

2016

WYOMING AIR SERVICE

Commercial Service Airports
Infrastructure Evaluation





Pilot and Index *(cover)*

Elevation: 11,522' and 10,709'

Location: Northwestern Wyoming (*Park County*)

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Technical Memorandum

Wyoming State Aviation System Plan



Subject: Commercial Service Airports Infrastructure Evaluation

Date: December 6, 2017

1. Introduction

As a part of the 2016 Wyoming State Aviation System Plan (WYSASP), an evaluation of infrastructure at commercial service airports in the state was conducted to determine how existing facilities are accommodating commercial service demand. This evaluation was also conducted to identify infrastructure improvement items that commercial service airports throughout the state should consider in accommodating commercial service activity. It is important to note this evaluation was intended to be a holistic view of how infrastructure at airports in the state are meeting commercial service demand. It was not intended to be a detailed evaluation of how individual infrastructure elements at each airport are meeting commercial service demand as this typically would be conducted as part of an airport master plan. Rather, this evaluation was intended to collect information on commercial service activity, facilities, and supporting services at each commercial service airport in Wyoming to assist decision makers in determining system-wide improvements or areas of focus that may be needed to improve the state's aviation system.

2. Inventory of Existing Conditions

An inventory was taken of the existing condition of commercial service related infrastructure, activities, and support elements at each airport. This inventory effort focused only on those items related to commercial service operations and did not include elements utilized for general aviation or military purposes. Such related infrastructure that was included as a part of the inventory effort ranged from elements about commercial service activity such as aircraft type, passenger capacity, and runway length needs, to airport related infrastructure such as available runway length, apron area, and the size / number of terminal building components. Support elements such as rental car providers, number of parking spaces, and number of screening checkpoints were also included. **Appendix A** presents the inventory items that were collected for each commercial service airport in Wyoming. The following describes the rationale for the

selection of each infrastructure element that was reviewed as a part of the inventory effort as well as considerations for system planning decision makers on how each element at an airport could be impacted by changes in commercial service activity.

2.1 General Information

The following general information was collected for each commercial service airport in Wyoming. The bulleted items represent those elements presented in the table included as a part of **Appendix A**.

- **Airport Name** – This is the official name for each airport.
- **Location** – This is the city associated with each airport.
- **Identifier** – This is the Federal Aviation Administration (FAA) identifier assigned to each airport.
- **Airport ARC** – The Airport Reference Code (ARC) is a coding system defined in FAA Advisory Circular (AC) 150/5300-13A, *Airport Design*, that is used to define the design and dimension of airfield infrastructure based on defined approach speeds and wingspans of aircraft. The ARC of each airport is presented to identify the largest type of aircraft in which the airfield was designed to accommodate. It is important to consider that aircraft types exceeding the defined ARC may be able to operate at an airport. ARCs of the most demanding type of commercial service aircraft operating, or anticipated to be operating, at an airport should be monitored to gain an understanding if future airfield infrastructure improvements are needed. Changes in commercial service fleet mixes also could factor in a need for airfield infrastructure improvements to meet the design standards of more demanding ARC aircraft types. The classification of approach speeds and wingspans of aircraft used to define the ARC is presented in **Appendix B**.
- **Airport Elevation** – The elevation of each airport was collected which is a component used in calculating the runway length needed for an aircraft to takeoff or land.

2.2 Airline Information

This part of the inventory effort focused on collecting data on the type and level of commercial service activity occurring at each airport. Information presented on the destinations and aircraft types used at each airport are current as of October 2016.

- **Airlines** – This is the names of the airlines that are operating at each airport as of October 2016. The two-character International Air Transport Association (IATA) code for each airline is also included in parentheses.
- **Destinations** – This is the non-stop destinations offered at each airport as of October 2016. It is important to note that the 2017-2018 seasonal destinations for Jackson Hole Airport are also included. Airlines providing service to each destination are listed by their IATA code in parentheses.

- **Aircraft** – These are the types of aircraft that are currently used by commercial service operators at each airport as of October 2016. Operators of each aircraft are listed by their IATA code in parentheses. Commercial service operators should be engaged as well as industry trends monitored for airport and system planners to understand the types of aircraft that could be operating at airports in the state when planning the need for future infrastructure improvements.
- **Aircraft ARC** – This is the ARC designation of each commercial service aircraft type operating at each airport as of October 2016. In planning for future airfield infrastructure improvements, it is important that the design of airfield components meet the ARC of the most demanding type of aircraft used for commercial service operations.
- **Passenger Capacity** – The maximum seating capacity of each commercial service aircraft type operating at each airport is listed. This seating capacity is the maximum number of seats listed for each aircraft according to data obtained from the manufacturers and could vary by airline based on airline seating arrangements. The passenger capacity of each aircraft should be a consideration when evaluating capacity related infrastructure items such as terminal building hold room space and number of security screening checkpoints.
- **MTOW Takeoff (ISA + 15C)** – The runway length needed to takeoff at maximum takeoff weight (MTOW) in International Standard Atmosphere (ISA) conditions on a warm day (86 degrees Fahrenheit) was calculated for commercial service aircraft types operating at each airport. Takeoff at MTOW on a warm day is typically the condition in which the greatest length of runway is needed for an aircraft. All runway length calculations were conducted using takeoff performance charts from aircraft planning and operating manuals provided by the manufacturers. It is noted that some aircraft types are unable to takeoff at MTOW on an 86-degree Fahrenheit day due to the elevation of the airfields and limitations in the operating performance of the aircraft at these altitudes. It is noted not all commercial service aircraft types are required to takeoff at MTOW, thus, the runway length needed for takeoff is dependent upon passenger loads and the amount of fuel needed to reach the intended destination. Coordination with commercial service operators on a case-by-case basis is recommended to determine the amount of runway length needed at an airport.
- **MTOW Takeoff (ISA + 15C) of Other Potential Aircraft Types** – The runway length needed for potential commercial service aircraft types to takeoff at MTOW in ISA conditions on an 86 degrees Fahrenheit day was calculated for each airport. The selection of potential aircraft types that could operate at an airport is based on current changes in the fleet mix of commercial services that operate regional jet aircraft. Aircraft such as the 50-seat CRJ-200 and ERJ-145 are being retired and replaced by larger, more demanding 70- to 90-seat aircraft such as the CRJ-700, ERJ-170, ERJ-175, and CRJ-900. The selection of other potential aircraft types was also based on other aircraft types within the fleets of current commercial service operators that could operate at each airport.

