FAYETTEVILLE REGIONAL AIRPORT

AIRPORT LAYOUT PLAN UPDATE & NARRATIVE



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July 2018

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FAYETTEVILLE REGIONAL AIRPORT

AIRPORT MASTER PLAN UPDATE

EXECUTIVE SUMMARY



August 2019

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1. EXECUTIVE SUMMARY

The Federal Aviation Administration (FAA) developed the airport master planning process to assist the nation's airports with expansion and improvement plans that meet aviation demand and safety requirements. A Master Plan provides an analysis of an airport that ultimately illustrates the short-, mid, and long-term development plans to meet future aviation demand and FAA airport design standards. The most recent Master Plan for the Fayetteville Regional Airport (FAY) was completed in 2005. This Airport Master Plan Update (AMPU) provides a development and expansion framework for a 20-year planning period starting from base year 2016.

1.05 AIRPORT MASTER PLAN UPDATE PART I – AIRLINE TERMINAL AREA

Airport Master Plan Update Part 1 – Airline Terminal Area

The Airport Master Plan Update for the Fayetteville Regional Airport has been accomplished in two parts. Part 1, covering the Airline Terminal Area, is documented in an 11x17 format report entitled, "Fayetteville Regional Airport (FAY), Airport Master Plan Update Part 1 – Airline Terminal Area, Final Report," dated April 21, 2015. The part 1 report is incorporated in this Part 2 report by reference.

The Part 1 report included seven chapters: (1) Introduction, (2) Inventory, (3) Forecasts, (4) Facility Requirements, (5) Terminal Area Alternatives/Preferred Alternative, (6) Preferred Alternative and (7) Final Report.

The terminal area improvements identified in Chapter 6 of the Part 1 report included expansion of and improvements to the terminal building as well as site improvements related to access road realignment and terminal auto parking expansion. These improvements are included on the ALP drawing set completed during this Airport Master Plan Update Part 2 effort.

Following completion of the Part 1 report, implementation of the near-term airline terminal improvements program outlined in Chapter 6 commenced, including environmental documentation and design efforts. The construction program has been adjusted and broken into two pieces. The Part 1 construction project, which included the replacement of Concourse A, has reached substantial completion as of October 2019. The Part 2 construction project, which includes improvements to the main terminal building and baggage handling areas, has been bid and partially funded as of October 2019.

Figure 1-1: FAY Airport Master Plan Update Part 1



1.1 PLAN GOALS AND OBJECTIVES

The goal of the Master Plan Update is to guide future airport development to meet future aviation demand and consider potential impacts. To achieve this goal, the AMPU includes the following elements.

Airport Inventory, Aviation Demand Forecasts, and Facility Requirements – Based on the projections of aviation demand, facility requirements were determined and compared to the existing capacity of the airport facilities.

Alternatives Development – Once facility needs were determined, alternative methods to meet those needs were developed. These alternatives were evaluated against operational, financial, environmental, and other feasibility-related criteria.

Facilities Implementation – The Implementation Plan forms the basis of the Airport's Capital Improvement Plan (ACIP) and includes a listing of key projects, their descriptions, cost opinions, and schedule for implementation.

Financial Feasibility – Airport improvements are typically funded using a combination of Federal grants, State grants, Passenger Facility Charges, Customer Facility Charges, Private Investment and Airport Sponsor Funding. This element considers the funding sources for the CIP.

Airport Layout Plan – The Airport Layout Plan (ALP) was updated as a part of the planning process. The ALP provides the official graphic representation of the Airport's existing and proposed facilities. Once the FAA approves the ALP, projects may be eligible for Federal grant funding.

1.2 GENERAL BACKGROUND

The National Plan of Integrated Airport Systems (NPIAS) identifies more than 3,300 airports that are significant to national air transportation and therefore eligible to receive federal grants under the Airport Improvement Program (AIP). The NPIAS includes all commercial service airports, all reliever airports, and selected general aviation (GA) airports. FAY is recognized in the Federal Aviation Administration's NPIAS as a Non-Hub Commercial Service Airport. Commercial Service airports are publicly owned airports that have at least 2,500 passenger enplanements each calendar year and receive scheduled passenger service. Non-Hub airports are defined as those which handle more than 10,000 enplaned passengers but less than 0.05% of total U.S. enplaned passengers annually. As per the NPIAS, the Fayetteville Regional Airport is classified as a "Primary Service" airport, having more than 10,000 passenger boardings each year.

FAY is served by three major air carriers and their regional partners (American Airlines, Delta Airlines and United Airlines). Non-stop flights are available to Charlotte (American), Atlanta (Delta) and Washington Dulles (United). As of July 1, 2016, these airlines offered a combined total of 14 daily departures, operated on turbo-prop, regional jet, and narrow-body mainline aircraft types. In addition to being the sole access point of scheduled air service in Cumberland County, the Airport accommodates general aviation (GA) and charter services. The Airport's general aviation activities are centered on the North General Aviation Apron. The Fixed Base Operator (FBO), Signature Aviation, which occupies a hangar on the North Apron, provides aircraft services such as line service, fueling and deicing, and aircraft parking/tie-downs, as well as pilot services such as a pilot's lounge, and a flight planning area.

FAY's primary service area consists of Cumberland, Sampson, Hoke, and Robeson Counties.

1.3 PUBLIC INVOLVEMENT

Airport officials, community leaders, and the public play an important role in the master planning process. A Stakeholder Working Group (SWG) was appointed to assist in the preparation of this

AMPU and met throughout the study period to ensure that a community-based perspective was incorporated into the project. The SWG was comprised of the following individuals:

- Bradley Whited, A.A.E., Director – Fayetteville Regional Airport
- Toney Coleman, A.A.E, Deputy Director – Fayetteville Regional Airport
- Bernard Green, Community Planner – FAA
- Ja'Monta Smith, Program Manager – FAA
- Kristen Dwiggins, Project Manager – NCDOT Division of Aviation
- Donald Warren, Chairman – FAY Airport Commission
- John Lewis, Representative – FAY Airport Commission
- Joel Strickland, Executive Director - Fayetteville Area MPO
- Craig Harmon, Senior Planner - City of Fayetteville
- Will Linville, Planner – Cumberland County
- Karl White, Tower Manger – FAA ATC
- Jesse Lance, General Manager – Landmark Aviation
- Chris Baily, Station Manager – American Airlines
- Steve Smith, Station Manager - Delta/United Airlines
- Steve Bright, PE, Principal – Talbert & Bright Inc.
- Eric Stumph, PE, Project Manager – Talbert & Bright Inc.
- Nicholas Stefaniak, Airport Planner – Talbert & Bright Inc.

Four (4) Stakeholder Working Group meetings were held at key points throughout the planning process. In the meetings, the consultant and airport staff discussed AMPU findings and recommendations and solicited input from the working group. Draft plan documents were provided to the group for review and comment. SWG meetings were held in the commercial terminal conference room on: March 22, 2016; September 8, 2016; January 22, 2018; and May 7, 2018. SWG meetings lasted approximately 1.5 hours and consisted of a presentations and open discussion.

A discussion of the preferred airport development alternatives occurred during an Airport Commission meeting that was held on May 7, 2018 and later presented to the Fayetteville City Council on the evening of May 7, 2018.

1.4 AVIATION DEMAND FORECASTS

The components of aviation activity evaluated included passenger enplanements, aircraft operations, and based aircraft. Forecasts of Air Carrier operations were interpolated and extrapolated through 2036 from the approved forecast prepared in Part 1 (the 2014 FAY Terminal Area Study). General Aviation forecasts fell well within the 10% and 15% FAA thresholds for the five and ten-year planning periods respectively. **Table 1-2** presents an overall summary of the aviation forecasts including the approved commercial activity forecasts prepared in Part 1 (approved on July 1, 2014).

General Aviation forecasts prepared in Part 2 of the AMPU were approved on July 7, 2017. The approval letter can be found in the complete AMPU Part 2 document.

Table 1-1: GA and Military Aviation Forecasts Summary

Year	GA Operations	Military Operations	Total Operations (Preferred)	Total GA FAA TAF Forecasts	Preferred vs TAF Difference	Based Aircraft
2016*	17,391	7,231	**24,622**	-		**66**
2021	17,952	5,775	**23,727**	23,780	**.25%**	**68**
2026	18,744	5,775	**24,519**	24,034	**2%**	**71**
2036	20,592	5,775	**26,367**	24,563	**7.5%**	**78**

Source: TBI Calculations, FAY AMPU Part 1, *2016 Base Year (Actual).

Table 1-2: Aviation Forecasts Summary

Year	Air Carrier/ Taxi Operations	GA Operations	Military Operations	Total Operations (Preferred)	Total FAA TAF Forecasts	Based Aircraft
2016*	10,222	17,391	7,231	**34,844**	-	**66**
2021	14,386	17,952	5,775	**38,113**	33,434	**68**
2026	15,250	18,744	5,775	**39,769**	34,160	**71**
2036	17,134	20,592	5,775	**43,501**	36,241	**78**

Source: TBI Calculations, FAY AMPU Part 1, *2016 Base Year (Actual).

1.5 PEAK AVIATION DEMAND CHARACTERISTICS

Since many of the airport's facility needs are related to the levels of activity during peak periods, forecasts were developed for peak month and peak hour operations. The peak period general aviation operations are shown in **Table 1-3**.

Table 1-3: General Aviation Peaking Characteristics

Year	Total GA Operations (Includes Military)	Peak Month Operations	Design Day Operations	Design Hour Operations
2016*	24,622*	2,616	87	13
2021	23,727	2,272	82	12
2026	24,519	2,554	85	13
2036	26,367	2,812	94	14

Source: TBI Calculations, * designates actual numbers

1.6 FACILITY REQUIREMENTS

The methodology used to determine facility requirements started with an examination of the Airport's major components: Airfield, Airspace, Buildings and Landside/Surface Access. Deficiencies in the facilities that comprise these four elements were identified based upon approved FAA forecasts and standards presented in FAA Advisory Circular 150/5300-13A Airport Design, and FAA Advisory Circular 150/5060-5 Airport Capacity and Delay. The airfield operational capacity for FAY, as calculated from FAA Advisory Circular 150/5060-5, Airport Capacity and Delay is approximately 200,000 annual operations per year. The current airport configuration provides an 'hourly' runway capacity of 77 Visual Flight Rules (VFR) operations and 57 Instrument Flight Rules (IFR) operations. A comparison of future demand to current airfield operational capacities does not indicate a need for capacity-enhancement projects such as additional runways. Recommended improvements to airport facilities and proposed phases of implementation are presented in **Table 1-6**.

1.6.1 Critical Aircraft

The current and future critical aircraft at FAY are presented in **Table 1-4**. As determined during the forecast analysis, the current critical aircraft for Runway 4/22 is the full range of narrow body mainline and regional jet aircraft used in the United States. For the purposes of determining airport geometry for Runway 4/22, this is defined as Aircraft Approach Category (AAC) C and Airplane Design Group (ADG) III. The current critical aircraft for Runway 10/28 is a Cessna Citation II (ADG B-II) is expected to remain the same throughout the planning period.

Table 1-4: 2016 FAY Critical Aircraft Characteristics

	RUNWAY 10/28	RUNWAY 4/22	
	EXISTING & PROPOSED	EXISTING	PROPOSED
	CESSNA CITATION II	MCDONNELL DOUGLAS MD-88	AIRBUS A-321
Reference Code (ARC)	B-II	D-III	C-III
Runway Critical Aircraft	10/28	4/22	4/22
Propulsion	Jet	Jet	Jet
Wingspan	52’	107.9’	117.5’
Length	47’	147.8’	146’
Height	15’	30.5’	38.6’
Maximum Takeoff Weight	15,100 lbs.	160,000 lbs.	196,200 lbs.
Seating Capacity	7	149	192
Range	2,104 nm	2,500 nm	3,700 nm
Taxiway Design Group	2	4	3

1.6.2 Runway Design, Reference Code, and Wind Coverage

In 2016 there were 631 operations conducted by the Boeing 717-200 and 426 operations conducted by the MD-88, both of which are Group III aircraft. When these aircraft are phased out or replaced by other aircraft within Delta’s fleet, it is expected they will be replaced with Group III aircraft with similar performance specifications and will not require geometric modifications to the primary Runway 04/22. It is also recommended, consistent with the previous Master Plan that the Airport ultimately (Beyond the planning period) provide the separation standards for Group III on Runway 10/28 to accommodate large corporate aircraft on the south side into the future. Existing runway widths are adequate. The Runway Design Code (RDC) and Runway Reference Code (RRC) for each of the runways at FAY are expected to remain the same throughout the planning period and are as follows:

- Runway 4 – RDC: C-III-4000, RRC: C-III
- Runway 22 – RDC: C-III-2400, RRC: C-III
- Runway 10 – RDC: B-II, RRC: B-II
- Runway 28 – RDC: B-II, RRC: B-II

The existing runway alignments provide greater than 95 percent wind coverage for all crosswind components for All Weather, VMC and IMC conditions on Runway 4/22 but not on Runway 10/28 for a crosswind of 10.5 knots. In addition, the combined wind coverage for both runways is over 95 percent. No changes to runway orientation are proposed.

1.6.3 Pavement Strength and Condition

The Runway 4/22 strength rating is consistent with one daily departure of an MD-88 and numerous daily departures of regional and general aviation aircraft. The MD-88 traffic has and can be expected to vary between similar narrow body air carrier aircraft, including the A319/320/321, B-717 and B-737 series. The air carrier apron and the taxiway network serving Runway 4/22 and the air carrier apron have pavement section strengths which are generally consistent with the strength rating for Runway 4/22. The Runway 10/28 strength rating is consistent with one daily departure of a 53,000-pound jet and numerous departures of a variety of regional and GA aircraft. Taxiways F and G serving Runway 10/28 have the same pavement section (and therefore strength) as the reconstructed runway.

The West GA apron and taxilanes pavement is rated for 12,500-pound aircraft. Pavement strength data is not readily available for the South GA area pavements, the North GA apron and the cargo apron. Those pavements appear to be satisfactorily carrying the current traffic without apparent load related pavement distress.

The airfield pavements at FAY are in fair condition or better, except for the cargo apron, Taxiway 'F' east of Runway 4/22, Taxiway G, and certain T-hangar taxilane pavements in the South GA area. The Airport's 2016 PMS report shows an average projected annual deterioration rate for FAY of about two percentage points per year (i.e., a pavement with a 2016 PCI of 75 would be projected to fall to about 65 by 2021). Consistent strong pavement subgrade conditions exist throughout the airfield and all airfield pavements appear to be structurally adequate for existing operations. It should be noted that heavier traffic (heavier aircraft, greater frequency or both) may result in more rapid pavement deterioration and the potential need for pavement strengthening.

Future pavement rehabilitation projects should include engineering analysis for pavement strength ratings (PCN and gear type/weight formats) for ready reference and use by the owner and airport users. Generally, pavement maintenance and rehabilitation planning should strive to keep all pavements in fair condition or better. **Table 1-5** presents a list of projected pavement rehabilitation needs over the 20-year planning horizon, based on age, current condition and engineering judgement.

1.6.4 Runway Protection Zones

The Runway Protection Zone's (RPZ) function is to enhance the protection of people and property on the ground. This is achieved through airport owner control over RPZ's. Such control includes clearing RPZ areas (and maintaining them clear) of incompatible objects and activities. Control is preferably exercised through acquisition of sufficient property interest in the RPZ. The Airport Layout Plan identifies this land acquisition to satisfy both existing and future RPZ areas.

RPZ land acquisition consists of approximately eight (8) acres off the approach end of Runway 4; twelve (12) acres off the approach end of Runway 22; twenty seven (27) acres off the approach end of Runway 10; and three (3) acres of land off the approach end of Runway 28.

Table 1-5: Airfield Pavement Recommendations

Pavement Location	Most Recent Construction		2016 PCI	Next Rehabilitation	
	Year	Type		Program Year(s)	Type
Cargo Apron	1980's	Original Construction	39 - 73	2023	Mill/Fill 4", CPR
Air Carrier Apron (1987 Concrete)	2015	Joint sealing, partial depth patching	93	2022	Reconstruct P-501
Taxiway F (East of Runway 4-22) & G	1972	Original Construction	47 - 57	2024	Reconstruct 4"
South GA Apron & Taxiways (L, M, N, Q)	1996	Original Construction	60 - 77	2025	Mill/Fill 4"
North GA Apron	2001	Mill/overlay (variable), reconstruct	72 - 76	2028	Mill/Fill 4"
Runway 4/22 & stub taxiways	2009 - 2012	Mill/Fill 2"	70 - 86	2026	Mill/Fill 4", Groove
Taxiway A & connector taxiways	2009 - 2012	Mill/Fill 2" to 4"	65 - 100	2027	Mill/Fill 4"
Runway 10/28 West of Runway 4-22	2017	Crack Seal, Seal Coat	57 - 76	2024	Mill/Fill 4"
West GA Apron & Hangar Taxilanes	2010	Reconstructed (2")	72 - 90	2029	Reconstruct 4"
South GA Hangar Taxilanes	1996 - 2006	Original Construction (2")	37 - 84	2023	Reconstruct 4"

1.6.5 Taxiway System

Runway 4/22 at FAY is equipped with a full parallel taxiway (Taxiway A) while Runway 10/28 has a partial parallel taxiway (Taxiway F). Taxiway A has five connection taxiways to the runway and five additional stub taxiways that provide access to the aircraft parking aprons. The partial parallel Taxiway F that provides access to the approach end of Runway 28 is equipped with two connectors. Although no additional connector taxiways are needed today, FAA design criteria recommends that taxiways not lead directly from an apron to a runway without requiring a turn. There is an area of Taxiway F that connects Taxiway A to the Commercial apron that requires a Modification to Standards or would

need to be closed or removed because it provides direct access. The same situation exists on Taxiway D that connects Taxiway A to the GA apron. Since Taxiway F provides Aircraft Rescue and Fire Fighting with direct access to the primary runway, and operational benefits during military charter operations, the Airport desires a Modification to Standards for the existing configuration. To satisfy FAA design criteria for Taxiway D, removal and relocation is recommended. This is shown on the ALP.

1.6.6 Taxiway Lighting

Except for the South GA area and Taxiways F and G, FAY is currently equipped with Medium Intensity Taxiway Lighting (MITL) and lighted taxiway signs. It is recommended that taxiway lighting in the South GA area be upgraded to include LED MITLs due to their efficiency and longer useful life.

1.6.7 General Aviation Areas and Auto Parking

The Airport's general aviation activities are located on the North GA apron, the West GA apron and the South GA apron. The Fixed Base Operator (FBO), Signature Aviation, occupies a large conventional hangar on the North GA apron and provides aircraft services such as line service, fueling and aircraft parking/tie-downs, as well as pilot services.

The North GA apron is of adequate size to accommodate aviation demand throughout the planning period and its pavement is currently in satisfactory condition. Facility requirements determined the need for an additional 49,000 square feet of aircraft storage to accommodate based and transient GA aircraft needs through the planning period. This can be accommodated through T-hangars, individual conventional box hangars, corporate hangars, or large FBO bulk storage hangars. This development is generally triggered by demand and not eligible for FAA funding.

The FBO is currently served by a 46-space parking lot in fair condition. The existing route between the accessible parking in the lot and the FBO rear entrance is challenging due to terrain. Since the 46-space lot is also shared by an adjacent tenant, the actual number of parking spaces available to the FBO and its customers is approximately 75% of that (35). General planning guidelines for GA automobile parking is 2.5 spaces per peak hour operation and 1 space per 200 SF of office space. The FBO currently shares a 38-space lot with an adjacent tenant. The forecast of 14 peak hour operations (by 2036) and the existing 2,000 SF (approximate) of FBO office space results in the need for 45 spaces exclusively for the FBO.

The ALP depicts areas best suited to accommodate future GA hangar and automobile parking development.

1.6.8 Passenger Terminal Area Auto Parking

The AMPU Part 1 study identified the need for expanded parking capacity for airline passengers, associated with anticipated growth in enplanements. A modest increase in capacity can be accomplished by building additional paved parking inside the existing terminal loop roadway, in areas which are currently landscaped. Beyond that limited additional capacity, the preferred alternative from the Part 1 study involved relocating the terminal loop roadway, allowing for the construction of additional parking inside the expanded loop. This proposed development is depicted on the ALP.

1.6.9 Aviation Fueling Facilities

As airlines switch to larger commercial aircraft over the next 20 years and as general aviation jet traffic increases, additional Jet A fuel storage may be necessary at FAY. Additionally, as GA development occurs in the South GA area, the development of a GA fuel farm may be necessary to accommodate the fueling needs of the aircraft stored in that area. An area identified for South GA fuel farm development was depicted in the existing ALP and has be carried forward onto the updated ALP.

1.6.10 Airfield Maintenance Equipment and Storage Facilities

Airfield maintenance equipment is stored and maintained in a 3,340-square foot three-bay garage located adjacent to the ARFF building. Maintenance equipment is also stored on the east side of, and adjacent to, the Terminal apron. This equipment includes various tractors, mowers, brush hogs and pickup trucks. An expanded or newly constructed airfield maintenance equipment storage facility is recommended in the near-term to provide additional covered storage for this equipment as well as an expanded workshop/repair facility. The future site for a new airport maintenance building is depicted on the ALP.

1.6.11 Rental Car Servicing Facilities

In cooperation with the rental car service providers, the Airport has initiated a rental car Capital Facility Charge (CFC) program to help finance improvements to rental car infrastructure. The anticipated improvements will support growth in rental car operations commensurate with anticipated passenger enplanement growth and replace and upgrade aging rental car infrastructure.

A future CFC program element includes a new consolidated rental car Quick Turn Around (QTA) servicing area. Due operational, aesthetic and capacity limitations of the existing QTA facilities located on and near the Airport, the consolidated QTA servicing facility is a priority. The area best suited to accommodate this development is depicted on the ALP.

Table 1-6 provides a summary of the Facility Requirements and lists the phases when various facilities will be needed as driven by demand.

Table 1-6: Facility Requirements Summary

Facility	Existing	Phase 1 Short-term (2017-2021)	Phase 2 Mid-term (2022-2026)	Phase 3 Long-term (2027-2036)
Runway	04/22 – 7,709' x 150' 10/28 - 4,801' x 150'	Same	Same	Same
Runway Lighting	04/22 – HIRL 10/28 – MIRL	04/22 – HIRL	04/22 – HIRL	04/22 – HIRL 10/28 – MIRL
NAVAIDs	04 - ILS, VOR 22 – VOR, GPS 10 – GPS 28- VOR, GPS	Same	Same	Same
Approach Lighting	04 – MALSR, PAPI 22 – REILs 10 – REILs 28 – REILs, PAPI	Same	Same	Same
Taxiway	04/22 - Full-Parallel 10/28 - Full Parallel	Same	Same	Same
Taxiway Lighting	MITL	Same	Same	Same
T-Hangar Units	38	Same	48	48
FBO Hangar (SF)	15,857 SF	17,980 SF	18,630 SF	22,300 SF
Corporate Hangar (SF)	40,000 SF	50,000 SF	50,000 SF	70,000 SF
GA Apron Area (SY)	18,000 SY	16,200 SY	17,100 SY	19,800 SY
Total GA Auto Parking Spaces	45	45	45	45
GA Terminal (SF)	3,600 SF	Same	Same	Same
Fueling Facility	12,000 G AvGas (1) 12,000 G Jet A (2) 10,000 G Corporate Jet	Same	Additional 10,000 Gallon 100 LL tank (West GA)	
ARFF Facility	6,500 SF facility	No Change	No Change	No Change
Airfield Maintenance/ Storage Facility	3,000 SF/4,500 SF	New Consolidated 4,800 – 6,400 SF facility		

Source: Talbert & Bright analysis

1.7 PROPOSED DEVELOPMENT

The following summarizes the development plan for the Airport. Additional information on the alternatives analysis can be found in Chapter 5 of the report. The proposed layout of future airport facilities is shown on Sheet 3, Airport Layout Plan. In addition, enlarged views of the commercial and general aviation areas is provided on Sheet 4, 5, and 6.

1.7.1 Airfield

The 2005 Master Plan for the Airport recommended an extension to Runway 10/28 and other ultimate improvements that were desired at that time but are either not necessarily needed to meet FAA requirements or eligible for FAA funding. Although some of those improvements have been carried forward to this update and are depicted on the ALP, the development alternatives presented herein are those needed to meet forecast demand and FAA current airport design criteria. For capacity elements such as aircraft storage and automobile parking, the development scenarios presented not only meet but exceed the needs for the planning period. Since this is a planning level document, some of the alternatives shown, while they meet the demand forecast, are generally intended to identify the type of development recommended for a specific area. Actual design and layout of buildings and layouts may vary.

1.7.2 Runway 10/28

Improvements to Runway 10/28 is taken from the 2005 Airport Master Plan and recognizes the desire of the Airport to increase the reliability of the Airport while providing a backup runway when the main runway is undergoing maintenance or is closed. This concept provides a 1,199-foot extension to the approach end of Runway 28 and would bring the runway to 6,000 feet. In anticipation of this ultimate scenario, the city understands the need to protect the associated airspace and has acknowledged this future development in its height restriction zoning ordinance. The extension to Runway 10/28 is shown in **Figure 1-2**. Also shown in this ultimate scenario is the widening of the taxiways in the South GA area to 50'. Doing so would accommodate large corporate business aircraft that require Group III taxiways. This development is not expected to occur within the planning period.

1.7.3 Preferred Taxiway Development

As mentioned, FAA design criteria recommends that taxiways not lead directly from an apron to a runway without requiring a turn. There is an area of Taxiway F that connects Taxiway A to the Commercial apron that requires a Modification to Standards or would need to be closed or removed

because it provides direct access. To satisfy FAA design criteria for Taxiway D, removal and relocation is recommended. This is shown in **Figure 1-3** and is depicted on the ALP.

1.7.4 North General Aviation Area Development

While the North GA apron is of adequate size to accommodate aviation demand throughout the planning period, facility requirements determined the need for an additional 49,000 square feet of aircraft storage to accommodate based and transient GA aircraft needs through 2036. Since the North GA area has convenient access to the primary runway, is served by the FBO, and most general aviation activities occur in this area, it is important that available apron frontage be reserved for its highest and best use. Therefore, it is recommended that the available apron frontage be reserved for corporate or FBO bulk aircraft storage. This is shown on **Figure 1-4**. Consistent with other automobile parking lot development in this area, **Figure 1-4** also shows areas suitable for automobile parking expansion.

1.7.5 South General Aviation Area Development

Based on existing based aircraft storage ratios, it was determined that the Airport is expected to experience a deficiency of T-hangar storage. Consistent with the existing development in the South GA area, **Figure 1-5** shows areas best suited to provide additional T-hangars. Also shown in this area is space that should be reserved for conventional or corporate hangar development. This is also a convenient area should an aviation related business, such as an aircraft maintenance operation, a flight school, or a second FBO decide to locate to FAY. The area shown on the existing ALP for fuel farm development has been carried forward and included in this update.

1.7.6 Commercial Service Auto Parking Expansion

As mentioned, a modest increase in automobile parking capacity can be achieved by building additional paved parking inside the existing terminal loop roadway. Beyond that limited additional capacity, the preferred alternative from the Part 1 study involved relocating the terminal loop roadway, allowing for the construction of additional parking inside the expanded loop. This proposed development is depicted in **Figure 1-6** and shown on the ALP.

1.7.7 Airfield Equipment Storage and Maintenance Facilities

The Facility Requirements indicated the Airport's need for a dedicated equipment storage and maintenance building. A primary objective in siting such a building is to avoid areas that are better suited for aircraft hangar or apron development and have the potential for generating airport revenue. In coordination with airport staff and the SWG, suitable areas were identified near the South GA area.

Potential sites for a new airport storage/maintenance building are shown in **Figure 1-7** and depicted on the ALP.

1.7.8 Consolidated Rental Car Servicing Facility

Due to the operational, aesthetic and capacity limitations of the existing rental car QTA facilities on and near the Airport, the AMPU looked to identify a suitable location to consolidate all its on-airport rental car servicing operations. By consolidating car wash facilities, vacuum systems, fueling, and service bays to one site, the Airport can maximize land resources and eliminate the need to drive between service centers. **Figure 1-9** and the ALP identifies the area best suited to accommodate this development and was coordinated with airport staff and the working group.

1.7.9 Runway Protection Zone Land Acquisition

The FAA recommends that an airport own or control land associated with airport design surfaces. There are areas off the approach end of each runway that should be acquired, especially the RPZs associated with the main runway. These areas are depicted on the ALP and are shown in **Figure 1-10**.

1.7.10 Airspace Obstructions

Sheets 7 through 14 of the ALP drawing set depict the overall Part 77 surfaces, Part 77 approach plan and profiles, and inner approach surfaces for all runway ends. Sheet 15 provides the associated obstruction data, including object descriptions, the amount of clearance/penetration, and proposed action.

1.7.11 Wildlife Hazard Management

A recommendation of the Airport's Wildlife Hazard Assessment was to initiate the process to modify existing perimeter fence to a height of 10-12 feet. The Airport has since undertaken a project to make the necessary improvements to its perimeter fence.

1.8 POTENTIAL FOR ENVIRONMENTAL IMPACTS

The potential for environmental effects of the alternatives are briefly summarized below per the impact categories defined in FAA Order 1050.1, Environmental Impacts: Policies and Procedures and FAA Order 5050.4, FAA Airports guidance for complying with NEPA. The Airport does not contain coastal resources, Section 4(f) properties, or Wild and Scenic Rivers. There are no projects expected to impact farmlands, hazardous materials, or floodplains. Although there are no NRHP-listed or

eligible sites within airport property, the NCHPO should be consulted for each project on identification of historic properties and determinations of project effect.

1.8.1 Runway Alternative

The extension of Runway 10/28 has the potential to impact jurisdictional wetlands and streams east of the runway. Wetlands were previously delineated in a portion of the area. Impacts may require a Clean Water Act Section 404 Permit from US Army Corps of Engineers and NC Division of Water Resources Section 401 Water Quality Certification. An emissions inventory and noise analysis may be required due to potential changes in aircraft operations. The project would require a stormwater permit and erosion and sedimentation control plan.

1.8.2 Taxiway Alternatives

The relocation of Taxiway D is not expected to have environmental effects due to its location in areas of existing disturbance and development. A stormwater permit and erosion and sedimentation control plan may be required if the project is greater than 1 acre.

1.8.3 North General Aviation Development Alternative

Based on its proximity to a mapped stream, the North GA development alternative has the potential to impact wetlands and streams. Surveys would be required to determine if jurisdictional wetlands or streams are present in the project area, and if the project would require a Clean Water Act Section 404 Permit from US Army Corps of Engineers and NC Division of Water Resources Section 401 Water Quality Certification. A stormwater permit and erosion and sedimentation control plan may be required since the project is greater than 1 acre.

1.8.4 South General Aviation Development Alternative

Based on its proximity to a mapped tributary of Big Sandy Run, the South GA development alternative has the potential to impact wetlands and streams. Surveys would be required to determine if jurisdictional wetlands or streams are present in the project area, and if the project would require a Clean Water Act Section 404 Permit from US Army Corps of Engineers and NC Division of Water Resources Section 401 Water Quality Certification. A stormwater permit and erosion and sedimentation control plan may be required since the project is greater than 1 acre.

1.8.5 Commercial Terminal Parking Alternative

Surveys were completed within the commercial terminal auto parking area by WithersRavenel in 2015. The surveys concluded the area does not contain jurisdictional wetlands or streams. Therefore, construction activities within the area are not expected to result in impacts to jurisdictional wetlands or streams and should not require authorization from the Corps of Engineers or NC Division of Water Resources. The survey verified that the area does not contain potential habitat for state or federal threatened and endangered species. A stormwater permit and erosion and sedimentation control plan may be required since the project is greater than 1 acre.

1.8.6 Airport Equipment Storage and Maintenance Building Site

Based on its proximity to a mapped tributary of Big Sandy Run and mapped wetlands to the southwest, the airport maintenance building alternative has the potential to impact wetlands and streams. Surveys would be required to determine if jurisdictional wetlands or streams are present in the project area, and if the project would require a Clean Water Act Section 404 Permit from US Army Corps of Engineers and NC Division of Water Resources Section 401 Water Quality Certification. A stormwater permit and erosion and sedimentation control plan may be required since the project is greater than 1 acre.

1.8.7 Rental Car Servicing Alternative

The rental car servicing alternative location contains a mapped wetland and stream. Surveys would be required to determine if jurisdictional wetlands or streams are present, and if the project would require a Clean Water Act Section 404 Permit from US Army Corps of Engineers and NC Division of Water Resources Section 401 Water Quality Certification. The area is mostly undeveloped, and a survey would need to determine if habitat for threatened and endangered species is present. A stormwater permit and erosion and sedimentation control plan may be required since the project is greater than one (1) acre.

Figures 1-2 through **1-9** are found on the following pages. **Figure 1-10** is a composite figure depicting all the preferred development alternatives.

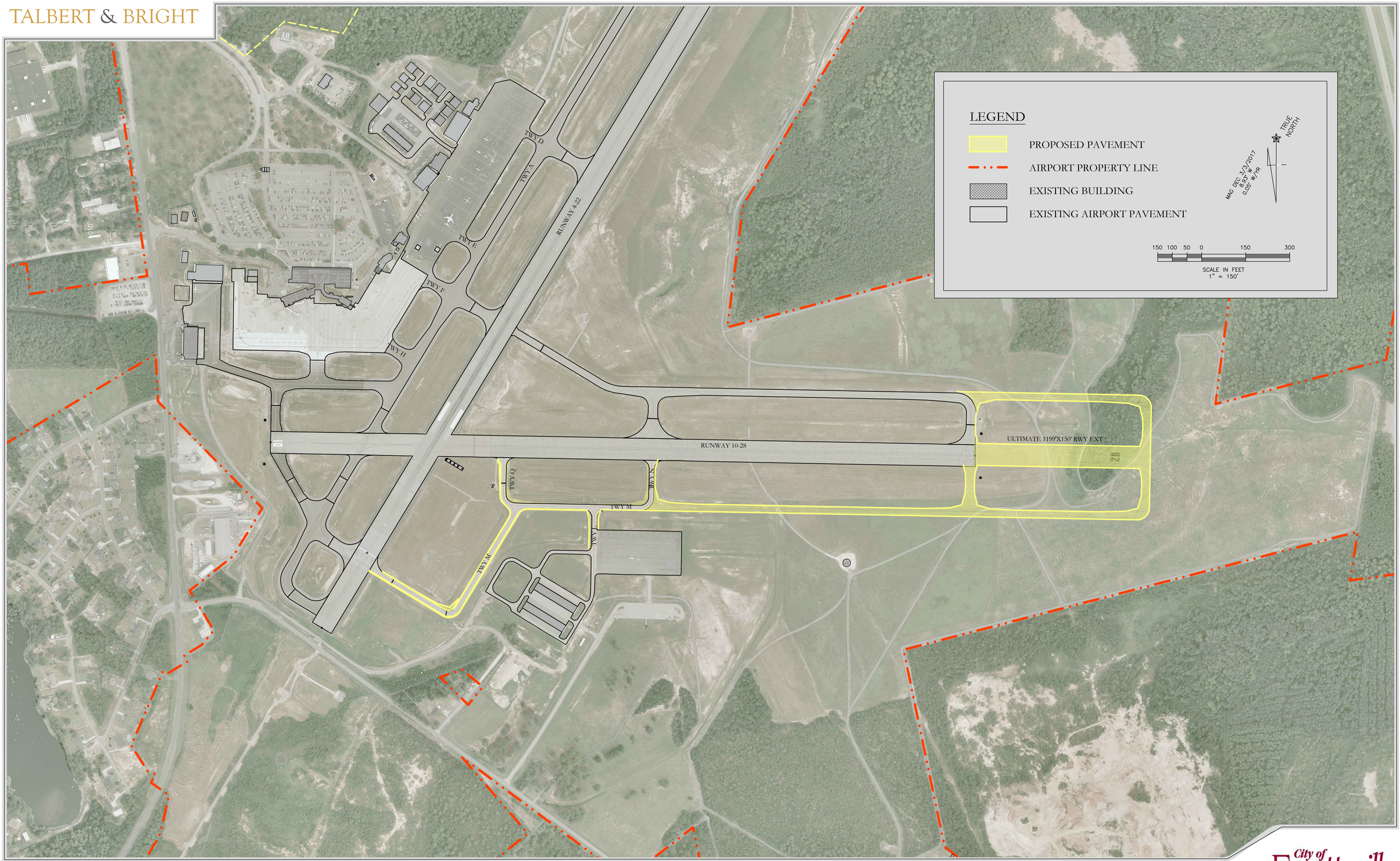


FIGURE 1-2. PREFERRED RUNWAY ALTERNATIVE (BEYOND PLANNING PERIOD) - EXTEND RUNWAY 10-28 TO 6000', MAINTAIN 150' WIDE

City of Fayetteville North Carolina REGIONAL AIRPORT

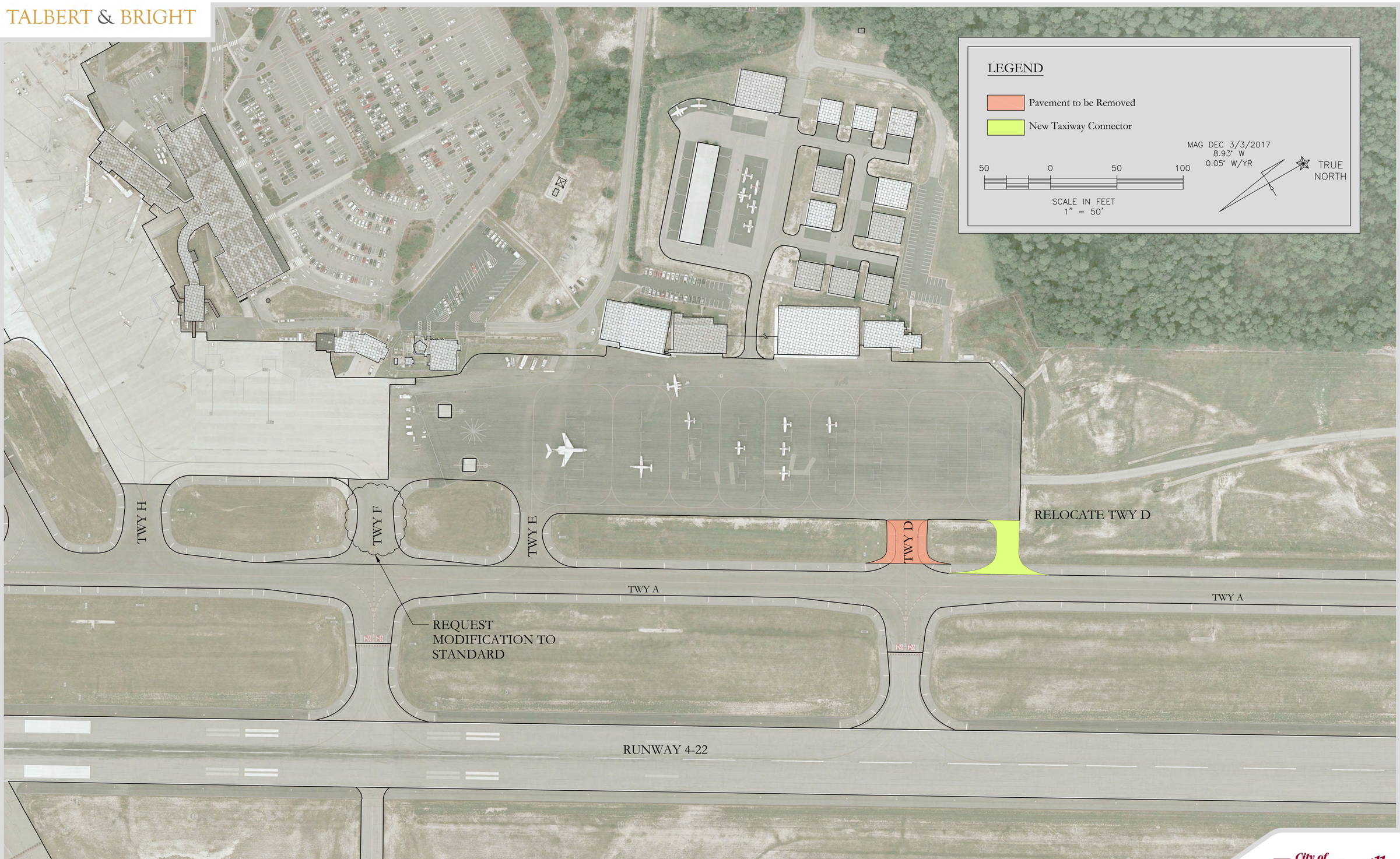


FIGURE 1-3. PREFERRED TAXIWAY ALTERNATIVE - SEEK MODIFICATION TO STANDARD FOR TAXIWAY "F" AND RELOCATE TAXIWAY "D"

City of Fayetteville North Carolina REGIONAL AIRPORT

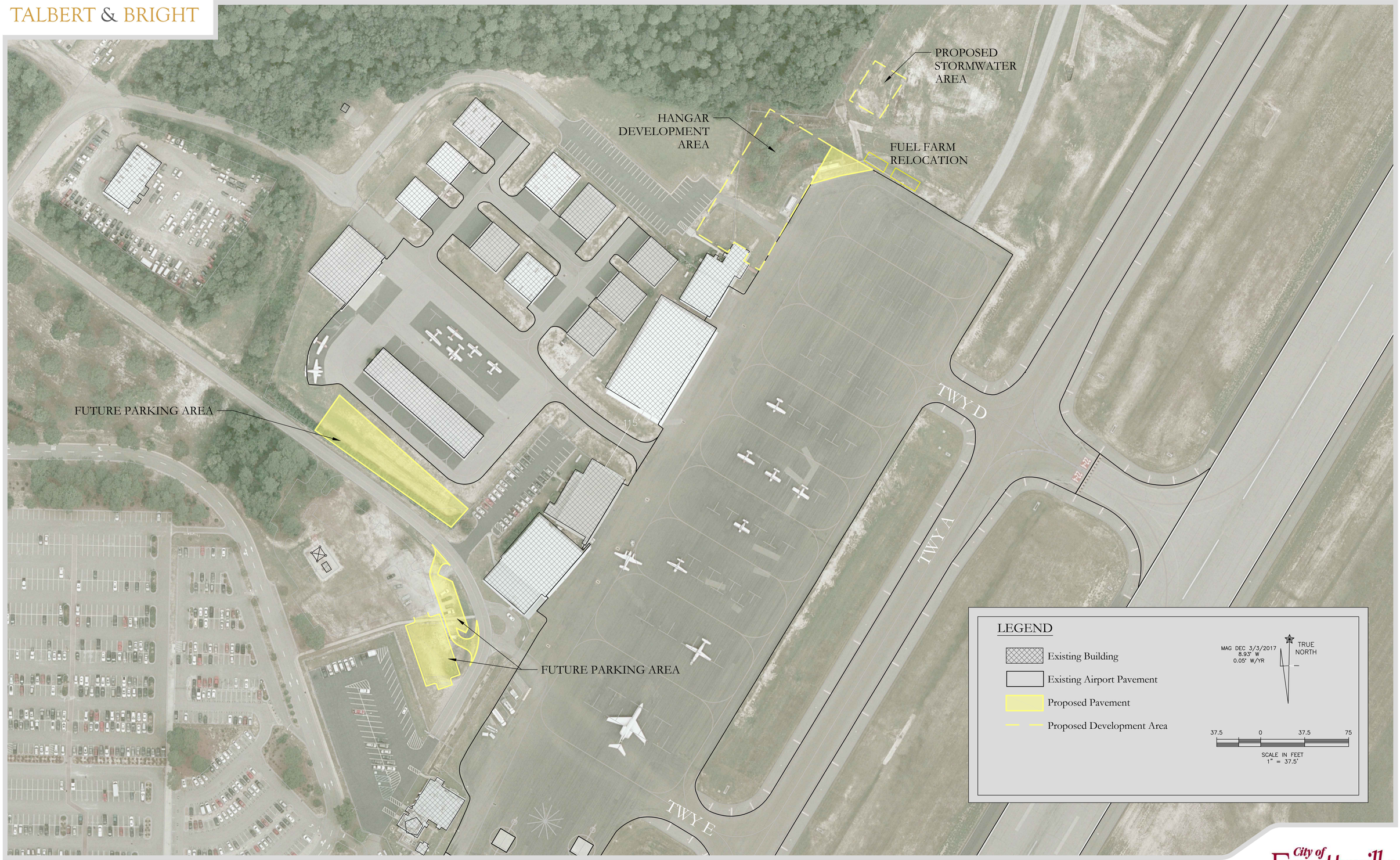


FIGURE 1-4. PREFERRED NORTH GA HANGAR ALTERNATIVE - FBO CONVENTIONAL HANGAR DEVELOPMENT AREA (MAY REQUIRE RELOCATION OF CORPORATE FUEL FARM)= AND AUTOMOBILE PARKING EXPANSION AREAS

TWY M
PROPOSED FUEL FARM
PROPOSED STORMWATER AREA
14-UNIT T-HANGAR
8-UNIT T-HANGAR
TWY L
TWY M
TWY N
RUNWAY 10-28
CONVENTIONAL/CORPORATE HANGAR DEVELOPMENT
VOR CRITICAL AREA

LEGEND

- Existing Building
- Existing Airport Pavement
- Future Development Area
- Proposed Pavement

MAG DEC 3/3/2017
8.93° W
0.05° W/YR
TRUE NORTH

50 0 50 100
SCALE IN FEET
1" = 50'

FIGURE 1-5. PREFERRED SOUTH GA HANGAR DEVELOPMENT - CONSTRUCT 22 ADDITIONAL T-HANGARS AND RESERVE AREA FOR CONVENTIONAL/CORPORATE HANGAR DEVELOPMENT

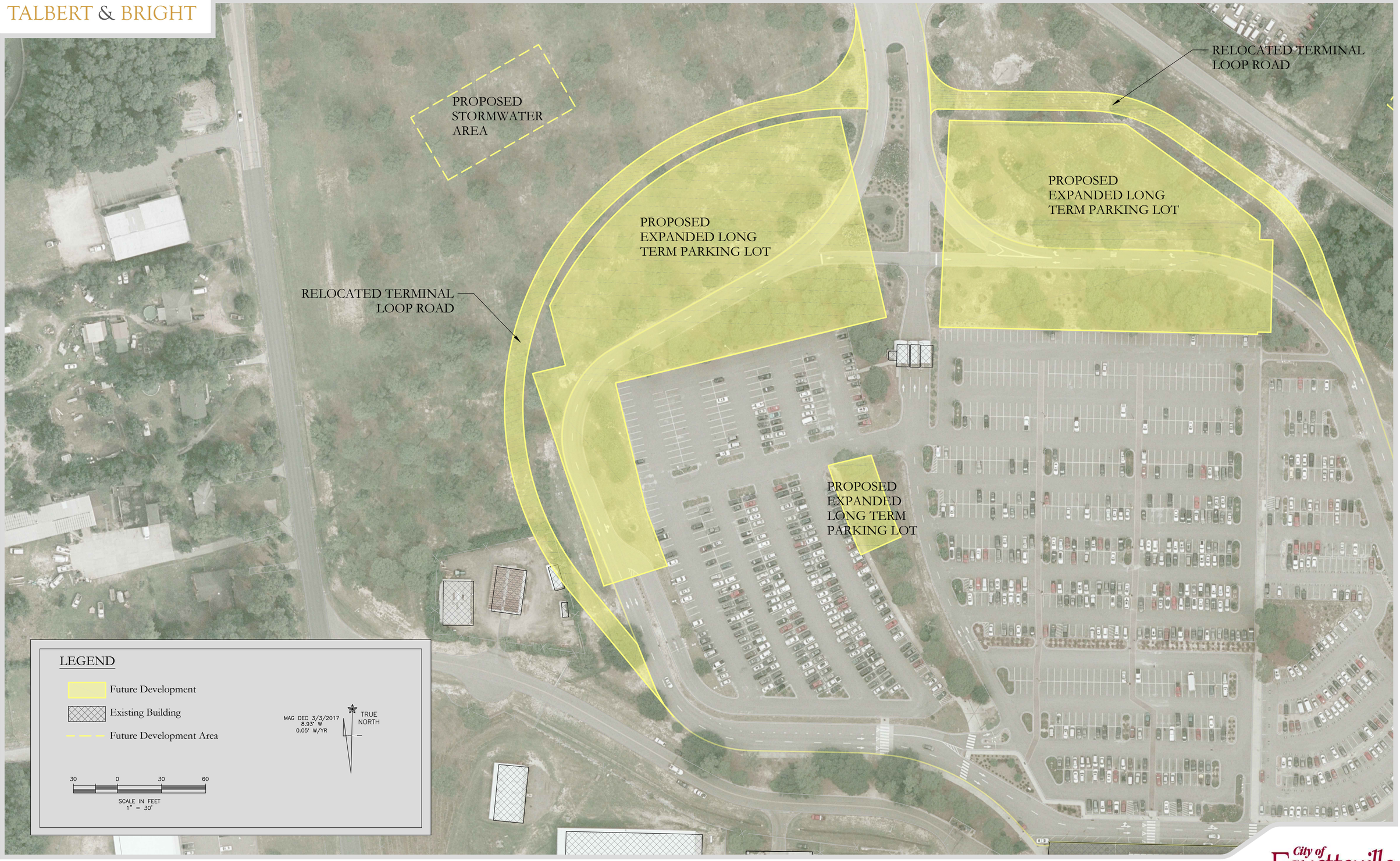


FIGURE 1-6. PREFERRED TERMINAL AREA AUTOMOBILE PARKING EXPANSION

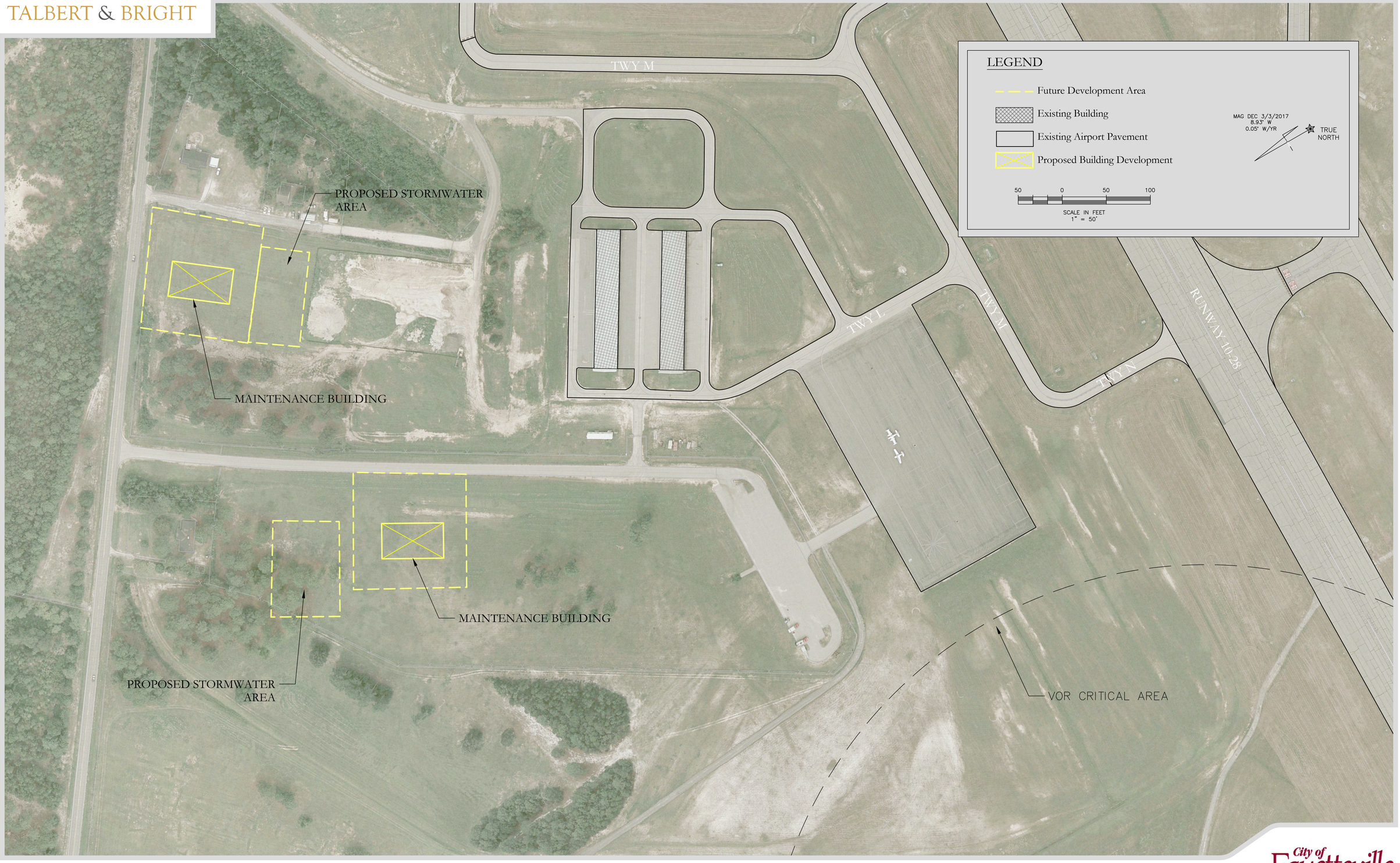


FIGURE 1-7. PREFERRED AIRPORT MAINTENANCE BUILDING DEVELOPMENT AREA



FIGURE 1-8. PREFERRED RENTAL CAR SERVICING DEVELOPMENT AREA

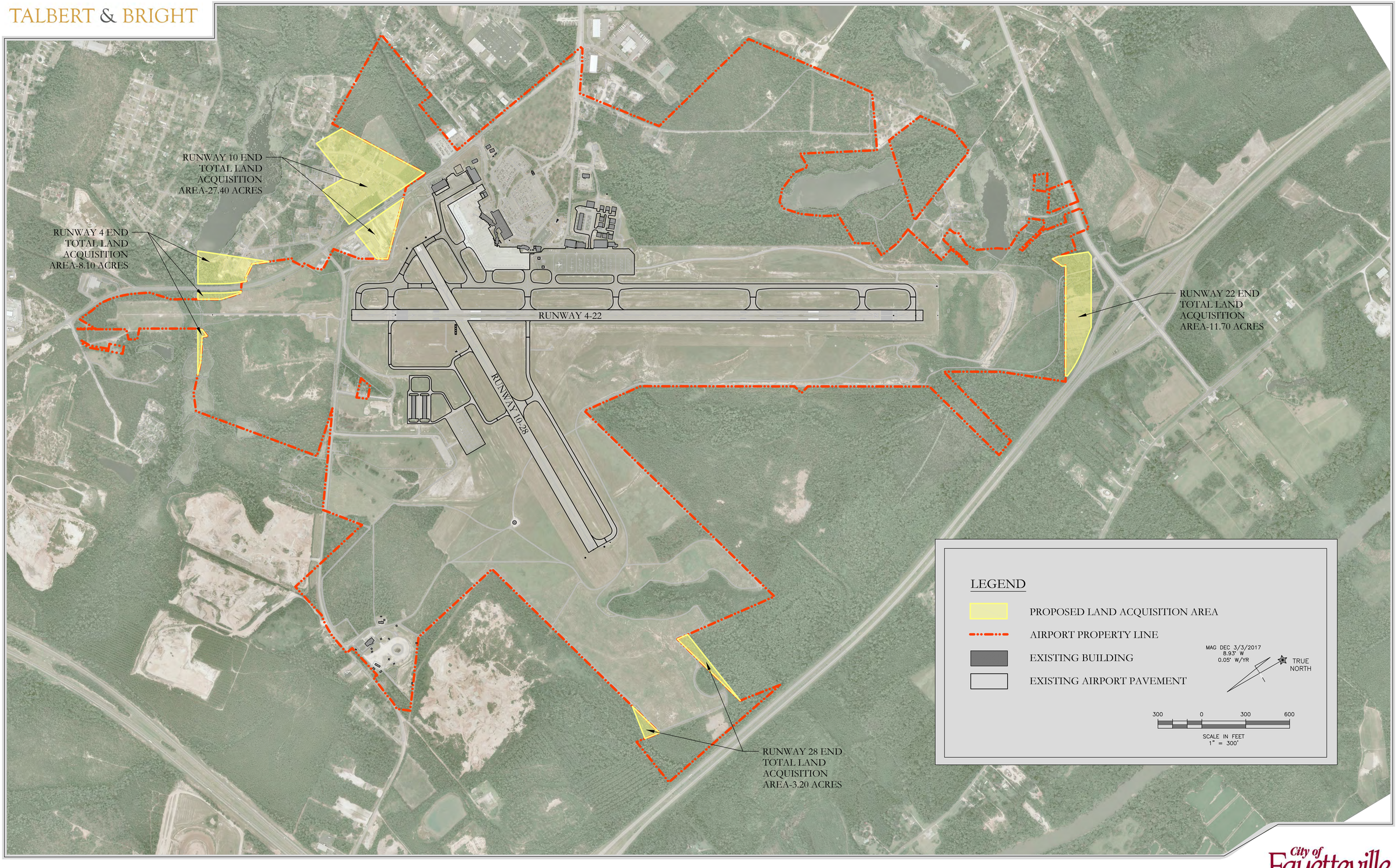


FIGURE 1-9. PREFERRED LAND ACQUISITION

City of Fayetteville North Carolina REGIONAL AIRPORT

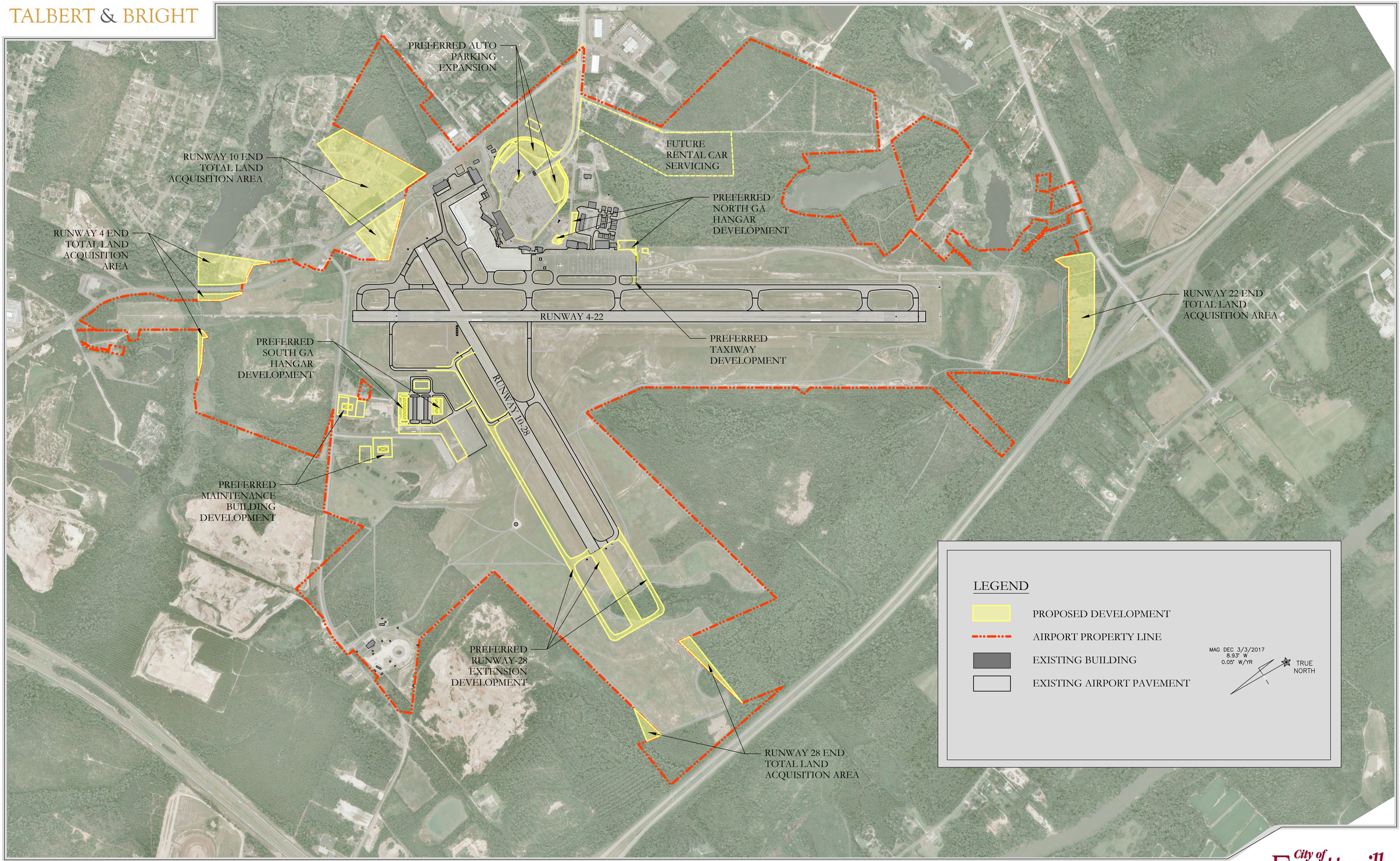


FIGURE 1-10. PREFERRED DEVELOPMENT ALTERNATIVE

City of Fayetteville North Carolina REGIONAL AIRPORT

1.9 RUNWAY DECLARED DISTANCES

Declared distances at airports are a mechanism by which specific lengths of runway pavement are identified for use in aircraft operations. The specified distance available for a particular operation such as landing may be different in each direction on the same runway pavement. The FAA defines four declared distances, these include:

- Takeoff Run Available (TORA) – the runway length declared available and suitable for satisfying takeoff run requirements. The TORA is measured from the start of takeoff to a point 200 feet from the beginning of the departure Runway Protection Zone.
- Takeoff Distance Available (TODA) – this distance comprises the TORA plus the length of any remaining runway or clearway beyond the far end of the TORA.
- Accelerate-Stop Distance Available (ASDA) – the runway plus stopway length declared available and suitable for the acceleration and deceleration of an aircraft that must abort its takeoff. A stopway is an area beyond the takeoff runway able to support the airplane during an aborted takeoff, without causing structural damage to the airplane.
- Landing Distance Available (LDA) – the runway length that is declared available and suitable for satisfying aircraft landing distance requirements.

Table 1-7 lists the existing and future declared distances through the planning period.

Table 1-7: Declared Distances

Runway	TORA	TODA	ASDA	LDA
Runway 4	7,709’	7,709’	7,007’	6,508’
Runway 22	7,709’	7,709’	6,715’	6,413’
Runway 10	4,801’	4,801’	4,801’	4,801’
Runway 28	4,801’	4,801’	4,801’	4,801’

Source: Talbert & Bright analysis

1.10 AIRPORT PROJECT HISTORY

The 2005 Master Plan identified several airside and landside projects to enhance the airport's ability to accommodate then existing activity as well as future demand. A number and variety of projects have been completed at the airport since the previous master plan was completed.

As shown in **Table 1-8**, this includes: pavement rehabilitation, safety improvements, hangar development, new navigational aids, and airport equipment acquisition among others.

Table 1-8 – Airport Improvements (2005-2016)

Project	Year	AIP #	Cost
Cargo to Corporate Office/Shop/Storage Conversion	2005	Private	N/A
Replace Marker Beacon with DME, Runway 4 ILS	2009	FAA	N/A
New Airfield Lighting Vault	2009	33	$1.9 million
Centurion Corporate Hangar	2009	Private	N/A
Runway 4/22 Rehabilitation	2009	34	$6.3 million
North GA West Ramp Rehabilitation	2010	State Funds	$635,000
Revenue Parking Lot Improvements	2010	Local	$181,490
Aircraft Rescue and Firefighting Building Improvements	2011	35,36	$1.1 million
Snow Removal Equipment Shelter	2011	32	$179,500
Sierra Nevada Corporate Hangar	2011	Private	N/A
Taxiway "A" Rehabilitation	2012	37	$5.4 million
Runway 4 and Runway 10 Approach Clearing	2012	State Funds	$208,000
Gate B4 Passenger Boarding Bridge	2012	PFC	$387,000
Air Carrier Apron Rehabilitation – Phase 1	2013	38	$4.2 million
Runway 4 RSA Improvements & Taxiway "A" Extension	2013	39,40	$3.3 million
Runway 4/22 Paved Shoulders	2014	41	$3.6 million
Taxiway "J" and "K" Rehabilitation	2015	42	$2.7 million
Air Carrier Apron Rehabilitation, Phase 2	2015	42	$2.2 million
Airport Master Plan Update, Part 1	2015	42	$323,500
New Employee Parking Lot	2016	Local/CFC	$668,000

1.11 AIRPORT CAPITAL IMPROVEMENT PLAN

The national Airports Capital Improvement Plan (ACIP) is an internal FAA document that serves as the primary planning tool for identifying and prioritizing critical airport development and associated capital needs for the National Airspace System. It also serves as the basis for the distribution of grant funds under the Airport Improvement Program (AIP). The ACIP includes the anticipated sources of funds for specific NPIAS development expected to be undertaken in the short-term (within the next 5 years).

The medium range (mid-term) projects are those more appropriately identified for inclusion in the FAA National Plan of Integrated Airport System (NPIAS). The 10- year outlook in the NPIAS report to Congress develops national airport needs on a broader scale. Long term development is a general range of projects for the 10 to 20-year period that are much more speculative. Both the mid-term and long-term projects provide the airport owner and FAA with an outlook of future needs. It is important to note that the ACIP is not definite or fixed. Airport priorities can change, costs fluctuate, and emergencies may arise, all of which may require modifying the CIP.

Order-of-magnitude cost opinions were developed for each of the recommended improvements. For eligible projects, the FAA Airport Improvement Program (AIP) can fund up to 90% of the cost. The balance is usually provided by the state and airport sponsor, in this case the city of Fayetteville. Generally, AIP grants can be obtained for most airfield capital improvements or repairs except those for hangars and non-aviation development. Eligible projects include improvements related to enhancing airport safety, capacity, security and environmental concerns. Regardless of the funding source, the development must be consistent with the ALP and is therefore subject to FAA review.

The cost opinions presented are based on conceptual project scoping as developed for master planning purposes. The cost opinions include construction costs, acquisition costs and soft costs, and represent current year (2018) costs. As projects approach implementation, updated cost opinions should be developed based on detailed project scope formulation. In addition to project scope changes, such factors as cost trends, bidding climate and economies of scale may result in substantial variation in project costs.

It should be noted that the development program assumes that FAY's activity level will grow consistent with the forecasts and that the facilities will be developed to meet projected demand. If activity does not meet the forecasted demand, implementation of the project schedule should be re-evaluated and modified as necessary.

Table 1-9 provides the 5-year ACIP for the Fayetteville Regional Airport, while **Table 1-10** and **Table 1-11** provide cost opinions of the anticipated mid-term and long-term projects over the remainder of the planning horizon.

