

5.1 Introduction

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

FAA guidance on the alternative analysis section¹ of the master plan instructs us that, as a 20-year plan, the recommended alternative should be functional through various stages of the plan and should also have the flexibility to meet unforeseen future conditions. FAA guidance also reminds us that it must take into account the practical fiscal limitations imposed on the airport by the availability of FAA and local funding. This guidance also advises that only the functional elements needed as part of the forecast should be evaluated (e.g. an airline passenger terminal is not a functional part of SGH and, therefore, is not included.) Additionally, if there are no facility needs associated with a functional element, it need not be included in the analysis either.

With the above guidance in mind, the functional elements to receive an alternatives analysis at SGH are the runways and their approaches, their associated 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 SGH management staff to be implementable. The following planning principles for the airport, as developed during a strategic planning exercise (see Appendix D) are applied to the evaluation of the alternatives considered:

1. Focus on safety and security as the first priorities.
2. Focus on ANG changes and impacts on Airport growth and development.
3. Preserve space for terminal, hangar and utilities efficiently and cost-effectively.
4. Provide enhancements for easy and aesthetically pleasing access points in and around the Airport.
5. Use emerging technologies to increase all-weather usage of the Airport.
6. Preserve investments in existing facilities and property contiguous with taxiways and aprons, for aviation purposed with airside needs.

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.²

¹ AC 150/5070-6B Change 2, Airport Master Plans

² Ibid.

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

- operational needs,
- operational efficiencies,
- safety,
- constructability and physical constraints,
- cost,
- flexibility, and
- the environment.

In the remainder of this section, the advantages (positive impacts) and disadvantages (negative impacts) of each alternative are presented, and ultimately, a preferred alternative for development is chosen.

5.2 Runway/Taxiway Facilities

Primary Runway 06-24

Alternative P-1: 9,000 ft. x 100 ft.

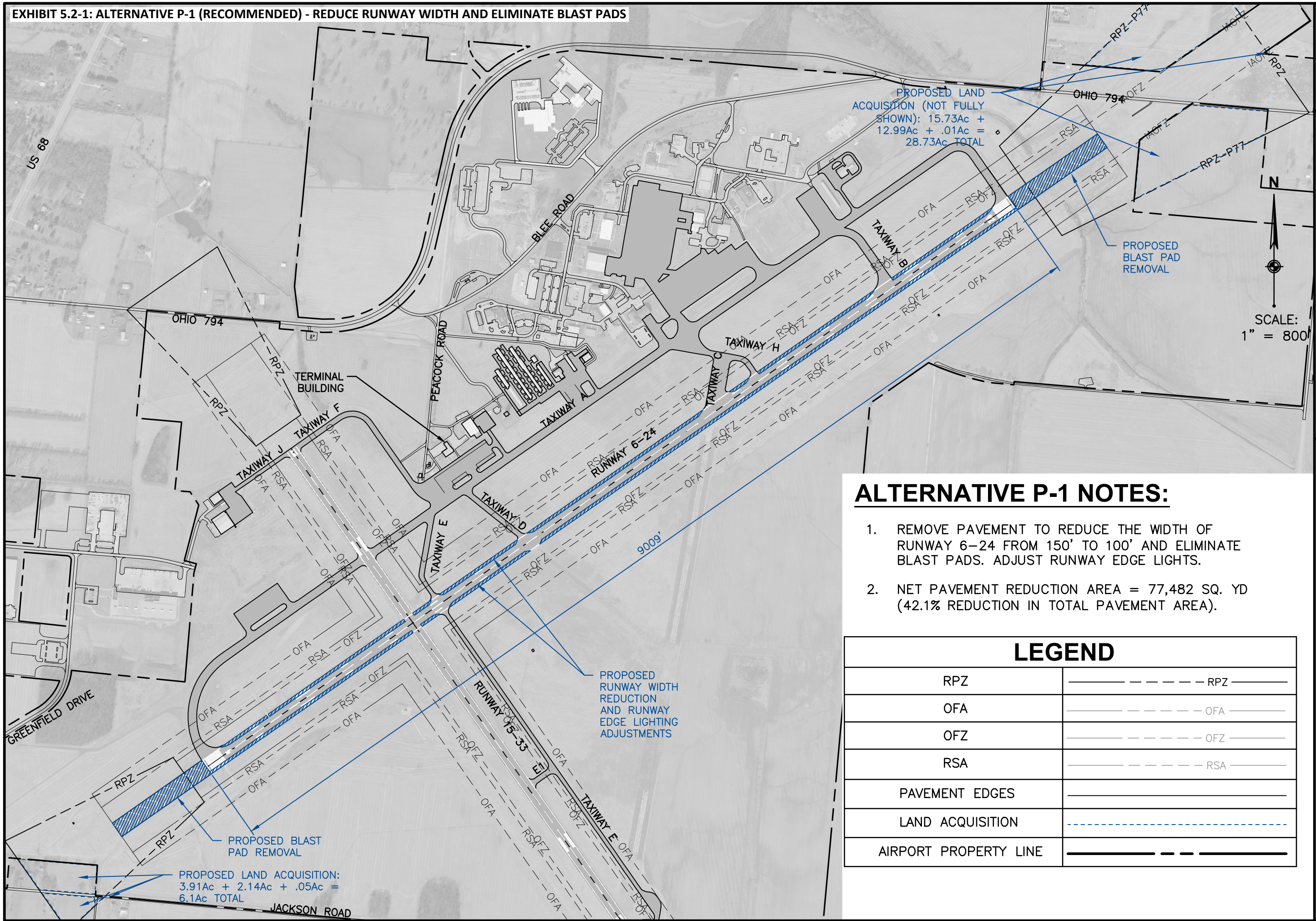
As part of the facility requirements section, a 9,000 feet X 100 feet primary runway was identified as needed over the planning period. The existing runway is 9,000 feet X 150 feet. While “right-sizing” the airport based on practical fiscal limitations imposed by the availability of funding is prudent, this should not be done at the expense of operational needs and efficiencies or safety. Accordingly, based on the analysis performed in Chapter 4, “Alternative P-1, Reduce Runway Width,” is the recommended alternative for Runway 06-24. (See **Exhibit 5.2-1.**) P-1 also removes the blast pads associated with each runway end.

Removing the blast pads and narrowing the runway from 150 feet wide to 100 feet wide at the time of the next major pavement rehabilitation project *if the operational fleet mix has not grown* to justify 150 feet will result in a 42.1% reduction in pavement. It is recommended that at the time of a Runway 06-24 design rehabilitation or reconstruction, rather than removing the blast pads, consideration be given for sizing them down to match the critical aircraft design requirements if it makes sense at that time and satisfy FAA requirements.

In relation to the evaluation criteria listed in Section 5.1, this alternative meets the existing and forecasted operational needs of the airport users while also not decreasing any efficiencies or safety. It is easily constructible. The only constraint are the location of the existing lights, which will need to be moved closer to the runway to meet standard or a modification-to-standards will be required. If the FAA would approve the existing location of the lights, the pavement could potentially just be marked as non-usable through an FAA Modification to Standard, saving the cost that would be required for pavement removal. If implemented at the time of a major runway rehabilitation or lighting project, it could prove cost effective over time, and there should be no added impact to the environment. Other factors considered in selecting this alternative are further discussed in Appendix E and at the end of this discussion on Primary Runway 06-24.

Notwithstanding the justification presented in Chapter 4, Facility Requirements, and Appendix E, the exercise of analyzing a length reduction for Runway 06-24 was still completed at the request of the FAA Detroit Airport District Office, and Alternative P-2 reviewed this reduction.

EXHIBIT 5.2-1: ALTERNATIVE P-1 (RECOMMENDED) - REDUCE RUNWAY WIDTH AND ELIMINATE BLAST PADS



PROPOSED LAND ACQUISITION (NOT FULLY SHOWN): 15.73Ac + 12.99Ac + .01Ac = 28.73Ac TOTAL

PROPOSED BLAST PAD REMOVAL

PROPOSED RUNWAY WIDTH REDUCTION AND RUNWAY EDGE LIGHTING ADJUSTMENTS

PROPOSED LAND ACQUISITION: 3.91Ac + 2.14Ac + .05Ac = 6.1Ac TOTAL

ALTERNATIVE P-1 NOTES:

1. REMOVE PAVEMENT TO REDUCE THE WIDTH OF RUNWAY 6-24 FROM 150' TO 100' AND ELIMINATE BLAST PADS. ADJUST RUNWAY EDGE LIGHTS.
2. NET PAVEMENT REDUCTION AREA = 77,482 SQ. YD (42.1% REDUCTION IN TOTAL PAVEMENT AREA).

LEGEND

RPZ	----- RPZ -----
OFA	----- OFA -----
OFZ	----- OFZ -----
RSA	----- RSA -----
PAVEMENT EDGES	=====
LAND ACQUISITION	-----
AIRPORT PROPERTY LINE	-----

**PRIMARY RUNWAY 06-24 ALTERNATIVES
ALTERNATIVE P-1 - 9,009' X 100'
SPRINGFIELD-BECKLEY AIRPORT
SPRINGFIELD, OHIO**

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Alternative P-2: 7,700 ft. (or Similar Reduced Length) x 100 ft.

At the request of the FAA Detroit Airport District Office, a reduced runway length has also been analyzed to determine *if in the future there is less demand*, what the impacts might be if the runway were shortened. While this analysis has been done, there is a current and forecast demand and justification for the existing runway length as detailed in Chapter 4.

The logical place for a new runway end would be based on existing infrastructure so new taxiways would not need to be built, which would be contrary to the purpose of pavement reduction. Shortening on the Runway 06 end does not provide many options because there is no logical location for the threshold. There is no connector taxiway to take advantage of between the 06 end and the crosswind runway. Relocating the threshold to the intersection of the two runways is not an option because it would reduce the primary runway to less than 7,000 feet (the minimum needed to accommodate 75% of the fleet) and would require either back taxi on the primary runway or taxi on the crosswind in order to get to the end of the runway for takeoff. The same would hold true for landing. Relocating the threshold between the crosswind and the existing 06 end would require the construction of a new taxiway connector. That connector would need to be at least 400 feet from the crosswind to provide for the appropriate C-II aircraft wingspan separation for the aircraft using Runway 06-24. While this might save approximately 1,800 feet of pavement, it would result in the need for roughly 650 more feet of taxiway. Additionally, any shortening of the runway on the 06 end would result in jet traffic being lower on departure over Clark-Shawnee Kindergarten and Shawnee High School, which are both very close to the extended runway centerline of the 24 end. It would also result in the redesign of the RNAV (GPS) instrument approach procedure to Runway 6, resulting in the need for a new obstruction survey.

The most logical location for a new threshold would be on the 24 end in alignment with Taxiway B so a new connector would not need to be constructed, which would result in a 7,700 ft. runway. **Exhibit 5.2-3** depicts this alternative (P-2), which also includes removal of the blast pads associated with each runway end. As mentioned previously, consideration should be given at the time of a Runway 06-24 rehabilitation or reconstruction, if the blast pads should be reduced to the critical aircraft design standards.

This would be a 52.1% reduction in pavement (compared to 42.1% in Alternative P-1) and require the physical removal of existing pavement for safety reasons. This alternative is NOT RECOMMENDED for several reasons:

1. This alternative requires the reconstruction of 3,300 feet of runway from the new runway end because of the surface gradient that currently exists in the area. FAA AC 150/5300-13A states the following for Approach categories C, D, and E, runways:
 - a. The maximum longitudinal grade is ± 1.50 percent; however, longitudinal grades may not exceed ± 0.80 percent in the first and last quarter, or first and last 2,500 feet (762 m), whichever is less, of the runway length.
 - b. The maximum allowable grade change is ± 1.50 percent; however, no grade changes are allowed in the first and last quarter, or first and last 2,500 feet (762 m), whichever is less, of the runway length.
 - c. Vertical curves for longitudinal grade changes are parabolic. The length of the vertical curve is a minimum of 1,000 feet (305 m) for each 1.0 percent of change.With the removal of this pavement, the longitudinal grades for the last 2,500 feet of runway and grade changes along the runway (e.g. vertical curves) would not meet the above FAA requirements. This would result in a significant portion of the runway pavement (full width) to be removed and reconstructed to meet FAA requirements, thus making it cost prohibitive. It would cost significantly more to remove and reconstruct this pavement than just to maintain it over its life-cycle (milling and overlaying). (Cost planning principle.)
2. The physical removal of the pavement would be required, at a substantial price tag (cost criteria), because of the risk of runway incursions if it were left in place (safety planning principle).

