



GHANA
CIVIL AVIATION AUTHORITY

ADVISORY CIRCULAR **AC-AD-008**

AIRPORT MASTER PLANS AND AIRPORT LAYOUT PLAN (Preparation and Submittal Guidelines)

GENERAL

Ghana Civil Aviation Authority (GCAA) Advisory Circulars from Aerodrome Safety and Standards (ASAS) contain information about standards, practices and procedures that the Authority has found to be an Acceptable Means of Compliance (AMC) with the associated Regulations.

An AMC is not intended to be the only means of compliance with a regulation, and consideration will be given to other methods of compliance that may be presented to the Authority.

PURPOSE

This Advisory Circular provides methods, acceptable to the Authority, for showing compliance with Part 24 and Part 27 of the Ghana Civil Aviation (Aerodrome) Regulations, 2011, LI 2004, as well as explanatory and interpretative material to assist in showing compliance.

REFERENCE

The Advisory Circular relates specifically to the Aerodrome GCARs and Manual of Standards (MOS).

STATUS OF THIS AC

This is the first AC to be issued on this subject.

FOREWARD

This document provides guidance to Aerodrome Operators and prospective aerodrome operators on the process of submitting construction drawings in the form of Airport Layout Plans (ALP) or Airport Master Plans (AMP) as may be required by GCAA for approval.

APPROVAL

Issue No : 01	Approved by:  _____ Director-General	_____ 2015
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Ghana Civil Aviation Authority
Private Mail Bag
Kotoka International Airport
Accra

June 30, 2015

Airport Sponsors and Consulting Engineers

Dear Sir/Madam

Airport Layout Plan (ALP) Preparation and Submittal Guidelines

The following are the Airport Layout Plan (ALP) preparation guidelines. These guidelines provide policies or practices used by the Aerodrome Safety and Standards Section of the GCAA for preparation, submittal, and review of ALP's.

These guidelines are intended to guide aerodrome sponsors and their consultants in the preparation and submittal of ALP's. The guidelines at no time are intended to contradict or change any of the requirements of the Ghana Civil Aviation Regulations (GCARs). The most current version of all GCARs, or other applicable rules or requirements shall be used in preparation of ALP's.

These guidelines were developed to provide consistency to ALP's prepared by aerodrome sponsors and their consultants throughout the country.

Please direct any questions or comments regarding these guidelines to:

Manager, Aerodrome Safety & Standards Office, GCAA
Phone (0302) 776171 Ext. 5051

Yours faithfully,

Daniel Acquah
Director, Safety Regulation
For: Director General

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1.0 INTRODUCTION

The GCARs require that a sponsor proposing to construct or make changes to airport layout submit Airport Layout Plan (ALP) Report or Airport Master Plan (AMP) to the Ghana Civil Aviation Authority for approval. The report is based on current physical conditions at the airport and provides recommendations for future improvement projects.

2.0 PURPOSE

This document provides guidance for Airport Layout Plan (ALP) preparation, submittal, and approval for airports that range in size and function from small general aviation to large commercial service facilities. The intent of this guidance is to foster a flexible approach to airport layout plan and to some extent master planning that directs attention and resources to critical issues. It is to be used as a **GUIDE** and checklist for the development and preparation of airport layout plans, and to **ASSIST** the preparer in conforming to Manual of Standards and changes. The scope of each layout plan must be tailored to the individual airport under evaluation.

An ALP is a planning document for airports. It is designed to show existing conditions, near term and long-term airport development.

The primary objective of the Safety Regulation Department is to improve safety in partnership with industry, and ensure that the frequency of fatal accidents reduces, or does not increase in line with forecast traffic growth.

3.0 PROJECT REQUIREMENTS

All proposed airport improvement projects must be shown on an approved ALP. If an airport sponsor is proposing an airport project not on the current ALP, an ALP update will be required before receiving a GCAA approval for the proposed project.

The airport sponsor shall not make or permit any changes or alterations in the airport or any of its facilities that are not in conformity with the ALP, as approved by the GCAA, which might adversely affect the safety, utility or efficiency of the airport.

The individual sheets that comprise the Airport Layout Plan drawing set will vary with each planning effort. The ALP preparer must work closely with the airport sponsor, the responsible GCAA office, and if appropriate, the applicable state agency, to define the requirements, standards, and criteria to be employed and must determine which sheets are necessary during the project scoping activities. To ensure that the ALP is comprehensive, all parties must agree to its content and standards.

3.1 Airport Master Plans and Airport Layout Plans

The goal of a master plan is to provide guidelines for future airport development which will satisfy aviation demand in a financially feasible manner, while at the same time resolving the aviation, environmental, and socioeconomic issues existing in a community.

Airport Master Plan is a concept of long-term development of an airport that defines the current, short-term and long-term needs of the airport. It provides a schedule for airport improvements, which help maintain the airport category minimum standards and its projected demands. The AMP provides detailed information on both airport and runway design criteria, which is necessary to define relationships with applicable standards. The design of the airport should be guided by the Manual of Standards for Aerodromes and Part 27 of the GCARs.

The Master Plan displays this concept graphically in the form of ALP and documents the data and logic upon which the plan is based. A master plan therefore provides narrative report and ALP which is prepared as part of a master plan. The narrative report is a brief written description of the individual elements represented in the set of Airport Plans for the airport. These drawing set is called Airport Layout Plans (ALP). An ALP is a scaled drawing depicting existing and future facilities and property necessary for the operation & development of the airport. It is a key “communication” and “agreement” document between the Airport Applicant and the GCAA.

Airport Layout Plans are prepared either as first time ALPs (i.e. part of AMP), or formal revisions based on changes to the airport, or informal revisions based on minor improvements to the airport. Informal revisions often referred to as pen-and-ink revisions, can be made to individual sheets of the ALP set.

If the ALP is prepared separately as an ALP Update, an ALP narrative report is required. The narrative will typically describe ALP development criteria and the rationale for the development shown on the ALP. Examples of these include airport reference code-related design criteria unique to specific areas of the airfield, or known or proposed modifications to GCAA design standards.

The quantity and form of ALP drawing sets must also be defined by the airport sponsor, GCAA and relevant state agencies. A reproducible, signed original copy and multiple paper copies of the drawings set may be required. Distribution requirements should be established during the project scoping.

Airports construction or improvements must be approved by the GCAA by submitting a form GCAA /SRD/ASAS - 03 "Notice of Landing Area Proposal." Completed airport improvements must be reflected on the ALP.

The four primary functions of the AMP that define its purpose are:

- (a). An AMP creates a blueprint for airport development by depicting proposed facility improvements. The AMP provides a guideline by which the airport sponsor can ensure that development maintains airport design standards and safety requirements, and is consistent with airport and community land use plans.
- (b). The AMP is a public document that serves as a record of aeronautical requirements, both present and future, and as a reference for community deliberations on land use proposals and budget resource planning.
- (c). The approved ALP enables the airport sponsor and the GCAA to plan for facility improvements at the airport. The approved ALP will also allow the GCAA to protect the airspace required for facility or approach procedure improvements.
- (d). The ALP can be a working tool for the airport sponsor, including its development and maintenance staff.

3.2 Update Frequency

Part 27 of the GCARs requires the airport sponsor to maintain an AMP that ensures the safety, utility and efficiency of the airport. It is also required that the sponsor keep the ALP up to date at all times.

A Master Plan should be completed or updated approximately every five years or when an airport experiences unexpected, rapid growth in activity. ALP must be updated depending on the type and size of the airport. If an AMP is less than 10 years old and there are significant changes in proposed airport expansion not shown on the current ALP, the preparation of a new ALP will be required. Minor changes may only require sheet updates.

If an AMP is more than 10 years old and the airport is proposing a project not shown on the ALP, or if the current ALP does not meet the existing standards required under these guidelines, new AMP update will be required.

If the proposed project is something that is normally not shown on an ALP (such as pavement maintenance work), an updated ALP may not be required prior to the project but should be done within a reasonable timeframe.

ALP drawing set, although the responsibility for review rests with the Aerodrome Operator, approval must still be coordinated with the GCAA.

The Airport Master Plan process is guided by the GCAA and ultimately results in projections of future growth and an Airport Layout Plan (ALP). An ALP is needed because all development at public airports must be done in accordance with GCAA-approved ALP.

3.3 As-Built Airport Layout Plans

After completion of airport construction projects shown on the ALP, an as-built ALP should be completed and submitted to update the current ALP on file. The symbology of the completed projects will need to be changed from proposed development to existing conditions. Minor changes, such as construction of hangars, may not require an as-built ALP, but projects that include construction/alteration of any aircraft movement areas will require an as-built ALP. Changes should be made on all applicable sheets, and only those sheets need to be submitted to the GCAA.

No other changes, other than changing proposed development to existing conditions, should be made to an as-built ALP. If other changes are made, it should be done as a new ALP update as opposed to an as-built ALP.

