FACILITY REQUIREMENTS AND ALTERNATIVE DEVELOPMENT ANALYSIS

The objective of this section is to identify, in general terms, the adequacy of existing airport facilities and outline what facilities may be needed to accommodate projected future aviation activity, as outlined in Chapter Two - Forecasts. Facility requirements include both airside and landside components. Airside facilities (including the runways, taxiways, navigational aids, lighting, and markings) enable the approach, departure, and ground movement of aircraft on the airport. Landside facilities (including terminal facilities, aircraft hangars, aircraft tiedowns, aircraft parking aprons, automobile parking, and various airport support facilities) enable the interface of air and ground transportation.

The facility requirements for York Municipal Airport (JYR) were evaluated using guidance contained in the following Federal Aviation Administration (FAA) publications:

- Advisory Circular (AC) 150/5300-13B (as amended), *Airport Design;*
- AC 150/5060-5, *Airport Capacity and Delay;*
- AC 150/5325-4B, *Runway Length Requirements for Airport Design;*
- 14 Code of Federal Regulations (CFR) Part 77, *Objects Affecting Navigable Airspace*; and,
- FAA Order 5090.5, *Formulation of the National Plan of Integrated Airport Systems* (NPIAS) and the *Airports Capital Improvement Plan* (ACIP).

AIRSIDE FACILITY REQUIREMENTS

AIRFIELD CAPACITY

A capacity analysis measures the capacity of the airfield facilities (i.e., runways and taxiways) in order to identify a plan for additional development needs. Several factors influence the capacity of the airfield, including the airfield layout, meteorological conditions, aircraft fleet mix, runway use, arrivals, touch-and-go activity, and exit taxiway locations. An airport's airfield capacity is expressed in terms of its annual service volume (ASV). ASV is a reasonable estimate of the maximum level of aircraft operations that the airport can accommodate in a year.

Pursuant to the guidelines contained in FAA AC 150/5060-5, *Airport Capacity and Delay*, a two-runway airfield configuration with less than 20 percent of operations by aircraft weighing more than 12,500 pounds has an unconstrained ASV of 230,000 annual operations. The forecasts for the airport indicate that activity throughout the planning period is forecast to reach 15,541 annual operations by 2044, which is 6.76 percent of the ASV. According to FAA Order 5090.5, planning for capacity improvement projects should begin when operations reach approximately 60 percent of ASV. The airfield is expected to accommodate anticipated operational demands; therefore, no additional runways are needed for capacity reasons.

RUNWAY ELIGIBILITY

All airports included in the National Plan of Integrated Airport Systems (NPIAS) are eligible for funding for a single runway through the Airport Improvement Program (AIP), unless the airport qualifies for a crosswind or secondary runway. To help the FAA determine funding eligibility, each runway at the airport is assigned a runway type. The four runway types described in FAA Order 5100.38D, *Airport Improvement Program Handbook*, are primary, crosswind, secondary, and additional. Primary, crosswind, and secondary runways are eligible for AIP funding, if justified. Additional runways, which are those that do not meet requirements for any other type, are ineligible for AIP funding. **Table 3A** presents the eligibility requirements for each runway type. Runway 17-35, which is 5,898 feet long by 100 feet wide and provides instrument approach capability with visibility minimums not lower than ¾ mile, is the primary runway at JYR and is eligible for AIP funding. The airport has determined that reconstruction of the primary runway will be required during the planning period. However, until 500 annual operations in the C-II category are reached, funding for the reconstruction may only be justified up to B-II design standards.

TABLE 3A | Runway Eligibility

The following runway type…	Must meet all of the following criteria…	And is…
Primary Runway	1. A single runway at an airport is eligible for development, consistent with FAA design and engineering standards.	Eligible
Crosswind Runway	1. The wind coverage on the primary runway is less than 95%.	Eligible if justified
Secondary Runway	1. There is more than one runway at the airport. 2. The nonprimary runway is not a crosswind runway. 3. Either of the following: a) The primary runway is operating at 60% or more of its annual capacity. b) The FAA has made a specific determination that the runway is required.	Eligible if justified
Additional Runway	1. There is more than one runway at the airport. 2. The nonprimary runway is not a crosswind runway. 3. The nonprimary runway is not a secondary runway.	Ineligible

Source: FAA Order 5100.38D, AIP Handbook

FAA AC 150/5300-13B, *Airport Design*, recommends that a crosswind runway be made available when the primary runway orientation provides for less than 95 percent wind coverage for specific crosswind components. The 95 percent wind coverage is computed on the basis of exceeding a 10.5-knot (12 miles per hour [mph]) component for airport reference codes (ARC) A-I and B-I; 13-knot (15 mph) component for ARC A-II and B-II; 16-knot (18 mph) component for ARC A-III, B-III, C-I through C-III, and D-I through D-III; and a 20-knot (23 mph) component for ARC A-IV through E-IV. Exhibit B (contained in Chapter 1) detailed the associated wind coverage for JYR. As shown on Exhibit B, primary Runway 17-35 provides less than 95 percent coverage during 10.5-knot crosswind conditions. Because the primary runway does not exceed the 95 percent coverage threshold, Runway 5-23 would be classified as a crosswind runway and is potentially eligible for AIP funding, based on the requirements outlined in **Table 3A**.

RUNWAY LENGTH REQUIREMENTS

Aircraft operate on a wide variety of available runway lengths. Many factors govern the suitability of runway lengths for aircraft, including elevation, temperature, wind velocity, aircraft operating weight, wing flap settings, runway condition (wet or dry), runway gradient, vicinity airspace obstructions, and any special operating procedures.

Using site-specific data, runway length requirements for the various classifications of aircraft that operate at JYR were examined using FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*. The FAA runway analysis groups general aviation aircraft into several categories, reflecting the percentage of the fleet within each category. The previous chapter determined that the existing and ultimate critical aircraft for Runway 17-35 are Air Tractor 802 and CI/CII family aircraft, respectively.

The existing critical aircraft (Air Tractor 802) for Runway 17-35 has a maximum certificated takeoff weight (MTOW) of 16,000 pounds, while the MTOW of CI/CII family ultimate design aircraft vary. The existing critical design aircraft (Air Tractor 802) for Runway 17-35 is considered a large aircraft (more than 12,500 pounds) as defined in 14 CFR Part 1. The CI/CII ultimate design aircraft generally weigh more than 12,500 and are also considered large aircraft.

The first step in evaluating runway length is to determine general runway length requirements for most aircraft operating at the airport. Most operations at JYR are conducted using smaller single-engine piston-powered aircraft and large turboprop aircraft that weigh more than 12,500 pounds. There are also business jets operating at the airport, with project increases in business jet operations in the future. As previously discussed, crosswind Runway 5-23 meets AIP funding justification for small aircraft. Therefore, runway length requirements for both large and small aircraft will be addressed.

Small Aircraft

Table 3B summarizes the recommended runway lengths for JYR. FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*, recommends that airports be designed to serve at least 95 percent of small airplanes. The advisory circular further defines the fleet categories as follows:

- **95 Percent of Small Airplane Fleet:** This category applies to airports primarily intended to serve medium-population communities, characterized by diverse uses and a significant potential for increased aviation activity. This category also includes airports that are primarily intended to serve low-activity locations, small-population communities, and remote recreational areas.

- **100 Percent of Small Airplane Fleet:** This type of airport is primarily intended to serve communities located on the fringe of metropolitan areas or relatively large-population communities that are remote from metropolitan areas.

TABLE 3B | Small Aircraft Runway Length Requirements – York Municipal Airport	
AIRPORT AND RUNWAY DATA	
Airport elevation	1,670 feet
Mean daily maximum temperature of the hottest month	87.1°F
RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN	
Small aircraft with fewer than 10 passenger seats	
95 percent of these small aircraft	3,700 feet
100 percent of these small aircraft	4,300 feet
Small aircraft with 10 or more passenger seats	
100 percent of these small aircraft	4,500 feet

Source: FAA AC 150/5325-4B, Runway Length Requirements for Airport Design (July 2005)

Business Aircraft

While most general aviation activity is conducted by small piston-powered aircraft, JYR is also frequently utilized by business jets and turboprop aircraft (e.g. Air Tractor 500, 600, and 800 families of agricultural spraying and King Air family turboprops, and Cessna Citation, Falcon 900, Hawker 800, and Learjet 70 business jets) which generally require increased runway lengths. Runway length requirements have been calculated for aircraft weighing more than 12,500 pounds, but less than 60,000 pounds, which includes most small to medium-size business jets. These calculations take into consideration the runway gradient and landing length requirements when contaminated (wet and slippery). Business jets tend to need a greater runway length when landing on a wet surface because of their increased approach speeds. AC 150/5325-4B provides a methodology for determining runway length for business jets with similar operating characteristics. The AC provides two separate "family groupings of airplanes," each based upon their representative percentage of aircraft in the national fleet. The first group is business jets making up 75 percent of the national fleet, and the second group is business jets making up 100 percent of the national fleet, while taking into account the aircraft's useful load (including passengers, cargo, and usable fuel) and the airport's conditions. **Table 3C** presents a partial list of common aircraft in each aircraft grouping. Aircraft that comprise 75 to 100 percent of the fleet are known to operate at JYR, including the Cessna Citation I/II/II jets, Dassault Falcon 900s, and Hawker 800s.

TABLE 3C | Business Jet Categories for Runway Length Determination

75 Percent of the National Fleet		75-100 Percent of the National Fleet		Greater than 60,000 Pounds	
Aircraft	MTOW (lbs.)	Aircraft	MTOW (lbs.)	Aircraft	MTOW (lbs.)
Lear 35	20,350	Lear 55	21,500	Gulfstream II	65,500
Lear 45	20,500	Lear 60	23,500	Gulfstream IV	73,200
Cessna 550	14,100	Hawker 800XP	28,000	Gulfstream V	90,500
Cessna 560XL	20,000	Hawker 1000	31,000	Global Express	98,000
Cessna 650 (VII)	22,000	Cessna 650 (III/IV)	22,000	Gulfstream 650	99,600
Cessna Citation I/II/III	22,002	Cessna 750 (X)	36,100		
IAI Westwind	23,500	Challenger 604	47,600		
Beechjet 400	15,800	Dassault Falcon 900C/EX	45,503		
Falcon 50	18,500				

MTOW = maximum takeoff weight

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

The results of the FAA AC 150/5325-4B methodology for recommended runway lengths for large aircraft that utilize JYR are summarized in **Table 3D**. It should be noted that utilization of the 90 percent category for runway length determination for large airplanes that weigh less than 60,000 pounds is generally not considered by the FAA unless there is a demonstrated need at an airport (i.e., a business jet operator that flies out frequently with heavy loads).

TABLE 3D | Business Jet Runway Length Requirements – York Municipal Airport	
AIRPORT AND RUNWAY DATA	
Airport elevation	1,670 feet
Mean daily maximum temperature of the hottest month	87.1°F
Runway gradient	0.08%
RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN	
Large airplanes up to 60,000 pounds	
75 percent of fleet at 60 percent useful load	5,500 feet
75 percent of fleet at 90 percent useful load	7,000 feet
100 percent of fleet at 60 percent useful load	5,900 feet
100 percent of fleet at 90 percent useful load	8,600 feet

Source: FAA AC 150/5325-4B, Runway Length Requirements for Airport Design (July 2005)

Another method to determine runway length requirements for aircraft at JYR is to examine aircraft flight planning manuals under conditions specific to the airport. A variety of aircraft were analyzed for takeoff length requirements at a design temperature of 87.1 degrees Fahrenheit (°F) and a field elevation of 1,670 feet mean sea level (MSL) with a 0.08 percent runway gradient. **Table 3E** provides a detailed runway length analysis for several aircraft. These data were obtained from Ultranav software, which computes operational parameters for specific aircraft based on aircraft manual data. The analysis includes the MTOW allowable and the percent useful load from 60 percent to 100 percent. At JYR, approximately 1,800 feet of the Runway 17-35 pavement is failing. Therefore, the usable runway length would be reduced from 5,898 feet to 4,098 feet if runway reconstruction does not occur during the planning period.

Of the 39 aircraft analyzed, all aircraft can take off with useful loads up to 60 percent on Runway 17-35, and all B-II aircraft are able to take off with useful loads up to 100 percent at the existing runway length of 5,898 feet. As previously discussed, runway reconstruction has been determined to be required for up to 1,800 feet on Runway 17-32. Therefore, the following discussion will analyze an adjusted runway length of 5,500 feet based on the results of this analysis and the critical aircraft determination (B-II existing and C-II ultimate).

With a 5,500-foot runway at JYR, all but four of the aircraft analyzed can take off with useful loads up to 60 percent on Runway 17-35. The Embraer 135, Gulfstream 200, Gulfstream II/IISP, and Hawker 4000 were found unable to take off with 60 percent or greater loads while utilizing Runway 17-35 at a runway length of 5,500 feet. Two B-I category aircraft, Beechjet 400A and Falcon 10, as well as all of the C and D category aircraft analyzed, would be unable to take off with useful loads up to 100 percent on a 5,500-foot runway at JYR. The greatest takeoff runway length required across all conditions is 5,786 feet for B-I/B-II category aircraft (Falcon 10 at 100% useful load) and 8,501 feet for C-I/C-II aircraft (Gulfstream 200 at 100% useful load).

TABLE 3E | Aircraft Takeoff Length Requirements – Runway 17-35							
			TAKEOFF LENGTH REQUIREMENTS (feet)				
			Useful Load				
Aircraft Name	ARC	MTOW (lbs.)	60%	70%	80%	90%	100%
Pilatus PC-12	A-II	9,921	2,191	2,373	2,563	2,763	2,972
King Air C90B	B-II	10,100	2,806	3,014	3,232	3,462	3,705
Citation I/SP	B-I	11,850	2,892	3,141	3,406	3,687	3,985
King Air 200 GT	B-II	13,300	3,550	3,677	3,810	3,950	4,078
Citation Sovereign	B-II	16,630	3,411	3,501	3,688	3,938	4,202
Citation (525A) CJ2	B-II	16,830	3,259	3,512	3,776	4,048	4,340
King Air 350	B-II	18,740	3,625	3,777	3,931	4,195	4,517
Citation II (550)	B-II	12,375	3,109	3,437	3,790	4,168	4,573
Citation 560 XLS	B-II	30,300	3,444	3,703	3,977	4,275	4,587
Citation Encore	B-II	20,200	3,195	3,502	3,839	4,212	4,621
Citation Encore Plus	B-II	14,800	3,207	3,521	3,875	4,261	4,689
Citation 560 XL	B-II	20,000	3,501	3,763	4,065	4,363	4,709
Citation Bravo	B-II	12,500	3,464	3,722	4,014	4,358	4,726
King Air C90GTi	B-II	15,000	3,745	4,008	4,292	4,595	4,919
King Air 1900D	B-I	10,100	4,141	4,391	4,688	5,028	5,376
Beechjet 400	B-I	17,120	4,284	4,616	4,968	5,331	5,692
Falcon 10	B-I	21,000	3,215	3,989	4,685	5,143	5,786
Citation III	C-II	16,300	4,445	4,868	5,329	5,826	5,860
Hawker 4000	C-II	39,500	4,320	4,679	5,063	5,487	5,973
Hawker 800XP	C-II	49,200	4,515	4,916	5,410	5,929	6,059
Lear 40	C-I	21,500	4,231	4,598	5,019	5,521	6,129
Citation VII	C-II	92,500	4,660	4,977	5,327	5,706	6,129
Challenger 300	C-II	38,850	4,513	4,938	5,382	5,845	6,331
Falcon 900EX	C-II	28,000	4,380	4,870	5,400	5,970	6,540
Falcon 2000	C-II	74,600	4,844	5,236	5,639	6,085	6,569
Global 5000	C-III	23,000	4,464	4,959	5,479	6,023	6,591
Gulfstream IV	D-II	35,700	4,742	5,046	5,641	6,201	6,719
Citation X	C-II	74,600	4,695	5,110	5,600	6,154	6,728
Gulfstream 450	D-II	35,800	4,620	5,090	5,605	6,157	6,741
Hawker 1000	C-II	46,500	5,530	6,150	6,790	7,180	7,180
Gulfstream 100	C-II	24,650	5,045	5,592	6,177	6,756	7,330
Challenger 604/605	C-II	48,200	5,054	5,551	6,122	6,741	7,380
Falcon 900A	C-II	45,100	4,960	4,940	6,660	7,450	7,450
Lear 60	C-I	23,500	5,324	5,798	6,327	6,933	7,598
Gulfstream II/IISP	C-II	21,500	5,518	7,610	6,456	7,006	7,610
Embraer 135	C-II	49,604	5,507	6,106	6,357	7,020	7,704
Challenger 601	C-II	65,500	5,310	5,910	6,590	7,350	8,190
Lear 55	C-I	31,000	5,455	6,064	6,724	7,438	8,209
Gulfstream 200	C-II	35,450	5,550	6,206	6,932	7,718	8,501
AVERAGE			4,224	4,637	5,042	5,494	5,923

Note: Green cells denote runway lengths less than or equal to 4,098 feet; yellow cells denote runway lengths between 4,098 and 5,500 feet; and red cells denote runway lengths greater than 5,500 feet.
MTOW = maximum takeoff weight

Source: Ultranav software

Table 3F presents the runway length required for landing under three operational categories: Title 14 Code of Federal Regulations (CFR) Part 25, CFR Part 135, and CFR Part 91K. CFR Part 25 operations are those conducted by individuals or companies that own their aircraft. CFR Part 135 applies to all for-hire charter operations, including most fractional ownership operations. CFR Part 91K includes operations in fractional ownership that utilize their own aircraft under the direction of pilots specifically assigned to those aircraft. Part 91k and Part 135 rules regarding landing operations require operators to land at the destination airport within 60 percent of the effective runway length. An additional rule allows operators to land within 80 percent of the effective runway length if the operator has an approved destination airport analysis in the airport's program operating manual. The landing length analysis accounts for both scenarios.

