

6.0 Recommended Master Plan Concept

6.1 Introduction

The evaluation and ranking of the various airport improvement alternatives is based on how well each alternative meets the specific criteria and project goals set by the TAC and PAC members and Aviation Department staff. The primary goals, as identified in this Master Plan, are to:

- Improve safety
- Enhance operational efficiency
- Right-size the development at DVT
- Meet current FAA airport design standards
- Accommodate forecast demand at a high level of service
- Balance the utilization of the airfield (north and south)
- Implement financially responsible development

6.2 Alternatives Evaluation

Each of the alternatives presented in Chapter 5, Airport Alternatives, were evaluated against the Master Plan goals presented in the previous section. This section summarizes the evaluation process for the airside improvements, support facilities, and on-airport land use. Proposed off-airport land use is discussed in Chapter 4, Off-Airport Land Use and Zoning. Each set of alternatives is compared to the overarching goals of the Master Plan. The evaluation also takes into account comments and feedback received from workshops with the TAC, PAC, general public, and Aviation Department staff.

6.2.1 Airside Alternatives

This section evaluates and ranks each of the airside alternatives depicted previously in Section 5.3. Each airfield alternative, with the exception of the No Build Alternative, builds upon Airfield Alternative 1, Taxiway Geometry Enhancements. The overall improvements in this alternative are needed to correct DVT's non-standard geometry and resolve the two Hot Spots discussed in Section 3.4.3.1. **Table 6-1** summarizes how each airfield alternative compares against the Master Plan Goals. If an alternative meets a goal, it is awarded "1", and if it does not meet a goal it is awarded "0". As shown in **Table 6-1** and further described below, Airfield Alternative 4 ranks highest among the airfield alternatives.

The base geometry improvements in Airfield Alternative 1 also improve airfield safety. The two existing Hot Spots are mitigated by the relocation of Taxiway B and the modified alignments of Taxiways B5/C5 and B9/C9. The non-standard geometry intersections are also improved as each alternative proposes to reduce the wide taxiway throats leading to/from the ramp and eliminate the complex intersections south of Runway 7R-25L.

Table 6-1: Airfield Alternatives Evaluation Matrix

Criteria	No Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Right-Sizes DVT	0	1	1	1	1	1
Meets Design Standards	0	1	1	1	1	1
Improves Safety	0	1	1	1	1	1
Enhances Operational Efficiency	0	0	1	1	1	1
Accommodates Forecast Demand	0	0	0	0	1	1
Balances the Airfield	0	0	0	0	1	1
Financially Responsible	1	1	1	1	1	0
Evaluation	0	4	5	5	7	6

Source: HNTB Analysis

Airfield Alternatives 2 through 5 further enhance safety at DVT by identifying a solution to relocating the runway holdbars south of Runway 7R-25L to their standard separation of 250 feet south of the runway's centerline. A full or partial-length Taxiway D, as proposed in Alternatives 2 and 3, respectively, and carried forward to Alternatives 4 and 5, provides a comprehensive solution for relocating the holdbars south of Runway 7R-25L to their standard location because a second parallel taxiway enables the segregation of aircraft allowing departing and arriving aircraft to operate on separate taxiways. Arriving aircraft could taxi directly onto Taxiway C without risk of a head-to-head conflict with an aircraft taxiing to departure and aircraft would no longer need to hold short of Taxiway C upon arrival to avoid other taxiing aircraft. This will reduce ATC's workload and improve pilot and controller situational awareness. Airfield Alternative 1 does not adequately address the impacts caused by the holdbar relocation, potentially causing a hazardous condition when they are relocated.

Airfield Alternatives 2 through 5 significantly enhance operational efficiency with the addition of Taxiway D. In addition to the safety benefits gained from enabling the relocation of holdbars as described above, dual parallel taxiways provide needed flexibility on the south side of the airfield where the majority of active tenants are located. Taxiways C and D can be operated to segregate arrivals and departures, or east and westbound traffic on different taxiways, which results in enhanced ATC management of the airfield. Each of the "build" airfield alternatives also propose to relocate the acute angle exit taxiways connecting Runway 7R-25L with Taxiway C to accommodate a larger percentage of the propeller-driven and jet fleet. The acute angle exit taxiways allow aircraft to exit the runway at a higher speed, which reduces runway occupancy time and ultimately increases airfield capacity. New acute angle exit taxiways connecting Runway 7L-25R with Taxiway B are also proposed in each of the "build" alternatives. These proposed acute angle taxiways are intended to accommodate approximately 100% of the propeller-driven fleet landing on the runway.

Airfield Alternatives 4 and 5 are the only alternatives that adequately accommodate forecast demand and balance the airfield by providing an extension of Runway 7L-25R. The extension of Runway 7L-25R to a length over 5,000 feet enables jet aircraft to use the north runway and provides an additional margin of safety

allowing 100% of the propeller-driven fleet to use the runway. Providing the ability to accommodate all propeller and most jet aircraft on either runway will allow operations on the airfield to be better balanced. Currently, the majority of operations utilize the south runway for takeoffs and landings because of its length. As discussed in Chapter 5, Airport Alternatives, the extension proposed in Airfield Alternative 5 requires the mitigation of several hills east of DVT in order to use the full length of pavement for departures to the east. The longer extension proposed in Airfield Alternative 5 is not currently considered financially viable due to the potential cost of mitigation at this time. It is recommended, however, to mitigate the hills east of DVT as the opportunities arise in order to provide additional safety to air navigation. Once the hills and their associated obstructions are removed, the displaced thresholds for both runways can also be reevaluated.

