5 Alternatives Analysis

5.0 Introduction

This section analyzes the alternative development options to meet the 20-year demand for airport facilities at KOSU identified in Chapter 4. The alternatives analysis systematically evaluates the options and provides the technical basis necessary for choosing a preferred development alterative to carry forward as part of the Airport Development Program and Future Airport Layout Plan (ALP) drawings.

As a 20-year plan, the recommended alternatives should be functional through various stages of the plan and should also have the flexibility to meet unforeseen future conditions. FAA guidance on developing the alternatives analysis advises that only the functional elements needed as part of the forecast should be evaluated (e.g., airline gates are not a functional part of KOSU and, therefore, are not included.) Additionally, if there are no facility needs associated with a functional element, it need not be included in the analysis either (e.g., KOSU has a new terminal that opened in 2018 that meets all its needs for the next 20 years, so a terminal building is not analyzed here).

With the above guidance in mind, the functional elements to receive an alternatives analysis at KOSU are the primary runway, taxiways, hangars, and support facilities. Facility development where the best alternative is both non-controversial and intuitive in nature will not be subject to an alternatives analysis (i.e. perimeter security fencing). The alternatives considered in this chapter are only those that meet the airport's need and are considered by the KOSU management staff to be implementable.

The level of complexity of the selection process in an alternatives analysis typically reflects the complexity of the airport's situation. FAA guidance advises that evaluation criteria should be determined in advance, should cover a broad range, and should achieve a balance between the need for a thorough evaluation and the inefficiency of over-analysis. KOSU evaluation criteria is based on the following planning guidelines, which reflect the airport's mission and role within the national airspace system:

- Ensure safety and security is the first priority, followed by meeting customer needs with quality service.
- Focus on the needs of all general aviation with an emphasis on students.
- Promote compatible land use on the airport.
- Co-locate like users/services where possible.
- Plan landside development in an efficient, flexible and cost-effective manner.
- Preserve investment in existing facilities, property contiguous with taxiways and aprons for aviation purposes with airside needs.
- Maintain Class IV, Part 139 Standards and all FAA regulations and design standards.
- Be mindful of airport impact on neighborhoods.

Accordingly, the alternatives for all elements are evaluated based how well they meet or impact the following criteria:

- mission,
- safety,
- operational needs,
- operational efficiencies & flexibility
- constructability and physical constraints,
- cost, and
- the environment (natural and human)

Each functional element with an alternatives analysis was evaluated and given a score based on how well it met the above criteria:

-1 was considered poor or undesirable relative to the intent of the criteria;
0 was neutral relative to the intent of the criteria; and
+1 was considered good relative to the intent of the criteria.

The following elements are those considered to have facility needs where alternatives are necessary to be analyzed:

- Primary Runway
- Taxiways
- Terminal Area (includes hangars and support facilities)
- Compass Calibration Pad
- Rotating Beacon

5.1 Runways and Taxiways

5.1.1 Primary Runway 9L-27R

As part of the facility requirements section, a longer primary runway was identified as needed over the planning period. The existing primary runway is 5,004 ft. X 100 ft. The length for a potential runway extension is impacted by several things, one of the most concerning to KOSU management is physical constraints. Accommodating a runway footprint longer than 6,000 feet would necessitate significant land acquisition and community disruption. Accordingly, the target length for the primary runway is 6,000 feet, which was also determined and evaluated in the previous master plan. The Facility Requirements chapter confirms that 6,000 feet is still needed, and this chapter reevaluates the alternatives for achieving this length.

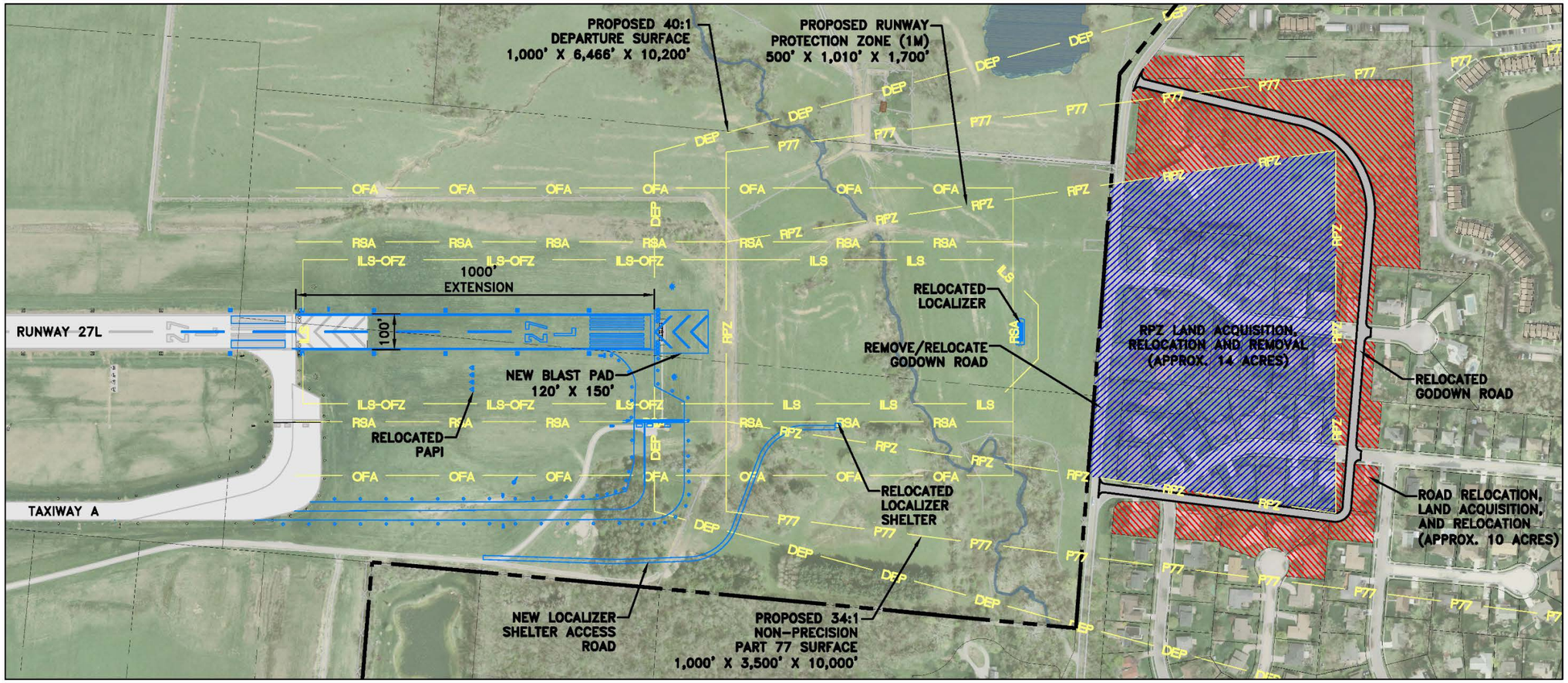
<u>Runway Alternative 1: Extension to RWY 27L 1,000 feet</u>

Alternative 1 includes extending the primary runway 1,000 feet to the east with the ILS remaining in place on 9R and providing an LPV approach with one-mile visibility to the new end of Runway 27L. (See **Exhibit 5.1.1-1**.) This is a logical first alternative because it would take the least amount of pavement and not require the ILS glideslope and MALSR to be relocated, thus providing a significant savings on navigational aids. However, in relation to the evaluation criteria listed in Section 5.1, this alternative has several disadvantages: the primary instrument approach end would not be optimal in relation to prevailing winds, extensive land acquisition and homeowner relocation would be required in Sycamore Hills, and a stream would need to be enclosed or relocated.

When this alternative is scored against the evaluation criteria, it scores low with a -1 because of the impact to the environment, cost, etc.:

Alternative	Description	Mission	Safety	Operational Needs	Operational Efficiency & Flexibility	Constructability/ Physical Constraint	Cost	Environment	TOTAL SCORE
Alt. 1	Extension to RWY 27L 1,000 feet	+1	+1	+1	-1	-1	-1	-1	-1

Exhibit 5.1.1-1



LEGEND: LINETYPE

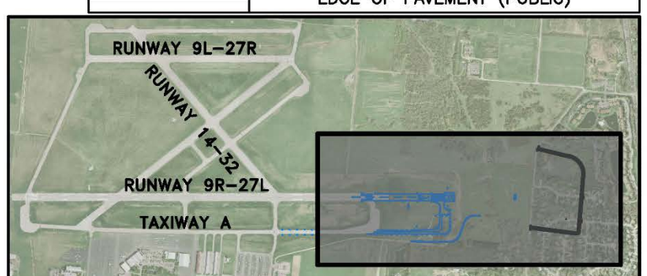
EXISTING	FACILITY
	AIRPORT PROPERTY LINE
	PARCEL LINE
	RUNWAY/TAXIWAY CENTERLINE
	EDGE OF PAVEMENT (AIRSIDE)
	EDGE OF PAVEMENT (PUBLIC)

LEGEND: LINETYPE

PROPOSED	FACILITY
RPZ	RUNWAY PROTECTION ZONE
P77	CFR PART 77 SURFACES
DEP	THRESHOLD SITING DEPARTURE SURFACES
RSA	RUNWAY SAFETY AREA
OFA	RUNWAY OBJECT FREE AREA
ILS	ILS CRITICAL AREA
ILS-OFZ	ILS CRITICAL AREA / OBSTACLE FREE ZONE
	EDGE OF PAVEMENT (AIRSIDE)

LEGEND: SYMBOLS

	FACILITY
	AIRFIELD PAVEMENT
	RELOCATED ROAD (PUBLIC)
	LAND ACQUISITION (ROAD RELOCATION)
	LAND ACQUISITION (RPZ PROTECTION)
	RUNWAY EDGE LIGHT (EX./PROP.)
	RUNWAY THRESHOLD LIGHT (EX./PROP.)
	REIL
	TAXIWAY EDGE LIGHT (EX./PROP.)
	PAPI/VASI
	GUIDANCE SIGN (EX./PROP.)
	WINDCONE



KEY MAP

N

MAGNETIC

MAGNETIC DECLINATION
2018 = 7° 5' W
CHANGING BY
0° 3' W PER YEAR

SOURCE DOCUMENT IS NATIONAL GEOPHYSICAL DATA CENTER – NOAA SATELLITE AND INFORMATION CENTER.

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL

333 North Alabama St.
Suite 200
Indianapolis, IN 46204
317.299.7500
FAX: 317.291.5805

The Ohio State University Airport
DON SCOTT FIELD

ALTERNATIVE 1

OSU AIRPORT MASTER PLAN

THE OHIO STATE UNIVERSITY AIRPORT - DON SCOTT FIELD COLUMBUS, OHIO

PROJECT No:	76761
DATE:	08-22-2018
HORIZ. SCALE:	1" = 300'
VERT. SCALE:	N/A

INTENTIONALLY LEFT BLANK

Alternative 2: – Extend RW 9R 500 feet and RW 27L 500 feet

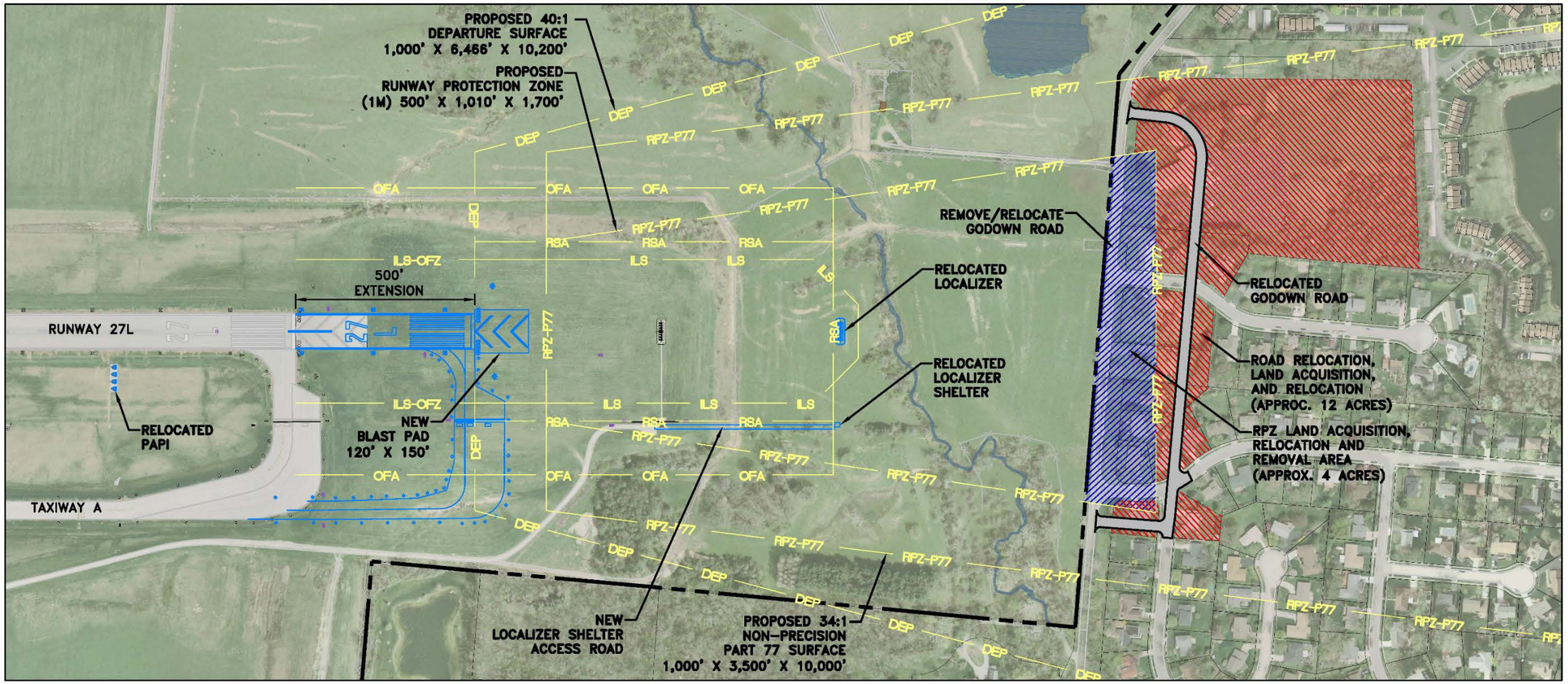
With that much impact to residential areas, Alternative 2 looked at adding pavement to each end of Runway 9R-27L to determine if it would be less impact to the community. Alternative 2 includes extending the primary runway 500 feet to the east and 500 feet to the west, with the ILS still on the Runway 9R and providing an LPV approach with one-mile visibility to the new end of Runway 27L. (See **Exhibit 5.1.1-2**.) This alternative removes the stream from being enclosed or relocated, but it still has a significant impact on Sycamore Hills, Abbey Church Village, and still requires Godown Road to be relocated. In addition to this, it requires the relocation of all the navigational aids associated with the ILS (glideslope, localizer, and MALSR), requires Sawmill Road to be relocated, and impacts Lakeview Square, and The Residences at Sawmill Park. This alternative also does not align the ILS with the prevailing winds.

