
CHAPTER TWO

Inventory and Existing Conditions

An early step in the Airport Master Plan process is the inventory of existing conditions and critical environs. This inventory information provides the basis for evaluating existing facility conditions and subsequently determining future facility needs. A Building Condition Index is also included at the end of this chapter indicating the relative condition of on-airport facilities in regards to their estimated useful life.

The chapter is divided into the following sections:

- 2.1 Airport Setting
- 2.2 Historic Background
- 2.3 Meteorological Conditions
- 2.4 Airspace and Airport Traffic Control Tower
- 2.5 Airfield Facilities
- 2.6 Terminal Facilities
- 2.7 Support/Ancillary Facilities
- 2.8 Ground Access
- 2.9 Airport Environs and Land Use
- 2.10 Building Condition Index

2.1 AIRPORT SETTING

The Richmond International Airport (RIC) is a key Origination and Destination (O&D) airport for the Commonwealth of Virginia and the neighboring State of Maryland. It is situated on approximately 2,580 acres and is located in the eastern half of Virginia within Henrico County, approximately eight miles south of the Richmond Central Business District. The airport provides air service to the City of Richmond and the surrounding region. While primarily a commercial service airport, it also supports general aviation activity. Due to RIC's strategic location, it is frequently used as a diversion airport. **Exhibit 2.1** depicts the location of RIC with respect to surrounding airports.

Richmond International Airport is owned and operated by the Capital Region Airport Commission (Commission). The Commission is an independent Authority consisting of 14 members (created by the State of Virginia) who are appointed by the local governmental jurisdictions of the City of Richmond and the counties of Henrico, Chesterfield, and Hanover. The Commission's charge is to direct the growth, development, operation, and business activities of RIC.

Airports located within 15 miles of RIC include Chesterfield County, New Kent County, Christian County, and Hanover County. Each of these airports serves an important role in the National Plan of Integrated Airport Systems (NPIAS) helping to eliminate congestion of general aviation aircraft at RIC. These airports include Chesterfield County Airport (FCI), New Kent County Airport (W96), and Hanover County Municipal Airport (OFP).

2.2 HISTORICAL BACKGROUND

The airport was commissioned as the Richard Evelyn Byrd Flying Field (Byrd Field) in 1927 and dedicated in honor of aviator Richard E. Byrd, brother of then Governor Harry F. Byrd. Although the facility was located in Henrico County, Richmond Mayor, John Fulmer Bright, was instrumental in the creation of Byrd Field, which was initially owned by the City of Richmond.

2.3 METEOROLOGICAL CONDITIONS

Weather is classified by the applicable air traffic control rules, which are determined by the prevailing ceiling and visibility. Visual Meteorological Conditions (VMC) exist when the ceiling is at least 1,000 feet above ground level and the visibility is at least three statute miles. Visual Flight Rules (VFR) generally apply under VMC and allow maximum operational capacity. Weather conditions below VMC standard are considered Instrument Meteorological Conditions (IMC) and, consequently, Instrument Flight Rules (IFR) must be applied.

The direction and velocity of prevailing winds, as well as cloud ceiling and visibility conditions, directly influence runway use, air traffic control rules, and, ultimately, airfield capacity. Wind direction and velocity determine the magnitude of the crosswind and tailwind components relative to a particular runway and, therefore, influence runway selection. **Exhibit 2.2** contains windrose data that summarize these operational conditions at the airport.

2.4 AIRSPACE AND AIRPORT TRAFFIC CONTROL TOWER

Updates to the RIC Master Plan must take into account the ability of the local airspace to provide for anticipated demand. Additionally, consideration must be given to potential changes in airport facilities and the effects such changes may have on airspace and on the procedures that govern the direction and operation of aircraft within the area. Therefore, a brief overview of airspace surrounding RIC is necessary. This overview includes a description of Federal Aviation Administration (FAA) facilities and operations that control the airspace above and around the airport.

2.4.1 Air Route Traffic Control Center Airspace

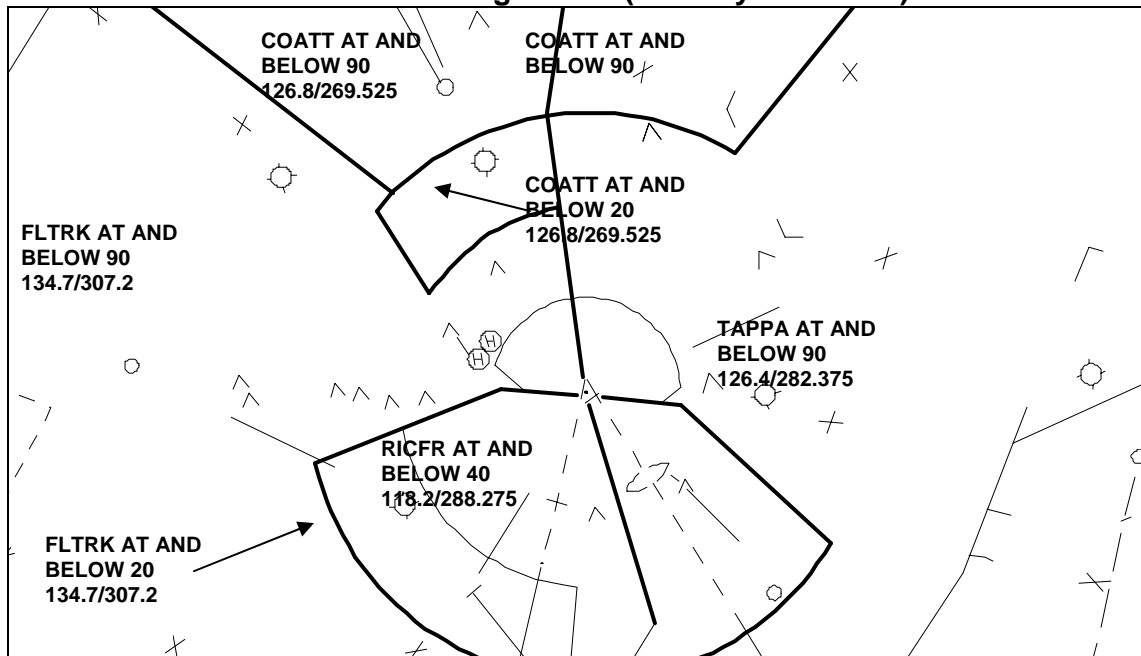
In general, en-route aircraft transitioning to and from RIC are controlled by the Washington Air Route Traffic Control Center (ARTCC) located in Washington, D.C., which is one of 22 centers located across the continental United States. The Washington ARTCC provides air traffic control services to aircraft operating on Instrument Flight Rules (IFR) flight plans within controlled airspace, principally between departing and arriving airports. When equipment capabilities and controller workload permit, certain advisory/assistance services may be provided to Visual Flight Rules (VFR) flight plan aircraft.

2.4.2 Terminal Radar Approach Control Airspace (TRACON)

An aircraft transitioning from en-route to one of the airports in the greater Richmond area is under the control of the Potomac TRACON facility located in Vint Hills Farm, Virginia. The Potomac TRACON provides radar services to aircraft within a 30-50 nautical mile radius of RIC between the ground surface and a flight level of 10,000 feet above mean sea level (MSL). This TRACON is one of the busiest in the United States, as it also serves Ronald Reagan Washington National Airport (DCA), Washington Dulles International Airport (IAD), and Baltimore/Washington International Airport (BWI).

The TRACON airspace surrounding the airport changes depending on the runway configuration that is being utilized. **Figure 2.1** and **Table 2.1** present a TRACON Sectorization Figure and Table (respectively) that show the Potomac TRACON airspace surrounding RIC while in a North runway configuration (approaches to Runways 2 and 34). **Figure 2.2** and **Table 2.2** present a TRACON Sectorization Figure and Table (respectively) that depict the Potomac TRACON airspace surrounding RIC while in a South runway configuration (approaches to Runways 20 and 16).

