Salina Regional SLN Airport

DEVELOPMENT ALTERNATIVES

Chapter Four

The previous chapter outlined the basis for future airport development needs. Aviation demand was quantified and projected for the next 20 years. Those projections were then translated into facilities which may be required to satisfy certain demand levels. Some facilities will need to be improved to meet Federal Aviation Administration (FAA) design standards. The next step in the planning process is to evaluate reasonable ways these facilities can be provided. With a sizeable airport facility, there can be numerous combinations of design alternatives; however, the alternatives presented here are those with the perceived greatest potential for implementation.

Any development proposed for a master plan evolves from the analysis of projected needs for a set period of time. Though the needs were determined by utilizing industry-accepted statistical methodologies, unforeseen future events could impact the timing of the needs identified. The master planning process attempts to develop a viable concept for meeting the needs caused by projected demands for the next 20 years; however, no plan of action should be developed which may be inconsistent with the future goals and objectives of the Salina Regional Airport Authority (SAA), airport users, and the citizens of Salina, who have a vested interest in the development and operation of the airport.

The development alternatives for Salina Regional Airport (SLN) can be categorized into two functional areas: the **airside** (runways, navigational aids, taxiways, etc.) and **landside** (hangars, apron, and terminal area). Within each of these areas, specific capabilities and facilities are required or desired. In addition, the utilization of airport property to provide revenue support for the airport and to benefit the economic development and well-being of the region must be considered.

Each functional area interrelates and affects the development potential of the others. Therefore, all areas are examined individually and then coordinated as a whole to ensure the final plan is functional, efficient, and cost-effective. The total impact of all these factors on the existing airport must be evaluated to determine if the investment in Salina Regional Airport will meet the needs of the community, both during and beyond the 20-year planning period.

The alternatives considered in this chapter are compared using design standard, industry standard, environmental, and economic factors to determine which of the alternatives will best fulfill the local aviation needs. It is important to note that these alternatives presented here can be considered as a starting point. After presenting this information to and receiving feedback from the Planning Advisory Committee (PAC), SAA, airport administration, and various airport stakeholders, a final airport development concept will emerge.

NON-DEVELOPMENT ALTERNATIVES

Prior to the presentation of development alternatives, there are several non-development options that should be considered for Salina Regional Airport. Non-development alternatives include a "no-build" or "do-nothing" alternative, development of a new replacement airport at a new location, or closure of the existing airport and the transfer of services to another existing airport.

Salina Regional Airport serves a very important function for the City of Salina, as well as Saline County and the region as a whole. The airport primarily serves as an air transportation facility offering a vital asset for interstate commerce. The airport is utilized by a wide variety of aviation entities including SeaPort Airlines and general aviation operators. In fact, the airport plays a key role as its location and available facilities make it an excellent destination for cross country fuel stops.

Salina Regional Airport also has a significant role to play in national defense. The airport is home to Kansas National Guard facilities and supports the Smoky Hill Bombing Range and Crisis City. As such, the airport regularly hosts national and international military units for training purposes.

There is significant public and private investment at the airport. Pursuit of a non-development alternative would slowly devalue these investments, lead to infrastructure deterioration, and, potentially, the loss of significant levels of federal funding for airport improvements. Ultimately, the safety of aircraft, pilots, and persons on the ground could be jeopardized. Therefore, the no-build/do-nothing alternative will no longer be considered.

The option of constructing a new airport to replace the existing Salina Regional Airport is equally unreasonable. Typically, this option may be considered if the existing airport has been encroached upon by surrounding incompatible land uses to such a degree that safety has been compromised. This is not the situation for Salina Regional Airport. Moreover, the sizable investments in the existing airport could not be duplicated in current funding environments.

Transferring airport demand to another airport is the final non-development alternative. Under this scenario, Salina Regional Airport would be closed and all ac-

tivity would be transferred to another airport in the region. Without consideration of the consequences, obligations, or costs of closure, there is no other regional airport which could absorb the transfer of activity and facilities from Salina Regional Airport.

The SAA is the governing body in charge of operating and managing Salina Regional Airport. As the airport sponsor, SAA would have to initiate and lead any effort to close the airport in favor of a new airport or to transfer services to another airport. From an economic standpoint, the Airport Authority would have to refund to the FAA the prorated portion of any federal dollars invested at the airport. The other option is to choose not to request or accept any further federal grants and wait for current grant obligations to expire.

SAA would have to also develop a plan to accommodate existing tenants and lease holders. This could be accomplished through buying out the remaining lease terms or allowing existing leases to expire. The Airport Authority would have to pay for the relocation of aircraft and other private property, and there are additional costs associated with the relocation of existing businesses. In addition, the improvement and maintenance investments made through the years would be lost. In short, it would be very time-consuming and costly to close Salina Regional Airport so as to relocate services to another airport.

Salina Regional Airport plays a critical role in the economic development of the region and an important role in the continuity of the national aviation network. Pursuing a no-build/do-nothing alternative will directly lead to a deterioration of airport facilities, including the runways and taxiways. Ultimately, safety could be compromised.

Construction of a replacement airport is not necessary as the airport is more than capable to serve its defined role in the aviation system now and into the future. Closure of Salina Regional Airport and transferring activity to another airport is not considered feasible, primarily due to legal obligations and the substantial costs associated with closure. Federal grant assurances necessitate that the airport remain in operation until grant assurances expire. Even if the SAA were to wait for the expiration for grant assurances, the cost to relocate current tenants would be substantial.

Therefore, it is recommended that the SAA continue to maintain and improve SLN so as to serve the aviation and economic development needs of the City of Salina, Saline County, and the greater North Central Kansas region. No further consideration will be given to the non-development alternatives.

AIRPORT DEVELOPMENT OBJECTIVES

It is the goal of this effort to produce a balanced development plan to best serve forecast aviation demands. However, before defining and evaluating specific alternatives, airport development objectives should be considered. It is of primary concern that the airport is marketed, developed, and operated for the betterment of the community and its users. With this in mind, the following overarching objectives have been defined for this planning effort:

- To preserve and protect public and private investments in existing airport facilities;

- To develop a safe, attractive, and efficient aviation facility in accordance with applicable federal, state, and local regulations;

- To develop a balanced facility that is responsive to the current and long term needs of all commercial, general aviation, and military users;

- To be reflective and supportive of the long term planning efforts currently applicable to the region;

- To develop a facility with a focus on self-sufficiency in both operational and developmental cost recovery; and

- To ensure that future development is environmentally compatible.

REVIEW OF PREVIOUS AIRPORT PLANS

The last planning effort for SLN was an Airport Layout Plan (ALP) Narrative Report completed in 2010. The resultant plan is depicted on **Exhibit 4A**. This effort was not a detailed master planning study; however, the plan outlined proposed improvements on both the airside and landside. For the airside, the previous plan considered the following major elements:

- Installation of an ILS glideslope antenna and MALSR on Runway 17;
- Modifying Runway 4-22 by shortening the north end and extending the south end;
- Narrowing the width of Taxiways B, C, D, E, and F;
- Constructing a new access taxiway for Runway 4 stemming from Taxiways C and E; and
- Constructing a parallel taxiway on the east side of Runway 18-36.

On the landside, the following major improvements were considered for the master plan:

- Slight modifications/additions of facilities in the main terminal area;
- Development of the airport rescue and firefighting (ARFF) facility (completed);
- Development of an Aviation Museum near Flower Aviation and the ARFF facility;
- Construction of large conventional hangars to the north of Kansas State University (KSU) facilities;
- Construction of corporate hangars to the north;
- Construction of T-hangars at the north end of the apron; and
- Allowance for military aviation facility development to the south of Taxiway B between Runway 30 and Runway 36.

The analysis to follow in this alternatives chapter will revisit the recommendations presented in the previous master plan. Some elements may be carried over to this master plan and others may be removed from future consideration.

AIRSIDE PLANNING CONSIDERATIONS

Generally, airside issues relate to those airport elements that contribute to the safe and efficient transition of aircraft and passengers from air transportation to the landside facilities at the airport. This includes the established design standards for the airport, the instrument approach capabilities, the capacity of the airfield,

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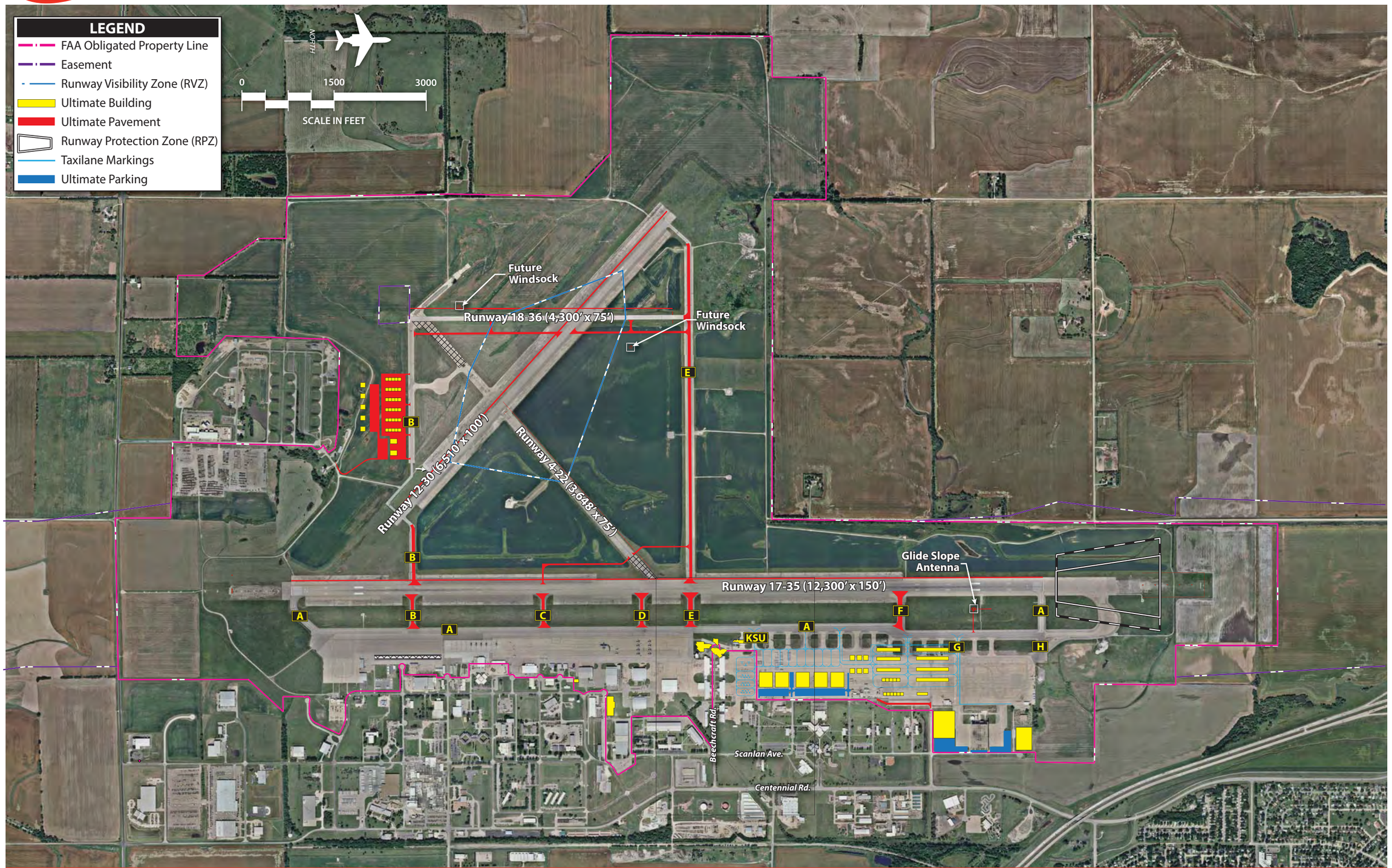

Exhibit 4A
Future Development

the length and strength of the runways, and the layout of the taxiways. Each of these elements was introduced in the previous chapter.

This chapter will examine airside and landside issues specific to Salina Regional Airport. These will then be applied to several airside and landside development alternatives. **Exhibit 4B** presents a summary of the primary airside and landside planning issues to be considered in this alternatives analysis.

As discussed in the Facility Requirements chapter of this master plan, a Runway Design Code (RDC) is applied to each runway in order to identify the appropriate design standards to apply to the runway and taxiway system. The RDC for Runway 17-35 is planned for C/D-III, while the RDC for Runway 12-30 is planned for ARC C/D-II. The RDC for Runways 18-36 and 4-22 is planned to remain in B-II. The applicable design standards were previously presented in Table 3F in Chapter Three.