When this alternative is scored against the evaluation criteria, it also scores low with a -1 for the same reasons as Alterative 1:

Alternative	Description	Mission	Safety	Operational Needs	Operational Efficiency & Flexibility	Constructability/ Physical Constraint	Cost	Environment	TOTAL SCORE
Alt. 2	Extend RW 9R 500 feet and RW 27L 500 feet	+1	+1	+1	-1	-1	-1	-1	-1

INTENTIONALLY LEFT BLANK

Exhibit 5.1.1-2



LEGEND: LINETYPE

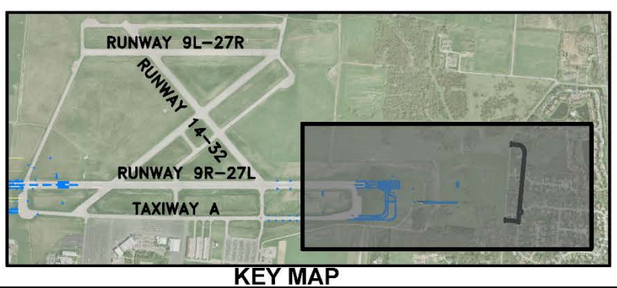
EXISTING	FACILITY
	AIRPORT PROPERTY LINE
	PARCEL LINE
	RUNWAY/TAXIWAY CENTERLINE
	EDGE OF PAVEMENT (AIRSIDE)
	EDGE OF PAVEMENT (PUBLIC)

LEGEND: LINETYPE

PROPOSED	FACILITY
RPZ	RUNWAY PROTECTION ZONE
P77	CFR PART 77 SURFACES
DEP	THRESHOLD SITING DEPARTURE SURFACES
RSA	RUNWAY SAFETY AREA
OFA	RUNWAY OBJECT FREE AREA
ILS	ILS CRITICAL AREA
ILS-OFZ	ILS CRITICAL AREA / OBSTACLE FREE ZONE
	EDGE OF PAVEMENT (AIRSIDE)

LEGEND: SYMBOLS

	FACILITY
	AIRFIELD PAVEMENT
	RELOCATED ROAD (PUBLIC)
	LAND ACQUISITION (ROAD RELOCATION)
	LAND ACQUISITION (RPZ PROTECTION)
	RUNWAY EDGE LIGHT (EX./PROP.)
	RUNWAY THRESHOLD LIGHT (EX./PROP.)
	REIL
	TAXIWAY EDGE LIGHT (EX./PROP.)
	PAPI/VASI
	GUIDANCE SIGN (EX./PROP.)
	WINDCONE



KEY MAP

N

MAGNETIC

MAGNETIC DECLINATION
2018 = 7° 5' W
CHANGING BY
0° 3' W PER YEAR

SOURCE DOCUMENT IS NATIONAL GEOPHYSICAL DATA CENTER – NOAA SATELLITE AND INFORMATION CENTER.

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL

333 North Alabama St.
Suite 200
Indianapolis, IN 46204
317.299.7500
FAX: 317.291.5805

The Ohio State University Airport
DON SCOTT FIELD

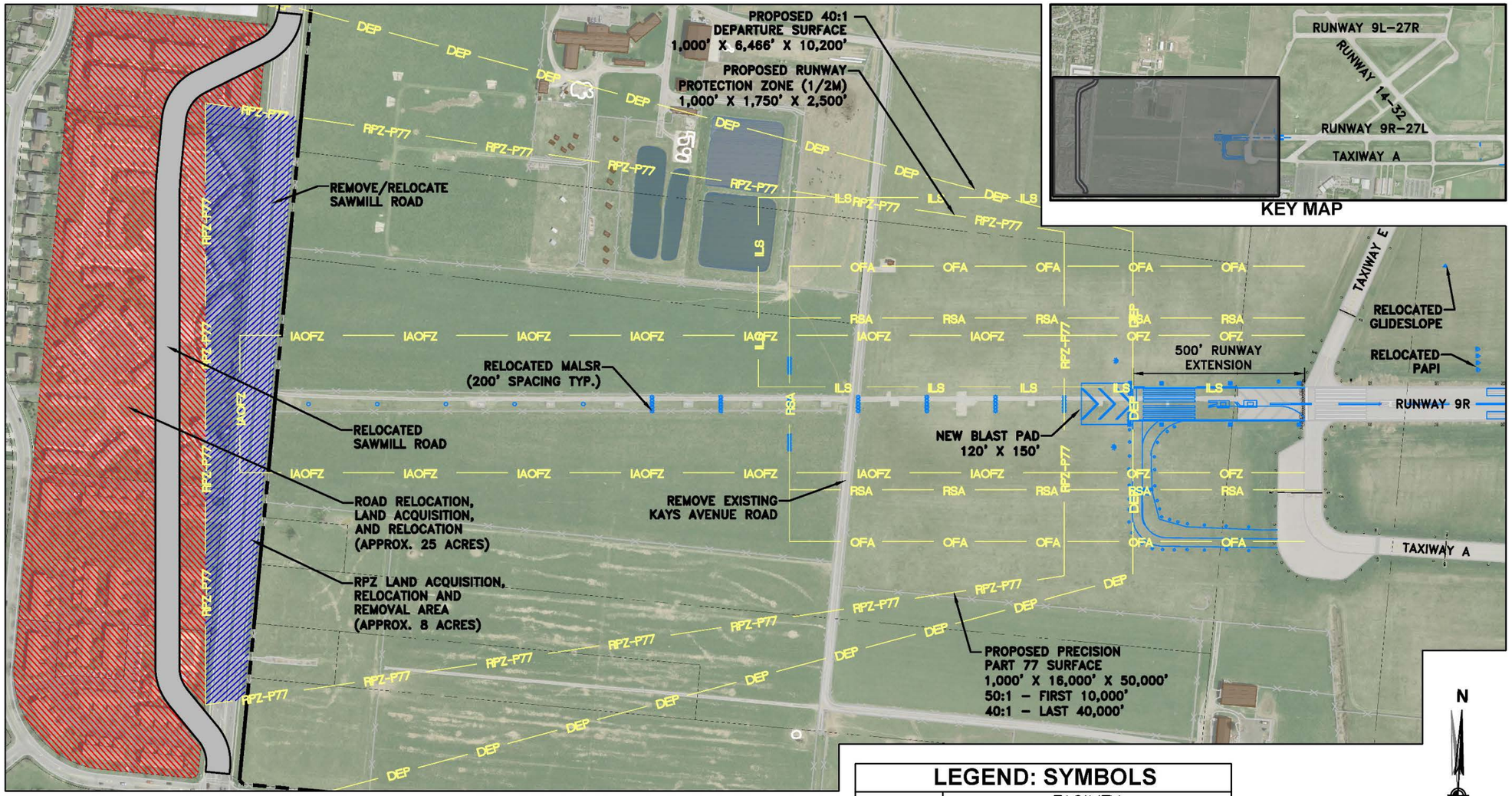
ALTERNATIVE 2 - EAST

OSU AIRPORT MASTER PLAN

THE OHIO STATE UNIVERSITY AIRPORT - DON SCOTT FIELD COLUMBUS, OHIO

PROJECT No:	76761
DATE:	08–22–2018
HORIZ. SCALE:	1" = 300'
VERT. SCALE:	N/A

Exhibit 5.1.1-2 continued



KEY MAP

LEGEND: LINETYPE

EXISTING	FACILITY
	AIRPORT PROPERTY LINE
	PARCEL LINE
	RUNWAY/TAXIWAY CENTERLINE
	EDGE OF PAVEMENT (AIRSIDE)
	EDGE OF PAVEMENT (PUBLIC)

LEGEND: LINETYPE

PROPOSED	FACILITY
RPZ	RUNWAY PROTECTION ZONE
P77	CFR PART 77 SURFACES
DEP	THRESHOLD SITING DEPARTURE SURFACES
RSA	RUNWAY SAFETY AREA
OFA	RUNWAY OBJECT FREE AREA
ILS	ILS CRITICAL AREA
ILS-OFZ	ILS CRITICAL AREA / OBSTACLE FREE ZONE
	EDGE OF PAVEMENT (AIRSIDE)

LEGEND: SYMBOLS

	FACILITY
	AIRFIELD PAVEMENT
	RELOCATED ROAD (PUBLIC)
	LAND ACQUISITION (ROAD RELOCATION)
	LAND ACQUISITION (RPZ PROTECTION)
	RUNWAY EDGE LIGHT (EX./PROP.)
	RUNWAY THRESHOLD LIGHT (EX./PROP.)
	REIL
	TAXIWAY EDGE LIGHT (EX./PROP.)
	PAPI/VASI
	GUIDANCE SIGN (EX./PROP.)
	WINDCONE

N

MAGNETIC

MAGNETIC DECLINATION
2018 – 7° 5' W
CHANGING BY
0° 3' W PER YEAR

SOURCE DOCUMENT IS NATIONAL GEOPHYSICAL DATA CENTER – NOAA SATELLITE AND INFORMATION CENTER.

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL

333 North Alabama St.
Suite 200
Indianapolis, IN 46204
317.299.7500
FAX: 317.291.5805

The Ohio State University Airport
DON SCOTT FIELD

ALTERNATIVE 2 - WEST

OSU AIRPORT MASTER PLAN

THE OHIO STATE UNIVERSITY AIRPORT - DON SCOTT FIELD COLUMBUS, OHIO

PROJECT No:	76761
DATE:	08–22–2018
HORIZ. SCALE:	1" = 300'
VERT. SCALE:	N/A

Alternative 3 – Extend Runway 9R 1,000 feet

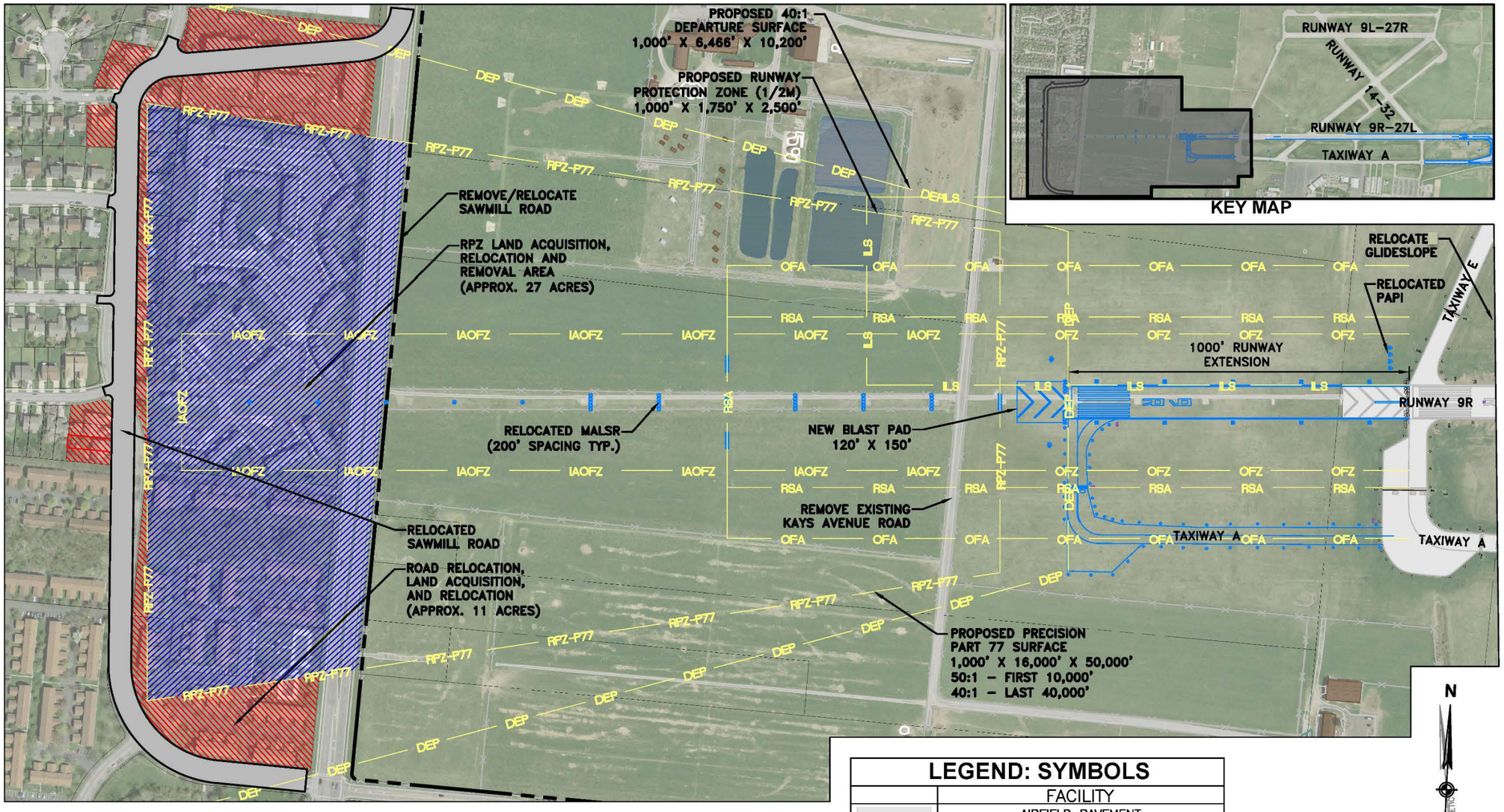
With Alternative 1 and 2 both having significant impacts, Alternative 3, which adds 1000 feet to Runway 9R, was reviewed to determine if there would be any advantages gained from putting the entire extension on the west end. (See **Exhibit 5.1.1-3**.) This alternative keeps the ILS on Runway 9R and adds an LPV to 27L. It does not have any advantages and carries similar impacts to Lakeview Square and Sawmill Roads as Alternative 1 does to Sycamore Hills and Godown Road. Outside of not impacting the stream or Sycamore Hills, this alternative has no advantages and requires significant land acquisition, demolition, and relocation. This alternative also does not align the ILS with the prevailing winds.