3. Relocation of the approach lighting system with sequence flashing (ALSF) would be required in order to maintain instrument approach minimums (operational needs, efficiencies, and safety planning principle) similar to what exists today with the RNAV (GPS) LPV approach. NOTE: The ILS has been decommissioned.
4. Any potential reintroduction of traditional aircraft back into the Guard mission at some later point would be more difficult (flexibility planning principle).
5. SGH's fleet mix includes over 500 existing operations by aircraft with demands for 9,000 ft. in many climate conditions, so a reduction would not meet their operational needs, would decrease efficiencies, and reduce safety (operational needs, efficiencies, and safety planning principle).
6. Spectra Jet's operation includes maintenance on the Bombardier Challenger 300 and 600 series and the Learjets (operational needs and efficiencies criteria), and the reduced runway length does not meet the needs for many of their customers' aircraft (e.g., CL60, LJ35/36) and it reduces the safety margins valued during test flights after maintenance or during ferry flights of aircraft in need of repair (safety planning principle).³

Runway 06-24 Preferred Alternative Recommendation

The selection of the preferred Runway 6-24 alternative should not be based solely of Federal funding appropriations for the Airport Improvement Program but must be based on FAA Requirements (described in Chapter 4 Facility Requirements) and the planning principles described in Section 5.1. However, there are some additional factors to consider given implications of the decision by the FAA on whether or not to provide certain types of funding support over the next 20-year planning period.

At this time, there are no significant design deficiencies for the runway. Land acquisition is necessary for the Runway Protection Zones at each end (both of which currently have roadway infringements). FAA officials appear to agree that the critical number of operations are met to validate the use of the remaining 25% fleet (100% fleet) of aircraft for determining runway length. The airport has also provided trip data showing that 40 percent of these takeoffs are going to destinations greater than 500 nautical miles, which shows credible rationale that these aircraft are loaded at greater than 60 percent warranting the use of the 90 percent useful load curves. SGH also has specific service needs⁴ for functional check flights that are considered higher risk, fuel sale incentives that increase load factors to first leg destinations less than 500 nautical miles, and based tenants requesting the need for the existing runway length. Refer to Chapter 4 and Appendix E for additional details. It is also noted that the FAA does not provide guidelines for a critical number of operations needed to warrant the use of a specific useful load curve or haul length other than "considering haul lengths and service needs". Currently, if loads exceed the 60% load curves, the sponsor shall use the 90% load curves without interpolation. Given the Master Plan represents the airport's vision, the airport sponsor can plan for their needs on the ALP as they desire; however, the FAA may not financially support certain infrastructure at the time a project is proposed if the project is not validated by their offices⁵.

It is the sponsor's opinion that:

- The airport's critical aircraft users have a significant economic and geographical impact as they provide connectivity to the City of Springfield and its community with the rest of the world. The airport's total economic impact is estimated at 1,452 jobs and an output of \$117.1M. The existing runway length plays a vital role to its sustainability.

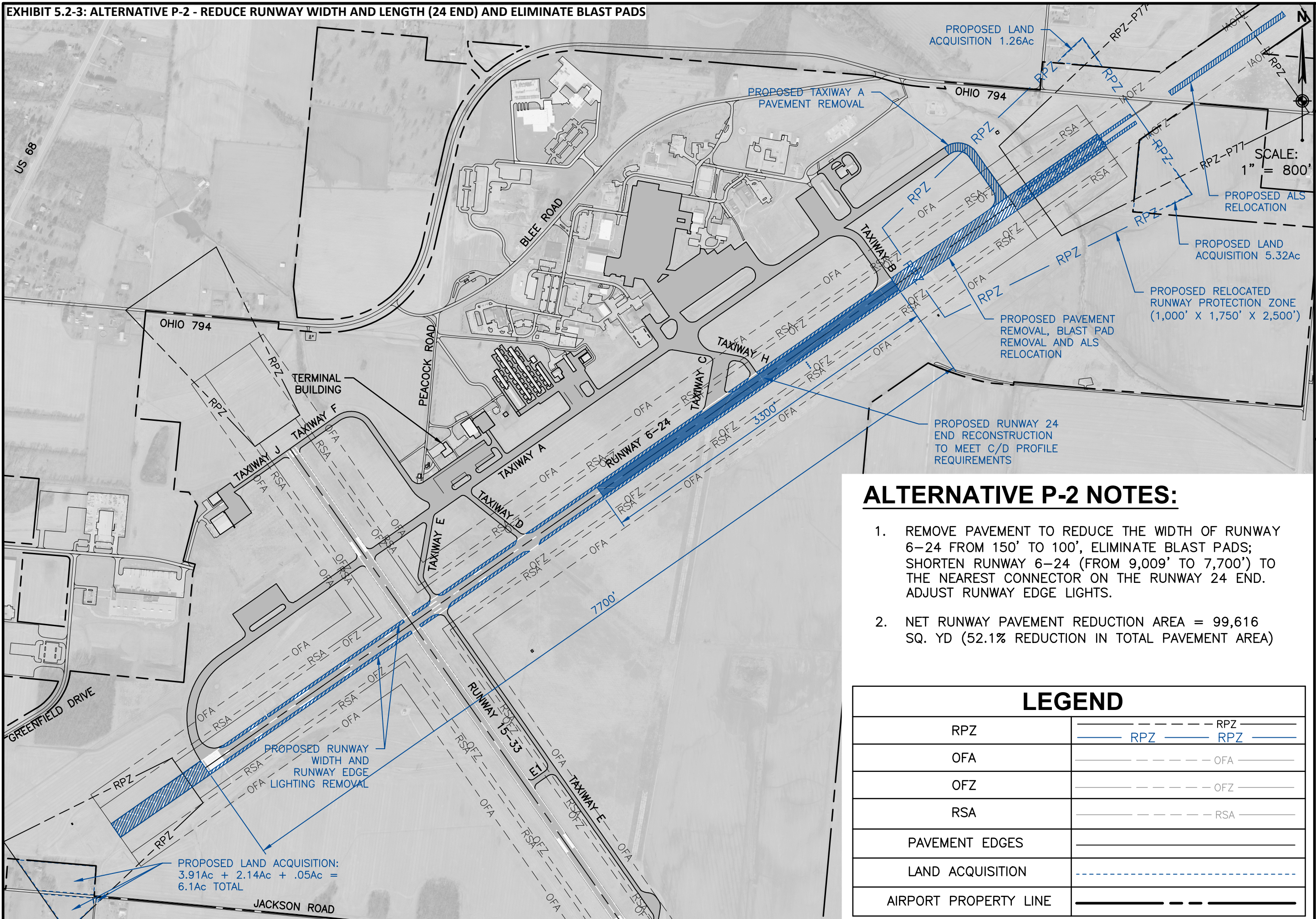
³ Runway length is of imperative importance during post maintenance test flights. Refer to Appendix E for additional details.

⁴ FAA AC 150/5325-4B states that selection of the 60 percent or 90 percent

⁵ Most FAA ALP approval letters are issued with a caveat that approval of the plan does not indicate that the United States will participate in the cost of any development proposed on the plan.

- The primary runway is not in need of a reconstruction and will only require rehabilitation or repairs over the planning period based on the existing fleet mix of aircraft and the planned growth. The cost of a reconstruction or partial reconstruction with the pavement removal would exceed \$20M while the partial removal of pavement and minor rehabilitation of the runway would remain less than \$10M over the planning period. FAA's general policy is not to remove pavement until required to reconstruct it.
- Spectra Jet customers and transient aircraft represent the required justification and a solid base for support of the existing runway given the existing conditions and does not take into consideration the forecasted growth approved in Chapter 3, Forecasts, or Spectra Jets growth plans shown in Appendix E. This additional growth will only further validate the use of the 90% useful curves and service need for the existing runway length at SGH over the planning period.

Based on the above factors, it is reasonable and practical for the sponsor to support Alternative P-1 (9,000 feet by 100 feet) over the planning period.



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ALTERNATIVE P-2 NOTES:

1. REMOVE PAVEMENT TO REDUCE THE WIDTH OF RUNWAY 6-24 FROM 150' TO 100', ELIMINATE BLAST PADS; SHORTEN RUNWAY 6-24 (FROM 9,009' TO 7,700') TO THE NEAREST CONNECTOR ON THE RUNWAY 24 END. ADJUST RUNWAY EDGE LIGHTS.
2. NET RUNWAY PAVEMENT REDUCTION AREA = 99,616 SQ. YD (52.1% REDUCTION IN TOTAL PAVEMENT AREA)

LEGEND	
RPZ	
OFA	
OFZ	
RSA	
PAVEMENT EDGES	
LAND ACQUISITION	
AIRPORT PROPERTY LINE	

PRIMARY RUNWAY 06-24 ALTERNATIVES
ALTERNATIVE P-2 - 7,700' X 100'
SPRINGFIELD-BECKLEY AIRPORT
SPRINGFIELD, OHIO

Crosswind Runway 15-33

Alternative C-1: 5,000 ft. x 100 ft. (Category C/D-II Approach)

As part of the facility requirements section, a 5,499 feet X 100 feet crosswind runway was identified as needed over the planning period. The existing runway is 5,499 ft. X 100 ft. Again, while “right-sizing” the airport based on practical fiscal limitations imposed by the availability of funding is prudent, this should not be done at the expense of operational needs and efficiencies or safety. However, at the request of the FAA Detroit Airport District Office, a reduced runway length has also been analyzed to determine, *if in the future there is less demand*, what the impacts might be if the runway were shortened. While this analysis has been done, there is a current and forecast demand and justification for the existing runway length as detailed in Chapter 4.

Alternative C-1 reviewed reducing the length of Runway 15-33 to 5,000 feet on the 33 end since there is no logical connector taxiway to shorten to on either end. (Shortening to Taxiway A would result in a runway less than 4,400 feet and shortening it to Taxiway E-1 would result in a runway less than 4,000 feet, both of which would reduce its utility to an unviable level.) Shortening to 5,000 feet would require the physical removal of 499 feet of runway pavement and approximately 700 feet of taxiway pavement in addition to the construction of a new connector taxiway from the parallel taxiway to the new runway end. (See **Exhibit 5.2-4.**) Total pavement area reduction for this alternative is only 14.1%. This alternative would also result in a clear Runway Object Free Area (ROFA) where approximately 2,100 SF on the southwest corner of the ROFA currently clips Jackson Road.

In relation to the evaluation criteria listed in Section 5.1, this alternative is not desired for the following reasons.

- 5,500 feet is the optimal runway length for 75% of the fleet at 60% useful load, which include the lighter jets like the Citation 550, smaller Learjets, and Beechcraft King Airs that are more affected by crosswinds (operational needs criteria).
- Spectra Jet’s operation includes maintenance on the Learjet series of aircraft, and due to their existing location at the end of Runway 15, the smaller jet customers will often use this runway (operational needs and efficiencies criteria).
- The removal of pavement, construction of a new connector taxiway, and relocation of runway lighting come at a cost that reduce any benefit received from less pavement to maintain (cost criteria).

However, the likelihood of relocating Jackson Road to remove the ROFA violation is low due to funding and impacts, while removing 499 feet of pavement will not likely have a significant impact to operations now or in the future. Therefore, while this is not the desired alternative, it is the recommended alternative to the existing configuration at this time. A summary of the positive and negative impacts are outlined below:

Positive Impacts

- Clear ROFA (safety criteria)
- 14.1% less pavement to maintain (cost criteria).
- Reduced amount of potential land rights acquisition required (cost criteria).
- Turbine Aircraft would still have 5,000 ft. available for landing and takeoff (typical minimum length required of turbine operators, including C/D aircraft).

Negative Impacts

- Does not meet needs of 75% of the fleet at 60% useful load, (Citation 550, smaller Learjets, and Beechcraft King Airs (operational needs criteria).
- Reduces efficiency and operational needs of Spectra Jet (operational needs criteria).
- Requires removal of pavement, construction of a new connector taxiway, and relocation of runway lighting (cost criteria).

Alternative C-2: 5,000 ft. x 75 ft. (Category A/B-II Design)

Alternative C-2 reviewed reducing the runway reference code from C-II to B-II and shortening the runway length by 499 feet on the 24 end down to 5,000 feet⁶ and its width is reduced by 25 feet to 75 feet. (See **Exhibit 5.2-5.**) As part of this alternative, a new connector taxiway from the parallel taxiway to the new runway end is needed. This alternative results in a 35.1% reduction in pavement. This alternative provides for a clear RPZ and runway OFA, but also requires the removal of pavement and the addition of a new connector taxiway.

In relation to the evaluation criteria listed in Section 5.1, this alternative IS NOT RECOMMENDED for many of the same reasons as Alternative C-1 is not recommended with some additional comment. NOTE: FAA does not consider convenience for a tenant on runway used as justification to maintain a runway length.

- 5,500 feet is the optimal runway length and width for 75% of the fleet at 60% useful load, which include the lighter jets like the Citation 550, smaller Learjets, and Beechcraft King Airs that are more affected by crosswinds (operational needs).
- Spectra Jet's operation includes maintenance on the Learjet series of aircraft, and due to their existing location at the end of Runway 15, the smaller jet customers will often use this runway (operational needs and efficiencies criteria).
- It is evident that C/D aircraft are utilizing the Crosswind Runway. While the operations from the "critical aircraft" may change over time and could result in reduced design standards (A/B), this temporary disposition will result in reduced operational safety of existing aircraft that are utilizing the facility now. This would be a short-sided view given that the runway was originally designed for C/D aircraft and the additional land acquisition needed in Alternative C-1 for C/D will still serve to benefit the approaches in the long-term (safety criteria).

