ALTERNATIVES

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4. AIRPORT IMPROVEMENT ALTERNATIVES

4.1 Introduction

Chapter 3, *Demand Capacity Analysis and Facility Requirements* identified airport facility improvements required over a twenty-year planning period. The purpose of this chapter is to identify alternative development plans capable of meeting those needs. A series of improvement alternatives will be compared for their ability to meet airfield, terminal and general aviation needs. Other improvements on the airport property which can provide revenue support will also be discussed. A preferred master plan concept will be recommended based on an evaluation of which alternative or combination of alternatives best meet the identified airport need. Because actual activity levels can vary from forecast levels, the plan must always retain an element of flexibility.

The evaluation of airport improvement alternatives may include the “no action” or “no build” alternative. This alternative will eventually reduce the quality of services provided to the public and potentially affect the Parker area’s ability to accrue additional economic growth.

While this study does not deal with the potential relocation of services to other airports, this option also exists. It would be difficult to duplicate the services and convenience of the current facility at a nearby airport and the economic and environmental costs of new site development are generally far greater than the cost of developing the existing site. It is sometimes possible to relocate, or encourage the relocation of some services. However, most of the services which local users find attractive are not easily met at nearby airports.

If the Avi Suquilla Airport were closed, service would need to be transferred to:

- Lake Havasu City Airport, approximately 45 miles to the north.
- Yuma International Airport, approximately 120 miles to the south.
- Blyth, CA Airport, approximately 65 miles south and west of Parker.

Closing the airport and transferring services to another airport does not meet Tribal or La Paz County needs. Parker is the La Paz County seat and CRIT Reservation Tribal Headquarters. Yuma and Blythe do not meet the needs of the current airport users.

Transfer of aircraft larger than utility aircraft to Lake Havasu Airport does not meet the needs of CRIT, Parker or La Paz County. Travel time is in excess of one-hour on a heavily traveled two-lane curvilinear road, congested with trucks, RV’s, winter visitors and summer tourists.

The inconvenience to business in Parker and corporations supporting Tribal activities will be significant if corporate aircraft fly to another existing airport.

The effect on Medi-Vac flights with passengers requiring one to two hours of ground transport time before transferring to a Medi-Vac aircraft will also be significant.

Because the “no-build” and “transfer of services” options are not feasible for Avi Suquilla Airport, the master planning process must attempt to address the facility needs which have been identified in the previous chapter, by providing a logical decision path which the CRIT

can follow in order to meet projected needs. Through coordination with CRIT staff, the Tribal Council and the public, the alternatives will be refined and modified as necessary to shape the recommended improvement program. The alternatives presented in this chapter can be considered a beginning point for formulating the updated master plan improvement program, and input will be necessary to define the resulting program. A final decision with regard to pursuing a particular improvement plan which meets the needs of commercial and general aviation users ultimately rests with the Colorado River Indian Tribes (CRIT).

4.2 Development Considerations

Development objectives have been established to show the intent, purpose, and direction for future airport development. Development objectives for Avi Suquilla Airport are as follows:

- Accommodate the forecast aviation fleet in a safe and efficient manner with the appropriate facilities
- Plan and develop an airport that is capable of accommodating the future needs and requirements of the Avi Suquilla Airport's service area.
- Enhance the self-sustaining capability of the airport and ensure the financial feasibility of development.
- Develop a facility offering services and infrastructure that will attract new businesses to the area and the airport.
- Plan and develop an airport that is environmentally compatible with the community and minimize environmental impacts to both airport and adjacent properties.
- Develop a plan that will encourage economic development for the community.

In attempting to meet these objectives, improvement of facilities should be undertaken in such a manner as to minimize operational constraints. Flexibility is essential to assure adequate capacity while minimizing financial commitments until market potential is realized. **Figure 4-1** summarizes the major airport development considerations based on facility requirements. While many of these development considerations reflect projects or topics which are demand driven, others are functional in nature.

Airfield Considerations

- **Plan for lengthening of Runway 1-19 to 7,000 feet within the planning period**
- **Plan for ultimate length of up to 8,500 feet on Runway 1-19**
- **Consider widening 35 foot wide sections of taxiways to 50 feet**
- **Consider modification of taxiway geometry to eliminate 90 degree turns**
- **Protect lateral ground clearance for possibility of future GPS**
- **Protect lateral ground clearance for MALSR approach lighting system**
- **Add REILS to Runway 1-19**
- **Designate helicopter landing area(s)**

Terminal / Access Considerations

- **GA terminal expansion / replacement**
- **Access / signage from Riverside Drive**
- **Construction of a sanitation sewer line**

General Aviation Considerations

- **Apron expansion**
- **Additional storage hangars**
- **Segregated area for helicopter operators**
- **Fueling system upgrades including self-service and spill containment**
- **Drainage improvements to reduce flooding**
- **Fire/water line to increase safety at the airport and in the GA terminal area**

Miscellaneous

- **Revenue enhancement on the airport**
- **Perimeter road**

Figure 4-1 Avi Suquilla Alternative Development Considerations

4.3 Safety and Investment Preservation

Chapter 3, *Facility Requirements*, identifies fire protection, utility and drainage deficiencies in the terminal area. These deficiencies should be addressed in the short term in order to preserve the investments that have been made in terminal area facilities.

Figure 4-2 illustrates a project which will correct the identified terminal area deficiencies. Since trenching for the fire protection impacts other utilities and the area to be addressed for drainage, it is most cost effective and efficient to accomplish the work in a single project.

A 12" fire water line is proposed to be extended from the 18" CRIT rural water main serving the Reservation lands north of the airport to the apron. Fire hydrants will be installed at an approximately 300-ft spacing along the apron. The drainage will be improved by installing a trench drain between the apron and the hangar, and connecting it to the storm drainage system to be installed in the vehicle parking area. The storm drainage system will be extended to an existing detention area at the intersection of Airport Road and Highway 95. Due to the re-grading of the parking area, other underground utilities in the parking lot will

need to be reinstalled at new grades, or relocated. In the case of the sanitary sewer, an existing septic tank and drain field will be removed, and a new sanitary sewer line installed as shown on the sketch. The sewer connection to the Parker – CRIT sewer system is being made at the manhole closest to the airport. The final element of the project is the rehabilitation of the existing airport access road and the reinstallation of power, telephone and communication facilities which will be impacted by the construction.

These projects are necessary regardless of future growth and development, and are included in all alternatives.