As with Alternatives 1 and 2, this alternative also scores low with a -1 for the same reasons as Alternatives 1 and 2:

Alternative	Description	Mission	Safety	Operational Needs	Operational Efficiency & Flexibility	Constructability/ Physical Constraint	Cost	Environment	TOTAL SCORE
Alt. 3	Extend Runway 9R 1,000 feet	+1	+1	+1	-1	-1	-1	-1	-1

INTENTIIONALLY LEFT BLANK

Exhibit 5.1.1-3



KEY MAP

LEGEND: LINETYPE

EXISTING	FACILITY
	AIRPORT PROPERTY LINE
	PARCEL LINE
	RUNWAY/TAXIWAY CENTERLINE
	EDGE OF PAVEMENT (AIRSIDE)
	EDGE OF PAVEMENT (PUBLIC)

LEGEND: LINETYPE

PROPOSED	FACILITY
RPZ	RUNWAY PROTECTION ZONE
P77	CFR PART 77 SURFACES
DEP	THRESHOLD SITING DEPARTURE SURFACES
RSA	RUNWAY SAFETY AREA
OFA	RUNWAY OBJECT FREE AREA
ILS	ILS CRITICAL AREA
ILS-OFZ	ILS CRITICAL AREA / OBSTACLE FREE ZONE
	EDGE OF PAVEMENT (AIRSIDE)

LEGEND: SYMBOLS

	FACILITY
	AIRFIELD PAVEMENT
	RELOCATED ROAD (PUBLIC)
	LAND ACQUISITION (ROAD RELOCATION)
	LAND ACQUISITION (RPZ PROTECTION)
	RUNWAY EDGE LIGHT (EX./PROP.)
	RUNWAY THRESHOLD LIGHT (EX./PROP.)
	REIL
	TAXIWAY EDGE LIGHT (EX./PROP.)
	PAPI/VASI
	GUIDANCE SIGN (EX./PROP.)
	WINDCONE

N

MAGNETIC DECLINATION 2018 – 7° 5' W CHANGING BY 0° 3' W PER YEAR

SOURCE DOCUMENT IS NATIONAL GEOPHYSICAL DATA CENTER – NOAA SATELLITE AND INFORMATION CENTER.

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL

333 North Alabama St.
Suite 200
Indianapolis, IN 46204
317.299.7500
FAX: 317.291.5805

The Ohio State University Airport
DON SCOTT FIELD

ALTERNATIVE 3

OSU AIRPORT MASTER PLAN

THE OHIO STATE UNIVERSITY AIRPORT - DON SCOTT FIELD COLUMBUS, OHIO

PROJECT No: 76761
DATE: 08–22–2018
HORIZ. SCALE: 1" = 300'
VERT. SCALE: N/A

INTENTIONALLY LEFT BLANK

Alternative 4 – Extend Runway 9L 1,700 feet and Runway 27R 1,306 feet

While intuitively it may seem that the easiest way to achieve a 6,000-foot runway at KOSU is to add pavement to the longest existing runway, that does not hold true in light of the adjacent land uses. Therefore, the review process looked at the other two runways to determine if either could be lengthened with less impact. The crosswind runway was quickly ruled out because it would either take out the State of Ohio aircraft hangar and impact an industrial park and West Dublin Granville Road on the north side, or impact Case Road and a shopping center on the south side, or some combination of the above. The short parallel runway, Runway 9L-27R, has the most vacant land on each side of it and the least amount of developed land in line with and adjacent to the airport property. This alternative (Alternative 4) adds 1,700 feet to Runway 9L with an ILS with ½ mile visibility minimums and 1,306 feet to Runway 27R with an LPV approach with 1-mile visibility minimums (see **Exhibit 5.1.1-5** on the next page).

Alternative 4 has by far the least impact to the surrounding community and maximizes the airport's existing foot print. It would help separate corporate traffic from student traffic which would move mostly to the south runway (Runway 9R-27L) because it is closer to the flight school, resulting in greater efficiency and flexibility. Some airport navigational devices would need to be acquired in addition to internal road and tree removal and bridging or relocating a stream. However, the residential impacts would be substantially less, though a sliver of a parking area in Shadow Lakes residential area (east of the airport) would be in the outer portion of the RPZ, along with a short strip of Godown Road. This would also be the case for a small area of a parking lot owned by the US postal service. (See **Exhibit 5.1.1-4**.) If Alternative 4 moves forward, KOSU would seek FAA approval for these land uses to exist within the future RPZ. To the west, all runway operations, objects and zones are within the airport's existing boundary, though livestock operations on the west side of the airport would be affected. Of the alternatives, this option has the least amount of property impacts, maximizes the use of existing land, and fosters the segregation of flight training from corporate traffic.

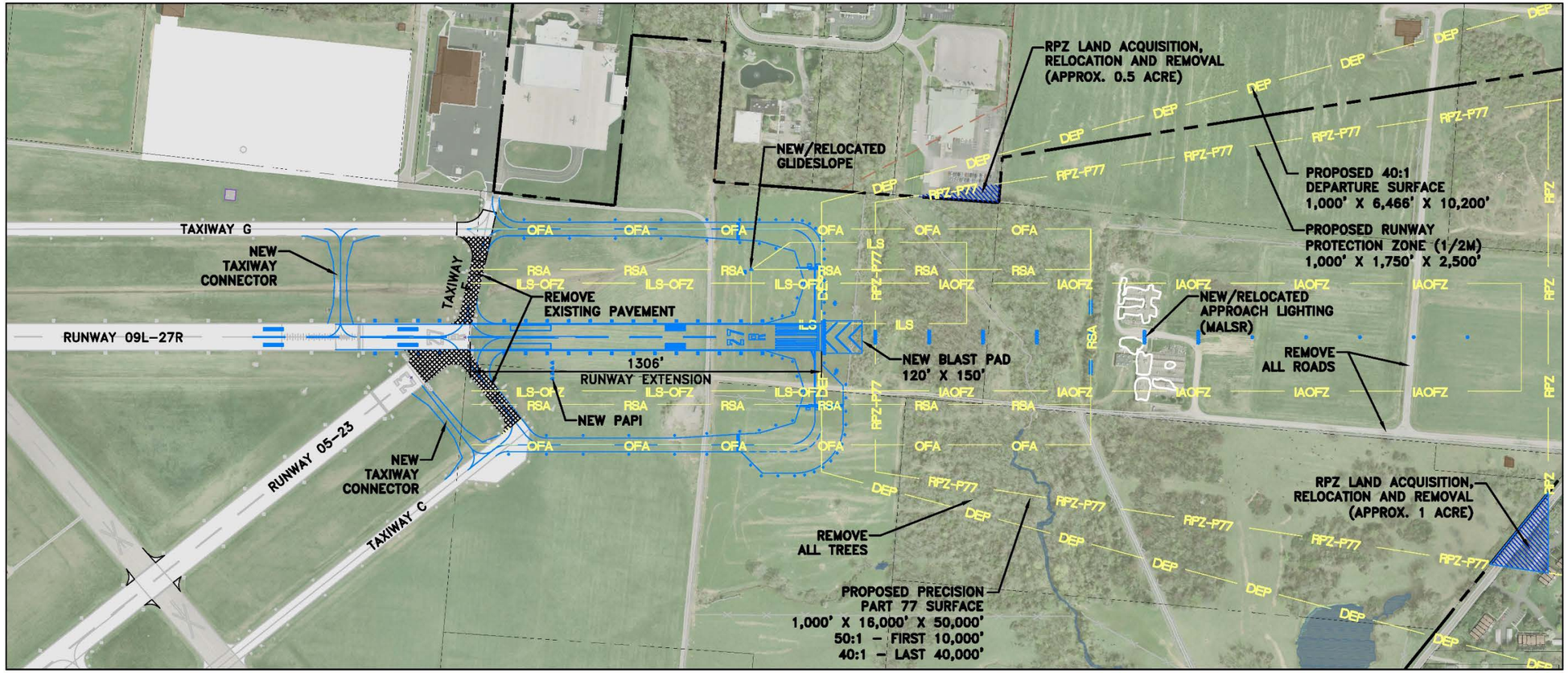
Exhibit 5.1.1-4

Source: Google Earth, 2018; Woolpert, Inc., 2018

This is the best alternative when rated against the evaluation criteria. It rates as +6 because it has the least impact on the environment and least cost while also creating the most operational efficiency and flexibility:

Alternative	Description	Mission	Safety	Operational Needs	Operational Efficiency & Flexibility	Constructability/ Physical Constraint	Cost	Environment	TOTAL SCORE
Alt. 4	Runway 9L 1,700 FT and Runway 27R 1,306 FT	+1	+1	+1	+1	+1	+1	-1	**+5**

Exhibit 5.1.1-5



LEGEND: LINETYPE

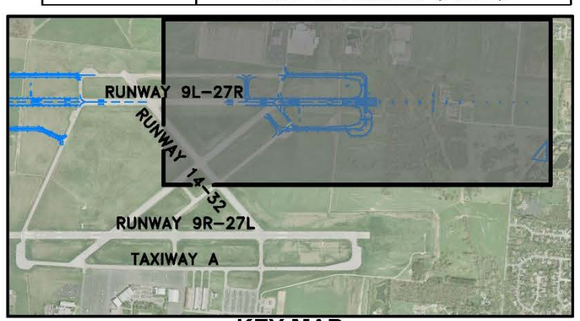
EXISTING	FACILITY
	AIRPORT PROPERTY LINE
	PARCEL LINE
	RUNWAY/TAXIWAY CENTERLINE
	EDGE OF PAVEMENT (AIRSIDE)
	EDGE OF PAVEMENT (PUBLIC)

LEGEND: LINETYPE

PROPOSED	FACILITY
RPZ	RUNWAY PROTECTION ZONE
P77	CFR PART 77 SURFACES
DEP	THRESHOLD SITING DEPARTURE SURFACES
RSA	RUNWAY SAFETY AREA
OFA	RUNWAY OBJECT FREE AREA
ILS	ILS CRITICAL AREA
ILS-OFZ	ILS CRITICAL AREA / OBSTACLE FREE ZONE
	EDGE OF PAVEMENT (AIRSIDE)

LEGEND: SYMBOLS

	FACILITY
	AIRFIELD PAVEMENT
	RELOCATED ROAD (PUBLIC)
	TAXIWAY CONNECTOR REMOVAL
	LAND ACQUISITION (ROAD RELOCATION)
	LAND ACQUISITION (RPZ PROTECTION)
	RUNWAY EDGE LIGHT (EX./PROP.)
	RUNWAY THRESHOLD LIGHT (EX./PROP.)
	REIL
	TAXIWAY EDGE LIGHT (EX./PROP.)
	PAPI/VASI
	GUIDANCE SIGN (EX./PROP.)
	WINDCONE



KEY MAP

N

MAGNETIC DECLINATION 2018 = 7° 5' W CHANGING BY 0° 3' W PER YEAR

SOURCE DOCUMENT IS NATIONAL GEOPHYSICAL DATA CENTER – NOAA SATELLITE AND INFORMATION CENTER.

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL

333 North Alabama St.
Suite 200
Indianapolis, IN 46204
317.299.7500
FAX: 317.291.5805

The Ohio State University Airport
DON SCOTT FIELD

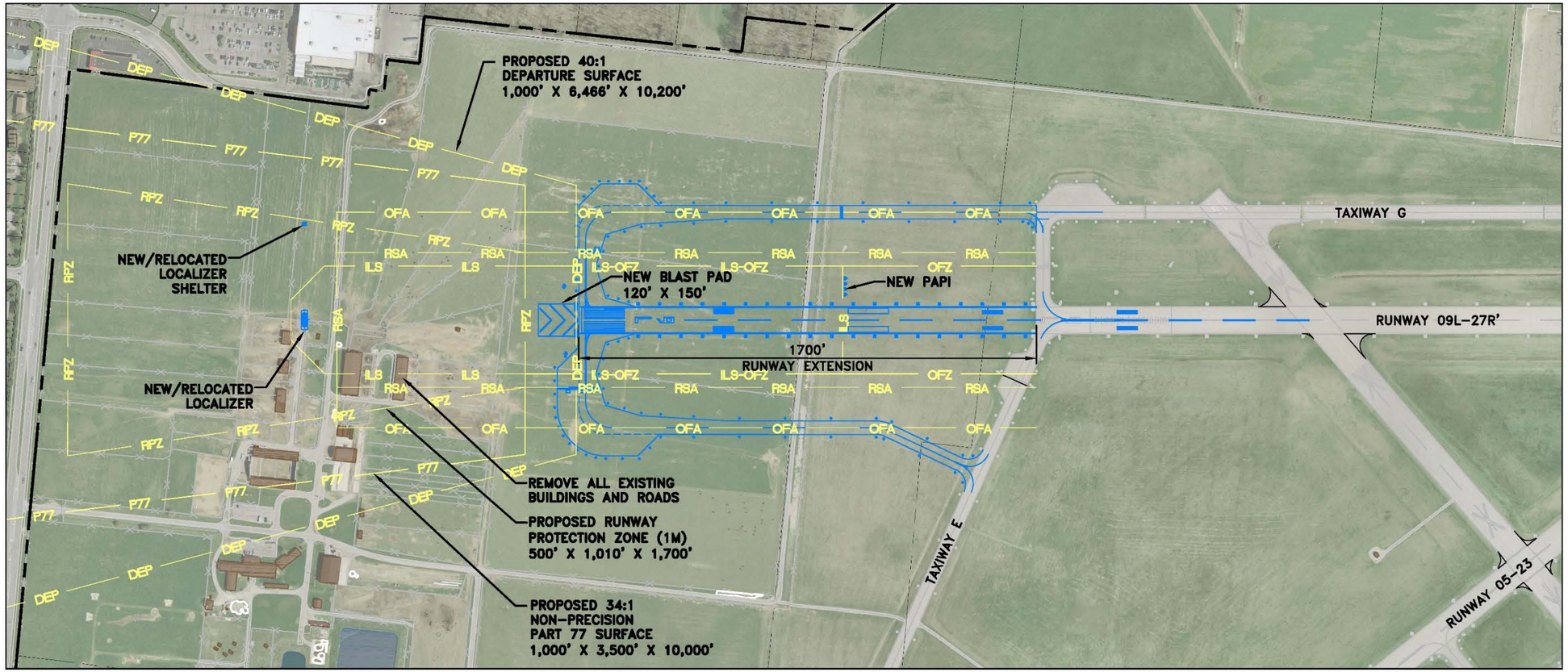
ALTERNATIVE 4 - EAST

OSU AIRPORT MASTER PLAN

THE OHIO STATE UNIVERSITY AIRPORT - DON SCOTT FIELD COLUMBUS, OHIO

PROJECT No: 76761
DATE: 08–22–2018
HORIZ. SCALE: 1" = 400'
VERT. SCALE: N/A

Exhibit 5.1.1-4 cont.