4.0 INITIAL ACTIONS

4.1 Airport Representative

An Aerodrome is a complex organisation with many interactive disciplines and functions. Therefore, it is possible that even the simplest of developments may need inter-departmental co-ordination.

To initiate the development procedure, the sponsor should appoint a project co-ordinator to liaise with the Head of Aerodrome Safety & Standards (ASAS) of the GCAA.

For major airport improvement projects or the development of new airport, an Initial Development Meeting (IDM) will be held to brief the GCAA on the project. The aerodrome management will be responsible for providing a written brief and minutes (for this and subsequent meetings).

Although consultants may attend development meetings, ASAS will only deal directly with the aerodrome sponsor or their management representatives, at least one of whom should always be in attendance. GCAA will not deal with consultants directly unless the Head of Aerodrome Safety & Standards agree that this is absolutely necessary for the advancement of a project.

(Note: Instructions for completing the application form can be found on pages 2&3 of the form)

4.2 Airport and Airspace Review process

After consultation with aviation stakeholders as appropriate, the GCAA will conduct and issue a determination to the proponent and advise those concerned of the GCAA determination.

Should the proposed development have any effect on the Instrument Approach, Missed Approach, and Visual Maneuvering (Circling) Procedures, including SIDS and STARS, details should be submitted to the GCAA Safety Regulation Department sufficiently in advance of the Initial Development Meeting (IDM) for the full impact to be considered by the appropriate departments.

Safety risk analysis of the entire cycle of the proposed development life cycle will form part of the review.

It should be noted that the processes of Town and Country Planning law are outside the terms of reference of the GCAA. Planning and Environmental issues must therefore be channeled through the appropriate local government planning authority.

5.0 ALP SUBMITTAL, REVIEW AND APPROVAL PROCESSES

Based on the conclusion of the Airspace Review, the proponent will be requested to furnish the GCAA with their Proposed Airport Layout Plan (ALP) or Master Plan.

The review of the Airport Layout Plan drawing set will typically be completed through multiple submittals. Milestones must be determined by the various reviewing offices, but typically include:

- (a). Identify planning Project & determine whether new or updated ALP is required.
- (b). Sponsor Review the “Airport Layout Plan Preparation & Submittal Guidelines”
- (c). An Initial Development Meeting (IDM) will be held to brief the GCAA on the project as indicated above. The aerodrome management will be responsible for providing a written brief and minutes (for this and subsequent meetings).
- (d). Sponsor and consultant review draft to ensure that the graphic depictions correctly present the sponsor’s goals and complete “ALP checklist”. Revise or correct ALP as necessary. (The “ALP checklist” in Appendix 10)

is to help the sponsor and consultant minimize the amount of time and expense of subsequent review-and-revision cycle).

- (e). Draft ALP Submittal – The airport sponsor initially submit one (1) signed Draft ALP drawing set and support documentation with cover letter to the GCAA ASAS Office for internal review and comments. Supporting documentation must include ALP checklists and must be predetermined with reviewing agencies. Appendix 1 provides description and sample transmittal letter.
- (f). Sponsor will also be required to **pay a fee for ALP evaluation and approval**. Fees differ depending on the use/category of the aerodrome.
- (g). GCAA reviews the ALP and return the documents to airport sponsor for corrections to be made if any. Comments provided are intended to strengthen your document.
- (h). When the revision is ready, the Applicant may schedule a meeting with the appropriate offices of the Regulation Department of the GCAA prior to re-submitting. Once the ALP is initially acceptable to GCAA, from the standpoint of Safety, Utility, and Efficiency” the, the sponsor incorporates further corrections based on the evaluation reports.
- (i). **Final ALP submittal** – The ALP drawing set is revised, as needed, based on the evaluation report. The sponsor must submit a minimum of five (5) signed copies of the ALP. The ALP drawing set, the accompanying narrative report and a completed ALP checklist (see appendix 10) should be sent to the GCAA ASAS office, GCAA. It should be noted that, the ALP, at this level, should be **a final version and should be completed to conform to the Manual of Standards, and incorporate all the requirements** of this document. The GCAA will review the ALP. If the submittal is incomplete or determined to be not acceptable, it will be returned without comment by GCAA for completion and re-submittal. GCAA Safety Department will not accept incomplete submittals. ALP’s must be submitted on 34" by 22" (ANSI D) sized plan sheets.
- (j). The GCAA will provide a letter issuing one of the following:

:

5.1 Unconditional Approval

The GCAA may unconditionally approve the Airport Layout Plan drawing set when all proposed development projects are either categorically excluded from additional environmental processing, have received a Finding of No Significant Impact resulting from an Environmental Assessment.

The GCAA may provide comments (unrelated to Safety, Utility, Efficiency) for a correction/change on the next ALP Update.

5.2 Conditional Approval

A Condition may also include a need for completion of environmental documentation according to EPA. Early Planning leads to efficient environmental processes. **The Airport Sponsor must coordinate all EPA studies.**

Note 1- ALP approval does not mean the commitment of the Authority or any state funds for any project/development shown on the ALP and does not constitute any environmental approval. A separate environmental review will be required.

If the ALP is accepted, the Head of ASAS will sign the copies; return one to the airport sponsor, retain one (1) and forward one copy each to the National Security via the Ministries, ANS Inspectorate and Air Traffic Services. If additional signed copies are desired by the airport or consultant, additional copies may be submitted for signature.

The ALP becomes a legal document and the sponsor should consider placing security controls on the ALP drawing set to prevent unauthorized changes to the drawings.

Sponsor scans and embeds (or otherwise attaches) GCAA's final ALP approval letter on the final ALP cover sheets.

On completion of construction, the GCAA should be contacted for a **final inspection of facilities** at the aerodrome. The applicant may also wish to invite the GCAA at certain phases of the construction. However, the Authority will charge a fee for each inspection conducted.

If the GCAA is satisfied, it shall issue authorization for the commencement of flight operations at the aerodrome after appropriate fee.

Note: The above processes focus principally on the planning process. Sponsors and consultants must address the environmental review requirements separately, with due consideration for the time required for analysis, public process (if appropriate) and other steps required prior to GCAA action on the ALP.

6.0 AIRPORT LAYOUT PLAN COMPONENTS AND PREPARATION

The Airport Layout Plan (ALP) is a graphic presentation to scale of existing and ultimate airport facilities, their location on the airport and the pertinent clearance and dimensional information required to show relationships with applicable standards that will be required to enable the airport to properly accommodate the forecast future demand. In addition, the ALP also provides detailed information on both airport and runway design criteria, which is necessary to define relationships with applicable standards and must be accepted by the GCAA.

The plan must be prepared in accordance with GCAA Manual of Standards. The ALP should normally present a 20-year, three-stage program that has been developed to support the projected activity at the airport. The stages of development correspond in years as follows: Stage I - 0 to 5 years; Stage II - 6 to 10 years; and, Stage III - 11 to 20 years.

In the case of smaller airports, some of the following sheets may be combined if practical and approved by GCAA.

The ALP drawing set can be one or two sheets depending on the complexity of the airport and the proposed development. Separate sheets may be required to delineate major phases of complex development or airfield reconfiguration projects. Typical components to be included in ALP submittals (set) are those listed in table.

Table 1 – Components of ALP Submittals

Component	ALP Drawing Set	Smaller Airport	Larger Airport
1. Transmittal Letter	-	X	X
2. ALP Narrative Report	-	X	X
3. Airport Layout Plan Set	Airport Data Sheet;	X	X
	Airport Layout Drawing	X	X
	Airport Airspace Drawing;	X	X
	Inner Portion of the Approach Surface Drawing;	X	X
	Airport Departure Surfaces Drawing		X
	Terminal and/ or Building Area Drawing;		X
	Land Use Plan/Drawing;		X
	Airport Property Map	X	X
4. Additional plans for larger and more complicated airports	Airport/Runway Departure Surface Drawing		
	Declared Distance Drawing		
	Airport Access Plans		
	Plan/Profile Drawing of Runway;		
	Facilities Layout Plan;		
	ATCT Shadow Study;		
	Utility Drawing.		

Note 1- If the ALP report is prepared as part of a Master plan, an ALP narrative report will only be duplication and will not be required. It is necessary only when the ALP is developed separately as an ALP update.

Note 2 - All components should consider and indicate existing, future, ultimate designs.

Note 3 – In some instances, the title sheet is omitted when its elements are detailed as part of the Airport Layout Drawing.

6.1 ALP Narrative Report

Definition

This is a condensed report explaining reasoning behind proposed airport construction or improvements, and the important features of the ALP. A narrative report should accompany any new ALP and all ALP revisions. The level of detail should be discussed with the Aerodrome Safety & Standards (ASAS) prior to starting the ALP update. Additionally, the (ASAS), Airport Sponsor, and consultant should discuss the following:

- Determine whether a user survey and/or forecasts are needed;
- Existing and future approach category and design group;
- Existing and future critical aircraft;
- Existing and planned instrument approach types;
- Existing and future Building Restriction Line (BRL) setbacks;
- Existing and future declared distances (if applicable).