The following discussion will analyze an adjusted runway length of 5,500 feet based on the results of this analysis and the critical aircraft determinations B-II existing and C-II ultimate. Of the aircraft analyzed in **Table 3F**, all the aircraft analyzed are able to land in dry conditions under Part 25. The landing length analysis shows that all but one of the aircraft analyzed (Lear 55) can operate in dry conditions under the 80 percent rule. Under the 60 percent rule and dry conditions, all but 12 of the aircraft analyzed can operate on a 5,500-foot runway. In wet conditions, 11 aircraft analyzed would not be able to land under Part 25 on a runway measuring 5,500 feet, including Citation 560 XL, Citation X, Beechjet 400A, Gulfstream 450, Citation Bravo, Gulfstream 100, Citation II (550), Gulfstream II/IISP, Lear 55, Challenger 601, and Gulfstream IV. The maximum landing runway length required across all conditions under Part 25 is 6,162 feet for B-I/B-II aircraft (Citation II in wet conditions) and 6,937 feet for C-I/C-II aircraft (Challenger 601 in wet conditions).

In wet runway conditions at a 5,500-foot runway length, approximately half of the aircraft analyzed are able to land under the 80 percent rule, and four of the aircraft analyzed are able to land under the 60 percent rule.

TABLE 3F | Aircraft Landing Length Requirements – Runway 17-35

			LANDING LENGTH REQUIREMENTS (feet)					
			Dry Runway Condition			Wet Runway Condition		
Aircraft Name	ARC	MLW (lbs.)	Part 25	80% Rule	60% Rule	Part 25	80% Rule	60% Rule
Pilatus PC-12	A-II	9,921	2,367	2,959	3,945	N/A	N/A	N/A
King Air C90GTi	B-II	9,600	1,441	1,801	2,402	N/A	N/A	N/A
King Air 200 GT	B-II	12,500	1,252	1,565	2,087	N/A	N/A	N/A
King Air C90B	B-II	9,600	1,290	1,613	2,150	N/A	N/A	N/A
Citation I/SP	B-I	11,350	2,454	3,068	4,090	2,822	3,528	4,703
Global 5000	C-III	78,600	2,749	3,436	4,582	3,162	3,953	5,270
Embraer 135	C-II	40,785	2,784	3,480	4,640	3,192	3,990	5,320
Falcon 10	B-I	17,640	2,860	3,575	4,767	3,289	4,111	5,482
King Air 350	B-II	15,000	2,871	3,589	4,785	3,302	4,128	5,503
King Air 1900D	B-I	16,765	2,990	3,738	4,983	3,438	4,298	5,730
Citation Sovereign	B-II	27,100	2,869	3,586	4,782	3,633	4,541	6,055
Falcon 2000	C-II	33,000	3,233	4,041	5,388	3,718	4,648	6,197
Lear 40	C-I	19,200	2,927	3,659	4,878	3,722	4,653	6,203
Hawker 4000	C-II	33,500	3,257	4,071	5,428	3,745	4,681	6,242
Hawker 1000	C-II	25,000	2,972	3,715	4,953	4,079	5,099	6,798
Gulfstream 200	C-II	30,000	3,599	4,499	5,998	4,139	5,174	6,898
Hawker 800XP	C-II	23,350	2,752	3,440	4,587	4,180	5,225	6,967
Citation III	C-II	19,000	3,056	3,820	5,093	4,302	5,378	7,170
Falcon 900A	C-II	42,000	3,750	4,688	6,250	4,310	5,388	7,183
Citation VII	C-II	20,000	3,218	4,023	5,363	4,353	5,441	7,255
Falcon 900EX	C-II	44,500	3,798	4,748	6,330	4,367	5,459	7,278
Challenger 604/605	C-II	38,000	2,904	3,630	4,840	4,505	5,631	7,508
Citation Encore	B-II	15,200	3,063	3,829	5,105	4,609	5,761	7,682
Citation Encore Plus	B-II	15,200	3,066	3,833	5,110	4,665	5,831	7,775
Citation (525A) CJ2	B-II	11,500	3,228	4,035	5,380	4,686	5,858	7,810
Lear 60	C-I	19,500	3,226	4,033	5,377	4,981	6,226	8,302
Challenger 300	C-II	33,750	2,996	3,745	4,993	5,167	6,459	8,612
Citation 560 XLS	B-II	18,700	3,475	4,344	5,792	5,470	6,838	9,117
Citation 560 XL	B-II	18,700	3,471	4,339	5,785	5,524	6,905	9,207
Citation X	C-II	31,800	3,890	4,863	6,483	5,550	6,938	9,250
Beechjet 400A	B-I	15,700	3,851	4,814	6,418	5,664	7,080	9,440
Gulfstream 450	D-II	66,000	3,373	4,216	5,622	5,733	7,166	9,555
Citation Bravo	B-II	13,500	3,675	4,594	6,125	5,773	7,216	9,622
Gulfstream 100	C-II	20,700	3,164	3,955	5,273	6,061	7,576	10,102
Citation II (550)	B-II	12,700	2,550	3,188	4,250	6,162	7,703	10,270
Gulfstream II/IISP	C-II	58,500	3,219	4,024	5,365	6,170	7,713	10,283
Lear 55	C-I	18,000	5,416	6,770	9,027	6,500	8,125	10,833
Challenger 601	C-II	36,000	3,468	4,335	5,780	6,937	8,671	11,562
Gulfstream IV	D-II	66,000	3,727	4,659	6,212	7,145	8,931	11,908
AVERAGE			3,083	3,854	5,139	4,716	5,895	7,860

Note: Green cells denote runway lengths less than or equal to 4,098 feet; yellow cells denote runway lengths between 4,098 and 5,500 feet; and red cells denote runway lengths greater than 5,500 feet.
MLW = maximum landing weight
N/A = not applicable (turboprop aircraft landing lengths are not adjusted for wet runway conditions)

Source: Ultranav software

Runway Length Summary

Many factors are considered when determining appropriate runway lengths for the safe and efficient operation of aircraft at JYR. The airport should strive to accommodate turboprop and jet aircraft to the greatest extent possible, as demand dictates. The small aircraft fleet with 10 or more passenger seats can be accommodated by Runway 17-35 at a length of 4,500 feet, as shown in **Table 3B**. For large aircraft, 75 percent of the fleet at 60 percent useful load could be accommodated by Runway 17-35 at a length of 5,500 feet, as shown in **Table 3D**. As discussed in Chapter Two, Runway 17-35 should meet to at least a B-II standard for large aircraft. It is also important to plan for the potential for increased usage by larger aircraft, including those in categories C and D. This should be considered once demand reaches 500 annual operations for those aircraft. Therefore, the alternatives to follow will include the reconstruction of 5,500 feet of the existing 5,898-foot runway.

At 4,590 feet long, Runway 5-23 can accommodate 100 percent of small aircraft with 10 or more passenger seats; however, larger aircraft are much more limited due to the turf surface of the runway, especially those with tricycle landing gear. Given the classification of Runway 5-23 as a crosswind runway, runway pavement options will be evaluated.

Justification for any runway reconstruction or extension to meet the needs of turbine aircraft would require regular use (i.e., 500 annual itinerant operations) which is the minimum threshold required to obtain FAA grant funding assistance.

RUNWAY WIDTH

Runway width design standards are primarily based on the critical aircraft but can also be influenced by the visibility minimums of published instrument approach procedures. Runway 17-35 is 100 feet wide, which exceeds the existing runway design code (RDC) B-II-4000 standard of 75 feet but meets the standard for the ultimate RDC C-II-4000 condition. Runway 17-35 should be reconstructed at the B-II-4000 standard of 75 feet and increased to a width of 100 feet in the ultimate condition. Runway 5-23 is 150 feet wide, which meets the existing and ultimate design standards for RDC A-I(small)-VIS crosswind turf runway and should be maintained throughout the planning period.

RUNWAY GRADE

The FAA has instituted various line-of-sight requirements to facilitate coordination among aircraft and between aircraft and vehicles that operate on active runways. This allows departing and arriving aircraft to verify the locations and actions of other aircraft and vehicles on the ground that could create a conflict.

Line-of-sight standards for an individual runway are based on the availability of a parallel taxiway. When a partial-parallel taxiway is available, any point five feet above the runway centerline must be mutually visible with any other point five feet above the runway centerline. Based on available mapping, both runways currently meet the line-of-sight standards.

The surface gradient of a runway affects aircraft performance and pilot perception. The surface gradient is the maximum allowable slope for a runway. For runways designated for approach categories A and B, the maximum longitudinal grade is 2.0 percent. Runway 17-35 has a longitudinal grade of 0.08 percent, while Runway 5-23 has a longitudinal grade of 0.02 percent. All runways at JYR conform to FAA design standards for longitudinal gradient.

RUNWAY PAVEMENT STRENGTH

Airport pavements must be able to withstand repeated operations by aircraft of significant weight; therefore, the strength rating of a runway is an important consideration in facility planning. While a runway is assigned a specific strength rating, this does not preclude aircraft that weigh more than the published strength rating from using the runway. All federally obligated airports must remain open to the public, and it is typically up to the pilot of an aircraft to determine if a runway can safely support their aircraft. On the other hand, the airport sponsor has an obligation to properly maintain and protect the useful life of the runway, typically for 20 years. According to the FAA Airport/Facility Directory Legend (October 31, 2024, to December 26, 2024), "Runway strength data shown in this publication is derived from available information and is a realistic estimate of capability at an average level of activity. It is not intended as a maximum allowable weight or as an operating limitation. Many airport pavements are capable of supporting limited operations with gross weights in excess of the published figures." The chart supplement also states that operators of aircraft that exceed the pavement strength should contact the airport sponsor for permission to operate at the airport.

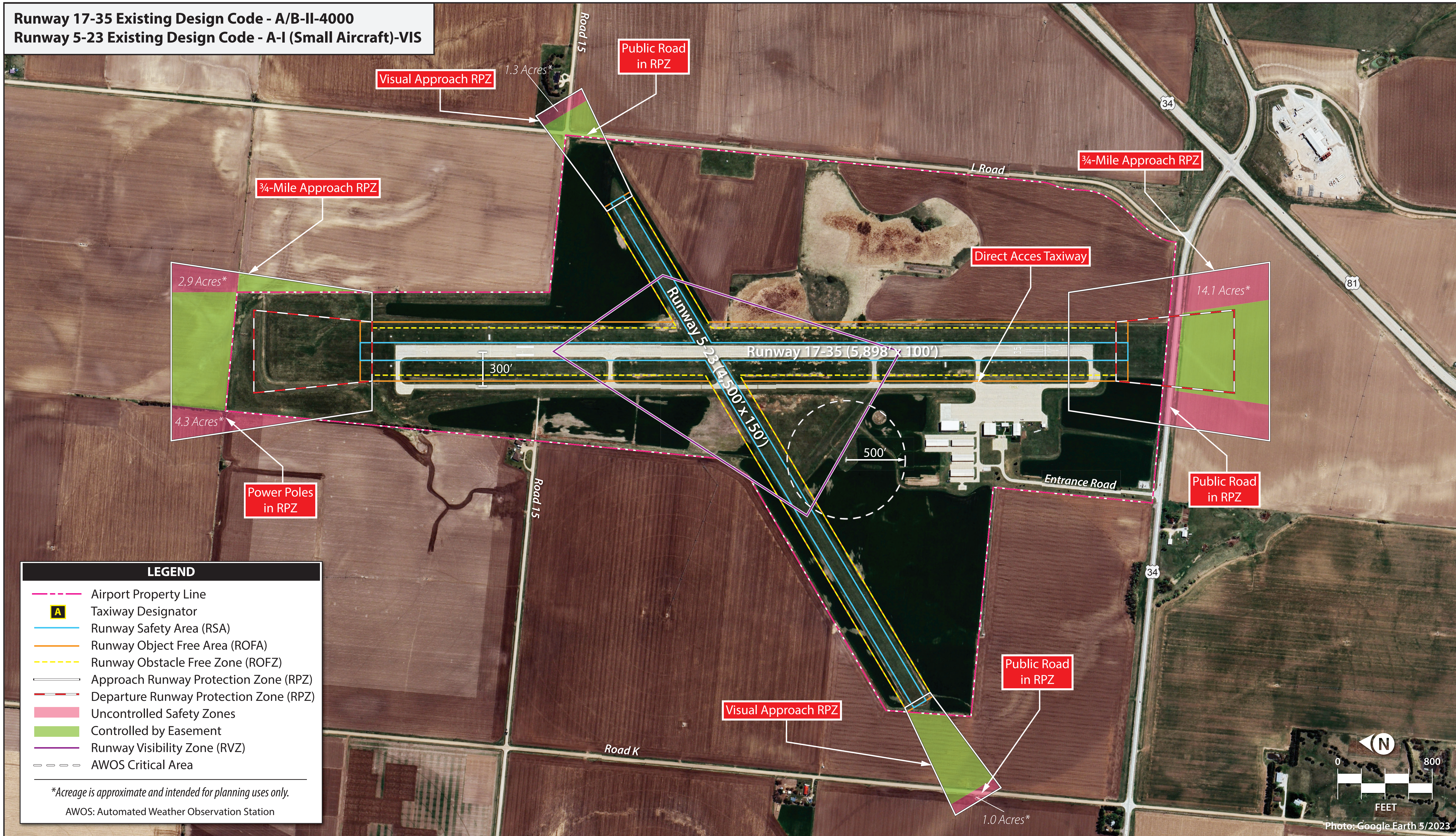
The current pavement strength rating for Runway 17-35 is 30,000 pounds for aircraft with a single wheel landing gear configuration (SWL) and 38,000 pounds for aircraft with a dual wheel landing gear configuration (DWL). At this strength rating, Runway 17-35 is able to accommodate most aircraft that currently utilize the airport, including mid-size turboprops and business jets; therefore, the existing strength rating for this runway is adequate through the planning period.

AIRFIELD DESIGN STANDARDS

The FAA has established several imaginary surfaces to protect aircraft operational areas and keep them free from obstructions that could affect the safe operation of aircraft. These surfaces include the runway safety area (RSA), runway object free area (ROFA), runway obstacle free zone (ROFZ), and runway protection zone (RPZ).

It is important that the RSA, ROFA, and ROFZ remain under the direct ownership of the airport sponsor to ensure these areas remain free of obstacles and can be readily accessed by maintenance and safety personnel. The airport should also own or maintain sufficient land use control over RPZs to ensure these areas remain free of incompatible developments. Alternatives to owning RPZs include maintaining positive control through avigation easements or ensuring proper zoning measures are taken to maintain compatible land use.

The applicable RDC and critical aircraft for Runway 17-35 and Runway 5-23 in the existing and ultimate conditions, as established in Chapter 2 - Aviation Demand Forecasts, are summarized in **Table 3G**. The existing and ultimate safety areas associated with each runway are depicted on **Exhibit W**.


Runway 17-35 Existing Design Code - A/B-II-4000
Runway 5-23 Existing Design Code - A-I (Small Aircraft)-VIS
Road 15
Public Road in RPZ
Visual Approach RPZ
1.3 Acres*
¾-Mile Approach RPZ
L Road
Direct Acces Taxiway
2.9 Acres*
14.1 Acres*
Runway 5-23 (4,500' x 150')
Runway 17-35 (5,898' x 100')
300'
500'
4.3 Acres*
Power Poles in RPZ
Entrance Road
Road 15
Public Road in RPZ
Visual Approach RPZ
Road K
1.0 Acres*
34
81
N
0
800
FEET
Photo: Google Earth 5/2023
LEGEND
Airport Property Line
Taxiway Designator
Runway Safety Area (RSA)
Runway Object Free Area (ROFA)
Runway Obstacle Free Zone (ROFZ)
Approach Runway Protection Zone (RPZ)
Departure Runway Protection Zone (RPZ)
Uncontrolled Safety Zones
Controlled by Easement
Runway Visibility Zone (RVZ)
AWOS Critical Area
*Acreage is approximate and intended for planning uses only.
AWOS: Automated Weather Observation Station

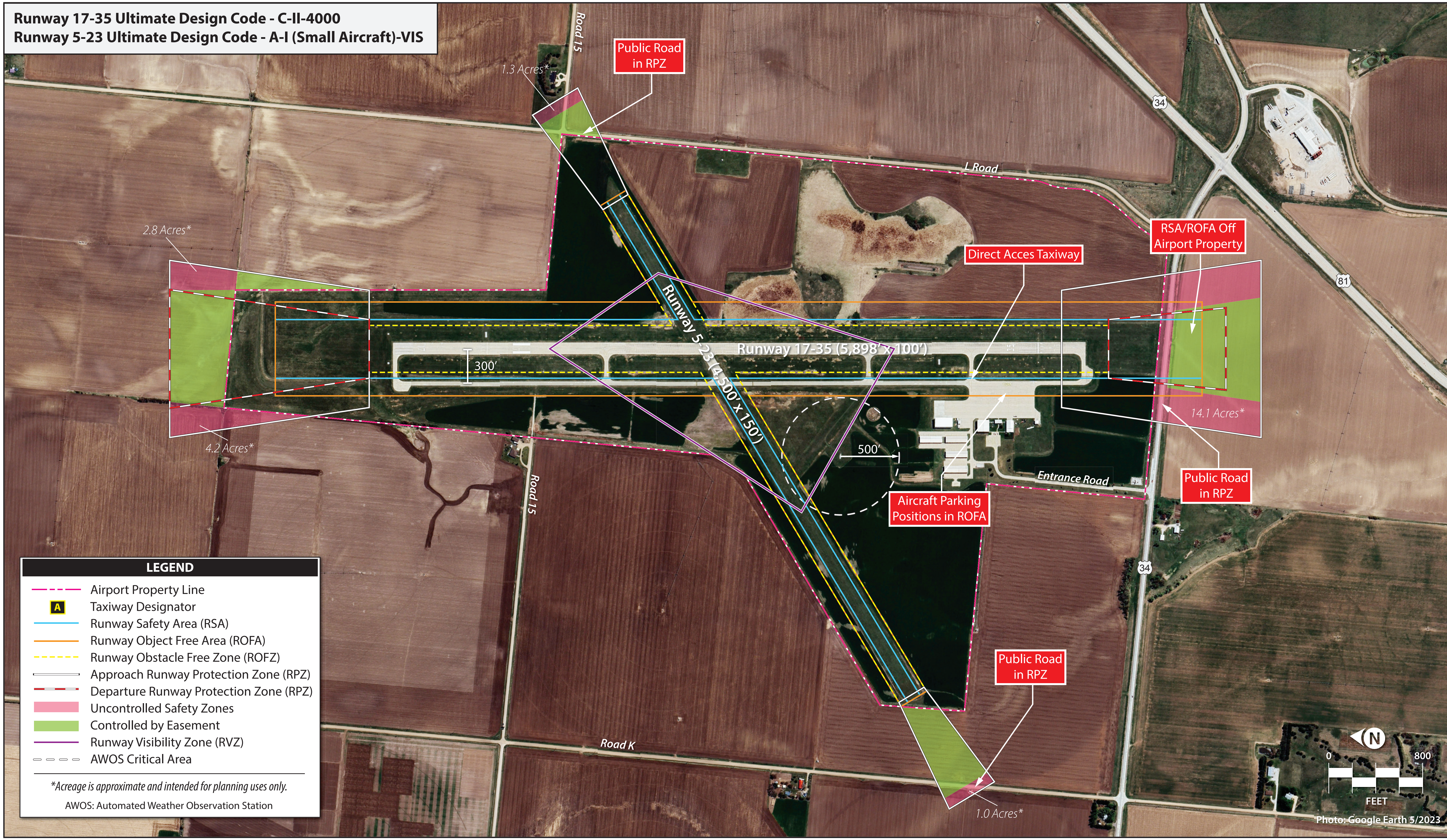


Exhibit W
ULTIMATE SAFETY ZONES

TABLE 3G | York Municipal Airport – Airfield Design Parameters					
Runway	Critical Aircraft	RDC	APRC	DPRC	TDG
EXISTING					
17-35	Air Tractor AT-802	B-II-4000	B/III/4000 D/II/4000	B/III D/II	1B
5-23	Cessna 172	A-I(small)-VIS	-	-	-
ULTIMATE					
17-35	CI/CII Family	C-II-4000	B/III/4000 D/II/4000	B/III D/II	2A
5-23	Cessna 172	A-I(small)-VIS	-	-	-
Key: RDC = runway design code; APRC = approach reference code; DPRC = departure reference code; TDG = taxiway design group					

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

Runway Safety Area (RSA)

The RSA is an established surface surrounding a runway that is designed or prepared to increase safety and decrease potential damage if an aircraft undershoots, overshoots, or makes an excursion from the runway. The RSA is centered on the runway centerline and its dimensions are based on the established RDC. The FAA states within AC 150/5300-13B, *Airport Design*, that the RSA must be cleared and graded and cannot contain hazardous surface variations. In addition, the RSA must be drained (either by grading or storm sewers) and must be capable of supporting snow removal and aircraft rescue and firefighting (ARFF) equipment, as well as the occasional passage of aircraft without damaging the aircraft. The RSA must remain free of obstacles, other than those considered fixed by function, such as runway lights.