Runway length calculations for these aircraft were conducted using takeoff performance charts from planning and operating manuals provided by each aircraft manufacturer. It is noted some of these aircraft types are also unable to takeoff at MTOW on an 86-degree Fahrenheit day due to limitations in the takeoff performance of the aircraft at these airfield elevations. Again, not all commercial service aircraft types are required to takeoff at MTOW; thus, coordination with commercial service operators on a case-by-case basis is recommended to determine the amount of runway length needed at each airport.

2.3 Airport Information

Information about the following airfield infrastructure elements that are utilized by commercial services was inventoried as a part of this effort:

- **Commercial Service Runways** – Information was collected on the length and width of runways at each airport that are capable of accommodating operations by commercial service aircraft types. Runways for general aviation aircraft that are not utilized for commercial service operations were not cataloged as a part of this effort. As previously noted, the design of a runway should meet standards identified in FAA AC 150/5300-13A, *Airport Design*, for the most demanding aircraft to regularly operate at an airport. In the case of most commercial service airports in Wyoming, this is the most demanding type of aircraft used for commercial service operations. In evaluating the design and length of a runway it is important to consider the runway length needs of all commercial service aircraft types that are currently operating or could potentially operate at an airport.
- **Instrument Approaches** – This cataloged the type of instrument approaches offered for each runway that can be utilized by commercial service aircraft types at each airport. The types of instrument approaches offered at an airport can largely be a factor in whether a commercial service seeks to initiate or expand service at an airport.
- **Instrument Approach Minimums** – The lowest decision height and visibility minimum offered by instrument approaches to each runway that can be utilized for commercial service operations were also cataloged. Having instrument approach minimums that allow operations in weather conditions that limit visibility is an additional factor commercial services consider when deciding to initiate or expand service at an airport.
- **Parallel Taxiway** – This lists the width of the parallel taxiway for runways used for commercial service operations at each airport. The width of a parallel taxiway is based on the Taxiway Design Group (TDG) outlined in FAA AC 150/5300-13A, *Airport Design*, of the critical aircraft type of the runway it is designed to support. Although the *Airport Design* AC defines this width, the width of the parallel taxiway and supporting taxiway system may factor in whether some commercial service operators choose to initiate or expand service at an airport. For instance, internal operating procedures of a commercial

airline may call that operations can only occur on a predesignated taxiway width that may exceed the width defined for an aircraft by FAA design standards.

2.4 Commercial Service Terminal Information

The terminal facility itself is a critical component in how commercial service operations are accommodated at an airport. The size, number, and type of infrastructure items as well as type of support services can factor in whether a commercial service chooses to provide service at an airport. Information on important commercial service terminal infrastructure elements that airlines could consider were cataloged as a part of this effort. These items include:

- **Approximate Airline Apron Area** – A measure was taken of the apron area available for commercial service use at each airport. It is important to note this measure of apron area is an approximation based on the boundaries of the Security Identification Display Area (SIDA) that were marked on some aprons or a visual determination from an aerial photo of the apron area used for commercial service operations. The amount of apron area needed for commercial service activity can vary from airport to airport based on types of aircraft, level of demand for consecutive flights, and how aircraft are parked adjacent to the terminal. For example, additional apron area may be needed if parking positions are designed for aircraft to power out from a gate on its own as compared to parking positions that require a push back from a tug.
- **Parking Positions** – This is a count of the parking positions on the commercial service apron for commercial service aircraft at an airport. The size and type of aircraft often drives the spacing and number of aircraft parking positions that can be accommodated on an apron at an airport. The number of gates with boarding bridges and number of ground boarding gates also factors into the number of parking positions provided on an apron at an airport.
- **Number of Boarding Bridges** – This cataloged the number of boarding bridges at a terminal facility, which may be less than the number of parking positions designated on an apron. Often, the frequency and timing of flights is a factor in the number of boarding bridges that are provided at an airport. Boarding bridges are often preferred by commercial service and airport operators alike as it provides covered and secured access for passengers to access an aircraft. This eliminates the need for passengers to use the apron for access which exposes them to environmental conditions such as high or low temperatures, rain, and snow as well as apron hazards such as aircraft exhaust, vehicles, and the movement of other ground support equipment.
- **Number of Boarding Gates** – An inventory was taken of the number of boarding gates, or doorways, for passengers to access aircraft at each terminal facility. The number of boarding gates at an airport can be greater than the number of boarding bridges and less than the number of parking positions on an apron. Often, the number of boarding gates equates to the number of parking positions, however, utilizing a single gate for multiple

aircraft parking positions can be an option at airports to accommodate multiple aircraft without expanding the terminal building.