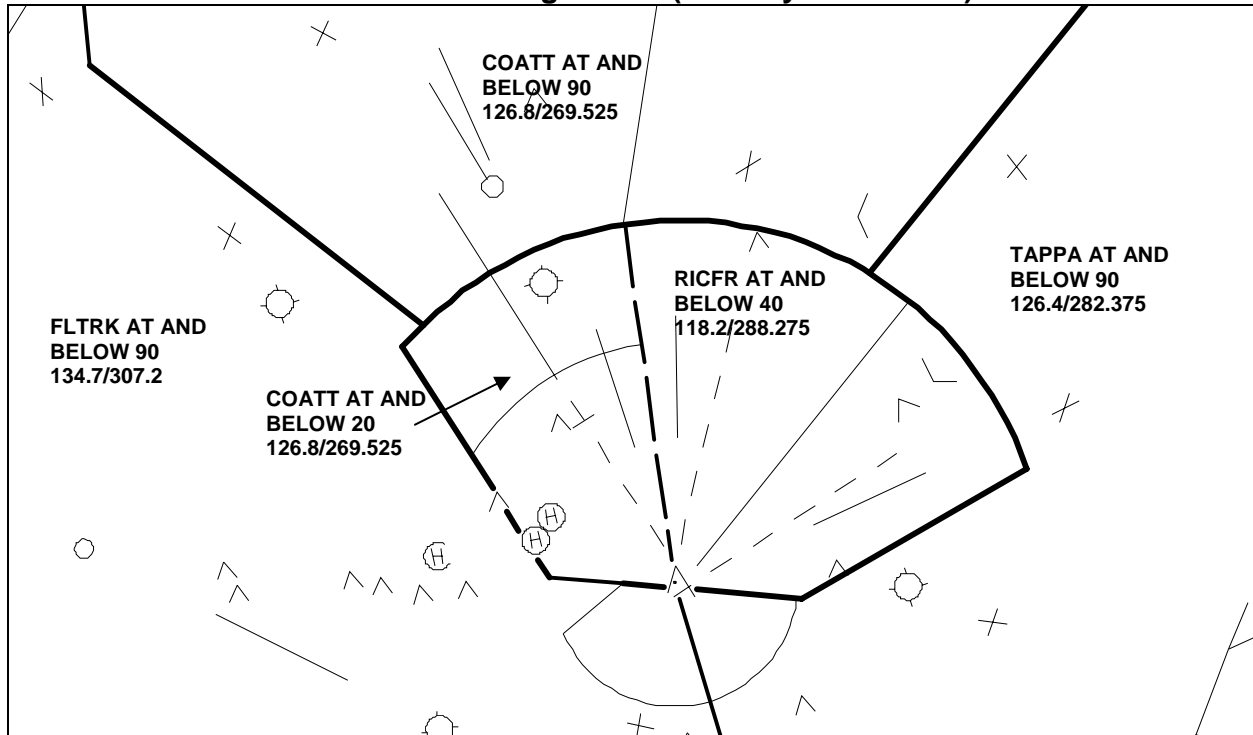
**Figure 2.1 Sectorization of TRACON Controlled Airspace
North Flow Configuration (Runways 2 and 34)**



**Table 2.1 Summary-Sectorization of TRACON Controlled Airspace
North Flow Configuration (Runways 2 and 34)**

DESTINATIONS	TYPE ACFT	ROUTE	REQUESTED ALTITUDE(S)	SECTOR
GVE, LKU, OMH, CHO, VBW, W13	Props	Direct	4,000/6,000/8,000	FLTRK
OFF, FCI, PTB, OVA5, VA39, APH	All	Direct	2,000/3,000	FLTRK
FYJ, W96, W79	All	Direct	2,000/3,000	TAPPA
IAD	Jets	COATTS/BARIN STAR	8,000*/10,000	TAPPA
IAD	Turboprop	COATTS/BARIN STAR	8,000	FLTRK
IAD	Piston-driven props	COATTS/BARIN STAR	6,000	FLTRK
CJR, MRB, JYO, HEF OKV, W66, 2VA9, 2VG2	All	CSN DIRECT	6,000	FLTRK
EZF, NYG, RMN, NDY	All	BRV GVE LURAY	4,000	FLTRK
FDK, GAI, DMW	Props	V143 MRB V166 EMI	6,000/8,000	FLTRK

**Figure 2.2 Sectorization of TRACON Controlled Airspace
South Flow Configuration (Runways 20 and 16)**



**Table 2.2 Summary-Sectorization of TRACON Controlled Airspace
South Flow Configuration (Runways 20 and 16)**

DESTINATIONS	TYPE ACFT	ROUTE	REQUESTED ALTITUDE(S)	SECTOR
DCA	Jets/Props	V376 IRONS	Requested altitude if 10,000	TAPPA
		Arrival	or above or 6,000/8,000	
ADW, NSF	Jets/Props	V376 IRONS	Requested altitude if 10,000	TAPPA
		Arrival	or above or 6,000/8,000	
DAA, W32, VKX, CGS, W00, 2W5	Props/Jets	V376 IRONS	6,000 or requested altitude	TAPPA
		Arrival	if 10,000 or above	
ORF, NGU, NTU, SFQ PVG, CPK	All	HPW V189	5,000/7,000/9,000	TAPPA
		WAIKS direct		
PHF, LFI, JGG, W94, FYJ, FAF	All	HCM direct	5,000/6,000	TAPPA
		NHK, 2W6	Props	V16
Routing via COLIN, South Operation	Jets	COLINS SID	9,000 or above	TAPPA
Routing via V16 COLIN, South Operation	Props	V16 PXT	5,000/7,000	TAPPA
Routing via COLIN, North Operation	All	V16 PXT	5,000/7,000/9,000 or above	TAPPA
Routing via GVE	All	Direct GVE	Even altitudes	FLTRK

2.4.3 *Airport Traffic Control Tower Airspace*

The Airport Traffic Control Tower (ATCT) provides aircraft with clearances to land and/or take off from RIC and also handles airside ground operations. The airspace controlled by the ATCT is designated as Class C airspace and is defined as the area that is within a five mile radius of the airport and less than 4,000 feet above the airport elevation. It also includes the area that is from 1,200 feet above MSL up to and including 4,000 feet above MSL and extends out to a ten mile radius from the airport.

The RIC ATCT utilizes two runway configurations, the North configuration and the South configuration. The North configuration utilizes Runways 2, 7, and 34, and the South configuration utilizes Runways 16, 20, and 25. Wind velocity and direction affects both runway and route configuration. The runway configuration that is utilized is directly correlated to the wind direction and velocity which consequently dictates the approach/departure routes that are utilized between the RIC ATCT and the Potomac TRACON.

2.4.3.1 Arrivals Airspace Structure

Arriving aircraft, at RIC, currently have no published Standard Terminal Arrival Routes (STAR). However, the Letter of Agreement (LOA) between the Potomac TRACON and the RIC ATCT states that after the runway configuration is set, the TRACON will determine the primary approach that will be utilized. The TRACON then issues routes/vectors in an effort to establish the aircraft on the final approach course. After an aircraft becomes established on its final approach path the TRACON controller will “hand off” control to RIC ATCT.

2.4.3.2 Departure Airspace Structure

Aircraft departing RIC are issued a departure heading and altitude by the RIC ATCT. This heading and altitude set the aircraft up for the ATCT to “hand off” control to the Potomac TRACON. The heading and altitude that are assigned depend on the runway configuration being utilized at the airport. **Tables 2.1** and **2.2**, depicted previously, show the departure headings, altitudes, and the corresponding sectors which the ATCT would “hand off” control to the TRACON.

After the aircraft departs, the ATCT “hands off” control to the corresponding sector. The TRACON controller in turn issues vectors/routes to place the aircraft in a position to be handed off to the ARTCC.

2.5 AIRFIELD FACILITIES

This section provides a summary of the airfield facilities. The primary airfield facilities include runways, taxiways, apron areas, and associated navigational aides (NAVAID). This section also discusses FAR Part 77 imaginary surfaces, obstructions, and airfield critical areas such as Runway Protection Zones (RPZ) and Runway Safety Areas (RSA).

The Federal Aviation Administration (FAA) classifies airports as a part of the National Transportation System. This classification is used to identify the individual role of the airport within the larger national system of airports and allows the FAA a mechanism to assess the specific needs of the facility relative to other airports of similar demand and utilization. This applies to such things as funding allocation, safety requirements, and passenger handling standards. RIC is classified as a primary airport in the national system.

The FAA uses an additional classification referred to as the Airport Reference Code (ARC) to define the typical size of aircraft that the airport can accommodate. The ARC is defined by wingspan and approach speed of the critical aircraft using the facility. The current design aircraft for RIC is the Boeing 767-300, which establishes the airport’s ARC as D-IV. **Table 2.3** depicts the rationale behind this coding system. **Figure Exhibit 2.3** shows a layout of the existing airside facilities.