A summary of the positive and negative impacts are outlined below:

Positive Impacts

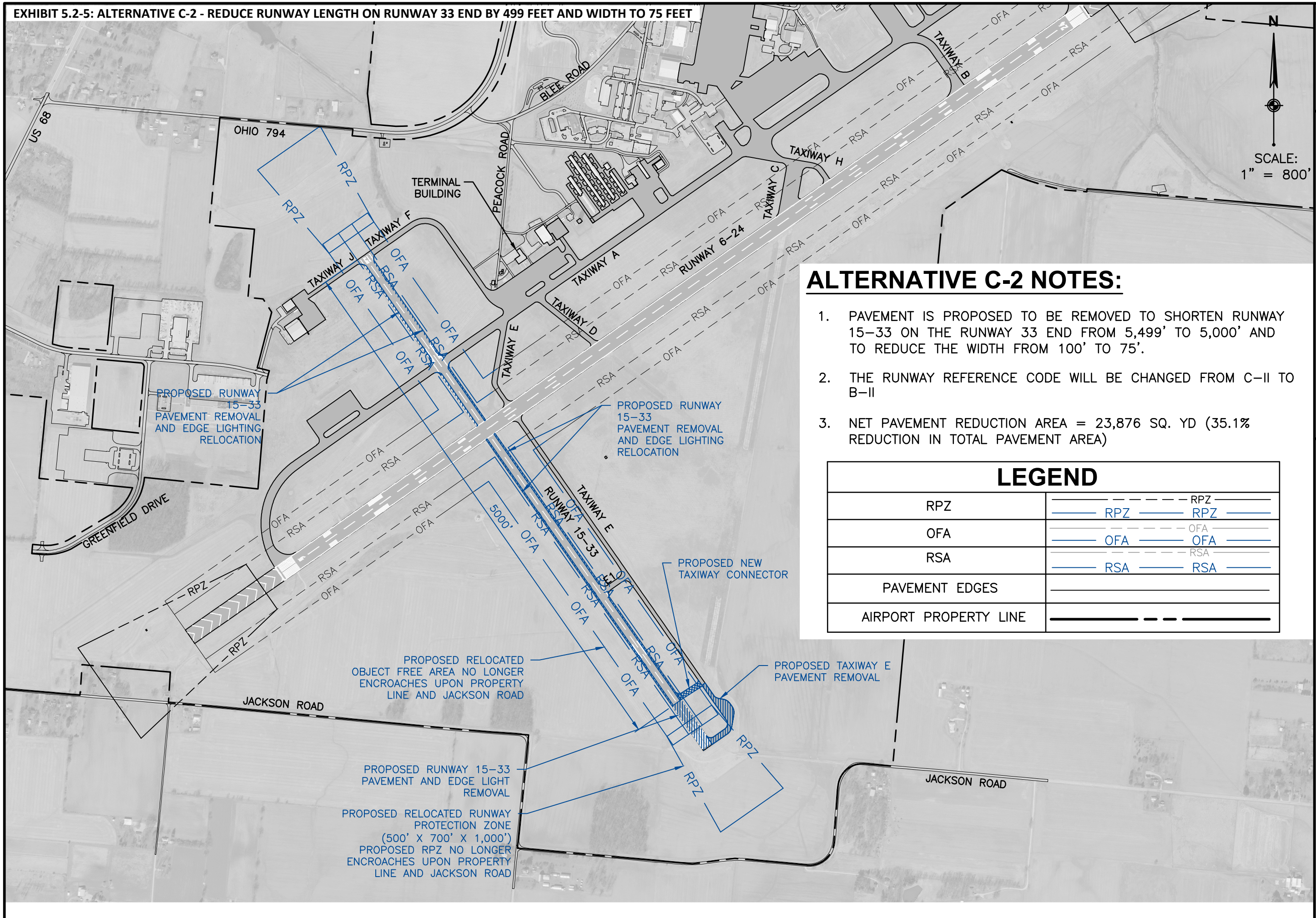
- Clear ROFA (safety criteria) and Roadways from RPZ.
- No potential acquisition of land rights required (cost criteria).
- 35.1% less pavement to maintain (cost criteria).

Negative Impacts

- Does not meet needs of 75% of the fleet at 60% useful load, (Citation 550, smaller Learjets, and Beechcraft King Airs (operational needs criteria).
- Reduces efficiency and operational needs of Spectra Jet (operational needs criteria).
- At times, the critical (C/D) aircraft and its required design standards may not be met (safety criteria).

⁶ FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*: Recommended length for small airplanes 12,500 pounds or less at SGH.

EXHIBIT 5.2-5: ALTERNATIVE C-2 - REDUCE RUNWAY LENGTH ON RUNWAY 33 END BY 499 FEET AND WIDTH TO 75 FEET



SCALE:
1" = 800'



ALTERNATIVE C-2 NOTES:

1. PAVEMENT IS PROPOSED TO BE REMOVED TO SHORTEN RUNWAY 15-33 ON THE RUNWAY 33 END FROM 5,499' TO 5,000' AND TO REDUCE THE WIDTH FROM 100' TO 75'.
2. THE RUNWAY REFERENCE CODE WILL BE CHANGED FROM C-II TO B-II
3. NET PAVEMENT REDUCTION AREA = 23,876 SQ. YD (35.1% REDUCTION IN TOTAL PAVEMENT AREA)

LEGEND

RPZ		RPZ
OFA		OFA
RSA		RSA
PAVEMENT EDGES		
AIRPORT PROPERTY LINE		

CROSSWIND RUNWAY 15-33 ALTERNATIVES
ALTERNATIVE C-2 - 5,000' X 75'
SPRINGFIELD-BECKLEY AIRPORT
SPRINGFIELD, OHIO

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Alternative C-3: 4,400 ft. x 75 ft. (Category A/B-II Design)

Alternative C-3 reviewed reducing the runway reference code from C-II to B-II also, in addition to reducing the runway length even further on the 24 end down to 4,400 feet⁷ and its width is reduced by 25 feet to 75 feet. (See **Exhibit 5.2-6.**) As part of this alternative, a new connector taxiway from the parallel taxiway to the new runway end is needed. This alternative results in a 42.2% reduction in pavement.

In relation to the evaluation criteria listed in Section 5.1, this alternative IS NOT RECOMMENDED for many of the same reasons as Alternative C-2 is not recommended as follows:

- 5,500 feet is the optimal runway length for 75% of the fleet at 60% useful load, which include the lighter jets like the Citation 550, smaller Learjets, and Beechcraft King Airs that are more affected by crosswinds (operational needs).
- Spectra Jet’s operation includes maintenance on the Learjet series of aircraft, and due to their existing location at the end of Runway 15, the smaller jet customers will often use this runway (operational needs and efficiencies criteria).
- This alternative would completely eliminate the use of some larger B and C/D category aircraft operators who require a minimum of 5,000 ft. of runway to operate their turbine aircraft. This would result in a reduced utility of the facility and likely reduce the economic viability of the airport (which currently is an all-weather airport). Should these larger aircraft operations increase again, the ability to design and construct an extension (i.e., restore the runway to its original length) to accommodate this growth in traffic (operational needs and cost criteria) is much more difficult than leaving it in place.
- The benefit-to-cost ratio of removal as compared to just standard life-cycle evaluation is not anticipated to be to the FAA, ODOT or sponsor’s benefit over time (cost criteria).

Positive Impacts

- Clear ROFA (safety criteria) and Roadways from RPZ.
- No land acquisition is required (cost criteria).
- 42.5% less pavement to maintain (cost criteria).

Negative Impacts

- Does not meet needs of 75% of the fleet at 60% useful load, (Citation 550, smaller Learjets, and Beechcraft King Airs (operational needs criteria).
- Reduces efficiency and operational needs of Spectra Jet (operational needs criteria).
- Loss of existing airport utility to critical operators and economic viability due to loss of tenants/other (operational needs).
- Life-Cycle Costs including restoration of pavement for aircraft traffic (cost criteria).

⁷ A length of 4,400 ft. is chosen to best meet critical aircraft operators’ needs and variable weather conditions on the crosswind runway as identified in Appendix E. It is the Sponsor’s opinion that without this minimum length and width, small jet operators would not use the runway.

Alternative C-4: 4,000 ft. x 60 ft. (Category A/B-I Design)

Alternative C-4 reviewed reducing the runway reference code from C-II to A/B-I also, in addition to reducing the runway length even further on the 24 end down to 4,000 feet⁸ and its width by 40 feet to 60 feet. (See **Exhibit 5.2-7.**) This alternative can be viewed as the “FAA’s funding alternative” because while FAA AC 5300-13A states that a crosswind runway is recommended when the primary runway orientation provides less than 95 percent wind coverage for specific allowable values:

Allowable crosswind component per Runway Design Code (RDC)

RDC	Allowable Crosswind Component
A-I and B-I *	10.5 knots
A-II and B-II	13 knots
A-III, B-III,	16 knots
C-I through D-III	
D-I through D-III	
* Includes A-I and B-I small aircraft.	

Source: FAA AC 150/5300-13A

Since Runway 6-24 meets 95 percent wind coverage in “all-weather” at 13-knots, the FAA will only fund the runway to a B-I design even though it does not meet 95 percent at 16 knots in “instrument conditions”. In fact, the crosswind analysis is only 0.36 percent away from validating the need for a Group II wind coverage in all weather conditions and wind coverage has been decreasing over the years.

As part of this alternative, a new connector taxiway from the parallel taxiway to the new runway end is needed. This alternative results in a 60.9% reduction in pavement.

In relation to the evaluation criteria listed in Section 5.1, this alternative IS NOT RECOMMENDED for many of the same reasons as Alternative C-2 and C-3 is not recommended as follows:

- 5,500 feet is the optimal runway length for 75% of the feet at 60% useful load, which include the lighter jets like the Citation 550, smaller Learjets, and Beechcraft King Airliners that are more affected by crosswinds (operational needs planning principle).
- Spectra Jet’s operation includes maintenance on the Learjet series of aircraft, and due to their existing location at the end of Runway 15, the smaller jet customers will often use this runway (operational needs and efficiencies planning principle).
- This alternative would completely eliminate the use of some larger B and C/D category aircraft operators who require a minimum of 5,000 ft. of runway length and 75 ft. of runway width to operate their turbine aircraft. This would result in a reduced utility of the facility and likely reduce the economic viability of the airport (which currently is an all-weather airport). Should these larger aircraft operations increase again, the ability to design and construct an extension (i.e., restore the runway to its original length) to accommodate this growth in traffic (operational needs and cost planning principle) is much more difficult than leaving it in place.
- The benefit-to-cost ratio of removal as compared to just standard life-cycle evaluation is not anticipated to be to the FAA, ODOT or sponsor’s benefit over time (cost planning principle).