Table 1-9: Five Year Airport Capital Improvement Plan (ACIP)

Project	Total Cost	FAA	Other (State/Local, PFC, CFC or Private)
Perimeter Fence Improvements	**$2,500,000**	$2,250,000	$250,000
Construct 8-unit T-hangar in the South GA area	**$1,390,000**	-	$1,390,000
FBO Auto Parking Improvements (8 spaces)	**$100,000**	-	$100,000
Construct New Airport Maintenance building	**$3,100,000**	-	$3,100,000
Construct Rental Car QTA Servicing Area/Facility	**$10,750,000**	-	$10,750,000
Add One 60' x 100', Three 60' x 60', One 14-Unit T-Hangar, and Four 60' x 60' Corporate hangars	**$5,500,000**	-	$5,500,000
Replace 2 plow trucks	**$400,000**	-	$400,000
Camera Assessment of Stormwater Piping	**$115,000**	$103,500	$11,500
Rehabilitate South GA Taxiway Lighting (LED)	**$440,000**	$396,000	$44,000
Perimeter Road Improvements	**$2,600,000**	$2,340,000	$260,000
Taxiway F & G Rehabilitation (Pavement and Lights)	**$2,700,000**	$2,430,000	$270,000
Rehabilitate Cargo Apron	**$1,300,000**	$1,170,000	$130,000
Stormwater Master Plan	**$230,000**	-	$230,000
Total	**$31,151,500**	$8,716,000	$22,435,500

Source: Talbert & Bright analysis

Table 1-10: Mid-Term Capital Improvement Plan

Project	Total Cost	FAA	Other (State/Local, PFC, CFC or Private)
Relocate Taxiway D	**$1,300,000**	$1,170,000	$130,000
Expand Terminal Automobile Parking (120 space credit card lot)	**$1,200,000**	-	$1,200,000
Rehabilitate Terminal Apron (Concourse B Area)	**$5,500,000**	$4,950,000	
Add New 10K Gallon Jet A tank	**$530,000**		$530,000
Stormwater Improvements	**$4,100,000**	$3,690,000	$410,000
Rehabilitate Airfield Drainage	**$3,700,000**	$3,330,000	$370,000
Rehabilitate Runway 4-22	**$13,000,000**	$11,700,000	$1,300,000
South GA Sanitary Sewer	**$1,300,000**	-	$1,300,000
Rehabilitate South GA Taxiways and Hangar Taxilanes, Widen Taxiway "L"	**$1,500,000**	$1,350,000	$150,000
Rehabilitate North GA Apron	**$4,200,000**	$3,780,000	$420,000
Rehabilitate Taxiway "A" and Stub Taxiways	**$2,250,000**	$2,025,000	$225,000
Rehabilitate/Replace Sewer Pump Station	**$1,500,000**	-	$1,500,000
Runway Approach Clearing	**$550,000**	$495,000	$55,000
Rehabilitate Runway 10-28	**$2,300,000**		$2,300,000
Total	**$13,139,000**	$3,249,000	$9,890,000

Source: Talbert & Bright analysis

Table 1-11: Long-Term Capital Improvement Plan

Project	Total Cost	FAA	Other (State/Local, PFC, CFC or Private)
Airfield Lighting Improvements (Vault & Airfield Equipment) and Relocate/Replace Runway 4 PAPI	**$1,000,000**	$900,000	$100,000
Construct Self-Fueling Facility (South GA)	**$320,000**	-	$320,000
Relocate Self-fueling facility on the North GA Apron	**$300,000**	-	$300,000
Construct 100' x 100' conventional hangar on the North GA Apron	**$1,700,000**	-	$1,700,000
Rehabilitate South GA Apron	**$1,700,000**	$1,530,000	$170,000
Rehabilitate Terminal Parking Lots	**$2,350,000**	-	$2,350,000
Rehabilitate GA Terminal	**$1,050,000**	-	$1,050,000
Land Acquisition – Runway 4 RPZ	**$2,600,000**	$2,340,000	$260,000
Rehabilitate North GA Access Roads	**$850,000**	-	$850,000
Rehabilitate South GA Access Road and Auto Parking	**$820,000**	-	$820,000
Rehabilitate West GA Apron and Taxilanes	**$1,700,000**	$1,530,000	$170,000
Rehabilitate Hangar Buildings	**$1,000,000**	-	$1,000,000
Airport Master Plan Update	**$1,000,000**	-	$1,000,000
Land Acquisition – Runway 10 RPZ	**$1,400,000**	-	$1,400,000
Replace ARFF Vehicle	**$700,000**	$630,000	$70,000
Relocate Terminal Loop Road	**$1,900,000**	-	$1,900,000
Rehabilitate Older Portions - Airline Terminal	**$2,700,000**	-	$2,700,000
Rehabilitate Taxiway "J" & "K"	**$2,800,000**	$2,520,000	$280,000
ARFF Station Improvements	**$520,000**	$468,000	$52,000
Total	**$26,410,000**	$9,918,000	$16,492,000

Source: Talbert & Bright analysis

1.12 AIRPORT LAYOUT PLAN UPDATE

An Airport Layout Plan Update that incorporates changes resulting from the preferred development alternatives was completed in this AMPU. The ALP depicts existing and proposed facilities and must be kept current for the Airport to receive federal financial assistance and collect passenger facility charges. The ALP also serves the following functions:

- Ensures that airport design standards and safety requirements are maintained, and that proposed development is consistent with airport and community land use plans.
- Serves as a public record of aeronautical requirements both present and future, and as a reference for community deliberations on land use proposals and budget resource planning.
- Allows the FAA to plan for budgetary, procedural, and airspace needs.
- Provides a working tool for the airport sponsor, including its development and maintenance staff.

The primary components of the ALP drawing set include:

Airport Layout Drawing and Data Sheet – Identifies existing and proposed facilities for the airport property. This drawing includes facility descriptions, airport safety areas and protection zones, imaginary airspace boundaries, and other pertinent airport/runway data.

Terminal Area Drawings – Presents large-scale depictions of terminal development areas, both the Commercial Passenger Terminal area, and the General Aviation areas.

Airport Airspace Drawing – Depicts objects affecting navigable airspace in the airport vicinity using criteria provided in Federal regulations and FAA advisory circulars.

Approach Surface Drawings – Presents large scale plan and profile views of the approach/departure environments at each runway end.

Land Use Drawings – Depicts on and off airport land uses and zoning designations.

Exhibit 'A' Property Map – Provides an inventory of land parcels that comprise the airport property and indicates how the land was acquired and funded. The land depicted on the Exhibit 'A' constitutes the airport property federally obligated for compliance under the terms and covenants of a grant agreement. The Existing Airport Layout drawing for FAY is shown in **Figure 1-11** and the future layout is shown in **Figure 1-12**.

Airport Details for KFAY - ACTIVE
Chart Date: 07/21/2016
FAYETTEVILLE RGNL/GRANNIS FIELD
FAYETTEVILLE
AL #: 690

State:	NORTH CAROLINA	Magnetic Variation/Year:	W07/1985	Weather Station:	YES
Country:	United States	Site Nbr:	16723.	Control Tower:	YES
Category:	AERODROME ONLY	Data Source:	THIRD_PARTY 09/16/2015	THIRD_PARTY	
FAR Part 139:	YES	Owner:	STATE	Use:	CIVIL
Reimbursable Agreement:				Military Type:	

Coordinates		Office		Local Auto Weather	
Latitude:	N 34° 59' 28.4000"	Flight Inspection:	ATL	Weather Source:	ASOS
Longitude:	W 078° 52' 49.0000"	Procedure Development:	110	Type:	3
Field Elevation:	189.4	Region Code:	SO	Frequency:	121.250
Ellipsoid Elevation:	79.2 S	Service Area:	EAST	Service A:	Y
Horizontal Datum:	NAD83	OCC Code:	AOCC	Phone number	(910)484-1546
Vertical Datum:	NAVD88	International:	NO		

CONTACTS

Contact Role	Last Name	First Name	Phone Number	E-mail	Remark
OWNER			(910)433-1619		

ALTIMETERS

Type	Primary	Airport ID	Field Alt Source	Latitude	Longitude	Operational Timing
L	YES	KFAY	ASOS	N 34° 59' 22.4126"	W 078° 52' 48.1702"	FULL-TIME
R	NO	KCTZ	AWOS	N 34° 58' 29.7800"	W 078° 21' 56.2650"	FULL-TIME

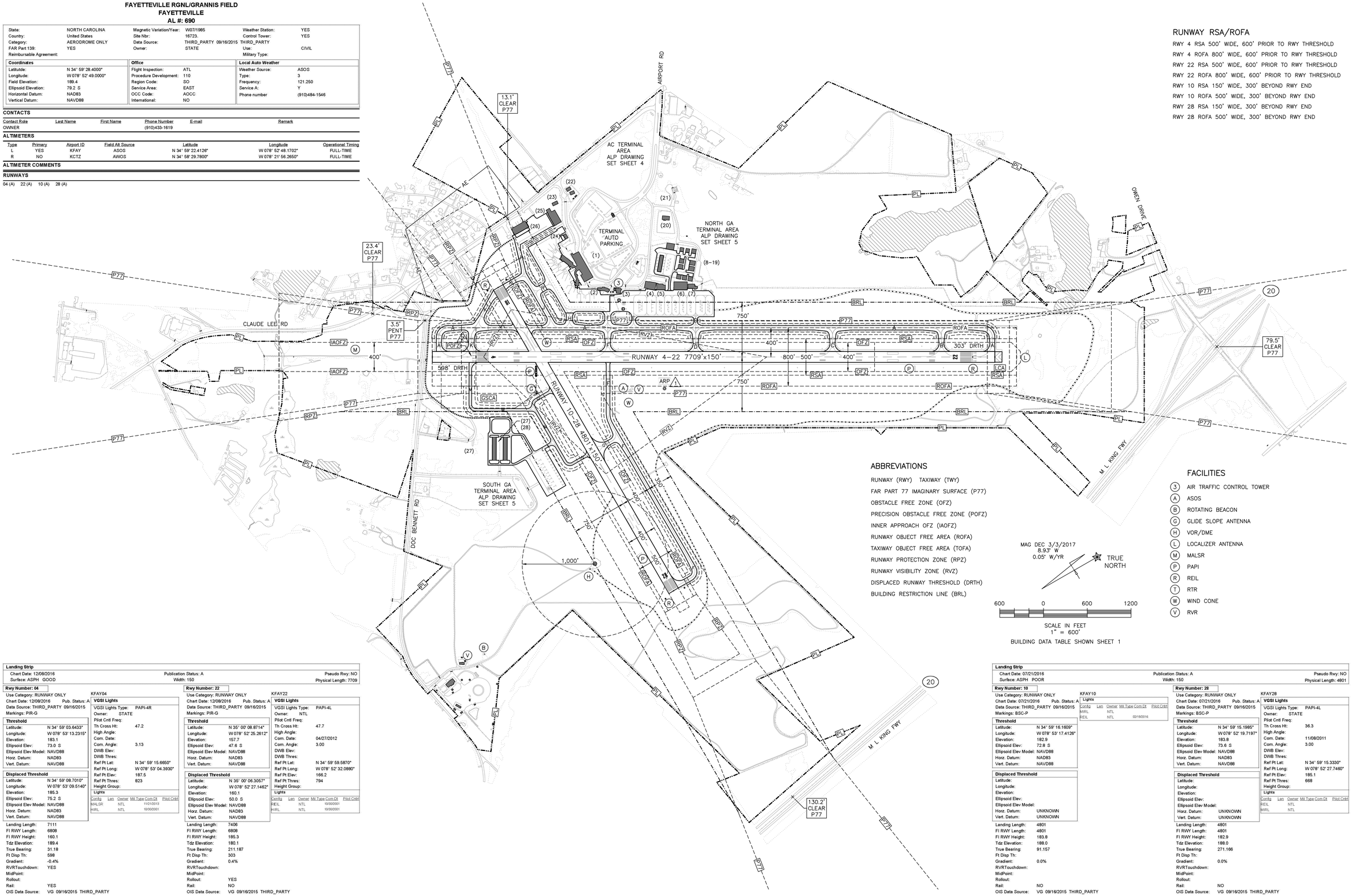
ALTIMETER COMMENTS

RUNWAYS

04 (A) 22 (A) 10 (A) 28 (A)

RUNWAY RSA/ROFA

RWY 4 RSA 500' WIDE, 600' PRIOR TO RWY THRESHOLD
RWY 4 ROFA 800' WIDE, 600' PRIOR TO RWY THRESHOLD
RWY 22 RSA 500' WIDE, 600' PRIOR TO RWY THRESHOLD
RWY 22 ROFA 800' WIDE, 600' PRIOR TO RWY THRESHOLD
RWY 10 RSA 150' WIDE, 300' BEYOND RWY END
RWY 10 ROFA 500' WIDE, 300' BEYOND RWY END
RWY 28 RSA 150' WIDE, 300' BEYOND RWY END
RWY 28 ROFA 500' WIDE, 300' BEYOND RWY END



ABBREVIATIONS

RUNWAY (RWY) TAXIWAY (TWY)
FAR PART 77 IMAGINARY SURFACE (P77)
OBSTACLE FREE ZONE (OFZ)
PRECISION OBSTACLE FREE ZONE (POFZ)
INNER APPROACH OFZ (IAOFZ)
RUNWAY OBJECT FREE AREA (ROFA)
TAXIWAY OBJECT FREE AREA (TOFA)
RUNWAY PROTECTION ZONE (RPZ)
RUNWAY VISIBILITY ZONE (RVZ)
DISPLACED RUNWAY THRESHOLD (DRTH)
BUILDING RESTRICTION LINE (BRL)

FACILITIES

(J) AIR TRAFFIC CONTROL TOWER
(A) ASOS
(B) ROTATING BEACON
(G) GLIDE SLOPE ANTENNA
(H) VOR/DME
(L) LOCALIZER ANTENNA
(M) MALSR
(P) PAPI
(R) REIL
(T) RTR
(W) WIND CONE
(V) RVR

MAG DEC 3/3/2017
8.93° W
0.05° W/YR
TRUE NORTH

600 0 600 1200
SCALE IN FEET
1" = 600'

BUILDING DATA TABLE SHOWN SHEET 1

Landing Strip
Chart Date: 12/08/2016 | Publication Status: A | Pseudo Rwy: NO
Surface: ASPH GOOD | Width: 150 | Physical Length: 7709

Rwy Number: 04
Use Category: RUNWAY ONLY
Chart Date: 12/09/2016 Pub. Status: A
Data Source: THIRD_PARTY 09/16/2015
Markings: PIR-G

Threshold

Latitude:	N 34° 59' 03.6433"
Longitude:	W 078° 53' 13.2315"
Elevation:	183.1
Ellipsoid Elev:	73.0 S
Ellipsoid Elev Model:	NAVD88
Horz. Datum:	NAD83
Vert. Datum:	NAVD88

Displaced Threshold

Latitude:	N 34° 59' 08.7010"
Longitude:	W 078° 53' 09.5140"
Elevation:	185.3
Ellipsoid Elev:	75.2 S
Ellipsoid Elev Model:	NAVD88
Horz. Datum:	NAD83
Vert. Datum:	NAVD88

Landing Length:	7111
Fl RWY Length:	6808
Fl RWY Height:	160.1
Tdz Elevation:	189.4
True Bearing:	31.18
Ft Disp Th:	598
Gradient:	-0.4%
RVRTouchdown:	YES
MidPoint:	
Rollout:	
Rail:	YES
OIS Data Source:	VG 09/16/2015 THIRD_PARTY
Assoc. Fac.:	GRA ILS (A)

KFAY04
VGSI Lights

VGSI Lights Type:	PAPI-4R
Owner:	STATE
Pilot Cntl Freq:	
Th Cross Ht:	47.2
High Angle:	
Com. Date:	
Com. Angle:	3.13
DWB Elev:	
DWB Thres:	
Ref Pt Lat:	N 34° 59' 15.6650"
Ref Pt Long:	W 078° 53' 04.3930"
Ref Pt Elev:	187.5
Ref Pt Thres:	823
Height Group:	

Lights

Config	Len	Owner	Mil Type	Com Dt	Pilot Cntrl
MALSR		NTL		11/01/2013	
HIRL		NTL		10/30/2001	

Rwy Number: 22
Use Category: RUNWAY ONLY
Chart Date: 12/09/2016 Pub. Status: A
Data Source: THIRD_PARTY 09/16/2015
Markings: PIR-G

Threshold

Latitude:	N 35° 00' 08.8714"
Longitude:	W 078° 52' 25.2612"
Elevation:	157.7
Ellipsoid Elev:	47.6 S
Ellipsoid Elev Model:	NAVD88
Horz. Datum:	NAD83
Vert. Datum:	NAVD88

Displaced Threshold

Latitude:	N 35° 00' 06.3057"
Longitude:	W 078° 52' 27.1462"
Elevation:	160.1
Ellipsoid Elev:	50.0 S
Ellipsoid Elev Model:	NAVD88
Horz. Datum:	NAD83
Vert. Datum:	NAVD88

Landing Length:	7406
Fl RWY Length:	6808
Fl RWY Height:	185.3
Tdz Elevation:	180.1
True Bearing:	211.187
Ft Disp Th:	303
Gradient:	0.4%
RVRTouchdown:	
MidPoint:	
Rollout:	YES
Rail:	NO
OIS Data Source:	VG 09/16/2015 THIRD_PARTY
Assoc. Fac.:	

KFAY22
VGSI Lights

VGSI Lights Type:	PAPI-4L
Owner:	NTL
Pilot Cntl Freq:	
Th Cross Ht:	47.7
High Angle:	
Com. Date:	04/27/2012
Com. Angle:	3.00
DWB Elev:	
DWB Thres:	
Ref Pt Lat:	N 34° 59' 59.5870"
Ref Pt Long:	W 078° 52' 32.0880"
Ref Pt Elev:	166.2
Ref Pt Thres:	794
Height Group:	

Lights

Config	Len	Owner	Mil Type	Com Dt	Pilot Cntrl
REIL		NTL		10/30/2001	
HIRL		NTL		10/30/2001	

Landing Strip
Chart Date: 07/21/2016 | Publication Status: A | Pseudo Rwy: NO
Surface: ASPH POOR | Width: 150 | Physical Length: 4801

Rwy Number: 10
Use Category: RUNWAY ONLY
Chart Date: 07/21/2016 Pub. Status: A
Data Source: THIRD_PARTY 09/16/2015
Markings: BSC-P

Threshold

Latitude:	N 34° 59' 16.1609"
Longitude:	W 078° 53' 17.4126"
Elevation:	182.9
Ellipsoid Elev:	72.8 S
Ellipsoid Elev Model:	NAVD88
Horz. Datum:	NAD83
Vert. Datum:	NAVD88

Displaced Threshold

Latitude:	
Longitude:	
Elevation:	
Ellipsoid Elev:	
Ellipsoid Elev Model:	
Horz. Datum:	UNKNOWN
Vert. Datum:	UNKNOWN

Landing Length:	4801
Fl RWY Length:	4801
Fl RWY Height:	183.8
Tdz Elevation:	188.0
True Bearing:	91.157
Ft Disp Th:	
Gradient:	0.0%
RVRTouchdown:	
MidPoint:	
Rollout:	
Rail:	NO
OIS Data Source:	VG 09/16/2015 THIRD_PARTY
Assoc. Fac.:	

KFAY10
Lights

Config	Len	Owner	Mil Type	Com Dt	Pilot Cntrl
MIRL		NTL			
REIL		NTL		03/18/2016	

Rwy Number: 28
Use Category: RUNWAY ONLY
Chart Date: 07/21/2016 Pub. Status: A
Data Source: THIRD_PARTY 09/16/2015
Markings: BSC-P

Threshold

Latitude:	N 34° 59' 15.1985"
Longitude:	W 078° 52' 19.7197"
Elevation:	183.8
Ellipsoid Elev:	73.6 S
Ellipsoid Elev Model:	NAVD88
Horz. Datum:	NAD83
Vert. Datum:	NAVD88

Displaced Threshold

Latitude:	
Longitude:	
Elevation:	
Ellipsoid Elev:	
Ellipsoid Elev Model:	
Horz. Datum:	UNKNOWN
Vert. Datum:	UNKNOWN

Landing Length:	4801
Fl RWY Length:	4801
Fl RWY Height:	182.9
Tdz Elevation:	188.0
True Bearing:	271.166
Ft Disp Th:	
Gradient:	0.0%
RVRTouchdown:	
MidPoint:	
Rollout:	
Rail:	NO
OIS Data Source:	VG 09/16/2015 THIRD_PARTY
Assoc. Fac.:	

KFAY28
VGSI Lights

VGSI Lights Type:	PAPI-4L
Owner:	STATE
Pilot Cntl Freq:	
Th Cross Ht:	36.3
High Angle:	
Com. Date:	11/08/2011
Com. Angle:	3.00
DWB Elev:	
DWB Thres:	
Ref Pt Lat:	N 34° 59' 15.3330"
Ref Pt Long:	W 078° 52' 27.7460"
Ref Pt Elev:	185.1
Ref Pt Thres:	998
Height Group:	

Lights

Config	Len	Owner	Mil Type	Com Dt	Pilot Cntrl
REIL		NTL			
MIRL		NTL			

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NC LICENSE NO. C-0713

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REV. NO.	DESCRIPTION	DATE
	REVISIONS	

FAYETTEVILLE REGIONAL AIRPORT
FAYETTEVILLE, NORTH CAROLINA
EXISTING AIRPORT LAYOUT DRAWING

DRAFT SET
JULY 2018

Date	JULY 2018
Scale	1" = 600'
Drawn	REM/LSM
Checked	NAS
Project No.	2502-1501
Sheet No.	2
	of ..... 20 sheeets

AIRPORT BASIC DATA

AIRPORT REFERENCE POINT (ARP)
LATITUDE NORTH 34°59'28.40" LONGITUDE WEST 78°52'49.00"
AIRPORT ELEVATION 189.4' MEAN SEA LEVEL (MSL)
RUNWAY 4–22 TRUE BEARING: 31.18°
RUNWAY 10–28 TRUE BEARING: 91.157°
RUNWAY 6–24 / RUNWAY 17–35 INTERSECTION:
LATITUDE NORTH 34°59'15.9409" LONGITUDE WEST 78°53'04.1894"
RUNWAY/RUNWAY INTERSECTION ELEVATION 187.6' MEAN SEA LEVEL (MSL)
HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 (NAD83)
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)
SURVEY SOURCE: 2016_FAY_VGA_5948.SPC
BUILDING DATA TABLE SHOWN SHEET 1

RUNWAY END DATA				
RUNWAY	LATITUDE NORTH	LONGITUDE WEST	ELEVATION	TDZ ELEVATION
4	34°59'03.6433"	78°53'13.2315"	183.1	189.4
4 DISPLACED	34°59'08.7010"	78°53'09.5140"	185.3	189.4
22	35°00'08.8714"	78°52'25.2612"	157.7	180.1
22 DISPLACED	35°00'06.3057"	78°52'27.1462"	160.1	180.1
10	34°59'16.1609"	78°53'17.4126"	182.9	188.0
28	34°59'15.1985"	78°52'19.7197"	183.8	188.0
28 FUTURE	34°59'14.9567"	78°52'05.2992"	183.8	188.0

MAG DEC 3/3/2017
8.93° W
0.05° W/YR
TRUE NORTH

600 0 600 1200
SCALE IN FEET
1" = 600'

AIRPORT RD
OWEN DRIVE
CLAUDE LEE RD
DOC BENNETT RD
M L KING FWY
RUNWAY 4–22 7709'x150'
RUNWAY 10–28 4801'x 50'
598' DRTH
303' DRTH
1,000'
13.1' CLEAR P77
23.4' CLEAR P77
3.5' PENT P77
79.5' CLEAR P77
130.2' CLEAR P77
AC TERMINAL AREA ALP DRAWING SET SHEET 4
NORTH GA TERMINAL AREA ALP DRAWING SET SHEET 5
SOUTH GA TERMINAL AREA ALP DRAWING SET SHEET 5
TERMINAL AUTO PARKING
RESERVE RENTAL CAR SERVICING
RESERVE CORPORATE DEVELOPMENT
RESERVE MAINT. BLD.
FUTURE
ARP
750'
400'
800'
500'
340'
1194'x150' RWY EXT

ABBREVIATIONS

RUNWAY (RWY) TAXIWAY (TWY)
FAR PART 77 IMAGINARY SURFACE (P77)
RUNWAY OBSTACLE FREE ZONE (ROFZ)
PRECISION OBSTACLE FREE ZONE (POFZ)
INNER APPROACH OFZ (IAOFZ)
RUNWAY OBJECT FREE AREA (ROFA)
TAXIWAY OBJECT FREE AREA (TOFA)
RUNWAY PROTECTION ZONE (RPZ)
RUNWAY VISIBILITY ZONE (RVZ)
DISPLACED RUNWAY THRESHOLD (DRTH)
BUILDING RESTRICTION LINE (BRL)

RUNWAY THRESHOLD SITING SURFACES		
RUNWAY	EXISTING	FUTURE
4	RUNWAY TYPE 4 AND 6	RUNWAY TYPE 4 AND 6
22	RUNWAY TYPE 3, 5, AND 6	RUNWAY TYPE 3, 5, AND 6
10	RUNWAY TYPE 3, 5, AND 6	RUNWAY TYPE 3, 5, AND 6
28	RUNWAY TYPE 3, 5, AND 6	RUNWAY TYPE 3, 5, AND 6
SOURCE: AC 150/5300-13A, TABLE 3-2 CHANGE 2		
ANALYSIS TABLE SHOWN ON SHEET 15		

RUNWAY APPROACH PART 77 AND RPZ DATA			
4	PRECISION APPROACH (CAT I) SURFACE VISIBILITY MINIMUMS NOT LESS THAN 1/2 MILE 1000' X 50000' X 16000' 10000' @ 50:1 SURFACE SLOPE 40000' @ 40:1 SURFACE SLOPE APPROACH RUNWAY PROTECTION ZONE 1000' X 1750' X 2500' DEPARTURE RUNWAY PROTECTION ZONE 500' X 1700' X 1010'	22	PRECISION APPROACH (CAT I) SURFACE VISIBILITY MINIMUMS NOT LESS THAN 1/2 MILE 1000' X 50000' X 16000' 10000' @ 50:1 SURFACE SLOPE 40000' @ 40:1 SURFACE SLOPE APPROACH RUNWAY PROTECTION ZONE 1000' X 1750' X 2500' DEPARTURE RUNWAY PROTECTION ZONE 500' X 1700' X 1010'
10	NON-PRECISION APPROACH SURFACE VISIBILITY MINIMUMS NOT LESS THAN 3/4 MILE 1000' X 10000' X 4000' 10000' @ 34:1 SURFACE SLOPE RUNWAY PROTECTION ZONE 1000' X 1700' X 1510'	28	NON-PRECISION APPROACH SURFACE VISIBILITY MINIMUMS NOT LESS THAN 3/4 MILE 1000' X 10000' X 4000' 10000' @ 34:1 SURFACE SLOPE RUNWAY PROTECTION ZONE 1000' X 1700' X 1510'

FACILITIES

(3) AIR TRAFFIC CONTROL TOWER
(A) ASOS
(B) ROTATING BEACON
(G) GLIDE SLOPE ANTENNA
(H) VOR/DME
(L) LOCALIZER ANTENNA
(M) MALSR
(P) PAPI
(R) REIL
(T) RTR
(W) WIND CONE
(V) RVR

AIRPORT MONUMENT DATA				
	NAME	NORTHING	EASTING	ELEVATION
1	FAY D (PACS)	451916.16	2035873.08	185.60
2	FAY 2 AZ MK (SACS)	449734.89	2033839.72	181.76

RUNWAY RSA/ROFA

RWY 4 RSA 500' WIDE, 600' PRIOR TO RWY THRESHOLD
RWY 4 ROFA 800' WIDE, 600' PRIOR TO RWY THRESHOLD
RWY 22 RSA 500' WIDE, 600' PRIOR TO RWY THRESHOLD
RWY 22 ROFA 800' WIDE, 600' PRIOR TO RWY THRESHOLD
RWY 10 RSA 150' WIDE, 300' BEYOND RWY END
RWY 10 ROFA 500' WIDE, 300' BEYOND RWY END
RWY 28 RSA 150' WIDE, 300' BEYOND RWY END
RWY 28 ROFA 500' WIDE, 300' BEYOND RWY END

FAA APPROVAL STAMP

RUNWAY PROFILE/ELEVATIONS

0 183.1 RWY 4 END
598 185.3 RWY 4 DISPLACED THRESHOLD
1453 187.6 RWY/RWY INTERSECTION
2210 189.4 HIGH POINT
5481 175.1 RWY 22 DISPLACED THRESHOLD
7406 160.1
7709 157.7 RWY 22 END LOW POINT
0 182.9 RWY 10 END
1101 187.6 RWY/RWY INTERSECTION
2401 187.93
2730 188.12 HIGH POINT
4801 183.96 RWY 28 END HGH POINT

LEGEND		
MAPPING ITEM		SYMBOL
CREEK STREAM AND POND		
GROUND CONTOUR		180
TREELINE		
UNPAVED ROAD		
PAVED ROAD		
FENCE LINE		
BUILDING/STRUCTURE		
AIRPORT ITEM	EXISTING	FUTURE
BUILDING/STRUCTURE (1–28)		
PERIMETER ROAD		FUT
PAVED AREA		
PROPERTY LINE (PL), (FPL)		
BUILDING RESTRICTION LINE (BRL)		
AVIGATION EASEMENT (AE)	AE	FAE
LAND ACQUISITION		
TAXIWAY CLOSURE		(D)

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REVISIONS		
REV. NO.	DESCRIPTION	DATE

FAYETTEVILLE REGIONAL AIRPORT
FAYETTEVILLE, NORTH CAROLINA
AIRPORT LAYOUT DRAWING

DRAFT SET
JULY 2018

Date	JULY 2018
Scale	1" = 600'
Drawn	REM/LSM
Checked	NAS
Project No.	2502-1501
Sheet No.	3
	of .....20 sheeets

FAYETTEVILLE REGIONAL AIRPORT

INVENTORY



July 2018

TALBERT & BRIGHT, INC. 4810 Shelley Drive. Wilmington. North Carolina. 28405. T: 910.763.5350

2 INVENTORY

This inventory section provides an overview of Fayetteville Regional Airport, including its ownership, physical facilities, operational characteristics, level of service, facility development, land use, and zoning. The information used to prepare the inventory was obtained through past project efforts, on-site field visits, correspondence with airport staff, and a review of published information.

Information was also obtained from available planning documents and studies concerning the Airport and surrounding areas. The information presented in this section serves as the basis for the development of subsequent study tasks and ultimately, the Airport Master Plan Update (AMPU) recommendations.

It should be noted that the information presented in this section is based on what was available at the time of preparation. To better reflect existing conditions, some of the information presented in this section has been updated as necessary throughout the planning process. However, since the Airport and the aviation industry are constantly changing, some of the information current at the time of preparation may now be out-of-date.

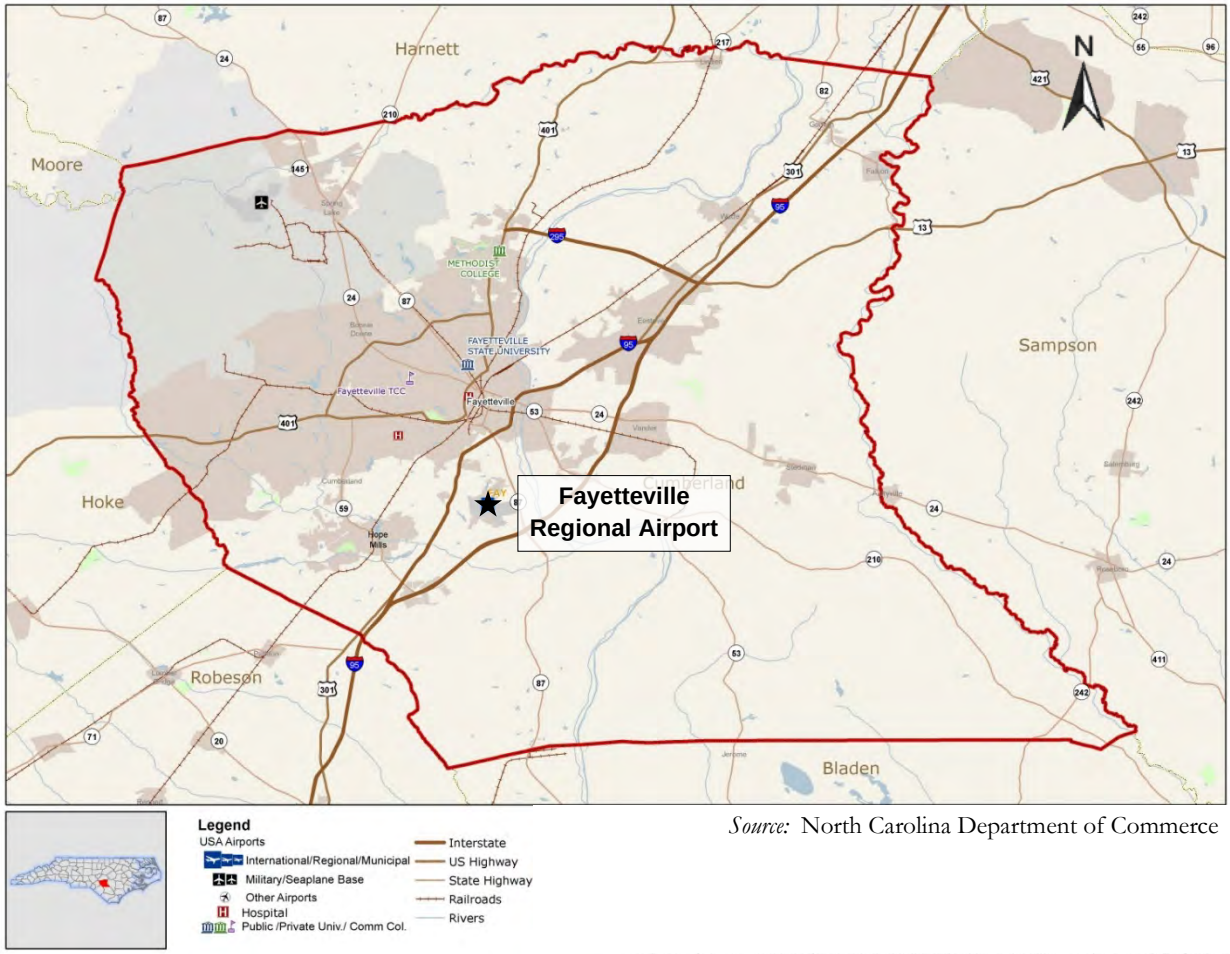
2.1 AIRPORT LOCATION, ROLE, CLASSIFICATION

2.1.1 Airport Location

Owned by the City of Fayetteville and located along the I-95 corridor (**Figure 2-1**), FAY is a public - use airport situated on 1,343 acres of land in Cumberland County, North Carolina. The climate of Fayetteville can be generally described as "humid subtropical," which is characterized by hot, usually humid summers and mild to cool winters. July is the hottest month of the year with an average high temperature of 90° F. January is the coldest month of the year with an average low temperature of 31° F.

The airport terminal area is easily accessed from Interstate 95 via Exit 44, signed, "Fayetteville Regional Airport, Claude Lee Road." Claude Lee Road is a North Carolina Department of Transportation (NCDOT) maintained two-lane secondary route and is in good condition. The road changes name (to Doc Bennett Road) as it approaches the Airport, and ends at Airport Road, a 4-lane divided NCDOT maintained road in good condition. The distance from Exit 44 to the airline terminal is less than 3 miles. From central Fayetteville and the NC Highway 87 freeway, the Airport can be accessed via US 301/Business 95 and Airport Road. The Airport is approximately six (6) miles from downtown Fayetteville.

Figure 2-1: Airport Location



Source: North Carolina Department of Commerce

Fayetteville is the seat of Cumberland County. As of the 2010 census, the population of Cumberland County was 319,431, making it the fifth-most populous county in North Carolina. The Airport property is incorporated in the city limits. Surrounding properties are in an un-incorporated section of Cumberland County. The Airport is located within the Military/Airport (MA) District and is exempt from the standards set forth in the city's Unified Development Ordinance. The MA District includes lands within the city containing military installations (Fort Bragg) and the Fayetteville Regional Airport. Aside from small areas zoned Light Industrial (LI) to the west and south of the Airport, most of the land adjacent to the Airport is either zoned Planned Industrial or Planned Commercial. There are a limited number of parcels to the Airport's west that are zoned Residential or Rural Residential. This is illustrated in **Figure 2-2**, Airport Zoning.

2.1.2 Airport Service Area & Access

An airport's primary air service area (the geographical area it serves) is defined by several factors, including geographical and access considerations, as well as by the proximity of alternative aviation facilities. More specifically, an airport's catchment area is the geographic area from which an airport can reasonably expect to draw commercial air service passengers. However, use of an airport by the airport's catchment area population is affected by a variety of factors, including the proximity to competing airport(s), airfares, destinations offered, and flight frequency. FAY's primary service area is Cumberland, Sampson, Hoke, and Robeson Counties.

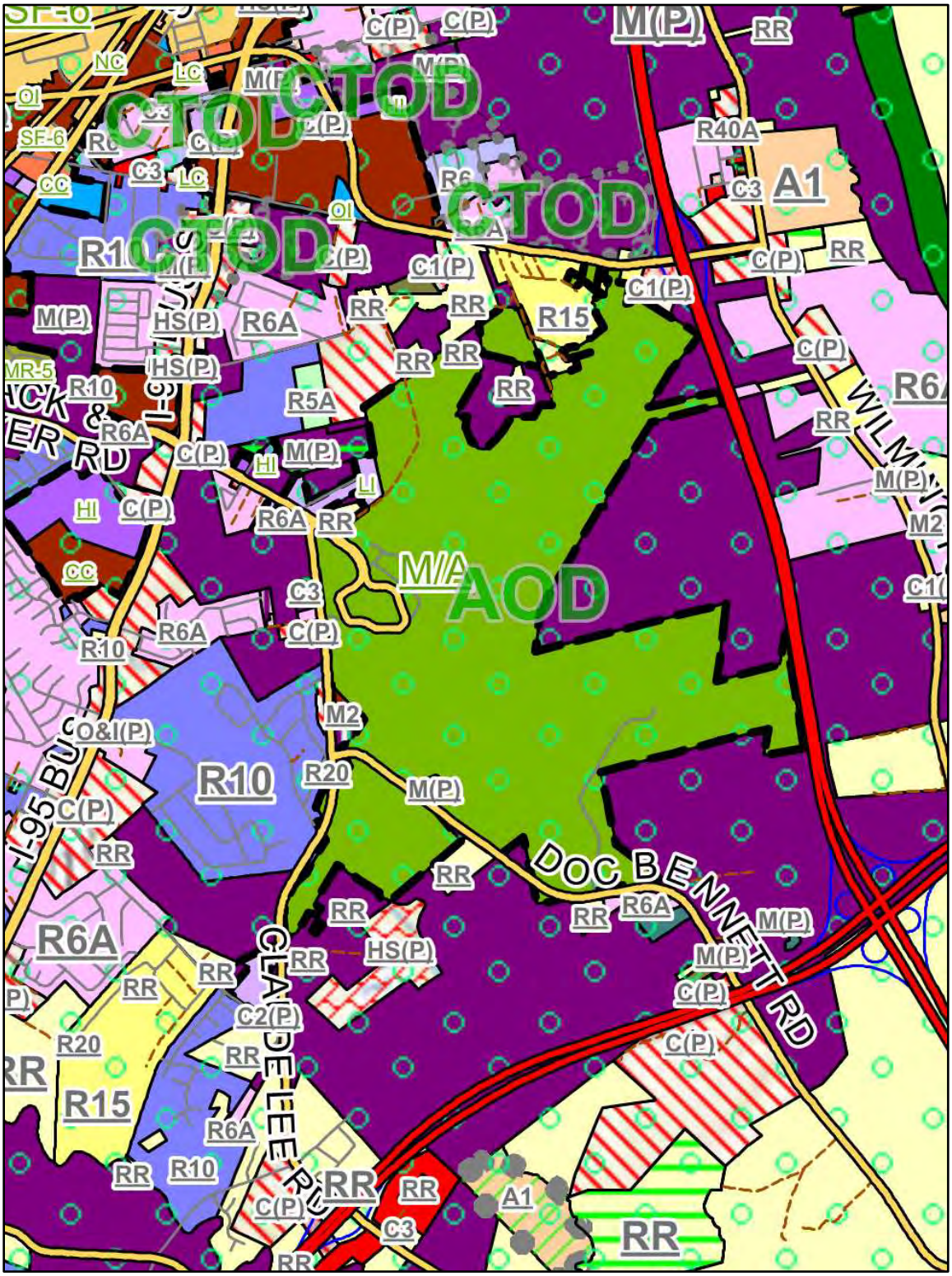
2.1.3 Airport Class and Role

The National Plan of Integrated Airport Systems (NPIAS) identifies more than 3,300 airports that are significant to national air transportation and therefore eligible to receive Federal grants under the Airport Improvement Program (AIP). The NPIAS includes all commercial service airports, all reliever airports, and selected general aviation (GA) airports. FAY is recognized in the Federal Aviation Administration's (FAA) NPIAS as a Non-Hub Commercial Service airport. Commercial Service airports are publicly owned airports that have at least 2,500 passenger enplanements each calendar year and receive scheduled passenger service. Non-Hub airports are defined as those which handle more than 10,000 enplaned passengers but less than 0.05% of total U.S. enplaned passengers annually. As per the NPIAS, FAY is classified as a "Primary Service" airport.

FAY is served by three major air carriers and their regional partners (American Airlines, Delta Airlines and United Airlines). Non-stop flights are available to Charlotte (American), Atlanta (Delta) and Washington Dulles (United). As of July 1, 2016, these airlines offer a combined total of 14 daily departures, operated on turbo-prop, regional jet, and narrow-body mainline aircraft types. In addition to being the sole access point of scheduled air service in Cumberland County, the Airport accommodates general aviation and charter services. The Airport's general aviation activities are centered on the North General Aviation apron. The Fixed Base Operator (FBO), Signature Aviation, which occupies a hangar on the North Apron, provides aircraft services such as line service, fueling and deicing, and aircraft parking/tie-downs, as well as pilot services such as a pilot's lounge, and a flight planning area.

In 2004, FAA issued a final rule that revised the Federal airport certification regulation [Title 14, Code of Federal Regulations (CFR), Part 139 (14 CFR Part 139)] and established certification requirements for airports serving scheduled air carrier operations. Airport Operating Certificates serve to ensure safety in air transportation. To obtain a certificate, an airport must agree to certain operational and safety standards and provide for such things as firefighting and rescue equipment. Since FAY currently holds an Airport Operating Certificate and may serve any air carrier operations covered under Part 139, the Airport must comply with all Part 139 requirements.

Figure 2-2: Airport Zoning



Source: Cumberland County NC GIS

2.2 AVIATION ACTIVITY

Per the Airport's master record at the time of preparation, there are currently 66 aircraft based on the field. These aircraft include 49 single-engine, ten (10) multi-engine, (6) jet aircraft, and one (1) helicopter. The largest jet aircraft currently based on the field is a Gulfstream IV. By their nature, aircraft are on the move, however, The Federal Aviation Administration (FAA) defines a "based aircraft" as an aircraft that is operational and air worthy, which is based at a specific facility for most the year.

The FAA's Terminal Area Forecast (TAF) system is the official forecast of aviation activity at terminal facilities. These forecasts are prepared to meet the budget and planning needs of the FAA and to provide information for use by state and local authorities, the aviation industry, and the public. The TAF includes forecasts for active airports in the NPIAS.

An operation is defined as a takeoff or a landing. Operations are broken down into local operations and itinerant operations. A local operation is a flight that originates and terminates at the same airport, whereas an itinerant operation is one that originates at one airport and terminates at another. The TAF indicates that in 2015 there were 36,475 operations, comprised of 10,344 air carrier and regional/commuter operations, 8,853 general aviation (GA) local operations, 13,348 GA itinerant operations and 1,973 military operations.

Enplanements are another metric used to describe an airport's operating characteristics. An enplaned passenger is defined as a revenue passenger boarding an aircraft, including originating, stopover, and transfer passengers, in scheduled and nonscheduled services. Enplanement numbers for commercial service airports are available from various sources including the Department of Transportation (DOT), the Federal Aviation Administration (FAA), and the airport.

Table 2.1 presents the number of annual enplanements from the years 2005-2015 per the FAA's TAF records.

Table 2.1 – Historical Annual Enplanements

Year	Enplanements
2005	160,982
2006	149,887
2007	172,765
2008	191,514
2009	225,608
2010	251,675
2011	262,217
2012	256,791
2013	246,349
2014	233,744
2015	220,339

Source: FAA TAF & Airport Records

2.3 AIRPORT PROJECT HISTORY

The 2005 Master Plan identified several airside and landside projects to enhance the airport's ability to accommodate then existing activity as well as future demand. A number and variety of projects have been completed at the Airport since the previous master plan was completed.

As shown in **Table 2.2**, this includes: pavement rehabilitation, safety improvements, hangar development, new navigational aids, and airport equipment acquisition among others.

Table 2.2 – Airport Improvements, 2008-2015

Project	Year	AIP #	Cost
New Airfield Lighting Vault	2009	33	$1.9 million
Centurion Corporate Hangar	2009	Private	N/A
Runway 4/22 Rehabilitation	2009	34	$6.3 million
North GA West Ramp Rehabilitation	2010	State Funds	$635,000
Revenue Parking Lot Improvements	2010	Local	$181,490
Aircraft Rescue and Firefighting Building Improvements	2011	35,36	$1.1 million
Snow Removal Equipment Shelter	2011	32	$179,500
Sierra Nevada Corporate Hangar	2011	Private	N/A
Cargo to Corporate Office/Shop/Storage Conversion	2005	Private	N/A
Taxiway "A" Rehabilitation	2012	37	$5.4 million
Runway 4 and Runway 10 Approach Clearing	2012	State Funds	$208,000
Gate B4 Passenger Boarding Bridge	2012	PFC	$387,000
Air Carrier Apron Rehabilitation – Phase 1	2013	38	$4.2 million
Runway 4 RSA Improvements & Taxiway "A" Extension	2013	39,40	$3.3 million
Runway 4/22 Paved Shoulders	2014	41	$3.6 million
Taxiway "J" and "K" Rehabilitation	2015	42	$2.7 million
Air Carrier Apron Rehabilitation, Phase 2	2015	42	$2.2 million
Airport Master Plan Update, Part 1	2015	42	$323,500
Replace Marker Beacon with DME, Runway 4 ILS	2009	FAA	N/A
New Employee Parking Lot	2016	Local/CFC	$668,000

Source: City of Fayetteville

2.4 AIRSIDE FACILITIES

Discussion of airport facilities in this narrative is divided into airside and landside sections. Airside facilities are associated with the taxiing, takeoff and landing of aircraft, i.e., the airfield and its components. Existing information associated with airfield facilities presented herein include:

- Runways
- Taxiways
- Lighting & Instrumentation

The official airport diagram for FAY is illustrated in **Figure 2-3**, and summarized in **Table 2.3**, Runway Characteristics and **Table 2.4**, Taxiways. **Figure 2-4** and **Figure 2-5** provide a graphical representation of the airport terminal area and adjacent facilities.

2.4.1 Runways

The existing airfield configuration consists of two runways: a northeast-southwest runway designated as Runway 4/22, and an east-west runway designated as Runway 10/28.

Runway 4/22 is the primary runway at FAY. Runway 4/22 is 7,709 feet long by 150 feet wide with a grooved asphalt surface. The Runway Design Code (RDC) for Runway 4/22 is C-III-2400, for reference to current FAA standards in Advisory Circular AC 150/5300-13A, Change 1 and other FAA publications.

The Runway Safety Area (RSA) and Runway Object Free Area (ROFA) standards for Runway 4/22 are met in part using displaced landing thresholds and declared distances as presented in **Table 2.3**.

Runway 10-28 is the crosswind runway and is 4,801 feet long by 150 feet wide with an asphalt surface. The Runway Design Code for Runway 10/28 is B-II-5000, for reference to current FAA standards in Advisory Circular AC 150/5300-13A, Change 1 and other FAA publications.

The pavement strength for Runway 10/28 is 53,000 pounds for single wheel loading and 75,000 pounds for dual wheel loading (PCN 11/F/B/Y/T). At the time of report preparation, the pavement conditions and markings on Runway 10/28 was poor. Since then, a pavement rehabilitation project was completed on Runway 10/28. The characteristics of Runway 10/28 are also presented in **Table 2.3**.

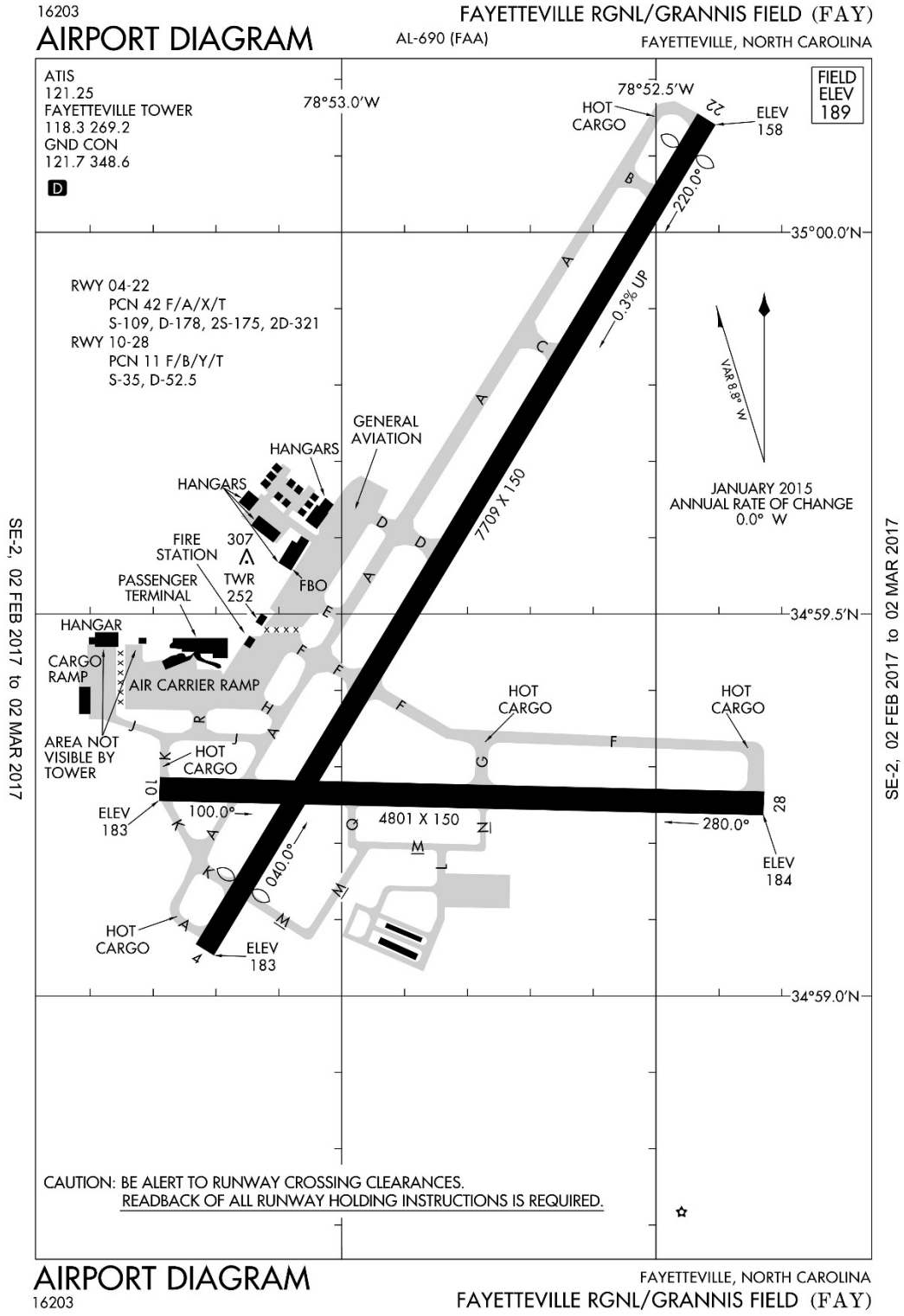
Table 2-3: Runway Characteristics

RUNWAY DATA	RUNWAY 04/22	RUNWAY 10/28
Length	7,709'	4,801'
Width	150'	150'
Surface Type-Condition	Asphalt-Good	Asphalt-Poor
Surface Treatment	Grooved	None
Gross Weight		
Single Wheel	109,000 lbs.	53,000 lbs.
Dual Wheel	178,000 lbs.	75,000 lbs.
Double Tandem Wheel	321,000 lbs.	Not reported
Dual Double Tandem Wheel	Not reported	Not reported
Pavement Classification Number (PCN)	42/F/A/X/T	17/F/A/X/T
Edge Light Intensity	High (HIRL)	Medium (MIRL)
Runway Marking Type-Condition	PIR-Good / PIR-Good	NPI-Good/NPI-
Visual Glide Slope Indicator	PAPI-4R / PAPI-4L	None / PAPI-4L
Threshold Crossing Height (AGL)	47' / 48'	NA/ 36'
Visual Glide Angle (degrees)	3.13° / 3.00°	NA / 3.00°
Runway End Identifier Lights (REIL)	No / Yes	Yes / Yes
Approach Lights	MALSR / None	None / None
Runway End Elevation	183.1' / 157.7'	182.9' / 183.8'
Displaced Threshold	598' / 303'	None / None
Displaced Threshold Elevation	185.3'/160.1'	
Obstruction Marked/Lighted	None / None	None / None
Declared Distances		
Touchdown Zone Elevation (TDZE)	189.4'/180.1'	188'/188'
Take Off Run Available (TORA)	7,709' / 7,709'	None / None
Take Off Distance Available (TODA)	7,709' / 7,709'	None / None
Accelerate Stop Distance Available (ASDA)	7,007' / 6,715'	None / None
Landing Distance Available (LDA)	6,508' / 6,413'	None / None

HIRL – High Intensity Runway Lights
NPI – Non-Precision Marking
MIRL – Medium Intensity Runway Lights
PAPI – Precision Approach Path Indicator
PIR – Precision Instrument Runway

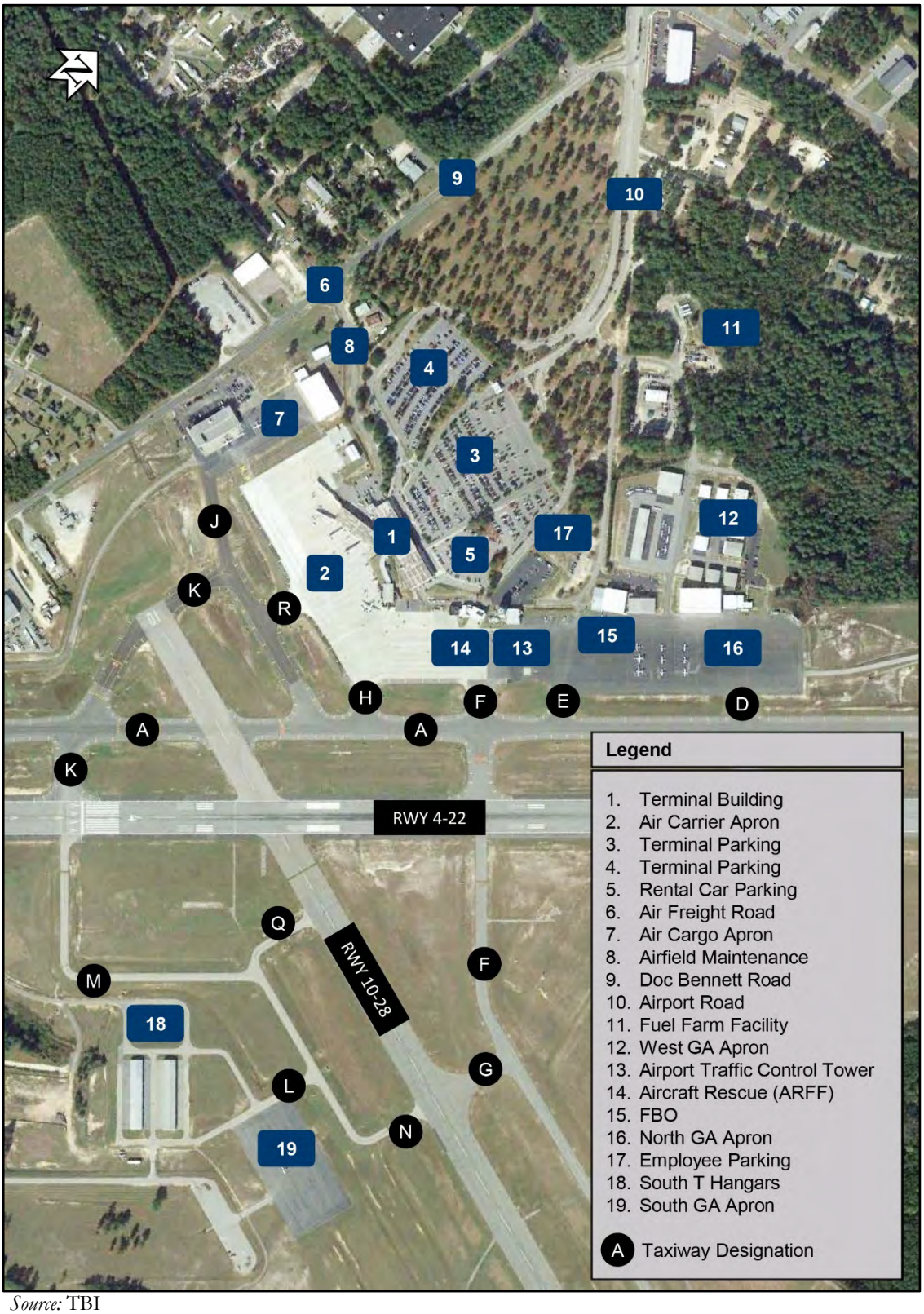
Source: National Flight Data Center

Figure 2-3: FAY Airport Diagram



Source: Airnav.com

Figure 2-4: Terminal Area and Adjacent Facilities



Source: TBI

2.4.2 Taxiways

There are 15 taxiways at FAY designated "A" through "R" (not including "I", "O", or "P"). Each taxiway is paved with asphalt and equipped with medium intensity taxiway edge lights (MITL). A full parallel taxiway (Taxiway "A") runs the entire length of Runway 4/22. The crosswind Runway 10/28 has full parallel taxiway coverage via Taxiways "A", "F", "J" and "K". The runway centerline separation of all parallel taxiway segments measures 400 feet. Nominal taxiway widths and 2016 pavement condition (as per a report prepared for the NCDOT Division of Aviation) are shown in **Table 2-4**. The 60-foot nominal taxiway width for the taxiways serving airline traffic is a legacy standard for Group III aircraft with a long wheel base, associated with footnote 2, Table 4-1 of AC 150/5300-13 (the previous Airport Design AC). These taxiways continue to adequately serve aircraft with a wheelbase greater than 60 feet without difficulty (current usage by MD-80 series aircraft).

Table 2.4 – Taxiways

TAXIWAY	WIDTH *1	PAVEMENT CONDITION
A (Full Parallel, Runway 4-22)	60 feet *2	Fair-Good
B (Stub)	60 feet *2	Satisfactory
C (Stub)	60 feet *2	Satisfactory-Good
D (Stub)	60 feet *2	Fair-Good
D & E (North GA Access)	50 feet *2	Good
F (Stub & AC Apron Access)	60 feet *2	Good
F (Partial Parallel, Runway 10-28)	50 feet	Poor
G (Stub)	50 feet	Poor
H (AC Apron Access)	60 feet *2	Good
J (Partial Parallel, Runway 10-28)	60 feet *2	Good
J (Cargo Apron Access)	50 feet	Good
K (Stub)	60 feet *2	Satisfactory-Good
L (South GA)	35 feet	Fair
M (South GA)	35 feet	Satisfactory
N (South GA)	35 feet	Satisfactory
Q (South GA)	35 feet	Satisfactory
R (AC Apron Access)	60 feet *2	Good

Source: TBI, NCDOT Pavement Study 2016

Notes: *1: Taxiway widths are nominal width exclusive of intersection tapers, widening, and fillets.

*2: Designates taxiway with paved shoulders.

2.4.3 Airfield Aprons

2.4.3.1 Air Carrier Apron

The airline terminal area is bounded by the Airport's "Cargo Apron" on the west, the runway and taxiway system to the south and east, the FAA and GA complex to the northeast, as well as under-developed airport land further north.

The air carrier apron features approximately 56,200 square yards of pavement. The apron includes 40,200 square yards of concrete pavement constructed in 2012 and 2015, 2100 square yards of asphalt pavement resurfaced in 2001, and 13,900 square yards of concrete pavement constructed in 1987. The newer concrete pavement is in good condition. The asphalt pavement resurfaced in 2001 is in satisfactory condition. The 1987 concrete pavement was rehabilitated in 2015 (concrete pavement repairs and joint sealing) and is in good condition. The pavement is suitable for regular use by the full range of regional and narrow body aircraft and occasional use by wide body aircraft.

The air carrier apron is accessed by 3 connector taxiways and a 60-foot wide apron edge taxilane. The apron depth between the apron edge taxilane and the existing concourses and other structures varies and is somewhat narrow, but adequately supports parking positions for regional and narrow body aircraft.

2.4.3.2 GA Aprons

The Airport's general aviation activities are located on the North GA apron, the West GA apron and the South GA apron. The Fixed Base Operator (FBO), Signature Aviation, occupies a large conventional hangar on the North GA apron and provides aircraft services such as line service, fueling and aircraft parking/tie-downs, as well as pilot services. The North GA apron is approximately 420,000 square feet and its pavement is in satisfactory condition. The apron provides tie down spaces for both transient and based aircraft, two helicopter parking pads, a compass rose, and access to four hangar buildings.

The West apron is located adjacent to the North GA Apron and is accessed from the North apron via an unlit 25-foot wide taxiway. The West apron provides tie down spaces and access to a 10-unit T- hangar, a maintenance hangar and ten (10) corporate box hangars. The apron was rehabilitated in 2010 (drainage system and pavement) and is in satisfactory to good condition.

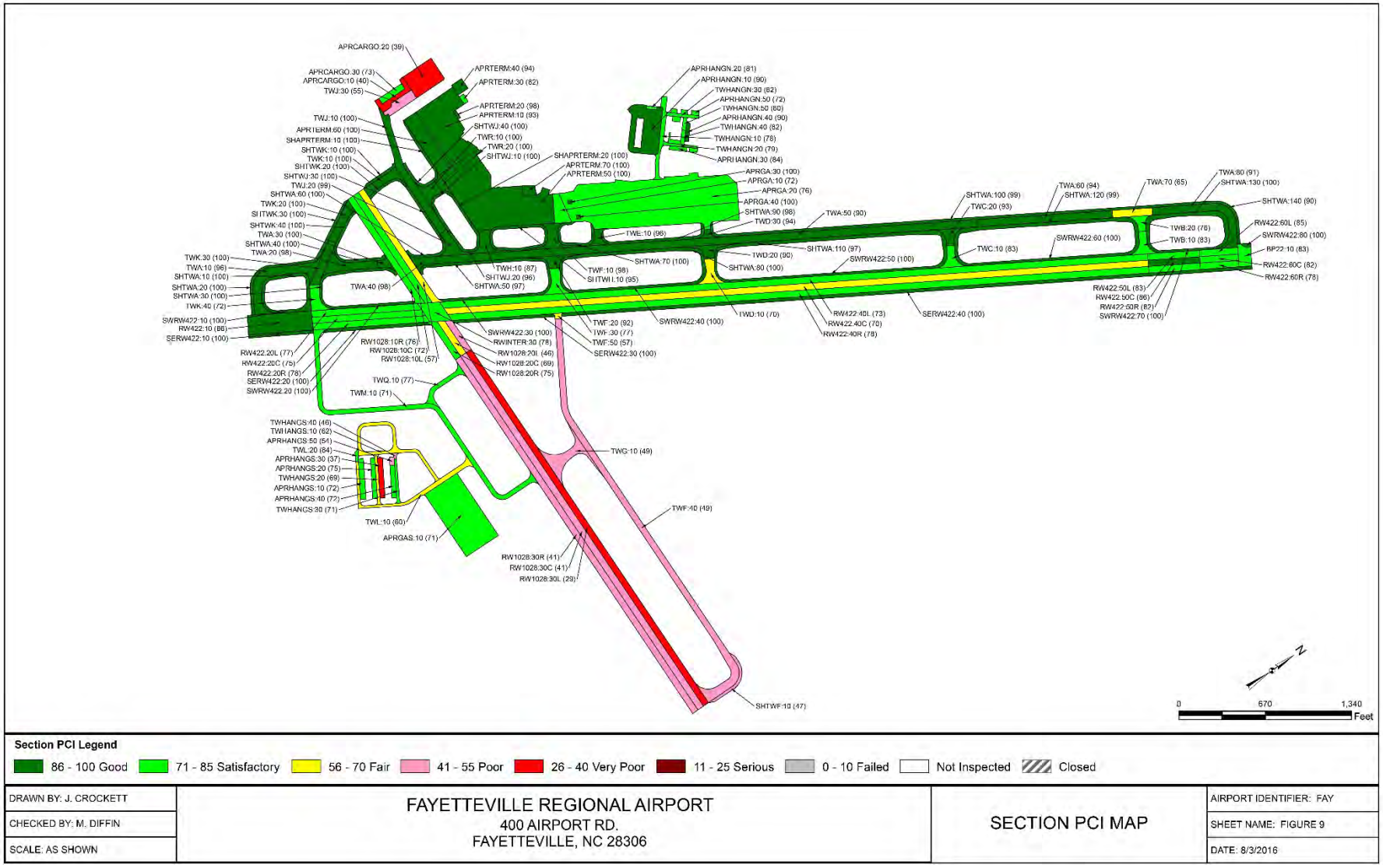
The South GA apron is approximately 173,000 square feet and its pavement is in satisfactory condition. The apron provides 31 aircraft tie-downs.

The Cargo apron located west of the air carrier apron is approximately 105,000 square feet; the condition of its pavement ranges from very poor to satisfactory. The apron provides access to a large corporate hangar as well as aircraft parking space.

2.5 AIRPORT PAVEMENT MANAGEMENT

In recent years, the NCDOT Division of Aviation has undertaken pavement management activities at airports throughout the state. At FAY, the NCDOT Division of Aviation has provided pavement condition index (PCI) reporting (2013 and 2016) and pavement strength evaluation (PCN) reporting (2014). The Pavement Condition Map from the 2016 PCI report is shown in **Figure 2-5**.

Figure 2.5: Airfield Pavement Conditions (2016)



2.6 LIGHTING AND INSTRUMENTATION

2.6.1 Lighting/Visual Aids

High intensity runway edge lights (HIRL) are provided on Runway 4/22 and medium intensity runway edge lights (MIRL) are provided on Runway 10/28. A medium intensity approach lighting system with runway alignment indicator lights (MALSR) is provided on Runway 4. Runway end identifier lights (REILs) are provided on Runways 10, 22 and 28. Precision approach path indicator lights (PAPIs) are provided on Runways 4, 22, and 28.

PAPI's are light array systems positioned beside the runway, consisting of four equi-spaced light units color-coded to provide a visual indication of an aircraft's position relative to the designated glideslope for the runway. PAPIs have an effective visual range of approximately five miles during the day and up to 20 miles at night. In addition to these visual aids, the Airport also has a rotating beacon to assist pilots in locating the airport during nighttime and inclement weather. At civil airports, such as FAY, a rotating beacon emits alternating white and green flashes to indicate the location of the Airport. The beacon at FAY is located atop a tower adjacent to Radar Road. The Airport's four lighted wind cones are dispersed throughout the airfield. There is one wind cone in proximity to each of the four runway ends.

2.6.2 FAA Navigational Aids

Electronic navigational aids (NAVAIDs) are instrument navigation elements used to guide an aircraft enroute between airports, on approach to an airport or directly to a runway end. These elements of instrument guidance are available in all weather and are critical when the visibility is poor and/or low clouds are prevalent. FAA NAVAID facilities at FAY include the Runway 4 ILS components (Glide Slope, Localizer, DME, RVR and MALSR), a VOR/DME, a TRACON radar facility and a 24-hour Airport Traffic Control Tower (ATCT). The FAA also maintains some of the visual aids and aviation weather equipment on the airfield. The FAA has a System Support Center (SSC) at FAY which maintains the FAA NAVAIDs, visual aids, weather equipment and radio communication equipment on the field and regionally.

2.6.3 Automated Surface Observing System (ASOS)

Weather reporting equipment at FAY consists of an ASOS located northeast of the Runway 4-22 Taxiway "F" intersection. Per the Aeronautical Information Manual (AIM), an ASOS provides continuous minute-by-minute observations and performs basic observing functions necessary to generate an aviation routine weather report (METAR) and other aviation weather information. An ASOS has the capability to report altimeter, wind, temperature/dew point, density altitude, visibility,

clouds/ceiling, precipitation and remarks. Located to the west of the ASOS is an anemometer. ASOS installations sense wind speed and direction using a rotating cup anemometer and wind vane. FAY is also equipped with wind shear detection equipment.

2.6.4 Instrument Landing System

An ILS is designed to provide an approach path for highly accurate alignment and descent of an aircraft on final approach to a runway. There are three types of ILS systems, referred to as CAT I, CAT II, and CAT III. The ILS system at FAY is categorized as CAT I. For a pilot to be able to make an approach to a runway during inclement weather, the weather must be at or above certain conditions depending on the category of the ILS approach. Per the Aeronautical Information Manual (AIM) the lowest authorized ILS minimums, with all required ground and airborne systems components operative for CAT I are a decision height of 200 feet and a runway visual range (RVR) of 2,400 feet. At FAY, the Runway 4 ILS approach and the Runway 4 RNAV (GPS) approach both achieve these minima.

