



5. ALTERNATIVES

This chapter presents various options and provides recommendations for future development at the Colorado Plains Regional Airport (AKO or the Airport) over the next 20 years. It examines multiple development concepts and employs evaluation criteria to select a preferred development scenario to meet the identified facility requirements. The overall objective of this analysis is to identify a set of feasible development options that enables the Airport to meet projected levels of aviation demand. Each alternative is evaluated to provide recommended improvements that meet demand and provide for future flexibility. Additionally, this chapter describes various factors and influences that form the basis for the Airport’s long-term development program.

5.1 Facility Requirements Summary

The Forecast and Facility Requirements chapters determined that AKO’s airfield operational capacity is sufficient to meet expected demand throughout the planning period. However, several enhancements are recommended to meet FAA design standards and improve aircraft safety and movement.

Airport improvements also address the demands for additional aircraft storage and identify the size, placement, and use of additional facilities that could bring businesses and increased employment to the region. **Table 5-1** is the summary of key facility recommendations identified in **Chapter 4**.

TABLE 5-1: FACILITY RECOMMENDATIONS

Facility	Future Requirement	Justification
Terminal Construction	Construct a new terminal building and associate access and parking.	Create a safer, more updated space for the public.
Apron Reconstruction	Pave a new apron to accommodate existing and future aircraft.	Increase safety and reduce foreign object debris (FOD).
Hangar Development	T-hangar and box hangar development.	As demand warrants.
Runway Development	Relocate Runway 11/29 threshold while maintaining width. Ultimate crosswind runway to meet FAA wind coverage recommendations if land and funding are available.	Maintain width and ARC C-III for wind coverage (primary reason) and as a regional resource and benefit to airport users. Crosswind runway to meet wind coverage, if possible, beyond 20-year planning range.
Approach Capabilities	Lower instrument approach visibility minimums to ¼-mile.	Address needs of existing users and attract others during adverse weather conditions.
Taxiway Improvements	Extend taxiway the full length of the runway and other enhancements.	Increase safety and airfield efficiency - Meet design standards.
Maintenance Equipment Storage	Storage building for airfield maintenance equipment.	Needed if airfield maintenance responsibilities were to shift to AKO.
Airfield Perimeter Fencing	Supplement existing fencing near terminal building to encompass entire airport property.	Security and wildlife management.
In-fill Development	Hangar and non-aeronautical development within vacant spaces.	Development where practical.

Source: Jviation



5.2 Evaluation Criteria

To facilitate the selection of a preferred airfield development scenario, the following evaluation criteria were utilized to determine the potential benefits and impacts of the various alternative development scenarios:

- **Safety/Operational Factors:** Each alternative is evaluated to determine its ability to safely accommodate future demand for aircraft, vehicles, and other relevant factors based on the specific facility being evaluated. This criterion evaluates alternative development concepts based on anticipated improvements to operational safety, capacity, and delay, as well as tenant convenience and other relevant planning considerations.
- **Economic Factors:** Historic infrastructure investment, the remaining useful life of existing airport facilities, anticipated alternative project cost differentials, and property acquisition requirements are economic factors considered in this metric. These factors provide a basis for comparing the cost-effectiveness and economic ramifications of development scenarios.
- **Environmental Factors:** A broad evaluation of relevant environmental factors associated with development, including, but not limited to, noise, wetland, and contamination impacts, are evaluated in greater detail for the preferred alternative. Considerations also include potential physical impacts to the surrounding community.
- **Implementation Feasibility:** There are often tangible and intangible factors that can impact an airport's ability to implement certain development scenarios. Community and political acceptance are examples of implementation feasibility factors taken into consideration in this analysis. Alternative facility development concepts identified for AKO are evaluated relative to each other based on the anticipated feasibility of their implementation.

Where appropriate, alternative development scenarios are quantitatively and qualitatively evaluated based on these factors. In addition to the evaluation criteria used above, select improvements were presented to the Airport to receive feedback and input on the demand for and preferred location of each facility.

5.3 Development Concepts & Alternatives

Because all other airport functions relate to and revolve around the basic runway/taxiway layout, airside development alternatives must be carefully examined and evaluated. While it is essential that the initial development recommendations for the Airport be commensurate with the near-term needs and requirements of the Airport users, the long-term improvement of the facility must also be considered and planned for to ensure the Airport's capability to accommodate future activity levels. Consequently, the main objective of the planning recommendations presented in this section is to identify future development that will result in a runway/taxiway system capable of accommodating the forecasted aviation activity levels.

