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2 EXISTING CONDITIONS

2.1 INTRODUCTION

Yakima Air Terminal/McAllister Field (YKM) is located in Yakima County within the City of Yakima and covers an area of 825 acres. The main entrance is at the intersection of South 24th Avenue and West Washington Avenue approximately three miles southwest from the Interstate 82/State Route 12 Interchange. There are two active runways at the airport.

Runway 9/27 is paved with asphalt and is 150 feet wide by 7,604 feet in length. There is a Localizer back course non-precision approach to Runway 9 and a precision approach to Runway 27.

Runway 4/22 is also paved with asphalt and is 150 feet wide by 3,835 feet in length. There are visual approaches to both runway ends.

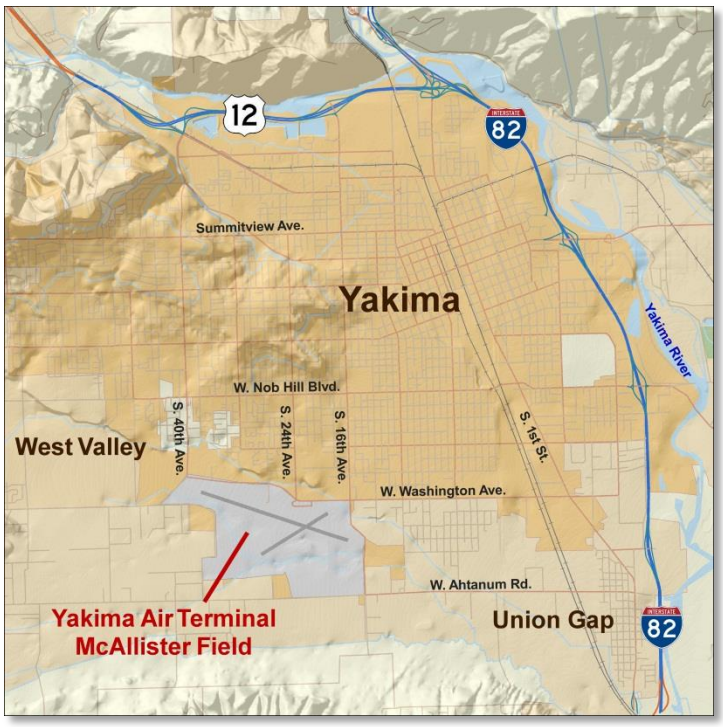


Figure 2-1: Airport Location Map

2.2 AIRPORT HISTORY

Yakima Air Terminal/McAllister Field provides the primary air transportation access for the City of Yakima (pop. 91,000 in 2010), Yakima County (pop. 235,000 in 2010) and the entire Yakima valley. To accommodate the increasing population and commerce opportunities of the Yakima Valley, the airport has been continually upgraded since its inception in the early 20th century. The chronology of the airport is shown on the timeline and descriptions on the next two pages.

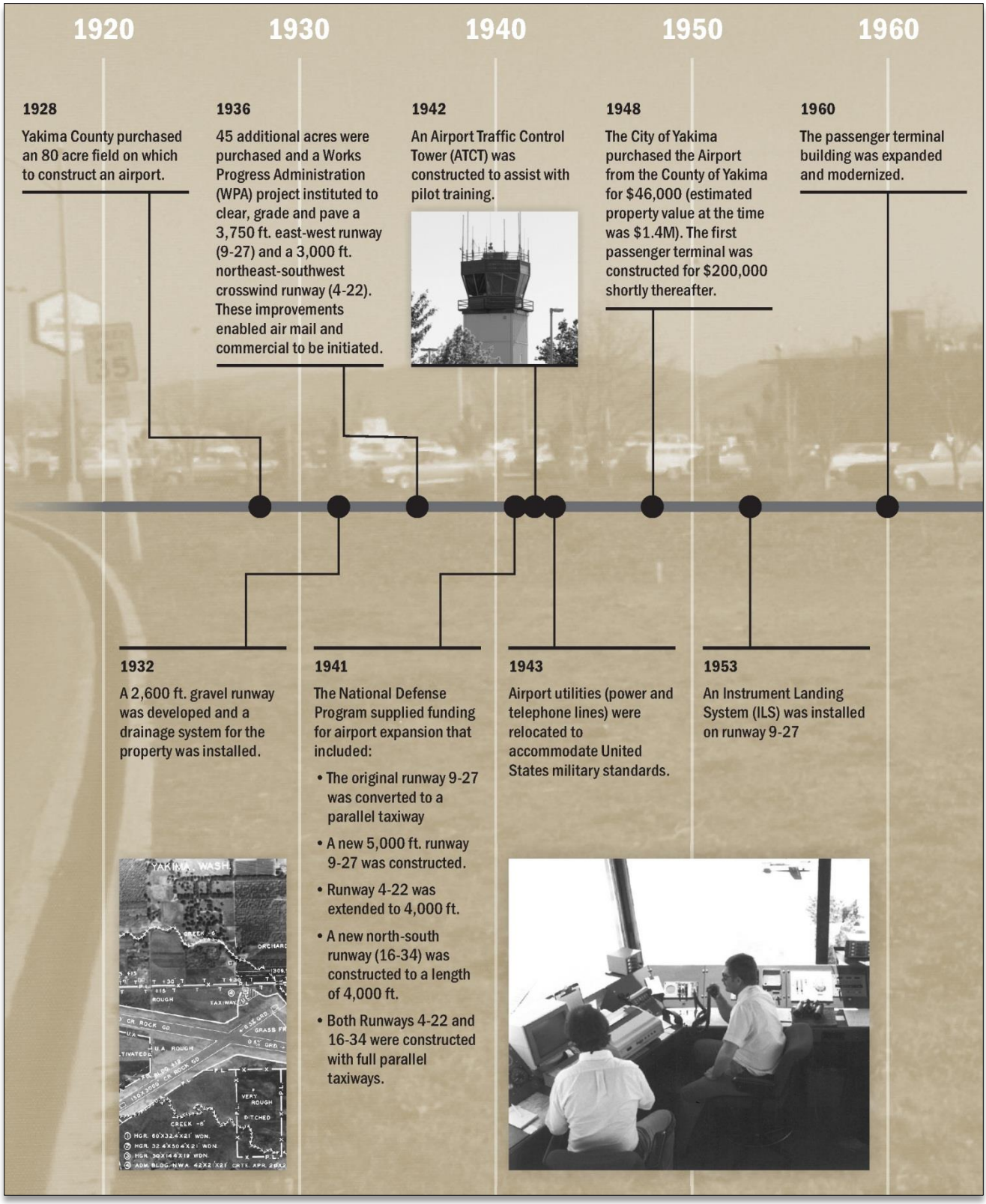


Figure 2-2: Yakima Air Terminal Development Timeline

1970 1980 1990 2000 2010

1967

- Runway 9-27 was extended by 1,100 ft. – to a total length of 7,604 ft. to accommodate increasing jet traffic.
- The passenger terminal building was expanded.
- Yakima Fire Station No. 4 was constructed adjacent to the terminal building to provide Aircraft Rescue and Fire Fighting (ARFF) capabilities at the airport.

1979

Runway 16-34 was closed and converted to a taxiway.

1982

The City of Yakima and Yakima County entered into a joint operational agreement to share operational and maintenance costs for the airport.

1988

The threshold for Runway 22 was relocated to allow safe clearances over West Washington Street, resulting in a runway length of 3,835 ft.

1996

Runway 9-27 was reconstructed with a new asphalt concrete overlay.

1999

The terminal building was rehabilitated and expanded.

2001

- Portions of taxiways Bravo and Charlie north of Runway 9-27 were overlaid.
- A new service/ARFF road was constructed from around the Runway 9 threshold to Spring Creek Road
- Runway End Identifier Lights (REILs) were installed on Runways 4 and 22, and Precision Approach Path Indicators (PAPIs) were installed on Runways 4, 22, and 27.

2002

Security fencing was installed around the southern perimeter of the airport.

2010

Runway 9-27 was reconstructed and brought to FAA standards.

2.3 EXISTING AIRPORT PLANS

2.3.1 Previous Master Plan Update

The latest Airport Master Plan prepared for the Yakima Air Terminal/McAllister Field was published in 2003. The following are key recommendations of this master plan:

1. Extend Runway 9/27 to a total length of 10,160 feet
2. Extend Runway 4/22 to 4,420 feet
3. Construct a new parallel taxiway south of Runway 9/27
4. Develop new air cargo facilities
5. Update and modify the passenger terminal
6. Acquire property to protect runway approach surfaces
7. Institute and follow a pavement rehabilitation program
8. Remove FAR Part 77 obstructions
9. Expand the general aviation area

In addition, a number of facility expansion and renewal projects intended to bring the airport into full compliance with FAA's Airport Design Standards were included. Since 2003, the recommendation to extend Runway 9/27 has been questioned and the local jurisdictions surrounding the airport have asked for additional information regarding its ultimate length. Additionally, wind analyses have shown Runway 4/22 may not meet FAA criteria for crosswind runways and its future is in question. One of the goals of this master plan is to revisit these recommendations to reassess their need or to revise the recommendation.

2.4 APPLICABLE FEDERAL/STATE PLANS

2.4.1 FAA National Plan of Integrated Airport Systems (NPIAS)

The National Plan of Integrated Airport Systems (NPIAS) is used by the Federal Aviation Administration (FAA) to identify airports within the United States and its territories critical to the nation's air transportation system. Airports listed in the NPIAS are eligible for Federal Development Grants under the Airport Improvement Program (AIP). Yakima Air Terminal/McAllister Field is

listed as a 'Non-hub Primary Airport'[1] in the NPIAS and is one of ten such airports in Washington State.

2.4.2 Washington State Department of Transportation Long-Term Air Transportation Study (LATS)

The Washington State Department of Transportation's (WSDOT) Long-Term Air Transportation Study (LATS) is a strategic planning effort for the aviation system in Washington. According to the LATS, YKM is classified as a Commercial Service Airport

Commercial Service Airports provide scheduled passenger air carrier and/or commuter service to in-state, domestic, and (in some cases) international destinations. Some of these airports also serve regional air cargo demand and many accommodate significant levels of general aviation activity. Commercial Service Airports are mostly located in large population centers. The extent of a Commercial Service Airport's service area, as defined by driving time and population, depends upon the type of air service provided. Typically, these airports are classified as *primary* or *commercial service* airports in the NPIAS (WSDOT, 2009).

2.5 AIRPORT FACILITIES

Existing airport facilities at YKM include two active runways and a full parallel taxiway system, runway and taxiway lighting systems, visual and electronic navigational aids, general aviation hangars and tiedown aprons, a passenger terminal building and support facilities, airport offices and maintenance building. Figure 2-3 shows the existing facilities at YKM. These are discussed in the following section.

[1] *'Non-hub Primary Airport' - Commercial service airports that enplane less than 0.05 percent of all commercial passenger enplanements but have more than 10,000 annual enplanements are categorized as non-hub primary airports. There are 244 non-hub primary airports that together account for 3 percent of all enplanements. These airports are heavily used by general aviation aircraft with an average of 95 based aircraft per airport.*

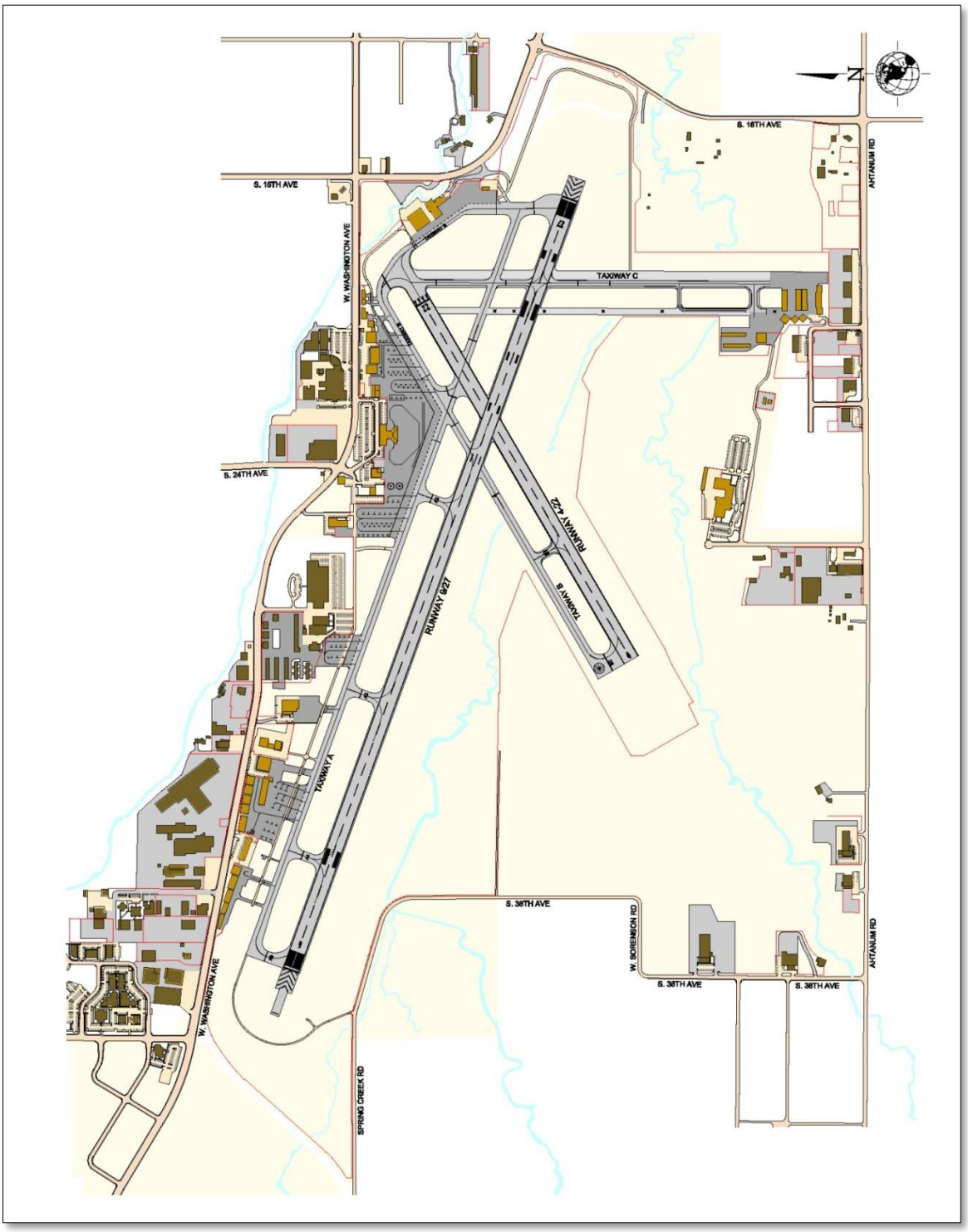


Figure 2-3: Existing Airport Facilities

2.5.1 Runways and Taxiways

The airfield at YKM consists of two runways, 9/27 and 4/22. Runway 9/27, the primary runway, is 7,604 feet long, 150 feet wide, and has a Category I precision instrument approach available on Runway 27 and non-precision approaches on Runway 9. Taxiway A is the full length parallel taxiway to Runway 9/27 with a runway/taxiway centerline separation distance of 400 feet. Runway 4/22 is the 3,835-foot-long, 150-foot-wide crosswind runway with full parallel Taxiway B. The runway/taxiway centerline separation for these is 313 feet.