RUNWAY ALTERNATIVES

Runway 17-35

Runway 17-35 is the airport's primary runway measuring 12,300 feet long by 150 feet wide. It is strength-rated to meet the needs of all aircraft using the airport, including large commercial and military aircraft. The current pavement length and strength exceeds the needs of the critical aircraft for the airport based on FAA standards. As such, the FAA only participates in maintenance funding for a portion of the runway, approximately 7,500 feet. The Kansas Department of Transportation (KDOT) – Aviation has stepped in to financially support half of the cost to maintain the remainder of the runway pavement, marking, and lighting costs. This situation is ideal and should continue as long as KDOT and SAA are willing to utilize funds to support the maintenance of the runway not supported by the FAA.

The only proposed improvement for Runway 17-35 is the consideration for improved instrument approach visibility minimums on Runway 17. Currently, the global positioning system (GPS) localizer performance vertical guidance (LPV) approach offers the best visibility minimums at not lower than one mile with 250-foot cloud ceilings. As there are no known obstructions to the north of the runway preventing lower minimums, consideration should be given to installing an approach lighting system capable of providing minimums as low as ½-mile visibility and 200-foot cloud ceilings, or Category I (CAT I) minimums.

In order to achieve CAT I minimums, a medium intensity approach lighting system with runway alignment lights (MALSR) would need to be installed north of the runway end. **Exhibit 4C** illustrates the MALSR as required to support a published instrument approach offering CAT I visibility minimums. Such an approach would also increase the size of the runway protection zone (RPZ). As depicted, the RPZ would enlarge but would remain fully on existing airport property.

It should be noted that obtaining an MALSR under current FAA programs is not simple. First, a benefit-cost analysis would need to support the installation. If justified, the procedure to arrange funding is arduous and would require the coordination and working agreements of several lines of business within the FAA.

Runway 12-30

Runway 12-30 is 6,510 feet long and 100 feet wide. This runway currently meets the length and width recommendations for a crosswind runway at Salina Regional Airport. It serves the needs of all aircraft users when wind conditions necessitate its use. As such, it should be maintained through the planning period.

The primary alternative issue with Runway 12-30 is improving instrument approach visibility minimums. Similar to Runway 17 discussed above, Runway 12-30 is served by non-precision approaches offering not lower than one mile visibility minimums. The GPS approaches to Runways 12 and 30, however, are lateral navigation only (LNAV), which do not offer the vertical descent guidance provided by the LPV approach. Moreover, the LNAV approach cannot provide lower than one mile minimums at this time. As such, consideration should be given to at least one end of Runway 12-30 being improved for an LVP approach with minimums as low as CAT I.

In order to achieve lower than one mile minimums, an approach lighting system would need to be installed. While an MALSR system could technically be installed on Runway 30, it would present difficulties due to the proximity of Runway 17-35. In fact, the installation would likely require that at least one light station be placed in or very near the runway pavement. Such an installation is complicated and costly. As such, any consideration of an approach lighting system for Runway 12-30 should be for the north end of the runway. **Exhibit 4C** depicts the installation of an MALSR on Runway 12, as well as the enlarged RPZ associated with a CAT I minimum approach. As depicted, the MALSR and RPZ would be located entirely on existing airport property.

A final consideration for lower visibility minimums for Runway 12-30 is parallel taxiway access. FAA standards indicate that a full length parallel taxiway be provided for runways served by an instrument approach having a vertical guidance component. As such, any plans for an LPV approach to Runway 12-30 must factor in the development of a parallel taxiway located 400 feet from the runway (centerline to centerline) as depicted on **Exhibit 4C**.

Runway 18-36

Runway 18-36 is 4,300 feet long by 75 feet wide, located approximately 4,434 feet west of and parallel to primary Runway 17-35. It was constructed by the SAA to as a training runway to relieve congestion on Runway 17-35 and segregate large aircraft operations from small aircraft as practical. It is also designated for use by unmanned aerial systems (UAS) aircraft by KSU. The runway is adequate to serve its intended purpose and should be maintained as needed.

Runway 4-22

The future disposition of Runway 4-22 is an important consideration in this study. As discussed in Chapter Three – Facility Requirements, the runway provides redundancy as a crosswind runway. It is not currently eligible for FAA development grants; however, it is eligible for state grants. Runway 4-22 is the least utilized runway according to airport traffic control tower (ATCT) personnel with fewer than 100 annual operations.

Salina Regional SLN Airport

AIRFIELD GEOMETRY AND DESIGN ISSUES

- Improved Instrument Approach Minimums
- Runway 4-22
- Taxiway Design
- Runway/Taxiway "Hot Spots"
- Aging Pavement Removal

LANDSIDE ISSUES

- Terminal Building
- Hangar Development
- Museum Development
- Aging Pavement Removal

Exhibit 4B
Alternative Considerations

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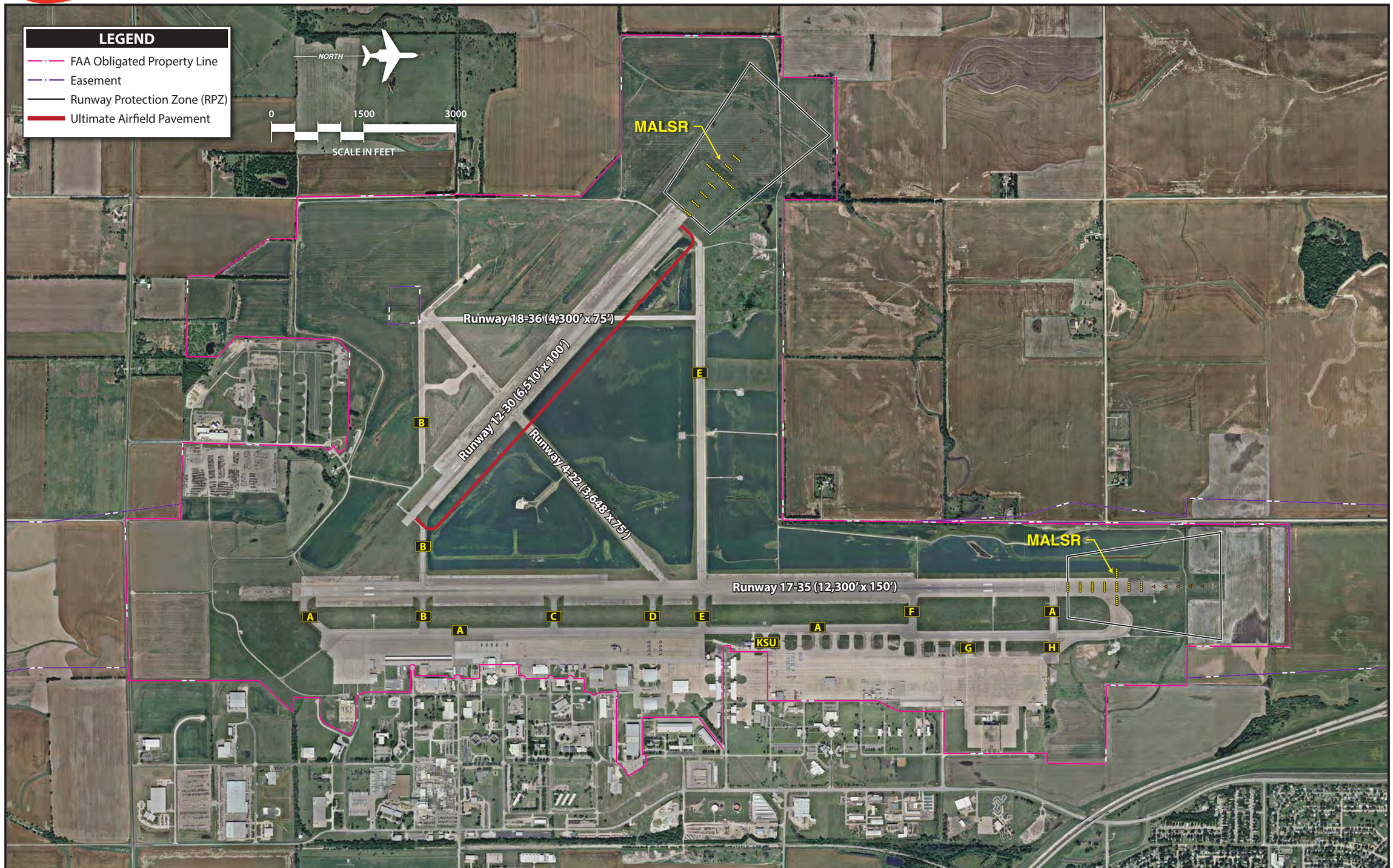

Exhibit 4C
Instrument Approach Improvement Options

Maybe an even more important factor is that the runway's current configuration does not meet FAA design standards. First, the FAA has recently moved to modify any runway design geometries that create closely spaced runways. Second, FAA standards suggest that the runway safety area (RSA) of one runway should not overlap another runway. Both conditions exist with the current configuration of Runway 4-22, as it is located between Runways 12-30 and 17-35. The southwestern end of the runway abuts the shoulder of Runway 12-30 and the northeastern end is closely spaced with Runway 17-35. The RSA beyond both ends of Runway 4-22 extend onto the nearby runways, as was depicted in the previous chapter on Exhibit 3E.

If Runway 4-22 is to remain, the runway would need to be modified to conform to FAA design standards. There are three development alternatives for modifying Runway 4-22 to meet design standards. Two of the alternatives were considered feasible, while the third was not.

Runway 4-22 Alternative 1

The first alternative would include shortening Runway 4-22 by 300 feet on each end, leaving 3,048 feet of usable runway length as depicted on the left pane of **Exhibit 4D**. Reducing the runway length would allow the final 300 feet on each end of the existing runway to serve as RSA. As such, the RSA would no longer overlap Runways 12-30 and 17-35. The primary drawback for this alternative would be the decreased runway length. This alternative does not present any real positive value other than maintaining the availability of a runway to meet the needs of a few users. The existing length is suitable only for small aircraft and any further reduction would minimize the runway's economic value.

Runway 4-22 Alternative 2

The second alternative for improving Runway 4-22 considered maintaining the existing length as a priority. As depicted on the right pane of **Exhibit 4D**, Alternative 2 considers shifting the runway 300 feet to the southwest, thereby shifting the RSA's for each end off the nearby runways. The primary benefit of this alternative would be maintaining the existing length and orientation of Runway 4-22 for its users. The primary drawbacks of this alternative include a limited runway with minimal economic value and the shifted Runway 4 end would remain closely spaced after intersecting with Runway 12-30.

Runway 4-22 Alternative 3

The final Runway 4-22 alternative is not depicted as it would likely not be approved by the FAA. It would include shifting the runway to the northeast so as to remove the RSA from Runways 17-35 and 12-30. By doing so, however, the shifted Runway 22 end would encroach upon Taxiway A, Flower Aviation, and KSU facilities. Such a shift would result in even more difficult geometrical design issues and is not practical. As such, this alternative will no longer be considered.

Runway 4-22 Alternative Summary

Runway 4-22 was originally constructed by the military so that the airfield could remain operational during all wind conditions. For civilian uses, however, the runway is no longer necessary and ex-

pensive to maintain. The FAA no longer participates in funding maintenance or other improvements to the runway. Its current configuration presents serious design complications which need to be modified to meet standards.

The runway is currently in relatively poor condition with cracking. The deteriorating pavement condition will ultimately lead to the development of foreign object debris (FOD). FOD is loose gravel/asphalt which can be dangerous to aircraft operations, or at a minimum will damage aircraft, especially aircraft propellers.

The most reasonable and practical alternative would be to close the runway. Runway 4-22 is rarely used and offers little to no economic value for the airport. Moreover, its continued maintenance will be costly and must come from local or state financial resources only. These funds would be better utilized on other airfield pavements or for landside development options. The runway could remain open until such time as additional financial resources are needed for maintenance or it could be closed immediately. Once closed, the pavement could be reconfigured for use as a taxiway or abandoned/removed. The final decision will need to be made by the SAA in consultation with airport management.

TAXIWAYS

The taxiway system at Salina Regional Airport provides for the efficient movement of aircraft to and from the runways. FAA AC 150/5300-13A, *Airport Design*, instituted new design standards for taxiways, some of which impact planning for Salina Regional Airport. Most of the new or updated standards were enacted to mitigate the potential for runway incursion events. Changes were also aimed at improving pilot situational awareness so as to help prevent accidents, such as the Comair crash in Lexington, Kentucky. The FAA has indicated that all airfields should be planned to meet these standards. Actual changes will be made over time as grant funding is made available.