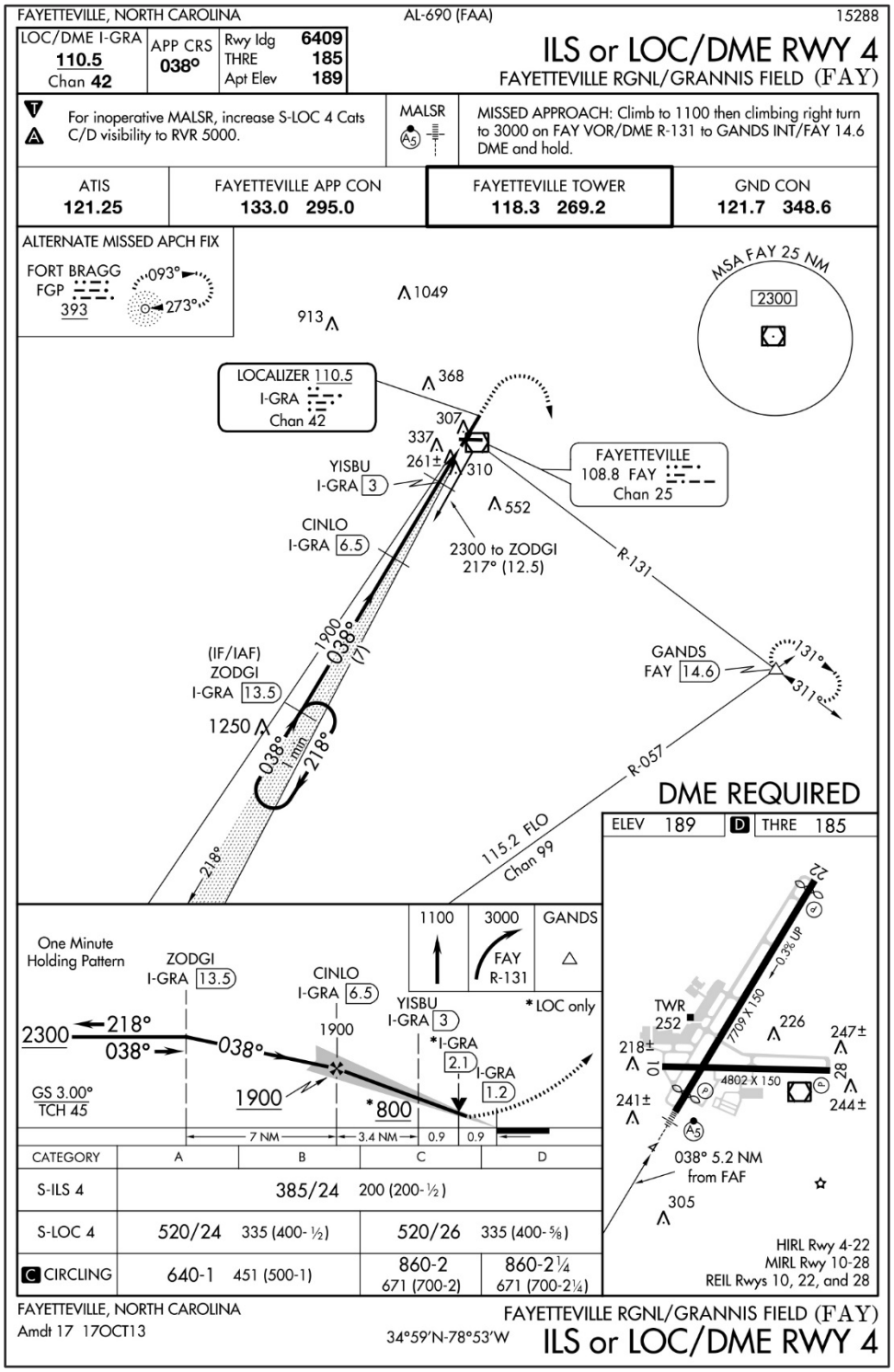
2.6.5 Instrument Approaches

An Instrument Approach, or Instrument Approach Procedure (IAP), consists of a series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing or to a point from which a landing may be made visually. These approaches are prepared and approved by the FAA. There are two types of IAPs at FAY, including:

- Precision Approach (PA)
- Non- Precision Approach (NPA)

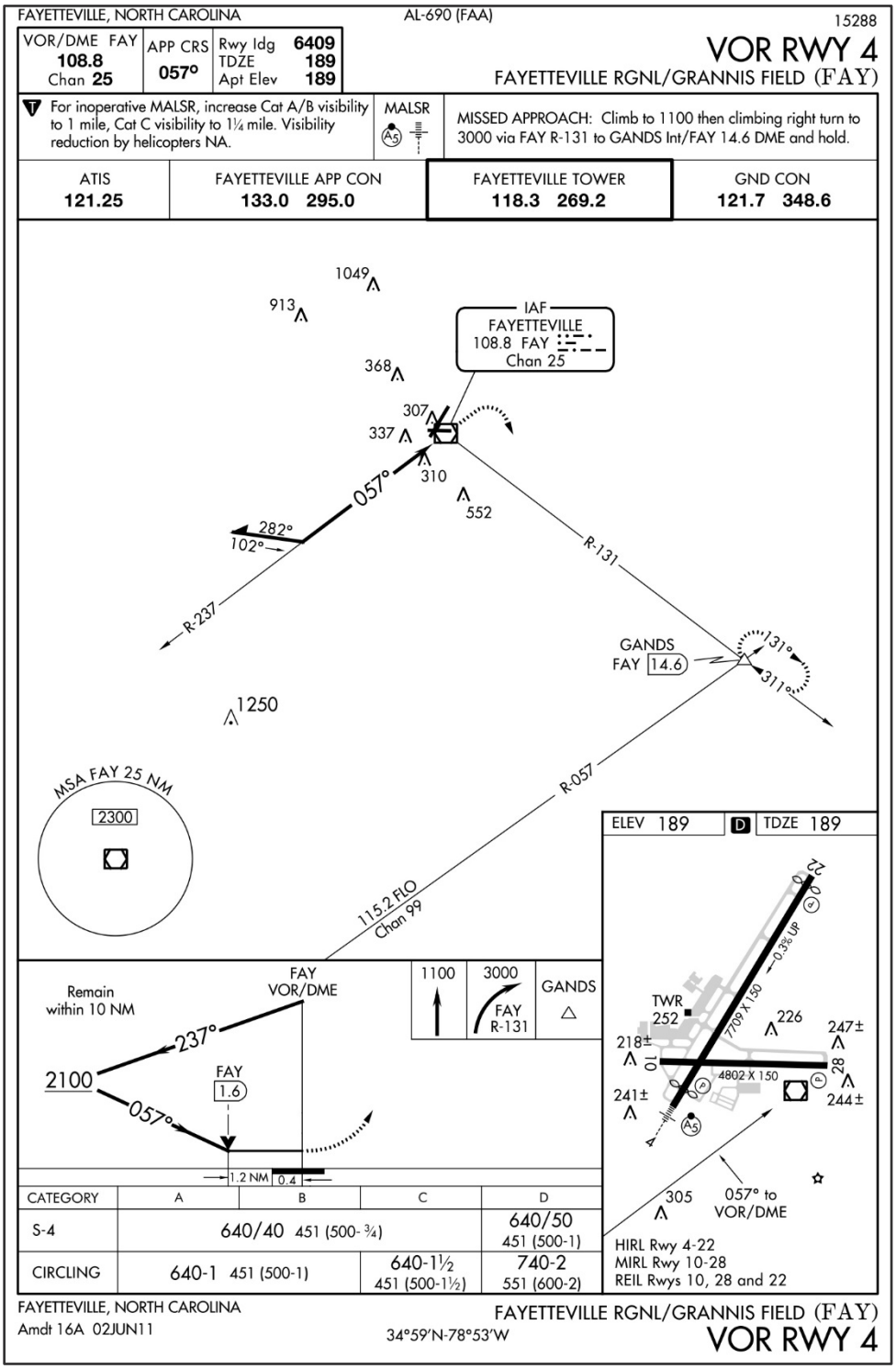
A PA uses a navigation system which provides course and glidepath deviation. An NPA uses a navigation system for course deviation but does not provide glidepath information. For FAY, non-precision approaches include a VOR, GPS and a Localizer Back Course that uses the lateral component of the instrument landing system for Runway 4. NPAs are flown to a Minimum Descent Altitude (MDA). Regarding FAY, this includes an Instrument Landing System (ILS) to Runway 4 and several NPA's to each runway end. IAP Charts are Aeronautical Charts which portray the aeronautical data which is required to execute an instrument approach to an airport. Besides depicting topographic features, hazards and obstructions, they depict the procedures and airport diagram. NPAs depict the MDA while a PA will show both the Decision Altitude (DA) and Decision Height (DH). Finally, the chart will depict the missed approach procedures in plan and profile view, besides listing the steps in sequence. There are nine published instrument approaches for FAY. These are illustrated in **Figures 2-6** through **2-13**.

Figure 2-6: ILS Approach, Runway 4



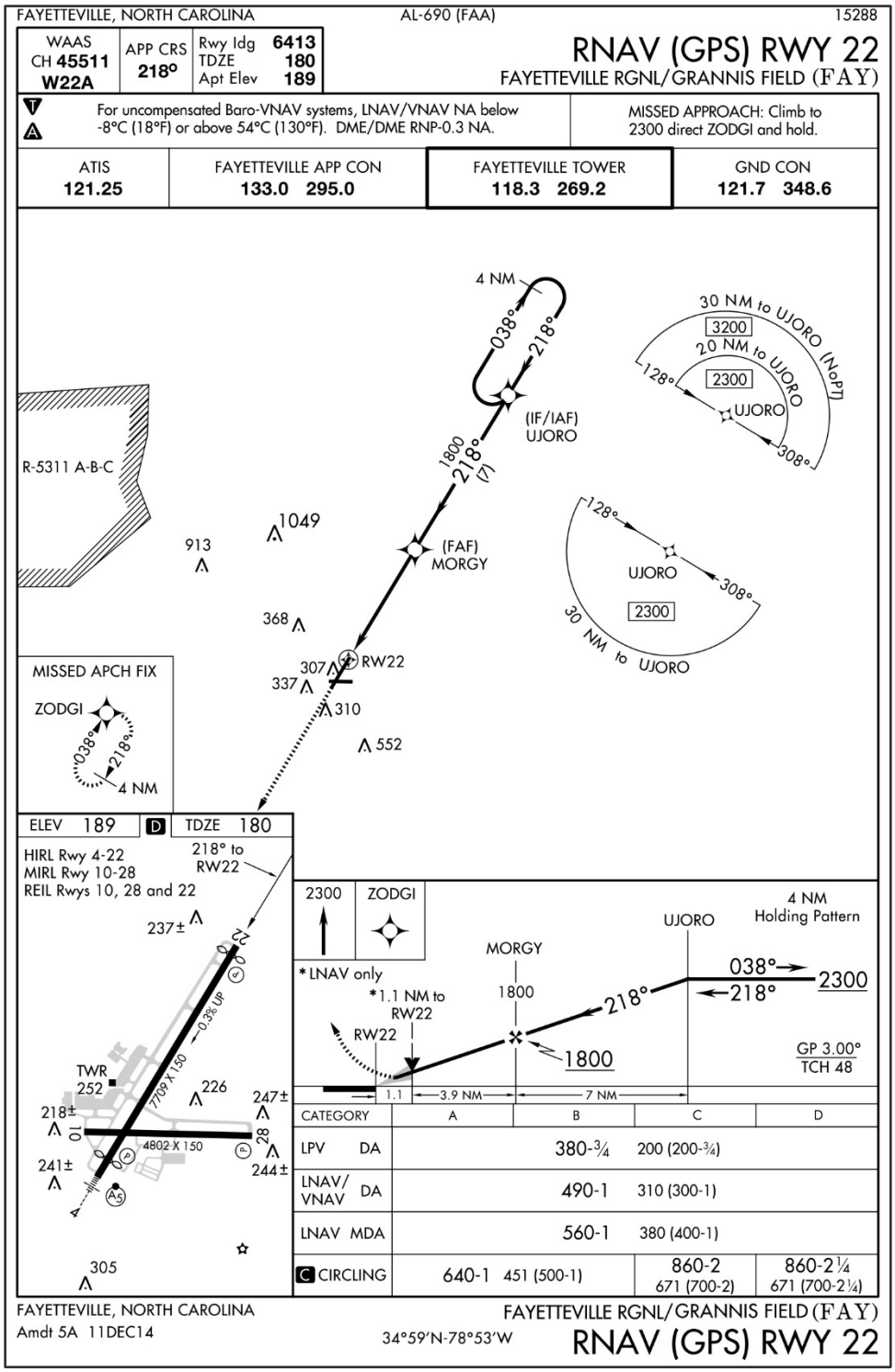
Source: Airnav.com

Figure 2-7: VOR Approach, Runway 4 (Non-Precision)



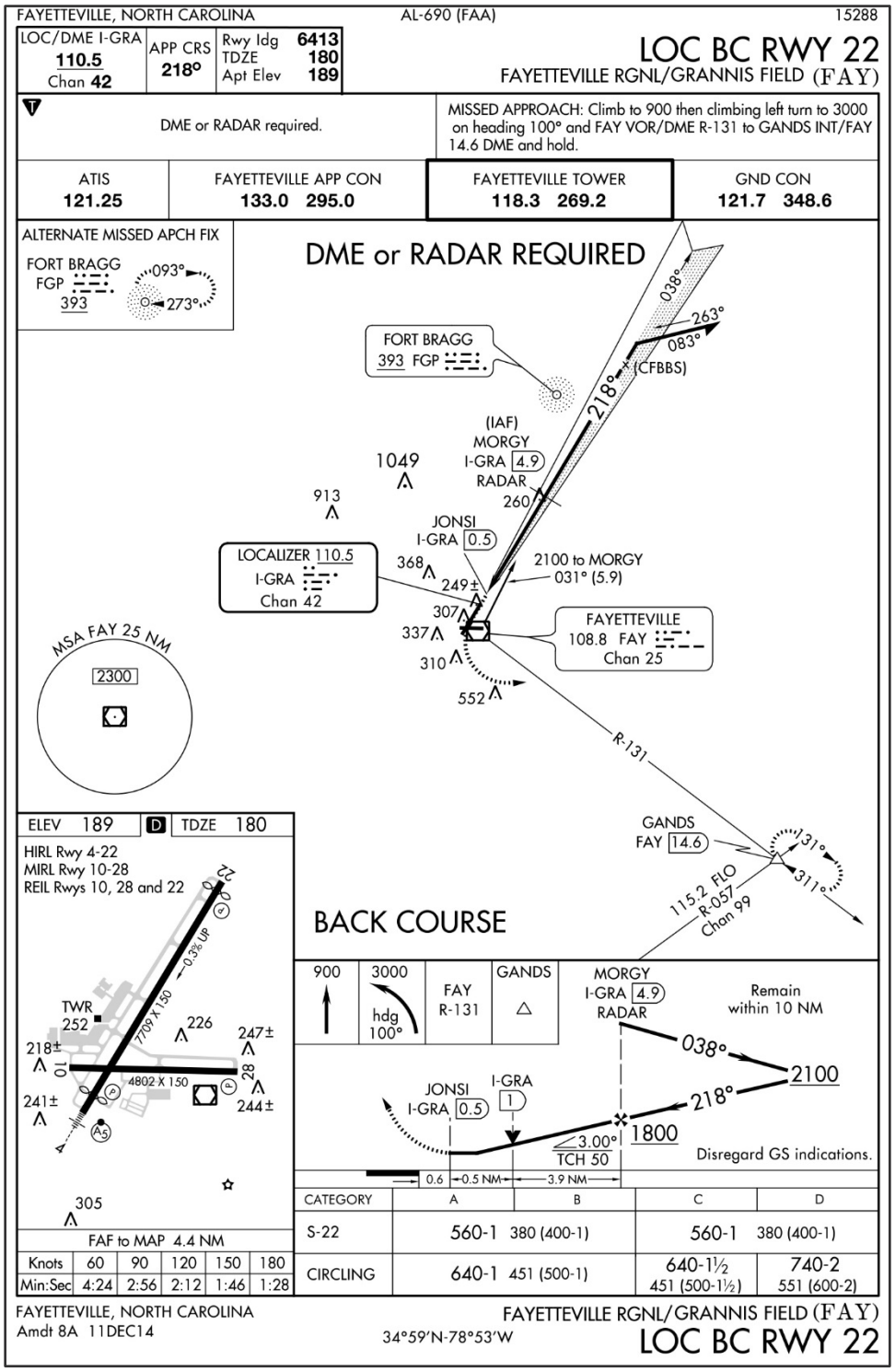
Source: Airnav.com

Figure 2-8: RNAV/GPS Approach, Runway 22 (Non-Precision)



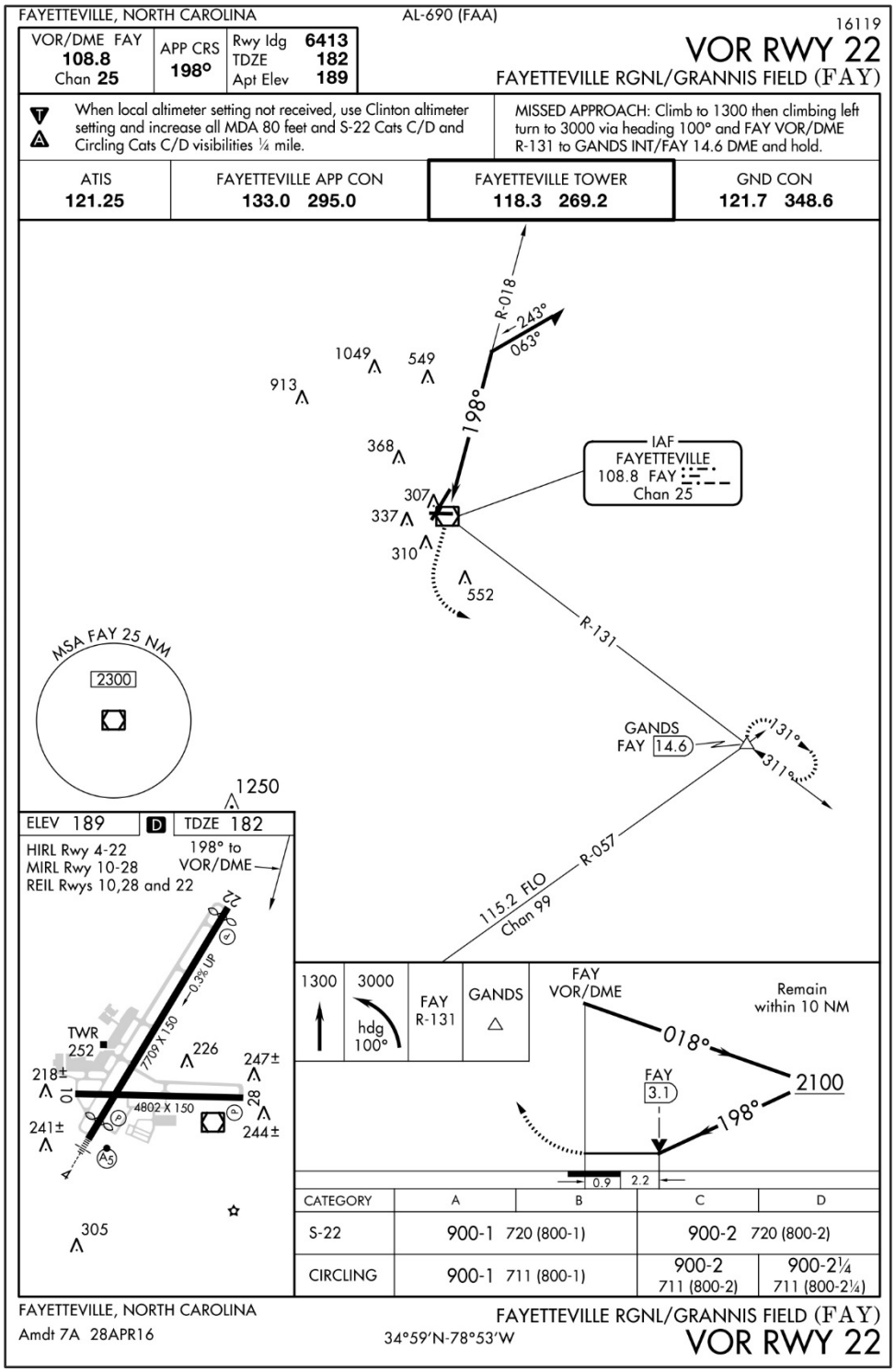
Source: Airnav.com

Figure 2-9: Localizer Back Course Approach, Runway 22 (Non-Precision)



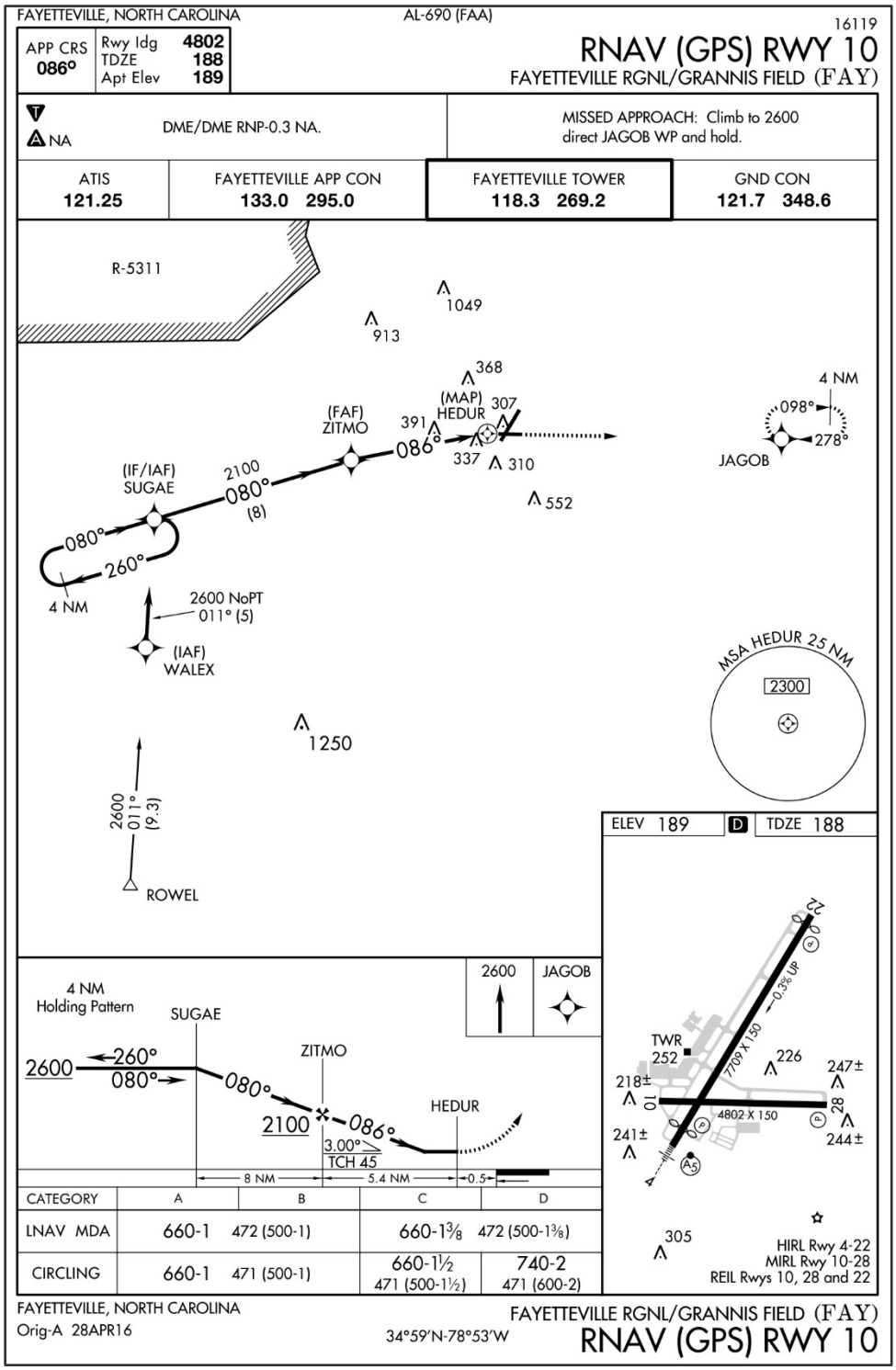
Source: Airnav.com

Figure 2-10: VOR Approach, Runway 22 (Non-Precision)



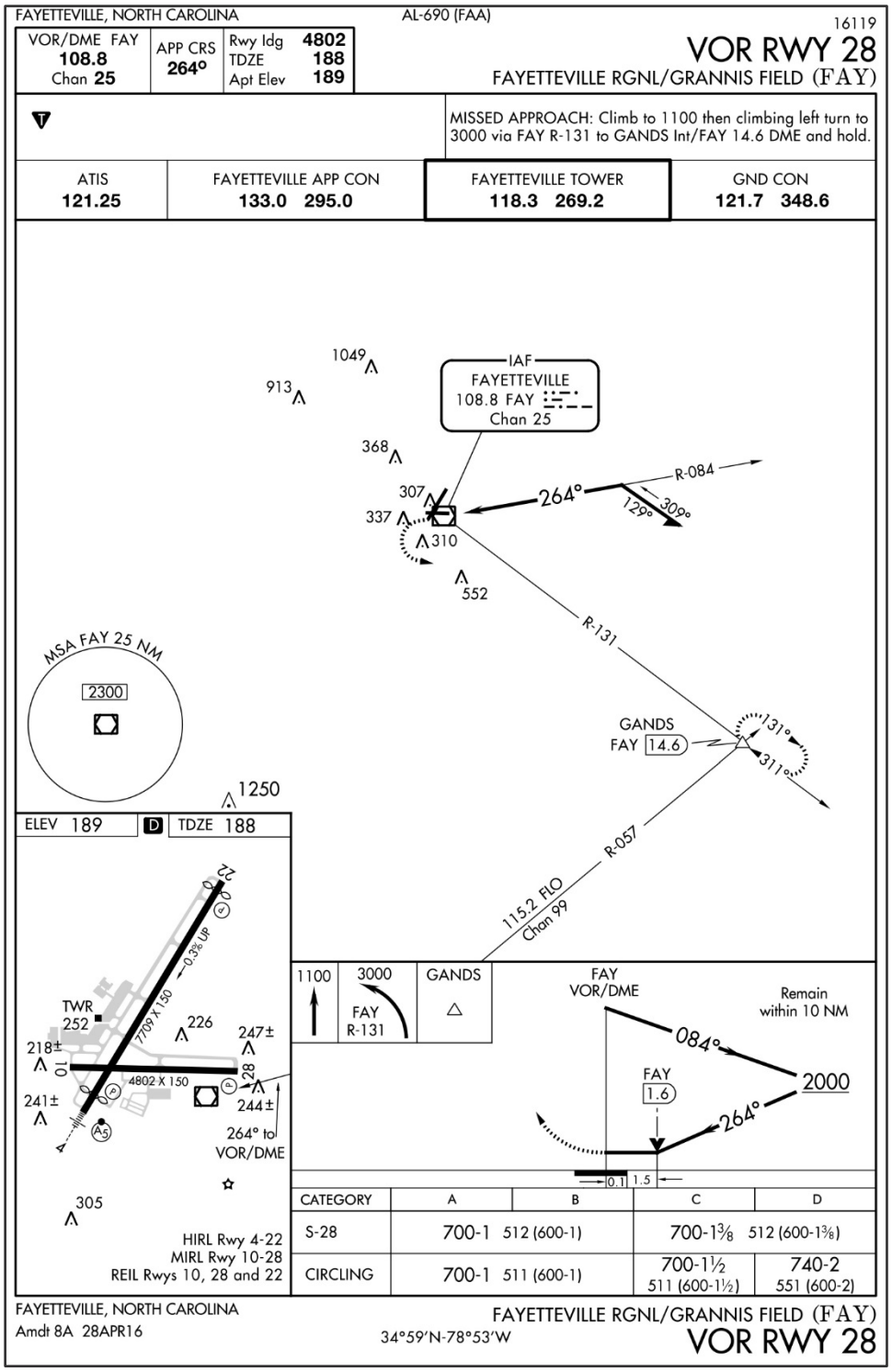
Source: Airnav.com

Figure 2-11: RNAV/GPS Approach, Runway 10 (Non-Precision)



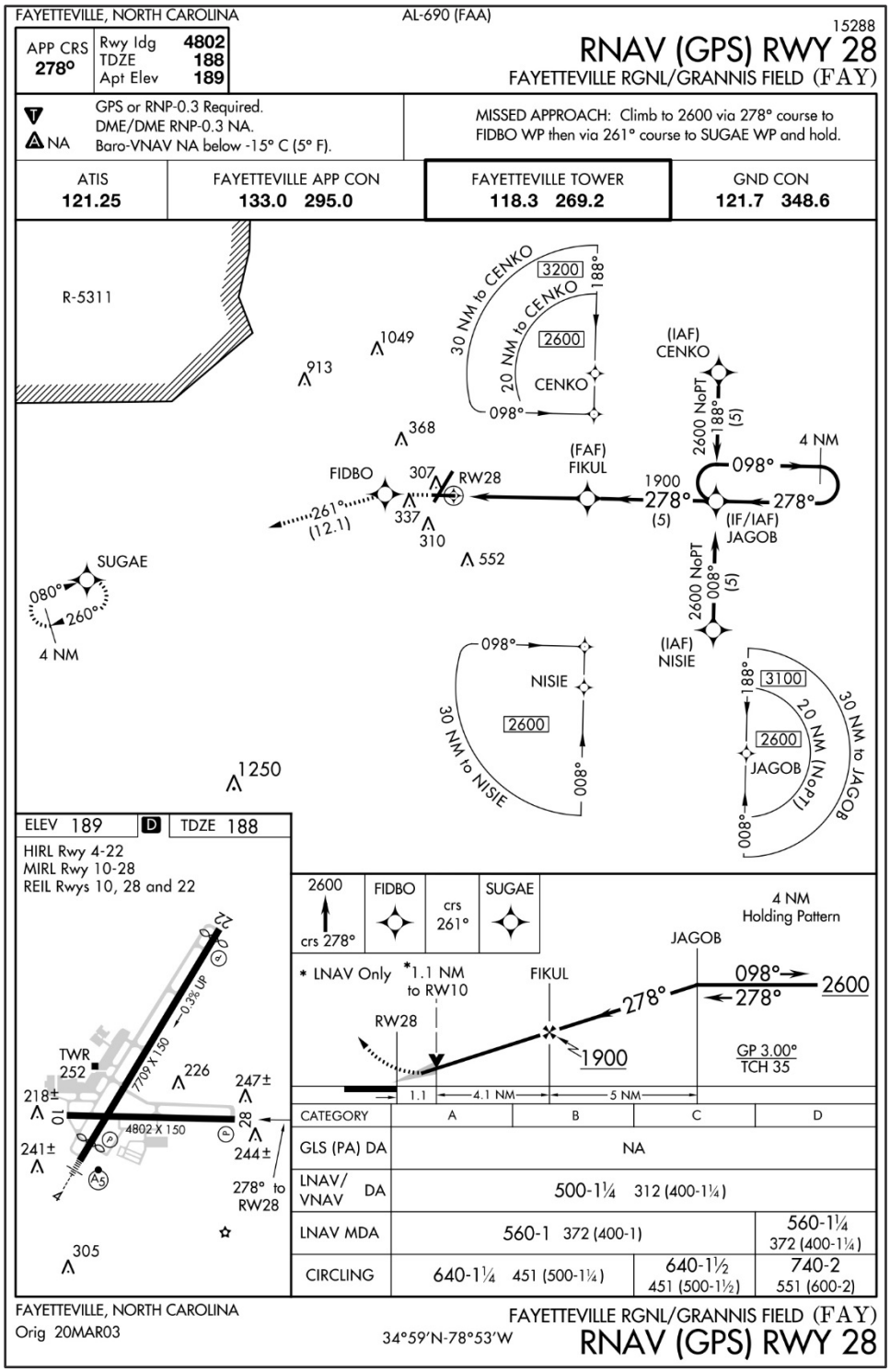
Source: Airnav.com

Figure 2-12: VOR Approach, Runway 28 (Non-Precision)



Source: Airnav.com

Figure 2-13: RNAV/GPS Approach, Runway 28 (Non-Precision)



Source: Airnav.com

2.7 AIRSPACE

Airspace in the United States is classified as controlled, uncontrolled, or special use. Controlled airspace is a generic term that covers the different classifications of airspace (Class A, Class B, Class C, Class D, and Class E) and defined dimensions within which air traffic control (ATC) service is provided to IFR flights and to VFR flights in accordance with the airspace classifications. Uncontrolled airspace includes areas where ATC has neither authority nor responsibility to control aircraft. Per the AIM, special use airspace consists of airspace where activities must be confined because of their nature, or where limitations are imposed upon aircraft operations that are not part of the confined activities. Special use or restricted airspace is depicted on aeronautical charts unless it is the result of a controlled firing area. Special use areas are typically due to military training facilities.

2.7.1 Airspace Structure

Airspace in the United States is designated with the letters A through G (not including F). A summary of each of these types of airspace and how they apply to FAY follows. A visual representation can be found in **Figure 2-14**, Airspace Structure.

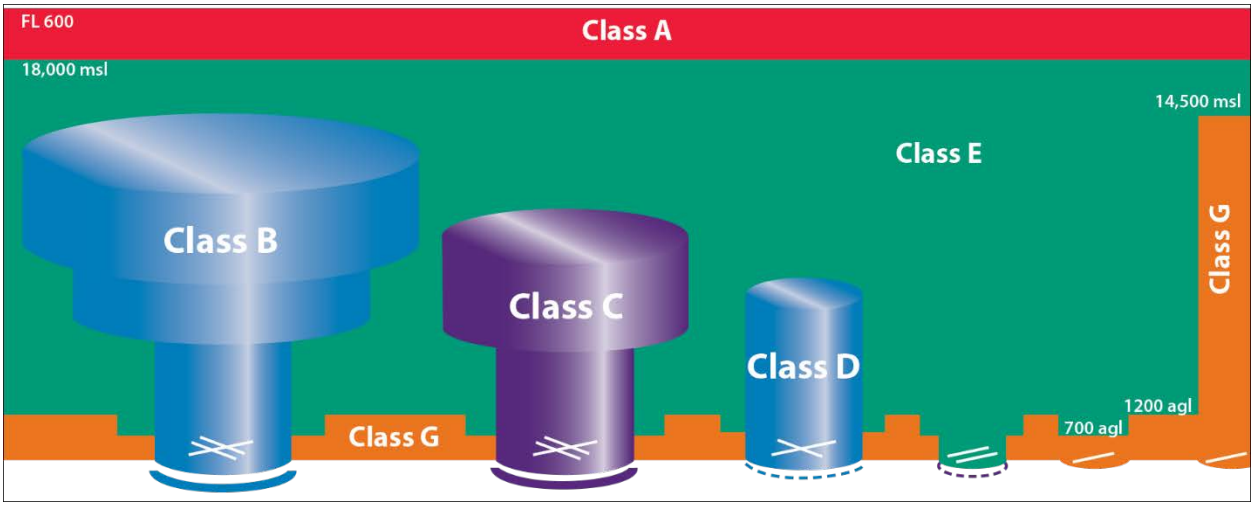


Figure 2-14: Airspace Structure

Source: AOPA.org

- Class A: All airspace above 18,000 feet MSL. Class A airspace contains all high altitude airways (jet routes) and does not directly affect activity at FAY. Instrument Flight Rules apply to aircraft flying in Class A airspace.

- Class B: Airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports in terms of IFR operations or passenger enplanements. There is no Class B airspace in the Fayetteville region.

- Class C: Airspace from the surface to 4,000 feet AGL surrounding airports such as FAY that have an operational control tower, are serviced by a radar approach control, and that have a certain number of IFR operations or passenger enplanements. Within the Class C airspace, the FAY ATCT visually controls all air traffic arriving or departing the airport or transitioning the area. Aircraft within this area must establish two-way radio communication with the ATCT.

- Class D: The terminal area airspace surrounding non-hub commercial airports, with a radius of five statute miles. The airspace extends from the surface to a height of 2,500 feet AGL.

- Class E: General and enroute Class E airspace begins 700 feet AGL in the area surrounding the Fayetteville Class D airspace. The Class E airspace includes the area above this level up to the overlying Class A airspace at 18,000 feet. Aircraft operating in the Class E airspace must follow rules for operating in Controlled Airspace.

Aircraft flying to, from, or through the Fayetteville Class C or surrounding Class E airspace typically follow designated routes called Victor Airways. These airways consist of a system of designated routes between VOR transmitters and are commonly used by pilots for navigation. Victor airways are identified on FAA aeronautical charts, which also indicate the magnetic bearing (radial) of each airway from the VOR station.

Class G: Class G airspace is uncontrolled airspace that exists outside Class D between the ground and the overlying Class E controlled airspace.

Special Use Airspace: Special Use Areas are those areas subject to flight restriction due to unusual hazards such as Fort Bragg North A and North B Military Operations Areas (MOAs). MOAs separate military training activities from IFR traffic. VFR operations are always permitted.

2.7.2 Air Traffic Control

The FAY ATCT operates 24-hours a day, seven days a week, and controls the airspace within five-nautical miles, up to a height of 2,500 feet AGL. The Fayetteville Terminal Radar Approach Control (TRACON) controls approximately 100 miles of airspace up to 10,000 feet MSL. The ATCT is located north east of the airline terminal on Control Tower road between the terminal and GA apron. The tower is four stories and provides offices, a radar room, tower, and base building. The facility was built in the 1970s and is in fair condition. The Terminal Radar Approach Control (TRACON) radar installation is located remotely and linked to the facility in FAY via a direct radio link. Back-up is provided via commercial (CenturyLink) telephone lines.

FAY Airport Traffic Control Tower (ATCT)

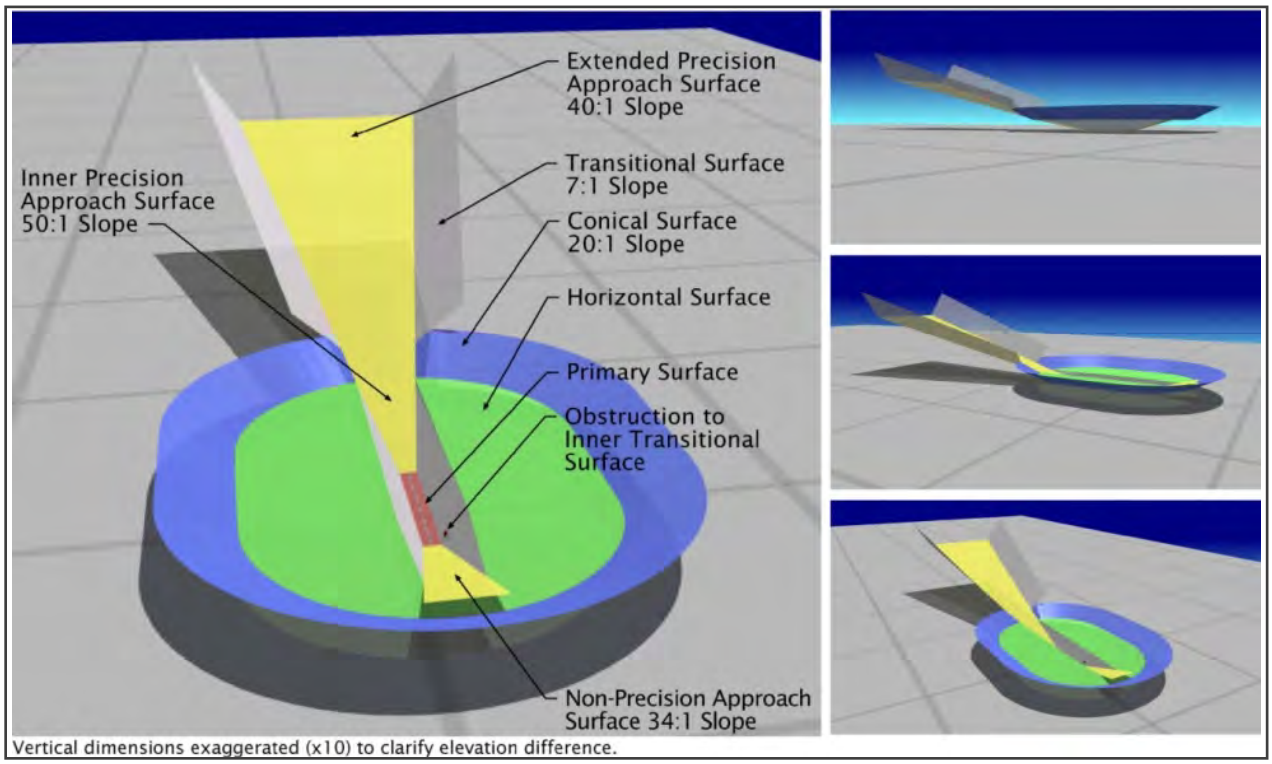


Source: TBI, February 2016

2.8 FAR PART 77 IMAGINARY SURFACES

Federal Aviation Regulation (FAR) Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace, is the regulation that protects the airport's airspace. The regulation establishes a requirement for anyone proposing to build a structure near an airport to report their intentions to the FAA. In addition, it defines a series of standards used for determining obstructions to an airport's navigable airspace. This is accomplished through the establishment of a set of airport imaginary surfaces. In some cases, obstructions may be classified by the FAA as a "hazard". Airport imaginary surfaces are established with relation to the airport and to each runway. The size of each such imaginary surface is based on the category of each runway according to the type of approach available or planned for that runway. The slope and dimensions of the approach surface applied to each end of a runway are also determined by the most precise approach procedure existing or planned for that runway end. A general diagram depicting FAR Part 77 surfaces is shown below in **Figure 2-15**. Brief descriptions follow.

Figure 2-15: FAA Part 77 Imaginary Surfaces



- **Primary Surface.** This surface is longitudinally centered on each runway and extends 200 feet beyond each runway end (if the runway is paved). The elevation of the primary surface of a given runway is the same as that of the nearest point on the runway centerline.

- **Approach Surface.** The approach surface is a trapezoidal-shaped surface that begins at the primary surface of each runway end, upwards and outwards for a prescribed slope and distance based on the type of approach (visual, non-precision, or precision).

- **Transitional Surface.** This surface is a plane with a 7:1 slope (horizontal to vertical) that extends upwards, outwards, and at right angles from the primary and approach surfaces, terminating at the airport horizontal surface.

- **Horizontal Surface.** This is a horizontal plane 150 feet above the established airport elevation. This surface is defined by drawing semi-circles of a given radius from the ends of the primary surfaces. The radius of the circle is determined by the type of approach serving each runway end.

- **Conical Surface.** The conical surface is an enclosed plane that extends upward and outward from the horizontal surface at a 20:1 slope.

Depending on the results of an FAA review, some obstructions are removed while others are catalogued using obstruction charts and lit with red obstruction lights. These charts are intended to keep a list of all known obstructions near the airport.

2.9 NEARBY GA AIRPORTS

The FAA NPIAS classifies airports as commercial service (primary and non-primary), reliever, or general aviation. In 2012, the FAA undertook a study (General Aviation Airports: A National Asset) that further defined GA airports and placed them in specific categories based on a set of established criteria. In 2015, North Carolina completed an Airport System Plan study that looked at North Carolina airports in even further depth and re-evaluated the airport groups per socio-economic data.

Several of these General Aviation airports of various size and function surround FAY within approximately 30 nautical miles. These airports are identified and compared in **Table 2.5**.

Table 2.5: Nearby Airports

Airport	Location	ID	Role	Primary Runway Length
Moore County	Carthage, NC	SOP	General Aviation	6,502 Feet
Brown	Elizabethtown, NC	EYF	General Aviation	5,006 Feet
Grays Creek	Fayetteville, NC	2GC	General Aviation	3,500 Feet
Harnett County	Erwin, NC	HRJ	General Aviation	5,000 Feet
Laurinburg-Maxton	Maxton, NC	MEB	General Aviation	6,503 Feet
Lumberton	Lumberton, NC	LBT	General Aviation	5,502 Feet
Raeford	Raeford, NC	5W4	General Aviation	3,402 Feet
Sampson County	Clinton, NC	CTZ	General Aviation	5,002 Feet

Source: TBI

2.10 LANDSIDE FACILITIES

Landside facilities support the many activities and services involved in storing and maintaining aircraft and in processing aircraft and passengers before and after use of the airside facilities. Typical landside facilities include aircraft hangars and aprons, terminal buildings, aviation fuel facilities, parking lots, and access roads. Well-maintained landside facilities are important to an airport's efficient operation. Landside facilities and services have been divided into the following categories and are discussed on the following pages.

- Airline Terminal & Associated Infrastructure
- General Aviation
- Air Cargo
- Other Landside Facilities
- Aviation Support Facilities
- Airport Utilities

2.10.1 Airline Terminal & Associated Infrastructure

An airport's airline terminal includes the passenger terminal building and the paved areas surrounding it on both the airside and landside. The terminal building serves as the point of transition for travelers between surface and air transportation. The passenger terminal building offers amenities such as wireless internet access, a business center workplace, a conference center meeting room, electronic airline check-in kiosks, rest rooms, rental car and taxi services. There is a restaurant/lounge/gift shop located in the terminal building as well as a small arcade, a military liaison office, and a USO center.

The airline terminal building at FAY was constructed in 1969. A major expansion was completed in 1988. Between 1997 and 2007, a series of terminal building renovation projects were undertaken. Recently, the air carrier apron has been rehabilitated and a refurbished passenger loading bridge has been installed at gate B4. While these improvements have provided an enhanced terminal environment and extended the useful life of the facility, it has been many years since a detailed and integrated condition and functional review of the architectural, civil, structural, mechanical, electrical and specialty equipment systems of the terminal complex have been conducted. Part 1 of this AMPU identified and prioritized a new Airline Terminal Improvements capital program to enhance the capacity, functionality and operating condition of the facility and its component systems. The terminal improvement program broke ground in November 2017.

The Part 1 study identified additional space needs to meet projected passenger volume in several key areas including passenger screening, ticket lobby and outbound baggage screening and handling, and passenger circulation. It also identified serious issues with the condition and functionality of major components of the architectural, electrical and mechanical systems which have reached or exceeded their normal service life. Numerous areas in which the facility is inconsistent with current building codes were also discovered. The existing building includes sections that are 48 years old.

The newest sections of the building are 28 years old. The terminal project will preserve existing capacity and expand the terminal building from approximately 85,000 SF to approximately 100,000 SF. The expansion and renovations are intended to provide capacity for the projected 10-year increase in enplanements (from approximately 250,000 annual enplanements currently to approximately 334,500 annual enplanements).

The terminal improvement program will include a new vertical circulation element, new curb front canopy and new entry vestibules added to the front of the terminal building; reconstruction of Concourse A and the main terminal/concourse connector; new outbound baggage screening and make-up systems; new roof, glazing and exterior wall systems; electrical and HVAC system improvements; and interior renovations. The program will enhance building code compliance, including the addition of fire sprinklers, ADA improvements, energy code improvements, and electrical code improvements. The project includes modifications to the terminal access road, utilities and general civil construction in support of building construction.

A complete inventory of the existing airline terminal facility has been completed as part of the Airport Master Plan Update Part 1 project.

Airline Terminal



Source: TBI, February 2016

2.11 GENERAL AVIATION

General Aviation (GA) operations are comprised of all flying activity apart from military and commercial service. GA users at FAY include individuals flying for business or personal reasons, as well as flight training activities.

GA landside facilities support both based and itinerant aircraft operations at FAY. Components of GA landside facilities include: Fixed Base Operator (FBO) services, conventional and T-hangars, apron areas, and automobile parking areas.

2.11.1 Fixed Base Operator Services

Signature Flight Support. Signature Flight Support is the current fixed base operator (FBO) at FAY. Provision of these services saw a change in ownership in 2016. At FAY, Signature Flight Support provides the following services:

- 100LL/Jet A Fuel
- Aircraft Parking/Tie Downs
- Ground Handling
- Lavatory Service
- Concierge Services
- Ramp-side Vehicle Access
- Courtesy Transportation
- Gourmet Catering
- Pilot Supplies
- Dishwashing Service

In June 2016, Signature Flight Support had 11 full-time and 3 part-time employees.

Signature Flight Support Building



Source: TBI, February 2016

Powell Avionics. Powell Avionics is an avionics service company that provides the sale, installation and repair of aircraft avionics equipment.

Rogers Aircraft Service. Rogers Aircraft Service is an aircraft maintenance facility that has provided aircraft repairs and maintenance at the Airport for more than 25 years.

2.11.2 GA Aircraft Parking and Storage

A variety of different options are available for the parking and storage of aircraft at FAY, from T-hangars to individual and corporate conventional (box) hangars, and outdoor tie-downs.

2.11.2.1 T-Hangars

At FAY, there are three sets of T-hangars, one 10-unit T-hangar, and two 14-unit T-hangars. There is currently a waiting list for T-hangars. The 10-unit T-hangar is located on the West apron and the two 14-unit T-hangars are in the South GA area.

2.11.2.1 Conventional (Box) Hangars

Much of the conventional (box) hangar space at FAY is located along the western edge of the North GA apron and in the adjacent West GA area. The West GA area features 15 conventional hangar buildings, ranging in size from 50-feet x 50-feet (2,500 square feet) to 108-feet x 184-feet (20,000 square feet). Hangar occupancy includes the Roger's aircraft maintenance hangar, Powell Avionics (two box hangars), community hangars and individual tenant hangars. Another 20,000-square foot hangar is located on the Cargo Apron. Many of the hangars have attached FBO, office and/or shop/storage space.

2.11.2.2 Tie-Downs

The Airport provides over 50 aircraft tie-downs available for both overnight or short-term transient aircraft, or monthly for based aircraft. Transient tie downs are available through the Airport's FBO while based aircraft tie-downs are provided through the city.

Table 2.6 summarizes the aircraft storage hangars on the Airport. Photographs of the GA parking aprons and aircraft storage areas can also be found on the following pages.

Table 2.6: Aircraft Storage Hangars

Description	Building Number	Year Built	Size (Feet x Feet)	Floor Area (SF)	Location	Remarks
14-Unit T-Hangar	3579	1998		17,640	South GA	Restroom in one end bay.
14-Unit T-Hangar	3575	2006		17,640	South GA	
Corporate Hangar	3129	2010	108.5 x 184.3	20,000	Cargo Apron	Sierra Nevada Corp.; 2500 SF office attached.
Corporate Hangar	466	2008	108.5 x 184.3	20,000	North GA	Centurion Aviation.
Community Hangar	3003	1969 +/-	100 x 100	10,000	North GA	3,200 SF FBO offices, lobby, etc. attached.
Corporate Hangar	476	1970's	60 x 60	3,600	North GA	3400 SF office attached (Bldgs 478 & 480).
Corporate Hangar	3001	1985	80 x 90	7,200	North GA	Centurion Aviation; 1,500 SF office and work room attached.
Maintenance Hangar	406	1979	80 x 80	6,400	West Ramp	Roger's Aircraft; 1,600 SF office & shop area attached.
10-Unit T-Hangar	430	1979		11,500	West Ramp	
Corporate Hangar	425	1978	60 x 75	4,500	West Ramp	Powell Avionics.
Corporate Hangar	431	1981	60 x 75	4,500	West Ramp	Powell Avionics.
Corporate Hangar	411	1978	50 x 50	2,500	West Ramp	
Corporate Hangar	415	1979	50 x 50	2,500	West Ramp	
Corporate Hangar	419	1981	60 x 60	3,600	West Ramp	
Corporate Hangar	423	1980	60 x 60	3,600	West Ramp	
Corporate Hangar	427	1985	60 x 60	3,600	West Ramp	
Corporate Hangar	441	1985	60 x 60	3,600	West Ramp	
Corporate Hangar	445	1985	60 x 60	3,600	West Ramp	
Corporate Hangar	449	1986	60 x 60	3,600	West Ramp	

Source: Airport Records

North GA Apron and West Apron Area



Source: Google Earth

10-Unit T-Hangar (West Apron)



Source: TBI, February 2016

South GA Facilities: Two 14-Unit T-Hangars, Tie-Down Apron, Auto Parking



Source: Google Earth

West Ramp Tie-Downs and Roger's Maintenance Hangar



Source: TBI, February 2016

2.12 CARGO FACILITY

The Airport's cargo facility is located southwest of the airline terminal, on Doc Bennett Road. The 10-bay facility was built in the late 1980s by third party developer Hill Beason, who leased it to Piedmont and American Airlines. American Airlines left FAY in 1995 and Piedmont Airlines was acquired by US Airways, who was released from its lease in 2002. In November 2003, Hill Beason turned the building over to the Airport seven years prior to its obligation. The facility is currently occupied by a corporate tenant (Sierra Nevada Corporation) and its sub-tenants for office and shop space. The facility is not currently being used for cargo operations; however, the tenant provides aviation related services to military and other clients. Sierra Nevada Corporation also occupies a 20,000-square foot hangar on the cargo apron, housing 5 based aircraft, and regularly uses the apron to park both based and transient aircraft in support of operations.

The facility offers approximately 14,000 square feet on the lower floor, divided into three separate cargo areas. The first section contains six bays. The other two sections each contain two bays. There is also approximately 13,000 square feet of office space throughout the building. An aerial view of the cargo facility area is provided below.

Cargo Apron and Associated Facilities



Source: Google Earth

2.13 Aviation Support Facilities

2.13.1 Aircraft Rescue and Fire Fighting Facilities (ARFF)

Aircraft rescue and firefighting (ARFF) equipment/facilities at FAY are located along the north-western edge of the air carrier apron between the airline terminal and the air traffic control tower. Federal Aviation Regulation (FAR) Part 139, *Certification and Operations: Land Airports Serving Certain Air Carriers*, Section 139.315, *Aircraft Rescue and Firefighting: Index Determination*, indicates that an index is required for each FAR Part 139 certificate holder. The index is based on the length of air carrier aircraft using the airport and the average number of daily departures FAY was designated with an Index B. Index B includes aircraft that are at least 90 feet but less than 126 feet in length. According to Section 139.315, if there are five or more daily departures or air carrier aircraft in a single Index group serving that airport, the longest Index group with an average of five or more daily departures is the Index required for the airport. If there are less than five average daily departures of air carrier aircraft in a single Index group serving the airport, the next lower Index from the longest Index group with air carrier aircraft in it is the Index required for the airport.

According to FAR Part 139 Section 139.317, *Aircraft Rescue and Firefighting*: *Equipment and Agents*, Index B requires either one vehicle carrying at least 500 pounds of sodium-based dry chemical or halon 1211, 1,500 gallons of water, and Aqueous Film-Forming Foams (AFFF) *or* one vehicle carrying 500 pounds of sodium-based dry chemical or halon 1211 or 450 pounds of potassium-based dry chemical and water with a commensurate quantity of AFFF to total 100 gallons *and* one vehicle carrying water and AFFF so that the total quantity of foam production carried by both vehicles is at least 1,500 gallons.

Aircraft Rescue and Firefighting Facility



Source: TBI, February 2016

The ARFF station at FAY was expanded and rehabilitated in 2011 under AIP 35 and 36. The facility features two apparatus bays, office space, dormitory areas, and support space.

2.13.2 Fuel Storage Facilities

Located just west of the West GA area, the airport's aviation fuel farm handles both aviation JET-A (jet fuel) and l00LL AVGAS (two 12,000-gallon above-ground storage tanks to provide JET-A and one 12,000-gallon above ground storage tank containing 100LL). These tanks are owned by the Airport and operated by the FBO. The FBO has a designated aircraft fueling truck parking area, protected by a spill control berm, adjacent to the FBO offices on the North GA apron. The FBO aircraft fueling trucks have paved access to all aircraft parking areas on the field, including the South GA area. The fueling truck access routes are located entirely outside the ATC movement area. There are also two 10,000-gallon JET-A above-ground corporate self-fueling tanks located on the north-west perimeter of the North GA apron.

Aviation Fuel Storage Facilities



Source: TBI, February 2016

Ground Vehicle and Generator Fuel Storage



Source: TBI, February 2016

2.13.3 Airport Maintenance Facilities



The airport maintenance and storage buildings located on the west side of the airline terminal consists of approximately 7,500 square feet of space in fair condition. The primary maintenance building shown below to the west of the corporate aircraft hangar provides four bays and a shop area. The additional buildings to the north provides equipment storage. The buildings are in fair condition. Additional maintenance offices, storage, and additional shop space is in the lower level of the Terminal Concourse B. A small storage room and workbench for airfield lighting system maintenance is provided in the Airfield Lighting Vault Building. The Airport intends to consolidate maintenance facilities currently spread out among these various location

2.13.4 Fire Training Center

Located in the southeastern portion of airport property at the intersection of Radar Road and Doc Bennett Road is the fire training center for the City of Fayetteville. The City conducts ARFF and building fire training for City crews and for other fire-fighting and ARFF operators in the region. The Fire Training Facility sits on approximately eleven acres of land and is the primary facility for the Training Division. The building itself is roughly 13,000 square feet and is shown in the following photo.

Fire Training Facility Building



2.13.5 Snow Removal Equipment Building

Built in 2011, the Snow Removal Equipment (SRE) building is in the north-west corner of the terminal apron and is used to house airport snow removal equipment. The SRE building is approximately 2,500 square feet.

Snow Removal Equipment Building



Source: TBI, February 2016

2.13.6 Perimeter Road and Fencing

The Airport's aging perimeter security fence is generally six feet high and requires frequent maintenance to address bottom breaches caused by erosion and animal activity. The airport has programmed a project to replace the fence with a new taller wildlife style fence line, to improve airport security and reduce wildlife intrusion. At the same time, the perimeter road on the east side of the airfield will be improved to all weather standards, which will enhance airfield security and emergency response capability.

2.13.7 Rental Car Servicing

Rental cars are currently serviced at four separate Quick-Turn-Around (QTA) facilities on and near the Airport. Hertz owns a private QTA facility at the intersection of Airport Road and Gillespie Street (Business Route 95/US 301), approximately one mile from the rental car ready and return lot. Avis and Budget operate a privately owned QTA facility on Doc Bennett Road, approximately 1.2 miles from the rental car ready and return lot. The Avis/Budget QTA facility is in the Runway 10 approach RPZ. Enterprise, Alamo and National operate a QTA facility on airport property at the corner of Control Tower Road and Hangar Road, approximately 0.4 miles from the rental car ready and return lot. Dollar and Thrifty operate a QTA facility on airport property at the intersection of Airport Road and Pine Haven Drive, approximately 0.5 miles from the rental car ready and return lot. Enterprise, Alamo and National operate an overflow rental car parking lot/storage area on airport property on Doc Bennet Road. The facility features gravel surfacing and is fenced and gated. Enterprise, Alamo and National also utilize an unfenced grass area on airport property off Hangar Road for additional overflow storage. The existing QTA and overflow storage facilities are older and generally unattractive. The Airport desires a consolidated rental car QTA facility, to be amortized using rental car Capital Facility Charge (CFC) receipts.

2.13.8 Automobile Parking

2.13.8.1 Airline Terminal

Airline Terminal passenger auto parking includes 161 short term and 948 long term spaces, all located within the Terminal Loop Road. The public parking is accessed by two short term and two long term entry portals with gates and ticket dispensers. Both lots exit via a 3-lane toll plaza. The parking concession is operated by Republic Parking. The public parking lots have recently been improved with pavement re-surfacing, new landscaping, pedestrian improvements, and a new exit plaza. The public parking lots are in generally good condition. The parking lot lighting system is nearing the end of its useful life. No parking lot shuttle services are available. Public parking rates are $1.00 per half hour with a $12 daily maximum for long-term parking and $9 for short-term parking (September 2016).

2.13.8.2 Rental Car Ready and Return Lot

The rental car tenants share a recently expanded 236-space ready and return lot located within the terminal loop road. Spaces are allocated based on market share. The rental car ready and return lot is in fair condition. The parking lot lighting system is nearing the end of its useful life.

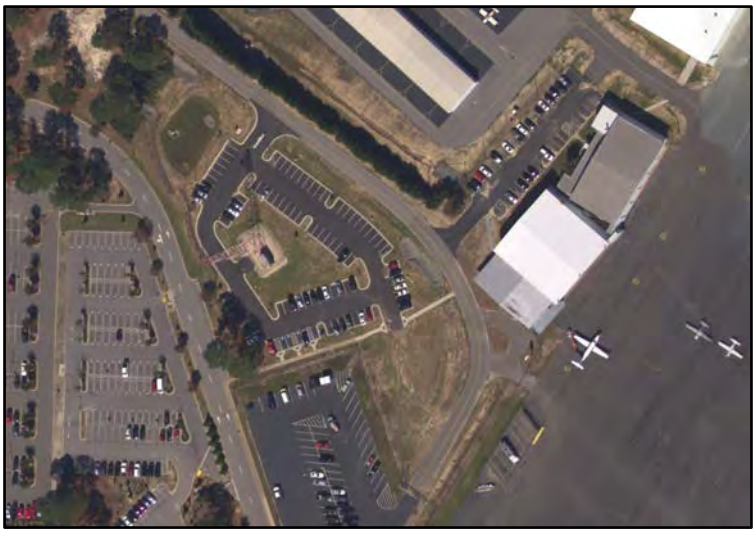
Airline Terminal Parking



Source: Google Earth

2.13.8.3 Employee Parking

Airport and tenant employee parking is provided in a new 92-space employee lot located on Control Tower Road and the 26-space management parking lot located adjacent to the airline terminal building at the end of Air Freight Road. The management parking lot is in fair condition. The parking lot lighting system is nearing the end of its useful life. Both lots have access control gates.



Source: Google Earth

2.13.8.4 Cargo Facility Parking

The cargo facility has a 57-space parking lot in fair condition and is shown in the following photo.

Cargo Facility Parking



Source: Google Earth

2.13.8.5 FBO Parking

The FBO (Signature) is served by a 46-space parking lot in fair condition. The existing route between the accessible parking in the lot and the FBO rear entrance is challenging due to terrain. Gravel overflow parking formerly available at the FBO was recently eliminated during construction of the new employee parking lot. Space is available for potential construction of new accessible and VIP parking near the FBO main entrance.



Source: Google Earth

2.13.8.6 North GA Parking

The North GA area is served by a 56-space parking lot located at the end of hangar road. The lot, which is in generally good condition, is remote from the FBO, but has easy access for various hangar tenants.



2.13.8.7 South GA Parking

The south GA area has a large parking lot (approximately 125 spaces) which is in fair condition. Space striping is almost entirely faded. The lot is rarely used.

South GA Parking Lot



Source: Google Earth

2.13.8.8 FAA Parking

The FAA has a separate secure parking lot with 51 spaces with primary access from Control Tower Road and a secondary access from the terminal loop near the ARFF building. The lot, which is in good condition, was recently reconfigured (reducing the parking space count) to eliminate parking spaces adjacent to the security fence.

FAA Parking Lot



Source: Google Earth

2.13.8.9 ARFF Parking

Five parking spaces are provided at the ARFF Station (also known as City Fire Station 10).

2.13.8.10 Fire Training Center

The Fire Training Center facility has a 42-space parking lot.

2.14 UTILITIES

The following provides a description of major elements of the infrastructure that service the Airport's utility demands.

2.14.1 Water

Water service for domestic, fire protection and landscape irrigation systems at FAY is provided by the Fayetteville Public Works Commission (PWC). Service is provided in the airline terminal area, north GA area, south GA area and the Fire Training Center via lateral distribution lines fed from a 16-inch diameter main along Doc Bennet Road on the west and south sides of the Airport. PWC recently completed an extension of the Doc Bennet Road main from the vicinity of the Fire Training Center to the southeast, across Interstate 95 and tying into an existing main near NC Highway 87, forming a large distribution system loop. The airport service mains include older asbestos cement pipelines and newer ductile iron and PVC pipelines. Recent flow testing in the terminal area indicates that system pressures and flow capacity are adequate for the domestic and fire protection needs of the Airport.

2.14.2 Sanitary Sewer

Sanitary sewer service at FAY is provided by the Fayetteville Public Works Commission (PWC). Service is provided in the airline terminal and north GA areas. Gravity lines serve the cargo apron area, airline terminal, ARFF station, ATCT complex and various north and west GA tenants. The gravity lines converge at a PWC operated pumping station located just west of the west GA hangar complex. The pumping station is adequate to handle current facilities but does not have substantial reserve capacity. The next downstream pump station in the PWC system does have reserve capacity which may be available to airport tenants.

2.14.3 Communications

Telecommunications serving the Airport include CenturyLink, which provides copper telecommunication lines to the airline terminal building; services to other facilities in the terminal area, including the ARFF station and ATCT, are back-fed from the terminal building. CenturyLink has a small facility on Airport Road near the airport fuel farm. The copper service cable to the terminal building is fed from that facility, as are new fiber optic lines recently extended into the west GA area. Time Warner Cable provides CATV service lines to the terminal building and to other terminal, North GA and west GA area tenants. The PWC provides fiber optic broadband service to the airport offices in the terminal building. That fiber optic broadband service is then distributed within the terminal building and linking to the ARFF station via airport owned cables maintained by the City IT Department. The PWC fiber optic service is not available to private tenants. There is currently no

private broad band service capability in the airline terminal. The Airline Terminal Improvements program is expected to provide facility and service upgrade opportunities for all telecommunications carriers in the terminal area.

2.14.4 Natural Gas

Natural gas service is provided to the airline terminal by Piedmont Natural Gas from a gas main in Doc Bennett Road. The gas service is currently limited to space heating in the terminal building. The ARFF station has a propane tank for space heating in the truck bays.

2.14.5 Electric Power

Electrical power service at FAY is also provided by PWC. Three-phase service is provided in the Airline Terminal and North GA areas. Overhead lines fed separately from three (3) substations enter the terminal area. PWC is currently upgrading the three-phase underground loop that serves the ATCT, ARFF, airfield lighting vault and the terminal building, including replacement of conductors, switchgear and transformers. New underground lines from two of the substations feed from Doc Bennet Road along Air Cargo Road, terminating at a new PWC automatic transfer switch (ATS) located adjacent to the snow removal equipment building. New underground conductors have been installed from riser poles near the FBO and extending to a manual transfer switch located between the ATCT and the ARFF station. Conductors from that location south to the airfield lighting vault were installed in 2009. The last leg of the planned improvements has been installed in coordination with the Airline Terminal Improvements project. That work included new underground three phase conductors in new conduits from the PWC ATS near the snow removal equipment building to the existing lines adjacent to the airfield lighting vault. These lines were installed via directional drilling under the parking lots north of the terminal building, completing the replacement of aging conductors in the 3-phase terminal area service loop. An early component of the Airline Terminal Improvements program will be a new PWC service transformer and new electrical service equipment, located in and adjacent to Concourse B, to replace the 1969 vintage service transformers and equipment.

The Fayetteville PWC provides electric power to FAA navaid facilities on the airfield. The FAA ATCT and base building are served by the same redundant system which service the airline terminal, airfield lighting vault, and ARFF station. FAA is currently working with PWC to plan electric service improvements for navigational aids on the field.

2.14.6 Stormwater Management

The Airport drains to local streams tributary to the Cape Fear River. The soils at the Airport are generally well drained sands that are conducive to infiltration, which helps to minimize runoff. The Airport is drained via a network of paved and vegetated open channels and closed (piped) drainage systems. The Airport is subject to the City Stormwater Management Ordinance and regulations and has implemented a Stormwater Pollution Prevention Plan (SWP3) pursuant to the North Carolina NPDES General Permit for stormwater discharges from industrial activity at airports. The Airport has been pro-active in managing the SWP3; stormwater inspections are conducted by airport staff, city stormwater staff, and state regulatory staff.

Four dry detention type stormwater management basins have been constructed on the Airport in support of recent improvements. The basins have been designed in accordance with the guidance in AC 150/5200-33B with respect to wildlife attraction. The Airport also has two large rock check dam type dry basins which attenuate flows on the east side of the airfield.

While the existing stormwater management infrastructure on the Airport is adequate in most locations, there are some areas with marginal drainage systems, including poor drainage across Doc Bennet Road and limited outfall conditions for the terminal area. These limitations can be expected to pose challenges in developing the stormwater management components of development projects with substantial areas of new pavement such as terminal area parking expansion and consolidated rental car servicing facilities.

2.15 SOCIOECONOMIC DATA

Per the 2012 U.S. Census estimate, the city has a population of 202,103. It currently ranks as the 6th largest municipality in North Carolina. Fayetteville is in the Sandhills region in the western part of the Coastal Plain. With an estimated population of 374,157, the Fayetteville metropolitan area is the largest in southeastern North Carolina and the 5th largest in the state. Suburban areas of metro Fayetteville include Fort Bragg, Hope Mills, Spring Lake, Raeford, Pope Field, Rockfish, Stedman, and Eastover.

Fayetteville and Cumberland County are the population and business centers for southeastern North Carolina. **Table 2.7** shows key demographic features of Fayetteville and Cumberland County compared to all North Carolina.

Table 2.7: Demographic Information

Demographic Feature	City of Fayetteville	Cumberland County	North Carolina
Population, 2012 Estimate	202,103	324,049	9,748,364
Population, 2010 Estimates	200,574	319,431	9,535,471
Population, Percent Change, 2010 to 2012	0.80%	1.40%	2.20%
High School Graduate or Higher, Percent of Persons Age 25+, 2008 to 2012	90.80%	89.10%	84.50%
Bachelor's Degree or Higher, Percent Persons Age 25+, 2008 to 2012	24.30%	22.40%	26.80%
Homeownership Rate, 2008 to 2012	51.00%	56.40%	67.10%
Median Value of Owner-Occupied Housing Units, 2008 to 2012	$123,300	$126,300	$153,600
Per Capita Money Income in the Past 12 Months (2011 Dollars), 2008 to 2012	$23,413	$23,133	$25,285
Median Household Income, 2008 to 2012	$44,756	$45,413	$46,450
Total Number of Firms, 2007	12,942	19,749	798,791
Retail Sales Per Capita, 2007	$16,912	$12,624	$12,641

Source: U.S. Census Bureau

As shown in the table, both Fayetteville and Cumberland County have experienced slightly less population growth than the state; have a comparable educated population; less median home values; per capita and/or household income; and higher retail sales than State averages.

Fort Bragg is the chief support system of the county's economy. Fort Bragg and Pope Army Airfield inject roughly $4.5 billion a year into the region's economy, making Fayetteville one of the best retail markets in the country. Fayetteville serves as the region's hub for shops, restaurants, services, lodging, health care and entertainment. Fayetteville boasts a low unemployment rate with a large labor pool of trained professionals.

