93ft

Note: the existing critical aircraft (Gulfstream IV) and the future critical aircraft (Gulfstream 550) are both TDG 3.
Source: FAA AC 150/5300-13A, Airport Design.

As shown above, the taxiway system at RIL meets taxiway design standards as indicated in the AC. Additionally, the taxiway system at RIL also meets design standards that were implemented with the recent revisions in AC 150/5300-13A, as mentioned previously in **Section 4.2.1**. Although not required, AC 150/5300-13A further recommends paved shoulders for taxiways, taxilanes, and aprons that accommodate TDG-3 aircraft. RIL currently does not have any paved shoulders on taxiways, taxilanes, or aprons that serve TDG-3 aircraft.

Taxiway A and all associated runway connector taxiways meet existing ADG-III/TDG-3 standards. Taxiway A3 that will be constructed in 2014 will also be built to TDG-3 standards. Taxiways R1 and R2 utilized by aircraft operating out of the T-hangar and GA tiedown apron currently meet ADG-I/TDG-1 standards, since smaller single and twin engine piston GA aircraft with much smaller wingspans utilize the T-hangar /GA tiedown apron area. Taxiway B4 located on the southeast area of the Airport off of Taxiway A is reserved for future aircraft access to development that will occur east of the main aircraft parking apron. Infrastructure development has already taken place within this area and alternatives will be examined in **Chapter 5**.

Paved shoulders are recommended for taxiways, taxilanes, and aprons that serve TDG-3 aircraft. The T-hangar/GA tiedown apron taxiway system is not used by TDG-3 aircraft and adequately serves the existing aircraft that use this area. If, in the future, larger aircraft begin operating from the T-hangar/GA tiedown apron, the taxiways should be updated accordingly.

All taxiways serving TDG-3 aircraft meet design standards.

4.5 NAVIGATIONAL AIDS

As discussed in **Chapter 2**, *Inventory,* RIL currently has seven instrument approach procedures. Approach minimums for the procedures are based upon several factors, including obstacles, navigation equipment, approach lighting, and weather reporting equipment. Due to the mountainous terrain that surrounds the Airport, approach minimums are relatively high. RIL is one of the few mountain airports equipped with a full Precision Instrument Landing System (ILS). The recent airfield upgrade project, completed in 2010, included an improvement to the Airport's ILS. The new ILS allows aircraft to arrive with four nautical miles visibility and a minimum altitude of 1,263 feet AGL. These new minimums allow aircraft to approach RIL in worse weather conditions than in the past, increasing aircraft arrival rates and reducing diversions.

Recent technological advancements have made possible the use of satellite-based navigation systems that rival conventional ground-based predecessors in accuracy and dependability. These capabilities are expected to further improve with the continued implementation of the FAA's NextGen program. NextGen is a complete upgrade of the National Airspace System. A focus of NextGen is the enhancement of pre-departure, departure, climb, en-route, and approach phases of a flight. More information on the NextGen program can be obtained from the FAA's website[32].

NextGen and the evolution of Global Positioning System (GPS) have already had profound impacts on instrument approach capabilities at public use airports. Conventional instrument approaches, such as the ILS, require ground-based facilities on or near an airport for navigation. With NextGen and GPS, this is no longer the case and, because if this, it has become possible to develop or improve approaches at airports where in the past it was not feasible. The FAA is continuing to expand development and use of GPS for use in aircraft navigation and instrument approach procedures via Area Navigation (RNAV) and the Wide Area Augmentation System (WAAS). WAAS utilizes a network of ground-based antennas to send correcting signals to the GPS satellite constellation, allowing for ILS like accuracy.

It is recommended that Garfield County continue to monitor the implementation of NextGen. The technical report on the Instrument Approach Analysis will be contained in Appendix C.

4.6 AIRSPACE REQUIREMENTS

14 CFR Part 77 defines and establishes the standards for determining obstructions that affect airspace in the vicinity of an airport. Prior to any airport development, a 14 CFR Part 77 evaluation must be conducted regardless of the project scale to verify that there will be no hazardous effects to air navigation due to

[32] http://www.faa.gov/nextgen/

construction. 14 CFR Part 77 defines an airport's imaginary surfaces, which are geometric shapes that are in relation to the airport and each runway. The size and dimensions of these imaginary surfaces are based on the category of each runway for current and future airport operations. The five imaginary surfaces, as depicted in **Figure 4-3**, are the Primary, Approach, Horizontal, Conical, and Transitional, and are defined on the following page.

Primary Surface – The Primary Surface is an imaginary obstruction-limiting surface that is specified as a rectangular surface longitudinally centered about a runway. The specific dimensions of this surface are functions of types of approaches, existing or planned, for the runway.

Approach Surface – The Approach Surface is an imaginary obstruction-limiting surface that is longitudinally centered on an extended runway centerline. It extends outward and upward from the primary surface at each end of a runway, at a designated slope and distance, determined upon the type of available or planned approach by aircraft to a runway.

Horizontal Surface – The Horizontal Surface is an imaginary obstruction-limiting surface that is specified as a portion of a horizontal plane surrounding a runway located 150 feet above the established airport elevation. The specific horizontal dimension of this surface is a function of the types of approaches existing or planned for the runway.

