

## **CHAPTER 7**

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### Airport Layout Plan Drawings

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### 7.1 General

This chapter describes the Airport Layout Plan (ALP) drawing set developed as part of the master plan. These plans identify areas of the Naples Airport (APF) needed for aviation related development during the 20-year planning horizon, as well as some land available for potential non-aeronautical use. The plans also serve as a reference for the Naples Airport Authority (NAA) and airport management to evaluate existing and/or future obstruction disposition in conjunction with the Federal Aviation Administration (FAA) criteria. The ALP drawing set presented may be amended over time to reflect changes to the airport environment, demand affecting future facilities, or data related to the airfield surfaces.

### 7.2 Drawing Set

The ALP drawing set consists of 21 drawing sheets, which have been prepared using AutoCAD software to graphically depict the recommended airfield improvements, imaginary safety surfaces, and layout of future facilities. The sheets of the ALP drawing set meet the criteria established in FAA Advisory Circular (AC) 150/5070-6B, Change 2, *Airport Master Plans*; FAA Office of the Associate Administrator for Airports (ARP) Standard Operating Procedure (SOP) 2.0, *Standard Procedure for FAA Review and Approval of Airport Layout Plans (ALPs)*, the Florida Department of Transportation (FDOT) *2019 Guidebook for Airport Master Planning*, and FAA AC 150/5300-13A, Change 1, *Airport Design*.

The ALP drawing set has been prepared using the airport survey, mapping, and imagery collected at the beginning of the master plan study as part of the FAA Airports Geographic Information System (AGIS) requirements. This data was primarily collected in April 2018 and the digital files were conditioned for compliance with the FAA AGIS program standards, then submitted, reviewed, and accepted by both the National Geodetic Survey (NGS) and FAA. The ALP drawing set includes:

- Cover Sheet
- Data Sheet
- Existing Facilities
- Airport Layout Plan
- Terminal Area Plans (4 sheets)
- Runway Gradient Analyses (3 sheets)
- Airport Airspace (2 sheets)
- Inner Approach Plans and Profiles (4 sheets)
- Runway Departure Surfaces (2 sheets)
- Land Use Plan
- Exhibit “A” Airport Property Inventory Map

The recommended development addresses the needs identified in the assessment of facility requirements, which were then evaluated to determine the best alternatives to create a flexible plan meeting NAA's goals. The ALP drawing set is available digitally and a full size version is on file at the airport management office as well as with both FAA and FDOT.

## 7.2.1 Existing Facilities

The Existing Facilities drawing documents the current airfield layout and structures on the airport. Also shown are the key design standards, critical surfaces, as well as roads and buildings in the immediate vicinity of the airport. While this is not a required drawing for an ALP drawing set, the separation of existing and future features simplifies the information provided on the ALP.

## 7.2.2 Airport Layout Plan

The ALP presents the proposed improvements for the airfield along with future design standards, critical surfaces, buildings, roads, and other features of the airport. The ALP drawing also reflects any changes necessary to meet the current FAA design standards. Due to the various airfield facilities, a separate Data Sheet was developed which precedes the Existing Facilities and ALP sheets. Once approved by the FAA and FDOT, the ALP becomes the official guidance for pursuing funding for airport improvements since at a minimum projects must be included on the ALP to be eligible for federal and state grants. As such, the drawing should be updated as necessary to reflect the changes to the airfield conditions or future needs. Regardless, before construction, each project will require approval from NAA and be subject to an airspace analysis by the FAA.

Most of the information presented on the ALP has been analyzed in preceding chapters, justifying the need for the improvements shown. However, the ALP and other sheets of the set also include some revisions from the recommended airport development plan presented in the alternatives chapter. These are primarily the result of the ALP drawing set review process with both FAA and FDOT. The most significant being the removal of Runway SW-NE. Based on changes in the July 2020 draft of FAA AC 5300-13B, *Airport Design*, the existing turf runway (published at 1,850 feet long and 100 wide) is currently being reviewed by the FAA with respect to the future designation in order for this area to continue to accommodate aircraft operations.