The Fayetteville area has a large and growing Defense Industry and was ranked in the Top 5 Defense Industry Development areas in US for 2010. Eight of the ten top American defense contractors are in the area, including Lockheed Martin, Boeing, Northrop Grumman, General Dynamics, and L3

Communications. Per the Fayetteville 2012 Comprehensive Annual Financial Report, the top employers in the city include:

- Department of Defense (Fort Bragg) – 15,000+ Employees
- Cumberland County Public School System – 6,000+ Employees
- Cape Fear Valley Health System – 5,000+ Employees
- Walmart – 3,500+ Employees
- Good Year Tire Manufacturing and Plant – 2,000+ Employees
- Cumberland County – 2,000+ Employees
- City of Fayetteville – 1,000+ Employees

The Fayetteville Metropolitan Statistical Area (MSA), as defined by the U.S. Census Bureau, is an area consisting of two counties – Cumberland and Hoke – in eastern North Carolina, anchored by the city of Fayetteville. Interstate 95 serves as the major north-south spine for the areas and connects the region to the entire East Coast from Florida to Maine. As of the 2000 census, the MSA had a population of 336,609 and as of the 2010 census the MSA had a population of 366,383 (see **Figure 2-2**). As mentioned these counties are the core of FAY's primary air service catchment area.

Based on the North Carolina Office of State Budget and Management population forecasts over the next 20 years show the area increasing in population by 20 percent. The outlining counties adjacent to Hoke and Sampson Counties are influenced by the metropolitan area, which serve as employment centers for commuting employees from surrounding communities.

2.16 FINANCIAL DATA

FAA Authorization Act of 1994. Section 111 of the Federal Aviation Administration Authorization Act of 1994, Public Law 103-305 (August 23, 1994) (FAA Authorization Act of 1994), requires sponsors to file financial information with the FAA. This Act requires sponsors to report payments their airports made to other units of government and the purpose of those payments and it also requires sponsors to report all services and property their airports provided to other units of government and the amount of compensation received. FAA Furthermore, this Act requires sponsors to report funds collected and spent at their airports. **Table 2.8** provides a summary of the airport's 2015 financial data compared to 2010.

Table 2.8: FAY Airport Financial Data

Category	2015	2010	% Change
Passenger Airline Revenue	$656,089	$654,699	0.2
Non-Passenger Airline Revenue	$838,884	$534,456	57
Total Aeronautical Revenue	$1,494,973	$1,189,155	25.7
Non-Aeronautical Revenue	$3,393,762	$2,595,874	30.7
Total Operating Revenue	$4,888,735	$3,785,029	29.1
Total Operating Expenses	6,066,173	$4,331,058	40
Total Non-Operating Revenue (Expenses)	$5,268,125	$4,638,913	13.6
Capital Expenditures and Construction in Progress	$6,032,436	$5,156,864	17
Total Debt at End of Year	$0	$213,918	NA
Externally Restricted Assets	$834,742	$681,895	22.4
Unrestricted Cash and Investments	$11,704,468	$6,919,165	69

Source: cats.airports.faa.gov

FAYETTEVILLE REGIONAL AIRPORT

AVIATION FORECASTS



July 2018

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3 AVIATION DEMAND FORECASTS

Forecasts of aviation demand are a key element in all airport planning activities and influence virtually all phases of the planning process. Demand forecasts based upon the characteristics of the service area and the airport provide a basis for determining the type, size, and timing of aviation facility development and are a platform upon which this Master Plan Update for FAY is built. The main sections of this chapter include:

- Purpose
- Historical Aviation Activity
- Commercial Aviation Forecasts (2014 Terminal Study)
- General Aviation and Military Forecasts
- Design Aircraft
- Aviation Forecast Summary

To provide a useful planning tool for implementing improvements, the projections are presented for short (0-5 years), intermediate (6-10 years), and long (11-20 years) range timeframes. These timeframes will be used to develop FAY's Airport Capital Improvement Plan (ACIP). The base year for the forecasts is 2016 and the most recent FAA TAF Forecast for FAY was released in February 2017.

As indicated in the Airport Inventory, the Airport and the aviation industry is in a period of transition. General Aviation has still not completely recovered from the 2008 recession and the future of GA is uncertain based on FAA forecast models. As airlines move to replace smaller regional jets with larger capacity aircraft, fleet mix changes are likely to impact the frequency of operations at airports like FAY.

FAY is currently served by three major/national carriers and their regional affiliates. These include: United, Delta, and American Airlines.

3.1 PURPOSE

The aviation demand forecasts will serve as the basis for the following:

- Determining the adequacy of airfield and general aviation capacity.
- Sizing of future facilities; and
- Determining the timing of needed facilities.

Forecasts of aviation demand can be developed for numerous elements. In the case of FAY, the key demand elements focus on scheduled airline passenger traffic and operations (developed in Part 1 of this study) and general aviation descriptors such as based aircraft and operations prepared during Part 2.

For this study aviation activity forecasts were prepared for the following elements:

- **Annual Itinerant Aircraft Operations:**

Operations performed by aircraft that land at FAY, arriving from outside the airport area, or depart FAY and leave the airport area are considered itinerant operations. The historical number of itinerant operations at the airport is available via the FAA's Air Traffic Activity System (ATADS) database which contains the official National Airspace System (NAS) air traffic operations data reported by the air traffic control tower. Operations other than itinerant are considered local operations which are operations performed by aircraft that remain in the local traffic pattern, execute simulated instrument approaches or low passes at the airport, and the operations to or from the airport and a designated practice area within a 20−mile radius of the tower. Since 2012, itinerant operations have comprised on average, approximately 70% of total operations. For the purposes of forecasting itinerant operations, it is assumed that the above trends and averages over the past five years will continue. The following will be used to project future itinerant operations through 2036.

  - 100% of all Air Carrier Operations are itinerant
  - 100% of all Commuter/Air Taxi Operations are Itinerant
  - 60% of GA Operations are Itinerant
  - 50% of Military Operations are Itinerant

- **Annual Passenger Enplanements:** Defined as fare paying air travelers who have boarded a departing airline aircraft at FAY. These forecasts were developed and approved (July 1, 2014) as part of the AMPU Part 1 project.

- **Itinerant operations by current critical aircraft:** This type of operation is either a takeoff or a landing of the most demanding aircraft type, or grouping of aircraft with similar characteristics, that make regular use of the airport. Regular use is 500 annual operations, excluding touch-and-go operations. An operation is either a takeoff or landing. For the purposes of this plan for FAY, the most demanding group of air carrier aircraft will be used.

- **Number of Based Aircraft by Type:** A based aircraft is defined as an active aircraft that is kept at an airport on a permanent basis. Types at FAY are single and multi-engine piston, jet, and helicopter.

- **Annual General Aviation Operations:** These types of operations are those not otherwise defined as air carrier, air taxi/commuter, or military, and;

- **Annual Military Operations:** These types of operations are those recorded by the tower as Military Operations.

3.2 HISTORICAL AVIATION ACTIVITY

The components of aviation activity include commercial airline activity, general aviation and military. Unlike many airports, which were originally military facilities, FAY was specifically constructed for providing commercial service to Cumberland County and the surrounding area. Although multiple sources are available for historic aviation activity, historic activity for this AMPU is reported from the FAA Terminal Area Forecast (TAF). As shown in **Table 3.1**, the total number of annual operations has generally been declining since 2000. This overall decline is attributable to declining general aviation activity nationwide. Although flight training comprises only one component of GA activity, stricter rules governing flight training, higher fuel costs, and a decline in student pilot certificates have also caused. GA activity to trend downward.

The decrease in air carrier and regional/commuter operations is attributable, in part, to a change in aircraft size, which has resulted in fewer flights but a higher number of enplanements per operation. In other words, larger planes with more seating capacity results in fewer operations but similar or more passengers flying. At FAY a change from smaller turboprop aircraft to larger regional jets have contrib.uted to this change. In addition, the size of regional jet aircraft continues to increase.

3.2.1 Operations

Table 3.1 provides detailed operational and enplanement statistics for FAY since 2000. The table divides the airport's commercial operations into two categories: "Air Carrier" and "Regional." The FAA Aerospace Forecasts Fiscal Years 2013-2040 indicates that there are 34 mainline air carriers that use large passenger jets and 79 regional carriers that use smaller piston, turboprop, and regional jet aircraft. However, the definition of "air carrier" and "regional" has changed over time, and today, operation categorization is based on aircraft seating capacity, regardless of whether a mainline carrier or a feeder carrier operates the route. Today the point of distinction is 60 passenger seats. For example, aircraft such as the CRJ-700 count as Air Carrier operations, while CRJ-200 and Dash-8 aircraft count as Air Taxi operations. This is reflected in the most recent aviation activity data.

In addition to the number of annual operations, air carrier activity is measured by the number of annual passenger enplanements. An enplanement is counted every time a ticket holding passenger boards a regularly scheduled commercial aircraft departing FAY. Enplanement statistics are kept by the air carriers and the airport under a reporting procedure established by the FAA. That procedure is based on ticket sales and continues the distinction between Major/National carriers and Regional carriers, and thereby results in a division of enplanements into "Air Carrier" enplanements, and "Air Taxi" enplanements. This distinction is shown in **Table 3.1**. while Historical Itinerant Operations are shown in **Table 3.2**.

Table 3-1: Historical Aviation Activity

	Enplanements			Operations				
Year	Air Carrier Enplanements	Air Taxi Enplanements	Total	Air Carrier	Air Taxi & Commuter	GA	Military	Total
2000	72,584	79,377	151,961	4,686	7,874	30,570	12,768	55,898
2001	39,925	97,527	137,452	2,151	9,800	33,901	10,036	55,888
2002	2,159	125,213	127,372	523	11,258	39,134	7,508	58,423
2003	2,448	118,728	121,176	515	8,970	30,463	6,517	46,465
2004	2,700	144,880	147,580	617	8,941	30,433	7,533	47,524
2005	2,540	158,442	160,982	1,473	8,036	29,959	7,617	47,085
2006	2,830	146,887	149,717	820	8,458	34,547	9,468	43,825
2007	9,652	163,113	172,765	537	10,070	34,589	10,346	55,542
2008	3,226	188,288	191,514	747	10,156	34,012	8,076	52,991
2009	2,053	223,555	225,608	1,754	9,635	27,193	7,122	45,704
2010	2,226	249,449	251,675	2,454	10,752	29,767	9,435	52,408
2011	3,158	259,059	262,217	1,717	12,131	25,824	10,276	49,948
2012	2,4386	232,405	256,791	1,262	12,002	24,404	6,902	44,570
2013	30,633	215,716	246,349	1,159	12,611	24,714	6,548	45,032
2014	31,652	202,092	233,744	1,582	10,560	20,820	4,761	37,723
2015	44,741	174,640	219,381	1,420	8,924	22,201	3,930	36,475
2016*	52,871	172,650	225,521	2,911	7,311	17,391	7,231	34,844

Source: 2016 FAA Terminal Area Forecast issued January 2017. *Enplanement data for 2016 is derived from the 2016 TAF Forecasts and 2016 Operations data is actual data from the FAA ATADS database.

Table 3-2: Historical Itinerant Aviation Activity

Year	Air Carrier	Air Taxi	Itinerant GA	Local GA	% GA Itinerant	Itinerant Military	Local Military	% Military Itinerant	Total Operations
2000	4,686	7,874	21,409	9,161	70%	6,079	6,689	48%	55,898
2001	2,151	9,800	19,839	14,062	59%	4,656	5,380	46%	55,888
2002	523	11,258	20,883	18,251	53%	3,484	4,024	46%	58,423
2003	515	8,970	16,753	13,710	55%	2,888	3,629	44%	46,465
2004	617	8,941	17,551	12,882	58%	3,508	4,025	47%	47,524
2005	1,473	8,036	16,455	13,504	55%	3,595	4,022	47%	47,085
2006	820	8,458	18,043	16,504	52%	5,023	4,445	53%	43,825
2007	537	10,070	18,575	16,014	54%	4,901	5,445	47%	55,542
2008	747	10,156	19,447	14,565	57%	4,373	3,703	54%	52,991
2009	1,754	9,635	15,956	11,237	59%	4,242	2,880	60%	45,704
2010	2,454	10,752	15,911	13,856	53%	4,301	5,134	46%	52,408
2011	1,717	12,131	13,623	12,201	53%	3,788	6,488	37%	49,948
2012	1,262	12,002	14,407	9,997	59%	3,077	3,825	45%	44,570
2013	1,159	12,611	13,567	11,147	55%	2,942	3,606	45%	45,032
2014	1,582	10,560	12,238	8,582	59%	2,327	2,434	49%	37,723
2015	1,420	8,924	13,348	8,853	60%	1,973	1,957	50%	36,475
2016	2,911	7,000	5,619	5,393	51%	2,878	4,353	40%	34,844

Source: 2016 FAA Terminal Area Forecast

3.3 COMMERCIAL AVIATION FORECASTS

As indicated in the Scope of Work for Part 2 of this Master Plan Update, aviation forecasts for airline passenger enplanements and operations have been completed and approved (July 1, 2014) in Part 1 of the study. This section summarizes those commercial activity forecasts.

The forecasts prepared in Part 1 noted that enplanements more than doubled at FAY between 2003 and 2010 due in part to more competitive pricing and growth in flight frequency and seat capacity at FAY. Part 1 also noted that Delta Airlines and American Airlines have built a critical mass of enplanements at FAY, feeding their domestic and international networks at ATL and CLT. United Airlines also provides service from FAY to its hub at Dulles International Airport (IAD) as a feeder to its domestic and international network. Recent FAA Aerospace Forecasts show national trends of increasing passenger volume and airline seat capacity.

With a strong population base, easy access, and convenient facilities, FAY is expected to continue to provide the airlines with ample opportunity for profitable operations with growing enplanements to feed their growing network operations.

Combined with the conveniences of a small airport, the critical mass of competitively priced flight choices is expected to enable FAY to continue to increase its enplanements. It is anticipated that the airlines will upgrade aircraft equipment and seat capacity at FAY and could add new non-stop and hub destinations such as New York, Chicago, Dallas, and Florida.

In developing the enplanement forecast, Part 1 of this study reviewed the 2005 Airport Master Plan and planning documents from the Fayetteville Area Municipal Planning Organization (FAMPO), the Fort Bragg and Pope Air Force Base BRAC Regional Task Force (BRAC RTF), and FAA TAF for 2012 and 2013. Population data and forecasts were obtained from the North Carolina Office of State Budget and Management.

The methods and results of the commercial aviation forecasts are presented on the following pages.

3.3.1 Commercial Aviation Forecast Methods and Results

Considering their importance in the overall master planning process, the forecast of airline enplanements examined several different means of projecting airline enplanements to see if consistent trends resulted and would be appropriate for this master plan update. Methods used in the forecasting process included:

- Trend Analysis
- Population Regression
- Market Share

3.3.1.1 Trend Analysis

The 31 years of enplanement data examined in Part 1 used two methods of trend evaluation, annual compound growth and least squares linear regression. A compound annual growth curve with an annual growth rate of 2.64 percent was considered the best fit for FAY through the forecast period of 2033. The linear regression technique was repeated for 10-year, 15-year, 20-year and 30-year periods, with widely variable results.

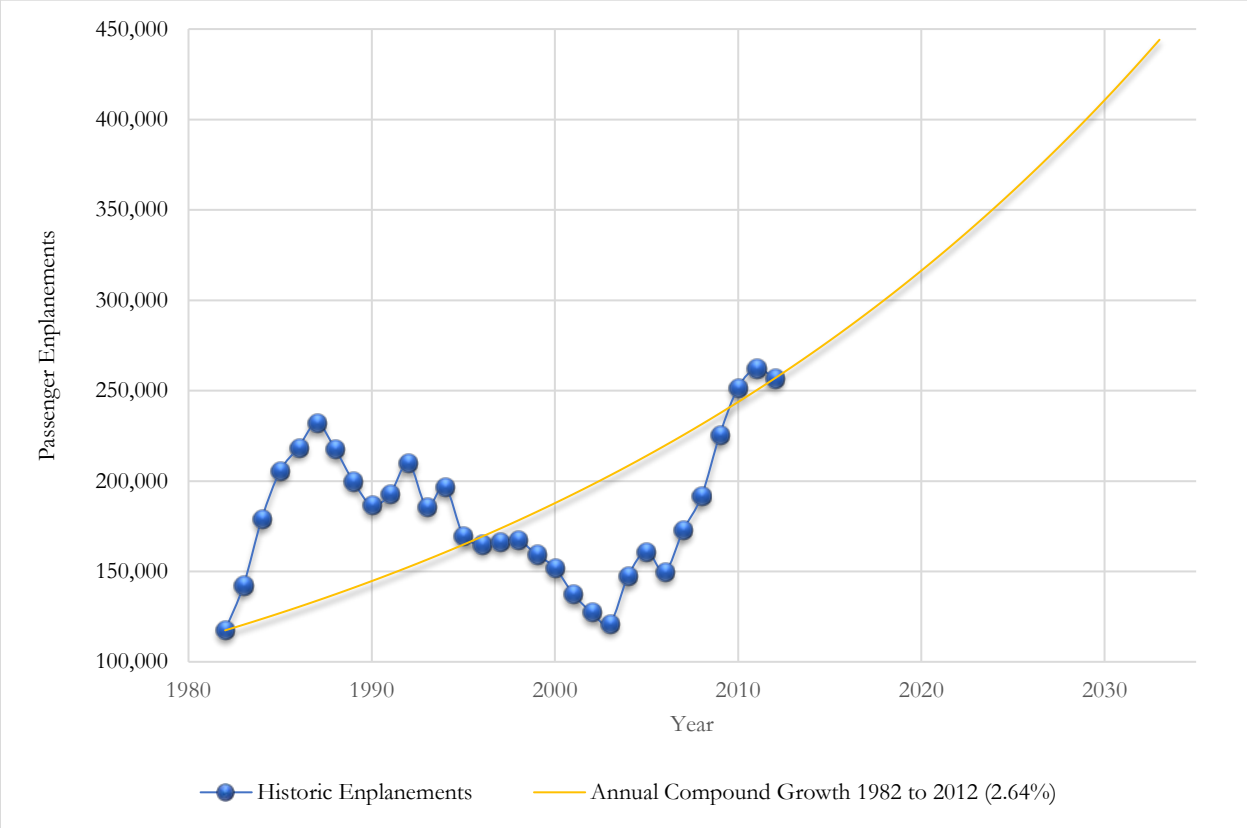
These linear trend lines did not appear to represent the overall trend as well as the compound growth curve. The trend analysis data and enplanement forecast are presented **Table 3.3**.

Table 3.3: Forecast by Annual Growth Trend

Year	Trend
2013	263,572
2018	300,290
2023	342,123
2028	389,784
2033	444,084

Source: FAY AMPU Part 1.

Figure 3-1: FAY Enplanement Forecast – Growth Trend



Source: FAY AMPU Part 1. Historic Enplanements 1982 to 1989 - 2005 FAY Airport Master Plan. Historic Enplanements 1990 to 2012 - 2013 FAA TAF.

3.3.1.2 Population – Enplanements Relationship

Part 1 noted that population growth in the Fayetteville area and the state of North Carolina has exceeded the national average since 1980; this trend is expected to continue. According to a recent forecast of The Welden Cooper Center for Public Service at the University of Virginia, North Carolina will rise from the 10th to the 8th most populous state by 2040.

Projected population data for the FAY Primary Service Area as defined in the 2005 Airport Master Plan is presented in **Table 3.4**. The Primary Service Area for FAY includes Cumberland, Hoke, Robeson, and Sampson counties. The population data conforms closely to a straight-line trend over the 50-year range of historic and projected data. A least squares linear regression technique was used to correlate the historic enplanement data with primary service area population. The results of this exercise did not appear to provide a meaningful direct relationship between the population and enplanement data.

Table 3.4. FAY Population Forecast

Year	Population
2013	584,252
2018	609,546
2023	635,939
2028	661,807
2033	687,817

Source: North Carolina Office of State Budget and Management.

As an alternative approach, the historic enplanement and primary service area population data were used to compute annual enplanements per capita (see **Table 3.5**). Between 1987 and 2003, per capita enplanements at FAY fell sharply from 0.53 to 0.23, rebounding to 0.45 by 2011. Part 1 examined enplanements per capita for 2011 at five similarly sized air carrier airports in North Carolina, using 4-county primary service areas like the one identified for FAY. The enplanements per capita values ranged from 0.45 at FAY to 0.94 at ILM. The enplanements per capita values computed were, AVL: 0.85, ILM: 0.94, FAY: 0.45, EWN: 0.53, OAJ: 0.55. In considering these North Carolina airports, together with other recent enplanements per capita data from around the country, it appears that FAY is at the low end of the range.

Between 1987 and 2003, FAY steadily lost passengers, due largely to leakage to RDU, which experienced rapid growth in capacity and a substantial ticket price advantage. Over the last 10 or so years, the economy has improved, the ticket price differential between FAY and RDU has leveled out, FAY has gained capacity and greater flight schedule flexibility, and FAY enplanements have grown.

The Part 1 Terminal study suggested that this growth is due to improving economic and convenience factors resulting in reduced leakage to RDU. We expect this trend to continue, with FAY capturing a larger share of regional passenger enplanements.

A compound annual growth curve was fit to the 31-year historical data, using an annual growth rate of 1.58 percent. Extended over the forecast period, the curve projects FAY per capita enplanements may reach 0.62 by 2033; this appears to be a reasonable value, in line with the other North Carolina airports of similar size. The projected growth to 0.62 enplanements per capita over the next 20 years is just 17% higher than the previous high of 0.53 set in 1987, and 35% higher than the 2011 level.

The per capita enplanement analysis data and associated enplanement forecast are presented in **Table 3.5** and **Figure 3-2**.

Table 3-5: FAY Enplanements per Capita (Primary Service Area)

Year	Enplanements	Population	Enplanements per Capita
1987	231,891	440,912	0.5259
1992	210,031	464,124	0.4525
1997	166,502	505,126	0.3296
2002	127,372	526,911	0.2417
2007	172,765	543,612	0.3178
2012	256,791	580,150	0.4426
Forecast by Annual Growth Trend			
2013	262,692	584,252	0.4496
2018	296,433	609,546	0.4863
2023	334,511	635,939	0.5260
2028	376,531	661,807	0.5689
2033	423,269	687,817	0.6154

Source: FAY AMPU Part 1 (2014).

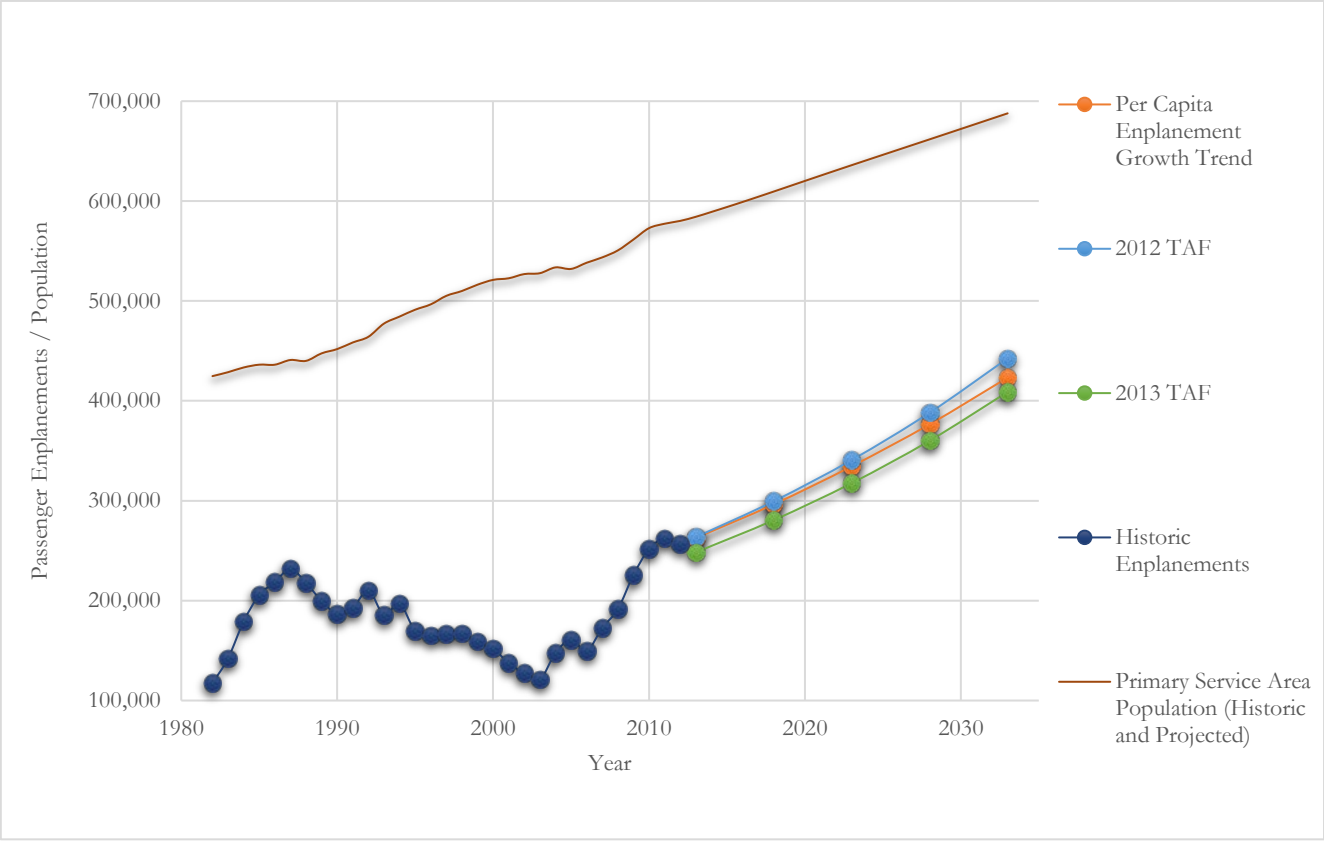
3.3.1.3 Market Share

The FAY AMPU Part 1 also analyzed FAY enplanement market share relative to total US enplanements over the period from 1982 through 2012. Total U.S. enplanement data for 1982 through 2007 is by calendar year and for 2008 through 2033 is by fiscal year; this disparity was considered negligible for the analysis. The FAY share of total U.S. enplanements fell 63 percent between 1985 and 2003. FAY has regained just over half of that lost market share since 2003. An enplanement forecast was developed using the 2012 FAY market share applied to projected total U.S. enplanements as presented in the 2012 TAF report. The market share analysis was not selected as the preferred forecast.

3.3.1.4 Recommended Baseline Enplanement Forecast

The recommended baseline enplanement forecast was derived from using the Per Capita Enplanements Growth Trend, which anticipates 423,269 annual enplanements by 2033. This forecast was lower than the 2012 TAF and fell within 6 percent of the 2013 TAF over the forecast period and was approved by the FAA in Part 1 of this study. These are presented in **Figure 3-2**.

Figure 3-2: FAY Enplanement Forecast Comparison



3.3.1.5 Airline Aircraft Operations Forecasts

AMPU Part 1 noted that a forecast of airline operations is required to assess the adequacy of the terminal and airfield system throughout the planning period. Airline operations are defined as all scheduled airline takeoffs and landings.

Table 3.6 presents the historical level of airline operations, including a ratio of "enplanements-per-departure". The table includes airline and commuter operations; air taxi operations are not included. The historic operations data is from the Bureau of Transportation Statistics database. The forecast of annual airline operations, with each operation consisting of one takeoff or landing, was derived from the forecast of annual enplaned passengers for each respective component of airline demand. The methodology used consisted of the following steps:

- Determine the historical ratio of enplaned passengers to airline departures [(enplanements ÷ operations) x 2];

- Project changes in the enplaned passengers per departure ratio for the planning period for each component of demand;
- Apply the projected enplaned passengers per departure ratios to the forecasts of annual enplaned passengers to calculate airline operations, [(enplanements ÷ enplanements-per-departure) x 2].

The key component of the forecast, therefore, is the projection of a reasonable enplanement-per-departure ratio. In this regard, the historical record provides insight into the recent trends at FAY. In the period from 2004 to 2013, the number of enplanements-per-departure has grown slightly from 36.4 to 37.5. This growth is reflective of several concurrent trends including:

- Airline economics is driving airlines to have more efficient schedules and load factors.
- Load factors have increased from the 59.7 percent range to 81.1 percent and are expected to continue to increase in the future to 85 percent based on the *FAA Aerospace Forecasts - Fiscal Years 2013-2033 Report*.
- The FAY market is predominately served by regional aircraft ranging from 37 to 50 seats. In July 2013, 86 percent of the departures were with aircraft having 37 to 50 seats. Aircraft size (in terms of number of seats) is expected to increase in the future as the smaller regional aircraft are removed from service.

As stated in the Part 1 study, the impact on the enplanements-per-departure ratio is to increase to 51 by the end of 2033. The impact on airline aircraft operations is a growth from the 2013 level of 13,106 to 16,546 departures by 2033, a 26 percent increase. During this same period, the average number of seats per departure for the airlines serving FAY is expected to grow. This growth will readily accommodate the expected increase in enplanements-per-departure that are forecast for the airport. It is important to note that as the aircraft fleet serving the airport changes (larger aircraft and more seats) the rate of increase in operations will not correspondingly be as high as the increase in enplanements in percentage terms. The larger aircraft will increase the overall seating capacity of departures to accommodate future enplanement levels.

The number of airline operations at FAY is related not only to enplanements, but also to the size and makeup of the airline fleet serving the market. The forecast of the airline fleet mix is used to estimate the need for future airport facilities such as runway length and strength, and terminal building requirements. Through July of 2013 the airport's two major carriers operated six major types of aircraft as shown on **Table 3.6**.

Table 3.6: FAY 2013 Commercial Fleet

Aircraft	Seats	Departures/Day	%	Total Seats/Day
MD-88	145	1	4.5%	145
CRJ-900	79	0	0%	0
CRJ-200	50	14	63.6%	700
EMB-175	80	0	0%	0
CRJ-700	67	2	9.1%	134
EMB 135/140/145	37	0	0%	0
Dash 8-300	50	2	9.1%	100
Bombardier Q200	37	0	13.6%	111
Total Daily		22	100%	1,190
Weekly*		149		8,130
Annual		7770		423,950

Source: FAY AMPU Part 1.

3.3.1.6 Airline Operations Forecast

For projecting airline operations in Part 2 of this study, the approved forecasts accepted in Part 1 have been interpolated, extrapolated and projected through 2036. These operations will be added to the general aviation operations and military operations and are presented in the summary of preferred forecasts at the end of this chapter.

Table 3-7: Airline Operations Forecast

2016*	2021	2026	2036
10,284	14,386	15,249	17,134

Source: FAY AMPU Part 1 (2014), interpolated/extrapolated.
*Actual

3.3.1.7 Peak Period Airline Activity

Airline activity is subject to peak period movements. Measures of this activity can include "peak month", "average day of the peak month", "peak day", and "peak hour" operations and enplanements. These indicators are used in airport planning to estimate size and configuration of terminal buildings and aircraft aprons. The methods used to forecast peak period airline activity are discussed below, along with the forecasts. For the Terminal Study, the airport's existing flight schedule was reviewed to determine FAY's peak period airline operations.

From the existing airline schedule at the time, it was determined that peak periods tend to be clustered around early morning departure and late morning/early afternoon arrivals to FAY. The maximum peak hour operations in 2014 were four (4). Part 1 of this study stated that the activity level at the time was likely to continue, with more growth possible if another hub is introduced to the market or an additional airline provides new service. The commercial activity forecast predicted five (5) peak hour airline operations for 2018, six (6) for the year 2023, and will remain at six (6) for the year 2033. The monthly and daily peak period forecasts presented in the Terminal Study are shown in **Table 3.8**, along with peak hour departures.

Table 3.8: 2014 Airline Terminal Area Study, Peak Airline Operations

Year	Annual Airline Operations	Peak Month Operations	Average Day of Peak Month	Peak Hour Operations	Peak Hour Departures
2013	13,106	1,311	42.29	4	3
2018	13,892	1,389	45	5	3
2021*	14,386	1,439	46	5	3
2023	14,726	1,473	48	6	4
2026*	15,249	1,525	49	6	4
2028	15,609	1,561	50	6	4
2033	16,546	1,655	53	6	4
2036*	17,134	1,713	55	6	4

Source: FAY AMPU Part 1. * denotes extrapolation of Terminal Study forecasts

3.4 GENERAL AVIATION FORECASTS

As mentioned, General Aviation is defined as that portion of civil aviation that encompasses all facets of aviation except military and commercial operations. To determine the types and sizes of facilities that should be planned to accommodate general aviation activity, certain elements of this activity must be forecast. Indicators of general aviation activity include:

- Based Aircraft
- Fleet Mix
- Operations
- Peak Period Activity

Forecast data presented in the general aviation forecast is provided by FAA TAF forecast, FAA Aerospace Forecasts for Fiscal Years 2016-2036, and Form 5010 dated 5/26/2015. The master plan

for FAY completed in 2005 by HNTB, and the 2015 North Carolina State Airport System Plan were also used as a source of data. The information in these reports serve as a comparative basis of forecasting aviation demand at the airport through 2036. Specific portions of these statewide and federal planning studies have been referenced, compared, and adjusted to more accurately reflect the present and expected future conditions at FAY.

3.4.1 Historical Based Aircraft

The number of based aircraft is the most basic indicator of general aviation demand. A based aircraft is a general aviation aircraft that is stationed at an airport and considers it as its "home base." Forecasts of based aircraft have been presented in the latest FAA TAF, the North Carolina State Aviation System Plan (2015) and the 2005 FAY Master Plan. These forecasts have been compared, updated, and applied to the present and expected future conditions at the Airport (the preferred forecast).

Per the FAA Terminal Area Forecasts the number of based aircraft have historically fluctuated since the previous master plan. The number of current based aircraft was obtained through airport records. Historical figures for based aircraft from these various sources are shown in **Table 3.9**.

Table 3.9: Based Aircraft History

Year	FAA TAF	2005 AMP	2015 SASP (.86% AAG)	Airport
2001	59	-	-	-
2002	59		-	-
2003	74	74	-	-
2004	64	-	-	-
2005	58	-	-	-
2010	56	-	-	-
2011	55	-	48	-
2012	48			
2013	46	86*	-	-
2014	65			
2015	59			
2016	59	-	56	66

Source: FAA, Airport Plans and Records. * Forecasted in 2005 FAY Master Plan

Basic GA aviation forecasts include projections of annual GA operations and based aircraft over the 20-year planning period. To establish a fleet mix, based aircraft counts are split by general aircraft type including: single and multi-engine piston, jet, and rotorcraft. Annual operations identify the type

of flight operation including general aviation, military, and commercial. Annual operations are also split between local and itinerant flights.

Forecasts developed are unconstrained, meaning they identify the actual aviation demand for the facility regardless of limiting factors (i.e. hangar availability, runway length, etc.). Aviation forecasts that differ by more than 10 percent from the published FAA TAF Forecast for the five-year horizon, and 15 percent for the 10-year horizon must be further validated by the FAA.

Generally, the approval of the forecasts considers the following:

- Is the forecast based on the latest data available?
- Are the assumptions realistic?
- Has an appropriate methodology been used?
- Is the forecast consistent with the FAA Terminal Area Forecast?

3.4.2 Methodology

Methods used to forecast aviation conditions are characterized by the application of judgment resulting from knowledge of inventory and market conditions as well as a mathematical approach. The forecasting technique used to develop basic aviation forecasts for FAY is that of the 2015 North Carolina Airport System Plan and the FAA Aerospace Forecast which is based primarily on a time series analysis coupled with judgment.

Since military operations forecasts have national security implications, the Department of Defense (DOD) provides only limited information on future aviation activity. Therefore, the TAF projects military activity at its present level except when FAA has specific knowledge of a change. For instance, DOD may announce a base closing or may shift an Army wing from one base to another.

Notably, summary statistics presented in the TAF differ from the national totals contained in the FAA Aerospace Forecasts since the TAF forecast methods consider individual airport and market specific trends. Therefore, the TAF forecasts are not scaled to force aggregates to equal national totals.

3.4.3 Based Aircraft Fleet Mix

The FAA uses estimates of fleet size, hours flown, and utilization rates from the General Aviation and Part 135 Activity Survey as baseline figures to forecast the GA fleet and activity. Forecasts of new aircraft deliveries, which use the data from General Aviation Manufacturers Association (GAMA), together with assumptions of retirement rates, produce growth rates of the fleet by aircraft categories which are applied to the GA Survey fleet estimates.

The forecast of the based aircraft fleet mix (type of aircraft) is based upon expected national trends adjusted to local conditions. These forecasts give an indication of the growth and direction of the fleet, and of potential future based aircraft at the airport. The forecast shows that although the total number of based aircraft is expected to grow slowly over the forecast period, fleet mix changes regarding jet, turboprop, and rotorcraft are expected to experience faster growth.

The based aircraft projections at FAY considered FAA Terminal Area Forecasts and industry growth rates presented in the FAA Aerospace Forecast Report and coupled these forecasts with the 2015 North Carolina Airport System Plan. The FAA Aerospace Forecast for Fiscal Years 2016-2036 indicates that the long-term outlook for general aviation in general is expected to experience slow to no growth, however, turbine aircraft activity is expected to increase at a much higher rate.

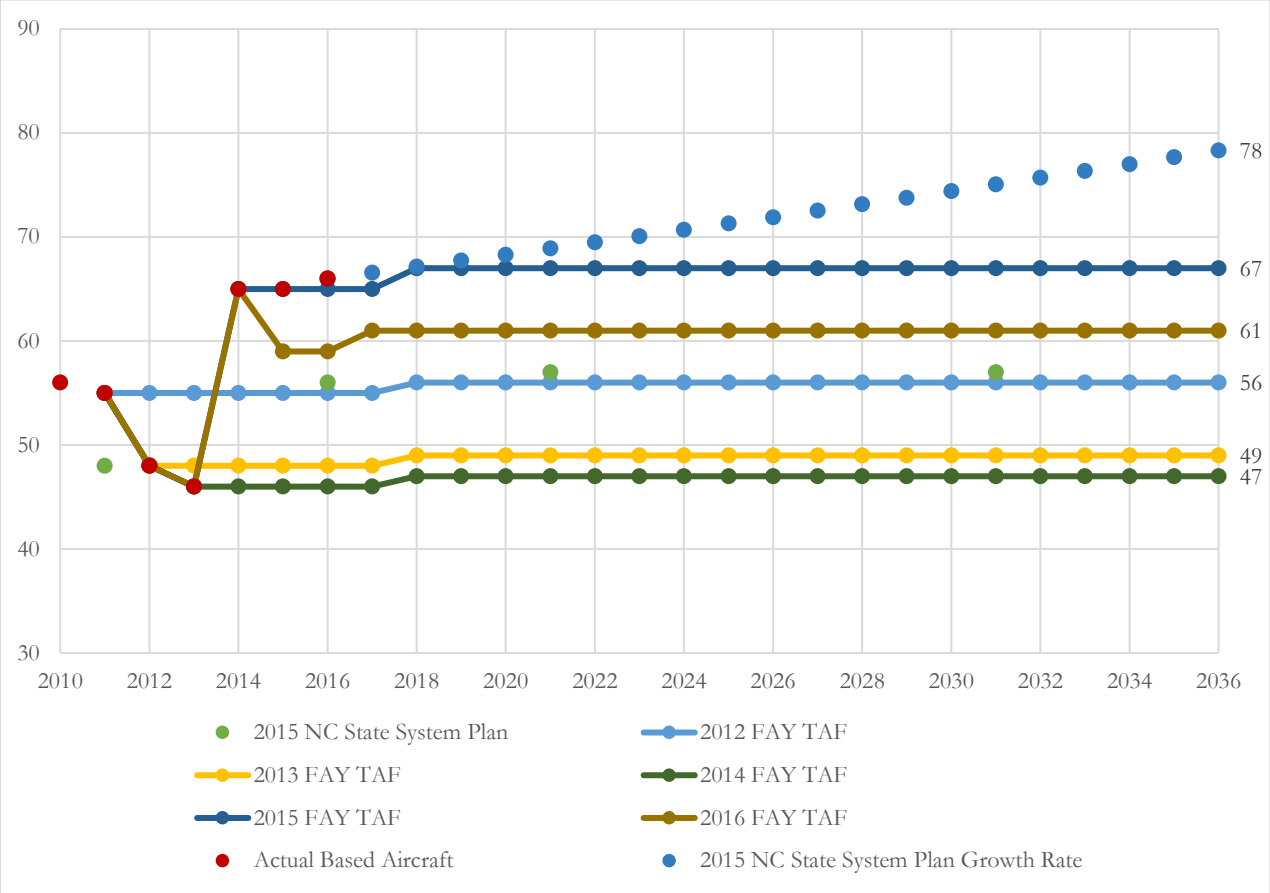
More expensive and sophisticated turbine-powered fleet (including rotorcraft) is projected to grow nationwide by 15,600 aircraft; at an average rate of 2.1% a year over the forecast period, with the turbine jet portion increasing at 2.5% a year.

Figure 3-3 presents the 2012-2016 FAA TAF forecasts for FAY as well as the approved based aircraft forecast for FAY as reported in the 2015 North Carolina Airport System Plan. The System Plan forecasts of activity at the commercial airports primarily reflect those contained in the FAA's TAF as available in December 2012. It was noted that in this TAF, the national growth rate was used to make general aviation projections.

The FAA TAF issued in January 2017 projected 59 based aircraft for FAY in 2016, considering that FAY has 66 based aircraft per the January 2017 FAY Airport Master Record (FAA Form 5010), the FAA forecast of based aircraft for FAY has already been exceeded by 12 percent. Furthermore, Figure 3-3 shows that for 2016 the airport has exceeded every FAA TAF forecast for based aircraft since 2012.

Applying the growth rate for FAY from the 2015 North Carolina System Plan (.86%), and applying it to 66 based aircraft as of 2016 suggests that by 2036 FAY will have up to 78 based aircraft. Given the historical fluctuation in based aircraft and the airport's performance compared to the historical FAA TAF forecasts this appears to be reasonable. Using the FAA TAF as a forecast provides an outlook that is much lower than can be expected while using the North Carolina System Plan growth rate for FAY appears to be a more optimistic forecast that results in 78 based aircraft by 2036 and will therefore be used as the preferred forecast for based aircraft.

Figure 3-3: Based Aircraft Forecasts



The FAA TAF for 2012 through 2016 projected that by 2036, FAY would have 56, 49, 47, 67, and 61 based aircraft. The number of existing based aircraft at FAY have already exceeded the 2036 forecast for every TAF since 2012 except for 2015. Furthermore, the 2011 TAF used to project based aircraft for FAY in the NC Airport System Plan suggested an average annual growth (AAG) rate of .86% through 2031 and 56 based aircraft by 2016. The actual number of based aircraft at FAY today (66) has already surpassed the system plan projection by nearly 18%.

For the purposes of forecasting fleet mix, it is assumed that single and multi-engine piston aircraft will make up the remainder of based aircraft as jet and rotorcraft grow at the rates suggested by the FAA Aerospace Forecasts over the planning horizon.

Using the above assumptions, **Table 3.10** presents the forecast of based aircraft and fleet mix anticipated for FAY.

Table 3.10: Based Aircraft and Fleet Mix Forecasts

Year	Single/Multi Engine	%	Jet/ Turboprop	%	Helo	%	Forecast Total
2016*	59	89%	6	9%	1	1.5%	66
Annual Growth	*Varies*	-	2.5%	-		-	-
2021	60	88%	7	10%	1	2%	68
2026	63	89%	7	10%	1	1%	71
2036	67	86%	10	13%	1	1%	78

Source: TBI Calculations, * Actual 2016 data

The fleet mix estimate presented in **Table 3.10** was derived from applying the forecasted National FAA Aerospace growth rate to the existing jet and helicopter fleet at FAY and suggests that the remaining fleet will consist of single and multi-engine piston aircraft. The current fleet mix at FAY consists of 74% single engine aircraft, 15% multi-engine, 9% jet and 1% helicopter (+/-). The comparison of existing and forecasted fleets indicates that most aircraft operated in the region are single-engine aircraft and will therefore continue to dominate the fleet mix.

3.4.4 General Aviation Operations Forecasts

General Aviation forecasts were developed for FAY using an operation per based aircraft (OPBA) ratio. Local operations are performed by aircraft operating within the airport traffic pattern, or aircraft arriving or departing from local practice areas within 20 nautical miles of the airport. Local operations by GA aircraft are generally associated with flight training activities. GA itinerant operations include all other operations not classified as commercial, air taxi, or military. The historical breakdown of these operations at FAY are presented in **Table 3.11**.

Table 3-11: Historical General Aviation Operations

Year	Based Aircraft	GA Itinerant	GA Local	Total GA	% Itinerant	% Local
2000	67	20,251	10,506	30,757	66%	34%
2001	59	20,140	16,748	36,888	55%	45%
2002	59	20,205	16,173	36,378	56%	44%
2003	74	16,704	13,672	30,376	55%	45%
2004	64	17,285	12,786	30,071	57%	43%
2005	58	16,762	13,886	30,648	55%	45%
2006	76	18,270	17,125	35,395	52%	48%
2007	80	18,680	14,963	33,643	56%	44%
2008	45	18,635	13,945	32,580	57%	43%
2009	61	16,077	11,389	27,466	59%	41%
2010	56	15,199	14,677	29,876	51%	49%
2011	55	13,741	10,871	24,612	56%	44%
2012	48	14,273	10,633	24,906	57%	43%
2013	46	13,176	10,926	24,102	55%	45%
2014	65	12,338	8,304	20,642	60%	40%
2015	65	13,093	8,509	21,602	61%	39%
2016	66	11,998	5,393	17,391	69%	31%

Source: FAA TAF and FAA ATADS Data

As shown in **Table 3.11**, in 2016 Itinerant GA operations averaged approximately 69 percent of total GA operations, while Local Operations averaged 31 percent. Considering the number of based aircraft during this period, this amounts to an average of approximately 82 local OPBA and 182 itinerant OPBA or 264 total OPBA. Presented in **Table 3.12**, these trends are applied to the projected number of based aircraft to determine the operations forecast at FAY through 2036.

As shown in the table, both the ratios of local and itinerant operations per based aircraft are assumed to remain constant over the period. Growth in the overall level of general aviation operations is expected to occur as the number of based aircraft and business and corporate use of the Airport changes over time.

Excluding military operations, the results of the general aviation operations forecast shows growth from 17,391 GA operations in 2016 to 20,592 GA operations in 2036. Although this projection is higher than the most recent FAA TAF forecast for GA, the 5 and even the 10-year forecast is within 10 percent for both the five and ten-year horizons.

Table 3.12: General Aviation Operations Per Based Aircraft Forecast

Year	Based Aircraft	Local Ops	Local OPBA	Itinerant Ops	Itinerant OPBA	Total GA Ops (Preferred)	Total FAA GA TAF Forecast
2016*	66	5,393	82	11,998	182	17,391	17,603
2021	68	5,576	82	12,376	182	17,952	16,907
2026	71	5,822	82	12,922	182	18,744	17,161
2036	78	6,396	82	14,196	182	20,592	17,690

Source: TBI Calculations (Does not include military operations), * 2016 Actual.

3.4.5 Military Operations Forecasts

Military operations at FAY averaged nearly 9,000 operations a year from 2005-2011. As shown in **Table 3.13**, since 2012 military operations have declined and averaged 5,775 over the last five years. In 2016, military operations made up approximately 21% (4,629) of total annual airport operations at FAY.

Since military operations are generally scheduled at the discretion of military officials and available budget there is no practical means of forecasting them at a facility such as FAY that receives occasional use. However, considering the Airport's proximity to Fort Bragg, it is assumed that military operations will meet or exceed the average level of annual military operations since 2012 (5,775). For the purposes of forecasting military operations, 5,775 annual military operations will be assumed through 2036.

Airfield dimensional standards are based on the most critical civilian aircraft (or family of aircraft) conducting at least 500 operations annually. Therefore, future military operations at FAY are not expected to impact the existing airfield geometry. Military operations are however, attributable to practice instrument approaches and do utilize the GA terminal apron and parking area during full stop operations. Consequently, military operations will be considered when developing GA terminal requirements resulting from GA peaking characteristics.

Table 3.13: Historical Military Operations

Year	Military Operations	Total Operations	% of Total Operations
2005	8,101	48,139	17%
2006	10,699	55,645	19%
2007	8,225	52,641	16%
2008	8,395	52,012	16%
2009	8,478	47,791	18%
2010	9,720	53,051	18%
2011	8,969	47,333	19%
2012	7,021	44,971	16%
2013	5,697	43,740	13%
2014	4,297	36,522	12%
2015	4,629	36,515	13%
2016	7,231	34,844	21%

Source: FAA ATADS Data, TBI Calculations

3.4.6 Cargo Operations Forecasts

As of 2016 there are no dedicated air cargo flight operations occurring at the Airport. Furthermore, at the time of this study, airport management was not aware of any prospective dedicated air cargo operations. Therefore, based on discussions with airport management, it is not anticipated that any dedicated air cargo facilities will be needed soon.

3.5 GENERAL AVIATION PEAKING CHARACTERISTICS

Since many of the Airport's facility needs are related to the levels of activity during peak periods, forecasts were developed for peak month and peak hour operations. The peak period general aviation operations for 2015, at FAY were calculated using the following methodology:

Peak Month Operations: This level of activity is defined as the calendar month when peak aircraft operations occur. At FAY, according to the FAA's Air Traffic Activity System (ATADS), the peak month has varied from year to year, however, since 2012 operations during the Peak Month have averaged 25 percent busier than the average month. Therefore, for projecting GA peaking activity, the

Peak Month is assumed to be 25 percent busier than an average month of the year. This is shown in **Table 3.14**.

Table 3.14: General Aviation Peaking Month History

Year	Average GA Ops per month	Peak Month Operations	% Busier in Peak month
2012	2,682	3,350	25%
2013	2,500	2,997	20%
2014	2,100	2,773	32%
2015	2,205	2,735	24%
2016	2,078	2,616	26%

Source: TBI Calculations

Peaking characteristics at FAY are calculated as follows:

Peak Month Operations = (Annual Operations/12) x 1.25

Design Day Operations: This level of operations is defined as the average day within the peak month.

Design Day Operations = Peak Month Operations/30

Design Hour Operations: This level of activity is defined as the peak hour within the design day. Typically, these operations will range between 10 and 15 percent of the design day operations. The lower the annual number of operations, the higher the design hour percentage of the design day. Considering the operations forecasts, a figure of 15 percent is used to estimate design hour operations.

Design Hour Operations = Design Day Operations x 0.15

Table 3.15 presents the forecast of peaking characteristics for general aviation operations at FAY.

Table 3.15: General Aviation Peaking Characteristics

Year	Total GA Operations (Includes Military)	Peak Month Operations	Design Day Operations	Design Hour Operations
2016*	24,622*	2,616	87	13
2021	23,727	2,272	82	12
2026	24,519	2,554	85	13
2036	26,367	2,812	94	14

Source: TBI Calculations, * designates actual numbers

3.6 DESIGN AIRCRAFT

In the following chapter, the airport's facility requirements are determined based on the aviation demand forecasts and the Critical Design Aircraft. As presented in Part 1, based on the existing terminal features, historical, current, and forecast usage; as well as airline and sponsor expectations, the Critical Design Aircraft for FAY is the full range of narrow body mainline and regional jet aircraft used in the United States. For the purposes of determining airport geometry, this is defined as Airplane Design Group (ADG) III and Taxiway Design Group (TDG) 3 as defined in the FAA Airport Design Advisory Circular. The facility requirements analysis will identify the needs for both airside and landside development to accommodate forecasted growth throughout the planning period.

3.7 AVIATION FORECASTS SUMMARY

Changes in national general aviation activity since 2007 has caused fluctuations of based aircraft at FAY, as well as fluctuations in the TAF based aircraft forecast. Based on these variations, it appears reasonable that FAY plan sufficient facilities to accommodate up to 12 additional based aircraft over the next 20 years. This was determined by applying the growth rate for based aircraft established in the 2015 North Carolina Airport System Plan (.86% AAG) starting at 66 based aircraft for 2016 and applying OPBA assumptions to determine operations forecasts.

Forecasts of Air Carrier operations were interpolated and extrapolated through 2036 from the approved forecast prepared in Part 1 (the 2014 FAY Terminal Area Study) which cause the disparity between the preferred operations forecast and the total FAA TAF forecast presented in **Table 3.17**.

Table 3.16 shows that the GA forecasts fall well within the 10% and 15% thresholds for the five and ten-year periods respectively. **Table 3.17** presents an overall summary of the aviation forecasts including the approved commercial activity prepared in Part 1.

Table 3.16: GA and Military Aviation Forecasts Summary

Year	GA Operations	Military Operations	Total Operations (Preferred)	Total GA FAA TAF Forecasts	Preferred vs TAF Difference	Based Aircraft
2016*	17,391	7,231	**24,622**	-		**66**
2021	17,952	5,775	**23,727**	23,780	**.25%**	**68**
2026	18,744	5,775	**24,519**	24,034	**2%**	**71**
2036	20,592	5,775	**26,367**	24,563	**7.5%**	**78**

Source: TBI Calculations, FAY AMPU Part 1, *2016 Base Year (Actual).

Table 3.17: Aviation Forecasts Summary

Year	Air Carrier/ Taxi Operations	GA Operations	Military Operations	Total Operations (Preferred)	Total FAA TAF Forecasts	Based Aircraft
2016*	10,222	17,391	7,231	**34,844**	-	**66**
2021	14,386	17,952	5,775	**38,113**	33,434	**68**
2026	15,250	18,744	5,775	**39,769**	34,160	**71**
2036	17,134	20,592	5,775	**43,501**	36,241	**78**

Source: TBI Calculations, FAY AMPU Part 1, *2016 Base Year (Actual).

FAYETTEVILLE REGIONAL AIRPORT

FACILITY REQUIREMENTS



July 2018

TALBERT & BRIGHT, INC. 4810 Shelley Drive. Wilmington. North Carolina. 28405. T: 910.763.5350

4. FACILITY REQUIREMENTS

The purpose of the Facility Requirements analysis is to determine the airport's capacity and ability to support the forecast levels of aviation demand identified in Chapter 3. The facility requirements presented herein identify development, replacement, or modification of airport facilities to accommodate the existing and 20-year anticipated demand.

The methodology used to determine facility requirements begins with an examination of the airport's major components: Airfield, Airspace, Buildings and Landside/Surface Access. It is important to note that each of these system components should be balanced, to achieve system optimization. Any deficiencies in the airport facilities that encompass these four elements are identified based upon standards presented in FAA Advisory Circular 150/5300-13A Airport Design, and FAA Advisory Circular 150/5060-5 Airport Capacity and Delay. Recommended improvements to airport facilities are noted in the following sections.

4.1 AIRFIELD CAPACITY AND DELAY

Airport capacity and delay computations are used to design and evaluate airport development and improvements. As demand approaches capacity, individual aircraft delay is increased. Successive hourly demands exceeding the hourly capacity result in unacceptable delays. Even when hourly demand is less than the hourly capacity, aircraft delays can still occur if the demand within a portion of the time interval exceeds the capacity during that interval.

Airport capacity is governed by runway configuration, percent arrivals, percent touch and go's, taxiway configuration, airspace limitations and runway instrumentation. Annual service volume (ASV) is a reasonable estimate of an airport's annual capacity. It accounts for differences in runway use, aircraft mix, and weather conditions that would be encountered over a year's time.

The airfield operational capacity for FAY, as calculated from FAA Advisory Circular 150/5060-5, Airport Capacity and Delay, is approximately 200,000 annual operations per year. The current airport configuration provides an 'hourly' runway capacity of 77 Visual Flight Rules (VFR) operations and 57 Instrument Flight Rules (IFR) operations. A comparison of future demand to current airfield operational capacities does not indicate the need for capacity-enhancement projects such as additional runways. Based on the forecasts for the Airport, the demand as a percent of ASV is presented in **Table 4.1**.

Table 4.1: Forecast Demand as Percent of Annual Service Volume (ASV)

YEAR	FORECAST ANNUAL OPERATIONS	MIX INDEX (C+3D OPS)	ANNUAL SERVICE VOLUME (ASV) OPERATIONS	PERCENT OF ASV
2016	34,844	34.4 percent	200,000	17.4 percent
2021	38,113	37.9 percent	200,000	19.1 percent
2026	39,769	38.5 percent	200,000	19.9 percent
2036	43,501	39.6 percent	200,000	21.8 percent

Source: FAA AC150/5060-5, Talbert & Bright, Inc. Analysis

Table 4.1 indicates that the forecast total annual operations are expected to grow from 17.4 percent to 21.8 percent of the annual service volume by the end of the planning period. Industry and FAA guidelines recommend that capacity improvements be pursued when annual operations reach 60% of the theoretical Annual Service Volume. Therefore, when annual operations reach 120,000, more detailed analysis should be performed to better determine the runway's capacity.

Hourly airfield capacity is a measure of the maximum number of aircraft operations which can be accommodated on the airport or airport component in an hour. Hourly capacity is an important consideration, since this measure determines whether an airport can accommodate the projected peak hour operations during the planning period.

FAA Advisory Circular 150/5060-5, Airport Capacity and Delay, is used to estimate the hourly capacity of FAY. The maximum hourly capacity for FAY under VFR conditions is currently 77 operations. The forecast annual operations are used to derive the peak hour operations as part of the forecast analysis. The airport is currently at 20.7 percent of their peak hour capacity with this number anticipated to grow to nearly 23.4 percent by 2036. The current peak hour operations levels represent a theoretical estimate of current demand. No additional airfield capacity improvements are anticipated over the 20-year planning period.

4.2 AIRPORT SERVICE LEVEL

The National Plan of Integrated Airport Systems (NPIAS) is a comprehensive list of all airports that are eligible for Federal funding from the FAA and required to meet FAA standards. FAY is listed as a Non-hub Primary Commercial Service Airport in the NPIAS. Similarly, the North Carolina Department of Transportation (NCDOT) classifies the airport as a Commercial Service facility. FAY

will continue to serve the commercial and general aviation role over the 20-year planning period; there is no anticipated change to the airport service level designation.

4.3 AIRPORT REFERENCE CODE

In accordance with FAA AC 150/5300-13A, Airport Design, airports and their associated runways and taxiways are designed and constructed to accommodate the most demanding aircraft or family of aircraft that make regular use (500+ annual operations) of the facility. The FAA has established airport design criteria based on the airport reference code (ARC) designation. The Airport Reference Code (ARC) is a measure of the approach speed, wingspan, and tail height of the most critical aircraft that operates at an airport. The critical aircraft is thus used to determine the required airport approach and layout dimensions. The FAA aircraft approach categories, design groups and visibility minimums are listed in **Table 4.2**.

Table 4.2: Components of Runway Design Code

AIRCRAFT APPROACH CATEGORY (AAC)		AIRPLANE DESIGN GROUP(ADG)		
CATEGORY	APPROACH SPEED (KNOTS)	GROUP #	WINGSPAN (ft.)	TAIL HEIGHT (ft.)
A	<91	**I**	<49	<20
B	91 to <121	**II**	49 to <79	20 to <30
C	121 to <141	**III**	79 to <118	30 to <45
D	141 to <166	**IV**	118 to <171	45 to <60
E	166+	**V**	171 to <214	60 to <66
		VI	214 to <262	66 to <80

VISIBILITY MINIMUMS RVR	INSTRUMENT FLIGHT VISIBILITY CATEGORY (STATUTE MILE)
5000	Not lower than 1 mile
4000	Lower than 1 mile but not lower than ¾ mile
2400	Lower than 3/4 mile but not lower than 1/2 mile
1600	Lower than 1/2 mile but not lower than 1/4 mile
1200	Lower than 1/4 mile

Source: FAA Advisory Circular 150/5300-13A, Airport Design

The current and future critical aircraft at FAY are listed in **Table 4.3**. As determined during the AMPU forecast analysis, the current critical aircraft for Runway 4/22 is the full range of narrow body mainline and regional jet aircraft used in the United States. For the purposes of determining airport geometry for Runway 4/22, this is defined as Aircraft Approach Category (AAC) C and Airplane Design Group (ADG) III.

The current critical aircraft for Runway 10/28 is a Cessna Citation II (ADG B-II) is expected to remain the same throughout the planning period where general aviation aircraft in this design group will continue to be able to operate from this runway and access the GA hangar, apron, and terminal area.

Table 4-3: 2016 FAY Critical Aircraft Characteristics

	RUNWAY 10/28	RUNWAY 4/22	
	EXISTING & PROPOSED	EXISTING	PROPOSED
	CESSNA CITATION II	MCDONNELL DOUGLAS MD-88	AIRBUS A-321
Reference Code (ARC)	B-II	D-III	C-III
Runway Critical Aircraft	10/28	4/22	4/22
Propulsion	Jet	Jet	Jet
Wingspan	52'	107.9'	117.5’
Length	47'	147.8'	146’
Height	15'	30.5'	38.6’
Maximum Takeoff Weight	15,100 lbs.	160,000 lbs.	196,200 lbs.
Seating Capacity	7	149	192
Range	2,104 nm	2,500 nm	3,700 nm

Source: Cessna, Airbus, Boeing, Delta

4.4 RUNWAY APPROACH CAPABILITIES

Airport design features and sizing/layouts are also determined by the approach visibility minimums for each runway end. These minimums represent ceiling height and visibility; the lower the minimums, the larger the safety areas and separation standards. The existing and proposed approach capabilities are shown in **Table 4.4**. Runway 4 currently has an Instrument Landing System (ILS) which is considered a “precision” approach by the FAA. An ILS can provide approach minimums as low as a 200’ ceiling and ½-mile visibility which is the case for Runway 4. Runway 22 has an LPV GPS approach with minimums as low as a 200’ ceiling and ¾ mile visibility.

Runway 10/28 has non-precision approach capabilities to both runway ends and the preferred condition is to obtain a ¾ mile approach to each of the 10/28 runway ends to accommodate corporate business GA traffic as well as a portion of air carrier traffic when necessary.

Table 4.4: FAY Approach Capabilities

RUNWAY	APPROACH VISIBILITY MINIMUMS
04 Existing and Future	Not Lower than ½ -Mile
22 Existing and Future	Not Lower than ¾-Mile
10 Existing	Not Lower than 1 mile
10 Future	Not Lower than ¾-Mile
28 Existing	Not Lower than 1 mile
28 Future	Not Lower than ¾-Mile

Source: FAA Advisory Circular 150/5300-13A, Inventory Chapter

4.5 AIRPORT GEOMETRY

This section presents the airport geometric design standards and recommendations to promote the safety, economy, efficiency and longevity of the airport. It is important for airport owners to review both the present and future uses of the airport and determine if there are any geometric deficiencies that need to be addressed.

4.5.1 Runway Wind Coverage

Wind direction determines runway orientation and the directional use of each runway. The direction of aircraft operations is determined by the prevailing wind at the given time as aircraft generally land and takeoff into the wind. FAA Advisory Circular 150/5300-13A, "Airport Design" recommends 95 percent wind coverage by an airport's runway configuration. Coverage is determined using historical wind speed and direction data, applying a crosswind component to each runway, and analyzing the percentage of time the crosswind component is below an accepted velocity. The crosswind component is the wind velocity acting at a right angle to a given runway.

FAA-accepted crosswind components are as follows:

- 10.5 knots for Runway Design Codes A-I and B-I including A-I and B-1 small;
- 13 knots Runway Design Codes A-II and B-II;

- 16 knots for Runway Design Codes A-III, B-III, and C-I through D-III; and
- 20 knots for Runway Design Codes A-IV through D-VI, and E-1 through E-VI.

Runway 4/22 has a Runway Design Code of C-III and therefore, a 16-knot crosswind component is used to determine the wind coverage, while Runway 10/28 has a Runway Design Code of B-II where a 13-knot crosswind component is used. When analyzing wind coverage, there are three meteorological conditions examined. These include:

- All Weather: All reported ceiling and visibility observations.
- Visual Meteorological Conditions (VMC): All observations with greater than 1,000' ceiling and greater than 3.0 miles of visibility. Based on data obtained from the FAA for the period 2006-2015, these conditions occurred 81 percent of the time at FAY.
- Instrument Meteorological Conditions (IMC): All observations with less than 1,000' ceiling and less than 3.0 miles of visibility. Based on data obtained from the FAA for the period 2006-2015, these conditions occurred approximately 19 percent of the time at FAY.

Table 4.5 lists the calculated wind coverages for each runway at FAY as well as the combined wind coverage for both runways. As shown in the table, the existing runway alignments provide greater than 95 percent wind coverage for all crosswind components for All Weather, VMC and IMC conditions on Runway 4/22 but not on Runway 10/28 for a crosswind of 10.5 knots. In addition, the combined wind coverage for both runways is well over 95 percent. No changes to runway orientations are proposed.

Table 4.5: Runway Crosswind Coverage Percentages

CROSSWIND KNOTS	VMC CONDITIONS 4/22	10/28	COMBINED
10.5	96.01	91.69	98.66
13	97.96	95.71	99.65
16	99.48	99.02	**99.93**
20	99.90	99.83	100.00
CROSSWIND KNOTS	**IMC CONDITIONS 4/22**	**10/28**	**COMBINED**
10.5	97.22	91.37	98.84
13	98.47	94.97	99.64
16	99.43	98.32	99.91
20	99.82	99.58	99.98
CROSSWIND KNOTS	**ALL WEATHER CONDITIONS 4/22**	**10/28**	**COMBINED**
10.5	96.23	91.73	98.70
13	98.05	95.64	99.65
16	99.46	98.92	99.92
20	99.88	99.79	99.99

Source: National Climatic Data Center, Asheville, NC

4.5.2 Runway Length Requirements

The following section describes the recommended runway length requirements for FAY. The planned, or future, runway length is determined by: 1) performance requirements to satisfy the most demanding aircraft or family of aircraft utilizing the Airport; 2) conformance with FAA recommended runway length standards per FAA Advisory Circular 150/5325-4C, Runway Length Recommendations for Runway Design; 3) Airport and local interest commensurate with community competitiveness for retaining and attracting business and investment to the region.

The Federal Aviation Administration provides guidance for all airports receiving federal funding for determining future runway length requirements. As stated in paragraphs 301 of AC 150/5325-4C: "The recommended runway length obtained for this category of airplanes (large airplanes and light jets) is based on using the performance charts published by airplane manufacturers (APMs) for individual airplanes." There are five steps identified in AC 150/5325-4C for determining the require runway length which are listed below.

- **Step #1.** Identify the critical aircraft takeoff and landing weights
- **Step #2.** Identify the critical aircraft flap setting
- **Step #3.** Identify airport specific parameters such as runway end elevation changes and mean daily maximum temperature.
- **Step #4.** Apply the procedures in this chapter to each APM to obtain separate takeoff and landing runway length recommendations.
- **Step #5.** Apply any takeoff and landing length adjustments, if necessary, to the resulting lengths.

FAA Traffic Flow Management System Counts (TFMSC) data was used to determine the types of aircraft most frequently operating at the airport as well as the most demanding aircraft forecasted to operate at FAY. This data consists of all aircraft that operated via an instrument flight plan to or from FAY. The most demanding critical aircraft for runway length requirements are comprised of the air carrier aircraft as shown in **Figure 4.6**. This figure includes the Maximum Takeoff Weight (MTOW) as provided by the manufacturer. This figure also lists the takeoff distance for the most predominant aircraft which is then adjusted to account for the average daily maximum temperature during the hottest month at FAY. Landing distances from the aircraft manufacturer are also included and have

been increased by 15 percent to account for wet runway conditions. All takeoff calculations listed in **Figure 4.6** assume the aircraft is operating at MTOW.

Figure 4.6: Runway Length Comparison

AIRCRAFT	ARC	MTOW (LBS.)	TAKEOFF LENGTH (FT.) ISA	TAKEOFF LENGTH (FT.) ISA + 15° C	LANDING LENGTH (FT.)	LANDING LENGTH (FT.) WET (+15%)
Boeing 717-200	C-III	119,000	5,500	7,600	4,700	5,405
Boeing 737-700	C-III	154,500	5,500	8,800	4,700	5,405
Airbus A319	C-III	166,000	6,070	7,000	4,700	5,405
MD-88	D-III	149,500	7,600	8,000	5,000	5,750
Bombardier CS100	C-III	134,000	4,000	4,800	4,450	5,118
Embraer 195	C-III	107,564	5,715	6,000	4,100	4,715
Embraer 190	C-III	105,359	5,243	5,800	4,100	4,715
Embraer 175	C-III	82,673	5,289	6,000	4,600	5,290
Embraer 170	C-III	79,344	4,865	5,300	4,100	4,715
Bombardier CRJ-900	C-III	80,500	5,775	6,800	5,800	6,670
Bombardier CRJ-700	C-II	72,750	5,040	5,300	5,100	5,865
Bombardier CRJ-200	C-II	53,000	5,800	6,700	4,900	5,635
DeHavilland Dash 8-300/100	B-III	43,000	3,870	3,400	2,900	3,335
B-II Business Jets/Turboprops (Cessna Citation Excel, Beechcraft King Air 200)	B-II	20,200	3,560	3,910	3,310	3,807
Business Jets Larger than B-II	B-III to D-III	Up to 90,000	5,990	6,859	2,950	3,393

Source: Aircraft manufacturer data.