Conical Surface – The Conical Surface is an imaginary obstruction-limiting surface that extends from the edge of the horizontal surface outward and upward at a slope of 20:1(horizontal:vertical) for a horizontal distance of 4,000 feet.

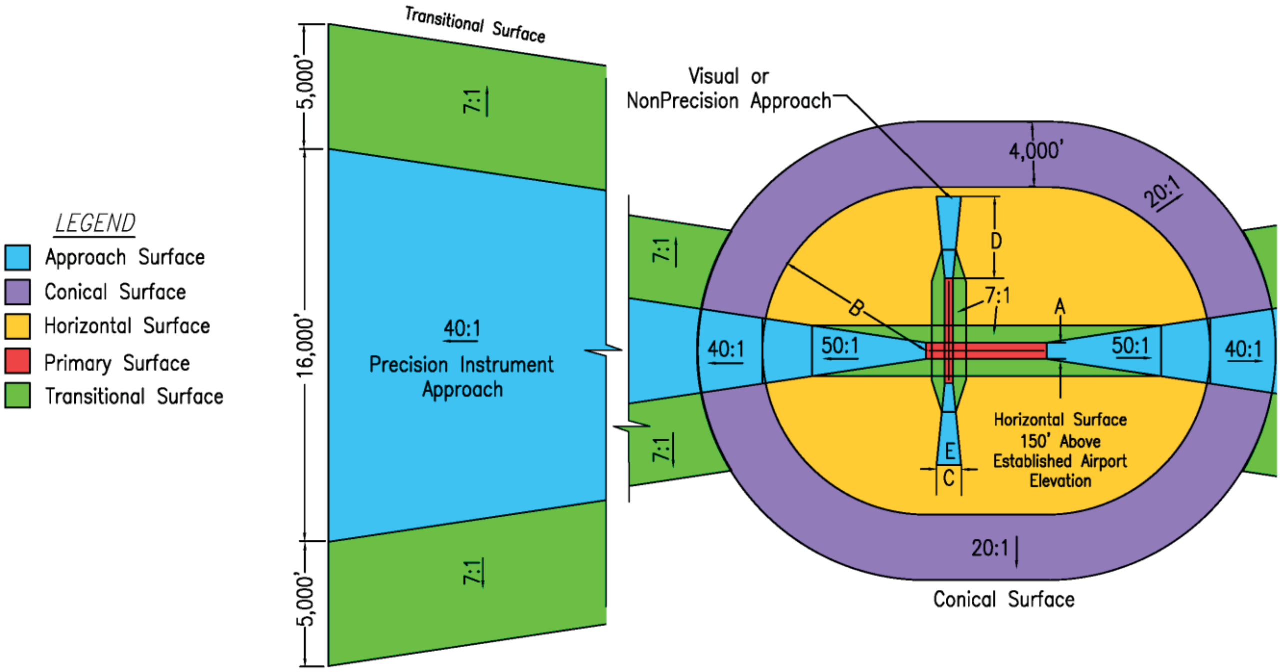
Transitional Surface – The Transitional Surface is an imaginary obstruction-limiting surface that extends outward and upward at right angles to the runway centerline and the runway centerline, extended at a slope of 7:1 (horizontal:vertical) from the sides of the primary surface.

In respect to 14 CFR Part 77, Runway 8 is a larger-than-utility runway with a non-precision RNAV approach with the lowest approach minimum of one mile. Runway 26 is a larger-than-utility runway with a precision ILS approach with a minimum of four miles, and a non-precision RNAV approach, with the lowest approach minimum of one mile. An Instrument Approach Analysis will be conducted as part of this Master Plan.

The surrounding terrain at RIL reflects the challenging airspace environment within the airport vicinity. It can be expected that the mountainous terrain surrounding the Airport limits the number of aircraft that can operate at one time. However, the ILS minimums on Runway 26 allow aircraft to approach RIL in worse weather conditions.

With new advances in technology and the potential for more efficient use of existing airspace with future NextGen technology, these limitations may be reduced. The Airport is currently seeking solutions for the airspace environment, which will be presented in the Instrument Approach Analysis that will be conducted as part of this Master Plan.

FIGURE 4-3 – PART 77 SURFACES



Source: FAA 14 CFR Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace

4.6.1 Obstructions

Obstructions are defined as any object of natural growth, terrain, permanent or temporary construction equipment, or permanent or temporary manmade structure that penetrates an imaginary surface.

Currently, a 400-foot penetration (tower) exists within the approach path to RIL, which is considered by the FAA as an Assumed Adverse Obstacle (AAO). At the time of this report, the tower has not been verified by Garfield County, and is currently in the process to be verified and eliminated.

A detailed obstruction survey was completed in 2010 in conjunction with the runway realignment project. The data from this survey will be used in the Instrument Approach Analysis that will be conducted as part of this Master Plan.