Table 2-1: Airport Runway Data

		Runway 4/22		Runway 9/27	
Runway Dimensions	Length:	3,835’		7,604’	
	Width:	150’		150’	
Pavement Type		Asphalt		Grooved Asphalt	
Pavement Strength (in 1,000 lbs.)		70 (S), 80 (D), 120 (DT)		95 (S), 160 (D), 220 (DT), 550 (DDT)	
Runway Safety Area (RSA)		4,315’ x 120’		9,604’ x 500’	
Object Free Area (OFA)		4,315’ x 250’		9,604’ x 800’	
Obstacle Free Zone (OFZ)		4,215’ x 250’		8,004’ x 400’	
Runway Lighting		MIRL		HIRL	
Runway End		**4**	**22**	**9**	**27**
Runway Approach Category		Visual	Visual	Non-Precision	Precision
Runway Approach Slope		20:1	20:1	34:1	50:1
Runway Markings		Basic	Basic	Non-Precision	Precision
Instrumentation / Approach Aids		None	None	Localizer, GPS/RNAV	ILS
Visual Aids		PAPI	PAPI	VASI	PAPI; MALSR
Critical Aircraft		Beech Baron		Boeing 727	
Wingspan:		37’ 10”		108’	
Weight:		5,500 lbs.		184,800 lbs.	
Approach Speed:		98 knots		133 knots	
Airport Reference Code (ARC)		B-I (small)		C-III	

S - Single-wheel Gear *D - Dual-wheel Gear* *DT - Dual-tandem Gear* *DDT - Dual double Tandem Gear*
ILS - Instrument Landing System *MALSR - Medium Intensity Approach Lighting System*
MIRL - Medium Intensity Runway Lights *HIRL - High Intensity Runway Lights*
PAPI - Precision Approach Path Indicator *VASI - Visual Approach Slope Indicator*

Both runways have been constructed to meet FAA design standards for safety and operational efficiency. The Airport Reference Code (ARC) is the classification system developed by the FAA to relate airport design criteria to the operational and physical characteristics of the types of aircraft expected to operate at the airport on a regular basis. The ARC is based on two key characteristics of the designated critical aircraft. The first, denoted by a letter, is the aircraft approach category. This is determined based on the aircraft's approach speed in the landing configuration. Generally, aircraft approach speed affects runway length, exit taxiway locations, and runway-related facilities. Following are the ARC approach speed categories:

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

The second component, depicted by a roman numeral, is the Airplane Design Group. This is based on the aircraft's wingspan and determines dimensional standards for the layout of airport facilities, such as separation criteria between runways and taxiways, taxilanes, buildings, or objects potentially hazardous to aircraft movement on the ground. Following are the design group categories:

- Design Group I: Wingspan up to but less than 49 feet
- Design Group II: Wingspan 49 feet up to but less than 79 feet
- Design Group III: Wingspan 79 feet up to but less than 118 feet
- Design Group IV: Wingspan 118 feet up to but less than 171 feet
- Design Group V: Wingspan 171 feet up to but less than 214 feet
- Design Group VI: Wingspan 214 feet up to but less than 262 feet

Based on the previous master plan, YKM has an Airport Reference Code (ARC) of C-III. Runway 9/27 is classified as a C-III runway based on use by Boeing 727 aircraft. Runway 4/22 is classified as a B-I (small) runway with operations confined to light single and twin engine piston aircraft. It should be noted that this runway as well as Taxiway B were constructed to meet B-III standards thus exceeding the B-I (small) standards.

The dimensional design criteria for a C-III category runway is shown in Table 2-2. This table also provides a comparison of the standards with existing conditions on Runway 9/27. Following this, Table 2-3 shows the Design Criteria for a B-I (small) runway along with the existing conditions. As seen in these tables, both runways meet FAA standards at the present time except in the areas of shoulder widths and blast pads.

Table 2-2: Existing Conditions vs. C-III Design Criteria (Runway 9/27)

Design Feature	Existing (ft.)	Standard (ft.)	Difference
Runway			
Width	150	150	Meets Standard
Runway Shoulder Width	10	25	15 feet
Runway Blast Pad Width	150	200	50 feet
Runway Blast Pad Length	200	200	Meets Standard
Runway Safety Area (RSA) Width	522	500	Meets Standard
Safety Area Length (beyond RW end)	1,000	1,000	Meets Standard
Object Free Area Width	800	800	Meets Standard
Object Free Area Length (beyond RW end)	1,000	1,000	Meets Standard
Obstacle Free Zone Width	400	400	Meets Standard
Obstacle Free Zone Length	8,004	8,004	Meets Standard
Taxiway			
Width	75	50	Meets Standard
Safety Area Width	118	118	Meets Standard
Object Free Area Width	186	186	Meets Standard
Taxilane Object Free Area Width	162	162	Meets Standard
Runway Centerline to:			
Taxiway Centerline	400	400	Meets Standard
Aircraft Parking Area	500	500	Meets Standard
Taxiway Centerline to Fixed or Movable Object	93	93	Meets Standard
Taxilane Centerline to Fixed or Movable Object	81	81	Meets Standard

Source: FAA Advisory Circular 150/5300-13, Airport Design, Change 6

Table 2-3: Existing Conditions vs. B-I (small) Design Criteria (Runway 4/22)

Design Feature	Existing (ft.)	Standard (ft.)	Difference
Runway			
Width	150	60	Meets Standard
Runway Shoulder Width	5	10	5 feet
Runway Blast Pad Width	None	80	80 feet
Runway Blast Pad Length	None	60	Meets Standard
Runway Safety Area (RSA) Width	200	120	Meets Standard
Safety Area Length (beyond RW end)	600	240	Meets Standard
Object Free Area Width	400	250	Meets Standard
Object Free Area Length (beyond RW end)	600	240	Meets Standard
Obstacle Free Zone Width	250	250	Meets Standard
Obstacle Free Zone Length	200	200	Meets Standard
Taxiway			
Width	75	25	Meets Standard
Safety Area Width	49	49	Meets Standard
Object Free Area Width	89	89	Meets Standard
Taxilane Object Free Area Width	79	79	Meets Standard
Runway Centerline to:			
Taxiway Centerline	300	150	Meets Standard
Aircraft Parking Area	420	125	Meets Standard
Taxiway Centerline to Fixed or Movable Object	44.5	44.5	Meets Standard
Taxilane Centerline to Fixed or Movable Object	39.5	39.5	Meets Standard

Source: FAA Advisory Circular 150/5300-13, Airport Design, Change 6
Note: Runway 4/22 and Taxiway B were constructed to meet B-III standards which exceed B-I (small) standards.

2.5.1.1 Airfield Pavement

In 2005, the WSDOT conducted an analysis of select airports within Washington State evaluating the condition of runway, apron and taxiway pavements. This Pavement Condition Index (PCI) was provided to federal, state and local jurisdictions and allows for strategic planning. The study provides airports an index ranging from 0–100; 0 being a failed index and 100 being an excellent index.

YKM has approximately 4.28 million square feet of runway, taxiway, and apron pavements. In 2005, the PCI ranged from 23 to 100. At the time of the report, Runway 9/27 had a score ranging from 91–99 and was recommended to receive preventative maintenance with replacement in 2012 (projected). Runway 4/22 ranged from 31–63 and was recommended for rehabilitation. Both taxiways (A/B) scored low enough (46–92) to be labeled, in some sections, as preventative maintenance and in others as major rehabilitation.

In 2010, Runway 9/27 underwent a rehabilitation project to replace the significantly deteriorated wearing course. The porous friction course (PFC) surface was replaced a few years ahead of its expected lifespan.

In conjunction with this master plan, both airside and landside pavements were re-evaluated through an update to the PCI report. Surfaces analyzed in this update included approximately 5,573,055 square feet of pavement. The PCI report presents the results of the pavement evaluation and presents the pavement management plan for YKM pavements. Figure 2-4 presents existing pavement conditions on the airport and the pavement report is appended to this master plan as Appendix C. As shown, most of the airfield pavements are in good condition except for portions of Taxiway A and Runway 4/22. Taxiway A is scheduled for rehabilitation in 2013. Runway 4/22 is in need of reconstruction if it is to remain usable. This master plan will address the future of this runway and its eligibility for funding.

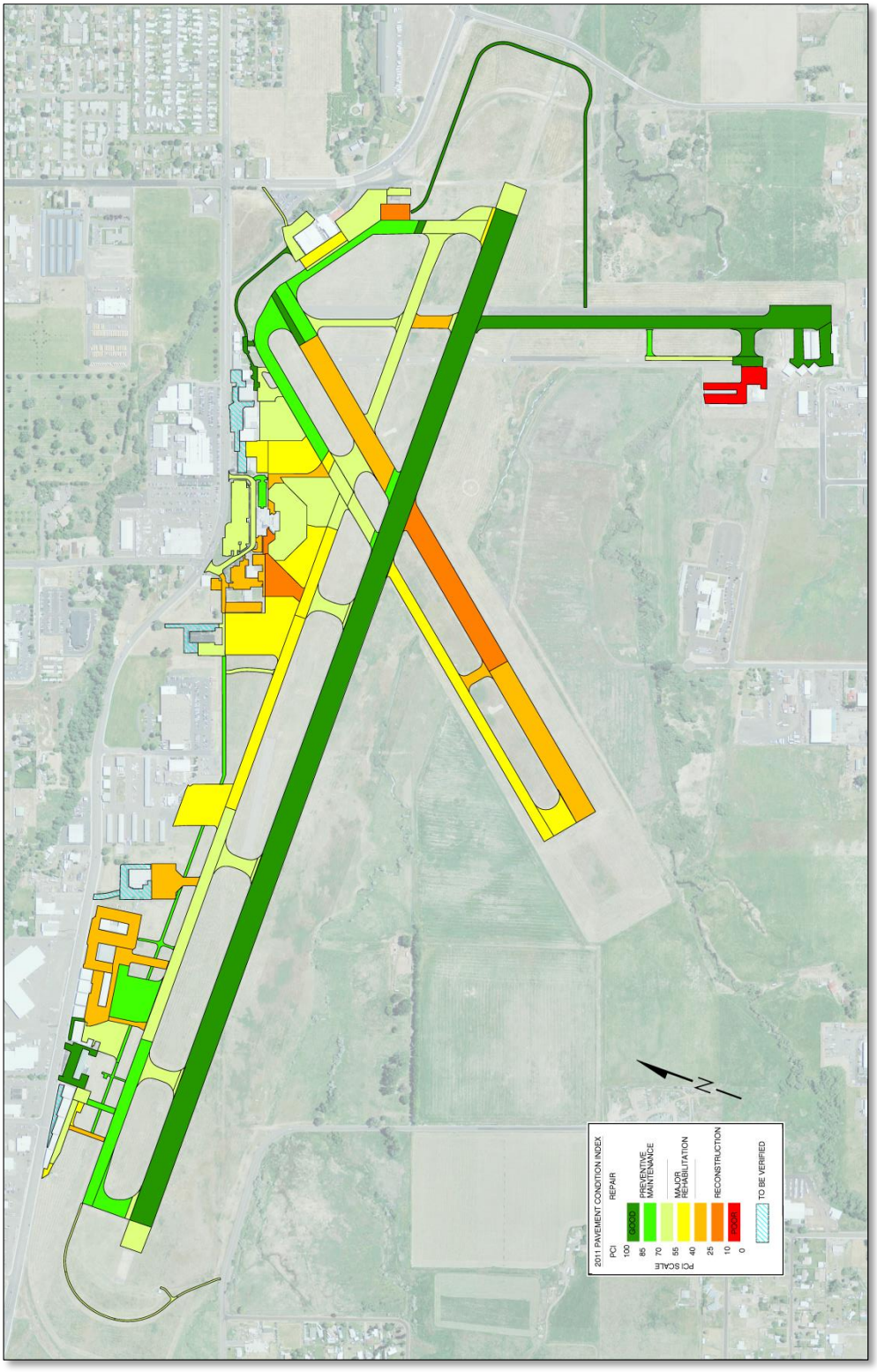


Figure 2-4: Existing Pavement Conditions

2.5.1.2 Airfield Lighting and Navigational Aids

The following visual and electronic navigation and landing aids are available at YKM. As indicated in Table 2-4, Runway 9 is equipped with a localizer for a non-precision approach with a 34:1 approach slope. The runway end has non-precision markings, a Visual Approach Slope Indicator (VASI), and High Intensity Runway Lights (HIRL).

Runway 27 is equipped with an Instrument Landing System (ILS) including a glide slope, and Medium Intensity Approach Lighting System (MALSR) for a precision instrument approach with a 50:1 approach slope. The runway end has precision runway markings, a Precision Approach Path Indicator (PAPI), and High Intensity Runway Lights (HIRL).

Runways 4 and 22 are visual approaches with 20:1 approach slopes. Both have visual runway markings, Precision Approach Path Indicator (PAPI), and Medium Intensity Runway Lights (MIRL).

Table 2-4: Navigational Aids

Navigational Aid	Rwy 4	Rwy 22	Rwy 9	Rwy 27
VASI			✈	
PAPI	✈	✈		✈
REIL	✈	✈	✈	
GPS			✈	✈
SDR-9				
Rotating Beacon	✈	✈	✈	✈
MALSR				✈
ILS – Glideslope Antenna				✈
Localizer			✈	
NPI			✈	✈
Compass Locator				✈
RVR			✈	✈
Lighted Windsock	✈		✈	✈

2.5.1.3 Airfield Signage

The airport incorporates standard runway and taxiway signage and meets all FAA signage standards.

2.5.1.4 Published Instrument Approaches

Instrument Procedures

Precision instrument approaches are available to Runway 27 and non-precision approaches are available for Runway 9. The approach plates for these are contained in Appendix D to this report and summarized in Table 2-5.

Table 2-5: Published Procedures

Instrument Approach Procedures	Departure Procedures
ILS Y RWY 27	GROMO TWO
ILS Z RWY 27	NACHES TWO
RNAV (RNP) Y RWY 09	WENAS SIX
RNAV (RNP) Y RWY 27	YAKIMA SIX
	ZILLA THREE (OBSTACLE)
RNAV (RNP) Z RWY 09	
RNAV (RNP) Z RWY 27	
RNAV (GPS) W RWY 27	
RNAV (GPS) X RWY 27	
LOC/DME BC-B	
VOR/DME OR TACAN RWY 27	
VOR-A	
COPTER NDB RWY27	

2.5.1.5 Runway Safety Areas

The Runway Safety Area (RSA) is a critical, two-dimensional area surrounding each active runway. The RSA must be:

- Cleared, graded, and free of potential hazardous surface variations;
- Properly drained;
- Capable of supporting ARFF equipment, maintenance equipment, and aircraft; and,
- Free of objects, except for those mounted using low-impact supports and whose location is fixed by function.

Based on FAA Criteria from Advisory Circular 150/5300-13 for a C-III runway, the RSA for Runway 9/27 needs to be 500 feet wide extending 1,000 feet beyond each runway end. Presently the RSA for both ends of the runway are generally in compliance with these standards except for occasional gopher activity.