LEGEND: LINETYPE

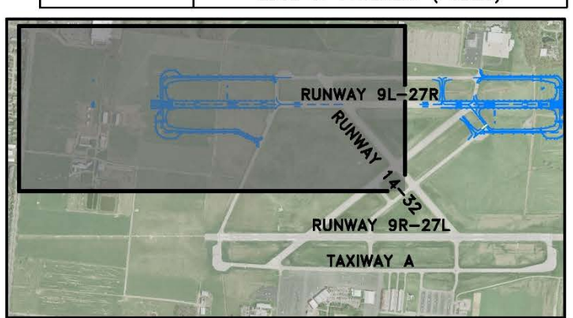
EXISTING	FACILITY
	AIRPORT PROPERTY LINE
	PARCEL LINE
	RUNWAY/TAXIWAY CENTERLINE
	EDGE OF PAVEMENT (AIRSIDE)
	EDGE OF PAVEMENT (PUBLIC)

LEGEND: LINETYPE

PROPOSED	FACILITY
RPZ	RUNWAY PROTECTION ZONE
P77	CFR PART 77 SURFACES
DEP	THRESHOLD SITING DEPARTURE SURFACES
RSA	RUNWAY SAFETY AREA
OFA	RUNWAY OBJECT FREE AREA
ILS	ILS CRITICAL AREA
ILS-OFZ	ILS CRITICAL AREA / OBSTACLE FREE ZONE
	EDGE OF PAVEMENT (AIRSIDE)

LEGEND: SYMBOLS

	FACILITY
	AIRFIELD PAVEMENT
	RELOCATED ROAD (PUBLIC)
	LAND ACQUISITION (ROAD RELOCATION)
	LAND ACQUISITION (RPZ PROTECTION)
	RUNWAY EDGE LIGHT (EX./PROP.)
	RUNWAY THRESHOLD LIGHT (EX./PROP.)
	REIL
	TAXIWAY EDGE LIGHT (EX./PROP.)
	PAPI/VASI
	GUIDANCE SIGN (EX./PROP.)
	WINDCONE



KEY MAP

N

MAGNETIC DECLINATION
2018 = 7° 5' W
CHANGING BY
0° 3' W PER YEAR

SOURCE DOCUMENT IS NATIONAL GEOPHYSICAL DATA CENTER – NOAA SATELLITE AND INFORMATION CENTER.

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL

333 North Alabama St.
Suite 200
Indianapolis, IN 46204
317.299.7500
FAX: 317.291.5805

The Ohio State University Airport
DON SCOTT FIELD

ALTERNATIVE 4 - WEST

OSU AIRPORT MASTER PLAN

THE OHIO STATE UNIVERSITY AIRPORT - DON SCOTT FIELD COLUMBUS, OHIO

PROJECT No: 76761
DATE: 08-22-2018
HORIZ. SCALE: 1" = 400'
VERT. SCALE: N/A

Conclusions

The scoring for each alternative as compared to the original criteria is shown in **Exhibit 5.1.1-6** below:

Exhibit 5.1.1-6: Runway Scoring Matrix

Alternative	Description	Mission	Safety	Operational Needs	Operational Efficiency & Flexibility	Constructability/ Physical constraint	Cost	Environment	TOTAL SCORE
Alt. 1	Extension to RWY 27L 1,000 feet	+1	+1	+1	-1	-1	-1	-1	**-1**
Alt. 2	Extend RW 9R 500 feet and RW 27L 500 feet	+1	+1	+1	-1	-1	-1	-1	**-1**
Alt. 3	Extend Runway 9R 1,000 feet	+1	+1	+1	-1	-1	-1	-1	**-1**
Alt. 4	Runway 9L 1,700 feet and Runway 27R 1,306 feet	+1	+1	+1	+1	+1	+1	-1	**+5**

Source: Woolpert, Inc., 2019

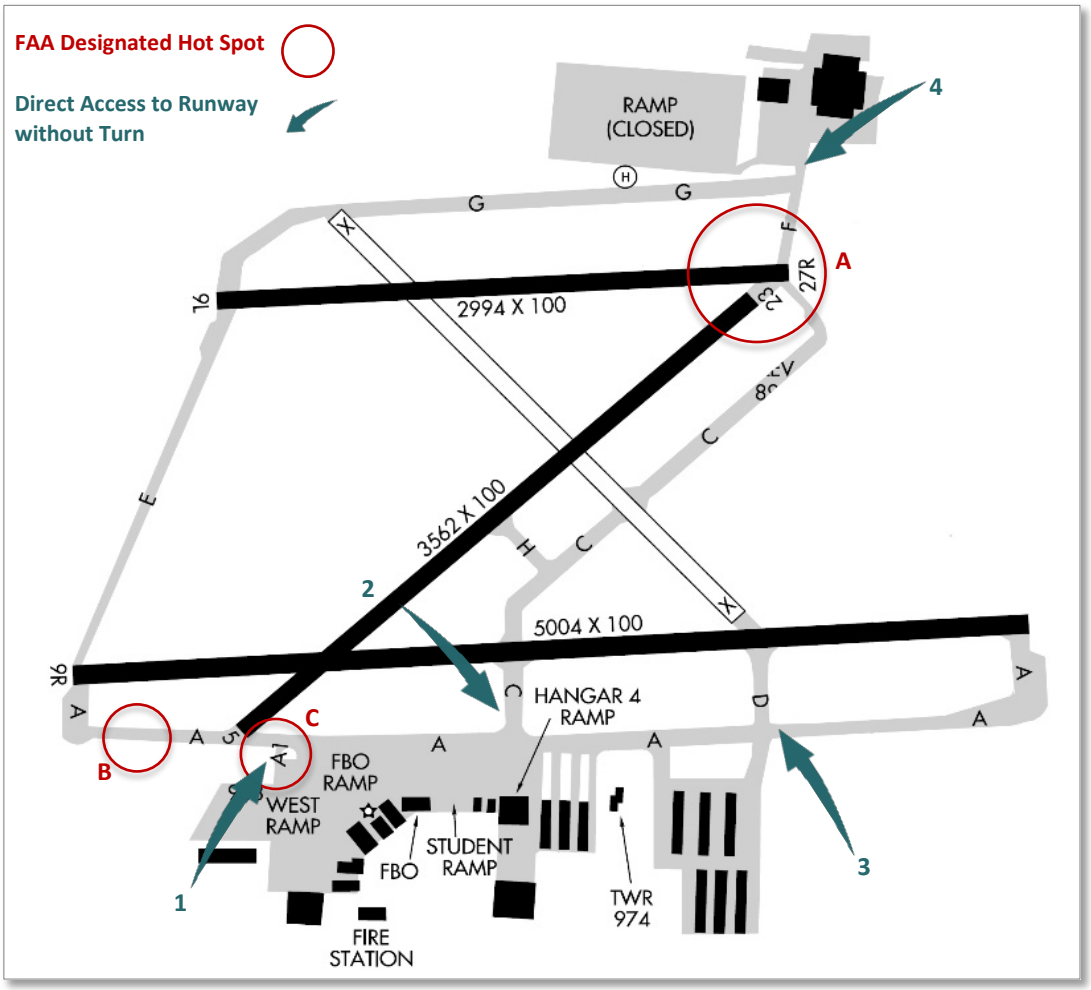
Extending the existing primary runway is not feasible due to the cost and impact to the local community, which is why the three alternatives that include the primary runway scored the lowest. The highest scoring alterative is Alternative 4, which includes extending the shorter parallel runway. Accordingly, Alternative 4 is the preferred alternative and substantiates the work done in the previous master plans that came to the same general conclusion. A noise analysis for the year 2037 was prepared for this extension and can be found in Appendix H. This analysis shows that the future 2037, FAA defined DNL noise contours remain predominantly within the airport boundary. When this project moves forward, an environmental analysis would be completed and would include additional noise contours at varying year intervals.

The width of the existing primary runway has not been discussed in this section even though it is currently wider than dictated by design standards for a C-II category of aircraft. However, keeping it at 100 feet in width is necessary and the reasons will be discussed in the taxiway section.

5.1.2 Taxiways

A number of taxiway configuration issues related to situational awareness and FAA Designated Hot Spots were noted in the facility requirements chapter: Hot Spot at Runways 23 and 27R intersection (labeled A in **Exhibit 5.1.2-1** below), Hot Spot at intersection of Taxiway A and Runway 5 (labeled B) and Hot Spot at the intersection of Taxiway A1 and Runway 5 (labeled C); and direct access issues associated with Taxiways A1 (labeled 1), C (labeled 2), D (labeled 3), and F (labeled 4). (See **Exhibit 5.1.2-1**.)

Exhibit 5.1.2-1: Situational Awareness and Taxiways

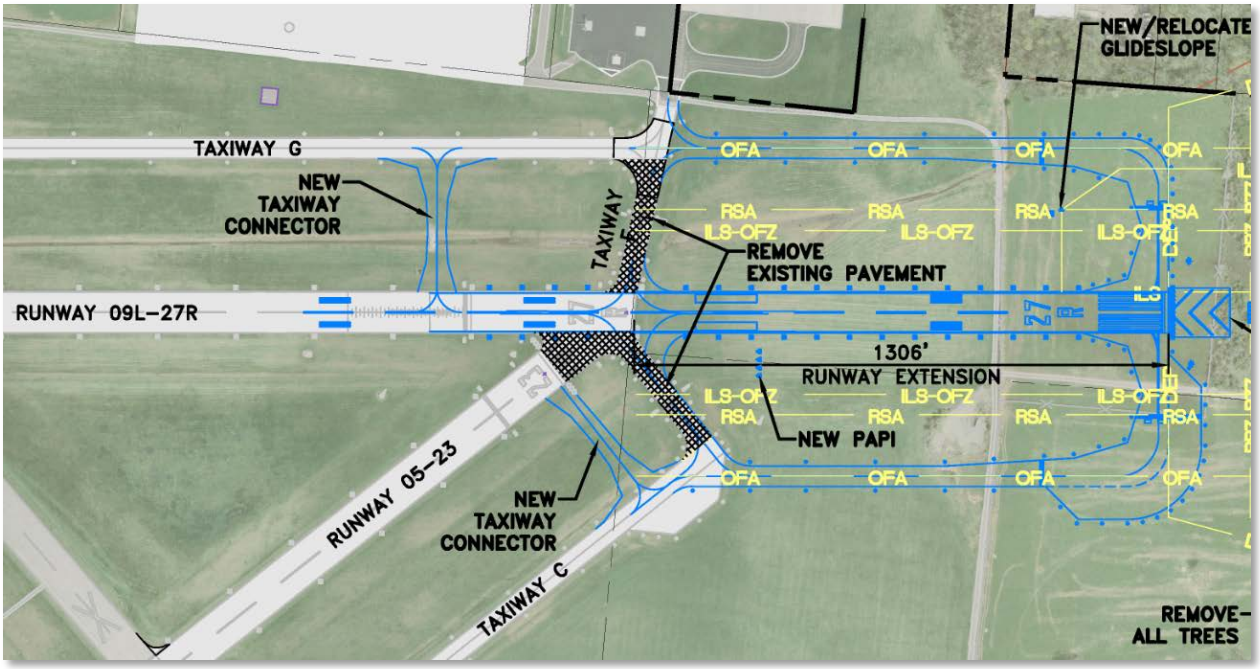


Source: FAA Airport Diagram, 2017; Woolpert, 2017.

The three hotspots on the airport are all associated with the crosswind runway. One alternative to fix Hot Spot A at Runways 23 and 27R intersection is accomplished with the extension of the end of Runway 27R as discussed in the previous section. With this extension, pavement is removed at the end of Runway 23R along with the Taxiway C connector to eliminate the intersection all together. (See **Exhibit 5.1.2-2**.) This exhibit also shows how direct access #4 (from Taxiway F) will be corrected, which simply includes shifting Taxiway F farther west. This option increases taxi time to the crosswind runway from the north and does nothing for the other two hotspots. Additionally, the RSA to Runway 23 would not be clear from Runway 9L-27R. Since the runways would no longer intersect, FAA standards

would require Runway 23 to be shortened until all the required surfaces were clear. This would also require relocation of the threshold lighting.