- **Terminal Footprint** – This cataloged the size in square feet of the footprint of each terminal building. It is important to note that the size of the footprint may not be equal to the area of a terminal if it has multiple floors. The terminal footprint size alone may not be an indication if adequate space or inadequate space is provided for commercial service terminal operations. Factors such as the interior design and layout of a building also need to be considered when evaluating the adequacy of the size of a terminal facility.
- **Hold Room Seating** – A count was taken of the number of seats in the hold room for each terminal building. Factors such as the seating capacities of aircraft, peak period passenger traffic volumes, and the timing of arriving and departing flights are used to determine if adequate hold room seating is provided in a terminal facility. Monitoring the capacities of the types of aircraft commercial service operators use to provide service at an airport can assist in determining if improvements are needed to the number of hold room seats.
- **Number of Baggage Claims** – The number of baggage claim devices were cataloged at each airport. Often, the level of activity and number of simultaneous arriving flights factors into the number of baggage claim devices needed at an airport. Busier airports often have multiple baggage claim devices while airports with lesser activity can support all commercial service activities with a single device.
- **Baggage Claim Area Size** – This lists the approximate size of the baggage claim area at each terminal. Often, the peak hour demand of the number of people from arriving flights factors into the size of a baggage claim area. Changes in fleet mix types by the commercial services can also factor into the adequacy of the area needed for passengers to retrieve baggage. Monitoring airline schedules, the seating capacities of arriving aircraft, as well as understanding passenger traffic flows can factor in determining whether improvements are needed to the size of the baggage claim area.
- **Rental Car Providers** – Rental car providers are listed for each airport as of October 2016. Many factors such as level of activity and market competition can factor into the number and brands of rental car providers at an airport. Airports should not only provide sufficient space to support existing rental car providers but also ensure that additional providers can be accommodated to promote competition and quality service for customers.
- **Rental Car Counter Area** – The size of the rental car counter area was taken within each terminal building. It is noted that for some airports the number of rental car counter spaces was inventoried instead of the area due to limitations in available terminal building information. Since some providers share counter space, a more case-by-case approach is needed to determine the adequacy of the rental car counter area at an airport. Level of customer activity should also be an important factor that is considered as a part of this decision making process.

- **Restrooms Inside Secured Area** – At smaller airports, restrooms may not be located inside the secured area past the screening checkpoint due to the design of terminal buildings that pre-date current airport terminal security requirements. Due to the screening process, passengers waiting for a flight prefer restrooms are available on the secured side of a screening checkpoint to eliminate the need to exit this area and undergo the screening process again for reentry.
- **Restaurant in Terminal** – Indication of whether a restaurant is available in the terminal building was the focus of this inventory item. While passengers not only demand food and beverage options be available prior to boarding a flight, the presence of a restaurant can also assist in accommodating passenger needs in instances of irregular operations that result in flight delays.
- **Number of Screening Checkpoints** – The number of screening checkpoints at a terminal is often determined based on the level of activity during peak periods with busier airports having more than one checkpoint or more than one checkpoint lane. At less active airports, a single screening checkpoint or checkpoint lane is often adequate to meet screening demands. The addition of larger commercial service aircraft types resulting in increased passengers per flight can be a factor in evaluating the adequacy of the number of screening checkpoints or checkpoint lanes at an airport.
- **Number of Ticket Counters** – The number of airline ticket counters were cataloged in each terminal facility. The number of airline ticket counters needed in a terminal can vary from airport to airport and from airline to airline. Typically, airports with higher passenger volumes will need a greater number of ticket counters than airports with lower levels of passenger activity. The type and size of aircraft used for commercial service operations can also factor into the number of airline ticket counters that are needed per departing flight schedules. For example, an airport may have lower levels of passenger activity in which a single ticket counter can meet average demand; however, the introduction of flights by a low-cost carrier operating narrow-body aircraft may require that more than one ticket counter be available to increase the efficiency of the check-in process for passengers. The number of ticket counters at an airport also can vary based on the number of airline ticketing check-in agents staffed at an airport and the availability / number of automated check-in kiosks.
- **Ticket Counter Area Size** – This inventory item inventoried the approximate size of the ticket counter area in each terminal. It is noted that the area for the counters themselves as well as the area designated for waiting passengers was included for most airports (only the area for the counter itself was cataloged for Laramie). The size needed for the ticket counter area can also vary between airports and is more of a case-by-case determination based on number of airlines, peak hour passenger activity, pedestrian traffic flows, and other design features of a terminal building. In determining the needed ticket counter area at an airport, consideration should also be given to the space needed for automated check-in kiosks.

- **Approximate Parking Size** – The area in square yards was cataloged of the vehicle parking area at each airport. While this measure can help compare parking lot sizes, design elements such as layout of traffic circulation and the configuration of individual parking spaces also need to be considered in determining if the available parking at an airport can meet demand.
- **Parking Spaces** – The number of vehicle parking spaces was also cataloged at each airport. This count includes a total of long-term, short-term, employee, and rental car spaces. Considerations in evaluating the number of parking spaces needed at an airport can include understanding the demand for short-term versus long-term parking, the number of employees that work at an airport, and the number of rental car providers as well as their rental vehicle fleet parking demands.

