

9. ALP Summary

The Airport Layout Plan (ALP) Drawing Set has been prepared in accordance with generally accepted airport planning practices and Federal Aviation Administration (FAA) guidance materials, including the following:

- FAA Advisory Circular (AC) 150/5070-6B, Airport Master Plans
- FAA AC 150/5300-13A, Airport Design
- FAA AC 150/5360-13A, Airport Terminal Planning
- Code of Federal Regulations (CFR) Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace
- FAA Standard Operating Procedures (SOP) ALP Checklist

The ALP Drawing Set for Greater Binghamton Regional Airport (BGM or the Airport) consists of a coversheet and 17 drawings as follows:

<u>Sheet No.</u>	<u>Title</u>
-	Cover Sheet
1.	Existing Airport Layout
2.	Airport Layout Plan
3.	Airport Data Tables
4.	Terminal Area Plan
5.	Airport Airspace Plan
6.	Outer Airport Airspace Plan
7.	Inner Approach Plan Runway 16-34
8.	Inner Approach Plan Runway 10-28
9.	Departure Surface Plan Runway 16
10.	Departure Surface Plan Runway 34
11.	Departure Surface Plan Runway 10
12.	Departure Surface Plan Runway 28
13.	Airport Land Use and RPZ Control Plan
14.	Exhibit "A" Airport Inventory Map
15.	Exhibit "A" Airport Property Inventory Tables





Reduced size versions of each ALP sheet are presented as **Appendix G**.

9.1. COVER SHEET

The *Cover Sheet* provides identifying information for the ALP Drawing Set. This information includes a drawing index listing each of the sheets within the set, as well as the specific FAA project number and information on the preparer of the document. Two maps are also placed on the cover sheet to identify the location of the Airport within the context of the State of New York (location map) and the area immediately adjacent to the Airport (vicinity map).

9.2. EXISTING AIRPORT LAYOUT

The *Existing Airport Layout* provides the current configuration and existing airport facilities at BGM. Details shown include airport buildings, airport infrastructure, local roads and neighborhoods, property lines, and water bodies on or adjacent to BGM. These details are based on aerial photography and photogrammetric mapping obtained as part of this study effort. This sheet also includes a graphical depiction of the declared distances for both runways.

This sheet also serves as a base upon which development proposed within this Master Plan Update is placed upon. The current dimensions of the airside and landside facilities are depicted within the sheet, as well as the dimensions of applicable FAA safety and object free areas, protection zones, and other dimensions relevant to airport design. The title and revision block are also included, as required.

9.3. AIRPORT LAYOUT PLAN

The *Airport Layout Plan* illustrates the recommended proposed development at BGM over the twenty-year planning period. The Airport Layout Plan sheet is the culmination of the Master Plan Update processes and is the most important sheet in the ALP Drawing Set. The ALP is a legal document used by the FAA to allocate federal grant funding and approve the use of Passenger Facility Charges (PFCs) for projects depicted. The document is approved and signed by the FAA, New York State Department of Transportation, and Broome County.

The projects depicted on the *Airport Layout Plan* are intended to cover a twenty-year period and are phased over this period based on the sponsor’s priority and forecasted demand. Four time periods have been defined within the Master Plan Update: Phase I (2021 – 2022), Phase II (2023 – 2028), Phase III (2029 – 2038), and Phase IV (2039 and beyond).

9.4. AIRPORT DATA SHEET

The *Airport Data Sheet* displays several tables that are typically placed on the *Airport Layout Plan* sheet. However, due to size constraints and the need to clearly show the existing facilities and proposed development on the *Airport Layout Plan* sheet, these tables have been placed on a dedicated sheet within the ALP Drawing Set. Tables on the sheet include the Runway Data Table, Airport Data Table, Runway Safety Area Determination Table, Wind Coverage Data, Declared Distances Table, and Modifications to Design Standards Table.



9.5. TERMINAL AREA PLAN

A *Terminal Area Plan* has been included at a scale to clearly illustrate all of the changes that have been proposed within the vicinity of the terminal building. The *Terminal Area Plan* depicts the proposed terminal area development at a scale of 1":100', as opposed to the scale of the *Airport Layout Plan* sheet at 1":400'.