The FAA places high significance on maintaining adequate RSAs at all airports. The FAA established the *Runway Safety Area Program* under Order 5200.8 (effective October 1, 1999). The Order states, “The objective of the Runway Safety Area Program is that all RSAs at federally obligated airports…shall conform to the standards contained in Advisory Circular 150/5300-13, *Airport Design*, to the extent practicable.” Each Regional Airports Division of the FAA is obligated to collect and maintain data on the RSAs for runways at each airport and to perform airport inspections.

Table 3H summarizes the standard RSA dimensions in the existing and ultimate conditions, as well as whether these standards are met in each scenario.

TABLE 3H | RSA Standards			
	RUNWAY 17-35		RUNWAY 5-23
	EXISTING RDC B-II-4000	ULTIMATE RDC C-II-4000	Existing & Ultimate RDC A-I(small)-VIS
RSA Dimensions	300' beyond runway end x 150' wide	1,000' beyond runway end x 500' wide	240' beyond runway end x 120' wide
Meets Standard?	Yes	No; 4.2 acres of the ultimate RSA extends beyond airport property east of Runway 35; 1.3 acres of the ultimate RSA is uncontrolled and obstructed by State Highway 34, and 2.9 acres is controlled by easement.	Yes

Source: FAA AC 150/5300-13B, Airport Design; Coffman Associates analysis

Runway Object Free Area (ROFA)

The ROFA can be described as a two-dimensional surface area that surrounds all airfield runways. This area must remain clear of obstructions, with the exception of those that are fixed by function, such as runway lighting systems. This safety area does not have to be level or graded like the RSA; however, the ROFA must be clear of any penetrations of the lateral elevation of the RSA. Like the RSA, the ROFA is centered on the runway centerline and its size is determined based on the established RDC.

Table 3J summarizes the standard ROFA dimensions in the existing and ultimate conditions, as well as whether these standards are met in each scenario.

TABLE 3J | ROFA Standards			
	RUNWAY 17-35		RUNWAY 5-23
	EXISTING RDC B-II-4000	ULTIMATE RDC C-II-4000	EXISTING & ULTIMATE RDC A-I(small)-VIS
ROFA Dimensions	300' beyond runway end x 500' wide	1,000' beyond runway end x 800' wide	240' beyond runway end x 250' wide
Meets Standard?	Yes	No; 6.5 acres of the ROFA extends beyond airport property east of Runway 35. 1.3 acres is uncontrolled and obstructed by State Highway 34 and 2.9 acres is controlled by easement.	Yes

Source: FAA AC 150/5300-13B, Airport Design; Coffman Associates analysis

Runway Obstacle Free Zone (ROFZ)

The runway obstacle free zone (ROFZ) can be defined as a portion of airspace centered about the runway, and its elevation at any point is equal to the elevation of the closest point on the runway centerline. The function of the ROFZ is to ensure the safety of aircraft conducting operations by preventing object penetrations to this portion of airspace, including penetrations by taxiing and parked aircraft. Any obstructions within this portion of airspace must be mounted on frangible couplings and be fixed in their positions by function.

Table 3H summarizes the standard ROFZ dimensions in the existing and ultimate conditions, as well as whether these standards are met in each scenario.

TABLE 3H | ROFZ Standards			
	RUNWAY 17-35		RUNWAY 5-23
	EXISTING RDC B-II-4000	ULTIMATE RDC C-II-4000	EXISTING & ULTIMATE RDC A-I(small)-VIS
ROFZ Dimensions	200' beyond runway end x 400' wide	200' beyond runway end x 400' wide	200' beyond runway end x 250' wide
Meets Standard?	Yes	Yes	Yes

Source: FAA AC 150/5300-13B, Airport Design; Coffman Associates analysis

Runway Protection Zone (RPZ)

An RPZ is a trapezoidal area centered on the extended runway centerline, beginning 200 feet from the end of the runway. The RPZ is established to enhance the safety and protection of people and property on the ground. Airport ownership and/or control of the RPZ and implementation of compatible land use principles comprise the optimal method of ensuring the public's safety in these areas. The RPZ dimensions are based on the established RDC of the runway. While the RPZ is intended to be clear of incompatible objects or land uses, some uses are permitted under certain conditions while other uses are prohibited. According to AC 150/5300-13B, the following land uses are permissible within the RPZ:

- Farming that meets the minimum buffer requirements;
- Irrigation channels, as long as they do not attract birds;
- Airport service roads, as long as they are not public roads and are directly controlled by the airport operator;
- Underground facilities, as long as they meet other design criteria, such as RSA requirements, as applicable;
- Unstaffed navigational aids (NAVAIDs) and facilities, such as those required for airport facilities that are fixed by function in regard to the RPZ; and
- Aboveground fuel tanks associated with backup generators for unstaffed NAVAIDS.

In September 2022, the FAA published AC 150/5190-4B, *Airport Land Use Compatibility Planning*, which states that airport owner control over RPZs is preferred. Airport owner control over RPZs may be achieved through:

- Ownership of the RPZ property (fee simple);
- Possessing sufficient interest in the RPZ property through easements, deed restrictions, etc.;
- Possessing sufficient land use control authority to regulate land use in the jurisdiction that contains the RPZ;
- Possessing and exercising the power of eminent domain over the property; or
- Possessing and exercising permitting authority over proponents of development within the RPZ (e.g., where the sponsor is a state).

AC 150/5190-4B further states that "control is preferably exercised through acquisition of sufficient property interest and includes clearing RPZ areas (and keeping them clear) of objects and activities that would impact the safety of people and property on the ground." The FAA recognizes that land ownership, environmental, geographical, and other considerations can complicate land use compatibility within RPZs. Regardless, airport sponsors must comply with FAA grant assurances, including (but not limited to) Grant Assurance 21, *Compatible Land Use*. Sponsors are expected to take appropriate measures to "protect against, remove, or mitigate land uses that introduce incompatible development within RPZs."

For a proposed project that would shift an RPZ into an area with existing incompatible land uses – such as a runway extension or construction of a new runway – the sponsor is expected to have or secure sufficient control of the RPZ, ideally through fee simple ownership. Where existing incompatible land uses are present, the FAA expects sponsors to "seek all possible opportunities to eliminate, reduce, or mitigate existing incompatible land uses" through acquisition, land exchanges, right-of-first refusal to purchase, agreement with property owners on land uses, easements, or other such measures. These efforts should be revisited during master plan or ALP updates, and periodically thereafter, and should be documented to demonstrate compliance with FAA grant assurances. If new or proposed incompatible land uses impact an RPZ, the FAA expects the airport to take the above actions to control the property within the RPZ and adopt a strong public stance opposing the incompatible land uses.

For new incompatible land uses that result from a sponsor-proposed action (i.e., an airfield project, such as a runway extension, a change in the critical aircraft that increases the RPZ dimension, or lower minimums that increase the RPZ dimension), the airport sponsor is expected to conduct an alternatives evaluation. The intent of this is to identify a variety of alternatives that can then be used to develop a recommended development concept for the airport to use as a basis for future airport development projects. For incompatible off-airport development, the sponsor should coordinate with the Airports District Office (ADO) as soon as it is aware of the development, and the alternatives evaluation should be conducted within 30 days of the sponsor becoming aware of the development within the RPZ. The following items are typically necessary in an alternatives evaluation:

- The sponsor's statement of the purpose of and need for the proposed action (airport project, land use change, or development);
- Identification of any other interested parties and proponents;
- Identification of any federal, state, and/or local transportation agencies involved;
- Analysis of sponsor control of the land within the RPZ;
- A summary of all alternatives considered, including:
    - Alternatives that preclude introducing the incompatible land use within the RPZ (e.g., zoning action, purchase, and design alternatives, such as implementation of declared distances, displaced thresholds, runway shift or shortening, or raising minimums);
    - Alternatives that would minimize the impact of the proposed land use in the RPZ (e.g., rerouting a new roadway through less of the RPZ, etc.); and
    - Alternatives that mitigate risk to people and property on the ground (e.g., tunnelling, depressing and/or protecting a roadway through the RPZ, implementing operational measures to mitigate any risks, etc.).
- A narrative discussion and exhibits or figures depicting each alternative;
- Rough order of magnitude cost estimates associated with each alternative, regardless of potential funding sources; and
- A practicability assessment, based on the feasibility of each alternative in terms of cost, constructability, operational impacts, and other factors.

Once the alternatives evaluation has been submitted to the ADO, the FAA will determine whether the sponsor has made an adequate effort to pursue and give full consideration to appropriate and reasonable alternatives. **The FAA will not approve or deny the airport sponsor's preferred alternative; rather, the FAA will only evaluate whether an acceptable level of alternatives analysis has been completed before the sponsor makes the decision to allow or disallow the proposed land use within the RPZ.**

In summary, the RPZ guidance published in September 2022 shifts the responsibility of protecting the RPZ to the airport sponsor. The airport sponsor is expected to take action to control the RPZ or demonstrate that appropriate actions have been taken. It is ultimately up to the airport sponsor to permit or not permit existing or new incompatible land uses within an RPZ, with the understanding that the sponsor still has grant assurance obligations, and the FAA retains the authority to review and approve or disapprove portions of the ALP that would adversely impact the safety of people and property within the RPZ.

RPZs are further designated as approach and departure RPZs. The approach RPZ is a function of the aircraft approach category (AAC), and approach visibility minimums associated with the approach runway end. The departure RPZ is a function of the AAC and departure procedures associated with the runway. For a particular runway end, the more stringent RPZ requirements (usually associated with the approach RPZ) will govern the property interests and clearing requirements the airport sponsor should pursue.

Runway 35 has a 400 foot displaced threshold, and Runway 17 has no threshold displacement. As a result, the approach RPZ for Runway 35 is displaced 200 feet from the displaced threshold, while the approach RPZs for Runway 17 and all departure RPZs begin 200 feet from the end of each runway. The existing RPZs at York Municipal Airport are presented on **Exhibit W** and detailed further in **Table 3J**.

TABLE 3J | Runway Protection Zones (RPZ) Summary

Runway	Visibility Minimums	RPZ Dimensions	Uncontrolled RPZ	Notes/Potential Incompatibilities
EXISTING RDC B-II-4000				
Runway 17	¾-mile	• 1,700' length • 1,000' inner width • 1,510' outer width	7.2 acres	Approximately 7.2 acres within the existing Runway 17 RPZ are uncontrolled.
Runway 35	¾-mile	• 1,700' length • 1,000' inner width • 1,510' outer width	14.1 acres	Approximately 14.1 acres within the existing Runway 35 RPZ are uncontrolled. The RPZ also traverses public roadways (State Highway 34).
ULTIMATE RDC C-II-4000				
Runway 17	¾-mile	• 1,700' length • 1,000' inner width • 1,510' outer width	7.2 acres	Approximately 7.2 acres within the ultimate Runway 17 RPZ are uncontrolled.
Runway 35	¾-mile	• 1,700' length • 1,000' inner width • 1,510' outer width	14.1 acres	Approximately 14.1 acres within the ultimate Runway 35 RPZ are uncontrolled. The RPZ also traverses public roadways (State Highway 34).
EXISTING & ULTIMATE RDC A-I(S)-VIS				
Runway 5	Visual	• 1,000' length • 250' inner width • 450' outer width	1.3 acres	Approximately 1.3 acres within the existing & ultimate Runway 5 RPZ are uncontrolled. The RPZ also traverses public roadways.
Runway 23	Visual	• 1,000' length • 250' inner width • 450' outer width	1.0 acres	Approximately 1.0 acres within the existing & ultimate Runway 23 RPZ are uncontrolled. The RPZ also traverses public roadways.

Source: Coffman Associates analysis (Note: acreages are approximate)

RUNWAY VISIBILITY ZONE (RVZ)

The runway visibility zone is an area formed by imaginary lines that connect intersecting runways. By FAA standards, any point five feet above the runway centerline and within the runway visibility zone must be mutually visible with any other point five feet above the runway centerline and within the runway visibility zone. The approximate RVZ is shown on **Exhibit W**. No equipment or obstructions have been identified within the RVZ.

TAXIWAYS

The taxiway system of an airport is intended primarily to facilitate aircraft movements to and from the runway system. While some taxiways are constructed to simply provide access from the apron to the runway, other taxiways are constructed to increase the allowable frequency of aircraft operations as air traffic increases. The design standards associated with taxiways are determined by the taxiway design group (TDG) or the airplane design group (ADG) of the critical aircraft. As determined previously, the applicable ADG for Runway 17-35 under both the existing condition and future condition is ADG II. The existing TDG for Runway 17-35 is TDG 1B and increases to TDG 2A in the ultimate condition. Certain portions of the landside area that are utilized exclusively by small aircraft, such as T-hangars and other aircraft parking or hangar areas, should adhere to ADG I and TDG 1A standards. For any future taxiways serving Runway 5-23, the applicable ADG and TDG for Runway 5-23 are ADG I and TDG 1A. **Table 3K** presents the various taxiway design standards related to ADG I and ADG II.

TABLE 3K | Taxiway Dimensions and Standards

STANDARDS BASED ON WINGSPAN	ADG II – Runway 17-35		ADG I – Runway 5-23
Taxiway and Taxilane Protection			
Taxiway Safety Area width (TSA)	79'		49'
Taxiway Object Free Area width (TOFA)	124'		89'
Taxilane Object Free Area width (TLOFA)	110'		79'
Taxiway and Taxilane Separation			
Taxiway Centerline to Parallel Taxiway Centerline	101.5'		70’
Taxiway Centerline to Fixed or Moveable Object	62'		44.5'
Taxilane Centerline to Parallel Taxilane Centerline	94.5'		64'
Taxilane Centerline to Fixed or Moveable Object	55'		39.5'
Wingtip Clearance			
Taxiway Wingtip Clearance (feet)	22.5'		20’
Taxilane Wingtip Clearance (feet)	15.5'		15'
STANDARDS BASED ON TDG	**TDG 1B**	**TDG 2A**	**TDG 1A**
Taxiway Width Standard	25'	35’	25'
Taxiway Edge Safety Margin	5'	7.5’	5'
Taxiway Shoulder Width	10'	15’	10'

ADG: Airplane Design Group
TDG: Taxiway Design Group

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

The existing/ultimate design for taxiways at the airport is TDG 1B, based on the Air Tractor AT-802 (existing critical aircraft) and the CI/CII family aircraft (ultimate critical aircraft). TDG 1B standards dictate a taxiway/taxilane width of 25 feet, whereas the TDG 2A standards dictate an increased taxiway/taxilane width of 35 feet. The taxiway system at JYR is at least 35 feet wide, which meets the TDG standards for both the existing and ultimate conditions. Certain portions of the landside area that are utilized exclusively by small aircraft, such as the T-hangar areas, have 25-foot-wide taxiways that adhere to TDG 1A/1B standards.

All taxiway widths on the airfield should be maintained, unless financial constraints dictate that taxiways that exceed 35 feet be narrowed to meet the standard. As such, the current widths could remain until rehabilitation is needed and the cost-benefit of maintaining the additional width is evaluated. FAA grant availability can only be provided if the project meets eligibility thresholds, as determined by the FAA.

Taxiway Design Considerations

FAA AC 150/5300-13B, *Airport Design*, provides guidance on recommended taxiway and taxilane layouts to enhance safety by avoiding runway incursions. A runway incursion is defined as "any occurrence at an airport involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and takeoff of aircraft."

The following list presents taxiway design guidelines and the basic rationale behind each recommendation:

1. **Taxi Method**: Taxiways are designed for cockpit-over-centerline taxiing, with pavement that is sufficiently wide to allow a certain amount of wander. On turns, sufficient pavement should be provided to maintain the edge safety margin from the landing gear. When constructing new taxiways, upgrades to existing intersections should be undertaken to eliminate judgmental oversteering, which occurs when a pilot must intentionally steer the cockpit outside the marked centerline to ensure the aircraft remains on the taxiway pavement.

2. **Curve Design**: Taxiways should be designed such that the nose gear steering angle is no more than 50 degrees, which is the generally accepted value to prevent excessive tire scrubbing.