3. Individual Airport Concerns

As a part of the commercial service airport infrastructure evaluation, Airport managers at each of the commercial service airports were asked to relay their primary concerns regarding their individual airports, airline services, and terminal facilities. Essentially, each airport manager was asked “what keeps you up at night” in relation to these three issues. Their responses are summarized below:

- **Casper-Natrona County Airport** – Primary concerns include the costs associated with maintaining the aging infrastructure at the industrial park and the lack of available avenues for funding such improvements, as well as ensuring adequate passenger demand to fill aircraft seats. Additionally, the airport manager is concerned about providing sufficient space to meet the operational demands of the terminal building without increasing rates and charges to the point where the airlines are priced out of the market.
- **Cheyenne Regional Airport/Jerry Olson Field** – Primary concerns include removal of rubber from the main runway as a result of heavy aircraft traffic, such as C-130s and diverted flights from Denver International Airport (DEN). Additionally, determining which airlines and markets best meet the community’s needs given the airport’s proximity to DEN is a concern, as well as project management issues related to the construction of the new terminal facility.
- **Yellowstone Regional Airport** – Primary concerns include adverse weather conditions and potential security issues, as well as the lack of air carriers available to serve the airport. The airport manager is also concerned about the facility reaching peak capacity and not having adequate space to meet passenger needs.
- **Gillette-Campbell County Airport** – Primary concerns include replacing some fencing that was destroyed by fire, as well as updating the fixed based operator (FBO) and general aviation area. The airport is in need of hangar space for a Gulfstream G-IV business jet.

The airport manager is also concerned about the frequency of airline flights and air fare costs. Additionally, rearranging the Transportation Security Administration (TSA) area, including their screening equipment, and remodeling the airline counter space are also notable issues of concern.

- **Jackson Hole Airport** – Ensuring adequate square footage for airport operations while operating at peak capacity is the primary concern at Jackson Hole Airport.
- **Laramie Regional Airport** – Primary concerns include weather conditions and resulting airline delays and cancellations. Additionally, the age and condition of the terminal facility are a concern, including the roof. The airport manager is also concerned about security and ensuring adequate space for passengers in the secured area. For example, they only have 28 chairs, but are filling 50-passenger aircraft.
- **Riverton Regional Airport** – Primary concerns include the acquisition of additional and improved Snow Removal Equipment (SRE) for the facility. When Great Lakes was providing air service, reliability of the airline was a primary concern. Now, the primary concern is ensuring operations by the current air carrier continue. Modernizing the terminal to match aircraft requirements and changes by security are also primary concerns.
- **Rock Springs-Sweetwater County Airport** – Primary concerns include the condition of the weather reporting system and airfield lighting, as well as ensuring existing air service operations continue. Additionally, the terminal facility has aged; it is small and cramped with a 17-year-old generator.
- **Sheridan County Airport** – Primary concerns include wildlife, hangars, and space for general aviation operations, as well as ensuring funding for continued air service. Additionally, the facility has aged; it is small and cramped. There is a lack of security space and restrooms available in the secured area. Currently, there is barely enough space for the sterile area.

4. Commercial Service Aircraft Evaluation

Finally, as a part of the commercial service airports infrastructure evaluation, a review was conducted of commercial service aircraft and their capabilities of conducting operations at commercial service airports throughout Wyoming. This evaluation was based on:

- ARC of the airport and the individual aircraft
- Aircraft Rescue and Firefighting (ARFF) Index of the airport and individual aircraft
- Pavement strength of surfaces at an airport.

It is important to note, however, that this evaluation did not include a runway length analysis as this need can vary by aircraft from flight to flight based on the amount of fuel needed to reach

the intended destination, the passenger/cargo load onboard an aircraft, takeoff flap settings, and environmental conditions such as temperature, wind speed, and wind direction. It is assumed that if the ARC designation of an aircraft did not meet the ARC designation of an airport or the weight of an aircraft exceeded the weight bearing capacity of pavement at an airport that the aircraft was not capable of operating at an airport. **Appendix C** presents this information as well as specifications of each aircraft type and inventory items such as the Federal Aviation Regulation (FAR) Part 139 classification, ARFF index, and pavement strength ratings at each airport.

5. Summary

In summary, this evaluation of infrastructure at commercial service airports in Wyoming was not intended to fulfill traditional planning processes that are accomplished on a more focused effort that would be conducted as part of an airport master plan or state aviation system plan. Rather, it was intended to catalogue information about infrastructure used by commercial service operations at these airports and note consideration about each infrastructure element that can be used by decision makers when evaluating how the overall Wyoming aviation system meets the commercial service demands of the state. In combination with concerns identified by each airport manager, it is the intent of this effort to bring attention to infrastructure items that may need further evaluation when planning how the Wyoming aviation system will meet the demands of existing and future commercial service activity.

Appendix A – Inventory of Existing Conditions

GENERAL INFORMATION

Airport	Casper/Natrona Co. Int'l	Cheyenne Rgnl / Jerry Olson Field	Yellowstone Rgnl	Gillette-Campbell Co.	Jackson Hole	Laramie Rgnl	Riverton Rgnl	Rock Springs Sweetwater Co.	Sheridan Co.
Location	Casper	Cheyenne	Cody	Gillette	Jackson	Laramie	Riverton	Rock Springs	Sheridan
Identifier	CPR	CYS	COD	GCC	JAC	LAR	RIV	RKS	SHR
Airport ARC	D-IV	D-IV	D-III	C-III	C-IV	C-II	C-II	C-III	C-III
Airport Elevation	5,344 ft MSL	6,160 ft MSL	5,102 ft MSL	4,364 ft MSL	6,451 ft MSL	7,284 ft MSL	5,528 ft MSL	6,765 ft MSL	4,021 ft MSL

