Chapter Four
ALTERNATIVES

In the previous chapter, aviation facilities required to satisfy airside and landside demand through the long-term planning period of the master plan were identified. In addition, various Federal Aviation Administration (FAA) standards were discussed that apply to airfield design. The next step in the planning process is to evaluate reasonable ways in which these facilities can be provided, and the design standards can be met. The purpose of this chapter is to formulate and examine rational development alternatives that address the specific aviation demands forecast for the short-, intermediate-, and long-term planning horizon levels. Because there are a multitude of possibilities and combinations, it is necessary to focus on the opportunities that have the greatest potential for success. Each alternative option provides a different approach to meet existing and future facility needs, and these layouts are presented for purposes of evaluation and discussion. It should be also noted that this evaluation is not to be an exhaustive analysis of all airport facilities. Many improvements will be presented in the next chapter, especially those having very specific functions. The goal of this chapter is to present those items which will require further discussion and will likely require additional decision making following the presentation of these alternatives. In short, this is the starting point for the formulation of the recommended development concept to be presented in the next chapter.

The primary goal of this planning process is to develop a feasible plan for meeting the needs that result from the projected market demand over the next 20 years. The plan of action should be developed in a manner that is consistent with the future goals and objectives of the City of Corpus Christi, airport businesses, airport users, the local community, and the surrounding region, all of which have a vested interest in the development and operation of Corpus Christi International Airport (CCIA).

The development alternatives for the airport can be categorized into two functional areas: the **airside** (runways, navigational aids, taxiways, etc.) and **landside** (passenger terminal, hangars, aprons, support facilities, etc.). Specific capabilities and facilities are required or desired within each area. In addition, planning must consider the utilization of airport property to provide revenue support and benefit the economic development and well-being of the local area.

Each functional area interrelates and affects the development potential of the others, so 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 these factors on the airport must be evaluated to determine if the investment in CCIA will meet the needs of the extended region it serves, both during and beyond the 20-year planning period.

The alternatives presented in this chapter have been formulated as a potential means to meet the overall program objectives for the airport in a balanced manner. Through coordination with the City of Corpus Christi, airport staff, the technical advisory committee (TAC), and the public, an alternative (or combination of alternatives) will be refined and modified, as necessary, into a recommended development concept; therefore, the planning considerations and alternatives presented in this chapter can be considered a beginning point in the evolution of a recommended concept for the future of CCIA.

PLANNING OBJECTIVES

A set of basic planning objectives has been established to guide the alternatives development process. The goal of this master planning effort is to produce a development plan for the airport that addresses forecasted aviation demand and meets FAA design standards, to the greatest degree possible. The City of Corpus Christi is the airport sponsor and provides overall guidance for the operation and development of the airport. It is of primary concern that CCIA is marketed, developed, and operated for the betterment of the community and its users. The following basic planning principles and objectives will be utilized as general guidelines during this planning effort:

- Develop a safe, attractive, and efficient aviation facility in accordance with applicable federal, state, and local regulations
- Preserve and protect public and private investments in existing airport facilities
- Provide a means for the airport to grow, as dictated by demand
- Establish a plan to ensure the long-term viability of the airport and promote compatible land uses surrounding the airport
- Develop a facility that is readily responsive to the changing needs of all aviation users
- Be reflective and supportive of the long-term planning efforts currently applicable to the region;
- Develop a facility with a focus on self-sufficiency in operational and developmental cost recovery
- Ensure that future development is environmentally compatible

NON-DEVELOPMENT ALTERNATIVES

Prior to the presentation of development alternatives for CCIA, several non-development options should be considered. 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 transfer of services to another existing airport. The following discussion presents the three primary non-development alternatives and the impact of pursuing each.

NO-BUILD/DO-NOTHING ALTERNATIVE

The no-build alternative essentially considers making no new capital investments in the airport. Limited maintenance and upkeep would continue so the airport remains safe for aviation activity. No new hangars or apron area would be planned to be built by the airport sponsor; however, this would not (and could not) prohibit hangar construction by a private entity. The obvious result of the no-build alternative is that the airport would be unable to accommodate forecasted demand for aviation services in the area.

The primary reason an airport sponsor might choose a no-build alternative is to ultimately avoid being bound by the grant assurances associated with the acceptance of airport development grants. Grant assurances are part of the grant package contract to which the airport sponsor commits when accepting a development grant from the FAA. As such, airport sponsors are bound to maintain the useful life of the facilities developed or equipment acquired for an airport development project. Useful life is a term not to exceed 20 years from the date of acceptance of a grant offer of federal (FAA) funds for a project. There is no limit on the duration of the terms, conditions, and assurances with respect to real property acquired with federal funds.

The unavoidable consequence of the no-build alternative is that the capability of the airport would diminish over time. Its ability to serve as a primary commercial service airport for the Corpus Christi metropolitan area and greater region would deteriorate. This would lead to diminished activity levels and would have significant negative impacts on the local and regional economy. Safety concerns would arise, especially if necessary and routine maintenance were deferred, and the liability for accidents or damage to aircraft would increase. The long-term consequences of the no-build alternative would reduce the quality of the existing airport facilities over time and would result in an overall unpleasant experience for regular users and visitors.

CCIA has received more than $152 million in airport improvement program (AIP)/FAA development grants since 2005 and another $20 million+ via COVID-19 grant programs. A significant portion of this funding was to improve the airfield geometry (discussed previously). These grants represent a direct economic stimulus that has lasting positive economic impacts. The City of Corpus Christi has a vested interest in maintaining and improving airport facilities for commercial passenger and cargo services, as well as the full array of general aviation (GA) users. Without a commitment to ongoing improvement of the airport, users of the airport would be prevented from taking full advantage of the airport's air transportation capabilities, and the airport's role as a regional economic engine would be lost.

RELOCATE/REPLACE AIRPORT ALTERNATIVE

This option considers constructing a new airport to replace the existing one. The new airport would have to be completed prior to the closure of the existing airport. Additional studies beyond the scope of this master plan would be required, including a feasibility study, a site selection study, a master plan for the replacement site, and appropriate environmental documentation of the new site (typically an environmental assessment [EA] or environmental impact statement [EIS]).

An important consideration is the potential cost associated with constructing a new airport and closing the existing airport. A broad estimate to replace CCIA with a new facility with similar capabilities would likely range between $1.5 and $3.0 billion. This cost must also assume a large, suitable area of land capable of accommodating airport activities could be found nearby and acquired.

A more detailed analysis would be needed to identify an acceptable site and refine the project cost estimates. A large portion of the development costs would be eligible for FAA grant funding. Non-revenue-producing facilities to be located within the airport property line are typically eligible for FAA funding. New passenger terminal buildings are eligible for FAA grant funding; however, funding eligibility

is restricted to public-use areas only. Elements outside the property line (such as utility extensions, surface roads, and other privatized facilities) are not eligible for funding. Moreover, the City of Corpus Christi could have other financial costs, such as the costs of retiring existing leases with private or public entities. For example, a fixed base operator (FBO) would need to be compensated for its facilities (and, in some cases, loss of business), potentially resulting in costs extending into millions of dollars.

The trigger for pursuing a replacement airport is often encroachment on the existing airport to a point that prevents it from fulfilling its role in the national aviation system. CCIA is not encumbered by proximate land use conflicts, with the exception of State Highway 44, which serves as a northern boundary constraint but does not hinder airport operations in any significant way. CCIA is capable of continuing in its role of providing regional aviation commercial and general aviation services, as well as its many other roles.

If a replacement airport feasibility study were undertaken, a detailed analysis should identify a site capable of developing airside, terminal, and landside facilities equivalent to those that currently exist at CCIA while providing convenient access to the local and regional service areas. This study does not promote this alternative or believe a replacement facility should be considered further.

TRANSFER SERVICE TO ANOTHER AIRPORT ALTERNATIVE

The feasibility of transferring services to an alternate airport relies on the answers to two primary questions:

1) Is a capable alternative airport reasonably located to accommodate CCIA's primary air service area?
2) Can a nearby airport accommodate CCIA's existing and projected aviation demand factors?

An analysis of regional airports has been completed to determine if transferring aviation demand is reasonable.

There are no commercial service airports in the immediate region; however, there are several public-use GA-only airports within 30 nautical miles of CCIA, as outlined in Chapter Two. None of the GA airports are positioned to accept a transfer of service from CCIA because they lack the necessary Part 139 certification requirements and facilities to accommodate commercial service activity from both an airfield perspective (runways/taxiways/navigational aids) and a landside perspective (passenger terminal/aircraft rescue and firefighting/road network and parking). The cost to improve any of these facilities to meet Part 139 certification and offer ample facilities for passengers would likely not be feasible for those communities. There are several commercial service airports within a three-hour drive time that attract some commercial passengers via automobile; however, none of these airports are geographically located to provide convenient access to CCIA's primary service area, which would lead to a lower utilization rate, declining service, and significant economic losses for the local area. CCIA has strong commercial service and post-COVID-19 ridership continues to grow. As outlined in the forecast analysis, the airport is positioned for strong growth, going forward.

The City of Corpus Christi has accepted $154 million dollars in federal development grant funding through the AIP for projects at CCIA since 2005 and another $22 million via COVID-19 grant programs. As previously discussed, acceptance of development grants obligates the airport sponsor, through grant assurances, to maintain the airport as an airport. Closing the existing airport and transferring services to another existing airport would be considered a violation of these grant assurances and would require repayment of grants that are not yet fully depreciated. The investments made and the public and private economic benefits received from the airport could not readily be shifted to or regenerated at another airport without significant costs/losses. As such, this alternative is not considered practical, reasonable, and/or financially feasible.

NON-DEVELOPMENT ALTERNATIVES SUMMARY

The purpose of this master plan is to examine aviation needs at CCIA over the course of the next 20 years, so this master plan will examine the needs of the existing airport and will present a program of needed capital improvement projects to cover the scope of the plan; nevertheless, various non-development alternatives may be considered by the airport sponsor.

Information pertaining to the three most common non-development alternatives has been presented. These are the no-build, relocate/replace, and transfer service alternatives. This evaluation is for informational purposes only and is not intended as a recommendation to pursue one of these alternatives. If the airport sponsor were to pursue one of these alternatives, additional studies beyond the scope of this master plan would be required.

Two of the three non-development alternatives would lead to the closure or significantly reduced operation of the existing airport. Obtaining approval for this course of action is a lengthy process. As outlined, the primary hindrance to considering airport closure is the fact that the sponsor has accepted federal development grants that include certain grant assurances, one of which is to maintain improvements for their useful lives (20 years). If the airport is closed in the interim, the sponsor could be required to refund all or a portion of the past federal investment. Moreover, private investments by any airport operator would also require some form of repayment, based on negotiated lease terms. The non-development options are not found to be feasible, practical, or prudent. CCIA is a vibrant facility with plenty of remaining growth potential; as such, the non-development alternatives will not be considered further in this planning process.

AIRSIDE PLANNING CONSIDERATIONS

Generally, airside issues relate to airport elements that contribute to the safe and efficient transition of aircraft and passengers from air transportation to the landside facilities at the airport. Planning must factor and balance many airside items, including meeting the FAA design parameters of the established design aircraft; instrument approach capability; airfield capacity; runway length; taxiway layouts; and pavement strengths. Each of these elements for CCIA was analyzed in the previous chapters. This chapter will examine airside improvement opportunities to meet design standards and/or capacity constraints. A summary of the primary airside planning issues to be considered in this alternatives analysis is listed below.

Airside Planning Considerations
• Meet runway design code (RDC) C/D-III-2400 standards on both runways now and plan to meet RDC C/D-IV in the future if CCIA's cargo aircraft platform shifts to the Boeing 757 (or similar) • Extend runway(s) to more safely accommodate larger commercial aircraft, if justified • Install four-box precision approach path indicator (PAPI-4) system on Runway 36

AIRFIELD DESIGN STANDARDS

As a primary commercial service airport in the FAA's *National Plan of Integrated Airport Systems* (NPIAS), CCIA should be capable of safely accommodating all commercial service aircraft that operate at the airport now and in the future. The critical design aircraft analysis in Chapter Two concluded that both runways should be capable of meeting the needs of RDC C/D-III-2400 in support of the current critical aircraft (Boeing 737 MAX). In the future, the critical aircraft could transition to a Boeing 757 or similar aircraft in support of cargo operations. This type of aircraft would require CCIA to meet RDC C/D-IV-2400. The design changes would be minimal but could require additional runway length.