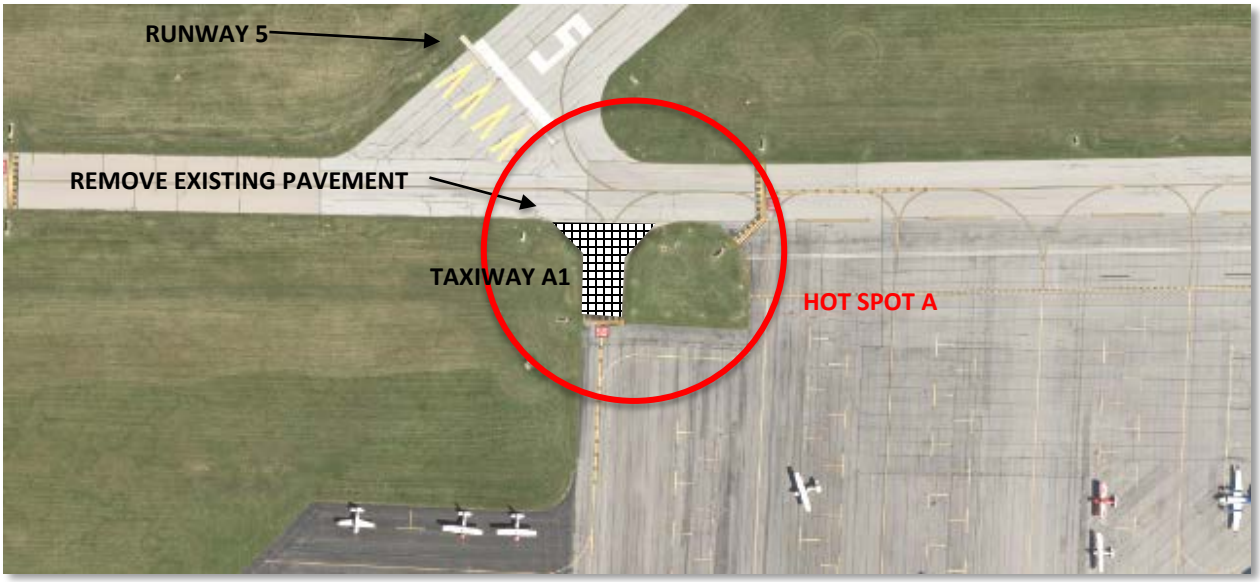
Exhibit 5.1.2-2: Alternative 1 - Eliminate Intersection of Runways 23 and 27R with Runway Extension (Eliminate Direct Access #4 and Hot Spot A)



Source: Woolpert, 2018

Hot Spot C at the intersection of Taxiway A1 and Runway 5 can be improved by removing Taxiway A1 since there is another access to Taxiway A from the ramp just 150 to the east of Taxiway A1. (See **Exhibit 5.1.2-3: Alternative 2**.)

Exhibit 5.1.2-3: Alternative 2 - Eliminate Taxiway A1 (Eliminate Direct Assess #1 and improve Hot Spot C)

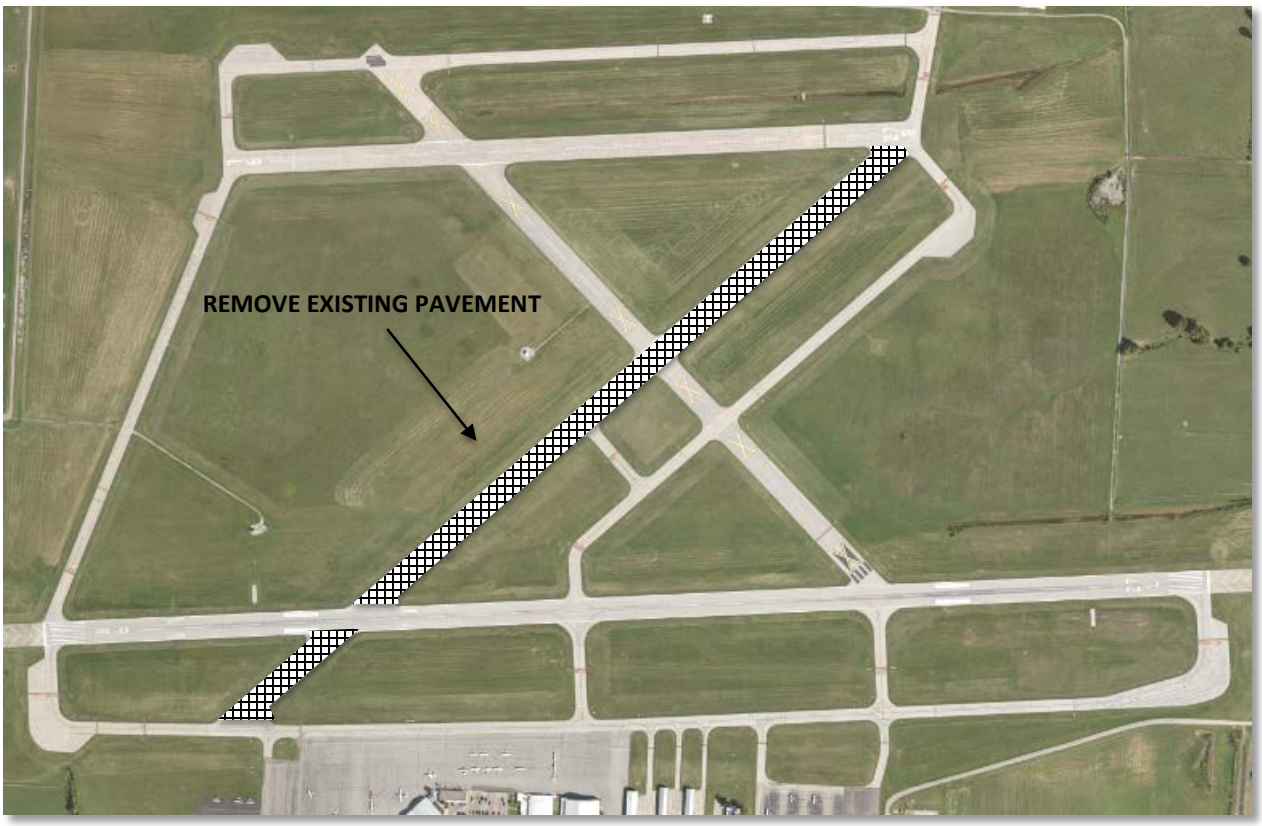


Source: Woolpert, 2018

Taxiway A1 also provides direct access from the west apron to Runway 5, so eliminating it would also help mitigate Hotspot C. While this taxiway location is temporarily being used for aircraft deicing, a permanent deicing facility is being proposed adjacent to Taxiway A between connectors D and A. Removing this connector improves the situational awareness in this location, but it likely does not totally eliminate the potential for runway incursions because the relative closeness of the next available access from the ramp to the runway being less than 150 feet to the east.

Another alternative to fix direct access #1 and Hot Spots A, B, and C is to eliminate the crosswind runway as shown in **Exhibit 5.1.2-4: Alternative 3** below.

Exhibit 5.1.2-4: Alternative 3 - Eliminate Crosswind Runway (Eliminate Hot Spots 1, 2, and 3 and Direct Access #1)



Source: Woolpert, 2018

The facility requirements section reviewed the crosswind coverage at the airport and shows that by FAA standards, the parallel runway configurations do not provide 95 percent wind coverage for the airport, so a crosswind is desirable. Consultation with the Air Traffic Control Tower (ATCT) chief revealed the belief that this runway is not heavily used. According to a sample of 40 percent of the annual operations for KOSU obtained from Port Columbus radar data, this runway was used only about four percent of the time. This runway is likely underutilized for two reasons. One reason is that OSU flight training policy prevents students from flying altogether in high winds. The other reason is the existing width of the parallel runways. With each being 100 feet wide, they exceed the minimum design standard for B-I (small aircraft) by 40 feet. This extra 40 feet of pavement provides a larger margin for error while landing in a crosswind than would be available on a 60-foot wide runway. As noted in FAA AC 150-5300-13A, when 95 percent wind coverage is not achieved by the primary runway and crosswind runways are impractical due to terrain constraints, upgrading the airport to the next higher RDC is an acceptable mitigation method. This is the

situation that exists by default at KOSU. Because the primary runways are so wide, they are in effect providing a higher RDC for the smaller aircraft to operate on in higher crosswind conditions. Therefore, if the crosswind is eliminated, the primary runway should be maintained at 100 feet in width.

With the low usage of the crosswind runway, its closure seems to offer more advantages than disadvantages. Closing this runway would correct three Hot Spots and one direct access safety issues. It would eliminate the amount of pavement and lighting KOSU needs to maintain, thus reducing operating costs. Additionally, it would reduce the amount of snow removal needed in the winter. Finding a better fix to Hotspots B and C would be difficult without extending Runway 5, which would be very expensive due to existing infrastructure in the area. Additionally, Runway 23 would have to be shortened so the RSAs were clear. Finally, when the pavement is removed, it will remove impervious surface and restore pervious surfacing to allow for natural drainage.

Direct Access C can be fixed by either removing a section of the pavement or painting a green island on the pavement. (See **Exhibit 5.2-5: Alternative 4.**)

Exhibit 5.1.2-5: Alternative 4 - Shift T-hangar Taxilane connector to Taxiway D West and Remove or Paint Pavement south of Taxiway C (Eliminate Direct Access #2 and #3)

Source: Woolpert, 2018

Conclusions

The scoring for each alternative is shown in **Exhibit 5.1.1-6** below:

Exhibit 5.1.1-6: Taxiway Scoring Matrix

Alternative	Description	Mission	Safety	Operational Needs	Operational Efficiency & Flexibility	Constructability/ Physical constraint	Cost	Environment	TOTAL SCORE
Alt. 1	Eliminate Interesting of Runways 23 and 27R with Runway Extension (Eliminate Direct Access #4 and Hot Spot A)	+1	0	0	-1	+1	-1	0	**0**
Alt. 2	Eliminate Taxiway A1 (Eliminate Direct Assess #1 and improve Hot Spot C)	+1	0	+1	0	+1	-1	0	**2**
Alt. 3	Eliminate Crosswind Runway (Eliminate Hot Spots 1, 2, and 3 and Direct Access #1)	+1	+1	0	0	+1	+1	+1	**+5**
Alt. 4	Shift T-Hangar Taxilane to Taxiway D West and Remove or Paint Pavement south of Taxiway C	+1	+1	+1	+1	+1	-1	0	**+4**

Source: Woolpert, Inc., 2019

All the alternatives improve safety to some degree. Alternatives 1 and 2 improve the hotspots but do not eliminate them so they are scored neutral. Alternative 3 eliminates them but does so at the cost of the crosswind runway. However, with its low utilization and the other two 100-foot wide runways, this alternative scores positive in safety. Alternative 4 is independent of the other 3.

Alternative 3 is the preferred alternative to fixing all the hotspots for several reasons. It can be implemented at any time and is not dependent on any other project. It opens up additional room for development that will bring income from lease rates and charges. Additionally, it significantly reduces the pavement that has to be maintained at the airport, which in turn reduces the operational cost for the facility. It costs little to implement initially. Finally, it will eventually eliminate impervious surface and as a result help drainage at a time when pavement is removed, which would be recommend with another large project to gain economy of scale and other efficiencies. **However, keeping**

the existing runways at 100 feet in width is necessary to help mitigate the loss of the crosswind runway for small aircraft by providing a wider surface during difficult crosswind landings.

5.1.3 Summary

The recommended alternative for a 6,000-foot runway is to extend Runway 9L 1700 feet and Runway 27R 1306 feet (Alternative 4 under Section 5.1.1). This has the least impact on the community and is the least expensive since no homes or roads need to be acquired or relocated. It maximizes the existing footprint occupied by KOSU and maintains the primary runway in its east-west configuration, which provides 90 percent wind coverage. Runway 9L-27R should be maintained at 100 feet in width because the recommended alternative to fix the airport Hot Spots is to remove the Runway 5-23 (Exhibit 5.1.2-4). The additional 40 feet in width above requirements provides a greater safety of margin for crosswind landings and will mitigate some of the loss in utility from removing the Runway 5-23 by providing a wider surface.

The recommended alternatives to fix the direct access issues associated with the taxiway connectors are to shift taxiways F and D west and to either remove pavement or paint it green south of Taxiway D (Exhibit 5.1.2-2 and Exhibit 5.1.2-5).

5.2 Terminal Area

In the Terminal Area alternatives, the needs of the OSU flight school should take precedence because the mission for the airport is for serving learning, discovery, and engagement. With the recent addition of a new terminal building with classrooms for flight education, the remaining flight school need is a hangar to house the OSU training fleet. Accordingly, the flight school hangar is placed first in the following four alternatives for the terminal area, and then the needs for additional corporate hangars, T-hangars, apron, etc. are laid out from there.

5.2.1 Alternatives

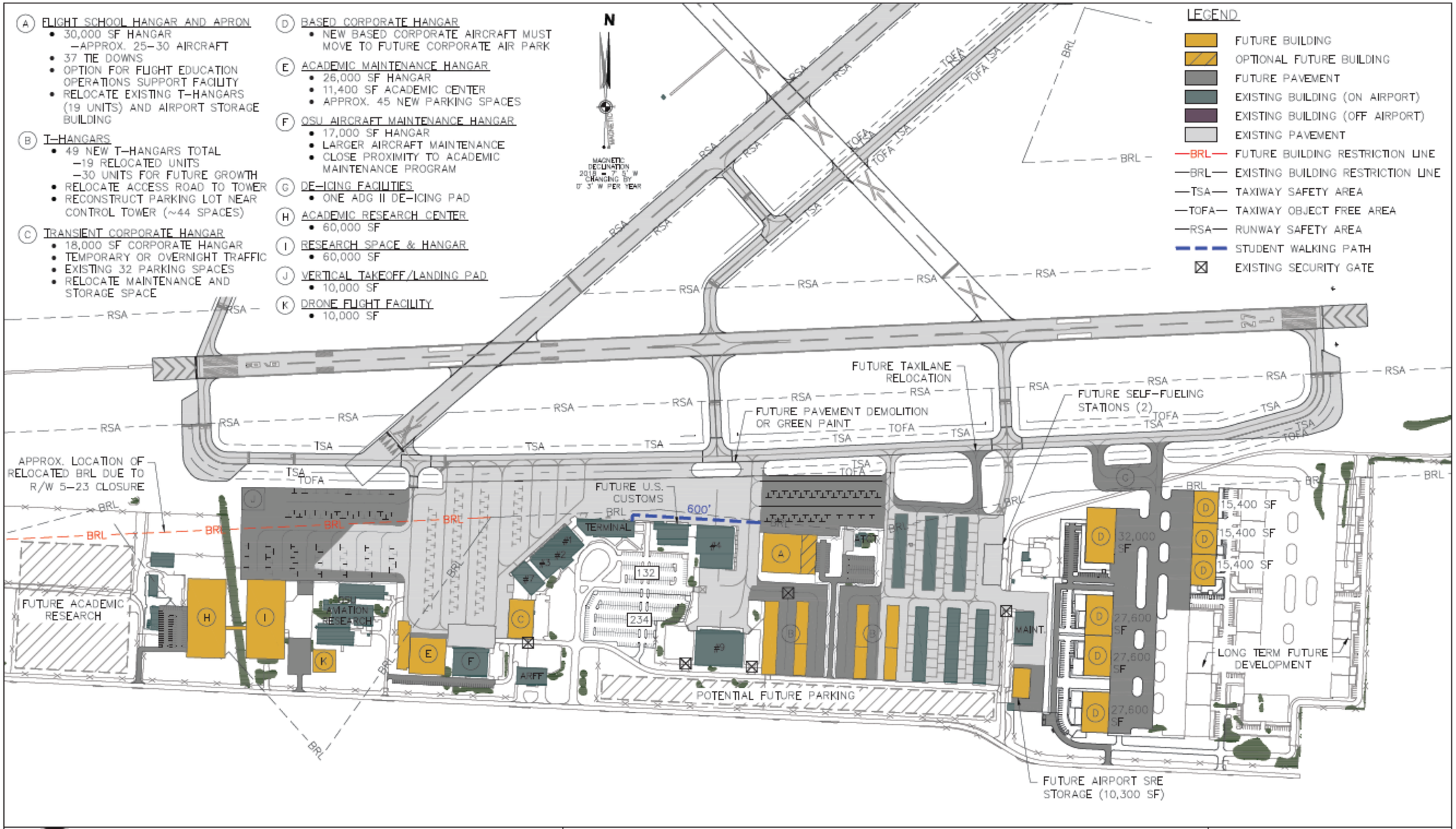
<u>Alterative 1</u>

Alternative 1 (see **Exhibit 5.2.1-1**) locates the Flight School Hangar just west of the Air Traffic Control Tower, keeps all the T-hangars together, and establishes a corporate hangar campus. This alternative adds more apron and focuses the Flight School aircraft in one area, which frees up apron space/area near and west of the terminal for other transient and based aircraft. A transient corporate hangar is added to the west of the apron area along with an academic research hangar and in-door drone flight facility. Finally, a corporate campus is added to the east side.