AIRLINE INFORMATION

Airport	Casper/Natrona Co. Int'l	Cheyenne Rgnl / Jerry Olson Field	Yellowstone Rgnl	Gillette-Campbell Co.	Jackson Hole	Laramie Rgnl	Riverton Rgnl	Rock Springs Sweetwater Co.	Sheridan Co.	
Airlines	Allegiant (G4) Delta Air Lines (DL) United Airlines (UA) Denver (UA) Las Vegas (G4) Salt Lake City (DL)	Great Lakes Airlines (ZK) Denver (ZK)	Delta Air Lines (DL) United Airlines (UA) Chicago-O'Hare (UA) Denver (UA) Salt Lake City (DL)	United Airlines (UA) Denver (UA)	American Airlines (AA) Delta Air Lines (DL) United Airlines (UA) Chicago-O'Hare (AA, UA) Dallas (AA) Denver (UA) Houston-Bush (UA) Los Angeles (AA, DL, UA) Minneapolis (DL) Newark (UA) New York-JFK (DL) Salt Lake City (DL) San Francisco (UA) Seattle (DL) 737-800 (UA) 757-200 (DL, UA) A319 (AA, DL) CRJ-700 (AA, DL, UA) ERJ-175 (DL) C-III : A319, E175 C-IV : B752 D-III : B738 737-800 : 108 to 177 757-200 : 200 A319 : 124 to 156 CRJ-700 : 66 to 78 ERJ-175 : 76 737-800 : n/a* 757-200 : n/a* A319 : 6,440 ft. CRJ-700 : 9,600 ft. ERJ-175 : n/a* CRJ-900 : n/a* ERJ-170 : 8,500 ft.	United Airlines (UA) Denver (UA)	Denver Air Connection (KG) Great Lakes Airlines (ZK) Denver (KG, ZK) Sheridan, WY (KG)	United Airlines (UA) Denver (UA)	Denver Air Connection (KG) Denver Air Connection (KG)	Denver Air Connection (KG)
Aircraft	CRJ-200 (DL) CRJ-700 (UA) ERJ-145 (UA) MD-80 (G4) C-II : CRJ2, CRJ7, E145 D-III : MD80	Beech 1900D (ZK)	CRJ-200 (DL) ERJ-145 (UA)	CRJ-200 (UA)	C-III : CRJ7 C-III : A319, E175 C-IV : B752 D-III : B738	CRJ-200 (UA)	Beech 1900D (ZK) Dormier 328 Jet (KG)	CRJ-200 (UA)	Dormier 328 Jet (KG)	
Aircraft ARC	CRJ-200 : 50 CRJ-700 : 66 to 78 ERJ-145 : 50 MD-80 : 155	B-II : B190	CRJ-200 : 50 ERJ-145 : 50	CRJ-200 : 50	C-II : CRJ2 C-II : CRJ2	CRJ-200 : 50	B-II : B190 C-II : J328	C-II : CRJ2	C-II : J328	
Passenger Capacity	CRJ-200 : 6,950 ft. CRJ-700 : 8,850 ft. ERJ-145 : 7,460 ft. MD-80 : n/a*	Beech 1900D : 19	CRJ-200 : 6,900 ft. ERJ-145 : 7,380 ft.	CRJ-200 : 6,550 ft.	737-800 : 108 to 177 757-200 : 200 A319 : 124 to 156 CRJ-700 : 66 to 78 ERJ-175 : 76	CRJ-200 : 50	Beech 1900D : 19 Dormier 328 Jet : 30	CRJ-200 : 50	Dormier 328 Jet : 30	
MTOW Takeoff (ISA + 15C)	CRJ-200 : 6,950 ft. CRJ-700 : 8,850 ft. ERJ-145 : 7,460 ft. MD-80 : n/a*	Beech 1900D : 3,700 ft. ^	CRJ-200 : 6,900 ft. ERJ-145 : 7,380 ft.	CRJ-200 : 6,550 ft.	737-800 : n/a* 757-200 : n/a* A319 : 6,440 ft. CRJ-700 : 9,600 ft. ERJ-175 : n/a* CRJ-900 : n/a* ERJ-170 : 8,500 ft.	CRJ-200 : 7,970 ft.	Beech 1900D : 3,700 ft. ^ Dormier 328 Jet : 4,485 ft. ^	CRJ-200 : 7,685 ft.	Dormier 328 Jet : 4,485 ft. ^	
MTOW Takeoff (ISA + 15C) of Other Potential Aircraft	CRJ-900 : n/a* ERJ-170 : 7,900 ft. ERJ-175 : n/a*	n/a	CRJ-700 : 8,600 ft. CRJ-900 : n/a* ERJ-170 : 7,750 ft. ERJ-175 : n/a*	ERJ-170 : 7,400 ft. ERJ-175 : n/a* CRJ-700 : 7,850 ft. CRJ-900 : n/a*	CRJ-900 : n/a* ERJ-170 : 8,500 ft.	CRJ-700 : n/a* CRJ-900 : n/a* ERJ-170 : 9,000 ft. ERJ-175 : n/a*	n/a	ERJ-170 : 8,700 ft. ERJ-175 : n/a* CRJ-700 : n/a* CRJ-900 : n/a*	n/a	

Notes:

* = Takeoff at MTOW above airfield elevation on warm day exceeds performance capability of aircraft