The following sections provide overviews of the alternative analyses for several of the key airfield infrastructure elements. Although these individual analyses are presented separately, it must be understood that they can and do impact each other.

5.3.1 Terminal Area

Terminal Alternative 1: Renovate or Reconstruct the Terminal Building in its Current Location

The terminal building is located along Highway 63, providing convenient access to the Airport. The capacity of the terminal is sufficient for current demand, however, maintenance repairs have become a problem, requiring continuous up-keep. Renovating or reconstructing the terminal would allow these issues to be addressed, maintain the building through the planning period, and continue convenient access from the highway and runway. This alternative does not consider any growth opportunity.

If the Airport maintains its B-II ARC and does not lower minimums on Runway 29, the current terminal building and attached hangar will remain outside of the Runway 29 runway protection zone (RPZ). If the Airport lowers minimums on Runway 29, the RPZ dimensions increase significantly, resulting in the terminal, attached hangar, and part of the parking apron being within the RPZ.

In the ultimate forecast, the Airport will upgrade to a C-III ARC. This will require all safety areas to increase, and the terminal building, nearby hangar, and much of the current apron area will be within the new safety areas. Because of the ultimate C-III designation, Terminal Alternative 1 is not recommended.

Terminal Alternative 2: New Terminal Area: North Side, Central Airfield

Terminal Alternative 2 proposes the new terminal location on the north side of the property, shown in **Figure 5-1**. The relocation would be much closer to Hayes Aviation maintenance hangars and would provide more space for automobile parking. Terminal Alternative 2 centralizes the terminal area on Airport property.

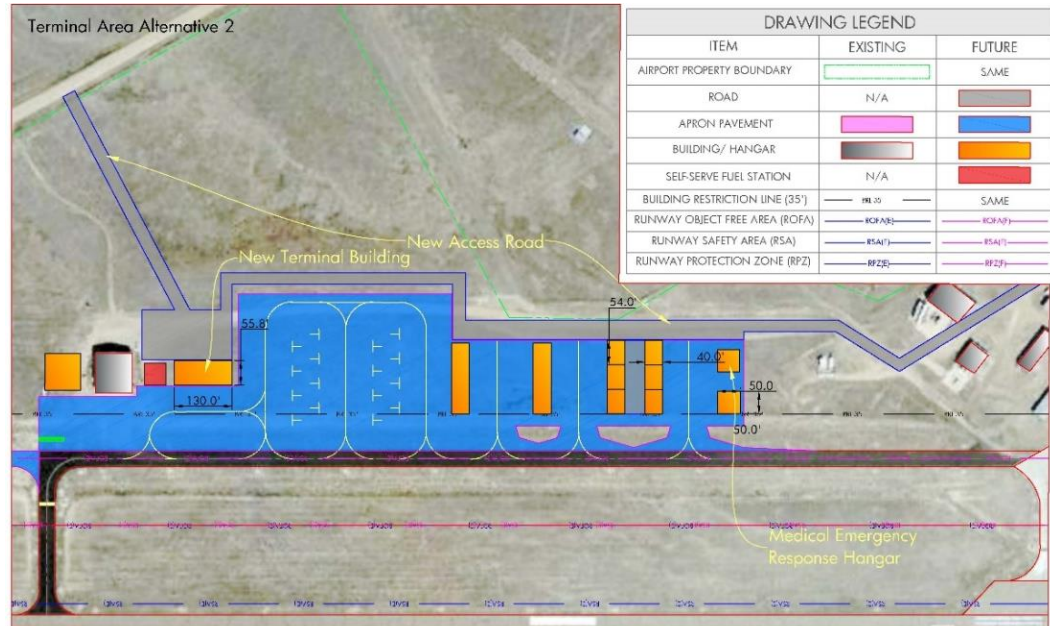
With the terminal area in a new location, a new apron would need to be constructed for aircraft parking. An area for hangar development is shown on the east side of the new apron. Additional hangars would allow for transient or based aircraft parking.

The buildings in **Figure 5-1** are not currently in any safety areas, and remain outside the ARC C-III safety areas. Terminal Alternative 2 allows for lower approach minimums and an increased ARC, and works well for the current Runway layout.