RUNWAY LENGTH

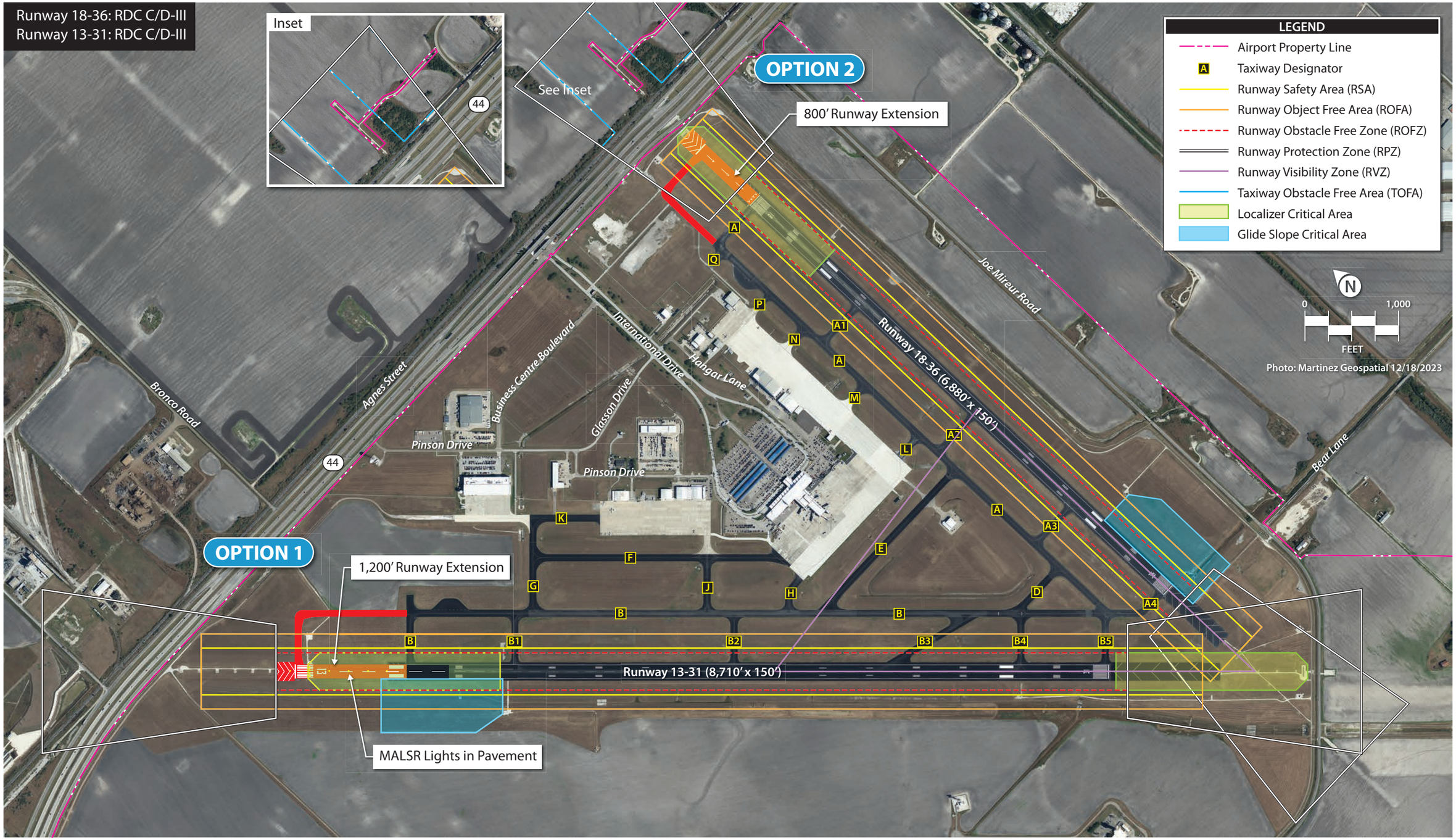
The runway length analysis in the previous chapter concluded that the existing lengths of primary Runway 13-31 and secondary/crosswind Runway 18-36 are capable of safely accommodating most commercial and business jet aircraft that currently operate at CCIA; however, during hot summer periods, some larger aircraft must depart from CCIA with restricted payloads (less fuel/freight or fewer passengers), which can limit nonstop destination distances. Moreover, future inclusion of larger commercial cargo jets, such as the projected Boeing 757 (or similar), will require longer runway length for takeoff during hot days and under heavy loads. The previous chapter indicated a runway length of up to 8,800 feet would be required to better accommodate future needs, if they arise as forecasted.

Discussion in the previous chapter outlined the substantial work completed on the airfield to improve safety concerns and conform to updated FAA geometrical design standards. The primary issue is the convergence of the southern ends of the runways, which create a problematic layout of the parallel taxiways and entrances to both southern ends. Any potential runway extension considered must not create a similar situation. As such, three runway extension options have been developed for consideration in long-term planning. The concept of a runway extension is not yet justified, which means there is no current identified need; however, the potential cargo platform shift (or any other change in the future) could present a need for a longer runway. A plan would allow CCIA administration to move quickly if such justification were to become reality within the planning horizon.

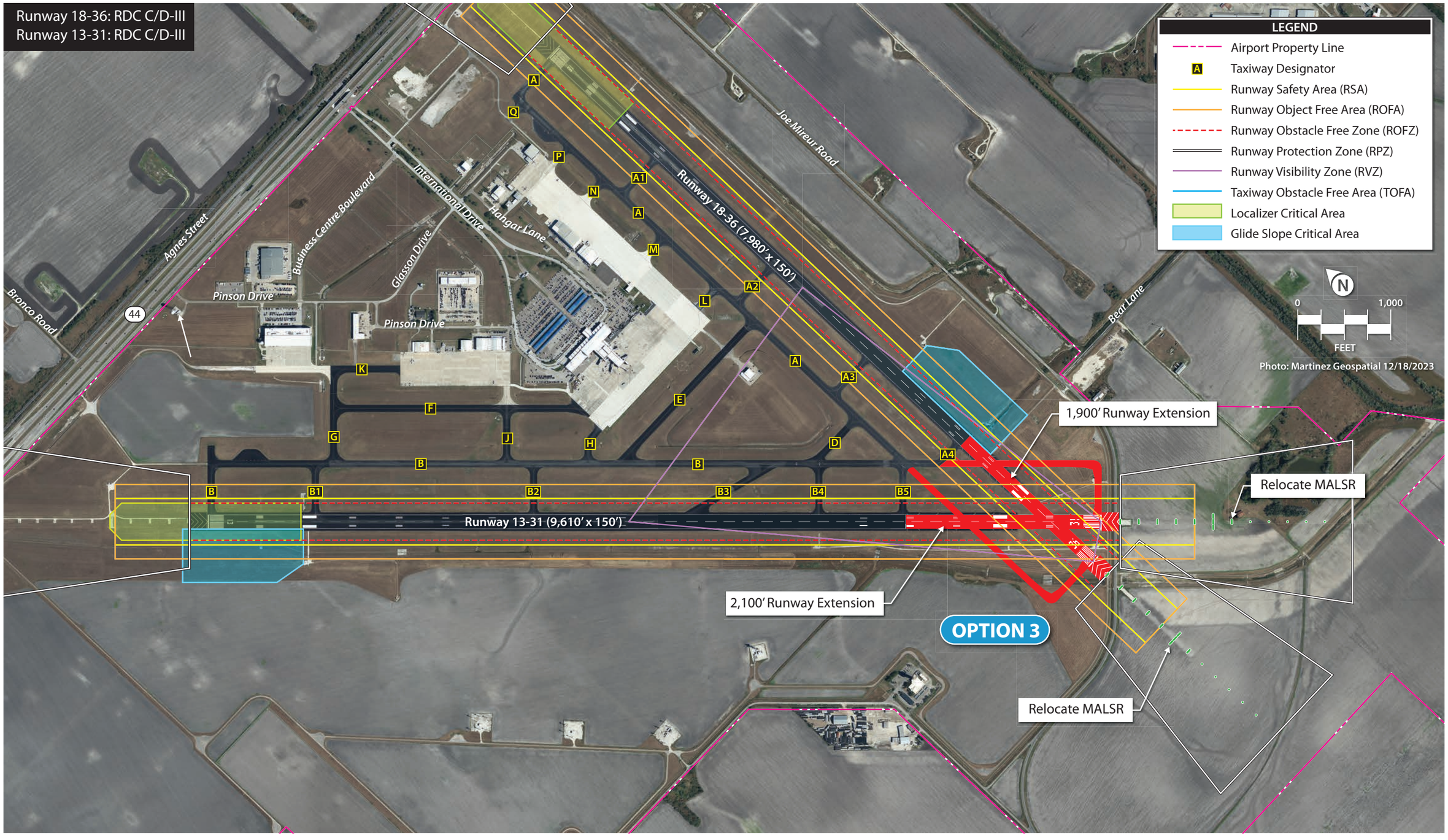
Runway Extension Option 1

Runway Extension Option 1 is depicted on **Exhibit 4A** and considers a northwesterly extension to Runway 13-31. As shown on the lower left side of the exhibit, the runway extension would total 1,200 feet, which is the maximum length possible within the constraint of State Highway 44. This option would place the edge of the runway object free area (ROFA) at the fence line. Other ancillary needs would include the following:

Runway 18-36: RDC C/D-III
Runway 13-31: RDC C/D-III



Runway 18-36: RDC C/D-III
Runway 13-31: RDC C/D-III



- Relocation of the instrument landing system (ILS) glideslope antenna for the Runway 13 approaches
- Relocation of the localizer antenna that serves the Runway 31 approaches
- Reconfiguration of the medium intensity approach lighting system with runway alignment lights (MALSR) to include a portion of the system to be located beyond (northwest) of State Highway 44
- Possible requirement for the Runway 13 threshold to remain in its current location, if warranted by State Highway 44 or railroad obstructions

The primary attraction of Runway Extension Option 1 is the additional takeoff length to the south. Most aircraft that require a more length than Runway 13-31 currently provides operate on hot days when winds are generally from the south. Even if the Runway 13 threshold would have to remain or be displaced in its current condition, longer takeoff length (especially to the south) would likely be the primary factor. Northerly departures would also benefit from the full 8,710 feet.

The primary drawback of this option would be the high cost of improvements, including the previously outlined navigational aid shifts. Moreover, the Runway 13 end may be obstructed by the highway/railroad and could be required to remain in place making it a displaced threshold.

Runway Extension Option 2

Runway Extension Option 2 is depicted on the upper right side of **Exhibit 4A** and considers a northerly extension of secondary/crosswind Runway 18-36. This option is not as favorable as the first option. As shown, only 800 feet of pavement can be added to the north end before the constraining factors of the highway and fence line would prohibit the continuance of the runway safety area (RSA) and ROFA. The most constraining part of this alternative would be that the extra pavement could only be fully used for takeoffs on Runway 18 or to the south. Landings on Runway 18 could only be improved by 200 feet due to RSA/ROFA constraints, and may require the threshold displaced in its current location due to obstructions to the north including which the highway, railroad, or other items to the north. Operations on Runway 36 would not be allowed to use the extra pavement because those operations require a full 1,000 feet of RSA and ROFA beyond the runway end. This option would effectively pave the center portion of the RSA and would not provide any additional runway length for north flow. As a result, this option would only improve Runway 18 departures by allowing for 6,880 feet of takeoff length. Other ancillary needs would include the following:

- The MALSR for Runway 18 would need to be modified to include in-pavement lighting, which is expensive

In general, Runway Extension Option 2 is a costly alternative that provides only one improved operational outcome: takeoffs to the south. This is the most important improvement outcome because, as noted before, south flow will likely require the longest runway length; however, Runway 18-36 is already much shorter than primary Runway 13-31 and this addition would not even match the primary runway's current length, and would thus not offer any overall improvements to the airfield. Overall, this option is considered far less beneficial than the first option.