For Runway 4/22, the RSA has been developed to meet the standards for a B-III aircraft. This includes an area 600 feet beyond each runway end measuring 200 feet wide.

2.5.1.6 Runway Object Free Areas

The runway object free area (OFA) is a two-dimensional ground area surrounding each runway. The ROFA clearing standard precludes parked aircraft or other objects, except NAVAIDs and other facilities whose locations are fixed by function from this area. For Runway 9/27, the ROFA is 800 feet wide, centered on the runway centerline, and extends 1,000 feet beyond the end of the runway. For Runway 4/22, the OFA dimensions are 250 feet wide and extend 400 feet off the runway end. Both ROFAs meet FAA Criteria.

2.5.1.7 Runway Protection Zone

The Runway Protection Zone (RPZ) is trapezoidal in shape and centered on the extended runway centerline for each runway end. Its function is to enhance the protection of people and property on the ground. It begins 200 feet beyond the permanent runway threshold (at the end of the primary surface). The RPZ dimensions are based on the type of aircraft using the runway, type of operations (visual or instrument) being conducted, and visibility minimums associated with the most demanding approach available. RPZ dimensional standards are defined in the FAA Advisory Circular 150/5300-13, Airport Design. The dimensions for the RPZs at YKM are shown in Table 2-6 and meet these standards.

The airport owns all property within the RPZ for each runway end.

Table 2-6: Runway Protection Zone (RPZ)

Runway	Aircraft Served	Approved Approach	Zone Length	Inner Width	Outer Width	Acres
09	Large	Non Precision	1,700’	1,000’	1,510’	48.978
27	Large	Precision	2,500’	1,000’	1,750’	78.914
04	Small	Visual	1,000’	250’	450’	8.035
22	Small	Visual	1,000’	250’	450’	8.035

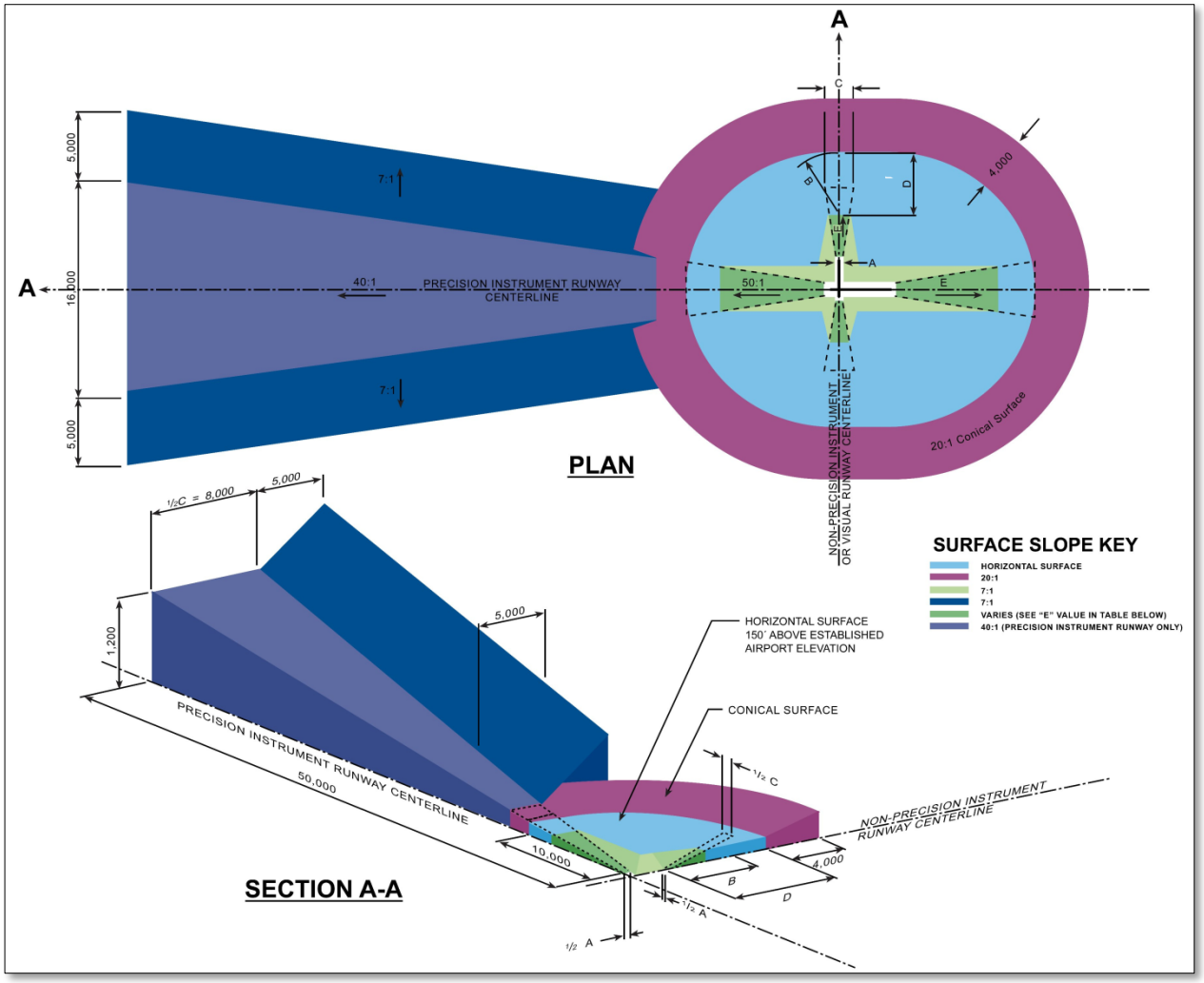
2.5.1.8 FAR Part 77 Surfaces

Under Part 77 of the Federal Aviation Regulations (FAR), standards are established for determining obstructions to navigable airspace. The regulation also provides for aeronautical studies of obstructions to determine their effect on the safe and efficient use of airspace.

Local jurisdiction (both city and county) protects FAR Part 77 surfaces and has incorporated the requirements set forth by the FAA into its zoning regulations and practices. The objective is to maintain the surrounding airspace and keep it free of obstacles that impede aircraft operations.

These regulations dictate the type of infrastructure and development allowed adjacent to and near the airport as well as the height of these objects. The five surfaces that make up the FAR Part 77, Imaginary Surfaces for a civil airport are the primary, approach, transitional, horizontal and conical surfaces.

Figure 2-5 shows each element of the Imaginary Surfaces as they relate to each other and the runways, and Figure 2-6 shows the Part 77 Surfaces for YKM.



Source: Washington State Department of Transportation, Aviation Division

Figure 2-5: FAR Part 77, Imaginary Surfaces - Diagram

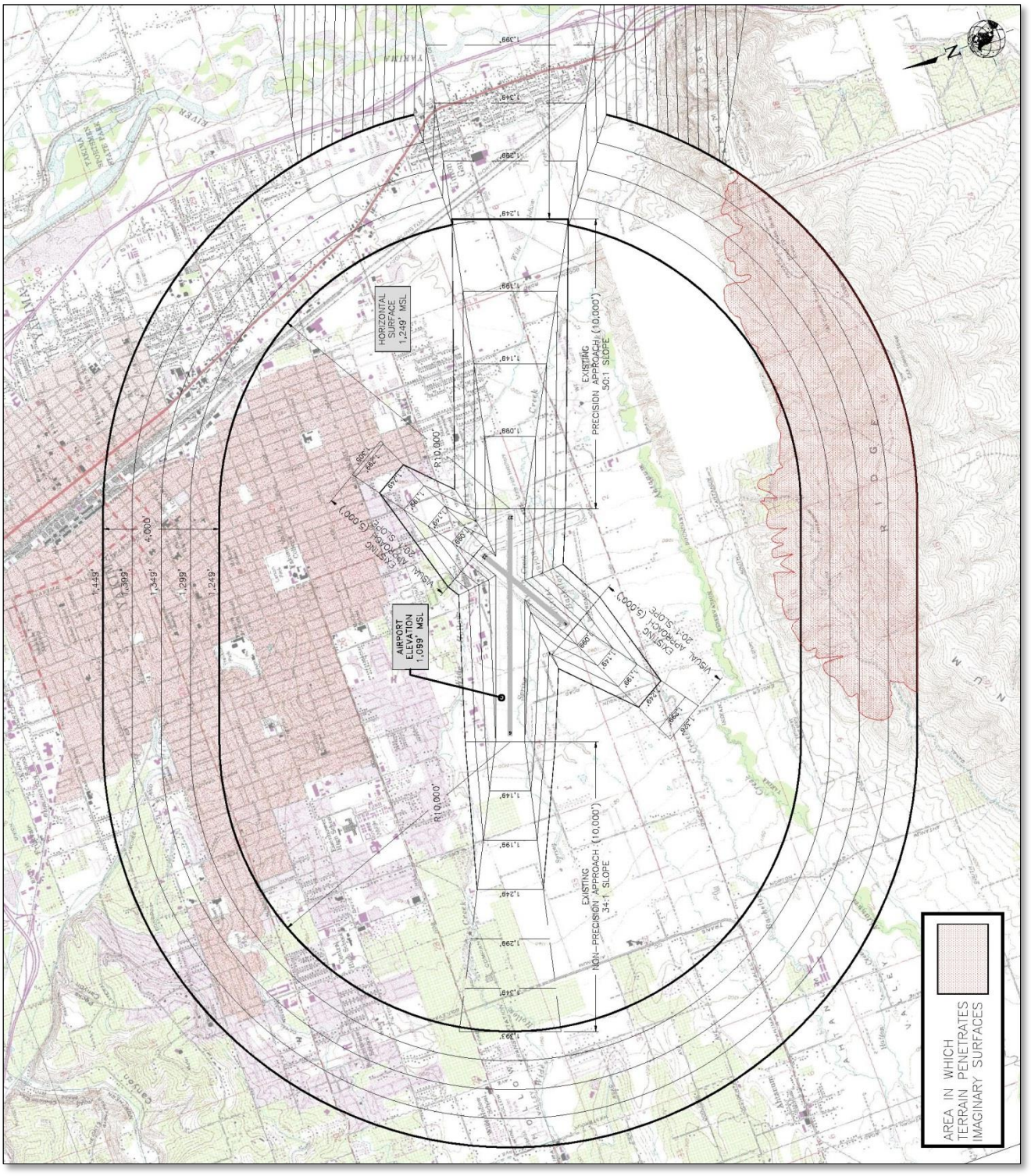


Figure 2-6: FAR Part 77, Imaginary Surfaces for YKM

Primary Surface

The primary surface is an imaginary surface longitudinally centered on the runway and extends 200 feet beyond the end of each runway. The elevation of any point of that surface is equal to the elevation of the nearest point on the runway centerline. The width varies, depending upon the type of approach available to the runway. For YKM, Runway 27 has a precision instrument approach with visibility minimums as low as three-fourths of a statute mile, while Runway 9 has a non-precision instrument approach. As a result, the primary surface for this runway is 1,000 feet wide centered on the runway centerline. Runway 4/22 is classified as a utility runway with visual approaches; therefore, the primary surface for this runway is 250 feet wide centered on the runway centerline.

Approach Surface

The approach surface is an inclined slope extending outward and upward from each end of the primary surface centered on the extended runway centerline. The inner width of the surface is the same as that of the primary surface. The approach surface is applied to each end of the runway based on the type of approach available or planned for that runway end.

Runway 27 is designated as a precision instrument runway. The approach surface for this runway is 1,000 feet wide where it intersects with the primary surface and expands uniformly for a distance of 10,000 feet at a slope of 50:1. It continues outward and upward for an additional 40,000 feet at a slope of 40:1 where the final width is 16,000 feet. Runway 9 is a non-precision runway with an approach surface starting at the primary surface with a width of 1,000 feet then expanding uniformly for a distance of 10,000 feet at a slope of 34:1 reaching a final width of 3,500 feet.

Both ends of Runway 4/22 have visual approaches. These surfaces are 250 feet wide at the intersection with the primary surface and expand uniformly for a distance of 5,000 feet at a slope of 20:1 to a final width of 1,250 feet.

Horizontal Surface

The horizontal surface is a horizontal plane 150 feet above the established airport elevation. YKM has an established elevation of 1,099 feet MSL (above Mean Sea Level) so the horizontal surface is 1,249 feet MSL. The perimeter of the surface is determined by arcs extending from the centerline of the runway and its intersection with the primary surface. The radii of these arcs correspond with the approach surface lengths for each of the runway ends. Runways designated as utility or visual use a radius of 5,000 feet, while all other runways use a radius of 10,000 feet.

Transitional Surface

The transitional surface is an inclined plane with a slope of 7:1, extending upward and outward at right angles to the runway centerline from the primary surface and the sides of the approach surfaces. These surfaces terminate where they intersect with the horizontal surface or another surface with more critical restrictions.

Conical Surface

The conical surface is an inclined plane at a slope of 20:1, extending upward and outward from the periphery of the horizontal surface for a distance of 4,000 feet.

2.5.2 Passenger Terminal Area

The passenger terminal area is located on the north side of the airport at the approximate intersection of Runways 9/27 and 4/22. The terminal area consists of the aircraft parking apron, the passenger terminal building, the surface access system and auto parking areas and the airport administrative offices, as shown in Figure 2-7. It is accessed using either West Washington Avenue or 24th Street onto the airport entry drive. Parking is located directly in front of the terminal with public parking, rent-a-car and employee parking provided in different areas.

2.5.2.1 Automobile Parking

Public parking is provided in a main parking lot directly north of the terminal. The lot contains spaces for short-term (17 spaces) and long-term (171 spaces) parking. Users can enter the lot either before or after the terminal entry. All users must exit through the ticket booth and proceed north to the intersection of West Washington Avenue and 24th Avenue.

Rental car parking is located east of the terminal with 36 spaces available in a restricted lot.

2.5.2.2 Passenger Terminal Building

For any passenger terminal building, services are required for the efficient processing of passengers arriving and departing on commercial flights. Enplaning services include the ticketing area, ticket counter, electronic ticket kiosks, queuing area, and airline offices. Processing services include passenger and bag screening facilities operated by the Transportation Security Administration (TSA). Deplaning services generally include baggage claim area and rental car counters. Other services necessary in a terminal building may include concessions, gift shops, restrooms, advertising and display areas, mechanical and utility rooms, and janitorial service and storage areas.