Alternative 1 has the following pros and cons:

PROS	CONS
• Keeps student in visual contact with the terminal and the ATCT when walking to flight school aircraft staging area	• Student walking across transient apron
• Establishes a corporate campus for all future corporate hangars	• Neither west apron expansion nor transient corporate hangar can be built until crosswind runway is closed
• No impact to the drainage swale	• Requires relocation of existing users in 2 T-hangar buildings
• Flight school hangar has expansion potential and apron provides parking flexibility (nested and pull-through)	• No based corporate hangar space available until corporate campus is initiated
• Co-location of T-hangars	• Slightly short on T-hangars
• Frees up existing apron for transient and other based aircraft as soon as Flight School Hangar is built	
• Concentrates students in one area and separates them from most jets to minimize the effects of jet blast	
• Flexible vehicular parking for T-hangar and Flight School use	
• Provides ease of Flight School aircraft maneuvering and limited taxi distance to and from the runways	
• VTOL availability if needed	
• Indoor Drone facility space if needed	

Exhibit 5.2.1-1: Alterative 1



BRANDSTETTER CARROLL INC
ARCHITECTS . ENGINEERS . PLANNERS
Lexington · Cincinnati · Cleveland · Dallas

WOOLPERT
ARCHITECTURE | ENGINEERING | ENVIRONMENTAL

7635 Interactive Way
Suite 100
Indianapolis, IN 46278
317.299.7500
FAX: 317.291.5805

TERMINAL AREA - ALTERNATIVE 1

OSU AIRPORT MASTER PLAN

THE OHIO STATE UNIVERSITY AIRPORT - DON SCOTT FIELD COLUMBUS, OHIO

The Ohio State University Airport
DON SCOTT FIELD

INTENTIONALLY LEFT BLANK

The biggest advantage to this alternative is that the Flight School is the shortest distance from the new terminal and staff can maintain visual contact with students as thee walk to the aircraft staging area. **Exhibit 5.2.1-2** shows the view from the Flight School Administrative office to the Alternative 1 location.

Exhibit 5.2.1-2

Source: Woolpert, 2018

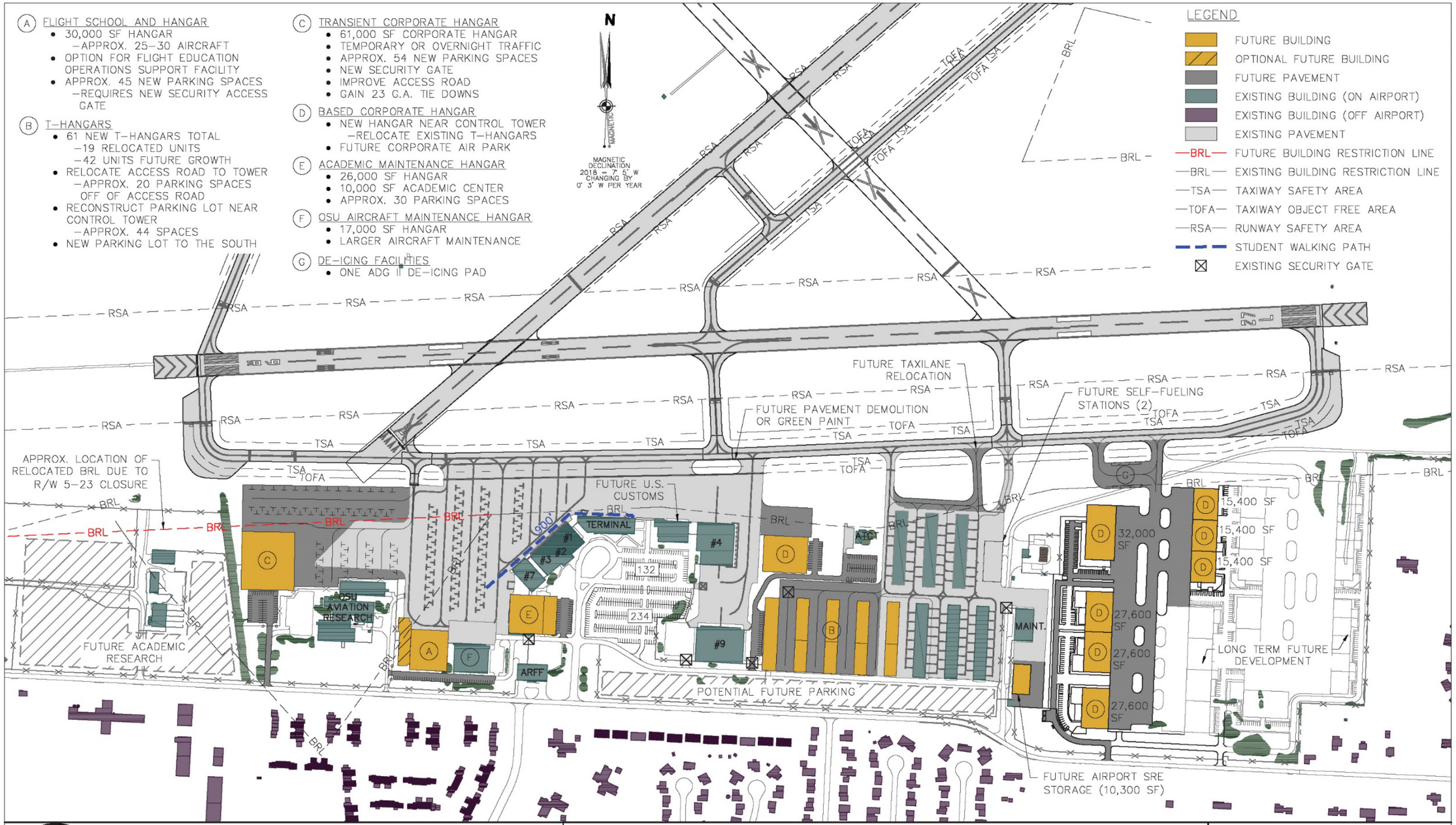
<u>Alterative 2</u>

Alternative 2 (see **Exhibit 5.2.1-3**) locates the Flight School Hangar on the south side of the existing apron just north of Case Road. This increases the walking distance for students to the aircraft staging area by approximately 300 feet from Alternative 1, and, unfortunately blocks the line-of-sight from the flight school to the student during that walk. This alternative adds a transient corporate hangar and an academic maintenance hangar. A corporate hangar can be added west of the ATCT and a corporate campus on the east side like Alternative 1. Alternative 2 has the following pros and cons:

PROS	CONS
• Allows for 1 based corporate hangar without infrastructure needs of corporate campus	• Student walking path across apron; lose sight of student from flight school
• No impact to drainage swale	• Immediate need for apron space unsatisfied as neither apron nor transient corporate hangar can be built before crosswind is closed
• Flight school hangar has expansion potential	• Requires relocation of existing users in 2 T-hangar buildings
• Co-location of T-hangars	• Slightly Short on T-hangars
• Co-location of academic uses	• Students mixing with all other based and transient users on existing apron
	• Corporate hangar vehicular parking not open to T-hangar users
	• Creates high traffic area in congested space
	• Flight School aircraft staging are not as flexible on apron
	• Leaves prime land with airside access unused near ATCT

INTENTIONALLY LEFT BLANK

Exhibit 5.2.1-3: Alterative 2



BRANDSTETTER CARROLL INC
ARCHITECTS . ENGINEERS . PLANNERS
Lexington · Cincinnati · Cleveland · Dallas

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL

7635 Interactive Way
Suite 100
Indianapolis, IN 46278
317.299.7500
FAX: 317.291.5805

TERMINAL AREA - ALTERNATIVE 2

OSU AIRPORT MASTER PLAN

THE OHIO STATE UNIVERSITY AIRPORT - DON SCOTT FIELD COLUMBUS, OHIO

The Ohio State University Airport
DON SCOTT FIELD

INTENTIONALLY LEFT BLANK

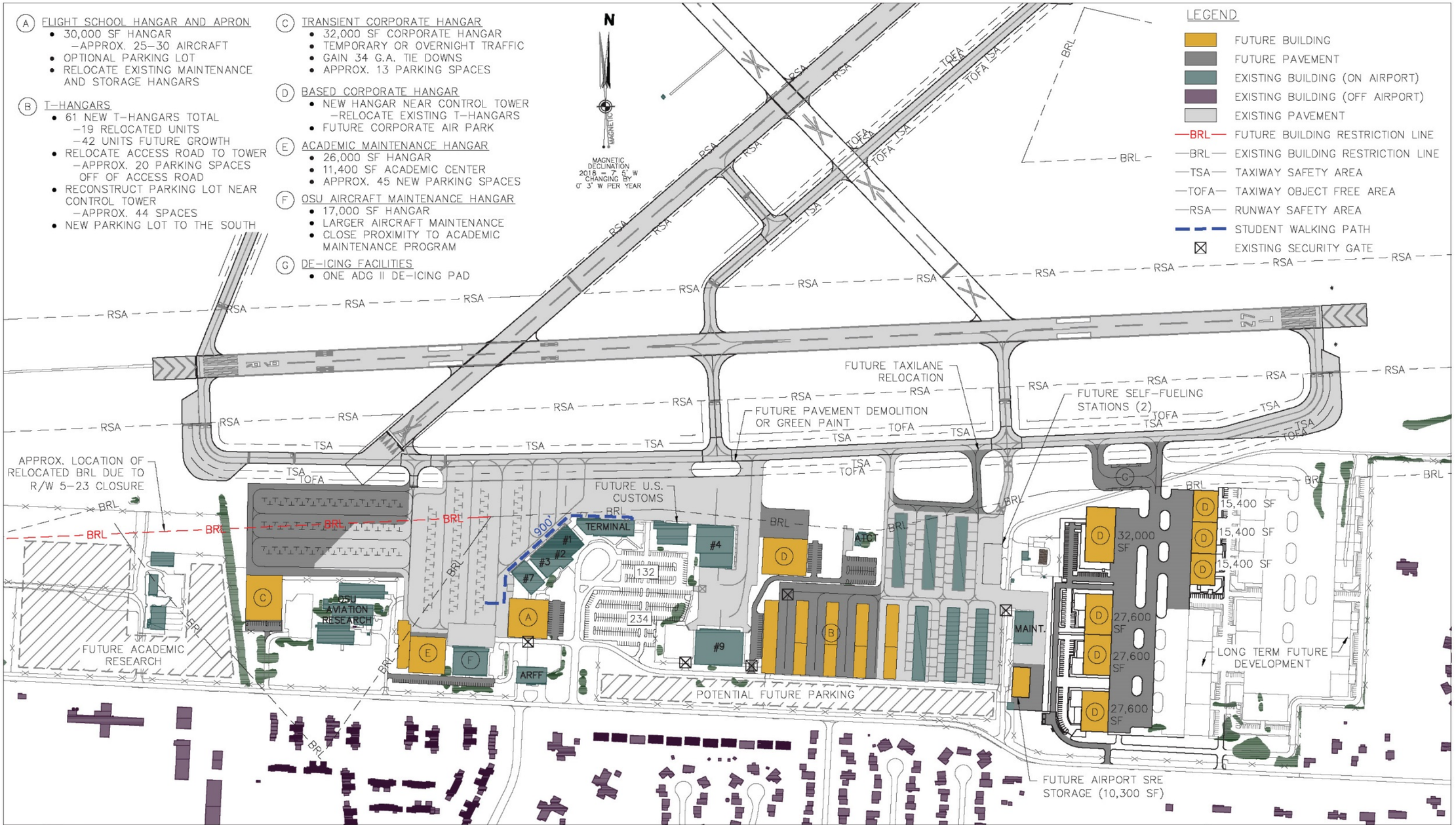
Alterative 3

Alternative 3 (see **Exhibit 5.2.1-4**) locates the Flight School Hangar on the south side of the existing apron just north of the Fire Station. This increases the walking distance for students to the aircraft staging area by approximately 300 feet from Alternative 1, and, unfortunately also blocks the line-of-sight from the flight school to the student during that walk. This alternative adds a transient corporate hangar and academic maintenance hangar on the west side. A based corporate hangar is added same as Alternative 2 and a corporate campus on the east side the same as the previous two alternatives. Alternative 3 has the following pros and cons:

PROS	CONS
• Co-location of T-hangars	• Student walking path across apron; lose sight of student from flight school
• Flight school hangar located next to its maintenance hangar	• Requires relocation of existing users in 2 T-hangar buildings
• Co-location of academic uses	• Neither apron nor transient corporate hangar can be built until crosswind runway is closed or corporate campus initiated
• Based corporate hangar can be added before corporate campus is established	• Slightly Short on T-hangars
• No impact of drainage swale	• Students mixing with all other based and transient users on existing apron
	• Corporate hangar vehicular parking not open to T-hangar users
	• Creates high traffic area in congested space
	• Flight School aircraft staging area not as flexible on apron
	• Leaves prime land with airside access unused near ATCT