Runway Extension Option 3

Runway Extension Option 3 considers the only viable southerly extension outcome. As shown on the back side of **Exhibit 4A**, both runways would be extended to the south: Runway 13-31 by 2,100 feet and Runway 18-36 by 1,900 feet. These dimensions are the minimum extension lengths that would not create a new convergence problem like the one that was previously fixed. This option is the minimum southerly runway extension option capable of providing both a southerly extension and full parallel taxiways to the extended southern ends. Options to extend one runway to the south are not feasible, as any singular extension would create a geometrical or other airfield safety standard objection. This option would improve the airfield's ability to meet the needs of larger aircraft or those with extended stage lengths. Other ancillary needs would include the following:

- Relocation of the Runway 36 glideslope antenna
- Relocation of the Runway 13 localizer antenna
- Possible required acquisition of a small portion of the Runway 31 RPZ (in fee or in easement)

Overall, Runway Extension Option 3 would provide the greatest operational lengths and offer the greatest flexibility for future runway length needs; however, this option would cost substantially more than either previous option.

PASSENGER TERMINAL ALTERNATIVES

The following sections describe the alternatives investigated for providing the necessary capacity increases to the existing terminal facility and its associated airside apron needs. These alternatives depict the Airport's 20-year terminal facility demand as described in *Chapter 3 – Terminal Facility Requirements*, and beyond.

The goal of the Master Plan is to provide a roadmap for the future, part of which identifies and preserves land area for potential development. This is especially important for the expansion of the terminal area portion of the plan, which must be flexible and responsive to operational changes as they emerge over time. Competing land uses (such as those required for the landside, terminal, and airside portions of the plan) need to be identified and planned for accordingly, and balanced and safeguarded for future needs. This study developed and examined a total of six alternatives, all of which are located within the existing terminal core.

TERMINAL SITE CONSTRAINTS

As part of the terminal alternatives planning process, the first step was to identify potential areas for future terminal expansion within and beyond the existing site envelope. This area is bound by the terminal entrance/exit roadway network and parking to the north, Taxiway "E" and the airfield electrical vault to the south, Taxiway "A" and rental car return to the east, and Taxiway "B" to the west.

INITIAL TERMINAL ALTERNATIVES

The development of each alternative utilized industry accepted planning parameters such as those identified in FAA AC 150/5300-13B, and ACRP Report 25, *Airport Passenger Terminal Planning and Design*. This includes guidelines related to taxiway and taxilane dimensional criteria, aircraft parking depth and wingtip spacing, concourse width, and gate planning.

The forecast identified a total of eight gates required during the 20-year planning horizon. As such, it was prudent to look at ways to optimize the current site, including ways to expand on the existing terminal and concourse. The five initial alternatives described below provide various concourse expansion alignments and configurations which were influenced by the terminal site envelope. These layouts were an attempt to test the extents of the existing terminal site for providing the most effective layout in terms of future gate capacity and apron aircraft parking and maneuvering efficiency. Additionally, ways to optimize the current terminal layout based on the deficiencies identified in the Terminal Facility Requirements chapter were studied, such as expanding current gate holdroom capacity. Enhancing the passenger experience also included, exploring ways to relocate checked baggage screening from the public ticketing queue area, as well as a consolidated checked baggage system. Protecting for gate expansion beyond the 20-year planning period was also explored.

The following sections present an overview of the terminal alternatives and analysis process.

ALTERNATIVE 1

Alternative 1 (shown on **Exhibit 4B)** provides a total of eight bridged aircraft gates and 10 total aircraft parking positions. All bridged gates accommodate a large narrowbody aircraft (739/321) while the two additional remain overnight (RON) positions accommodate large regional aircraft (E95). Additionally, one of the new end gates preserves parking capability for a widebody (767) aircraft. The layout provides a double-loaded, 215-foot concourse extension off the end of the existing concourse by expanding the existing apron south toward Taxiway E. This also protects for a new parallel airplane design group (ADG) III taxilane and two taxilane connectors from Taxiway E to the aircraft apron parking area. This linear expansion provides a wider concourse and circulation corridor, and additional gate holdroom capacity. Existing Gate 5 is relocated to the end of the new expanded concourse.

In order to provide true “swing” gate capability at the existing international arrivals gate (Gate 6), the existing passenger boarding bridge (PBB) rotunda is relocated to a new building vestibule adjacent to the existing sterile corridor. This allows passengers to enter the sterile corridor directly from the PBB while simultaneously providing gate holdroom capacity for outbound domestic or international flights as depicted in **Figure 4-1**. The plan also identifies areas for an 80-foot building expansion for an additional baggage claim device and a new building of approximately 10,000 square feet for a consolidated baggage screening and makeup area. An area of 2,900 square feet provides space for relocating the three existing baggage screening devices configured for a “mini inline” system. The remaining area provides space for approximately 10 baggage carts staged parallel to a single carousel makeup device as depicted in **Figure 4-2**.

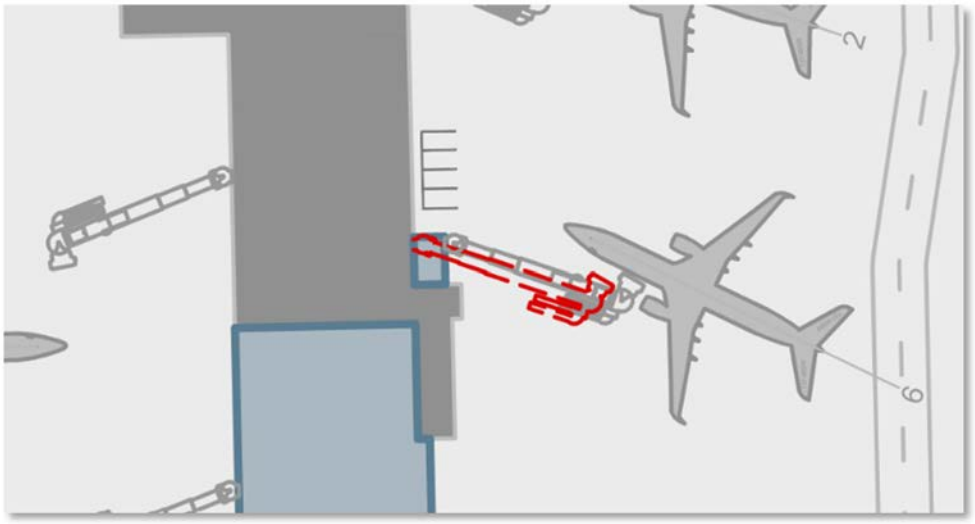


Figure 4-1

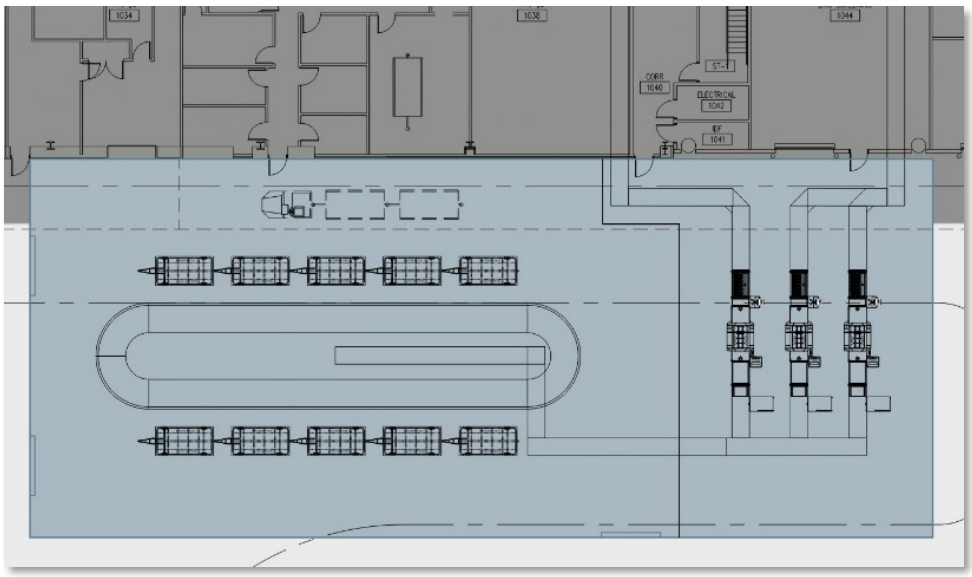
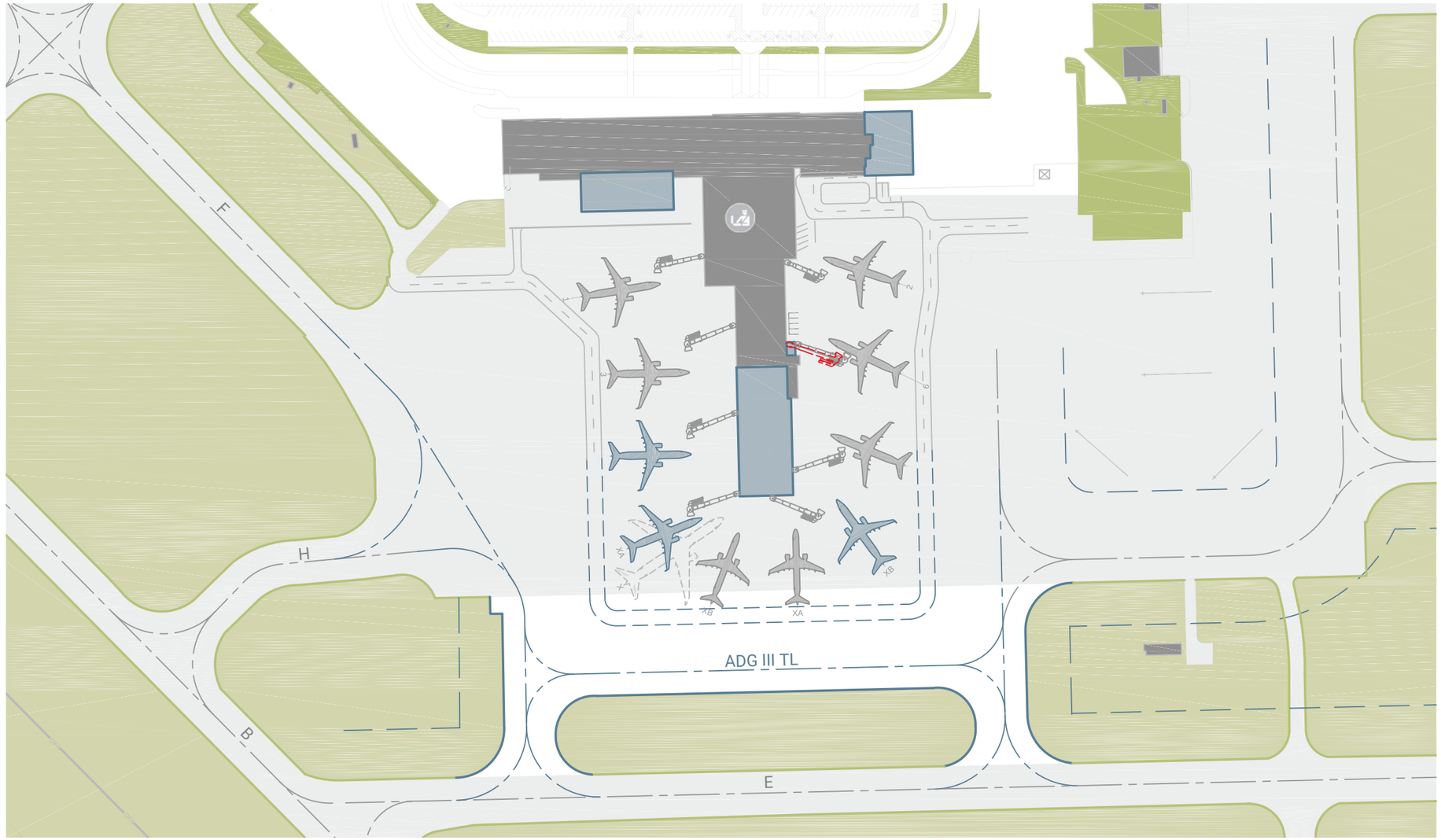


Figure 4-2

ALTERNATIVE 2A

Alternative 2a (see **Exhibit 4C)** provides a total of 8 bridged aircraft gates and 10 total aircraft parking positions. All bridged gates accommodate a large narrowbody aircraft (739/321) while the two additional remain overnight (RON) positions accommodate a large regional aircraft (E95). The layout provides a 54-foot concourse extension to the end of the existing concourse that aligns with the end of the existing sterile corridor. This provides increased gate holdroom capacity to Gate 6.