In 2016 there were 631 operations conducted by the Boeing 717-200 and 426 operations conducted by the MD-88, both of which are Group III aircraft. Should either of these aircraft be phased out or replaced by other aircraft within Delta's fleet, it is expected they will be replaced with Group III aircraft with similar performance specifications and will not require geometric modifications to the primary Runway 4/22. It is also recommended, consistent with the previous Master Plan that the existing

separation standards be met for Group III aircraft on Runway 10/28 to accommodate large corporate aircraft on the south side into the future.

4.5.3 Runway Numbering

Runway numbers are determined by the nearest tenth of a degree in magnetic heading. The constant shifting of magnetic north due to declination change can cause runway designation numbers to change occasionally. The true runway heading plus the magnetic declination for Fayetteville, NC equals the magnetic runway heading as shown in **Table 4.7**.

Table 4.7: Runway Crosswind Coverage Percentages

RUNWAY	RUNWAY HEADING (TRUE)	MAGNETIC DECLINATION	MAGNETIC RUNWAY HEADING	RUNWAY NUMBERS
04/22	31.18°/211.187°	8.56°	39.74°/219.747°	04/22
10/28	91.157°/271.166°	8.56°	99.717°/279.726°	10/28

Source: FAA AVN Datasheet for FAY (2017), NOAA Magnetic Field Calculator (2017)

The existing runway numbers accurately depict the current (2017) runway magnetic headings and will not need to be altered. It is important to monitor declination changes in the future so that the most accurate magnetic heading may be reflected through the runway designation numbers.

4.5.4 Runway Geometry

Table 4.8 and **4.9** summarize the existing and future runway dimensions and design parameters for Runway 4/22 and Runway 10/28 respectively. Runway 4/22 includes the lack of a full 1,000-foot RSA and ROFA beyond the runway ends. This is due to the proximity of Doc Bennett Road near the Runway 04 end and RSA grading limitations near the Runway 22 end.

To provide full RSAs & ROFAs, declared distances are used to reduce the available Accelerate Stop Distance Available (ASDA) and Landing Distance Available (LDA) which reduces the useable runway length for takeoff and landing calculations.

Table 4.8: Runway 4/22 Design Standards

ITEM	EXISTING	ARC C-III Requirements (Lower than 3/4-mile Visibility)
	RWY 4 / RWY 22	**RWY 4 / RWY 22**
Runway Width	150’	150’
Runway Safety Area (RSA)		
Length beyond departure end	1,000’*	1,000’
Length prior to runway threshold	600’	600’
Width	500’	500’
Runway Object Free Area (ROFA)		
Length beyond runway end	1,000’*	1,000’
Length prior to runway threshold	600’	Same
Width	800’	Same
Runway Obstacle Free Zone (ROFZ)		
Length beyond runway end	200’	Same
Width	400’	Same
Precision Obstacle Free Zone (POFZ)		
Length	200’	Same
Width	800’	Same
Approach Runway Protection Zone (RPZ)		
Length	2,500’/1,700’	2,500’
Inner Width	1,000’/1,000’	Same
Outer Width	1,750/1,510’	1750’
Size (acres)	78.914/42.978	78.914
Departure Runway Protection Zone (RPZ)		
Length	1,700’/1,700’	Same
Inner Width	500’/500’	Same
Outer Width	1,010’	Same
Size (acres)	29.465	Same
Runway centerline to:		
Holding Position	250’	Same
Parallel Taxiway/Taxiway centerline	400’	Same
Aircraft Parking Area	550’	Same

Source: Advisory Circular 150/5300-13A, Airport Design; Talbert & Bright analysis, * Departure end RSA and ROFA length requirements are met using declared distances.

Table 4.9: Runway 10/28 Design Standards

ITEM	EXISTING	ARC B-II Requirements (Not Lower than 1-mile visibility)
	RWY 10 / RWY 28	**RWY 10 / RWY 28**
Runway Width	150’	75’
Runway Safety Area (RSA)		
Length beyond departure end	300’ / 300’	300’ / 300’
Length prior to runway threshold	300’ / 300’	300’ / 300’
Width	150’	150’
Runway Object Free Area (ROFA)		
Length beyond runway end	300’ / 300’	300’ / 300’
Length prior to runway threshold	300’ / 300’	300’ / 300’
Width	500’	500’
Runway Obstacle Free Zone (ROFZ)		
Length beyond runway end	200’	200’
Width	400’	400’
Approach Runway Protection Zone (RPZ)		
Length	1,000’ / 1,000’	1,000’ / 1,000’
Inner Width	500’ / 500’	500’ / 500’
Outer Width	700’ / 700’	700’ / 700’
Size (acres)	13.770 / 13.770	13.770 / 13.770
Departure Runway Protection Zone (RPZ)		
Length	1,000’ / 1,000’	1,000’ / 1,000’
Inner Width	500’ / 500’	500’ / 500’
Outer Width	700’ / 700’	700’ / 700’
Size (acres)	13.770 / 13.770	13.770 / 13.770
Runway centerline to:		
Holding Position	200’	200’
Parallel Taxiway/Taxiway centerline	400’	240’
Aircraft Parking Area	550’	250’

Source: Advisory Circular 150/5300-13A, Airport Design; Talbert & Bright analysis

4.5.5 Runway Width

FAA Advisory Circular 150/5300-13A provides guidance for runway width standards based on ARC and wind coverage. For Category C-III runways such as 4/22, a 150-foot width is required. Runway 04/22 meets this standard at its current width of 150 feet. For Category B-II (aircraft greater than 12,500 pounds) runways such as 10/28, a 75-foot width is required for visual approaches and approaches with visibility minimums not lower than ¾-mile. Runway 10/28 exceeds this standard with its current 150-foot width. No runway widening will be required over the 20-year planning period.

4.5.6 Pavement Strength and Condition

Airport pavements are constructed to provide adequate support for the loads imposed by aircraft using the airport and to produce a firm, stable, smooth, all year, all weather surface free from dust or other particles that may be blown or picked up by propeller wash or jet blast. For pavements to meet the requirements noted they must have the strength and stability to withstand abrasive action, adverse weather and other deteriorating influences.

4.5.6.1 Pavement Management System

An Airport Pavement Management System (PMS) involves periodic collection and evaluation of pavement strength and condition data to guide pavement maintenance efforts and to plan and program pavement rehabilitation projects. This process is intended to provide safe and serviceable airfield pavements on a continuing basis with cost effective maintenance and capital improvement expenditures. The first PMS report for FAY was prepared by HNTB in 2006. Subsequently, the North Carolina Department of Transportation, Division of Aviation (NCDOA) has taken an active role in implementing PMS at air carrier airports, including FAY. The DOA has issued three PMS reports for FAY: a Pavement Management Inspection (PMI) report in 2013, a Pavement Classification Number (PCN) Evaluation report in 2014 and a Pavement Management System Update report in 2016.

The DOA PMS reports, coupled with the data developed over the course of nine airfield pavement projects over the last ten years, provides information from which a program of projected airfield pavement rehabilitation needs over the planning horizon can be developed.

4.5.6.2 **Pavement Strength**

Airfield pavement design and pavement strength evaluation involve engineering analyses using soil subgrade strength, pavement section thicknesses and material properties and traffic data regarding the aircraft types, weights and frequency of operations.

Runway pavement strength is reported in the FAA 5010 database in both Pavement Classification Number (PCN) and gear type/weight formats. The reported pavement strength for Runway 4/22 at FAY is taken from the DOA 2014 PCN report. The reported pavement strength for Runway 10/28 is taken from a 2017 Talbert & Bright analysis which reflects the recent reconstruction/rehabilitation of the runway.

The current reported runway pavement strengths at FAY are as follows:

Runway 4/22	Runway 10/28
PCN 42/F/A/X/T	PCN 17/F/A/X/T
S 109, D 178, DT 321	S 53, D 75

The runway 4/22 strength rating is consistent with one daily departure of an MD-88 and numerous daily departures of regional and general aviation aircraft. The MD-88 traffic has and can be expected to vary between similar narrow body air carrier aircraft, including the A319/320/321, B-717 and B-737 series. The air carrier apron and the taxiway network serving Runway 4/22 and the air carrier apron have pavement section strengths which are generally consistent with the strength rating for Runway 4/22.

The Runway 10/28 strength rating is consistent with one daily departure of a 53,000-pound jet and numerous departures of a variety of regional and GA aircraft. Taxiways F and G serving Runway 10/28 have the same pavement section (and therefore strength) as the reconstructed runway.

The west General Aviation apron and taxilanes pavement is rated for 12,500-pound aircraft. Pavement strength data is not readily available for the South GA area pavements, the North GA apron and the cargo apron. Those pavements appear to be satisfactorily carrying the using traffic without apparent load related pavement distress.

FAY has consistent strong pavement subgrade conditions throughout the airfield. All airfield pavements appear to be structurally adequate for existing operations. The Pavement Classification Number (PCN) strength rating system is used by aircraft operators and airport owners to evaluate planned aircraft operations by comparing the Aircraft Classification Number (ACN) for the specific

aircraft at a specific operating weight versus the PCN value for the airport pavement. Use of the ACN/PCN system is increasing in the United States. It is recommended that future pavement rehabilitation projects for runways, taxiways and aprons include engineering analysis for pavement strength ratings (PCN and gear type/weight formats) for ready reference and use by the Owner and airport users. It should be noted that heavier traffic (heavier aircraft, greater frequency or both) may result in more rapid pavement deterioration and the potential need for pavement strengthening.

4.5.6.3 **Pavement Condition**

Pavements deteriorate over time due to environmental effects (sun/UV radiation, precipitation, wind, freeze/thaw cycles, wet/dry cycles, hot/cold cycles, material/chemical/biological processes), mechanical damage (snow plowing, marking and rubber removal, utility trenches, subgrade settlement, etc.) and repetitive traffic loading.

The Pavement Management System uses a standardized visual pavement inspection routine which characterizes pavement condition as a number known as the Pavement Condition Index (PCI). The index represents the condition or serviceability of the pavement surface and can be thought of as a percentage of new condition.

A map depicting the results of the 2016 PMS inspection conducted for the NCDOT DOA is included as **Figure 4-1**. The map is color coded with standardized PCI ranges with condition characterized as Good, Satisfactory, Fair, Poor, Very Poor, Serious or Failed. With the recent completion of the Runway 10/28 Rehabilitation project, the PCI for the portion of Runway 10/28 located to the east of Runway 4/22 is now 100 (Good). The project included crack sealing and an asphalt emulsion seal coat for the portion of Runway 10/28 located west of Runway 4/22. The PCI for that section would remain in the Fair to Satisfactory range.

The airfield pavements at FAY are in Fair condition or better, except for the cargo apron, Taxiway 'F' east of Runway 4/22, Taxiway G, and certain T-hangar taxilane pavements in the south GA area. The PMS reports include 5-year projections of PCI values. The 2016 PMS report shows an average projected annual deterioration rate for FAY of about two percentage points per year (i.e., a pavement with a 2016 PCI of 75 would be projected to fall to about 65 by 2021).

Generally, pavement maintenance and rehabilitation planning should strive to keep all pavements in Fair condition or better.

4.5.6.4 Pavement Life

FAA policy regarding expected minimum useful life for airfield pavement construction, rehabilitation and maintenance activities are found in the AIP handbook and the Pavement Design Advisory Circular. Many pavements will perform well for longer periods. These guidelines represent the minimum time frame expectations relative to additional capital expenditures, except where increases in traffic or other unanticipated causative factors result in more rapid deterioration. New and reconstructed pavements have a minimum expected useful life of 20-years. Pavement rehabilitation has an expected minimum useful life of 10-years. Concrete pavement joint seal replacement has an expected minimum useful life of 7-years. Asphalt seal coat and asphalt pavement joint sealing have a minimum expected useful life of 3-years.

4.5.6.5 Flexible Pavement Rehabilitation

Both the 2006 and 2013 Pavement Management System (PMS) reports for FAY included specific pavement rehabilitation recommendations. The recommended method for flexible pavement rehabilitation in both reports was to mill the pavement surface to a depth of 2-inches, and then pave it back with a 2-inch overlay. These recommendations formed the basis of ACIP project programming budgets. In 2009, the Runway 4/22 rehabilitation project was implemented using that recommendation because it was consistent with the budgetary basis and because it represented a workable solution for short night time closures, with the runway re-opened to aircraft operations each day. The 2-inch "mill and fill" night time operation was used on about 6,700 linear feet of the runway as well as on the stub taxiways and a small portion of Taxiway A near Taxiway B. Subsequent minor reflective cracking was addressed with crack sealing.

The Taxiway 'A' rehabilitation project included a 4-inch deep mill and fill operation along with additional changes intended to further mitigate reflective cracking (a polymer modified asphalt cement, non-rubberized crack sealant and sparing use of crack relief inter-layer material) as recommended by FAA research consultants. The 2016 PMS report does not include specific pavement rehabilitation recommendations.

The pavement areas resurfaced in 2009 using the 2-inch mill and fill operation have 2016 PCI values ranging from 65 to 83 (age 7 years). Projecting to 2019 (10-year minimum expected life), the PCI values would be expected in the range of 59 to 77. It is recommended that Runway 4/22 (full length), the stub taxiways and the affected portion of Taxiway A be programmed for pavement rehabilitation (4-inch minimum) within the first two phases of the planning period (2018 – 2028).

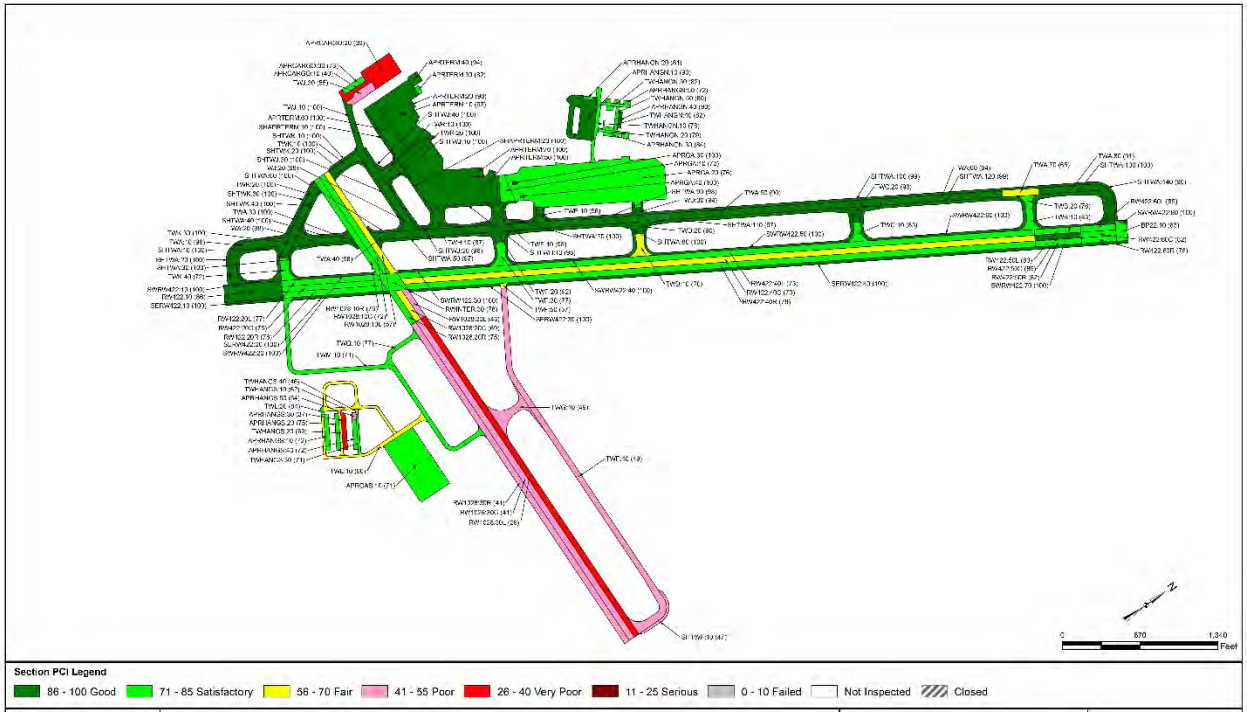
4.5.6.6 1987 Concrete Apron Pavement

The rigid (concrete) pavement on the air carrier apron adjacent to Concourse B is now 30 years old. The PCI for this pavement was listed as 86 in the 2006 report and 73 in the 2013 report. In 2015, the Air Carrier Apron Rehabilitation Phase 2 project replaced an area of deteriorated flexible (asphalt) pavement with new rigid (concrete) pavement. The project also replaced the most severely cracked slabs around the perimeter of the 1987 concrete pavement. The joints in the 1987 pavement were cleaned and sealed and several partial depth concrete repairs (patches) were constructed. Following the project, the 2016 PMS report listed a PCI of 93 for this pavement. Recently, a small area in a 1987 slab exhibited shallow surface spalling. The 1987 pavement exhibits isolated areas of thin surface cracking in a crazing type pattern, particularly at corners and along joint lines. This may be indicative of alkali-silica reaction (ASR) or some other environmental/chemical distress mechanism. If the deterioration mechanism is progressive, additional cases of spalling can be expected, with the need for additional and possibly deeper patching. It is recommended that the 1987 concrete pavement be monitored closely. If additional spalling occurs, it may be prudent to take pavement cores for petrographic examination to investigate the nature, status and progression of the distress mechanism. As the remaining 1987 pavement continues to age, it may be a candidate for full depth reconstruction during the first or second 5-year planning period.

4.5.6.7 Projected Pavement Rehabilitation Needs

Figure 4-1 presents the pavement conditions reported in the 2016 RDM International Pavement Report while **Table 4.10** provides a list of projected pavement rehabilitation needs over the 20-year planning horizon, based on age, current condition and engineering judgement. The list should be reviewed, revised and updated regularly based on sponsor pavement condition observations, PMS updates (typically performed every three years), as well as during ACIP reviews with FAA and NCDOT-DOA.

Figure 4-1: Airfield Pavement Conditions (2016)



Source: RDM International FAY Pavement Report

Table 4.10: Airfield Pavement Recommendations

Pavement Location	Most Recent Construction		2016 PCI	Next Rehabilitation		Remarks
	Year	Type		Program Year(s)	Type	
Cargo Apron	1980's	Original Construction	39 - 73	2023	Mill/Fill 4", CPR	
Air Carrier Apron (1987 Concrete)	2015	Joint sealing, partial depth patching	93	2022	Reconstruct P-501	Continue to monitor 1987 pavement for ASR/surface spalling.
Taxiway F (East of Runway 4-22) & G	1972	Original Construction	47 - 57	2024	Reconstruct 4"	
South GA Apron & Taxiways (L, M, N, Q)	1996	Original Construction	60 - 77	2025	Mill/Fill 4"	
North GA Apron	2001	Mill/overlay (variable), reconstruct	72 - 76	2028	Mill/Fill 4"	Flatten steep zones; relocate connector away from Taxiway D.
Runway 4/22 & stub taxiways	2009 - 2012	Mill/Fill 2"	70 - 86	2026	Mill/Fill 4", Groove	Night time construction. Include selected stub taxiways, depending on condition.
Taxiway A & connector taxiways	2009 - 2012	Mill/Fill 2" to 4"	65 - 100	2027	Mill/Fill 4"	Selected areas, depending on condition.
Runway 10/28 West of Runway 4/22	2017	Crack Seal, Seal Coat	57 - 76	2024	Mill/Fill 4"	
West GA Apron & Hangar Taxilanes	2010	Reconstructed (2")	72 - 90	2029	Reconstruct 4"	Reconstruct selected areas, depending on condition.
South GA Hangar Taxilanes	1996 - 2006	Original Construction (2")	37 - 84	2023	Reconstruct 4"	Reconstruct selected areas, depending on condition. Improve Drainage.

4.5.7 Runway Protection Zones

The Runway Protection Zone's (RPZ) function is to enhance the protection of people and property on the ground. This is achieved through airport owner control over RPZ's. Such control includes clearing RPZ areas (and maintaining them clear) of incompatible objects and activities. Control is preferably exercised through acquisition of sufficient property interest in the RPZ. The geometrics of the RPZ vary depending upon the visibility minimums for the runway approach and the aircraft utilizing the airport as shown in **Table 4.11**.

Table 4.11: Approach Runway Protection Zone (RPZ) Dimensions & Design Standards

RUNWAY	APPROACH VISIBILITY MINIMUMS	FACILITIES EXPECTED TO SERVE	LENGTH	INNER WIDTH	OUTER WIDTH	RPZ ACRES
Runway 04 Existing & Future	Lower than 3/4-Mile	All Aircraft	2,500'	1,000'	1,750'	78.914
Runway 22 Existing & Future	Not Lower than 3/4-Mile	All Aircraft	1,700'	1,000'	1,510"	48.978
Runway 10 Existing	Not Lower than 3/4-Mile	Category A & B	1,000'	500'	700'	13.770
Runway 10 Future	Not Lower than 3/4-Mile	All Aircraft	1,700'	1,000'	1,510"	48.978
Runway 28 Existing	Not Lower than 1-Mile	Category A & B	1,000'	500'	700'	13.770
Runway 28 Future	Not Lower than 3/4-Mile	All Aircraft	1,700'	1,000'	1,510"	48.978

Source: Advisory Circular 150/5300-13A, Airport Design; Talbert & Bright analysis

FAY also has Departure Runway Protection Zones which have dimensional standards equal to or less than the approach RPZ standards. All the departure RPZs either coincide with or fall within the approach RPZs dimensions. No land use changes are required for these departure RPZs other than ensuring that the airport owns an interest in these land areas to prevent incompatible land uses in the future.

4.5.8 Runway 4 Approach RPZ

The City of Fayetteville does not currently own or otherwise control the entire Runway 4 Approach Runway Protection Zone (RPZ). Several vacant properties, one dwelling, portions of occupied single-family house lots and the Lake Lynn dam lie within the RPZ. Two NCDOT maintained public roadways, Doc Bennet Road and Claude Lee Road, pass through the RPZ. Claude Lee Road provides the primary access route from Interstate 95 to the airport terminal area.

Land and easement acquisition have long been included in the airport's long-range capital plan to acquire land in fee or easement coverage for the Runway 4 Approach RPZ.

Relocating the public roadways out of the Runway 4 Approach RPZ (and the Runway 10 RPZ) should be a consideration in long term regional ground transportation planning. Doc Bennett Road could be dead ended to the southeast of the Runway 4 RPZ limits. A new roadway alignment linking Doc Bennett Road near the Fire Training Center to Claude Lee Road would be appropriate to avoid an extremely long dead-end roadway with the associated emergency response challenges. Among the environmental impact considerations would be a new crossing of Big Sandy Run.

Dead-ending Claude Lee Road either side of the Runway 4 RPZ would have serious direct access implications for the airport and for neighboring residential, commercial and industrial properties. Closing Doc Bennett Road at the Runway 10 RPZ would have similar property impacts. Claude Lee Road could conceivably be relocated to the west of Lake Lynn. Environmental impacts associated with crossing Big Sandy Run, its tributaries and wetlands could be substantial.

The South-Central Land Use Plan, March 2015, prepared by the Cumberland County Joint Planning Board, depicted a new public roadway linking Airport Road with Owen Drive. The plan envisioned this roadway as an extension of the Claude Lee and Doc Bennett Road corridor from I-95 Exit 44. The new roadway link between Airport Road and Owen Drive could provide an alternative access link from I-95 to the airport terminal (via NC Route 87, MLK freeway), if Claude Lee Road were closed through the Runway 4 Approach RPZ.

The existing Runway 10/28 is protected by easement, however, it is recommended that the city consider purchasing those easements in fee simple, as they become available. Should Runway 10/28 ultimately require a C-II, ¾ mile RPZ, it is also recommended that the city consider purchasing those additional properties in the future as they become available.

4.5.9 Runway Safety Area

A Runway Safety Area (RSA) is defined as a surface surrounding the runway which is suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway. The dimensional standards are noted in **Table 4.12**. In addition to the dimensional standards, the RSA should conform to the following design standards:

- Graded and cleared of hazardous items or surface variations
- Drained by grading or other conveyance to prevent water accumulation
- Capable, under dry conditions of supporting airport vehicles and Aircraft Rescue and Fire Fighting (ARFF) equipment, and the occasional passage of aircraft without causing damage to the aircraft.
- Free from objects except those fixed by function. Objects greater than 3 inches in height above grade shall be frangible.

Table 4.12: Runway Safety Area (RSA) Dimensions and Design Standards

RUNWAY	ARC	RSA WIDTH	RSA LENGTH BEYOND RUNWAY END	MEETS DESIGN STANDARDS
04/22 Existing & Future	C-III	500’	1,000’	Yes (with declared distances)
10/28 Existing & within Planning Horizon	B-II	150’	300’	Yes

Source: Advisory Circular 150/5300-13A, Airport Design; Talbert & Bright analysis

However, the current dimensions of the Runway 4/22 and Runway 10/28 RSA meet C-III and B-II FAA airport design standards respectively. No RSA improvements are expected since the current length of Runway 4/22 is adequate throughout the planning period, neither is there an expected increase to the design code of Runway 10/28 which would require larger safety areas.

4.5.10 Runway Obstacle Free Zone

The Runway Obstacle Free Zone (OFZ) clearing standards preclude taxiing and parked airplanes and object penetrations, except for frangible visual NAVAIDs that need to be in the OFZ because of their function. The runway OFZ, the inner-approach OFZ and the inner-transitional OFZ comprise the obstacle free zone (OFZ). The clearance requirements for the OFZs are defined in A/C 150-5300-13A. They include:

Runway OFZ. The runway OFZ is a defined volume of airspace centered above the runway centerline. The runway OFZ is the airspace above a surface whose elevation at any point is the same as the elevation of the nearest point on the runway centerline. The runway OFZ extends 200 feet beyond each end of the runway. Its width varies depending on the aircraft being served. At FAY both runways serve aircraft weighing more than 12,500 pounds and therefore both have a ROFZ width of 400 feet.

Inner-approach OFZ. The inner-approach OFZ is a defined volume of airspace centered on the approach area and applies only to runways with approach lighting systems which FAY is equipped with on Runway 4. The inner-approach OFZ begins 200 feet from the runway threshold at the same elevation as the runway threshold and extends 200 feet beyond the last light unit in the approach lighting system. Its width is the same as the runway OFZ and rises at a slope of 50 (horizontal) to 1 (vertical) from its beginning. The Inner-approach OFZ ensures a clear line of sight between the light units and aircraft landing on Runway 4.

Inner-transitional OFZ. The inner-transitional OFZ is a defined volume of airspace along the sides of the ROFZ and inner-approach OFZ. It applies only to runways with lower than 3/4 statute mile approach visibility minimums. Aircraft tails may not violate the inner-transitional OFZ. FAY has approach minimums low enough to require an inner-transitional OFZ and the airspace around Runway 04/22 should be protected so that a clear inner-transitional OFZ is maintained.

Precision OFZ. The precision OFZ (POFZ) is a defined volume of airspace above an area beginning at the runway threshold, at the threshold elevation, and centered on the extended runway centerline, 200' long by 800' wide. The surface is in effect only when the following operational conditions are met:

- The approach includes vertical guidance.
- The reported ceiling is below 250' or visibility is less than ¾ statute mile (or Runway Visual Range (RVR) is below 4,000').
- An aircraft is on final approach within two (2) miles of the runway threshold.

When the POFZ is in effect, a wing of an aircraft holding on a taxiway waiting for runway clearance may penetrate the POFZ; however, neither the fuselage nor the tail may infringe on the POFZ. Since Runway 4 has a precision instrument approach, FAY should maintain the 200 foot by 800-foot clear area adjacent to the end of Runway 4.

ILS hold lines and lighted signs are provided on taxiways A, K and M, allowing air traffic controllers to hold aircraft clear of the Runway 4 POFZ, as well as the Glide Slope Critical Area (TWY M).

4.5.11 Runway Object Free Area

The Runway Object Free Area (ROFA) is an area on the ground centered on the runway centerline provided to enhance the safety of aircraft operations by having the area free of objects except objects that need to be in the ROFA for air navigation or aircraft maneuvering purposes.

The ROFA dimensional standards are noted in **Table 4.13**.

Table 4.13: Runway Object Free Area (ROFA) Dimensions and Design Standards

RUNWAY	ARC	ROFA WIDTH	ROFA LENGTH PRIOR TO THRESHOLD	ROFA LENGTH BEYOND RUNWAY END	MEETS DESIGN STANDARD
04/22 Existing & Future	C-III	800'/800'	600'/600'	600'/1,000'	Yes - with Declared Distances
10/28 Existing & Future	B-II	500'	300'	300'	Yes

Source: Advisory Circular 150/5300-13A, Airport Design; Talbert & Bright analysis

4.5.12 Runway Line of Sight

An acceptable runway profile permits any two points five feet above the runway centerline to be mutually visible for the entire runway length. However, if the runway has a full-length parallel taxiway, the runway profile may be such that an unobstructed line of sight will exist from any point five feet above the runway centerline for one-half the runway length. There are no obstructions or limitations to the line of sight within the visibility zone at FAY. No changes are required to meet runway visibility standards.

4.5.13 Runway Edge Lighting and Signage

Edge lights are used to outline usable operational areas of airports during periods of darkness and low visibility weather conditions. FAY is currently equipped with High Intensity Runway Lights (HIRL) on Runway 4/22 and Medium Intensity Runway Lights (MIRL) on Runway 10/28. There is no recommended alteration to these lights other than periodic maintenance. Existing airside signage consists of lighted guidance signs. These signs will require periodic maintenance but do not currently need to be replaced or upgraded.

4.5.14 Taxiway Requirements

The minimum pavement widths, intersection geometry, and separations associated with airplane movement areas and airplane physical characteristics establish the taxiway system. Since the taxiway system is the transitional facility, which supports airport operational capacity, the capability to maintain an average taxiing speed of at least 20 mph is recommended, which is currently met by the existing taxiways at the airport. Taxiway dimensional standards are categorized by separations, widths, and intersection geometry. **Table 4.14** summarizes the taxiway dimensional standards. In addition, the taxiway safety area shall be:

- Cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations;
- Drained by grading or storm sewers to prevent water accumulation;
- Capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage for the aircraft; and
- Free of objects except those that need to be in the taxiway safety area because of their function. Objects higher than 3 inches above grade should be constructed on low impact resistant supports (frangible mounted structures) of the lowest practical height with the frangible point no higher than 3 inches above grade. Other objects, such as manholes, should be constructed at grade. In no case should their height exceed 3 inches above grade.

Table 4.14: Taxiway Dimensional Standards

ITEM	EXISTING RWY 04/22 TWY DIMENSIONS	TDG 3 / ADG III STANDARDS	EXISTING RWY 10/28 TWY DIMENSIONS	TDG 3 / ADG II STANDARDS
Taxiway Width	A- 60' K- 60-80' J- 50'	50'	F- 50'	50'
Taxiway Edge Safety Margin	10'	10'	7.5'	10'
Taxiway Centerline to Fixed or Movable Object	93' +	93'	62.5'	93'
Taxilane Centerline to Parallel Taxilane Centerline	350'	140'	140' +	140'
Taxilane Centerline to Fixed or Movable Object	75'	81'	46.5'	81'
Taxiway Wingtip Clearance	34'	34'	26' +	34'
Taxilane Wingtip Clearance	22'	22'	18'	22'
Taxiway Shoulder Width	20'	20'	-	20'
Taxiway Safety Area Width	118' +	118'	79' +	118'
Taxiway Object Free Area Width	186' +	186'	131' +	186'
Taxilane Object Free Area Width	162'	162'	varies	162'

Source: Advisory Circular 150/5300-13A, Airport Design; Talbert & Bright analysis

4.5.15 Parallel Taxiways and Connector Taxiways

A basic airport consists of a runway with a full-length parallel taxiway, an apron, and connecting transverse taxiways between the runway, parallel taxiway, and the apron. Runway 4/22 at FAY is equipped with a full parallel taxiway (Taxiway A), as is Runway 10/28 (Taxiway F). Taxiway A has five connection taxiways to the runway and five additional stub taxiways that provide access to the aircraft parking aprons. The partial parallel Taxiway F that provides access to the approach end of Runway 28 is equipped with two connectors. Connector taxiways should permit free flow to the parallel taxiway. The location of connector taxiways depends on the mix of aircraft, approach and touchdown speeds, point of touchdown, exit speed, rate of deceleration, dry or wet pavement, and number of exits. No additional connector taxiways are needed now.

FAA design criteria recommends that taxiways not lead directly from an apron to a runway without requiring a turn. Since Taxiway F leads directly from the Commercial apron to the runway it would need to be closed or removed to satisfy current airport design standards. The same type of situation exists on Taxiway D which would also need to be relocated to meet taxiway design criteria. The Alternatives Analysis will provide options to remedy the existing conditions that do not currently meet FAA design standards.

4.5.16 Taxiway Edge Lighting and Signage

The taxiway edge lighting system is a configuration of lights that define the lateral and longitudinal limits of usable taxiway. Taxiway signage provides the airport users with guidance information for taxiing destinations and to assist in taxi route decision making upon exiting the apron area. FAY is currently equipped with Medium Intensity Taxiway Lighting (MITL) and lighted taxiway signs. Most of the taxiways at FAY are equipped with LED lighting with the exception of the south GA area and taxiways F and G. Future taxiways and taxiway lighting upgrades at the airport should provide LED MITLs due to their efficiency and longer useful life.

4.5.17 Runway to Taxiway Separation

Runway to taxiway separation standards are predicated on the Airport Reference Code (ARC) and the existing/future visibility minimums expected. The higher the ARC and the lower the visibility minimums, the greater the runway to taxiway separation distances. At FAY, FAA AC 150-5300-13A requires a 400-foot separation for Runway 4/22 (ARC C-III) with visibility minimums lower than 3/4-mile. Taxiway A is currently located at 400 feet and meets existing and future design standards.

Runway 10/28 (existing ARC B-II) requires a 240-foot runway to taxiway separation with approach capabilities not less than 1-mile. However, partial parallel taxiways F, J, M, and N are located 400 feet

from the Runway 10/28 centerline and meet the existing separation requirements. No improvements to runway/taxiway separation are necessary.

4.5.18 Taxiway and Taxilane Object Free Areas

The taxiway and taxilane object free areas (TOFA and TLOFA) are centered on the taxiway and taxilane centerlines. The taxiway and taxilane clearing standards prohibit service vehicle roads, parked airplanes, and above ground objects except for objects that need to be in the object free area (OFA) for air navigation or aircraft ground maneuvering purposes. Vehicles may operate within the OFA provided they give right of way to oncoming aircraft by either maintaining a safe distance ahead or behind the aircraft or by exiting the OFA to let the aircraft pass. The requirement for ADG III is for a 186-foot object free area and the requirement for ADG II is for a 131-foot object free area. This criterion is met for both Taxiway A and Taxiway F, the parallel taxiways that serve both runways at FAY.

4.5.19 Taxilane System

Taxilanes are used for low speed maneuvering of aircraft on aprons and between hangars. The taxilane centerlines should be marked to provide the appropriate taxilane object free area (T/L OFA) for the using class of aircraft, for wingtip clearances from hangars, parked aircraft and other obstacles. Generally, appropriate T/L OFA clearances are met at FAY, as follows:

Table 4.15: FAY Taxilane Geometry

LOCATION	ADG	TL OFA (feet)
Air Carrier Apron	III	162’
Cargo Apron	III	162’
North GA Apron		
Primary Taxilanes	II	115’
Secondary Taxilanes	I	79’
West GA Apron		
Primary Taxilanes	I	79’
T-Hangar Taxilanes	NA	60’
South GA Area		
Primary Taxilanes	II	115’
Secondary Taxilanes	I	79’
T-Hangar Taxilanes	I	79’

On the North GA Apron, the primary taxilane loop from apron entrance Taxiway E, serving the itinerant parking area, has a taxilane OFA clearance issue. As currently marked, the taxilane centerline passes within 35 feet of the fueling vehicle parking area. As part of the construction access plan for the Airline Terminal Improvements – Part 1 project, the taxilane centerline in that area is shown to be permanently removed. This will eliminate the taxilane loop configuration adjacent to Signature Aviation (the FBO). During FBO business hours (0600 to 2200 local), itinerant aircraft crews are assisted by FBO line attendants.

4.6 GENERAL AVIATION AIRCRAFT PARKING AND STORAGE

General aviation aircraft parking and storage requirements can vary widely from airport to airport depending on the number of transient aircraft using the airport and the number of based aircraft owners who choose to tie down their aircraft on the ramp versus those who choose to use hangars.

Airports most often utilize T-hangars as covered storage for small general aviation aircraft. The name of the hangars is derived from their "T" shape. A series of T-Hangars are typically nested together under one common roof. FAY currently has three T-Hangar buildings with a total of 38 individual storage units. There are currently 59 single and multi-engine piston aircraft based aircraft at FAY with approximately 65% stored in T-Hangars. The number of single and multi-engine aircraft is projected to increase to 67 over the next 20 years which means the existing number of T-Hangars will be insufficient for meeting demand over the 20-year planning period. There is currently a waiting list for T-Hangar storage and some aircraft currently stored on the apron may relocate to a T-Hangar if given the option. Therefore, FAY should plan for the addition of one 10-unit T-Hangar over the next 20 years to ensure that demand for this type of storage can be met.

Table 4-16 presents the existing and future storage needs for single and multi-engine aircraft at FAY. **Table 4-17** presents the forecasted T-Hangar needs at FAY through 2036. **Table 4.19** shows based aircraft apron needs through 2036.

All based jets and turboprop aircraft are assumed to require conventional aircraft hangar storage. Those needs are shown in **Table 4.18**.

Table 4.16: Single and Multi-Engine Based Aircraft Storage Ratios

Year	Single/ Multi-Engine	Apron	% Apron	T Hangars	% T Hangars	Conventional	% Conventional
2016	59	7	12%	38	65%	10	23%
2021	60	6	10%	39	65%	15	25%
2026	63	6	10%	41	65%	16	25%
2036	67	7	10%	44	65%	17	25%

Source: Talbert & Bright analysis

Table 4.17: T-Hangar Aircraft Storage Requirements

Year	Single/ Multi-Engine Piston	% T Hangars	T Hangar Need	Surplus/ Deficiency
2016	59	65%	38 units	-
2021	60	65%	39 units	1 Unit
2026	63	65%	41 units	3 Units
2036	67	65%	44 units	6 Units

Source: Talbert & Bright analysis

Table 4.18: FAY Based Jet Storage Requirements

Year	Jet/ Turboprop	FBO Conventional Storage (30% of Total)	Hanger Needs @ 2,900 SF per AC	Private Corporate Hangar Storage (70 % of Total)	Hangar Needs @ 10,000 sf per AC
2016	6	2	5,800 SF	4	40,000 SF
2021	7	2	5,800 SF	5	50,000 SF
2026	7	2	5,800 SF	5	50,000 SF
2036	10	3	8,700 SF	7	70,000 SF

Source: Talbert & Bright Analysis

Table 4.19: FAY Based Aircraft Apron Storage Requirements

Year	Available Apron Space (square yards)	Available Tie-downs @ 575 square yards per Tie-down	Based Piston Apron Requirements
2016	22,360	39	7 tie-downs
2021	22,360	39	6 tie-downs
2026	22,360	39	6 tie-downs
2036	22,360	39	7 tie-downs

Source: Talbert & Bright analysis

Transient aircraft storage requirements accommodated by FBO services make up the remaining aircraft parking needs at the airport. Transient aircraft are defined as those aircraft not based at FAY. The transient aircraft storage needs are shown in **Table 4.20** and **Table 4.21**.

Table 4-20: FAY Transient Aircraft Storage Requirements

(Estimates 15% of design day are Jet and 10% of which require storage at 2,900 SF/aircraft)

YEAR	Transient Jet Aircraft Storage		
	Design Day Operations	Design Day Jet Operations	Transient Jet Storage Needs
2021	82	12	3,480 SF
2026	85	13	3,770 SF
2036	94	14	4,060 SF

Source: Talbert & Bright analysis

Table 4.21: FAY Transient Aircraft Apron Requirements

(Estimates 80% of GA Ops - Transient)
(Estimates 70% of Transient Arrivals will need parking)
(Estimates 80% of those who need parking will be on the apron at the same time)

Year	Design Day GA Operations	Design Day Itinerant Arrivals	Itinerant Aircraft on Apron	Peak Hour Transient Parking Demand	Required Transient Apron Space (sq yd)
2016	87	35	25	20	18,000 of 36,667 available
2021	82	33	23	18	16,200 of 36,667 available
2026	85	34	24	19	17,100 of 36,667 available
2036	94	38	27	22	19,800 of 36,667 available

Source: Talbert & Bright analysis

A summary of aircraft storage requirements for FAY through 2036 is shown in **Table 4.22**.

Table 4.22: FAY Aircraft Storage Requirements Summary

Year	Needed T Hangars	T Hangar Surplus/ Deficiency	Total FBO Conventional Storage Needs	FBO Conventional Storage Surplus/ Deficiency	Needed Private Corporate Hangar Storage	Private Corporate Storage Surplus/ Deficiency	Total Transient GA Apron Needs	Transient GA Apron Surplus/ Deficiency	GA Based Apron Needs	GA Based Apron Surplus/ Deficiency
2016	38 units	-	15,857 SF	5,857 SF	40,000 SF	3,400 SF	18,000	18,667	4,025 SY	18,335 SY
2021	39 units	1 unit	17,980 SF	7,980 SF	50,000 SF	13,400 SF	16,200	20,467	3,450 SY	18,910 SY
2026	41 units	3 units	18,630 SF	8,630 SF	50,000 SF	13,400 SF	17,100	19,567	3,450 SY	18,910 SY
2036	44 units	6 units	22,300 SF	12,300 SF	70,000 SF	33,400 SF	19,800	16,867	4,025 SY	18,335 SY

Source: Talbert & Bright analysis

4.7 AIRPORT ANCILLARY FACILITY REQUIREMENTS

4.7.1 Fueling Facilities

The existing fueling facilities at FAY are as follows:

- Two 12,000-gallon Jet A above ground steel single-walled storage tanks
- Two 10,000-gallon Jet A above ground steel single-walled storage tank used for based corporate aircraft
- One 12,000-gallon AvGas (100LL) above ground steel single-walled storage tank

As airlines switch to larger commercial aircraft over the next 20 years and as general aviation jet traffic increases, additional Jet A fuel storage may be necessary at FAY. Additionally, as GA development occurs in the South GA area, the development of a GA fuel farm may be necessary to accommodate the fueling needs of the aircraft stored in that area. An area identified for South GA fuel farm development was depicted on the existing ALP and will be carried forward on the updated ALP.

4.7.2 Airport Electrical Vault

A new airfield lighting vault was completed in November 2009 under AIP-33, featuring new regulators in a switchgear style arrangement, a computerized Airfield Lighting Control and Monitoring System (ALCMS) and a stand-by generator which also serves the adjacent Aircraft Rescue and Firefighting (ARFF) facility. The vault features new home run cables installed in conduits for the various airfield lighting circuits. New underground communications cables link the vault with the FAA Airport Traffic Control Tower (ATCT) facility. The ALCMS data link is carried over fiber optic cable and the FAA Runway Light Intensity Monitoring (RLIM) data and the FAA tower cab emergency siren activation link are carried over copper cable. The routing of these communication cables is depicted on the record drawings for the ARFF Building Renovation and Addition project (AIP-35/36). The ALCMS software was updated in 2015 under AIP-42 to reflect changes in taxiway configuration and taxiway lighting circuits. The airfield lighting vault is expected to be adequate for many years. Regular maintenance includes repair and replacement of electronic components of the ALCMS, regulators and other components.

In Table 3-8 of FAA Order 5100.38D, the AIP handbook, airfield lighting and signage is shown to have a minimum life expectancy of 10 years. Given the high level of electronic and micro-computer technology contained in modern airfield lighting components, including ALCMS systems and regulator systems, a detailed inspection of the vault equipment would be appropriate soon to identify an appropriate Airport Capital Improvement Program (ACIP) programming timeline for equipment and/or system replacement.

4.7.3 Airfield Maintenance Equipment and Storage Facilities

Airfield maintenance equipment is stored and maintained in a 3,340-square foot three-bay garage located adjacent to the ARFF building. Maintenance equipment is also stored on the east side of and adjacent to the terminal apron. This equipment includes various tractors, mowers, brush hogs and pickup trucks. An expanded or newly constructed airfield maintenance equipment storage facility is recommended in the near-term to provide additional covered storage for this equipment as well as an expanded workshop/repair facility. Since airport property includes over 1,300 acres, and over one million square feet of runway pavement a 4,800 to 6,400 square foot facility with multiple bays and roll-up garage doors is recommended to supplement the existing maintenance facilities. The future site for a new airport maintenance building is depicted on the ALP. The ideal location should be such that:

- Maintenance equipment activities do not interfere with aircraft operations;
- Maintenance equipment is not required to cross large amounts of airfield pavement thereby increasing the chances of FOD;
- Airport employees do not have to cross active airfield pavements to reach the facility;
- It does not interfere with the possible expansion or construction of other airfield facilities;
- It meets AC 150/5300-13a and FAR Part 77 guidelines; and
- Allows for future expansion.

4.7.4 Airport Rescue and Fire Fighting (ARFF) Facility

FAY is a certified CFR Part 139 commercial service airport and is this required to have on-site Aircraft Rescue and Firefighting (ARFF) equipment. The level of air carrier service provided at an airport determines the ARFF requirements. FAY is a Class I Part 139 Airport which is defined by 14 CFR Part 139 as "an airport certificated to serve scheduled operations of large air carrier aircraft that can also serve unscheduled passenger operations of large air carrier aircraft and/or scheduled operations of small air carrier aircraft."

The airport has an ARFF index of "B" which is based on the longest aircraft with an average of five or more daily departures. Index B includes commercial service aircraft over 90-feet but less than 126-feet in length.

The critical aircraft at FAY is anticipated to change to an aircraft beyond 126 feet long (A321), however, it is not expected that these aircraft will average five or more departures a day. Therefore, no changes to ARFF facilities or equipment are anticipated over the planning period. If the airport

were to experience five or more daily departures of aircraft between 126 feet and 159 feet long, FAY would have to meet the requirements of an ARFF index "C" facility.

4.7.5 Perimeter Fencing

Perimeter fencing is crucial to the prevention of animal and human incursion on aircraft operating areas. The airport fence should be adjusted so that the airfield remains secure when additional facilities such as hangars are constructed. Currently FAY is mostly surrounded by a 6-foot chain-link fence that is not adequate in preventing wildlife intrusion (deer can jump the existing fence and coyotes and other smaller mammals can burrow under it. It is recommended that all 6-foot fence be replaced with Wildlife Control Fencing. This will improve the airport's wildlife management capabilities and will provide greater perimeter security associated with greater fence height.

4.7.6 Airline Terminal Parking

The Master Plan Update Part 1 study identified the need for expanded parking capacity for airline passengers, associated with anticipated growth in enplanements. A modest increase in capacity can be accomplished by building additional paved parking inside the existing terminal loop roadway, in areas which are currently landscaped. Beyond that limited additional capacity, the preferred alternative from the Part 1 study involved relocating the terminal loop roadway, allowing for the construction of additional parking inside the expanded loop.

Another alternative which can be considered to provide additional parking capacity without the considerable capital expense of relocating the loop road would be to construct a "credit card" lot outside the current loop roadway. This approach has been successful at other small commercial service airports in the region. The credit card lot layout can be designed to be compatible with the future loop road relocation.

4.7.7 Rental Car Facilities

FAY is served by robust rental car operations. In cooperation with the rental car service providers, the Fayetteville Regional Airport has initiated a rental car Capital Facility Charge (CFC) program to help finance improvements to rental car infrastructure at the airport. The anticipated improvements will support growth in rental car operations commensurate with anticipate passenger enplanement growth and replace and upgrade aging rental car infrastructure. The program has already provided additional rental car ready and return parking capacity adjacent to the airline terminal by relocating employee parking to a new lot located outside the terminal loop roadway.

Future CFC program elements include expanded and renovated rental car counters and office space in the airline terminal bag claim area, a new consolidated rental car Quick Turn Around (QTA) servicing area, improvements to the ready and return lot (reconfiguration, pavement rehabilitation, new lighting, etc.), covered rental car ready and return spaces and a covered walkway from the terminal building to the ready and return spaces. The consolidated QTA servicing facility is a priority due operational, aesthetic and capacity limitations of the existing QTA facilities located on and near the airport.

4.7.8 Utilities

Electric. The Fayetteville Public Works Commission (PWC) is the electric utility serving the Fayetteville Regional Airport. Over the last few years, PWC has put in place new robust three phase power supply infrastructure serving the terminal area. This effort has been extensively coordinated with and is expected to be completed in concert with airline terminal improvements now entering the construction phase.

The Federal Aviation Administration (FAA) has completed design of a project to upgrade PWC utility and FAA secondary electric infrastructure serving NAVAID's located throughout the airfield.

Water. The Fayetteville Public Works Commission (PWC) is the water utility serving the Fayetteville Regional Airport. Recently, PWC has completed a new water main along Doc Bennet Road to the south and east of the airport. This new main enhances the distribution system capacity and reliability in the airport vicinity. The airline terminal improvements project is expected to partially address a scarcity of fire hydrants along the emergency vehicle approach routes to the terminal area and will add fire sprinklers to the terminal building. New domestic water services are included in the Airline Terminal Improvements – Part 1 project.

Sewer. The Fayetteville Public Works Commission (PWC) is the sewer utility serving the Fayetteville Regional Airport. PWC operates and maintains the sewer pump station serving the terminal area. If a new rental car QTA facility is constructed, it is anticipated that either a new separate sewer pump station and force main will be needed for that facility (car wash discharge) or a capacity upgrade would be needed to add the facility to the existing pump station. Based on information from PWC, it is expected that the next downstream PWC pump station has adequate reserve capacity for the flow from a new QTA facility. Sewer service is not currently available in the south GA area. The airport should work with PWC toward extending sewer service to that area.

Telecommunications. Century Link provides telephone service to the terminal area via an old copper cable that enters the terminal building. Other facilities in the terminal area, including the FAA ATCT complex, are back fed from the terminal building. Century Link has recently extended fiber

optic cable into the west GA hangar area. Spectrum provides cable TV service in the terminal area. The Fayetteville PWC provides City fiber optic service to the terminal building.

The Airline Terminal Improvements – Part 1 project includes extensive joint use telecommunications duct bank infrastructure extending into a new central communications room in the terminal building. This infrastructure is expected to enable the existing carriers and new carriers to dramatically upgrade service into the terminal and terminal area.

4.7.9 Storm Drainage and Stormwater Management

FAY is drained by a variety of closed inlet and pipe drainage systems, paved ditches, rip rap lined ditches and vegetated ditches. Some of the storm drainage system components are many decades old. The soils throughout the airport vicinity are well drained sands which allow rapid infiltration and groundwater movement

Inlet and pipe drainage systems are susceptible to leakage through pipe and structure joints. This leakage can lead to the transport of fine grained soil material from around the pipes and inlets, resulting in subsurface voids and sink holes. The leakage and sediment transport problems tend to increase with time as pipe and structure materials and joint seals deteriorate. Ground settlement causes pipe joint spaces to widen. The development of voids and sink holes beneath runway, taxiway and apron pavements and adjacent safety areas can represent a hazard to the safety of aircraft operations.

Small sink holes which developed in the pavement around drainage inlets on the North GA apron were addressed in 2010 using chemical grouting followed by pavement patching. Following the heavy rains of Hurricane Matthew in October 2016, a large sink hole developed over a storm drain in an area east of the Runway 4/22 RSA. That portion of that drain line was recently reconstructed. Upstream of the recent problem area, that drain line crosses under Runway 4/22 and Taxiway F.

Rubber gaskets and fabric wrap have been used on new storm drain lines at FAY over the last 10 years to provide better resistance to pipe joint leaks and sediment transport. Older pipe lines under the air carrier apron were lined in 2015 using the cured-in-place pipe (CIPP) method during the Air Carrier Apron Rehabilitation Phase II project.

Due to the age of existing storm drainage pipe lines at FAY, a system wide inspection effort is recommended (visual inspection of inlets, manholes and outfalls and video inspection of pipe lines), followed by Airport Capital Improvement Plan (ACIP) programming of rehabilitation measures as indicted by the inspection program.

The airport property is subject to the post construction stormwater management requirements of the City's NPDES Stormwater program. The airport does not have stormwater facilities with capacity to manage the increased runoff associated with new or expanded impervious surfacing. Each project must therefore include stormwater management components. For recent projects, the stormwater quality aspects of the City's NPDES Stormwater program have been addressed based on the low overall development density of the airport project. Stormwater peak runoff attenuation requirements have been met using new dry detention basins (three have been constructed, another is pending for the Airline Terminal Improvements – Part 1 project), inlet pipe restrictors and check dams (Taxiway A shoulders and Runway 4/22 shoulders).

To address stormwater management requirements for future projects, consideration of a stormwater master planning effort is recommended. The effort, which should include jurisdictional wetland and stream mapping, could be used to identify and provide preliminary design of stormwater management facilities and channel improvements in support of planned development in various areas, including the south GA area and the air carrier/north GA terminal area.

The South GA area drains via inlet and pipe systems and grass lined ditches to the south via existing culverts under Doc Bennett Road. The area has seen erosion problems and slope and pavement failure at and near Doc Bennet Road from the Hurricane Matthew rainfall. A dry stormwater attenuation basin and channel improvements should be considered in support of further development in that South GA area.

The air carrier – North GA terminal area drains via several inlet and pipe systems and a variety of open channels. The area includes three outfall points to the west under Doc Bennet Road. The northern outfall is a low point on airport property opposite the southeast corner of the Eaton property. A culvert believed to be owned by NCDOT under Doc Bennett Road appears to exist in that location and appears to be buried. The downstream drainage way appears to be small and poorly maintained, crossing a variety of residential and commercial properties. The central outfall is located just south of Air Freight Road and is another low point adjacent to Doc Bennet Road. A culvert under Doc Bennett Road appears exist in that location but appears to be almost entirely buried. No culvert outlet is visible on the downstream side of the road. On NOAA satellite photography following Hurricane Matthew, standing water is present at the northern and central outfall points along Doc Bennet Road. The southern outfall is located just west of the Runway 10 threshold. The outfall is a large culvert under Doc Bennett Road, which outfalls to a large rip rap lined roadside ditch running through a single-family residential neighborhood. It is recommended that consideration be given to planning for new stormwater attenuation, conveyance pipelines and a new consolidated outfall on airport land west of Doc Bennett Road, to deliver the attenuated runoff to the Big Sandy Run headwaters away from residential properties.

The planning and construction of this new infrastructure could be a collaborative effort by the airport, City Stormwater Program, NCDOT Highways, NCDOT Division of Aviation and FAA.

Much of the terminal area drains to the north to a heavily wooded drainage corridor which flows to the north into a network of private lakes., then east across airport property, passing just north of the Runway 4 localizer. Two of the private dams were breached from the Hurricane Matthew rainfall and the lakes remain empty at this time. It is recommended that stormwater planning be considered for this area, to include channel stabilization and stormwater attenuation facilities in support of new development such as a new consolidated rental car Quick Turn-Around (QTA) facility.

4.8 AIRSPACE AND NAVAID REQUIREMENTS

It is important to analyze the existing airspace surrounding FAY and how it impacts aircraft approaching or departing from the airport. It is also important to identify existing and potential obstructions to the airspace surfaces in the immediate vicinity of the airport. This section discusses the airspace around the airport from both perspectives.

The ability for FAY to obtain better visibility approach minimums to Runway 10/28 will be determined by land use and obstruction constrains as well as the airspace surrounding the airport as discussed below. The recommendations represent an ideal airport enhancement which may not be practical or obtainable due to these limitations.

4.8.1 Airspace Capacity

As discussed in the Inventory Chapter of this document, FAY lies within Class C airspace due to the presence of an air traffic control tower at the airport. The airport lies within a relatively congested area of airspace that encompasses approximately 4,800 square miles, contains four air traffic control towers, and approach control service for thirteen airports with instrument approaches. The airspace also includes Fort Bragg, a Restricted Area, and four Military Operation Areas (MOAs). It is recommended that the existing and future precision approaches continue for Runway 4/22, and non-precision approaches be maintained on Runway 10/28. However, no additional airspace constraints are expected over the 20-year planning period.

4.8.2 Visual Guidance Lighting System

The Precision Approach Path Indicator (PAPI) is a lighted instrument that provides electronic visual guidance to the pilot to allow vertical guidance to the runway end. The PAPI provides accurate guidance with one set of lights which indicate different slopes: above, on course, or below the glide slope. It is recommended that PAPIs be installed on each end of an instrument runway or where maintaining vertical guidance is necessary (such as overpopulated areas). Four-box PAPIs are currently installed on both ends of Runway 4/22 and on Runw.ay 28. Currently, the Runway 4 PAPI does not meet siting standards regarding the lightening unit separation from Runway 10/28. These PAPI lights provide a 3° glide path to the 22 and 28 runway end.s with Runway 4 having a 3.13° glide path. An obstruction clearance plane is required for the PAPIs. This surface extends 4 nautical miles from the runway touchdown point at a slope of 1° 50' which is 1 degree less than the lowest on-course aiming angle of 2° 50' (3° 50' for Runway 4). Based on an analysis of an FAA 18B survey, the Runway 4 PAPI obstacle clearance surface appears to be clear, and the glide path may be corrected to 3°. Additional ground survey and coordination with the FAA should be performed and the FAA should flight check the PAPI on Runway 4 to verify this assessment. No other improvements are needed to the existing PAPIs at FAY other than periodic maintenance.

There is currently a 2,400-foot medium intensity approach lighting system (MALSR) with runway alignment indicator lights to Runway 4. The MALSR system consists of a combination of threshold lamps, steady burning light bars and flashers, and provides visual information to pilots on runway alignment, height perception, roll guidance, and horizontal references for Category I precision approaches. Runway End Identifier Lights (REIL) are located on all other runway ends. The existing lighting systems are adequate for the existing and future runways at FAY. Except for replacing aging equipment in kind, no approach lighting upgrades are a.nticipated over the 20-year planning period.

4.8.3 Weather Reporting System

FAY is equipped with an Automated Surface Observing System (ASOS) which provides real-time weather information to pilots operating at the airport. This system provides up to the minute temperature, precipitation, wind speed & direction, ceiling, pressure, and visibility. The ASOS is located northeast of the Runway 4/22 Taxiway F intersection. This system is expected to accommodate the forecast weather information demand for the 20-year planning period.

4.8.4 Runway Visual Range (RVR)

FAY is also equipped with an RVR system for the Runway 4 precision approach. The RVR is required to support precision landing and takeoff operations in the National Airspace System. The system

measures visibility, background luminance, and runway light intensity to determine the distance a pilot should be able to see down the runway. No changes are recommended to the RVR at FAY.

4.9 GENERAL AVIATION TERMINAL and AUTO PARKING

4.9.1 General Aviation Terminal

Terminal buildings provide essential services for passengers and pilots, as well as a facility for the transfer of passengers and flight crews to and from the aircraft. Terminal facilities range in size based on several factors, most important being the type of airport users. Buildings can range from a small pilot room for flight planning and resting to a large multi-room building that provides services for multiple uses. Access to public facilities 24/7 from both sides of the fence is desirable. Specific uses for a terminal building include:

- Waiting areas
- Restrooms
- Pilot lounges
- Vending
- Pilot planning areas (including access to a computer for weather and flight planning)
- Conference rooms
- Administrative offices

In the case of FAY, the existing FBO has facilities that accommodate pilots, passengers, and FBO functions. At FAY, since the FBO is a standalone structure, it has a separate apron for aircraft servicing, fueling, and parking. Although it is common in these cases that the airport owner typically assesses individual needs, available infrastructure, and agreements with the FBOs to address specific operational needs, general planning criteria can be assessed to determine the adequacy of the FBO terminal size.

Derived from the Airport Cooperative Research Program (ACRP) Guidebook on General Aviation Facility Planning, a factor of 2.5 people (pilots and passengers) per peak-hour operation is used. An area of 100 to 150 square feet of space per person is generally considered adequate to accommodate the peak hour traffic. The square footage per person is dependent on the functions anticipated and any additional areas expected in the terminal. Using these figures, the following formula can be used to provide a planning size for a GA terminal building for an ALP:

(Peak-hour operations) × (2.5) × (100 SF to 150 SF) = Building square footage.

The Peak-hour operations at FAY are forecasted to be 14 by 2036, and therefore requires 3,500 SF to 5,250 SF of GA terminal building at 100 SF per passenger. The existing GA terminal building is just over 3,600 SF and meets the minimum requirements.

4.9.2 General Aviation Terminal Auto Parking

An adequate number of auto parking spaces should be provided for airport employees, tenants, and the public that use the airport facilities. The FBO is currently served by a 46-space parking lot in fair condition and the accessible route between the accessible parking in the lot and the FBO rear entrance is challenging due to terrain. Since the 46-space lot is also shared by an adjacent tenant, the actual number of parking spaces available to the FBO and its customers is approximately 75% of that (35). Notably, the gravel overflow parking for the FBO was recently eliminated due to the construction of a new employee parking lot.

General planning guidelines for GA automobile parking is 2.5 spaces per peak hour operation and 1 space per 200 SF of office space. The FBO currently shares a 38-space lot with an adjacent tenant. The forecast of 14 peak hour operations (by 2036) and the existing 2,000 SF (approximate) of FBO office space results in the need for 45 spaces exclusively for the FBO. The alternatives analysis will look at alternatives that provide additional automobile parking spaces to satisfy the existing and forecasted need.

The West GA area is served by a 56-space parking lot located at the end of hangar road. The lot, which is in generally good condition, is remote from the FBO, but has easy access for various hangar tenants. Although many based aircraft pilots park in their vehicles in their hangars while flying, a general rule of thumb is one space per 1,000 SF of hangar space. Considering the West GA hangars with based aircraft total approximately 38,000 SF, parking in this area appears to be adequate.

4.10 FACILITY REQUIREMENTS SUMMARY

Table 4.23 summarizes the Facility Requirements for FAY and lists the phases which various facilities will be needed as driven by demand.

Table 4.23: Facility Requirements Summary

FACILITY	EXISTING	PHASE 1 SHORT-TERM (2017-2021)	PHASE 2 MID-TERM (2022-2026)	PHASE 3 LONG-TERM (2027-2036)
Runway	04/22 – 7,709' x 150' 10/28 - 4,801' x 150'	Same	Same	Same
Runway Lighting	04/22 – HIRL 10/28 – MIRL	04/22 – HIRL 10/28 – MIRL	04/22 – HIRL 10/28 – MIRL	04/22 – HIRL 10/28 – MIRL
NAVAIDs	04 - ILS, VOR 22 – VOR, GPS 10 – GPS 28- VOR, GPS	Same	Same	Same
Approach Lighting	04 – MALSR, PAPI 22 – REILs 10 – REILs 28 – REILs, PAPI	Same	Same	Same
Taxiway	04/22 - Full-Parallel 10/28 - Full Parallel	Same	Same	Same
Taxiway Lighting	MITL	Same	Same	Same
T-Hangar Units	38	Same	48	48
FBO Hangar (SF)	15,857 SF	17,980 SF	18,630 SF	22,300 SF
Corporate Hangar (SF)	40,000 SF	50,000 SF	50,000 SF	70,000 SF
GA Apron Area (SY)	18,000 SY	16,200 SY	17,100 SY	19,800 SY
Total GA Auto Parking Spaces	45	45	45	45
GA Terminal (SF)	3,600 SF	Same	Same	Same
Fueling Facility	12,000 G AvGas (1) 12,000 G Jet A (2) 10,000 G Corporate Jet (2)	Same	Additional 10,000 Gallon 100 LL tank (West GA)	
ARFF Facility	6,500 SF facility	No Change	No Change	No Change
Airfield Maintenance/ Storage Facility	3,000 SF/4,500 SF	New Consolidated 4,800 – 6,400 SF facility		

Source: Talbert & Bright analysis

FAYETTEVILLE REGIONAL AIRPORT

ALTERNATIVES ANALYSIS



July 2018

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5. ALTERNATIVES ANALYSIS

Section 2 accumulated the baseline of existing airport data, Section 3 presented the outlook for the future in terms of forecasting operational activity, and Section 4 defined the facilities that are needed to meet forecasted demand and current FAA design standards. This section provides an "Alternatives Analysis", which considers the findings of the Facility Requirements and assesses what can be provided in terms of airport development. Unlike the Facility Requirements which were unconstrained, the Alternatives Analysis considers any limiting factors associated with potential future development. Within this section, alternatives are identified and evaluated for Runway and Taxiway Systems, aircraft hangar development, and supporting infrastructure such as maintenance buildings, rental car servicing facilities, and automobile parking.

In considering alternatives, it is important to recognize engineering feasibility, environmental and land use impacts and financial costs versus the operational and safety benefits a specific alternative may provide. In assessing and presenting development alternatives to the Airport and the Stakeholder Working Group, the objective was to create a realistic and achievable set of options that could be depicted on the ALP and ultimately implemented to meet FAA airport design standards and projected aviation demand.

5.1 RUNWAY ALTERNATIVES

Runway Alternatives consider the runway system capacity, geometry, and its ability to accommodate the critical aircraft throughout the planning period. Currently, the runways at FAY have enough capacity, meet FAA airport design standards, and have enough length to serve the aircraft that currently use, and are proposed to use the runways at the Airport throughout the planning period. The 2005 Master Plan suggested that Runway 10/28 be extended to 6,000 feet to provide crosswind coverage and a backup runway for when Runway 4/22 is closed for maintenance. This alternative was selected in 2005 and is shown on the existing ALP.

Although Runway 10/28 is not currently eligible for federal funding, in coordination with the Airport and FAA, a 1,200-foot extension of Runway 10/28 will be shown as ultimate development (beyond the 20-year planning period). This ultimate scenario also includes the taxiway system necessary to provide access to and from the South GA area and is shown in **Figure 5-1**.

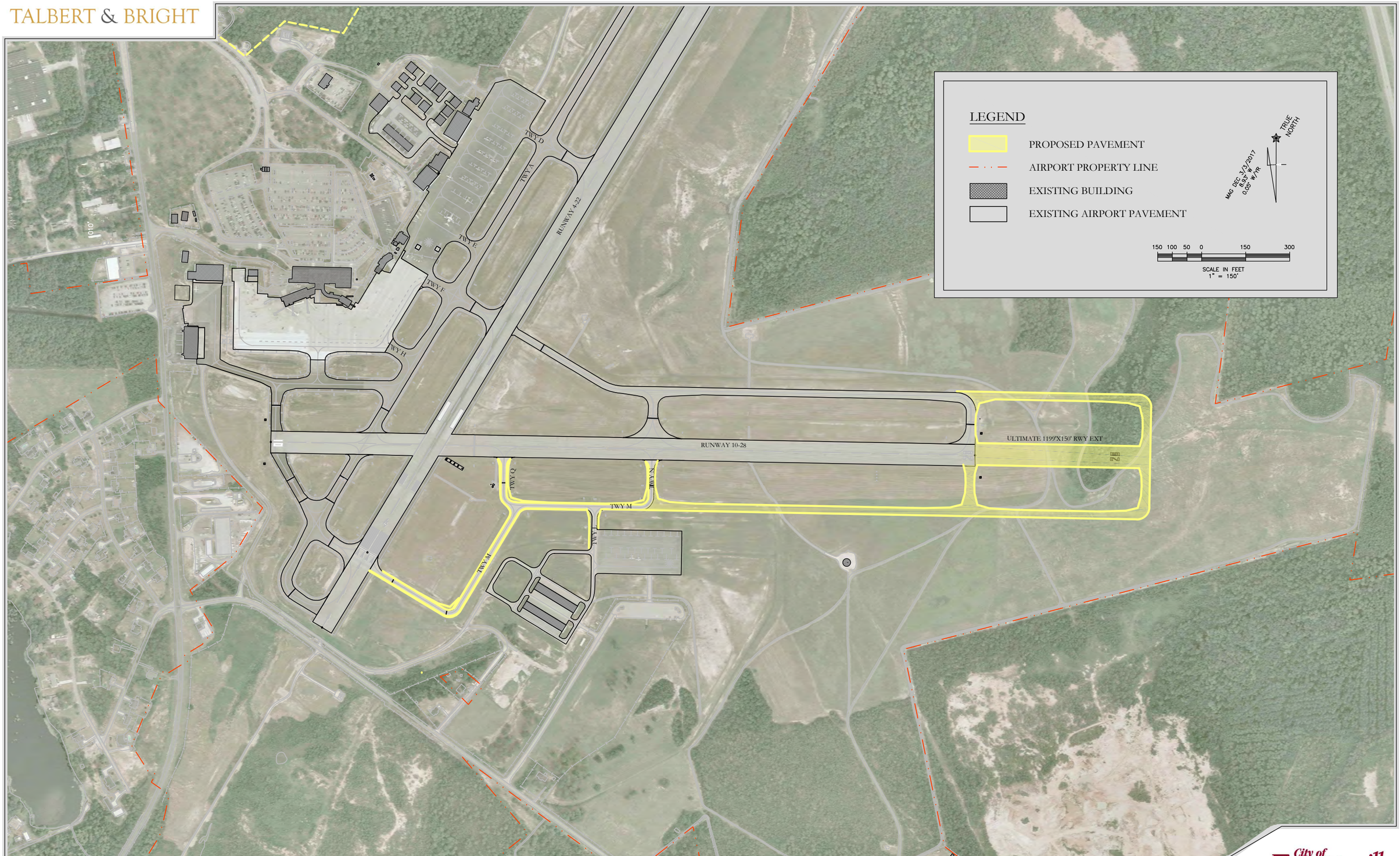


FIGURE 5-1. PREFERRED RUNWAY ALTERNATIVE (BEYOND PLANNING PERIOD) - EXTEND RUNWAY 10-28 TO 6000', MAINTAIN 150' WIDE

5.2 TAXIWAY ALTERNATIVES

5.2.1 Taxiway Alternative 1

The Airport's taxiway system should meet FAA design criteria and provide for free movement and routing to and from the runways, terminal area and aircraft parking areas. It was noted in the Facility Requirements that according to the latest FAA Airport Design Advisory Circular, taxiways should avoid "direct access" from an apron to a runway without requiring a turn. Currently at FAY, there are two existing taxiways that provide direct access. These include Taxiway F and Taxiway D. Discussions with airport management indicate that the existing location and width of Taxiway "F" provides very efficient access for large corporate charter, and military aircraft that regularly use the Airport, and more importantly, provides aircraft rescue services with optimal access to the runways during emergency situations. Therefore, rather than considering options to relocate Taxiway F, the Airport will seek a Modification to Standards, and submit a request to the FAA to maintain the existing configuration of Taxiway F. Since Taxiway D was determined to be less critical to the daily operations, an alternative to remove direct access from the GA apron to Runway 4/22 includes relocating Taxiway D to the northern most edge of the apron. This preferred Taxiway development is shown in **Figure 5.2**.