Although this Alternative considers future development changes, there are some concerns. For example, Terminal Alternative 2 proposes a large amount of new pavement for parking and taxiing. It was noted that the proposed areas may be more pavement and storage space than future demands warrant. Another concern is relocating the terminal building. Currently, the terminal building and Airport entrance are located on Highway 63 (Cedar Avenue), one of the main roads through Akron.

Moving the terminal building off a main roadway could result in fewer visitors and more confusion as to the location of the Airport entrance. Subsequently, Terminal Alternative 2 is not recommended.

FIGURE 5-1: TERMINAL ALTERNATIVE 2: NORTH SIDE, CENTRAL AIRFIELD



Source: Jviation

Terminal Alternative 3: New Terminal Area: South Side, Central Airfield

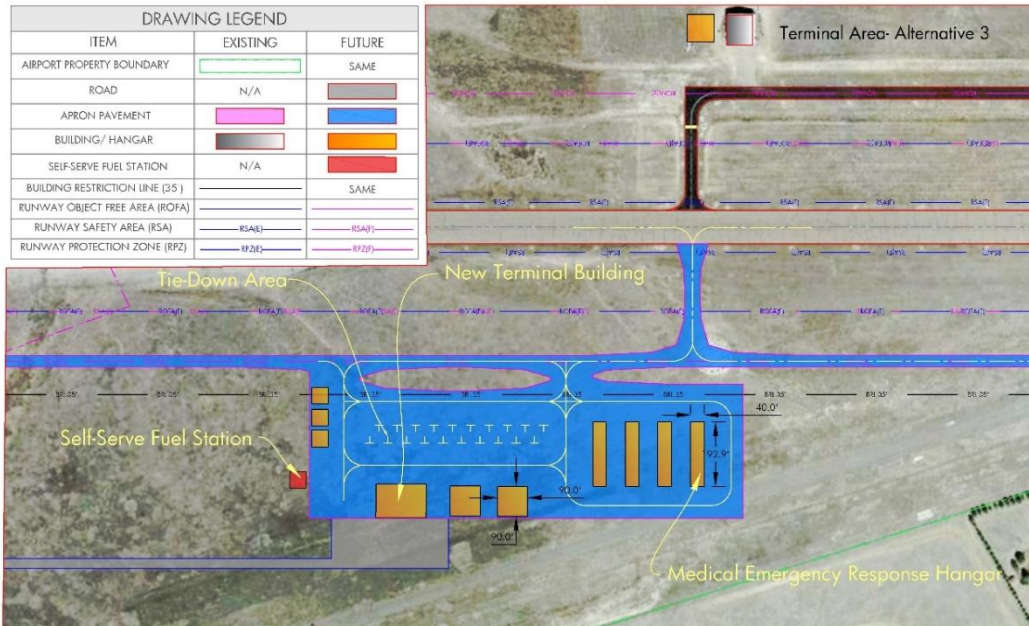
The north side of the Airport could be considered constrained because of the adjacent property line. There is a considerable amount of space that could be used for development south of the Runway. Terminal Alternative 3 proposes development along the south side of Airport property, shown in **Figure 5-2**.

Terminal Alternative 3 proposes a new terminal building, self-serve fuel, and hangars of varying sizes. It also allows for ample aircraft tie-down spaces, and includes a full-length parallel taxiway on the south side of Runway 11/29. Access to this new terminal area would be on County Road B.

For ultimate development, a crosswind runway, an increase in ARC, and lower minima were considered, and it was determined that development in this area would not interfere with any safety areas.

There are challenges with development on the south side. Utilities currently only exist on the north side of the Runway, and are often expensive and difficult to move. Land south of the Airport property boundary is currently being developed for single-family homes, and it is highly likely that additional aircraft traffic further south on Airport property would not be well received by community members. Subsequently, Terminal Alternative 3 is not recommended.