Airfield Alternative 4 – 800 Foot Extension of Runway 7L-25R scores highest against the evaluation criteria amongst the airfield alternatives and due to the reasons cited above was the Recommended Airfield Alternative brought forward in the Recommended Alternative. The longer runway extension proposed in Airfield Alternative 5 is not precluded by the selected alternative and could be a longer-term (post 2033) recommendation brought forward in the next update of the Master Plan.

6.2.2 Compass Calibration Pad

From the goals presented in Section 6.1, only three: *Meets Design Standards*, *Accommodates Forecast Demand* and *Implements Financially Responsible Development*, are applicable for evaluating the proposed compass calibration pad alternative locations described in Section 5.4.1. **Table 6-2** summarizes how each compass calibration pad alternative compares against the Master Plan Goals.

Table 6-2: Compass Calibration Pad Evaluation Matrix

Criteria	No Build	Alt 1	Alt 2	Alt 3
Right-Sizes DVT		<i>Not applicable</i>		
Meets Design Standards	0	1*	1	1
Improves Safety		<i>Not applicable</i>		
Enhances Operational Efficiency		<i>Not applicable</i>		
Accommodates Forecast Demand	0	1	1	1
Balances the Airfield		<i>Not applicable</i>		
Financially Responsible	1	1	0	0
Evaluation	1	3	2	2

Source: HNTB Analysis

Note: *Meets general design standards but may not fully meet the magnetic interference requirements presented in AC 150/5300-13A and as a result may be inoperable during periods where the run-up area is occupied due to magnetic interference.

Compass Calibration Pad Alternative 1 proposed on the northwest run-up apron, best matches the evaluation criteria, meeting design standards for a compass calibration pad and utilizing existing pavement, which reduces the need for extensive pavement construction on the airfield. This makes Alternative 1 much

more financially responsible. While all three options meet general design standards, it should be noted that Alternative 1 may not fully meet the magnetic interference requirements presented in AC 150/5300-13A and as a result may be inoperable during periods where the run-up area is occupied due to magnetic interference. It was determined that the cost considerations outweighed the potential short-term periods of inoperability and Compass Calibration Pad Alternative 1 was recommended to be brought forward in the Recommended Alternative.

6.2.3 IFR Hold Bays

With the selection of Airfield Alternative 4 as the recommended airfield development alternative, the need for separate IFR hold bays is eliminated because of the sequencing benefits provided by proposed full-length parallel Taxiway D. It is not uncommon for IFR aircraft to be given a departure time 10 to 30 minutes after taxiing out from the ramp and today these aircraft sometimes block Taxiway C when waiting for their call for release. Both IFR hold bay alternatives identified a location that requires extensive travel time to reach one or both ends of the runway, which can impact an IFR aircraft's slotted departure time. However, new parallel Taxiway D, as proposed in the recommended airfield alternative, will allow aircraft to bypass each other, meeting the dynamic needs of ATC and allowing these IFR aircraft to hold close to the end of the runway while waiting for ATC clearance. In addition, aircraft leaving the FBOs on the south side of the airfield generally hold on the FBO's ramp until called for IFR release. As a result no IFR hold bay was recommended to be carried forward in the Recommended Alternative.

6.2.4 Public Safety Building

The development of Taxiway D in the selected Airfield Alternative 4 – 800 Foot Extension of Runway 7L-25R impacts the existing Police Air Support Unit apron and hangars. The facility is also old and in disrepair. As a result when Taxiway D is constructed a relocation of the facility will be required. **Table 6-3** summarizes how each public safety building alternative (alternatives described in Section 5.4.3) compares against the Master Plan Goals.

Table 6-3: Public Safety Building Evaluation Matrix

Criteria	No Build	Alt 1	Alt 2	Alt 3
Right-Sizes DVT	<i>Not applicable</i>			
Meets Design Standards	0	1	1	1
Improves Safety	0	1	1	1
Enhances Operational Efficiency	0	1	1	1
Accommodates Forecast Demand	0	1	1	1
Balances the Airfield	<i>Not applicable</i>			
Financially Responsible	1	0	0	0
Evaluation	1	4	4	4

Source: HNTB Analysis

Each alternative was located on the south side of DVT to keep the existing helicopter response times to the Downtown Phoenix area and to avoid conflict with the airspace that would be caused by crossing the runways to respond to the south (the most common response direction) if the facility was located on the north. All alternatives scored the same against the Master Plan Goals, shown in **Table 6-3**, and were also evaluated to determine any impacts to the existing drainage retention basin or future revenue generating development and proximity to the fence line along Deer Valley Road which will facilitate faster landside fire and emergency response.

Public Safety Building Alternative 1 is located along the fence line on the south side of the airfield; however, its location interferes with the long planned corporate aviation development in the southeast corner of airport property which would impact revenue generating development. Public Safety Building Alternative 2 is also located along the fence line on the south side of the airfield and does not impact the future corporate aviation area. It does displace one existing shade hangar building, one t-hangar building, and 18 aircraft tie-down parking positions. Public Safety Building Alternative 3 is not located along the fence line, but is located on the south side of the airfield. Being located further away from the fence line provides the Police Air Support Unit with unimpeded access to the runways; however, it increases the response time for landside fire response. The combined facility would also have some impact to the future corporate aviation area which would impact revenue generating development. Based on the evaluation criteria and feedback from stakeholders, Public Safety Building Alternative 2 was selected as the preferred location and carried forward in the Recommended Alternative (shown on **Figure 6-2**).