Table 2.3 Airport Reference Coding System

Aircraft Approach Category	Airplane Design Group
Category A: Approach Speed Less than 91 knots	Group I: Aircraft wingspan up to 49 feet
Category B: Approach Speed 91 knots or more but less than 121 knots	Group II: Aircraft wingspan 49 feet to 79 feet
Category C: Approach Speed 121 knots or more but less than 141 knots	Group III: Aircraft wingspan 79 feet to 188 feet
Category D: Approach Speed 141 knots or more but less than 166 knots	Group IV: Aircraft wingspan 118 feet to 171 feet
Category E: Approach Speed 166 knots or more	Group V: Aircraft wingspan 171 feet to 214 feet
	Group VI: Aircraft wingspan 214 feet to 262 feet

The ARC is based on two components of the airport’s design aircraft. The first component, depicted by a letter, is the Aircraft Approach Category and relates to aircraft approach speed. The second component, depicted by a Roman numeral, is the Airplane Design Group and relates to aircraft wingspan. Generally, aircraft approach speed applies to runways and related facilities, and aircraft wingspan relates to separation criteria involving taxiways and related facilities.

2.5.1 Runways

RIC has three active runways. The nomenclature used for these runways is defined by compass headings; they are referred to as 2-20, 7-25, and 16-34. ATCT personnel consider Runway 16-34 the primary runway due to its Category III Instrument Landing System; however, operations are generally split between Runways 2-20 and 16-34.

2.5.1.1 Runway 2-20

Runway 2-20, which is generally oriented in a north-south alignment, is the most heavily utilized runway at RIC due to its proximity to the terminal area. It is 6,607 feet in length and 150 feet wide. This runway is outfitted with Medium Intensity Runway Lighting (MIRL) and has a Category I Instrument Landing System (ILS) for approaches to Runway 2. The pavement consists of asphaltic concrete with a grooved surface treatment. Its current pavement strength is capable of accommodating 125,000 pound Single Wheel Loading (SWL), 200,000 pound Dual Wheel Loading (DWL), and 340,000 pound Dual Tandem Wheel Loading (DTWL).

2.5.1.2 Runway 7-25

Runway 7-25 is oriented along a northeast-southwest alignment. It is 5,316 feet in length and 100 feet wide with High Intensity Runway Lighting (HIRL) and a Visual Approach Slope Indicator (VASI) for approaches to Runway 25. Due to its length, this runway is used primarily by general aviation aircraft with occasional use by smaller commuter aircraft. Frequently, the pavement is utilized by aircraft taxiing to and from the south end of the airfield. The pavement strength is rated for 125,000 pound SWL, 200,000 pound DWL, and 340,000 DTWL. The runway is constructed of Hot Mix Asphaltic Concrete with a grooved surface treatment. It has High Intensity Runway Lighting (HIRL) and is marked for non-precision instrument operations. There are no parallel taxiways associated with this runway.

2.5.1.3 Runway 16-34

Runway 16-34 is oriented along a northwest-southeast alignment and is the longest runway at RIC with dimensions of 9,003 feet in length and 150 feet in width. It is outfitted with HIRL and several instrument approaches including: a Category I ILS for both runway approaches, as well as both a Category II and III ILS to the Runway 34 approach. The runway is constructed of asphaltic concrete and has a grooved surface treatment. Its current pavement strength ratings are 125,000 pound SWL, 200,000 DWL, and 340,000 DTWL.

Runway 16-34 is used by both civilian and military aircraft, and due to its use by the military aircraft formerly based on the field with the Virginia Air National Guard, it is also equipped with two BAK-14 aircraft arresting devices, which are located approximately 1,700 feet from each runway end. One additional feature of this runway is that there are approximately 1,000 feet of paved overrun off each runway end. Pavement conditions for all runways at RIC are documented in the field inventory report and can be found in **Appendix A**.

Table 2.4 depicts a summary of the characteristics of each runway.

Table 2.4 Runway Characteristics

	RUNWAY 16L/34R	RUNWAY 16R/34L (PROPOSED)	RUNWAY 2/20	RUNWAY 7/25
RUNWAY CATEGORY	D-V	D-V	D-IV	B-III
INSTRUMENT (ILS) RUNWAY	16L and 34R	16R and 34L	2	None
PART 77 APPROACH SLOPES/	16L - 50:1 / 1/2 MI.	16R - 50:1 / 3/4 MI.	2 - 50:1 / 3/4 MI.	7 - 20:1 / VISUAL
VISIBILITY MINIMUMS	34R - 50:1 / 1/2 MI.	34L - 50:1 / 1/2 MI.	20 - 34:1 / 1 MI.	25 - 34:1 / 1 MI.
RUNWAY PROTECTION ZONE (Inner Width x Length x Outer Width)	16L - 1000' x 2500' x 1750' 34R - 1000' x 2500' x 1750'	16R - 1000' x 2500' x 1750' 34L - 1000' x 2500' x 1750'	2 - 1000' X 1700' X 1510' 20 - 500' X 1700' X 1010'	7 - 500' x 1000' x 700' 25 - 500' x 1000' x 700'
RUNWAY LENGTH AND WIDTH	10,203' x 150'	8000' x 150'	6607' X 150'	5326' x 100'
STOPWAY LENGTH	16L-0', 34R-800'			
CLEARWAY LENGTH	16L-600', 34R-1,800'			
SAFETY AREA LENGTH AND WIDTH	13003' x 500'	10000' x 500'	8607' X 500'	6516' x 300'
EFFECTIVE RUNWAY GRADIENT	0.04%	To be Determined	0.16%	0.102%
PAVEMENT TYPE AND STRENGTH	Bituminous 340,000 DTG	Concrete Pvm. 870,000 DDTG Bridge Structure 1,200,000 DDTG	Bituminous 340,000 DTG	Bituminous 190,000 DWG
PCN	70/F/C/W/T	68/R/C/W/T	70/F/C/W/T	57/F/C/W/T
WET SURFACE TREATMENT	Grooving	Grooving	Grooving	None
RUNWAY MARKING	Precision	Precision	Precision	Non-Precision (7 and 25)
RUNWAY LIGHTING	HIRL, Centerline, TDZ (34 only) Distance Markers	HIRL, Centerline, TDZ (34 only) Distance Markers	MIRL Distance Markers	HIRL
VISUAL NAVIGATION AIDS	16L - MALSR, PAPI-4 34R - ALSF-2, PAPI-4	16R - MALSR, PAPI-4 34L - ALSF-2	2 - MALSR, PAPI-4 20 - REIL, VASI-4	25 - VASI-4
ELECTRONIC NAVIGATION AIDS	16L - CAT I ILS 34R - IIIB ILS	16R-CAT I ILS, GPS 34L-CAT IIIB ILS, GPS	2 - CAT I ILS, GPS 20 - VOR/DME, RNAV, GPS	None
TRUE RUNWAY AZIMUTH	327 27' 53"	327 27' 53"	193 27' 44"	237 28' 23"
% WIND COVERAGE(ALL WEATHER)	97.30% (15 Knots)	97.30% (15 Knots)	98.69% (15 Knots)	90.56% (10 Knots)

Details on the conditions of these pavement areas can be found in the Pavement Conditions Report in **Appendix B**.

2.5.2 Taxiway System

The runway system and developed aviation uses on the airport are served by a system of taxiways that provides access between the airfield and other aviation facilities. Taxiways link the independent airport elements and provide for controlled movement to and from the runways, terminal/cargo areas, general aviation facilities and aircraft parking areas. From a design standpoint, it is desirable to maintain a smooth flow on the taxiway system with a minimum number of points requiring changes in an aircraft's taxing speed (e.g., runway and taxiway crossings).

For description purposes the taxiway system at RIC has been separated into four classifications:

- Full or partial parallel taxiways
- Entrance and exit taxiways,
- Bypass, crossover, or transverse taxiways
- Hangar or apron access taxiways.

2.5.2.1 Taxiway Descriptions

Parallel or partial parallel taxiways are generally parallel to the runway they serve. They connect one runway end to the other runway end, or to a point along the runway that is served by the partial parallel taxiway.

Entrance and exit taxiways are located at points along a runway and connect the runway to the parallel or partial parallel taxiway that serves the runway.

Bypass, crossover, or transverse taxiways are used to connect one operation area on the airport with another operation area on the airport.