The narrative report provides useful information in an understandable format to the airport sponsor and facilitates final GCAA approval process. When ALP preparation is being accomplished in conjunction with a Master Plan Study, the Master Plan Report will contain this information, and an ALP narrative report is not necessary. When periodically updating ALP's, a narrative report is not required unless major changes in airport function, classification or facilities are anticipated.

6.2 Components

Aviation demand forecasts and facility requirements; aircraft operational characteristics; environmental considerations; and as characterized in the previously noted statement of goals, the general direction of airport development prescribed by airport management. Forecasts are utilized as a basis for planning; however, facilities are only to be constructed to meet actual demand.

The items included in a narrative report are not limited to, but should include the following:

- (a).Inventory - Includes data on existing airport facilities, aviation activity (total operations, itinerant operations, and instrument operations), based aircraft and critical aircraft. This element may also include the results of a need study or user survey where the planned improvements require documentation of need.

- (b).Forecasts – Basic aeronautical forecast of aviation demand. Includes as a minimum, short (0-5 years), intermediate (6-10 years) and long range (11-20 years) forecasts for the following:
- (i) Total annual operations
 - (ii) Annual itinerant operations
 - (iii) Based aircraft
 - (iv) Annual instrument approaches
 - (v) Existing and future annual operations by the critical design aircraft. For the critical design aircraft, identify the type of aircraft, (i.e.: design group, approach speed, and gross loading characteristics)
- (c).**Demand/Capacity Analysis** - Includes a comparison of existing airport facilities and forecast needs to determine facility requirements, such as:
- (i) Length, strength and number of runways
 - (ii) Apron and tiedown requirements
 - (iii) Area requirements for terminal buildings, hangars, and auto parking
 - (iv) NAVAIDS and other airport aids
 - (v) Taxiways
- (d).**Site Selection** - If a new airport or new runway is being considered, include a discussion of the factors which influenced its location, such as: airspace, environmental considerations, community needs, airport access, land availability, total costs, and engineering factors which may affect site development. For more details on selection a suitable site location for aerodrome, see GCAA publication on “Aerodrome Site Selection Guide – ASAS TP 06”.
- (e).**Stage Development** – Development summary for stages of construction and layout sketches depicting the main items of development in that stage. Indicate staging of improvements shown on the ALP, based on short, intermediate and long range (0-5, 6-10 and 11- 20 years) forecasts of aviation activity.
- (f). **Economic Feasibility** - Show comparisons of annual costs needed to implement the phased development with annual revenues available or forecast to be available. Cost estimates for each stage of the proposed development should be included.
- (g).**Wind Data** - Discuss the wind data and coverage. Identify the source, period covered, and the number of observations. If applicable, determine

the best alignment for the primary and/or the crosswind runway for optimum wind coverage.

- (h). **Alternative Analysis** - Briefly discuss and analyze the obvious alternatives. Explain why the selected alternative was chosen.
- (i). **Approaches** - Discuss the existing and future approaches. Determine if there are or will be any obstructions to Obstacle Limitation Surfaces as detailed in Appendix 4 of this publication. If there are obstructions, discuss their penetration and their proposed disposition. Identify any existing determinations of no hazard and the date granted. Determine if any additional determinations of no hazards are necessary. Describe the object and why a determination of no hazard is necessary.
- (j). **Waivers & Modifications to GCAR Design Standards** - Rationale for unusual design features and/or modification to GCAA Manual of Standards. Identify any existing waiver and the date granted. Determine if any additional waivers that are necessary. Identify the violations to all GCAR standards including: approach surfaces, runway and taxiway separation distances, runway and taxiway safety areas, building restriction lines, controlled activity area, and the instrument landing system critical areas. Describe what is being waived and why a waiver is necessary, or the proposed disposition of each violation.
- (k). **Compatible Land Use & Coordination**- Describe any local and/or regional planning efforts and zoning ordinances in effect or anticipated which would have an effect on or be affected by the airport development. Obtain and append to the Report evidence that the ALP was coordinated with appropriate local and national governmental units (e.g., City, District Assemblies or Metropolitan Planning Authority, Ghana Highway Authority, Urban Roads, Utility Companies, etc.), and found to be consistent with their plans.
- (l). **Other** - Remember the primary purpose of the narrative report is to provide useful and understandable information and guidance to the airport sponsor. It also provides the GCAA with important information needed to review and ultimately approve the ALP.

7.0 AIRPORT LAYOUT PLAN (ALP) SET

7.1 General Requirements

ALP clarity is of the utmost importance. Make sure that each sheet is readable and that all line types, widths and colors provide a clear depiction of development. The sheet size, scale, and minimum letter size should be consistent with this guide.

For all aerodromes, ALP's must conform to the current version of Manual of Standards. Each sheet should show the following:

- (a). Plan size should be 34" X 22" (ANSI D)
- (b). Applicable scale
- (c). Title, revision and signature/approval blocks (i.e. completed with signature and date of latest revision).
- (d). Existing and ultimate airport development elements
- (e). All sheets will have legend depicting existing and ultimate elements with different symbology (**Note: Not required on title sheet**) that explains all pertinent features that are not identified. Existing features should be shown with solid lines, and future and ultimate items shown with dashed lines.
- (f). North Arrow - Show True North to the top left of each sheet. Also indicate magnetic variation and the year of the declination used.
- (g). Because of the number of imaginary surfaces required by GCAA to be depicted on ALP's, it is necessary to separate ALP's into sections corresponding to Existing, Future (where appropriate), and Ultimate. This separation should apply to Layout Sheets and Approach Sheets.
- (h). Numerical and graphic scale. If the plans are reduced after plotting, numerical scale should be blocked out.
- (i). All coordinates shall be in WGS-84 datum and all ALP elevations should be established using elevations amsl.
- (j). Identify runways by numerical designation in all references to a specific runway.
- (k). If the ultimate development is to occur in stages, the ALP must show all phases/stages of construction of the ultimate development in all applicable drawings.

APPENDICES

APPENDIX 1 – TRANSMITTAL LETTER

1) Introduction

Airport Master Plans or ALPs should be sent to GCAA for aeronautical review using a standardized letter signed by duly signed the chief executive or very senior person of the organisation making the application.

The letter should contain the following:

- (a). A statement as to whether the submittal is a first time ALP or an update of previous ALP. If an update, state what the update replaces, e.g., “it replaces an approved ALP dated_____.”
- (b). A page by page description of the changes made to the previous ALP. (An extra copy of the ALP with the changes highlighted may be submitted to aid GCAA in their review, but it is not required.)
- (c). Any request for waivers or “determinations of no hazard” should be stated in the description of the page on which the items in question are shown. State the reason for the request.
- (d). The end of the letter should summarize the requested waivers and “determinations of no hazard”. If there are none, it should be so stated.
- (e). There should be a statement that, “There are no obstructions in the runway strips, or to the safety areas.” if such is the case.

2) **Sample Letter**

July 28, 2015

The Director General
Ghana Civil Aviation Authority
PMB – KIA
Accra

Attn: Mr. Acoustics Williams
(Manager, Aerodrome Safety & Standards)

Dear Sir,

SIMPA COMMUNITY AIRPORT - AIRPORT LAYOUT PLAN

Enclosed for your review and approval is an Airport Layout Plan (ALP) for the Simpa Community Airport. The ALP was developed in accordance with Manual of Standards. This ALP replaces the previously approved ALP dated November 21, 1995. The ALP changes consist of showing updates for the existing conditions and a revised length on the secondary Runway 13/31. The following is a page by page discussion of the changes to the ALP:

Sheet 1 – Title sheet: The pavement configuration has been revised to show current conditions. The Airport Data box has been revised for existing and ultimate navigational and visual aids. The Design Critical Aircraft for Runway 4/22 is shown as 2A; Runway 13/31 is shown as 4E.

Sheet 2 – Airport Layout Drawing: Runway 4/22 is shown as the primary runway with an ultimate length of 6,000. The runway will have NPI approaches with 34:1 approach slopes and a full length parallel taxiway on the west side to serve the hangar area. Ghunney street will ultimately be closed to provide the necessary clearance. Runway 13/31 is the crosswind runway and is shown as paved and reduced in length from 3,850' on the previously approved ALP to 3,400'.

Sheet 3 – Terminal Area Drawing: This drawing has been updated to show new hangars and the cattle fence.

Sheet 4 – Terminal Area Drawing: This is a new drawing showing hangars on the west side of Runway 4/22.

Sheet 5 – Runway 4 Approach Drawing: A 1,004' extension to the southwest is shown for an ultimate runway length of 6,000. Ghunney Street will be relocated outside the ultimate runway strip and Runway Safety Areas. The ultimate property line is shown. Approximately 36 acres would need to be acquired.