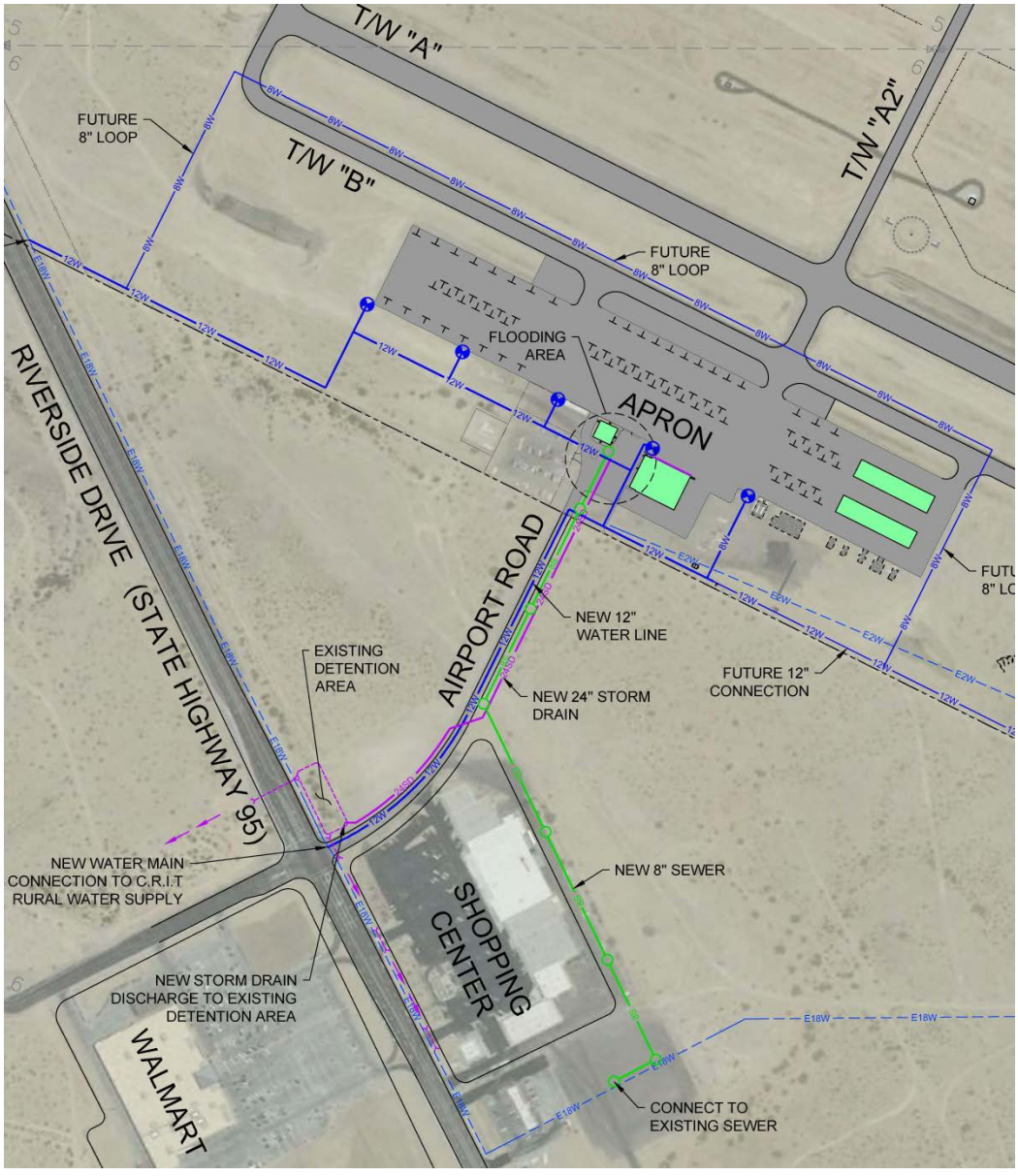

Figure 4-2 Safety / Investment Preservation Project

4.4 Airfield Alternatives

Airfield facilities are, by nature, a focal point of the airport complex. Because of their primary role and the fact that they physically dominate airport land use, airfield facility needs are often the critical factor in the determination of a viable airport improvement program. Analysis in the previous chapter indicated the need to continue to maintain the current runway length and width. Other factors to be considered include taxiway circulation and the potential to provide additional runway length if needed in the future.

The 1997 Master Plan considered and discussed a variety of potential airfield development schemes to provide an upgraded runway to meet demand for Class C aircraft. An Airport Layout Plan Narrative Report was completed in 2003 and revised in 2005 which confirmed the need for a lengthened runway and determined a relocated runway centerline was necessary in order to conform to FAA dimensional criteria. Since that time, an Environmental Assessment has been completed, a Finding of No Significant Impact (FONSI) issued, and the relocated runway has been constructed with appurtenant taxiways and lighting. Given the significant planning effort that was involved to determine this airfield plan, and the commitment that has already taken place in its implementation, the alternatives analysis of this Master Plan will serve to refine the airfield plan rather than reinvent it.

The alignment of the relocated runway was selected based on its ability to accommodate phased runway extensions to 7,250 feet and ultimately 8,250 feet. A runway length of 7,250 feet meets the needs of 100% of the fleet at a 60% useful load. The ultimate length of 8,250 feet comes close to meeting the needs of 75% of the fleet at a 90% useful load. This data is based on the “declared distance” procedures outlined in the previous chapter. Lengthening the runway beyond 8,250 becomes impracticable as it requires relocation of State Highway 95.

Consistent with the previous Master Plan and the current Airport Layout Plan, all alternatives propose carrying forward the approved runway alternative. This Alternative would extend Runway 1-19 1,000 feet to the southeast to achieve an interim length of 7,250 feet. In addition to the runway extension, a full 1,000-foot runway safety area would be extended beyond the end of the pavement to the southeast. The southeast extension would require relocation of the ADOT Motor Vehicles Division office in order to remove it from the ultimate Runway Protection Zone. An ultimate extension of 1,000 feet to the northwest would achieve the ultimate runway length of 8250. A full 1,000 foot safety area to the northwest would need to be achieved using declared distance procedures.

4

4.3

4.4.1 Alternative 1

Alternative 1, as depicted on **Figure 4-3,** proposes an ultimate extension to Runway 1-19 to 8250 feet with parallel taxiway extensions to accommodate the runway extension. The ends of Taxiway C (previously referred to as the ‘parallel portions of Taxiways A1 and A3’) are connected to provide a full length parallel taxiway that provides dual-directional taxiing capabilities. The 90 degree angle of Taxiway A-3 with Taxiway C is replaced with a diagonal taxiway facilitating a smoother and more efficient flow to and from the Runway 1

end. This alternative also depicts the addition of parallel Taxiway D, with its centerline located 400 feet east of the Runway 1-19 centerline. The addition of this parallel taxiway will help facilitate development on the east side of the airport.

With the release of the new Airport Design AC (150/5300-13A), a few modifications are required to the existing taxiway layout with respect to apron access to the runway. The new design AC clearly indicates that there should be no direct access from an apron to the runway. Therefore, Alternative 1 depicts the removal of Taxiway A2 between Taxiways A and B and the addition of two new 50 foot wide taxiways between Taxiways A and B.

This alternative also shows a new commercial passenger terminal complex constructed to the north side of the airport. This area would accommodate commercial and/or charter operations in the event that the airport needed to support FAR Part 121 or Part 135 operations in the future. The terminal building is planned at the northwestern edge of the apron to provide access and visibility from Riverside Drive (State Highway 95). Several conventional hangar facilities could be constructed along the northwestern edge of the apron with space available for an Aircraft Rescue Fire Fighting (ARFF) facility when needed. A large apron area would be available for larger business jets and turboprops. This terminal area would be accessible via a new access road extending from Riverside Drive (State Highway 95) at the Blue Water Casino entrance road intersection. The existing GA apron would be expanded to the north of the existing terminal area to provide for the development of additional T-hangars. A designated helicopter pad is shown at the southern edge of the commercial apron to separate helicopter activity from fixed wing activity as much as possible. The area south of the existing terminal area is reserved for long-term future aviation related development.

The south side of the airport west of Taxiway C would be reserved for corporate parcels. These parcels could be leased to develop a mixture of aviation-related businesses requiring large hangars and/or ramp space, and non-aeronautical uses for revenue support. Aviation related parcels would access the runway via Taxiway A-3 and Taxiway C. A new access road extending from Mohave Drive would serve these corporate parcels.

With the abundance of land available in the southeast quadrant of airport property a potential opportunity exists to develop an airport industrial park. A site is reserved in the south east quadrant for a multi-modal airport industrial park with access to Runway 1-19 through proposed Taxiway D. A conceptual layout is presented as part of Alternative 3 on **Figure 4-5**. Natural gas is available to this site and the cost to extend water and sewer would not be prohibitive. With the extension of the railroad spur, the potential exists for development of an intermodal center with access to both rail and air.

A continuous perimeter road is shown along the inside of the fence line to facilitate vehicular access to all areas of the airfield for regular security inspection.

Advantages:

Alternative A provides distinct separations between corporate and general aviation activity on the airport. Corporate aircraft activity would be concentrated on the northwest side of the airport. This would provide direct access to the runway and some separation from other

general aviation uses. This can be attractive for safety and security purposes. The new terminal area would be highly visible with access off Riverside Drive (State Highway 95).

Aviation related business uses have the potential to develop on the south side parcels. Small general aviation uses would be focused midfield in the currently developed area.

Disadvantages:

While separation of function is desirable, this alternative also requires the development of infrastructure in two separate quadrants. In addition the location of corporate parcels on the south side of the airfield provides limited visibility from major roadways.