6.3 On-Airport Land Use

Each of the three on-airport land use alternatives (described in Section 5.5) preserve the Corporate Aviation area in the southeast corner of airport property but vary in the location of general aviation facilities and the location and accommodation of flight schools, aviation support uses and aviation business park areas. The overall evaluation of the three on-airport land use plans is provided in the matrix on **Table 6-4**. The biggest differentiators in the evaluation was the limited ability of Alternative 2 to balance the airfield as flight schools remained on the south side and the limited revenue potential gained from Alternative 3 which did not maintain the DVT 2012 Market Study recommendation for an aviation business park. In addition, Alternative 1 did not provide dedicated space for the aviation support facilities (e.g. paint shop, avionics) that users have requested.

Table 6-4: On-Airport Land Use Evaluation Matrix

Criteria	Alt 1	Alt 2	Alt 3
Right-Sizes DVT	1	1	1
Meets Design Standards	1	1	1
Improves Safety	1	1	1
Enhances Operational Efficiency	1	1	1
Accommodates Forecast Demand	1	1	1
Balances the Airfield	1	0	1
Financially Responsible	1	1	0
Evaluation	7	6	6

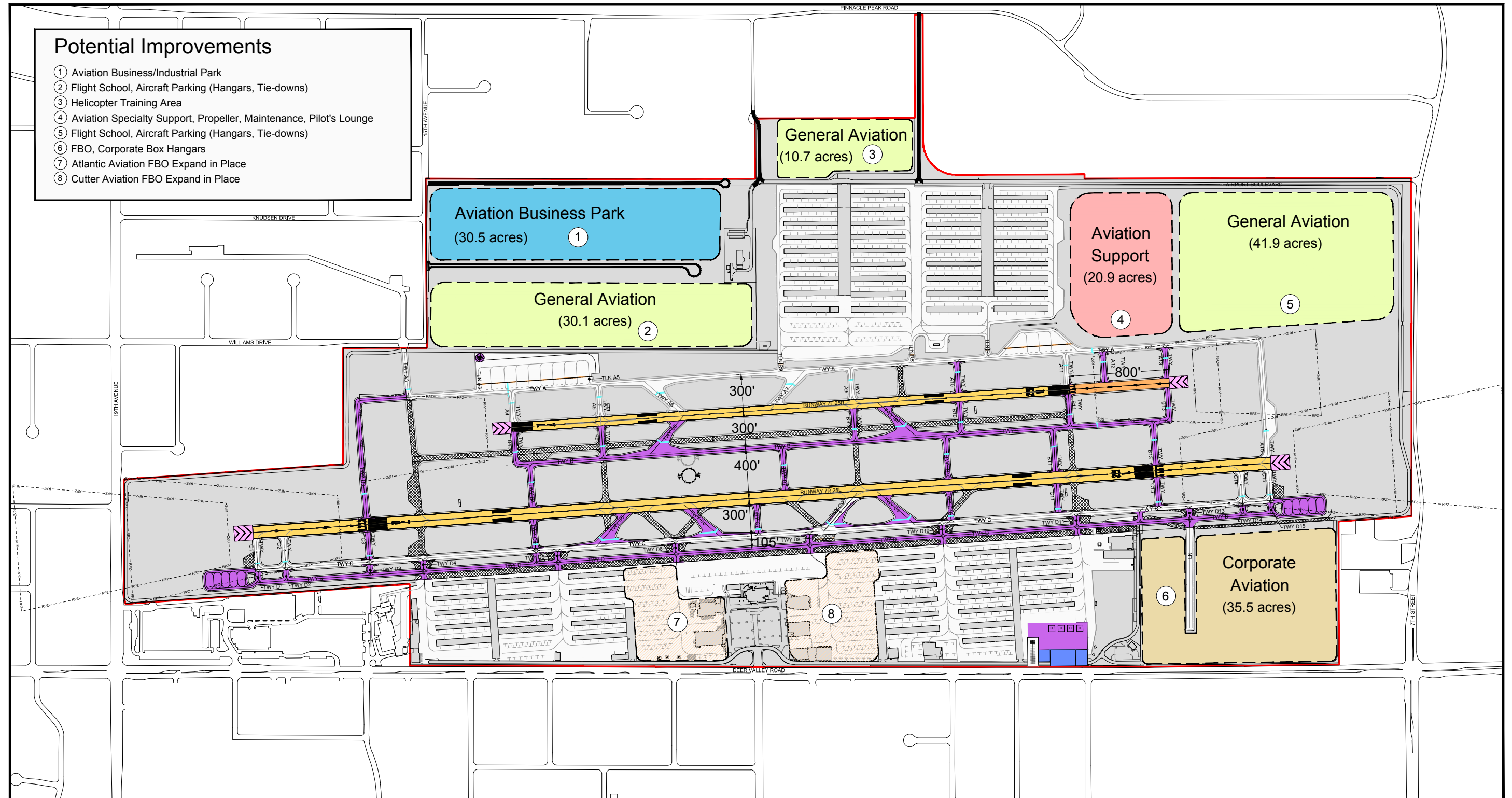
Source: HNTB Analysis

As the alternatives were presented to Aviation Department Staff and the TAC and PAC members, many of the stakeholders recommended a refined land use alternative, combining elements from each of the three land use alternatives. There was a desire to maintain an area for multiple- or single-use revenue generating development, designated as the aviation business park, for a third-party developer that might have synergies with the north air park. It was also recommended that a helicopter training area be provided in the parcel north of the north t-hangars and that an area for aviation support and the eventual relocation of the flight schools also be provided. The refined land use alternative was unanimously selected as the recommended on-airport land use plan presented in **Figure 6-1**. The recommended on-airport land use plan does not indicate immediate development or relocation of facilities but designates the areas where facilities would be developed as the need arises.