Hangar and apron access taxiways are used to provide access from the parallel taxiway system to parking ramps and aircraft hangar areas that are located around the airport. The existing taxiway system is shown in **Exhibit 2.4**.

2.5.2.2 Primary Taxiways

The primary Taxiways at RIC are A, C, E, H, L, M, and U. Each of these taxiways serves a specific purpose that facilitates the safe and efficient flow of aircraft in and around the airfield.

Taxiway A is a full-length parallel taxiway that is located along the west side of Runway 2-20. It is 75 feet wide and 7,420 feet in length. The pavement is constructed of Portland Cement Concrete (PCC) and equipped with Medium Intensity Taxiway Lighting (MITL) to provide visual guidance during night operations at the airport.

Taxiway U is also considered a full-length parallel taxiway located between Runway 2-20 on the east, and Taxiway A on the west. It is also 75 feet wide and has a length of 6,605 feet. This taxiway is constructed of Hot Mix Asphaltic Concrete (HMAC) and is also equipped with MITL.

Taxiway M is the parallel taxiway to Runway 16-34. It is located along the north side of the runway and is 75 feet wide and 9,500 feet long. It is constructed of HMAC and is equipped with MITL. This pavement does not meet the standards designated by the current airport Reference Code for pavement strength.

Taxiway C serves as a transverse taxiway from the east side of Runway 2-20 and intersects with Taxiway L and Runway 16-34. It provides a direct taxi route for aircraft travelling between Runway 34 and the airport terminal area. This PCC pavement is 2,550 feet long and 75 feet wide. It is available for use by all aircraft using the airfield and is equipped with MITL.

Taxiway E commences on the east side of Runway 2-20 and extends to Taxiway L while serving as a transverse taxiway. It is approximately 3,240 feet in length and 75 feet wide. The pavement is constructed of PCC and is equipped with MITL.

Taxiway H commences on the east side of Runway 2-20 and extends southeast to the threshold of Runway 7 while serving as a transverse taxiway. The airport's current utilization of taxiways identifies Taxiway H as the primary connection between the air cargo area and the approach end of Runway 34. It is constructed of PCC and is approximately 1,400 feet in length and 75 feet wide. Taxiway H is available for use by all aircraft presently using the airport. Taxiway H is equipped with MITL.

Taxiway L is a partial parallel taxiway for the south end of Runway 16-34 and is 6,100 feet in length and 75 feet wide. This PCC pavement is utilized by all aircraft on the field and is equipped with MITL.

2.5.2.3 Secondary Taxiways

The remainder of the airfield's taxiway system is made up of secondary taxiways that aid in the flow of aircraft in and around the airfield. All of the secondary taxiways are equipped with MITL and can accommodate all aircraft utilizing RIC.

2.5.2.4 Taxiway Characteristics

Table 2.5 depicts the general characteristics of each of the airfield taxiways.

Table 2.5 Taxiway Characteristics

Taxiway	Dimensions	Surface	Lighting	Purpose
A	7,420 X 75'	Portland Cement Concrete	MITL	Full Parallel
B	755' X 150'	Portland Cement Concrete	MITL	Entrance/Exit
C	2,550' X 75'	Portland Cement Concrete	MITL	Transverse
E	3,240' X 75'	Portland Cement Concrete	MITL	Transverse
F	625' X 90'	Hot Mix Asphalt Concrete	MITL/No Centerline Lights/No Edge Reflectors	Access
G	500' X 90'	Portland Cement Concrete	MITL/No Centerline Lights/No Edge Reflectors	Access
H	1,400' X 75'	Portland Cement Concrete	MITL	Transverse
J	350' X 50'	Hot Mix Asphalt Concrete	MITL	Access
K	400' X 75'	Hot Mix Asphalt Concrete	MITL	Access
L	6,100' X 75'	Portland Cement Concrete	MITL/No Centerline Lights/No Edge Reflectors (only on portions)	Partial Parallel
M	9,500' X 75'	Hot Mix Asphalt Concrete	MITL	Full Parallel
M1	575' X 50'	Hot Mix Asphalt Concrete	MITL	Entrance/Exit
M2	575' X 50'	Hot Mix Asphalt Concrete	MITL	Entrance/Exit
M3	575' X 50'	Hot Mix Asphalt Concrete	MITL	Entrance/Exit
R	2,350' X 50'	Hot Mix Asphalt Concrete	MITL/No Centerline Lights/No Edge Reflectors	Access
S	1,550' X 50'	Hot Mix Asphalt Concrete	MITL	Access
T	2,050' X 90'	Hot Mix Asphalt Concrete	MITL/No Centerline Lights/No Edge Reflectors	Access
U	6,605' X 75'	Hot Mix Asphalt Concrete	Centerline Lights/Edge Reflectors	Full Parallel
V	550' X 50'	Hot Mix Asphalt Concrete	MITL/No Centerline Lights/No Edge Reflectors	Entrance/Exit

Details on the conditions of these pavement areas can be found in the Pavement Conditions Report in **Appendix B**.

2.5.3 Aprons and Hold Pads

For the purpose of this master plan, three categories of aprons and hold pads are identified:

- Terminal Apron
- Cargo/Maintenance Aprons
- General Aviation Aprons
- Runway Hold Pads

All terminal aprons are considered non-movement areas. These areas are not controlled by the ATCT. Non-movement terminal aprons are typically controlled by airport operational procedures and the airlines.

The cargo portion of the south apron is divided into two geographic areas. The southern portion is a PCC ramp utilized by Continental Express, FedEx, and UPS; and the north apron area is a bituminous pavement serving eight hardstand parking positions. It is utilized by Cargex, DHL, and the United States Postal Service. Airfield access to these ramp areas is provided through three taxilanes that connect to Taxiway A.

Further south are two separate areas accessed via two taxilanes that serve Million Air (FBO) and TransStates (an aircraft maintenance facility). All of the aprons are constructed of bituminous pavement and have airfield access via taxilanes that connect the south ends of Taxiways A and U with the South Cargo Apron.

The north general aviation (GA) apron areas serve eight GA/FBO operators that either have their own apron areas or share apron areas with another operator. Three of the aprons are serviced by a single taxilane that connects to the north end of Taxiway A.

The airport has no commercial flight hold pads but does have small aircraft hold pads at each end of Runway 16-34.

Details on the conditions of these pavement areas can be found in the Pavement Conditions Report in **Appendix B**.

2.5.4 Airport Aids to Navigation and Navigational Aids

RIC is served by an array of electronic and visual systems that aid pilots in landing safely and navigating into and around the airfield. These systems are discussed in the following sections.

2.5.4.1 Identification Lighting

The location and presence of an airport at night is universally indicated by the airport beacon. The 36-inch airport beacon at RIC is situated on top of the ATCT. The rotating beacon is equipped with an optical system that projects two beams of light, one green and one white, 180 degrees apart.

2.5.4.2 Obstruction Lighting

Obstructions in the vicinity of the airport are marked and/or lighted to warn pilots about objects that may affect navigable airspace. Existing obstructions that cannot be removed are lighted. There are obstruction lights in place in areas for the Runway 2 RPZ. These obstructions are identified for pilots on approach charts and on the official airport Obstruction Chart, published by the National Oceanic and Atmospheric Administration.

2.5.4.3 Approach Lighting

Approach lighting systems (ALS) are used in the vicinity of runway thresholds in conjunction with electronic navigational aids for the final portion of ILS approaches under IFR conditions, and as visual guides for nighttime approaches under VFR conditions. These systems provide the basic means to transition from instrument flight to visual flight for landing. The approach lighting system supplies the pilot with visual cues concerning aircraft alignment, roll, height, and position relative to the runway threshold.

A Medium Intensity Approach Lighting System with Runway Alignment Indicator (MALSR) is located on the approach to Runway 16. This system assists pilots transitioning from the cockpit instrument landing segment to the runway environment. The system provides a lighted approach path 2,400 feet in length along the extended centerline of the runway.

An Approach Lighting System with sequenced Flashers (ALSF-2) is located on the approach to Runway 34 in conjunction with each of the ILS approaches. The lighting scheme for the ALSF-2 extends between 2,400 feet and 3,000 feet from the end of the runway.