The following, as depicted on **Exhibit 4E**, are the taxiway geometry concerns at Salina Regional Airport based on FAA taxiway design criteria outlined in Chapter Three – Facility Requirements:

1. Hot Spot identified by FAA at intersection of Taxiway E and Runway 17-35;
2. Hot Spot identified by FAA on Taxiway B between Runway 17-35 and Runway 12-30;
3. Taxiway A at the south end of Runway 17-35, hold position marking is not aligned at a 90-degree angle. As this taxiway is an entry taxiway for Runway 35 departure operations, it should be planned to provide a 90-degree angle at the hold position marking;
4. Taxiway B hold position marking for Runway 30 is not aligned at a 90-degree angle. As this taxiway is an entry taxiway for Runway 30 departure operations, it should be planned to provide a 90-degree angle at the hold position marking;
5. Taxiways D and E serve as runway crossing taxiways providing access to Runway 4, Runway 12, and Runway 18. These taxiways provide crossing opportunities in the high energy area for Runway 17-35, which is discouraged under new FAA guidelines;
6. Discussion in the previous chapter indicated that Runway 4-22 could

Salina Regional SLN Airport

ALTTERNATIVE 1
MOVE EACH RUNWAY END 300'

NORTH

0 1000 2000

SCALE IN FEET

Runway 18-36 (4,300' x 75')

Runway 12-30 (6,510' x 100')

Runway 4-22 (3,048' x 75')

Runway 17-35 (12,300' x 150')

E

B

B

B C D E

A

KSU

LEGEND

- FAA Obligated Property Line
- Easement
- Runway Safety Area (RSA)
- Object Free Area (OFA)
- Ultimate Airfield Pavement
- Pavement to be Removed

ALTERNATIVE 2
SHIFT RUNWAY 300'

Runway 18-36 (4,300' x 75')

Runway 12-30 (6,510' x 100')

Runway 4-22 (3,648' x 75')

Runway 17-35 (12,300' x 150')

E

B

B

B C D E

A

KSU

Exhibit 4D
Runway 4-22 Alternatives

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Exhibit 4E
Taxiway Design Issues

be modified for use as a taxiway if closed as a runway; and

7. Runway 12-30 is not served by a parallel taxiway and has no true midfield exit taxiway options. If the runway is to be served by a vertically guided approach, a parallel taxiway system is required.

Hot Spot Mitigation Measures

There are two identified Hot Spot locations on the airfield. The objective of this analysis is to identify opportunities to improve the Hot Spot if solutions are available.

Hot Spot at Taxiway E

One location is on Taxiway E between Runway 17-35 and parallel Taxiway A. This location is a common point for midfield departure operations on Runway 17 by aircraft not needing the full runway length. At Taxiway E, Runway 17 has 6,500 feet of length for southerly departures. Taxiway E is also the primary route to transition between the main ramp areas east of Runway 17-35 and the west side of the airport. Aircraft departing on Runways 4, 12, and 18, as well as aircraft landing on Runways 30 and 36, will utilize Taxiway E as a means to cross Runway 17-35 to transition to their intended destinations. As such, Taxiway E can become a very busy intersection, especially during KSU peak training periods. As will be discussed later, Taxiway E crosses Runway 17-35 in the high energy area as defined by FAA at the middle third of the runway.

The physical design and geometry of the Taxiway E Hot Spot location meets all FAA criteria. It is situated at a proper 90-degree angle with the runway. The hold line is set 290 feet from the runway centerline and is properly marked. Airport management has also installed enhanced centerline marking and a "wig-wag" lighting system to alert approaching aircraft of the hold position marking. It appears that all conventional design methods have been put into place. Moreover, the availability of air traffic control also establishes another layer of safety for the movement area. The only remaining option would be to divert some or all of the traffic from this taxiway to other routes. While this option could help, shifting the traffic to alleviate the Hot Spot could simply shift the Hot Spot to another location on the airfield. Alternative consideration to be presented later will identify a method of shifting traffic to meet other standard considerations.

Hot Spot at Taxiway B

The second identified Hot Spot is located on the section of Taxiway B between Runways 12-30 and 17-35. This portion of taxiway is commonly used for aircraft departing Runways 30 and 36, as well as aircraft landing on Runways 12, 18, and even Runway 4. The geometrical design of this section of Taxiway B includes a hold position marking 290 feet west of Runway 17-35 and another hold position marking 250 feet east of Runway 12. The Hot Spot is identified as some aircraft are confused by the two hold position markings and may cross through one without proper clearance.

Based on the physical design and geometry, Taxiway B meets all FAA standards between the hold position marking locations. Enhanced centerline markings and wig-wags have been installed. There is ample room, approximately 715 feet, be-

tween the two hold position markings. As such, the area is more than adequate for all aircraft users to transition and hold in between the hold position markings.

As with the Taxiway E Hot Spot, it appears that all conventional methods of improving the situational awareness for pilots has been provided. The only remaining option would be to modify the taxiway geometry as a means to improve pilot awareness. A potential solution will be outlined later in the alternatives for improving the entry taxiway geometry into Runway 30.

Entry Taxiway Alternatives

Entry taxiways are those that provide a direct link between a parallel or crossing taxiway with the departure end of a runway. As indicated earlier, there are two taxiways which do not provide the FAA standard 90-degree entry: Taxiway A for Runway 35 and Taxiway B for Runway 12.

Taxiway A Entry Taxiway Alternatives

Parallel Taxiway A is a full length parallel taxiway serving Runway 17-35. It is located more than 600 feet east of the runway centerline. The location and geometry of Taxiway A meets standard with the exception of the southernmost portion serving as an entry taxiway for northerly departures on Runway 35. The southern portion of the taxiway is oriented at an acute angle as it approaches Runway 35 before meeting the runway at a 90-degree angle.

The orientation of the hold position marking on Taxiway A does not conform to FAA design standard. The hold position marking is situated 290 feet from the runway centerline and is not oriented parallel to the runway as FAA standards require. The standard has been established to allow pilots the ability to have a full view of the runway environment. The angled taxiway diminishes the pilot's ability to fully view the northern portion of the runway. As such, alternatives have been developed which will aid in providing for proper hold position orientation on Taxiway A.

Taxiway A Entry Option 1

The first option for improving the non-standard entry orientation on Taxiway A includes a simple approach of moving the hold position marking to the west. The existing hold position marking is set 290 feet from runway centerline. This dimension was recommended by the FAA under previous design standards. Previous recommendations included establishing the hold position marking 250 feet from the runway centerline plus 40 feet due to the airport's elevation above mean sea level.

The most recent changes included in the Advisory Circular do not require the additional separation for aircraft in airport reference code (ARC) C-II/C-III. For these aircraft, the hold position marking is only required to be 250 feet from runway centerline. As such, the first option is to shift the hold position marking 40 feet to the west as depicted on the left pane of **Exhibit 4F**. If planning for ARC D-II/III, the hold distance would be 263 feet.

The exhibit depicts a large aircraft (Boeing 737) at the relocated hold position. While a large aircraft is not fully at 90 degrees with the runway, the pilots of the aircraft would have a full field of vision on Runway 17-35. Smaller aircraft will be

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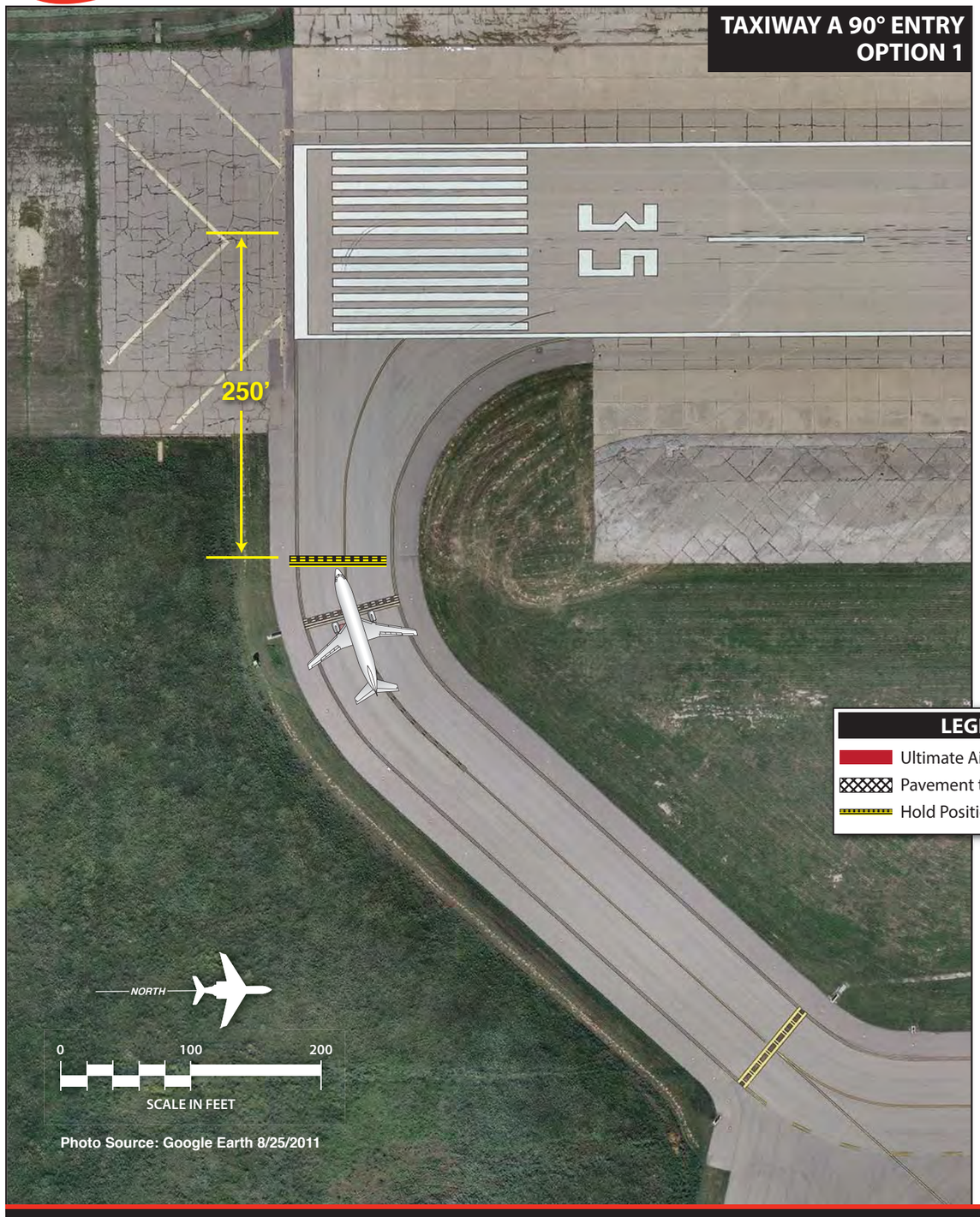