INTENTIONALLY LEFT BLANK

Exhibit 5.2.1-4: Alterative 3



BRANDSTETTER CARROLL INC
ARCHITECTS . ENGINEERS . PLANNERS
Lexington · Cincinnati · Cleveland · Dallas

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL

7635 Interactive Way
Suite 100
Indianapolis, IN 46278
317.299.7500
FAX: 317.291.5805

TERMINAL AREA - ALTERNATIVE 3

OSU AIRPORT MASTER PLAN

THE OHIO STATE UNIVERSITY AIRPORT - DON SCOTT FIELD COLUMBUS, OHIO

The Ohio State University Airport
DON SCOTT FIELD

INTENTIONALLY LEFT BLANK

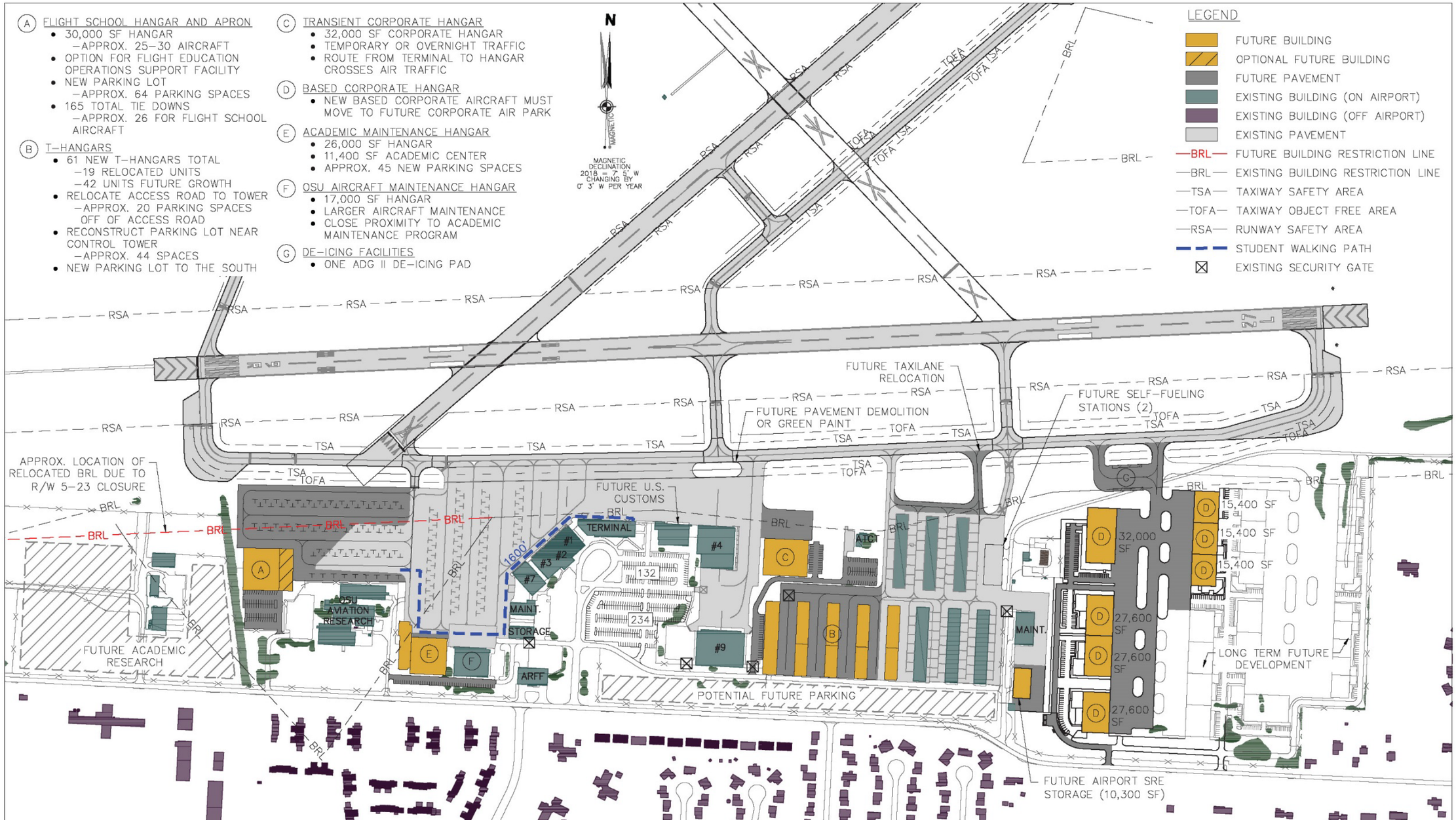
Alterative 4

Alternative 4 (see **Exhibit 5.2.1-5**) locates the Flight School Hangar on an expanded apron west of the existing apron. This increases the walking distance for students to the aircraft staging area to 1,600 feet and also blocks the line-of-sight to the students during that walk. An academic maintenance hangar is added to the west side, a transient corporate hangar is added just west of the ATCT, and a corporate campus is added to the east side like the other 3 alternatives. Alternative 4 has the following pros and cons:

PROS	CONS
• Co-location of T-hangars	• Longest walking path for students, which traverses entire apron; lose sight of student from flight school
• Co-location of maintenance hangars	• Neither apron nor Flight School hangar can be built before crosswind is closed
• Co-location of academic uses	• Requires relocation of existing users in 2 T-hangar buildings
• No impact of drainage swale	• Slightly short on T-hangars
• Allows for transient corporate hangar without infrastructure needs of corporate campus	• Leaves prime land with airside access unused near ATCT
• Flight school hangar has expansion potential and apron has flexibility in parking (nested and pull-through)	
• Ample parking for apron	
• Frees up existing apron for transient and other based aircraft as soon as Flight School Hangar is built	
• Removes congestion from existing apron	

INTENTIONALLY LEFT BLANK

Exhibit 5.2.1-5: Alterative 4



BRANDSTETTER CARROLL INC
ARCHITECTS . ENGINEERS . PLANNERS
Lexington · Cincinnati · Cleveland · Dallas

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL

7635 Interactive Way
Suite 100
Indianapolis, IN 46278
317.299.7500
FAX: 317.291.5805

TERMINAL AREA - ALTERNATIVE 4

OSU AIRPORT MASTER PLAN

THE OHIO STATE UNIVERSITY AIRPORT - DON SCOTT FIELD COLUMBUS, OHIO

The Ohio State University Airport
DON SCOTT FIELD

INTENTIONALLY LEFT BLANK

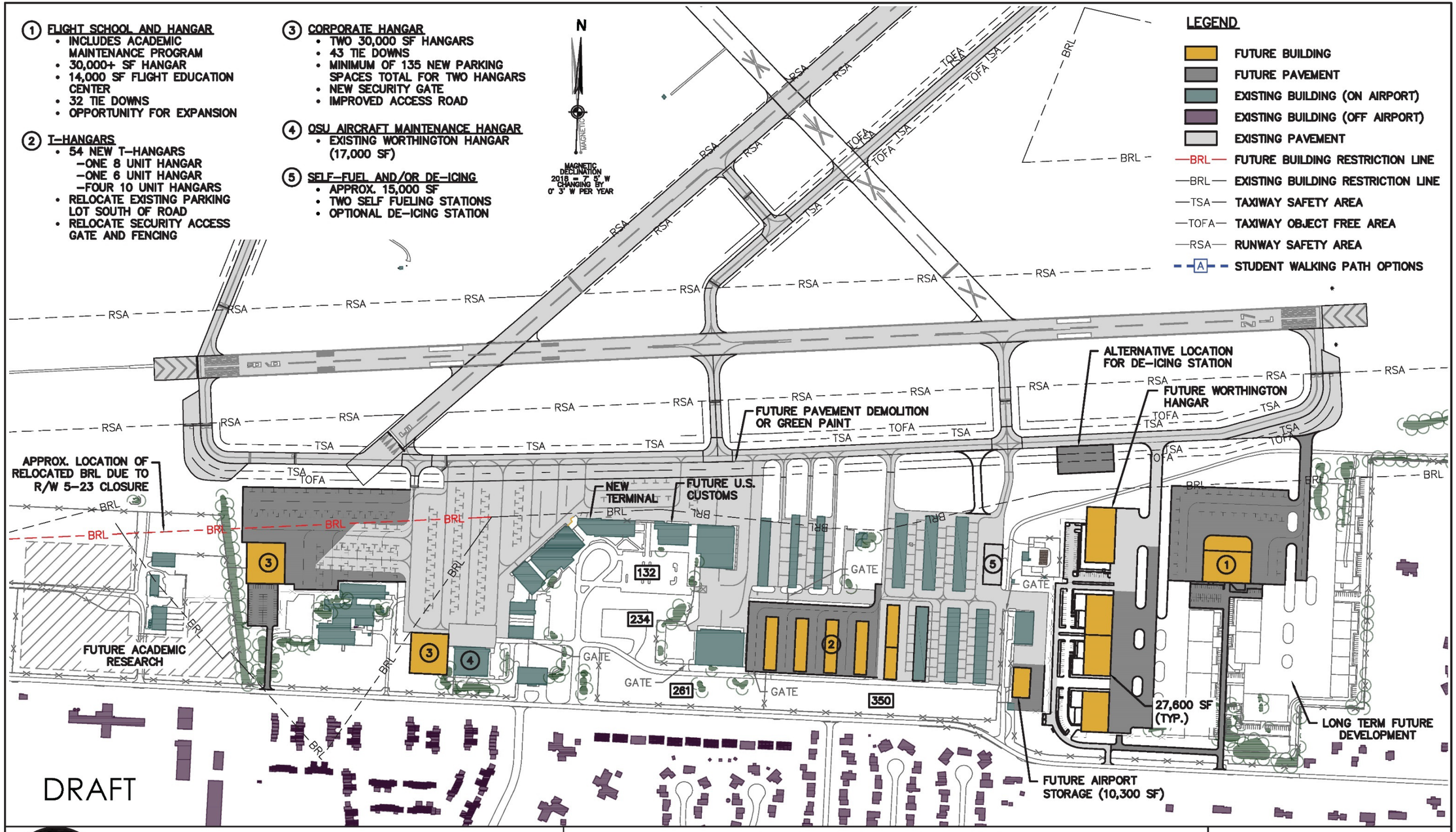
Alterative 5

Alternative 5 (see **Exhibit 5.2.1-6**) locates the Flight School Hangar in the future corporate campus. This alternative would require moving all the academic flight school facilities to this side to work. Otherwise, the students would need to be bused from the existing flight school facilities that were just built with the new terminal to the corporate campus. Because of these issues, this alternative was quickly abandoned for this reason. Alternative 5 has the following pros and cons:

PROS	CONS
• Potential to be impetus for getting 50-acre site started as funding for students	• Need to move classrooms to this site for it to work
• Co-location of T-hangars	• Separation of academic uses
• Co-location of maintenance hangars	• Apron cannot be built before crosswind is closed
• Provides ease of Flight School aircraft maneuvering and limited taxi distance to and from the runways	• No academic maintenance hangar unless switched out for one of proposed corporate hangars. (If switched, no corporate hangar can be built until corporate campus initiated or crosswind closed
• Abundant T-hangar parking	• No general parking for west side of apron
• No impact of drainage swale	• New corporate hangar in the middle of academic area
• Concentrates Flight School Aircraft in one area and separates them from most jets to minimize the effects of jet blast	• General parking has access to AOA without additional gates
• Flight School aircraft fueling is done away from most other aircraft which provides for better efficiency and ease due to the frequency with which it is done.	• No relocation of existing T-hangar users
	• Difficult to get buy-in since new terminal has now been built to house Flight School academic facilities
	• Access from ramp to taxiway would need modification of standard

INTENTIONALLY LEFT BLANK

Exhibit 5.2.1-6: Alterative 5



BRANDSTETTER CARROLL INC
ARCHITECTS . ENGINEERS . PLANNERS
Lexington · Cincinnati · Cleveland · Dallas

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL

7635 Interactive Way
Suite 100
Indianapolis, IN 46278
317.299.7500
FAX: 317.291.5805

TERMINAL AREA - ALTERNATIVE 5

OSU AIRPORT MASTER PLAN

THE OHIO STATE UNIVERSITY AIRPORT - DON SCOTT FIELD COLUMBUS, OHIO

The Ohio State University Airport
DON SCOTT FIELD

INTENTIONALLY LEFT BLANK

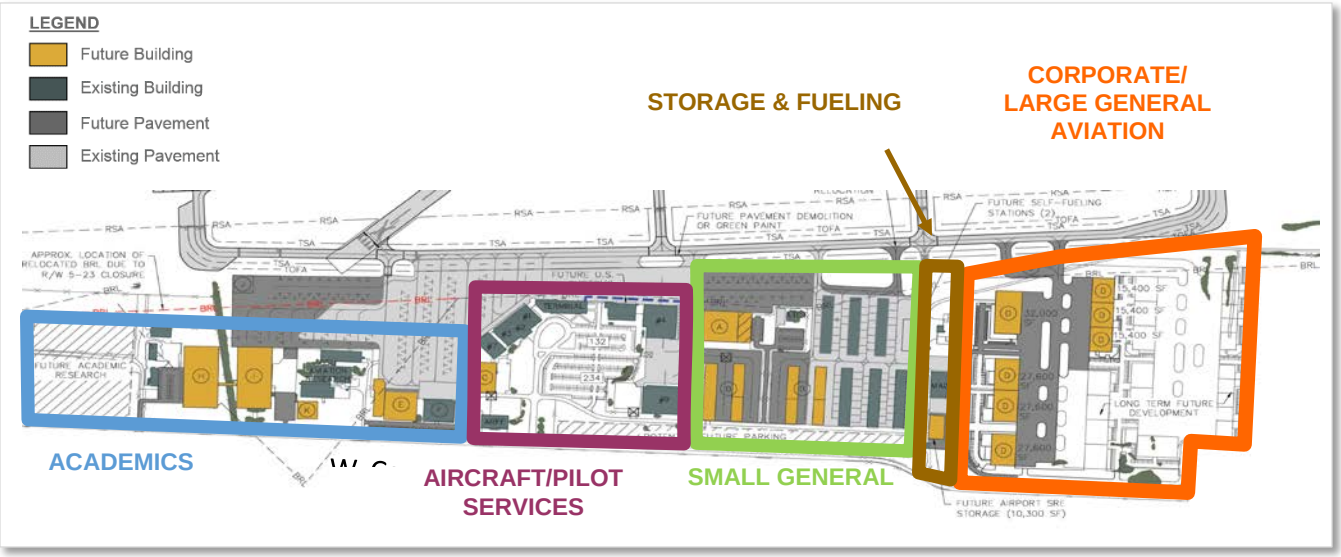
5.2.2 Terminal Area Alternatives Summary

The recommended alterative for the terminal area is Alternative 1. With KOSU's mission of serving learning, discovery, and engagement, this layout is the best as it relates to the Flight School students because it is the shortest distance from the new terminal. In this location, Flight School staff can maintain visual contact with students as they walk to the aircraft staging area. Performance management and coaching of students can be instituted should they begin to deviate from the prescribed route to the aircraft staging area, which can eliminate bad habits from forming before they take hold.