The trees (4.1) are obstructions to the existing and ultimate 7:1. These trees provide a visual and noise buffer to the homes located along Ghunney Street. For that reason, a “Determination of No Hazard” is requested.

Sheet 6 – Runway 22 Approach Drawing: The existing 20:1 approach is shown with Ghartey Road closed to provide the appropriate clearance. The 1995 ALP used a threshold location plane to provide the clearance, but runway strip criteria for night operations won’t allow it. The City decided to close the road rather than displace the threshold. The ultimate approach 22 surface is shown as 34:1. The trees (22.9) are obstructions to the ultimate 7:1 are located in the front yards of adjacent homes. A “Determination of No Hazard” is requested.

Sheet 7 – Runway 13 Approach Drawing: The existing turf crosswind runway is shown to be replaced with a 75’ x 3,400’ paved runway for visual use only. The length on the west end was reduced because of environmental concerns in the proximity of the river. 31 acres of fee or easement property will need to be acquired.

Sheet 8 – Runway 31 Approach Drawing: The existing turf crosswind runway is shown to be replaced with a 75’ x 3,400’ paved runway for visual use only. The length on the east end was reduced to provide clearance over Ghartey Road, since the City will not be closing the road.

Sheet 9 – Land Inventory Map: No changes.

Design Standard Waivers

The ALP was completed utilizing the specifications in the Manual of Standards. No waivers are requested.

Summary of No Hazard Determinations Requests

1. Sheet 5: The trees (4.1) are obstructions to the existing and ultimate 7:1. These trees proved a visual and noise buffer to the homes located along Ghunney Street. A “Determination of No Hazard” is requested.
2. Sheet 6: The trees (22.9) are obstructions to the ultimate 7:1. These trees are located in the front yard of adjacent homes. A “Determination of No Hazard” is requested.
3. There are no obstructions to the runway strip or the safety area.

We believe public circularization is not necessary, since this is an updated ALP. Please conduct an aeronautical study of this plan and respond with your comments.

If you have any questions, please contact me at (0432) 267-5273 or at emmanuel.akotey@simpa.airport.com

Sincerely,

Emmanuel Akotey
Airport Engineering Section

Enclosure

cc: Manager, NAVAIDs
 Manager, Resource and Planning Branch
 Manager, Project

APPENDIX 2 – AIRPORT DATA SHEET

The Airport Data Sheet, also known as the Airport Data Summary provides a quick overview of the airport's location; wind analysis, aircraft design group and signatures.

(a) Features:

Items that must be shown on a title sheet include the following:

- (1) Title and Revision Blocks
- (2) Approval/signature blocks
- (3) Location & Vicinity maps
- (4) Wind rose and coverage analysis
- (5) Airport data table
- (6) Design Critical Aircraft Data Table.

(b) Preparation Guidelines:

At times, elements of this sheet are incorporated in the preparation of Airport Layout Drawing. It is easy therefore to find all the above features on an Airport Layout Drawing.

Items that must be shown on a Airport Data Sheet include the following:

- (1) Sheet size – ANSI D (22" x 34")
- (2) Index to sheets
- (3) Title and Revision Blocks.
- (4) Submission of final ALPs for GCAA approval must reflect sponsors approval of the plan). It should contain revision block and approval/signature blocks for the following:
 - Engineer/Consultant
 - Airport Sponsor
 - GCAA
- (5) Outline of pavements, existing and ultimate, should appear in the in the middle of the sheet at an appropriate scale.

- (6) Location map – showing general area of the location of the airport. (i.e. showing major trunk roads).
- (7) Vicinity map – showing immediate area around the airport
- (8) Wind data table, wind rose and coverage analysis – All Weather and Instrument Flight Rules (IFR) weather wind rose
 - (a). Cite data source (i.e., weather station) and time period covered. If IFR wind rose is depicted, state % of time IFR conditions exist.
 - (b). Include individual and combined coverage for:
 - Runways with 10.5 knots crosswind.
 - Runways with 13 knots crosswind.
 - Runways with 16 knots crosswind.
 - Runways with 20 knots crosswind.
- (9) Airport data table. The airport data table should contain the following:
 - (a). Airport use (Basic Utility, General Aviation, Transport/Corporate, Airline/Cargo etc).
 - (b). Airport Reference Point - Lat/Long of center of ultimate development, to the nearest hundredth of a second.
 - (c). Airport elevation - the highest point of the runways, to the nearest tenth of foot.
 - (d). Mean maximum temperature of the hottest month.
 - (e). Airport and Terminal Navigational Aids - (VOR, NDB, ILS, GPS, etc.)
 - (f). Visual Aids - (VASI, PAPI, REIL, MALS, etc.)
 - (g). Miscellaneous Facilities - (Rotating Beacon, segmented circle, taxiway lighting, etc.)
- (10) Runway Data Table (Existing and Ultimate, unless there is a significant intermediate step). Include the following runway details:
 - (a). Approach Visibility Minimums - Include designated or planned approach visibility minimums (Visual, 1 mi, 3/4 mi, 1/2 mi, CAT II, or CAT III).
 - (b). Dimensions - Note length and width (for existing and ultimate) within outline of runway.
 - (c). Effective gradient expressed as a %: difference in high and low point divided by the total runway length.
 - (d). Pavement Design Strength will be included.
 - (e). Orientation - Depict runway end numbers and show true bearing - accuracy to nearest 0.01 degree.

- (f). Lighting - Depict existing and ultimate threshold lights with symbols. Show type of lighting (MIRE, etc.). Don't depict runway edge lights on drawing.
- (g). Marking - Include the type of runway markings (V, NP, or P).
- (h). Stage Lengths - Show only existing and ultimate. (Depict interim stage lengths on stage development sketches in ALP Narrative Report.)
- (i). End Coordinates - Note end (existing and ultimate) of each runway - accuracy to nearest 0.01 second.
- (j). Monuments - Depict the location of all survey monuments and reference markers. As a minimum, monuments should be established to locate the runway centerline at the runway ends and at displaced thresholds. Include a note describing the manner in which these monuments are protected.
- (k). Declared Distances - Identify any clearway/stopway portions in the declared distances and any runway portions not included in the declared distances. Include all declared distances for all runway directions in the Runway Data Table. Declared distances associated with each runway direction may also be shown on the drawing (refer to Manual of Standards for Aerodromes).

(11) Design Critical Aircraft Data Table. Identify the critical aircraft design groups and approach categories which regularly use each runway for existing data and which are anticipated for ultimate development. The following should be included:

- Runway Identification
- Aircraft Weight - Maximum gross take-off weight of critical aircraft (**NOT PAVEMENT STRENGTH**).
- Aeroplane Reference Field Length - for category of the critical aircraft using the airport (Category 1, 2, 3 or 4)
- Wing Span - Maximum wing span for the design group of the critical aircraft using the airport (A, B, C, D or F)
- Tail height - Tail Height of critical aircraft.
- Airport Reference Code (ARC) – coding system used to relate airport design criteria to the operational and physical characteristics of the airplanes intended to operate at the airport (derived from aeroplane reference field length and wing span/gear span).

Note: The data need not be all from the same specific aircraft. Approach speed can be for a Lear Jet, wingspan for a Citation, etc depending on the aircraft with a more demanding situation.

APPENDIX 3 – AIRPORT LAYOUT DRAWING

The sheet provides overview of the airport's general layout, navigational aids; aircraft physical characteristics and aerodrome reference code.

This sheet is a detailed, scaled representation of ***existing and ultimate airport facilities***. It provides pertinent dimensions and clearance information pursuant to applicable Standards. This sheet should be scaled to show the entire airport facilities. Zoning and approach slopes are not required to be shown on this sheet.

(a) Features:

- (1). General Layout of existing and proposed facilities, buildings and other features.
- (2). Basic airport and runway data tables.
- (3). Legend and building tables.
- (4). Title and Revision Blocks
- (5). Sponsor Approval Block
- (6). List of approved modifications to elements in the Manual of Standards for Aerodromes, including proposed and planned modifications to standards, such as the use of declared distances for airport design, expected to be approved as part of the ALP review and approval process.
- (7). Outline of pavements, existing and ultimate, should appear in the middle of the sheet

(b) Preparation Guidelines:

- (1) Sheet size – 34" X 22" (ANSI D)
- (2) Scale - Determined by airport size. Stay within range 1" = 200 to 1"= 600.