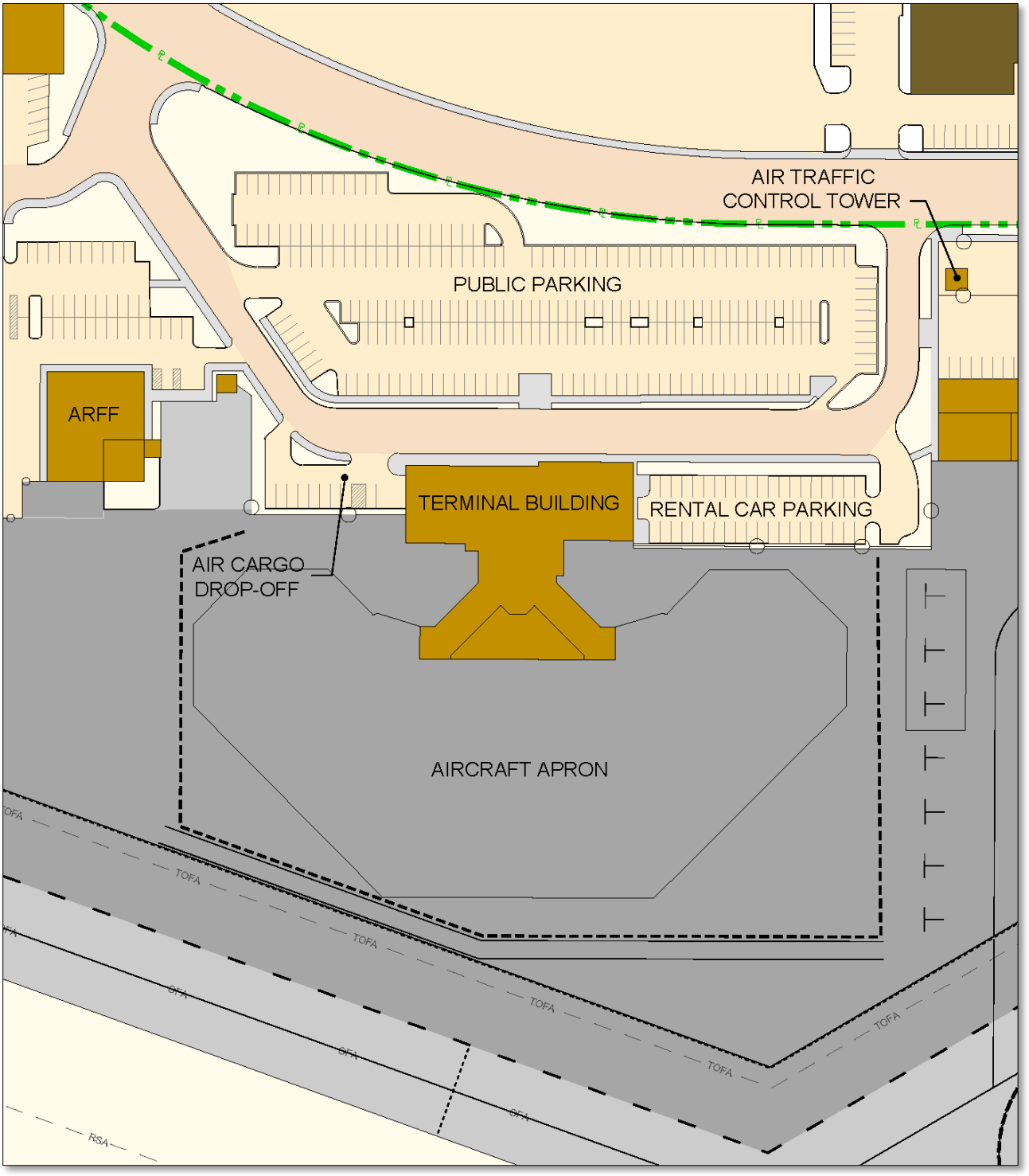


Figure 2-7: Terminal Area

Figure 2-8 and Figure 2-9 show the current floor plan for the passenger terminal. As seen the passenger enters the doorway and has two options for proceeding to the ticket counter, depending on what airline is being used. From ticketing they proceed to the TSA security screening area in the center of the building and, once screened, move into the spacious gate area. The YKM terminal currently provides concessions for the passengers from vending machines.

Departures Process

Curbside

Given current levels of commercial service, there is an ample length of available curbside for passenger loading and unloading. The drive in front of the terminal offers frontage for easy loading and unloading from private vehicles, taxis and buses, and extends eastward beyond the terminal should terminal user demand exceed the covered frontage available. The curbside immediately in front of the terminal is covered, providing passengers with shelter from inclement weather. However, the curbside width is somewhat narrow. The location of the concrete-clad steel columns which support the roof canopy overhead can interfere with the opening of passenger-side car doors along the curb. Also, the vestibule at the main terminal entrance is the only terminal entry on the curbside and serves both departing and arriving passengers, which can lead to congestion if departure and arrival traffic occur simultaneously.

Ticket Lobby

The Ticket Lobby is located immediately inside the main terminal entrance. Given current levels of commercial service, the number of ticket counter positions is adequate to handle passenger volumes. The orientation of the ticket counters (perpendicular to the curbside); the separated physical locations of airline ticket counters; as well as the inadequate size of the passenger queuing areas pose significant challenges to efficient passenger processing and circulation, as shown in Figure 2-10. The current low level of passenger volumes has kept these shortcomings from being major problems.

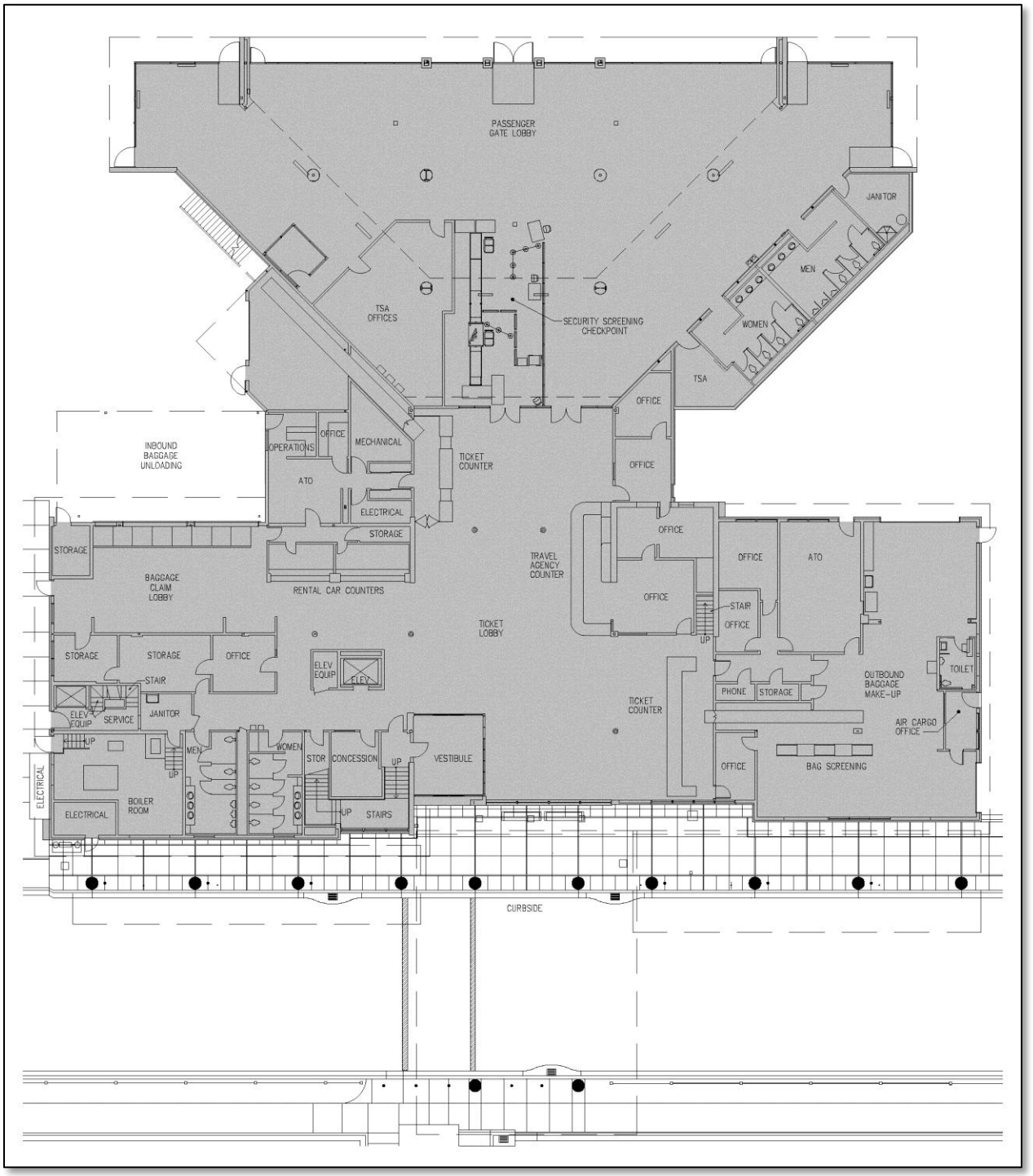


Figure 2-8: Terminal Floor Plan (First Floor)

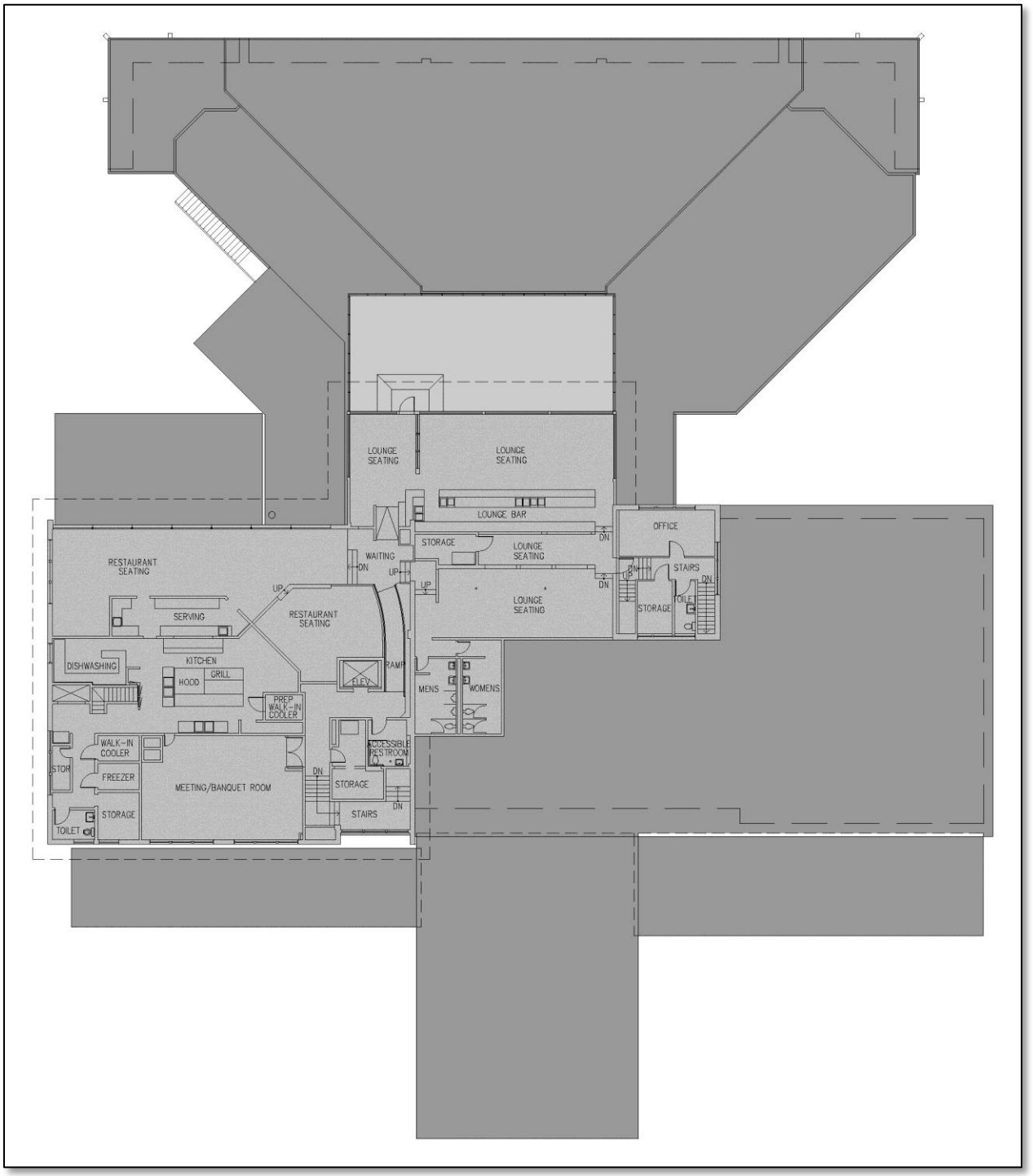


Figure 2-9: Terminal Floor Plan (Second Floor)

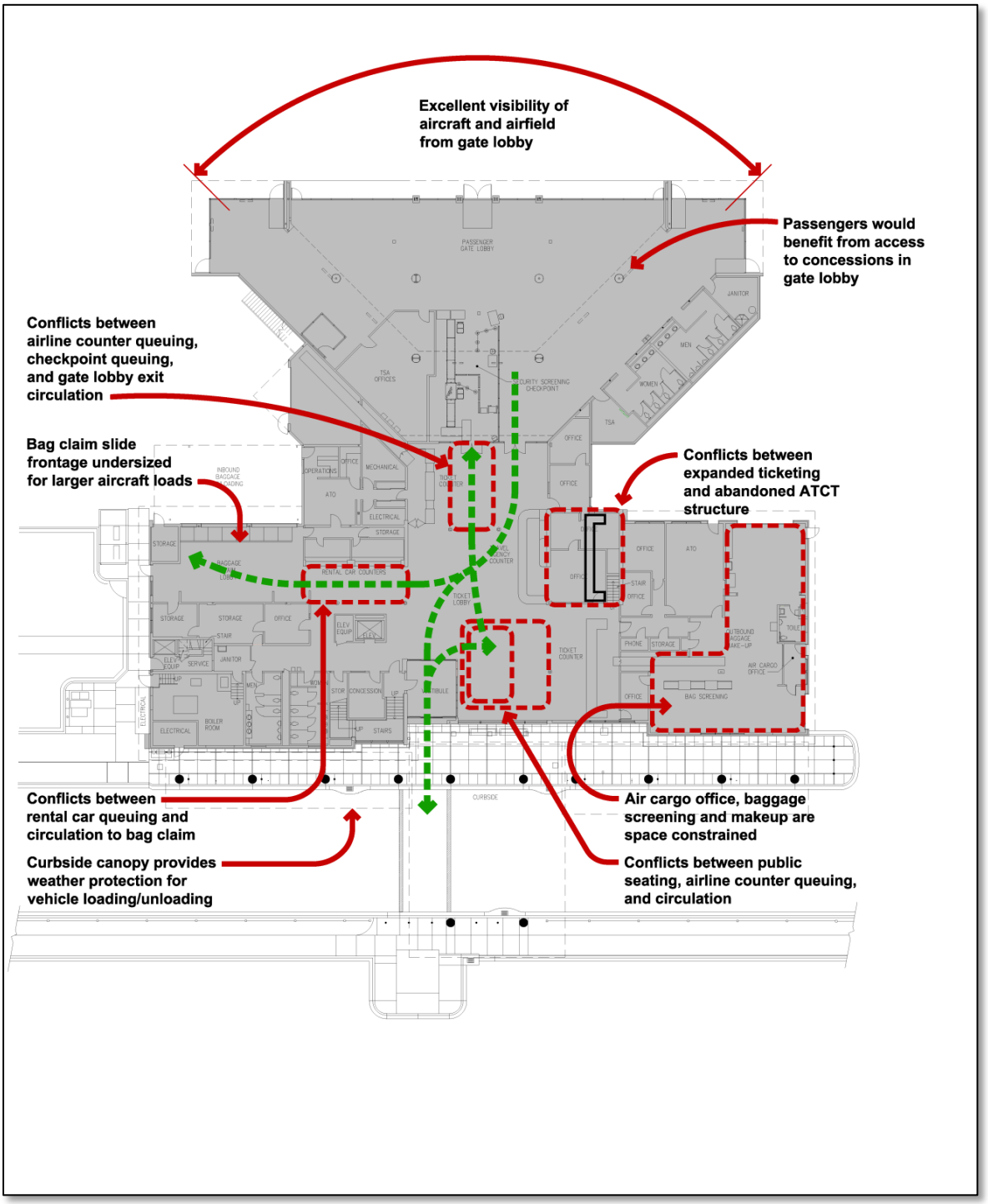


Figure 2-10: Terminal Facility Assessment

Also, the former existence of a travel agency customer service counter in the ticket lobby could contribute to circulation congestion if passenger volumes were higher. The amenity of a travel-related tenant is a positive feature should it return, but the location should be reconsidered during future terminal planning efforts.