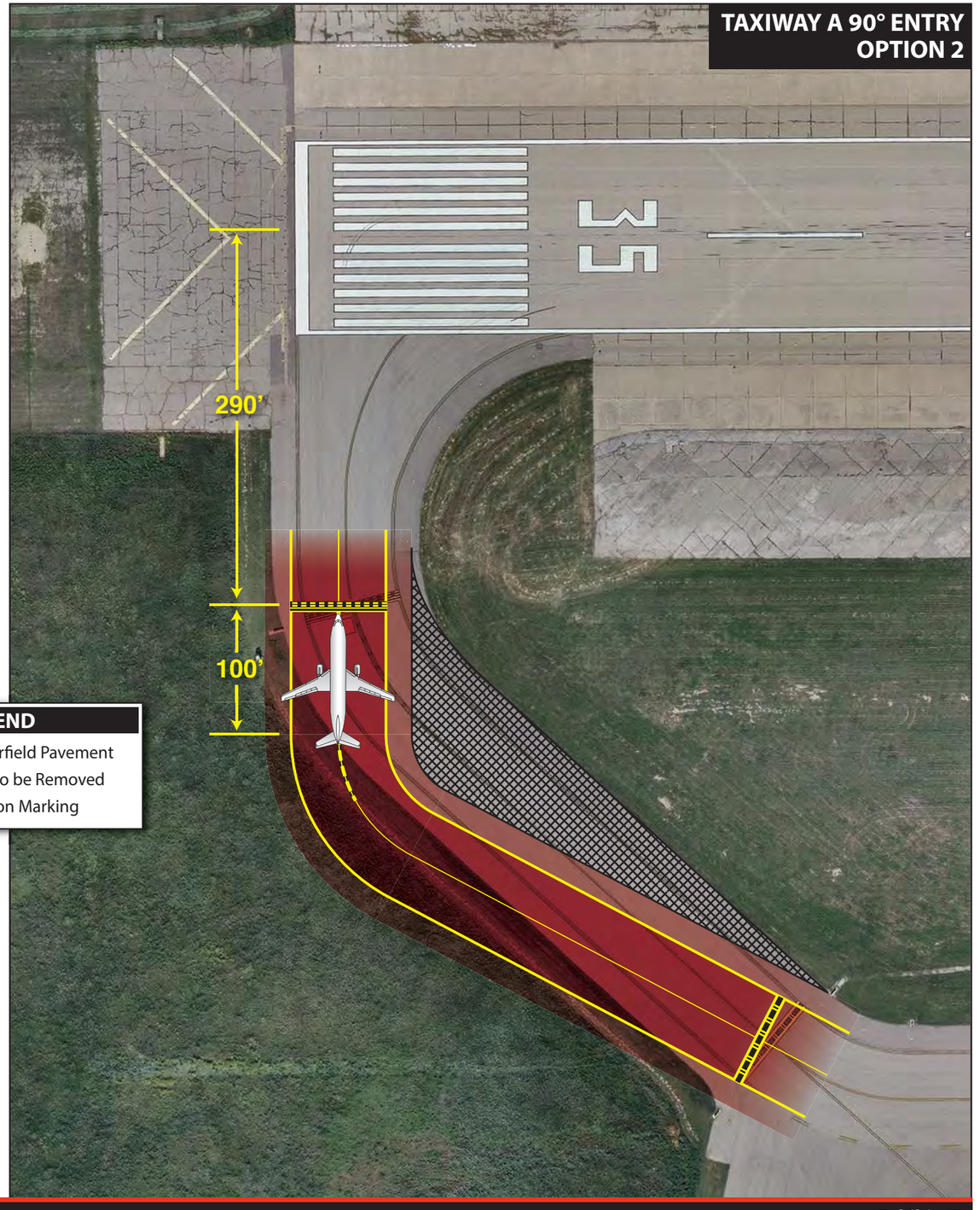

Exhibit 4F
Taxiway A 90° Entry Alternatives

able to approach the hold position fully perpendicular to the runway. This alternative could require the modification of all hold position markings associated with Runway 17-35 in order to maintain uniformity throughout the airfield.

Taxiway A Entry Option 2

The second option for improving the taxiway entry angle includes realigning the taxiway. As depicted on the right pane of **Exhibit 4E**, Option 2 would realign Taxiway A in a manner to allow at least 100 feet of taxiway prior to the hold position so as to be perpendicular (90 degrees) to the runway. As such, the realigned pavement would provide a fully parallel hold position with the runway and would offer pilots the recommended field of vision on Runway 17-35. This option would allow the hold position marking to remain 290 feet from the runway. In doing so, all hold positions would remain at a uniform distance from Runway 17-35.

Taxiway A Entry Option Summary

Both entry option modifications presented for Taxiway A will improve the nonstandard alignment and improve pilot situational awareness. Option 1 will not require pavement modifications, but would require relocation of the hold position marking and associated signage. Moving the hold position at Taxiway A could also require that all hold position markings and signage associated with Runway 17-35 be shifted to be uniform throughout. Option 2 presents a more traditional method of meeting design standards; however, it would require constructing additional pavement and removal of existing pavements in order to not create a large expanse or wide throat pavement area. Option 2 would not require the relocation of other hold position markings and signage associated with Runway 17-35 as it would remain uniform with the other hold position markings.

Taxiway B Entry Taxiway Alternatives

Taxiway B serves as an entry taxiway and connecting taxiway traversing from the parallel Taxiway A, through Runway 17-35, through Runway 30, to the south end of Runway 18-36. Its functional design is ideal with the exception of the portion providing entry access onto Runway 30.

The existing design places the hold position marking for the entry to Runway 30 at an angle greater than 90 degrees. As such, pilots of aircraft at the hold position have a full northerly view of the runway; however, the pilots do not have a full view of aircraft approaching Runway 30. Two alternatives were developed which are aimed at realigning the taxiway to meet design criteria. Both alternatives would require pavement modifications.

Taxiway B Entry Option 1

The first Taxiway B realignment option is depicted on the left pane of **Exhibit 4G**. As depicted, Option 1 would realign the taxiway so as to create a longer lead-in to the hold position, fully perpendicular to the runway. The standard runway to parallel taxiway separation for ARC C-II runways is 400 feet. Option 1 would include constructing the taxiway with two curves in close proximity so as to minimize new pavement construction and existing pavement removal.

Taxiway B Entry Option 2

The second option includes a similar modification for extending the approach pavement to the Runway 12 out to 400 feet from the runway centerline. The primary difference with this alternative includes a shallower curve beginning further to the east as depicted on the right pane of **Exhibit 4G**. Option 2 would require more new pavement construction and existing pavement removal than Option 1.

Taxiway B Entry Alternative Summary

The two options for realigning Taxiway B would provide a standard 90-degree entry angle hold position for Runway 30. The first option minimizes new pavement construction and existing pavement removal; however, the proposed curves could be closely spaced creating an unusual taxi route. The second option would be less problematic but would be more costly. It should be noted that either of the alternatives could serve to improve the Hot Spot condition for Taxiway B. The addition of a non-linear route could initiate the need for greater pilot focus, thereby increasing pilot situation awareness.

Crossing Taxiway Alternatives

As previously noted, FAA design standards present a new concept of a runway's "high energy area". The high energy area is defined as the middle third of a runway and is typically the location where aircraft are moving rapidly for take-off or landing. It is in this area that aircraft are more vulnerable to accidents with aircraft crossing through as they cannot readily slow or stop to avoid impacts. FAA guidance highly discourages the location of taxiways which route aircraft across a runway in the high energy area.

Salina Regional Airport has two taxiways which provide for runway crossings in the high energy area on Runway 17-35, as depicted earlier on **Exhibit 4E**. Taxiway D can offer aircraft crossing for departures on Runway 4. Taxiway E, however, is more commonly used for aircraft operating on Runways 4-22, 12-30, and 18-36. There are few options available to mitigate the crossing in the high energy area due to existing airfield design. The only viable option would be to create a parallel taxiway on the west side of Runway 17-35, which would provide crossing opportunities further north and south of existing Taxiways E and D. Such an option is depicted on **Exhibit 4H**.

The parallel taxiway west of Runway 17-35, depicted on **Exhibit 4H**, is situated 400 feet from the runway (centerline to centerline). This separation distance is required per FAA criteria. As depicted, the parallel taxiway could extend between Taxiway B on the south and Taxiway F on the north. If pavement minimization is desired, a new exit taxiway could be constructed just north of the Runway 17-35 high energy area as depicted on **Exhibit 4H**. If the new exit/crossing taxiway were to be constructed, the parallel taxiway would not need to extend north to Taxiway F as shown.

Construction of a parallel taxiway on the west side of Runway 17-35 could also offer more efficient taxi routes for the western runway system. As depicted, Taxiway C could be extended through the runway. It could also be bolstered by the rededication of Runway 4-22 as a taxiway.

While the option of developing a west side parallel taxiway system, as depicted

Salina Regional SLNAirport

LEGEND

- Ultimate Airfield Pavement
- Pavement to be Removed
- Hold Position Marking

Exhibit 4G
Taxiway B 90° Entry Alternatives

Salina Regional
SLNAirport

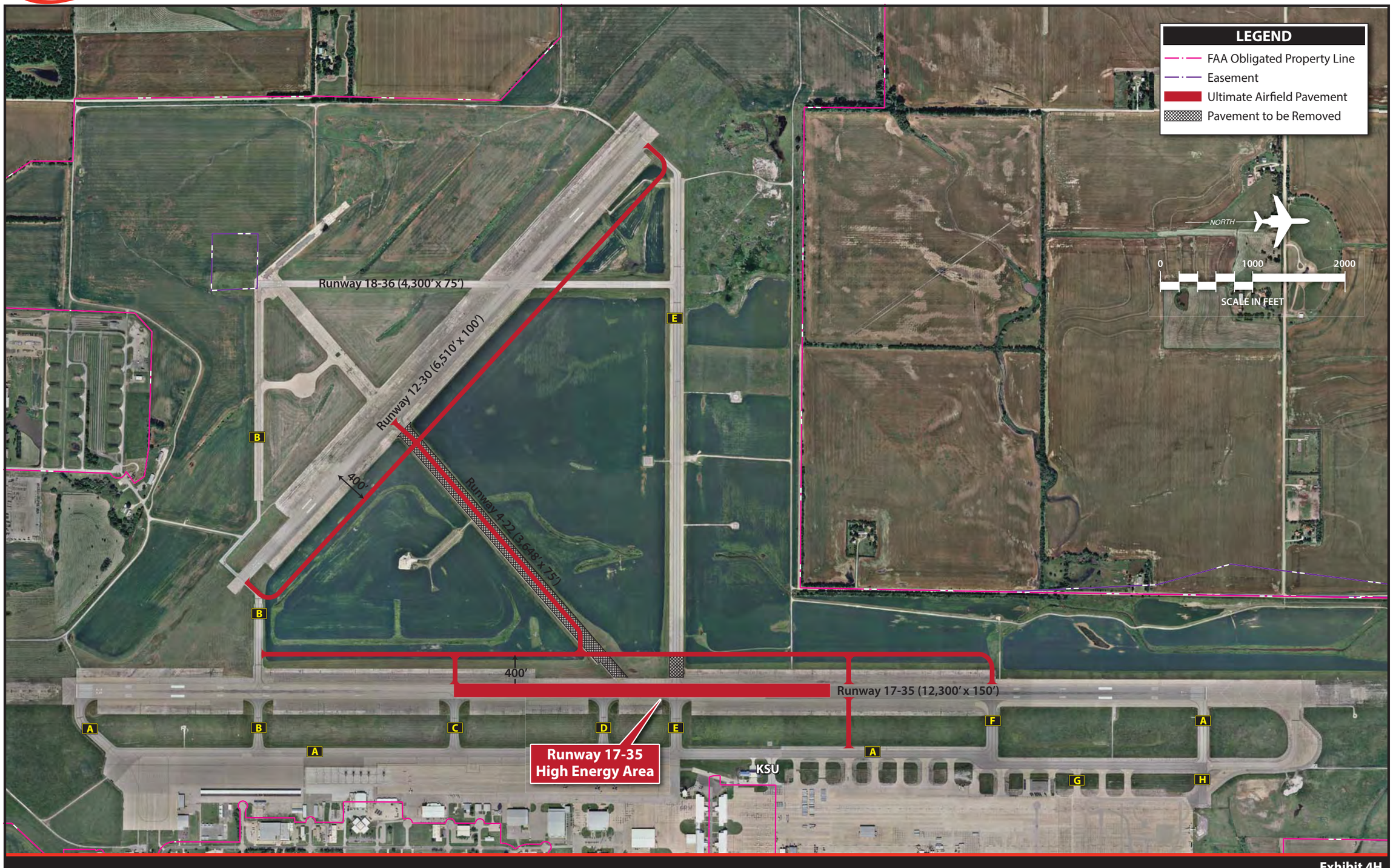

Exhibit 4H
Crossing Taxiway Alternatives

on **Exhibit 4H**, would mitigate high energy area crossings, it would be costly to construct. Moreover, it would present a more circuitous route between the east side terminal facilities and Runways 12 and 18, especially for KSU operations. Proper planning should consider such an improvement; however, the actual construction of a west parallel taxiway should only be undertaken if directed by the FAA.

No Taxi Islands

Another new taxiway design standard put into place under Advisory Circular 150/5300-13A is the prohibition of direct access between an aircraft apron and a runway. At SLN, several direct access points between the primary apron and Runway 17-35 exists. Taxiways A, B, C, D, and E offer direct pavement connections between the apron and Runway 17-35. Taxiway routing markings are not considered sufficient per FAA guidance. As such, the FAA recommends constructing "no taxi islands."

No taxi islands can be developed using markings around the island, green paint to identify the island, and lighting around the island; or, the islands can be developed by removing the pavement altogether. Either option will present an obstruction which will require a pilot to navigate a turn prior to entering a runway environment. The FAA has found that requiring a turn prior to entering a runway can minimize runway incursion events.

Exhibit 4J depicts the location of taxiway islands on the main aircraft apron to the east of parallel Taxiway A. As depicted, the no taxi islands would need to be constructed perpendicular to exit/entry Taxiways A, B, C, D, and E. These islands would prohibit direct navigation between the apron and Runway 17-35.