4.7 GENERAL AVIATION

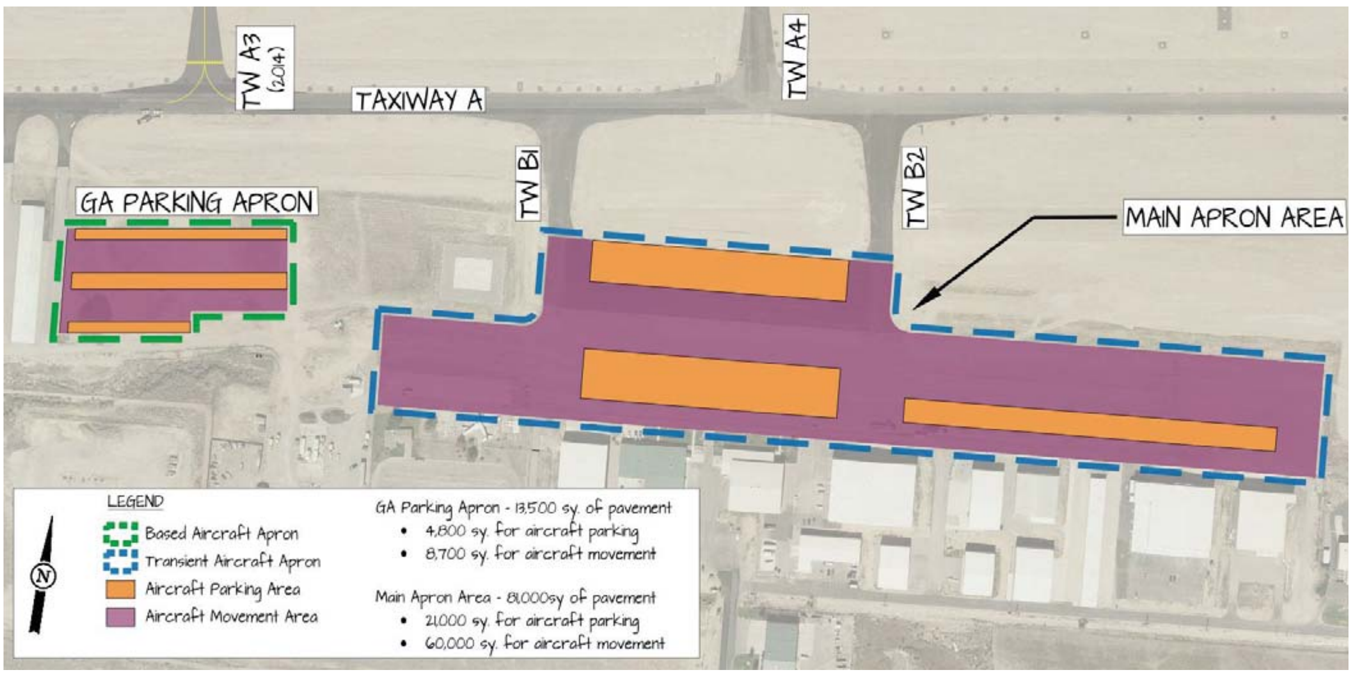
The number and types of projected GA operations and based aircraft can be converted into a generalized projection of GA facility needs. GA facilities include the FBO, hangars, apron, and tiedown space.

A major component of GA facilities is apron space. Apron frontage is considered premium airport space and should be strategically utilized. This is particularly important for RIL. During peak operations, during the winter, the GA apron is often at or near capacity. Apron layout design should take into account the location of airport terminal buildings, FBO facilities, and other aviation related access facilities at an airport. Aprons provide parking for based and transient airplanes, access to the terminal facilities, fueling, and surface transportation. FAA AC 150/5300-13A, *Airport Design, Appendix 5,* provides guidelines in assisting with the determination of the layout and design of airplane parking apron(s) and tiedown area(s) for based and transient aircraft.

4.7.1 TRANSIENT AIRCRAFT PARKING APRON

The transient aircraft parking apron, shown in **Figure 4-4**, provides access to parking, terminal facilities, fueling, and surface transportation for aircraft that are not based at an airport. Appendix 5 of AC 150/5300-13A establishes methodology for the determination of transient parking. This method involves the analysis and estimation of the demand for transient airplanes and utilizes forecasting numbers from numerous tables mentioned throughout **Chapter 3**.

FIGURE 4-4 – TRANSIENT AIRCRAFT PARKING APRON



Source: Jviation, Inc.

Chapter 3 indicates that in 2033 there will be 13,696 GA operations at RIL. The chapter further specifies that in 2033, an estimated seven GA operations will occur on the Airport's peak hour of operation, and 53 total operations on the peak day. The AC considers 50% of the peak day operations as a reasonable figure to assume for transient aircraft, while 25% of peak day transient aircraft could be anywhere on the ground simultaneously. This equates to approximately 27 total aircraft using the apron on a peak day, while approximately 13 aircraft will simultaneously use the apron on a peak day. Allowing an area of 1,100 square yards (to accommodate the Gulfstream 550) is considered adequate space for each transient aircraft. The result is approximately 29,179 square yards of desired apron space required for transient aircraft in 2033. This space takes into account Taxilane OFA width criteria (found in FAA AC 150/5300-13A, *Airport Design)* and any other necessary space for fueling, parking, and other airplane related actions. **Table 4-6** summarizes the current space available, along with the minimum apron space required, using the above calculations for the next five years, 10 years, and 20 years of the planning period.