The overall passenger processing flow diagram for the terminal is a product of the original small-scale 1950 passenger terminal. Given the passenger demands in that era, the layout was efficient and properly scaled. Today's air passenger facility demands are far different and significant increases in passenger volumes would bring this terminal quickly to gridlock in a number of areas, including: the building entry, the ticketing queues, the ticket counters, and the circulation space connecting these functions.

Airline Ticket Office (ATO) and Baggage Operations

ATO space for Alaska Airlines and a future air carrier appear to be adequate for the immediate future. However, the physical separation of the ATO and baggage areas (as well as the ticket counters) is an inefficient configuration brought about by earlier decisions to expand the building in a cost efficient rather than functional manner.

The Alaska Airlines outbound baggage handling area is currently undersized, due to the addition of Transportation Security Administration (TSA) baggage screening operations in the makeup area. Baggage cart circulation is highly constrained, and the airline employee lockers and break area have no enclosed space. An air cargo operation coexists in the makeup room, with a public entry and transaction counter opening off of a small parking area west of the terminal building. Additional storage area for equipment would also be useful.

Concessions

Currently, food and beverage concession in the terminal building are provided through vending machines. There is a small vacant space on the ground floor for a coffee/snack type concession, and there is a vacant restaurant/lounge on the second floor. There are currently no provisions for airside concessions. Passengers would benefit from concessions, but the small volume of passenger traffic cannot support the expense of providing the service. Also, an airside food and beverage concession, preferably with a view to airside, would be a big improvement to customer service if passenger volumes supported the investment.

Public Services

Public services include restrooms, vending machines, an automated teller machine (ATM), and other conveniences provided for the passengers. The primary public restrooms in the main terminal are adequately sized and have been renovated in recent years. Newer terminal buildings typically

include a small "family restroom" wherever men's and women's rooms are located which is handicap-accessible and includes a baby-changing table. While this type of service may not be possible at the existing restroom location, it is an idea worth exploring should new restrooms be considered as part of future terminal improvements.

Currently the ATM machine in the terminal is a freestanding device located adjacent to the main entrance in the ticket lobby. Also, there is no business center or location to send a fax or plug in a notebook computer in the terminal. A small area with these provisions would provide an added level of service to the business traveler.

Security Screening

The passenger security screening checkpoint is located immediately adjacent to a currently vacant ticket counter area, resulting in an unfortunate conflict between ticketing and checkpoint queuing lines. These lines, when concurrent, contribute to overall congestion in the ticket lobby and the main circulation areas in the non-secure portion of the terminal building. If future traffic levels or TSA screening requirements dictated a larger footprint for screening, the terminal would have to give up lobby space to accommodate the increase.

Passenger Gate Lobby and Boarding Area

The passenger gate lobby and boarding area is south of the ticket lobby and adjacent to the aircraft apron at ground level. It was expanded during the 1997 to 2000 terminal rehabilitation project, filling in the space between the two diagonal passenger circulation concourses added during the 1968 expansion project. Unfortunately this infill diminished the airside views from the restaurant/lounge operation, one of primary assets of the second floor location concession.

Improvements to airside passenger service could be made by: family restrooms; providing food and beverage service; providing sit-down counters for working on laptop computers; or providing some café-type tables and chairs in addition to the traditional gate lobby seating.

Arrivals Process

Arrivals Entrance/Greeters' Area

Upon exiting their aircraft, passengers enter the terminal by way of one of five arrival/departure gates. Once inside the gate lobby, they proceed to the airside exit doors adjacent the passenger security checkpoint. These doors allow passage into the public lobby/ticket lobby space which allows transit to rental car counters and the baggage claim lobby beyond. Because of the limited size of the Public Lobby/Ticket Lobby space, and because of the arrangement of functions requiring

queuing in a main circulation area, this space can quickly become crowded if passenger and meeter/greeter numbers are substantial.

Baggage Claim/Rental Cars

The baggage claim lobby consists of approximately 32 linear feet of baggage slide frontage, and the rental car counters consist of two 12-foot public transaction counters. During the terminal assessment site visit arriving passenger traffic was not observed. The following discusses opinions on its functionality.

During a one flight operation by a Q-400 with 70% load factor, 1 bag/passenger ratio, and the plane-side bag claim option used by 50% of the passengers, it would be predicted that the 32 linear feet of baggage slide is adequate. If actual passenger traffic volume or baggage ratios become higher, this will affect the ability of the claim slide to display available baggage for claiming.

The standing space within the claim lobby is limited and could become congested if passengers are accompanied into the claim lobby by their meeter/greeter parties.

Rental car counter frontage is limited to two 12-foot counter frontages that are both occupied. It is not known whether other rental car companies have requested space in the terminal but it is not uncommon to have up to 5 rental car companies interested in serving non-hub airports.

The rental car lobby space on which the rental car counters front is narrow and it is likely that during flight arrivals there is congestion resulting from completing demands for rental car customer queues and passengers circulating to baggage claim.

Public Services

Currently, there are small restrooms near the baggage claim area; however, these restrooms are not along the path of travel for arriving passengers and are therefore somewhat difficult to locate. Ideally, larger restrooms visible from the bag claim area would be preferable.

A number of other items in and around the baggage claim area that would improve passenger service include baggage trolleys, seating, and a visitor's welcome/information desk.

Arrivals Curb

See earlier discussion on departures process. The curbside has adequate length for current passenger volumes and is largely covered to keep passengers protected from the weather. As was noted with the departures curb, the columns supporting the roof canopy are positioned close to the drive and pose a hazard to passenger-side car doors.

Building Services

The terminal building operates for the most part as a stand-alone facility without dependence on centralized city or county services for daily operations. Relative to building services that the building requires on-site for daily operations (mechanical, electrical, communication, elevator rooms, etc.), the terminal has all the functions that it presently requires.

However, any future expansions must revisit the issue of fire protection with an eye toward present code requirements for fire sprinklers and anticipated facility size. While observing that the terminal has existing support spaces for utilities and services, these spaces are in some cases undersized due to incremental growth of demand or addition of new equipment over time. Relocation and/or resizing of spaces is deemed prudent if/when conceptual design for a facility expansion begins.

TSA-required facility security systems include an access control and monitoring system that monitors doors and gates along the airport operations perimeter. The operating system and software for this function are housed in the terminal for all the access doors and is connected to a computer system in the administration office. Approved airport personnel are issued badges that allow access via card readers at each door or gate.

Administrative Services

Airport administrative offices were relocated to a former fire station building adjacent to the airfield. Current functions include a reception area, small conference room, and offices for airport management.

Airport Emergency Operations Center (AEOC) Station 94 is located in the Aircraft Rescue and Fire Fighting (ARFF) station for coordinating smaller emergencies that do not require the County Emergency Operations Center to be activated. It may also serve as a command post depending on location of the accident/incident. Major emergency events are managed from city offices downtown. There is no airport police office at the airport. Police services are assigned from police department offices downtown. Neither of these services was mentioned by staff as being deficient.

2.5.2.3 Airline Apron Area

The apron area directly south of the terminal is designated for airline use. Space is provided for four aircraft parking positions, although they are seldom used at the same time. The apron also provides for airline service equipment and safe passenger circulation.

2.5.2.4 Air Cargo

Air cargo services at the airport are provided by Federal Express, UPS, and AeroFlight. FedEx operates from a building west of the terminal which measures approximately 7,700 square feet. UPS and AeroFlight operate from the McCormick Air Center ramp.

2.5.2.5 Aircraft Rescue and Fire Fighting (ARFF)

The ARFF building is located west of the main terminal and measures approximately 4,000 square feet in area. The building houses an Oshkosh T-1500 fire truck and Oshkosh ST-1 Striker.

2.5.2.6 Airport Traffic Control Tower (ATCT)

The airport is served by a contract Level 1 ATCT with radar support from the Pasco TRACON. The tower is located just east of the terminal and has a height of 78 feet.

2.5.3 General Aviation Facilities

There are more than 160 general aviation aircraft based at YKM. These are housed in hangars or stored outdoors on tiedowns in four distinct areas on the airport; the northwest GA Area; the terminal area; the east GA area; and, the southeast GA area as shown in Figure 2-11.

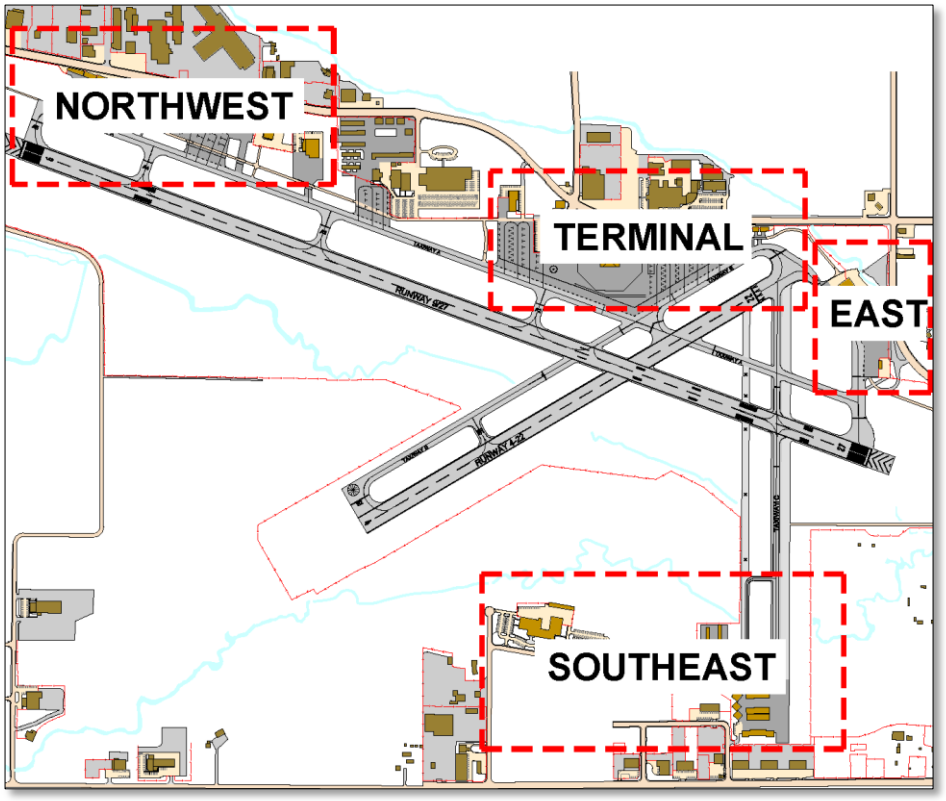


Figure 2-11: GA Facilities - Key Plan

2.5.3.1 Northwest General Aviation Area

This area measures more than 53 acres and includes aviation and non-aviation related buildings as well as a former "through the fence" operation that has recently gone out of business. The area includes 29 paved tiedowns and 2 helicopter landing pads. Refer to Figure 2-12 and Table 2-7 for Northwest GA Area buildings.

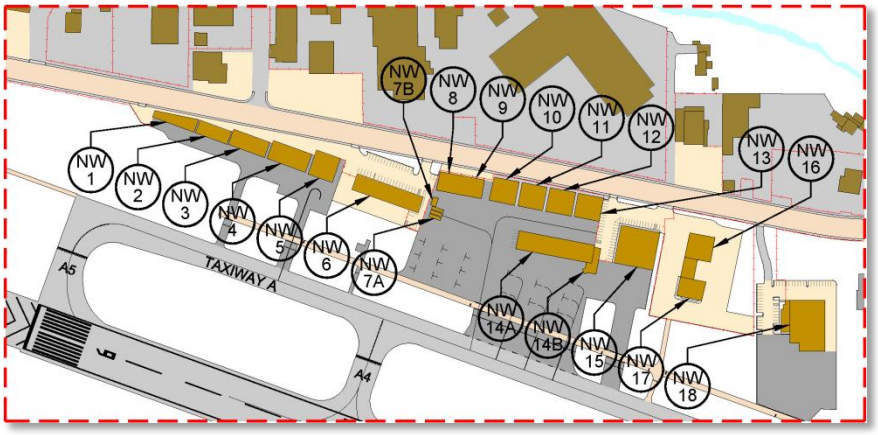


Figure 2-12: Northwest GA Area

Table 2-7: General Aviation Tenants (Northwest Area)

Building Number	Use	Building Height (feet above ground)
NW1	Box Hangar	28
NW2	Box Hangar	28
NW3	Box Hangar	28
NW4	Box Hangar	28
NW5	Box Hangar	26
NW6	Van Doran Sales (non-aviation)	23.6
NW7A	Fuel Tanks	14
NW7B	Fuel House	11
NW8	Box Hangar	29
NW9	Box Hangar	29
NW10	Box Hangar	26
NW11	Box Hangar	25.5
NW12	Box Hangar	25.5
NW13	Box Hangar	29.5
NW14A	T-Hangar	19
NW14B	McCormick Aviation FBO	30
NW15	Larson	36
NW16	Airport Maintenance Building	22
NW17	Airport Maintenance Building	26
NW18	Air Cargo Building (FEDEX)	25

2.5.3.2 GA Terminal Area

The GA terminal area includes the terminal building and covers a triangle shaped area measuring approximately 9 acres. Included are several hangars, 35 paved tiedown spaces, and other facilities. Refer to Figure 2-13 and Table 2-8 for GA Terminal Area buildings.

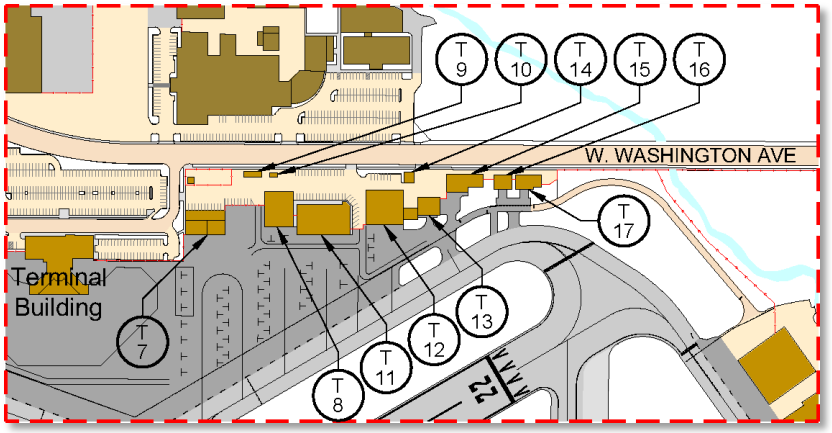


Figure 2-13: GA Terminal Area

Table 2-8: General Aviation Tenants (Terminal Area)

Building Number	Use	Building Height (feet above ground)
T7	Old FedEx Hangar	23’
T8	Box Hangar	26’
T9	New Electrical Vault	13.5’
T10	Old Electrical Vault	10.5’
T11	Box Hangar	27’
T12	Box Hangar	28’
T13	Box Hangar	20’
T14	Water Treatment Plant	10’
T15	Box Hangar	18’
T16	Box Hangar	21’
T17	Box Hangar	21’

2.5.3.3 East General Aviation Area

The east general aviation area is the home of the McAllister Air Museum and the CubCrafters manufacturing facility. The area encompasses 9 acres and provides space for 11 aircraft tiedowns. Refer to Figure 2-14 and Table 2-9 for East GA Area buildings.