The plan recommends maintaining the 35.5 acre corporate aviation area in the southeastern quadrant of DVT. This site has been graded and some infrastructure has already been constructed, including a taxilane, roadway, and some utility tie-ins. The recommended on-airport land use plan splits general aviation development and aviation support facilities on the northeast corner of the airfield. The aviation support areas (20.9 acres) would provide space for development of aviation specialty support businesses, propeller shop, maintenance hangar, paint shop, and a small pilot's lounge. The east general aviation area (41.9 acres) includes areas for flight schools (new or relocated from the south side), t-hangars, and aircraft tie-down parking positions.

Another general aviation area (10.7 acres) is preserved north of the north side t-hangars. On an interim basis this area is intended to serve as a training area for locally-based and transient helicopters to perform touch and go operations. The area has a clear line of sight to the ATCT, is within the normal fixed wing traffic pattern, and is unlikely to have adverse noise impacts. The northwest corner is split between general aviation uses on the south portion directly adjacent to the airfield and aviation business park uses on the north portion. The general aviation area (30.1 acres) would reserve space for a flight school (new or relocated from the south side), t-hangars, and aircraft tie-down parking positions.

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- Potential Improvements**
- ① Aviation Business/Industrial Park
 - ② Flight School, Aircraft Parking (Hangars, Tie-downs)
 - ③ Helicopter Training Area
 - ④ Aviation Specialty Support, Propeller, Maintenance, Pilot's Lounge
 - ⑤ Flight School, Aircraft Parking (Hangars, Tie-downs)
 - ⑥ FBO, Corporate Box Hangars
 - ⑦ Atlantic Aviation FBO Expand in Place
 - ⑧ Cutter Aviation FBO Expand in Place

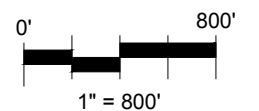
Recommended On-Airport Land Use Plan

Figure 6-1



LEGEND

- Airport Property Boundary
- Airfield Ramp, Taxiway & shoulders
- Existing Runway Pavement
- Existing on-Airport Building
- Holding Position
- RPZ Runway Protection Zone
- Proposed Removal
- Proposed Airfield Enhancement
- Proposed Runway Pavement



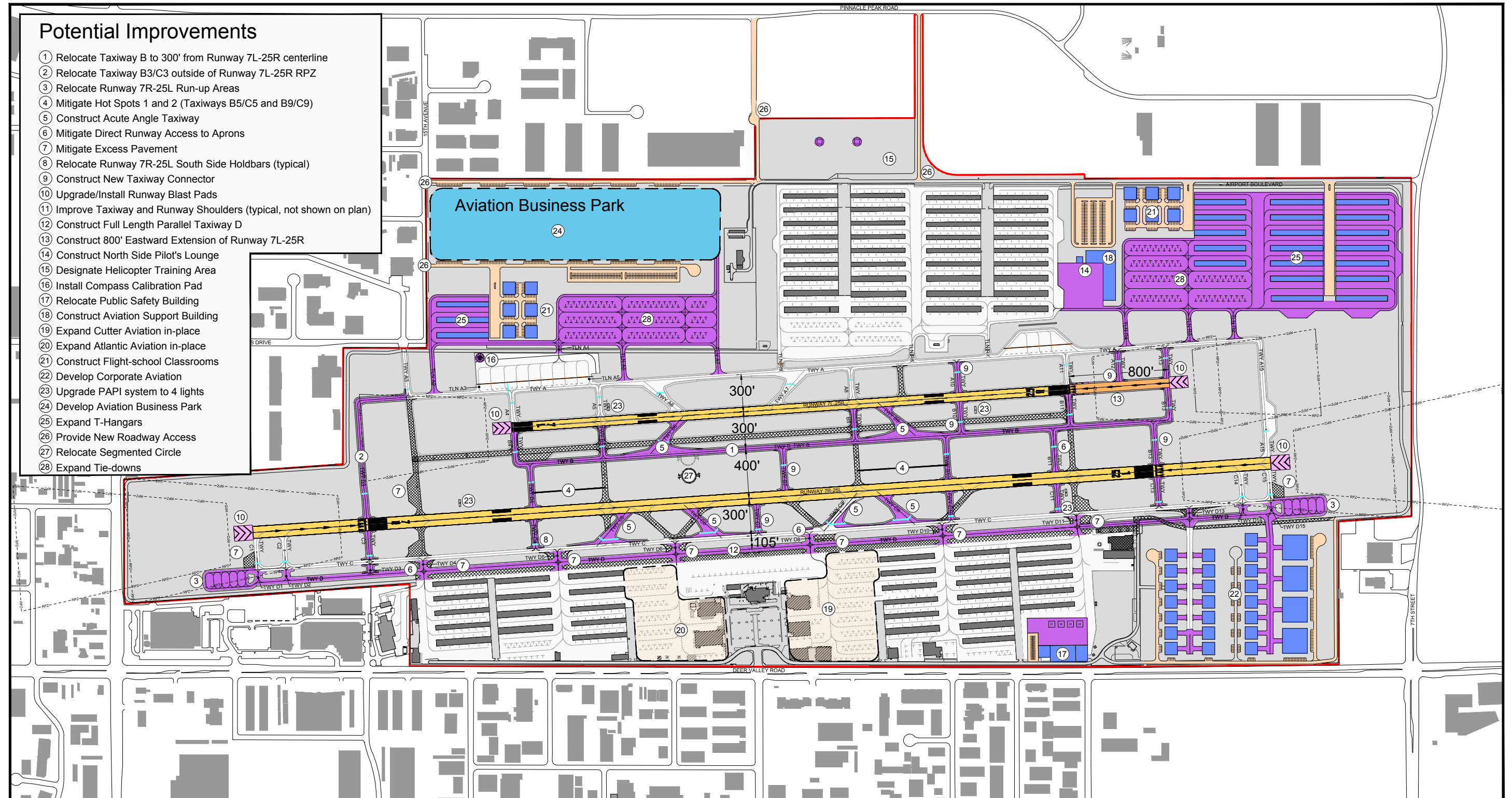
The aviation business park (30.5 acres) includes the development of aviation related business facilities and business or industrial airpark. Facilities may include aircraft hangar and ramp space with direct taxiway access. Development may be undertaken by a large single-purpose user or a third-party developer accommodating multiple smaller scale businesses. If in the future the aviation business park needs to expand the small north general aviation area currently recommended as a helicopter training area for helicopters could be re-purposed.