TABLE 4-6 – TRANSIENT AIRCRAFT APRON REQUIREMENTS

	2013	2018	2023	2033
General Aviation Operations	10,524	11,326	12,131	13,696
Peak Day GA Operations	20	22	24	27
Peak Hour GA Operations	5	5	6	7
Current Apron Space (SY)	21,000	21,000	21,000	21,000
Available Large Transient Aircraft Parking Positions	12	12	12	12
Required Large Transient Aircraft Parking Positions for Aircraft on Ground Simultaneously	10	11	12	13
Surplus or Shortfall	**2**	**1**	**1**	**-1**
Required Large Transient Peak Hour Aircraft Parking (SY) for Aircraft on Ground Simultaneously	11,224	12,075	12,929	14,590
Surplus or Shortfall	**+9,776**	**+8,925**	**+8,071**	**+6,410**
Required Peak Day Transient Aircraft Parking (SY)	22,448	24,150	25,858	29,179
Surplus or Shortfall	**-1,448**	**-3,150**	**-4,858**	**-8,179**
Required Large Transient Peak Day Aircraft Parking Positions	20	22	24	27
Surplus or Shortfall	**-8**	**-10**	**-12**	**-15**

Source: Jviation, Inc.

Although the existing transient apron is adequate to accommodate peak hour aircraft on the ground simultaneously, as shown above in **Table 4-6**, it is important to plan for an apron expansion since RIL frequently receives diversions from other airports during inclement weather conditions in the winter season.

Approximately 8,179 square yards of additional transient aircraft apron space is needed by 2033 to accommodate approximately 14 additional large D-III transient aircraft. A development area for additional aircraft parking has been reserved for future expansion.

4.7.2 Based Aircraft Parking Aprons

Apron space utilized for based airplanes should be separate from that of transient airplanes. Moreover, the area needed for parking based airplanes is typically a smaller space per airplane than for transient aircraft. The smaller required space results in knowledge of the specific type of based airplanes at an airport in addition to closer clearance allowed between airplanes. Currently, according to RIL records, only 23 based aircraft are tied down on the apron, versus 47 housed inside a hangar/shelter.

The FAA has established a method in determining apron needs for based airplanes, which also uses previously discussed forecasting numbers found in **Chapter 3**. This method assumes that 360 square yards of apron space is necessary for each aircraft. This area should be adequate for all single engine and light twin engine airplanes, such as the Cessna 310, which has a wingspan of 37 feet and a length of 27 feet. This space also takes into account Taxilane OFA width criteria and any other necessary space for fueling, parking, and other airplane related actions. Assuming the same ratio of based aircraft that are tied down today will continue into the future, estimated based aircraft apron requirements have been developed. **Table 4-7** summarizes the projected RIL based aircraft that will require apron tiedowns and apron space for the years 2013, 2018, 2023, 2028, and 2033.

TABLE 4-7 – BASED AIRCRAFT APRON REQUIREMENTS

Year	Projected Tied Down Based Aircraft	Minimum Apron Space Required (square yards)	Current Apron Space (square feet)	Surplus or Shortfall (square feet)
2013	23	8,280	4,800	-3,480
2018	24	8,640	4,800	-3,840
2023	24	8,640	4,800	-3,840
2033	26	9,360	4,800	-4,560

Source: Jviation, Inc.

The existing GA tiedown apron is insufficient to meet current and future demand. Approximately 3,480 square yards is needed in the short-term, and a total of 4,560 square yards is needed by 2033.

4.7.3 Apron Pavement

The pavement on both the GA tiedown apron and the main aircraft parking apron were rehabilitated during the 2010 runway realignment/reconstruction project. Only preventative pavement maintenance is required for both aprons.

The main aircraft parking apron and GA tiedown apron are in good condition. Preventative pavement maintenance and the pavement maintenance plan are recommended to be continued to ensure pavement life.

4.7.4 Aircraft Storage Requirements

The Airport is equipped with both aircraft hangars and hangar shelters. Aircraft storage at RIL is highly sought after, especially during the ski season and periods of inclement weather. During the winter season, when hangar storage is at capacity during inclement weather at other surrounding airports (EGE and ASE) it is not uncommon for transient aircraft to drop off passengers and depart for other nearby airports (such as RIL) with available aircraft storage. Also, during times of congestion at ASE or EGE, transient aircraft may drop off passengers at surrounding airports and depart for RIL to avoid extended ground holds. With the absence of the Special Traffic Management Program (STMP), aircraft operators that need to divert to RIL during inclement weather conditions are no longer required to make slot reservations prior to departing for RIL (see **Section 2.9.4**). As these diversions to RIL increase, the demand for transient aircraft hangar storage also increases.

Hangars at RIL include one eight-unit T-hangar, seven privately owned box hangar units, and four FBO hangar units. In total, RIL has 195,000 square feet of hangar space (11 hangars, one T-hangar). The majority of the hangars are for current based aircraft, with FBO hangar space reserved for transient aircraft operations. By dividing the 195,000 square feet of existing hangar space by the 47 current hangared aircraft, the result is approximately 4,159 square feet of hangar for each based aircraft. Specific demand will be based on the actual size of aircraft that ultimately will be based at RIL and will require new hangar construction; however, for planning purposes it is assumed that the current ratio of 4,159 square feet per aircraft will continue, as shown in **Table 4-8**. Although industry standards applied to hangar storage capacity shows that the Airport has insufficient aircraft hangar space, the RIL Master Plan planning advisory committee (PAC) has indicated that current hangar needs are adequately served. It is also recommended that adequate hangar storage is available to capture "drop and go" passengers during inclement weather conditions from surrounding airports.