A linear, single-loaded, 680-foot concourse expansion to the east provides three new ADG III narrowbody gates with space for a pushback zone for departure operations. The entrance to the new concourse occurs at the existing Gate 2 gate holdroom while relocating the gate to the new concourse. All existing taxiway/taxilane alignments remain the same.



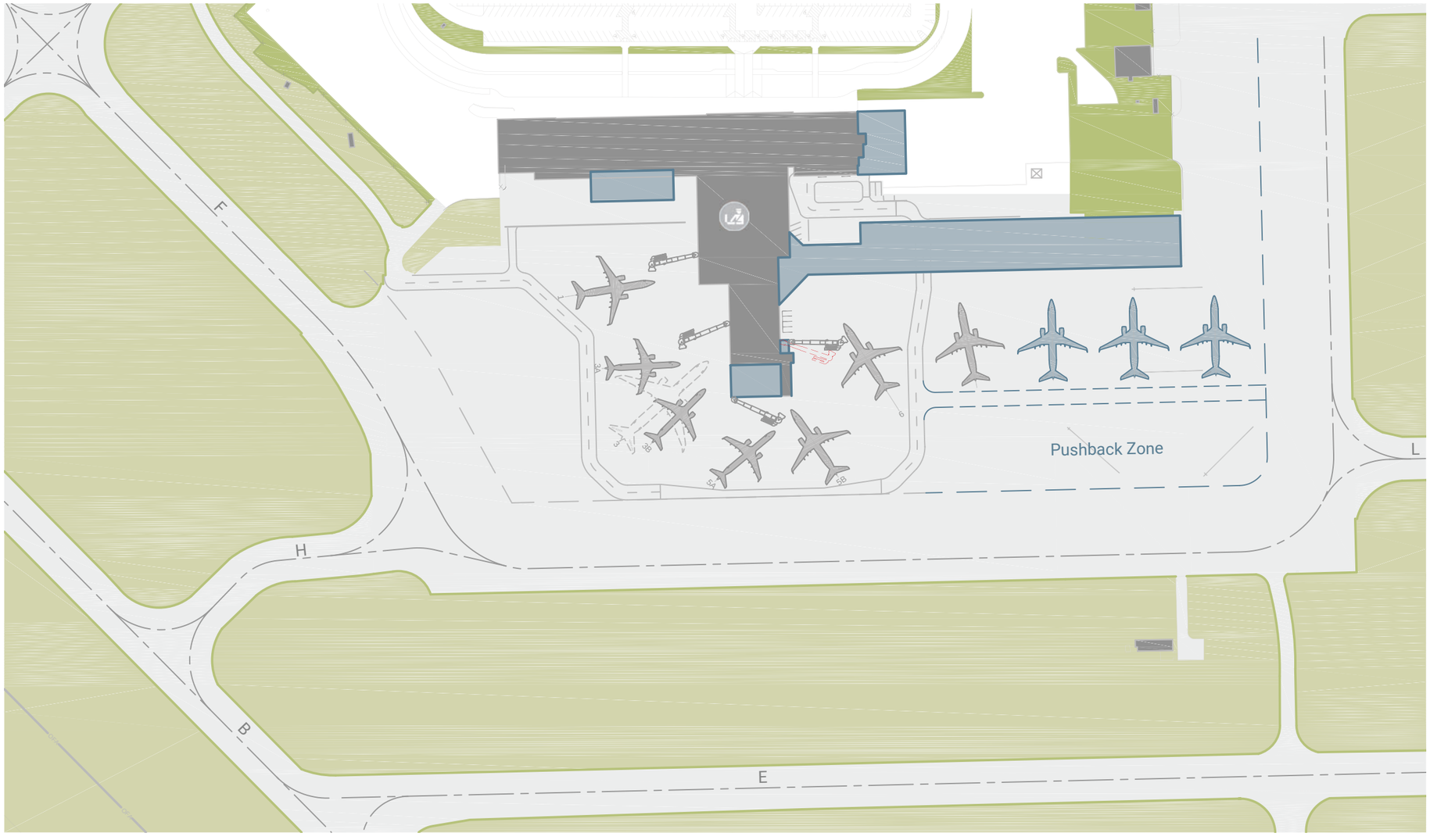
Color Key

- Building Demo
- Proposed Building
- Existing Building
- Proposed Apron
- Existing Apron
- TSA Security Screening Checkpoint
- Existing aircraft position
- New aircraft position
- Future Building
- Existing Airport Fence

Site Alternative 1

0' 100' 200' 400'

SCALE: 1" = 200'



Color Key

- Building Demo
- Proposed Building
- Existing Building
- Proposed Apron
- Existing Apron
- TSA Security Screening Checkpoint
- Existing aircraft position
- New aircraft position
- Future Building
- Existing Airport Fence

Site Alternative 2a

0' 100' 200' 400'

SCALE: 1" = 200'

A new vestibule is constructed at Gate 6 as described in Alterative 1 to provide "swing" gate capability for international operations. The plan also identifies areas for building expansion for an additional baggage claim device, and a new building of approximately 6,500 square feet for baggage makeup as depicted in **Figure 4-3**. This area would accommodate ten baggage carts parked perpendicular to a narrow flat plate recirculating belt. The interior ATO and existing baggage screening areas are reconfigured to allow baggage to flow directly to this makeup device. In order to provide an enhanced passenger experience, the existing takeback belt behind United and American's counters are joined to provide a singular belt. A new corridor is constructed within the existing ATO space directly behind these two airlines for access to their offices. Bags entering the existing screening would be transferred to the second bag screening device through a combination of steel rollers and conveyors. Southwest's existing baggage screening device is relocated from the ticket lobby area into the vacant ATO space directly east of their ATO space. A new takeback is added behind the existing ticket counters, which then feeds into the new baggage screening room. Existing ATO space is renovated with the addition of a new door to the ticket counter agent area. All three bag screening devices would then feed the new makeup conveyor.

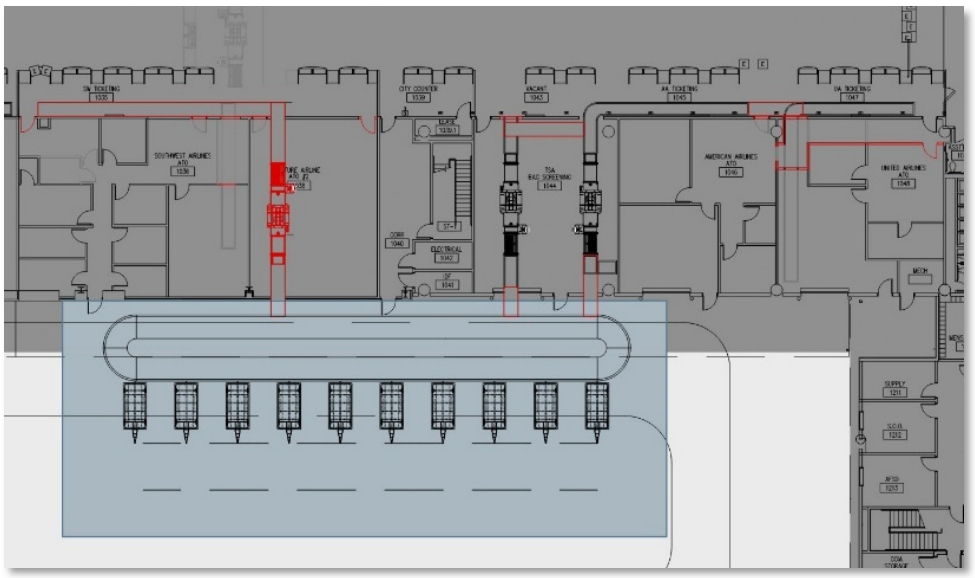


Figure 4-3

ALTERNATIVE 2B

Alternative 2B (see **Exhibit 4D**) is a slight variation of 2A with regards to the existing international Gate 6. The existing PBB is relocated from its current location south to the end of the eastern face of the sterile corridor as depicted in **Figure 4-4**. An interior storefront mullion system would be constructed along the side of the escalator with a set of double doors in order to close off the vertical circulation when departing passengers enter the corridor and into the PBB. The aircraft lead-in line is rotated clockwise to avoid aircraft parking conflicts with the new gate position on the adjacent concourse. This new PBB location also provides the capability to serve an additional RON parking position to the west. In order to provide full narrowbody aircraft parking capability at the relocated Gate 5 and Gate 6, a slight apron parking expansion is required to the south along with a slight realignment of the existing Taxilane.