^ = Sea level, ISA conditions

AIRPORT INFORMATION

Airport	Casper/Natrona Co. Int'l	Cheyenne Rgnl / Jerry Olson Field	Yellowstone Rgnl	Gillette-Campbell Co.	Jackson Hole	Laramie Rgnl	Riverton Rgnl	Rock Springs Sweetwater Co.	Sheridan Co.
Commercial Airline	Rwy 3/21 - 10,165 x 150	Rwy 9/27 - 9,270 x 150	Rwy 4/22 - 8,268 x 100	Rwy 16/24 - 7,500 x 150	Rwy 1/19 - 6,300 x 150	Rwy 3/21 - 8,502 x 150	Rwy 10/28 - 8,204 x 150	Rwy 9/27 - 10,000 x 150	Rwy 15/33 - 8,301 x 100
Service Runways	Rwy 8/26 - 8,679 x 150 Rwy 3 - ILS, GPS	Rwy 13/31 - 6,690 x 150 Rwy 9 : GPS	Rwy 4 : n/a Rwy 22 : GPS	Rwy 16 : GPS, VOR Rwy 34 : ILS, GPS	Rwy 1 : GPS, VOR Rwy 19 : ILS, GPS, VOR	Rwy 12/30 - 6,300 x 100 Rwy 3 : GPS Rwy 21 : GPS Rwy 12 : GPS, VOR Rwy 30 : GPS, VOR	Rwy 10 : GPS, VOR Rwy 28 : ILS, GPS, VOR	Rwy 9 : GPS, VOR Rwy 27 : ILS, GPS, VOR	Rwy 15 : GPS, VOR Rwy 33 : ILS, GPS
Instrument Approaches	Rwy 26 - GPS	Rwy 31 : GPS							
Instrument Approach	Rwy 3 : 200-2400 RVR Rwy 21 : 250-3/4 mile	Rwy 9 : 330-1 1/4 mile Rwy 27 : 200-2400 RVR	Rwy 4 : n/a Rwy 22 : 381-1 1/4 mile	Rwy 16 : 323-1 1/4 mile Rwy 34 : 200-1/2 mile	Rwy 1 : 962-2 miles Rwy 19 : 200-3/4 miles	Rwy 3 : 250-3/4 mile Rwy 21 : 250-3/4 mile Rwy 12 : 250-1 mile Rwy 30 : 250-1 mile	Rwy 10 : 386-1 1/4 miles Rwy 28 : 200-1/2 mile	Rwy 9 : 200-3/4 mile Rwy 27 : 200-1/2 mile	Rwy 15 : 250-3/4 mile Rwy 33 : 200-1/2 mile
Minimums	Rwy 8 - ILS, GPS Rwy 26 : 250-1 mile	Rwy 31 : 250-1 mile							
Parallel Taxiway	75 feet	60 feet	50 feet	50 feet	75 feet	50 feet	50 feet	50 feet	50 feet

COMMERCIAL AIRLINE TERMINAL INFORMATION

Airport	Casper/Natrona Co. Int'l	Cheyenne Rgnl / Jerry Olson Field	Yellowstone Rgnl	Gillette-Campbell Co.	Jackson Hole	Laramie Rgnl	Riverton Rgnl	Rock Springs Sweetwater Co.	Sheridan Co.
Appx Airline Apron Area	26,300 sq yds	10,200 sq yds	16,800 sq yds	12,700 sq yds	56,000 sq yds	3,000 sq yds	12,900 sq yds	24,100 sq yds	9,200 sq yds
Parking Positions	4	4	3	3	11	1	2	varies	2
Number of Boarding Bridges	1	0	0	0	0	0	0	0	0
Number of Boarding Gates	4	2	2	4	9	2	1	1	1
Terminal Footprint	74,000 sq ft	20,000 sq ft	28,000 sq ft	26,000 sq ft	115,600 sq ft	7,100 sq ft	11,013 sq ft	25,000 sq ft	10,300 sq ft
Hold Room Seating	169	154	102	93	900	28	30	50	35
Number of Baggage Claims	1	1	1	1	3	1	1	1	1
Baggage Claim Area Size	3,200 sq ft	2,000 sq ft	810 sq ft	600 sq ft	45,000 sq ft	200 sq ft	500 sq ft	800 sq ft	400 sq ft
Rental Car Providers	Avis Budget Enterprise Hertz National	Hertz Avis National	Avis Budget Dollar Hertz Thrifty	Avis Enterprise Hertz	Avis Budget Enterprise Hertz	Hertz	Hertz	Avis Budget	Avis Budget Dollar Hertz Thrifty
Rental Car Counter Area	425 sq ft	1 counter	3 counters	768 sq ft	3 counters	300 sq ft	720 sq ft	750 sq ft	350 sq ft
Restrooms Inside Secured Area	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
Restaurant in Terminal	Yes	Yes	Yes	Yes	Yes	No	No	No	No
Number of Screening Checkpoints	1	1	1	1	4lanes	1	1	1	1
Number of Ticket Counters	4	2	2	6	25	2	2	2	2
Ticket Counter Area Size	2,528 sq ft	1,500 sq ft	2,100 sq ft	1,920 sq ft	14,000 sq ft	20 sq ft	320 sq ft	1,000 sq ft	270 sq ft
Approximate Parking Size	31,000 sq yds	8,000 sq yds	15,000 sq yds	16,500 sq yds	23,500 sq yds	7,000 sq yds	12,000 sq yds	21,000 sq yds	8,000 sq yds
Parking Spaces	712	150	200	442	700	200	213	374	224

Appendix B – Airport Reference Code Information

The Airport Reference Code (ARC) is a coding system that identifies the design standards of an airport as it relates to the approach speed and wingspan/tail height of an aircraft. The first component of the ARC, the Aircraft Approach Category (AAC), is depicted by a letter and relates to the approach speed of an aircraft as categorized in Table 1. It should be noted that aircraft in approach categories A and B typically include small single- and twin-engine piston aircraft, commuter turboprop aircraft, and small business jet aircraft. Category C is typically comprised of business jets, regional jets, and narrow-bodied commercial aircraft while categories D and E are comprised of large wide-bodied aircraft, high performance military aircraft, and small business jet aircraft with high approach speeds.