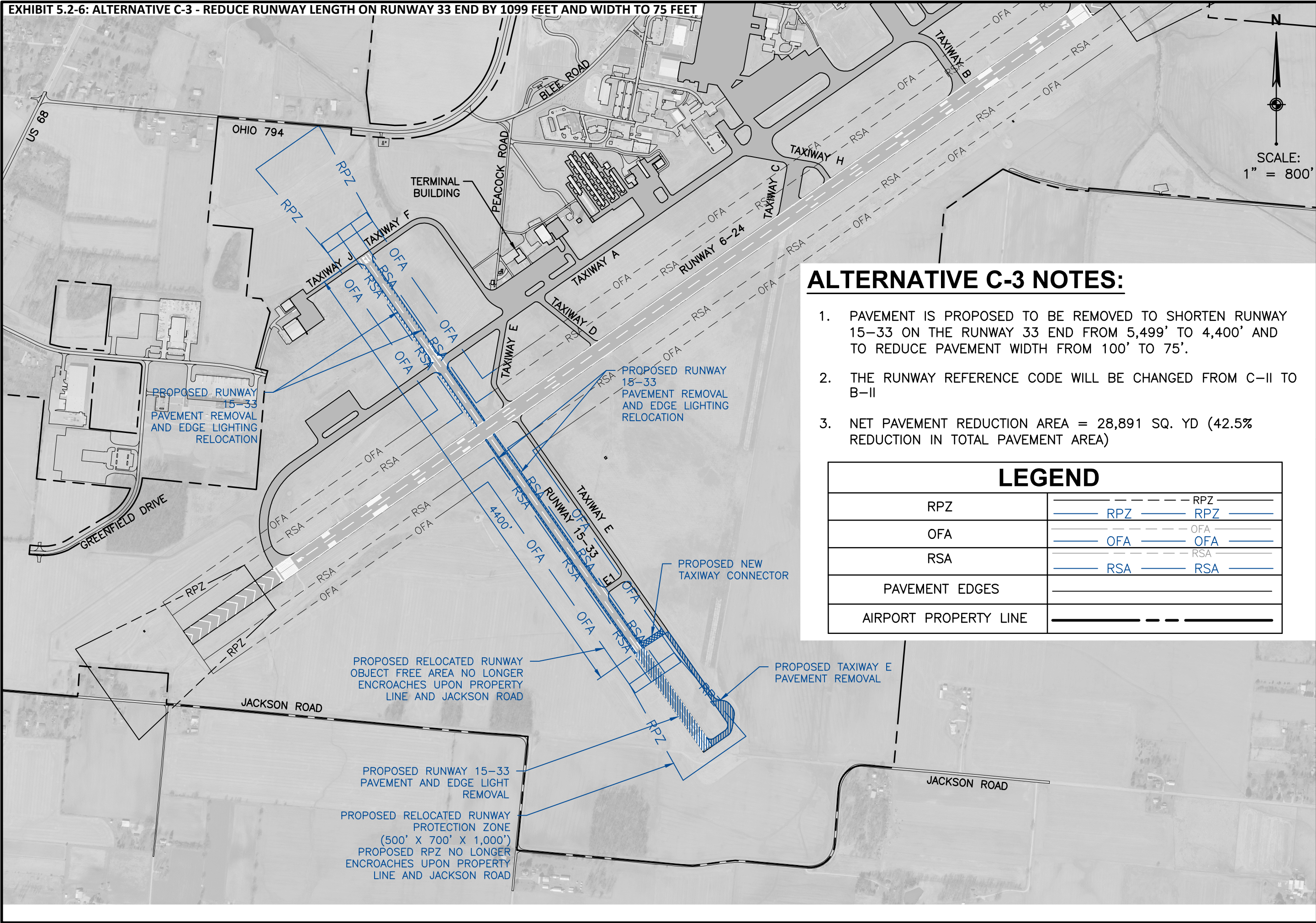
⁸ FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*: Recommended length for small airplanes 12,500 pounds or less at SGH.

Positive Impacts

- Clear ROFA (safety principle) and Roadways from RPZ.
- No land acquisition is required (cost principle).
- 60.9% less pavement to maintain (cost principle).

Negative Impacts

- Does not meet needs of 75% of the fleet at 60% useful load, (Citation 550, smaller Learjets, and Beechcraft King Airs (operational needs principle).
- Reduces efficiency and operational needs of Spectra Jet (operational needs principle).
- Loss of existing airport utility to critical operators and economic viability due to loss of tenants/other (operational needs principle).
- Life-Cycle Costs including restoration of pavement for aircraft traffic (cost principle).



ALTERNATIVE C-3 NOTES:

1. PAVEMENT IS PROPOSED TO BE REMOVED TO SHORTEN RUNWAY 15-33 ON THE RUNWAY 33 END FROM 5,499' TO 4,400' AND TO REDUCE PAVEMENT WIDTH FROM 100' TO 75'.
2. THE RUNWAY REFERENCE CODE WILL BE CHANGED FROM C-II TO B-II
3. NET PAVEMENT REDUCTION AREA = 28,891 SQ. YD (42.5% REDUCTION IN TOTAL PAVEMENT AREA)

LEGEND

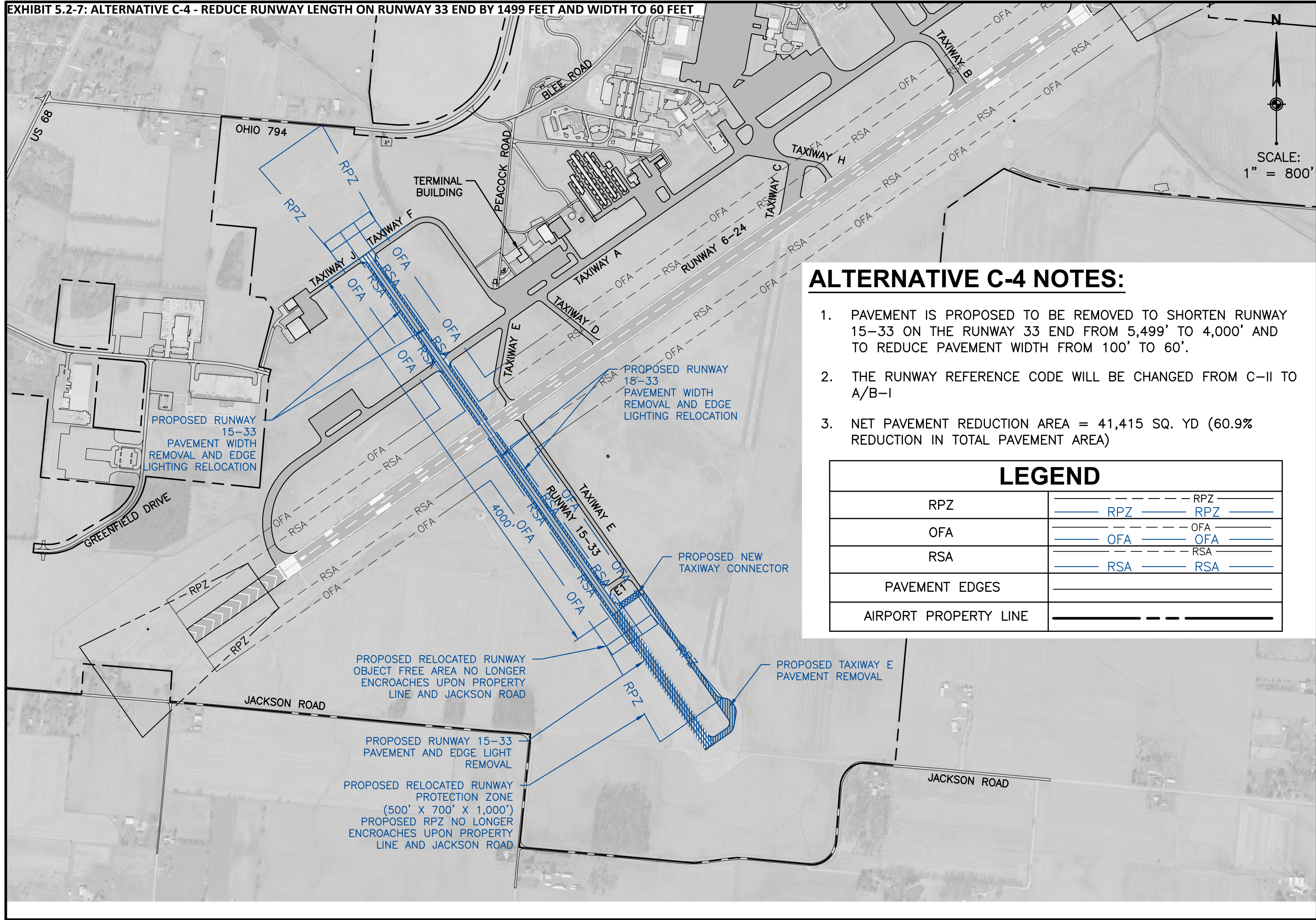
RPZ		RPZ
OFA		OFA
RSA		RSA
PAVEMENT EDGES		
AIRPORT PROPERTY LINE		

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**CROSSWIND RUNWAY 15-33 ALTERNATIVES
 ALTERNATIVE C-3 - 4,400' X 75'
 SPRINGFIELD-BECKLEY AIRPORT
 SPRINGFIELD, OHIO**



ALTERNATIVE C-4 NOTES:

1. PAVEMENT IS PROPOSED TO BE REMOVED TO SHORTEN RUNWAY 15-33 ON THE RUNWAY 33 END FROM 5,499' TO 4,000' AND TO REDUCE PAVEMENT WIDTH FROM 100' TO 60'.
2. THE RUNWAY REFERENCE CODE WILL BE CHANGED FROM C-II TO A/B-I
3. NET PAVEMENT REDUCTION AREA = 41,415 SQ. YD (60.9% REDUCTION IN TOTAL PAVEMENT AREA)

LEGEND

RPZ		RPZ
OFA		OFA
RSA		RSA
PAVEMENT EDGES		
AIRPORT PROPERTY LINE		

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CROSSWIND RUNWAY 15-33 ALTERNATIVES
ALTERNATIVE C-4 - 4,400' X 75'
SPRINGFIELD-BECKLEY AIRPORT
SPRINGFIELD, OHIO

Runway 15-33 Preferred Alternative Recommendation

The selection of the crosswind Runway 15-33 alternative must be based on FAA Requirements (described in Chapter 4 Facility Requirements) and the factors described in Section 5.1. However, there are some additional factors to consider given implications of the decision by the airport sponsor and the FAA to provide certain types of funding support or not over the next 10-20 years (Planning Period).

At this time, FAA design criteria only supports Alternative C-4 (A/B-I, 4,000 feet by 60 feet) in order to meet the minimum crosswind coverage. The runway meets C-II design requirements with only one critical design deficiency being the Runway 33 end Runway Object Free Area roadway and fence violation. In order to resolve this issue, Jackson Road and the airport perimeter fence are proposed to be relocated outside of the existing Runway Object Free Area (refer to Appendix I Modification to Standards⁹ for additional details). Land is also required to be acquired for the Runway Protection Zones at each end (of which roadways will exist within). The FAA does not see value in the use of this runway by aircraft that could use the primary runway when required (e.g. wind, weights, etc.). Given the Master Plan represents the airport's vision, the airport sponsor can plan for their needs on the ALP as they desire; however, the FAA may not be able to financially support these projects with funding at the time of the need of the project if these are not validated by their offices¹⁰.

It is of the sponsor's opinion that:

- It is disappointing that the FAA has always supported it as a C-II runway on previous ALP's (regardless of wind conditions) and the number of critical operations that would use this runway have gone up.
- There is a need to correct the Runway Object Free Area violations and agree that the only way to remove this violation is to reduce the runway length or change to A/B design criteria. The preference would be to reduce the runway length (as reducing design group may require significant changes to go back).
- The existing runway has a very low Pavement Condition Index (PCI). The pavement score in 2015 was between 41 to 55. However, upon inspection of the pavement at the time of limited pavement repairs in 2018 (partial and full depth transverse asphalt crack repair), the pavement structure was found to be in relatively good condition. Surface cracking was not full depth and there were no signs of subbase damage, rutting, or poor interlayer bonding. The pavement is anticipated to only require a rehabilitation and not a reconstruction to restore surface life for another 10-20 years.
- The rough order of magnitude in cost in Alternative C-4 to remove 60% of the pavement and re-establish new runway edge lighting is anticipated to be approximately \$1,000,000 and to reconstruct the remaining portion is \$3,500,000. The rough order of magnitude in cost to Alternative C-2 is not considered significantly different to C-4 as the width still must be reduced, new lights installed and more of the remaining pavement rehabilitated even with the smaller amount of pavement to be removed. This is unless the airport could get an FAA Modification to Standard that would allow for 12.5 feet shoulders on each side and a relocated runway edge light offset of 13 feet as this would significantly reduce costs¹¹.
- Reducing the runway length to less than 4,400 feet or 75 feet in width will impact use of the runway by existing and future small jet operators that would prefer to use it when winds dictate and loads allow and reduce the operational safety of the runway.

⁹ An FAA Modification to Standards was submitted to the FAA in 2019/2020 to mitigate the Runway Object Free Area violation of the road and the fence to the Runway 33 end. This submittal is included in Appendix I. Upon FAA's review of the alternatives and the intention to relocate Jackson Road and the Fence, the FAA accepted this alternative for inclusion on the ALP and the FAA Modification of Standards was cancelled.

¹⁰ FAA Modification to Standards must not consider cost as the only alternative to accept.

¹¹ FAA ALP Approval: "Approval of the plan does not indicate that the US will participate in the cost of any development proposed"

It is desirable for the airport, as supported in FAA AC 150/5300-13A, paragraph 201b, that both runways' elements meet the requirements of the most demanding RDC and Taxiway Design Group (TDG) with the exception of the length. Therefore, based on the above factors, the Sponsor elects to keep the runway at its existing length and width for as long as possible as it will provide more airspace coverage with the relocation of Jackson Road and the airport perimeter fence.

However, at the time of any reconstruction, the sponsor will consider reductions that take into account additional local costs to meet specific user needs such as runway length or width beyond that supported by the FAA in Alternative C-4 for funding assuming the design standards or justification do not change. By doing so, the Sponsor will get better airspace protection of the crosswind runway (including to the north where development does continue) and be able to maintain Group II design criteria should wind conditions over the planning period continue to decline. This would not be possible with a quick implantation of Alternative C-4 as it significantly reduces runway group, length and width conditions that will be very difficult to get back if things change over the planning period.