TABLE 4-8 – BASED HANGARED AIRCRAFT REQUIREMENTS

Year	Based GA Aircraft	Based GA Aircraft Using Tiedowns	Minimum Hangar Space Required	Current Hangar Space	Surplus or Shortfall
2013	70	23	195,000 sf	195,000 sf	0 sf
2018	73	24	203,298 sf	195,000 sf	-8,298 sf
2023	76	24	2 15,745 sf	195,000 sf	-20,745 sf
2033	86	26	248,936 sf	195,000 sf	-53,936 sf

Source: Jviation, Inc.

Although the PAC has indicated that aircraft hangar storage needs are adequately served, industry standards used in this analysis show existing hangar storage is nearing capacity. Additional hangar development will be investigated in Chapter 5.

4.7.5 Fixed Base Operator (FBO) Facility Needs

RIL, like many airports in Colorado and across the country, is served by a single FBO. Atlantic Aviation provides FBO functions such as aircraft fueling services, management of the transient aircraft apron, aircraft maintenance services, and a large portion of the hangar storage on the airfield. In addition, the FBO terminal facility provides space for other basic functions such as a pilot lounge, flight planning room, crew rest rooms, and bathrooms. The FBO has written in the lease agreement the option to upgrade the existing FBO terminal building or build another facility as it is reaches the end of its serviceable life. Any upgrades to the FBO facilities are business decisions by the FBO, while any potential FBO investments at RIL are market driven.

4.8 AIRPORT SUPPORT FACILITIES

4.8.1 Airport Administration/ARFF/SRE/Maintenance Building

The airport administration building is located on the south airfield east of the FBO and northeast of the airport entrance road. The building has two vehicle bays used for Snow Removal Equipment (SRE), Aircraft Rescue and Fire Fighting (ARFF), and general maintenance storage. The existing building adequately meets existing and future staff; however, it does not adequately accommodate ARFF, SRE, and maintenance, since equipment is currently stored outside year round. Covered and exposed SRE equipment storage is located adjacent to the airport fuel farm, east of the main aircraft parking apron. Storing this equipment outside exposes the valuable equipment to the elements, which creates additional wear and tear. In the winter, there are frequent periods of extreme cold with snow and ice, which can create additional maintenance issues.

The existing airport administration/ARFF/SRE/maintenance building is adequate for existing and future storage and staffing needs. Options for creating additional covered storage for airport equipment will be investigated in Chapter 5. The County has plans to improve the building in 2015 to accommodate storage needs.

4.8.2 Aircraft Rescue and Fire Fighting (ARFF)

RIL meets ARFF Index A requirements, based on the Gulfstream IV, with a length of 88.4 feet, and is considered adequate for current aircraft operations. The 1986 Oshkosh P-19 fire truck is adequate for existing ARFF requirements.

RIL meets all ARFF Index A requirements to ensure coverage. Existing ARFF equipment and facilities are adequate to meet future demand.

4.8.3 Snow Removal Equipment (SRE)

RIL's SRE includes a 2002 International NavStar 5000i snow plow, a 1999 MB pull behind broom, a 1992 Ford snow plow, a 1982 International DT-466 snow plow, and a 1975 RAHS-300A Snowblast snow blower.

The replacement of the 1975 RAHS-300A snow blower and the 1982 International DT-466 snow plow is recommended within the 20-year planning period.

4.8.4 Airport Perimeter Fence and Access Control

The perimeter of the Airport is protected by an eight-foot tall wildlife fence. Vehicle access to the Airport Operations Area (AOA) is protected by secured access gates that require airport identification. Buildings that provide access to the non-secured portions of the Airport are the responsibility of the building occupants.

All airport perimeter fence and access control measures meet FAA guidelines.

4.8.5 Fuel Storage Requirements – 100LL, Jet-A, and Self-Fueling

RIL has a current capacity of 78,000 gallons of fuel storage, with the capacity of 66,000 gallons of Jet-A and 12,000 gallons of Avgas fuel. The majority of fuel storage is located at the fuel farm on the east end of the main aircraft parking apron. One 12,000 gallon Avgas tank is used as a self-serve fuel dispenser and is located north of the fuel farm in support of based GA aircraft. Most of the fuel storage capacity is dedicated to Jet-A, due to the higher demand for jet fuel. Atlantic Aviation owns and operates the 12,000 gallon AvGas tank, while Garfield County owns and operates the remaining 66,000 gallons of Jet-A fuel. Airport management has indicated that the fuel containment area is in poor condition. The containment pad is cracked, and any fuel spill onto the existing pad would not prevent leakage. Based on fuel data provided by

Atlantic Aviation, an average of 1,007,782 gallons of fuel was dispensed annually from 2006 through 2013[33]. The average annual operations for the same time period were approximately 14,638 operations per year. Measuring fuel flowage against annual operations equates to approximately 69 gallons of fuel per operation.