Table 1: Aircraft Approach Categories

Category	Approach Speed
Category A	Less than 91 knots
Category B	91 knots or more, but less than 121 knots
Category C	121 knots or more, but less than 141 knots
Category D	141 knots or more, but less than 166 knots
Category E	166 knots or more

Source: FAA Advisory Circular 150/5300-13A, *Airport Design*

The second component of the ARC, the Airplane Design Group (ADG), is depicted by a Roman numeral and categorizes aircraft by wingspan and tail height as illustrated in Table 2. It should be noted that ADG I and II aircraft typically include small single- and twin-engine piston aircraft, turboprop aircraft, and most business jets. Large business jets, regional jets, and narrow-bodied commercial aircraft typically comprise ADG III, while large jets used for commercial and military uses typically comprise ADG IV, V, and VI.

Table 2: Airplane Design Groups

Group	Tail Height	Wingspan
I	Less than 20 feet	Less than 49 feet
II	From 20 feet to less than 30 feet	From 49 feet to less than 79 feet
III	From 30 feet to less than 45 feet	From 79 feet to less than 118 feet
IV	From 45 feet to less than 60 feet	From 118 feet to less than 171 feet
V	From 60 feet to less than 66 feet	From 171 feet to less than 214 feet
VI	From 66 feet to less than 80 feet	From 214 feet to less than 262 feet

Source: FAA Advisory Circular 150/5300-13A, *Airport Design*

Appendix C – Commercial Service Aircraft & Airport Data Information

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IATA	MANUFACTURER AND AIRCRAFT TYPE	ARFF INDEX	AIRPORT REFERENCE CODE	WINGSPAN	TAIL HEIGHT	MAX RAMP WEIGHT
AT4	AEROSPATIALE/ALENIA ATR 42-300 / 320	A	B-III	80' 7.5"	24' 11"	36850
AT5	AEROSPATIALE/ALENIA ATR 42-500	A	B-III	80' 7.5"	24' 11"	36850
ATR	AEROSPATIALE/ALENIA ATR 42-600	A	B-III	80' 7.5"	24' 11"	36850
AT7	AEROSPATIALE/ALENIA ATR 72	A	B-III	88' 9"	25' 1.25"	44136
319	AIRBUS 319*	B	C-III	111'	39' 6"	155204
320	AIRBUS 320*	B	C-III	111' 10"	40' 10"	162820
321	AIRBUS 321*	C	C-III	112'	38' 9"	188274
BE1	BEECHCRAFT 1900	A	B-II	58'	18' 6"	17060
717	BOEING 717	B	C-III	93' 4"	29' 7"	122000
733	BOEING 737-300	B	C-III	94' 9"	36' 7"	135500
734	BOEING 737-400	B	C-III	94' 9"	36' 7"	139000
735	BOEING 737-500	B	C-III	94' 9"	36' 7"	134000
736*	BOEING 737-600	B	C-III	112' 7"	41' 3"	144000
73G/W*	BOEING 737-700	B	C-III	112' 7"	41' 3"	153500
738/H*	BOEING 737-800	C	C-III	112' 7"	41' 2"	172000
739	BOEING 737-900	C	C-III	112' 7"	41' 2"	174700
752*	BOEING 757-200	C	C-IV	124' 10"	45' 1"	241000
753*	BOEING 757-300	D	C-IV	124' 10"	45' 1"	256000
CS1	BOMBARDIER CS100	B	C-III	115' 1"	37' 8"	134000
CS3	BOMBARDIER CS300	C	C-III	115' 1"	37' 8"	149000
CR1	CANADAIR REGIONAL JET 100	A	C-II	69' 8"	20' 9"	53250
CRK	CANADAIR REGIONAL JET 1000	C	C-III	85' 11"	24' 6"	92300
CR2	CANADAIR REGIONAL JET 200	A	C-II	69' 8"	20' 9"	53250
CR7	CANADAIR REGIONAL JET 700	B	C-II	76' 3"	24' 10"	75250
CR9	CANADAIR REGIONAL JET 900	B	C-III	81' 6.5"	24' 1"	85000
DH1	DE HAVILLAND CANADA DHC-8-100	A	B-III	84' 11"	24' 7"	36300
DH2	DE HAVILLAND CANADA DHC-8-200	A	B-III	84' 11"	24' 7"	36300
DH3	DE HAVILLAND CANADA DHC-8-300	A	B-III	90'	24' 7"	43000
DH4	DE HAVILLAND CANADA DHC-8-400	B	C-III	93' 3"	27' 5"	64500
EM2	EMBRAER 120	A	B-II	64' 11"	20' 2.5"	25529
ERJ	EMBRAER 135/140/145	A / B / B	C-II	65' 9"	22' 2"	42549
E170	EMBRAER 170	B	C-III	85' 4"	32' 3"	79697
E175	EMBRAER 175	B	C-III	85' 4"	32' 4"	83026
E190	EMBRAER 190	B	C-III	94' 3"	34' 7"	107916
E195	EMBRAER 195	C	C-III	94' 3"	34' 7"	107916
D38	FAIRCHILD DORNIER 328	A	B-II	68' 10"	23' 9"	30840
FRJ	FAIRCHILD DORNIER 328JET	A	B-II	68' 10"	23' 9"	34524
M80	MCDONNELL DOUGLAS MD80	C	C-III	107' 10"	30' 2"	141000
M81	MCDONNELL DOUGLAS MD81	C	C-III	107' 10"	30' 2"	141000
M82	MCDONNELL DOUGLAS MD82	C	C-III	107' 10"	30' 2"	150500
M83	MCDONNELL DOUGLAS MD83	C	C-III	107' 10"	30' 2"	161000
M87	MCDONNELL DOUGLAS MD87	C	C-III	107' 10"	31' 2"	141000
M88	MCDONNELL DOUGLAS MD88	C	C-III	107' 10"	30' 2"	150500
M90	MCDONNELL DOUGLAS MD90	C	C-III	107' 10"	31' 1"	157000
PLS	PILATUS PC-12	A	B-II	53' 4"	14"	10495
S20	SAAB 2000	A	B-III	81' 3"	25' 4"	50265