AGING PAVEMENT REMOVAL

SLN was originally constructed to military standards for the purposes of training operations. As common to military fields of its day, the airfield pavements were much wider, and in some cases, longer than current civilian requirements. Most of the airfield pavements have been modified from original construction to be narrower or shorter. The pavement no longer used is deteriorating and could present safety issues in the future. Deteriorating pavements generally become loose gravel which can be ingested and cause significant damage to jet engines or cause damage to aircraft propellers.

These unused airfield pavements also present an abundance of impervious surfaces which create airfield drainage issues. Reduction of impervious surfaces at the airport would serve to decrease water runoff. From an environmental perspective, increased runoff can damage streamside vegetation and aquatic habitat when the water transitions from a stormwater culvert system to a natural streambed downstream. Runoff can also increase peak stream flows and can alter in-stream hydraulics. Alternatively, non-impervious areas of native grassland, including regularly maintained areas, trap rainwater or snowmelt and filter out pollutants, such as oil, dirt, and chemicals, and enhance surface water quality. Finally, current environmental regulations adopted by most local, regional, and national agencies require the addition of detention area when creating new impervious surfaces.

In an effort to aid in improving airport drainage and safety, this planning effort will include plans to remove aging pavements wherever possible and/or practical. The effort must first begin with identifying and targeting pavements to be removed.

Exhibit 4K outlines airfield pavement areas which are aging and could be removed. As depicted, most of the pavements include original military pavements that are now aligned beyond the shoulders of the runways and taxiways. In total, approximately 160 acres of aging pavement have been identified for potential removal. It is unlikely that all of these pavements will be removed, as the costs of removal may not be practical. In some cases, however, pavements can be "harvested" by a contractor to be re-used as aggregate or basic materials for new pavement projects. This type of arrangement would be ideal. The next phase of the planning process will include recommendations for airfield pavement removal projects.

LANDSIDE PLANNING CONSIDERATIONS

Generally, landside issues relate to those airport facilities necessary or desired for the safe and efficient parking and storage of aircraft, movement of passengers and pilots to and from aircraft, airport land use, and overall revenue support functions. In addition, elements such as fueling capability, availability of services, and emergency response are also considered in the landside functions.

Landside planning issues, summarized on **Exhibit 4B**, will focus on a strategy of separating facilities by activity levels. To maximize airport efficiency, it is important to locate facilities intended to serve similar functions close together. For example, it makes sense to plan T-hangar structures in a designated area rather than haphazardly building them as needed on the next available spot at the airport. It is also important to plan for facilities that airport users desire, whether they are T-hangars, box hangars, or larger conventional hangars.

The orderly development of the airport terminal area (those areas parallel to the runway and along the flight line) can be the most critical, and probably the most difficult, development to control on the airport. A development approach of "taking the path of least resistance" can have a significant effect on the long term viability of an airport. Allowing development without regard to a functional plan can result in an inconsistent array of buildings and small ramp areas, which will eventually preclude the most efficient use of valuable space along the flight line. Activity in the terminal area should be divided into three categories at an airport: high-, medium-, and low-activity areas.

The high-activity area should be planned and developed as the area providing aviation services on the airport. An example of a high-activity area is the commercial passenger service apron and terminal building. The commercial terminal building and associated apron should be segregated from other uses as required by the FAA and Transportation Security Administration (TSA). Ideally, the commercial terminal complex should be located midfield to provide efficient access to all runway ends. The complex should also be provided ample vehicle parking for commercial passengers. While the existing commercial terminal complex at SLN is not located midfield, the facility is properly segregated, offering ample spaces for the existing carrier, SeaPort Airlines.

Salina Regional
SLNAirport

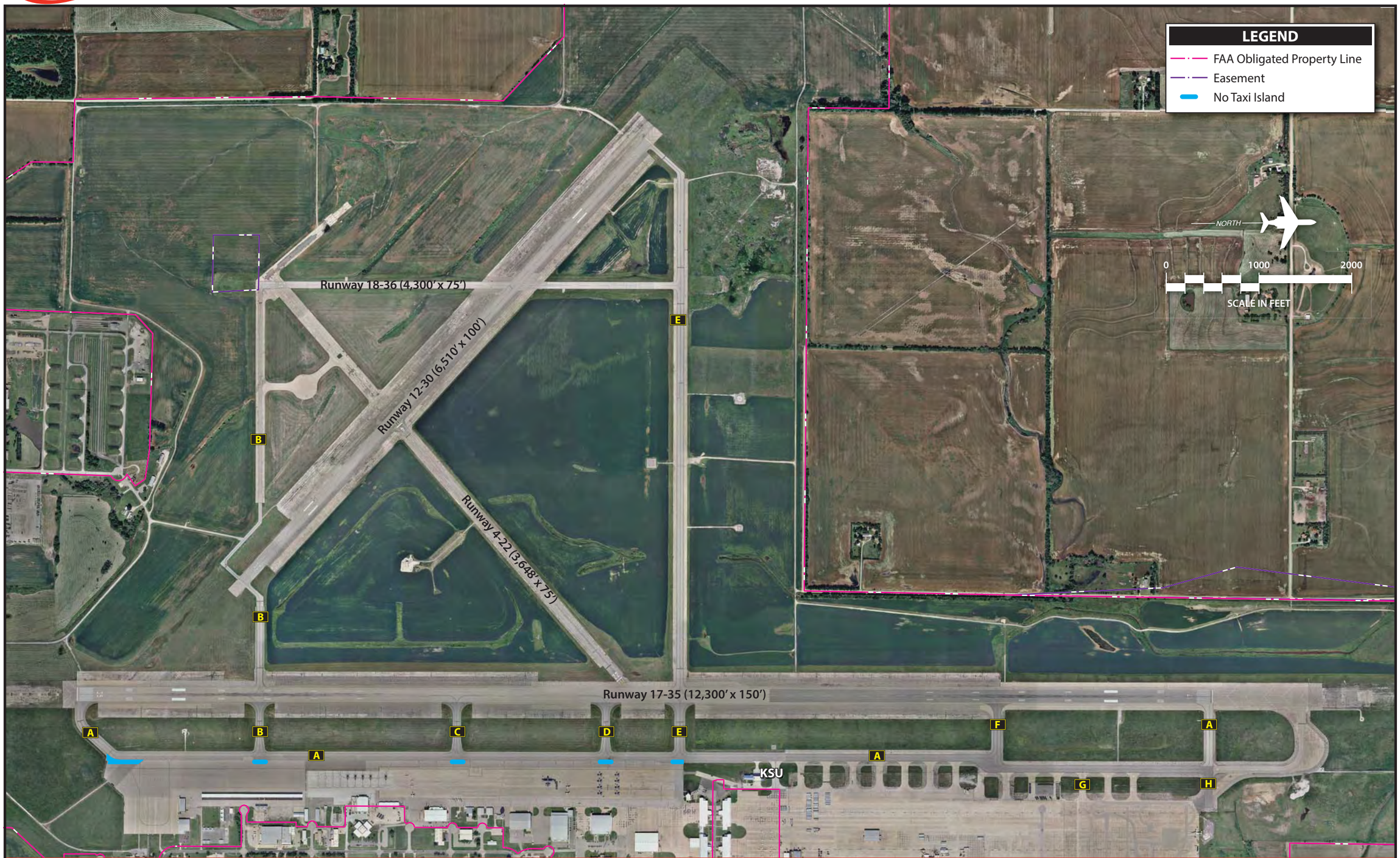

Exhibit 4J
No Taxi Island Alternatives

Salina Regional SLNAirport

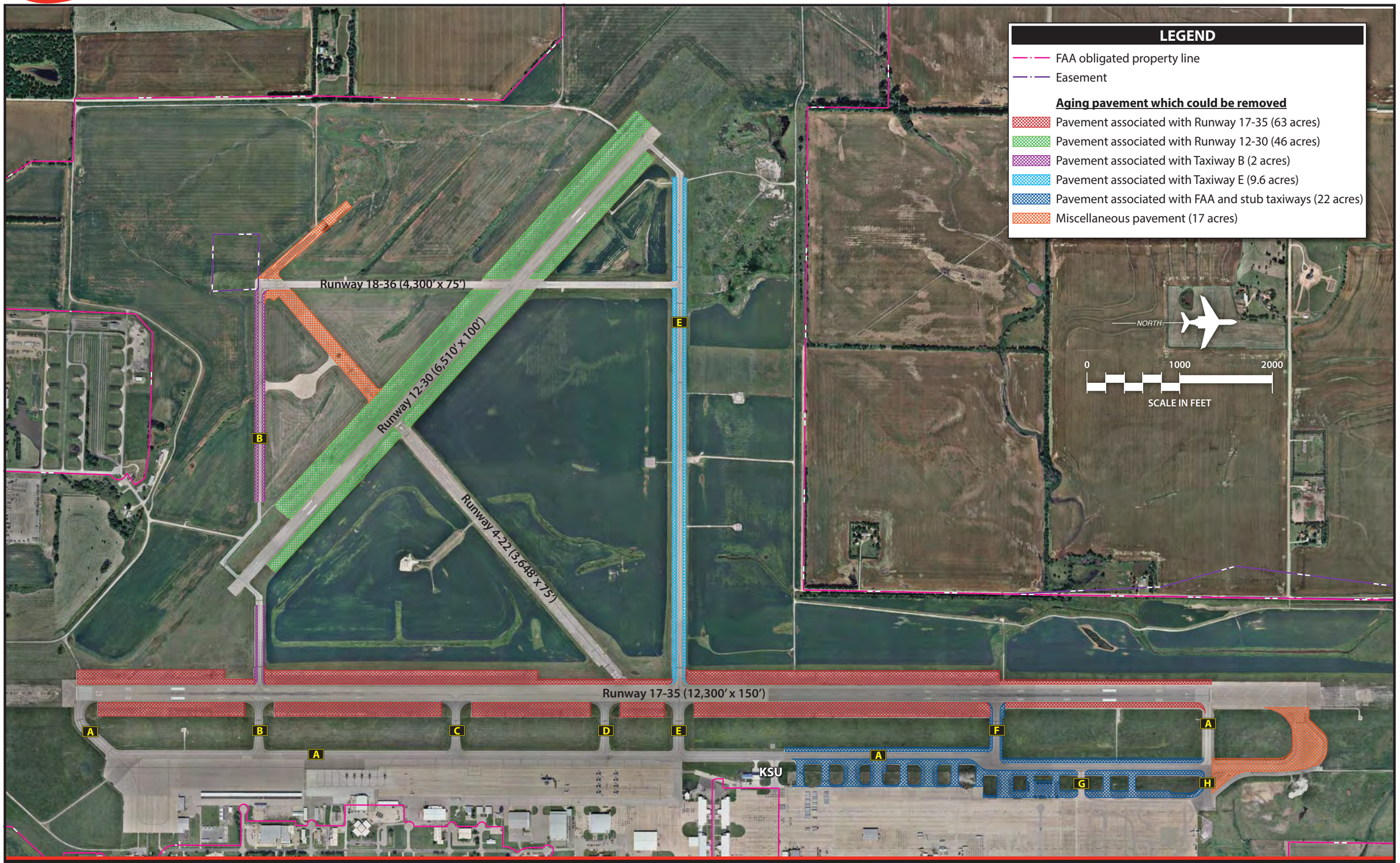

Exhibit 4K
Airfield Pavement Removal Options

For general aviation, an example of a high-activity area is the main aircraft parking apron, which provides outside storage and circulation of aircraft. Large conventional hangars housing fixed base operators (FBOs), other airport businesses, or those used for bulk aircraft storage would be considered high-activity uses. A conventional hangar structure in the high-activity area should be a minimum of 6,400 square feet (80 feet by 80 feet). If space is available, it is more common to plan these hangars for up to 200 feet by 200 feet, or larger as needed. Fueling facilities are also typically located in the high-activity areas. The best location for high-activity areas is along the flight line near midfield, for ease of access to all areas of the airfield.

The medium-activity category defines the next level of airport use and primarily includes corporate aircraft operators that may desire their own box or conventional hangar storage on the airport. A hangar in the medium-activity use area should be at least 50 feet by 50 feet, or a minimum of 2,500 square feet. The best location for medium-activity use is off the immediate flight line, but still with ready access to the runway/taxiway system. Typically, these areas will be adjacent to the high-activity areas. Parking and utilities, such as water and sewer, should also be provided in this area.

The low-activity use category defines the area for storage of smaller single and multi-engine aircraft. Low-activity users are personal or small business aircraft owners who prefer individual space in T-hangars or small box hangars. Low-activity areas should be located in less conspicuous areas or in the outer fringes of the flight line. This use category will require electricity, but may not require water or sewer utilities.