The recommended on-airport land use plan also includes areas for expansions of the two existing FBOs on the south side of DVT property once one or both of the flight schools, which sublease their facilities from the FBOs, relocate to the north side of DVT. North side non-secure access would be provided to the aviation business park development from Pinnacle Peak Road and 15th Avenue. This new access roadway would end past the development parcel and would not connect to airside facilities. Additional north side roadway access to the north hangars would be provided by developing the 3rd Avenue right-of-way from Pinnacle Peak Road. In addition, 7th Avenue would be extended to Airport Boulevard providing access to the ATCT and north hangar facilities. Airside gates would be maintained at the ATCT and north hangar entrances. The 150-foot wide easement along 7th Avenue which was previously provided for future through-the-fence access is not recommended to be maintained under current FAA guidelines which discourage through-the-fence agreements. However, the no development is currently identified along this easement in the recommended on-airport land use plan.

6.4 Master Plan Recommended Alternative

DVT's Master Plan Recommended Alternative, presented in **Figure 6-2**, meets DVT's facility needs through 2033. The major development project within this Master Plan's horizon is the implementation of the airfield geometry improvements, addition of a second parallel Taxiway D south of Runway 7R-25L, relocation and reconstruction of Taxiway B, and 800 foot extension of Runway 7L-25R. The land-use development recommended in this plan also meets the 2033 facility requirements. It is important to note that the layout of proposed land-use facilities (e.g. general aviation or corporate hangars, tie-downs, buildings, ramp taxilanes) is shown as one potential configuration. However, the actual configuration of such facilities will likely be different, depending heavily on market conditions and how tenants develop individual parcels.

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Potential Improvements

- ① Relocate Taxiway B to 300' from Runway 7L-25R centerline
- ② Relocate Taxiway B3/C3 outside of Runway 7L-25R RPZ
- ③ Relocate Runway 7R-25L Run-up Areas
- ④ Mitigate Hot Spots 1 and 2 (Taxiways B5/C5 and B9/C9)
- ⑤ Construct Acute Angle Taxiway
- ⑥ Mitigate Direct Runway Access to Aprons
- ⑦ Mitigate Excess Pavement
- ⑧ Relocate Runway 7R-25L South Side Holdbars (typical)
- ⑨ Construct New Taxiway Connector
- ⑩ Upgrade/Install Runway Blast Pads
- ⑪ Improve Taxiway and Runway Shoulders (typical, not shown on plan)
- ⑫ Construct Full Length Parallel Taxiway D
- ⑬ Construct 800' Eastward Extension of Runway 7L-25R
- ⑭ Construct North Side Pilot's Lounge
- ⑮ Designate Helicopter Training Area
- ⑯ Install Compass Calibration Pad
- ⑰ Relocate Public Safety Building
- ⑱ Construct Aviation Support Building
- ⑲ Expand Cutter Aviation in-place
- ⑳ Expand Atlantic Aviation in-place
- ㉑ Construct Flight-school Classrooms
- ㉒ Develop Corporate Aviation
- ㉓ Upgrade PAPI system to 4 lights
- ㉔ Develop Aviation Business Park
- ㉕ Expand T-Hangars
- ㉖ Provide New Roadway Access
- ㉗ Relocate Segmented Circle
- ㉘ Expand Tie-downs

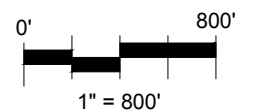
Master Plan Recommended Alternative

Figure 6-2



LEGEND

- Airport Property Boundary
- Airfield Ramp, Taxiway & Shoulder
- Existing Runway Pavement
- Existing on-Airport Building
- Holding Position
- Runway Protection Zone
- Proposed Expansion In-place
- Proposed Removal
- Proposed Airfield Pavement
- Proposed Runway Pavement
- Proposed Building
- Proposed Roadway/Parking



6.4.1 Description of Projects

Each of the projects included in the Master Plan Recommended Alternative are identified with a numbered tag. The description along with the purpose and function of each project are explained below:

- 1. Relocate Taxiway B to 300 feet from Runway 7L-25R Centerline:** Similar to the Taxiway A relocation program, which moved and reconstructed Taxiway A from 200 feet to 300 feet north of Runway 7L-25R's centerline, the relocation and reconstruction of Taxiway B is needed for Runway 7L-25R to meet ARC B-II design standards. While the future RDC for Runway 7L-25R is B-II, and the required runway to taxiway design standard separation is a minimum of 240 feet, relocating Taxiway B to the RDC D-II standard of 300 feet from the runway centerline allows full redundancy in case of an incident on Runway 7R-25L.
- 2. Relocate Taxiway B3/C3 Outside of the Runway 7L-25R RPZ:** Existing Taxiway B3 serves as a north-south taxi route connecting the Northwest Industrial Airpark with Runway 7R-25L. Taxiway B3, while not officially recognized as an FAA hot spot, has geometry similar to Taxiways B5 and B9 such that aircraft have the potential to miss runway holdbars due to an extended straight through taxi route. The Recommended Alternative relocates Taxiway B3 to the west outside of the Runway 7L arrival RPZ. When Taxiway B3 is shifted further to the west, it will be located outside and underneath all critical safety surfaces including the Runway 25R TERPS Departure Surface, Runway 7L Threshold Siting Surface, Runway 7L Part 77 Approach Surface, RSA, ROFA, and RPZ. The relocation improves pilot situational awareness as aircraft originating from the Northwest Industrial Airpark would have to make a turn onto Taxiway A, prior to turning south on the relocated Taxiway B3.
- 3. Relocate Runway 7R-25L Run-up Areas:** The existing run-up areas for Runway 7R-25L are located inside of the RSA and conflict with future plans to relocate the runway holdbars south of Runway 7R-25L to their design-standard separation. Additionally, the existing run-up areas do not accommodate existing demand due to their limited size as the two flight schools often depart multiple aircraft from their ramps resulting in departure queues of up to 15 aircraft at the end of the runway. The proposed run-up areas located at each end of Runway 7R-25L accommodate 6 ADG-I aircraft positions each, and provide enhanced sequencing ability by having a dedicated entrance and exit taxiway while also allowing aircraft to bypass other aircraft without conflict. The relocated run-up areas are located beyond the ends of the runway and allow aircraft that are ready to depart the ability to bypass the aircraft in the run-up area without having to take an intersection departure.

The two proposed run-up areas were also reviewed to assess their impact on existing airspace procedures. Since DVT, similar to most airports, lands and

departs aircraft in the same direction as the prevailing wind, there isn't a need to assess the impacts of the TERPS Departure Surface on the two run-up areas. Aircraft that are performing their run-up will be on the approach end of the runway, and the TERPS Departure Surface is effective for the departure end of the runway. Due to the displaced arrivals thresholds on each end of the runway, the threshold siting surfaces are clear of the maximum expected tail height at each run-up position. The Part 77 approach and transitional surfaces were also analyzed to determine if there were any penetrations. The Part 77 approach surface on both ends of Runway 7R-25L is clear of penetrations. The Part 77 transitional surface is penetrated by 1 foot on the Runway 7R end under the assumption that the run-up area is at the same elevation as the Runway 7R end and that the tail height of an aircraft in the first run-up position is 20 feet (the maximum ADG-I tail height). The Part 77 transitional surface is also penetrated by 2.5 feet on the Runway 25L end under the assumption that the run-up area is at the same elevation as the Runway 25L end and that the tail height of an aircraft in the first run-up position is 20 feet (the maximum ADG-I tail height). In reality, the majority of ADG-I aircraft have tail heights below 20 feet. Additionally, it is likely that designed grades could be adjusted such that the run-up aprons are lower than the runway ends.

- 4. Mitigate Hot Spots 1 and 2 (Taxiways B5/C5 and B9/C9):** To address the FAA-identified hot spots, the Master Plan Recommended Alternative proposes to eliminate the straight through taxi paths that currently exist on Taxiways B5 and B9 and require aircraft to make a turn onto Taxiway B in order to cross to the north or south. Requiring an aircraft to make a turn onto Taxiway B enhances pilot and controller situational awareness as it provides more visual cues for pilots to understand their location on the airfield. This reduces the risk of a pilot missing runway holdbars and causing an incursion in these two locations. Additionally, existing Taxiway B9 is proposed to be relocated so that it will no longer be a crossing point located in the "high-energy" middle third of the runway.
- 5. Construct Acute Angle Taxiways:** There are five new / relocated and one enhanced existing acute angle taxiway connectors proposed under the Master Plan Recommended Alternative. Acute angle taxiways are needed in order to minimize runway occupancy time so that minimum in-trail arrival separations can be maintained which optimizes the capacity of the airfield. Existing acute angle taxiway connectors C6 and C7 meet in a closed "V" intersection and also both directly feed into the ramp entrance. In order to remedy these non-standard geometries, the Recommended Alternative proposes to relocate both acute angle taxiway connectors to the east and west. The Recommended Alternative also proposes to reconfigure acute angle taxiway connectors C8 and C9 to better accommodate a larger share of the fleet mix. Westbound acute angle Taxiway C9 would remain in its current location, however, its fillet would be widened to meet current design standards. Taxiway C9 will continue to accommodate the majority of the propeller-driven fleet. The eastbound acute angle Taxiway C8 would be relocated

approximately 800 feet east of its existing location. Two new acute angle taxiway connectors are proposed connecting Runway 7L-25R with Taxiway B. These two taxiways will be able to accommodate the majority of the propeller driven fleet.