9.6. AIRPORT AIRSPACE PLANS

Title 14 of the CFR, Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace*, regulates the airspace surrounding airports through the development of five "Imaginary Surfaces." These surfaces include the primary surface, the approach surface, the transitional surface, the horizontal surface, and the conical surface. The *Airport Airspace Plan* of the ALP Drawing Set depicts the existing and future 14 CFR Part 77 imaginary surfaces based on the existing and proposed conditions at BGM. Modifications proposed on the *Airport Layout Plan* sheet and throughout the Master Plan Update are appropriately accounted for on the *Airport Airspace Plans*. The *Outer Approach Plan* sheet shows the extents of these surfaces.

9.6.1. Primary Surface

This surface is a rectangle aligned with the centerline of the runway and extends 200 feet from each runway end. The width of the primary surface varies depending on the type of runway and could be anywhere from 250 to 1,000 feet. At BGM, existing Runway 16-34 and the Runway 10-28 have a primary surface with a width of 1,000 feet.

9.6.2. Transitional Surface

The transitional surface is constructed to join the primary, approach, and horizontal surfaces. It starts at the edges of the primary surface and extends outwards and upwards from the primary and approach surfaces at a slope of 7:1 to an elevation 150 feet above the airport elevation, where it meets the horizontal surface.

9.6.3. Approach Surface

The approach surfaces are aligned longitudinally with each runway end starting at the edge of the primary surface (200 feet from each runway end) and extending outward and upward in a trapezoidal fashion. The following approach surfaces apply to BGM's runways:

- Runway 16 has a precision instrument approach. Therefore, the approach surface extends from the primary surface out 50,000 feet to a width of 16,000 feet. The first 10,000 feet climb at a slope of 50:1 (50 feet horizontally for one foot vertically) and the next 40,000 feet climb at a slope of 40:1 (40 feet horizontally for one foot vertically).
- Runway 34 has a precision instrument approach. Therefore, the approach surface extends from the primary surface out 50,000 feet to a width of 16,000 feet. The first 10,000 feet climb at a slope of 50:1 (50 feet horizontally for one foot vertically) and the next 40,000 feet climb at a slope of 40:1 (40 feet horizontally for one foot vertically).
- Runway 10 has a non-precision instrument approach. Therefore, the approach surface extends from the primary surface out 10,000 feet to a width of 4,000 feet. The approach slope is 34:1 (34 feet horizontally for one foot vertically).



- Runway 28 has a non-precision instrument approach. Therefore, the approach surface extends from the primary surface out 10,000 feet to a width of 4,000 feet. The approach slope is 34:1 (34 feet horizontally for one foot vertically).

9.6.4. Horizontal Surface

The horizontal surface is a horizontal plane at 150 feet above the airport elevation. It is constructed by swinging arcs around the end of the primary surface, which are connected via tangential lines. The horizontal surface radius is 5,000 feet for visual runways or for non-precision instrument runways serving only utility aircraft (small aircraft less than 12,500 pounds). For all larger runways, the horizontal surface has a radius of 10,000 feet. BGM’s horizontal surface will extend 10,000 feet from the ends of existing Runway 16-34. The horizontal surface for Runway 10-28 will extend 5,000 feet from the ends of Runway 10 and 28. The Airport’s horizontal surface elevation is 1,786 feet above mean sea level.

9.6.5. Conical Surface

The conical surface extends beyond the horizontal surface for 4,000 feet at a slope of 20:1.

9.7. OUTER AIRPORT AIRSPACE PLAN

Due to the length of the approach surfaces for Runways 16 and 34, it is not possible to include the entire approach surface on a single sheet with any clarity. Therefore, the *Outer Airport Airspace Plan* depicts the outer portion of these approach surfaces. There were no obstructions found to the outer portion of the approach surfaces.

9.8. INNER APPROACH PLANS

Inner Approach Plan Runway 16-34, and *Inner Approach Plan Runway 10-28* depict close-in obstructions to the existing 14 CFR Part 77 primary, approach, and transitional surfaces, as well as surface #4, #5, and #6 defined in the Approach/Departure Standards Table as published in Table 3-2¹ of FAA AC 150/5300-13A (Change 1), *Airport Design*. These sheets both incorporate the precision approach procedures for existing Runways 16, 34, 10 and 28, as well as the precision approach path indicator (PAPI) Obstacle Clearance Surface, PAPI Light Signal Clearance Surface, and visual glide slope indicator (VASI) Obstacle Clearance Surface for Runways 10 and 28. As no significant changes are recommended with regards to the approach procedures or to the longitudinal dimensions of the runway, the existing surfaces will be maintained through the planning period.