2.5.4.4 Runway Touchdown Zone and Centerline Lighting

The ILS approaches to Runway 34 are also supported by pavement touchdown zone lights and runway centerline lighting. Runway centerline lighting provides positive visual guidance to pilots regarding the location and alignment of the runway centerline during periods of low visibility. Flush mounted bi-directional centerline lights are spaced at 50-foot intervals beginning 75 feet from the landing threshold and extending to within 75 feet of the opposite end of the runway. Touchdown Zone Lighting consists of two rows of unidirectional three-fixture light barrettes placed in the pavement symmetrically about the runway centerline normally at 100-foot intervals. The basic system extends 3,000 feet along the runway.

2.5.4.5 Runway and Threshold Lighting

The identification of runway ends or thresholds assists the approaching aircraft in much the same manner as other approach aids. The runway end/threshold is given special lighting consideration. Instrument threshold lighting is available on Runways 2, 16, and 34 consisting of two groups of four fixtures and visual threshold lighting across the entire end of the runway pavement. In addition, all other runway thresholds on the airport are equipped with four-fixture runway threshold lights.

2.5.4.6 Runway End Identifier Lights

Runway End Identifier Lights (REIL) provide additional delineation of the runway threshold. They consist of a pair of synchronized flashing lights, often referred to as strobes, each located laterally on the side of the runway threshold. REILs are installed on Runways 2, 20, and 25.

2.5.4.7 Approach Descent Indicators

The term “Approach Descent Indicators” is a generic reference that addresses systems that are used to provide pilots a visual reference of their approach to a runway during night operations. The more common systems for providing visual descent information are known as Visual Approach Slope Indicator (VASI), Precision Approach Path Indicator (PAPI), and Pulsating Visual Approach Slope Indicator (PLASI). RIC has installed four-box VASI systems to serve aircraft approaches on Runways 16, 2, 20, and 25. These systems provide visual guidance to pilots during approach to landing by radiating a directional pattern of high intensity red and white focused light beams that indicate whether a pilot is on the approach path.

2.5.4.8 Runway Edge Lighting

Runway Edge Lighting is used to outline the edges of a runway during periods of darkness and/or restricted visibility. These systems are classified in accordance with their intensity or brightness: High Intensity Runway Lights (HIRL), Medium Intensity Runway Lights (MIRL), and Low Intensity Runway Lights (LIRL). Runways 7-25 and 16-34 are equipped with HIRL, while Runway 2-20 is equipped with MIRL. Runway Edge Lights are white, except on instrument runways where amber replaces white on the last 2,000 feet or half the runway length, whichever is less, to form a caution zone for landings.

2.5.4.9 Taxiway Lighting

The final segment of a flight commences with the taxiing operation to the aircraft's destination (terminal ramp, parking apron, or hangar). Taxiway lighting, which delineates the taxiway edge and/or centerline, provides guidance to pilots at night and during periods of low visibility. The most commonly used type of taxiway lighting consists of a series of blue fixtures located at two hundred feet intervals along the taxiway edges. This is the system typical of the lighted taxiways at RIC. These lights provide taxiway alignment up to the aircraft apron. All taxiways at RIC are equipped with MITL, with the exception of Taxiway M and its connecting taxiways to Runway 16-34. Taxiway R from the Richmond Jet Center west, Taxiway S, Taxiway K, and Taxiway T from the cargo ramp south are also not equipped with taxiway lighting.

2.5.4.10 Electronic Navigational Aids

Navigational aids (NAVAIDS) also include electronic devices, which provide point-to-point guidance information or position data to an aircraft in flight. Various types of NAVAIDS are available for use at an airport, and many of these have been installed and are employed at

RIC. This includes a Very High Frequency Omni-Range Station and Tactical Air Navigation System (VORTAC), Instrument Landing Systems (ILS), Global Positioning Systems (GPS), and Airport Surveillance Radar (ASR). Each of these NAVAIDs is detailed in the following sections.

2.5.4.11 Very High Frequency Omni-Range Station and Tactical Air Navigation System (VORTAC)

A Very High Frequency Omni-Range Station and Tactical Air Navigation System (VORTAC) is a navigational aid that facilitates aircraft traveling to and from the airport environment. It provides approach guidance, en-route, and terminal navigation for aircraft arriving at the airport. Because of the high radio frequencies involved, the RIC's VORTAC is constrained to line-of-sight distances. This facility is located in the midfield area, south of taxiway E.

2.5.4.12 Instrument Landing System

The Instrument Landing System (ILS) is an approach and landing aid designed to identify an aircraft's approach path alignment. The ILS system is installed to allow straight in approaches during periods of poor visibility and at RIC, to allow landings on at least one runway, with ceilings as low as 100 feet above the runway surface and visibility to 1/4 mile away from the runway threshold for all four categories of aircraft approach speeds. Runways 2, 16, and 34 are equipped with varying types of this system. An ILS system provides horizontal and vertical guidance — vertically by a glide slope beacon and horizontally by a localizer beacon. Proximity to the threshold (range) is furnished by the outer, middle, and inner marker beacons; and, visual identification is supplied by the approach lighting system and runway edge lights.

At RIC, localizers are in place for Runways 2, 16, and 34. To provide horizontal guidance to a runway threshold, a localizer is positioned off of the opposite end of the runway threshold. The localizer antenna for Runway 2 broadcasts at a frequency of 110.9 megahertz (MHZ), while the Runway 16 and Runway 34 localizer antennae broadcast at 110.7 MHZ. These systems emit very high frequency (VHF) signals that tell the pilot to what extent he/she is left or right of the runway centerline.

To further assist the ILS approach, two marker beacons, the outer marker (OM) and the middle marker (MM), furnish range information to indicate how far along the approach path the aircraft has progressed. The Runway 16 ILS approach has a three-degree glide slope that intercepts the outer marker at a distance of about 6.9 nautical miles northwest from, and approximately 2,293 feet above, the Runway 16 threshold. The middle marker for the Runway 16 ILS at RIC is located roughly 0.6 nautical miles to the northwest of the Runway 16 threshold. Both the Category I and Category II ILS to Runway 34 have 3.0-degree glide slopes that intersect the outer marker at a distance of 4.6 nautical miles southeast from, and 1,532 feet above, the runway threshold. The middle marker for both ILSs is situated 0.4 miles to the southeast of the runway threshold.

2.5.4.13 Global Positioning System

The FAA is currently in the process of implementing a new technology for both en route and terminal navigation procedures based on Global Positioning System (GPS) satellites. GPS is a space-based radio positioning, navigation, and time-transfer system being developed to provide highly accurate position and velocity information and precise time on a continuous global basis. The system will be unaffected by weather and will provide a worldwide common grid reference system. The FAA has already approved a number of GPS approaches to airports in Virginia that are overlaid on other existing non-precision approaches procedures, such as NDBs, VORs, and Distance Measuring Equipment (DME). At present, RIC has GPS overlay approaches to Runways 2, 16, 20, 25, and 34. It is expected that the FAA will be implementing standalone GPS procedures for both precision and non-precision approaches within the 20-year planning horizon.

2.5.4.14 Airport Surveillance Radar (ASR)

The Airport Surveillance Radar (ASR) is used to provide the ATCT with information regarding aircraft operating within the airspace around the airport. The ASR rotates through 360 degrees, and information is displayed on radar scopes in the ATCT. RIC is served by an ASR-9.

2.5.4.15 Airfield Electrical Systems

The Airfield Electrical Systems are housed in the South and North Vaults. The South and North Vaults are cinder block, one-story structures of approximately 2,100 square feet each. Both facilities house the Constant Current Regulators (CCRs) that are the power source for the airfield lighting circuits. The runway and taxiway circuits come into the vaults via a 2" conduit from a manhole located outside the vault. The conduits terminate in 12" x 16" x 6" panel, where it connects to the field leads from the CCR by L-823 connectors.

The Airfield Electrical System at RIC has been surveyed and documented. A copy of the Electrical and Survey Analysis is located in **Appendix B**.

2.5.5 Airfield Pavement

There are two types of pavement on the airfield. The first is bituminous pavement, commonly referred to as asphalt. The second type of pavement on the airfield is Portland cement concrete (PCC). PCC is a higher cost pavement to install but typically has a longer life span and much lower maintenance cost. If properly designed, installed, and maintained, PCC should last 20 years or more before it needs to be replaced.

PCC makes up approximately 30% of the airfield pavement, and all but a small section at the north end of the terminal is considered to be in good condition. The remaining 70% of the pavement on the airfield is Hot Mix Asphalt Concrete (HMAC), including all three runways and ranges from good to poor condition depending on the location as illustrated in **Exhibit 2.5**.