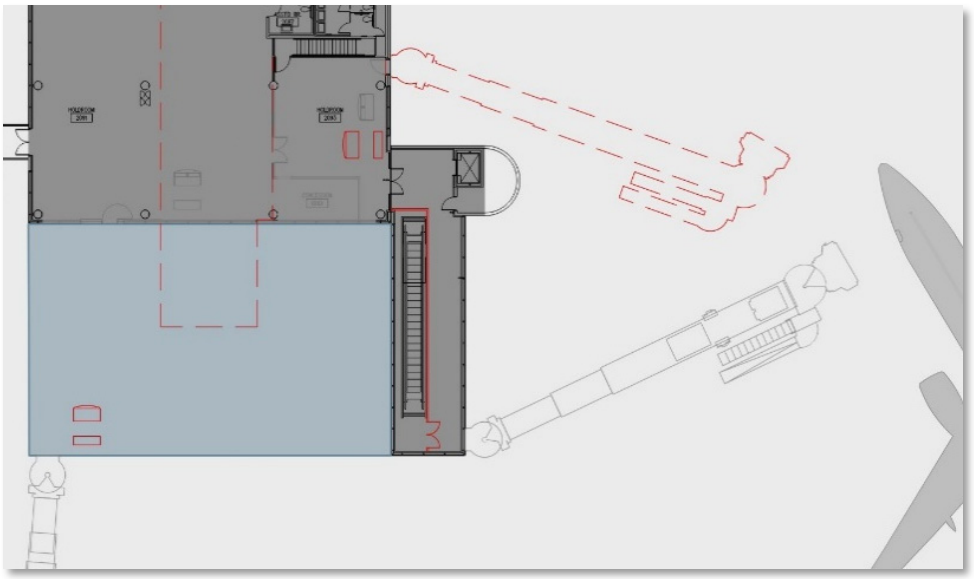


Figure 4-4

ALTERNATIVE 3

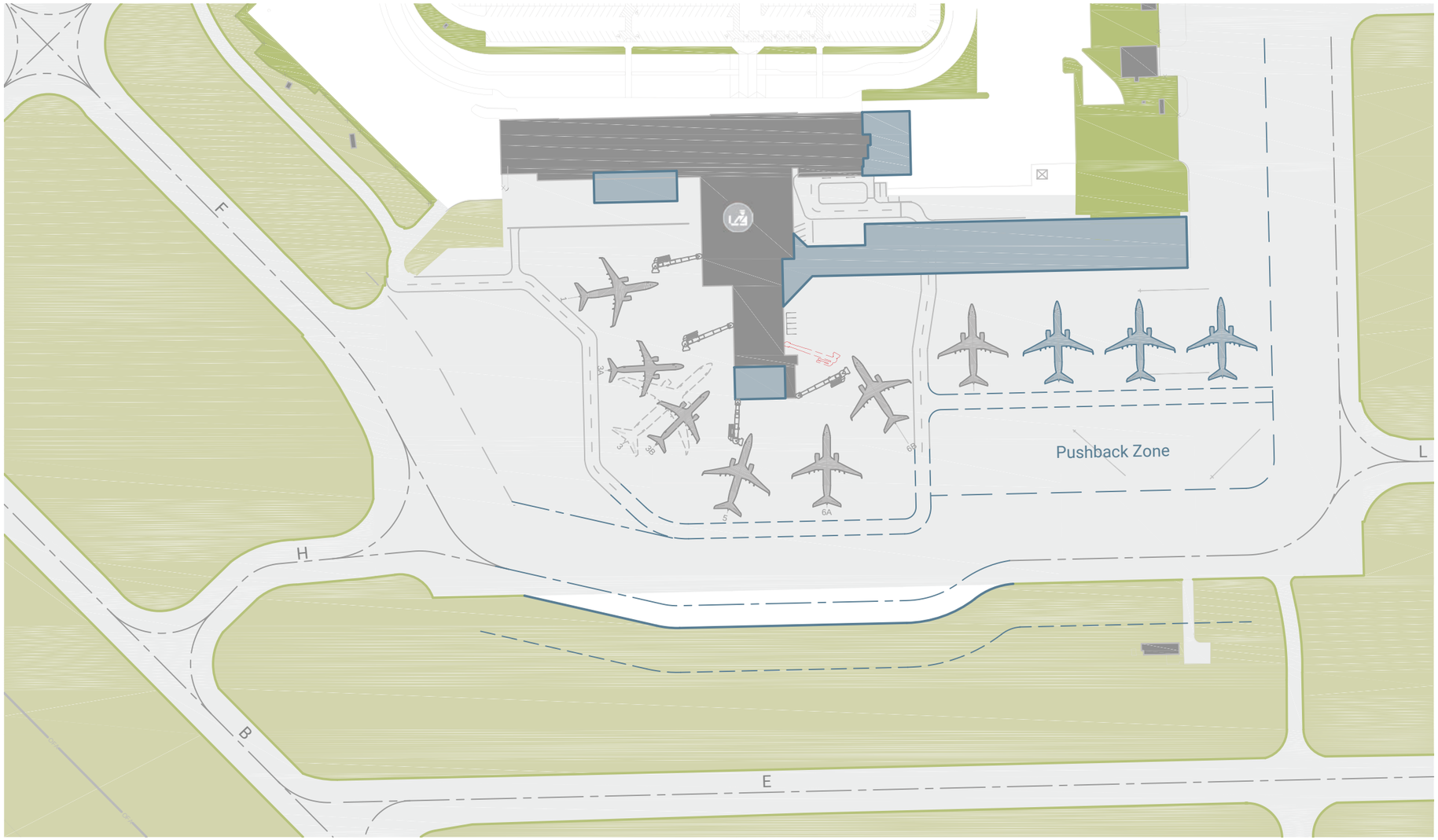
Like Alternatives 2A and 2B, Alternative 3 (see **Exhibit 4E**) provides a new single-loaded, 430-foot concourse expansion to the west that provides for four new narrowbody gates. This new concourse is linked to the existing terminal with a 20-foot-wide, 350-foot-long corridor extending from the existing Gate 1 boarding area. Modifications to the existing retail in this area would provide a wider connection point for passenger circulation.

Aircraft parking remains unchanged around the existing concourse with the exception of Gate 1, which is relocated to the new concourse after construction. The same small expansion to the end of the existing concourse, along with the relocated Gate 6 PBB, remains the same as Alternative 2A, while also providing for an additional RON parking position. Taxilane alignment south of the existing concourse remains unchanged with a slight realignment to Taxiway H. Existing Taxiway F, however, is removed and new apron expansion to the west occurs for the new concourse to allow for a pushback zone for aircraft departure operations.

An 80-foot building expansion to the existing baggage claim area provides space for a third flat plate "T" baggage claim device. Additionally, a new baggage makeup building as described in Alternative 2A is provided. Alternatively, the combined baggage screening and baggage makeup building could be constructed as well. Future expansion, beyond the 20-year planning horizon, could occur south of the existing concourse, continued expansion of the new west concourse, or an additional concourse to the east as depicted in Alternative 2A.

ALTERNATIVE 4

Alternative 4 (see **Exhibit 4F**) provides a slight variation from Alternative 3 by constructing a shorter 120-foot connecting corridor from the existing concourse. This is achieved by relocating Gates 1 and 3 to the



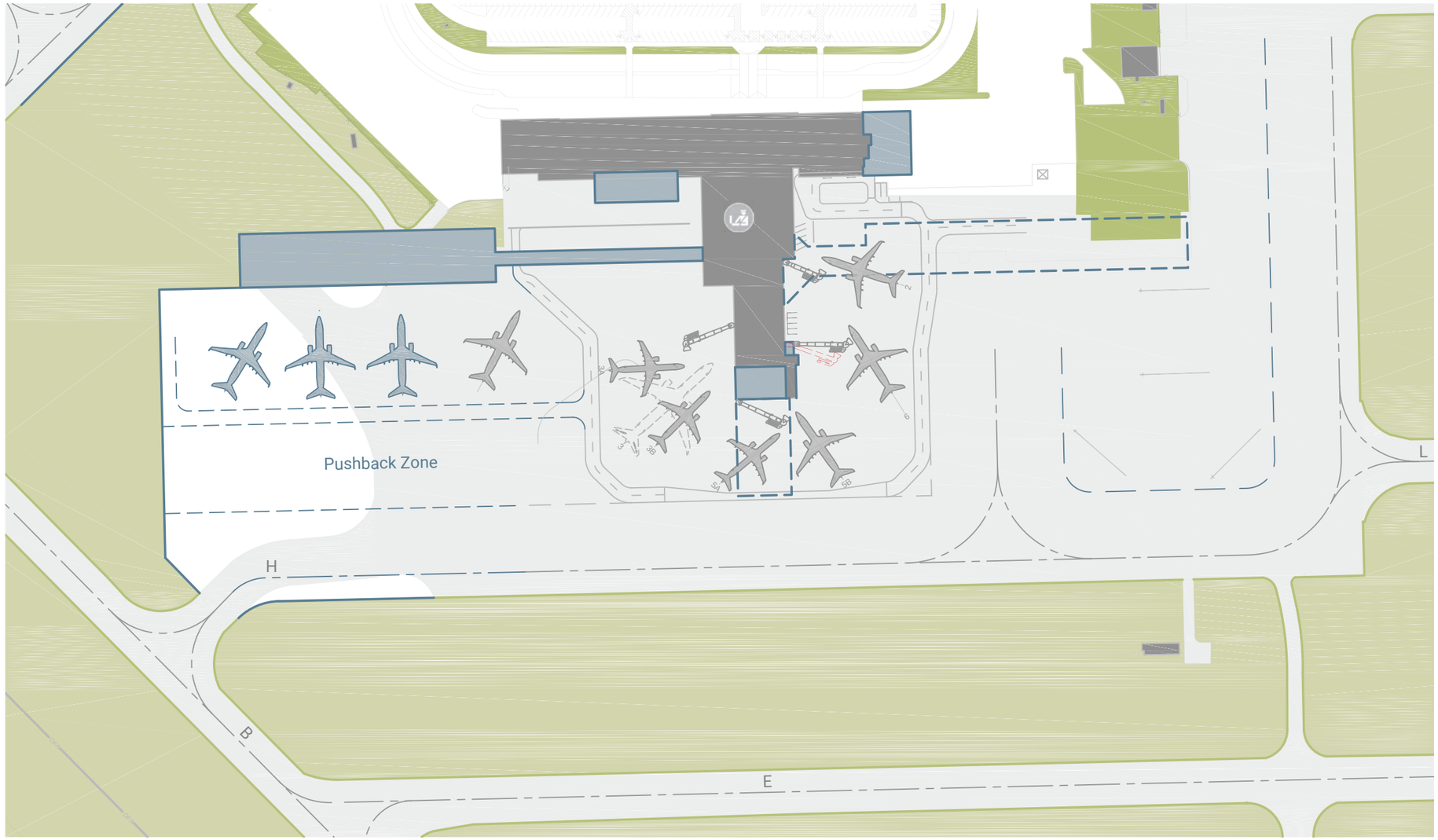
Color Key

- Building Demo
- Proposed Building
- Existing Building
- Proposed Apron
- Existing Apron
- TSA Security Screening Checkpoint
- Existing aircraft position
- New aircraft position
- Future Building
- Existing Airport Fence

Site Alternative 2b

0' 100' 200' 400'

SCALE: 1" = 200'



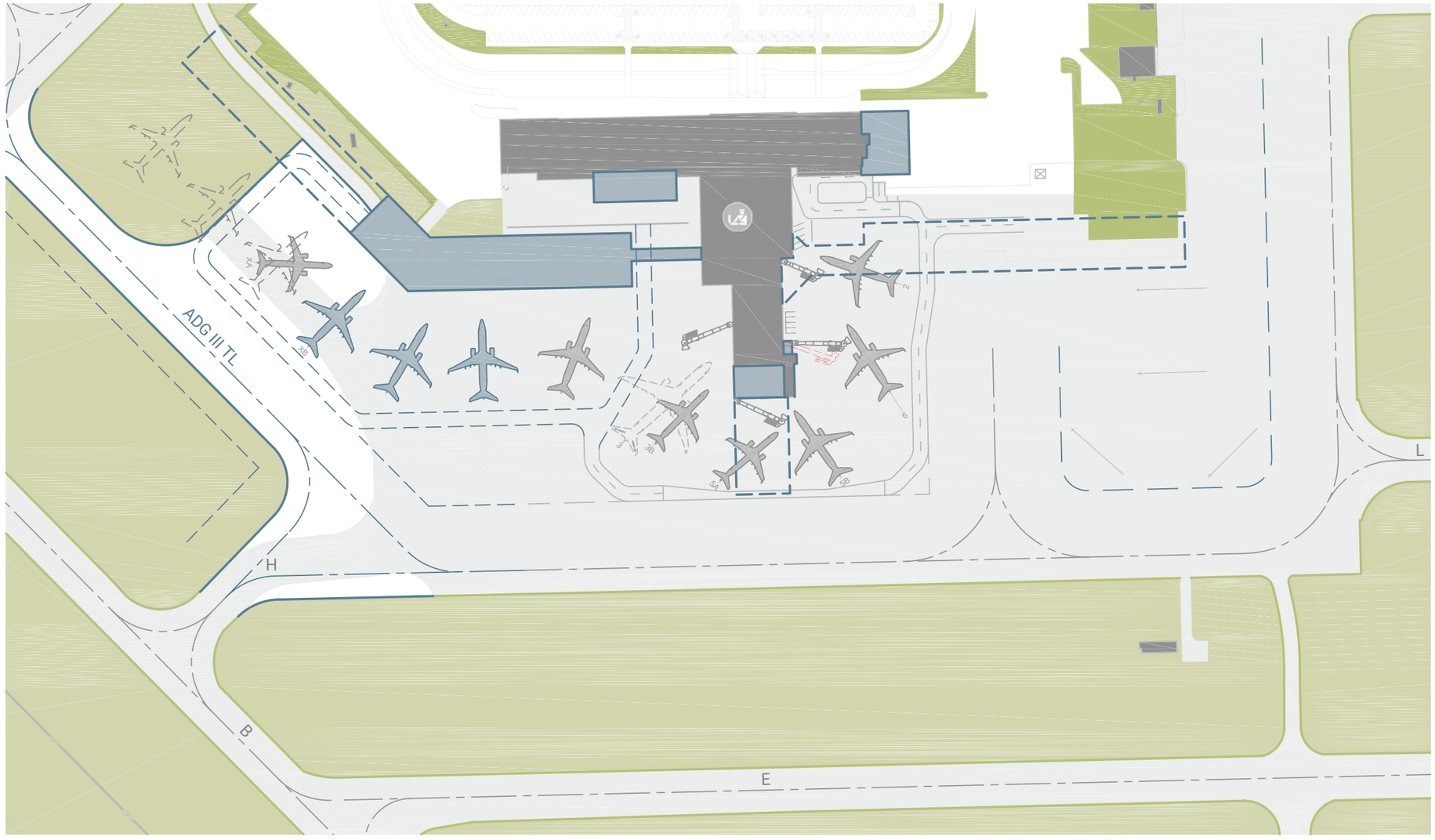
Color Key

- Building Demo
- Proposed Building
- Existing Building
- Proposed Apron
- Existing Apron
- TSA Security Screening Checkpoint
- Existing aircraft position
- New aircraft position
- Future Building
- Existing Airport Fence

Site Alternative 3

0' 100' 200' 400'

SCALE: 1" = 200'



Color Key

- Building Demo
- Proposed Building
- Existing Building
- Proposed Apron
- Existing Apron
- TSA Security Screening Checkpoint
- Existing aircraft position
- New aircraft position
- Future Building
- Existing Airport Fence

Site Alternative 4

0' 100' 200' 400'

SCALE: 1" = 200'

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new 480-foot, single-loaded concourse. Taking advantage of the existing site geometry, this new concourse jogs northwest to allow for increased gate capacity, initially providing five new narrowbody gates with expansion for three to four additional bridged narrowbody gates.