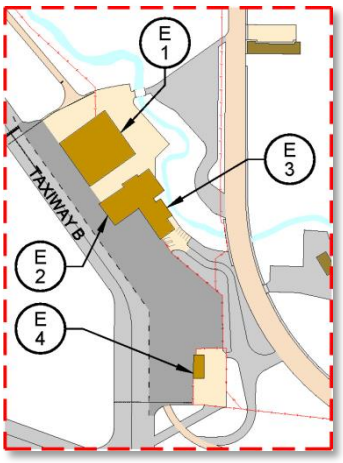


Figure 2-14: East GA Area

Table 2-9: General Aviation Tenants (East Area)

Building Number	Use	Building Height (feet above ground)
E1	CubCrafters	25’
E2	CubCrafters	25’
E3	McAllister Air Museum	20’
E4	Non-Aviation (hair salon, old terminal building)	19’

2.5.3.4 South General Aviation Area

The south general aviation area is a mixture of old hangars owned by the airport and new privately owned hangar buildings. The south area is the primary area where new development proposals are being considered. The area measures about 163 acres, most of it currently undeveloped with some area hampered by flood plains/ways as well as the existing landfill. Refer to Figure 2-15 and Table 2-10 for East GA Area buildings.

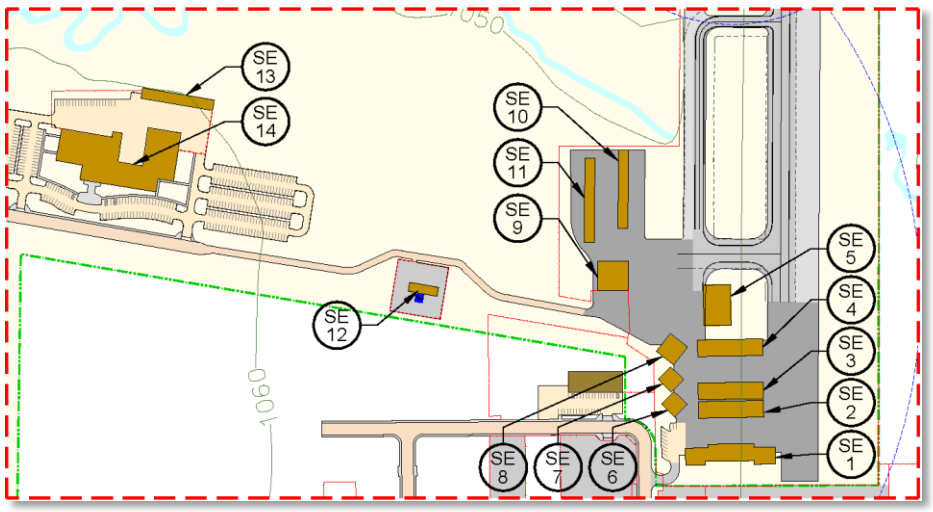


Figure 2-15: Southeast GA Area

Table 2-10: General Aviation Tenants (South Area)

Building Number	Use	Building Height (feet above ground)
SE1	Box Hangar	30’
SE2	Box Hangar	21’
SE3	Box Hangar	21’
SE4	Box Hangar	21’
SE5	JR Helicopter	26.2’
SE6	Box Hangar	21’
SE7	Box Hangar	23’
SE8	Box Hangar	20’
SE9	T-Hangar	15’
SE10	T-Hangar	16’
SE11	Airport Surveillance Radar (ASR-9)	59’/82’
SE12	National Guard (Non-Aviation)	31’
SE13	National Guard (Non-Aviation)	~12’

2.5.3.5 FBO (Fixed Base Operator) and Support Services

YKM has a single fixed base operator, McCormick Air Center. McCormick Air Center is located on the airport's northwest and northeast general aviation areas. They offer the following services to both based and transient GA aircraft:

Fueling (DESC fuel provider)	Avionics
Aircraft maintenance	Flight training
Courtesy crew car	Rental cars
Wireless high speed internet	Oxygen & deicing
Hangars	Aircraft cleaning / washing / detailing
Aircraft parts	Support facilities
Fuel storage facilities	

2.5.4 Fuel Storage and Distribution

Fuel storage facilities are located at three places on the airport. McCormick Aviation owns and operates a fuel storage and dispensing area in the northwest general aviation area. This fueling facility has two 12,000-gallon aboveground storage tanks for Jet-A fuel. This is distributed using two dedicated trucks or through self-service. In addition, McCormick operates a 12,000-gallon aboveground storage tank for 100 LL Avgas. This is distributed via a single truck and/or self-service facilities.

Also in the northwest GA area a private aircraft owner maintains a 10,000-gallon aboveground tank for Jet A fuel. This is for private use only.

On the east GA area, the McAllister Museum offers 100 LL fuel to pilots through a self-service facility. Storage is a 12,000-gallon aboveground tank.

2.5.5 Utility Systems

2.5.5.1 Water

Public water lines surround the airport property in Washington Avenue, Valley Mall Boulevard, South 16th Avenue, South 21st Avenue, Oak Avenue, and Ahtanum Road. Although located in the City of Yakima water service boundary, the airport property can be served water by three different providers. City of Yakima currently provides water service to the airport and various airport and private buildings on the property.

Nob Hill Water currently has lines installed in West Washington Avenue near 48th Avenue and Spring Creek Road, and plans to extend their water system from Spring Creek Road to South 38th Avenue along the south side of the airport. At this time there are no known connections to the Nob Hill Water system by the Yakima Air Terminal, airport owned buildings or private businesses including the City of Yakima, Nob Hill Water and the City of Union Gap.

The City of Union Gap has installed a new 12-inch water main in Valley Mall Boulevard which borders airport property along the northeast corner. However, with the City of Yakima already having a water main in this area, it is unlikely a connection will be made to the City of Union Gap's water system unless needed to increase fire flow protection.

City of Yakima water mains and services have been extended into various parts of the airport to create water loops and enhance fire flow. The airport is served by two primary water mains; the 12-inch-diameter main located in West Washington Avenue between 48th and 24th Avenues, and a 16-inch line with an 8-inch companion line east of 24th Avenue. The 16-inch water main branches in Washington Avenue near the South 16th Avenue intersection and crosses the airfield between Runway 22 and CubCrafters.

The administration building is currently served by City water. No other domestic or irrigation wells are known to exist on airport property. However, there are several domestic wells in close proximity.

Additionally, there are several sets of monitoring wells around the airport and on airport property. Although they are not used to provide water, they have to remain in place until such time when their purpose is complete. The first set is located near Carpenter Ditch and were used to monitor ground water elevations. This monitoring project was completed this year. The second known set of monitoring wells was installed by Landau Associates in 2009.

2.5.5.2 Sewer (Sanitary and Storm)

Sanitary

The Cities of Yakima and Union Gap are the providers of public sewer services near airport property. The City of Yakima maintains two trunk lines; one in West Washington Avenue and the second in Pioneer Street/Valley Mall Boulevard. The City of Union Gap maintains a sanitary sewer main in Valley Mall Boulevard. No known connections have been made to this sewer main.

All airport services and existing buildings (except the hair salon and McAllister Museum) that require a discharge into the sewer system are connected to one of the two trunk lines maintained by the City of Yakima. There are two known existing and in-use septic systems on airport property. Both the McAllister Museum and an older complex (currently a hair salon) south of the Museum use these onsite sewer disposal systems which are maintained by the airport.

Stormwater

There are two nearby stormwater conveyance systems; one is located in West Washington Avenue and one in Valley Mall Boulevard. near the intersection with South 16th Avenue. The system in West Washington Avenue is maintained by the City of Yakima and outfalls into Wide Hollow Creek near CubCrafters. The storm drainage system in Valley Mall Boulevard and South 16th Avenue is maintained by the City of Union Gap and uses subsurface infiltration to dispose of generated stormwater from the roadway. No known stormwater conveyance systems from airport buildings or airport property are connected to either of these City systems.

All paved areas on the airfield drain toward an existing storm structure, namely a catch basin, or toward grass shoulders which act as filter strips. There are two creeks across the airport property, Wide Hollow Creek and Bachelor Creek, which ultimately receive all stormwater discharges that are not infiltrated into the underlying soils. Aside from the two creeks, there are no above ground surface detention systems.

Additionally, all taxiways and runways were constructed with subdrain systems to mitigate groundwater. These open joint subdrains also carry away surface stormwater that infiltrates and reaches the subdrains. The subdrain systems ultimately discharge to on-site creeks. The City of Yakima completed a stormwater study in 2010 to determine all discharge locations.

2.5.5.3 Electric

Electricity for the airport and surrounding areas is provided through Pacific Power and Light. There are several underground high voltage lines (20,000 volts) in and around the airport and on both the north and south sides of the airfield.

2.5.5.4 Gas

Natural gas is distributed by Cascade Natural Gas and exists around the Yakima Air Terminal in West Washington Avenue and in the south development area. Several private hangars are connected to natural gas. The terminal building, maintenance shop and administration offices are connected to natural gas.

There is a proposal from Cascade Natural Gas to extend a gas main along South 16th Avenue to connect West Washington Avenue to the existing lines along the south side of the airport and allow for increase in gas pressure. No known timeline for this work has been provided.

2.5.6 Perimeter Fencing

The Yakima Air Terminal has a perimeter security fence that meets FAA and TSA standards for a Part 139 certificated airport. The fencing consists of 7-foot-tall chain link fence with three strands of barbed wire. Most gates are accessed with a mechanism that requires a security code to be entered. However some of the lesser-used gates intended to allow access by the leasees that are using the land for cattle-grazing or crops use lock and key access control.

2.6 ENVIRONMENTAL DATA

2.6.1 Hydrology

Water Resource Inventory Areas (WRIA) Inventory - Area 37 Lower Yakima.

The Yakima City area receives an average annual total of 8.29 inches precipitation with the wettest time of year being from November to March (USDA, 1985). Three permanent streams are located on YKM property: Bachelor Creek, Spring Creek and Wide Hollow Creek, and a permanent irrigation ditch, Carpenter Ditch.

A fish hatchery was located on Spring Creek, a tributary of Bachelor Creek, southeast of Runway 9/27. The portion of the hatchery above the ground surface has been removed. However, the weir (still located on site) remains an impediment to fish movement. In order to get upstream, fish have to pass through a weir box, small waterfall, and debris screen (which may be large enough to allow minnows/juvenile fish through). Flood irrigation is practiced in the vicinity of the weir. The irrigation ditch, Carpenter Ditch, diverts water from Spring Creek before it reaches Bachelor Creek. Water from the ditch provides irrigation water. The ditch berms are not well maintained and water leakage has created wetland like conditions within these riparian corridors.

Bachelor Creek

Bachelor Creek originates approximately 14.75 miles west of YKM. It transits within YKM from a start point near the southwest corner of the intersections of South 36th Avenue and Ahtanum Road. In general, Bachelor Creek runs westerly to easterly, passing through the middle of YKM, south of Runway 4/22. The Creek crosses under the former footprint of South 16th Avenue and the paved perimeter road and continues east to merge with Carpenter Ditch, an irrigation ditch and associated wetlands. Bachelor Creek crosses under the existing South 16th Avenue before meandering southeast approximately 1.5 miles under Ahtanum Road to converge with Ahtanum Creek (a tributary of the Yakima River). The Type 2 Creek requires a 25-foot buffer minimum and 75-foot buffer maximum from its delineated ordinary high water mark (OHWM) within YKM boundaries.

Wide Hollow Creek

Wide Hollow Creek originates approximately 15 miles west of YKM. It transits within YKM for approximately 1,000 lineal feet near the northeast portion of YKM. From a start point near the intersections of South 16th Avenue and West Washington Avenue, Wide Hollow Creek meanders through a vegetated channel under an access road for Cub Crafters and before exiting YKM under the recently improved South 16th Avenue. Wide Hollow Creek is a tributary of the Yakima River. The Type 2 Creek requires a 25-foot buffer minimum and 75-foot buffer maximum from its delineated OHWM within YKM boundaries.

Spring Creek

Spring Creek originates approximately 2,000 feet west of West Washington Avenue in two separate channels. These two channels merge near an agriculture field at West Washington Avenue. The creek crosses under West Washington Avenue into YKM and meanders out of, and back into the airport near the intersections of Spring Creek Road and South 36th Avenue. This is a location of an existing mitigation area for the Runway 27 Safety Area Improvement Project (Widener and Associates September 2008). The creek continues in a partially channelized, partially vegetated, meandering ditch, under Runway 4 and further easterly towards the former South 16th Avenue footprint, towards the weir and former hatchery location, east of the perimeter road. Spring Creek becomes the Carpenter Irrigation Ditch at this location, regulating flows between the ditch and Bachelor Creek. Spring Creek a Type 3 stream (and associated wetlands) flows west to east and through YKM within both the City of Yakima and Yakima County boundaries. It requires a minimum 25-foot and maximum 50-foot buffer from the delineated OHWM.

Carpenter Irrigation Ditch

Carpenter Irrigation Ditch provides irrigation water to surrounding fields. Waters from the ditch exit airport property as Bachelor Creek, flowing under South 16th Avenue. This ditch is considered waters of the United States within YKM, and is jurisdictional under United States Army Corps of Engineers (Title 33 CFR).

Floodplains

Floodplains are defined by Executive Order 11988, Floodplain Management, as those areas with a one percent chance of flooding in any given year, or once in every 100 years. Examination of Federal Flood Insurance Maps, have revealed the existence of 100 year floodplains north of, within, east of, and west of YKM associated with the meanderings of Bachelor and Spring Creeks. Included in this floodplain area is the south end of Taxiway C and a small part of the proposed extension to Runway end 27 as indicated in the previous master plan. Figure 2-16 represents the floodplains as identified by Yakima County in 2011.

Wetlands

The US Army Corps of Engineers and the US Environmental Protection Agency (EPA) jointly define wetlands as follows: Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (33 CFR 328.3). If an area is covered with water for short durations such that no effect occurs on moist vegetation, it is not considered a wetland, nor are the permanent waters of streams, reservoirs, and deep lakes.