- 6. Mitigate Direct Runway Access to Aprons:** There are three existing taxiways that lead directly from the ramp to a runway. In order to prevent loss of pilot situational awareness, ramp entrances that previously led directly to a runway will now require the pilot to make a conscious turn onto a taxiway prior to encountering a runway. The relocation of Taxiway B3/C3 moves the intersection with Taxiway C west of Taxilane R1. Ramp entrance Taxilane R4 is proposed to be relocated to the west to avoid direct ramp entrances from aircraft coming off of an acute angle taxiway. Taxiway B11/C11 is also realigned to the west to avoid a double runway crossing leading from the northeast run-up area across both runways and into Taxilane R6.
- 7. Mitigate Excess Pavement:** Excess pavement will be removed, or marked unusable, to the extent practicable once other geometry improvements are completed. The six taxiway entrances to/from the southside aprons all have taxiway widths that exceed FAA design standards and can cause signs to be located outside of a pilot's peripheral vision resulting in a loss of pilot situational awareness. Instead of demolishing the extra pavement width and its associated fillets, the extra pavement could be painted to identify it as shoulder pavement, while still being able to accommodate the occasional ADG-III aircraft which requires wider pavement. The exiting run-up aprons should be demolished to avoid having extra pavement inside of the RSA.
- 8. Relocate Runway 7R-25L South Side Holdbars:** The existing holdbars south of Runway 7R-25L do not meet current FAA separation standards. The holdbars are located 150 feet south of the Runway 7R-25L centerline, but the required separation is 250 feet south of runway centerline. In addition to surface painted markings, it is recommended that each taxiway connecting to Runway 7R-25L include in-pavement and elevated runway guard lights to further enhance situational awareness and warn pilots that they are approaching a runway. This project requires the implementation of Taxiway D as an enabling project.
- 9. Construct New Taxiway Connectors:** Several new taxiway connectors are needed to provide efficient airfield access. New taxiway connectors are proposed to provide a new runway crossing opportunity near the east end of Taxiway B. A Runway 25R entrance taxiway is proposed to serve the future extension of Runway 7L-25R by providing an opportunity for intersection departures or to facilitate the rapid exit of an aircraft that aborts its departure. Additional Runways 7L-25R and 7R-25L 90 degree taxiway exits are included to reduce runway occupancy time.

- 10. Upgrade/Install Runway Blast Pads:** The existing runway blast pads for Runway 7R-25L do not meet existing design standards. The Master Plan Recommended Alternative proposes to widen the Runway 7R-25L blast pads by 20 feet to 120 feet and add 95 feet wide by 150 feet long blast pads to Runway 7L-25R, which currently does not have them, in order to meet B-II design standards.
- 11. Improve Taxiway and Runway Shoulders:** Runway 7R-25L, as well as many of the taxiways on the south side of the airfield, does not have shoulders. To meet standards, it is proposed that 10 foot shoulders be added to Runway 7R-25L during its next major rehabilitation and 15 foot shoulders be incorporated into the design of all new taxiways on the south side of the airfield.
- 12. Construct Full Length Parallel Taxiway D:** A new full length parallel taxiway, denoted as Taxiway D, south of existing Taxiway C is included in the Master Plan Recommended Alternative. Taxiway D's centerline would be located 105 feet south of Taxiway C's centerline and meet the ADG-II design standards. Taxiway D provides a comprehensive solution for relocating the holdbars south of Runway 7R-25L to their standard location because a second parallel taxiway enables the segregation of aircraft allowing departing and arriving aircraft to operate on separate taxiways. The segregation of aircraft between taxiways would reduce ATC's workload and improve pilot and controller situational awareness, by allowing arriving aircraft to taxi directly onto Taxiway C without risk of a head-to-head conflict with an aircraft taxiing to departure and aircraft would no longer need to hold short of Taxiway C upon arrival to avoid other taxiing aircraft. Taxiway D impacts the first row of north facing t-hangar and shade hangar buildings west of the Terminal and south of Taxiway D as well as the Police Air Support Unit facility and some transient parking positions north of the Terminal.
- 13. Construct 800 Foot Eastward Extension of Runway 7L-25R:** The Master Plan Recommended Alternative includes an extension of Runway 7L-25R 800 feet to the east for a total length of 5,300 feet. Chapter 3, Facility Requirements, reviewed DVT's runway length requirements for the next 20 years based on the projected fleet mix and concluded that airport operations would benefit from extending Runway 7L-25R to over 5,000 feet. Exceeding 5,000 feet will allow corporate aircraft to use the runway and provides the capability to better balance the utilization between two runways. An 800 foot extension of Runway 7L-25R maximizes the ability to use the additional runway length bi-directionally. The additional runway length would be used for departures and arrivals in east flow and departures in west flow. In discussions with DVT's tenants and users it was stated that due to the high number of student pilots making converging approaches it was preferred not to move the Runway 25R arrival threshold closer to the Runway 25L arrival threshold as a result of the proposed displaced threshold arrivals in west flow would not benefit from the added runway length. By not aligning the arrival thresholds, aircraft entering the pattern for Runway 25R will be at a higher

altitude than the aircraft entering the Runway 25L pattern, reducing the risk of inflight incident should one or both aircraft overshoot their final approach course. For departures to the east, the 800 foot extension is the maximum distance that does not cause the departure climb to exceed a 500 foot per nautical mile climb gradient over obstacles to the east of the runway.