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AIRPORT	PART 139 CLASSIFICATION	ARFF INDEX	AIRPORT REFERENCE CODE	PAVEMENT STRENGTH (SINGLE WHEEL PRIMARY RUNWAY)	PAVEMENT STRENGTH (DUAL WHEEL PRIMARY RUNWAY)	PAVEMENT STRENGTH (SINGLE WHEEL SECONDARY RUNWAY)	PAVEMENT STRENGTH (DUAL WHEEL SECONDARY RUNWAY)
COD	Class I	A	D-III	45,000	80,000		
CPR	Class I	B	D-IV	130,000	170,000	85,000	140,000
CYS	Class I	A	D-IV	75,000	140,000	75,000	120,000
GCC	Class II	A	C-III	70,000	110,000	40,000	60,000
JAC	Class I	B / A	C-IV	75,000	200,000		
LAR	Class II	A	C-III	86,000	105,000	86,000	105,000
RIW	Class II	A	C-II	85,000	110,000	30,000	50,000
RKS	Class II	A	C-III	55,000	110,000	12,000	25,000
SHR	Class II	A	C-III	60,000	75,000	36,000	50,000
WRL	Class III	A	C-II	50,000	70,000		

IATA	MANUFACTURER AND AIRCRAFT TYPE	COD	CPR	CYS	GCC	JAC	LAR	RIW	RKS	SHR	WRL
AT4	AEROSPATIALE/ALENIA ATR 42-300 / 320	X	X	X	X	X	X	X A	X	X	X A
AT5	AEROSPATIALE/ALENIA ATR 42-500	X	X	X	X	X	X	X A	X	X	X A
ATR	AEROSPATIALE/ALENIA ATR 42-600	X	X	X	X	X	X	X A	X	X	X A
AT7	AEROSPATIALE/ALENIA ATR 72	X	X	X	X	X	X	X A	X	X	X A
319	AIRBUS 319*		X			X F					
320	AIRBUS 320*		X			X F					
321	AIRBUS 321*		X			X F					
BE1	BEECHCRAFT 1900	X	X	X	X	X	X	X	X	X	X
717	BOEING 717		X	X F		X F					
733	BOEING 737-300		X	X F		X F					
734	BOEING 737-400		X	X F		X F					
735	BOEING 737-500		X	X F		X F					
736*	BOEING 737-600		X			X F					
73G/W*	BOEING 737-700		X			X F					
738/H*	BOEING 737-800					X F					
739	BOEING 737-900					X F					
752*	BOEING 757-200										
753*	BOEING 757-300										
CS1	BOMBARDIER CS100		X	X F		X F					
CS3	BOMBARDIER CS300		X F			X F					
CR1	CANADAIR REGIONAL JET 100	X	X	X	X	X	X	X	X	X	X
CRK	CANADAIR REGIONAL JET 1000		X F	X F	X F	X F	X F	X F	X F		
CR2	CANADAIR REGIONAL JET 200	X	X	X	X	X	X	X	X	X	X
CR7	CANADAIR REGIONAL JET 700	X F	X	X F	X F	X F	X F	X F	X F		
CR9	CANADAIR REGIONAL JET 900		X	X F	X F	X F	X F	X F A	X F		
DH1	DE HAVILLAND CANADA DHC-8-100	X	X	X	X	X	X	X A	X	X	X A
DH2	DE HAVILLAND CANADA DHC-8-200	X	X	X	X	X	X	X A	X	X	X A
DH3	DE HAVILLAND CANADA DHC-8-300	X	X	X	X	X	X	X A	X	X	X A
DH4	DE HAVILLAND CANADA DHC-8-400	X F	X	X F	X F	X F	X F	X F A	X F	X F	X F A
EM2	EMBRAER 120	X	X	X	X	X	X	X	X	X	X
ERJ	EMBRAER 135/140/145	X F	X	X F	X F	X F	X F	X F	X F	X F	X F
E170	EMBRAER 170	X F	X	X F	X F	X F	X F	X F A	X F		
E175	EMBRAER 175		X	X F	X F	X F	X F	X F A	X F		
E190	EMBRAER 190		X	X F	X F	X F		X F A	X F		
E195	EMBRAER 195		X F	X F	X F	X F		X F A	X F		
D38	FAIRCHILD DORNIER 328	X	X	X	X	X	X	X	X	X	X
FRJ	FAIRCHILD DORNIER 328JET	X	X	X	X	X	X	X	X	X	X
M80	MCDONNELL DOUGLAS MD80		X F			X F					
M81	MCDONNELL DOUGLAS MD81		X F			X F					
M82	MCDONNELL DOUGLAS MD82		X F			X F					
M83	MCDONNELL DOUGLAS MD83		X F			X F					
M87	MCDONNELL DOUGLAS MD87		X F			X F					
M88	MCDONNELL DOUGLAS MD88		X F			X F					
M90	MCDONNELL DOUGLAS MD90		X F			X F					
PLS	PILATUS PC-12	X	X	X	X	X	X	X	X	X	X
S20	SAAB 2000	X	X	X	X	X	X	X A	X	X	X A

* HAS LARGER WINGLET PACKAGE AVAILABLE

X - AIRCRAFT COULD CONDUCT OPERATIONS AT AIRPORT BASED ON WEIGHT, ARFF, ARC

F - ARFF INDEX COULD BE A LIMITING FACTOR IN AIRCRAFT OPERATING AT AIRPORT

A - AIRPORT REFERENCE CODE