FIGURE 5-2: TERMINAL ALTERNATIVE 3: SOUTH SIDE, CENTRAL AIRFIELD



Source: Jviation

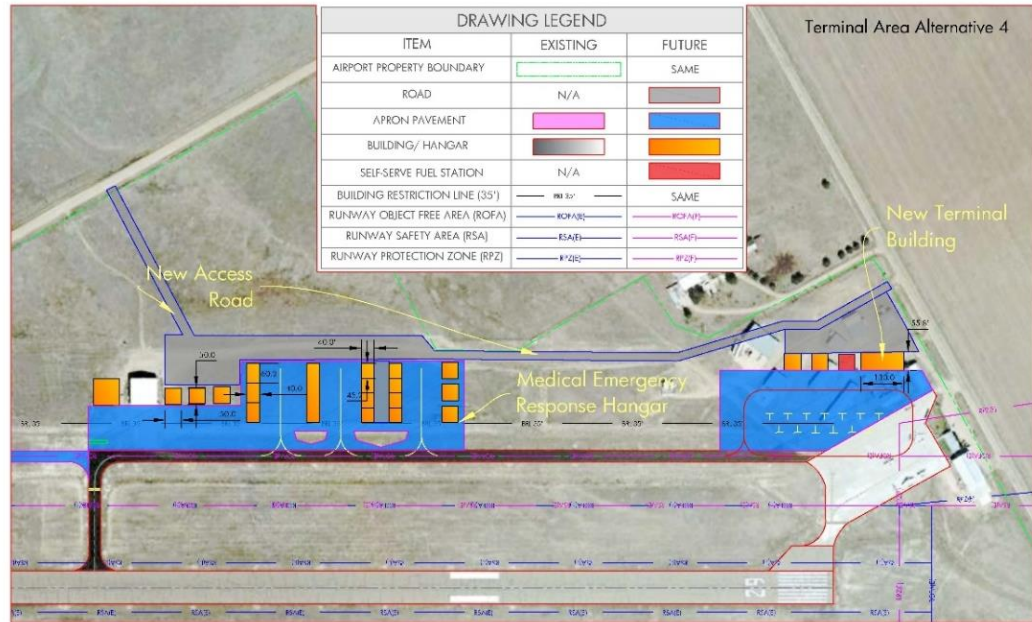
Terminal Alternative 4: New Terminal Area: North Side, East Airfield

Terminal Alternative 4 proposes two development areas, shown in Figure 5-3. A new terminal building, self-serve fuel station, and two hangars would be built north of the existing apron. This area also has a large space for tiedown parking. Development in this location would require relocation of the existing hangars. The second area, mainly for commercial and private hangar development, is located west of the proposed terminal area and north of the Runway, near the existing Hayes Aviation maintenance hangars.

Terminal Alternative 4 includes a new access road to private businesses and hangars that would cut down on traffic around the terminal building, and allow for additional auto parking.

Terminal Alternative 4 prepares the airfield and terminal area for any future airspace or ARC changes. The proposed buildings will be outside of any current through ultimate development. Subsequently, Terminal Alternative 4 is recommended for the future of Colorado Plains Regional Airport.