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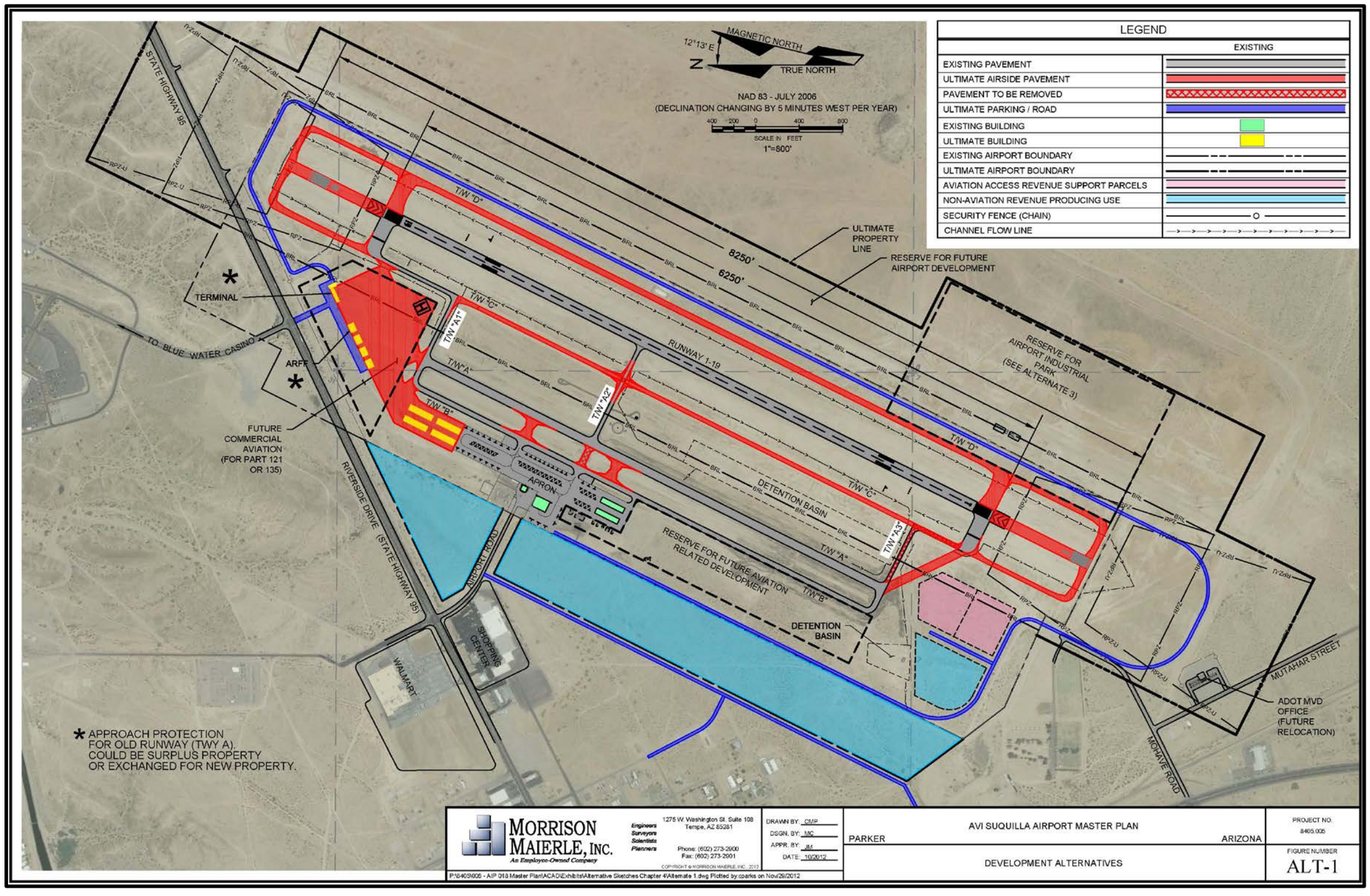

Figure 4-3 Airport Development Alternative 1

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4.4.2 Alternative 2

As presented on **Figure 4-4**, Alternative 2 provides the same runway extension proposed in Alternative 1 as well as parallel taxiway extensions to accommodate the runway extension. This alternative most closely resembles the current Airport Layout Plan. The terminal apron is expanded to the east to provide additional depth, converting a portion of Taxiways A and B into taxilanes. The ends of Taxiway C (previously referred to as the 'parallel portions of Taxiways A1 and A3') are connected to provide a full length parallel taxiway which provides dual-directional taxiing capabilities. This alternative also shows parallel Taxiway D, east of the runway as well as two new exit taxiways from Runway 1-19 to proposed Taxiway C. The new exit taxiways are each located 5,000 feet from each runway threshold and will allow 100% of small singe and twin engine aircraft and 49% of large aircraft to exit the runway without having to taxi to the end.

Consistent with the new Airport Design AC requirements, a portion of Taxiway A2 must be removed to eliminate direct access from the apron to the runway. This pavement section is located between Taxiway A and the east apron expansion and a new connector taxiway is shown just south of the removed connector taxiway.

This alternative also shows an apron expansion to the north of the existing terminal area. This area could be designated as a commercial passenger terminal complex to accommodate to support future FAR Part 121 or Part 135 operations. The terminal area is designed in the same manner as in Alternative 1 with corporate parcels and hangar development areas, but with access from the airport's current entry from Airport Road. A designated helicopter pad is shown at the extreme north end of the proposed apron to separate helicopter activity from fixed wing activity. The area south of the current apron would be expanded for general aviation T-hangar and conventional hangar development. The area further to the south is reserved for long-term future aviation related development.

The north side of the airport, west of Taxiway C, would be reserved for corporate parcels. These parcels could be leased to develop a mixture of aviation-related businesses requiring large hangars and/or ramp space, and non-aeronautical uses for revenue support. Aviation related parcels would access the runway via Taxiway A-1 and Taxiway C. A new access road extending from Riverside Drive (State Highway 95) would serve these corporate parcels.

As discussed for Alternative 1, the abundance of land available in the southeast quadrant of airport property provides a potential opportunity to develop an airport industrial park. The site will have access to the runway through utilization of Taxiway D.. A conceptual layout of the site is presented on **Figure 4-5**.

Alternative 2 also includes a continuous perimeter road along the inside of the fence line to facilitate vehicular access to all areas of the property.

Advantages:
This alternative provides centralized terminal facilities all within the same area as current operations. This provides some efficiencies for taxiways, utilities and other landside infrastructure. The growth of facilities can be incremental with contiguous apron expansion

to the north, south and east. Corporate parcels have high visibility from Riverside Drive (Highway 95) which would make them more attractive to potential lessees.

Disadvantages:
This alternative provides less separation of corporate and general aviation activity. The terminal building would be in the center core and not distinctly visible from surrounding arterial roadways.

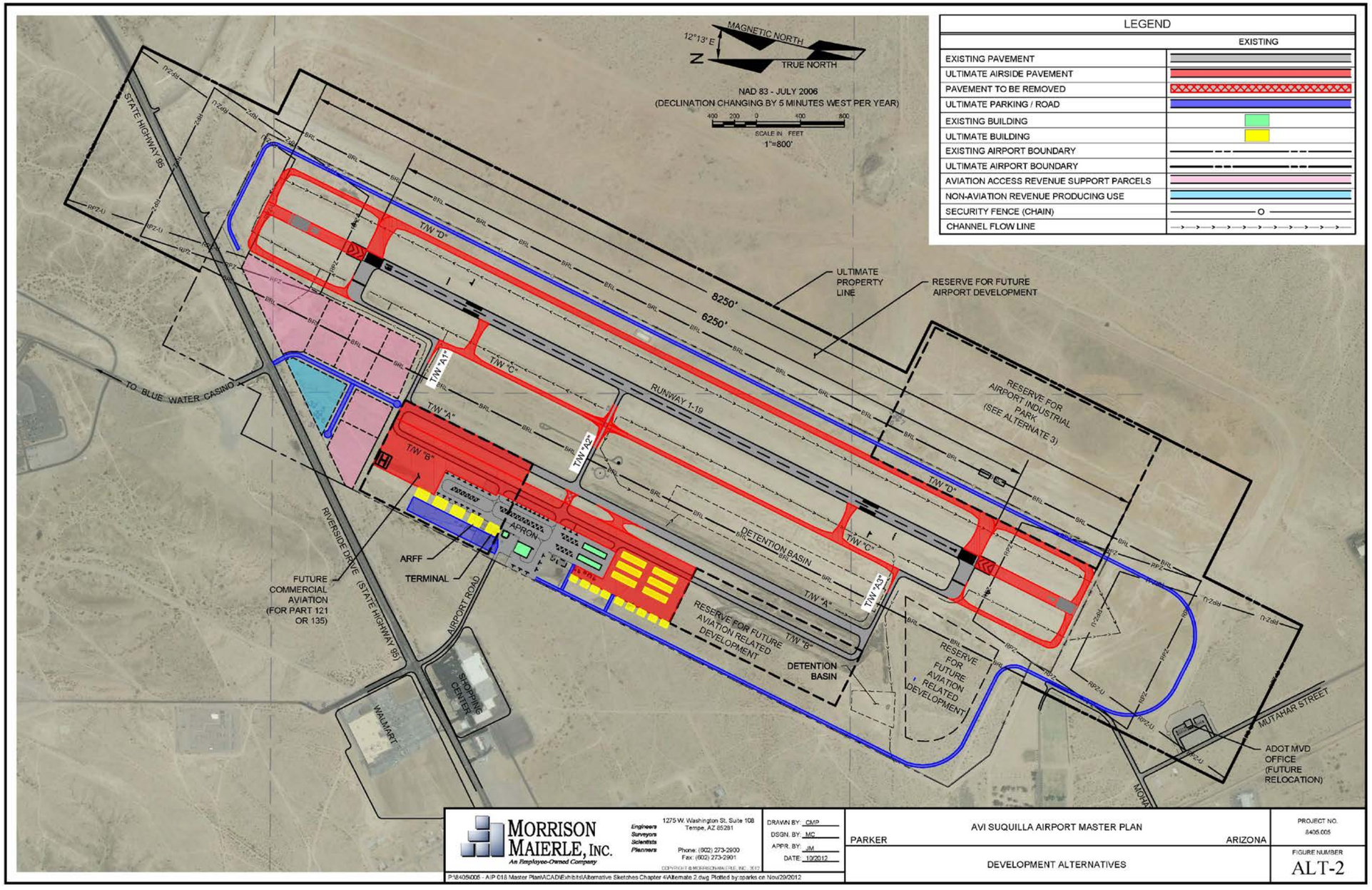

Figure 4-4 Airport Development Alternative 2

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4.4.3 Alternative 3

Alternative 3, as depicted on **Figure 4-5,** proposes the same Runway 1-19 and taxiway extensions as proposed for both Alternatives 1 and 2 as well as the addition of Taxiway D east of the runway..