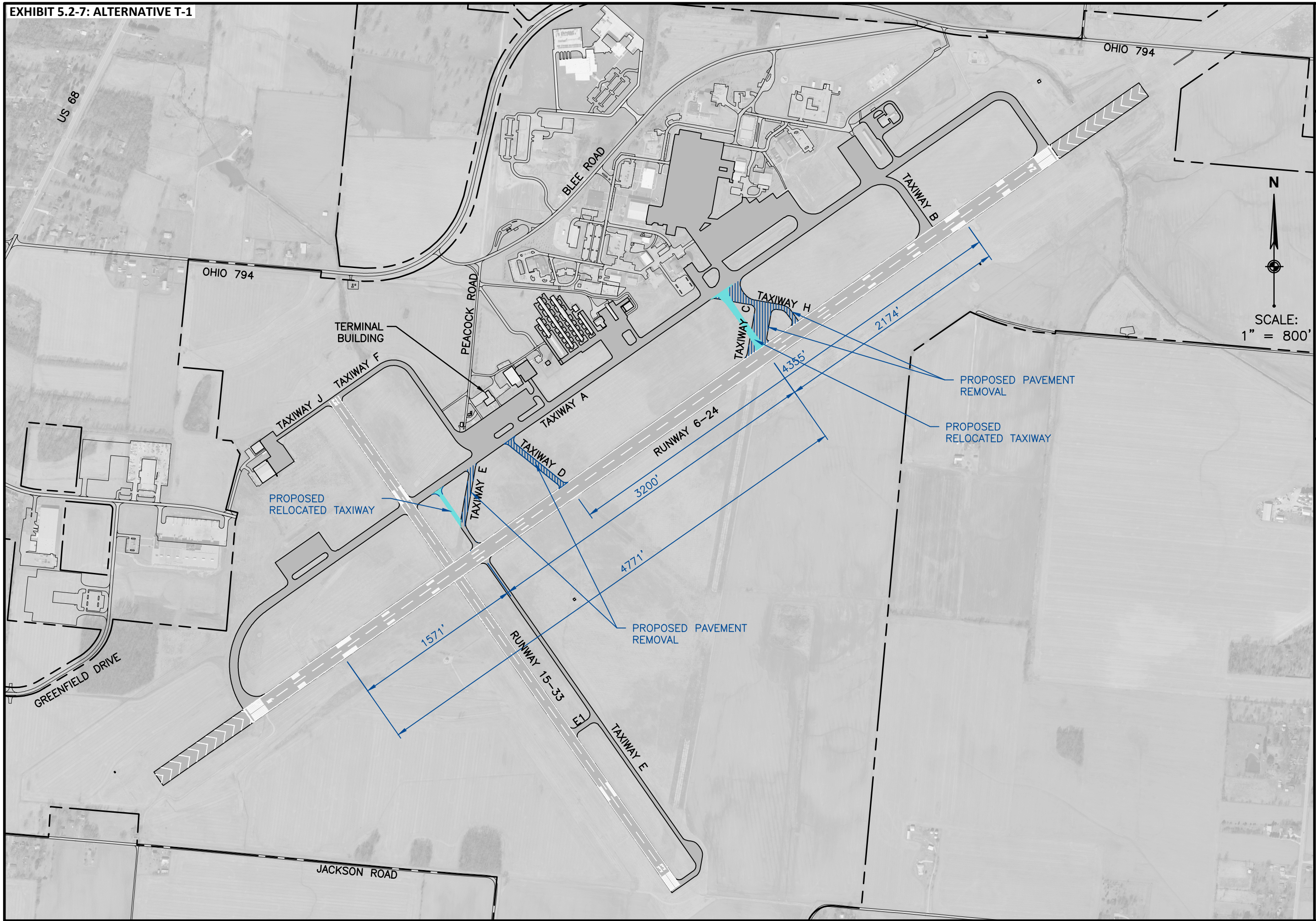
Taxiways Connectors

A number of taxiway configuration issues related to situational awareness were noted in the facility requirements chapter. Most of them have a simple single intuitive option for correction. Those where alternatives were developed are include Taxiways E, D, C, and H and are shown in this section.

Alternative T-1 includes straightening out Taxiway E and replacing Taxiways H and C with a single Taxiway. (See **Exhibit 5.2-7.**) With this alternative, Taxiway E is aligned to provide for a 90 degree turn as promoted in FAA AC 150/5300-13A. A new connector is added in place of the two lost. This alternative reduces the total amount of pavement to maintain (cost criteria) and fixes some of the situational awareness issues (safety criteria).

Alternative T-2 includes straightening out Taxiway E and D and replacing Taxiways H and C with a single Taxiway. (See **Exhibit 5.2-8.**) This alternative also provides for 90 degree turn as promoted in FAA AC 150/5300-13A, but keeps Taxiway D rather than removing it, which allows for an additional option for airport exit upon landing allowing for greater airport utility.

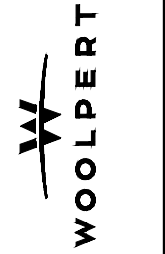
Alternative T1 reduces the pavement necessary to maintain at the airport (cost criteria), but may also ultimately reduce the runway utility because of reducing the number of exit points for the runway, potentially keeping aircraft on the runway longer when it may be needed for takeoff or landing by another aircraft (efficiency criteria). Alternative T2 essentially keeps the same number of entrance taxiways and potentially provides for a better exit points for smaller aircraft landing (efficiency criteria). Based on landing distances from either direction on the primary runway, only two exit points were determined as necessary, and Alternative T1 is recommended as the preferred.



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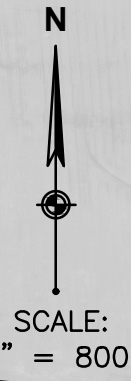
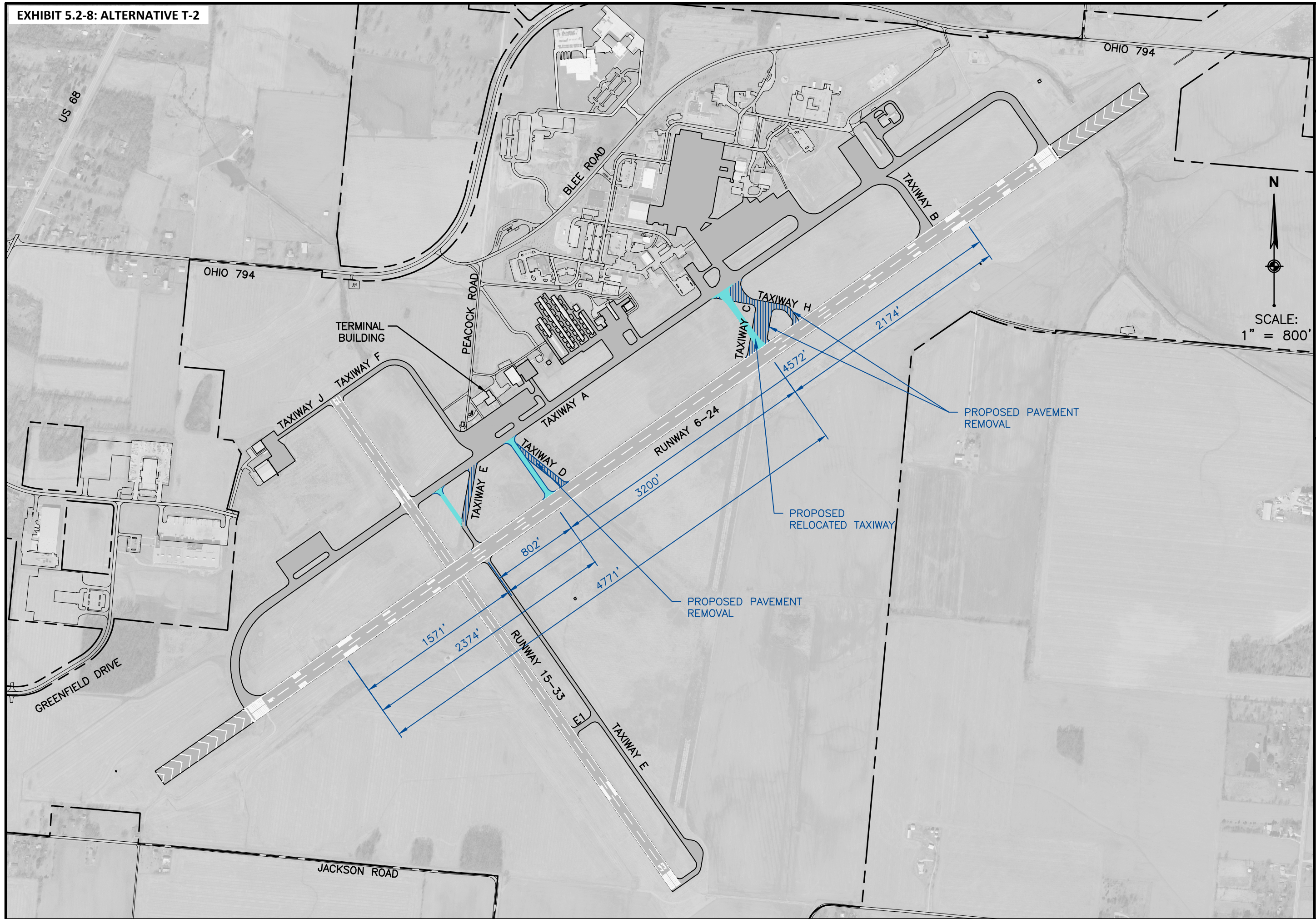
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**TAXIWAY CONNECTOR ALTERNATIVES
ALTERNATIVE T-1
SPRINGFIELD-BECKLEY AIRPORT
SPRINGFIELD, OHIO**

N
SCALE:
1" = 800'



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**TAXIWAY CONNECTOR ALTERNATIVES
 ALTERNATIVE T-2
 SPRINGFIELD-BECKLEY AIRPORT
 SPRINGFIELD, OHIO**

5.3 Hangar and Terminal Facilities

West Corporate Campus

Several options were developed for build out of the west corporate campus. While there are a multitude of ways to arrange hangars in this area, the following four were developed from which a preferred alternative was developed. Comparing area for future development, additional hangars, and additional apron area helps in discussing the succeeding alternatives.

Alternative W-1

Alternative W-1 (**Exhibit 5.3-1** on a following page) provides for an extension of the existing corporate hangar arrangements owned by Spectra Jet, Inc. (2 new hangars) and Ali-Gator Air, LLC. (one new hangar). This alternative also adds three 30,000 square feet corporate hangars and two 15,000 square feet hangars, for a total of eight new corporate hangars. Alternative W-1 makes use of the existing holding bay/bypass taxiway located off of Taxiway A, converting it to an apron. W-1 also adds a new proposed parallel taxiway to Runway 15-33 so this corporate traffic (e.g., Learjets and Challengers) does not have to back taxi on or cross a runway when landing on Runway 24 or taking off of Runway 26. The proposed construction will require the levelling of an existing berm off of the existing holding bay. This berm rises to an elevation 16 feet above ground level, incurring additional costs to remove the earth.

W-1 designates 13.3 acres for future development. While the build out along Taxiway A prohibits future potential airside access, the land west of the existing hangars can accommodate further hangar and apron construction. A summary of pertinent design aspects can be found below in **Exhibit 5.3-2**.

Exhibit 5.3-2: Alternative W-1 Summary

Design Aspect	Value	Units
Additional Hangars	8	Buildings
	193,000	Square Feet
Additional Apron Area	207,397	Square Feet
Area for Future Development	7.7	Acres

Source: Woolpert, 2017

Like the following three alternatives, W-1 proposes a perimeter road that starts near the proposed taxiway and roughly follows the airport property line to connect with a proposed roadway in the terminal area. This access road will be discussed further on in this chapter.

Alternative W-2

Alternative W-2 (**Exhibit 5.3-3** on a following page) also provides for an extension of the existing corporate hangar arrangements owned by Spectra Jet, Inc. (two new hangars) and Ali-Gator Air, LLC. (one new hangar). Alternative W-2 also adds a mix of larger (40,500 square feet) and smaller hangars (8,000 square feet) to the West Corporate Campus for additional flexibility that may be needed by potential users of this area. Like W-1, the holding bay is proposed to be converted into an apron and the bordering berm to be levelled. Furthermore, a parallel taxiway is to be constructed to accommodate traffic flow, as discussed above.

The area for future development is exclusively in the western portion behind the existing hangars. With the proposed new taxiway, airside access is available. **Exhibit 5-3.4** summarizes three pertinent design aspects of W-2. A notable aspect of this alternative is the variety of hangar sizes it offers, as well as the considerable amount of apron space added.

Exhibit 5.3-4: Alternative W-2 Summary

Design Aspect	Value	Units
Additional Hangars	12	Buildings
	251,000	Square Feet
Additional Apron Area	378,509	Square Feet
Area for Future Development	7.7	Acres

Alternative W-3

Alternative W-3 (**Exhibit 5.3-5** on a following page) also accounts for expansion of Spectra Jet, Inc. by two new hangars and Ali-Gator Air, LLC. by one new hangar and continues this same template of hangars in the entire West Corporate Campus. This alternative allows for a larger area devoted to potential car parking. **Exhibit 5.3-6** shows that W-3’s configuration is such that it offers less hangar square footage than W-1 and W-2 and less apron space than W-2, without offering more area for future development.