- 14. Construct North Side Pilot's Lounge:** Tenant and user surveys indicated a need for a small-scale pilot's lounge on the north side of the airfield. Currently, the only pilot's lounge available to the public is inside the Terminal on the south side. The new north side lounge would provide a small area for route planning as well as restrooms.
- 15. Designate Helicopter Training Area:** Helicopter training is prevalent at DVT; however, ATC has had challenges managing helicopter training touch and go operations on the south side of the airfield given all of the activity located there. The DVT ATCT recommended that a helicopter training area be sited north of the north t-hangars so that helicopters could perform touch and go operations under direct line-of-sight from the ATCT while not disrupting other airfield operations.
- 16. Install Compass Calibration Pad:** Prior to its reconstruction, DVT maintained a compass calibration pad located on the northwest run-up apron. A compass calibration pad enables pilots to calibrate their on-board magnetic compass by aligning their aircraft on known magnetic headings and making adjustments to the compass and/or placard markings to indicate the required corrections. Since the decommissioning of the former compass calibration pad, users have requested that this important air navigation function be restored at DVT and it was the most requested facility in the survey of DVT based pilots. The Master Plan Recommended Alternative proposes to locate the compass calibration pad on the northwest run-up apron. It is possible that this area may not fully meet the magnetic interference requirements presented in AC 150/5300-13A, but this location provides the most cost-effective and accessible solution of the alternatives that were reviewed.
- 17. Relocate Public Safety Building:** The majority of the existing Police Air Support Unit apron falls within proposed Taxiway D's OFA and construction of the taxiway adjacent to the Runway 25L end will require the relocation of the Police Air Support Unit facility. In addition, the facility has exceeded its useful service life and will require reconstruction or significant rehabilitation in the future. The relocated Police Air Support Unit will also include space for a landside fire station at such time that City of Phoenix Fire Station 36, which has also exceeded its useful service life, is replaced. The fire station would be configured to provide direct airside and landside services to DVT and the community at large. A new traffic signal may be required along Deer Valley Road to serve the fire station.

- 18. Construct Aviation Support Building:** Aviation support services were also frequently requested in the survey of DVT based pilots. Aviation support services include facilities that would support general aviation pilots at DVT such as propeller or paint shops and avionics repair. An area has been reserved adjacent to the north side pilot's lounge for a third party developer/tenant to construct such facilities. A large parking lot would also be included with the aviation support building to provide employee and customer parking for those and other adjacent north side facilities.
- 19. Expand Cutter Aviation In-Place:** As aviation demand continues to grow, it is likely that the FBOs will expand to capitalize on the market. This specific expansion assumes that Cutter Aviation will expand their services to areas currently sub-leased to TransPac should TransPac relocate to the north side.
- 20. Expand Atlantic Aviation In-Place:** As aviation demand continues to grow, it is likely that the FBOs will expand to capitalize on the market. This specific expansion assumes that Atlantic Aviation will expand their services to areas currently sub-leased to Westwind should Westwind relocate to the north side.
- 21. Construct Flight School Classrooms:** As activity grows on the south side of the airfield and the FBOs expand business, it is assumed that the flight schools would eventually relocate to new facilities on the north side. This development may be through the existing FBOs or a new tenant on the north. Flight school classrooms are proposed to support the eventual relocation of both flight schools to the north side. The actual design and layout of the flight schools will be determined by the developer/tenant.
- 22. Develop Corporate Aviation:** A corporate aviation development has been long planned for the southeastern corner of the airfield. DVT has already graded the site, provided utility stub-outs and constructed a taxiway and roadway to foster future development. The Master Plan Recommended Alternative includes a second taxiway connecting to Taxiway D and additional roadways with parking to serve the corporate hangars. The actual configuration of the corporate aviation facilities will be determined by the developer/tenant.
- 23. Upgrade PAPI System to 4 Lights:** Each of DVT's four existing PAPI visual slope indicators are two light systems. Two light systems indicate whether a pilot is above or below the runway's glide path angle. A four light system conveys to pilots additional relative information about the glide path including whether the pilot is marginally above/below the glide path angle or substantially above/below the glide path angle. Four-light PAPIs enhance pilot situational awareness on an approach and increase overall safety. The Master Plan Recommended Alternative includes the replacement of DVT's two light PAPIs with four light PAPIs.

- 24. Develop Aviation Business Park:** As discussed in Section 6.3, On-Airport Land use, the Master Plan Recommended Alternative includes an aviation business park which encompasses aviation related business facilities and business or industrial airpark. Facilities may include aircraft hangar and ramp space with direct taxiway access. Development may be undertaken by a large single-purpose user or a third-party developer accommodating multiple smaller scale businesses. The actual configuration of the aviation business park facilities will be determined by the developer/tenant.
- 25. Expand T-Hangars:** The expansion of t-hangars is needed to meet DVT's forecast growth and to replace impacted t-hangars from the development of Taxiway D. All of the t-hangar growth is included on the north side of the airfield, largely in the northeast corner. The over 400,000 square feet of t-hangars added in the Master Plan Recommended Alternative meets the 2028 facility requirements. The configuration of the hangars will be determined as the sites are developed.
- 26. Provide New Roadway Access:** North side non-secure access would be provided to the aviation business park development from Pinnacle Peak Road and 15th Avenue. This new access roadway would end past the development parcel and would not connect to airside facilities. Additional roadway access to the north hangars would be provided by developing 3rd Avenue from Pinnacle Peak Road. In addition, 7th Avenue would be extended to Airport Boulevard providing access to the ATCT and north hangar facilities. Airside gates would be maintained at the ATCT and north hangar entrances. Two additional entrances to the aviation business park and flight school are proposed to connect to 15th Avenue.
- 27. Relocate Segmented Circle:** As a result of the proposed relocation and reconstruction of Taxiway B, the existing segmented circle will require relocation. The Recommended Alternative proposes a location approximately 100 feet south of its existing location.
- 28. Expand Tie-Downs:** Aircraft tie-down parking positions are needed to support the flight schools' operations as the vast majority of their aircraft are kept outside. The total expansion of tie-down area shown exceeds the 2033 Facility Requirement by 200,000 square feet.