This alternative assumes that the airport will not require a commercial / charter terminal area, but will continue to serve predominantly general aviation operations. The GA terminal apron is expanded to the east to provide additional depth, converting a portion of Taxiway B into a taxilane. Along with the extension of Taxiway C to create a full length parallel taxiway with dual direction taxiing capabilities, exit taxiways located 5,000 feet from each runway end have been provided between the runway and Taxiway C to facilitate a more efficient route from the runway to parking facilities. This alternative shows an apron expansion to the north of the existing terminal area, which extends to the far north side of the airfield. Areas are identified for both T-hangar and conventional hangar development. A designated helicopter pad is shown at the north end of the existing apron to separate helicopter activity from fixed wing activity as much as possible. As with the other two alternatives, a portion of Taxiway A2 must be removed. This alternative provides new connector taxiways, both north and south of Taxiway A2, to facilitate aircraft from the apron to Taxiway A.

The area on north side of the airport west of Taxiway C between the apron and Riverside Drive would be reserved for corporate and non-aviation revenue producing parcels. These parcels could be leased to develop a mixture of aviation-related businesses and non-aeronautical uses for revenue support. A new access road extending from Riverside Drive (State Highway 95) would serve these parcels.

The area south of the current terminal area would be reserved and developed for aircraft storage. Interest in this use has been indicated to airport management. Potential layouts are noted on **Figure 4-6**, **Figure 4-7** and **Figure 4-8**. Further to the south an area is reserved for long-term future aviation related development.

As discussed with each of the previous alternatives, the land available in the southeast quadrant of airport property provides a potential opportunity for the development of an airport industrial park. Alternative 3 presents a conceptual layout for the airport industrial park. The layout includes development of a cargo apron, a receiving facility, corporate parcels with taxiway access, an access road and an extension of the railroad spur. This rail extension creates the potential for the development of an intermodal center with access to both rail and air. The industrial airpark will have access to Runway 1-19 via Taxiway D.

As with the previous two alternatives, Alternative 3 includes a continuous perimeter road along the inside of the fence line to facilitate vehicular access to all areas of the property for regular security inspection.

Advantages:

Similar to Alternative 1, this alternative provides two distinct apron areas that could be utilized to separate smaller general aviation from larger corporate turboprops and jets. This can be attractive for both safety and security purposes. The corporate parcels, similar to Alternative 2, have high visibility from Riverside Drive (Highway 95) which would make them

more attractive to potential lessees. This alternative also introduces an aircraft storage use which could provide a valued service and viable revenue stream for the airport.

Disadvantages:

Like Alternative 1, this alternative requires the development of infrastructure in two separate quadrants. It also does not provide airfield access to the majority of corporate parcels.

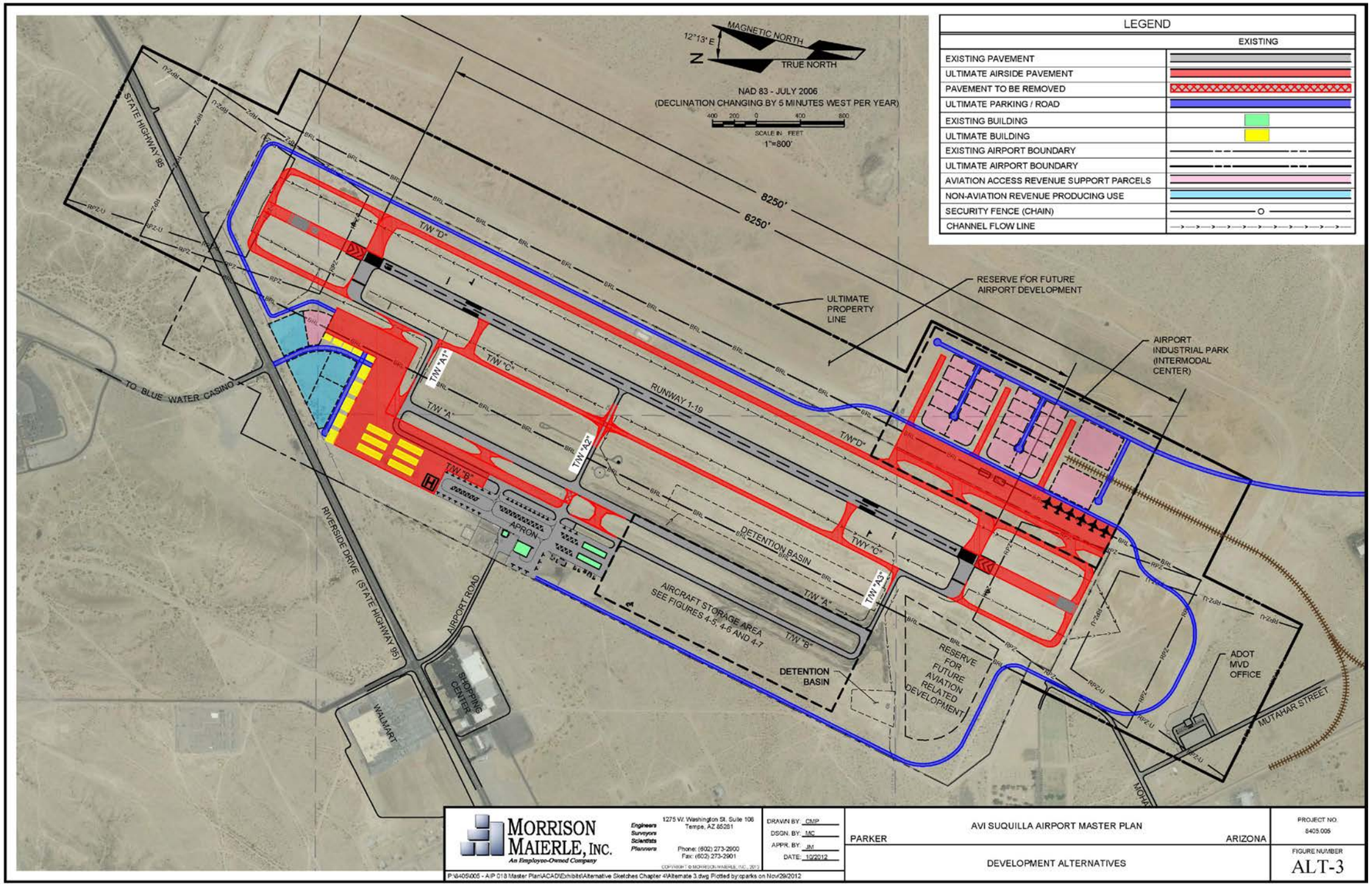

Figure 4-5 Airport Development Alternative 3

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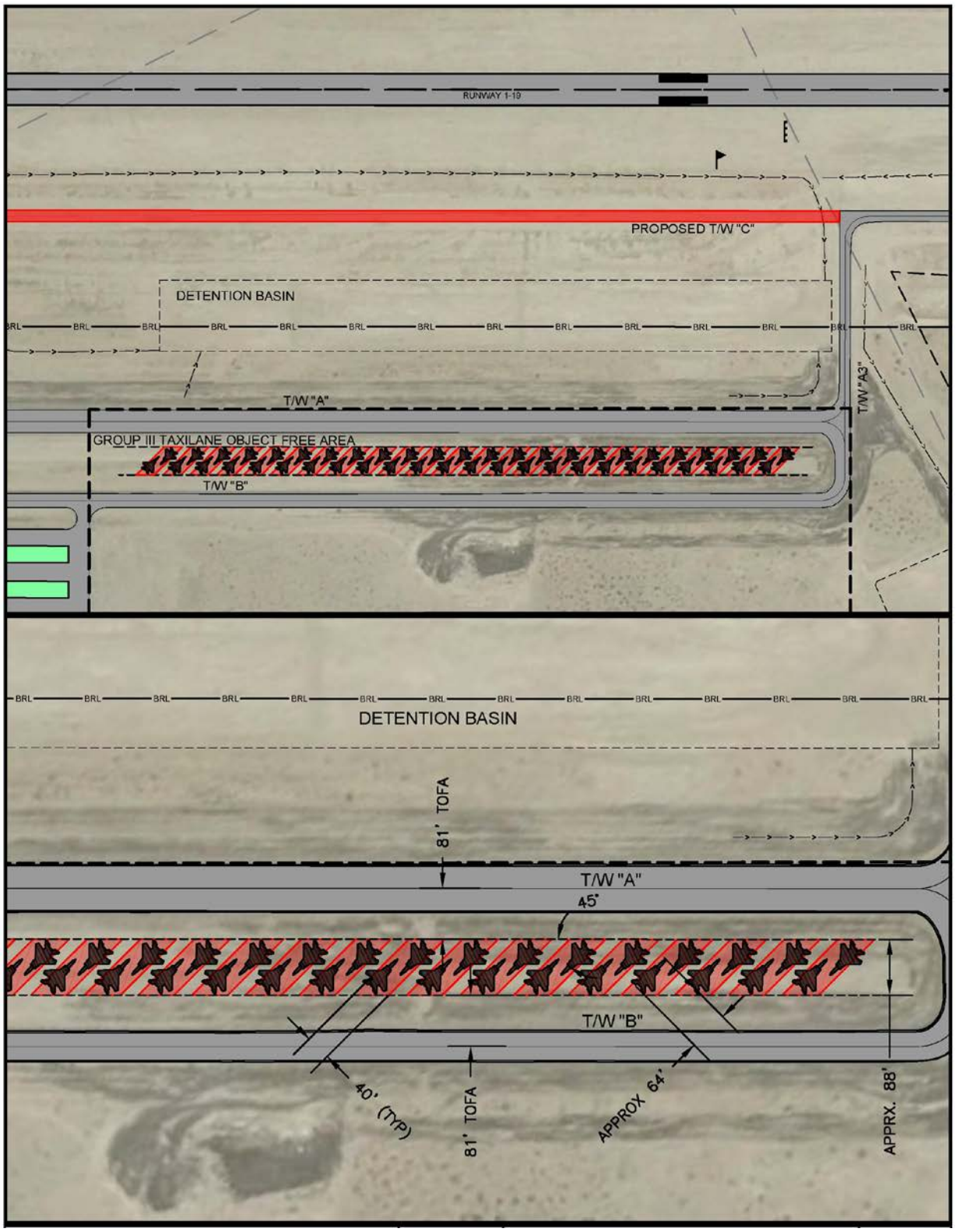