Exhibit 5.3-6: Alternative W-3 Summary

Design Aspect	Value	Units
Additional Hangars	8	Buildings
	173,500	Square Feet
Additional Apron Area	314,036	Square Feet
Area for Future Development	7.7	Acres

Alternative W-4

Alternative W-4 (**Exhibit 5.3-7** on a following page), like W-1, proposed two hangars for Spectra Jet and one hangar for Ali-Gator. This alternative provides a partially-constructed taxiway to promote future airside development in this area. (See **Exhibit 5.3-8.**) While W-4 shows less in the way of additional hangar space and apron area, it provides for flexibility in future development wherever it may be needed.

Exhibit 5.3-8: Alternative W-4 Summary

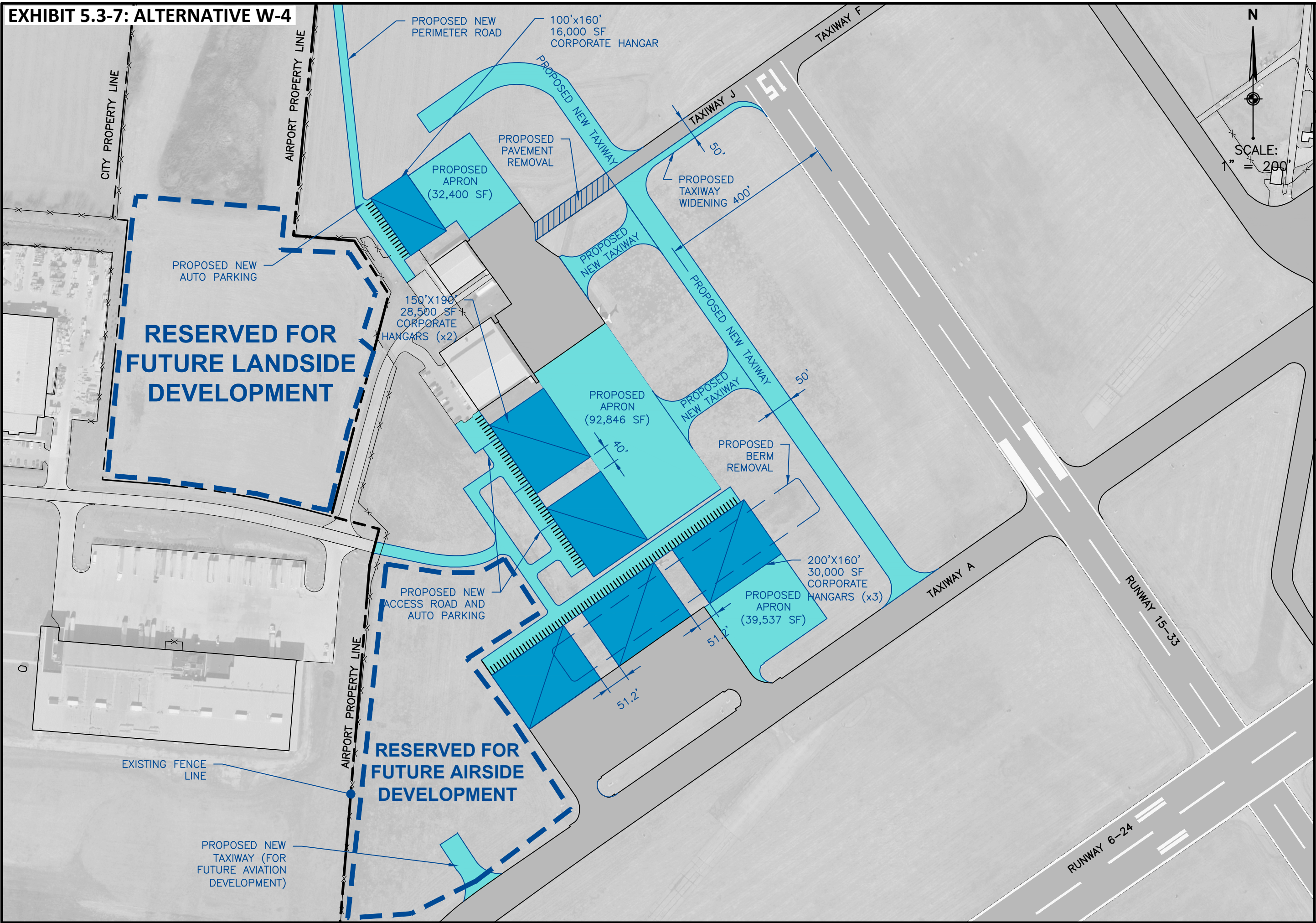
Design Aspect	Value	Units
Additional Hangars	6	Buildings
	163,000	Square Feet
Additional Apron Area	164,783	Square Feet
Area for Future Development	13.8	Acres

Preferred Alternative

Alternative W-1 is the preferred alternative for a number of reasons. Though it is not the alternative with the most hangar space, apron area or area for future development, its additions help meet the needs described in the previous chapter, as well as offering other merits:

- W-1 is designed in such a way that construction can be phased over multiple years, and the alternative can thus be implemented realistically (constructability and physical constraints criteria).
- This alternative also maintains the separation between airside and landside operations by generally keeping parking on the landside face of the hangars. This reduces the risks of incursions and pedestrian and aircraft interactions (safety criteria and efficiencies criteria).
- W-1 limits the amount of proposed access roads, thereby simplifying the landside area and making user traversal more straight forward (safety criteria and efficiencies criteria).
- There are three different hangar sizes proposed, allowing for a variety of users (flexibility criteria).
- W-1 balances additional apron area with efficient design. The apron area provided serves the proposed hangars and does not add unused paved area that needs to be maintained (cost criteria and efficiencies criteria).

EXHIBIT 5.3-7: ALTERNATIVE W-4



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**WEST CORPORATE CAMPUS ALTERNATIVES
 ALTERNATIVE W-4
 SPRINGFIELD-BECKLEY AIRPORT
 SPRINGFIELD, OHIO**

Landside Campus

The Ohio Air National Guard (OANG) is the largest tenant at the airport. They perform Intelligence, Surveillance and Reconnaissance (ISR) missions, which involves gathering intelligence information regarding the enemy by watching their behavior and tracking movements. Decoding communications to intercept plans, strategies and resources are all used to determine locations and activities providing battlefield commanders timely, relevant information. Additional missions include Remotely Piloted Aircraft, Combat Communications, and Cyber Systems. They currently do not fly aircraft missions out of the airport as they have in the past. Additional information on OANG:

178TH WING

The 178th Wing is currently an MQ-1B Predator unit. The unit was recently assigned new missions as both a ground control station for the remotely piloted MQ-1B Predator and an extension of the intelligence analysis mission from the National Air and Space Intelligence Center.

269TH COMBAT COMMUNICATIONS SQUADRON

The 269th Combat Communications Squadron operates out of Springfield-Beckley Air National Guard Base. Their mission includes deploying, operating and maintaining strategic emergency communications. It also plays a critical peacetime role during state-declared emergencies providing vital communications and other needed assistance. .

251ST CYBERSPACE ENGINEERING INSTALLATION GROUP

The 251st Cyberspace Engineering Installation Group operates out of Springfield-Beckley Air National Guard Base. Their mission includes detecting and repelling cyber-attacks on National Guard computer systems and infrastructure .

Currently, OANG has discussed releasing some of their existing facilities to the City of Springfield. There would also be potential for development in the landside area of the Ohio Air National Guard (OANG) property depending on if the OANG should either shrink its activity on the airport or expand in the future. Development in this area has unique considerations due to the OANG, and this section covers this factor, as well as other criteria. However, at this time, OANG does not have plans to grow or shrink beyond their footprint as they know it today.

Alternative L-1

Alternative L-1 (**Exhibit 5.3-9** on a following page) offers a scenario where OANG does not release any of its land. Even without a release, there is room on existing SGH land for three 10,000 square foot corporate hangars, as well as over 30,000 square feet of apron surface. To link these developments to the existing hangars in the terminal area, access road enhancements are needed. This alternative results in more usable aircraft pavement and hangar space, as well as parking, without the requirements for a land release.

Alternative L-2

Alternative L-2 (**Exhibit 5.3-10** on a following page) shows OANG releasing over 20 acres of its leased property by the existing terminal T-hangars, Taxiway G, and Tiger ramp. The released land by the terminal and Taxiway G is proposed as a business park and also another airside access point, with room for additional storage structures. The released land on the northeast side allows users access to the existing Tiger ramp, creating a second additional means for airport users to access the airside. With this access, L-2 designates existing airport property to be used as a site for unmanned aircraft systems (UAS). Also, like Alternative L-1, three 10,000-square foot hangars and a 30,835 square foot apron are proposed. And also like L-1, access road enhancements are needed.

Alternative L-3

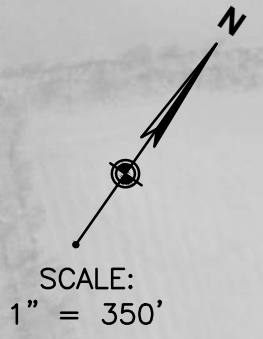
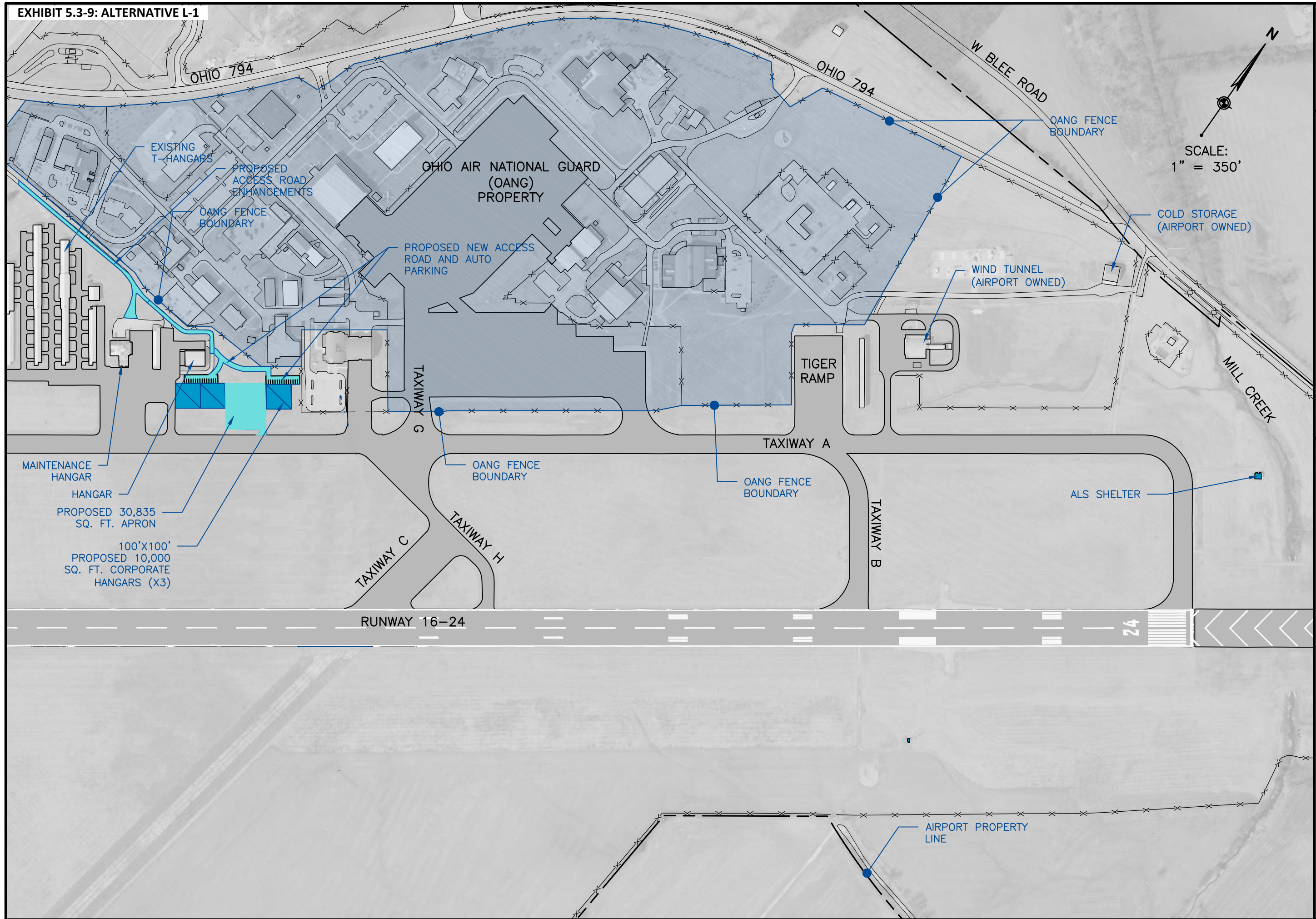
Alternative L-3 (**Exhibit 5.3-11** on a following page) includes a 33-acre land release as well as the build out near the existing terminal T-hangars also shown in the previous two alternatives. In addition to these changes, this alternative also shows the construction of ten 10,000-square foot corporate hangars and two aprons, totaling over 80,000 square feet. Though this alternative adds a considerable amount of hangar and apron space, it is not favorable because of the seclusion of the eastern airside development from the terminal area; the distance of the eastern area from the terminal makes monitoring activity in this area difficult, which is a safety and security concern for not only SGH, but also OANG. In addition to these visibility and security concerns, users of this area would have a farther distance to travel to use the facilities offered by the terminal, thereby making the area potentially unfavorable and difficult to find occupants for.