- (3) North Point - Indicate both True and Magnetic North and the year of the magnetic declination used. Orient drawing so that north is to the top of sheet.
- (4) Runway Data Table (Existing and Ultimate, unless there is a significant intermediate step). Include the following runway details:
- (a). Approach Visibility Minimums - Include designated or planned approach visibility minimums (Visual, 1 mi, 3/4 mi, 1/2 mi, CAT II, or CAT III).
 - (b). Dimensions - Note length and width (for existing and ultimate) within outline of runway.
 - (c). Effective gradient expressed as a %: difference in high and low point divided by the total runway length.
 - (d). Pavement Design Strength will be included.
 - (e). Orientation - Depict runway end numbers and show true bearing - accuracy to nearest 0.01 degree.
 - (f). Lighting - Depict existing and ultimate threshold lights with symbols. Show type of lighting (MIRE, etc.). Don't depict runway edge lights on drawing.
 - (g). Marking - Include the type of runway markings (V, NP, or P).
 - (h). Stage Lengths - Show only existing and ultimate. (Depict interim stage lengths on stage development sketches in ALP Narrative Report.)
 - (i). End Coordinates - Note end (existing and ultimate) of each runway - accuracy to nearest 0.01 second.
 - (j). Monuments - Depict the location of all survey monuments and reference markers. As a minimum, monuments should be established to locate the runway centerline at the runway ends and at displaced thresholds. Include a note describing the manner in which these monuments are protected.
 - (k). Declared Distances - Identify any clearway/stopway portions in the declared distances and any runway portions not included in the declared distances. Include all declared distances for all runway directions in the Runway Data Table. Declared distances associated with each runway direction may also be shown on the drawing (refer to Manual of Standards for Aerodromes).
- (5) Airport Reference Point (ARP) - Show location based on ultimate airport configuration with latitude and longitude to the nearest second based on WGS 84.

- (6) Topographic Information - Show ground contours at intervals of 3 feet to 10 feet (1m to 3m) depending on terrain. Draw in with very light lines.
- (7) Elevations: Include the following:
- i. Runway - at existing and ultimate ends, displaced thresholds, touchdown zones, intersections, high and low points - accuracy to the nearest 1/10 of a foot (1 cm) where the elevation is not subject to change with time.
 - ii. Structures on Airport - If Terminal Area Plan Drawing is not to be included, show top elevations on this sheet. Use table and numbering system.
- (8) Building Restriction Lines - Show on both sides of runways and extend to airport property line.
- (9) Approach Surface Data Table - Include the existing and ultimate RESA dimensions as RESA width and RESA length beyond the stop end of runway and/or depict the RESA on drawing with dimensions.
- (10) Runway End Safety Areas (RESA) - Include the existing and ultimate RESA dimensions as RESA width and RESA length beyond the stop end of runway and/or depict the RESA on drawing with dimensions.
- (11) Runway Strip - Include the existing and ultimate Runway dimensions in the Runway Data Table as Runway strip width and runway strip length beyond the stop end of runway and/or depict the runway strip on drawing with dimensions.
- (12) Specify "NO OFZ OBJECT PENETRATIONS" when no object other than frangible NAVAIDS penetrates the Runway Strip. Otherwise show the object penetrations and indicate how they will be eliminated. The runway strip may be depicted on the drawing with dimensions to facilitate identifying object penetrations.
- (13) Threshold Details - Depict the thresholds with coordinates - accuracy to nearest 0.01 second, elevation, displacement from runway end. Show any object penetrations and indicate how they will be eliminated.
- (14) Holding Position Signs and Markings - Depict the holding position signs and markings distance from runway centerline. Use dimension lines.

(15) Taxiway Details - Include the following:

- i. Dimensions - Show widths and separations from runway centerline to parallel taxiway, aircraft parking areas, building restriction line, and objects. Use dimension lines.
- ii. Lighting and marking - Indicate by notes in Airport Data Table.

(16) Building Table - Identify existing and proposed structures by number and include a description of the structure. When appropriate, expand to include a column for the top building elevations if a Terminal Area Drawing is not included.

(17) Areas reserved for future aviation development and services are outlined, e.g., general aviation, fixed base operations, heliports, cargo facilities.

APPENDIX 4 - AIRPORT AIRSPACE DRAWING

1.0 Introduction

The Airport Airspace Drawing is based upon Obstacle Limitation Surfaces in the Manual of Standards for Aerodromes, which deals with Objects Affecting Navigable Airspace and how to manage them. In order to protect the airport's airspace and approaches from hazards that could affect the safe and efficient operation of aircraft, Obstacle Limitation Surfaces (OLS) criteria should be established to provide guidance in controlling the height of objects in the vicinity of airports. GCAR

The airspace drawings show obstructions to navigation and indicate areas that an airport owner may need to regulate in order to prevent or remove such obstructions.

Airport Airspace Drawing (ICAO Obstacle Chart-Type B) depicts all OLS around the airport. The airport airspace drawing sheet(s) shall include all obstacle limitation surfaces plus a drawing of the approach surfaces to the full length of the approach surface. The surfaces shown should be for the **ULTIMATE** runway lengths. The drawing is intended to show the relationship between the imaginary surfaces and the topographical features. Emphasis is on defining significant objects and elevations that are critical to airport operations. Significant objects include all obstacles penetrating the surfaces and close-in obstacles 5ft below the surfaces.

All obstructions, natural and constructed, within any imaginary surface must be shown in a schedule of obstructions with the proposed disposition. The schedule should show a reference number for all obstructions shown on the plan and profile drawings. The disposition of the obstruction must be shown along with the effective date of the disposition.

The airport owner should protect obstacle limitation (imaginary) surfaces through height limitations on development both on and around the airport and especially in the approach areas and departure areas of the runways.

The ALP may be adopted by reference and used to limit the height of objects that would interfere with airport usage. Such adoption needs to be coordinated with local zoning authorities such as the city or county of jurisdiction. Close coordination with the county or city planning departments is essential for successful implementation of airport zoning.

The Airport Airspace Drawing:

(a) Includes:

- (1). Plan view of all obstacle limitation surfaces based on ultimate runway lengths.
- (2). Small scale profile views of ultimate approach surfaces.
- (3). Obstruction Data Tables, as appropriate (refer to inner portion of the approach surface discussion).

(b) Preparation Guidelines:

- (1) Sheet size – 34" X 22" (ANSI D).
- (2) Title & Revision Blocks
- (3) Plan View Details

Scale for the plan view (Existing & Ultimate) is 1" = 1000 to 1" = 3000

- (i). Show runway end numbers.
- (ii). Include 10 m or 50-foot elevation contours on all sloping surfaces.
- (iii). When horizontal and/or conical surfaces overlap the approach surface, draw in the more demanding surfaces with solid lines and the others with dashed lines.
- (iv). Identify objects, and note top elevations thereof, which penetrate the obstacle limitations surfaces, except those which are within the inner portion of the approach surfaces. For the latter, add note, "Refer to the inner portion of the approach surface plan view details for close-in obstructions."
- (v). For precision instrument runways (i.e., approaches 50,000 feet (15 000 m) in length), use a cut line and show the balance of 40,000 feet (12 000 m) approach on a separate sheet.
- (vi). Include a note specifying any height restriction zoning ordinances/statutes in the airport environs.

(4) Approach Profile Details

Scale: 1" = 1000 to 1" = 3000 for *horizontal* and 1" = 100 to 1" = 400 for *vertical*.

- (i). Depict the ground profile along the extended runway centerline representing the composite profile based on the highest terrain across the width and along the length of the approach surface.
- (ii). Depict all significant objects within the approach surfaces regardless of whether they are obstructions (e.g., roadways, rivers, bluffs, towers, etc.). Note top elevation of all significant objects.

(iii). Show existing and ultimate runway ends and approach slopes.

2.0 Obstacle Limitation Surfaces

The safe and efficient use of an aerodrome, airport or heliport can be seriously eroded by the presence of obstacles within or close to the takeoff or approach areas. The airspace in the vicinity of takeoff or approach areas (to be maintained free from obstacles so as to facilitate the safe operation of aircraft) is defined for the purpose of either:

- regulating aircraft operations where obstacles exist;
- removing obstacles; or
- preventing the creation of obstacles.

An obstacle limitation surface (OLS), also known as, the aerodrome imaginary surfaces establishes the limits to which objects may project into the airspace associated with an aerodrome yet assure that aircraft operations at the aerodrome will be conducted safely. The specific imaginary surfaces, which should be protected from obstructions, include:

- Primary Surface
- Approach Surface
- Transitional Surface
- Horizontal Surface
- Conical Surface

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 determined by the most precise approach existing or planned for that runway end. Table 4.1 below provides for the dimensions of imaginary surface sizes for specific approach categories.

The following civil airport imaginary surfaces are established with relation to the airport and to each runway:

(a) Primary surface. A rectangular area symmetrically located about each runway centerline and extending a distance of 200 feet beyond each runway threshold. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway; but when the runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at each end of that runway. Width of the Primary Surface is based on the type of approach a particular runway has. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline.

(b) Horizontal surface. A horizontal plane (level oval-shaped area) situated 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the primary surface of each runway of each airport and connecting the adjacent arcs by lines tangent to those arcs. The plane limit extends to 5,000 or 10,000 feet outward, depending on the runway category and approach procedure available.

(c) Conical surface. A surface extending outward and upward from the periphery of the horizontal surface at a slope of 1:20 for a horizontal distance of 4,000 feet.