Figure 4-6 Potential Aircraft Storage Layout 1

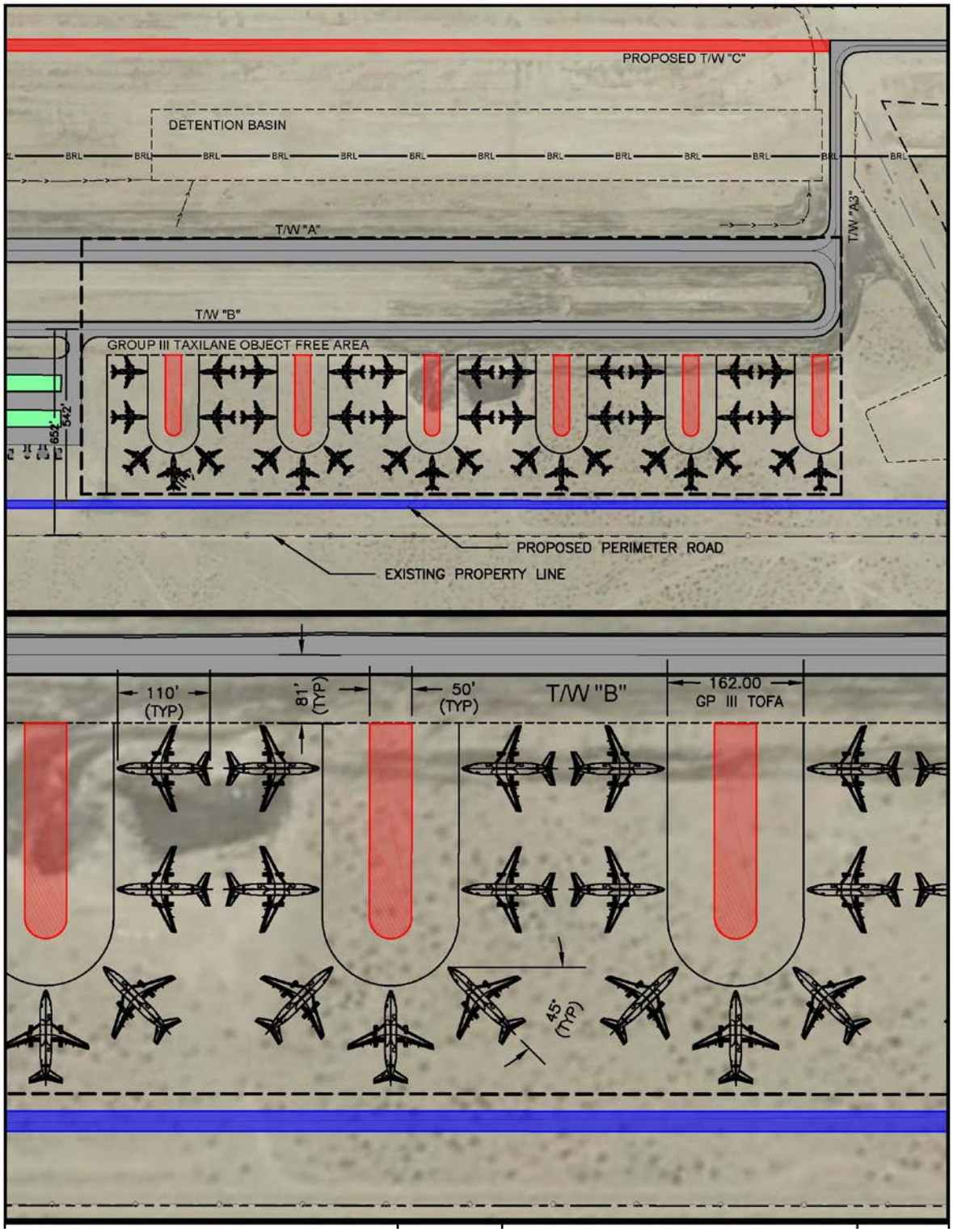

Figure 4-7 Potential Aircraft Storage Layout 2

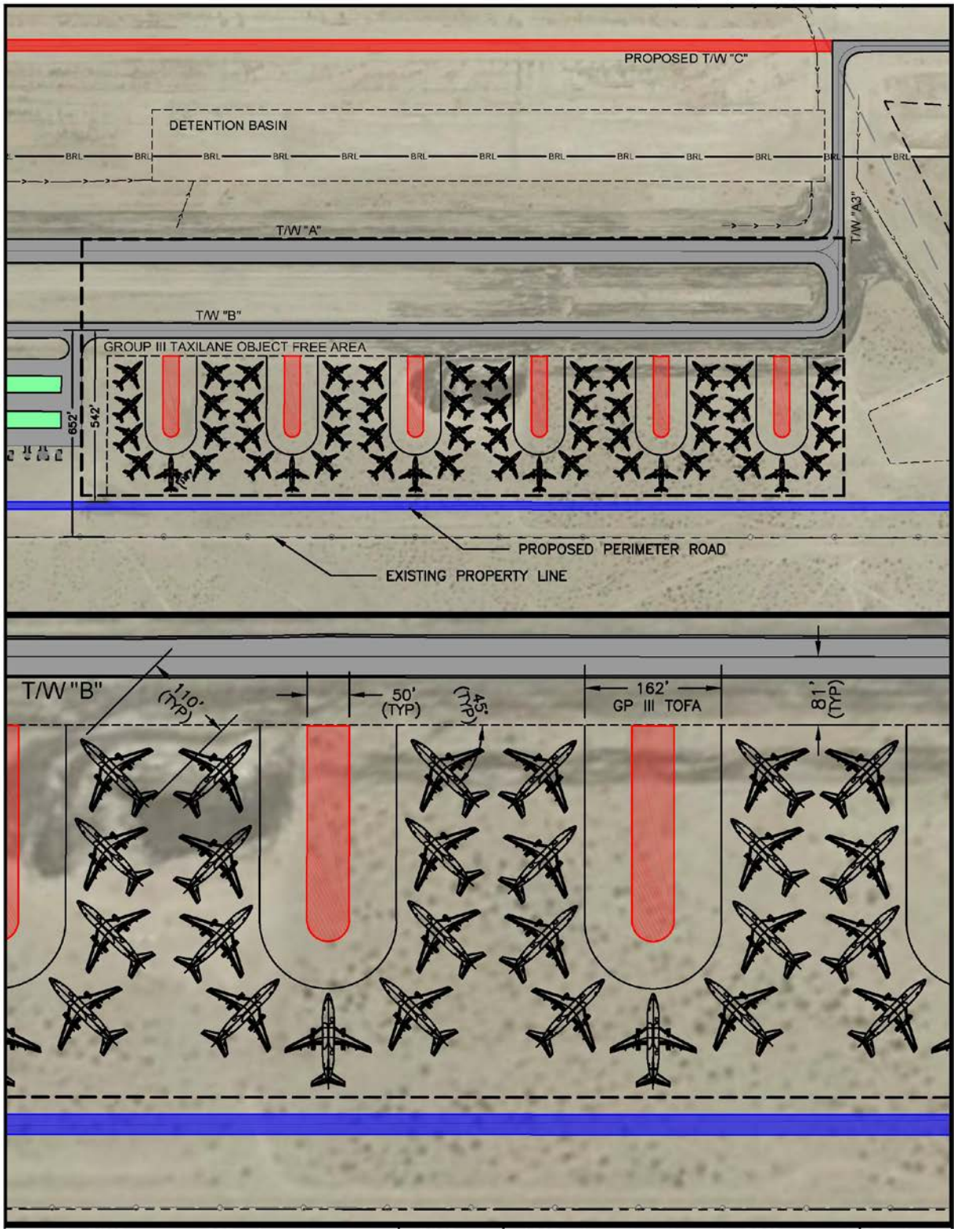

Figure 4-8 Potential Aircraft Storage Layout 3

4.4.4 Preferred Alternative

Airfield and landside development alternatives were assessed using a process that considered short and long term needs as well as future growth potential. Safety, both in the air and on the ground, was given high priority in the analyses and current airport design standards were considered in every scenario.