4.8.5.1 Jet-A Fuel Storage Demand

Breaking operations further down by aircraft using Jet-A fuel (jet and turboprop) and AvGas (single and multi-engine piston, helicopter, etc.), Atlantic Aviation reports that in 2013, annual jet and turboprop operations were 5,538. Because jet and turboprop traffic at RIL is higher on Fridays, Saturdays, and Sundays, and the lowest on Tuesdays and Thursdays, peak month operations in 2013 were 739 and the peak month average day (PMAD) operations were 34. This equates to approximately 206 gallons of Jet-A per jet/turboprop operation. During the peak season, Atlantic Aviation reports that jet fuel storage runs out on Fridays, Saturdays, and Sundays, requiring additional fuel to be delivered since the existing Jet-A storage capacity is insufficient to accommodate demand.

It is important to note that the market for Jet-A fuel at RIL is sensitive to absolute peak days, when traffic is at its highest in the peak month, reducing the amount of available fuel. Atlantic Aviation records indicate that during the peak month in 2013, 152,284 gallons of Jet-A was purchased, and 50,000 gallons of Jet-A was sold on the absolute peak/highest day[34] for jet fuel sales. The PMAD in 2013 yielded an average of nine days of Jet-A capacity, while the absolute peak day of the peak month yields one day of Jet-A capacity. Assuming the highest amount of Jet-A is sold on the absolute peak day (50,000 gallons) during the forecast period, RIL would have one day of Jet-A fuel capacity for absolute peak days. If Jet-A capacity was expanded by 20,000 gallons, thus reducing the absolute peak day Jet-A fuel purchased (to approximately 22,000 gallons), four days of Jet-A fuel storage capacity would be available for absolute peak days during the peak month, as detailed in **Table 4-9**.

[33] Fuel sales and operations for 2010 were not included in the average due to significantly lower sales volume, since RIL was closed from April to November for the airfield upgrade.
[34] Based on days with Jet-A fuel sales exceeding 22,000 gallons.

TABLE 4-9 – JET-A FUEL STORAGE CAPACITY

	2013 (Existing)	2018	2023	2033
PM Operations (Jet/Turboprop)	739	789	843	963
PMAD Operations (Jet/Turboprop)	34	36	39	44
Gallons / Operation (Jet/Turboprop)	206	195	195	195
PMAD Jet-A Fuel (gal)	7,006	7,091	7,576	8,646
Existing Jet-A Fuel Storage Total (gal)	66,000	66,000	66,000	66,000
Days of Jet-A Fuel Storage	9	9	9	8
Absolute PMAD Operations (Jet/Turboprop)	133	142	152	173
Absolute PMAD Fuel (gal)	27,407	27,740	29,634	33,820
Days of Jet-A Fuel Storage Absolute Peak	1	1	1	1
Expanded Jet-A Capacity (Forecast Years)	66,000	86,000	86,000	86,000
Days of Jet-A Fuel Storage	9	12	11	10
Days of Jet-A Fuel Storage Absolute Peak	1	4	4	4

Note: 2013 operations and fuel storage demand are based on actual data, provided by RIL Airport Management records and Atlantic Aviation in March 2014.
Sources: RIL Airport Management Records; Atlantic Aviation; Jviation, Inc.

4.8.5.2 AvGas Storage Demand

Atlantic Aviation reports that in 2013, annual single engine piston, multi-engine piston, and helicopter operations were 5,178. It is also assumed that single engine, multi-engine, and helicopter activity at RIL is higher on Fridays, Saturdays, and Sundays, and the lowest on Tuesdays and Thursdays. This equates to 426 peak month operations and 20 peak month average day operations in 2013, which is approximately 19 gallons of AvGas per operation. The peak month average day yielded approximately 32 days of fuel capacity in 2013, and by the end of the planning period, approximately 25 days of AvGas fuel capacity will be available to accommodate demand, as shown below in **Table 2-10**.

TABLE 4-10 – AVGAS FUEL STORAGE CAPACITY

	2013 (Existing)	2018	2023	2033
PM Operations (SE/ME/Helo)	426	455	486	555
PMAD Operations (SE/ME/Helo)	20	21	23	26
Gallons / Operation (SE/ME/Helo)	19	19	19	19
PMAD AvGas Fuel (gal)	381	396	423	482
Existing AvGas Fuel Storage Total (gal)	12,000	12,000	12,000	12,000
Days of AvGas Fuel Storage	32	30	28	25

Note: 2013 operations and fuel storage demand are based on actual data, provided by RIL Airport Management records and Atlantic Aviation in March 2014.
Sources: RIL Airport Management Records; Atlantic Aviation; Jviation, Inc.

The existing Jet-A fuel storage facility is recommended to be replaced as the containment area is cracked and in poor condition. Storage capacity provides for possible delays which could occur in fuel delivery, given the location of the Airport. Only nine days of Jet-A fuel is available during peak month, and one day of capacity is available during absolute peak month activity. An additional 20,000 gallons of Jet-A capacity is recommended. AvGas storage capacity at RIL meets existing and future demand.

