Chapter Two Alternatives

2.1 Introduction

This chapter describes reasonable alternatives to the Proposed Action and evaluates the ability of the alternatives to meet the purpose and need as described in Chapter One. Federal guidelines concerning the environmental review process describe reasonable alternatives as those that are feasible and are practical from a technical and economic standpoint and using common sense.[14]

This chapter also describes the process by which alternatives were developed and evaluated, resulting in the selection of the proposed CTP as the STLAA's Preferred Alternative and the Proposed Action. This evaluation of alternatives was conducted as part of the recent 2023 Master Plan process and meets the requirements of NEPA to rigorously explore and objectively evaluate all reasonable alternatives.

The goal of the alternatives development and evaluation process was to identify a range of alternatives that could achieve the purpose and need and are reasonable. An alternative is not feasible if it cannot be built as a matter of sound engineering judgment. Only feasible alternatives were developed and included in the Master Plan process.

2.2 Preliminary Alternatives Development

Once a range of preliminary alternatives was established, a multi-step alternatives evaluation process was applied. These steps were referred to in the Master Plan as "rounds." The initial analysis considered relocating the terminal(s) and identified 15 potential sites on the airport property. This exercise revealed that relocating the terminals away from the existing site would require the relocation of I-70, the relocation or decommissioning of runways, and/or construction of new landside access from a highway. All of these factors were considered cost prohibitive and therefore, not practical. Thus, relocation of the terminal(s) was not advanced and only preliminary alternatives in the general area of the existing terminals between the airfield to the north and I-70 to the south were considered.

Preliminary alternatives in the area of the existing terminals (referred to as "concepts" in the Master Plan) were developed to achieve the project purpose and need and to avoid impacts to the airfield, I-70,[15] and Coldwater Creek, as well as to accommodate the types of aircraft in the forecast and to maintain MetroLink transit access at STL. To the greatest extent possible, the alternatives avoid impacts to the National Register of Historic Places (NRHP) eligible Lambert Field Historic District, the NRHP-eligible iconic 1956 domes of the existing main terminal ticket

[14] Council on Environmental Quality, Memorandum to Agencies: Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, Answer to Questions 1a and 2A, March 23, 1981.

[15] While MoDOT is studying improvements to I-70 in the vicinity of the airport, it is likely that only minor shifts to I-70 would occur as a result of MoDOT improvements.

lobby, the NRHP-eligible Ozark Air Lines Office, Shop, and Hangar, and the 34-acre Department of Defense (DoD) property between Lambert International Boulevard and I-70.[16, 17]

Two "families" of preliminary alternatives were developed: consolidating the two existing terminals into one terminal and maintaining two separate terminals. Although the initial focus was on the concourse (gate) areas, the Master Plan also identified and evaluated three preliminary alternatives for passenger processing (referred to as "processors"), which contain functions such as ticketing, baggage claim, and security screening, and which would be paired later in the screening process with a concourse alternative. The Master Plan identified 22 preliminary alternatives: 11 one-terminal concepts, 8 two-terminal concepts, and 3 processor concepts. The 22 preliminary alternatives developed are illustrated in Figure 2.2-1.

2.2.1 Preliminary Alternatives Evaluation Process and Results

In the Master Plan, the preliminary alternatives were screened in a five-step process as shown in Figure 2.3-1. A set of screening criteria were applied at each step to narrow the range of preliminary alternatives to be evaluated in more detail in the subsequent step. These steps were referred to in the Master Plan as "rounds." In each round, the screening criteria address, in different ways, whether each preliminary alternative achieves the project purpose and need and whether it is practical. [18]

Figure 2.3-2 illustrates the results of the preliminary alternatives screening process. Table 2.3-1 lists the screening criteria applied in each round and summarizes the results of applying the criteria to each of the preliminary alternatives. As summarized in Table 2.3-1, Rounds 1, 2 and 3 focused on broad-scale terminal configurations. Round 4 focused on whether each remaining preliminary alternative could, in the limited envelope available between the terminal area and I-70, accommodate the roadway safety and efficiency improvements and parking capacity enhancements required to achieve the purpose and need. The optimum location of the parking garage is within walking distance from the terminal, both for passenger convenience, and to reduce roadway congestion from parking shuttles; therefore, the garage was maintained in its existing location for the Round 4 analysis.