There were also modifications to the proposed expansions of the aircraft parking apron areas in both the South and East Quads with respect to how they tie into adjacent taxiways. This included relocating the portion of Taxiway A3 between Runway 5-23 and Taxiway A instead of the portion between Taxiway A and the Commercial Airline Terminal apron. In addition to eliminating the direct access between the runway and apron, this change will enable the airport to eliminate the existing modification of standard for the Runway 5-23 distance remaining signs. Other changes were based on improvements made to the airport since the master plan initiated, such as the new Aircraft Rescue and Fire Fighting (ARFF) facility, removal of the old ARFF facility, new hangars, and expansion of the fuel farm.

## 7.2.3 Terminal Area Plans

The Terminal Area Plans depict the same development configuration shown on the ALP at a larger scale so that additional features and greater detail of the proposed facilities can be discerned. There are four of these drawings; one for each quadrant of the airport.

### North Quad

Future development in the North Quad mostly includes a number of clearspan hangars to support the based aircraft demand and existing tenant activity. It is anticipated that all of the proposed hangars shown will be constructed by private developers leasing land from NAA. For the clearspan hangars in the northwest corner, the airport will develop the airside access off Taxiway B, the aircraft apron area, and stormwater drainage features.

Just north of the Taxiway B and Taxiway D intersection there is the potential to redevelop two small clearspan hangars with a single larger hangar. To the east of this area space has been reserved as an optional site for a replacement Airport Traffic Control Tower (ATCT). In addition to the various imaginary surfaces, all future facilities must remain clear of the Runway Visibility Zone (RVZ) required between the two runways as depicted on the drawing.

### South Quad

The South Quad terminal area plan includes a number of new hangars and additional general aviation aircraft parking apron space around the Commercial Airline Terminal building. Both T-hangars and small box hangars are planned in the southeast corner to accommodate a number of the based aircraft that will be displaced when older hangars in the East Quad are replaced with the new General Aviation Terminal facilities. The expanded taxilane access into this hangar area also includes the ability to provide a 100LL (AvGas) self-serve fuel tank facility, just east of the airport's fuel farm.

Two expansions of the Commercial Airline Terminal apron are shown. While the one to the north (south of the Taxiway A and Taxiway C intersection) would provide additional space for the queuing of aircraft during peaks, aircraft cannot park in this area when the ATCT is closed, since it is within the RVZ. The other apron expansion to the east will provide general aviation aircraft parking space. Another future aircraft parking apron is depicted in the southwest portion with a number of clearspan hangars around the perimeter. However, as shown, a taxilane would have to come off Taxiway A to access this site, which impacts some existing facilities. For the impact to the Emergency Management Services (EMS) facility; Collier County has already identified the need to develop a new EMS building at the airport. For the other impacts, the plan reflects improvements to provide new landside access to the north end of Tower Drive, expanded automobile parking areas, and the potential for a consolidated rental car facility. The South Quad also includes an expansion of the airport's maintenance facilities.

## East Quad

The primary focus of development in the East Quad includes a new General Aviation Terminal and expansion of the aircraft parking apron space to accommodate both existing and future demand. Two aircraft storage hangars and a ground support equipment lean-to are also included to support NAA's fixed base operator (FBO) operations. Space for a second fuel farm is reserved to provide additional fuel storage capacity and a more convenient location for the significant activity that occurs on this side of the airport. The East Quad also reflects improvements to the edge of the General Aviation Terminal apron to better facilitate aircraft movements during peak periods, some additional box hangars at the north end, expanded automobile parking, and the opportunity for non-aeronautical development off Airport Pulling Road.