2.5.6 Perimeter Roads

The Airfield Perimeter Road is a part of the airfield roadway system and is located along the interior perimeter boundary of the airport. The purpose of this road is to permit access to all areas of the airport without traversing areas designated for controlled aircraft movement. Perimeter Roads are used by RIC Airport Operations staff to access its facilities and the FAA staff to access its equipment.

2.6 TERMINAL FACILITIES

In the spring of 2007, RIC officially opened its new terminal and concourse facilities. **Exhibits 2.6** through **2.7** depict the existing terminal building and concourse areas.

The two-level passenger terminal and concourses accommodate all commercial flights at RIC. While primarily serving domestic operations, the terminal and concourses occasionally accommodate international charter activity as well. The terminal accommodates both airline arrival and departure functions such as ticketing, security screening, baggage make-up, and baggage claim. Concourses A and B are both dual-level facilities and share a central concessions area and connecting corridor with the terminal. The upper level of the concourse includes holdrooms and other airline space, concessions areas, and public corridors and spaces to accommodate passengers. The lower level (a.k.a. the apron level) includes primarily ramp operations space to accommodate airline operations personnel. The lower level of the concourse also includes holdroom space and a Federal Inspection Services (FIS) area as well. The terminal and concourse facilities provide a total of 22 gates.

The newly renovated and expanded concourses have independent security screening check point (SSCP) areas designed for a total of four lanes per concourse. There is no sterile corridor between the two concourses.

2.6.1 Airline Exclusive Use Areas

Airline exclusive use areas include those facilities in the terminal that are leased by the air carriers to conduct their business operations and to service their respective passengers. Airline Exclusive Use space includes:

- Airline Ticket Counters
- Airline Ticket Offices
- Airline Self-Service Check-in Kiosks
- Baggage Claims
- Airline VIP Lounges
- Baggage Service Offices
- Outbound Baggage Sortation
- Inbound Baggage Drop-off
- Holdrooms
- Ramp Operations
- Other Airline Support/Operations Space

2.6.2 Public Use Areas

Public use areas include those areas in the terminal that are used for the circulation of visitors and passengers. These areas are not exclusively leased by airlines or tenants. Public Use space in the terminal and concourses includes:

- Arrival and Departure Lobbies
- Circulation/Corridors (including moving walkways)
- Security Screening Checkpoints
- Public Restrooms
- Vertical Circulation (stairs, elevators, and escalators)

2.6.3 Concession Areas

Concession areas include those areas in the terminal that are leased by the food and beverage, the news and gifts, and retail concession operators. Concessions space in the terminal and concourses includes:

- Food and Beverage
- News and Gifts
- Retail/Specialty Shops
- Rental Car Agencies
- Newspaper Sales Boxes
- Advertisement Displays/Boards
- Public Telephones
- ATMs
- Concession Storage/Distribution/Offices

The concession areas at the airport are located in pre- and post-security areas such as the atrium between the terminal and in the concourses. Current security requirements prohibit non-passengers (e.g., well-wishers and meeters/greeters) from proceeding through the security screening checkpoints. There is no immediate indication that this requirement will be revised in the future. Rental car agencies are located on the lower level of the terminal building in the baggage claim area. The remaining concessions are sporadically located throughout the terminal for passenger convenience.

2.6.4 Utilities and Building Service Areas

Utilities and building service areas include those areas that are used for the operation of the building systems of the airport. Utilities and building service space in the terminal and concourses includes:

- Mechanical rooms
- Electrical rooms
- Telephone and communication equipment rooms
- Horizontal and vertical right-of-way for distribution of MEP-IT
- Janitorial closets
- Storage areas
- Trade shops

These facilities are located throughout the terminal and concourses. Additionally, some of these facilities are located in rooftop systems and underground vaults, but this space is not included in the computation of terminal and concourse area square footage.

2.6.5 Federal Inspection Facilities

The Federal Inspection Services (FIS) facilities are located in the apron level of Concourse B. The space reserved for U.S. Customs is currently vacant. FIS facilities include approximately 41,000 square feet of space with one baggage claim unit. Since Richmond has no scheduled International Air Service, U.S. Customs and Naturalization does not have offices stationed at the airport. Agents are required to travel to the airport when needed to process arriving international passengers.

2.7 SUPPORT/ANCILLARY FACILITIES

This section documents the remaining on-airport facilities that are not located within the terminal facility or do not comprise part of the airfield or ground transportation infrastructure. They include facilities currently operated by airport tenants, the Commission, the FAA, and the City of Richmond Fire Department. Other miscellaneous facilities that are either vacant or located off-airport that have an operational dependency with other on-airport facilities are also discussed. RIC's building inventory is depicted on **Exhibit 2.8** and includes the following:

- Aircraft Maintenance Facilities
- Airport Maintenance Facilities
- Cargo Facilities
- General Aviation (GA)/Fixed Base Operator Facilities
- Airport Traffic Control Tower Facilities
- Miscellaneous Facilities (Owner by the Commission)
- Aircraft Rescue and Fire Fighting Facilities
- Perimeter Fencing and Airfield Access Facilities
- Heating and Refrigeration Plant
- Oversized Vehicle Parking/Staging
- Service Roads
- Ivor/Massey Administration Building
- Stormwater Detention and Management Facilities
- Public Safety Building
- Fuel Storage Areas
- Army National Guard
- Richmond International Airport Air Guard Station
- Deicing Facilities
- Utilities

The following subsections provide general information pertaining to the present configuration of the airport and a summary of the gross areas of various facility components for each facility type. A general description of each facility and the primary tenant is provided, although the gross areas dedicated to automobile parking are not presented in this section.

2.7.1 Aircraft Maintenance Facilities

Aircraft maintenance facilities include all hangars, administrative/operations offices, and aprons that serve aircraft maintenance activities at the airport. There are currently two operators that use facilities for aircraft maintenance – Transtates Airlines and Continental Express.

2.7.2 Airport Maintenance Facilities

There are currently four buildings dedicated to Airport Maintenance. They are located on the southern end of the airfield, east of the Runway 7 threshold. These facilities house the airport's maintenance equipment and shops.

2.7.3 Cargo Facilities

Air cargo facilities provide air cargo carriers with the ability to store and manage the flow of goods to the marketplace. There are several air cargo operators at RIC, including: Federal Express, United Parcel Service, DHL, Cargex, and the United States Postal Service. These air cargo carriers are located in four buildings on two apron areas at the south end of the airport. Both apron areas are accessed by Taxiways F, G, and T. Surface access to the cargo area is through South Airport Drive to Lisle Road, Air Express Road, Fox Road, and Federal Road.

Passenger airlines also offer air cargo service, which is transported in the cargo hold (belly) of the aircraft. Some carriers also utilize bulk bays on the aircraft.

Cargo Building Number One is approximately 65 feet by 500 feet (32,500 square feet), with a 30,000 square foot parking lot located north of the building. This lot is available for employee parking as well as truck loading/unloading at the building. Surface access to this building is through Federal Road.

Cargo Building Number Two is approximately 65 feet by 155 feet (10,000 square feet), with a 10,000 square foot parking lot located west of the building. Surface access to this building is through Air Express Road.

Cargo Building Number Three is approximately 115 feet by 220 feet (25,000 square feet), with additional attached office space totaling 31,500 square feet. The building has its own adjoining 10,000 square foot parking area. Surface access to this building is through Air Express Road.

Cargo Building Number Four is approximately 165 feet by 215 feet (35,475 square feet), with an adjoining 70,000 square foot staging/parking area located west of the building. Surface access to this building is through Fox Road.

2.7.4 General Aviation/Fixed Base Operator Facilities

There are several aircraft storage and handling facilities at RIC. Million Air and Martinaire (Aero Industries) operate General Aviation/Fixed Base Operator (GA/FBO) facilities, and several firms occupy corporate hangars. The facilities include terminal buildings, hangars, and automobile parking areas.

2.7.5 Airport Traffic Control Tower

In 2005, the FAA commissioned the current Airport Traffic Control Tower (ATCT) at RIC. It is located north of the terminal core. The facility includes the tower cab with associated support facilities and an adjacent parking lot for employees and visitors.

2.7.6 Miscellaneous Facilities (Owned by the Commission)

Miscellaneous Commission-owned Facilities include all other buildings/facilities owned and operated by the Commission. This includes airport maintenance complexes, skilled trade centers, police offices, triturators, warehouses, storage facilities, an explosives chamber, police canine services, and field offices. The Commission-owned facilities are dispersed throughout the airport.