9.8.1. Inner Approach Plan Runway 16-34

Obstructions Found

- Runway 16-34 was found to have several obstructions to the CFR Part 77 Primary and Transitional Surfaces

¹ The revised Table 3-2 of FAA AC 150/5300-13A (Change 1), *Airport Design* as shown in Engineering Brief (EB) No. 99A *Changes to Tables 3-2 and 3-4 of Advisory Circular 150/5300-13A, Airport Design* was used for all approach and departure sheets.



- Runway 16 was found to have two obstructions to the CFR Part 77 Approach Surface
- Runway 34 was found to have two obstructions to Airport Design Approach Surface #5

No Obstructions Found

- Runway 34 was found to have no obstructions to the CFR Part 77 approach surface
- Runway 16 presents no obstructions to Design Approach Surface #5
- Runways 16 and 34 were found to have no obstructions to the Airport Design Approach Surface #6, PAPI Obstacle Clearance Surface, or PAPI Light Signal Clearance Surface

9.8.2. Inner Approach Plan Runway 10-28

Obstructions Found

- Runways 10 and 28 were found to have several obstructions to the CFR Part 77 primary, approach, and transitional surfaces

No Obstructions Found

Runways 10 and 28 were found to have no obstructions to Airport Design Approach Surfaces #4, #6, nor the VASI Obstacle Clearance Surface

9.9. DEPARTURE SURFACE PLANS

The *Departure Surface Plans* depict obstructions to the 40:1 sloped departure surface as defined by Table 3-2 of FAA Advisory Circular 150/5300-13A (Change 1), *Airport Design*, as updated by EB99A. These plans are required for each runway that is designated for instrument departures. When departure surfaces are clear of obstructions pilots can follow standard departure procedures. Obstacles, however, frequently penetrate the departure surface and may dictate non-standard climb rates, and/or higher departure minimums. Therefore, it is important for airports to identify and remove these obstacles whenever possible.

9.9.1. Departure Surface Runway 16, Departure Surface Runway 34, and Departure Surface Runway 10

No Obstructions Found

No obstructions were found penetrating or within 10 feet of penetrating the departure surfaces for Runway 16, Runway 34, or Runway 10.

9.9.2. Departure Surface Runway 10

Obstructions Found

Runway 28 was found to have two obstructions to the departure surface.

9.10. AIRPORT LAND USE AND RPZ CONTROL PLAN

The *Airport Land Use and RPZ Control Plan* provides general guidance for future land development on-airport as well as in the vicinity of airport property. Since aircraft noise is a major factor



influencing land use compatibility, the FAA’s Aviation Environmental Design Tool (AEDT) was used to predict noise levels in the year 2037 based upon aviation activity included within the approved forecasts. The resultant noise contours are included in the sheet along with the Airport’s Environs Zone.

The AEDT model estimates aircraft noise levels in decibels (dB) at ground level. Noise levels are quantified according to the A-weighted scale (which approximates the range of human hearing) using the Day-Night Average Level (DNL). A DNL of 65 dB (decibel) is considered by the FAA to be the threshold of impact for noise sensitive areas. The AEDT output includes noise contours, which are lines of equal loudness, with the highest levels centered on the runway and the quieter levels expanding outward. As shown on the *Airport Land Use and RPZ Control Plan*, the future noise contours for existing Runways 16-34 and Runway 10-28 at 65 DNL are entirely on airport property.

Additionally, this sheet of the ALP set details all parcels not currently owned by the Airport but within the limits of any of the Airport’s existing or future runway protection zones (RPZ) and expresses the preferred action for each in the future.

9.11. EXHIBIT “A” AIRPORT PROPERTY INVENTORY MAP

The *Airport Property Map* illustrates the Airport’s current property boundaries. The property map depicts the existing land area that currently comprises the entire Airport. Additionally, all properties and easements surrounding the Airport that have been acquired to date are identified with a unique alpha-numeric identifier with detailed information on the following sheet.

9.12. EXHIBIT “A” AIRPORT PROPERTY INVENTORY TABLES

The final ALP sheet provides detailed information about Airport property. Information about each parcel of Airport property that has been acquired is provided in their respective tables and include a numerical identifier, tax parcel number, book and page information, acreage, acquisition date, the AIP number (for land acquired using AIP funds), as well as the AIP acreage and the date of the AIP grant. The plan also depicts the proposed land to be acquired in fee, as well as the parcels that have been released and Section 163 determinations.