The recommended development concept for Avi Suquilla Airport represents a means by which the airport can grow in a balanced manner to accommodate demand over the planning period. In addition, the plan provides the flexibility to meet activity growth beyond the long range planning horizon.

Through further meetings and discussions with the Tribal Council, the Planning Advisory Committee, as well as the public, a recommended concept has evolved which includes elements from all three alternative scenarios. The recommended concept represents a means by which the airport can continue to effectively serve general aviation needs within the overall operation and development of the airport as well as provide direction for corporate and multi-modal development and services.

The Preferred Alternative, as depicted on **Figure 4-9,** proposes the following elements as outlined in one, two or three of the previously proposed planning alternatives:

- Extension of Runway 1-19 to north and south
- Extension of Taxiway C
- Addition of Taxiway D
- Extension of Taxiways C and D to new Runway 1-19 Ends
- Additional exit taxiways between Runway 1-19 and Taxiway C
- North apron development west of Taxiway C with commercial/corporate terminal and hangar development
- Expansion of existing apron to the north, east and south for increased parking capacity and new hangar development
- Aircraft storage area south of the apron expansion
- Industrial airpark development within the southeast quadrant of airport property
- Addition of a perimeter road along the existing property fence
- Reserved land for future aviation related development

The area south of the southern apron expansion, which is reserved for aircraft storage, is smaller than the reserved area proposed in Alternative 3. New potential layouts for aircraft storage are depicted on **Figure 4-10**, **Figure 4-11** and **Figure 4-12.**

The proposed apron expansions will require a reconfiguration of the apron tie-downs to accommodate additional aircraft and helicopters as well as to meet the requirements of AC 150/5300-13A. The apron tie-down layout can be found on **Figure 4-13.** The airports design aircraft, the Gulfstream III, was used to design 6 corporate jet parking tie-down and a Citation II was used to design 74 smaller aircraft parking tie-downs within the main apron parking area near the terminal. The apron configuration also allows for 8 helicopter parking locations. The northern most apron addition, west of Taxiway C, includes a heliport and an additional 40 tie-downs.

As discussed in the previous chapter, several fuel-farm improvements and upgrades are necessary ensure the fuel dispensing systems meet current aviation fueling standards. A self-serve system is desirable in order to provide fuel service to those utilizing the airport after-hours. **Figure 4-14** depicts a layout of the fueling area that can accommodate a Gulfstream III.

4.5 Summary

Airfield and landside development alternatives were assessed using a process that considered short and long term needs as well as future growth potential. Safety, both in the air and on the ground, was given high priority in the analyses and current airport design standards were considered in every scenario.

The recommended development concept for Avi Suquilla Airport represents a means by which the airport can grow in a balanced manner to accommodate demand over the planning period. In addition, the plan provides the flexibility to meet activity growth beyond the long range planning horizon.

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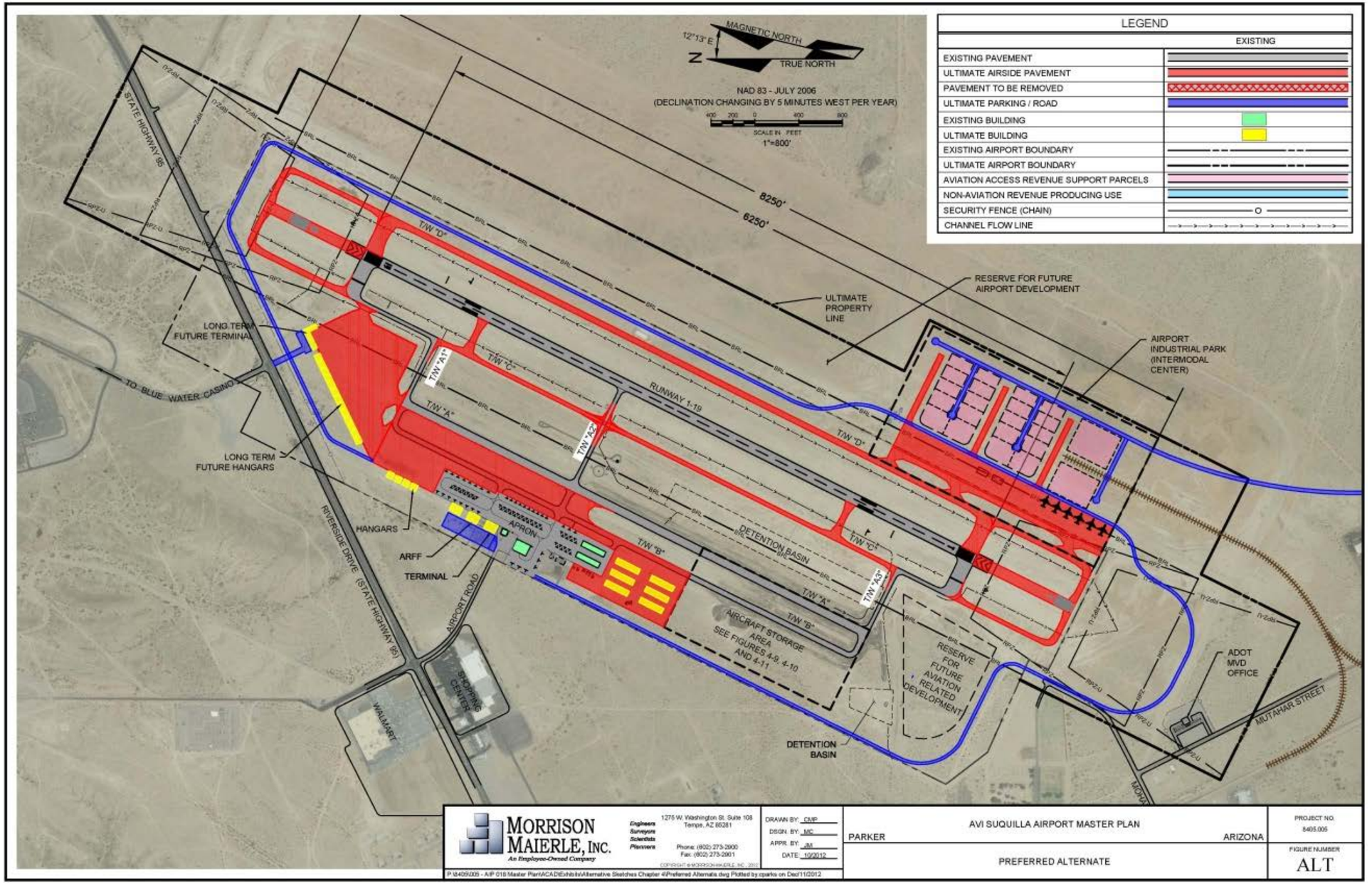