Preferred Alternative

The preferred alternative is L-2 for a number of reasons listed below.

- With a minor land release by OANG, the airport is able to gain 30,000 square feet of both hangar space and apron area (operational needs criteria).
- The land release also allows for future business development (flexibility criteria).
- With no development out of the line-of-sight of the terminal, proper monitoring of users is ensured (safety criteria).
- The proposed land release is smaller as compared to L-3 and incorporates fewer hangars, while still meeting the need for 23,800 square feet in hangar space (cost criteria).

EXHIBIT 5.3-9: ALTERNATIVE L-1



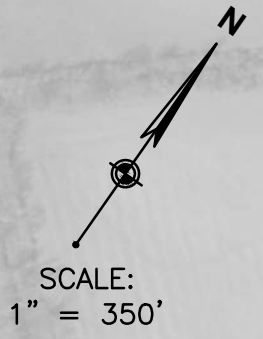
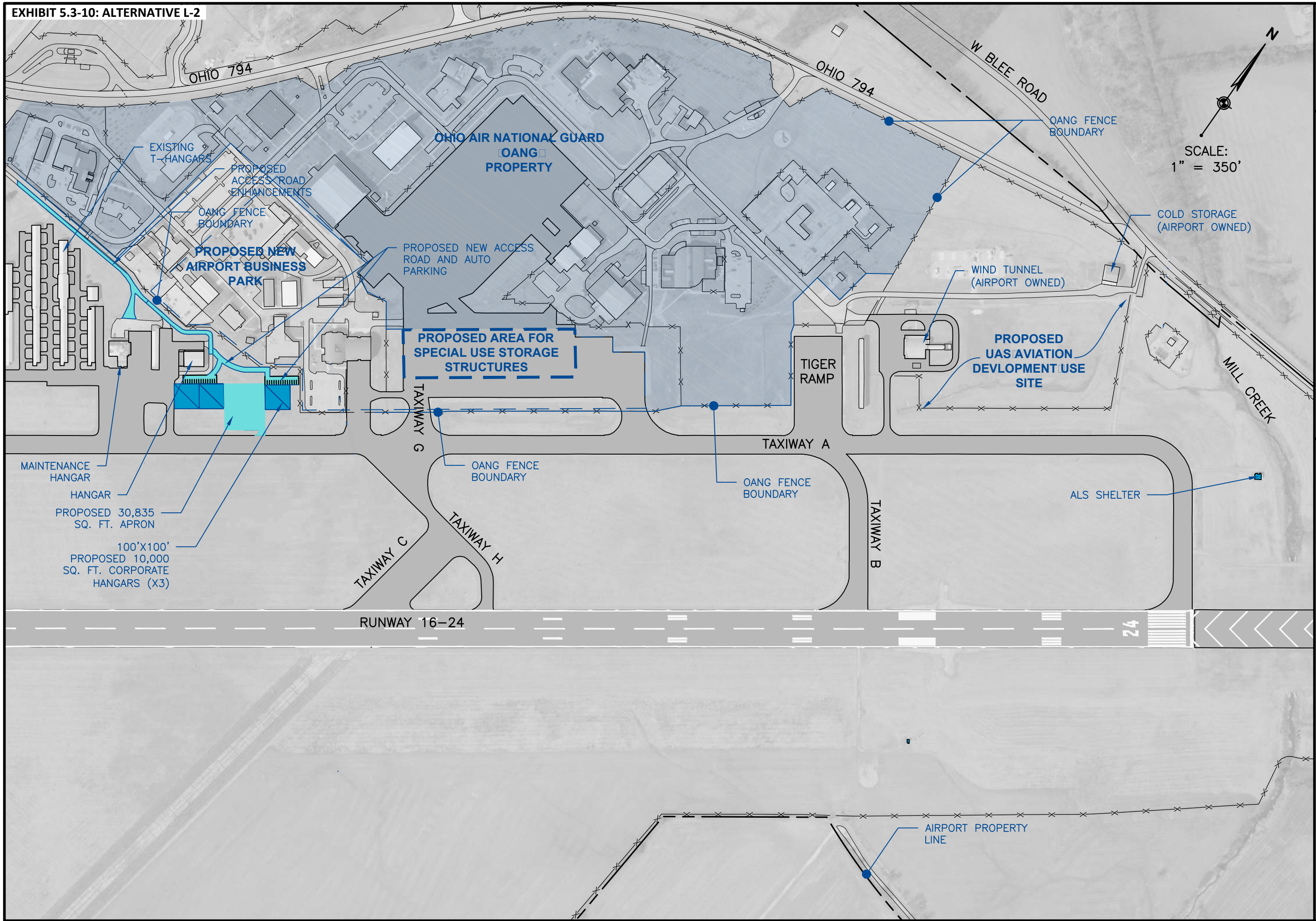
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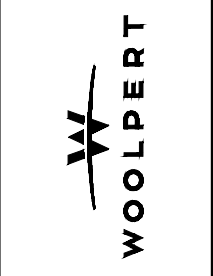
**LANDSIDE CAMPUS ALTERNATIVES
ALTERNATIVE L-1 - OANG NO CONTRACTION
SPRINGFIELD-BECKLEY AIRPORT
SPRINGFIELD, OHIO**

EXHIBIT 5.3-10: ALTERNATIVE L-2



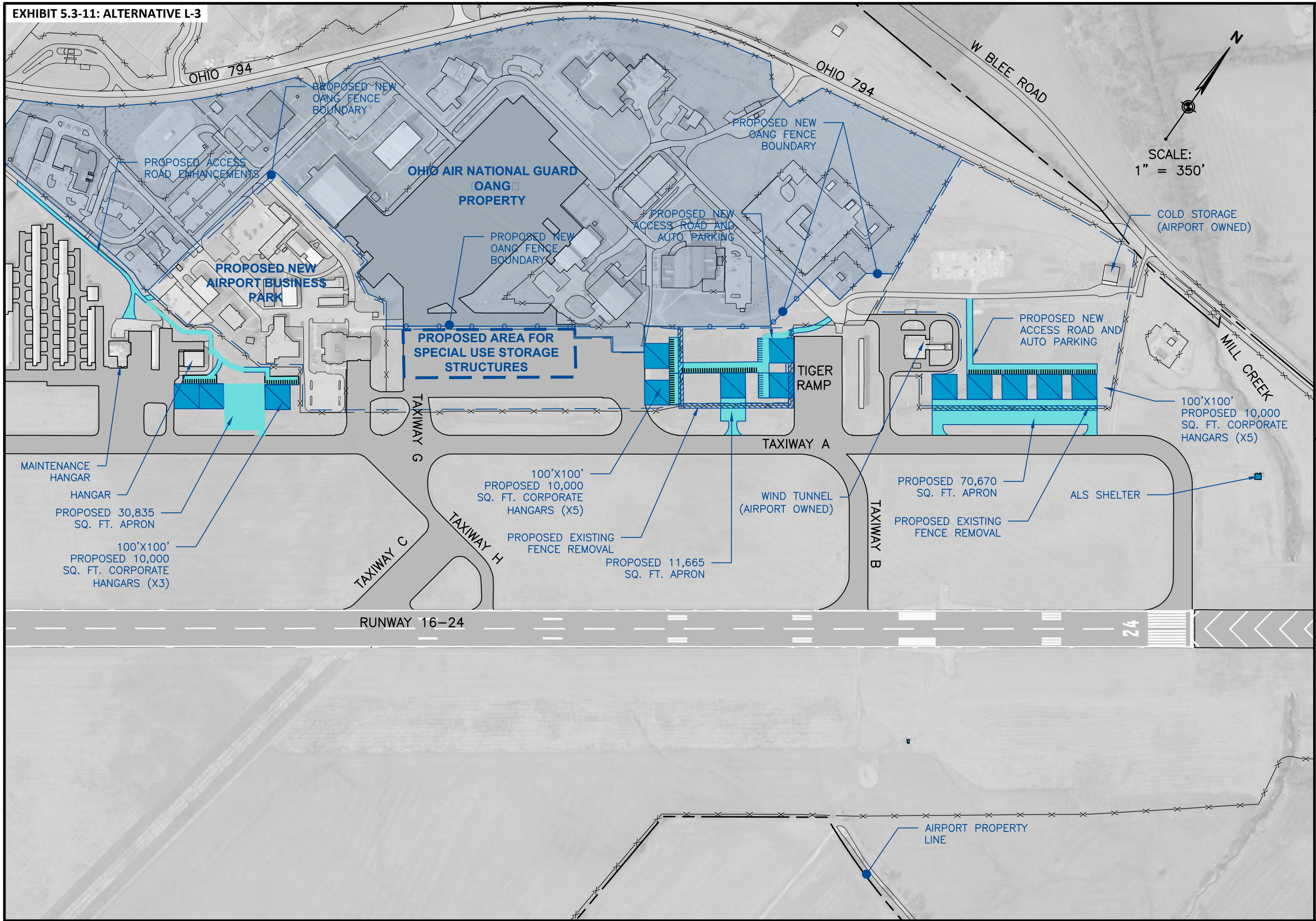
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**LANDSIDE CAMPUS ALTERNATIVES
 ALTERNATIVE L-2 - CONTRACTION
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EXHIBIT 5.3-11: ALTERNATIVE L-3



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**LANDSIDE CAMPUS ALTERNATIVES
 ALTERNATIVE L-3 - OANG CONTRACTION
 SPRINGFIELD-BECKLEY AIRPORT
 SPRINGFIELD, OHIO**

Terminal Campus

The first recommendation for the terminal campus is renaming Peacock Road. Typically, if there are trees or buildings on each side, the term “avenue” is used. A “road” typically connects two points and a “way” typically is a small side street of a road. Regardless of the suffix chosen, providing a more appropriate name would better signify an airport presence for the community and provide for an airport campus impression for visitors, like Airport Avenue. Accordingly, the final alternative chosen for the terminal campus build-out should include a new street name.

Alternative M-1

Alternative M-1 (**Exhibit 5.3-12**) is designed with the premise that there will be further expansion of the OANG onto airport property. It incorporates five 10,000-square foot corporate hangars, two 22,500-square foot corporate hangars, 49 nested T-hangars, and 26 box hangars for a total of 88,765 square feet of additional T-hangar and/or corporate/box hangar space and 95,000 square feet of conventional hangar space. This alternative eliminates the modification-to-standards associated with the existing T-hangars by removing two of the rows and replacing them with one row, thereby meeting the required 79 feet separation requirement for taxilane object free areas. T-hangars would first be added east of Peacock Road where the existing T-hangars are located. Then, as demand warranted, more would be added west of Peacock Road. An additional entrance taxiway to Taxiway A would be added for more efficient access and traffic flow.

Corporate hangars would be added off of Taxiway F, which would provide easy access to either runway on prime airside land. Initially this would provide for a separation of larger corporate aircraft from smaller T-hangar aircraft until additional T-hangar units were needed west of Peacock Road.

These additions satisfy the T-hangar/box hangar and conventional hangar needs of 16,800 square feet and 23,800 square feet, respectively, described in the previous Facilities Requirements chapter. A total of 239,675 square feet of apron is also added to accommodate the newly constructed hangars. Additionally, five tie down spots are added to the existing apron to meet the facility needs discussed in the previous chapter.

A significant need of the airport, as discussed previously, is adequate parking. Alternative M-1 provides additional parking not only for the proposed hangars, but also around the terminal area. A total of 277 parking spots are added, with 25 spots designated for long-term parking, six for terminal parking, 70 for business parking and 10 for the proposed maintenance building.

Alternative M-1 also provides a potential 640-square foot fuel farm expansion and 200 square foot terminal expansion. Additionally, the northeastern portion of fencing that surrounds the closed air traffic control tower (ATCT) will be removed and replaced further from the taxiway apron.

Alternative M-2

Alternative M-2 (**Exhibit 5.3-13**) is designed with the premise that OANG will expand. Under this scenario the entire T-hangar complex is taken over by OANG and new units are built west of Peacock Drive. M-2 includes one 10,000-square foot and two 22,500 square foot corporate hangars, nine smaller box hangars, and 64 nested T-hangars, all west of Peacock Road. This alternative would require a land release and result in a net gain of just over 19,500 square feet in T-hangar/box hangar square footage and 43,105 square feet of conventional hangar square footage. These net gains still satisfy the airport’s hangar needs, and if it is determined that the T-hangars are to be demolished, the need for a modification to standards will be eliminated.