During the alternatives evaluation process, some of the preliminary alternatives were refined to address particular issues, as reflected in Table 2.3-1. For example, during Round 2, two variants with an aboveground Automated People Mover (APM) (Alternatives 8A and 8B) were introduced to mitigate the high cost of Alternative 8's underground APM, and Alternative 14 was refined to retain the iconic terminal domes (Alternative 14A). After Round 3, complete alternatives were formed by paring Alternative 5 (consolidated terminal) with each of the two remaining processors and pairing Alternative 18 with each of two scaled-down single terminal alternatives to form two-

[16] The Lambert Field Historic District is comprised of a part of the former MoANG campus northwest of Terminal 1, and it is eligible for listing on the National Register of Historic Places (NRHP). The terminal domes were designed by an important architect, are NRHP eligible, and are architecturally symbolic of STL. Under Section 4(f) of the U.S. Department of Transportation Act, FAA may approve a transportation project requiring the use of Section 4(f) resources if there is no feasible and prudent alternative and the project includes all possible planning to minimize harm; thus, the Master Plan ensured at least some of the preliminary alternatives avoided these properties.

[17] The Master Plan evaluated preliminary alternatives that did not require acquisition of the DoD property because acquiring the property and relocating the military uses on the site would be costly, complex, and time-consuming.

[18] Figure 2.2-1 does not depict Alternatives 21 and 22, which alter the internal use of existing structures.

Figure 2.2-1: Initial Preliminary Alternatives

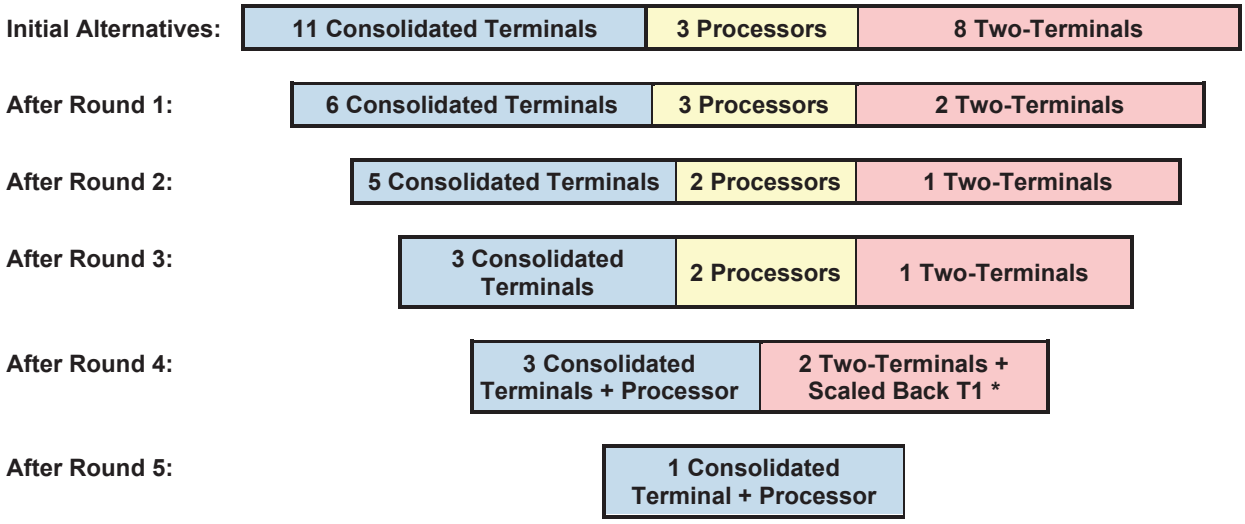
Notes: Alternatives 10, 11 and 12 are processor alternatives that were paired with concourse alternatives later in the screening process.
Alternative 21 (Swap Airline Locations in Existing Terminals) and Alternative 22 (Reopen Entire Concourse D to Connect Terminals 1 and 2), which only alter the internal use of existing structures, are not depicted here.

Sources: WSP USA, STL Master Plan, 2023.

terminal alternatives. These four paired alternatives, shown in Figure 2.3-2, and Alternative 8A, were advances from Round 4 to the final round of alternatives screening. In Round 5, Alternative 5-P1 was selected as the Preferred Alternative, because it is practical and would achieve the project purpose and need. The other remaining alternatives have one or more of the following limitations: they would be less convenient for some passengers; be more costly to construct, operate and maintain; provide less flexibility for addressing landside needs; be more costly to expand the number of gates in the future; and could result in fewer concession choices for passengers and less non-aeronautical revenue to STL.