3. **Three-Path Concept**: To maintain pilot situational awareness, taxiway intersections should provide a pilot with a maximum of three choices of travel. Ideally, these are right- and left-angle turns and a continuation straight ahead.

4. **Channelized Taxiing**: To support visibility of airfield signage, taxiway intersections should be designed to meet standard taxiway width and fillet geometry.

5. **Designated Hot Spots and Runway Incursion Mitigation (RIM) Locations**: A hot spot is a location on the airfield with elevated risk of a collision or runway incursion. For areas the FAA designates as hot spots or RIM locations, mitigation measures should be prioritized.

6. **Intersection Angles**: Design turns to be 90 degrees wherever possible. For acute-angle intersections, standard angles of 30, 45, 60, 120, 135, and 150 degrees are preferred.

7. **Runway Incursions**: Design taxiways to reduce the probability of runway incursions.
   - *Increase Pilot Situational Awareness*: A pilot who knows where he/she is on the airport is less likely to enter a runway improperly. Complexity leads to confusion. Keep taxiway systems simple using the three-node concept.
   - *Avoid Wide Expanses of Pavement*: Wide pavements require placement of signs far from a pilot's eye. This is especially critical at runway entrance points. Where a wide expanse of pavement is necessary, avoid direct access to a runway.

- *Limit Runway Crossings*: The taxiway layout can reduce the opportunity for human error. The benefits are twofold: through a simple reduction in the number of occurrences and a reduction in air traffic controller workload.
- *Avoid High-Energy Intersections*: These are intersections in the middle thirds of runways. By limiting runway crossings to the first and last thirds of the runway, the portion of the runway where a pilot can least maneuver to avoid a collision is kept clear.
- *Increase Visibility*: Right-angle intersections between both taxiways and runways provide the best visibility. Acute-angle runway exits provide greater efficiency in runway usage but should not be used as runway entrance or crossing points. A right-angle turn at the end of a parallel taxiway is a clear indication of approaching a runway.
- *Avoid Dual Purpose Pavements*: Runways used as taxiways and taxiways used as runways can lead to confusion. A runway should always be clearly identified as a runway and only a runway.
- *Indirect Access*: Do not design taxiways to lead directly from an apron to a runway. Such configurations can lead to confusion when a pilot typically expects to encounter a parallel taxiway.
- *Hot Spots*: Confusing intersections near runways are more likely to contribute to runway incursions. These intersections must be redesigned when the associated runway is subject to reconstruction or rehabilitation. Other hot spots should be corrected as soon as practicable.

8. **Runway/Taxiway Intersections**:
   - *Right Angle*: Right-angle intersections are the standard for all runway/taxiway intersections, except where there is a need for an acute-angled exit. Right-angle taxiways provide the best visual perspective to a pilot approaching an intersection with the runway to observe aircraft in both the left and right directions. Right-angle taxiways also provide optimal orientation of the runway holding position signs, so they are visible to pilots.
   - *Acute Angle*: Acute angles should not be larger than 45 degrees from the runway centerline. A 30-degree taxiway layout should be reserved for high-speed exits. The use of multiple intersecting taxiways with acute angles creates pilot confusion and improper positioning of taxiway signage. The construction of high-speed exits is typically only justified for runways that experience regular use by jet aircraft in approach categories C and above.
   - *Large Expanses of Pavement*: Taxiways must never coincide with the intersection of two runways. Taxiway configurations with multiple taxiway and runway intersections in a single area create large expanses of pavement, making it difficult to provide proper signage, marking, and lighting.

9. **Taxiway/Runway/Apron Incursion Prevention**: Apron locations that allow direct access to a runway should be avoided. Increase pilot situational awareness by designing taxiways in a manner that forces pilots to consciously make turns. Taxiways that originate from aprons and form straight lines across runways at mid-span should be avoided.
   - *Wide Throat Taxiways*: Wide throat taxiway entrances should be avoided. Such large expanses of pavement may cause pilot confusion and make lighting and marking more difficult.
   - *Direct Access from Apron to Runway*: Avoid taxiway connectors that cross over a parallel taxiway and directly onto a runway. Consider a staggered taxiway layout that forces pilots to make a conscious decision to turn.

The taxiway system at York Municipal Airport generally provides for the efficient movement of aircraft, and there are no FAA-designated hot spots at the airport. However, there is an existing non-standard taxiway geometry condition. One taxiway connector leads directly from the main aircraft apron to Runway 17-35. This configuration allows for direct access from the primary aircraft parking apron to the runway and increases the risk for runway incursions.

Potential solutions will be presented in the following section, Airside Alternatives. The analysis will also consider improvements that could be implemented on the airfield to minimize runway incursion potential, improve efficiency, and conform to FAA standards for taxiway design.

Taxiway Alignment

Taxiway A is a full-length parallel taxiway oriented with Runway 17-35. Upon reconstruction of Runway 17-35, the taxiway length and location of connectors should be modified to align with the proposed reconstructed runway.

Taxiway Width

Taxiway A is currently 35 feet wide. This exceeds the standard for the existing taxiway design group (TDG) 1B standard of 25 feet and meets the ultimate TDG 2A standard of 35 feet. Although the additional width provides an added safety margin for aircraft operating at the airport, the FAA may elect not to fund regular pavement maintenance for the portions of taxiway pavement that exceed the standard until over 500 annual operations are reached in the TDG 2A category. If the airport chooses to maintain these taxiways at their current widths, the costs may need to come from a local or state funding source, rather than federal grants.

Runway-to-Taxiway Separation

Design standards for the separation distance between runways and parallel taxiways are based on the RDC for the runway. For primary Runway 17-35, with a current RDC of B-II-4000, the runway/taxiway (runway centerline to taxiway centerline) separation standard is 240 feet. Parallel Taxiway A is separated from Runway 17-35 by 300 feet, which exceeds the required design standard. Planning for Runway 17-35 considers a transition to RDC C-II-4000, which has a runway-to-taxiway separation standard of 300 feet. Given that the existing runway-to-taxiway separation currently meets the ultimate design standards, this taxiway should remain in its existing location for the duration of the planning period.

Runway 5-23 is not currently served by a parallel taxiway. Since this runway is justified as a crosswind runway, the alternatives to follow will consider the addition of a parallel taxiway to Runway 5-23.

Holding Position Separation

Holding position markings are placed on taxiways leading to runways. When approaching the runway, pilots should stop short of the holding position marking line. FAA design standards call for hold lines to be 200 feet from runway centerlines for B-I and B-II Runways with approach minimums not lower than 1-mile or not lower than ¾-mile, and 250 feet from runway centerline for C-II runways with approach minimums not lower than ¾-mile. The FAA also recommends that hold lines be parallel with the runway so that a pilot is fully perpendicular to the runway with a clear, unobstructed view of the entire runway length.

At JYR, all hold lines leading to Runway 17-35 are 250 feet from the runway centerline, which meets both the existing and ultimate condition design standards.

AIRCRAFT PARKING APRON

According to FAA AC 150/5300-13B, aircraft parking positions should be located to ensure that aircraft components (tail, wingtip, nose, etc.) do not:

1. Conflict with the object free area for the adjacent runway or taxiways:
    a. Runway object free area (ROFA)
    b. Taxiway object free area (TOFA)
    c. Taxilane object free area (TLOFA)

    or

2. Violate any of the following aeronautical surfaces and areas:
    a. Runway approach or departure surface
    b. Runway visibility zone (RVZ)
    c. Runway obstacle free zone (ROFZ)
    d. Navigational aid equipment critical areas

The TOFA for taxiways serving Runway 17-35 is 124 feet wide, based on the existing and ultimate airplane design group (ADG) II, and – like the ROFA – this area should be cleared of objects and parked aircraft, except objects needed for air navigation or aircraft ground maneuvering purposes.

There is one designated aircraft parking area, which is located adjacent to Taxiway A on the west side of the airfield, with a total of 34 marked aircraft tiedown parking positions on the main apron. The aircraft parking positions are clear of the ROFA in the existing condition; however, in the ultimate condition, the 12 tiedowns located on the east side of the apron are within the ROFA. In the existing and ultimate conditions, the 6 most easterly tiedowns are within the TOFA for Taxiway A. **Figure B** depicts the TOFA and TLOFA in relationship to the existing hangar and apron.

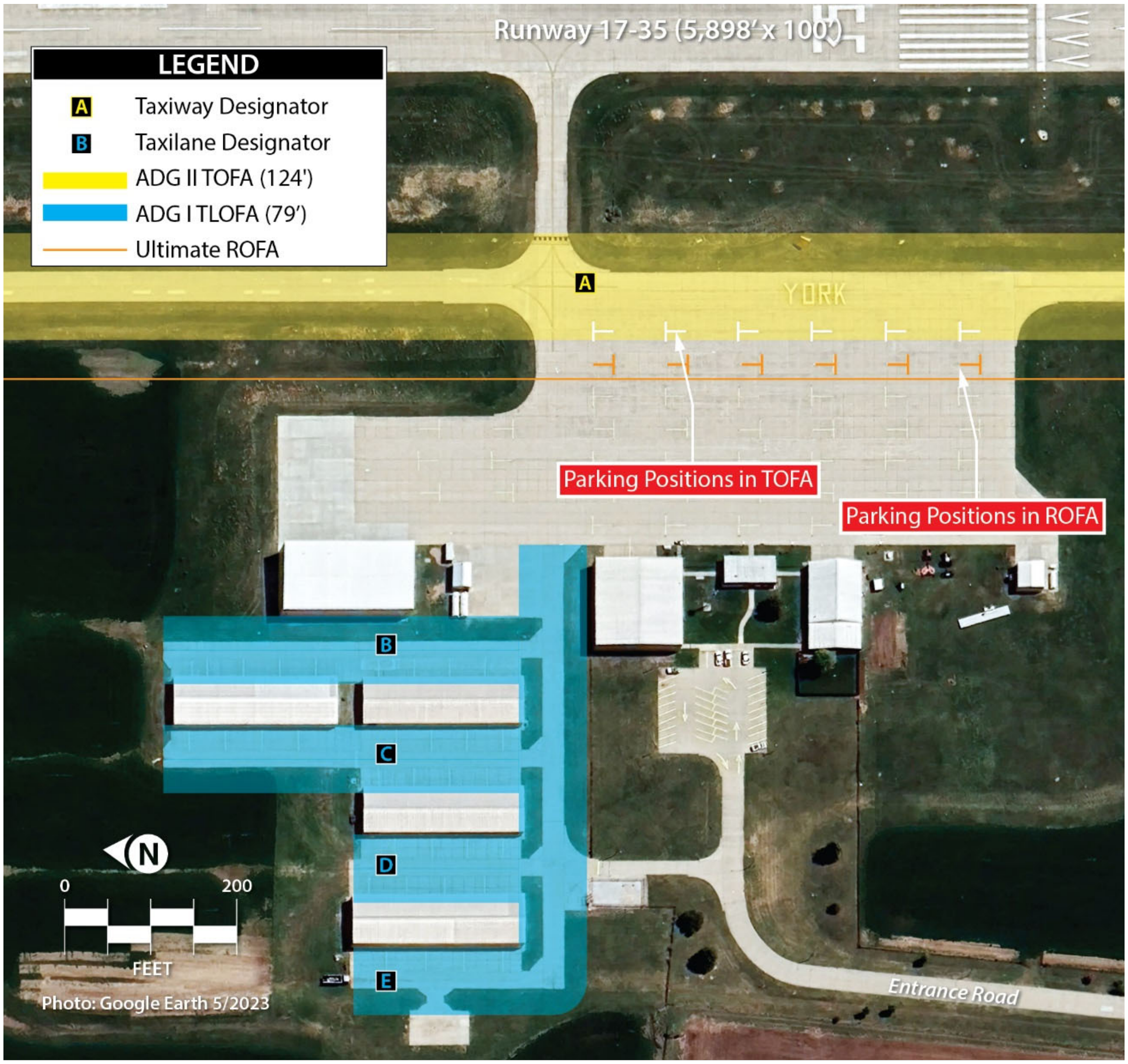


Figure B - Apron Separation

INSTRUMENT APPROACH CONSIDERATIONS

Approach minimums should be as low as practical, considering possible safety and financial constraints. The best practical approach minimums will ultimately allow aircraft to operate in reduced visibility conditions, while increasing the operational safety and airport capacity.

JYR currently has four published instrument approaches, including the area navigation (RNAV)-global positioning system (GPS) approaches to both Runway 7 and Runway 35, and the Non-Directional Beacon (NDB) approaches to Runway 17 and Runway 35. Runways 17 and 35 are equipped with RNAV (GPS) localizer performance with vertical guidance (LPV) approach, with vertical guidance (APV) instrument approaches providing visibility minimums down to ¾-mile. Both runway ends are also equipped with non-precision NDB S-35 and circling approaches with one-mile minimums.

An airspace evaluation has been completed utilizing survey data of the airport and surrounding area. The results of the evaluation are presented in **Exhibit Y**. For planning purposes, approach surfaces correlating to a non-precision instrument runway with approach minimums down to ¾-mile visibility were evaluated for each end of Runway 17-35. The evaluation confirmed a number of features that were noted on the previous ALP. Although none of these features obstruct the approach surface, lowering the approach minimums would result in airspace obstructions. Therefore, the alternatives to follow will include maintenance of the existing ¾-mile RNAV GPS approaches to Runway 17-35.

Turf runways are not typically compatible with instrument approach procedures; therefore, no consideration is given to establishing instrument approach procedures to Runway 5-23 if it remains unpaved. If the runway is ultimately paved, consideration should be given to establishing GPS-based instrument approaches with visibility minimums down to 1-mile.

VISUAL APPROACH AIDS

In most instances, the landing phase of any flight must be conducted in visual conditions. To provide pilots with visual guidance information during landings to the runway, electronic visual approach aids are commonly provided at airports. Both ends of Runway 17-35 are currently outfitted with two-box precision approach path indicator (PAPI-2) systems. Consideration should be given to upgrading these systems to PAPI-4s, if warranted by additional jet traffic.

Runway end identification lights (REILs) are flashing lights that are located at the runway threshold and facilitate rapid identification of the runway end at night and during poor visibility conditions. REILs provide pilots with the ability to identify the runway thresholds and distinguish runway end lighting from other lighting on the airport and in the approach areas. The FAA indicates that REILs should be considered for all lighted runway ends that are not planned for a more sophisticated approach lighting system. Runway 17-25 is equipped with REILs on both ends and Runway 5-23 is not. The alternatives will consider the inclusion of REILs on Runway 5-23 as well as paved surface options.

AIRFIELD MARKING, LIGHTING, AND SIGNAGE

Runway 17-35 is marked with non-precision runway markings that are in good condition. These markings are consistent with the available and planned instrument approach capabilities of each runway and should be maintained throughout the planning period.

Runway and taxiway lighting systems serve as primary means of navigation in reduced visibility and nighttime operations. Runway 17-25 is currently equipped with medium intensity runway lights (MIRL), which is a common runway lighting system that can be activated via a pilot-controlled system. The pilot-controlled system is also equipped with a photocell. These systems should be maintained throughout the planning period. Consideration should be given to the installation of medium intensity taxiway lighting (MITL) on Taxiway A. Any alternative that considers paving Runway 5-23 will also consider MIRL and MITL.

Runway 5 Approach Obstructions						
ID	Feature	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Penetration Value (ft.)
1	Tree	1,663.70	8.17	1,671.87	5.89
2	Fence	1,662.73	3.81	1,666.54	0.46
3	Fence	1,662.96	5.04	1,668.00	1.16
4	Tree	1,663.87	8.39	1,672.26	5.16
5	Agricultural Irrigation	1,663.63	14.22	1,677.85	8.49
6	Agricultural Irrigation	1,663.72	13.70	1,677.42	5.48
7	Agricultural Irrigation	1,663.46	18.64	1,682.10	6.85
8	Utility Pole	1,665.12	27.23	1,692.35	3.90
9	Transmission Line	1,665.33	46.19	1,711.52	19.94
10	Transmission Line	1,665.29	50.99	1,716.28	19.81
11	Transmission Line	1,665.10	60.58	1,725.68	22.19

N

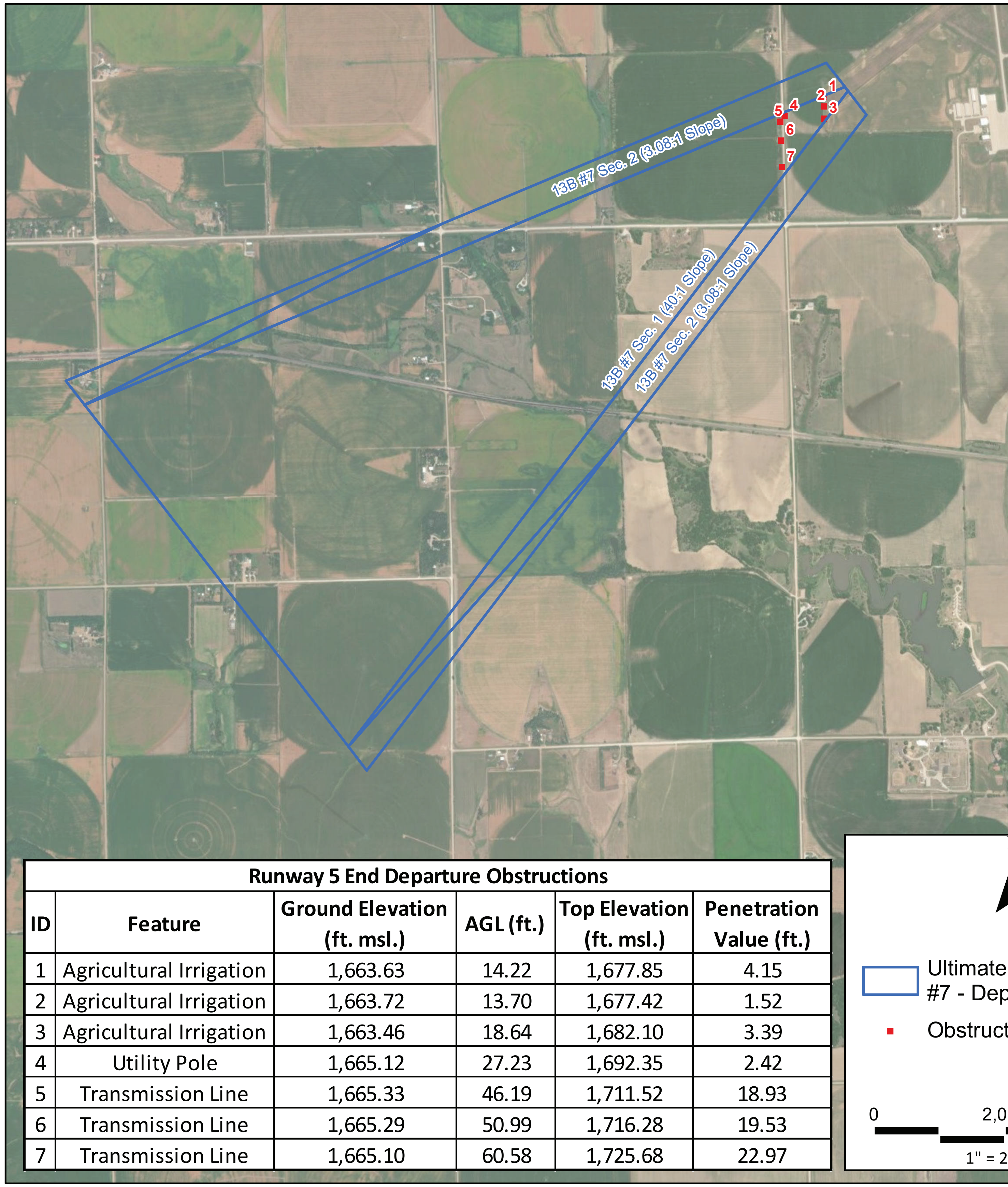
ObstructionAnalysis

Ultimate Part 77 Approach Surfaces

0 2,000 4,000

1" = 2,000'