## West Quad

A number of future clearspan and t-hangar facilities are depicted in the West Quad to support the long-term aircraft storage demand. While the ultimate layout of these facilities will certainly change, the general concept is for facilities serving the smaller aircraft to be situated off Runway 14-32 and those for larger aircraft off Runway 5-23. Given the potential to accommodate a significant number of small aircraft in the West Quad, a 100LL (AvGas) self-serve fuel tank facility and an aircraft wash rack have also been included.

Additional aircraft parking apron space with at least one clearspan hangar is depicted in the middle of the site to reflect the potential for an aviation related business. The West Quad also includes the other optional site for a replacement ATCT. Setbacks from either runway will depend on the overall height of the individual structures, which in addition to all of the imaginary surfaces for the airfield also needs to include the line-of-sight for both the existing and future ATCT locations. And as with each quadrant, a clear line-of-sight must also be maintained for the RVZ between the two runways.

## 7.2.4 Runway Gradient Analyses

There are two sheets which depict the transverse and longitudinal runway grades based on the FAA AGIS data obtained as part of the master plan study. A third sheet depicts the minimum and maximum Runway Safety Area (RSA) gradients for both runways. These drawings illustrate the fact that neither runway has a standard RSA with respect to the transverse grade requirement. This has to do with the fact that the high water table and required drainage of the airfield pavements cannot be accomplished in most areas within the FAA minimum and maximum RSA gradients. New RSA Inventory and Determination Forms documenting these conditions for both runways have been completed and coordinated with the FAA Orlando Airports District Office.

## 7.2.5 Airport Airspace

The future airspace surfaces were developed utilizing Title 14 Code of Federal Regulations (CFR) Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace*. In order to protect the airspace and approaches to each runway from hazards that could affect the safe and efficient operation of the airport, the full extent of all airport development is utilized. The 14 CFR Part 77

criterion has been established for use by local planning and land use jurisdictions to control the height of objects in the vicinity of the airport.

The specific imaginary surfaces include the Primary, Horizontal, Conical, Approach, and Transitional Surfaces. A description and the corresponding dimensions for each surface were included in the facility requirements chapter. The future 14 CFR Part 77 airspace surfaces are adopted as part of the local ordinances in order for the City of Naples and Collier County to notify airport management if a proposed permanent or temporary structure penetrates any of the surfaces for APF. This allows an analysis to be conducted which would determine what, if any impacts to the operational capability of APF might be created by potential obstructions. The 14 CFR Part 77 surfaces and compatible land use zoning for the area surrounding the airport are included in the following local ordinances:

- ➔ City of Naples, Code of Ordinances: Chapter 58 - *Zoning*, Article III. – *Special Overlay Districts*, Division 4 – *Airport Overlay District*
- ➔ Collier County, Land Development Code: Chapter 2 – *Zoning Districts and Uses*, Section 2.03.07 *Overlay Zoning Districts*, Section 4.02.06 *Standards for Development in Airport Zones*

During the course of this master plan, the future 14 CFR Part 77 Surfaces were incorporated into the City's ordinance in 2018 and Collier County's in 2019.

Critical structures and obstructions documented in the various data tables of the drawing sheets area based on the FAA AGIS data obtained at the onset of this master plan. While a number of objects penetrate the 14 CFR Part 77 surfaces, it should be noted that the primary function of these surfaces is to determine which potential penetrations need to be further evaluated to determine if they are in fact considered an obstruction to aircraft navigation to and from the airport.

## 7.2.6 Inner Approach Plans and Profiles

The Inner Approach Plans and Profiles illustrate the critical surfaces prior to the landing threshold for each runway end. Federally obligated airports like APF are subject to Grant Assurances 20 and 21 which require the protection of these surfaces. The FAA reviews all published instrument approach procedures on a periodic basis (approximately every two years). Obstacles found within the critical surfaces will likely result in higher minima, loss of approaches, and/or loss of night operation capability.