Further information regarding the alternatives evaluation and the screening process, including an evaluation of airport access roadway alternatives, from the Master Plan are included in Appendix C.

Figure 2.3-1: Alternatives Screening Process



* The one remaining two-terminal alternative was paired with two different scaled-back one-terminal options.

Source: WSP USA, 2023.

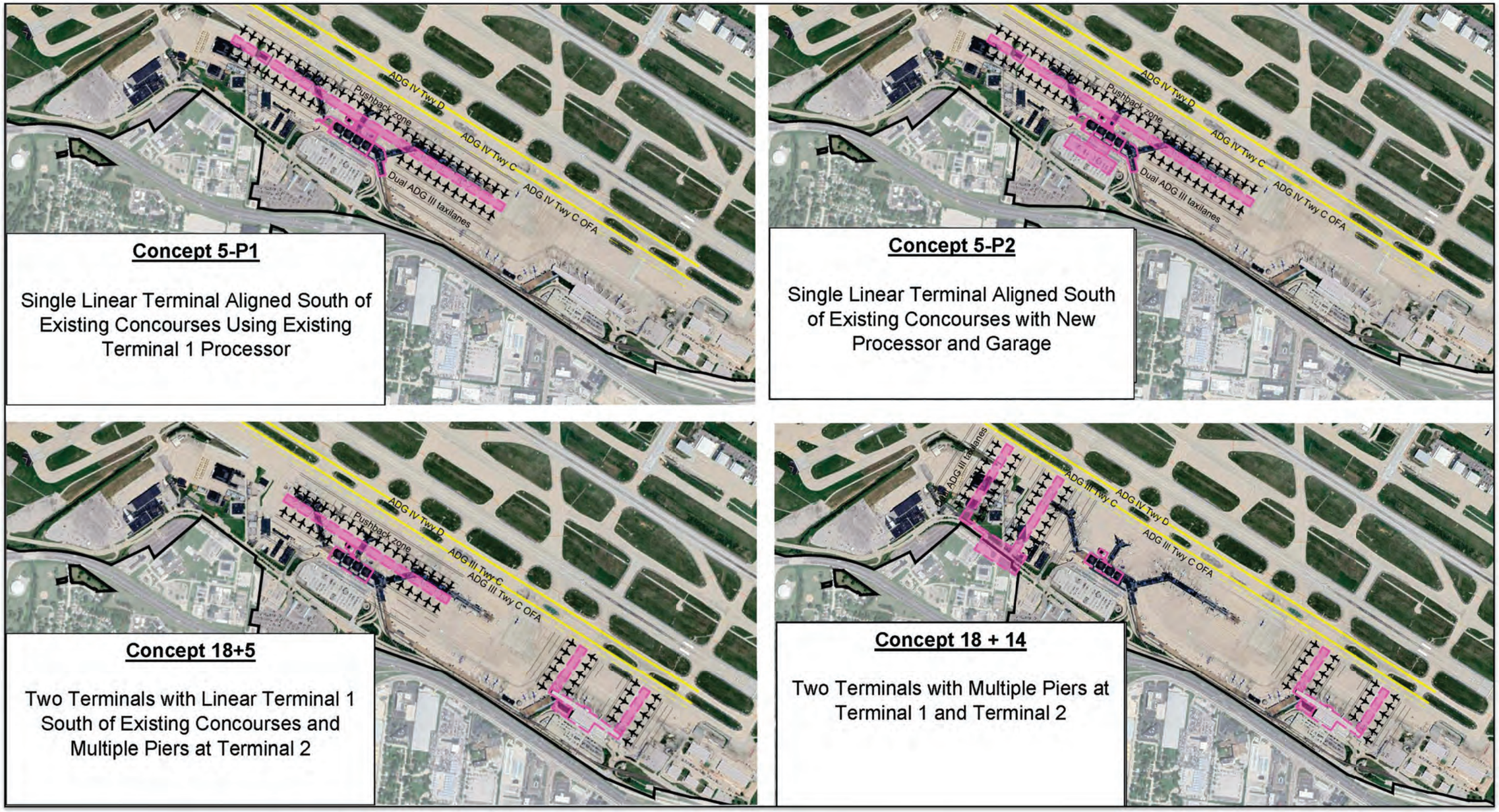
2.2.2 No Action Alternative

Under the No Action Alternative, STL would maintain its existing passenger terminals and roadway infrastructure and would not address the deficiencies as described in Chapter One. This alternative would not meet the purpose and need.