Runway 23 Approach Obstructions					
ID	Feature	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Penetration Value (ft.)
1	L Road	1,666.6	15.0	1,681.6	0.1
2	Utility Pole	1,664.5	25.9	1,690.3	6.9
3	Utility Pole	1,660.6	44.2	1,704.8	19.4
4	Utility Pole	1,659.8	34.5	1,694.4	2.6



Runway 5 End Departure Obstructions

ID	Feature	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Penetration Value (ft.)
1	Agricultural Irrigation	1,663.63	14.22	1,677.85	4.15
2	Agricultural Irrigation	1,663.72	13.70	1,677.42	1.52
3	Agricultural Irrigation	1,663.46	18.64	1,682.10	3.39
4	Utility Pole	1,665.12	27.23	1,692.35	2.42
5	Transmission Line	1,665.33	46.19	1,711.52	18.93
6	Transmission Line	1,665.29	50.99	1,716.28	19.53
7	Transmission Line	1,665.10	60.58	1,725.68	22.97

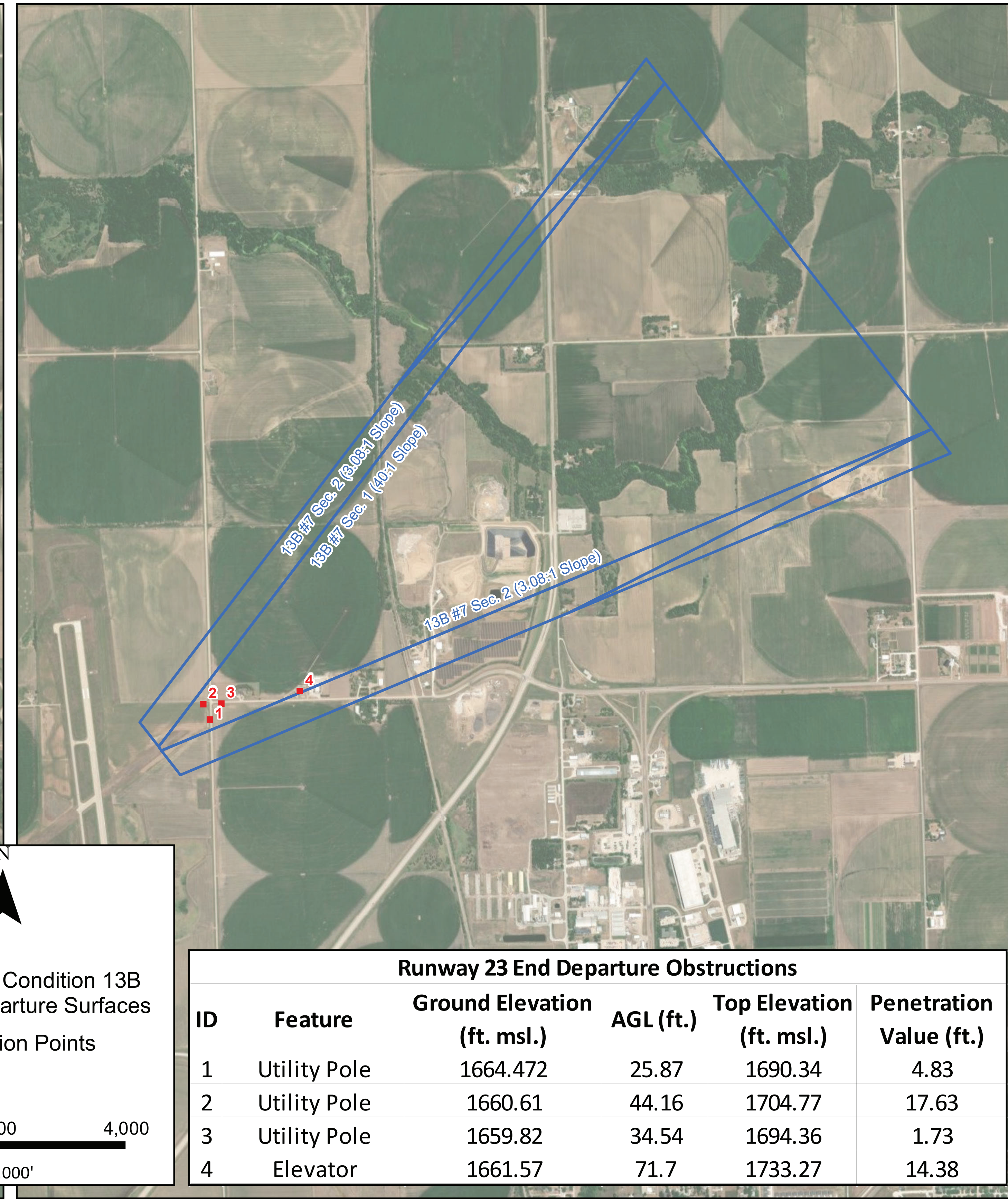
N

Ultimate Condition 13B #7 - Departure Surfaces

Obstruction Points

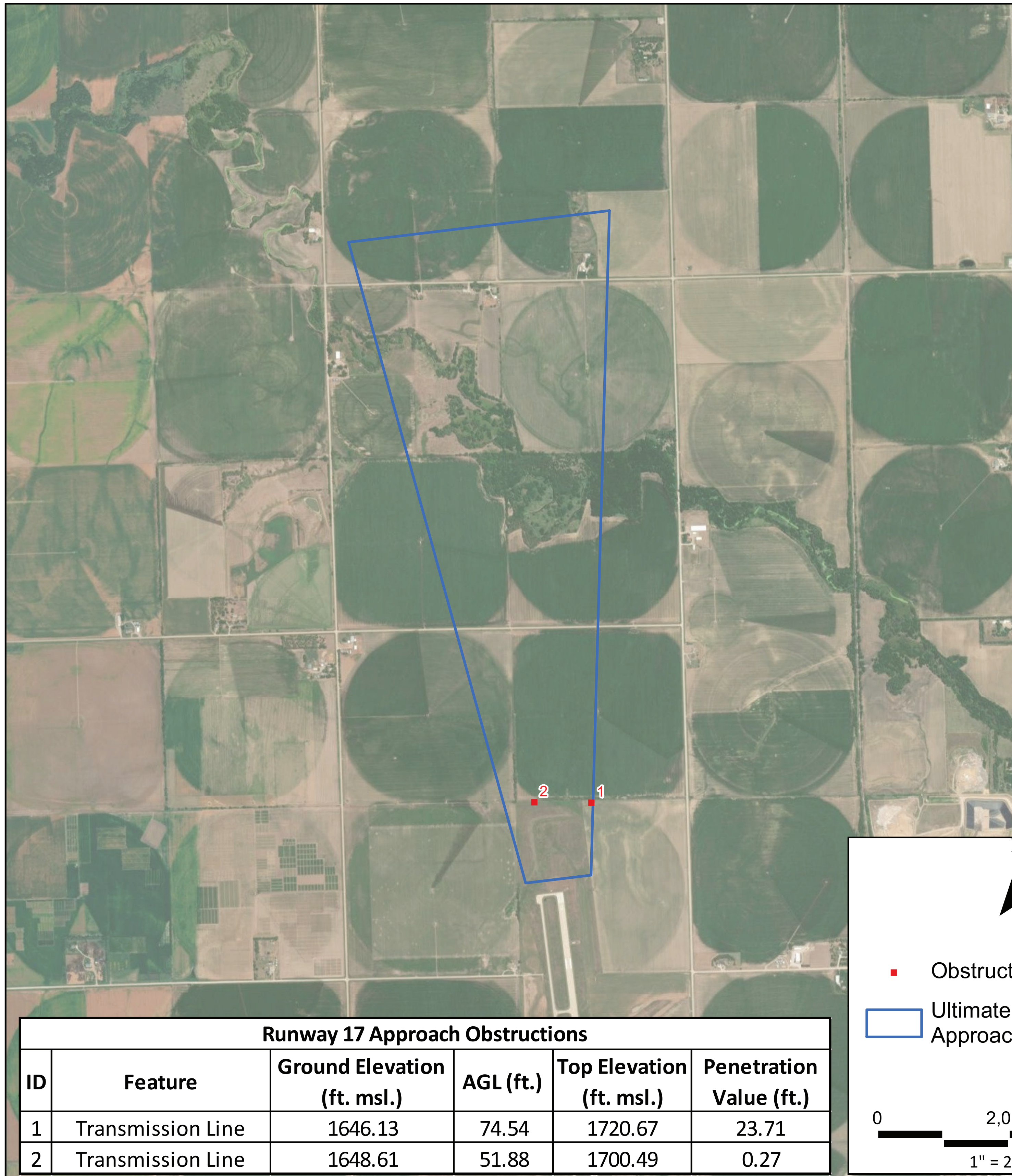
0 2,000 4,000

1" = 2,000'

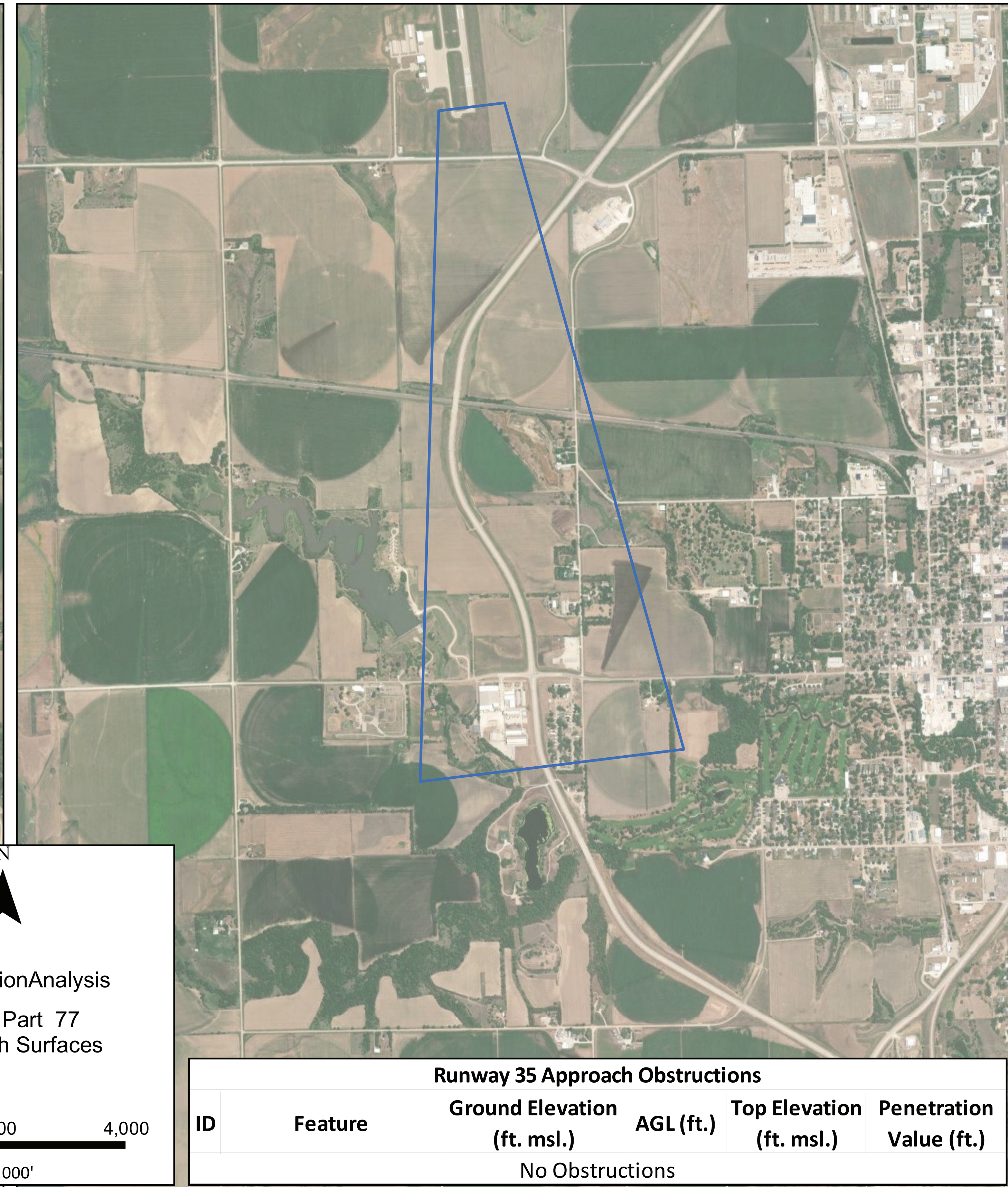


Runway 23 End Departure Obstructions

ID	Feature	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Penetration Value (ft.)
1	Utility Pole	1664.472	25.87	1690.34	4.83
2	Utility Pole	1660.61	44.16	1704.77	17.63
3	Utility Pole	1659.82	34.54	1694.36	1.73
4	Elevator	1661.57	71.7	1733.27	14.38

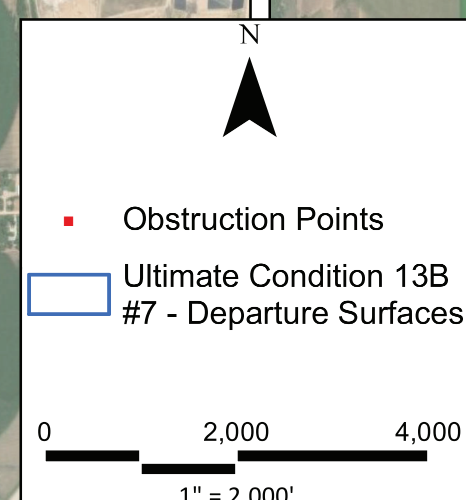


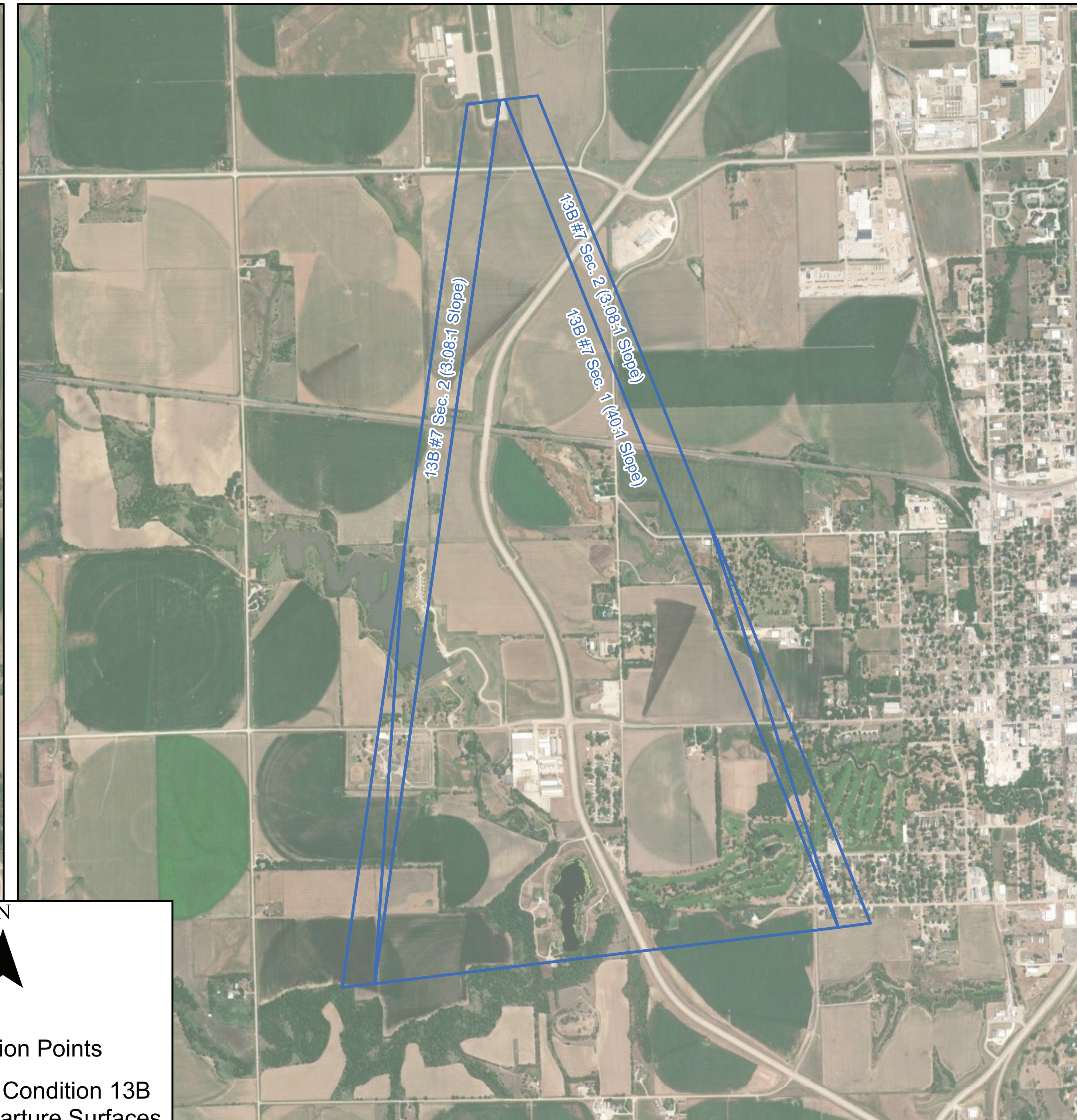
Runway 17 Approach Obstructions					
ID	Feature	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Penetration Value (ft.)
1	Transmission Line	1646.13	74.54	1720.67	23.71
2	Transmission Line	1648.61	51.88	1700.49	0.27



Runway 35 Approach Obstructions					
ID	Feature	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Penetration Value (ft.)
		No Obstructions			

Runway 17 End Departure Obstructions					
ID	Feature	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Penetration Value (ft.)
1	Transmission Line	1648.61	51.88	1700.49	0.57





Runway 35 End Departure Obstructions					
ID	Feature	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Penetration Value (ft.)
No Obstructions					

Airfield signage serves as another means of navigation for pilots. Airfield signage informs pilots of their location on the airport and directs them to major airport facilities, such as runways, certain taxiways, and aprons. Currently, the airport is equipped with airfield location signage at the ends of Runway 5-23. These signs should be maintained. The alternatives to follow will consider addition signage to connector Taxiways A1, A2, A3, A4, and A5.