Figure 4-9: Preferred Alternative

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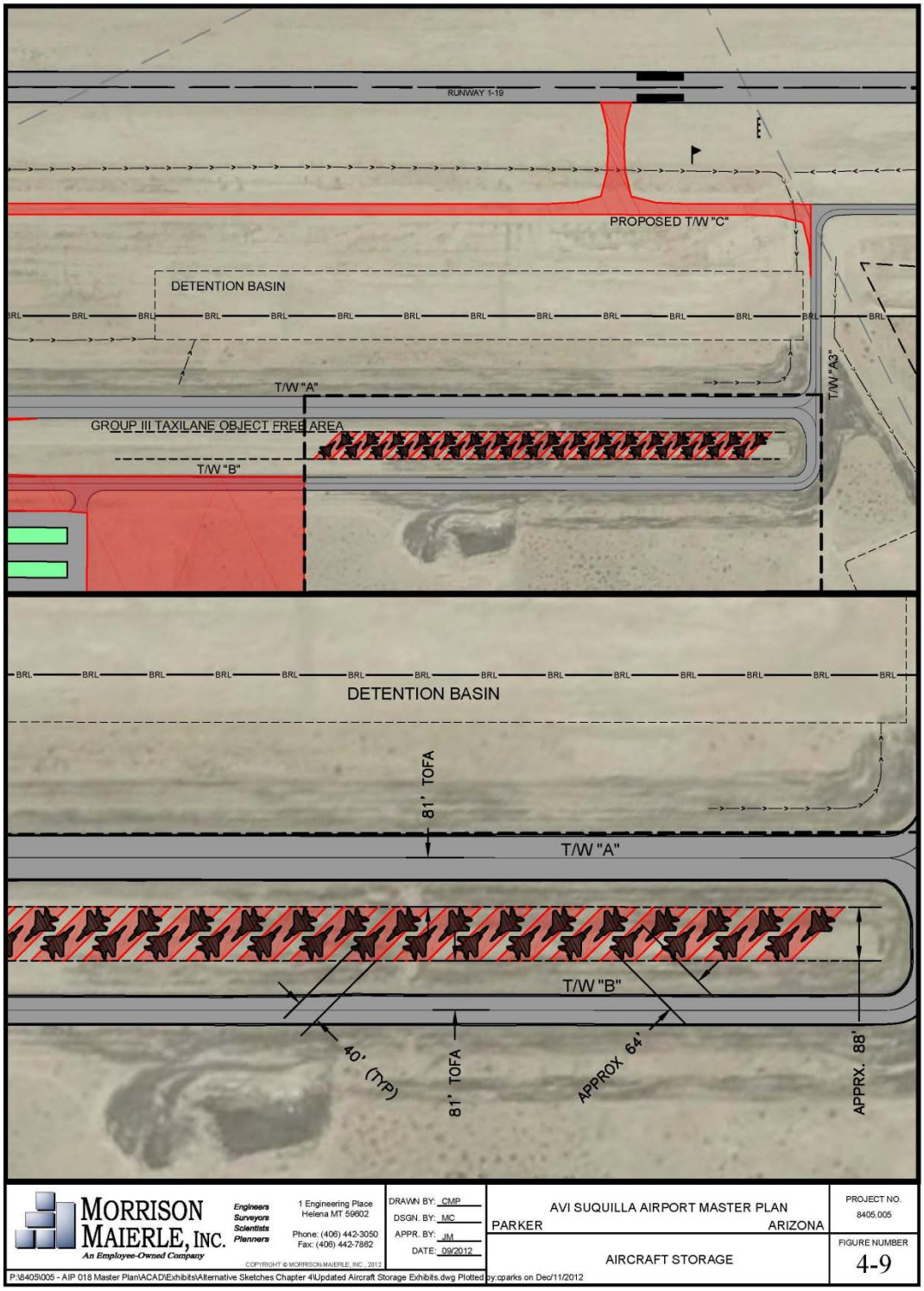