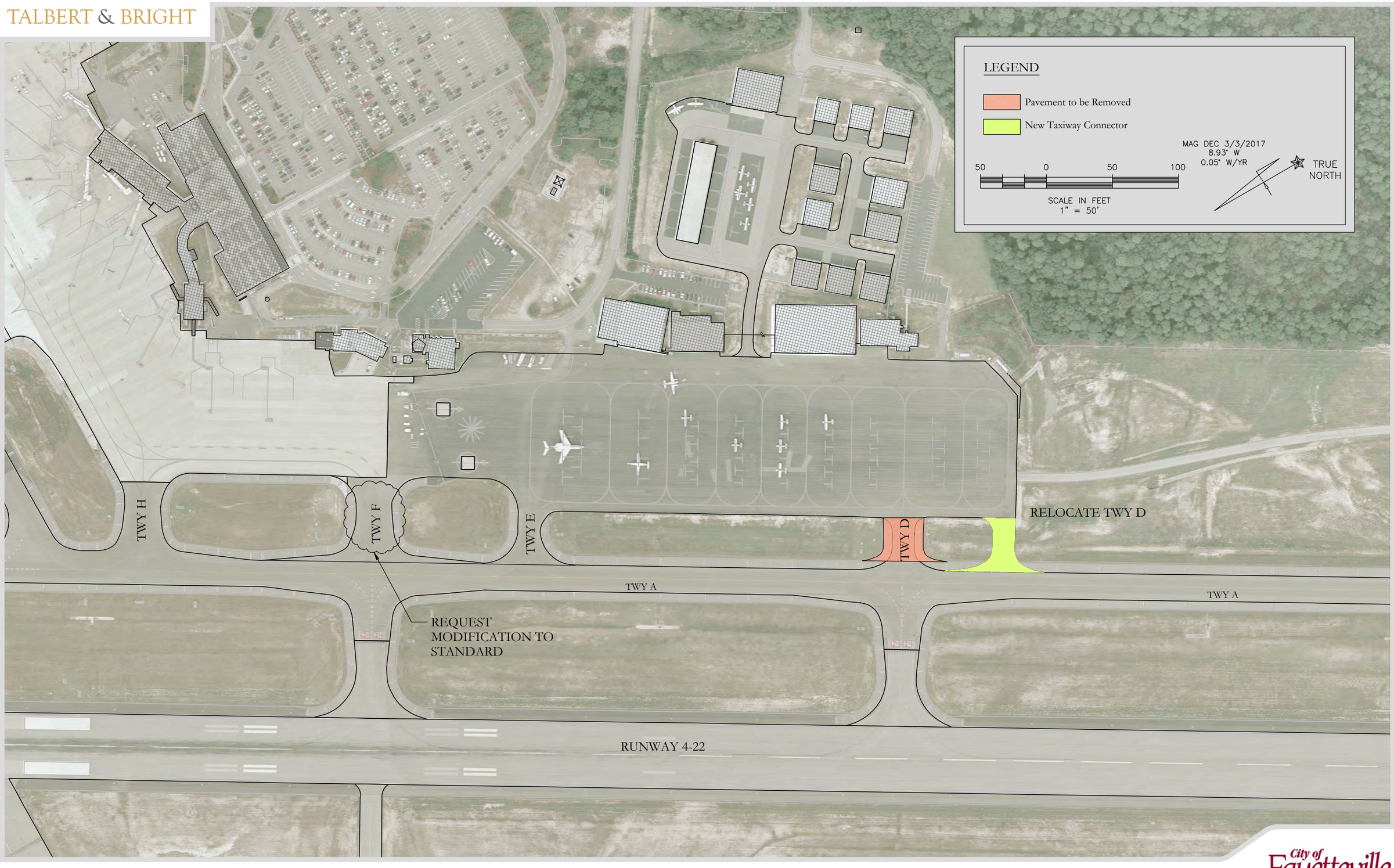


FIGURE 5-2. PREFERRED TAXIWAY ALTERNATIVE - SEEK MODIFICATION TO STANDARD FOR TAXIWAY "F" AND RELOCATE TAXIWAY "D"

5.3 HANGAR ALTERNATIVES

The Facility Requirements chapter used the approved aviation forecasts to identify general aviation hangar storage and tie-down needs at FAY through 2037. Based on the existing ratios of FBO conventional storage, private corporate aircraft storage, single and multi-engine piston tie-down usage, and itinerant aircraft storage and tie-down needs include:

- 6 additional T-hangar units;
- 33,400 SF of additional corporate hangar storage; and
- 12,300 SF of additional FBO storage

It is important to note that the aircraft storage needs for based aircraft often vary based on availability. E.g., a based aircraft currently stored in the FBO bulk storage hangar may want to relocate to a T-hangar if one were available, thus freeing that space for transient aircraft use as needed.

5.3.1 GA Hangar Alternative 1

This alternative develops both the North and South GA area to help meet the forecasted requirements of T-hangars, corporate hangars and FBO bulk storage. The proposed development in this alternative are shown in GA Hangar Alternative 1 on the following page and includes the following:

- Removing the 10-unit T hangar in the North GA area and replacing it with a 14-unit T-hangar in the South GA area which allows for additional corporate development in the North GA;
- Constructing a 10-unit T hangar in the South GA Area
- 10,000 SF of additional FBO bulk storage adjacent to the North GA apron (would require the relocation of the employee parking lot entrance as well as where fueling vehicles are currently stored);
- 17,200 SF of Private Corporate Storage in the North GA area;
- A future corporate/conventional hangar development area in the South GA area with approximately 1,100 LF of Taxilane/Apron Frontage; and
- Proposed Stormwater Runoff Areas



FIGURE 5-3. GA HANGAR ALTERNATIVE 1 - 10,000 SF FBO STORAGE, 10 UNIT T-HANGAR, 17,200 SF CORPORATE HANGAR STORAGE AND A CORPORATE HANGAR DEVELOPMENT AREA

5.3.2 GA Hangar Alternative 2

This alternative also develops both the North and South GA areas to meet the forecasted requirements of T-hangars, corporate hangars, and FBO aircraft storage needs, and considers removing the aging existing 10-unit T-hangar in the North GA area if corporate development in that area is triggered by demand. If demand warrants, aircraft in the 10-unit T-hangar in the North GA Area will be relocated to a new 14-unit T-hangar in the South GA area. The proposed development in this alternative is shown in GA Hangar Alternative 2 and provides the following:

- 14 additional T-hangar units;
- 10,800 SF of corporate hangar storage in the North GA area;
- A future corporate/conventional hangar development area with approximately 1,100 LF of Taxilane/Apron Frontage;
- 10,000 SF of FBO hangar storage on the north end of the GA apron that would require the relocation of existing fuel tanks; and
- Proposed Stormwater Runoff Areas

5.3.3 GA Hangar Alternative 3

This alternative also proposes development the North and South GA areas to meet aircraft storage demand throughout the planning period but does not propose relocating the existing 10-unit T-hangar in the North GA Area. Like Alternative 2, it also provides flexibility within the future hangar development area shown in the South GA to accommodate various sizes of corporate hangar development depending on need. In the North GA area, Alternative 3 proposes a 10,000 SF conventional hangar for FBO aircraft storage with associated automobile parking, and a 100' x 100' corporate hangar on the north end of the North GA apron. The corporate development shown in the North GA Area would require the relocation of existing fuel tanks. The proposed development in this alternative are shown in GA Hangar Alternative 3 and provide the following:

- 10 additional T-hangar units;
- 10,000 SF of Corporate Storage (one 100' x 100' corporate hangar) in the North GA Area;
- 10,000 SF of FBO aircraft storage;
- A future corporate/conventional hangar development area with approximately 1,100 LF of Taxilane/Apron Frontage; and
- Proposed Stormwater Runoff Area

5.3.4 GA Hangar Alternative 4

The fourth GA hangar development alternative proposes a specific layout of four corporate hangars of various size in the South GA Area, and a 10-unit T-hangar to accommodate the anticipated T-hangar needs throughout the planning period. In this alternative, the only development in the North GA area is a 100' x 100' conventional hangar to accommodate future FBO aircraft storage needs. Shown in GA Hangar Alternative 4, this alternative meets the facility requirements of aircraft storage and provides the following:

- 10 additional T-Hangar units;
- 10,000 SF of FBO storage;
- 32,800 SF Private Corporate Storage; Two 80' x 80' corporate hangars and two 100' x 100' corporate hangars; and
- Proposed Stormwater Runoff Area

5.3.5 Preferred GA Hangar Development

The GA hangar alternatives described above provide development that would satisfy the 20-year forecasted demand requirements of T-hangar, FBO, and private corporate storage at FAY and were presented to airport management and the stakeholder working group for discussion and comment. Given the similarities among the development options regarding the operational, environmental, engineering, and financial impacts of each, there was not a specific alternative that was determined to be much more favorable over the others except it was mentioned that removing the existing 10-unit T-hangar in the North GA area and replacing it with a new 14-unit T-hangar in the South GA area would have an impact on the existing tenants who utilize the T-hangars in the North GA area and the services provided by the FBO located on the north apron. It was also noted that proposing the FBO hangar expansion in the area where the fuel trucks are currently parked would also provide impacts to line operations and includes engineering challenges associated with the grading in that area. Therefore, the preferred GA alternative is made up of elements from both the presented alternatives.

After further discussions with airport staff, it was agreed that since GA storage needs are demand triggered, and GA growth at FAY is anticipated to be generally slow, aside from specific T-hangar development, the Airport Layout Plan should depict general areas for corporate development rather than specific schematic layouts of hangars, since actual needs may differ once the demand presents itself. As shown in the preferred North and South GA development figures, an area for corporate/conventional hangar development is reserved on the north end of the apron that includes the relocation of existing fuel tanks should the FBO or Airport chose to build a conventional hangar for bulk storage of aircraft (based or transient) or if corporate development is desired. This preferred North GA development alternative assumes that the existing 10-unit T-hangar will remain until corporate or conventional hangar demand in the North GA

warrants removal and relocation to the South GA area. Carried over from Master Plan Part 1 and shown in the Preferred North GA Hangar Alternative is additional parking for use by the Airport and FBO.

The Preferred South GA Hangar Development Alternative proposes a scenario where at some point, all T-hangar storage at the Airport will be accommodated by the South GA area along Taxiway L and space adjacent to Taxiway L and along the landside edge of the South GA apron is reserved for conventional or corporate hangar development. This provides the Airport with flexibility to develop this space as demand warrants. To accommodate larger single and multi-engine aircraft in the South GA area, the Airport prefers the development of larger than standard T-hangars to supplement the two existing 14-unit T-hangars which results in an 8-unit T-hangar as opposed to the originally proposed 10-unit T hangar. A proposed fuel farm that serves the fueling needs of aircraft in the South GA was proposed in the 2005 Master Plan and has be carried forward to this ALP update.

GA Hangar Alternatives 2 through 4 as well as Preferred North and South GA Hangar development are presented on the following pages.

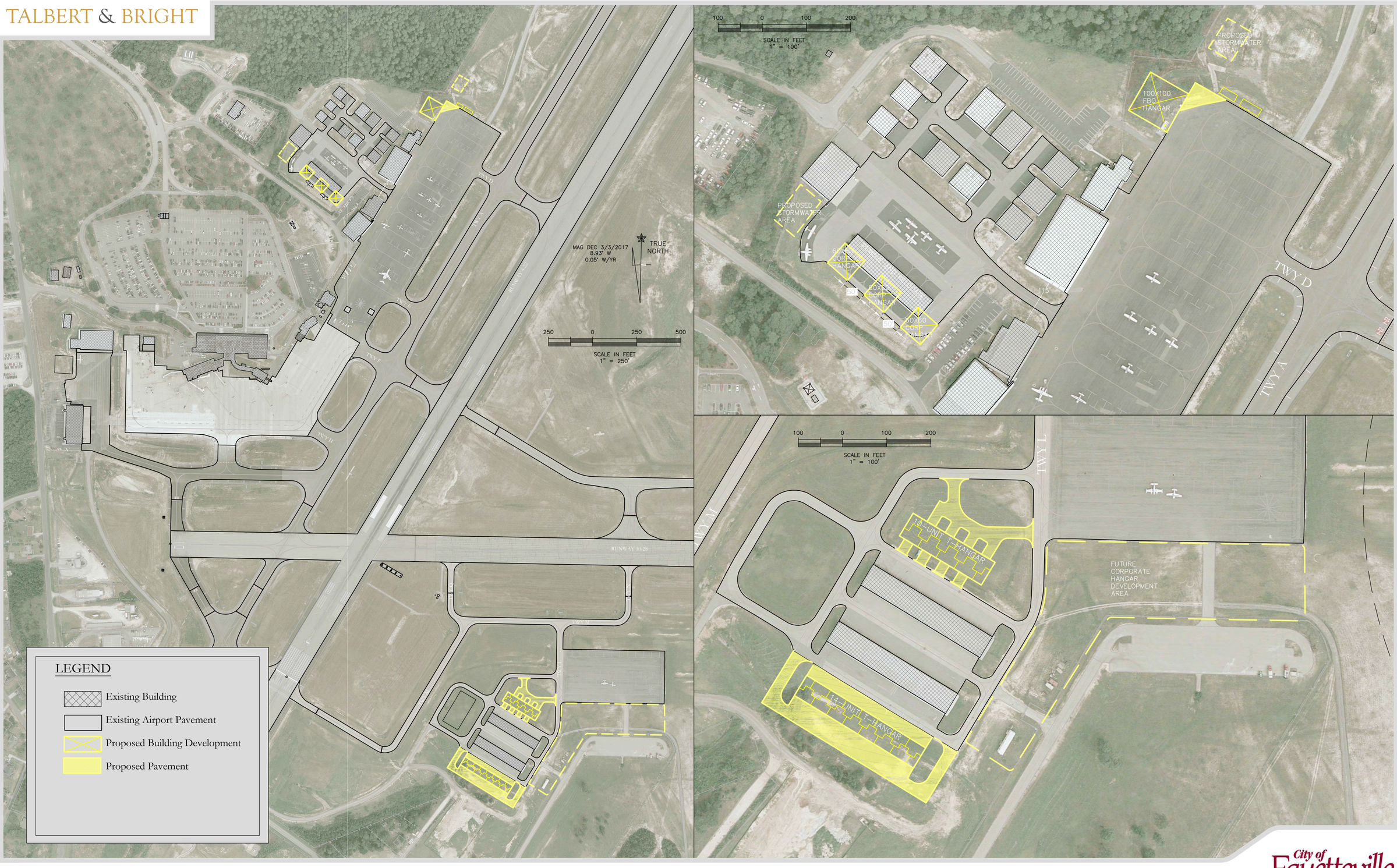


FIGURE 5-4. GA HANGAR ALTERNATIVE 2 - 10,000 SF FBO STORAGE, 10 UNIT T-HANGAR, 10,800 SF CORPORATE HANGAR STORAGE AND A CORPORATE HANGAR DEVELOPMENT AREA

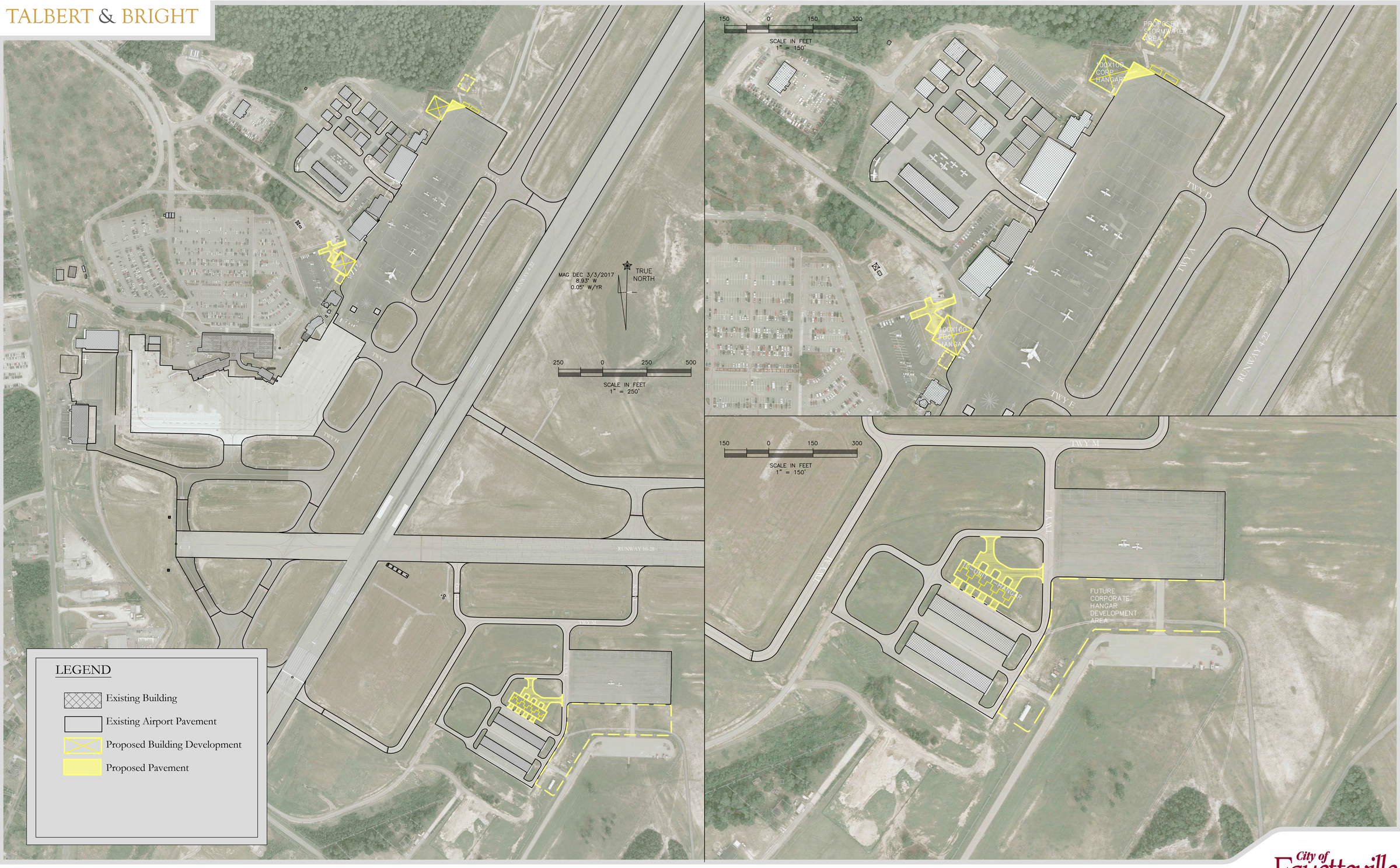


FIGURE 5-5. GA HANGAR ALTERNATIVE 3 - 10,000 SF FBO STORAGE, 10 UNIT T-HANGAR, 10,000 SF CORPORATE HANGAR STORAGE AND A CORPORATE HANGAR DEVELOPMENT AREA

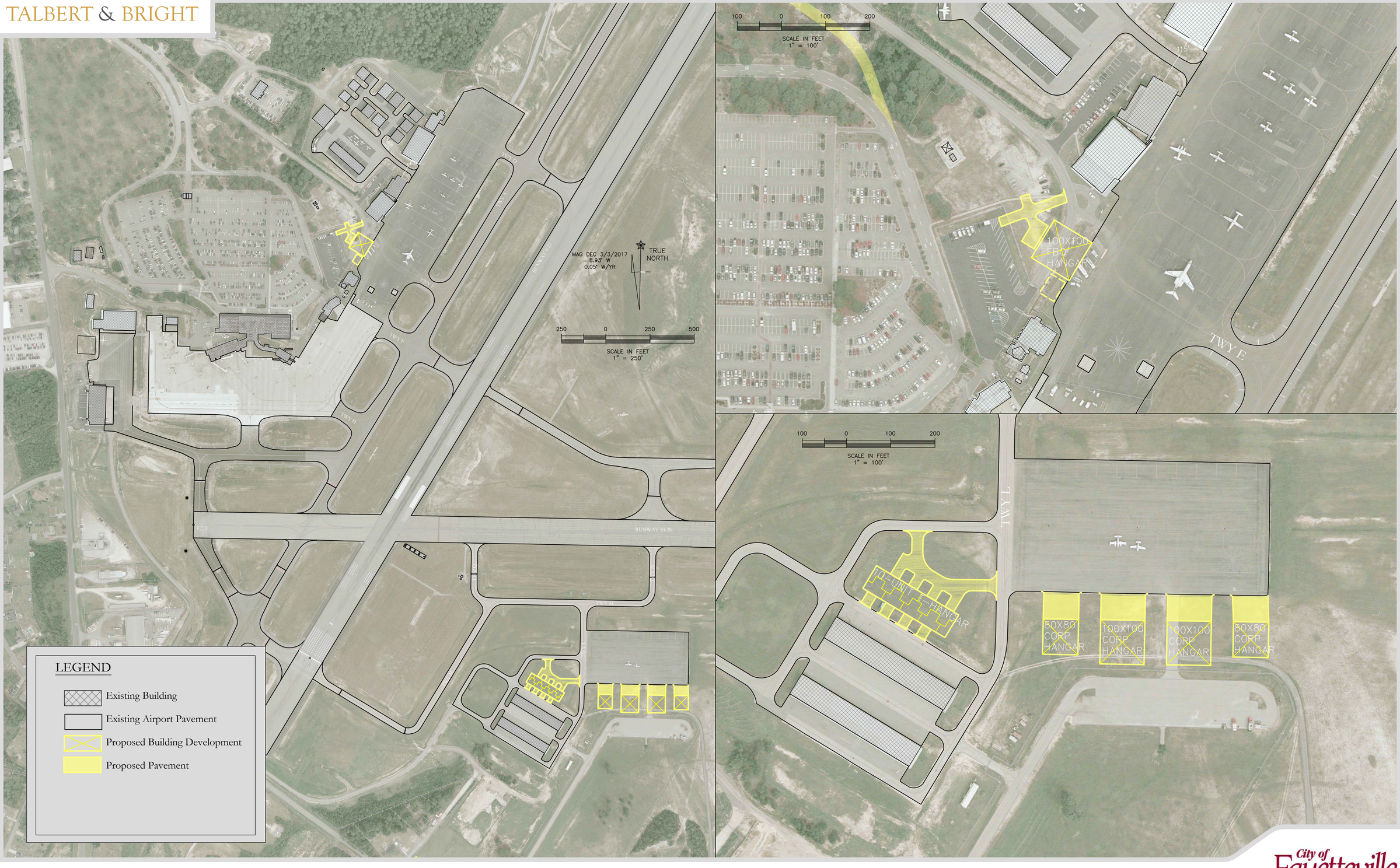


FIGURE 5-6. GA HANGAR ALTERNATIVE 4 - 10,000 SF FBO STORAGE, 10 UNITS OF ADDITIONAL T-HANGARS, AND 32,800 SF CORPORATE HANGAR STORAGE

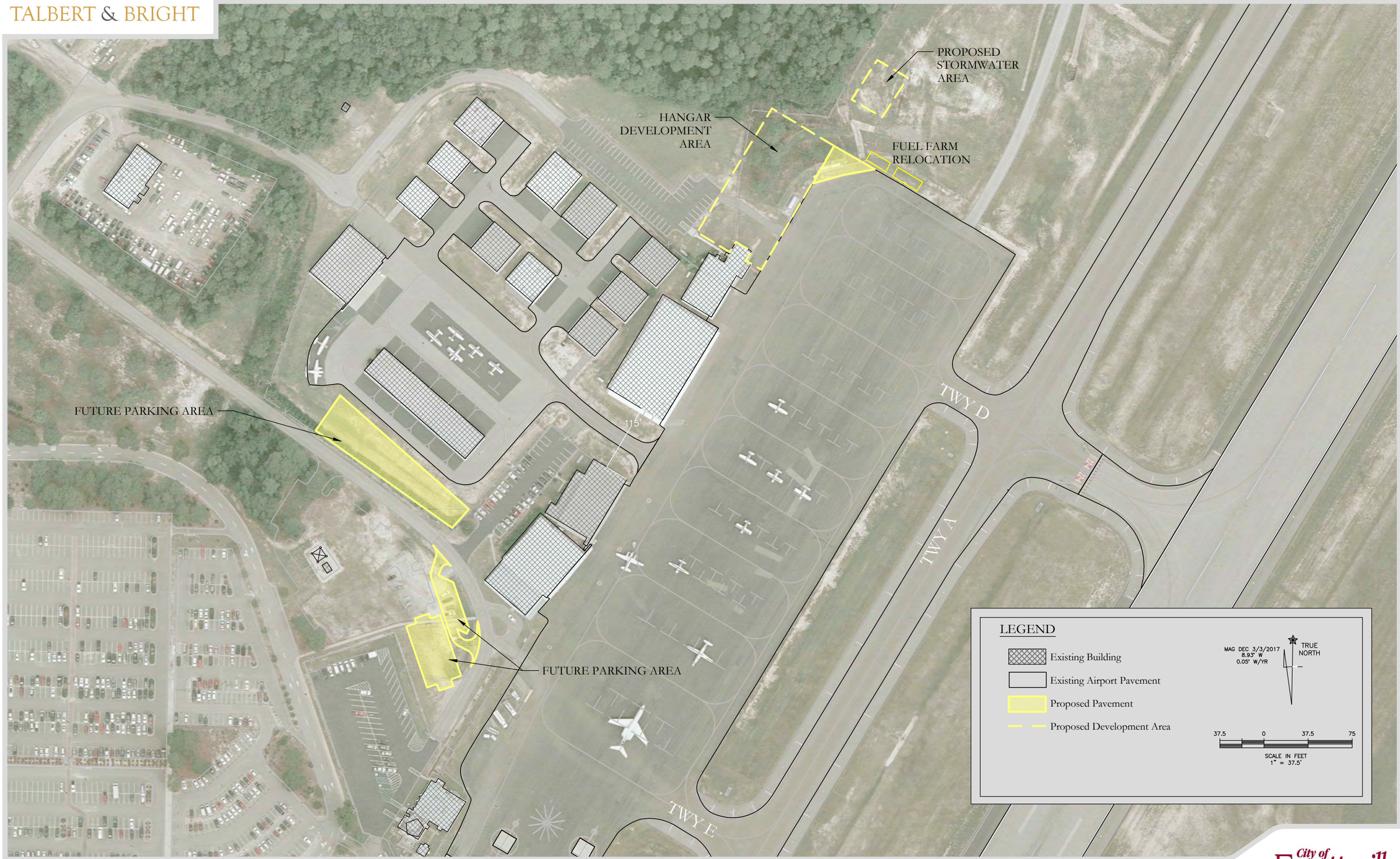


FIGURE 5-7. PREFERRED NORTH GA HANGAR ALTERNATIVE - FBO CONVENTIONAL HANGAR DEVELOPMENT AREA (MAY REQUIRE RELOCATION OF CORPORATE FUEL FARM) AND AUTOMOBILE PARKING EXPANSION AREAS

TWY M

PROPOSED
FUEL FARM

PROPOSED
STORMWATER
AREA

14-UNIT T-HANGAR

8-UNIT T-HANGAR

TWY L

TWY M

TWY N

RUNWAY 10-28

CONVENTIONAL/CORPORATE
HANGAR DEVELOPMENT

VOR CRITICAL AREA

LEGEND

- Existing Building
- Existing Airport Pavement
- Future Development Area
- Proposed Pavement

MAG DEC 3/3/2017
8.93° W
0.05° W/YR
TRUE NORTH

50 0 50 100
SCALE IN FEET
1" = 50'

FIGURE 5-8. PREFERRED SOUTH GA HANGAR DEVELOPMENT - CONSTRUCT 22 ADDITIONAL T-HANGARS AND RESERVE AREA FOR CONVENTIONAL/CORPORATE HANGAR DEVELOPMENT

5.4 ANCILLARY ALTERNATIVES

The ancillary alternatives associated with Part 2 of this Master Plan provide the development necessary to support the primary activities and operations at the Airport for the next 20 years. In the development of the scope of work, the Airport requested that future development consider the need for a consolidated rental car servicing facility and an airport maintenance/storage building. The expansion of the existing Airport Terminal Auto Parking area was determined in Part 1 of the study and has been included in Part 2 for depiction on the new Airport Layout Plan.

5.4.1 Airport Maintenance and Storage Building

Although an airport's maintenance/storage building must have access to the airfield, airside frontage for aviation-related uses should be maintained; siting these types of buildings farther from the runway environment is recommended. In identifying a suitable location, it was determined that due the existing and proposed level of operations and based aircraft expected over the next 20 years, a dedicated maintenance/storage building would be best located in proximity the South GA Area. Due to the vast amount of space the Airport has in this area with little to no impact to existing and future operations, locating an Airport Maintenance building off Doc Bennett Road and adjacent to the South GA Service Road would provide airport staff with adequate access both landside and airside. Much like the airport hangar alternatives, rather than showing one specific location, it was recommended that two general areas be depicted on the ALP and reserved for the development of a dedicated Airport Maintenance and Storage Building. These areas are shown on **Figure 5-9** and provides:

- 11,200 SF Maintenance Storage (80' x 140') Maintenance/Storage building
- 55,000 SF Pavement Area for Storage Around Building
- Proposed Stormwater Runoff Area

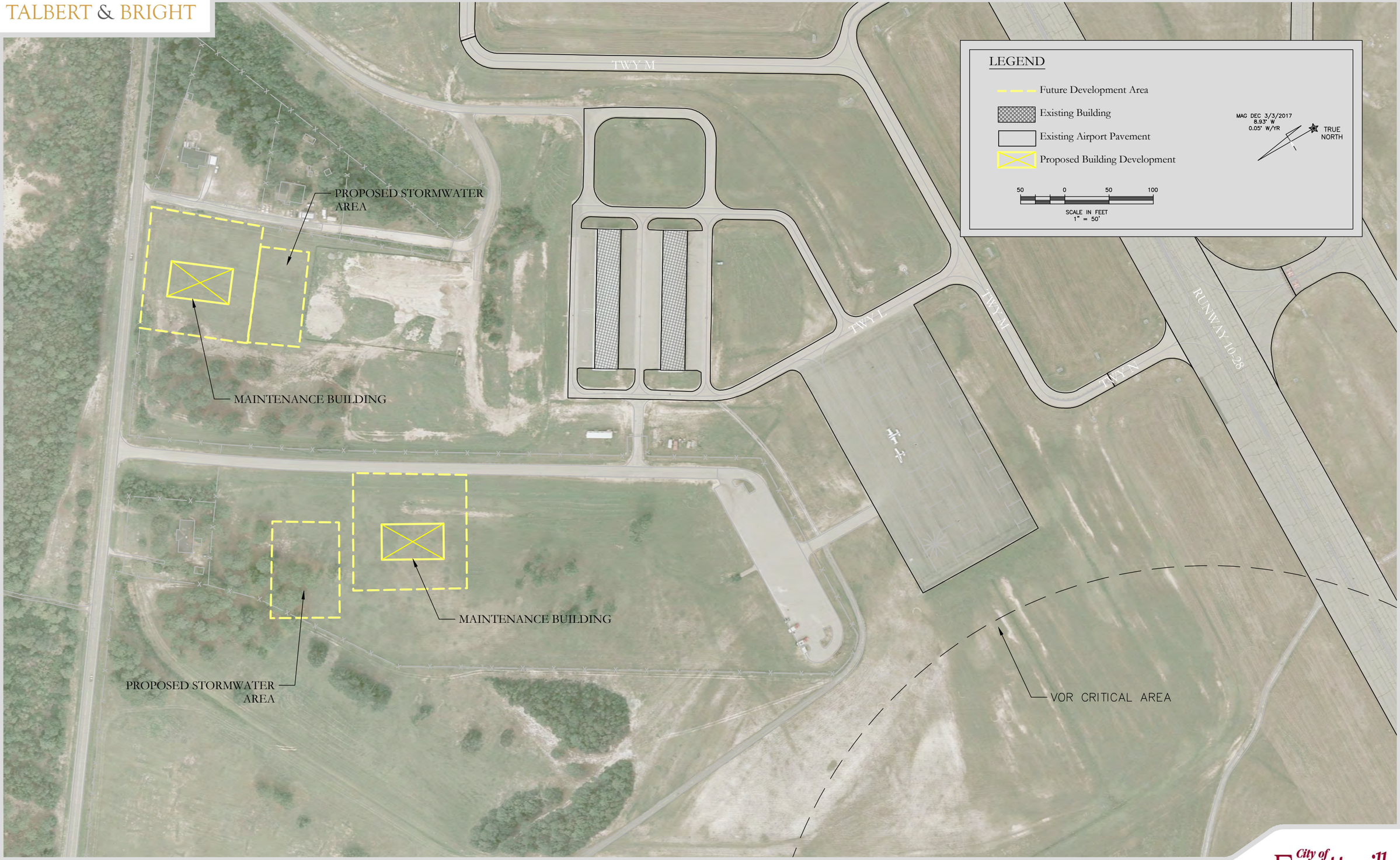


FIGURE 5-9. PREFERRED AIRPORT MAINTENANCE BUILDING DEVELOPMENT AREA

5.4.2 Rental Car Servicing Area

Currently, the rental car agencies at FAY service their rental cars off site which presents an inefficient situation, especially during peak periods. In satisfying the Airport's request to identify a suitable location to accommodate a consolidated QTA (Quick-Turn-Around) facility where rental cars can be turned around quickly for the next rental customers in a single location rather than have them separated in locations around the Airport, two areas were presented to the Airport and the Stakeholder Working Group for discussion and consideration. In identifying a location, it was important to consider areas that provided proximity to the terminal and with enough size to accommodate wash bays, maintenance bays, fueling facilities, and offices. The alternatives for a QTA considered two similar locations off Airport Road, north of the airport fuel farm.

Rental Car Servicing Alternative 1 proposes an area to develop a consolidated rental car QTA facility off Pine Haven Dr on current airport property with a connection to Hangar Rd. This alternative requires the demolition of existing homes off Pine Haven Dr. The proposed developments in this alternative include:

- Four Rental Car Servicing Facilities; Three facilities with parking for 174 cars and a 4,200 SF building, and one facility with parking for 87 cars and a 3,000 SF building
- Proposed Stormwater Runoff Area

Rental Car Servicing Alternative 2 proposes an area in the same general location with a longer access road than Alternative 1 but would not require the demolition of existing homes off Pine Haven Dr. The proposed developments in this alternative include:

- Four Rental Car Servicing Facilities; Four facilities with parking for 174 cars and a 4,200 SF building
- Proposed Stormwater Runoff Area

Again, like the proposed conventional hangar and maintenance building development, since their characteristics were similar, the Airport requested that these two general areas be depicted on the ALP and reserved for the development of a consolidated Quick Turn Around Facility. These areas are shown on the **Figure 5-10** and **Figure 5-11**.



FIGURE 5-10. RENTAL CAR SERVICING ALTERNATIVE 1



FIGURE 5-11. RENTAL CAR SERVICING ALTERNATIVE 2

City of Fayetteville North Carolina REGIONAL AIRPORT

5.4.3 Terminal Auto Parking Improvements

As mentioned in Part 1 of this Master Plan, The Airport has ample open space available in the terminal area to expand surface parking lots. Two basic concepts were developed which can accommodate the projected 20-year parking demand as presented in Part 1, Chapter 4. The existing ground access is adequate for the planning horizon, with modifications as needed in connection with the building and parking options selected.

Parking Concept No. 1 presented in Part 1 suggested retaining the existing terminal loop road and relocating employee parking outside the terminal loop to the northeast, near the FBO. This alternative included a large new surface lot outside the loop road to the northwest and a small "cell phone" lot along Airport Road near Doc Bennet Road with an additional area is shown as overflow if demand grows beyond the current projections and during peak activity periods.

Parking Concept No. 2 (preferred) involves reconstruction of the terminal loop road such that the projected 20-year short term, long term and rental car ready space needs are all accommodated within the terminal loop. As with Concept No. 1, the employee parking, cell phone lot and reserve areas are located outside the loop.

Both parking concepts included enough space for the projected parking requirements but with input from the Stakeholder Group, the Airport Commission selected the second option, which is shown on **Figure 5-12** and depicted on the ALP.

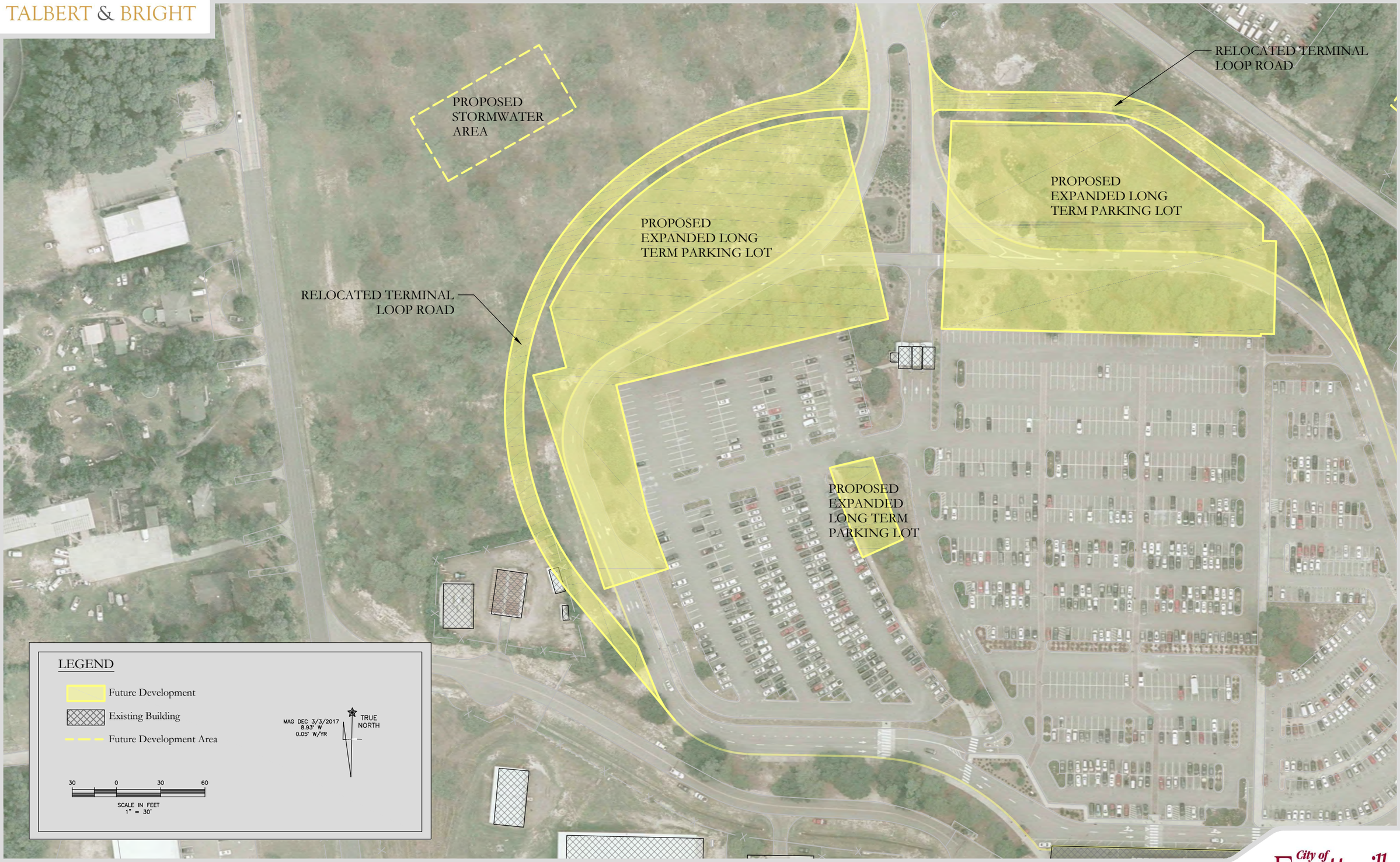


FIGURE 5-12. PREFERRED TERMINAL AREA AUTOMOBILE PARKING EXPANSION

5.5 POTENTIAL FOR ENVIRONMENTAL EFFECTS OF PREFERRED DEVELOPMENT

The potential for environmental effects of the alternatives are briefly summarized below per the impact categories defined in *FAA Order 1050.1, Environmental Impacts: Policies and Procedures* and *FAA Order 5050.4, FAA Airports guidance for complying with NEPA*. The Airport does not contain coastal resources, Section 4(f) properties, or Wild and Scenic Rivers. There are no projects expected to impact farmlands, hazardous materials, or floodplains. Although there are no NRHP-listed or eligible sites within airport property, the NCHPO should be consulted for each project on identification of historic properties and determinations of project effect.

5.5.1 Runway Alternative

The extension of Runway 10-28 has the potential to impact jurisdictional wetlands and streams east of the runway. Wetlands were previously delineated in a portion of the area. Impacts may require a Clean Water Act Section 404 Permit from US Army Corps of Engineers and NC Division of Water Resources Section 401 Water Quality Certification. An emissions inventory and noise analysis may be required due to potential changes in aircraft operations. The project would require a stormwater permit and erosion and sedimentation control plan.

5.5.2 Taxiway Alternative

Relocation of Taxiway D is not expected to have environmental effects due to its location in an area of existing disturbance and development. A stormwater permit and erosion and sedimentation control plan may be required if the project is greater than 1 acre.

5.5.3 General Aviation Development (South) Alternative

Based on its proximity to a mapped tributary of Big Sandy Run, the south GA development alternative has the potential to impact wetlands and streams. Surveys would be required to determine if jurisdictional wetlands or streams are present in the project area, and if the project would require a Clean Water Act Section 404 Permit from US Army Corps of Engineers and NC Division of Water Resources Section 401 Water Quality Certification. A stormwater permit and erosion and sedimentation control plan may be required since the project is greater than 1 acre.

5.5.4 General Aviation Development (North) Alternative

Based on its proximity to a mapped stream, the north GA development alternative has the potential to impact wetlands and streams. Surveys would be required to determine if jurisdictional wetlands or

streams are present in the project area, and if the project would require a Clean Water Act Section 404 Permit from US Army Corps of Engineers and NC Division of Water Resources Section 401 Water Quality Certification. A stormwater permit and erosion and sedimentation control plan may be required since the project is greater than 1 acre.

5.5.5 Airport Maintenance Building Alternative

Based on its proximity to a mapped tributary of Big Sandy Run and mapped wetlands to the southwest, the airport maintenance building alternative has the potential to impact wetlands and streams. Surveys would be required to determine if jurisdictional wetlands or streams are present in the project area, and if the project would require a Clean Water Act Section 404 Permit from US Army Corps of Engineers and NC Division of Water Resources Section 401 Water Quality Certification. A stormwater permit and erosion and sedimentation control plan may be required since the project is greater than 1 acre.

5.5.6 Rental Car Servicing Alternative

The rental car servicing alternative location contains a mapped wetland and stream. Surveys would be required to determine if jurisdictional wetlands or streams are present, and if the project would require a Clean Water Act Section 404 Permit from US Army Corps of Engineers and NC Division of Water Resources Section 401 Water Quality Certification. The area is mostly undeveloped, and a survey would need to determine if habitat for threatened and endangered species is present. A stormwater permit and erosion and sedimentation control plan may be required since the project is greater than 1 acre.

5.5.7 Commercial Terminal Auto Parking Alternative

Surveys were completed within the commercial terminal auto parking area by WithersRavenel in 2015. The surveys concluded the area does not contain jurisdictional wetlands or streams. Therefore, construction activities within the area are not expected to result in impacts to jurisdictional wetlands or streams and should not require authorization from the Corps of Engineers or NC Division of Water Resources. The survey verified that the area does not contain potential habitat for state or federal threatened and endangered species. A stormwater permit and erosion and sedimentation control plan may be required since the project is greater than 1 acre.

5.6 PREFERRED AIRPORT DEVELOPMENT

As shown in **Figure 5-13**, Preferred Development Alternative, the preferred airside and landside alternatives have been incorporated to depict an overall airport development plan. This list is not all inclusive; refer to the 5-year, Mid-Term, and Long-Term Capital Improvement Plan provided in the Executive Summary. The major elements that comprise the Preferred Development include:

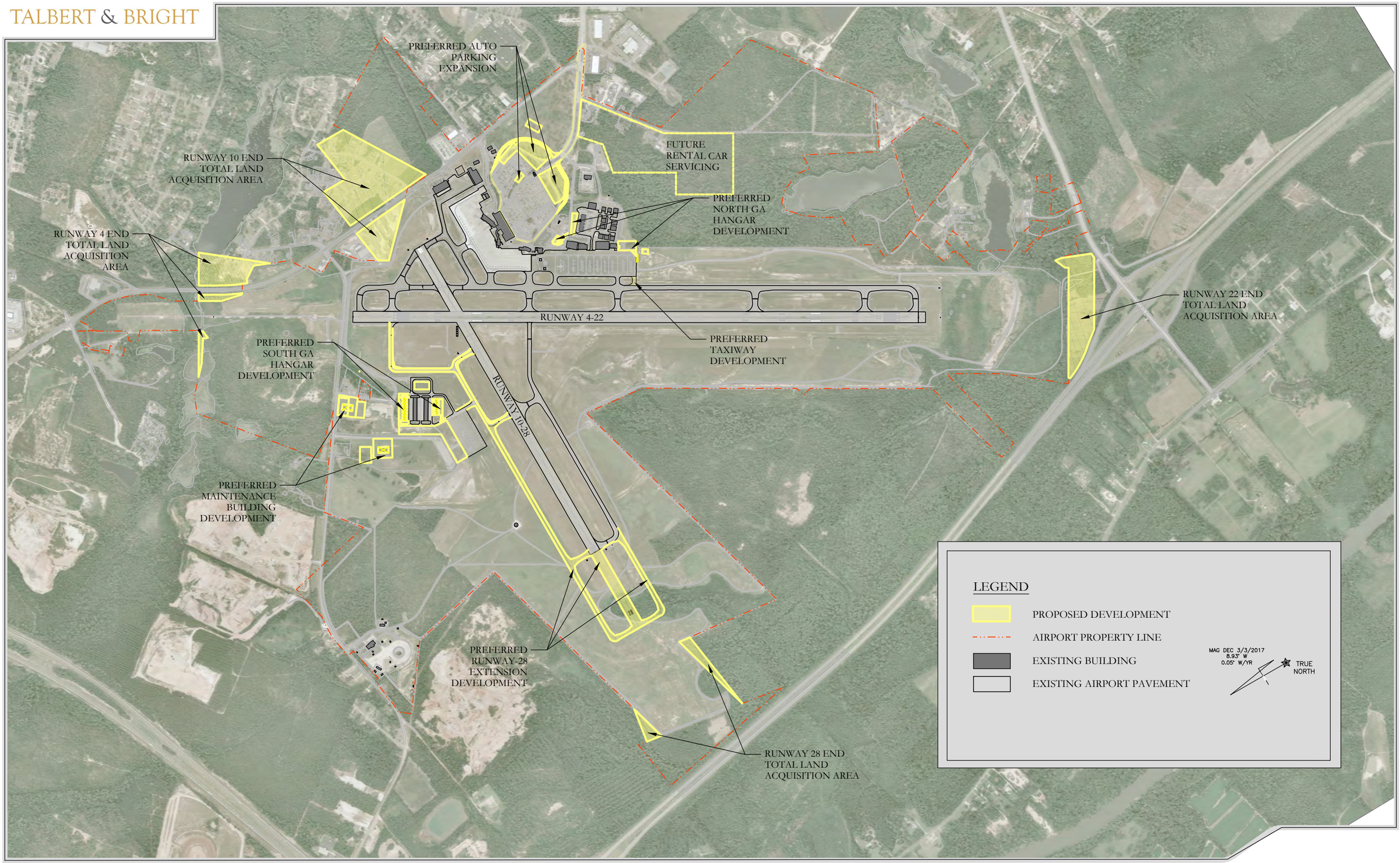
5.6.1 Airside

- Runway 28 extended to 6,000 feet (beyond 2037)
- Relocate stub Taxiway D between Taxiway A and the North GA Apron to avoid direct access
- Corporate or Conventional Hangar Development on the north end of the North GA Apron
- T-hangar development in the South GA Area
- Construct Self-fueling facility in the South GA Area
- Relocate Self fueling facility on the North GA apron
- Acquire property rights in RPZ to all runways

5.6.2 Landside

- Construct Airport Maintenance Building
- Construct Rental Car QTA Facility
- Expand Terminal Auto Parking

The preferred development alternative provides the basis for the final project documents which includes the Final Report and the Airport Layout Plan (ALP) for the sponsor, and FAA approval.



F:\COF_RegionalAirport_logo.jpg

FIGURE 5-13. PREFERRED DEVELOPMENT ALTERNATIVE

FAYETTEVILLE REGIONAL AIRPORT

AIRPORT LAYOUT PLAN



July 2018

TALBERT & BRIGHT, INC. 4810 Shelley Drive. Wilmington. North Carolina. 28405. T: 910.763.5350

U.S. Department
of Transportation
**Federal Aviation
Administration**

Memphis Airports District Office
2600 Thousand Oaks Blvd., Suite 2250
Memphis, TN 38118

Phone (901) 322-8180

October 7, 2019

Mr. Brad Whited, Director
400 Airport Road, Suite #1
Fayetteville, NC 28301

Dear Mr. Whited:

Fayetteville Regional Airport, North Carolina
City of Fayetteville, NC
Conditional Airport Layout Plan (ALP) Approval

Thank you for submitting your updated Airport Layout Plan drawing set for review. The Airport Layout Plan (ALP) dated July, 2018 was reviewed by the FAA (airspace study 2019-ASO-3048-NRA) and we have found it acceptable from a planning standpoint. Therefore, we have conditionally approved this ALP. Please note that the conditional approval of the updated ALP does not indicate that the United States will participate in the cost of any proposed development. This ALP approval is also conditioned on acceptance of the plan under local land use laws. We encourage appropriate agencies to adopt land use and height restrictive zoning based on the plan. The airport sponsor must consider the following two conditions prior to approval of any development shown on the ALP:

- Environmental Approval of the project by the Federal Aviation Administration
- Evidence of Project Eligibility and Justification

The conditional approval, indicated by my signature, is given subject to the condition that the depicted (1) Terminal Area Parking and other airside reserved development, (2) All future general aviation development, may not be undertaken without environmental approval by the Federal Aviation Administration. Ultimately, all items of future and/or proposed development shown on this ALP will require environmental processing and shall comply with the requirements of the National Environmental Policies Act of 1969 (P.L. 91-190). FAA approval of your ALP means that all existing and proposed airport development shown on the plan should meet current FAA Airport Design Standards or a current FAA approved Modification of Airport Design Standards. It also means that we find the proposed airport development shown on the plan useful and efficient. However, our approval does not represent a commitment to provide federal financial assistance to implement any development or air navigation facilities shown on the plan, nor does it mean that we find funding of the proposed airport development justified. Proposed development on the ALP which will require evidence of eligibility and justification at the time a funding request is ripe for consideration includes, but is not limited to, the following:

- General Aviation Area Development
- North General Aviation Terminal Area
- Air Carrier Terminal Area

Our office also circularized this ALP as an airspace case for comment. Comments were received and include the following comments approvable from an airspace utilization standpoint provided that the airport owner:

1. Provide notice to the FAA ADO at least 60 days in advance of starting the construction of any facilities on the airport. You must submit proper notification to our office and receive FAA airspace approval prior to construction.

2. Obstruction Evaluation Group. The ALP was reviewed as a planning document and this evaluation did not include any obstacle evaluations. Any changes to the runway physical end latitude/longitude coordinates or elevations must be uploaded into the OEAAA runway/data base, to ensure the FAR Part 77 and TERPs calculations are run on the most recent data. All proposed construction projects (terminal buildings, taxiways, etc), and associated equipment must be filed separately as individual studies for impact on the National Airspace System.

3. FAA Flight Procedures Office. The establishment of future projects shown on the ALP that involve construction are conditionally approved for planning purposes only. All construction projects are subject to final FAA approval via a separate aeronautical study. Review of this proposal is not considered a request for procedure development; the Eastern region Flight Procedures Team must be notified at least 24 - 36 months prior to the desired date for procedures meeting the needs of runway extension(s), or additional navigational equipment installed at the airport. If/when the airport decides to extend the crosswind runway, they'll require a "new" obstacle survey meeting 18B standards. This survey must be submitted, validated and entered into the data base prior to the Eastern region Flight Procedures Team completing its feasibility study and forwarding the project to Oklahoma City for procedure development/amendment. When the runway threshold is moved, the airport will lose its flight procedures to the respective runway; we highly recommend the Airport work closely with the Eastern region Flight Procedures Team, well in advance, to devise a plan for retaining procedures throughout the course of the project.

4. Tech Ops. Any structural development within the terminal area should not exceed 80 ft. to protect LLWAS communications to remote stations. Any structure proposed in the vicinity of the airport will need 7460-1 filing.

In making this determination, the FAA has considered matters such as the effects the proposal would have on existing or planned traffic patterns of neighboring airports, the effects it would have on the existing airspace structure and projected programs of the FAA, the effects it would have on the safety of persons and property on the ground, and the effects that existing or proposed manmade objects (on file with the FAA), and known natural objects within the affected area would have on the airport proposal.

The FAA cannot prevent the construction of structures near an airport. The airport environs can only be protected through such means as local zoning ordinances, land use planning, acquisition of property in fee or aviation easements, letters of agreement or other means.

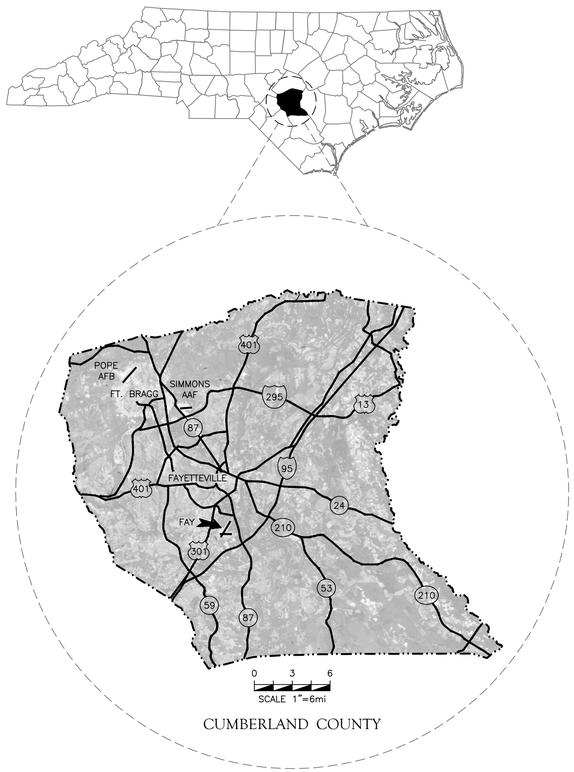
We are enclosing a copy of the conditional approved ALP drawing set for your records. If you have any questions, please contact me at 901-322-8187 or by email at Leonard.Green@faa.gov. We look forward to working with you in the continued development of your airport.

Sincerely,

L. Bernard Green, CM, AICP
Community Planner

FAYETTEVILLE REGIONAL AIRPORT
FAYETTEVILLE, NORTH CAROLINA

AIRPORT LAYOUT PLAN DRAWING SET



CUMBERLAND COUNTY

LIST OF DRAWINGS:

COVER SHEET (APPROVAL SIGNATURE BLOCKS)	NOT NUMBERED
AIRPORT DATA SHEET	SHEET NO. 1 OF 20
EXISTING AIRPORT LAYOUT DRAWING	SHEET NO. 2 OF 20
AIRPORT LAYOUT DRAWING	SHEET NO. 3 OF 20
TERMINAL AREA DRAWING (AIR CARRIER AREA)	SHEET NO. 4 OF 20
TERMINAL AREA DRAWING (NORTH GENERAL AVIATION AREA)	SHEET NO. 5 OF 20
TERMINAL AREA DRAWING (SOUTH GENERAL AVIATION AREA)	SHEET NO. 6 OF 20
AIRPORT AIRSPACE DRAWING (PRIMARY/HORIZONTAL/CONICAL)	SHEET NO. 7 OF 20
AIRPORT AIRSPACE DRAWING (RUNWAY 4 APPROACH)	SHEET NO. 8 OF 20
AIRPORT AIRSPACE DRAWING (RUNWAY 22 APPROACH)	SHEET NO. 9 OF 20
AIRPORT AIRSPACE DRAWING (RUNWAY/APPROACH PROFILES)	SHEET NO. 10 OF 20
INNER PORTION OF THE APPROACH SURFACE DRAWING (RUNWAY 4)	SHEET NO. 11 OF 20
INNER PORTION OF THE APPROACH SURFACE DRAWING (RUNWAY 22)	SHEET NO. 12 OF 20
INNER PORTION OF THE APPROACH SURFACE DRAWING (RUNWAY 10)	SHEET NO. 13 OF 20
INNER PORTION OF THE APPROACH SURFACE DRAWING (RUNWAY 28)	SHEET NO. 14 OF 20
INNER PORTION OF THE APPROACH SURFACE DRAWING (OBSTRUCTION DATA)	SHEET NO. 15 OF 20
ON-AIRPORT LAND USE DRAWING	SHEET NO. 16 OF 20
OFF-AIRPORT LAND USE DRAWING	SHEET NO. 17 OF 20
AIRPORT PROPERTY MAP (EXHIBIT A)	SHEET NO. 18 OF 20
DEPARTURE SURFACE DRAWING (RUNWAY 4-22)	SHEET NO. 19 OF 20
DEPARTURE SURFACE DRAWING (RUNWAY 10-28)	SHEET NO. 20 OF 20

City of Fayetteville North Carolina
REGIONAL AIRPORT

TALBERT & BRIGHT
ENGINEERING & PLANNING CONSULTANTS
4810 SHELLEY DRIVE WILMINGTON, NC 28405
FAX: 910.762.6281 PHONE: 910.763.5350
EMAIL: TBIILM@TBIILM.COM
NC LICENSE NO. C-0713

CITY OF FAYETTEVILLE

APPROVED _____ 9-16-19
BRADLEY S. WHITED, AIRPORT DIRECTOR DATE

ACAD FACSIMILE OF ORIGINAL SIGNED 9-16-19

FEDERAL AVIATION ADMINISTRATION

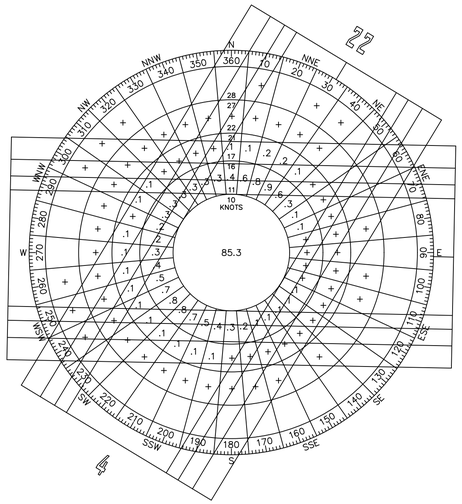
APPROVED _____ 10-7-19
DATE

ACAD FACSIMILE OF ORIGINAL SIGNED 10-7-19

REVISION		
NO.	DESCRIPTION	DATE

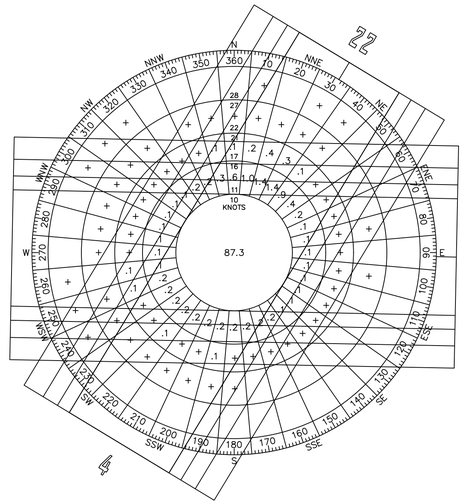
ALL WEATHER WIND ROSE

RUNWAY	CROSSWIND COMPONENT			
	10.5 KTS	13 KTS	16 KTS	20 KTS
4–22	96.23%	98.05%	99.46%	99.88%
10–28	91.73%	95.64%	98.92%	99.79%
COMBINED	98.70%	99.65%	99.92%	99.99%
110,531 OBSERVATIONS 2006–2015				
NATIONAL CLIMATIC DATA CENTER ASHEVILLE, NC STATION: FAYETTEVILLE, NC				



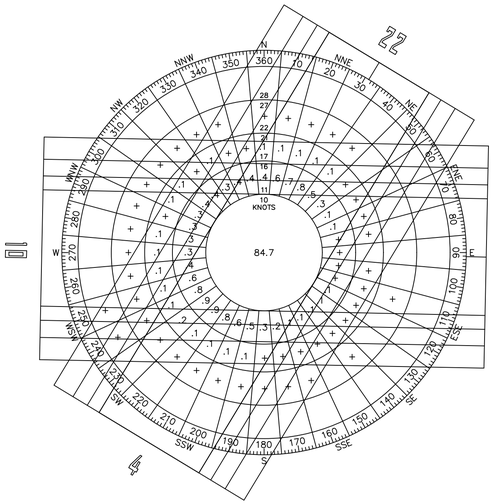
IFR (IMC) WIND ROSE

RUNWAY	CROSSWIND COMPONENT			
	10.5 KTS	13 KTS	16 KTS	20 KTS
4–22	97.22%	98.47%	99.43%	99.82%
10–28	91.37%	94.97%	98.32%	99.58%
COMBINED	98.84%	99.64%	99.91%	99.98%
20,929 OBSERVATIONS 2006–2015				
NATIONAL CLIMATIC DATA CENTER ASHEVILLE, NC STATION: FAYETTEVILLE, NC				

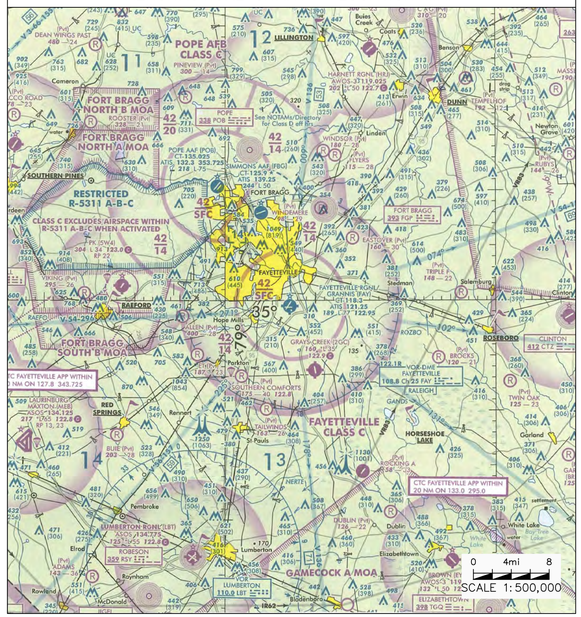


VFR (VMC) WIND ROSE

RUNWAY	CROSSWIND COMPONENT			
	10.5 KTS	13 KTS	16 KTS	20 KTS
4–22	96.01%	97.96%	99.48%	99.90%
10–28	91.69%	95.71%	99.02%	99.83%
COMBINED	98.66%	99.65%	99.93%	100.00%
90,100 OBSERVATIONS 2006–2015				
NATIONAL CLIMATIC DATA CENTER ASHEVILLE, NC STATION: FAYETTEVILLE, NC				



AERONAUTICAL CHART – LOCATION MAP



AIRPORT MAGNETIC DECLINATION WMM 2015 2018-01-01
8.93° WEST ±20' CHANGING BY 0'3' W PER YEAR

DECLARED DISTANCES

RUNWAY	TORA	TODA	ASDA	LDA
4	7709'	7709'	7006'	6408'
22	7709'	7709'	6711'	6408'
10	4801'	4801'	4801'	4801'
28	4801'	4801'	4801'	4801'

RUNWAY APPROACH PART 77 AND RPZ DATA

4	PRECISION APPROACH (CAT I) SURFACE VISIBILITY MINIMUMS NOT LESS THAN 1/2 MILE 1000' X 50000' X 16000' 10000' @ 50:1 SURFACE SLOPE 40000' @ 40:1 SURFACE SLOPE APPROACH RUNWAY PROTECTION ZONE 1000' X 1750' X 2500' DEPARTURE RUNWAY PROTECTION ZONE 500' X 1700' X 1010'	22	PRECISION APPROACH (CAT I) SURFACE VISIBILITY MINIMUMS NOT LESS THAN 1/2 MILE 1000' X 50000' X 16000' 10000' @ 50:1 SURFACE SLOPE 40000' @ 40:1 SURFACE SLOPE APPROACH RUNWAY PROTECTION ZONE 1000' X 1750' X 2500' DEPARTURE RUNWAY PROTECTION ZONE 500' X 1700' X 1010'
10	NON-PRECISION APPROACH SURFACE VISIBILITY MINIMUMS NOT LESS THAN 3/4 MILE 1000' X 10000' X 4000' 10000' @ 34:1 SURFACE SLOPE RUNWAY PROTECTION ZONE 1000' X 1700' X 1510'	28	NON-PRECISION APPROACH SURFACE VISIBILITY MINIMUMS NOT LESS THAN 3/4 MILE 1000' X 10000' X 4000' 10000' @ 34:1 SURFACE SLOPE RUNWAY PROTECTION ZONE 1000' X 1700' X 1510'

AIRPORT NAVAIDS

TYPE	ID	NAME	LATITUDE	LONGITUDE
VOR/DME	FAY	FAYETTEVILLE	34°59'07.9750"	78°52'30.2300"
NDB	FGP	FORT BRAGG	35°08'20.5940"	78°48'46.1110"
TACAN	POB	POPE	35°09'35.4000"	79°01'16.8000"
NDB	POB	POPE	35°13'36.6000"	78°57'15.6000"
VOR	LBT	LUMBERTON	34°36'38.5900"	79°03'17.1180"
VORTAV	SDZ	SANDHILLS	35°12'55.6470"	79°35'16.6270"

MODIFICATIONS TO STANDARDS

RUNWAY DESIGN CODE STANDARDS

ITEM	4–22	10–28
RUNWAY SAFETY AREA (RSA) WIDTH	500'	150'
RSA BEYOND RUNWAY END	600' | 1000'	300' | 300'
RUNWAY OBSTACLE FREE ZONE (OFZ) WIDTH	400'	400'
OFZ BEYOND R/W END	200'	200'
RUNWAY OBJECT FREE AREA (ROFA) WIDTH	800'	500'
ROFA BEYOND RUNWAY END	600' | 1000'	300' | 300'
MINIMUM AIRCRAFT PARKING DIST FROM RUNWAY C/L	500'	250'
RUNWAY PAVED SHOULDERS	YES	NO

RUNWAY END DATA

RUNWAY	LATITUDE NORTH	LONGITUDE WEST	ELEVATION	TDZ ELEVATION
4	34°59'03.6433"	78°53'13.2315"	183.1	189.4
4 DISPLACED	34°59'08.7010"	78°53'09.5140"	185.3	189.4
22	35°00'08.8714"	78°52'25.2612"	157.7	180.1
22 DISPLACED	35°00'06.3057"	78°52'27.1462"	160.1	180.1
10	34°59'16.1609"	78°53'17.4126"	182.9	188.0
28	34°59'15.1985"	78°52'19.7197"	183.8	188.0
28 FUTURE	34°59'14.9567"	78°52'05.2992"	183.8	188.0