Most civilian airports do not accommodate high volumes of military aircraft operations. At SLN, however, military operations are routine and common. As such, the airport should be planned to properly accommodate these users in a manner that is coordinated with other civilian operations. Ideally, military facilities would be completely segregated from civilian facilities. At SLN, the Kansas Guard Army Aviation Support Facility (AASF) #2 operates rotorcraft from a large conventional hangar in the center of the main apron. The portion of apron dedicated to the military is segregated by marking only. Ideally, this facility would be located away from civilian uses if possible.

In addition to the functional compatibility of the terminal area, the proposed development concept should provide a first-class appearance for Salina Regional Airport. Consideration to aesthetics should be given high priority in all public areas, as many times the airport can serve as the first impression a visitor may have of the community.

Generally, the existing development at the airport has followed the strategy of separating activity levels. The south terminal area and main apron serve the terminal building and several larger conventional hangars. The area also supports a long linear T-hangar facility as well as connected individual T-hangars (Port-a-Port). There is very little existing space in the center and south terminal area for additional hangar development; however, all future development in this area should be restricted to larger hangars intended to support aviation-related businesses.

Along the flight line to the north are hangars housing two FBOs and other specialty operators, fueling facilities, and KSU facilities. The main general aviation

apron provides a large area for all aircraft users, including large commercial aircraft, military aircraft, and all general aviation aircraft types. Generally, this area offers a good separation of activity levels.

Ideally, terminal area facilities at small commercial service and general aviation airports should follow a linear configuration parallel to the primary runway. The linear configuration allows for maximizing available space, while providing ease of access to terminal facilities from the airfield. At Salina Regional Airport, the hangars are situated parallel to the runway, thus facilitating maximum developable space.

Planning for future hangar development should take into consideration typical local weather conditions, especially potential winter snowfall. Winter weather patterns typically bring snow from the north, which can build up at the north-facing hangar doors. Future planning, especially of T-hangars, may consider aligning these hangars so they are positioned in a north to south manner, with east- and west-facing doors. Such an alignment ensures that each side of the facility will receive sunlight during a winter day, aiding in melting ice and snow.

Each landside alternative will address development issues, such as the separation of activity levels and efficiency of layout. The landside alternatives will also plan for adequate facilities to meet the forecast needs as defined in the previous chapter of this plan.

COMMERCIAL TERMINAL COMPLEX ALTERNATIVES

Terminal buildings serve as a central entrance to the community for air travelers so aesthetics of design should be considered. A welcoming entrance to the city may positively influence economic activity in the region. The M. J. Kennedy Air Terminal building is a well-kept welcoming facility that serves two primary functions: commercial passenger airline service and airport administration.

The building is utilized by SeaPort Airlines in offering commercial passenger services. SeaPort Airlines operates a nine-passenger capacity aircraft under Code of Federal Regulation (C.F.R.) Part 135. As such, the airline does not require TSA security screening services. Passengers are checked in at the counter and wait for departures in the main lobby. Passengers and baggage are routed through the covered walkway onto the commercial aircraft apron. In support of commercial passengers, car rental services are offered in the southern portion of the terminal building.

The terminal building also serves as an administration building for the SAA and airport administration. Two administrative offices and the SAA conference room facilities are located in the building's first floor. Additional administrative offices are located on the second floor.

The existing building is more than adequate to serve existing demand. As previously discussed, SeaPort Airlines operations do not require TSA screening and the limited flight schedule does not tax existing terminal spaces. SAA and administrative offices are comfortably provided. It is important to note, however, that the building is aging and may become costly to operate within the planning period. Moreover, if a C.F.R. Part 121 air carrier were to return to the airport, the need for TSA security screening would also return. The first floor of the terminal building would be limited if security screening and

a secured passenger hold-room were needed. In today's ever changing commercial airline market, there is a possibility that Part 121 carrier service could return to Salina. As such, this planning effort should, at a minimum, identify opportunities for expanding the existing building or constructing a new building.

Given the investments in the current location, including the existing commercial apron, the focus of terminal building alternatives remains in the southern portion of the terminal area. The airport has an abundance of property which could also be utilized; however, the costs of developing a terminal complex to the north would be greater than at or near the existing location.

Commercial Terminal Building Option 1

The first terminal alternative utilizes a simplistic approach of expanding the building 50 feet to the west, as depicted on **Exhibit 4L**. The additional 6,500 square feet of space would be suitable for TSA security screening operations as well as a secured passenger hold-room. This expansion could be easily accomplished while normal day-to-day operations occur as the expansion area is currently unused. If a second floor is added, an elevated boarding hold-room and gate could be added for large aircraft boarding; however, the proposed outer wall would remain 200 feet from the aircraft ramp. As such, a relatively long boarding facility (jet bridge structure) would be costly to construct. Construction of a second floor could also be utilized to expand administrative office spaces, provide for an airport viewing lounge, or accommodate commercial applications such as a restaurant.

Commercial Terminal Building Option 2

The second alternative considers another simplistic option with a 100-foot expansion to the south. The proposed expansion would allow the airline facilities to also be shifted south inside the building, which would provide more room near the departure gate. The added room could be used for security screening and secure passenger hold-room facilities. The expanded portion of the building would house baggage claim and support services such as car rental agencies. A second floor option in this alternative could only be utilized for administrative office spaces or commercial purposes such as a restaurant.

Commercial Terminal Building Option 3

The third terminal building alternative considers constructing an entirely new building to the west of the existing facility, as depicted on **Exhibit 4L**. As shown, the building would abut the commercial terminal apron, providing closer boarding proximity to the building. The facility would house approximately 20,000 square feet of floor space and would be capable of accommodating a second level. The building would still remain distant enough from the runway and would not penetrate obstruction surfaces. Obviously, the alternative would require razing the existing building and expanding the automobile parking.

Commercial Terminal Building Option 4

The final commercial terminal building alternative considers constructing a new

building on the south side of the commercial apron. The 20,000 square feet of floor space would provide for proximate aircraft boarding with access from the building's north face. The proposed alternative includes a new parking lot and roadway access extending from Bailey Court Road. This alternative would allow for the complete disposition of the existing terminal building, which could include razing or re-use for other purposes.

Commercial Terminal Building Alternative Summary

The four commercial terminal building alternatives provide ample spaces for airline and administrative operations if needed in the future. Options 1 and 2 would include expanding the existing facility, which would be less costly than building an entirely new facility; however, the existing building is aged and could require substantial investments to operate in the future.

Options 3 and 4 propose an entirely new building to the west of the existing facility. These alternatives could be constructed while the existing operations continue without disruption of services. These options, however, will be more costly as they would require a new building as well as parking lot and roadway improvements.

At this time, the existing building appears to be adequate to serve the long term needs of SeaPort Airlines. The primary drivers which would require a larger and/or new facility would be the entry of a Part 121 commercial airline and/or the existing building becomes too costly to maintain and operate. The next phase in the master planning process will include a recommended development concept after consultation with the Planning Advisory Committee (PAC), SAA, and airport management.

GENERAL AVIATION ALTERNATIVES

As presented in Chapter Three – Facility Requirements, additional aircraft hangar storage area is recommended to accommodate forecast growth in based aircraft. The airport is also capable of attracting large aviation business operations and spaces should be available to accommodate them.

General aviation planning is somewhat difficult as individual preference will be the final arbiter as to what types of hangars are desired. For example, if the airport has a wait list for a T-hangar space, then it is a good time to plan for more T-hangars. Likewise, if an individual desires to construct a box hangar, then that becomes the priority. Planning exercises such as this one are primarily aimed at providing an overarching layout plan which could accommodate all types in an efficient and orderly manner. In doing so, the airport can be developed as demand dictates, while also maintaining proper long term growth goals.

Potential general aviation development alternatives can be numerous for a large airport with abundant spaces such as SLN. The following three alternatives are those that best meet design standards, while maximizing the efficiency of aircraft storage and movement. The general aviation element of the recommended master plan concept, to be presented in the next chapter, may be one of these alternatives or a combination of elements from each of them. Input from airport management and the PAC will be integral in determin-

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SLN Airport

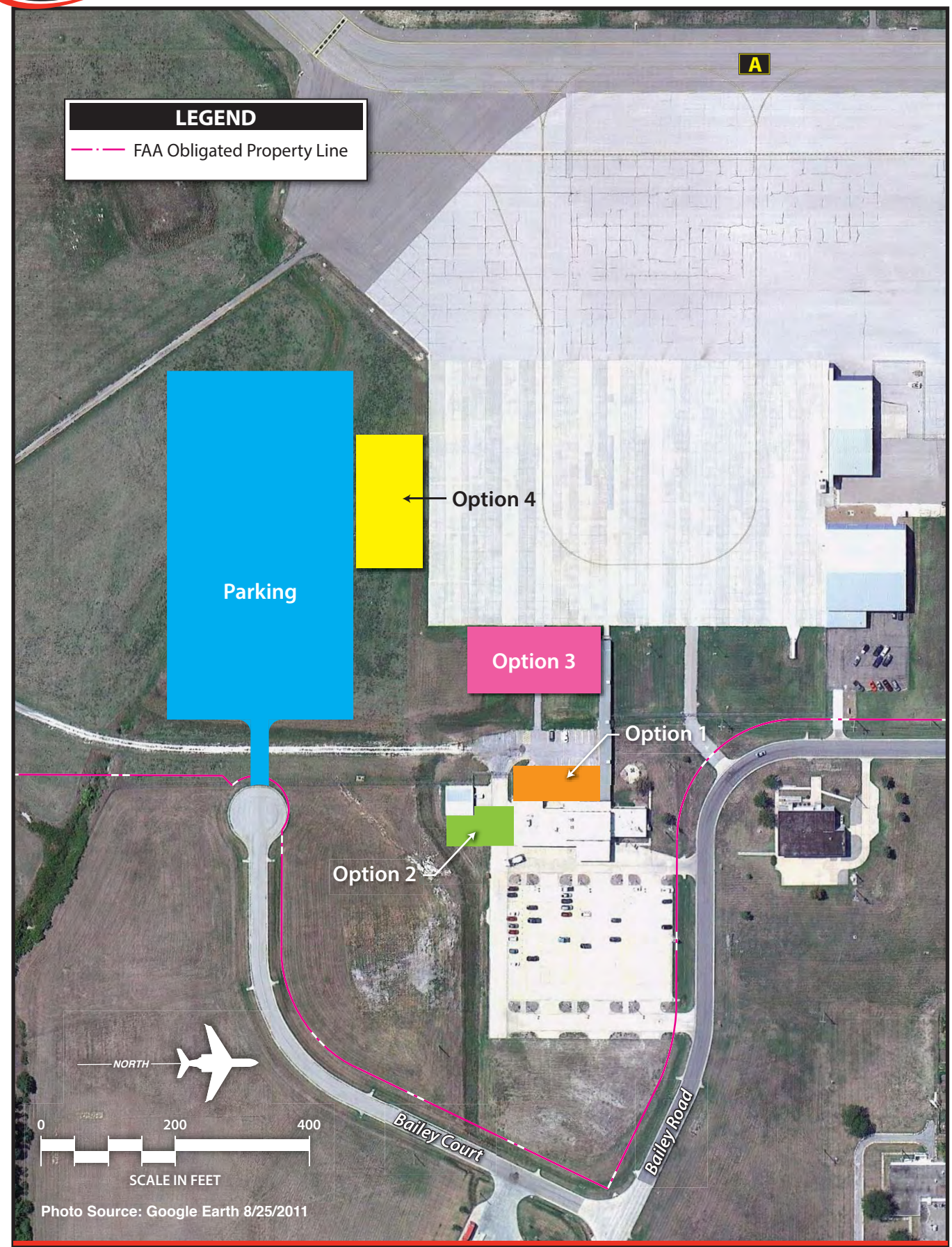

Exhibit 4L
Commercial Terminal Building Alternatives

ing the general aviation vision for the airport.

Prior to presentation of the general aviation alternatives, it is important to identify areas that are reasonably suitable for additional development. Most existing general aviation facilities are in the south and central portions of the flight line. T-hangars are located at the south end, while corporate and conventional hangars traverse the entire flight line. Most of the existing flight line between the commercial terminal complex and KSU facilities is occupied. As such, little room is left for additional development without redevelopment of existing facilities.

The prime location for future general aviation development is immediately north of KSU facilities. Some of the area is currently in use by non-aviation entities, but these operations could be relocated to the Industrial Park or moved off of the airport.

General Aviation Alternative 1

The first general aviation alternative is presented on **Exhibit 4M**. Alternative 1 is the current plan on the airport layout drawing (ALD). As depicted, the proposed development would maintain a good separation of activity levels. Five large conventional hangars are proposed in a linear fashion facing to the west. These hangars could support additional aviation businesses and/or bulk storage facilities. The conventional hangars could be supported by roadway and parking improvements, as depicted on the exhibit.