Figure 4-10: Aircraft Storage Concept 1

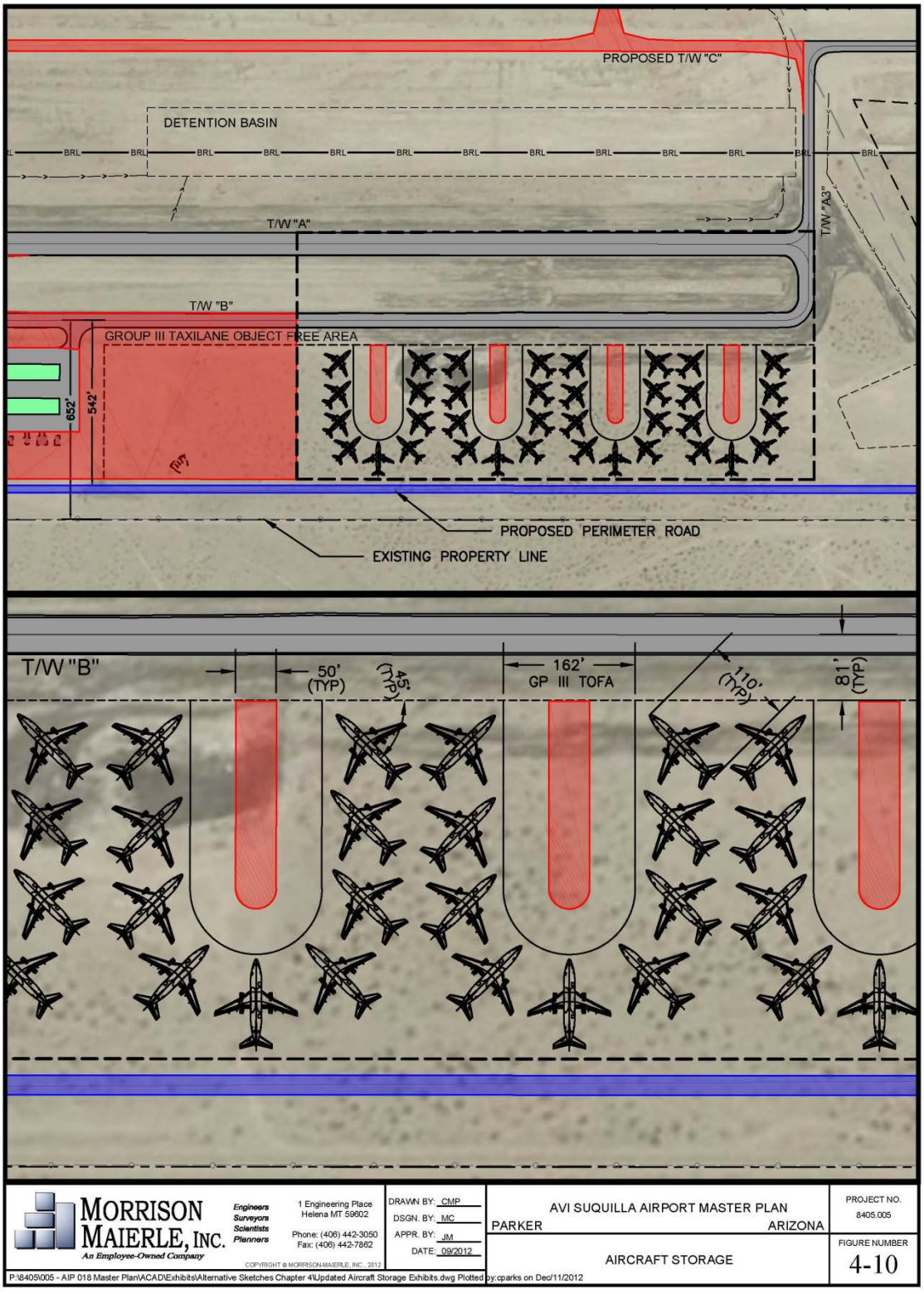

Figure 4-11: Aircraft Storage Concept 2

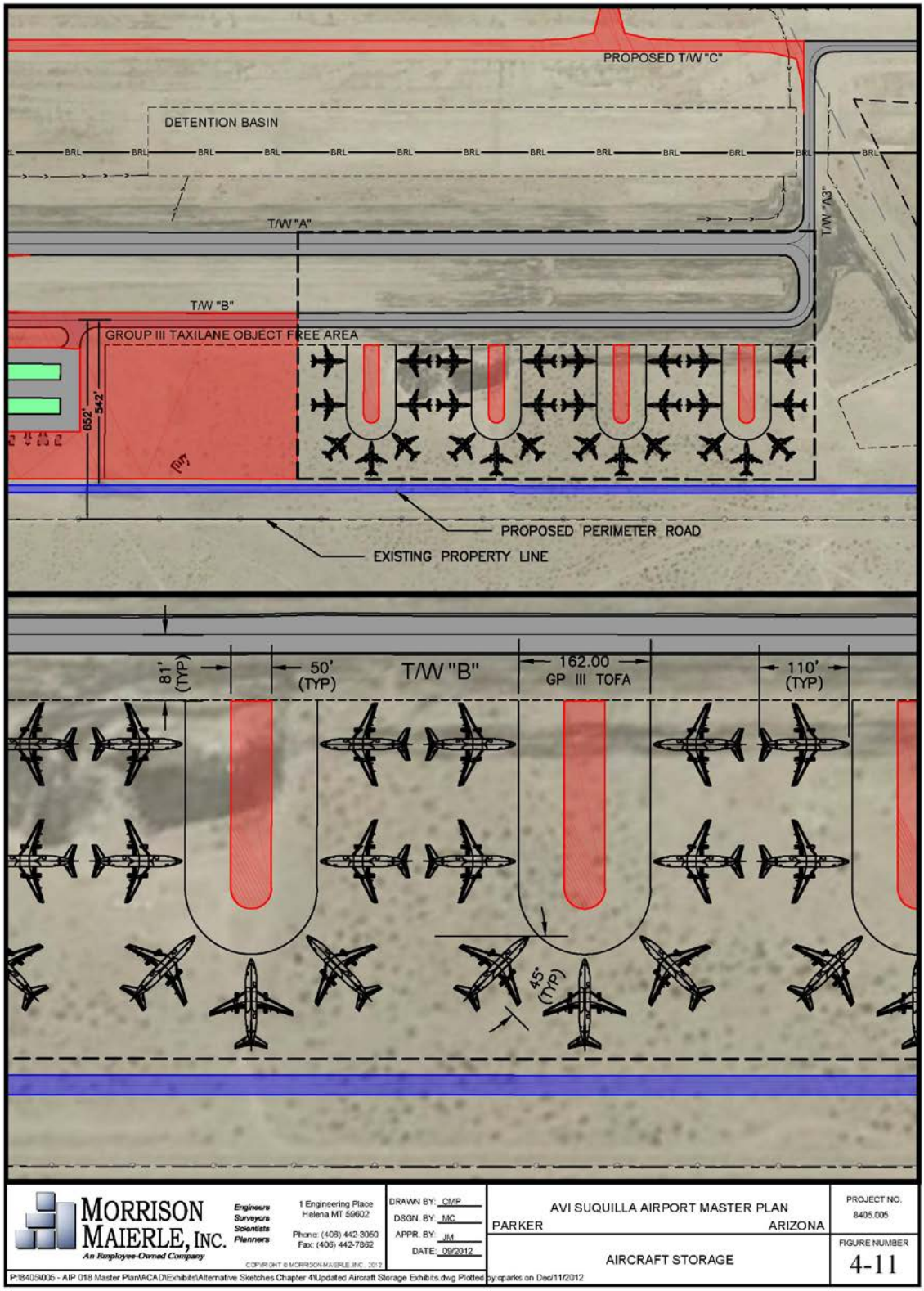

Figure 4-12: Aircraft Storage Concept 3

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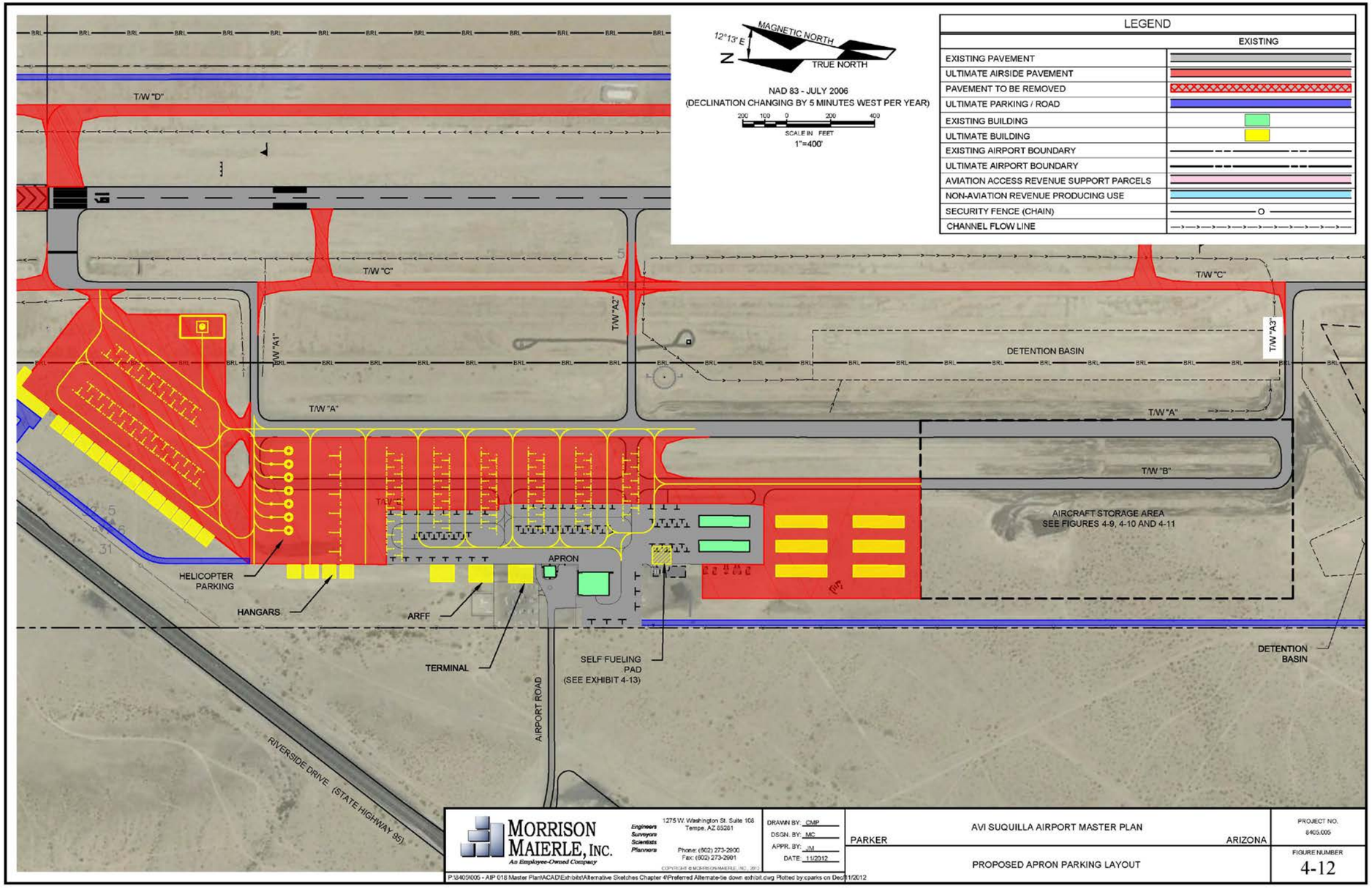

Figure 4-13: Tie-Down Layout

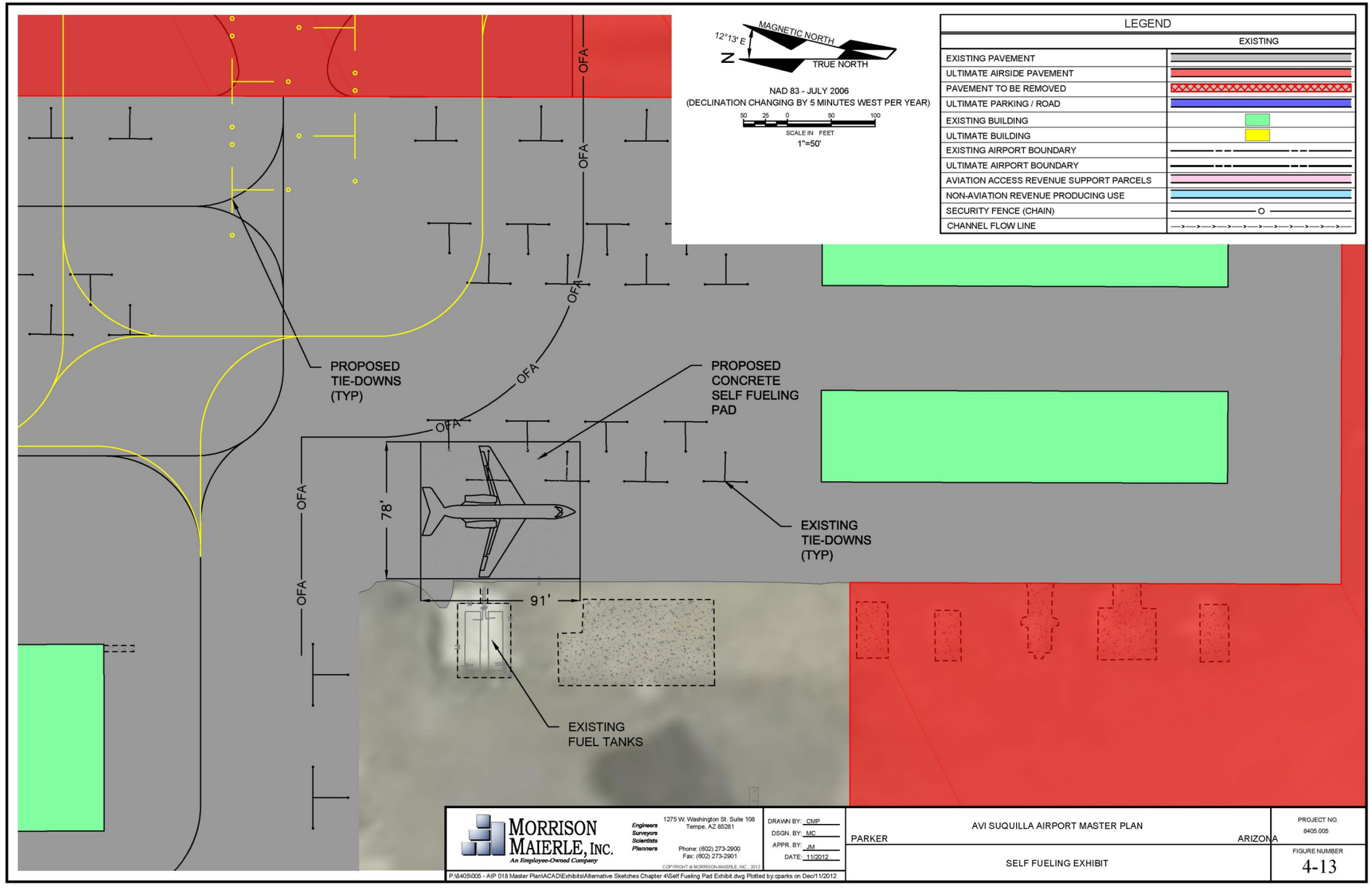

Figure 4-14: Self-Serve Fueling Pad