RUNWAY THRESHOLD SITING SURFACES

RUNWAY	EXISTING	FUTURE
4	RUNWAY TYPE 5, 6, AND 7	RUNWAY TYPE 5, 6, AND 7
22	RUNWAY TYPE 4, 6, AND 7	RUNWAY TYPE 4, 6, AND 7
10	RUNWAY TYPE 4, 6, AND 7	RUNWAY TYPE 4, 6, AND 7
28	RUNWAY TYPE 4, 6, AND 7	RUNWAY TYPE 4, 6, AND 7
SOURCE: AC 150/5300-13A, TABLE 3-2 EB NO.99, ANALYSIS TABLE SHOWN ON SHEET 15		

TAXIWAY DESIGN GROUP STANDARDS

ITEM	4–22	10–28
DESIGN GROUP (TDG)	3	2
SAFETY AREA (TSA) WIDTH	118'	79'
OBJECT FREE AREA (TOFA) WIDTH	186'	131
LIGHTING	MITL/SIGNAGE	MITL/SIGNAGE
PAVEMENT (WIDTH) / SHOULDER (WIDTH)	50/20'	35/15'

AIRPORT MONUMENT DATA

NAME	NORTHING	EASTING	ELEVATION
1 FAY D (PACS)	451916.16	2035873.08	185.60
2 FAY 2 AZ MK (SACS)	449734.89	2033839.72	181.76

AIRPORT DATA

		EXISTING	FUTURE
AIRPORT REFERENCE CODE (ARC)		C-III	C-III
AIRPORT REFERENCE POINT	LATITUDE NORTH	34°59'28.4000"	34°59'28.4000"
ARP COORDINATES	LONGITUDE WEST	78°52'49.0000"	78°52'49.0000"
ESTABLISHED AIRPORT ELEVATION		189.4	189.4
NORMAL MAXIMUM TEMPERATURE – HOTTEST MONTH		92.1°	92.1°
NATIONAL PLAN OF INTEGRATED AIRPORT SYSTEMS (NPIAS)		CS	CS
STATE EQUIVALENT SERVICE ROLE		PS	PS

RUNWAY DATA

RUNWAY	EXISTING		FUTURE	
ITEM	4–22	10–28	4–22	10–28
RUNWAY DESIGN CODE (RDC)	CIII4000/CIII2400	BII	CIII4000/CIII2400	BII
RUNWAY REFERENCE CODE (RRC)	CIII/CIII	BII/BII	CIII/CIII	BII/BII
DESIGN AIRCRAFT	MD88	CITATION II	MD88	CITATION II
LENGTH X WIDTH	7709' X 150'	4801' X 150'	7709' X 150'	4801' X 150'
EFFECTIVE GRADIENT	0.4%	0.0%	0.4%	0.0%
PAVEMENT SURFACE	ASPHALT	ASPHALT	ASPHALT	ASPHALT
SURFACE TREATMENT	GROOVED	–	GROOVED	–
GROSS WEIGHT (THOUSANDS#)	109S 178D 3212D	35S 52D	109S 178D 3212D	35S 52D
PCN	42/F/A/X/T	11/F/B/Y/T	42/F/A/X/T	11/F/B/Y/T
MARKING	PRECISION	NPI	PRECISION	NPI
LIGHTING	HIRL	MIRL	HIRL	MIRL
APPROACH LIGHTS	MALSR-4 REIL22	REIL 10,28	MALSR-4 REIL22	REIL 10,28
VGSI	PAPI4R 4, 4L 22	PAPI4L 28	PAPI4R 4, 4L 22	PAPI4R 10, 4L 28
ILS/DME	4	–	4	–

AIRPORT FACILITIES LEGEND

ITEM	EXISTING	FUTURE
BUILDING/STRUCTURE (1–28)		
PERIMETER ROAD		FUT
PAVED AREA		
BUILDING RESTRICTION LINE (BRL)		
PROPERTY LINE (PL)		
AVIGATION EASEMENT (AE)	AE	
LAND ACQUISITION		
TAXIWAY CLOSURE		D

AIRPORT BUILDING DATA

NO.	USE	TOP ELEV. FT.
1	ADMINISTRATION/TERMINAL	222
2	AIRPORT RESCUE AND FIREFIGHTING	218
3	AIR TRAFFIC CONTROL TOWER	265
4	FIXED BASE OPERATOR	204
5	CENTURION AVIATION	203
6	CORPORATE HANGAR	216
7	FBO N. HANGAR	195
8	CORPORATE HANGAR	*189
9	CORPORATE HANGAR	*189
10	CORPORATE HANGAR	*189
11	CORPORATE HANGAR	*188
12	POWELL AVIONICS	*189
13	CORPORATE HANGAR	*189
14	POWELL AVIONICS	*190
15	CORPORATE HANGAR	*185
16	CORPORATE HANGAR	*185
17	CORPORATE HANGAR	*189
18	10 UNIT T-HANGAR	*184
19	CORPORATE HANGAR/OFFICES	*188
20	NATIONAL CAR RENTAL	*179
21	AIRPORT MAINTENANCE	*185
22	FUEL FARM	*192
23	AIRPORT MAINTENANCE	*192
24	SNOW PLOW STORAGE	208
25	CORPORATE HANGAR	216
26	CARGO BUILDING	212
27	14 UNIT T-HANGAR	204
28	14 UNIT T-HANGAR	203
	* FROM PREVIOUS MASTER PLAN	

MAPPING LEGEND

ITEM	SYMBOL
CREEK STREAM AND POND	
GROUND CONTOUR	180
TREELINE	
UNPAVED ROAD	
PAVED ROAD	
FENCE LINE	
BUILDING/STRUCTURE	

HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 (NAD83)
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)
SURVEY SOURCE: 2016_FAY_VGA_5948.SPC

TALBERT & BRIGHT
ENGINEERING & PLANNING CONSULTANTS
480 SHELLEY DRIVE WILMINGTON, NC 28405
FAX: 910-762-6281 PHONE: 910-763-5350
NC LICENSE NO. C-0713 EMAIL: TBIL@TBILM.COM

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REV. NO.	DESCRIPTION	DATE
	REVISIONS	

FAYETTEVILLE REGIONAL AIRPORT
FAYETTEVILLE, NORTH CAROLINA
AIRPORT DATA SHEET

City of Fayetteville North Carolina
REGIONAL AIRPORT

Date	JULY 2018
Scale	1" = 600'
Drawn	REM/LSM
Checked	NAS
Project No.	2502-1501
Sheet No.	1
	of ..... 20 sheets

Airport Details for KFAY - ACTIVE

Chart Date: 07/21/2016
FAYETTEVILLE RGNL/GRANNIS FIELD
FAYETTEVILLE
AL #: 690

State:	NORTH CAROLINA	Magnetic Variation/Year:	W07/1985	Weather Station:	YES
County:	United States	Site Nbr:	16723.	Control Tower:	YES
Category:	AERODROME ONLY	Data Source:	THIRD_PARTY 09/16/2015	THIRD_PARTY	
FAR Part 139:	YES	Owner:	STATE	Use:	CIVIL
Reimbursable Agreement:				Military Type:	

Coordinates		Office		Local Auto Weather	
Latitude:	N 34° 59' 28.4000"	Flight Inspection:	ATL	Weather Source:	ASOS
Longitude:	W 078° 52' 49.0000"	Procedure Development:	110	Type:	3
Field Elevation:	189.4	Region Code:	SO	Frequency:	121.250
Ellipsoid Elevation:	79.2 S	Service Area:	EAST	Service A:	Y
Horizontal Datum:	NAD83	OCC Code:	AOCC	Phone number	(910)484-1546
Vertical Datum:	NAVD88	International:	NO		

CONTACTS

Contact Role	Last Name	First Name	Phone Number	E-mail	Remark
OWNER			(910)433-1619		

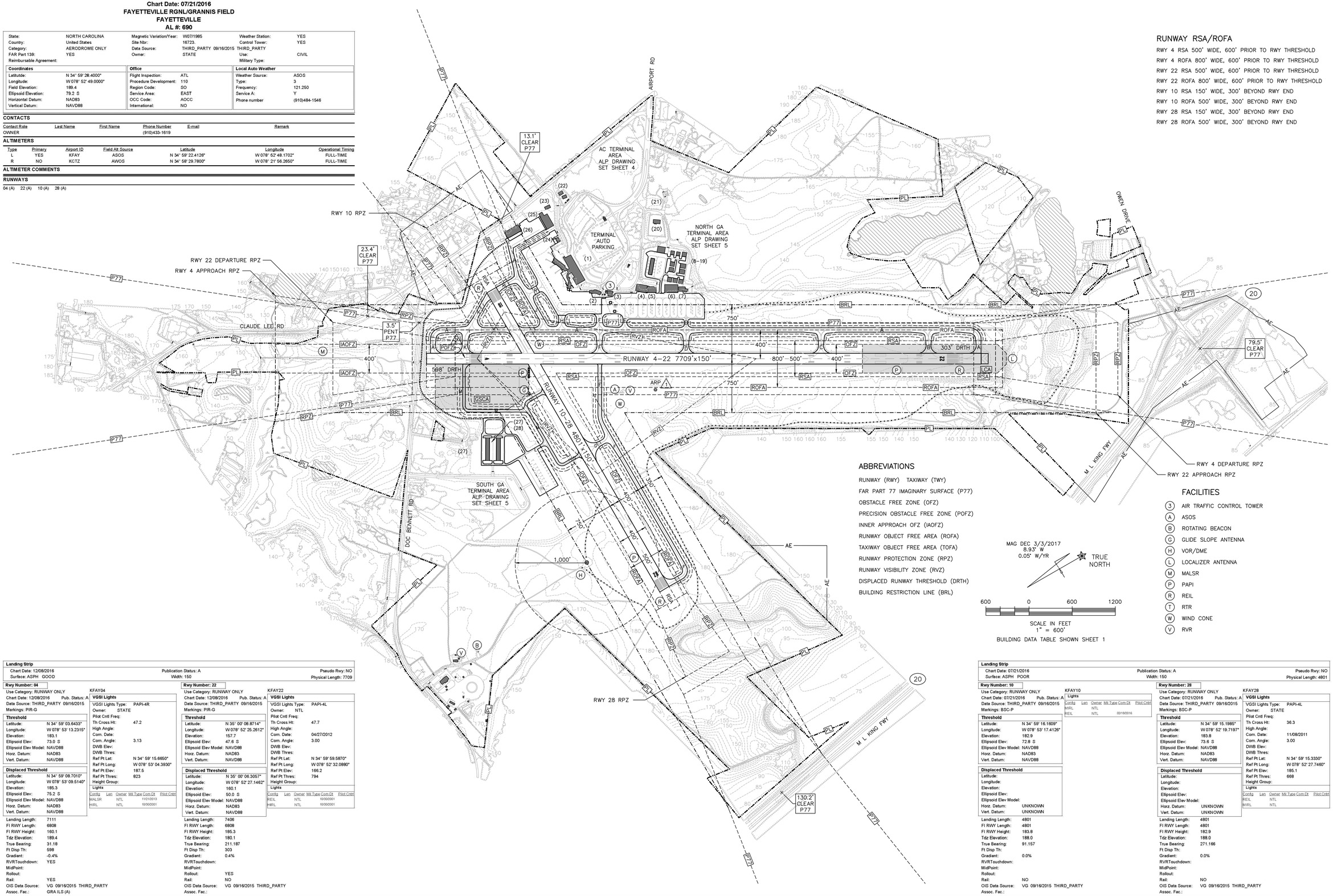
ALTIMETERS

Type	Primary	Airport ID	Field Alt Source	Latitude	Longitude	Operational Timing
L	YES	KFAY	ASOS	N 34° 59' 22.4126"	W 078° 52' 48.1702"	FULL-TIME
R	NO	KCTZ	AWOS	N 34° 58' 29.7800"	W 078° 21' 56.2650"	FULL-TIME

ALTIMETER COMMENTS

RUNWAYS

04 (A) 22 (A) 10 (A) 28 (A)



RUNWAY RSA/ROFA

RWY 4 RSA 500' WIDE, 600' PRIOR TO RWY THRESHOLD
RWY 4 ROFA 800' WIDE, 600' PRIOR TO RWY THRESHOLD
RWY 22 RSA 500' WIDE, 600' PRIOR TO RWY THRESHOLD
RWY 22 ROFA 800' WIDE, 600' PRIOR TO RWY THRESHOLD
RWY 10 RSA 150' WIDE, 300' BEYOND RWY END
RWY 10 ROFA 500' WIDE, 300' BEYOND RWY END
RWY 28 RSA 150' WIDE, 300' BEYOND RWY END
RWY 28 ROFA 500' WIDE, 300' BEYOND RWY END

ABBREVIATIONS

RUNWAY (RWY) TAXIWAY (TWY)
FAR PART 77 IMAGINARY SURFACE (P77)
OBSTACLE FREE ZONE (OFZ)
PRECISION OBSTACLE FREE ZONE (POFZ)
INNER APPROACH OFZ (IAOFZ)
RUNWAY OBJECT FREE AREA (ROFA)
TAXIWAY OBJECT FREE AREA (TOFA)
RUNWAY PROTECTION ZONE (RPZ)
RUNWAY VISIBILITY ZONE (RVZ)
DISPLACED RUNWAY THRESHOLD (DRTH)
BUILDING RESTRICTION LINE (BRL)

MAG DEC 3/3/2017
8.93° W
0.05° W/YR
TRUE NORTH

600 0 600 1200
SCALE IN FEET
1" = 600'

BUILDING DATA TABLE SHOWN SHEET 1

FACILITIES

(3) AIR TRAFFIC CONTROL TOWER
(A) ASOS
(B) ROTATING BEACON
(G) GLIDE SLOPE ANTENNA
(H) VOR/DME
(L) LOCALIZER ANTENNA
(M) MALSR
(P) PAPI
(R) REIL
(T) RTR
(W) WIND CONE
(V) RVR

Landing Strip
Chart Date: 12/08/2016 — Publication Status: A — Pseudo Rwy: NO
Surface: ASPH GOOD — Width: 150 — Physical Length: 7709

Rwy Number: 04
Use Category: RUNWAY ONLY
Chart Date: 12/08/2016 Pub. Status: A
Data Source: THIRD_PARTY 09/16/2015
Markings: PIR-G

Threshold

Latitude:	N 34° 59' 03.6433"
Longitude:	W 078° 53' 13.2315"
Elevation:	183.1
Ellipsoid Elev:	73.0 S
Ellipsoid Elev Model:	NAVD88
Horz. Datum:	NAD83
Vert. Datum:	NAVD88

Displaced Threshold

Latitude:	N 34° 59' 08.7010"
Longitude:	W 078° 53' 09.5140"
Elevation:	185.3
Ellipsoid Elev:	75.2 S
Ellipsoid Elev Model:	NAVD88
Horz. Datum:	NAD83
Vert. Datum:	NAVD88

Landing Length:	7111
Fl RWY Length:	6808
Fl RWY Height:	160.1
Tdz Elevation:	189.4
True Bearing:	31.18
Ft Disp Th:	598
Gradient:	-0.4%
RVRTouchdown:	YES
MidPoint:	
Rollout:	
Rail:	YES
OIS Data Source:	VG 09/16/2015 THIRD_PARTY
Assoc. Fac.:	GRA ILS (A)

KFAY04
VGSI Lights

VGSI Lights Type:	PAPI-4R
Owner:	STATE
Pilot Cntl Freq:	
Th Cross Ht:	47.2
High Angle:	
Com. Date:	
Com. Angle:	3.13
DWB Elev:	
DWB Thres:	
Ref Pt Lat:	N 34° 59' 15.6650"
Ref Pt Long:	W 078° 53' 04.3930"
Ref Pt Elev:	187.5
Ref Pt Thres:	823
Height Group:	

Lights

Config	Len	Owner	Mil Type	Com Dt	Pilot Cntrl
MALSR		NTL		11/21/2013	
HIRL		NTL		10/30/2001	

Rwy Number: 22
Use Category: RUNWAY ONLY
Chart Date: 12/08/2016 Pub. Status: A
Data Source: THIRD_PARTY 09/16/2015
Markings: PIR-G

Threshold

Latitude:	N 35° 00' 08.8714"
Longitude:	W 078° 52' 25.2612"
Elevation:	157.7
Ellipsoid Elev:	47.6 S
Ellipsoid Elev Model:	NAVD88
Horz. Datum:	NAD83
Vert. Datum:	NAVD88

Displaced Threshold

Latitude:	N 35° 00' 06.3057"
Longitude:	W 078° 52' 27.1462"
Elevation:	160.1
Ellipsoid Elev:	50.0 S
Ellipsoid Elev Model:	NAVD88
Horz. Datum:	NAD83
Vert. Datum:	NAVD88

Landing Length:	7406
Fl RWY Length:	6808
Fl RWY Height:	185.3
Tdz Elevation:	180.1
True Bearing:	211.187
Ft Disp Th:	303
Gradient:	0.4%
RVRTouchdown:	
MidPoint:	
Rollout:	YES
Rail:	NO
OIS Data Source:	VG 09/16/2015 THIRD_PARTY
Assoc. Fac.:	

KFAY22
VGSI Lights

VGSI Lights Type:	PAPI-4L
Owner:	NTL
Pilot Cntl Freq:	
Th Cross Ht:	47.7
High Angle:	
Com. Date:	04/27/2012
Com. Angle:	3.00
DWB Elev:	
DWB Thres:	
Ref Pt Lat:	N 34° 59' 59.5870"
Ref Pt Long:	W 078° 52' 32.0880"
Ref Pt Elev:	166.2
Ref Pt Thres:	794
Height Group:	

Lights

Config	Len	Owner	Mil Type	Com Dt	Pilot Cntrl
REIL		NTL		10/30/2001	
HIRL		NTL		10/30/2001	

Landing Strip
Chart Date: 07/21/2016 — Publication Status: A — Pseudo Rwy: NO
Surface: ASPH POOR — Width: 150 — Physical Length: 4801

Rwy Number: 10
Use Category: RUNWAY ONLY
Chart Date: 07/21/2016 Pub. Status: A
Data Source: THIRD_PARTY 09/16/2015
Markings: BSC-P

Threshold

Latitude:	N 34° 59' 16.1609"
Longitude:	W 078° 53' 17.4126"
Elevation:	182.9
Ellipsoid Elev:	72.8 S
Ellipsoid Elev Model:	NAVD88
Horz. Datum:	NAD83
Vert. Datum:	NAVD88

Displaced Threshold

Latitude:	
Longitude:	
Elevation:	
Ellipsoid Elev:	
Ellipsoid Elev Model:	
Horz. Datum:	UNKNOWN
Vert. Datum:	UNKNOWN

Landing Length:	4801
Fl RWY Length:	4801
Fl RWY Height:	183.8
Tdz Elevation:	188.0
True Bearing:	91.157
Ft Disp Th:	
Gradient:	0.0%
RVRTouchdown:	
MidPoint:	
Rollout:	
Rail:	NO
OIS Data Source:	VG 09/16/2015 THIRD_PARTY
Assoc. Fac.:	

KFAY10
Lights

Config	Len	Owner	Mil Type	Com Dt	Pilot Cntrl
MIRL		NTL			
REIL		NTL		02/19/2016	

Rwy Number: 28
Use Category: RUNWAY ONLY
Chart Date: 07/21/2016 Pub. Status: A
Data Source: THIRD_PARTY 09/16/2015
Markings: BSC-P

Threshold

Latitude:	N 34° 59' 15.1985"
Longitude:	W 078° 52' 19.7197"
Elevation:	183.8
Ellipsoid Elev:	73.6 S
Ellipsoid Elev Model:	NAVD88
Horz. Datum:	NAD83
Vert. Datum:	NAVD88

Displaced Threshold

Latitude:	
Longitude:	
Elevation:	
Ellipsoid Elev:	
Ellipsoid Elev Model:	
Horz. Datum:	UNKNOWN
Vert. Datum:	UNKNOWN

Landing Length:	4801
Fl RWY Length:	4801
Fl RWY Height:	182.9
Tdz Elevation:	188.0
True Bearing:	271.166
Ft Disp Th:	
Gradient:	0.0%
RVRTouchdown:	
MidPoint:	
Rollout:	
Rail:	NO
OIS Data Source:	VG 09/16/2015 THIRD_PARTY
Assoc. Fac.:	

KFAY28
VGSI Lights

VGSI Lights Type:	PAPI-4L
Owner:	STATE
Pilot Cntl Freq:	
Th Cross Ht:	36.3
High Angle:	
Com. Date:	11/08/2011
Com. Angle:	3.00
DWB Elev:	
DWB Thres:	
Ref Pt Lat:	N 34° 59' 15.3330"
Ref Pt Long:	W 078° 52' 27.7460"
Ref Pt Elev:	185.1
Ref Pt Thres:	669
Height Group:	

Lights

Config	Len	Owner	Mil Type	Com Dt	Pilot Cntrl
REIL		NTL			
MIRL		NTL			

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REV. NO.	DESCRIPTION	DATE
	REVISIONS	

FAYETTEVILLE REGIONAL AIRPORT
FAYETTEVILLE, NORTH CAROLINA
EXISTING AIRPORT LAYOUT DRAWING

City of Fayetteville North Carolina
REGIONAL AIRPORT

Date	JULY 2018
Scale	1" = 600'
Drawn	REM/LSM
Checked	NAS
Project No.	2502-1501
Sheet No.	2
	of ..... 20 sheeets

AIRPORT BASIC DATA

AIRPORT REFERENCE POINT (ARP)
LATITUDE NORTH 34°59'28.40" LONGITUDE WEST 78°52'49.00"
AIRPORT ELEVATION 189.4' MEAN SEA LEVEL (MSL)
RUNWAY 4–22 TRUE BEARING: 31.18°
RUNWAY 10–28 TRUE BEARING: 91.157°
RUNWAY 6–24 / RUNWAY 17–35 INTERSECTION:
LATITUDE NORTH 34°59'15.9409" LONGITUDE WEST 78°53'04.1894"
RUNWAY/RUNWAY INTERSECTION ELEVATION 187.6' MEAN SEA LEVEL (MSL)
HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 (NAD83)
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)
SURVEY SOURCE: 2016_FAY_VGA_5948.SPC
BUILDING DATA TABLE SHOWN SHEET 1

RUNWAY END DATA

RUNWAY	LATITUDE NORTH	LONGITUDE WEST	ELEVATION	TDZ ELEVATION
4	34°59'03.6433"	78°53'13.2315"	183.1	189.4
4 DISPLACED	34°59'08.7010"	78°53'09.5140"	185.3	189.4
22	35°00'08.8714"	78°52'25.2612"	157.7	180.1
22 DISPLACED	35°00'06.3057"	78°52'27.1462"	160.1	180.1
10	34°59'16.1609"	78°53'17.4126"	182.9	188.0
28	34°59'15.1985"	78°52'19.7197"	183.8	188.0
28 FUTURE	34°59'14.9567"	78°52'05.2992"	183.8	188.0

MAG DEC 3/3/2017
8.83° W
0.05° W/YR
TRUE NORTH

600 0 600 1200
SCALE IN FEET
1" = 600'

RUNWAY 4–22 7709'x150'
RUNWAY 10–28 4801'x150'
AIRPORT RD
OWEN DRIVE
CLAUDE LEE RD
DOC BENNETT RD
M L KING FWY
AC TERMINAL AREA ALP DRAWING SET SHEET 4
NORTH GA TERMINAL AREA ALP DRAWING SET SHEET 5
SOUTH GA TERMINAL AREA ALP DRAWING SET SHEET 5
TERMINAL AUTO PARKING
RESERVE FOR RENTAL CAR SERVICING
RESERVE CORPORATE DEVELOPMENT
RESERVE FOR MAINT. BLD.
ULT. RVZ
1199'X150' RUNWAY EXTENSION (ULTIMATE)
RWY 28 DEPARTURE RPZ (ULTIMATE)
RWY 10 RPZ
RWY 10 APPROACH RPZ (ULTIMATE)
RWY 22 DEPARTURE RPZ
RWY 4 APPROACH RPZ
RWY 22 RPZ (FUTURE)
RWY 4 DEPARTURE RPZ
RWY 22 APPROACH RPZ
RWY 28 RPZ
RWY 28 RPZ (ULTIMATE)
13.1' CLEAR P77
23.4' CLEAR P77
3.5' PENT P77
79.5' CLEAR P77
130.2' CLEAR P77
508' DRTH
303' DRTH
1,000'
750'
400'
800'
500'
350'
300'

ABBREVIATIONS

RUNWAY (RWY) TAXIWAY (TWY)
FAR PART 77 IMAGINARY SURFACE (P77)
RUNWAY OBSTACLE FREE ZONE (ROFZ)
PRECISION OBSTACLE FREE ZONE (POFZ)
INNER APPROACH OFZ (IAOFZ)
RUNWAY OBJECT FREE AREA (ROFA)
TAXIWAY OBJECT FREE AREA (TOFA)
RUNWAY PROTECTION ZONE (RPZ)
RUNWAY VISIBILITY ZONE (RVZ)
DISPLACED RUNWAY THRESHOLD (DRTH)
BUILDING RESTRICTION LINE (BRL)

RUNWAY THRESHOLD SITING SURFACES

RUNWAY	EXISTING	FUTURE
4	RUNWAY TYPE 5, 6, AND 7	RUNWAY TYPE 5, 6, AND 7
22	RUNWAY TYPE 4, 6, AND 7	RUNWAY TYPE 4, 6, AND 7
10	RUNWAY TYPE 4, 6, AND 7	RUNWAY TYPE 4, 6, AND 7
28	RUNWAY TYPE 4, 6, AND 7	RUNWAY TYPE 4, 6, AND 7
SOURCE: AC 150/5300-13A, TABLE 3-2 (ENGINEERING BRIEF NO.99)		
ANALYSIS TABLE SHOWN ON SHEET 15		

RUNWAY APPROACH PART 77 AND RPZ DATA

4	PRECISION APPROACH (CAT I) SURFACE VISIBILITY MINIMUMS NOT LESS THAN 1/2 MILE 1000' X 50000' X 16000' 10000' @ 50:1 SURFACE SLOPE 40000' @ 40:1 SURFACE SLOPE APPROACH RUNWAY PROTECTION ZONE 1000' X 1750' X 2500' DEPARTURE RUNWAY PROTECTION ZONE 500' X 1700' X 1010'	22	PRECISION APPROACH (CAT I) SURFACE VISIBILITY MINIMUMS NOT LESS THAN 1/2 MILE 1000' X 50000' X 16000' 10000' @ 50:1 SURFACE SLOPE 40000' @ 40:1 SURFACE SLOPE APPROACH RUNWAY PROTECTION ZONE 1000' X 1750' X 2500' DEPARTURE RUNWAY PROTECTION ZONE 500' X 1700' X 1010'
10	NON-PRECISION APPROACH SURFACE VISIBILITY MINIMUMS NOT LESS THAN 3/4 MILE 1000' X 10000' X 4000' 10000' @ 34:1 SURFACE SLOPE RUNWAY PROTECTION ZONE 1000' X 1700' X 1510'	28	NON-PRECISION APPROACH SURFACE VISIBILITY MINIMUMS NOT LESS THAN 3/4 MILE 1000' X 10000' X 4000' 10000' @ 34:1 SURFACE SLOPE RUNWAY PROTECTION ZONE 1000' X 1700' X 1510'

AIRPORT MONUMENT DATA

NAME	NORTHING	EASTING	ELEVATION
1 FAY D (PACS)	451916.16	2035873.08	185.60
2 FAY 2 AZ MK (SACS)	449734.89	2033839.72	181.76

RUNWAY RSA/ROFA

RWY 4 RSA 500' WIDE, 600' PRIOR TO RWY THRESHOLD
RWY 4 ROFA 800' WIDE, 600' PRIOR TO RWY THRESHOLD
RWY 22 RSA 500' WIDE, 600' PRIOR TO RWY THRESHOLD
RWY 22 ROFA 800' WIDE, 600' PRIOR TO RWY THRESHOLD
RWY 10 RSA 150' WIDE, 300' BEYOND RWY END
RWY 10 ROFA 500' WIDE, 300' BEYOND RWY END
RWY 28 RSA 150' WIDE, 300' BEYOND RWY END
RWY 28 ROFA 500' WIDE, 300' BEYOND RWY END

CONDITIONAL APPROVAL
(Reference FAA Order 1050.1F)
FEDERAL AVIATION ADMINISTRATION
Community Planner
Memphis Airports District Office, Memphis, TN
Approval is subject to provisions of the FAA letter Dated 10-7-19

ACAD FACSIMILE OF ORIGINAL SIGNED 10-7-19

FACILITIES

(3) AIR TRAFFIC CONTROL TOWER
(A) ASOS
(B) ROTATING BEACON
(G) GLIDE SLOPE ANTENNA
(H) VOR/DME
(L) LOCALIZER ANTENNA
(M) MALSR
(P) PAPI
(R) REIL
(T) RTR
(W) WIND CONE
(V) RVR

RUNWAY PROFILE/ELEVATIONS

0 183.1 RWY 4 END
598 185.3 RWY 4 DISPLACED THRESHOLD
1453 187.6 RWY/RWY INTERSECTION
2210 189.4 HIGH POINT
5481 175.1 RWY 22 DISPLACED THRESHOLD
7406 160.1
7709 157.7 RWY 22 END LOW POINT
0 182.9 RWY 10 END
1101 187.6 RWY/RWY INTERSECTION
2401 187.93
2730 188.12 HIGH POINT
4801 183.96 RWY 28 END HGH POINT

LEGEND

MAPPING ITEM	SYMBOL
CREEK STREAM AND POND	
GROUND CONTOUR	180
TREELINE	
UNPAVED ROAD	
PAVED ROAD	
FENCE LINE	
BUILDING/STRUCTURE	

AIRPORT ITEM	EXISTING	FUTURE
BUILDING/STRUCTURE (1–28)		
PERIMETER ROAD		FUT
PAVED AREA		
BUILDING RESTRICTION LINE (BRL)		
PROPERTY LINE (PL), (FPL)		
AVIGATION EASEMENT (AE)	AE	
LAND ACQUISITION		
TAXIWAY CLOSURE		(D)

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REV. NO.	DESCRIPTION REVISIONS	DATE

FAYETTEVILLE REGIONAL AIRPORT
FAYETTEVILLE, NORTH CAROLINA
AIRPORT LAYOUT DRAWING

Approved By: Brian C. Nesbitt
Title: AIRPORT DIRECTOR
Date: 9-16-19

CITY OF FAYETTEVILLE
NORTH CAROLINA

Date: JULY 2018
Scale: 1" = 600'
Drawn: REM/LSM
Checked: NAS
Project No.: 2502-1501
Sheet No.: 3
of .....20 sheeets

MAG DEC 3/3/2017
8.93° W
0.05° W/YR

TRUE NORTH

100 0 100 200

SCALE IN FEET
1" = 100'

LEGEND AND BUILDING DATA TABLE SHOWN ON SHEET 1

RESERVE FOR AUTO PARKING

EXPANDED LONG TERM PARKING LOT

EXPANDED LONG TERM PARKING LOT

AIRPORT ROAD

CORPORATE RD

CONTROL TOWER ROAD

PARKING TICKET BOOTH

EXPANDED LONG TERM PARKING LOT

LONG TERM PARKING LOT

EXPANDED LONG TERM PARKING LOT

LONG TERM PARKING LOT

EXPANDED SHORT TERM PARKING LOT

RENTAL CAR LOT

TERMINAL LOOP ROAD

SHORT TERM PARKING LOT

RENTAL CAR LOT

GATE

AIR FREIGHT ROAD

TERMINAL LOOP ROAD

DOC BENNETT ROAD

AIRPORT FENCE (6FT HIGH TYP.)

PL

EXPANDED TERMINAL

AIRPORT MGMT PARKING LOT

CARGO APRON (11,800SY)

CONCOURSE A

CONCOURSE B

B4 B1 B2 B3 A1 A2 A3

MD88 (TYPICAL)

A320 (TYPICAL)

AIR CARRIER APRON (55800 SY)

TSA TOFA

TW R

RESERVE FOR AUTO PARKING

RESERVE FOR CORPORATE DEVELOPMENT

FBO PARKING LOT

EMPLOYEE PARKING LOT

EXPANDED EMPLOYEE PARKING LOT

EXPANDED FBO PARKING LOT

FAA PARKING LOT

HELICOPTER PARKING PADS

FUEL TANKS

NORTH GENERAL AVIATION APRON

TOFA

TSA

RSA

OFZ

TW A

TW D

TW E

TW F

TW H

P-71

RWZ

S I D A

RUNWAY 4-22

FUEL

VAULT

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 18 19 20 22 23 24 25 26

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	REVISIONS	

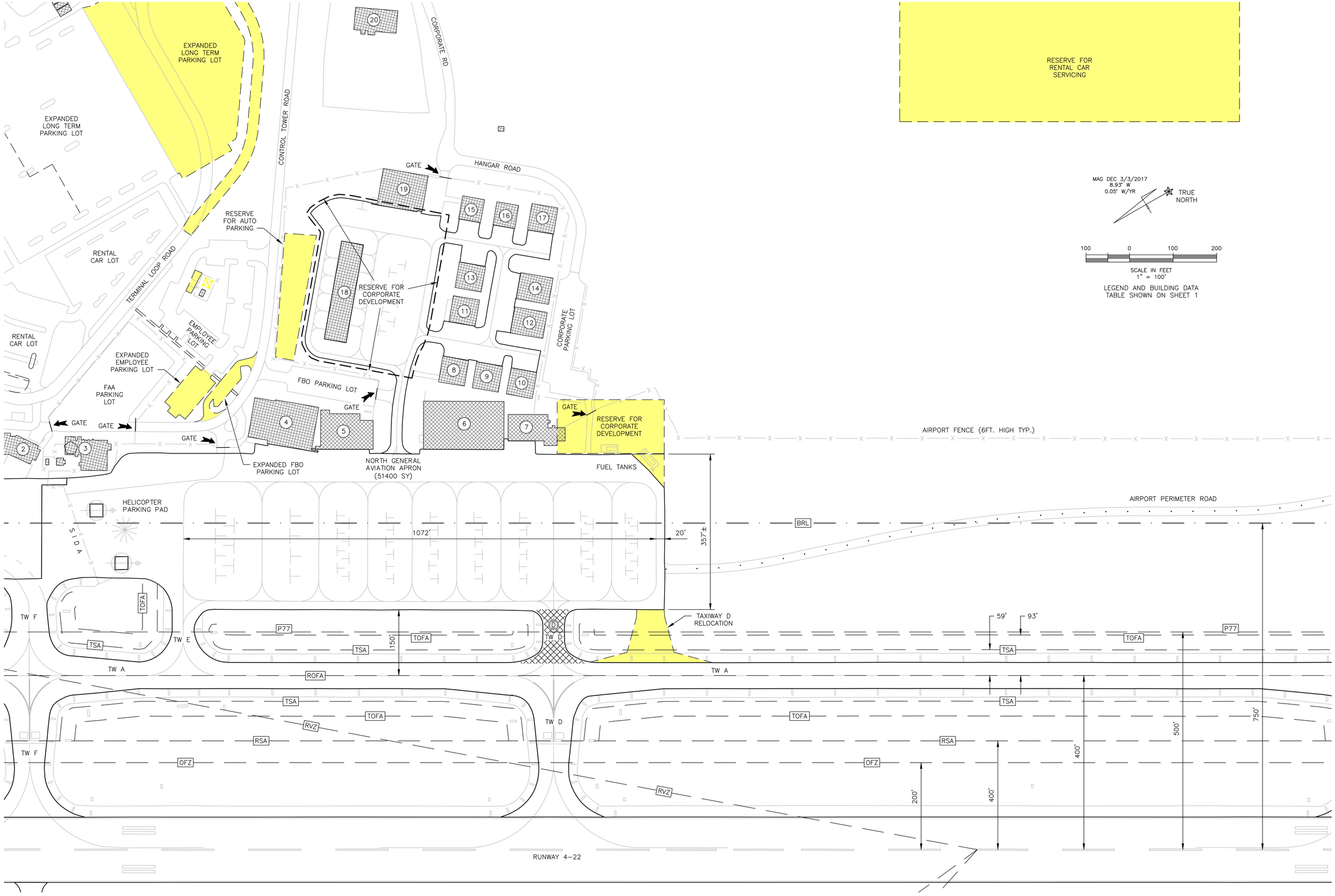
FAYETTEVILLE REGIONAL AIRPORT
FAYETTEVILLE, NORTH CAROLINA

TERMINAL AREA DRAWING
(AIR CARRIER AREA)

City of Fayetteville North Carolina
REGIONAL AIRPORT

Date	JULY 2018
Scale	1" = 100'
Drawn	REM/LSM
Checked	NAS
Project No.	2502-1501
Sheet No.	4

of ..... 20 sheeets



MAG DEC 3/3/2017
8.93° W
0.05° W/YR

TRUE NORTH

100 0 100 200

SCALE IN FEET
1" = 100'

LEGEND AND BUILDING DATA TABLE SHOWN ON SHEET 1

TALBERT & BRIGHT
ENGINEERING & PLANNING CONSULTANTS
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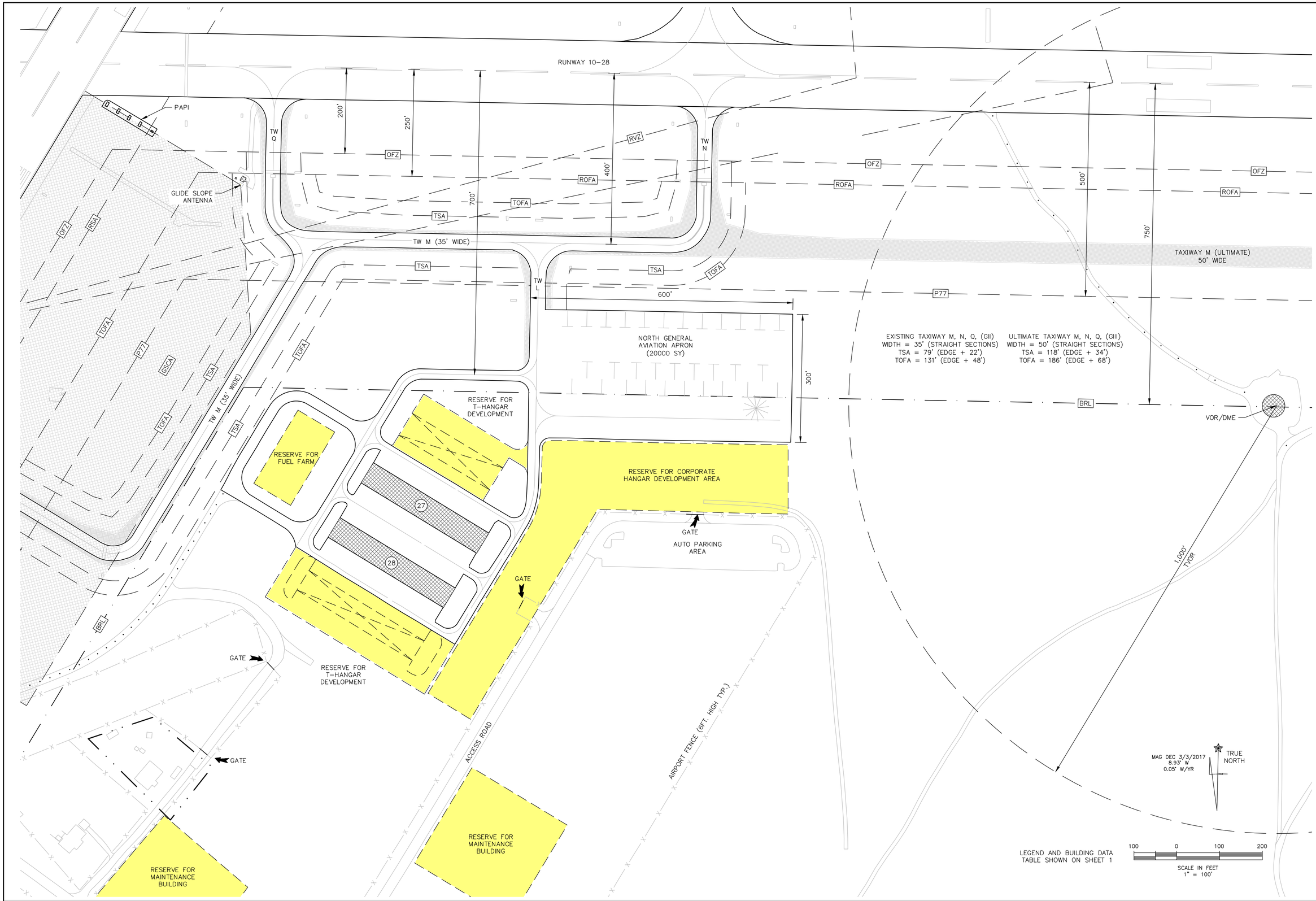
REVISIONS

FAYETTEVILLE REGIONAL AIRPORT
FAYETTEVILLE, NORTH CAROLINA
TERMINAL AREA DRAWING
(NORTH GENERAL AVIATION AREA)

City of Fayetteville North Carolina
REGIONAL AIRPORT

Date	JULY 2018
Scale	1" = 100'
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Project No.	2502-1501
Sheet No.	5

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REV. NO.	DESCRIPTION	DATE
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FAYETTEVILLE REGIONAL AIRPORT
FAYETTEVILLE, NORTH CAROLINA

TERMINAL AREA DRAWING
(SOUTH GENERAL AVIATION AREA)

City of Fayetteville North Carolina REGIONAL AIRPORT

Date	JULY 2018
Scale	1" = 100'
Drawn	REM/LSM
Checked	NAS
Project No.	2502-1501
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of .....20 sheeets

AIRPORT DATA

AIRPORT REFERENCE POINT (ARP) COORDINATES
LATITUDE NORTH 34°59'26.99" LONGITUDE WEST 78°52'33.17"
AIRPORT ELEVATION 189.4' MSL

RUNWAY DATA

RUNWAY	ELEVATION	LATITUDE	LONGITUDE	GEODETIC AZIMUTH
4	183.1	34°59'03.6433"	78°53'13.2315"	31.18°
22	157.7	35°00'08.8714"	78°52'25.2612"	211.187°
10	182.9	34°59'16.1609"	78°53'17.4126"	91.157°
28	181.4	34°59'14.9570"	78°52'05.3190"	271.166°

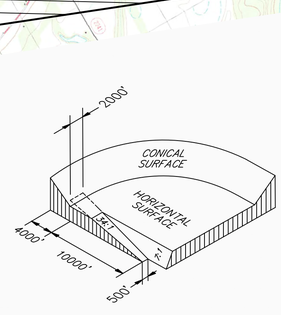
HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 (NAD83)
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)
ALL ELEVATIONS REFERENCE MEAN SEA LEVEL (MSL)

FAR PART 77 SURFACES

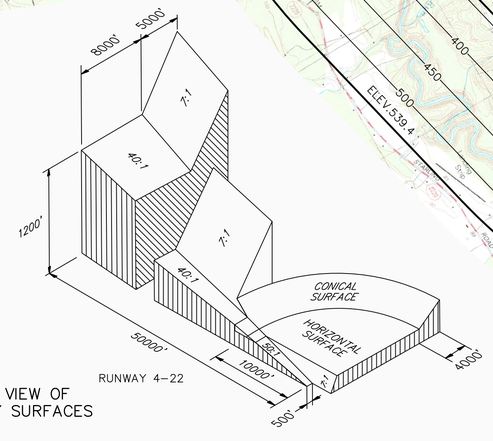
1. PRIMARY SURFACE
   RUNWAY 4–22 8109' X 1000'
   RUNWAY 10–28 6400' X 1000'
   SAME ELEVATION AS RUNWAY
2. APPROACH SURFACE
   1000' X 50000' X 16000'
   10000'–50:1 APPROACH SLOPE
   40000'–40:1 APPROACH SLOPE
3. APPROACH SURFACE
   1000' X 10000' X 4000'
   10000'–34:1 APPROACH SLOPE
4. 7:1 TRANSITIONAL SURFACE
5. HORIZONTAL SURFACE 150' ABOVE ESTABLISHED AIRPORT ELEVATION
6. 20:1 CONICAL SURFACE

MAG DEC 3/3/2017
8.93° W
0.05° W/YR
TRUE NORTH

ELEV.539.4
500
450
400
ELEV.339.4
POLE
342.6D
3.20 PENT.
HORIZONTAL SURFACE ELEVATION 339.4
150' ABOVE ESTABLISHED AIRPORT ELEVATION
10000' R (TYPICAL ALL RUNWAYS)
300
250
200
ARP
HORIZONTAL SURFACE ELEVATION 339.4
150' ABOVE ESTABLISHED AIRPORT ELEVATION
ELEV.339.4
400
450
500
ELEV.539.4
Rockfish Creek
Cape Fear River
Little River
Beaver Creek
Lake Rim
Lake Mathews
Lake Rochelle
Lake Tokay
Lake Valley
Lake Arran
Lake Susan
Lake Lucas
Lake Lisa
Lake Lenore
Lake Lawrence
Lake Lafayette
Lake Kimberly
Lake Jeanette
Lake Jane
Lake Hope
Lake Hillside
Lake Harris
Lake Glenville
Lake Gillespie
Lake Georgetown
Lake Fisher
Lake Farrington
Lake Eastover
Lake Devane
Lake Cypress
Lake Cameron
Lake Bonnie
Lake Arnette
Lake Ann
Lake Alexander
Lake Adelaide
Cross Creek
Cedar Creek
Blounts Creek
Big Rockfish Creek
Beaver Dam Creek
Bear Creek
Bay Tree Lake
Bay Creek
Arsenic Creek
Anderson Creek
Alligator Creek
Alder Creek
Airport Lake
Airport Drive
Airport Road
Andrews Road
Bragg Boulevard
Cliffdale Road
Cumberland Road
Fort Bragg Road
Fort Bragg
Pope Army Airfield
Fayetteville Regional Airport
Fayetteville
Spring Lake
Hope Mills
Vander
Cedar Creek
Eastover
Linden
Stedman
Wade
Falcon
Godwin
Autryville
Roseboro
Salemburg
Newton Grove
Clinton
Dunn
Erwin
Benson
Four Oaks
Smithfield
Selma
Garner
Raleigh
Wake Forest
Zebulon
Wendell
Knightdale
Rolesville
Youngsville
Franklinton
Louisburg
Roxboro
Person County
Granville County
Vance County
Warren County
Halifax County
Northampton County
Bertie County
Hertford County
Gates County
Chowan County
Perquimans County
Pasquotank County
Camden County
Currituck County
Dare County
Hyde County
Tyrrell County
Washington County
Martin County
Pitt County
Greene County
Lenoir County
Jones County
Craven County
Pamlico County
Carteret County
Onslow County
Pender County
New Hanover County
Brunswick County
Columbus County
Bladen County
Sampson County
Duplin County
Wayne County
Johnston County
Harnett County
Lee County
Chatham County
Orange County
Durham County
Wake County
Granville County
Vance County
Warren County
Franklin County
Nash County
Edgecombe County
Wilson County
Greene County
Lenoir County
Jones County
Craven County
Pamlico County
Carteret County
Onslow County
Pender County
New Hanover County
Brunswick County
Columbus County
Bladen County
Sampson County
Duplin County
Wayne County
Johnston County
Harnett County
Lee County
Chatham County
Orange County
Durham County
Wake County
Person County
Caswell County
Rockingham County
Guilford County
Randolph County
Alamance County
Davidson County
Davie County
Forsyth County
Stokes County
Surry County
Yadkin County
Iredell County
Rowan County
Cabarrus County
Stanly County
Union County
Anson County
Richmond County
Scotland County
Hoke County
Cumberland County
Robeson County
Montgomery County
Moore County
Lee County
Chatham County
Orange County
Durham County
Wake County
Granville County
Vance County
Warren County
Franklin County
Nash County
Edgecombe County
Wilson County
Greene County
Lenoir County
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Pamlico County
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Guilford County
Randolph County
Alamance County
Davidson County
Davie County
Forsyth County
Stokes County
Surry County
Yadkin County
Iredell County
Rowan County
Cabarrus County
Stanly County
Union County
Anson County
Richmond County
Scotland County
Hoke County
Cumberland County
Robeson County
Montgomery County
Moore County



RUNWAY 10–28



RUNWAY 4–22

ISOMETRIC SECTIONAL VIEW OF
CFR PART 77 IMAGINARY SURFACES
NOT TO SCALE

NOTES

BASE MAPPING FROM DIGITAL USGS 7.5 MINUTE QUADRANGLES: FAYETTEVILLE, VANDER, HOPE MILLS, CEDAR CREEK.

PLAN AS DRAWN DEPICTS THE ULTIMATE AIRPORT CONFIGURATION. ALL AIRPORT DATA REFERENCES THE ULTIMATE AIRPORT CONFIGURATION.

CITY OF FAYETTEVILLE AND CUMBERLAND COUNTY HEIGHT RESTRICTION ZONING IN PLACE.

2000 0 2000 4000 6000

SCALE IN FEET
1" = 2000'

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FAYETTEVILLE REGIONAL AIRPORT
FAYETTEVILLE, NORTH CAROLINA

AIRPORT AIRSPACE DRAWING
(PRIMARY/HORIZONTAL/CONICAL)

City of Fayetteville North Carolina
REGIONAL AIRPORT

Date	JULY 2018
Scale	1" = 2000'
Drawn	LSM
Checked	NAS
Project No.	2502-1501
Sheet No.	7
of	20 sheeets

MAG DEC 3/3/2017
8.93° W
0.05° W/YR
TRUE NORTH

2097.39

1383.1

1350 1300 1250 1200 1150 1100 1050 1000 950 900 850 800 750 700 650 600 550 500 450 400 350 300 250 200

HORIZONTAL SURFACE ELEVATION 339.4
150' ABOVE ESTABLISHED AIRPORT ELEVATION

ELEV 339.4

400

450

500

ELEV 539.4

2097.39

2000 0 2000 4000 6000

SCALE IN FEET
1" = 2000'

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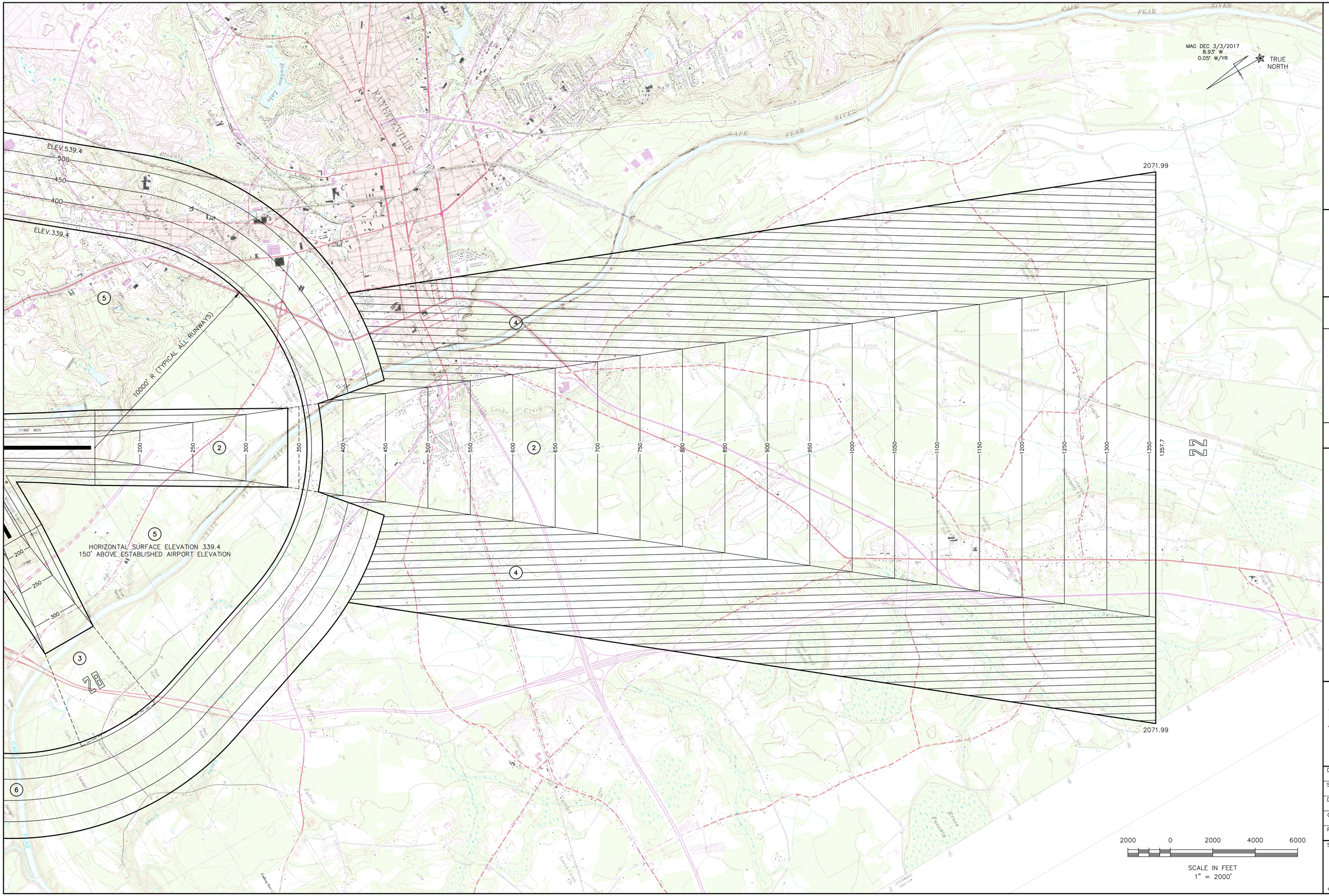
REV. NO.	DESCRIPTION	DATE
	REVISIONS	

FAYETTEVILLE REGIONAL AIRPORT
FAYETTEVILLE, NORTH CAROLINA

AIRPORT AIRSPACE DRAWING
(RUNWAY 4 APPROACH)

City of Fayetteville North Carolina
REGIONAL AIRPORT

Date	JULY 2018
Scale	1" = 2000'
Drawn	LSM
Checked	NAS
Project No.	2502-1501
Sheet No.	8
	of ..... 20 sheeets



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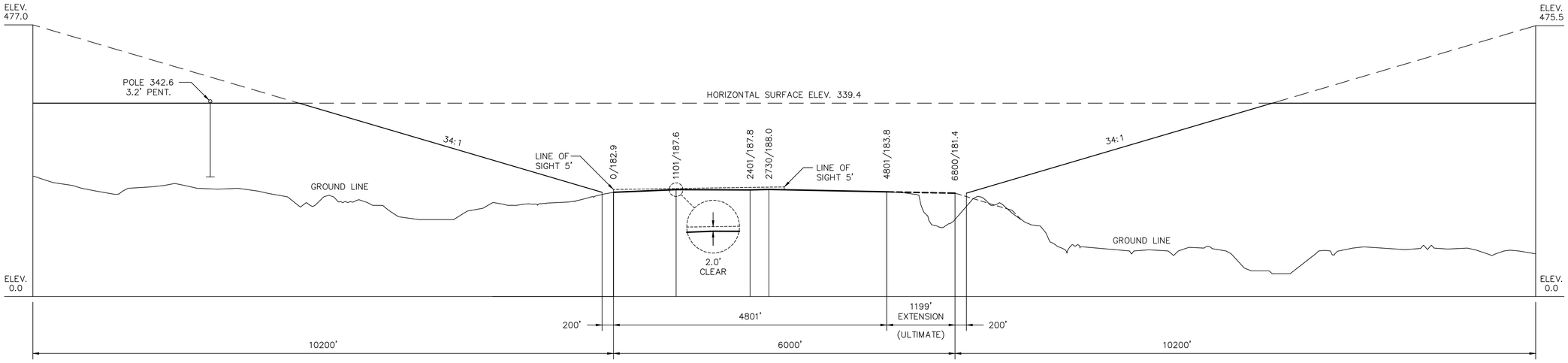
FAYETTEVILLE REGIONAL AIRPORT
FAYETTEVILLE, NORTH CAROLINA

AIRPORT AIRSPACE DRAWING
(RUNWAY 22 APPROACH)

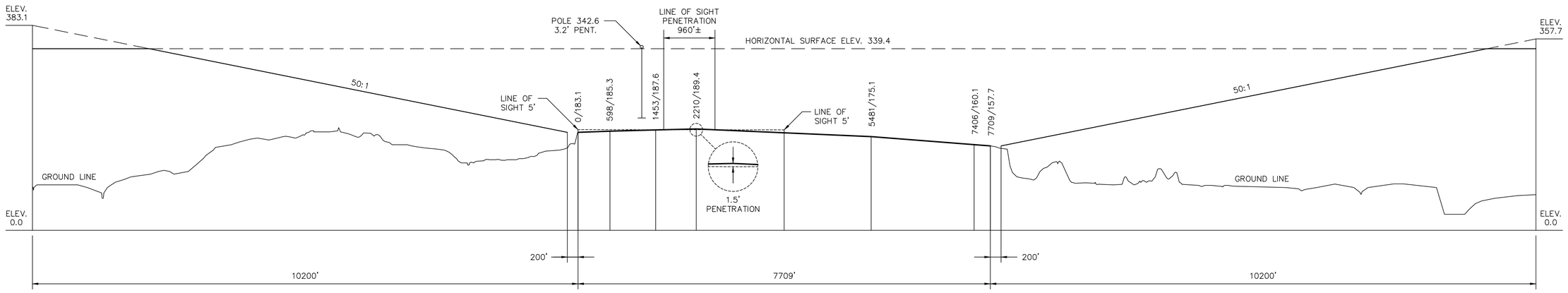
City of Fayetteville North Carolina
REGIONAL AIRPORT

Date	JULY 2018
Scale	1" = 2000'
Drawn	LSM
Checked	NAS
Project No.	2502-1501
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RUNWAY 10–28 PROFILE
SCALE: 1"=1000' HZ., 1"=100' VT.



RUNWAY 4–22 PROFILE
SCALE: 1"=1000' HZ., 1"=100' VT.

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FAYETTEVILLE, NORTH CAROLINA

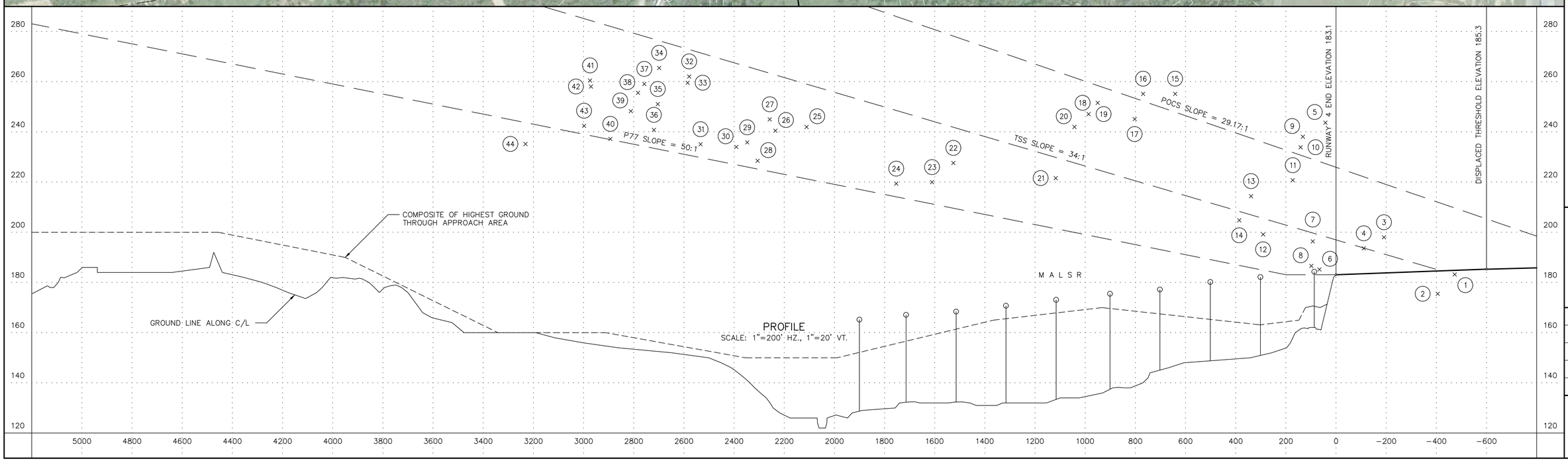
AIRPORT AIRSPACE DRAWING
(RUNWAY/APPROACH PROFILES)

City of Fayetteville North Carolina
REGIONAL AIRPORT

Date	JULY 2018
Scale	1" = 1000'
Drawn	LSM
Checked	NAS
Project No.	2502-1501
Sheet No.	10

of ..... 20 sheeets





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FAYETTEVILLE, NORTH CAROLINA

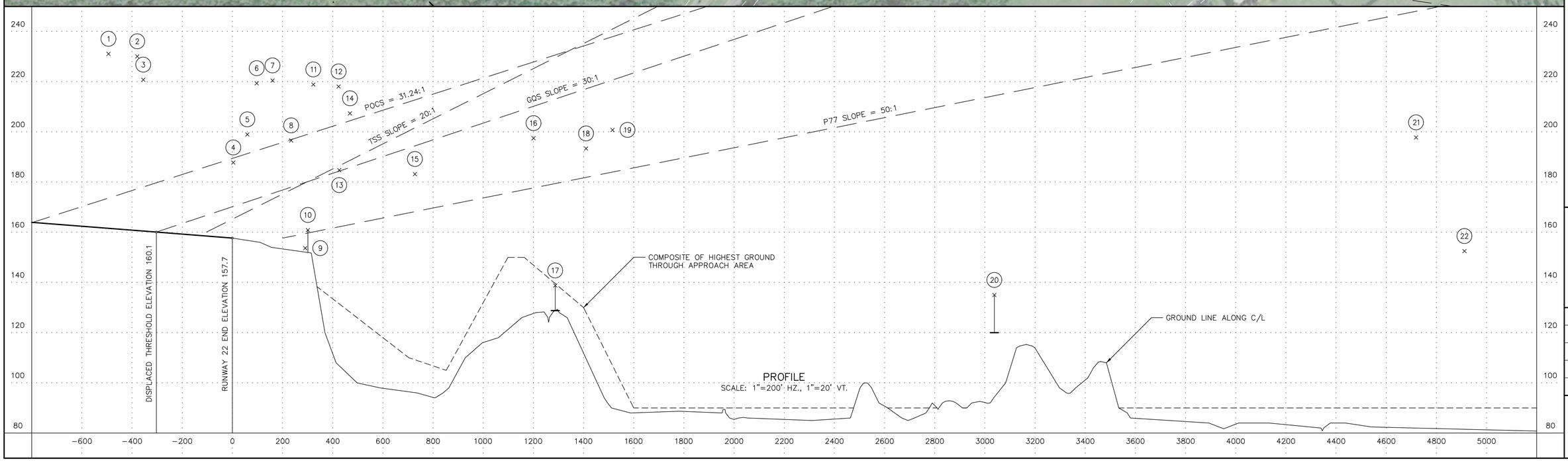
INNER PORTION OF THE APPROACH SURFACE DRAWING (RUNWAY 4)

City of Fayetteville North Carolina REGIONAL AIRPORT

Date	JULY 2018
Scale	AS SHOWN
Drawn	LSM
Checked	NAS
Project No.	2502-1501
Sheet No.	11
	of ..... 20 sheeets



PLAN VIEW
SCALE: 1"=200'



PROFILE
SCALE: 1"=200' HZ., 1"=20' VT.

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FAYETTEVILLE REGIONAL AIRPORT
FAYETTEVILLE, NORTH CAROLINA

INNER PORTION OF THE APPROACH SURFACE DRAWING (RUNWAY 22)

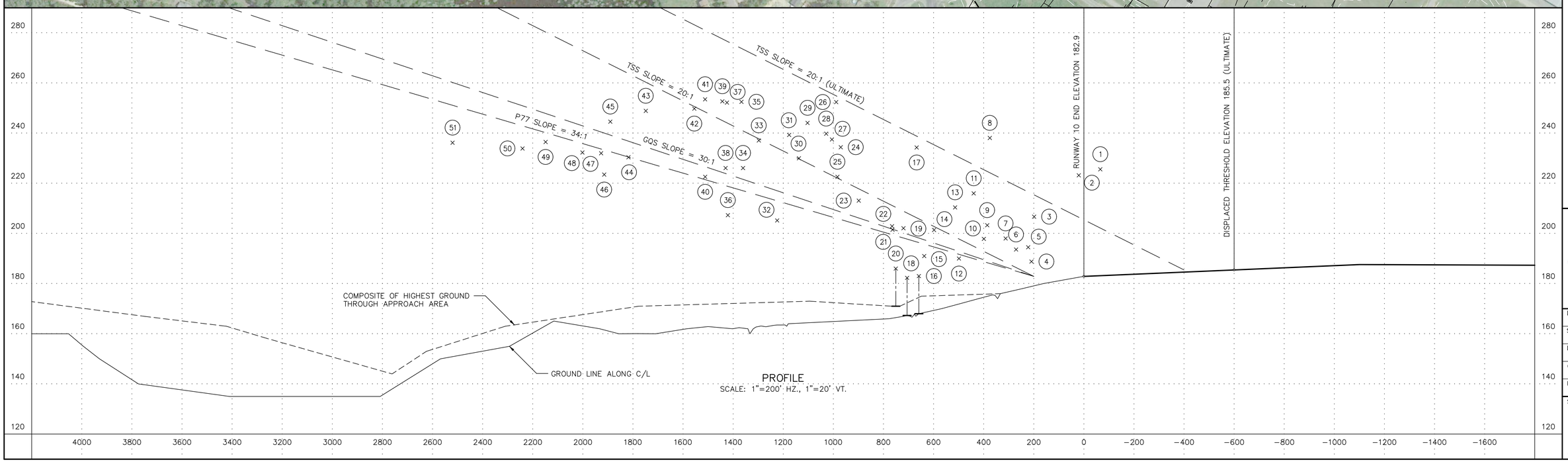
City of Fayetteville North Carolina REGIONAL AIRPORT

Date	JULY 2018
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Drawn	LSM
Checked	NAS
Project No.	2502-1501
Sheet No.	12

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PLAN VIEW
SCALE: 1"=200'



PROFILE
SCALE: 1"=200' HZ., 1"=20' VT.

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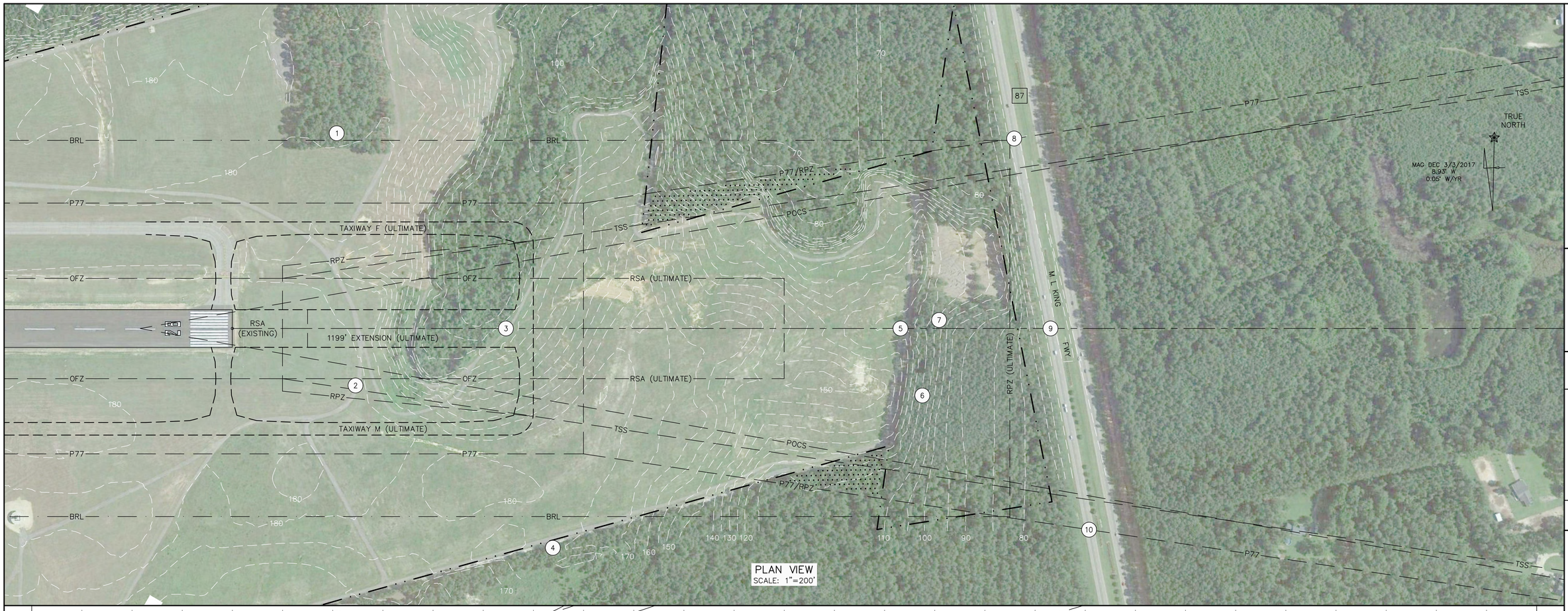
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	REVISIONS	

FAYETTEVILLE REGIONAL AIRPORT
FAYETTEVILLE, NORTH CAROLINA

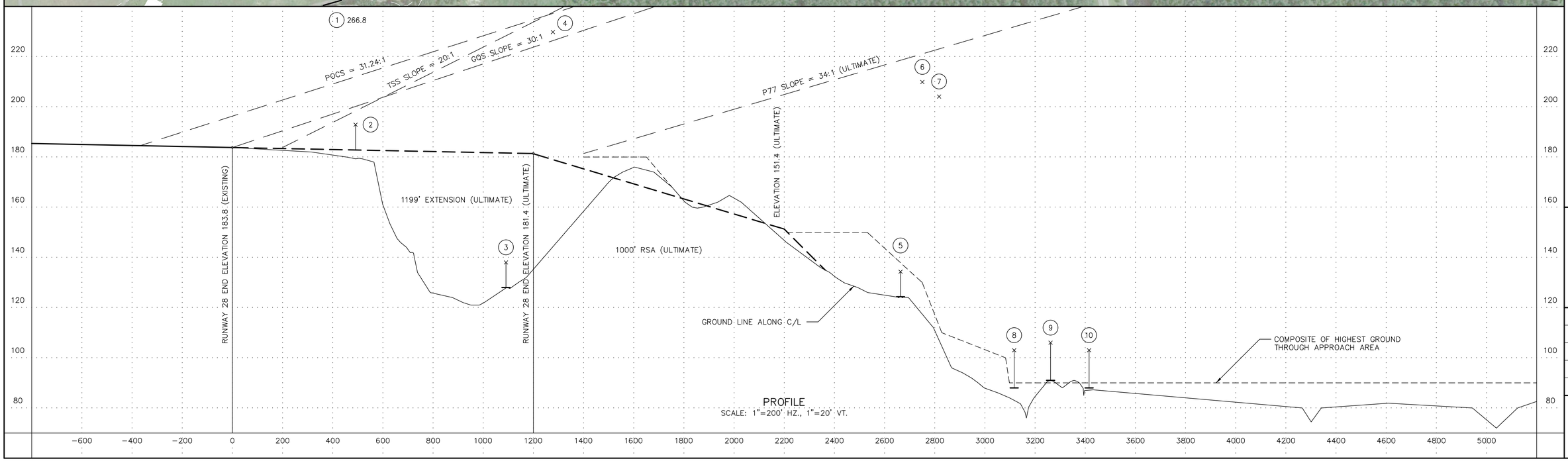
INNER PORTION OF THE APPROACH SURFACE DRAWING (RUNWAY 10)

City of Fayetteville North Carolina
REGIONAL AIRPORT

Date	JULY 2018
Scale	AS SHOWN
Drawn	LSM
Checked	NAS
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	of ..... 20 sheets



PLAN VIEW
SCALE: 1"=200'



PROFILE
SCALE: 1"=200' HZ., 1"=20' VT.