FIGURE 5-3: TERMINAL ALTERNATIVE 4: NORTH SIDE, EAST AIRFIELD



Source: Jviation

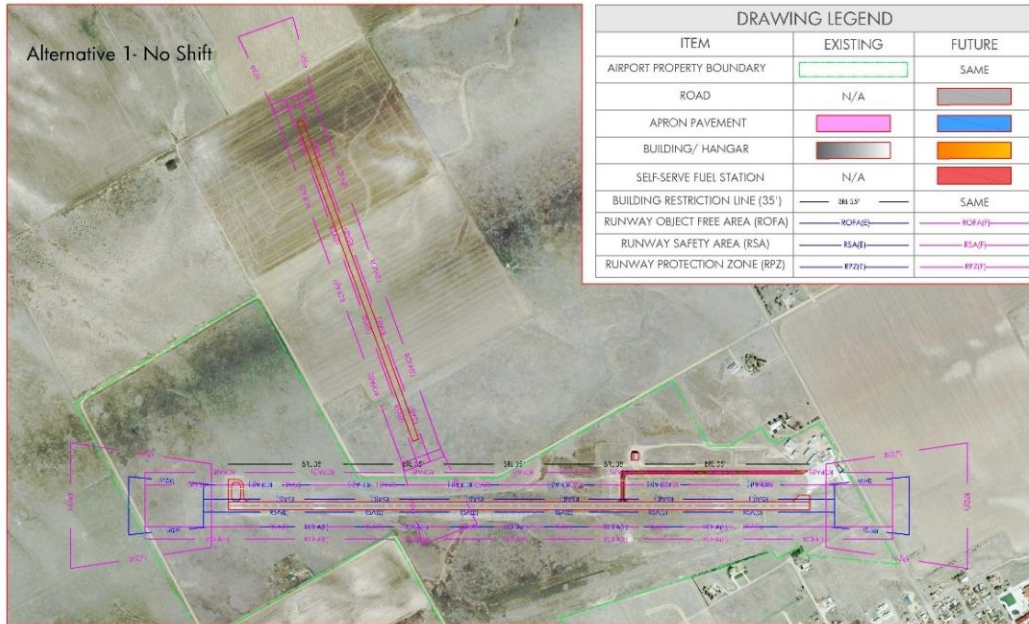
5.3.2 Airfield Alternatives

Airfield Alternative 1: No Change

Airfield Alternative 1 proposes no change to the current layout of Runway 11/29, including the current safety areas based on B-II standards (**Figure 5-4**). The approach RPZ for Runway 29 currently encompasses part of Highway 63, an incompatible land use that needs to be addressed if there is a change in approach minima and/or RPZ, per FAA Memorandum *Interim Guidance on Land Uses Within a Runway Protection Zone*. Since Airfield Alternative 1 proposes “No Change,” the Airport and Town would not have to address the issue.

Airfield Alternative 1 is not recommended because it does not help AKO improve in the future.

FIGURE 5-4: AIRFIELD ALTERNATIVE 1: NO CHANGE

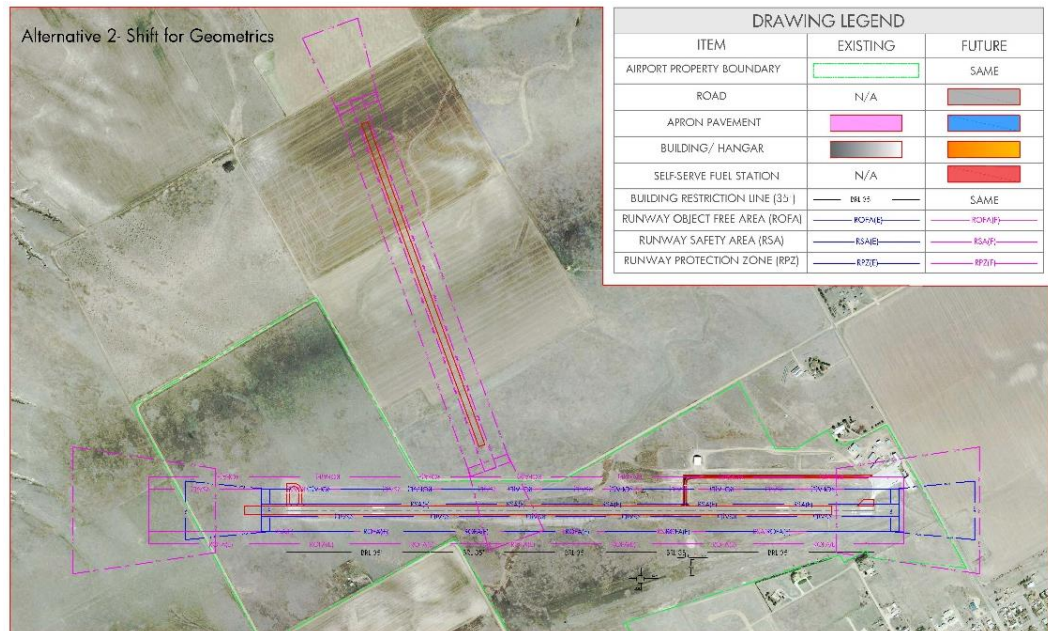


Source: Jviation

Airfield Alternative 2: Shift Runway for Geometrics

Airfield Alternative 2 proposes increasing the ARC to C-III. The new designation would change the dimensions of the safety areas surrounding the Runway, effectively putting Highway 63 within the runway safety area (RSA) and the runway object-free area (ROFA), as well as the RPZ, as shown in **Figure 5-5**. To address the requirements of the *Interim Guidance on Land Uses Within a Runway Protection Zone*, Airfield Alternative 2 proposes realigning the Runway so existing buildings and Highway 63 are not within the new RSA and ROFA. Moving the Runway to accommodate the new RPZ dimensions would be an expensive adjustment, so a phased approach may be warranted. Additional coordination with the FAA would need to be conducted to receive their approval on shifting the RSA and ROFA, but not the RPZ. Airfield Alternative 2 helps AKO reach its ultimate goals, but does not meet RPZ requirements.