WEATHER FACILITIES

JYR is equipped with a lighted wind cone and segmented circle located west of the main apron. The wind cone provides information to pilots regarding wind speed and direction and should be maintained throughout the planning period. The segmented circle consists of a system of visual indicators that are designed to provide traffic pattern information to pilots. Additionally, there is a windsock located directly to the east of the airport's main apron. These facilities should be maintained throughout the planning horizon.

The airport is equipped with an automated weather observation system (AWOS-3), which provides weather observations 24 hours per day. The system updates weather observations every minute, continuously reporting significant weather changes as they occur in real time. This information is transmitted via a designated radio frequency at regular intervals. FAA siting criteria in AC 150/5220-16E indicate that the AWOS should be located between 1,000 and 3,000 feet from the runway threshold and between 500 and 1,000 feet perpendicular to the runway centerline. The AWOS also has a 500-foot radius critical area, which must be kept free of obstructions that could interfere with its sensors. The AWOS should be maintained through the long-term planning period; however, alternative analysis will consider additional locations for the AWOS to better accommodate landside development potential.

AIRSIDE FACILITY REQUIREMENTS SUMMARY

The intent of this section has been to outline the airside facilities required to meet potential aviation demands projected for York Municipal Airport through the long-term planning period. A summary of the airside requirements is included on **Exhibit Z**.

AIRSIDE ALTERNATIVES

The development alternatives are categorized into two functional areas: airside and landside. The airside relates to runways, taxiways, navigation aids, lighting and marking aids, etc., and requires the greatest commitment of land area to meet the physical layout of an airport, as well as the required airfield safety standards. The design of the airfield also defines minimum setback distances from the runway and object clearance standards; these criteria are defined first to ensure that fundamental needs of JYR are met.

AIRSIDE CONSIDERATIONS

Airside planning considerations generally relate to airport elements that contribute to the safe and efficient transition of aircraft and passengers from air transportation to the landside facilities at the airport. Planning must factor and balance many airside items, including meeting FAA design parameters of the established design aircraft, instrument approach capability, airfield capacity, runway length, taxiway layouts, and pavement strengths. Each of these elements was analyzed for JYR earlier in the chapter. The alternatives to follow will examine airside improvement opportunities to meet design standards and/or capacity constraints. A summary of the primary airside planning issues to be considered in this alternatives analysis is included below.

Airside Planning Considerations
1. Reconstruct Runway 17-35 to meet existing B-II-4000 standards
2. Modify length of Taxiway A and location of connectors to align with the proposed reconstructed Runway 17-25
3. Meet ultimate RDC C-II-4000 standards on Runway 17-35 and ultimate RDC A-I-(small)-VIS standards on Runway 5-23
4. Mitigate non-standard conditions in safety areas
5. Take corrective measures for non-standard taxiway geometry
6. Remove non-standard holding apron and relocate on Taxiway A
7. Add pavement, lighting, and visual and instrument approach aids to Runway 5-23
8. Upgrade visual approach aids for Runway 17-35
9. Update taxiway and connector nomenclature

Consideration #1 – Reconstructing Runway 17-35 to meet existing B-II-4000 standards

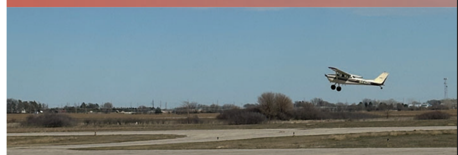
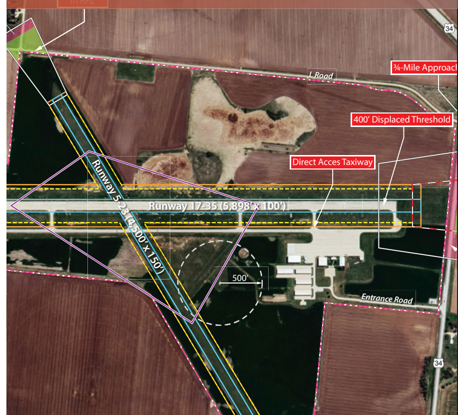
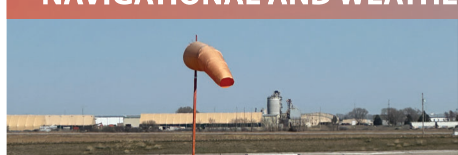
Approximately 1,800 feet of the existing runway will need to be reconstructed in the near term due to failing pavement. The current length and width of Runway 17-35 exceeds the requirements for existing critical aircraft operations. As discussed, Runway 17-35 should be reconstructed to meet the RDC B-II-4000 standards for the existing condition. Alternatives will include a reconstructed runway at a reduced width of 75 feet and a reduced length of 5,500 feet, which will accommodate 75 percent of the large aircraft fleet at 60 percent useful load when adjusted for gradient and wet conditions.

Consideration #2 – Modifying length of Taxiway A and location of connectors to align with the proposed reconstructed Runway 17-25

As a result of the Runway 17-35 reconstruction, the length of parallel Taxiway A and the location of its connectors will need to be modified. The alternatives will consider taxiway length and connector location adjustments for Taxiway A in accordance with the Runway 17-25 reconstruction alternatives.

Consideration #3 – Meeting ultimate RDC C-II-4000 standards on Runway 17-35 and ultimate RDC A-I-(small)-VIS standards on Runway 5-23

As discussed previously, Runway 17-35 should meet an ultimate RDC of C-II-4000 and an ultimate RDC of B-I-(small)-VIS on Runway 5-23. Currently, Runway 17-35 is categorized as a B-II-4000 runway, while Runway 5-23 has an existing RDC of A-I-(small)-VIS. Larger aircraft, including turboprops and small- to mid-sized business jets, are anticipated to utilize the airport more frequently in the future, consistent with the FAA's national forecasts for general aviation; therefore, it is prudent to plan the airport to meet ultimate RDC C-II-4000 and A-I-(small)-VIS design standards for Runways 17-35 and 5-23, respectively. Consideration is being given to meeting ultimate design standards of B-I(S)-5000 if Runway 5-23 is to be paved. Otherwise, turf Runway 5-23 is to be maintained at A-I(small)-VIS design standards.

		EXISTING	ULTIMATE	EXISTING	ULTIMATE
RUNWAYS		**17-35**	**17-35**	**5-23**	**5-23**
	Runway Design Code (RDC)	B-II-4000	C-II-4000	A-I(S)-VIS	Turf - A-I(S)-VIS, Paved - A/B-I(S)-5000
	Dimensions	5,500' x 75'	Consider extension; maintain width	4,500' x 150'	Maintain
	Pavement Strength	30,000 lbs S | 38,000 lbs D	Maintain	N/A - Turf	Maintain
SAFETY AREAS					
	Runway Safety Area (RSA)	Fully contained on airport property; no obstructions identified.	Extends onto uncontrolled property - property acquisition requred.	Fully contained on airport property; no obstructions identified.	Fully contained on airport property; no obstructions identified.
	Runway Object Free Area (ROFA)	Fully contained on airport property; no obstructions identified.	Extends onto uncontrolled property - property acquisition required. 6 aircraft parking positions obstruct ultimate ROFA - mitigation measures required.	Fully contained on airport property; no obstructions identified.	Fully contained on airport property; no obstructions identified.
	Runway Obstacle Free Zone (ROFZ)	Fully contained on airport property; no obstructions identified.	Fully contained on airport property; no obstructions identified.	Fully contained on airport property; no obstructions identified.	Fully contained on airport property; no obstructions identified.
	Runway Protection Zone (RPZ)	Approximately 7.2 acres within the existing Runway 17 RPZ and 14.1 acres within existing Runway 35 RPZ are uncontrolled. Runway 35 RPZ traverses public roadways - mitigation measures may be necessary.	Same as Existing	Approximately 1.3 acres within the existing Runway 5 RPZ and 1.0 acres within existing Runway 5 RPZ are uncontrolled. Both Runway 5 and Runway 23 RPZs traverse public roadways - mitigation measures may be necessary.	Same as Existing
TAXIWAYS					
	Design Group	1B	2A	-	-
	Parallel Taxiway	Taxiway A	Maintain	-	-
	Parallel Taxiway Separation from Runway	300'	Maintain	-	-
	Widths	35' (Taxiway A and connectors)	Maintain	-	-
	Holding Position Separation	250'	Maintain	-	-
	Notable Conditions	Direct access from main apron	Maintain	-	-
NAVIGATIONAL AND WEATHER AIDS					
	Instrument Approaches	RNAV GPS (17, 35)	Maintain	Visual only	Maintain
	Weather Aids	AWOS, wind cones, rotating beacon	Maintain equipment; relocate/install new beacon		
	Approach Aids	PAPI-2 & REILS on both runway ends	Consider upgrade to PAPI-4; maintain REILs		
LIGHTING AND MARKING					
	Runway Lighting	MIRL	Maintain	Daytime Use Only	Maintain
	Runway Marking	Non-precision	Maintain	N/A - Turf	N/A - Turf
	Taxiway Lighting	MITL (Taxiway A)	Maintain	Daytime Use Only	Maintain

KEY:

AWOS - Automated Weather Observation Station
D - Dual Wheel Loading
GPS - Global Positioning System
MIRL - Medium Intensity Runway Lighting
MITL - Medium Intensity Taxiway Lighting
PAPI - Precision Approach Path Indicator
REIL - Runway End Identification Lights
S - Single Wheel Loading
N/A - Not Applicable

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Consideration #4 – Mitigation of Non-Standard Conditions in Safety Areas

The existing and ultimate RPZs associated with Runway 17-35 each contain obstructions. Portions of each are also uncontrolled. At the Runway 35 end, the RSA, ROFA, and RPZ extend beyond airport property and over a state highway in the ultimate condition. Three of the four RPZs also contain power poles. The alternatives to follow will explore options to mitigate these non-standard conditions within the safety areas.

Other obstructions within safety areas in the ultimate condition include the wind cone and six aircraft parking positions located near the main apron and end of Runway 35. Consideration will be given to relocating the existing wind cone and aircraft parking positions to locations outside of the ultimate ROFA.

Consideration #5 – Corrective Measures for Non-Standard Taxiway Geometry

FAA taxiway geometry design standards recommend offsetting taxiway connections between aprons and runways to mitigate the potential for pilots who are unfamiliar with the airport layout to unintentionally taxi directly onto a runway, resulting in a runway incursion. Taxiway A2 allows for direct access to the runway from JYR's maintained apron area and is, therefore, a non-standard design. The airside alternatives present an option for eliminating the direct access point and forcing pilots to make turns, which increases a pilot's situational awareness.

Consideration #6 – Non-Standard Holding Apron Removal and Relocation on Taxiway A

As discussed earlier in this chapter, the existing holding apron near Runway 17 does not meet the standard design. A standard holding bay is not required on Runway 17-35; however, consideration should be given to the construction of a standard holding apron for pilots to perform pre-flight engine checks prior to departure on Runway 17.

Consideration #7 – Adding pavement, lighting, and visual and instrument approach aids to Runway 5-23

As previously discussed, wind analysis suggests that turf Runway 5-23 is justified as a crosswind runway, because the primary runway does not provide at least 95 percent wind coverage for crosswinds exceeding 10.5 knots, limiting use of the primary runway for small aircraft (A-I and B-I aircraft) weighing less than 12,500 pounds. The current turf runway length and width exceeds the A-I/B-I standard; therefore, the runway pavement option will be limited to a length of 4,300 feet and a width of 75 feet to meet eligibility requirements for potential FAA AIP funding.

Paving the crosswind runway will also result in the need to consider installation of additional lighting and approach aids. Runway 5-23 does not have a PAPI system on either runway end, and installation of PAPI-2 systems are depicted in the alternatives for both Runway 5 and Runway 23. REILs are recommended for runway ends that are not served by a more sophisticated approach lighting system; therefore, the alternatives depict the inclusion of REILs on Runway 5-23. Additionally, adding RNAV GPS approaches to both ends of Runway 5-23 is included with the alternative for paving crosswind Runway 5-23 to accommodate small A-I/B-I category aircraft with approach minimums not lower than 1-mile for each runway end.

Consideration #8 – Upgraded or Install New Approach Aids and Airfield Lighting

Each end of Runway 17-35 is equipped with a PAPI-2 system. As jet traffic increases at JYR, consideration should be given to upgrading the current two-box PAPI system to a four-box system (PAPI-4), as depicted in the alternatives.

Consideration #9 – Update Taxiway and Connector Nomenclature

The current ALP does not specify nomenclature for Taxiway A and associated connectors. The alternatives will include taxiway nomenclature, with the single parallel taxiway designated Taxiway A, and each connector taxiway labeled from north to south A, B, C, and D. Designators are also assigned to Taxiway B and associated connectors in the Runway 5-23 pavement option alternative.

AIRSIDE ALTERNATIVE 1

Airside Alternative 1, depicted on **Exhibit AA,** considers an option to reconstruct Runway 17-35. As previously discussed, the runway pavement condition has deteriorated to the point that major reconstruction is now required. The dimensions for runway reconstruction will need to be justified by AIP eligibility criteria per FAA AC 150-5325-4B, *Runway Length Requirements for Airfield Design*, Paragraph 102. Justification for AIP funding typically involves documentation of at least 500 annual operations by aircraft, which in the existing condition is met by large aircraft weighing over 12,500 pounds in the B-II design category. Therefore, the reconstructed runway is depicted at a length of 5,500 feet and width of 75 feet to meet the existing B-II-4000 standards. Alternative 1 depicts the reconstructed Runway 17-35 on the northernmost portion of the existing runway footprint.

For Runway 17-35, a primary consideration is achieving standard safety areas (RSA, ROFA, ROFZ) through the implementation of declared distances. With the current runway length of 5,898 feet, this objective is achieved through the implementation of declared distances. By reducing the length of Runway 17-35 on the south as presented in Alternative 1, no declared distances or displaced threshold would be required.

Other proposed features of Airside Alternative 1 include:

1. The implementation of two no-taxi islands before the entry point of relocated Taxiway A1 and existing Taxiway A2 from the main apron to mitigate direct access from the apron to Runway 17-35. For direct-access points, the most economical option is to implement a no-taxi island. No taxi-islands are green-painted areas of apron that force pilots to make a turn prior to entering the runway. Taxiway centerlines should be remarked to guide pilots on the best taxi route to the adjoining parallel taxiway.
2. Removal of the non-standard holding bay on Runway 35.
3. Removal of excess runway, taxiway, and holding bay pavement at the end of Runway 35.
4. Upgrade the PAPI-2s to PAPI-4s along Runway 17-35.