(d) Approach surface. A surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface (200 feet beyond the runway threshold). An approach surface is applied to each end of each runway based upon the type of approach available or planned for that runway end. That is, at a ratio determined by the runway category and type of approach available to the runway.

The width and elevation of the inner end conforms to that of the Primary Surface while approach surface length and width of the outer end are governed by the runway category and approach procedure available.

(e) Transitional surface. A sloping area beginning at the sides of the Primary and Approach Surfaces and sloping upward and outward at a ratio of 1:7 until it intersects the Horizontal Surface. Transitional surfaces for those portions of the precision approach surface which project through and beyond the limits of the conical surface extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at right angles to the runway centerline.

Table 4.1- Dimensions of Obstacle limitation surfaces for various approach categories

ITEM	Type of Approach & Dimensional Standards						
	Visual Runway		Non-Precision Instrument Runway				Precision Instrument Runway
	Utility	Large than utility	Utility	Large than utility			
NP + ³ / ₄				NP ³ / ₄			
1	Width of primary surface / Approach surface width at inner end - W	250	500	500	500	1,000	1,000
2	Approach surface width at end - W'	1,250	1,500	2,000	3,500	4,000	16,000
3	Approach surface length - L	5,000	5,000	5,000	10,000	10,000	*10,000+40,000
4	Approach Surface slope - S	1:20	1:20	1:20	1:34	1:34	*1:50 / 1:40
5	Radius of horizontal surface	5,000	5,000	5,000	10,000	10,000	10,000

6	Flare ratio - A	0.10	0.10	0.15	0.15	0.15	0.15
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Note 1 - Definitions

*Precision instrument approach slope is 1:50 for inner 10,000ft and 1:40 for additional 40,000ft.

$\frac{3}{4}+$ – planned approach visibility minimums greater than $\frac{3}{4}$ statute mile

$\frac{3}{4}$ – planned approach visibility minimums as low as $\frac{3}{4}$ statute mile

Visual Runway - a runway intended solely for the operation of aircraft using visual approach procedures.

Utility Runway - a runway that is constructed for and intended to be used by propeller driven aircraft of 5,700 kg maximum gross weight and less.

Larger than Utility Runway - a runway that is constructed for and intended to be used by propeller driven aircraft of greater than 5,700kg maximum gross weight and by jet powered aircraft.

Non-precision Instrument Runway - a runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigation equipment, for which a straight-in nonprecision instrument approach procedure has been approved or planned.

Precision Instrument Runway - A runway having an existing instrument approach procedure utilizing an Instrument Landing System (ILS) or a Precision Approach Radar (PAR).

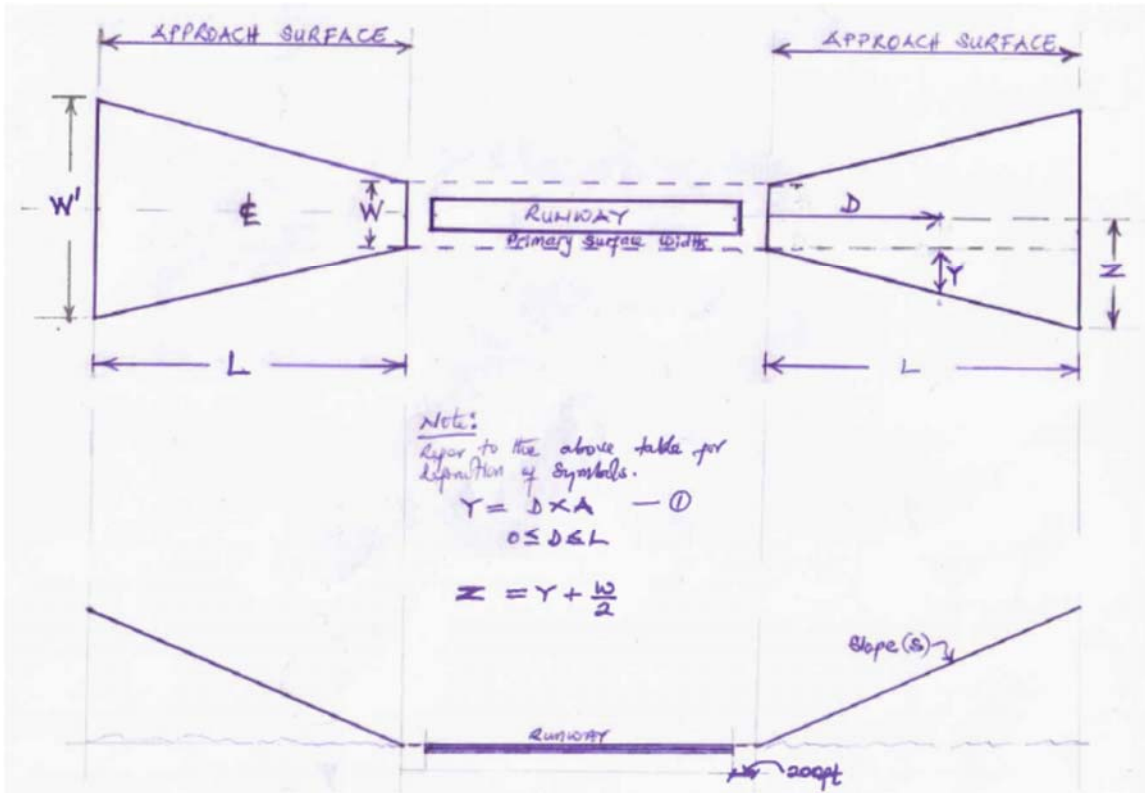
Note 2- Procedure

The development of various imaginary surfaces (obstacle limitation surfaces) and other flight procedures (as necessary) form the Airport Airspace Drawing.

For visual approaches, two parameters of the critical aircraft are needed in the decision making:

- Maximum gross weight; and
- Powerplant type (i.e. jet or propeller)

The above parameters are compared with the definitions in note 1 in choosing type of approach.



APPENDIX 5 - INNER PORTION OF APPROACH SURFACE DRAWING

This drawing is an easily-readable, scaled detail of the approach surfaces. Drawings containing the plan and profile view of the inner portion of the approach surface to the runway and a tabular listing of all surface penetrations are required for all existing and ultimate runways in all airport layout plan packages.

Large-scale drawings with both plan and profile delineations intended to facilitate identification of the roadways, utility lines, railroads, structures, and other possible obstructions that may lie within the confines of the inner approach surface area associated with each runway end. As with the *AIRPORT AIRSPACE DRAWINGS*, the *INNER PORTION OF THE APPROACH SURFACE DRAWINGS* are based upon the ultimate planned runway length, along with the ultimate planned approaches to each runway.

(a). Includes:

- (1). For each runway end, a large scale plan view of the inner portion of the approach, usually limited to the area out to where the approach surface reaches a 100-foot (30 m) height above the runway end.
- (2). Projected profile views of Item (1) above.
- (3). Show incompatible land use
- (4). Obstruction Tables.

(b). Preparation Guidelines:

- (1). Sheet size – 34" X 22" (ANSI D), same as other.
- (2). Scale
 - i. Plan view scale (Existing & Ultimate) is 1"=200'
 - ii. Approach profiles scale is 1"=200' horizontal and 1"=20' vertical.
- (3). Title and Revision Blocks - Same as for Airport Layout Drawing.
- (4). Plan View Details
 - i. Use aerial photos for base maps when available.
 - ii. Use numbering system to identify obstructions.
 - iii. Depict property line when it is located within the area.

- iv. When traverse ways (roads, railroads, waterways, etc.) cross the area beneath the approach surface, show the traverse way elevation and vertical clearance between the traverse way and the approach surface at the approach surface edges and extended runway centerline. Also, number these points for subsequent use on the profile drawings.
- v. Depict existing and ultimate end of runway. Note runway end number.
- vi. Show ground contours (with light line) within the area.

(5). Profile View details

- i. Depict terrain along runway safety area and significant items such as fences, stream beds, roadways etc., regardless of whether the items are obstructions.
- ii. Identify obstructions with numbers used on plan view.
- iii. Depict cross-section of roads and railroads with dashed lines where they intersect outer edges of approach surface.

(6) Obstruction Table Details

- i. Prepare separate table for each approach surface **and** specify type and slope of the approach surface.
- ii. Provide columns for obstruction identification number **and** description, the amount of approach surface penetration, and the proposed disposition of the obstructions, including no action.

APPENDIX 6 - AIRPORT DEPARTURE SURFACES DRAWING

This drawing depicts large scale plan views of departure surfaces for runway end(s) designated primarily for instrument departures. The one-engine inoperative (OEI) obstacle identification surface (OIS) should be shown for any departure runway end(s) supporting aircraft operations. **This surface only applies to IFR airports.**

Preparations

(a) Scale

Plan View: 1"=1000'

Profile View: Horizontal is 1"=1000' to 2000'
Vertical is 1"=100'

(b) Sheet size 34" X 22" (ANSI D)

Procedure

Plan and profile view of existing or ultimate *approach* areas are required for all existing and ultimate runways in all airport layout plan packages.