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FAYETTEVILLE REGIONAL AIRPORT
FAYETTEVILLE, NORTH CAROLINA

INNER PORTION OF THE APPROACH SURFACE DRAWING (RUNWAY 28)

City of Fayetteville North Carolina
REGIONAL AIRPORT

Date	JULY 2018
Scale	AS SHOWN
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Project No.	2502-1501
Sheet No.	14

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ENGINEERING BRIEF NO.99

Table 3-2. Approach and Departure Standards Table [1, 2]

	Runway Type	DIMENSIONAL STANDARDS* Feet (Meters) A	B	C	D	E	Slope
1	Approach end of runways expected to serve small airplanes with approach speeds less than 50 knots. (Visual runways only, day/night).	0 (0)	120 (37)	300 (91)	500 (152)	2,500 (762)	15:1
2	Approach end of runways expected to serve small airplanes with approach speeds of 50 knots or more. (Visual runways only, day/night).	0 (0)	250 (76)	700 (213)	2,250 (686)	2,750 (838)	20:1
3	Approach end of runway expected to serve large airplanes. (Visual runways only, day/night).	0 (0)	400 (122)	1,000 (305)	1,500 (457)	8,500 (2591)	20:1
4	Approach end of runways expected to accommodate instrument approaches having visibility greater than or equal to 3/4 statute mile. [3]	200 (61)	400 (122)	3,400 (1036)	10,000 [4] (3048)	0 (0)	20:1
5	Approach end of runways expected to accommodate instrument approaches having visibility minimums less than 3/4 statute mile.	200 (61)	800 (244)	3,400 (1036)	10,000 [4] (3048)	0 (0)	34:1
6 [5]	Approach end of runways expected to accommodate instrument approaches with vertical guidance.	0 (0)	Runway width + 200 (61)	1520 (463)	10,000 [4] (3048)	0 (0)	30:1
7	Departure runway ends used for any instrument operations.	0 [6] (0)	See Figure 3-4.				40:1

* The letters are keyed to those shown in Figure 3-2 of AC 150/5300-13A.

14 CFR PART 77 ANALYSIS – RUNWAY 4 (SHEET 11)

OBJECT NUMBER	OBJECT DESCRIPTION	SURFACE SLOPE	SURFACE ELEVATION	OBJECT ELEVATION	(–) CLEARANCE (+) PENETRATION	ACTION
1	FENCE	7:1	218.9	183.2	–35.7	NONE
2	AIRPORT ROAD	7:1	211.2	175.5	–35.7	NONE
3	BUILDING	7:1	240.5	198.0	–42.5	NONE
4	BUILDING	7:1	224.0	193.6	–30.4	NONE
5	TREE	7:1	221.1	243.7	+22.6	FAA AERONAUTICAL STUDY
6	TREE	7:1	198.1	185.2	–12.9	NONE
7	TREE	7:1	207.0	220.8	+13.8	FAA AERONAUTICAL STUDY
8	PRIMARY ROAD	7:1	183.1	185.6	+3.5	FAA AERONAUTICAL STUDY
9	POLE	7:1	224.3	238.1	+13.8	FAA AERONAUTICAL STUDY
10	TREE	7:1	208.1	233.9	+25.8	FAA AERONAUTICAL STUDY
11	POLE	7:1	191.9	196.4	+4.5	FAA AERONAUTICAL STUDY
12	TREE	7:1	215.6	199.2	–16.4	NONE
13	TREE	7:1	246.9	211.4	–35.5	NONE
14	POLE	7:1	205.1	204.8	–0.3	NONE
15	TREE	7:1	236.5	255.2	+18.7	FAA AERONAUTICAL STUDY
16	TREE	7:1	231.3	255.2	+23.9	FAA AERONAUTICAL STUDY
17	TREE	7:1	210.8	245.1	+34.3	FAA AERONAUTICAL STUDY
18	TREE	7:1	230.6	251.6	+21.0	FAA AERONAUTICAL STUDY
19	TREE	7:1	260.6	247.1	–13.5	NONE
20	TREE	7:1	218.6	242.0	+23.4	FAA AERONAUTICAL STUDY
21	TREE	7:1	213.8	221.6	+9.8	FAA AERONAUTICAL STUDY
22	TREE	50:1	209.6	227.6	+18.0	FAA AERONAUTICAL STUDY
23	TREE	50:1	211.3	220.0	+8.7	FAA AERONAUTICAL STUDY
24	TREE	50:1	214.2	219.4	+5.2	FAA AERONAUTICAL STUDY
25	TREE	7:1	272.9	242.0	–30.9	NONE
26	TREE	50:1	223.8	240.5	+16.7	FAA AERONAUTICAL STUDY
27	TREE	7:1	229.4	215.0	–14.4	NONE
28	TREE	50:1	252.2	228.5	+3.3	FAA AERONAUTICAL STUDY
29	TREE	50:1	226.0	235.8	+9.8	FAA AERONAUTICAL STUDY
30	TREE	50:1	226.9	234.1	+7.2	FAA AERONAUTICAL STUDY
31	TREE	50:1	229.8	235.1	+5.3	FAA AERONAUTICAL STUDY
32	TREE	7:1	270.9	262.1	–8.8	NONE
33	TREE	7:1	262.7	259.6	–3.1	NONE
34	TREE	7:1	262.3	265.5	+3.2	FAA AERONAUTICAL STUDY
35	TREE	7:1	235.4	251.1	+15.7	FAA AERONAUTICAL STUDY
36	TREE	50:1	233.5	240.8	+7.3	FAA AERONAUTICAL STUDY
37	TREE	7:1	252.4	259.1	+6.7	FAA AERONAUTICAL STUDY
38	TREE	7:1	244.2	255.6	+11.4	FAA AERONAUTICAL STUDY
39	TREE	50:1	235.3	248.3	+13.0	FAA AERONAUTICAL STUDY
40	TREE	50:1	237.0	237.2	+0.2	NONE
41	TREE	7:1	262.9	258.1	–4.8	NONE
42	TREE	7:1	267.4	260.5	–6.9	NONE
43	TREE	50:1	239.1	242.5	+3.4	FAA AERONAUTICAL STUDY
44	TREE	50:1	243.7	235.2	–8.5	NONE

AC 150/5300-13A TABLE 3-2 ANALYSIS – RUNWAY 4 TYPE 5 & 6 (SHEET 11)

OBJECT NUMBER	OBJECT DESCRIPTION	SURFACE SLOPE	SURFACE ELEVATION	OBJECT ELEVATION	(–) CLEARANCE (+) PENETRATION	ACTION
NO OBJECT PENETRATIONS NOTED						NONE

14 CFR PART 77 ANALYSIS – FUTURE RUNWAY 22 (SHEET 12)

OBJECT NUMBER	OBJECT DESCRIPTION	SURFACE SLOPE	SURFACE ELEVATION	OBJECT ELEVATION	(–) CLEARANCE (+) PENETRATION	ACTION
1	TREE	7:1	228.1	231.1	+3.0	FAA AERONAUTICAL STUDY
2	TREE	7:1	231.0	230.1	–0.9	NONE
3	TREE	7:1	207.2	220.8	+13.6	FAA AERONAUTICAL STUDY
4	TREE	7:1	223.6	187.8	–35.8	NONE
5	TREE	7:1	187.7	199.0	+11.3	FAA AERONAUTICAL STUDY
6	TREE	7:1	219.9	219.4	–0.5	NONE
7	TREE	7:1	202.8	220.5	+17.7	FAA AERONAUTICAL STUDY
8	TREE	7:1	191.8	196.6	+4.8	FAA AERONAUTICAL STUDY
9	LOCALIZER SHELTER	34:1	159.5	153.7	–5.8	NONE
10	LOCALIZER ANTENNA	34:1	159.7	160.9	+1.2	FAA AERONAUTICAL STUDY
11	TREE	7:1	208.2	218.9	+10.7	FAA AERONAUTICAL STUDY
12	TREE	7:1	212.8	218.1	+5.3	FAA AERONAUTICAL STUDY
13	TREE	7:1	194.9	184.8	–10.1	NONE
14	TREE	7:1	210.4	207.4	–3.0	NONE
15	TREE	7:1	198.6	183.2	–15.4	NONE
16	TREE	7:1	228.1	197.5	–30.6	NONE
17	AIRPORT ROAD	34:1	179.4	138.8	–40.6	NONE
18	TREE	7:1	208.9	193.4	–15.5	NONE
19	TREE	7:1	203.3	200.8	–2.5	NONE
20	PRIMARY ROAD	34:1	214.5	135.0	79.5	NONE
21	TREE	7:1	248.1	197.8	–50.3	NONE
22	TREE	7:1	252.0	152.5	–99.5	NONE

AC 150/5300-13A TABLE 3-2 ANALYSIS – RUNWAY 22 TYPE 4 & 6 (SHEET 12)

OBJECT NUMBER	OBJECT DESCRIPTION	SURFACE SLOPE	SURFACE ELEVATION	OBJECT ELEVATION	(–) CLEARANCE (+) PENETRATION	ACTION
NO OBJECT PENETRATIONS NOTED						NONE

14 CFR PART 77 ANALYSIS – RUNWAY 10 (SHEET 13)

OBJECT NUMBER	OBJECT DESCRIPTION	SURFACE SLOPE	SURFACE ELEVATION	OBJECT ELEVATION	(–) CLEARANCE (+) PENETRATION	ACTION
1	TERMINAL BUILDING	7:1	247.4	225.6	–21.9	NONE
2	TERMINAL BUILDING	7:1	254.2	223.2	–31	NONE
3	UTILITY POLE	0:1	182.9	206.7	+23.8	FAA AERONAUTICAL STUDY
4	BUILDING	34:1	183.2	188.8	+5.6	FAA AERONAUTICAL STUDY
5	TREE	7:1	183.5	194.5	+11.0	FAA AERONAUTICAL STUDY
6	BUILDING	7:1	186.2	193.6	+7.4	FAA AERONAUTICAL STUDY
7	TREE	7:1	204.0	198.0	+6.0	FAA AERONAUTICAL STUDY
8	TREE	7:1	252.7	238.1	–14.6	NONE
9	FLAG POLE	7:1	193.1	203.2	+10.1	FAA AERONAUTICAL STUDY
10	TREE	34:1	188.8	197.9	+9.1	FAA AERONAUTICAL STUDY
11	BUILDING	7:1	256.6	216.0	–40.6	NONE
12	TREE	34:1	191.7	190.0	–1.7	NONE
13	BUILDING	7:1	194.0	210.4	+16.4	FAA AERONAUTICAL STUDY
14	TREE	34:1	194.6	201.4	+6.8	FAA AERONAUTICAL STUDY
15	POLE	34:1	195.8	191.0	–4.8	NONE
16	PRIMARY ROAD	34:1	196.4	183.0	–13.4	NONE
17	TREE	7:1	262.3	234.3	–28.0	NONE
18	PRIMARY ROAD	34:1	197.8	182.3	–15.5	NONE
19	TREE	34:1	198.2	202.1	+3.9	FAA AERONAUTICAL STUDY
20	PRIMARY ROAD	34:1	199.1	186.0	–13.1	NONE
21	TREE	34:1	199.5	201.5	+2.0	FAA AERONAUTICAL STUDY
22	TREE	34:1	199.5	202.9	+3.4	FAA AERONAUTICAL STUDY
23	TREE	34:1	203.4	213.1	+9.7	FAA AERONAUTICAL STUDY
24	TREE	7:1	246.6	234.4	–12.2	NONE
25	TREE	34:1	205.9	222.6	+16.7	FAA AERONAUTICAL STUDY
26	TREE	7:1	275.6	252.4	–23.2	NONE
27	TREE	7:1	208.5	237.7	+29.2	FAA AERONAUTICAL STUDY
28	TREE	7:1	261.5	239.8	–23.8	NONE
29	TREE	7:1	221.3	244.1	+22.3	FAA AERONAUTICAL STUDY
30	TREE	34:1	210.5	230.0	+19.5	FAA AERONAUTICAL STUDY
31	TREE	34:1	211.6	239.3	+27.7	FAA AERONAUTICAL STUDY
32	TREE	34:1	213.0	205.2	–7.8	NONE
33	TREE	7:1	248.8	237.1	–11.7	NONE
34	TREE	7:1	270.3	226.1	–44.2	NONE
35	TREE	7:1	283.5	252.5	–31.0	NONE
36	TREE	34:1	218.8	207.3	–11.5	NONE
37	TREE	34:1	218.9	252.2	+33.3	FAA AERONAUTICAL STUDY
38	TREE	34:1	219.1	226.1	+7.0	FAA AERONAUTICAL STUDY
39	TREE	34:1	219.5	252.7	+33.2	FAA AERONAUTICAL STUDY
40	TREE	34:1	221.4	222.6	+1.2	FAA AERONAUTICAL STUDY
41	TREE	7:1	226.8	253.5	+26.7	FAA AERONAUTICAL STUDY
42	TREE	34:1	222.8	249.8	+27.0	FAA AERONAUTICAL STUDY
43	TREE	34:1	228.4	248.9	+20.5	FAA AERONAUTICAL STUDY
44	TREE	34:1	230.5	230.4	–0.1	NONE
45	TREE	7:1	290.2	244.7	–45.5	NONE
46	TREE	34:1	233.3	223.5	–9.8	NONE
47	TREE	34:1	233.7	232.0	–1.7	NONE
48	TREE	34:1	235.9	232.3	–3.6	NONE
49	TREE	34:1	240.2	236.3	–3.9	NONE
50	TREE	34:1	242.9	233.9	–9.0	NONE
51	TREE	34:1	251.1	236.2	–14.9	NONE

AC 150/5300-13A TABLE 3-2 ANALYSIS – RUNWAY 10 TYPE 4 & 6 (SHEET 13)

OBJECT NUMBER	OBJECT DESCRIPTION	SURFACE SLOPE	SURFACE ELEVATION	OBJECT ELEVATION	(–) CLEARANCE (+) PENETRATION	ACTION
NO OBJECT PENETRATIONS NOTED						NONE

14 CFR PART 77 ANALYSIS – RUNWAY 28 (SHEET 14)

OBJECT NUMBER	OBJECT DESCRIPTION	SURFACE SLOPE	SURFACE ELEVATION	OBJECT ELEVATION	(–) CLEARANCE (+) PENETRATION	ACTION
1	TREE	7:1	222.8	266.8	+44.0	FAA AERONAUTICAL STUDY
2	AIRPORT ROAD	34:1	182.8	192.9	+10.1	FAA AERONAUTICAL STUDY
3	AIRPORT ROAD	34:1	181.6	138.0	–43.6	NONE
4	TREE	7:1	234.9	229.8	–5.1	NONE
5	AIRPORT ROAD	34:1	218.6	134.3	–84.3	NONE
6	TREE	34:1	221.2	209.9	–11.2	NONE
7	TREE	34:1	223.1	204.1	–19.0	NONE
8	PRIMARY ROAD	34:1	231.9	103.0	–128.9	NONE
9	PRIMARY ROAD	34:1	236.2	106.0	–130.2	NONE
10	PRIMARY ROAD	34:1	240.7	103.0	–137.7	NONE

AC 150/5300-13A TABLE 3-2 ANALYSIS – RUNWAY 28 TYPE 4 & 6 (SHEET 14)

OBJECT NUMBER	OBJECT DESCRIPTION	SURFACE SLOPE	SURFACE ELEVATION	OBJECT ELEVATION	(–) CLEARANCE (+) PENETRATION	ACTION
NO OBJECT PENETRATIONS NOTED						NONE

OBSTRUCTION SURVEY DATA

HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 (NAD83)

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)

SURVEY SOURCE: 2016_FAY_VGA_5948.SPC

OBJECT ELEVATION PROVIDES CLEARANCE ADJUSTMENTS: 23'RAILWAY, 15' FOR PUBLIC ROADS.

ALL ELEVATIONS REFERENCE MEAN SEA LEVEL (MSL)

TALBERT & BRIGHT
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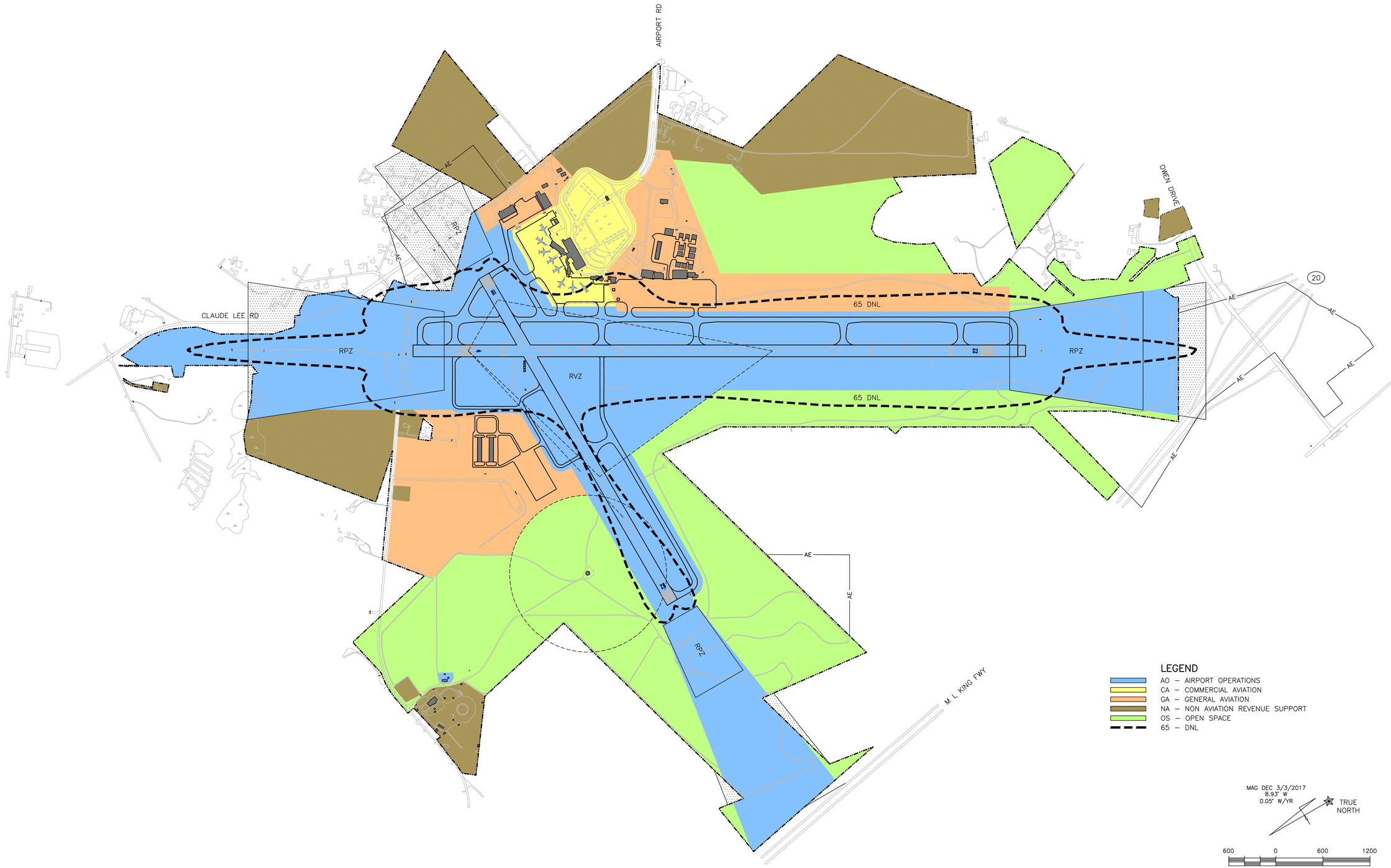
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FAYETTEVILLE REGIONAL AIRPORT
FAYETTEVILLE, NORTH CAROLINA

INNER PORTION OF THE APPROACH SURFACE DRAWING (OBSTRUCTION DATA)

City of Fayetteville North Carolina REGIONAL AIRPORT

Date	JULY 2018
Scale	AS SHOWN
Drawn	LSM
Checked	NAS
Project No.	2502–1501
Sheet No.	15
	of ..... 20 sheeets



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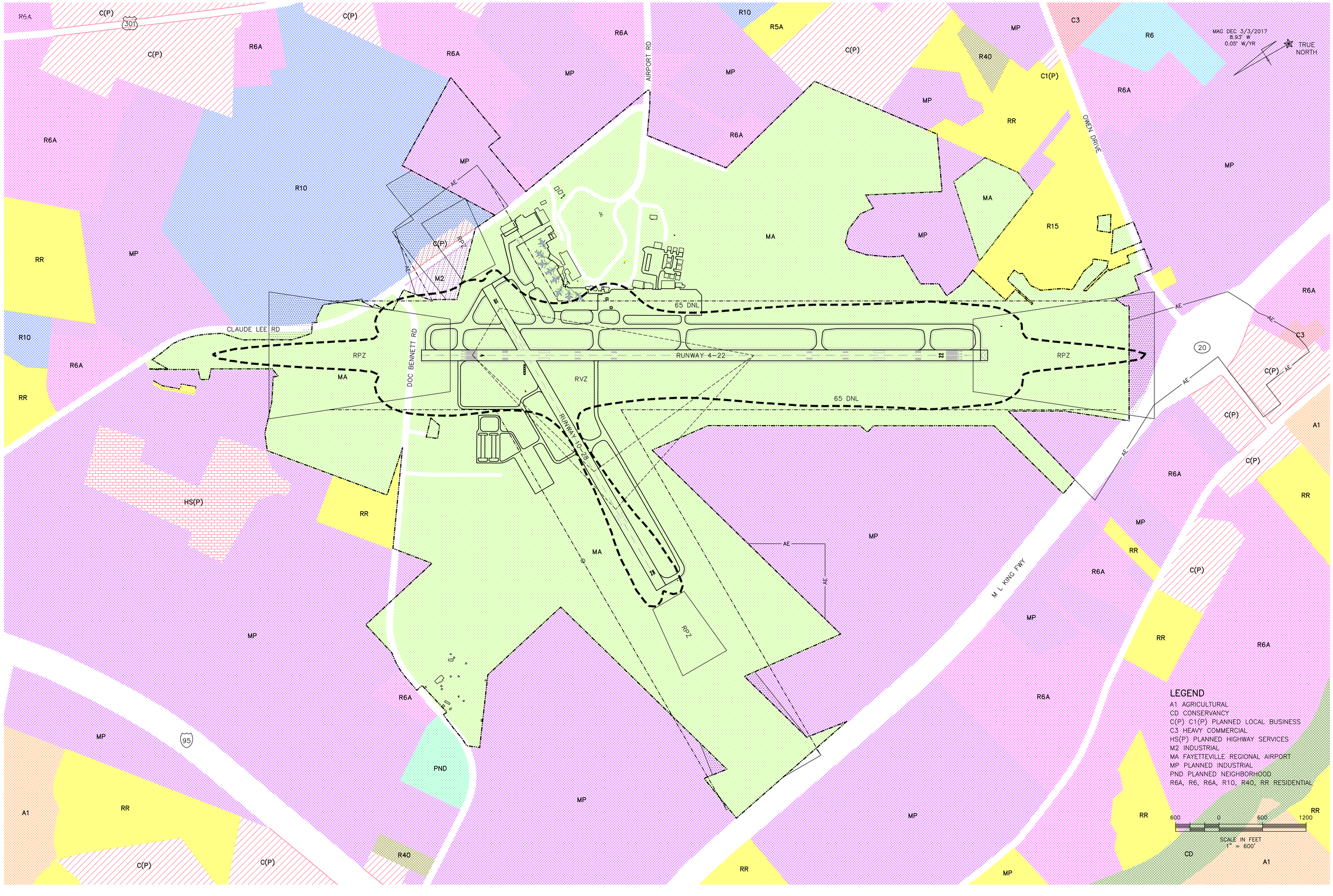
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	REVISIONS	

FAYETTEVILLE REGIONAL AIRPORT
FAYETTEVILLE, NORTH CAROLINA
ON-AIRPORT LAND USE DRAWING

City of Fayetteville North Carolina REGIONAL AIRPORT

Date	JULY 2018
Scale	1" = 600'
Drawn	REM/LSM
Checked	NAS
Project No.	2502-1501
Sheet No.	16
	of ..... 20 sheeets



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REV. NO.	DESCRIPTION	DATE
	REVISIONS	

FAYETTEVILLE REGIONAL AIRPORT
FAYETTEVILLE, NORTH CAROLINA
OFF-AIRPORT LAND USE DRAWING

City of Fayetteville North Carolina
REGIONAL AIRPORT

Date	JULY 2018
Scale	1" = 600'
Drawn	REM/LSM
Checked	NAS
Project No.	2502-1501
Sheet No.	17

of ..... 20 sheeets

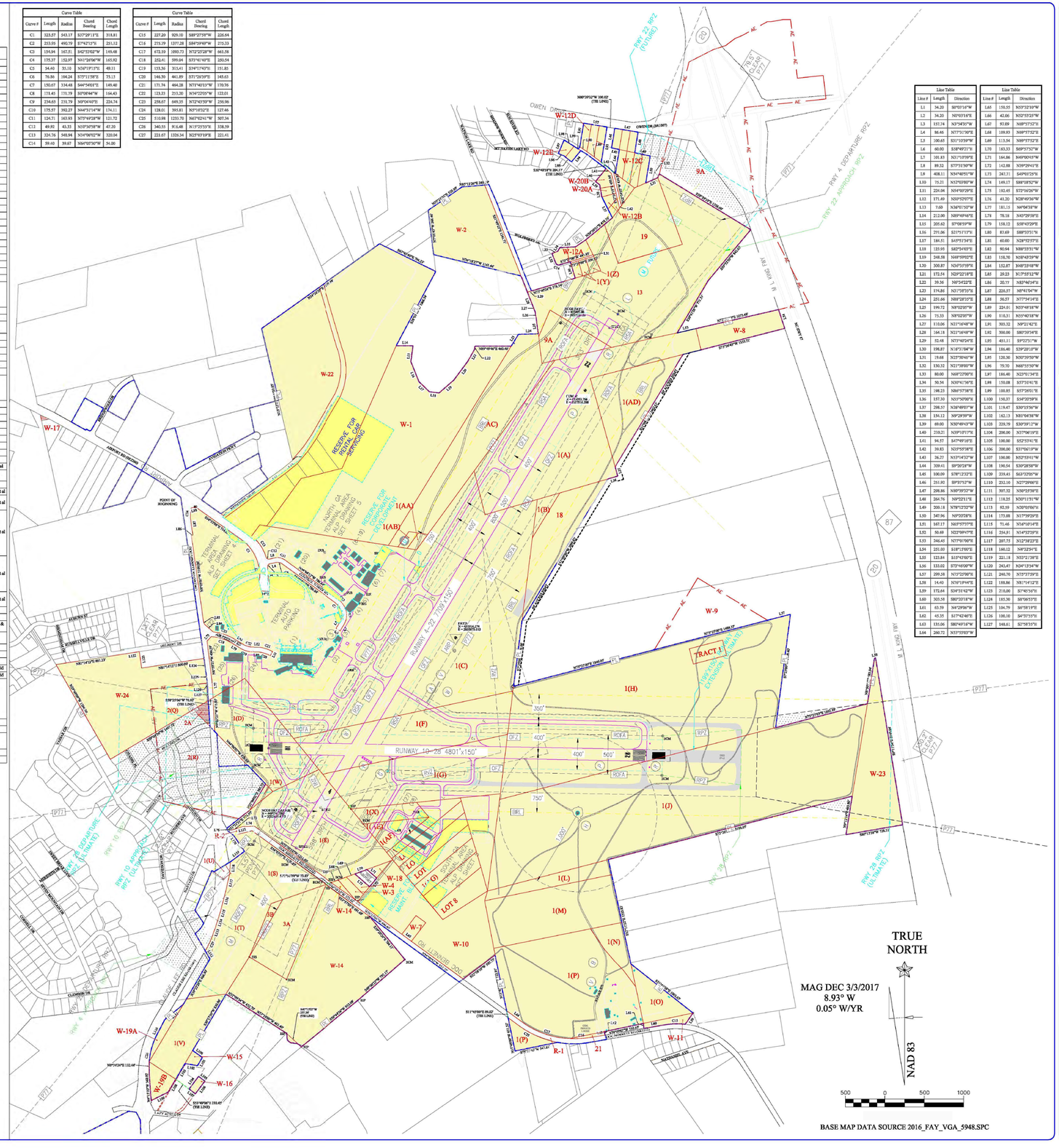
Tract	Acres	PIN	Deed(s) (Book/Page)	Deed Date	Plat (Book/Page)	Grantee	Project	Purpose	Interest	Grantor
1(A)	59.00	0435-70-1215-	523/307	5/10/1948	12/20	City of Fayetteville		Development	Fee Simple	Wilson, John & Wife, Myrtle
1(B)	1.60	0435-70-1215-	526/41	5/10/1948	12/20	City of Fayetteville		Development	Fee Simple	Keith, Fred & Wife, Grace B.
1(C)	227.70	0435-70-1215-	521/307	5/10/1948	12/20	City of Fayetteville		Development	Fee Simple	Wilson, John & Wife, Myrtle
1(D)	22.30	0435-70-1215-	521/306	5/10/1948	12/20	City of Fayetteville		Development	Fee Simple	Davis, Don & Wife, Flora
1(E)	26.80	0435-70-1215-	523/310	5/10/1948	12/20	City of Fayetteville		Development	Fee Simple	Corbin, Lemuel & Wife, Lena Bell
1(F)	31.30	0435-70-1215-	525/309	5/10/1948	12/20	City of Fayetteville		Development	Fee Simple	Breeze, E.U. & Wife, Lucy D.
1(G)	29.70	0435-70-1215-	523/309	5/10/1948	12/20	City of Fayetteville		Development	Fee Simple	Breeze, E.U. & Wife, Lucy D.
1(H)	112.50	0435-70-1215-	523/308	5/10/1948	12/20	City of Fayetteville		Development	Fee Simple	Rankin, Thomas & McCaskill, Georgia
1(I)	119.80	0435-70-1215-	525/313	5/10/1948	12/20	City of Fayetteville		Development	Fee Simple	Pate, Hannah, Pate, J. Warren & Wife
1(K)	6.90	0435-70-1215-	523/505, 526/43	5/10/1948	12/20	City of Fayetteville		Development	Fee Simple	Kilgore, Beatrice Young et al
1(L)	5.80	0435-70-1215-	523/311	5/10/1948	12/20	City of Fayetteville		Development	Fee Simple	Hall, T.I. & Wife, Alice B.
1(M)	23.70	0435-70-1215-	523/311	5/10/1948	12/20	City of Fayetteville		Development	Fee Simple	Hall, T.I. & Wife, Alice B.
1(N)	3.70	0435-70-1215-	523/311	5/10/1948	12/20	City of Fayetteville		Development	Fee Simple	Hall, T.I. & Wife, Alice B.
1(O)	5.80	0435-70-1215-	523/311	5/10/1948	12/20	City of Fayetteville		Development	Fee Simple	Hall, T.I. & Wife, Alice B.
1(P)	66.00	0435-70-1215-	526/42	5/10/1948	12/20	City of Fayetteville		Development	Fee Simple	McNeill, Gertrude & Husband, Dave et al
1(S)	18.84	0435-70-1215-	920/273	9/26/1952	26/41	City of Fayetteville		Development	Fee Simple	Corbin, Lena Bell
1(T)	24.62	0435-70-1215-	953/45, 923/65	1/1/1962	26/41	City of Fayetteville		Development	Fee Simple	West-Hankins Realty, Inc.
1(U)	0.46	0435-70-1215-	1021/449	11/21/1963	26/41	City of Fayetteville		Development	Fee Simple	Hale, Edith G.
1(V)	10.10	0435-70-1215-	952/525	10/25/1962	26/41	City of Fayetteville		Development	Fee Simple	Lee, Lillie E.
1(W)	0.57	0435-70-1215-	1136/165	9/10/1965		City of Fayetteville		Development	Fee Simple	West-Hankins Realty, Inc.
1(X)	4.02	0434-59-0639-	1011/403	1/3/1964		City of Fayetteville		Development	Fee Simple	Gainey, Nannie V. Sealey
1(Y)	0.46	0435-76-5614-	2035/1	6/7/1967		City of Fayetteville		Development	Fee Simple	Watson, Clio B.
1(Z)	1.02	0435-76-5614-	2035/3	7/14/1967		City of Fayetteville		Development	Fee Simple	Shotwell, Ivan & Wife, Yvonne C.
1(AA)	0.59	0435-70-1215-	2032/609	5/16/1967		City of Fayetteville		Development	Fee Simple	Brinsen, Eben G. & Wife Nannie B.
1(AB)	0.59	0435-70-1215-	2032/609	5/16/1967		City of Fayetteville		Development	Fee Simple	Brinsen, Eben G. & Wife Nannie B.
1(AC)	29.57	0435-70-1215-	2035/347	6/13/1967		City of Fayetteville		Development	Fee Simple	Wilson, J.M., Sr. & Wife, Myrtle C.
1(AD)	16.20	0435-70-1215-	2035/545	6/13/1967		City of Fayetteville		Development	Fee Simple	Keith, Fred & Wife, Grace B.
1(AE)	0.62	0435-70-1215-	1023/291	12/6/1963		City of Fayetteville		Development	Fee Simple	Leggett, Ethel Young & Husband, Roy
1(AF)	3.10	0435-70-1215-	1069/361	8/19/1964		City of Fayetteville		Development	Fee Simple	Leggett, Ethel Young & Husband, Roy
1(AG)	3.57	0435-70-1215-	1175/127	3/21/1966		City of Fayetteville		Development	Fee Simple	Gladden, Joe F. & Wife, Myrtla H.
2(Q)	6.10		520/188	9/6/1948	12/20	City of Fayetteville		Avigation Easmt	Avigation Easmt	Hair, J.A. and Wife, Mattie G.
2(R)	27.30		520/186	9/6/1948	12/20	City of Fayetteville		Avigation Easmt	Avigation Easmt	Martin, Chalmers O. & Wife, Lois G.
2A*	0.72	Now Portions of 0435-21-6040- 0435-20-4973-	1136/213	8/24/1965		West-Hankins Realty, Inc.		Expansion	Fee Simple	City of Fayetteville
3A	12.81	0435-70-1215-	SP No 2589	11/15/1963		City of Fayetteville		Expansion	Fee Simple	L.B. Smith
3B	0.90	0435-70-1215-	SP No 2593			City of Fayetteville		Expansion	Fee Simple	L.B. Smith
9A	7.32		1175/477 (SP. No. 2591)	4/50/1966		City of Fayetteville		Avigation Easmt	Avigation Easmt	Brinsen, Eben G. & Wife Nannie B.
13	58.27	0435-70-1215-	2032/609 (Tr 3)	5/16/1967		City of Fayetteville		Expansion	Fee Simple	Brinsen, Eben G. & Wife Nannie B.
18	13.51	0435-70-1215-	2045/243	7/13/1967		City of Fayetteville		Expansion	Fee Simple	Keith, Frederick R., Jr. & Wife Judy Troy
19	14.56	0435-70-1215-	2048/223	8/5/1967		City of Fayetteville		Expansion	Fee Simple	Minges, Richard B. & Wife, Elizabeth
21	0.25	0435-70-1215-	2331/499	7/10/1972		City of Fayetteville		Expansion	Fee Simple	Bennett, M.D. & Clara N.
LOT3	3.59	0434-59-5421-	3155/252	4/29/1986		City of Fayetteville	AIP-10	Expansion	Fee Simple	Estate of Floyd Young
LOT4	3.38	0434-59-5299-	3155/252	4/29/1986		City of Fayetteville	AIP-10	Expansion	Fee Simple	Estate of Floyd Young
LOT5	3.59	0434-59-8372- 0434-59-6009- 0434-58-3991-	3155/252	4/29/1986		City of Fayetteville	AIP-10	Expansion	Fee Simple	Estate of Floyd Young
LOT8	4.16	0434-58-9644-	1181/601	7/19/1966		City of Fayetteville		Expansion	Fee Simple	Ramsey, Daisy Young Hunt
W-1	71.10	0435-54-0245-	3360/852	2/24/1988		City of Fayetteville	AIP-10	Expansion	Fee Simple	Wilson, Mary Catherine Trice
W-2	18.57	0435-67-0086-	3360/852	2/24/1988		City of Fayetteville	AIP-10	Expansion	Fee Simple	Wilson, Mary Catherine Trice
W-3	0.88	0434-48-5753-	3343/776	7/12/1987		City of Fayetteville	AIP-10	Expansion	Fee Simple	Weinstein, William M. & Wife, Debra D.
W-4	0.80	0434-48-6841-	3477/677	4/28/1989		City of Fayetteville	AIP-11	Expansion	Fee Simple	Bennett, Clara N.
W-5	3.56	0434-58-8833-	3404/298	7/22/1988		City of Fayetteville	AIP-11	Expansion	Fee Simple	Estate of Searey Young
W-6	3.70	0434-59-4586-	3453/831	1/27/1989		City of Fayetteville	AIP-10	Expansion	Fee Simple	Smith, Luther O. & Wife, Izzie O.
W-7	1.01	0419-88-4322-	3482/593	5/17/1989		City of Fayetteville	AIP-11	Expansion	Fee Simple	Jernigan, Dennis R. & Wife, Debra B.
W-8	6.57	0435-95-4873-	3516/66	9/14/1989		City of Fayetteville	AIP-11	Expansion	Fee Simple	Beverly, Mertys B.
W-9	12.65		2952/543	9/28/1983		City of Fayetteville	NON AIP	Avigation Easmt	Avigation Easmt	Keith, Frederick R., Jr. & Wife Judy Troy, et al
W-10	26.19	0434-58-5390-	3518/64	9/21/1989		City of Fayetteville	AIP-11	Expansion	Fee Simple	Bennett, Clara N. & Jernigan, Debra Joan Bennett
W-11	1.16	0434-87-5085-	3617/827	10/4/1990		City of Fayetteville	AIP-12	Expansion	Fee Simple	Snott, E.W.
W-12A	1.95	0435-76-3851-	3596/23	7/17/1990	24/18	City of Fayetteville	AIP-12	Expansion	Fee Simple	Bunch, Patricia W. & Husband Tony Allen, et al
W-12B	0.89	0435-77-8417- 0435-77-8356-	3596/23	7/17/1990	33/29	City of Fayetteville	AIP-12	Expansion	Fee Simple	Bunch, Patricia W. & Husband Tony Allen, et al
W-12C	6.35	0435-87-2845- 0435-77-1845- 0435-77-9681- 0435-87-0859- 0435-77-9964- 0435-88-1201- 0435-88-0203- 0435-78-9215-	3596/23	7/17/1990	33/29	City of Fayetteville	AIP-12	Expansion	Fee Simple	Bunch, Patricia W. & Husband Tony Allen, et al
W-12D	2.60	0435-78-6089- 0435-78-7320- 0435-78-6204- 0435-78-5218-	3596/23	7/17/1990	33/29	City of Fayetteville	AIP-12	Expansion	Fee Simple	Bunch, Patricia W. & Husband Tony Allen, et al
W-12E	0.95	0435-78-3046- 0435-78-2163-	3596/23	7/17/1990	33/29	City of Fayetteville	AIP-12	Expansion	Fee Simple	Bunch, Patricia W. & Husband Tony Allen, et al
W-14	46.91	0434-48-4715-	4087/624	12/30/1993		City of Fayetteville		Expansion	Fee Simple	Lola Smith Heirs
W-15	0.52	0434-26-5547-	4084/594	12/23/1993		City of Fayetteville		Expansion	Fee Simple	Wingman Motorcycle Club, Inc.
W-16	0.46	0434-26-5285-	4215/188	9/9/1994		City of Fayetteville		Expansion	Fee Simple	Hill, William W. & Wife, Byrd, Brenda Ann & Husband
W-17	0.11	Portion of 0435-03-4978-	7610/824	5/24/2007		Cedar Creek Crossing West, LLC		Expansion	Fee Simple	City of Fayetteville
W-18	0.55	0419-88-4322-	4456/884	3/11/1996		City of Fayetteville	AIP-14	Expansion	Fee Simple	Vick, Walter T. & Wife, Helen M.
W-19A	1.22	0434-26-1963-	4860/664	5/1/1998		City of Fayetteville	State Grant	Expansion	Fee Simple	Lee, Willie C. & Wife Joyce
W-19B	2.16	0434-26-1208-	4860/664	5/1/1998		City of Fayetteville	State Grant	Expansion	Fee Simple	Lee, Willie C. & Wife Joyce
W-20A	0.43	0435-77-7598-	3823/544	6/24/1992	33/29	City of Fayetteville	AIP-12	Expansion	Fee Simple	Billups, Cynthia B. & Husband William David
W-20B	0.80	0435-77-7792-	3823/544	6/24/1992	33/29	City of Fayetteville	AIP-12	Expansion	Fee Simple	Billups, Cynthia B. & Husband William David
W-22	99.05	0425-45-7890- 0435-44-2591- 0435-44-1169- 0435-44-0007- 0435-33-8936- 0435-33-6704- 0435-33-2495-	6315/8 6313/5 6298/9 6298/11 6298/7	10/3/2003	83/39	City of Fayetteville	AIP-28	Expansion	Fee Simple	Gibson & Parnell
W-23	17.50	0445-10-1281-	6745/44	12/20/2004		City of Fayetteville		Expansion	Fee Simple	Tyson, Nancy Butler
W-24	35.10	0435-11-7187-	8521/518	11/15/2010		City of Fayetteville		Expansion	Fee Simple	J. Howard Clark Revocable Trust
*Avigation Easement Reserved										
R-1			4940/845	9/22/1998		NCDOT	Right-of-Way		Fee Simple	City of Fayetteville
R-2			2811/377	2/9/1981		NCDOT	Right-of-Way		Fee Simple	City of Fayetteville

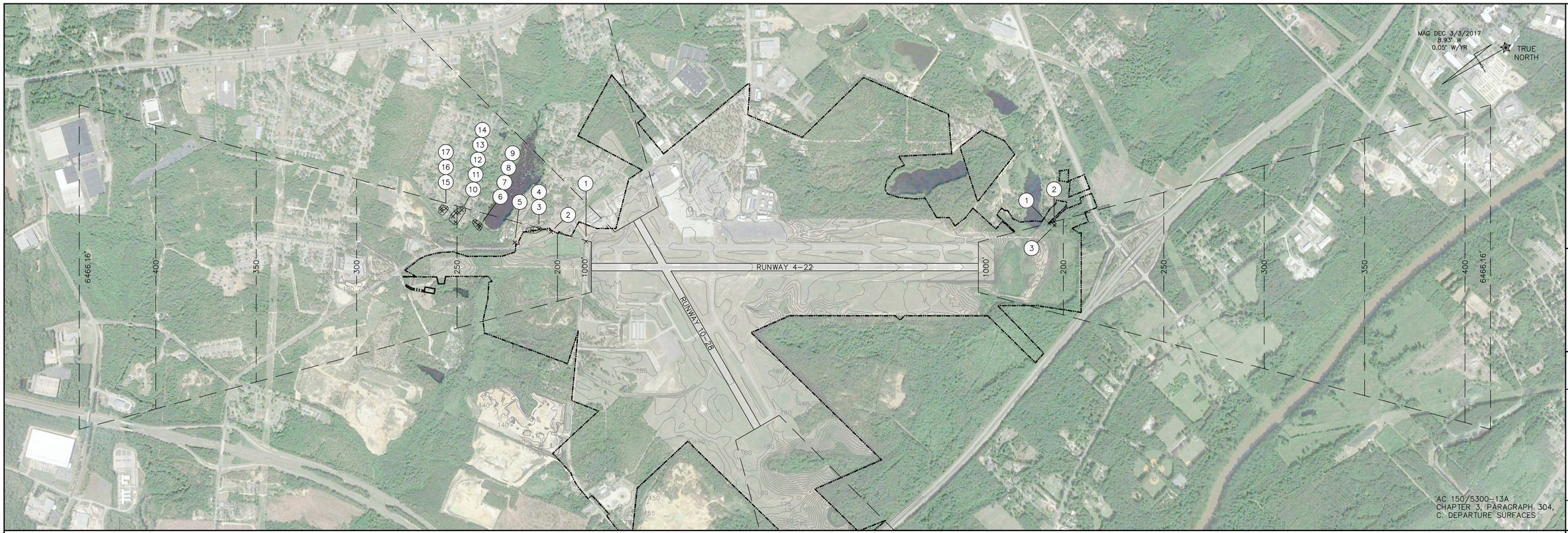
Curve Table				
Curve #	Length	Radius	Chord Bearing	Chord Length
C1	323.57	543.17	S27°29'11"E	318.81
C2	253.59	490.79	S7°47'13"S	251.12
C3	154.94	167.51	S42°37'02"W	149.48
C4	175.37	152.97	N41°20'06"W	165.92
C5	34.40	35.10	N38°35'15"S	40.11
C6	76.86	104.28	S75°11'58"E	75.13
C7	150.67	534.48	S44°54'01"E	149.40
C8	171.45	171.79	S0°08'44"W	164.63
C9	234.63	231.79	S0°06'40"E	224.74
C10	175.57	392.27	S64°51'14"W	174.11
C11	124.71	163.93	S75°39'28"W	121.72
C12	49.92	43.33	N35°39'58"W	47.20
C13	324.76	548.94	N34°06'02"W	320.04
C14	89.40	39.67	N64°05'30"W	54.00

Curve Table				
Curve #	Length	Radius	Chord Bearing	Chord Length
C15	227.20	929.10	S88°27'39"W	226.64
C16	273.29	1377.28	S84°39'49"W	273.33
C17	672.19	1050.73	N72°22'28"W	661.58
C18	252.41	599.04	S73°41'40"E	250.54
C19	153.50	315.41	S74°17'47"E	151.85
C20	146.50	461.89	S71°26'35"E	145.63
C21	171.74	464.28	S71°44'33"W	170.76
C22	123.23	213.20	N74°25'05"W	122.01
C23	258.67	649.35	S72°41'50"W	256.96
C24	128.01	395.81	S57°10'32"E	127.46
C25	510.98	1233.70	S61°02'41"W	507.34
C26	340.55	91.648	N13°25'33"E	338.59
C27	233.67	1326.34	S25°03'19"E	221.41

Line Table		
Line #	Length	Direction
L1	34.20	S0°05'16"W
L2	34.20	N0°05'16"E
L3	193.74	N3°54'43"W
L4	86.46	N77°31'50"E
L5	100.45	S31°10'59"W
L6	60.00	S58°49'21"E
L7	101.83	N31°10'59"E
L8	89.32	S77°31'36"W
L9	408.11	S35°40'51"W
L10	15.21	S53°50'00"W
L11	224.04	S54°49'20"E
L12	171.49	S50°52'07"E
L13	7.69	N36°01'50"W
L14	212.00	N89°49'46"E
L15	205.62	S7°08'59"W
L16	271.86	S21°51'17"E
L17	184.51	S45°51'54"E
L18	133.91	S82°54'05"E
L19	248.58	N46°59'02"E
L20	300.87	N50°53'59"E
L21	172.74	N20°22'18"E
L22	59.56	S0°34'42"E
L23	174.86	N31°38'51"E
L24	251.66	N88°28'32"E
L25	199.72	N8°02'05"W
L26	75.33	N8°02'05"W
L27	115.06	N31°54'48"W
L28	164.18	N31°54'48"W
L29	52.48	N71°42'24"E
L30	198.87	N16°11'04"W
L31	19.68	N35°58'46"W
L32	130.32	N31°58'00"W
L33	80.00	N68°12'58"E
L34	50.54	N30°41'56"E
L35	198.23	N86°57'38"E
L36	187.30	N5°50'06"E
L37	298.57	N36°49'07"W
L38	150.13	S9°29'59"W
L39	69.60	N36°49'43"W
L40	210.21	N19°11'17"E
L41	94.57	S47°49'16"E
L42	39.83	N31°55'38"E
L43	26.27	N31°14'32"W
L44	209.41	S9°30'23"W
L45	100.09	S78°12'32"E
L46	251.92	S9°37'52"W
L47	298.86	N90°39'32"W
L48	264.76	N9°22'31"E
L49	209.14	N78°25'59"E
L50	347.96	S0°20'28"E
L51	167.17	N65°57'57"E
L52	50.68	N32°09'47"E
L53	346.45	N17°01'06"E
L54	251.01	S18°15'02"E
L55	123.81	S11°43'00"E
L56	133.02	S73°45'00"W
L57	299.38	N13°22'06"E
L58	14.40	N76°19'44"E
L59	172.61	S34°33'42"W
L60	303.59	S86°20'18"W
L61	63.39	S6°29'06"W
L62	45.35	S17°42'46"E
L63	151.06	S80°46'14"W
L64	260.72	N33°55'03"W

Line Table		
Line #	Length	Direction
L65	150.55	N33°32'10"W
L66	42.06	N32°53'25"W
L67	97.09	N0°57'52"E
L68	109.93	N0°57'52"E
L69	113.54	S0°57'52"W
L70	183.33	S69°57'57"W
L71	164.86	N49°00'05"W
L72	142.88	N39°29'41"E
L73	243.21	S49°00'25"E
L74	149.17	S88°18'52"W
L75	102.45	S72°14'09"W
L76	41.20	N28°49'36"W
L77	181.15	N4°04'38"W
L78	78.18	N43°29'58"E
L79	158.12	S58°47'29"E
L80	83.69	S88°07'31"E
L81	60.00	N28°52'57"E
L82	90.94	N88°33'51"W
L83	158.70	N58°49'39"W
L84	152.87	N49°33'48"W
L85	29.23	N17°35'31"W
L86	20.73	N82°46'54"E
L87	220.57	N8°41'04"W
L88	56.27	N77°54'14"E
L89	224.01	N33°48'18"W
L90	110.31	N55°40'18"W
L91	303.52	N9°21'42"E
L92	300.00	S80°35'14"E
L93	401.11	S9°22'31"W
L94	186.40	S39°20'10"W
L95	120.30	N50°39'50"W
L96	79.70	N66°35'39"W
L97	186.40	N20°51'36"E
L98	150.08	S57°31'41"E
L99	100.85	S57°26'01"E
L100	150.37	S54°20'59"E
L101	119.47	S30°15'56"W
L102	162.13	N81°04'38"W
L103	220.79	S30°59'12"W
L104	200.00	N37°06'19"E
L105	100.00	S52°53'41"E
L106	200.00	S37°06'19"W
L107	100.00	N52°53'41"W
L108	190.54	S39°58'18"W
L109	259.45	S63°32'59"W
L110	252.10	N27°29'06"E
L111	397.32	N56°25'38"E
L112	118.25	N30°11'31"W
L113	83.10	N58°05'06"E
L114	175.88	N17°59'29"E
L115	71.46	N36°50'14"E
L116	254.81	N14°52'29"E
L117	209.73	N12°59'23"E
L118	160.12	N9°32'54"E
L119	241.18	N35°21'38"E
L120	243.47	N34°13'54"W
L121	240.70	N75°37'59"E
L122	188.86	N81°14'12"E
L123	210.00	S7°45'56"E
L124	185.30	S8°06'53"E
L125	104.79	S8°38'18"E
L126	100.10	S4°37'57"E
L127	144.61	S2°58'35"E

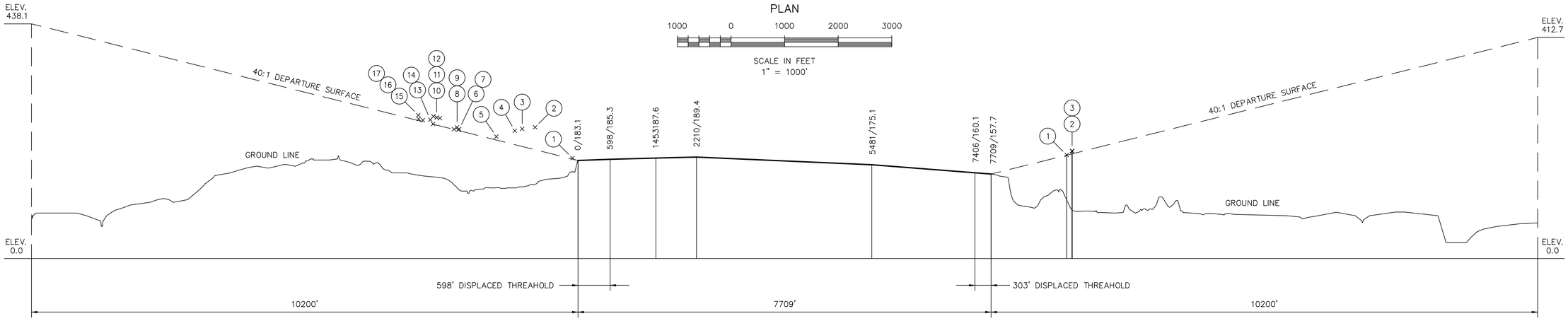

RUNWAY 4-22 7100'x150'
RUNWAY 10-28 4801'x150'
RWY 22 APPROACH RPZ
RWY 4 DEPARTURE RPZ
RWY 22 RPZ (ULTIMATE)
RWY 28 RPZ (ULTIMATE)
RWY 10 DEPARTURE RPZ (ULTIMATE)
RWY 10 APPROACH RPZ (ULTIMATE)
RWY 4 APPROACH RPZ (ULTIMATE)
RESERVE FOR FUTURE CAR PARKING
RESERVE FOR FUTURE GA T-HANGARS
RESERVE FOR FUTURE GA T-HANGARS AND TAXILANES
RESERVE FOR FUTURE GA T-HANGARS AND TAXILANES (SEE SHEET 19)
NORTH GA TERMINAL AREA APRON AND T-HANGARS (SEE SHEET 5)
TERMINAL AUTO PARKING
TERMINAL AREA (SEE SHEET 4)
TRACT 1
FAYETTEVILLE REGIONAL AIRPORT
POINT OF BEGINNING
OWEN DRIVE
CLEMSON DR
CLEMSON RD
MARIETTA DR
MARIETTA LN
MARIETTA RD
MARIETTA CT
MARIETTA PL
MARIETTA WAY
MARIETTA CIR
MARIETTA TER
MARIETTA CV
MARIETTA TRL
MARIETTA PKWY
MARIETTA AVE
MARIETTA ST
MARIETTA RUN
MARIETTA LOOP
MARIETTA BLVD
MARIETTA HWY
MARIETTA PASS
MARIETTA GLEN
MARIETTA GROVE
MARIETTA HILL
MARIETTA MEADOW
MARIETTA PARK
MARIETTA PLAZA
MARIETTA SQUARE
MARIETTA VILLAGE
MARIETTA WOODS
MARIETTA ESTATES
MARIETTA GARDENS
MARIETTA HEIGHTS
MARIETTA MANOR
MARIETTA PLACE
MARIETTA RIDGE
MARIETTA SPRINGS
MARIETTA TERRACE
MARIETTA VALLEY



PLAN

1000 0 1000 2000 3000

SCALE IN FEET
1" = 1000'



4 RUNWAY 4–22 PROFILE 22

SCALE: 1"=1000' HZ., 1"=100' VT.

RUNWAY 4 DATA TABLE							RUNWAY 22 DATA TABLE						
NO.	DESCRIPTION	ELEVATION	40:1 ELEVATION	ABOVE	BELOW	ACTION	NO.	DESCRIPTION	ELEVATION	40:1 ELEVATION	ABOVE	BELOW	ACTION
1	DOC BENNETT RD	187.6	185.8	1.8	–	FAA AERONAUTICAL STUDY	1	TREE	193.4	193.0	0.4	–	FAA AERONAUTICAL STUDY
2	TREE	245.1	203.1	42.0	–	FAA AERONAUTICAL STUDY	2	TREE	200.8	195.4	5.4	–	FAA AERONAUTICAL STUDY
3	TREE	242.0	209.2	32.8	–	FAA AERONAUTICAL STUDY	3	TREE	200.6	195.6	5.0	–	FAA AERONAUTICAL STUDY
4	TREE	238.6	212.6	26.0	–	FAA AERONAUTICAL STUDY							
5	TREE	227.6	221.2	6.4	–	FAA AERONAUTICAL STUDY							
6	TREE	241.5	238.6	2.9	–	FAA AERONAUTICAL STUDY							
7	TREE	240.5	238.9	1.6	–	FAA AERONAUTICAL STUDY							
8	TREE	245.0	239.6	5.4	–	FAA AERONAUTICAL STUDY							
9	TREE	241.5	241.1	0.4	–	FAA AERONAUTICAL STUDY							
10	TREE	262.1	247.6	14.5	–	FAA AERONAUTICAL STUDY							
11	TREE	263.3	249.0	14.3	–	FAA AERONAUTICAL STUDY							
12	TREE	265.5	250.5	15.0	–	FAA AERONAUTICAL STUDY							
13	TREE	251.1	250.7	0.4	–	FAA AERONAUTICAL STUDY							
14	TREE	259.1	252.1	7.0	–	FAA AERONAUTICAL STUDY							
15	TREE	258.5	255.5	3.0	–	FAA AERONAUTICAL STUDY							
16	TREE	260.6	257.5	3.1	–	FAA AERONAUTICAL STUDY							
17	TREE	276.3	266.2	10.1	–	FAA AERONAUTICAL STUDY							

OBSTRUCTION SURVEY DATA

HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 (NAD83)
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)
SURVEY SOURCE: 2016_FAY_VGA_5948.SPC
OBJECT ELEVATION PROVIDES CLEARANCE ADJUSTMENTS: 23'RAILWAY, 15' FOR PUBLIC ROADS
ALL ELEVATIONS REFERENCE MEAN SEA LEVEL (MSL)

TALBERT & BRIGHT
ENGINEERING & PLANNING CONSULTANTS
4810 SHELLEY DRIVE WILMINGTON, NC 28405
FAX: 910-762-6281 PHONE: 910-763-5350
NC LICENSE NO. C-0713 EMAIL: TBWLM@TBWLM.COM

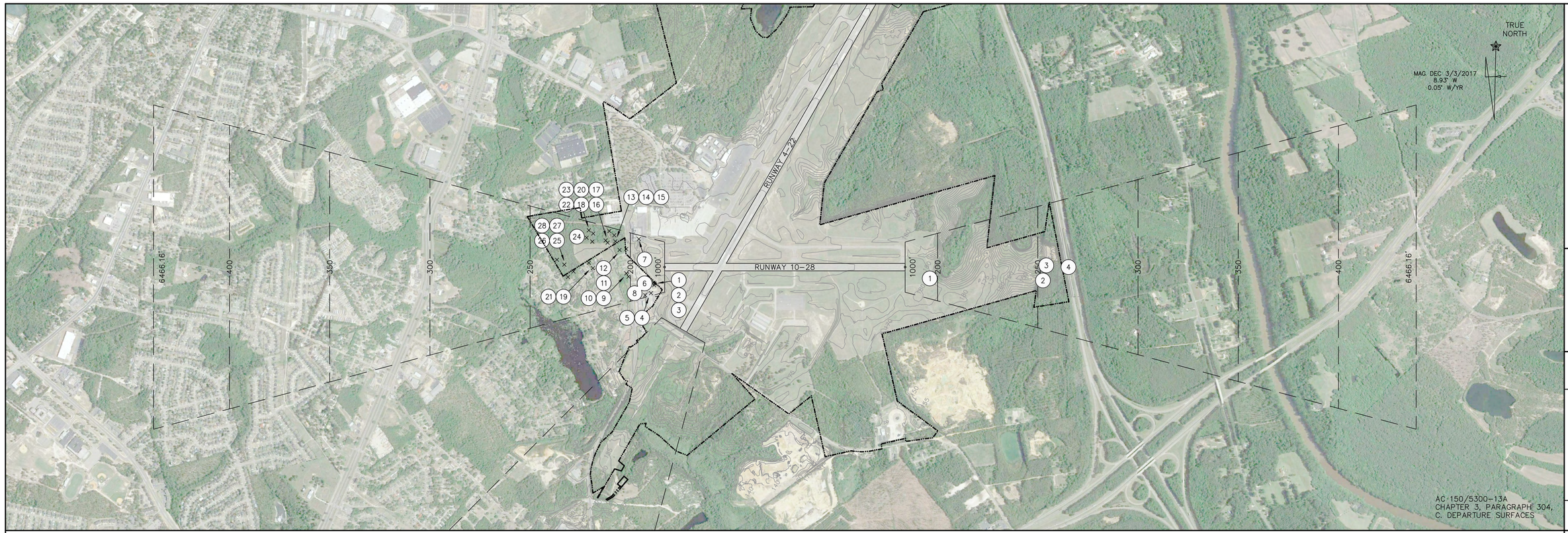
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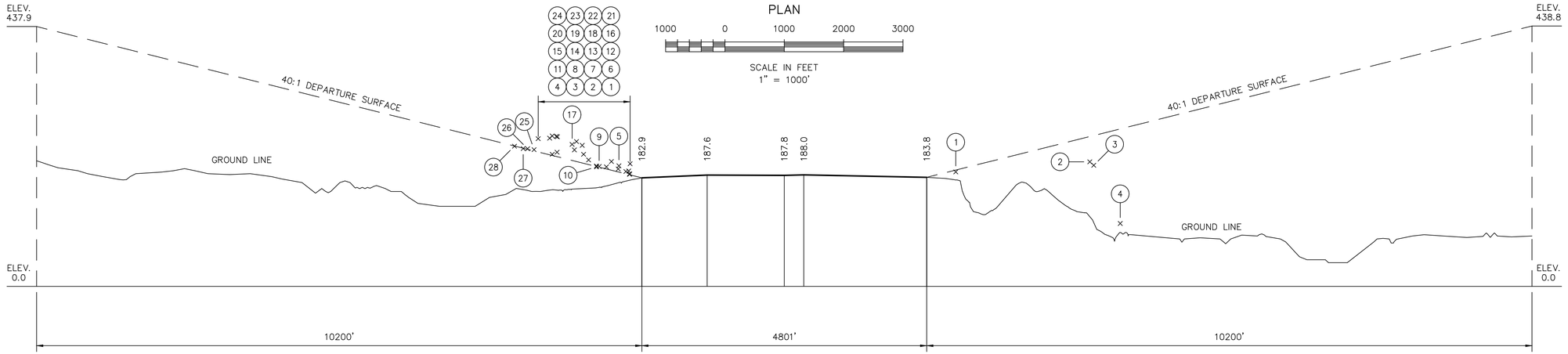
REV. NO.	DESCRIPTION	DATE
	REVISIONS	

FAYETTEVILLE REGIONAL AIRPORT
FAYETTEVILLE, NORTH CAROLINA
DEPARTURE SURFACE DRAWING
(RUNWAY 4–22)

City of Fayetteville North Carolina
REGIONAL AIRPORT

Date	JULY 2017
Scale	1" = 1000'
Drawn	LSM
Checked	NAS
Project No.	2502-1501
Sheet No.	19
of	20 sheeets





RUNWAY 10 DATA TABLE

NO.	DESCRIPTION	ELEVATION	40:1 ELEVATION	ABOVE	BELOW	ACTION
1	UTILITY POLE	206.7	187.8	18.9	–	FAA AERONAUTICAL STUDY
2	BUILDING	188.8	188.1	0.7	–	FAA AERONAUTICAL STUDY
3	TREE	194.5	188.4	6.1	–	FAA AERONAUTICAL STUDY
4	BUILDING	193.6	189.6	4.0	–	FAA AERONAUTICAL STUDY
5	FLAG POLE	203.2	192.5	10.7	–	FAA AERONAUTICAL STUDY
6	TREE	197.9	192.8	5.1	–	FAA AERONAUTICAL STUDY
7	BUILDING	210.4	195.7	14.7	–	FAA AERONAUTICAL STUDY
8	TREE	245.0	197.8	3.6	–	FAA AERONAUTICAL STUDY
9	TREE	202.1	200.9	1.2	–	FAA AERONAUTICAL STUDY
10	TREE	201.5	–	−0.5	−0.5	NONE
11	TREE	202.9	202.0	0.9	–	FAA AERONAUTICAL STUDY
12	TREE	213.1	205.3	7.8	–	FAA AERONAUTICAL STUDY
13	TREE	207.4	222.6	15.2	–	FAA AERONAUTICAL STUDY
14	TREE	237.7	208.0	29.7	–	FAA AERONAUTICAL STUDY
15	TREE	244.1	210.4	33.7	–	FAA AERONAUTICAL STUDY
16	TREE	211.3	230.0	18.7	–	FAA AERONAUTICAL STUDY
17	TREE	239.3	212.3	27.0	–	FAA AERONAUTICAL STUDY
18	TREE	252.2	218.5	33.7	–	FAA AERONAUTICAL STUDY
19	TREE	226.1	218.6	7.5	–	FAA AERONAUTICAL STUDY
20	TREE	252.7	218.9	33.8	–	FAA AERONAUTICAL STUDY
21	TREE	222.6	220.6	2.0	–	FAA AERONAUTICAL STUDY
22	TREE	253.5	220.7	32.8	–	FAA AERONAUTICAL STUDY
23	TREE	249.8	221.7	28.1	–	FAA AERONAUTICAL STUDY
24	TREE	248.9	226.6	22.3	–	FAA AERONAUTICAL STUDY
25	TREE	230.4	228.3	2.1	–	FAA AERONAUTICAL STUDY
26	TREE	232.0	231.0	1.0	–	FAA AERONAUTICAL STUDY
27	TREE	232.3	232.9	–	0.6	NONE
28	TREE	236.3	236.6	–	0.3	NONE

RUNWAY 28 DATA TABLE

NO.	DESCRIPTION	ELEVATION	40:1 ELEVATION	ABOVE	BELOW	ACTION
1	AIRPORT ROAD	192.9	196.0	–	–	NONE
2	TREE	209.9	252.5	–	–	NONE
3	TREE	204.1	254.2	–	–	NONE
4	PRIMARY ROAD	106.0	265.3	–	–	NONE

OBSTRUCTION SURVEY DATA

HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 (NAD83)
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)
SURVEY SOURCE: 2016_FAY_VGA_5948.SPC
OBJECT ELEVATION PROVIDES CLEARANCE ADJUSTMENTS: 23'RAILWAY, 15' FOR PUBLIC ROADS
ALL ELEVATIONS REFERENCE MEAN SEA LEVEL (MSL)

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REV. NO.	DESCRIPTION	DATE
	REVISIONS	

FAYETTEVILLE REGIONAL AIRPORT
FAYETTEVILLE, NORTH CAROLINA

DEPARTURE SURFACE DRAWING
(RUNWAY 10-28)

City of Fayetteville North Carolina
REGIONAL AIRPORT

Date	JULY 2018
Scale	1" = 1000'
Drawn	LSM
Checked	NAS
Project No.	2502-1501
Sheet No.	20

of ..... 20 sheeets