Runway 17-35 Ultimate Design Code - C-II-4000
Runway 5-23 Ultimate Design Code - A-I (Small Aircraft)-VIS

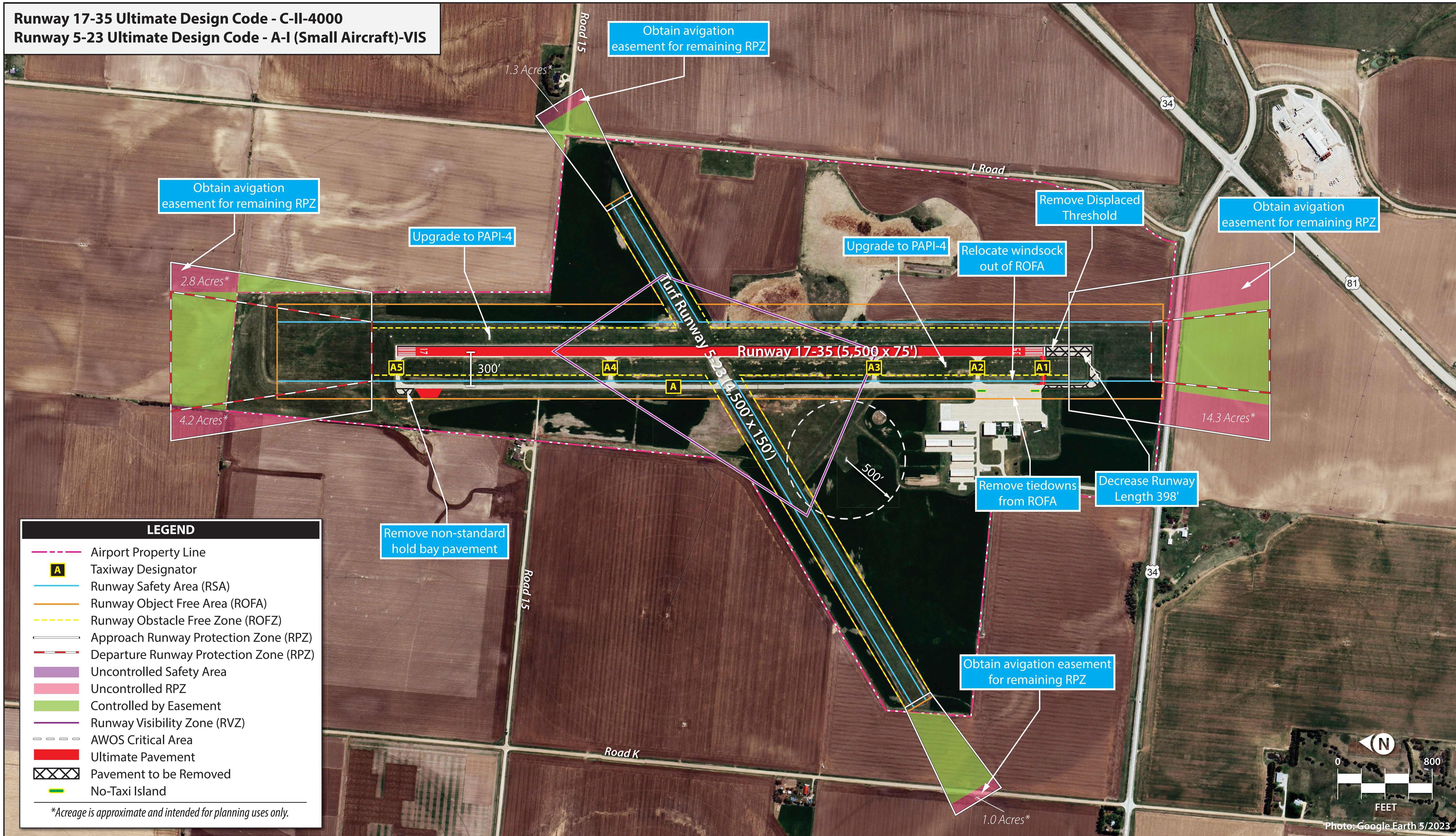

Exhibit AA
AIRSIDE ALTERNATIVE 1

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AIRSIDE ALTERNATIVE 2

Depicted on **Exhibit BB**, Airside Alternative 2 also considers an option to reconstruct Runway 17-35. Alternative 2 depicts the reconstructed Runway 17-35 on the southernmost portion of the existing runway footprint. This alternative would require the displaced threshold to remain at 400 feet to meet existing safety area considerations; however, the ultimate safety area non-standard conditions would still exist. Declared distances would need to be implemented to meet ultimate safety area design standards. Alternative 2 also proposes the acquisition of property within the RPZ, and no modifications to the surrounding road area are proposed.

As previously discussed, for Runway 17-35 the primary consideration is achieving standard safety areas (RSA, ROFA, ROFZ) through the implementation of declared distances. Declared distances are used by the FAA to define the effective runway length for landing and takeoff when a displaced threshold is involved. They are considered a reasonable alternative to mitigate existing runway shortcomings or deficient safety areas; however, they are considered an interim mitigation, and the preferred condition is a runway that fully meets design standards without the need for declared distances. The four types of declared distances – as defined in FAA AC 150/5300-13B, *Airport Design* – are as follows:

- **Takeoff Run Available (TORA) –** The runway length declared available and suitable for satisfying takeoff run requirements. TORA does not take into consideration RSA/ROFA design standards.
- **Takeoff Distance Available (TODA) –** The TORA plus the length of any remaining runway and/or clearway beyond the departure end of the TORA that is available for satisfying takeoff distance requirements.
- **Accelerate-Stop Distance Available (ASDA) –** The runway declared available for the acceleration and deceleration of an aircraft aborting takeoff. ASDA takes into consideration RSA/ROFA standards, thereby improving safety margins for users.
- **Landing Distance Available (LDA) –** The runway length declared available and suitable for landing, taking into account the RSA standard.

Measuring from the end of the existing C-II-4000 ROFA to the perimeter fence at the Runway 35 end results in the need for approximately 400 feet beyond the end of Runway 35 to achieve the full RSA and ROFA on Runway 17-35. Maintaining the displaced threshold at 400 feet and continuing to implement the following declared distances for Runway 17-35 would provide standard safety areas for both the RSA and ROFA for the ultimate C-II-4000 condition.

Declared Distances	Runway 17	Runway 35
TORA	5,500'	5,500'
TODA	5,100'	5,500'
ASDA	5,100'	5,500'
LDA	5,100'	5,100'

Aircraft taking off from Runway 35 would have the full 5,500 feet of runway available; however, the landing length available to pilots arriving on Runway 35 would be reduced to 5,100 feet. For aircraft departing Runway 17, the ASDA and TODA would be reduced to 5,100 feet, and the landing length would be similarly shortened to 5,100 feet for Runway 17. This 400’ adjustment is consistent with the displaced threshold and declared distances currently in place for Runway 17-35.

Other actions to meet existing and ultimate design standards include obtaining avigation easements for uncontrolled areas of the RPZs for both runways, relocating an existing windsock out of the ultimate ROFA, removing six aircraft parking positions on the main apron from the existing TOFA, and relocating another six aircraft parking positions on the main apron from the ultimate ROFA. Uncontrolled portions to the Runway 17-35 RPZs are proposed to be controlled via fee simple acquisition (preferred) or easement (recommended, at a minimum), where feasible. No modifications to the public roads passing through any RPZs are proposed. Alternative 1 also considers removal of excess runway, taxiway, and holding bay pavement at the end of Runway 17.

Other proposed features of Airside Alternative 2 include:

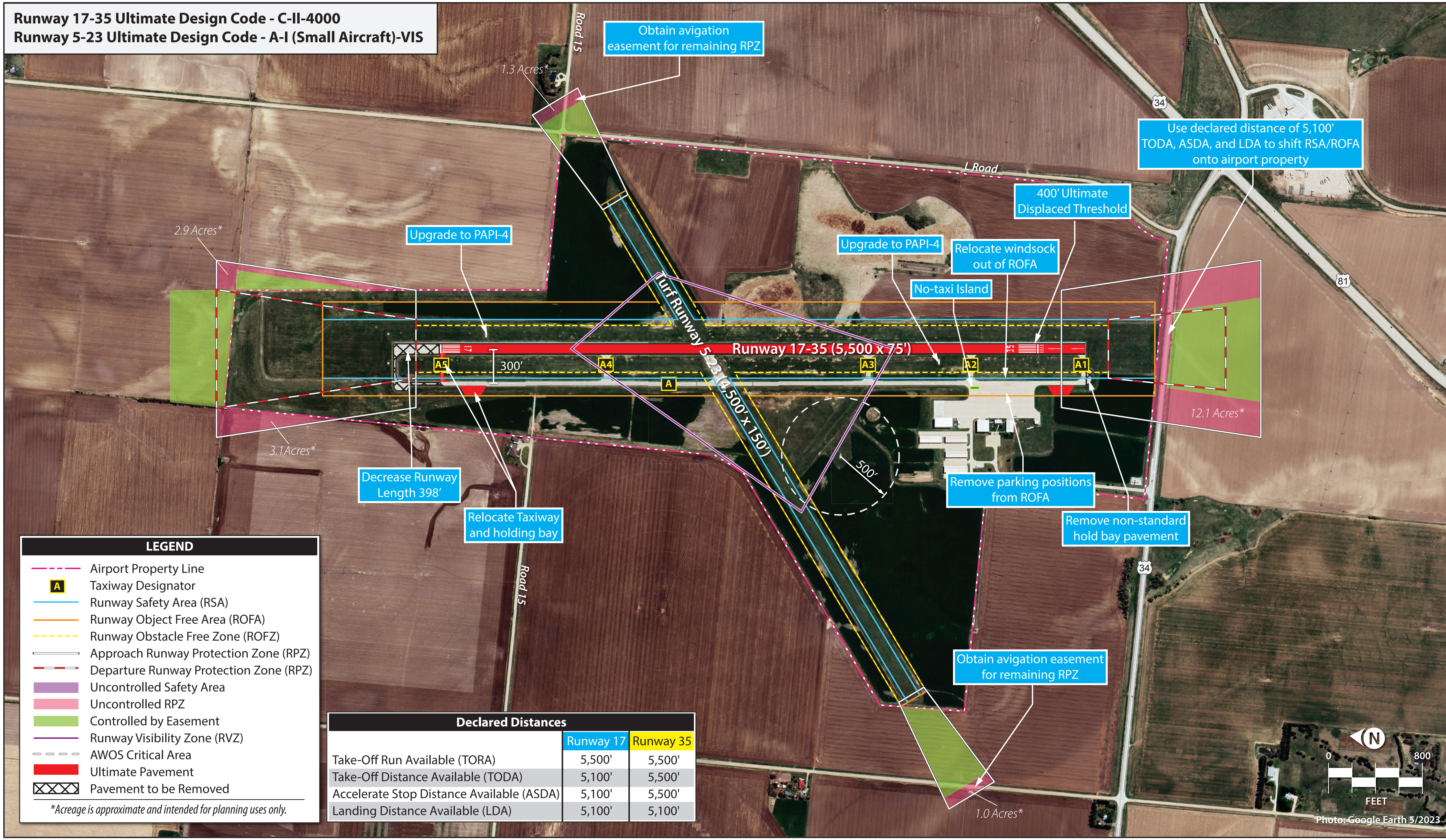
1. The implementation of a no-taxi island before the entry point of Taxiway A2 from the main apron to mitigate direct access from the apron to Runway 17-35. For direct-access points, the most economical option is to implement a no-taxi island. No taxi-islands are green-painted areas of apron that force pilots to make a turn prior to entering the runway. Taxiway centerlines should be remarked to guide pilots on the best taxi route to the adjoining parallel taxiway.
2. Removal of the non-standard holding bay and construction of a standard holding apron on Runway 17.
3. Removal of excess runway, taxiway, and holding bay pavement at the end of Runway 35.
4. Upgrade the PAPI-2s to PAPI-4s along Runway 17-35.

AIRSIDE ALTERNATIVE 3

Similar to Airside Alternative 1, Alternative 3 (as seen on **Exhibit CC**) depicts the reconstructed Runway 17-35 on the northernmost portion of the existing runway footprint. The runway reconstruction includes an additional 100 feet of runway length and associated displaced threshold and declared distances to prevent the creation of new non-standard direct access taxiway on the south portion of the main apron.

Declared Distances	Runway 17	Runway 35
TORA	5,600'	5,600'
TODA	5,500'	5,600'
ASDA	5,500'	5,600'
LDA	5,500'	5,500'

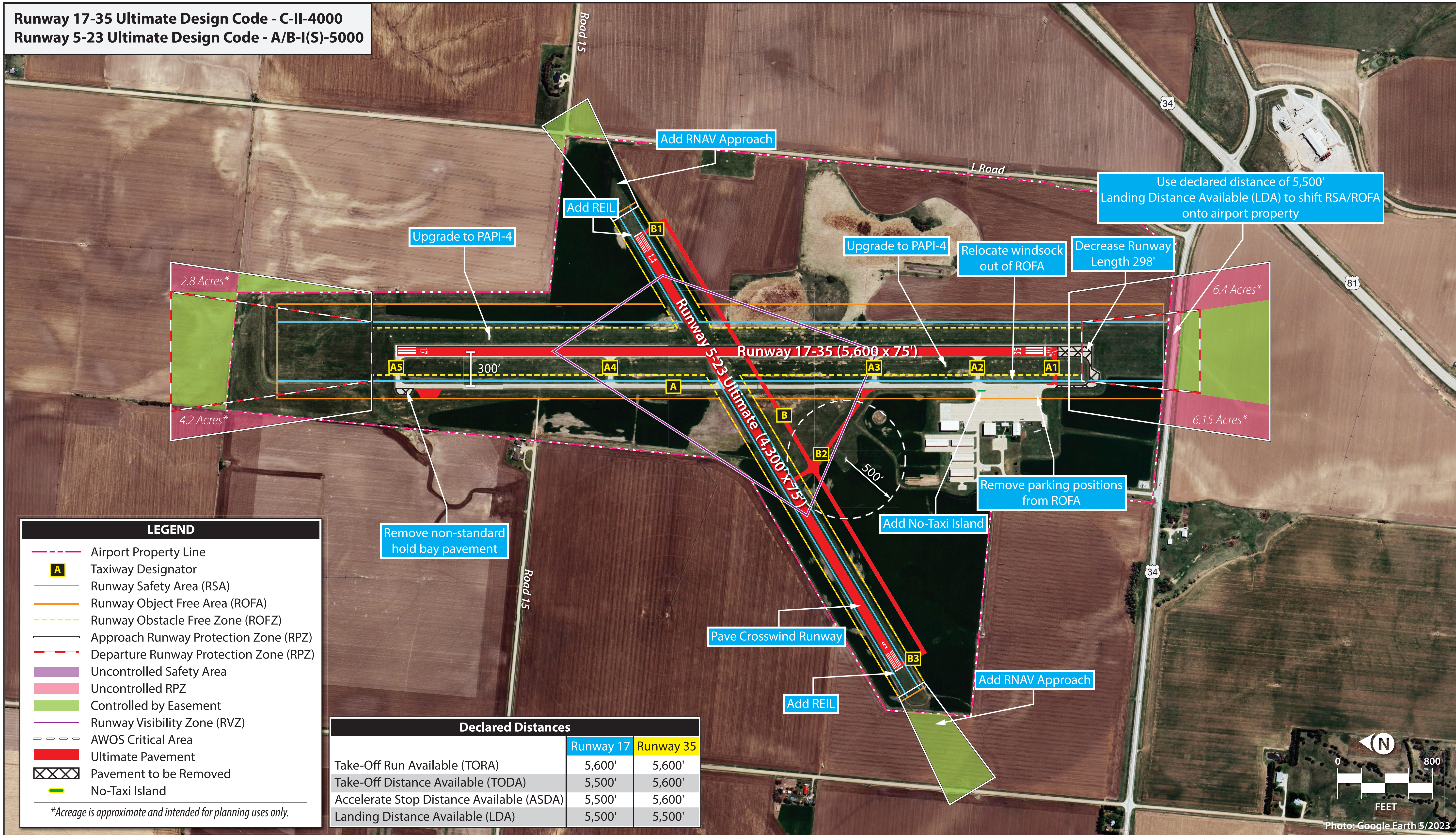
Alternative 3 also includes the paving and establishment of RNAV GPS instrument approach aids with visibility minimums not lower than 1 mile to Runway 5-23. The runway length for a paved crosswind runway is based on the recommended runway length for small airplanes weighing 12,500 pounds or less and A-I/B-I design standards, resulting in an ultimate runway length of 4,300 feet and width to 60 feet. According to the runway length analysis conducted (see **Table 3B**), a 4,300-foot crosswind runway would accommodate 100 percent of the small aircraft fleet.



Declared Distances

	Runway 17	Runway 35
Take-Off Run Available (TORA)	5,500'	5,500'
Take-Off Distance Available (TODA)	5,100'	5,500'
Accelerate Stop Distance Available (ASDA)	5,100'	5,500'
Landing Distance Available (LDA)	5,100'	5,100'

Runway 17-35 Ultimate Design Code - C-II-4000
Runway 5-23 Ultimate Design Code - A/B-I(S)-5000



LEGEND

- Airport Property Line
- Taxiway Designator
- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Runway Obstacle Free Zone (ROFZ)
- Approach Runway Protection Zone (RPZ)
- Departure Runway Protection Zone (RPZ)
- Uncontrolled Safety Area
- Uncontrolled RPZ
- Controlled by Easement
- Runway Visibility Zone (RVZ)
- AWOS Critical Area
- Ultimate Pavement
- Pavement to be Removed
- No-Taxi Island

Acreage is approximate and intended for planning uses only.

Declared Distances

	Runway 17	Runway 35
Take-Off Run Available (TORA)	5,600'	5,600'
Take-Off Distance Available (TODA)	5,500'	5,600'
Accelerate Stop Distance Available (ASDA)	5,500'	5,600'
Landing Distance Available (LDA)	5,500'	5,500'

Exhibit CC
AIRSIDE ALTERNATIVE 3

LANDSIDE FACILITY REQUIREMENTS

Components included within this section include general aviation terminal facilities, aircraft hangars and tiedowns, aircraft parking aprons, automobile parking, and airport support facilities.

TERMINAL FACILITIES AND VEHICLE PARKING

The terminal facilities located on general aviation airports typically provide space for a variety of activities, as well as pilot services. Terminal services at JYR are provided in an administration building that is approximately 1,800 square feet (sf) and includes a pilots' lounge and restrooms.

To estimate terminal facility needs, the number of itinerant passengers expected to use terminal facilities during the design hour are taken into consideration. The terminal area space requirements are based on the allocation of a range of designated square feet per design hour itinerant passenger. Identifying the number of design hour passengers is achieved by simply multiplying the number of itinerant design hour operations by the number of passengers expected on the aircraft. General aviation space requirements are based on providing 150 sf per design hour itinerant passengers. As most of the aircraft operating at the airport allow for multiple passengers, a multiplier of 2.5 was established for the short term, increasing to 4.0 in the long term. The analysis examines the national trends and increased activity at the airport and shows a progressive increase in the passenger count, which was used to account for larger, more sophisticated aircraft using the airport. Current and projected terminal building requirements are included in **Table 3F**.

TABLE 3F | General Aviation Terminal Services Requirements – York Municipal Airport

	Currently Available	Short-Term (5 year)	Intermediate-Term (10 year)	Long-Term (20 year)
Design Hour Itinerant Operations	2.3	2.8	2.8	3.6
Multiplier	2.5	2.5	3.2	4.0
Design Hour Itinerant Passengers	6	7	9	14
Terminal Parking Spaces	37	5	7	11
Total Building Space (sf)	**1,800**	**1,050**	**1,350**	**2,100**

Source: Coffman Associates analysis

When considering the square footage for the existing terminal building, the analysis shows that the existing administration building should be adequate in terms of capacity to meet demand through the intermediate-term planning period; however, an expansion of up to 300 sf, along with facility updates and upgrades, may be required over the long term.

General aviation vehicle parking demands at the airport were also evaluated. Space determinations for passengers were based on an evaluation of existing airport use, as well as local land use, planning standards, which recommend one parking space for every 200 sf of business/retail space. There are currently 37 marked individual vehicle spaces provided at the airport, all of which are located adjacent to the terminal building. The current total number of vehicle parking spaces offered at JYR is adequate for the long-term planning period.