Every obstruction or group of obstructions (trees) to every imaginary surface as defined in the Manual of Standards for Aerodromes must be listed. This includes the entire primary, transition, and approach surfaces. Objects along the entire length of the runway must be considered.

It may be necessary to show some object elevations on the layout plan sheet or terminal area sheet. Show tree removal limits necessary to provide clear surfaces. This requires survey of these obstructions

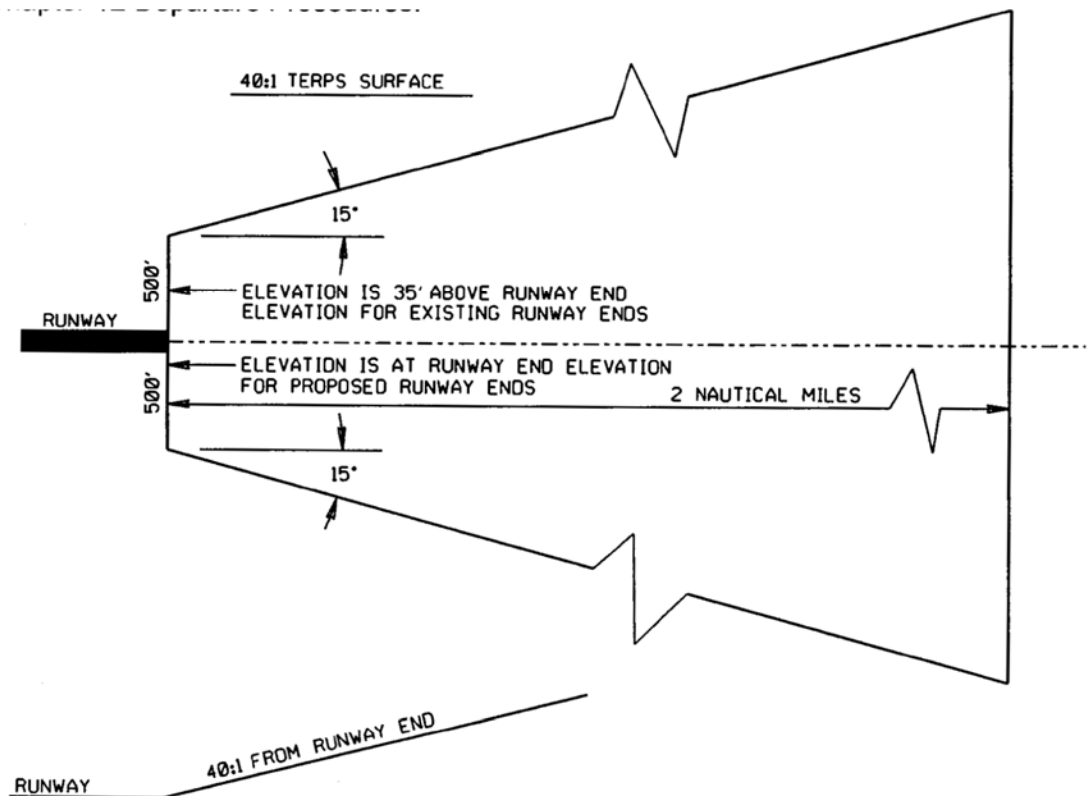
The Obstacle Identification surface is a 1: 40 surface over an area that is 1000 wide (500' each side of the runway centerline) at the runway end and with sides that splay 15 degrees to line that is parallel to the extended runway centerline for a distance of 2nm surface. It begins no higher than 35' above the runway end elevation and rises in the direction of departure.

The following assist in the applications of instrument design procedures:

1. This surface only applies to IFR airports
2. This surface is independent of approach minimums

3. For proposed object, the 1:40 surface begins at the runway end elevation
4. For objects that violate the surface departure minimums, climb rates may be required to permit a departure procedure. These departure minimums and climb rates will be provided in the airspace review of proposal and are included in the Terminal Instrument Procedures (Approach Plate) publication.
5. Lighting objects that violate the surface may be required to permit nighttime operations.
6. Proposed departure procedures over existing object are raised 35' at the end then the impact of the existing object is assessed.

The surface described above is not the only departure surface considered by procedure designers when departure procedures are being studied.



APPENDIX 7 – TERMINAL OR BUILDING AREA DRAWING

This drawing depicts the proposed terminal area development for both commercial terminal area and general aviation terminal area. The purpose of this sheet is to depict all buildings and their related infrastructure at airports for safety and security review. The building area drawing shall show all buildings, existing and planned, aprons with tie down locations depicted, parking areas, fueling facilities, and the building restriction line with elevations/heights. A table shall also be included listing each building's coordinates, function, and elevation.

For airports with commercial service, terminal area drawings as well as general aviation (GA) areas, cargo facilities, fueling facilities, existing and ultimate, including underground storage should be shown.

They are presented at a larger scale than the ALP so that greater detail of the terminal area can be discerned.

(The need for this drawing will be decided on a case-by-case basis. For small airports, where the Airport Layout Drawing is prepared to a fairly large scale, a separate drawing for the terminal area may not be needed.)

The following are list of items that may be shown on the drawing:

- i. Aircraft boarding gate positions shown, indicated by circles, existing and ultimate positions designated.
- ii. Existing and ultimate security fencing with gates shown.
- iii. Existing and ultimate buildings shown with critical elevations of highest buildings and buildings closest to the runway. Identify T-hangars and/or corporate hangars.
- iv. Existing or ultimate rotating beacon with elevation.
- v. Building Restriction Lines (BRL).
- vi. Taxiway or taxilane centerlines designated, existing and ultimate.
- vii. Aprons, taxiways, clearances, etc. dimensioned.
- viii. Existing or ultimate lighted wind cone (with top elevation), wind tee, and segmented circle.
- ix. Location, ties, and elevations of any bench marks or monuments in terminal area.
- x. Auto parking existing and ultimate shown.
- xi. Ground contours shown, if appropriate.
- xii. Drainage including any structures.
- xiii. Control Tower with top elevation.
- xiv. Entrance and access roads, existing and ultimate shown.

- xv. Various aircraft aprons, existing and ultimate, and their function shown (passenger, cargo, transient, tie down area with tie downs shown, etc.)
- xvi. Legend where necessary.
- xvii. Index of buildings and facilities where necessary.
- xviii. Line of sight, existing and ultimate.
- xix. Show aircraft parking limit line where appropriate.

(a). Includes:

Large scale plan view of the area (or areas) where aprons, buildings, hangars, parking lots, etc., are located.

(b). Preparation Guidelines:

1. Sheet size – 34" X 22" (ANSI D).
2. Scale - Range of 1" = 50 to 1"= 200.
3. Title and Revision Block - Same as Airport Layout
4. Building Data Table - For listing structures and showing pertinent information relative to them.

Include space and columns for:

- i. Structure identification number (identify structures on plan view with numbers instead of words).
 - ii. Top elevation of structures.
 - iii. Obstruction marking (existing and planned)
- (5) Legend - Include symbol for indicating planned removal, abandonment, etc

APPENDIX 8 - LAND USE DRAWING

This drawing provides details for current and future uses of property within, and surrounding the airport boundaries. It serves as a planning tool for communities to insure that growth in the area around the airport will be compatible in use and not impede future aeronautical expansion.

The drawing depicts existing and recommended use of all land within the ultimate airport property line (on airport) **and** in the vicinity of the airport (off airport to at least 65 LDN). The land uses should be depicted by general use categories (e.g., agriculture, recreational, industrial, aviation, commercial, etc.).

The sheet should be sufficiently detailed to allow the airport management to determine which areas must be kept in mowed grass and which areas are restricted to low growing crops. The safety areas and runway strips must be kept mowed and free of crops. High crops are allowed outside the primary surface, the runway safety areas, and the runway visibility zones.

Property use and zoning (on and off the airport) should be identified as agricultural, residential, commercial, industrial, recreational park, etc. with standard drafting symbols (shading, cross hatching, etc.) as well as all appurtenant topographical data, including waterways, man-made structures, and significant contours. Additionally, as the sheet size allows, show as much as possible of airport. If available it is recommended that an aerial photo be used as a background for this mapping.

This provides airport management with a plan for leasing revenue-producing areas on the airport. It also provides guidance for determining allowable proximity of farming operations to runways and taxiways.

Identify the date and type of any zoning ordinance in effect. Depict boundaries of local government.

Depict the location of all public facilities (schools, hospitals, parks, etc.) in the vicinity of the airport.

At a minimum, the drawing must contain land within the 65 DNL noise contour. For general aviation airports or low activity commercial service airports, where noise issues are less important, on-airport land use and off-airport land use drawings may be combined.