From a regulatory stand point, the term wetlands is generally used to describe wet areas that may possess all three essential characteristics for a jurisdictional wetland under the Federal Clean Water Act (as defined in the Code of Federal Regulations Part 328.3[b]). These characteristics are: 1) hydrophytic vegetation, 2) hydric soils, and 3) wetland hydrology. There are approximately 2,000 named hydric soils in the US that occur in wetlands, these are further identified within the county hydric soils lists, and are used as indicator soils to detect the possible presence of wetlands. An examination of soil maps of the airport indicate that soils classified as hydric soils, or which have components that are considered to be hydric soils exist along the stream corridors of Bachelor, Spring and Wide Hollow Creeks, and along Carpenter Irrigation ditch, a jurisdictional water as determined from the Corps (Widener January 2009). An examination of the National Wetland Inventory Map indicates the presence of wetlands associated with these same creeks and the irrigation ditch system, within and outside of YKM. Wetlands have also been identified as part of two wetland mitigation sites that are within YKM. One is located at the northwest intersection of

West Washington Avenue and South 48th Avenue, and the other is located along Spring Creek near the intersection of South 38th Avenue.

Wetlands have been identified within YKM as part of past project analysis, again these wetlands are identified within and along the channels of the same creek systems as those mentioned above. There are also wetland mitigation sites that have been identified and delineated as part of projects that have occurred in conjunction with the YKM expansion and improvement projects, and road projects in the vicinity of the YKM.

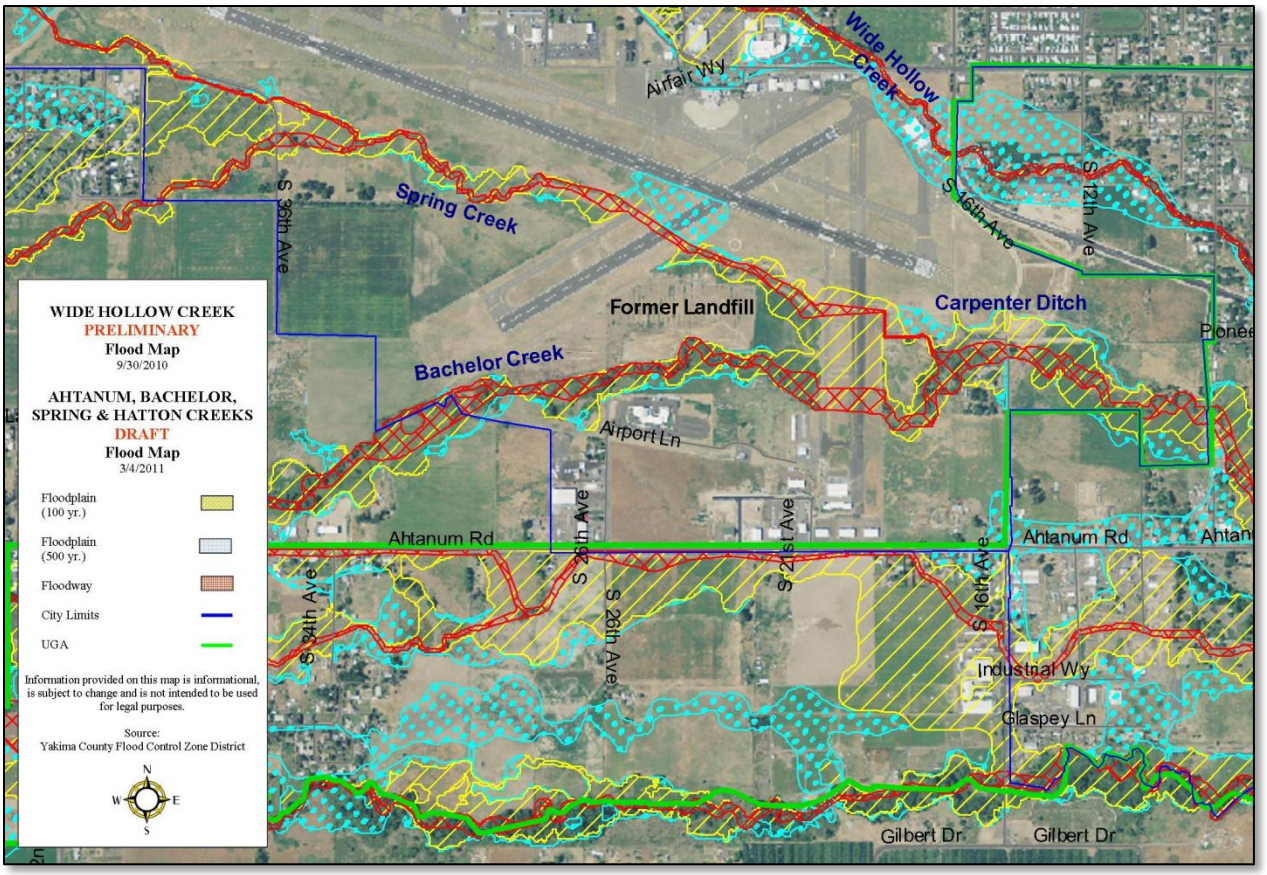


Figure 2-16: Floodplains

2.6.2 Landfill

Yakima County used to run a landfill operation on site of the YKM. According to facilities representative Mike Heironimus at the airport, the landfill was formerly located north of the existing

Bachelor Creek and south of the existing Spring Creek. The landfill was capped and shut down approximately in the 1950s.

2.6.3 Wind and Weather

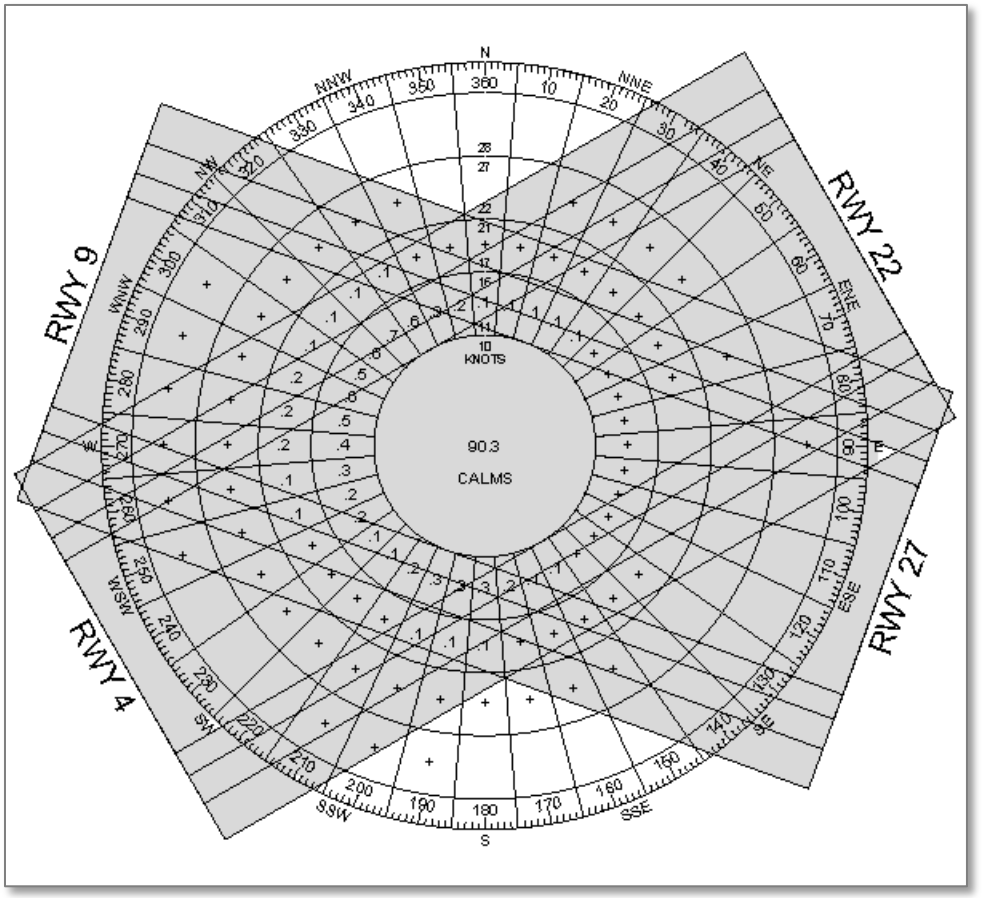
Weather conditions such as cloud ceiling, visibility, and wind, are significant factors in the operation of an airport. Weather has a direct impact on aircraft flight, primarily on the equipment needed in the aircraft to navigate to and land at airports, particularly for instrument flight conditions when less than clear weather exists. Accordingly, a weather condition classification system has been developed. Visual Meteorological Conditions (VMC) occur when visibility is at least three statute miles and the ceiling is a least 1,000 feet above ground level (AGL). Visual Flight Rules (VFR) are in effect under VMC. Instrument Meteorological Conditions (IMC) occur whenever visibility is at least one statute mile but less than three statute miles and/or the ceiling is at least 500 feet but less than 1,000 feet AGL. Instrument Flight Rules (IFR) are in effect under IMC. Poor Visibility and Ceiling (PVC) conditions exist whenever visibility is less than one statute mile and/or the ceiling is less than 500 feet AGL.

At YKM, VMC conditions occur on average 94.6% of the time. Therefore, IFR and PVC conditions occur only 5.4% of the year.

Historical wind and weather data for the airport was obtained from the National Climatic Center for the years 2000 through 2009. It shows that, based on all-weather wind coverage with a 13-knot crosswind limitation, Runway 9/27 has 98.01% coverage and Runway 4/22 has 96.83% coverage. The two runways have a combined wind coverage of 99.26%. Winds are calm (0 to 10 knots) an average of 90.3% of the time. This data is presented in Figure 2-17 as an all-weather wind rose and includes calculations for 10.5-, 13-, 16-, and 20-knot crosswind coverage.

Under VFR conditions with a 13-knot crosswind limitation, Runway 9/27 is usable 97.90% of the time and Runway 4/22 is usable 96.66% of the time. Both runways have a combined coverage of 99.22%. Winds are calm an average of 92.6% of the time. This is shown as a VFR wind rose in Figure 2-18.

Under IFR conditions with a 13-knot crosswind limitation, Runway 9/27 is usable 99.93% of the time. Winds are calm an average of 99.8% of the time. This is shown as an IFR wind rose in Figure 2-19.

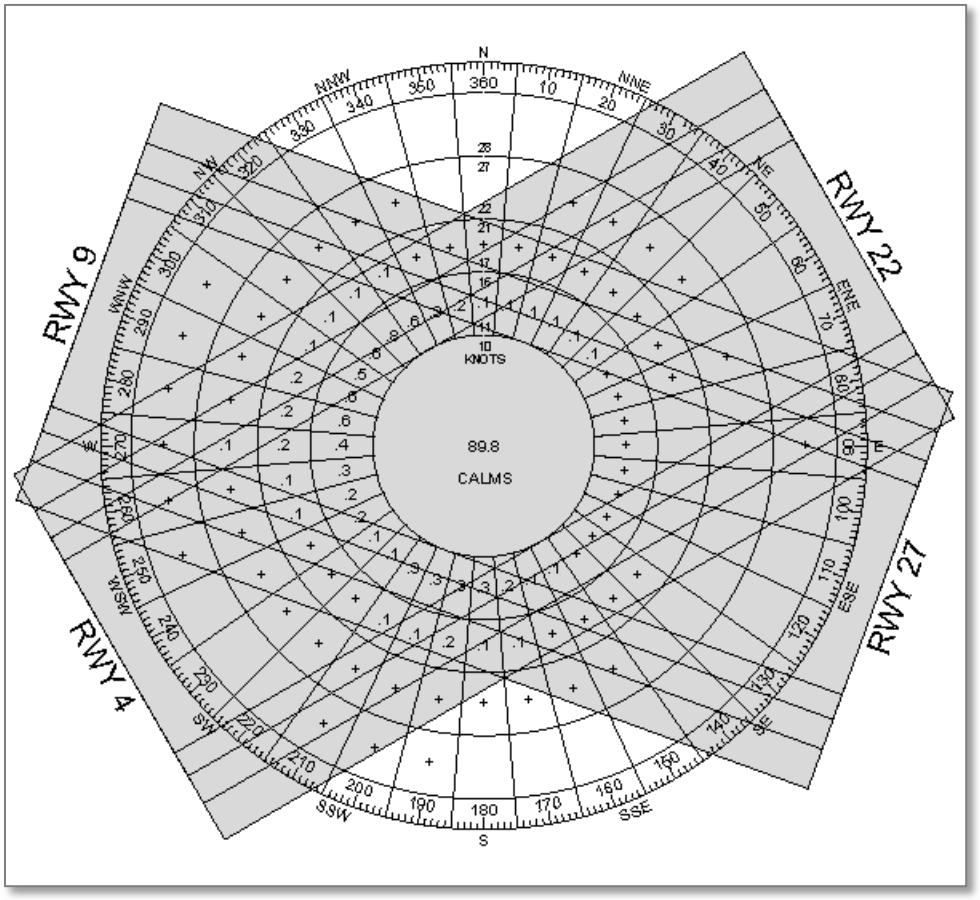


All Weather (78,061 observations)

CROSSWIND	RWY 04/22	RWY 09/27	COMBINED
10.5 knots	94.43%	96.51%	98.18%
13 knots	96.83%	98.01%	99.26%
16 knots	99.07%	99.26%	99.79%
20 knots	99.81%	99.81%	99.97%

Source: National Oceanic and Atmospheric Administration, National Climatic Data Center. Station 72781 - Yakima, Washington. Period of record: 2000-2009

Figure 2-17: All Weather Wind Rose

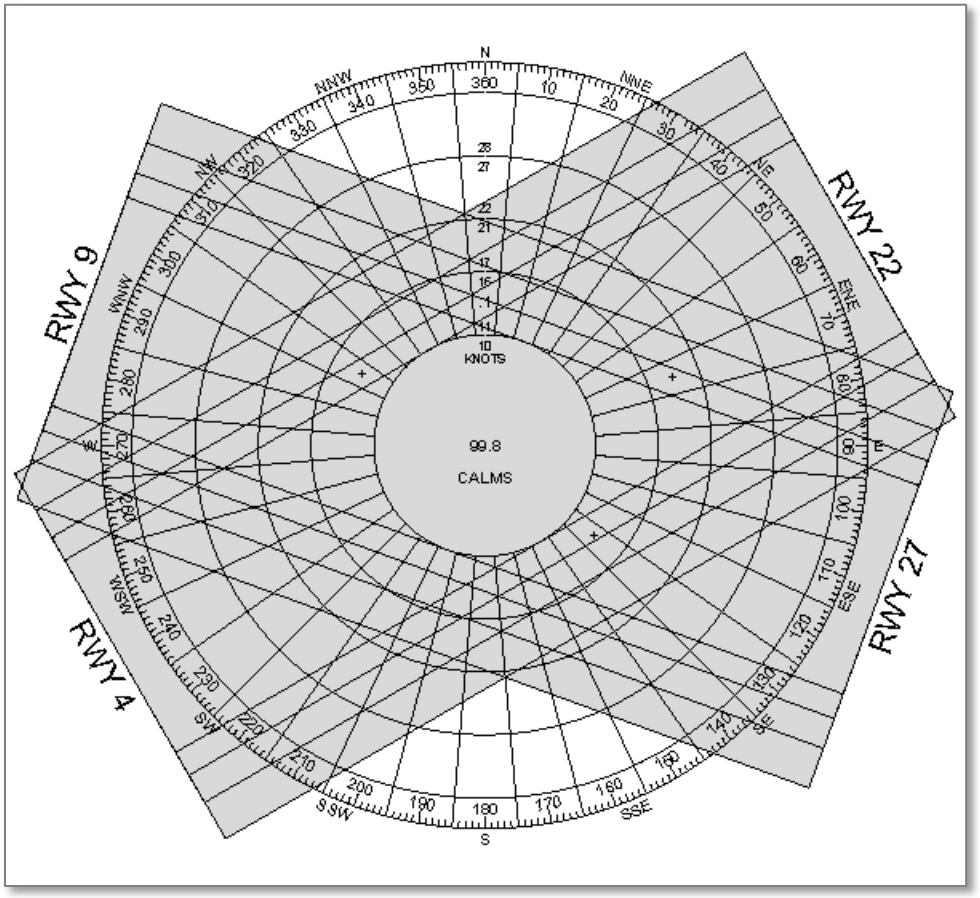


VFR (73,893 observations)

CROSSWIND	RWY 04/22	RWY 09/27	COMBINED
10.5 knots	94.12%	96.32%	98.08%
13 knots	96.66%	97.90%	99.22%
16 knots	99.02%	99.22%	99.78%
20 knots	99.80%	99.80%	99.97%

Source: National Oceanic and Atmospheric Administration, National Climatic Data Center. Station 72781 - Yakima, Washington. Period of record: 2000-2009

Figure 2-18: Visual Flight Rules (VFR) Wind Rose



IFR (3,147 observations)

CROSSWIND	RWY 04/22	RWY 09/27	COMBINED
10.5 knots	99.87%	99.88%	99.92%
13 knots	99.93%	99.93%	99.95%
16 knots	99.97%	99.97%	99.97%
20 knots	99.97%	99.97%	99.97%

Source: National Oceanic and Atmospheric Administration, National Climatic Data Center. Station 72781 - Yakima, Washington. Period of record: 2000-2009

Figure 2-19: Instrument Flight Rules (IFR) Wind Rose

2.7 HISTORICAL AIRPORT ACTIVITY

2.7.1 Commercial Airline Service Area

The Yakima Air Terminal is one of six commercial service airports serving central Washington. These facilities, listed in Table 2-11, compete directly for the same passengers as YKM.