In total, Alternative M-2 provides 197,827 additional square feet of apron surface. Like Alternative M-1, five tie down spots are added to accommodate more aircraft. M-2 also provides for 237 additional parking spots, of which 63 are for long-term parking, six for terminal parking, 20 for business parking, and 16 for the proposed maintenance building. It should be noted that the long-term parking lot requires the removal of nine trees.

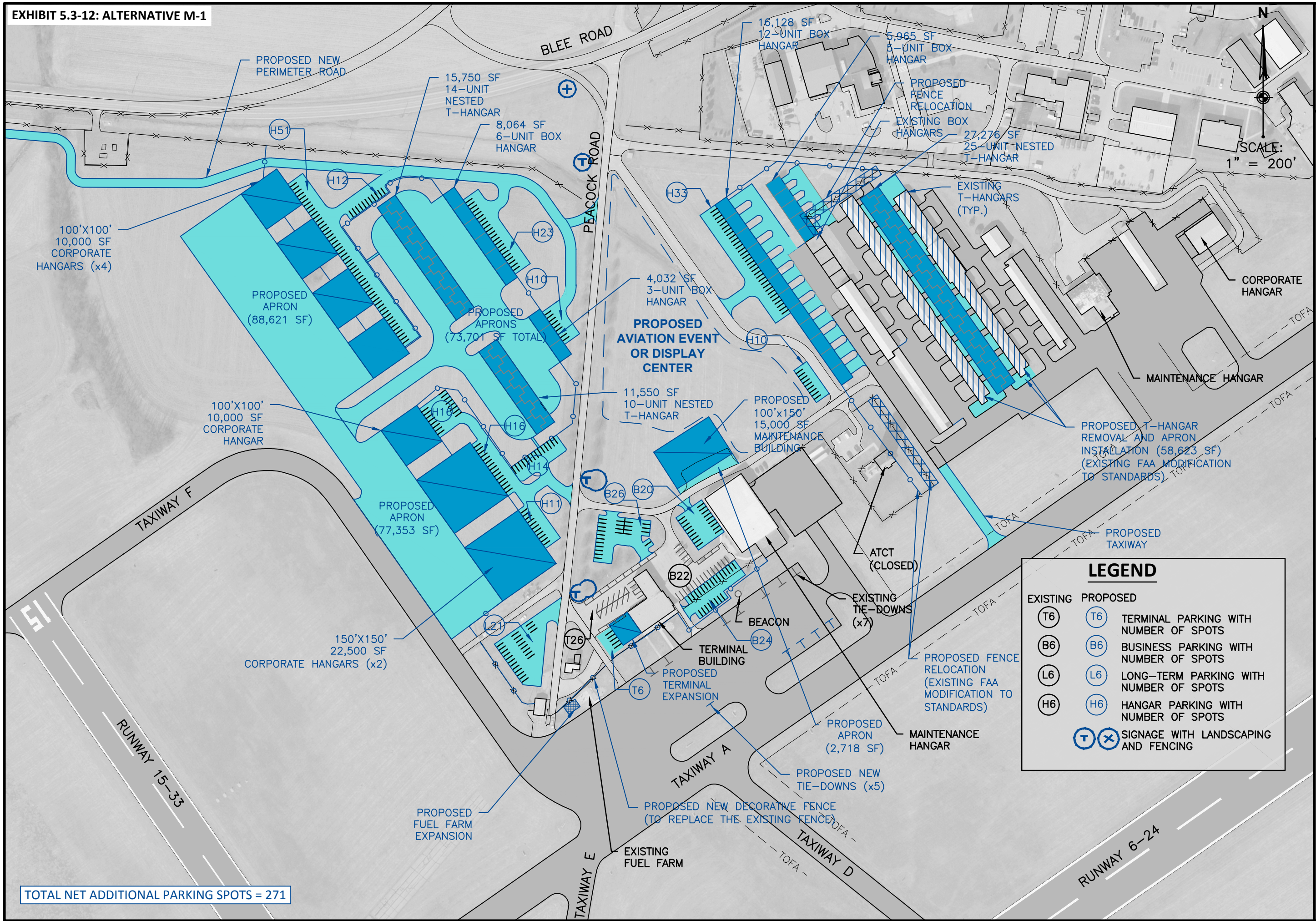
Like the previous alternative, there is a proposed 640 square foot fuel farm and 200 square foot terminal expansion. A section of the ATCT fencing will also be altered to remove the modification to standard currently in place.

Preferred Alternative

Alternative M-1 is the preferred alternative because there are no existing plans for OANG expansion, in addition to the reasons described below.

- M-1 provides the most additional parking spots, apron area, and hangar space of the two alternatives (operational needs criteria).
- In constructing the additional parking spaces, no trees need to be removed (environmental criteria).
- With the existing T-hangars remaining in the airport's property, this allows for the potential to develop further into OANG's property, as discussed in the Landside Campus alternatives above (flexibility).

EXHIBIT 5.3-12: ALTERNATIVE M-1

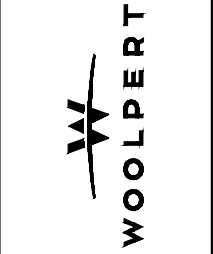


TOTAL NET ADDITIONAL PARKING SPOTS = 271

EXISTING		PROPOSED	
(T6)	TERMINAL PARKING WITH NUMBER OF SPOTS	(T6)	TERMINAL PARKING WITH NUMBER OF SPOTS
(B6)	BUSINESS PARKING WITH NUMBER OF SPOTS	(B6)	BUSINESS PARKING WITH NUMBER OF SPOTS
(L6)	LONG-TERM PARKING WITH NUMBER OF SPOTS	(L6)	LONG-TERM PARKING WITH NUMBER OF SPOTS
(H6)	HANGAR PARKING WITH NUMBER OF SPOTS	(H6)	HANGAR PARKING WITH NUMBER OF SPOTS
(T X)	SIGNAGE WITH LANDSCAPING AND FENCING	(T X)	SIGNAGE WITH LANDSCAPING AND FENCING

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**TERMINAL CAMPUS ALTERNATIVES
 ALTERNATIVE M-1
 SPRINGFIELD-BECKLEY AIRPORT
 SPRINGFIELD, OHIO**

5.5 Support Facilities

In the preceding alternatives discussion, much of the support facilities have also been discussed. Below summarizes the proposed alternatives for creating additional fuel storage and maintenance/storage hangars.

Fuel Storage

Both alternative M-1 and M-2 designate 640 square feet next to the existing fuel farm for a potential future fuel farm expansion. With 12,000 gallon tanks taking up less than 300 square feet, this allows for an additional JetA tank and 100LL, if necessary in the future. Locating the fuel storage expansion near the existing fuel dispensing area makes refilling the tanks simpler and more efficient, thereby saving money (cost criteria). Furthermore, with one location, monitoring usage and the safety of users is simpler than if two locations existed (safety).

Maintenance and Storage Hangars

Both alternative M-1 and M-2 propose a 15,000 square foot maintenance / storage hangar. Both alternatives locate this hangar northeast of the terminal building. M-1 orients the front of the hangar against the road, while M-2 orients the front to face east. Both locations of the maintenance hangar are suitable. Being 10,000 square feet, this hangar provides the 6000 to 8000 square feet of additional storage needed (operational needs criteria).

Air Traffic Control Tower

The SGH air traffic control tower (ATCT) closed in 2014 after three years of contracted services that resulted from the OANG change in mission at the airport. The City assumed operation of the ATCT in hopes of bringing other military aviation related operations to the airport; however, most general aviation aircraft do not require an ATCT to operate, so closure was the most financially prudent option for the city to take.

Several air traffic control towers across the country have been closed over the year, with some being demolished, some rehabilitated for historic reasons, and others repurposed. Due to the relatively modern building and cab (see **Exhibit 5.5-1**), there does not appear to be a reason to demolish it or keep it for any historical reasons. While it can be maintained for occasional use as needed (e.g., OANG Air Force Research Laboratory, UAV operations, air shows) repurposing it seems the most likely option for the facility. The equipment could be sold and the building used for office space, including the airport manager's office because of its superior visibility of the airport operations area. Other ATCT across the country have been used for completely non-aviation related things, like the old Stapleton tower, which is set to open as a new restaurant called the "Punch Bowl Social"¹². Walt Disney Co. turned the old Grand Central Air Terminal into a "creative campus"¹³ and the Indiana Army National Guard used federal stimulus funds to move its administration into the Old Stout Field tower at the old Indianapolis airport¹⁴.

Due to the location of the SGH ATCT, it would easily be used for aviation purposes with an attached hangar and airport administrative offices for the City of Springfield. This would open more space in the terminal for other uses and development by the FBO. If this were to happen, the hangar would best be positioned behind the tower or in a way to ensure line-of-sight was not impeded should it ever need to be converted back into an air traffic control tower.

¹² Fox 31 Denver, *Old Stapleton air traffic control tower set to open as new Punch Bowl Social*, September 17, 2017, Available at: <http://kdvr.com/2017/09/27/old-stapleton-air-traffic-control-tower-set-to-open-as-new-punch-bowl-social/>

¹³LA Times, *Impact Report on Disney's Glendale Project Examined*, July 07, 2000, available at: <http://articles.latimes.com/2000/jul/07/local/me-49021>

¹⁴13 WTHR, *Guard finds new use for old airport tower*, December 20, 2011, available at: <https://www.wthr.com/article/guard-finds-new-use-for-old-airport-tower>

Exhibit 5.5-1: Springfield's Air Traffic Control Tower



Source: Woolpert, 2017

Perimeter Roads

SGH's landside can be considered comprised of two halves, the West Corporate Campus and the Terminal Campus. Connecting these two areas without having to access outside roads or traverse an active runway will increase convenience and safety for airport users (operational efficiencies criteria and safety criteria). To connect these two campuses, a perimeter road running north of Runway 15 and along the airport property line has been proposed. Due to the layout of the airside and landside, there is no other feasible and economically efficient location for the perimeter road. Furthermore, being over 1000 feet from Runway 15 at its closest point, the road is not anticipated to carry any users that would be an obstacle to current or proposed arrival or departure surfaces. This perimeter road can be seen in **Exhibit 5.7-1**.

5.6 Un-Crewed Aircraft Systems (UAS)

UAS will be further discussed in Appendix H. An additional road is proposed to the east of and running parallel to Runway 33. This road will provide access to a potential UAS site. This road, accessible via Jackson Road, will allow authorized users to reach this site without traversing through the terminal area and on active runways (safety criteria). This road can be found below in **Exhibit 5.7-1**.

5.7 Overall Preferred Alternative

The ALP (Chapter 6) visually represents the FINAL preferred alternatives discussed above and revised as discussed below between the time of the original alternatives and the FAA review. These proposed developments have been selected considering the operational needs of the airport, efficiency, safety, constructability, cost, flexibility and the environment.

Taxiway Connectors

In accordance with Advisory Circular 5300-13a, Table 4-9 and the alternatives, locating the newly proposed Taxiway H from the Alternative T-1 to about midpoint between Taxiway D and Taxiway H is recommended. It would provide the best percentage of utilization from flights in both directions under both wet and dry conditions for large aircraft. Because most flights land east to west at the airport on the primary airport, the construction of this taxiway connector is not necessary until Taxiway D is removed. Therefore, it is not required when removing Taxiway H/C.

Terminal Area Plans

Upon further review of the terminal area, additional modifications were made:

Main Terminal

- Re-align and extend new T-Hangars including those that can support wingspans larger than 49 feet and provide a future Group I and Group II separation (as shown). This would add a substantial number of hangars without having to tear down all the existing. This would assist in the transition of existing users and alleviate the need for them to relocate off the airport.
- Provide more middle range sized hangar options (smaller than 100ft. by 100ft.) for development including a vertiport/UAS aircraft work hangar near the terminal.
- Expand the auto parking around the terminal.
- Remove unused and unsightly buildings near the terminal, and enhance existing buildings (e.g., electrical vault).
- Expand the Apron for additional tie-downs or large aircraft parking out of the way of the terminal (e.g., in front of the closed ATCT, future administrative buildings).
- Consider enlarging the existing maintenance facility with the parking lot before having to construct a new facility nearby to save on costs.
- Add a picnic/park area in a safe location for viewing by airport users and the public.

West Campus

- Add more auto parking and improve fencing/access gate conditions for existing tenants.

Landside Campus

- With the lack of OANG's interest in shrinking their lease interest, keep the existing footprint intact except for a small area that would allow roadway access from Blee Road directly to the Tiger Ramp.
- Add Vertiport locations on the existing Tiger Ramp and to a future ramp buildout location near the wind tunnel.