FIGURE 5-5: AIRFIELD ALTERNATIVE 2: SHIFT RUNWAY FOR GEOMETRICS



Source: Jviation

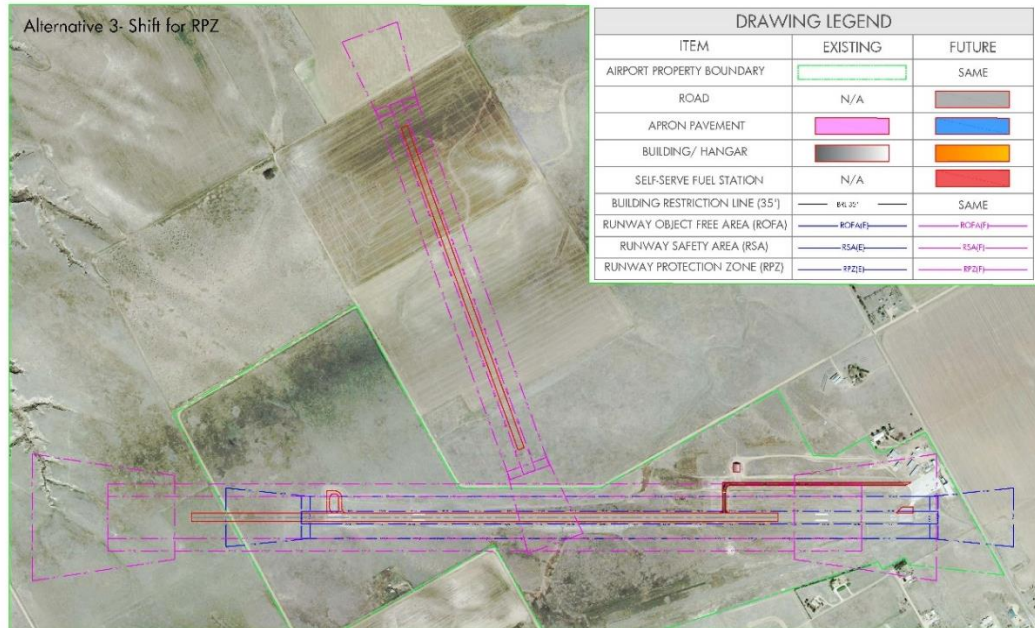
Airfield Alternative 3: Shift for RPZ

Airfield Alternative 3 proposes increasing the Airport ARC to C-III and shifting the Runway west about 1,500 feet so all buildings and roads are outside safety areas and runway protection zones (**Figure 5-6**). As stated previously, a change in the ARC would fall under the FAA’s interim guidance to adjust land uses within the RPZ. Alternative 3 shifts the Runway and safety areas to comply with the FAA’s guidance.

This adjustment would affect buildings and parking areas that are currently occupied. In coordination with the Preferred Terminal Alternative, this Alternative could be accommodated with the removal of the occupied buildings.

Based on discussions with the FAA and adherence to *Interim Guidance on Land Uses Within a Runway Protection Zone*, Alternative 3 is the preferred option. A phased approach to meet RPZ compliance is possible and will be illustrated on the ALP set.

FIGURE 5-6: AIRFIELD ALTERNATIVE 3: SHIFT FOR RPZ



Source: Jviation

Airfield Alternative 4: B-II, Lower Minimums

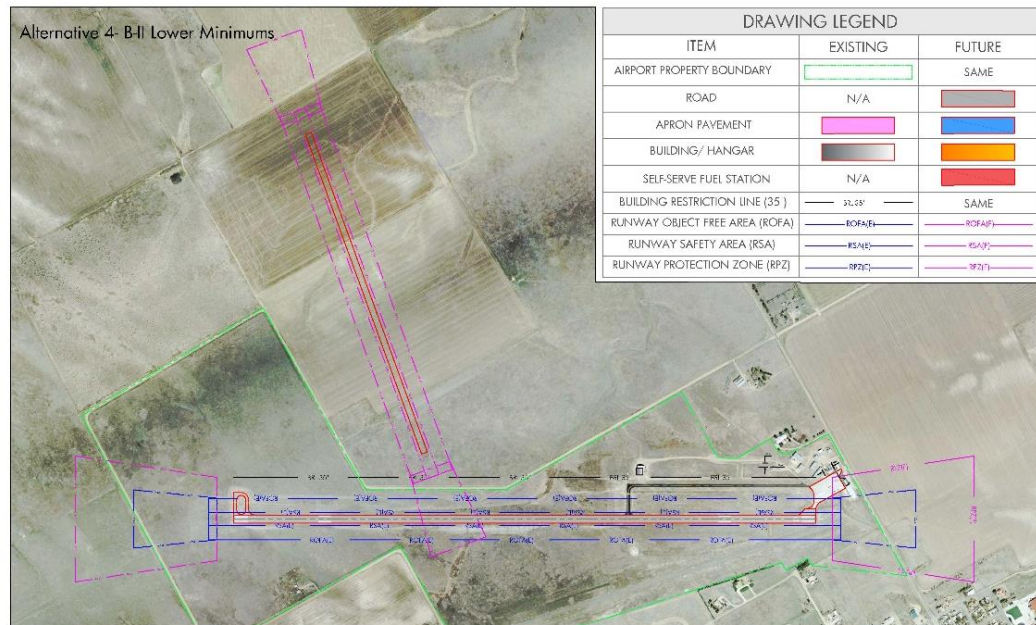
Figure 5-7 displays Airfield Alternative 4. In this proposed development, the Runway would maintain a B-II ARC, but approach visibility minimums would lower to ¾ statute mile. This change causes the RPZ dimensions to increase, but the RSA and ROFA dimensions remain the same.