4.8.6 DEICING FACILITIES

Deicing of aircraft is essential in climates like that of RIL, due to the propensity of frost, ice, and snow to accumulate on aircraft surfaces. Ice buildup diminishes the aerodynamic qualities of aircraft and can result in loss of lift and stability. The deicing of aircraft at RIL is performed by the FBO. Presently, aircraft deicing occurs on the main aircraft parking apron, next to the fuel storage area. Airport management has indicated that the concrete deice pad is failing and has to be repaired on an annual basis. The deicing underground valve also freezes during the winter, and doesn't capture approximately 5% of fluid. The deice pad will need to be replaced and potentially relocated within the next ten years.

The existing deicing facilities are recommended to be replaced and possibly relocated during the planning period.

4.9 UTILITIES

Utilities provide the Airport with potable water, fiber optics and phone, electricity, storm water, and natural gas. Currently, all of the existing utilities are adequate to meet the existing demand.

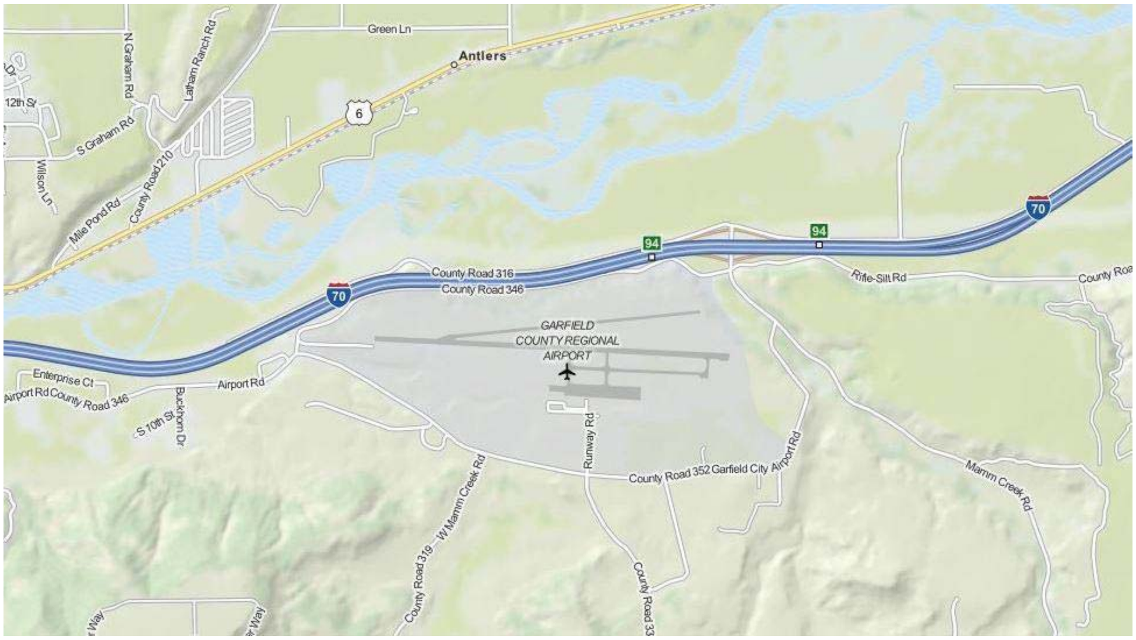
Water and sewer needs for RIL are serviced through the City of Rifle. This transaction helps ensure that water is sufficient for future growth of the Airport. The utilities need to be accessed to accommodate the requirements of any future development at the Airport (i.e. hangar development, apron expansion, new facilities, facility expansion, etc.). Development alternatives will be evaluated in part with utility availability as a criterion for the Airport in **Chapter 5**.

4.10 LANDSIDE REQUIREMENTS

4.10.1 Regional Transportation Network

The roads and highways that provide access to RIL are adequate to handle both the current conditions and the future growth predicted in the approved FAA Forecast. There are two access routes from I-70 to the Airport, on the east and west sides of the Airport, as shown in **Figure 4-5**. The existing regional access from I-70 is considered adequate for the 20-year planning period.

FIGURE 4-5 – REGIONAL ACCESS



Source: Mapquest.com

The existing regional access to the Airport from Interstate 70 is considered adequate for the 20-year planning period.

4.10.2 On-Airport Circulation Roadways

The majority of on-airport circulation roadways meet current demands during periods of peak capacity. Currently, there is only one entrance to the Airport, via Runway Road. Since some Garfield County administration offices are located at the Airport, vehicular traffic for Garfield County combined with peak periods of travel at the Airport at times constrains this entry road. Alternatives for additional airport access roads will be examined in **Chapter 5**.