Table 2-11: Commercial Service Airports

Airport	Airport Code	City	Distance from Yakima	Annual Enplaned Passengers
Pangborn Memorial Airport	EAT	Wenatchee	58 miles N	50,930
Grant County International Airport	MWH	Moses Lake	69 miles NE	5,962
Tri-Cities Airport	PSC	Pasco	71 miles SE	245,036
Seattle-Tacoma International Airport	SEA	Seattle	112 miles NW	15,219,321
Portland International Airport	PDX	Portland	126 miles SW	6,449,185

In February of 2010, an air service market analysis was conducted for YKM entitled "True Market Estimate." This estimated the number of inbound and outbound origin and destination (O/D) air travelers moving to and from the airport's catchment area. The catchment area was defined as that area where YKM was the most convenient airport and would be the natural choice for the consumer, were all other factors equal. It includes portions

Data Source: Passenger Demand Analysis (Mead & Hunt, March 2005)

Figure 2-20: Commercial Service Airports

of Yakima, Lewis, King, and Kittitas Counties with a combined population of approximately 270,700 people. The analysis showed this catchment area generated 223,792 Origin and Destination (O&D) 2007 through 2008.

2.7.2 General Aviation Service Area

It is assumed airports within a 50-mile radius of YKM compete directly for general aviation activity. As seen in Table 2-12 and Figure 2-21, there are twelve airports within the 50-mile radius. Few of these, however, have the capability to compete for the corporate aviation sector customers. Six of the airports are privately owned and only Ellensburg's Bower's Field has a runway length capable of accommodating corporate aircraft. The following table summarizes the facilities available at each of the airports located within 50 miles of YKM.

Table 2-12: Regional Airports

Airport	Location	Longest Runway	Approach
Vagabond Army Heliport	8 miles NE	NA	NA
Desert Aire	32 miles E	3,665	Visual
Christenson Brothers (pvt)	37 miles NE	2,506	Visual
Mattawa (pvt)	42 miles NE	2,600	Visual
McMahan (pvt)	18 miles SE	2,000 turf	Visual
Sunnyside Municipal	32 miles SE	3,423	Visual
Prosser	44 miles SE	3,453	Visual
Harrah (pvt)	12 miles SW	2,650 dirt	Visual
West Valley (pvt)	11 miles W	2,400	Visual
Tieton State	27 miles W	2,509 turf	Visual
Vantage (pvt)	34 miles NW	2,400 gravel	Visual
Bowers Field	34 miles N	5,590	Non-Precision

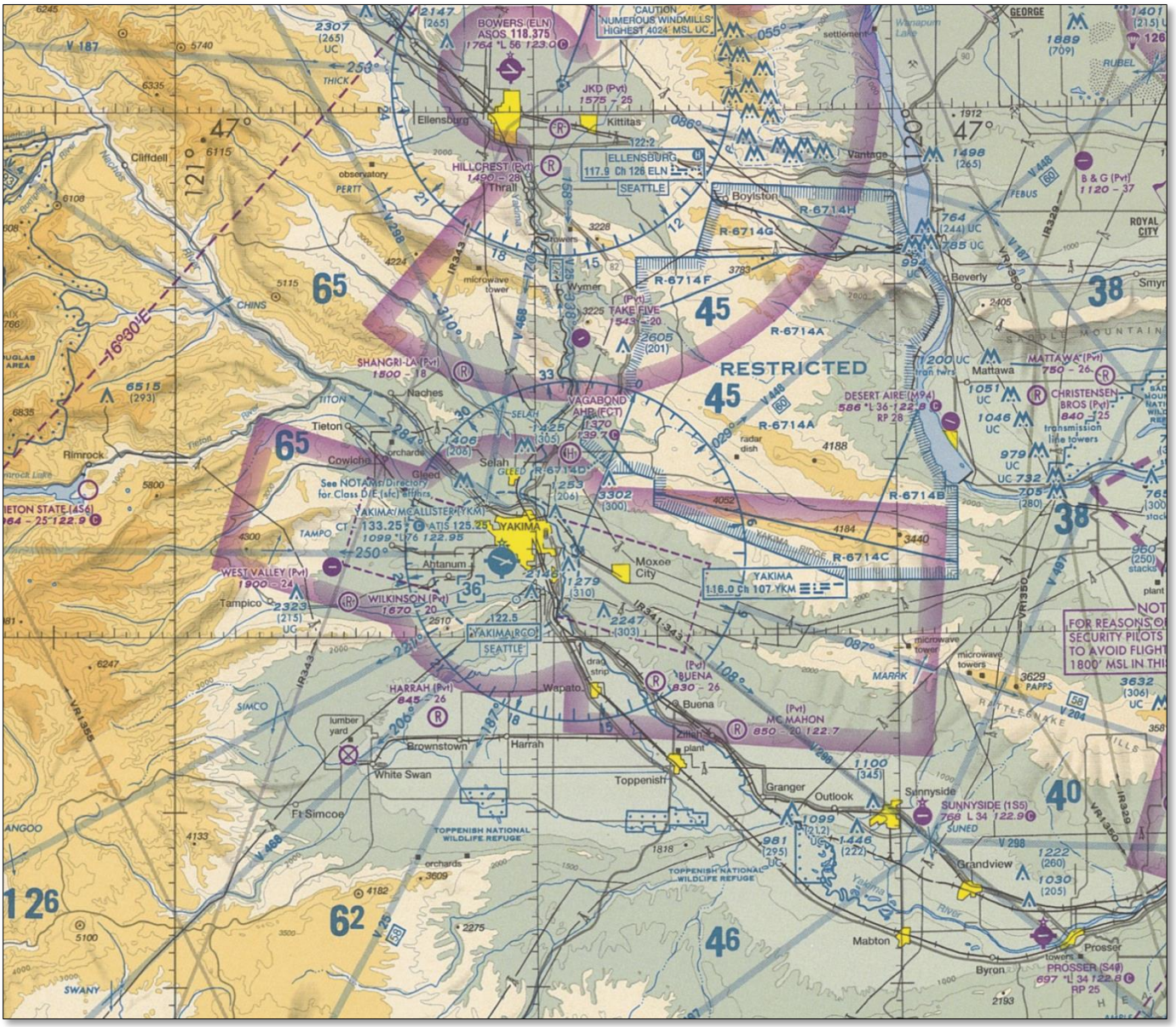


Figure 2-21: Regional Airport Locations

2.7.2.1 Historical Operations Data

Airline service at Yakima has been relatively consistent over the past decade with service being primarily back and forth to the Seattle-Tacoma International Airport offered by Horizon Airlines using 35- to 75-seat aircraft and some unscheduled charter service offering flights to and from destinations associated with the gaming industry (Las Vegas, Reno, Elko, etc.) using 120- to 130-seat aircraft. Total passenger levels have ranged from 92,409 in 1997 to a low of 53,155 in 2004.

Table 2-13: Annual Enplaned Passengers 1990 through 2009

Year	Air Carrier	Commuter	Total
1990	39,022	30,406	69,428
1991	21,140	74,638	95,778
1992	24,710	62,710	87,420
1993	16,826	62,177	79,003
1994	3,740	71,323	75,063
1995	4,301	80,717	85,018
1996	4,633	86,105	90,738
1997	3,247	89,162	92,409
1998	2,655	84,617	87,272
1999	1,154	88,003	89,157
2000	1,104	85,266	86,370
2001	1,338	80,544	81,882
2002	1,514	57,949	59,463
2003	1,543	55,756	57,299
2004	914	52,241	53,155
2005	1,567	55,752	57,319
2006	1,004	56,116	57,120
2007	1,281	64,750	66,031*
2008	1,678	73,034	74,712*
2009	2,224	56,770	58,994

** Delta service to Salt Lake City*

In 2007, eastbound service to Salt Lake City was initiated by Delta Airlines. This resulted in an immediate increase in the number of enplaned passengers by approximately 15,000 per year. When this service was discontinued in 2009 the number of enplaned passengers immediately returned to the same passenger levels that were registered before the service was offered as shown in Table 2-13.

Table 2-14 shows the total number of operations recorded at YKM for the period 1990 through 2009. This table reflects the data recorded by the FAA in the TAF. Horizon passengers are included as commuter passengers. As is shown, operation levels experienced relative stability between 1990 and 2001, varying from year to year but holding between 50,000 and 70,000 annual operations. In 2001, a decrease of approximately 5,000 operations was experienced. This number has stabilized since then.

Table 2-14: Annual Operations: 1990 through 2009

Year	Itinerant Operations					Local Operations			Total Operations
	Air Carrier	Air Taxi or Commuter	General Aviation	Military	Total	General Aviation	Military	Total	
1990	247	15,595	23,086	3,861	42,789	21,595	3,174	24,769	67,558
1991	410	19,240	28,930	3,485	52,065	25,368	3,817	29,185	81,250
1992	676	20,014	30,765	3,083	54,538	22,308	2,678	24,986	79,524
1993	526	19,750	24,974	3,454	48,704	16,970	2,354	19,324	68,028
1994	672	19,273	28,314	3,463	51,722	21,704	3,204	24,908	76,630
1995	530	17,993	25,476	2,954	46,953	25,162	2,392	27,554	74,507
1996	290	18,673	24,620	2,528	46,111	26,157	1,700	27,857	73,968
1997	360	18,556	20,794	2,082	41,792	17,540	2,353	19,893	61,685
1998	317	17,484	17,578	1,435	36,814	16,823	2,059	18,882	55,696
1999	354	16,919	18,471	1,809	37,553	16,567	2,188	18,755	56,308
2000	553	15,861	21,466	1,854	39,734	18,945	2,147	21,092	60,826
2001	237	14,485	19,393	1,712	35,827	18,264	1,185	19,449	55,276
2002	341	11,739	19,601	1,617	33,298	16,989	944	17,933	51,231
2003	90	11,635	18,935	932	31,592	15,074	565	15,639	47,231
2004	60	10,752	18,404	905	30,121	16,227	581	16,808	46,929
2005	96	10,241	18,483	1,044	29,864	18,553	971	19,524	49,388
2006	71	9,911	17,278	1,034	28,294	17,797	838	18,635	46,929
2007	59	9,856	16,888	925	27,728	19,008	1,222	20,230	47,958
2008	1,046	8,751	16,932	945	27,674	20,778	1,012	21,790	49,464
2009	2,596	5,777	17,636	1,167	27,176	20,845	1,080	21,925	49,101

Source: FAA TAF

2.8 EXISTING AIRPORT/COMMUNITY LAND USE COMPATIBILITY PLANNING

2.8.1 WSDOT – Airport Land Use Compatibility Program

In 1996, the Washington State Legislature amended the Growth Management Act (GMA) that requires cities and counties to protect airports from incompatible development. Senate Bill 6422 was codified to RCW 35.63.250, 35A.63.270, 36.70.547 and 36.70A.510. These provisions apply to GMA and Non-GMA jurisdictions (town, city and county) within Washington State.

RCW 36.70A GMA requires that within a comprehensive plan, maps, descriptive text covering objectives, principals and standards, and inventory of air, water, and ground transportation facilities are to be included. Cities or counties must take legislative action to review and revise, as needed, their comprehensive plan. Since airports are considered essential public facilities (EPF), local jurisdictions are not allowed to prohibit the siting, expansion or continuation of an EPF. Enhancing applicable mitigation measures is an allowable action under the GMA.

RCW 36.70.547, 36.70A.510, 35A.63.270, and 35.60.250 were adopted in 1996. Cities and counties must protect airport facilities through zoning regulations. Incompatible development is prohibited. Plans may not be adopted until formal consultation with airport owners, GA pilots, ports, and the WSDOT Aviation Division. Comprehensive plans must be filed with WSDOT aviation.

WSDOT recommends three areas be considered when developing comprehensive plans: building/structure heights; noise (over-flight noise 65 dbl or greater); and, safety (hazardous material). Airport master plans, layout plans, airport documents, aircraft/pilot characteristics, and airport operations should all be considered.

2.8.2 City and County Ordinances

The Yakima County and the City of Yakima zoning ordinances are closely outlined regarding airports and airport facilities. Both mandate that land-use around existing and future airports must be compatible with airport functions. The height of new and existing buildings is limited to the proximity of the imaginary surfaces designated by FAR Part 77 and the relative proximity to the ends and sides of the runway (500 ft. and 100 ft. respectively). Height limitations may be ignored if the FAA has not deemed the penetration to be a hazard to airspace and the reviewing official in conjunction with WSDOT or the airport manager deem it as a non-hazard. The applicable parts of the ordinances are included in Appendix E to this master plan.

2.8.3 Airport Safety Overlay

The Airport Safety Overlay (ASO), as prescribed by the City of Yakima, states that all buildings, structures, use, or trees that penetrate a FAA designated imaginary surface constitutes an obstruction within the ASO. All aforementioned objects must conform to the requirements found within chapter 15.30 sections .030 thru .080. Most notably, height requirements limit buildings to 35 ft., or, if greater than 35 ft., determination that it will not penetrate approach, transitional, horizontal, conical, or planned approaches defined in FAR Part 77.