AIRCRAFT STORAGE HANGARS

Utilization of hangar space varies as a function of local climate, security, and owner preferences. The trend in general aviation aircraft, whether single- or multi-engine, is toward more sophisticated (and, consequently, more expensive) aircraft; therefore, many aircraft owners prefer enclosed hangar space to outside tiedowns.

The demand for aircraft storage hangars is dependent on the number and type of aircraft expected to be based at the airport in the future. For planning purposes, it is necessary to estimate hangar requirements based on forecast operational activity; however, hangar development should be based on actual demand trends and financial investment conditions.

A variety of aircraft storage options are typically available at airports, including T-hangars, executive box hangars, and conventional hangars. A T-hangar is intended to accommodate one small single-engine piston aircraft or, in some cases, one multi-engine piston aircraft. T-hangars are so named because they are configured in the shape of a "T" and provide space for the aircraft nose and wings, but no space for turning the aircraft within the hangar. Conventional/executive hangars provide open space, free from roof support structures, and have the capability to store multiple aircraft simultaneously, depending on their size. Conventional hangars are typically greater than 10,000 sf in size, while executive box hangars can range in size from 2,000 sf up to 10,000 sf.

JYR has seven separate hangar facilities, which include approximately 32 T-hangars and provide approximately 70,235 total sf of hangar space. T-hangars comprise the largest portion of the hangars, with four separate units that total approximately 42,000 sf. The remaining hangars are comprised of three executive box hangars that total approximately 28,235 sf.

Planning for future aircraft storage needs is based on typical owner preferences and standard sizes for hangar space. For determining ultimate aircraft storage needs, a planning standard of 1,200 sf per based aircraft is utilized for T-hangars. For executive box and conventional hangars, an ultimate planning standard of 3,000 sf per turboprop, 5,000 sf per jet, and 1,500 sf per helicopter is utilized, as these hangars are capable of housing larger aircraft.

Ultimate hangar requirements are presented in **Table 3G**. While some based aircraft may utilize aircraft parking apron space instead of enclosed hangar space, the overall percentage of aircraft seeking hangar space is projected to increase during the long-term planning period.

TABLE 3G | Aircraft Hangar Requirements

	Currently Available	Short-Term Need (5 year)	Intermediate-Term Need (10 year)	Long-Term Need (20 year)
Total On-Airport Based Aircraft to be Hangared	27	30	33	40
Hangar Area Requirements				
T-Hangar Area (sf)	42,000	30,000	31,200	38,400
Executive Box/Conventional Hangar Area (sf)	28,235	6,000	11,000	11,000
Total Hangar Area (sf)	**70,235**	**37,100**	**42,500**	**54,400**

The analysis above indicates that the availability of hangar space is adequate to meet growing demand for aircraft storage during the long-term planning period. The alternatives will consider options for growth that may exceed the growth expected from the forecast, and include a mixture of hangar types, with the largest projected need in the T-hangar and executive hangar categories. Due to the projected increase in based aircraft, the existing demand for hangar space, annual general aviation operations, and nationwide hangar storage needs, facility requirements will continue to be met through a combination of hangar types.

It should be noted that hangar requirements are general in nature and based on the aviation demand forecasts. The actual need for hangar space will depend on usage within the hangars. For example, some hangars may be utilized entirely for non-aircraft storage, such as maintenance; however, they have an aircraft storage capacity from a planning standpoint, even though the needs of an individual user may differ from the calculated space necessary.

AIRCRAFT PARKING APRONS

The aircraft parking apron is an expanse of paved area intended for aircraft parking and circulation. A main apron is typically located near the airside entry point, such as the terminal building or a fixed based operator (FBO) facility. Ideally, the main apron is large enough to accommodate transient airport users, as well as a portion of locally based aircraft. Smaller aprons are often available adjacent to FBO or specialty aviation service operator (SASO) hangars and at other locations around the airport. At JYR, the apron is located to the east of the terminal building, adjacent to Taxiway A near the end of Runway 35.

To determine future apron needs, a planning criterion of 800 square yards (sy) was used for single- and multi-engine itinerant aircraft, while a planning criterion of 1,600 sy was used to determine the area for transient turboprop and jet aircraft. A parking apron should also provide space for locally based aircraft that require temporary tiedown storage. Locally based tiedowns typically will be utilized by smaller single-engine aircraft; thus, a planning standard of 650 sy per position is utilized.

Aircraft parking position requirements have been calculated at 15 percent of based aircraft for local operations and 40 percent of busy day itinerant operations for transient GA aircraft. Because jet operations are anticipated to increase over the planning period, there may be demand for additional turbine aircraft parking positions.

The total apron and aircraft parking position requirements are presented in **Table 3H**. There are currently 48 marked parking positions and 23,900 sy of pavement available for based and itinerant aircraft at the airport. As shown in the table below, the total number of marked parking positions and apron area at JYR are sufficient through the intermediate term. In the long term, approximately 5,700 sy of additional aircraft parking apron pavement will be needed. Additionally, a portion of the existing main apron and six existing aircraft parking positions will need to be relocated due to safety area incompatibility in the ultimate C-II-4000 condition.

TABLE 3H | Aircraft Parking Apron Requirements	Available	Short-Term	Intermediate-Term	Long-Term
Aircraft Parking Positions				
Based/Local GA Aircraft	4	5	5	6
Transient GA Aircraft	17	20	21	25
Transient Turboprop/Jet Aircraft	0	0	2	3
Helicopter	0	0	0	0
Total Parking Positions	**48**	**25**	**27**	**33**
Total Apron Area	**23,900**	**20,000**	**24,000**	**29,600**

Source: Coffman Associates analysis

SUPPORT REQUIREMENTS

Various facilities that do not logically fall within the classifications of airfield, terminal building, or general aviation areas have also been identified. These other areas provide certain functions related to the overall operation of the airport and are considered supporting functions.

AIRCRAFT RESCUE AND FIREFIGHTING (ARFF)

JYR does not have an aircraft rescue and firefighting (ARFF) building or equipment located on the airfield. As a general aviation airport, the FAA does not mandate that ARFF services be provided. JYR is anticipated to remain a general aviation airport through the planning period, so no additional on-site ARFF facilities or equipment are planned.

AVIATION FUEL STORAGE

The airport currently has two fuel storage tanks with the capacity to hold 10,000 gallons 100LL Avgas and 10,000 gallons Jet A fuel. Flowage records for the airport were not available, so it's unclear whether existing capacity meets demand. As the fleet mix transitions to include more frequent operations by turbojet aircraft, fuel storage and capacities should be evaluated to ensure an adequate supply of fuel is available. Planning should also consider an additional tank to store unleaded aviation fuel (100UL). The FAA has recently approved the use of 100UL in piston-powered aircraft, although some details regarding infrastructure and distribution remain unknown.

PERIMETER FENCING AND GATES

Perimeter fencing is used at airports primarily to secure the aircraft operational area. The physical barrier of perimeter fencing:

- Gives notice of the legal boundary and the outermost limits of the facility or security-sensitive area;
- Assists in controlling and screening authorized entries into a secured area by deterring entry elsewhere along the boundary;
- Supports surveillance, detection, assessment, and other security functions by providing a zone for installing intrusion detection equipment and closed-circuit television (CCTV);

- Deters casual intruders from penetrating the aircraft operations areas on the airport;
- Creates a psychological deterrent;
- Demonstrates a corporate concern for facilities; and
- Limits inadvertent access to aircraft operations on the airport.

The operation areas at York Municipal Airport are enclosed by four-foot-tall barbed wire fencing, with one controlled access gate near the hangar area to allow entry of authorized personnel and vehicles. All fencing and gates should be maintained throughout the planning period and should be regularly inspected to ensure they are functioning properly and are undamaged.

LANDSIDE ALTERNATIVES

Generally, landside issues are related to those facilities necessary or desired for the safe and efficient parking and storage of aircraft, movement of pilots and passengers to and from aircraft, and overall revenue support functions, including airport support facilities. To maximize airport efficiency, it is important to locate facilities together when they are intended to serve similar functions. The best approach to landside facility planning is to consider the development like a community, for which land use planning is the guide. For airports, the land use guidance in the terminal area should generally be dictated by aviation activity levels. Consideration will also be given to non-aviation uses that can provide additional revenue support to the airport and support economic development for the region.

Landside planning considerations – summarized below – will focus on strategies that follow a philosophy of separating activity levels. Potential landside facility development at JYR is focused on the east side of airport property, where existing facilities (terminal building, hangars, etc.) are already located.

Landside Planning Considerations
1. Consider the building restriction line (BRL) when planning vertical infrastructure
2. Increase aircraft storage capacity
3. Expand aircraft parking apron
4. Expand terminal building
5. Add aircraft self-service fuel facility

Consideration #1 – Building Restriction Line (BRL)

The BRL is a line that identifies suitable and unsuitable building area locations on the airport. The BRL encompasses the RPZs, the ROFA, navigational aid critical areas required for terminal instrument procedures, and other areas necessary for meeting airport line-of-sight criteria.

Two primary factors contribute to the determination of the BRL: type of runway (utility or other-than-utility) and the capability of the instrument approaches. Runway 17-35 is identified as an other-than-utility runway, and Runway 5-23 is considered a utility runway.

The BRL is the product of Title 14 Code of Federal Regulations (CFR) Part 77 transitional surface clearance requirements. These requirements stipulate that no object be located in the primary surface, defined as being no closer than 250 feet from a non-precision instrument runway centerline and not closer than 500 feet to a runway served by a precision instrument approach. For York Municipal Airport, the primary surface is 1,000 feet wide (500 feet on either side of the runway centerline). From the primary surface, the transitional surface extends outward at a slope of one vertical foot to every seven horizontal feet.

The location of the BRL is dependent upon the selected allowable structure height. Traditionally, the BRL is set at a point where the transitional surface is 20 feet or 35 feet above the runway elevation. The alternatives to follow consider a 20-foot BRL in relationship to the runway system and existing and proposed land uses. There are currently structures located within the BRL. **It should be noted that the BRL is not a standard; rather, it is a guideline to use when planning vertical infrastructure on the airport.** The FAA may require structures inside the BRL to be equipped with obstruction lights.

Consideration #2 – Hangar Capacity

As previously discussed, existing hangar capacity at JYR is expected to meet the needs of future aviation demand. However, optimal hangar configurations are evaluated to assist the airport in making future land use development decisions for the airport property.

Consideration #3 – Aprons

JYR has approximately 23,900 sy of apron space dedicated to aircraft parking and circulation. Based on projected growth in based aircraft and transient operations, an additional 5,700 sy of apron capacity is needed over the next 20 years. Six aircraft parking positions currently located within the existing TOFA will need to be removed; however, the remaining existing 42 parking positions will meet demand for aircraft parking positions throughout the 20-year planning period. An additional six parking positions in the ultimate ROFA will need to be relocated over the long term if operations justify meeting the C-II ultimate design standards.

Consideration #4 – Terminal Building

The alternatives will consider expansion of the existing 1,800 sf terminal building at JYR to meet future aviation demand. Based on projected growth in based aircraft and transient operations, an additional 300 sf of terminal capacity will be needed over the next 20 years.

Consideration #5 – Self-Service Fueling

The alternatives will consider adding a self-service fueling facility to the airport’s available services. The alternatives include the addition of two aboveground fuel storage tanks, providing self-service fueling options for both 100 LL and Jet A fuel.

LANDSIDE ALTERNATIVE 1

Depicted on **Exhibit DD**, Landside Alternative 1 focuses primarily on the expansion of aircraft storage, with the addition of five new T-hangar structures and three executive box hangars. Alternative 1 is consistent with the airport's existing ALP for planned future aeronautical development. Features of the landside alternative include the following:

1. Addition of 58,750 sf of new hangar development, including 5 new T-hangar facilities to the north of the existing T-hangars and 3 new executive box hangars near the main apron.
2. Addition of approximately 3,333 sq yards of additional apron to the north.
3. Future taxilane connecting the new apron addition to Taxiway A near the hangar development.
4. Removal of six aircraft parking locations within the existing TOFA and relocation of six aircraft parking locations within the ultimate ROFA.
5. Addition of a self-service fueling facility outside of the ROFA on the south side of the apron, west of the parallel taxiway.

LANDSIDE ALTERNATIVE 2

As shown on **Exhibit EE**, Landside Alternative 2 depicts a second layout which is similar to Alternative 1, with the northernmost row of T-hangars replaced by three rows of four executive box hangars, and a larger executive box hangar proposed adjacent to the expanded apron. The proposed apron expansion is also increased. There is also is an additional apron with executive hangars and an access road to the south. Features of Landside Alternative 2 include the following:

1. Addition of 83,700 sf of new hangar development, including 2 new T-hangar facilities and 9 new executive box hangars to the north of the existing T-hangars, and 3 new executive box hangars near the main apron.
2. Addition of approximately 7,289 sq yards of additional apron to the north and addition of approximately 2,550 sq yards of additional apron to the south.
3. Future taxilanes connecting the north apron addition to Taxiway A near the hangar development and south apron addition to the main apron.
4. Additional access road to the south of the existing parking lot to provide access to south hangar development.
5. Removal of six aircraft parking locations within the existing TOFA and relocation of six aircraft parking locations within the ultimate ROFA.
6. Addition of a self-service fueling facility outside of the ROFA on the south side of the apron, west of the parallel taxiway.

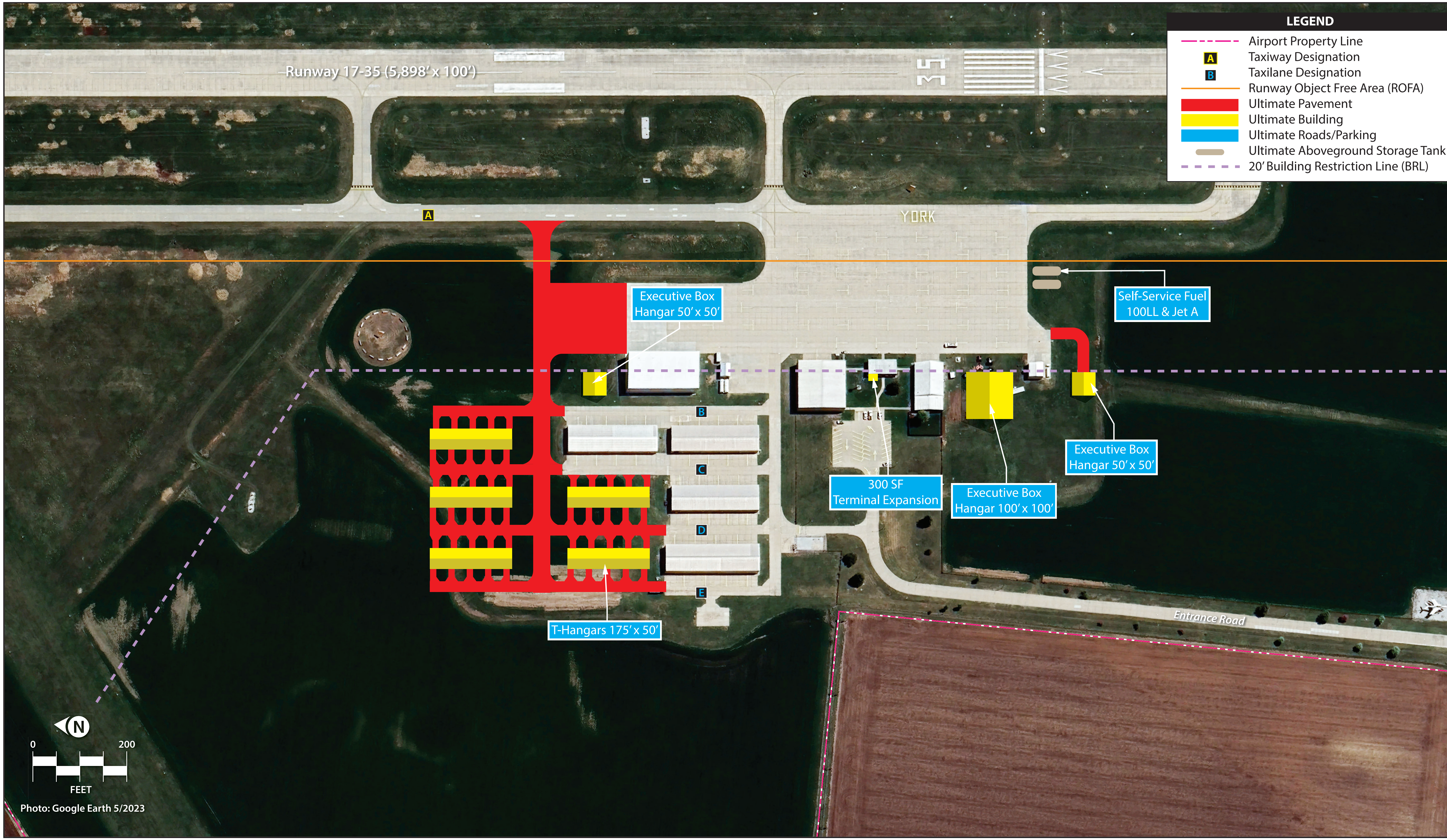


Exhibit DD
LANDSIDE ALTERNATIVE 1


LEGEND
Airport Property Line
Taxiway Designation
Taxilane Designation
Runway Object Free Area (ROFA)
Ultimate Pavement
Ultimate Building
Ultimate Roads/Parking
Ultimate Aboveground Storage Tank
20' Building Restriction Line (BRL)
Runway 17-35 (5,898' x 100')
YORK
Executive Box Hangar 150' x 80'
Executive Box Hangar 50' x 50'
Executive Box Hangar 100' x 100'
Self-Service Fuel 100LL & Jet A
Executive Box Hangars 50' x 50'
300 SF Terminal Expansion
Executive Box Hangars 80' x 80'
T-Hangars 175' x 50'
Entrance Road
A
B
C
D
E
N
0
200
FEET
Photo: Google Earth 5/2023

SUMMARY

This chapter is intended to present an outline of airside and landside facilities needed at JYR and potential alternatives to meet safety requirements and demand. FAA design standards are frequently updated with the intent of improving the safety and efficiency of aircraft movements on and around airports, which can lead to certain pavement geometries that previously qualified as standard being classified as non-standard.

The next step in this ALP update and narrative report is to arrive at a recommended development concept. Additional consultation with the FAA and the NDOT Division of Aeronautics will also be required. Once a consolidated development plan is identified, a capital improvement program – including a list of prioritized projects tied to aviation demand and/or necessity – will be presented.