With this alternative, hangar 8 (building 0256) will get reused as the OSU maintenance hangar when the current tenant relocates to the corporate campus. Hangars 1, 2, and 3 currently house an aircraft parts department, a paint booth, a restaurant, and several aircraft. Because Final Alternative #1 is slightly short on T-hangars for the forecasted single and multi-engine aircraft, hangars 1 and 3 will continue to be used for aircraft storage while hangar 2 will also provide storage for line service equipment because of its proximity to the line for servicing aircraft.

This alterative provides for the best co-location of like services as shown below in **Exhibit 5.2.2**.

Exhibit 5.2.2: Preferred Terminal Area Alterative



Source: Woolpert, 2019.

5.3 Other

5.3.1 Compass Calibration Pad

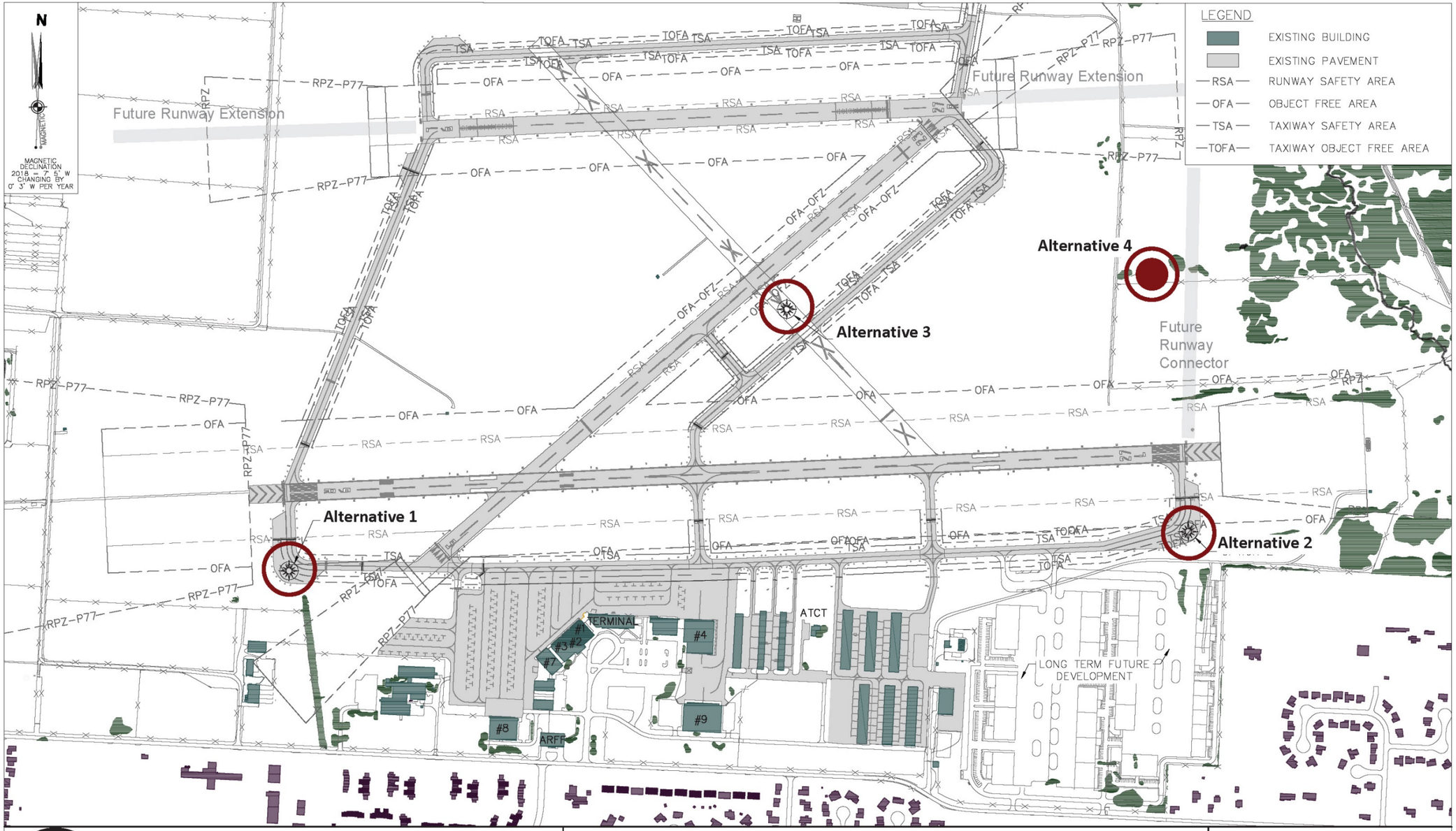
According to FAA Advisory Circular (AC) 150/5300-13A, three main steps are required for the construction of a compass calibration pad. First, it requires the selection of a site through visual application of appropriate criteria, then a preliminary magnetic survey of the site prior to construction, and finally a magnetic survey of the compass pad after construction. This analysis is based on visual application of the design criteria; a magnetic survey is required at the time of pad construction.

The main apron at KOSU would be the preferred location for a magnetic compass because the majority of aircraft traffic traverses this area. However, AC 150/5300-13A states that the center of the pad should be at least:

- 600 ft. from magnetic objects such as parking lots, busy roads, railroad tracks, or electrical lines.
- 300 ft. from buildings, aircraft arresting gear, fuel lines, and electrical or communication cable conduit.
- 150 ft. from edge light bases, airfield signs, ducts, and drainage grates when they contain iron, steel, or ferrous material.

These parameters limit potential site selection for the calibration pad. The presence of hangars surrounding the main terminal area prevents most of it from being a suitable site. **Exhibit 5.3.1-1** illustrates three potential locations that are away from large metal buildings. Alternatives 1 and 2 offer better convenience, but do not provide the recommended 150-foot separation from light bases. Alternative 3 is less convenient but meets most of the site calibration pad requirements, and is therefore the preferred option. A magnetic survey must be conducted to determine if any of these are acceptable before the compass is constructed.

Exhibit 5.3.1-1: Compass Calibration Pad Alternatives



BRANDSTETTER CARROLL INC
ARCHITECTS . ENGINEERS . PLANNERS
Lexington · Cincinnati · Cleveland · Dallas

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL

7635 Interactive Way
Suite 100
Indianapolis, IN 46278
317.299.7500
FAX: 317.291.5805

COMPASS CALIBRATION PAD LOCATIONS

EXHIBIT 5.2.1-1 OSU AIRPORT MASTER PLAN

THE OHIO STATE UNIVERSITY AIRPORT - DON SCOTT FIELD COLUMBUS, OHIO

The Ohio State University Airport
DON SCOTT FIELD

INTENTIONALLY LEFT BLANK

5.3.2 Rotating Beacon

The existing airport rotating beacon is located on top of Hangar #2 at an elevation of 937 feet above mean sea level (MSL). There is existing light pollution surrounding this location due to the proximity to the terminal and other existing facilities in this area. It can be difficult for pilots to discern the light from the beacon in the midst of the surrounding lighting. The main goal of relocating the beacon is to create a clearly visible and identifiable source of light from the beacon for ease of pilot navigation to the airport. **Exhibit 5.3.2-1** illustrates four potential alternatives for a new beacon location.

Alternative 1: Air Traffic Control Tower

One alternative is to mount it on top of the Air Traffic Control Tower (ATCT). Previous communication with FAA implied that beacons should not be placed on the ATCT because the beacon's performance characteristics may inhibit the installation of other equipment and it may generate noise and light reflections in the cab. The current AC 150/5340-30J, Design and Installation Details for Airport Visual Aids, states that rotating beacons may be placed on top of control towers when authorized by the local FAA regional office. Therefore, the implementation of this alternative is dependent upon FAA approval.

Advisory Circular 150/5300-13A requires the beacon to be mounted such that the beam sweep, oriented two degrees or more above the horizon, is not blocked by any natural or manmade object. The ATCT is 66.4 ft. in height (AGL) with a top elevation of 963.7 ft. MSL. This is nearly 28 ft. above the existing beacon height of 937.0 ft. MSL. Since the ATCT is the tallest building in this area, this location would provide clearance between the beacon light beam and the surrounding buildings and obstacles.

Alternative 2: Aviation Research Building

Alternative 2 would place the beacon on top of the KOSU Aviation Research Building. This building has the benefit of being further away from the terminal and existing hangars while still remaining near the main apron. This location is nearly 800 ft. southwest of the existing beacon location and has a top elevation of 930.0 ft. MSL. The next closest building is Hangar #8, which is nearly 400 ft. from the KOSU Aviation Research Building, and reaches an elevation of 954.2 ft. At two degrees above the horizon, the beacon would need to be raised approximately 10 ft. higher than the roof elevation to clear Hangar #8. The existing research building is located within the departure surface for Runway 5-23 and already penetrates the departure surface by over 10 ft. Adding another 10 ft. for the beacon would create an even greater penetration. However, if Runway 5-23 is permanently closed in the future, then it would cease to be an obstruction. Conversely, if this runway is closed, future hangars would be built in this area that may present a height problem and increase the light pollution.

Alternative 3: North Side

Alternative 3 would be to move the beacon to the east in the future corporate campus. This is a farther distance from the tower than the T-hangars, but also remains on airport property. Since this area is largely undeveloped for now, a free-standing structure is an option; however, mounting it to an existing building would be a more cost-effective solution. The northwestern hangar of the future corporate airpark was selected as the most desirable alternative in this area.

The top elevation of the corporate hangar will be between approximately 933 ft. to 935 ft. MSL. At a 2° angle above the horizon and a horizontal distance of 1,050 ft. from the tower, the beacon would clear the ATCT by around five to six feet. Thus, this location would provide clearance of the ATCT, proximity to the runways, and separation from the lights in the terminal area. However, as more hangars are built in this area, light pollution will increase over time.

Alternative 4: North Side

Alternative 4 is to relocate the beacon to the north side of the field. This would eliminate the light pollution issue altogether by moving it to a secluded area on the airfield. The northern portion of the airfield up to West Dublin Granville Road is classified as an M-2 manufacturing zone. If the beacon moved to the north, it would not be negatively impacting a residential neighborhood. In fact, the north side location is farther removed from a residential area than all the options on the south side, including the existing beacon.

There is also the potential to construct a free-standing structure in this area. The structure must be located such that it clears the surrounding buildings but does not create an obstruction for Runway 9L-27R. Two potential sites (**Alternatives 4A** and **4B**) are on airport property to the west of the apron and to the east of the State of Ohio hangar respectively. These locations would need to be above the tree line. Depending upon the location, providing utilities to the site could create for a more expensive option.

Therefore, two existing buildings on the north side were considered as potential sites to mount the beacon, the State of Ohio hangar and the Medflight hangar (**Alternative 4C** and **4D**).

Alternative 5: Central Location

Alternative 5 locates the beacon in between the runways once the crosswind runway is close. The location would have the least light pollution and could be powered from the existing utilities in the area feeding the RTR. A free-standing structure would be needed. If located directly between the two parallel runways, the transitional surface would allow for a structure approximately 70 feet AGL. An airspace analysis by the FAA would be required to ensure the instrument approaches for the runways were not impacted, especially in the missed approach areas. A Rotating Beacon is approximately 5 feet in height and the nominal height of a tilt pole is approximately 55 ft. for total of approx. 60 ft. AGL.[1] This is the preferred alternative because of the existing utilities, limited existing sources of light, and lack of other tall objects in the area.

[1] FAA Ac 150/5340-30J, Pages A-68 and A-74

Exhibit 5.3.2-1: Rotating Beacon Alternatives

BRANDSTETTER CARROLL INC
ARCHITECTS . ENGINEERS . PLANNERS
Lexington · Cincinnati · Cleveland · Dallas

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL

7635 Interactive Way
Suite 100
Indianapolis, IN 46278
317.299.7500
FAX: 317.291.5805

EXHIBIT 5.3.2-1: ROTATING BEACON LOCATIONS

OSU AIRPORT MASTER PLAN

THE OHIO STATE UNIVERSITY AIRPORT - DON SCOTT FIELD COLUMBUS, OHIO

The Ohio State University Airport
DON SCOTT FIELD

INTENTIONALLY LEFT BLANK

5.4 Summary

While KOSU is a learning laboratory, the corporate aircraft that use the facility make the state-of-the-art airfield facilities possible, so their needs for a longer runway cannot be ignored. Extending the north parallel runway on each end is the most cost-effective way to obtain a 6,000-foot runway with the least impact to the surrounding community. Future FAA defined aircraft DNL noise contours remain predominantly within the airport boundary with the runway extension.

The elimination of the crosswind runway will improve safety for pilot situational awareness, which can be especially troublesome for new students. This elimination will also open space up for more buildings in the terminal area, which will bring in revenue for the airport and advance it toward its goal of being financially self-sustaining. While elimination of the crosswind could impact airport utility during certain wind conditions, the 100-foot wide runways mitigate this for the small aircraft that use the airport by increased the margin of safety during crosswind landings.

Other additions to the terminal area include permanent aircraft de-icing facilities, maintenance hangar, additional T-hangars, and taxiway improvements. A corporate campus on the east side of the terminal area will provide for added large corporate hangars. The proposed terminal area layout will ultimately provide for better co-location of like services and users and reduce to mixture of small piston engine aircraft with larger jets.