While a No Action Alternatives does not meet the project purpose and need, it is required by NEPA and the regulations of the Council on Environmental Quality (CEQ)[19] to be carried forward for analysis of environmental consequences and to serve as a baseline against which to evaluate the impacts of the Proposed Action. With the No Action Alternative, the Proposed Action would not be constructed with the following consequences:

[19] 40 CFR 1502.14, available at https://www.ecfr.gov/current/title-40/chapter-V/subchapter-A/part-1502.

Figure 2.3-2: Paired Preliminary Alternatives Evaluated in Round 5



Note: Alternative 8B, which did not require pairing, was also considered in Round 5.

Sources: WSP USA, STL Master Plan, 2023.

Table 2.3-1: Summary Results of Alternatives Screening

Rounds and Criteria	**Alternatives**																							
	One Linear Terminal										**Processor Only**			**One Pier or Satellite Terminal**			**Two Terminals**							
Round 1	1	2	3	4	5	6	7	8		9	10	11	12	13	14		15	16	17	18	19	20	21	22
Provides sufficient gate/aircraft parking positions to meet forecast need through 2040																		X					X	
Meets industry standards for walking distance, has balanced walking distance to all gates	X	X				X											X						X	X
Provides dual ADG III taxilanes around concourses	X																					X		
Provides workable landside access to curb front																					X			
Avoids Navaid impacts							X																	
Results	**X**	**X**	**X[1]**	**A**	**A**	**X**	**X**	**A**		**A**	**A**	**A**	**A**	**A**	**A**		**X**	**X**	**A**	**A**	**X**	**X**	**X**	**X**
Round 2				4	5			8	8A[2]	8B[2]	9	10	11	12	13	14			17[3]	18				
Construction Period																								
Reasonable duration for enabling projects																								
Maintains reasonable passenger experience				X																				
Ease of phasing and constructability				X										X										
Maintains safe and efficient operations (terminal, airside, landside)																								
Maintains flexibility to respond to demand																								
End State																								
Provides optimum passenger experience									X															
Relative cost compared to other alternatives									X															
Creates safe and efficient operations (terminal, airside, landside)																			X					
Avoids unacceptable impacts to other facilities																								
Provides flexibility and future expansion potential (beyond 2040)														X										
Results				**X**	**A**			**A**	**X**	**A**	**A**	**A**	**A**	**X**	**X**	**A**			**X**	**A**				
Round 3					5			8		8B	9	P1[4]	P2[4]			14	14A[5]			18				
Relative cost compared to other alternatives								X			X													
Acceptable walking distance																								
Acceptable level of Passenger Convenience																								
Maintains STL's image (keep domes)																X								
Results					**A**			**X**		**A**	**X**	**A**	**A**			**X**	**A**			**A**				

Rounds and Criteria	**Alternatives**																															
	One Linear Terminal											**Processor Only**			**One Pier or Satellite Terminal**			**Two Terminals**														
Round 4					5[6]					8B			P-1	P-2				14A						18[7]								
Fluid, independent roadway traffic flows (separate terminal traffic from non-terminal uses)																																
Adequate roadway distance for decision-making and signage																																
Prioritizes inbound over outbound roadway improvements (getting to terminal quickly)																																
Reserves space for potential future Consolidated Rent-A-Car (ConRAC)																																
Keep roads and auto parking out of Runway Protection Zone																																
Results					**A**					**A**			**A**	**A**				**X**[8]						**A**								
Round 5					5					8B			P-1	P-2										18								
Adequate space to address landside issues and for future facilities (e.g., ConRAC)														X										X								
Relative cost compared to other alternatives										X				X										X								
Passenger experience and convenience																								X								
Results					**PA**					**X**			**PA**	**X**										**X**								

Notes:

A Alternative advanced to next round.

X Alternative does not achieve the criteria or is not advanced to next round.

PA Advanced for detailed analysis of environmental impacts as the Proposed Action.

1 Alternative 3 is not advanced because it is very similar to Alternative 5.

2 Two variants of Alternative 8 were introduced to reduce the cost of the Automated People Mover (APM): Alternative 8A moves the APM aboveground on the MetroLink track and Alternative 8B moves the APM aboveground along Lambert International Boulevard.

3 Alternative 17 is not advanced because it is similar to Alternative 18, and in its end state, would have substantial operational issues that Alternative 18 would not have.