Two conventional hangars are also proposed at the far northern portion of the development area. These hangars were likely planned to support the large Hawker Beechcraft hangar facility, labeled Hangar 959 on the exhibit. Since this plan was completed, the Hawker Beechcraft Corporation opted to cease operations at SLN. This facility can be planned for aviation use in the future.

Immediately north of the conventional hangars, executive box or corporate hangars are depicted. These six 80-foot by 80-foot hangar facilities could house corporate flight departments, small aviation specialty operations, and/or multiple aircraft storage uses. Eleven more connected 60-foot by 60-foot corporate hangars are proposed to the northeast.

Eight T-hangar facilities are proposed at the north end of the development area. These facilities could support more than 100 individual T-hangar storage units. The T-hangars would be placed on aging pavements which would need to be improved to serve as a base for the buildings and for aircraft taxi operations.

Advantages: Alternative 1 would provide more than sufficient hangar space to meet projected demand. In fact, the spaces provided in this alternative would far exceed those forecast in Chapter Three. The plan would also allow for good separation of activity levels.

Disadvantages: The primary disadvantage with this alternative would be the location of the conventional hangars. The hangars would be immediately adjacent to KSU facilities, which are active training operations. Automobile access would also be relatively difficult, requiring automobiles to utilize Tony's Road then head north on Hein Avenue. The alternative would require substantial investments in rehabilitating aging pavements.

General Aviation Alternative 2

The second general aviation alternative is presented on **Exhibit 4N**. This alternative differs from the first in that the T-hangar development is proposed immediately adjacent to the KSU facility. In doing so, the low activity T-hangar area would serve to segregate high-activity users in the conventional hangar area from KSU operations. As proposed, the T-hangar area could support more than 100 individual storage units.

The high-activity area, including six large conventional hangars is proposed immediately north of the T-hangar area. As depicted, the six conventional hangars would be supported with a large automobile parking lot immediately west of Hein Avenue. Two larger conventional hangars are also proposed immediately south of the Hawker Beechcraft hangar facility.

The plan considers the development of 18 80-foot by 80-foot corporate hangars to the north of the high-activity conventional hangar area. These facilities could house a variety of operations, including small specialty operators, corporate flight departments, and/or multiple aircraft storage. The plan includes the extension of Tony's Road and addition of automobile parking, as depicted on the exhibit.

Advantages: The high-activity area is better separated from KSU operations, and low-activity uses (T-hangars) serve as a buffer between them. Automobile access to the high-activity area is improved over the first alternative. Corporate hangars are served by a road and automobile parking.

Disadvantages: The high-activity area is located in the center of the development area with low-activity uses to the south and medium-level uses to the north. This separation is acceptable, but not ideal. Automobile access is improved to the high-activity area but remains somewhat distant. The alternative would require substantial investments in rehabilitating aging pavements.

General Aviation Alternative 3

The final general aviation alternative considers shifting the high-activity area to the far northern portion of the proposed development area. As depicted on **Exhibit 4P**, Alternative 3 proposes the development of five large conventional hangars facing west. Two larger conventional hangars could then be developed in an L-shaped manner facing north. These facilities would be offered good automobile access from Tony's Road and Hein Avenue.

The proposed T-hangar low-activity level is located in the same location as proposed in Alternative 2. Again, the T-hangars would serve to be a good buffer with KSU operations. More than 100 individual T-hangar units would be offered by the five proposed T-hangar facilities.

Corporate hangars would be developed in the center. As depicted, 18 80-foot by 80-foot corporate hangars are proposed. These hangars could be supported by roadway access and automobile parking lots extending west from Hein Avenue.

Advantages: Alternative 3 provides the best separation of activity levels. The high-activity area, including up to seven additional conventional hangars, would be easily accessible from airside and landside locations. Automobile access would be direct from Tony's Road and would be highly visible to drivers. The T-

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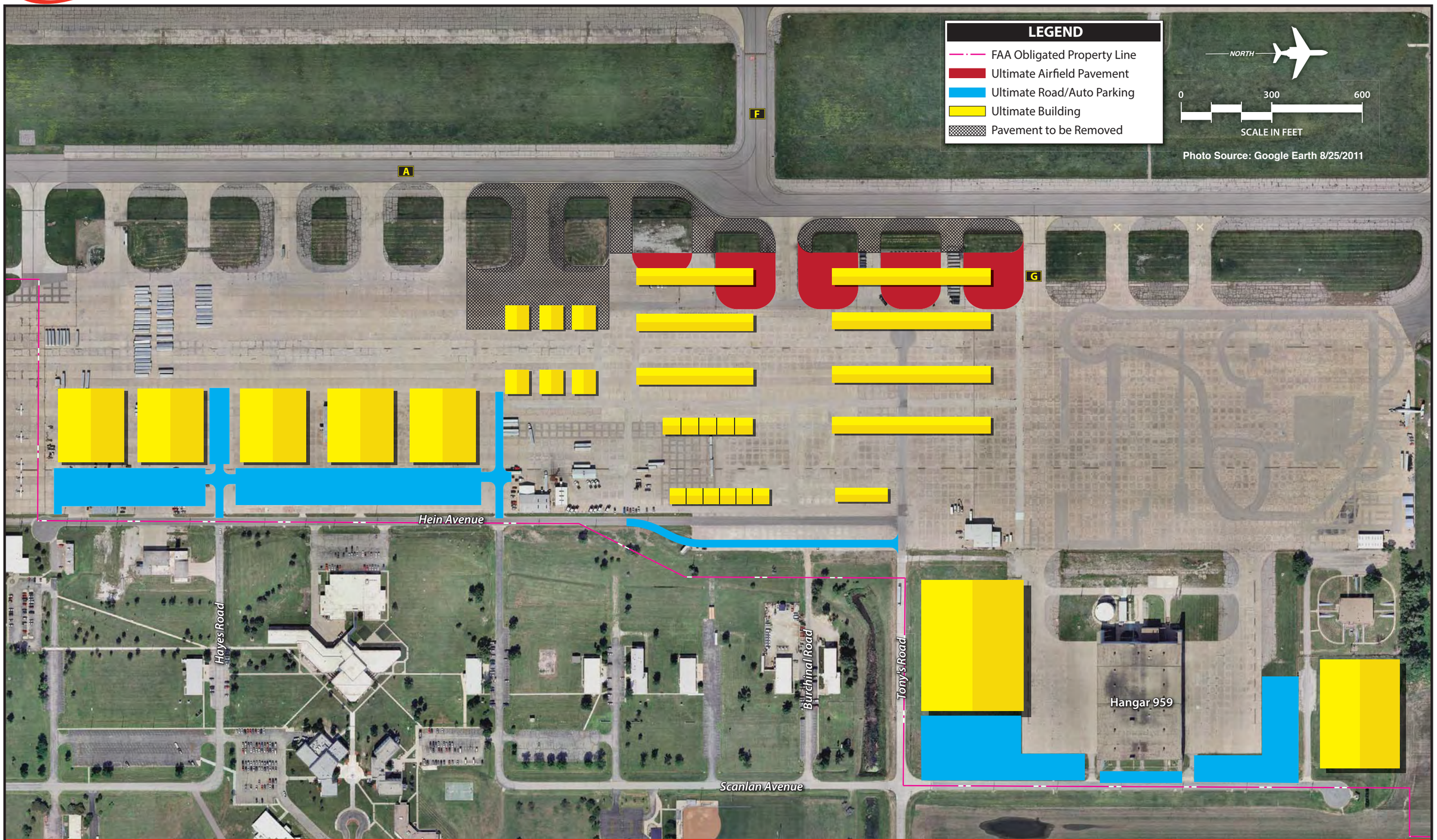

Exhibit 4M
General Aviation Alternative 1

Salina Regional
SLN Airport

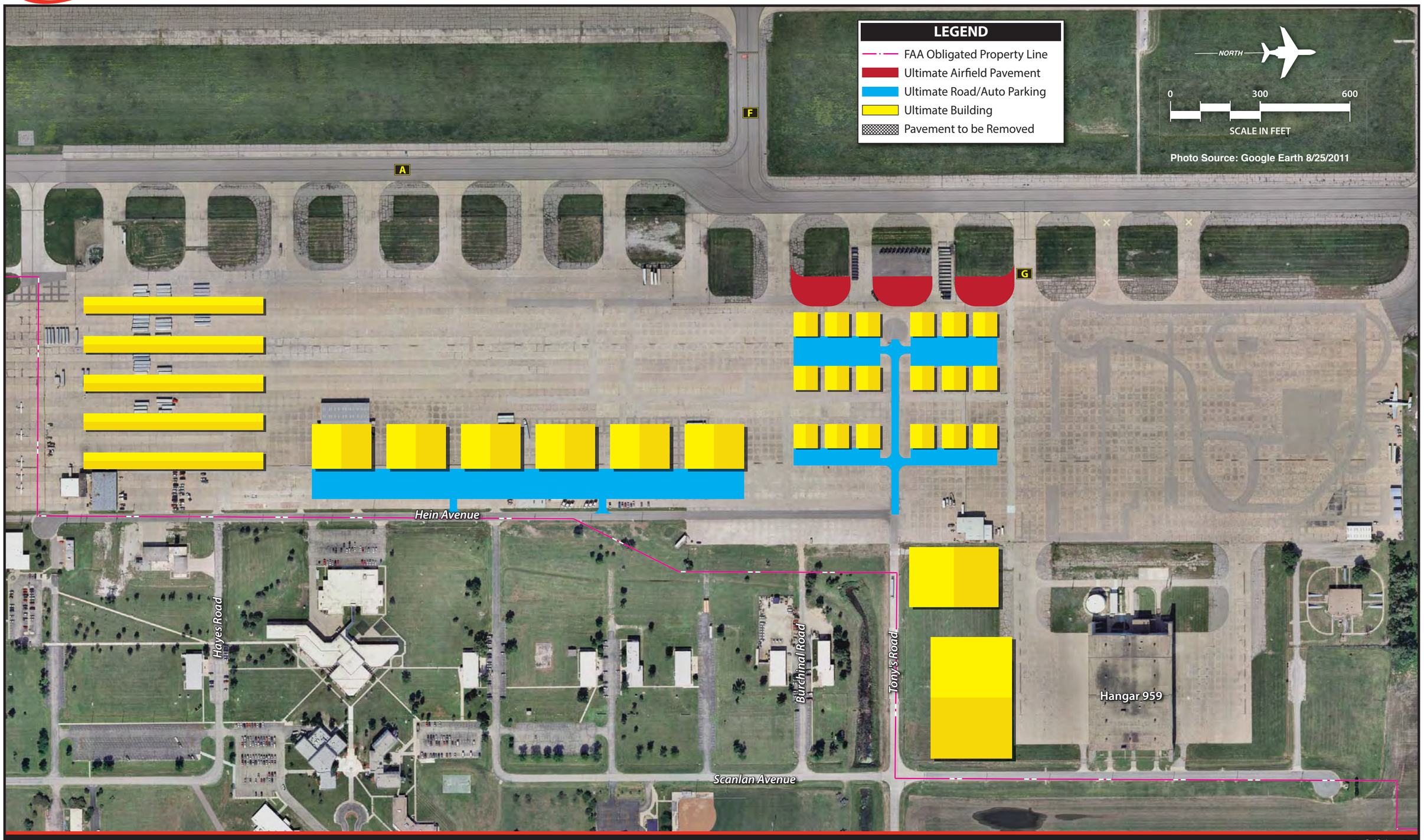

Exhibit 4N
General Aviation Alternative 2

Salina Regional
SLN Airport

LEGEND

- FAA Obligated Property Line
- Ultimate Road/Auto Parking
- Ultimate Building
- Pavement to be Removed

NORTH

0 300 600

SCALE IN FEET

Photo Source: Google Earth 8/25/2011

A

F

G

Hein Avenue

Hayes Road

Burchinal Road

Tony's Road

Scanlan Avenue

Hangar 959

Exhibit 4P
General Aviation Alternative 3

hangars would provide a good buffer with KSU operations and the corporate hangar area would be highly accessible.

Disadvantages: The alternative would require substantial investments in rehabilitating aging pavements.

General Aviation
Alternative Summary

The three alternatives present good options for future general aviation development. All three offer suitable separation of activity levels; however, Alternatives 2 and 3 are better suited to separate KSU operations from high-activity areas. Automobile access is adequate for all three alternatives, but Alternative 3 presents the best option as it is immediately adjacent to the intersection of Tony's Road and Hein Avenue. After consultation with the PAC and airport administration, a final recommended concept will be presented in the next chapter.