The existing taxilane alignment remains unchanged south of the existing concourse, but Taxiway F is relocated southwest to allow for the new west concourse. All additional building expansion beyond the 20-year expansion options follow those depicted in Alternative 3.

ALTERNATIVE 5

At full capacity, Alternative 5 (see **Exhibit 4G**) is capable of providing a total of 15 narrowbody bridged gates. The layout is a combination of both Alternatives 2 and 4. Initial development occurs with the west concourse expansion of approximately 600 feet, which provides three new and two relocated bridged narrowbody gates. Additionally, the furthest end gate provides parking capacity for an additional RON position served by the single PBB. A nearly 400-foot concourse expansion to the east provides the required capacity for the relocation of the remaining three bridged gates.

With a relocation of the existing FIS, the remaining original concourse is demolished to create a straight east-to-west flightline with the potential for a new, central concessions node between the new east/west concourse. Further study would be required for the relocation of the FIS, but the processing area could be located on the apron level of the eastern concourse, exiting into the existing space within the central terminal core.

Existing taxilane alignment remains unchanged to the south, with a slight realignment to tie into Taxiway H. This provides a pushback zone along the entire southern aircraft parking positions. Taxiway F is relocated further southwest (as depicted in Alternative 4) to allow for the gate capacity required on the western concourse. Additional terminal building expansion for baggage claim and baggage screening/makeup remain the same as those shown in Alternatives 1 and 2. Beyond the 20-year planning horizon, a 400-foot concourse expansion to the new west concourse provides capacity for an additional three to four bridged gates. The east concourse is capable of an additional 300-foot, three bridged gate expansion.

ALTERNATIVE 6

Alternative 6 (see **Exhibit 4H)**, a variation of Alternative 1, provides a total of 8 bridged narrowbody aircraft (739/321) gates and 10 total aircraft parking positions. The two additional positions accommodate large regional (E95) remain overnight (RON) positions. The layout provides a “T” extension off the existing concourse approximately 470 feet in length. This is achieved by expanding the existing apron south towards Taxiway E. This also protects for a new parallel airplane design group (ADG) III taxilane and two taxilane connectors from Taxiway E to the aircraft apron parking area. Existing Gate 6 is relocated to the new concourse expansion along with an expanded sterile corridor connecting to the new PBB rotunda location. Beyond the 20-year planning horizon, assuming the existing airfield electrical vault would be relocated, a 400-foot eastward concourse expansion yields an additional eight narrowbody bridged gates giving the plan a total of 16 bridged gates.

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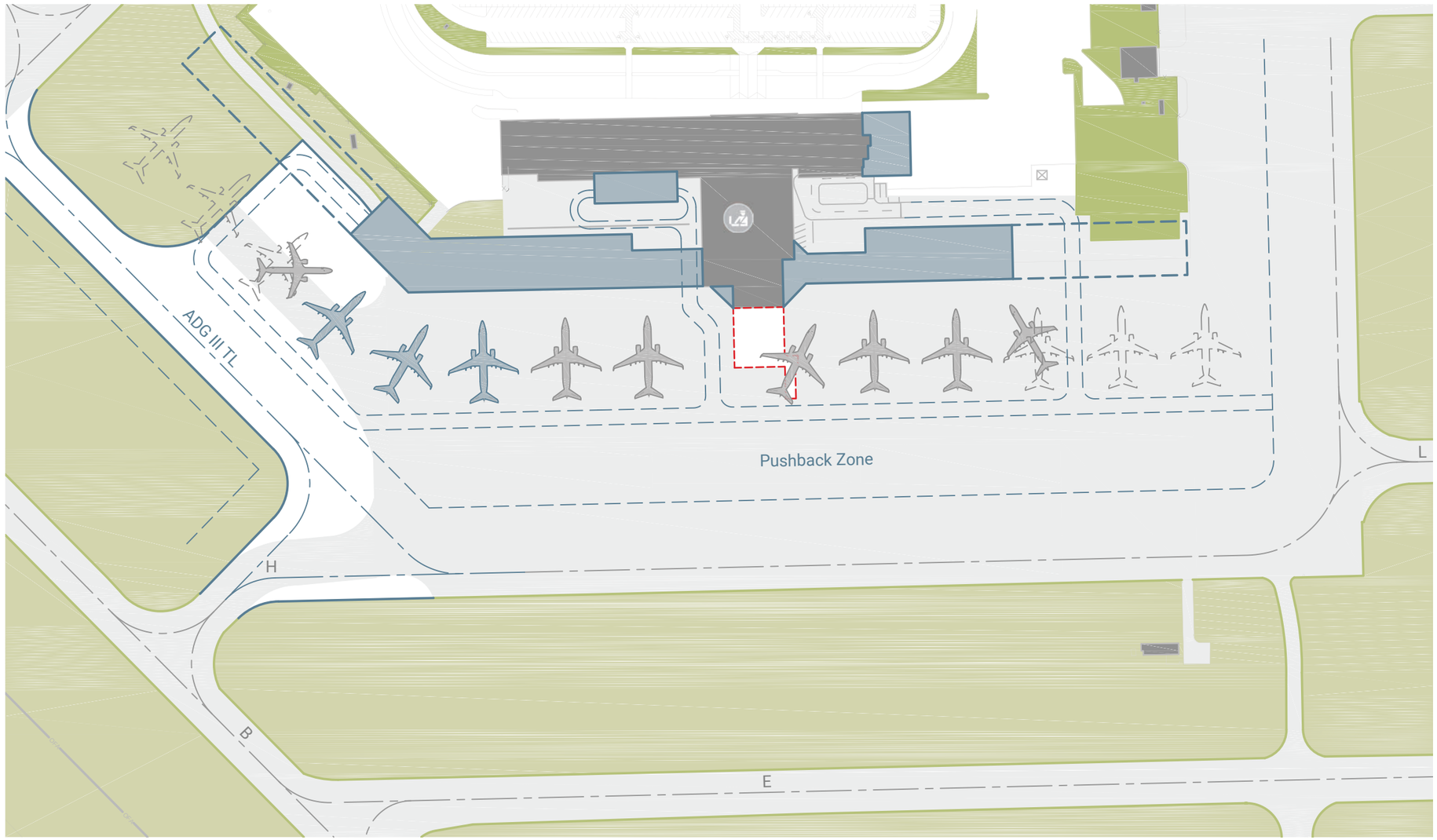


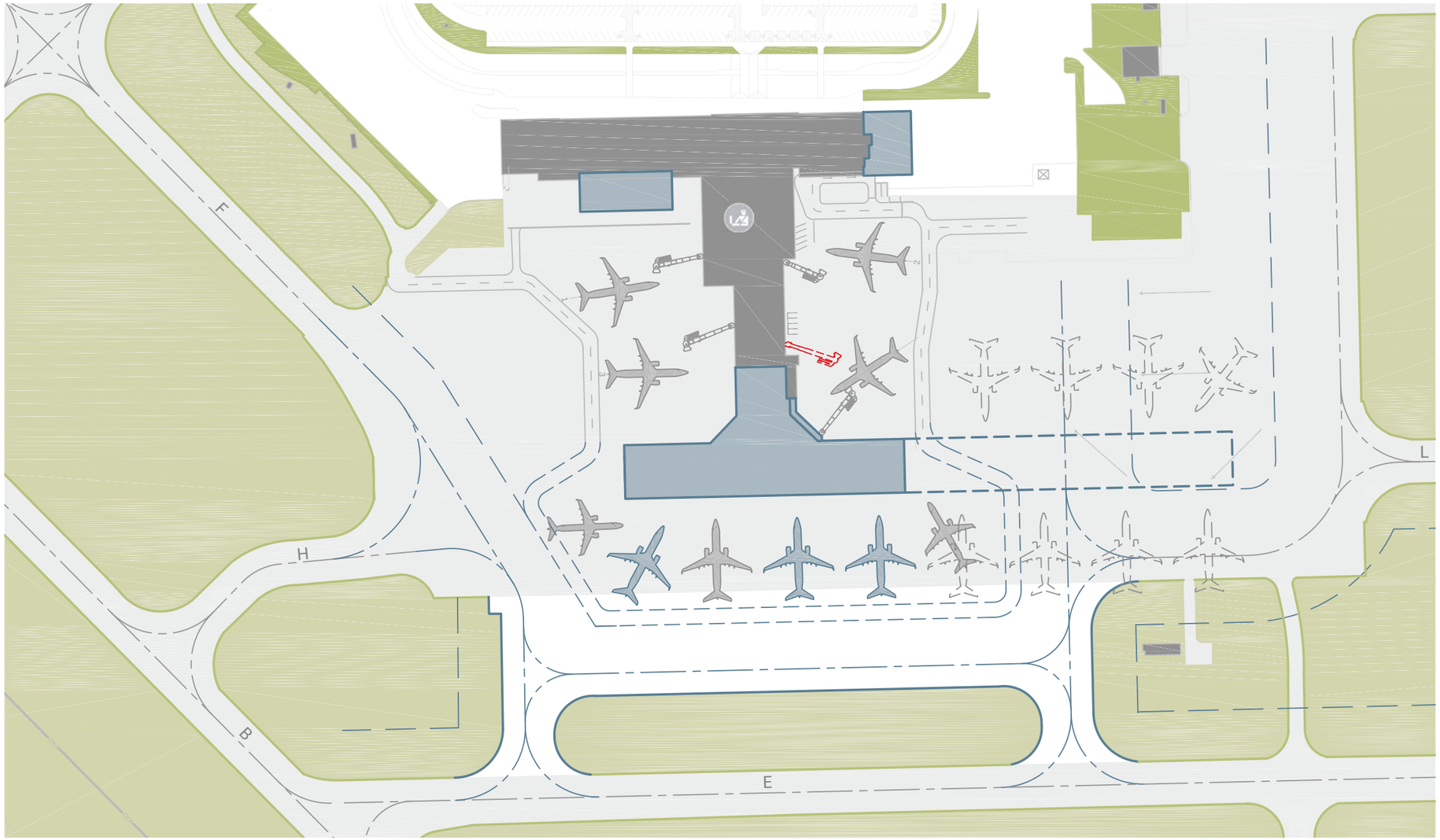
Color Key

- Building Demo
- Proposed Building
- Existing Building
- Proposed Apron
- Existing Apron
- TSA Security Screening Checkpoint
- Existing aircraft position
- New aircraft position
- Future Building
- Existing Airport Fence

Site Alternative 5

0' 100' 200' 400'

SCALE: 1" = 200'



Color Key

- Building Demo
- Proposed Building
- Existing Building
- Proposed Apron
- Existing Apron
- TSA Security Screening Checkpoint
- Existing aircraft position
- New aircraft position
- Future Building
- Existing Airport Fence

Site Alternative 6

0' 100' 200' 400'

SCALE: 1" = 200'

LAND USE ALTERNATIVES

CCIA has an abundance of land available to develop for future facilities, as demand dictates. The analysis in this chapter is intended to begin the process of identifying the highest and best uses of property so that demand is met, and airport revenues are maximized. One of the airport's obligations is to ensure the airport is operated in a manner that establishes the best opportunity to meet operational and capital expenditures. As noted previously, the airport has utilized more than $170 million in federal grants in aid to support airport development. Local resources were also required as matching funds, but they total less than 10 percent over the last 20 years.