Most aircraft land on Runway 11, which opens the possibility of lowering the minimums for only that runway. With this option, the RPZ would only change for Runway 11. The current RPZ for Runway 29 would not be changed, and therefore would not need adjustments to comply with FAA’s *Interim Guidance on Land Uses Within a Runway Protection Zone*.

Airfield Alternative 4 does not require the Airport to move the Runway and allows approach minimums to be lower but does not consider the Airport’s desire to ultimately have a C-III ARC designation. Therefore, it is not recommended.



FIGURE 5-7: AIRFIELD ALTERNATIVE 4: B-II, LOWER MINIMUMS



Source: Jviation

Airfield Alternative 5: Build a Paved Crosswind Runway

Ultimately, if the Airport wants to increase crosswind coverage for all aircraft, a crosswind runway should be constructed. A paved crosswind runway is a large investment, both initially and in ongoing maintenance, for the FAA, the State, and the Town of Akron, and should be considered carefully. Although costly, the Airport would be able to accommodate additional aircraft, potentially increasing revenue overall. A CATEX and additional environmental processes would need to be addressed before any work could begin on the construction of this runway.

Airfield Alternative 5b: Build a Turf Crosswind Runway

Airfield Alternative 5b proposes that a turf runway be installed rather than a paved crosswind runway. This would increase crosswind coverage while encouraging flight training on turf runways at AKO. Currently, there are very few public-use airports in Colorado with turf runways, making this alternative appealing. Maintenance would still need to be performed on this runway, but a turf crosswind runway serving the needs of small aircraft is more cost effective than a paved runway.

Figure 5-78 shows the ultimate airfield layout of AKO. Airfield Alternative 5b is recommended for beyond the 20-year planning period.

5.3.3 Miscellaneous

Fencing

Because AKO is currently not fully fenced around its property boundaries, people and animals can access airport property at any time. To increase safety and prevent

trespassing, it is recommended that the fencing be extended around the entire airport property.

Taxiway

The most efficient way to increase capacity at an airport is to have a taxiway the same length and parallel to the airport’s runways. AKO’s taxiway is approximately half the length of Runway 11/29. It is suggested that the taxiway be extended to be the same length as the Runway.

It is important to note the economic and environmental concerns with lengthening the taxiway. The land for this taxiway is hilly, and dirt would need to be moved to accommodate the additional length. Moving land is costly and could disrupt various habitats. A CATEX will need to be completed to determine if additional levels of environmental impact would be affected.

5.4 Recommended Plan

Recommended alternatives are aligned with forecasted operations and based aircraft and allow the Airport space to accommodate additional hangars, aprons, and other landside development. Utilizing the evaluation of the alternatives, feedback from airport staff, and the project advisory committee (made up of key tenants and stakeholders), future improvements can be determined.

TABLE 5-2: RECOMMENDED PLAN

Development Area	Preferred Alternative
Terminal Area	Terminal Alternative 4: Construct New Terminal with additional hangar development throughout the north side of the Airport.
Airfield Alternatives	<ul style="list-style-type: none"> – Within the 20-year planning period: Airfield Alternative 3, Shift for RPZ. This alternative will be adjusted in the production of the final runway development plan and ALP to present a phased approach to shifting the runway RPZs based on future/ultimate conditions. The initial shift to meet RPZ requirements will be about 715’ to avoid Cedar Ave (Rt. 63). – Beyond the 20-year planning period: Airfield Alternative 5a, Build Turf Crosswind Runway with the possibility of paving it when demand warrants and funding becomes available.
Miscellaneous	Finish fencing and extend taxiway.