While the 14 CFR Part 77 notification surfaces are shown for reference, these drawings reflect the critical Threshold Siting Surfaces, Precision Approach Path Indicator (PAPI) Obstacle Clearing Surface, RSAs, Runway Object Free Areas, Runway Obstacle Free Zones, and Runway Protection Zones. Details are provided for objects that penetrate the criteria of these surfaces with existing and potential obstructions listed in the tables for each runway end. These sheets reflect those surfaces with a vertical component out to a height of 100 feet above the respective runway threshold elevation, as per FAA guidance for this type of drawing. Each of these sheets also depict the location of any roadways, structures, ground elevations, and other man-made or natural features

within the limits of the various imaginary surfaces. The obstacle locations and heights were obtained from the FAA AGIS data obtained as part of this master plan study.

## 7.2.7 Runway Departure Surfaces

The Runway Departure Surface sheets illustrate the critical surfaces within the departure area off the ends of Runway 5-23 and Runway 14-32. Federally obligated airports like APF are subject to Grant Assurances 20 and 21 which require the protection of any departure surfaces established. The FAA reviews all published instrument procedures on a periodic basis (approximately every two years). Obstacles found within the associated departure surfaces will likely result in higher minima or loss of the published instrument departure procedure affected.

These sheets reflect the existing 40:1 departure surfaces currently established off each runway end. These departure surfaces are 1,000 feet wide at the designated stop end of the runway and extend out 10,200 feet to an outer width of 6,466 feet. This is the current criteria from FAA AC 150/5300-13A, Change 1, *Airport Design*; however, these criteria are expected to change significantly in 2020 as part of the revisions in the draft of FAA AC 150/5300-13B.

Details are provided for objects that penetrate the current criteria of these surfaces with obstructions listed in the tables for each of the four runway ends. The drawings also depict the location of any roadways, structures, ground elevations, and other man-made or natural features within the limits of the surfaces. The obstacle locations and heights were obtained from the FAA AGIS data obtained at the onset of this master plan.

## 7.2.8 Land Use Plan

A Land Use Plan has been prepared for the existing (2017) conditions which depicts both on-airport and off-airport land uses. On-airport uses include airfield, conservation (non-development), and conservation easement. Only a few areas are identified as non-aeronautical to ensure that the airport property required for aviation is not utilized for other purposes that would limit the ability of the facility to accommodate the expected demand. The off-airport portions reflect the existing and future land use designations surrounding the airport property boundary. These were obtained from both the City of Naples and Collier County.

Superimposed over the airport and surrounding area are the day-night average sound level (DNL) contours created as part of the environmental overview for this study. Even though the noise contours created were not part of an official 14 CFR Part 150 Noise and Land Use Compatibility Study, they were developed utilizing the same 65, 70, and 75 DNL contours evaluated in a full noise study, as well as the locally adopted 60 DNL contour. The environmental overview chapter summarized the on- and off-airport areas these contours encompass. The compatible land use and development standards around the airport are defined in the City of Naples, Code of Ordinances: Chapter 58 - Zoning, Article III. – Special Overlay Districts, Division 4 – Airport Overlay District.

## 7.2.9 Exhibit “A” Airport Property Inventory Map

The Exhibit “A” Airport Property Inventory Map accurately depicts the current airport property boundary, including original parcels that were released, parcels that have been acquired, easements within the property limits, etc. This drawing meets the criteria established in FAA AC 150/5100-17, Change 7, *Land Acquisition and Relocation Assistance for Airport Improvement Program (AIP) Assisted Projects* and FAA ARP SOP No. 3.00 Appendix B, *Exhibit “A” Review Checklist*.

The information from these sheets is based on the full boundary survey and title search conducted as part of this master plan by Atkins to develop a new Exhibit “A” Property Inventory Map drawing set. The Exhibit “A” Airport Property Inventory Map was approved by the FAA on December 28, 2019 and is on file at the airport management office as well as with both FAA and FDOT.