2.7.7 Aircraft Rescue and Firefighting Facilities

Aircraft Rescue and Firefighting (ARFF) is a special category of firefighting that involves the response, hazard mitigation, evacuation, and possible rescue of passengers and crew of an aircraft involved in an airport ground emergency. The existing ARFF facility is located in the center of the airfield between Runways 16-34 and 2-20. The facility was commissioned in 1981 and has four truck bays.

2.7.8 Perimeter Fencing and Airfield Access Facilities

The airport boundary is securely fenced with restricted access to the Air Operations Area (AOA) and Security Identification Display Area (SIDA). Access to the AOA is restricted through a combination of perimeter fences, buildings with airside and landside components clearly delineated, and apron security fencing put in place to keep GA/FBO operations separate from the AOA.

Access to the AOA is provided through a variety of controlled access points located along the perimeter fence and within specific facilities that provide access to the AOA. The Commission is responsible for the development, installation, and maintenance of all access facilities at the airport, though coordination with the Transportation Security Administration (TSA) is now required. Any tenant with AOA access is responsible for monitoring/controlling all airfield access within its leasehold. These facilities include: FBO/GA facilities, cargo warehouses, aircraft maintenance hangars, ground service equipment maintenance facilities, etc.

2.7.9 Central Utility Plant

The Central Utility Plant houses the following equipment for the operation of the heating and cooling of the Terminal Building.

- (3) 700 ton Chillers
- (3) 4800 MBH Boilers
- (1) 4000 MBH Boiler
- (1) 750 ton Cooling Tower
- 1680 gpm primary chill water pumps
- 1680 gpm secondary chill water pumps
- (3) 2100 gpm condensing water pumps
- (2) 1545 gpm hot water pumps

2.7.10 Oversized Vehicle Parking/Staging

RIC does not have a dedicated Oversized Vehicle Parking/Staging; however, in the event space is needed for such vehicles, the overflow area of Economy Lot B is utilized.

2.7.11 Service Roads

Service Roads provide the ability to service navigation equipment, provide runway inspections, access different elements of the airfield in the event of an accident, and provide a variety of other uses. RIC has a system of service roads that aid in the ability of airport Operations staff to access airfield facilities, limiting the amount of time vehicles are on active runways and taxiways.

2.7.12 Ivor/Massey Administration Building

The Ivor/Massey Administration Building is a standalone, two-story, 30,000 square foot office administration building on the northern side of the airport. The building has dedicated vehicular parking, as well as airside access. The offices of the Commission are currently located in this facility. In the middle of 2008, the Commission will relocate its office space to the terminal building. The vacated space will be available for lease.

2.7.13 Stormwater Detention and Management Facilities

The airport storm sewer system is owned and maintained by the Commission, with the majority of the airport's tributary storm water runoff being directed across the airfield from southwest to northeast through ditches and 72- and 96-inch pipes, and out falling in the Beulah Road detention facility and into White Oak Swamp Creek. North sections of the airport are controlled by a second system through 30- and 54-inch pipes to an on-airport detention basin.

2.7.14 Public Safety Building

RIC does not have a dedicated Public Safety Building. The Airport Police occupy space in the Terminal Building.

2.7.15 Fuel Storage Areas

A fuel storage area is an allocation of space strictly dedicated to the storage of 100 Low Level Gasoline, Jet Aviation Gasoline, and other fuels for aircraft. The Commission does not maintain a single central fuel farm. Fueling of general aviation aircraft is provided by two Fixed Base Operators on the airport as well as by individual tenants who own their own on-site fuel farm. Air cargo and air carrier aircraft are fueled by either of the FBOs. Both of these FBOs have developed fuel farms to provide for the needs of their operations. These two fuel farms provide the majority of fuel for the airport civil users. The fuel capacity on the airport is located south of the cargo apron and includes:

- 310,000 Gallons of Jet A
- 25,000 Gallons of Aviation Gasoline
- 10,000 Gallons of 100 Low Level
- 5,000 Gallons of Unleaded Fuel (Vehicles)

2.7.16 Army National Guard

The Army National Guard is located on the eastern side of the airfield and operates a Black Hawk Helicopter Training Base (non-aviation).

2.7.17 Richmond International Airport Air Guard Station

Under the Base Realignment Closure Act of 2005, the Virginia Air National Guard Station (VANG) based at RIC was recommended for realignment. The VANG no longer occupies the facility, and a new tenant has been identified for portions of the installation.

2.7.18 Deicing Facilities

Currently, all deicing is provided by the air carriers' personnel or through third-party contractors and is performed at the gate. The Air Cargo Operators perform deicing functions at the air cargo areas. These operators utilize basins and drains that tie back into a central collection area, where it is collected and taken off-site.

2.7.19 Utilities

As facilities are improved and further developed, all utility improvements (e.g., sanitary sewer, natural gas, water, telecommunications, and electrical service) will be included in the development as required to accommodate the additional service demand. The utilities listed below identify the existing service providers and capacities.

2.7.19.1 Sanitary Sewer

Henrico County owns and operates a 24-inch sanitary sewer main, which services the majority of facilities on-airport. Facilities that are not connected to the sanitary sewer system rely on septic systems. The 24-inch trunk line runs north along Airport Drive and through the former Virginia Air National Guard site to a lift station on Beulah Road, where it is sent back across the airport in a 30-inch force main that parallels the south side of Runway 7-25. The sanitary sewer system on the airport is a combination of County and Airport-owned facilities of different sizes. The sewer ultimately feeds into a main along Williamsburg Road and then east to the pump station located on Beulah Road across from the former Virginia Air National Guard site, which is adjacent to RIC's storm water management facility.

2.7.19.2 Natural Gas

The City of Richmond, Department of Public Utilities provides the natural gas service to the airport and its tenants.

2.7.19.3 Water Service

The airport water service is supplied by a 12-inch water main loop that is owned and maintained by Henrico County. Each facility on the airport is serviced and individually metered from this 12-inch water main. All tenants outside of the terminal building have independent water meters. Currently, the Commission owns and maintains the water system on the airport. The system is fed through three master meters owned by Henrico County with various water line sizes (6, 8, 10, & 12-inch) serving the Airport's tenants. Each tenant is billed monthly by the Commission based on its individual water meter. The Commission is performing renovations to the water system, which will improve the on-airport water system and bring it up to Henrico County Standards (including new water meters). Upon completion of this system upgrade, the Commission will transfer ownership of the water system to Henrico County, who will take over its operation and maintenance..

2.7.19.4 Telecommunication

Telecommunication Service is provided primarily through underground lines, but there are also some overhead lines. Verizon is the telecommunication provider for RIC and its tenants.

2.7.19.5 Electrical Utility Service

Electrical utility service is provided by Dominion Virginia Power.

2.8 GROUND ACCESS

The airport is surrounded by a ground transportation system that includes regional highways and expressways, major arterial roadways, and railroads. The on-airport, transportation network interfaces with the regional system utilizing roadways, parking areas, and rental car facilities. This section discusses these on- and off-airport ground transportation facilities. The discussion of ground access facilities is categorized into the following groups:

- Roadways
- Public Parking
- Employee Parking
- Rental Car Facilities
- Commercial Vehicle Staging
- Railroads
- Public Transit

2.8.1 Roadways

The airport maintains the terminal roadway system that connects the terminal core to the regional roadway network. The discussion of roadways is categorized into regional (i.e., off-airport) roadways, airport roadways, and terminal core roadways. **Exhibit 2.9** depicts the roadway system.

2.8.1.1 Regional Roadway Facilities

The Regional Roadway network primarily carries non-airport related trips, but also provides the direct link to the local Airport Roadway system. Historically, the regional roadway network traffic patterns are typical with the workday flows of morning and afternoon. Interstates 64 and 295 carry/accommodate the bulk of the traffic to and from the airport. Currently, Airport Drive is being realigned and reconstructed. Upon completion of this project, Interstate 895 (Pocahontas Parkway) may pull traffic from the other interstates.