The goal of this evaluation is to identify the highest and best use of land currently unencumbered by development. This is the initial step—later analysis will further refine the opportunities so that the best uses are promoted.

First, it is important to understand that CCIA is a federally funded and maintained airport with responsibilities to operate as such. This statement seems obvious on its face but, many times, airports can and do also serve other functions, such as economic drivers through the allowance of non-aviation development on airport property. The development could be similar in purpose, like hotels or gas stations, which directly serve to be complimentary to the airport's primary function in the moving of people and goods via air. The development could also be completely and unpaired to the function of an airport, serving to provide industrial or commercial development, and increasing the airport's revenue in order to support its primary function. Either way, these developments should be considered in all planning efforts when an abundance of land is available.

Typically, land adjacent or with proximate access to the runway system should be reserved and/or developed for aviation specific purposes. Those properties that are further away, or "islandized" from the airfield system, can then be planned and developed for a wider range of development opportunities. This section will provide a starting point in formulating a land use plan that will be a part of the airport layout plan (ALP) and once approved by the FAA, would allow airport administration to effectively market and develop accordingly.

Exhibits 4J and **4K** outline two land use alternatives that provide for aviation and non-aviation land use development opportunities on property that is not currently encumbered. Both options would provide for an additional 540 acres of aviation land use improvement options. As shown in the dark blue colored parcels, all flight line areas would be fully capable of providing for additional aviation use spaces to include cargo, FBO, SASO, general aviation hangar, maintenance repair and overhaul (MRO), and any other aeronautical development opportunities. As noted above, these parcels have direct access to the airfield and are required to be reserved and developed only for aviation-specific functions.

Commercial passenger spaces were identified in the previous section. The one area not addressed, however, would be the addition of more automobile parking. Both land use alternatives would allow for additional parking to be developed adjacent to International Drive on the space identified as P1 on **Exhibits 4J** and **4K**. This area would provide more than enough space to meet long-term parking needs at CCIA.

The specific improvements needed for a dedicated air cargo operator would need to be located within one (or more) of the aviation land use parcels. The best location(s) would be A8-12 if done relatively soon, as these parcels would have more immediate availability. Longer term, Parcels A1-A7 and A20-A31 could also serve this function.

Exhibit 4L shows a more defined and "shovel ready" plan for converting a specific parcel of land into an aviation use development. As shown, the plan would allow for expanding university/flight training operations. This development is not yet approved but is under consideration by the city and would allow for the increases in aviation hangar and ramp spaces proposed in the previous chapter

Non-aviation development includes commercial/retail, industrial/manufacturing, light industrial, and commercial/office spaces. Both development options presented here retain the city's current plans for a hotel and gas station along Highway 44 and International Drive. These alternatives only differ in the non-aviation opportunities, as shown. **Exhibit 4J** concentrates commercial retail uses along the highway, while the proposal depicted on **Exhibit 4K** allows for expanded light industrial land uses near the highway.

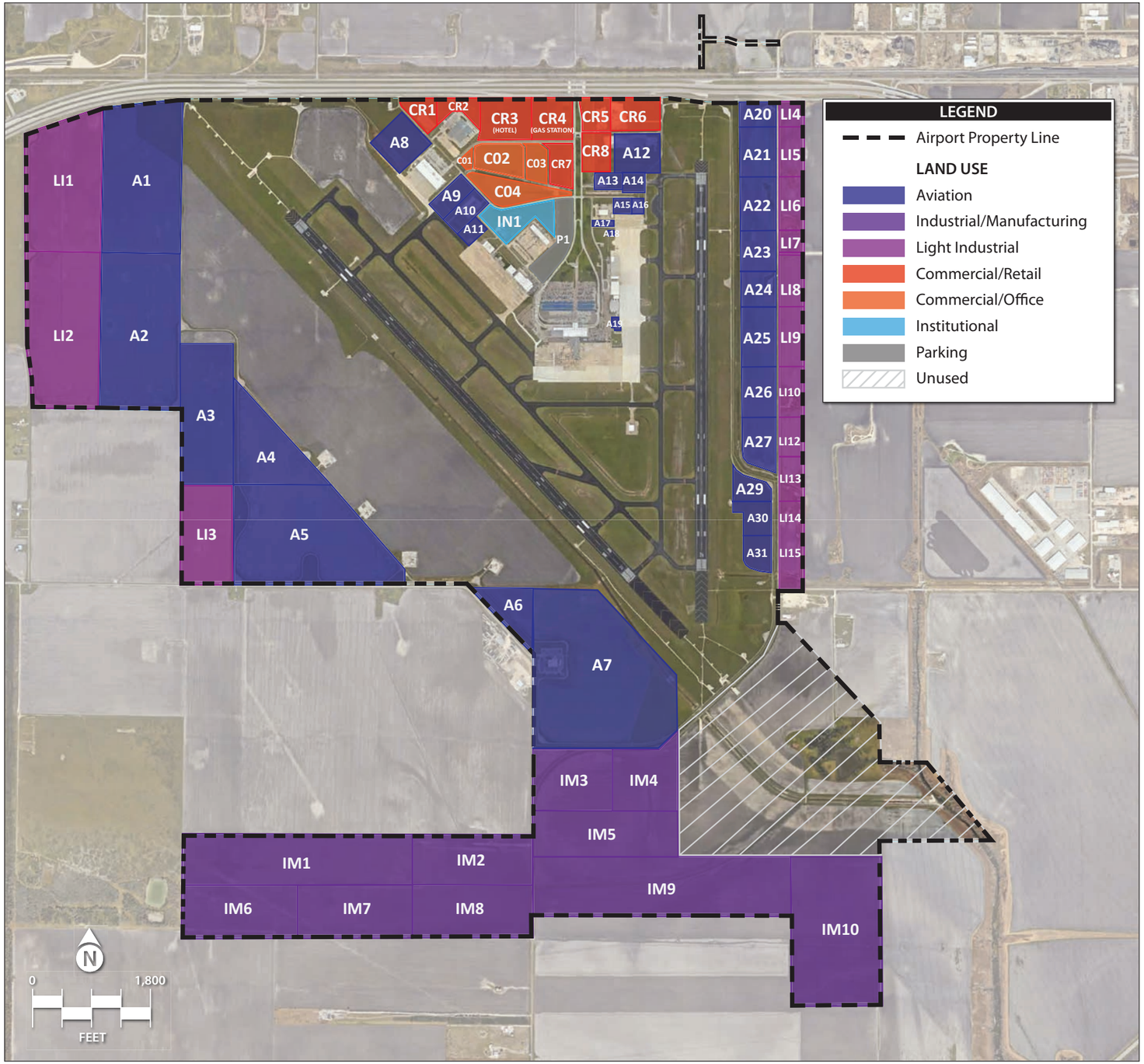
A final consideration would be given to utilizing the land to the west and east of the runways for energy generation via solar panels. These areas are currently not served by any utility or infrastructure. Any development, either aviation or non-aviation, would require substantial investment just to get it ready for development. A solar farm would not require such substantive improvements and could also serve to provide energy or financial resources to CCIA.

Once these concepts have been considered and evaluated, a formalized plan will be developed in the next chapter. This plan will then become part of the ALP drawing set and part of the CCIA development concept.

ALTERNATIVES SUMMARY

The process used in assessing airside and landside development alternatives involved a detailed analysis of short- and long-term requirements, as well as future growth potential. Current airport design standards were considered at each stage of development. On the landside, the passenger terminal building options will allow CCIA to continue offering a high level of services through the long-range enplanement levels. Also, consideration for the highest and best uses of airport property will open discussion so that a final recommendation can be formulated.

Several development alternatives and options related to both the airside and landside have been presented. After review by the TAC and the public, a recommended concept will be presented in the next chapter. The resulting plan will represent an airside facility that fulfills safety and design standards and a landside complex that can be developed as demand dictates.



LAND USE TABLE

Label	Land Use	Acres
A1	Aviation	66.6
A2	Aviation	69.2
A3	Aviation	40.8
A4	Aviation	28.9
A5	Aviation	74.4
A6	Aviation	10.9
A7	Aviation	124
A8	Aviation	10.2
A9	Aviation	4.8
A10	Aviation *(Carr's Delivery Services)*	4.9
A11	Aviation	2.4
A12	Aviation	9.7
A13	Aviation	2.5
A14	Aviation	2.4
A15	Aviation *(College)*	1.5
A16	Aviation *(College)*	0.9
A17	Aviation *(College)*	0.7
A18	Aviation *(College)*	0.2
A19	Aviation	0.5
A20	Aviation	5.1
A21	Aviation	9.7
A22	Aviation	10.2
A23	Aviation	7.8
A24	Aviation	6.8
A25	Aviation	11.4
A26	Aviation	9.4
A27	Aviation	9.0
A28	Aviation	5.0
A29	Aviation	5.8
A30	Aviation	5.1
Aviation Total		*540.8*

Label	Land Use	Acres
IM1	Industrial/Manufacturing	64.1
IM2	Industrial/Manufacturing	33.3
IM3	Industrial/Manufacturing	27.2
IM4	Industrial/Manufacturing	23.4
IM5	Industrial/Manufacturing	36.6
IM6	Industrial/Manufacturing	32.7
IM7	Industrial/Manufacturing	33.0
IM8	Industrial/Manufacturing	35.1
IM9	Industrial/Manufacturing	81.5
IM10	Industrial/Manufacturing	73.2
Industrial-Manufacturing Total		*440.1*

Label	Land Use	Acres
LI1	Light Industrial	55.1
LI2	Light Industrial	61.8
LI3	Light Industrial *(Storage Facility)*	28.8
LI4	Light Industrial	3.5
LI5	Light Industrial	6.8
LI6	Light Industrial	7.3
LI7	Light Industrial	3.0
LI8	Light Industrial	7.0
LI9	Light Industrial	8.1
LI10	Light Industrial	6.8
LI11	Light Industrial	5.4
LI12	Light Industrial	5.8
LI13	Light Industrial	4.6
LI14	Light Industrial	7.5
Light Industrial Total		*211.5*