4 In Round 3, the two remaining processor alternatives (10 and 11) are renamed P1 and P2, respectively.

5 A variant of Alternative 14 was introduced (14A) to retain the unused domes and repurpose them for non-terminal functions.

6 Alternative 5 can be paired with either P1 or P2 to make a complete alternative.

7 Alternative 18 can be paired with scaled back version of Alternatives 5 or 14 to make a complete alternative.

8 Alternative 14A was not advanced due to landside access and other problems that cumulatively cause unique problems and impacts of substantial magnitude.

Source: WSP USA, STL Master Plan, 2023.

- Terminals 1 and 2 would remain in their current location and configuration, resulting in worsening congestion in the holdrooms, corridors, concession areas, baggage claim areas, security screening and ticketing areas and other public spaces as passenger demand continues to grow. Additionally, there would be insufficient space to provide additional concession options, resulting in a low customer experience, and lost airport revenue opportunity. Operating and maintenance costs would also continue to escalate due to the aging and inefficient mechanical systems in Terminal 1.
- The existing on-airport roadways, curbsides and parking facilities would remain in their current location and configuration resulting in safety and capacity deficiencies that would be worsened by increased traffic associated with the forecasted future passenger levels. Demand for on-airport parking would also continue to exceed the existing supply resulting in a significant lost revenue opportunity for STL.

2.3 Alternatives Advanced for Environmental Evaluation

Two alternatives advanced for detailed evaluation of environmental consequences, the No Action Alternative and the Preferred Alternative, as described below.

2.3.1 No Action Alternative

The No Action Alternative, as previously described in Section 2.4, would not meet the project purpose and need. However, CEQ guidance and the FAA Order 5050.4B prescribe the need to analyze and compare the No Action Alternative to the Proposed Action and for the No Action Alternative to serve as the baseline against which to measure the impacts of the Proposed Action. Therefore, the No Action Alternative will be carried forward for further analysis.

2.3.2 Preferred Alternative (Alternative 5-P1)

Alternative 5-P1 is the preferred alternative because it is practical and achieves the purpose and need because it would:

- Enhance the passenger experience by providing an “optimum” level of passenger service.
- Enhance the passenger experience and airport revenue by increasing space for concessions, and therefore the variety of concessions, on the post-security screening side.
- Reduce operating and maintenance costs by eliminating aging and redundant building systems and duplication of services in two terminals.
- Ensure continued safe, secure, and efficient operations by providing sufficient space and facilities for current and forecast passenger demand and aircraft operations.

Additional benefits of the Preferred Alternative include:

- Improved airfield operations because it accommodates a full-length Taxiway C, Airplane Design Group (ADG) III dual taxilanes[20] around the concourse, and it avoids aircraft pushing back onto Taxiway C.
- The ability to accommodate future incremental concourse expansion.
- Preservation and use of the terminal domes, which are architecturally symbolic of STL and eligible for listing on the National Register of Historic Places.
- The opportunity to provide a new airport entrance.

The Preferred Alternative, hereafter referred to as the Proposed Action, replaces the existing Terminals 1 and 2 with a consolidated terminal centered on the location of the existing Terminal 1 and includes:

- A 110-foot-wide linear concourse, with space for up to 62 gates in 2040 and a maximum walking distance of 2,500 feet from the security checkpoint to the farthest gate. A full-length Taxiway C, and ADG III dual taxilanes around the concourse.
- A reconfigured check-in lobby (passenger processor) that incorporates the terminal domes.
- New consolidated security screening centered between the check-in lobby and the concourse.
- A Federal Inspection Service (customs) accessible to all carriers.
- A new baggage claim area on the lower level.
- A two-level passenger drop-off and pick-up curb with departures on the upper level and arrivals on the lower level.
- A new parking garage and ground transportation center directly across from the terminal.
- Space on the landside to improve driver wayfinding and decision making in the terminal roadway system and airport access.
- Closing Terminal 2 and mothballing until a potential reuse of Terminal 2 is identified.

A detailed description of the Proposed Action, including connected actions, is provided in Chapter One, Section 1.5.

[20] Airplane Design Group: A grouping of aircraft related to aircraft wingspan or tail height (physical characteristics), whichever is most restrictive. See AC 150/5300-13B: Airport Design, page 1-13, Table 4-1 and Figure 4-7, Federal Aviation Administration, March 31, 2022.