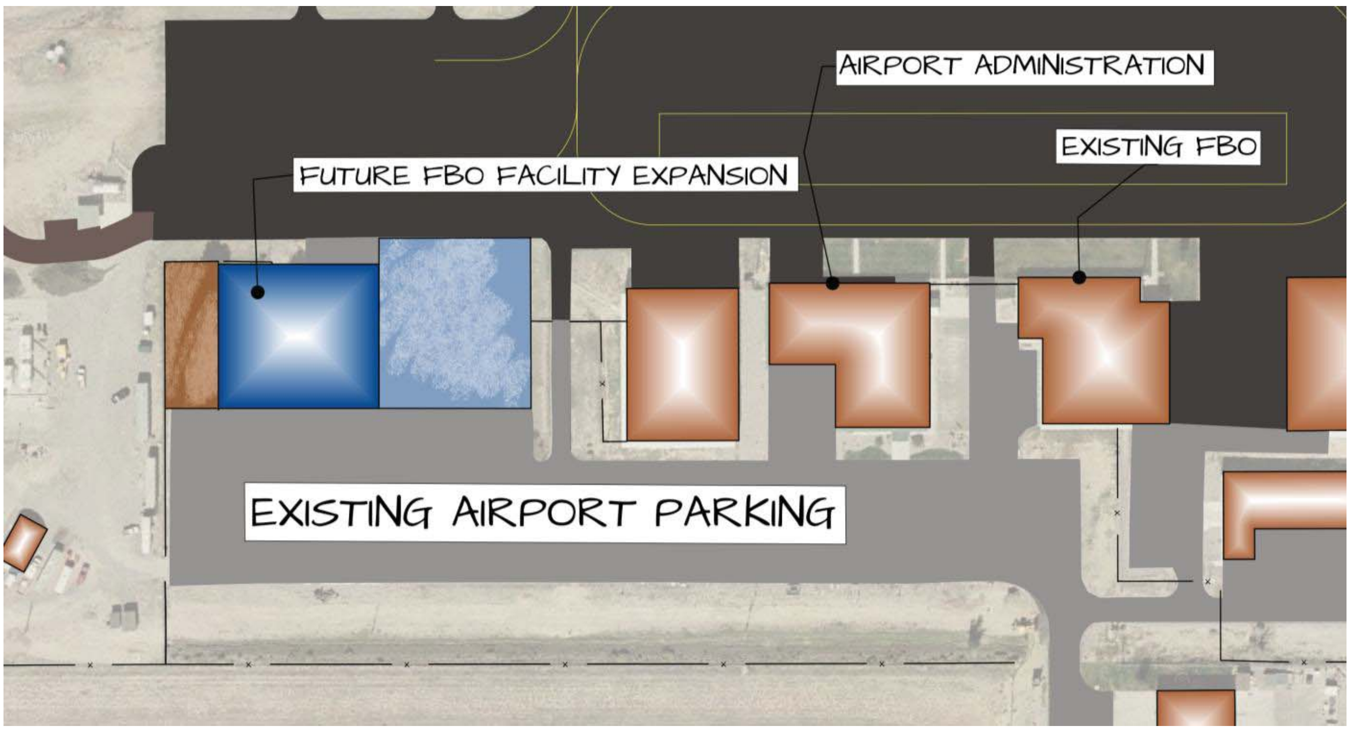
It is recommended that routine roadway maintenance continue to be performed. Alternatives for additional circulation for airport access will be examined.

4.10.3 Auto Parking

An automobile parking lot serves the County offices, including the airport administration. Auto parking at RIL, as depicted in **Figure 4-6**, is currently adequate for meeting the normal daily needs of airport users, including Helitak, non-aviation tenants, and the Garfield County administration office. However, there are times during County functions that the parking is inadequate. Further, the FBO terminal building, per the lease agreement, will need to be upgraded or replaced. A potential area for the new FBO facility is on the north side of the existing auto parking lot, as it is a prime location for aviation-related uses. Currently, there is room for an additional 180 auto parking spaces; however, because the auto parking lot is primarily used for Garfield County administrative building activities and Bureau of Land Management (BLM) operations, funding for auto parking improvements will not be the responsibility of RIL. Should additional County offices be housed at the Airport, parking improvements will be needed. Auto parking alternatives need to address the potential relocation of the FBO terminal building in the parking lot area, with the assumption of no net loss in auto parking. Auto parking alternatives will be explored in **Chapter 5**.

It is recommended that additional auto parking alternatives be examined in Chapter 5.

FIGURE 4-6 – EXISTING AIRPORT PARKING



Source: Jviation, Inc.
Note: The FBO facility is conceptual, as it is meant to show how potential development on this parcel would impact existing auto parking.

4.11 FACILITY REQUIREMENTS SUMMARY

A summary of these facility improvements that currently need to be addressed during the planning period are provided in **Table 4-11**. Certain improvements will be further examined in **Chapter 5**, to evaluate options to accommodate the facility requirements.

TABLE 4-11 – FACILITY REQUIREMENTS SUMMARY

Facility	Identified Requirement
Runway Length	Examine runway extension alternatives
Runway Shoulders & Blast Pads	Add 20-foot runway shoulders
Taxiway System	Add shoulders to taxiways, taxilanes, and aprons serving ADG-III aircraft
Transient Apron	Add approximately 2,874 square yards
General Aviation Apron	Add approximately 4,560 square yards
Aircraft Hangar Storage	Expand aircraft hangar storage capacity
Deicing	Replace existing deicing facilities
SRE	Replacement of existing snow blower and snow plow
Fuel Storage Requirements	Expand Jet-A fuel storage capacity by 2023 Upgrade existing fuel storage tanks and containment area
Landside Requirements	Reconfigure and expand existing parking lot Improve auto entrance/circulation access. Additional auto parking is recommended

Source: Jviation, Inc.