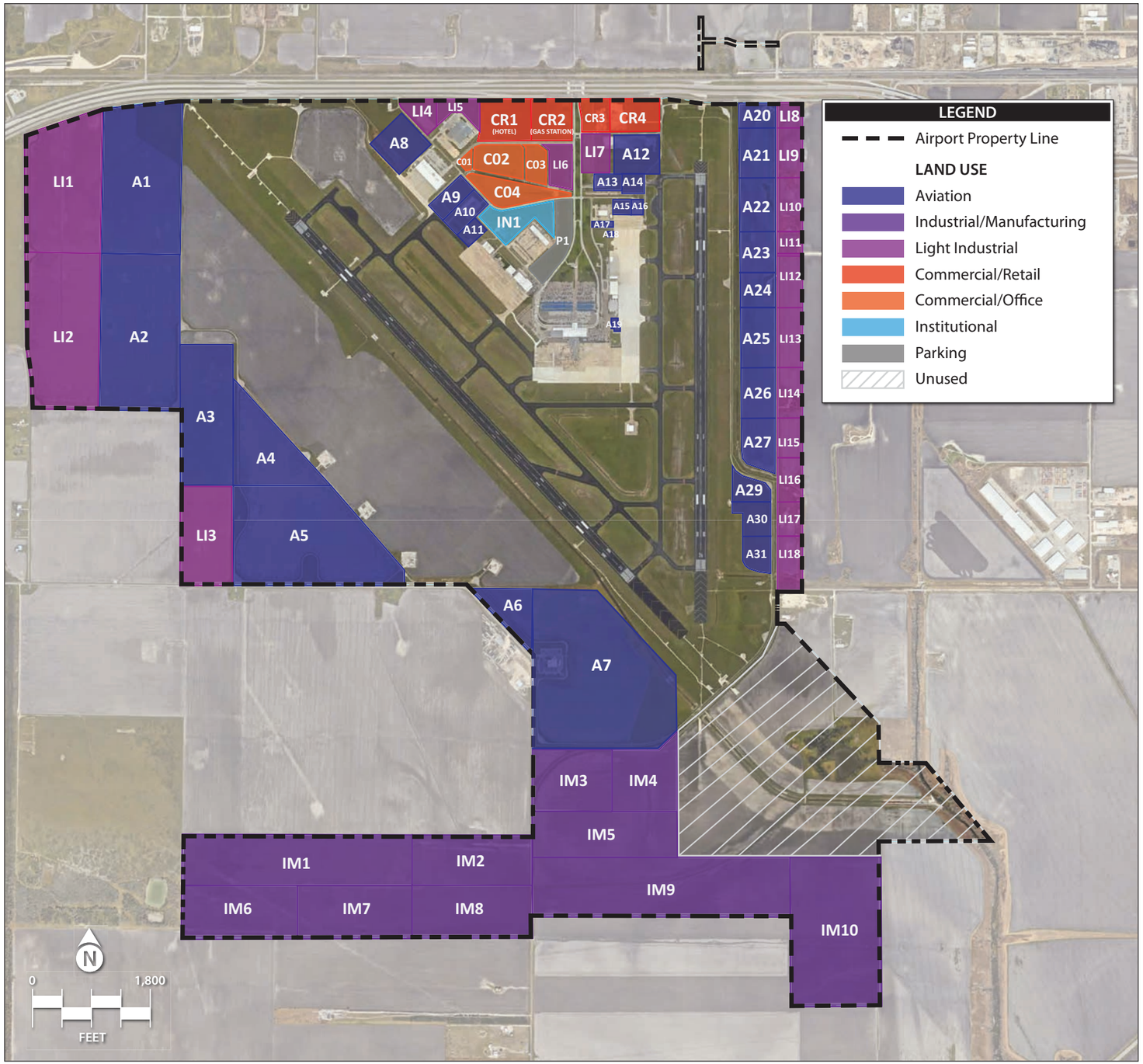
Label	Land Use	Acres
CR1	Commercial/Retail	5.1
CR2	Commercial/Retail	4.9
CR3	Commercial/Retail	12.1
CR4	Commercial/Retail	9.9
CR5	Commercial/Retail	5.4
CR6	Commercial/Retail	9.3
CR7	Commercial/Retail	5.8
CR8	Commercial/Retail	5.9
Commercial-Retail Total		*58.4*

Label	Land Use	Acres
IN1	Institutional *(National Weather Service Office - Corpus Christi)*	9.6
Institutional Total		*9.6*

Label	Land Use	Acres
P1	Parking	8.2
Parking Total		*8.2*

Label	Land Use	Acres
CO1	Commercial/Office	0.9
CO2	Commercial/Office	8.0
CR3	Commercial/Office	4.2
CO4	Commercial/Office	9.1
Commercial-Office Total		*22.2*

TOTAL ACREAGE - 1,290.8



LAND USE TABLE

Label	Land Use	Acres
A1	Aviation	66.6
A2	Aviation	69.2
A3	Aviation	40.8
A4	Aviation	28.9
A5	Aviation	74.4
A6	Aviation	10.9
A7	Aviation	124
A8	Aviation	10.2
A9	Aviation	4.8
A10	Aviation *(Carr's Delivery Services)*	4.9
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A12	Aviation	9.7
A13	Aviation	2.5
A14	Aviation	2.4
A15	Aviation *(College)*	1.5
A16	Aviation *(College)*	0.9
A17	Aviation *(College)*	0.7
A18	Aviation *(College)*	0.2
A19	Aviation	0.5
A20	Aviation	5.1
A21	Aviation	9.7
A22	Aviation	10.2
A23	Aviation	7.8
A24	Aviation	6.8
A25	Aviation	11.4
A26	Aviation	9.4
A27	Aviation	9.0
A28	Aviation	5.0
A29	Aviation	5.8
A30	Aviation	5.1
Aviation Total		*540.8*

Label	Land Use	Acres
CR1	Commercial/Retail	12.1
CR2	Commercial/Retail	9.9
CR3	Commercial/Retail	5.4
CR4	Commercial/Retail	9.3
Commercial-Retail Total		*36.7*

Label	Land Use	Acres
IN1	Institutional *(National Weather Service Office - Corpus Christi)*	9.6
Institutional Total		*9.6*

Label	Land Use	Acres
IM1	Industrial/Manufacturing	64.1
IM2	Industrial/Manufacturing	33.3
IM3	Industrial/Manufacturing	27.2
IM4	Industrial/Manufacturing	23.4
IM5	Industrial/Manufacturing	36.6
IM6	Industrial/Manufacturing	32.7
IM7	Industrial/Manufacturing	33.0
IM8	Industrial/Manufacturing	35.1
IM9	Industrial/Manufacturing	81.5
IM10	Industrial/Manufacturing	73.2
Industrial-Manufacturing Total		*440.1*

Label	Land Use	Acres
LI1	Light Industrial	55.1
LI2	Light Industrial	61.8
LI3	Light Industrial *(Storage Facility)*	28.8
LI4	Light Industrial	5.1
LI5	Light Industrial	4.9
LI6	Light Industrial	5.8
LI7	Light Industrial	5.9
LI8	Light Industrial	3.5
LI9	Light Industrial	6.8
LI10	Light Industrial	7.3
LI11	Light Industrial	3.0
LI12	Light Industrial	7.0
LI13	Light Industrial	8.1
LI14	Light Industrial	6.8
LI15	Light Industrial	5.4
LI16	Light Industrial	5.8
LI17	Light Industrial	4.6
LI18	Light Industrial	7.5
Light Industrial Total		*233.2*

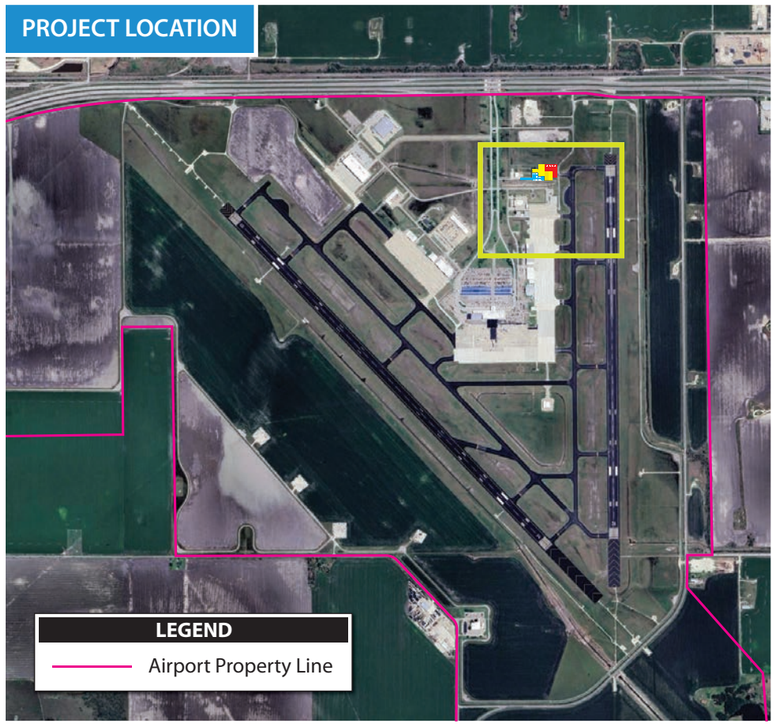
Label	Land Use	Acres
CO1	Commercial/Office	0.9
CO2	Commercial/Office	8.0
CR3	Commercial/Office	4.2
CO4	Commercial/Office	9.1
Commercial-Office Total		*22.2*

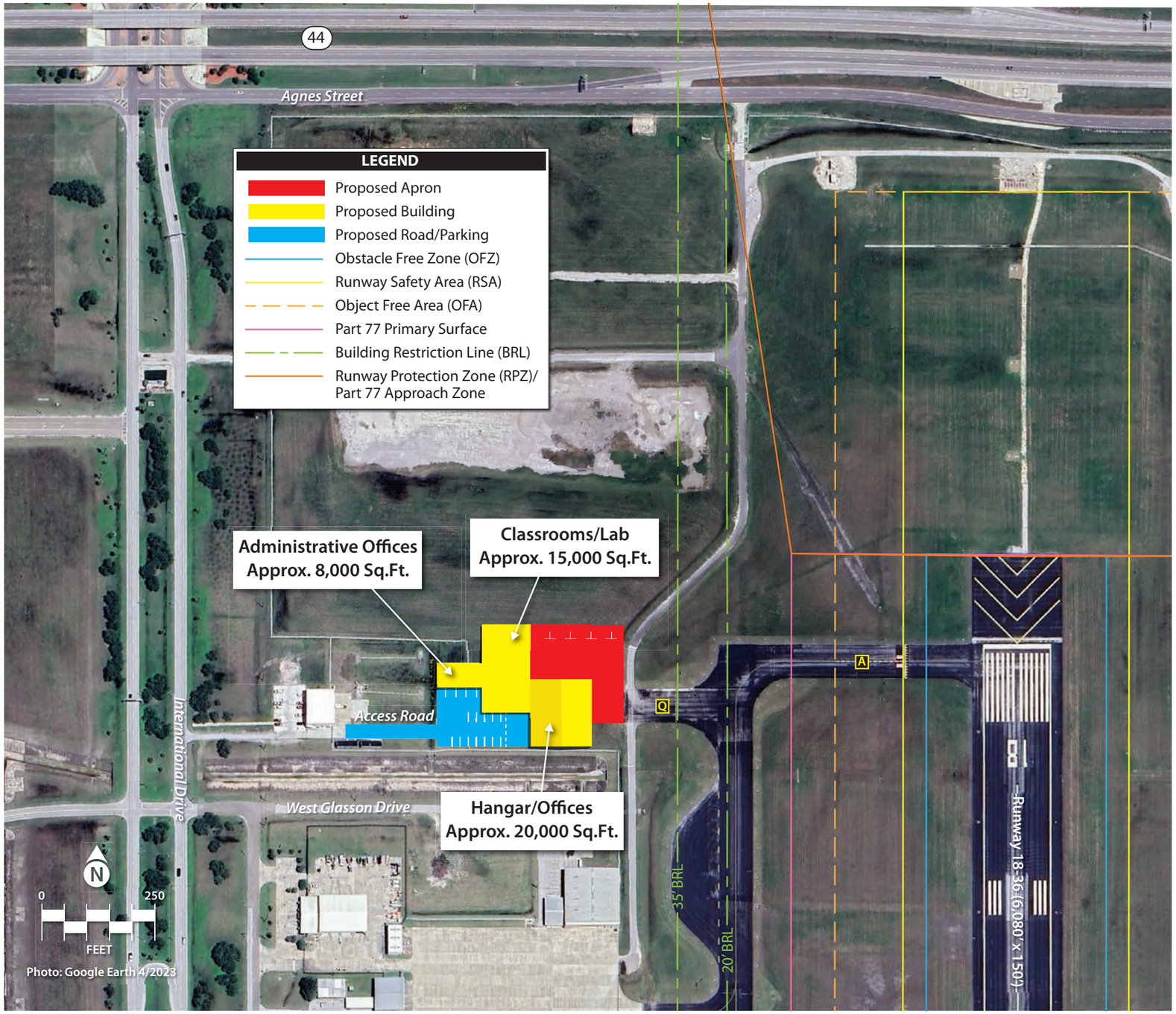
Label	Land Use	Acres
P1	Parking	8.2
Parking Total		*8.2*

TOTAL ACREAGE - 1,290.8

PROPOSED DEVELOPMENT RENDERING

PROJECT LOCATION





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