- *Airport Drive* provides a north-south corridor connecting the terminal roadway network with Interstate 64 and Interstate 295. The roadway is currently being reconstructed and is slated to be completed in 2008. These improvements should provide seamless access to the terminal roadways from the surrounding interstates.
- *Interstate 64* provides access to the City of Richmond and further west to Charlottesville. Access to Williamsburg/Newport News (to the East of the airport) is also provided by Interstate 64.
- *Interstate 295* provides access south to Petersburg and north around the City of Richmond.
- *Interstate 895, a toll road*, currently provides indirect airport access along the southern side of the City of Richmond and Henrico County through connection to South Laburnum Avenue.

2.8.1.2 On-Airport Roadways

The airport's terminal roadways were reconstructed and opened in 2007 in conjunction with the new terminal building. This roadway network consists of an upper/lower level configuration separating departures and arrivals respectively. The lower (arrivals) level also separates private vehicles (inner lanes) from commercial vehicles (outer lanes) and manages the commercial vehicles through Automatic Vehicle Identification (AVI) access control. These public access roadways also provide landside access to the public and employee parking lots, rental car, and support/ancillary facilities.

2.8.1.3 Terminal Curbfront Roadways

The recently completed terminal building provides for separated departure and arrival levels, effectively doubling the available curbfront at the terminal. The current configuration boasts 875 linear feet of curb on the upper level and 566 linear feet on the lower level interior curb, with 708 linear feet on the lower level commercial vehicle lane.

2.8.2 *Parking Facilities*

Terminal area parking facilities include employee parking, short- and long-term public parking, and satellite parking facilities not situated in the immediate terminal facility for terminal users.

2.8.2.1 Public Parking

There are several on-airport options for vehicle parking. The airport's parking garages are located across from the terminal complex. These facilities offer daily, hourly, and valet parking options. There are also two remote parking lots (Economy Lot A and Economy Lot B) located across Airport Drive with free shuttle service to the terminal.

The North and South Parking Garages have a total of 4,352 parking spaces. Additionally, there is a Center Surface Lot (between the garages) that accommodates 144 parking spaces. Economy Lots A and B accommodate 1,250 and 985 spaces respectively.

2.8.2.1 Employee Parking

Employee parking is provided in multiple locations. Parking facilities are located on the south side of the terminal roadways near the cargo area, and there is also a remote lot on the southwestern corner of the airport in the aircraft maintenance area.

2.8.3 *Rental Car Facilities*

The Rental Car Companies have customer counters and offices located on the lower level of the terminal building adjacent to the baggage claim area. Currently, eight rental car companies have operations at the airport, housing a ready/return operation in a consolidated Rental Car Garage located on the north side of the Terminal. The maintenance locations of the Rental Car Agencies are separate from their operations with some residing on-airport and others located off-airport.

2.8.4 *Commercial Vehicle Staging Areas*

RIC currently does not have an on-airport dedicated Commercial Vehicle Staging Area. Taxis authorized to pick up passengers at the airport are available curbside, adjacent to the North Garage. Executive sedan/limousine service is also available curbside.

2.8.5 *Railroads*

One Class I freight railroad abuts the airport. This rail and right-of-way, owned and operated by CSX Transportation, is located along the southern airport boundary. The rail line provides service to the shipyards located in Newport News to the east and continues on into the City of Richmond to the west traveling along the James River. The railroad right-of-way represents the southern limits of all airport operations and activities. The airport owns several parcels south of the railroads, which are held to address navigation easement issues.

2.8.6 Public Transit

The Greater Richmond Transit Company offers public bus access from the terminal to the City of Richmond and other locations throughout the metro area. Currently, the Purple Route #56 serves the airport. Eastbound buses depart every 30 minutes from 6:43 a.m. until 8:23 a.m., and at 4:37 p.m. and 5:07 p.m. Westbound buses have the same departure times with an additional afternoon bus departing at 3:55 p.m. The buses drop off and pick up passengers at the lower level of the terminal.

2.9 AIRPORT ENVIRONS AND LAND USE

RIC is surrounded by a mixture of commercial, residential, and rural land use. For commercial buildings, Henrico County regulates height of structures within its jurisdictions through zoning ordinances. In addition to these regulations, through navigation easements, RIC controls certain land uses within RPZ areas that may extend beyond the airport property line. Residential land uses have also developed in all directions in the vicinity of RIC. The residential developments in the vicinity of the airport vary in density according to the characteristics of the communities.

The airport is bordered by Interstate-895 (Pocahontas Parkway) to the South, Interstate-295 to the east, Interstate-64 to the north, and South Laburnum Avenue to the west. On the immediate west side (between the airport and South Laburnum Avenue), there is a mixture of commercial/business use, light industrial manufacturing, and residential development. The areas north of the airport consist primarily of commercial/business properties with some residential areas. The areas to the east and south of the airport are primarily open rural and wooded areas with minimal facilities or residences.

2.10 BUILDING CONDITION INDEX

To better understand the conditions of the facilities at the airport, the Master Plan Team completed a building condition survey of all on-airport facilities. A copy of the survey can be found in **Appendix C**. Each facility was assessed using the following criteria in order to establish the likely useful life of each building:

- Good = estimated useful life in excess of 10 years with no major capital expenditure
- Fair = estimated useful life of 5-9 years with no major capital expenditure
- Poor = estimated useful life of 1-4 years with no major capital expenditure

Table 2.6 depicts the general condition of the on-airport facilities.

Table 2.6 Building Condition Index

Building No.	Tenant	Good (10+ Yrs.)	Fair (5-9 Yrs.)	Poor (1-4 Yrs.)
1	VA Aviation Museum	X		
2	Richmond Jet Center Hangar	X		
3	Aero Industries-CSX	X		
4	Philip Morris	X		
5	VA DOT	X		
6	Dominion Resources	X		
10	Million Air (3 Buildings)	X		
11	Aero Industries		X	
12	CRAC (Ethyl)	X		
14	CRAC ARFF Station	X		
15-1	CRAC Sand Building	X		
15-2	CRAC Sand Building	X		
16	CRAC Massey Building	X		
20	Express Jet	X		
21	Aero Industries – Police Hangar	X		
22	Aero Industries - Martinaire	X		
23	National Alamo	X		
26	Avis	X		
27	Cargex (UPS)	X		
32	Sternheimer – A & N Roof		X	
32	Sternheimer – A & N		X	
2749	Air National Guard		X	
2750	Air National Guard	X		
2751	Air National Guard	X		
2852	Air National Guard	X		
2855	Air National Guard	X		
2856	Air National Guard	X		
3629	Air National Guard	X		
3630	Air National Guard			X
3633	Air National Guard	X		
3634	Air National Guard	X		
3635	Air National Guard	X		
3641	Air National Guard	X		
3642	Air National Guard		X	
3643	Air National Guard	X		
3645	Air National Guard	X		
3646	Air National Guard	X		
3647	Air National Guard		X	
3648	Air National Guard	X		
3649	Air National Guard	X		
3650	Air National Guard	X		
3653	Air National Guard – Guard House	X		
3654	Air National Guard	X		
3655	Air National Guard		X	
3656	Air National Guard	X		
3657	Air National Guard	X		
3658	Air National Guard	X		
3660	Air National Guard	X		
3661	Air National Guard	X		
3664	Air National Guard	X		

3665	Air National Guard	X	
3670	Air National Guard – Metal Booth		X
3671	Air National Guard	X	
3678	Air National Guard	X	
3682	Air National Guard	X	
3683	Air National Guard	X	
3684	Air National Guard	X	
3686	Air National Guard	X	
3687	Air National Guard	X	
3688	Air National Guard	X	
3902	Army National Guard Pump House	X	
3903	Army National Guard	X	
3904	Army National Guard	X	
3905	Army National Guard	X	
3906	Army National Guard	X	
3990	Army National Guard Maintenance Hangar	X	
3991	Army National Guard Maintenance Hangar	X	
3992	Army National Guard Hangar	X	
3993	Army National Guard Hangar	X	
3994	Army National Guard Hangar	X	
3996	Army National Guard Fuels Building	X	
	CRAC Car Wash Dumpster Building		X
	City Fire Training	X	
	Davenport	X	
	DHL	X	
	FAA ATCT	X	
	FedEx Cargo	X	
	CRAC GSE Building	X	
	Hertz Maintenance Facility	X	
	CRAC North Vault – Electrical	X	
	Henrico Park and Ride		X
	CRAC Parking Administration	X	
	CRAC South Fault	X	
	Storage Building	X	
	USAir Maintenance GSE	X	
	USPS	X	
	Henrico Volunteer Rescue Squad	X	
	WAWA	X	

Source: CP&Y, 2007