WINGS OVER SALINA AIR MUSEUM

The Wings Over Salina Air Museum is currently in the design phase with plans for construction within the next several years. At this time, the fundraising process is underway. According to the airport manager Tim Rogers, "This will not be your typical air museum with airplanes in an open hangar with display aircraft. We plan to take a more intimate look at the people who have shaped the history of civil and military aviation in Salina and Saline County." The museum will be dedicated to the past, present, and future of Salina-area aviation. The Wings Over Salina concept design has been inspired by the accomplishments of Salina aviation pioneers such as Glenn Martin and astronaut Steve Hawley. Inspiration for the project also comes from Steve Fossett's record-setting around the world flights in the GlobalFlyer while based at the Salina Regional Airport.

Exhibit 4Q presents the current plan for the Wings Over Salina Air Museum. As depicted, the museum will be located adjacent and south of the new ARFF building and immediately north of Flower Aviation. The museum will be accessible via Beechcraft Road, and new parking lots will be provided to serve the area.

Plans for the museum are moving forward and only two issues need to be addressed by this study: airside access and roadway improvements.

The museum will feature an aircraft display hangar which will require airside access. Two options for providing access have been developed and are depicted on **Exhibit 4Q**. Option 1 considers re-using aged pavements which would link the hangar with the aircraft apron north of Flower Aviation. The second option would provide a small apron adjacent to the hangar which would link directly to parallel Taxiway A. This taxiway would be closed to the public and useable only for museum operations.

The second issue involves roadway improvements on Beechcraft Road. The museum will be a high profile facility which will attract people from regional, national, and even international locales. As such, the facility should be supported by an aesthetically pleasing entryway. Airport administration is committed to improving the appearance of building structures along Beechcraft Road. Beechcraft Road is owned by the City of Salina and improvements to it will need to be funded by the City as funds would not be eligible

from the FAA. The City of Salina should consider improving Beechcraft Road to include curb and guttering, drainage, and pavement upgrades. These improvements would need to be made via City of Salina capital project planning and programming.

AGING PAVEMENT CONSIDERATIONS

As with airfield pavements, landside pavements, especially those in the northern terminal area, are aging and will need to be improved or removed. The general aviation development alternatives would need to address the pavements in the northern terminal area. Once the final recommended plan is put into place, a recommendation will be made for landside pavement removal in the north terminal area.

MILITARY FACILITIES

The military has a significant presence on the airport. The Kansas Army Guard AASF #2 facility houses Blackhawk rotorcraft from a conventional hangar in the center of the main general aviation apron. Itinerant military aircraft are also common for training and fueling purposes. Ideally, there should be a segregation of military and civilian operations whenever practical.

The current airport layout plan drawing includes the development of a military activity area south of Taxiway B between Runways 30 and 36. This location would be ideal as it would offer good separation from other civilian operations. There are no other locations on the airport which would offer better segregation without rededicating future general aviation growth areas to military purposes. As a civilian airport receiving federal funding, civilian purposes should take priority. As such, continued planning for military facilities as proposed on the current development plan is recommended.

The current plan, however, would take years to develop as the proposed area is not served by utilities. The plan should continue for long term purposes, however, the need for more immediate military and governmental segregated spaces is also needed. An ideal location for short term, more immediate military and governmental uses would be the far north apron and even buildings 939 and 959 as depicted on the general aviation alternatives **Exhibits 4M**, **4N**, and **4P**. These areas could support a variety of operations including NASA climate research as well as Forward Operating Location (FOL) operations. In order to do so, the apron would need to be rehabilitated. The area would offer very good segregation between military and civilian operations, especially in the short term.

AIR TRAFFIC CONTROL TOWER (ATCT)

Salina Regional Airport has an ATCT that provides terminal area guidance for pilots in the immediate vicinity of the airport. The tower is operated and staffed through the FAA's Contract Tower Program. Under this program, the FAA pays for the maintenance and staffing costs of the tower. The tower is staffed by private contractors who are trained and certified in the same manner as FAA employed controllers.

Due to federal budget cuts associated with what is commonly known as Seques-

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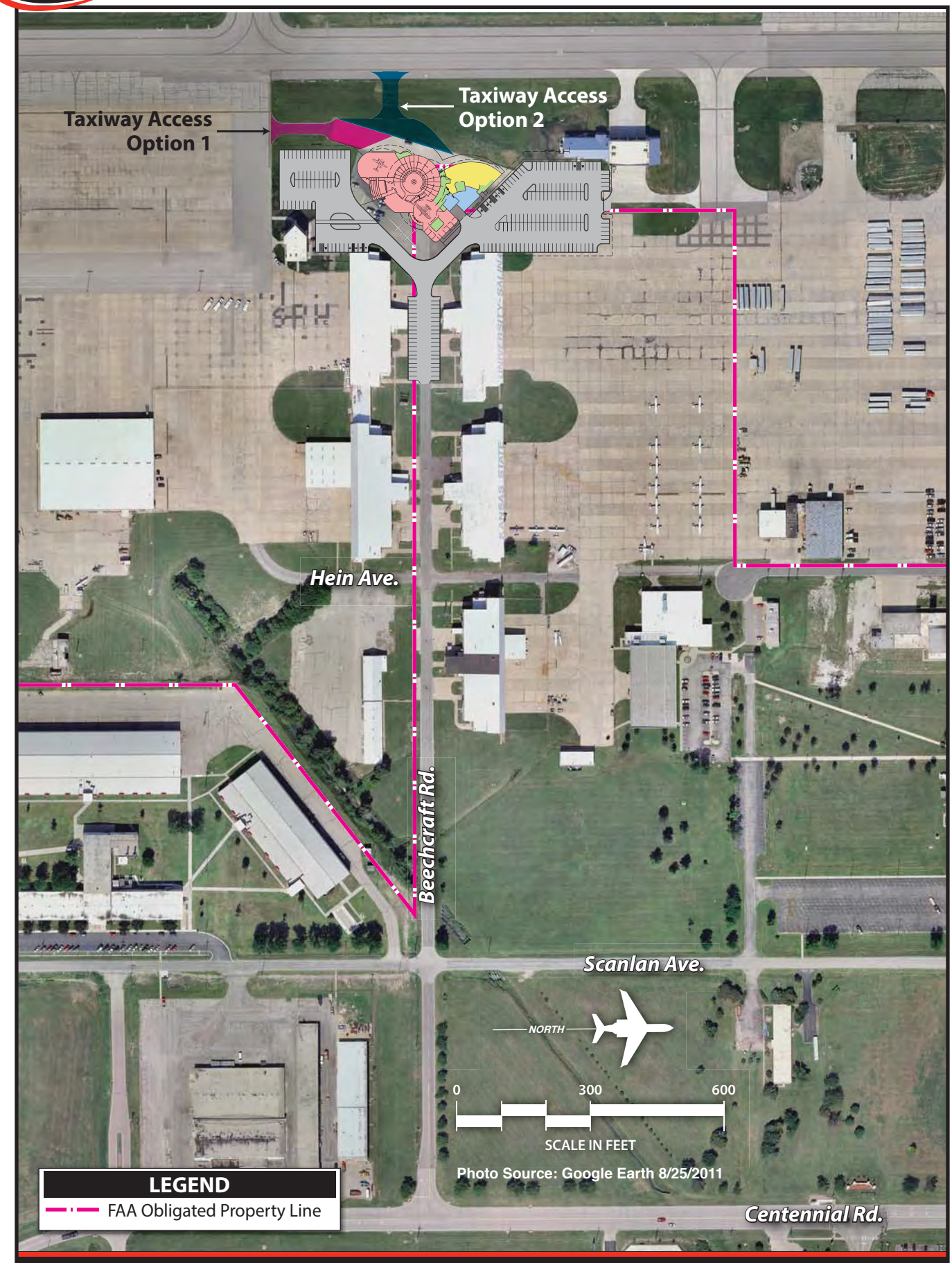

Exhibit 4Q
Future Museum Development

tration, approximately 150 contract towers were scheduled to be closed beginning in April 2013. The scheduled closure plan was later changed to June 2013. The SLN tower was not included as its operations exceeded the minimum levels established by the FAA.

In May of 2013, Congress acted to shift funds from the Airport Improvement Program (AIP) to fund the towers for the remainder of the fiscal year (September 2013). At this time, it is not clear if Fiscal Year 2014 will include funding for continued operations at these ATCTs. While the SLN ATCT is not on the targeted list for closure, future considerations could include SLN. As such, each contract tower operator should understand that future ATCT closure is possible and understand the possible outcomes.

The FAA issued guidance for airport sponsors outlining two options they can pursue if their tower is scheduled to be defunded. The airport sponsor may choose to operate the tower as a non-towered airport or they may choose to continue providing tower services as a non-Federal control tower. If the airport sponsor chooses to continue providing tower services, then expenses would shift to the airport sponsor.

The FAA has indicated that they will discuss continued use of buildings and equipment and the availability of reimbursable agreements. The airport can reimburse the FAA to provide other services such as tower maintenance and logistics support. The airport sponsor would have to negotiate directly with the company employing the controllers to staff the tower. In addition, the FAA will not begin removing equipment and terminating local service agreements immediately. In most cases, it will take up to 90 days for the FAA to begin disconnecting and removing equipment at affected towers.

Any towered airport sponsor has a variety of items to consider if their tower were to close. Airport administration should consider, at a minimum, the following:

- Frequencies: Pilots in the vicinity should utilize the common traffic frequency (CTAF) to announce their intentions with regard to landing and taking off.
- Pilot-Activated Lights: Pilots should be aware of the availability of pilot-controlled lighting.
- Weather Observation: Airfield weather information will remain available via the ASOS at the airport. Visual wind indicators will also still be available.
- Notify Tenants: Airport sponsors should notify tenants of the tower closure and provide any additional information.
- Airfield Controls: Airport sponsors must ensure that any airfield controls located in the tower continue to be accessible or are relocated.
- Airport Diagram: Airports must identify to the FAA who will control the airport diagram.
- Notice to Airmen (NOTAM): The airport sponsor should issue a NOTAM alerting pilots to the changes in tower operating hours. The FAA Airports District Office and the FAA Flight Standards District Office should also be notified.
- Publications: Air Traffic Publications and Aeronautical Charts must be updated to reflect the changes.

Historically, FAA has funded the staffing, operations, and maintenance of towers if the airport meets certain operational thresholds and a benefit/cost analysis. Current discussions by the FAA indicate that future contract tower programmed airports will need to be re-evaluated via a cost-benefit analysis. If the airport does not meet the threshold, then FAA may not participate in the continued funding of the tower services. At this time, however, it appears that the SLN ATCT will continue to receive full funding through the contract tower program.

ALTERNATIVES SUMMARY

Numerous development alternatives related to both the airside and the landside have been presented. On the airside, the major considerations are related to airfield geometrical changes spurred by changed in FAA design standards. The configuration of Runway 4-22 no longer meets standards as the RSA extends onto Runway 17-35 and Runway 12-30. The analysis indicated that improvements to meet standards on Runway 4-22 would be costly with little economic value. As a result, the analysis indicated that the runway should be planned for closure.

Taxiway improvements were also analyzed. Taxiways A and B provide entry hold positions with Runways 35 and 30 respectively, which are not aligned at 90 degrees with the runway served. The non-standard positions could create the potential for future runway incursions. Alternatives presented methods for meeting standard which could improve the Hot Spot situation on Taxiway B as well.

Taxiways D and E provide crossing routes through Runway 17-35 for west-side runway operations. These routes cross through the high energy area for Runway 17-35. FAA suggests that alternative routes be considered which avoid the high energy area. Alterative analysis indicated that the only viable solution would be to construct a parallel taxiway on the west side of Runway 17-35 which provides crossing points to the north and south of the high energy areas. While viable, the alternative does not appear to be practical as it would create longer taxi times and would be costly to construct.

On the landside, the alternatives focused on the commercial terminal building and general aviation alternatives. The M. J. Kennedy Air Terminal is more than adequate to accommodate current demand. As it continues to age, however, it could become very costly to maintain and operate. Moreover, the facility is undersized to meet the needs of a larger commercial carrier which requires TSA security screening processes. As such, the alternatives considered expanding the existing building as well as new building locations. General aviation alternatives focused on providing all hangar types with proper activity separations. Military facilities will be planned for the area currently proposed on the airport layout drawing.

After review by the PAC, a recommended concept will be presented in the next chapter. The concept will be evaluated for environmental issues as well. The analysis will also include drainage and pavement removal recommendations. A financial and capital improvement program will also be presented.