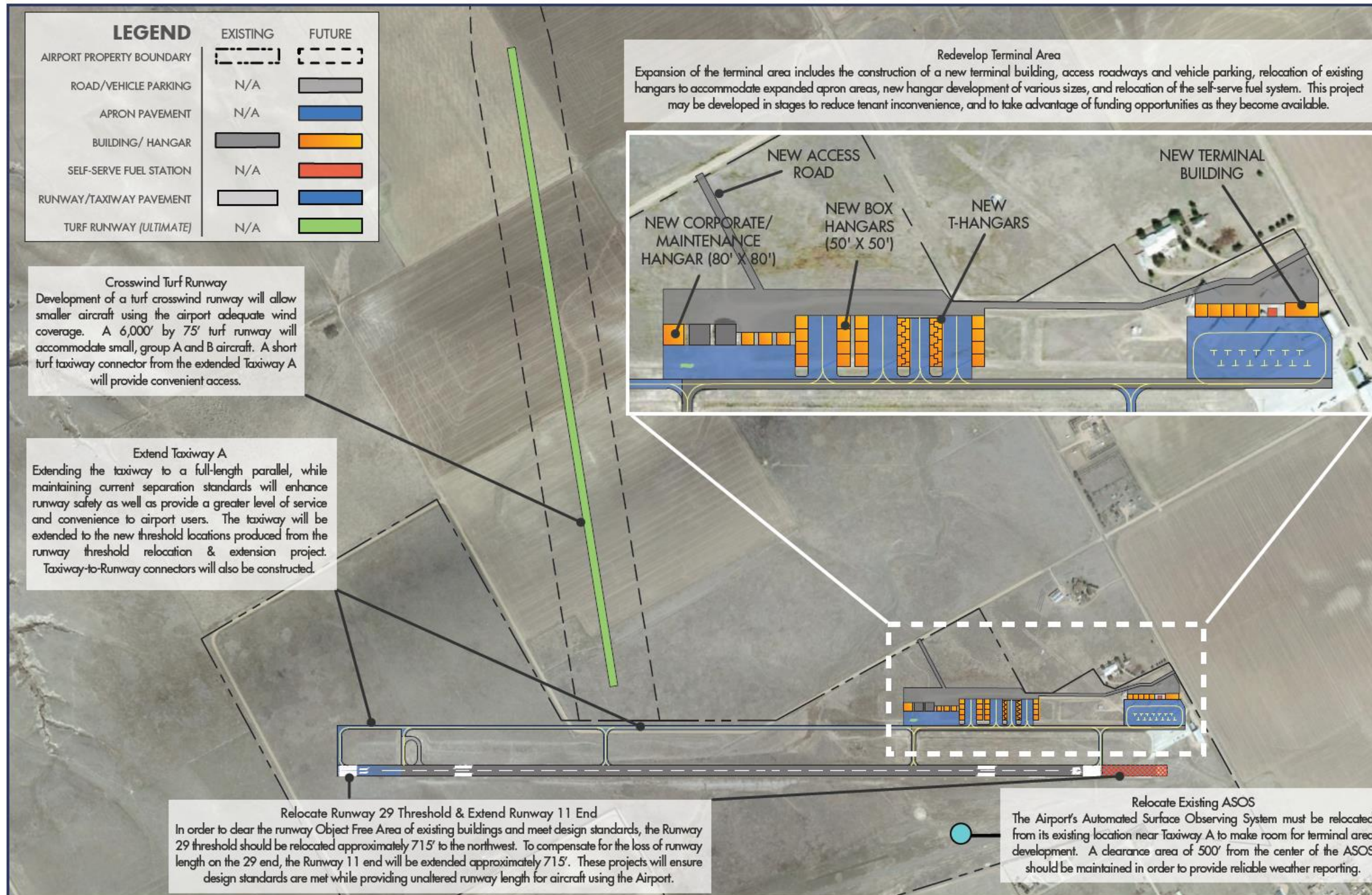
Source: Aviation

Recommended improvements throughout the Airport are displayed in **Figure 5-8**. These projects will be carried through the rest of the master plan study for further evaluation and depiction on the Airport Layout Plan. **Chapter 7, Implementation Plan**, estimates costs and financial resources available to fund recommended projects.



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FIGURE 5-8: RECOMMENDED AIRPORT IMPROVEMENTS



Source: Jviation



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