Preparation Guidelines:

- (1) Sheet Size – 34" X 22" (ANSI D).
- (2) Scale - Same as Airport Layout Drawing.
- (3) Title and Revision Block - Same as Airport Layout Drawing.
- (4) Base Map - Use aerial photos when available.
- (5) Legend - Within the various parcels and/or areas on and off the airport, use standard drafting symbols (i.e., shading, cross hatching or other tonal effects) to identify recommended land uses by general category (e.g., agricultural, recreational, industrial, commercial, residential, aeronautical, etc.). Use notes to identify existing land uses by general category.
- (6) Public Facilities - Depict the location of all public facilities (e.g., schools, hospitals, prisons, parks, etc.) in the vicinity of the airport.
- (7) Drawing Details - Normally limited to existing and future airport features (i.e., runways, taxiways, aprons, runway protection zones, terminal buildings and NAVAIDs). The drawing should be sufficiently detailed to allow the airport management to determine limit lines for areas which must be kept in grass or restricted to low growing crops.

APPENDIX 9 - AIRPORT PROPERTY MAP

This sheet serves an inventory of existing and future land/property rights owned by the airport.

The drawing indicates how various tracts of land within the airport boundaries were acquired (e.g., compulsory acquisitions, state funds, surplus property, local funds only, etc.). Easement interests in areas outside the fee property line should also be included.

The airport property map must show all parcels within the airport property and identify those tracts of land that have been recommended for future acquisition. This allows the Airport the ability to ensure its future viability and capability to meet development both during the period covered under this ALP Update as well as beyond the planning horizon of this document. Given the continued expansion of developed land uses in the immediate airport environs, it is important that a property envelop sufficient to provide for airport needs well into the future, be defined and acquired. This minimizes the acquisition of costly developed property in the future to meet airport development needs.

Parcels must be clearly defined with parcel numbers and parcel flagging. Existing and ultimate property lines must be clearly defined. A property table should be included which indicates parcel owners, size, date of purchase and cost.

The airport property map will identify easements beyond the airport boundary that were acquired to develop the airport, and the method of acquisition. The airport alternatives analysis may benefit from an inventory of parcels surrounding the airport boundary, particularly in areas of anticipated airport development. Being able to identify these parcels by size and use may also benefit potential subsequent environmental studies. The ALP preparer, the GCAA, and airport sponsor should determine if expanding the property map to include these areas is necessary.

Preparation Guidelines:

- (1). Sheet Size - 34" X 22" (ANSI D).
- (2). Scale Range: 1"=200' to 600' (Same as Airport Layout Drawing)
- (3). Title and Revision Block - Same as Airport Layout Drawing.

- (4). Legend - Use standard drafting symbols (i.e., shading, cross hatching or other tonal effects) and legend table to indicate the type of acquisition involved with each tract or area.
- (5). Data Table - A data table with a numbering or lettering system should be used to show pertinent data applicable to property acquisitions. As a minimum, the date the property was acquired should be included.
- (6). Drawing Details - Normally limited to existing and future airport features (i.e., runways, taxiways, aprons, runway protection zones, terminal buildings and NAVAIDs) which would indicate aeronautical need for airport property.
 - i. Details should be subordinated to property lines and tract outlines by half toning, screening, or other similar techniques.
 - ii. A screened reproducible of the Airport Layout Drawing may be used as the base for the Airport Property Map.
 - iii. Airport boundary lines and lines depicting property interest areas should be bold so as to stand out from background details.

APPENDIX 10 - AIRPORT LAYOUT PLAN (ALP) CHECKLIST



GHANA CIVIL AVIATION AUTHORITY
(AERODROMES SAFETY AND STANDARDS SECTION)

AIRPORT LAYOUT PLAN (ALP) CHECKLIST

Ghana Civil Aviation Authority (GCAA) prepared this checklist for use by Safety Inspectors, airport sponsors, and consultants to ensure that all pertinent information is reflected on the airport layout plan (ALP) set of drawings.

ALPs and/or Master Plans shall conform to this checklist as required by the GCAA. Failure to include a completed and signed checklist along with the ALP and/or Master Plan will result in rejection for review.

This checklist shall be used for the small airports as well as for the larger, more complex ones and, therefore, every drawing or item in the checklist may not apply in all situations. However, certain drawings in the checklist are required in every case. The table below drawings that are required for certain projects.

The need for other drawings will be decided on a case-by-case basis. This decision as well as the determination as to which of the individual checklist items for each drawing apply to a given airport situation will be made at the time the work scope is being prepared for the development of the new or updated ALP. This involves the Safety Inspectors working closely with the airport sponsor and their consultant to evaluate and reach agreement on the use of the checklist in airport planning projects. The individual ALP checklist items as well as the case-by-case drawings that apply to a given airport situation depend on the nature and complexity of the facility and the objectives identified during the work scope development process. If, during or after this process, the airport sponsor or their consultant disagrees with the Safety Inspectors regarding the applicability of any element of the checklist to a given ALP project, they should provide the rationale for any such concerns to the Safety Inspectors. The Safety Inspectors shall determine whether or not the rationale is acceptable and make the appropriate determination. In summary, this checklist is part of the ALP work scope process, the preparation of the ALP, and the draft and final ALP reviews. ALPs and /or Master Plans shall conform to this checklist as required by the GCAA. Failure to include a completed and signed checklist along with the ALP and/or Master Plan will result in rejection for review.

AIRPORT LAYOUT PLAN COMPONENTS

(1).	Normally Required Drawings	Yes	No	Remarks
a.	Narrative Report			
b.	Airport Layout Drawing			
c.	Airport Airspace Drawing			
d.	Inner Portion of the Approach Surface Drawing			

e.	Airport Property Map			
(2).	Case-by-Case Drawings			
a.	Land Use Drawing			
b.	Terminal Area Drawing (if applicable, or include a Building Table with top building elevations within the Airport Layout Drawing)			
c.	Declared Distances Drawing (if applicable)			
d.	Airport/Runway Departure Surface Drawing (i.e. the 1:40 slope for inst. Dep. Runways);			
e.	ATCT Shadow Study;			

- All sheets should be standard sized 34" X 22" (ANSI D)
- All sheets should contain title and revision blocks.
- In the case of smaller airports, some of the following sheets may be combined if practical and approved by GCAA.

SIGNATURE PAGE

Airport Identification (to be completed by Sponsor or Consultant)

Name of Airport _____

Airport Owner _____ Three-Letter Code _____

Location of Airport _____

Airport Reference Code (ARC) _____

Included

Yes No N/A **Remarks**

AIRPORT LAYOUT PLAN COMPONENTS

Report (Narrative or Master Plan)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Airport Layout Drawing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Airport Airspace Drawing;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inner Portion of the Approach Surface Drawing;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Airport Departure Surfaces Drawing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Terminal and/ or Building Area Drawing;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Land Use Plan/Drawing;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Airport Property Map	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ALP Submission Information (to be completed by Sponsor or Consultant)

ALP Prepared by _____

Name of Consulting Firm

Name of Individual & signature

Date

Title

Telephone

Email address

Sponsor Review

Name of Individual & signature

Date

Title

GCAA Review (to be completed by GCAA)

Name of Individual

Date

		Yes	No	N/A	Remarks
I. Narrative Report					
1.	Aeronautical Forecast (0-5, 6-10, 11-20 years)				
	(a). Local operations All Aircraft Current Design Aircraft Future Design Aircraft				
	(b). Annual itinerant Operations All Aircraft Current Design Aircraft Future Design Aircraft				
	(c). Total Annual Operations				
	(d). Number based aircraft				
	(e). Design Aircraft (approach speed, wingspan, weight)				
	(f). Number enplanements				
	(g). Airport Reference Code- existing/ future				
2.	Explanation of proposed development items				
3.	GCAA Approval Block for Modification to Standards (Rationale for Non-Standard Conditions and/or Modifications to GCAA). A separate written request, including justification, should accompany the modification to design standards). This item must be either in the narrative report or clearly				

	explained on the ALP.				
4.	Obstructions & Obstacle Limitation Surfaces				
5.	Summary of staged development (including drawings, schedules, project cost estimates) for 0-5, 6-10, 11-20 years				
6.	Letters of Coordination with all levels of Govt. units, as needed. (Highways, Planning Agencies, etc)				
<i>Remarks</i>					

	Yes	No	N/A	Remarks
II. Cover Sheet				
Index to sheet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sheet size 34" X 22" (ANSI D)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

		Yes	No	N/A	Remarks
III. Airport Data Sheet					
Sheet size 34" X 22" (ANSI D)					
1.	Title and revision blocks				
2.	Airport owner approval block				
3.	Date of ALP (date the airport sponsor/consultant signs the ALP)				
4.	Index of sheets				
5.	GCAA Approval Block				
6.	Location map (general area)				
7.	Vicinity map (general area showing specific airport location)				
8.	Wind Rose and coverage analysis (all weather and IFR) (latest 10-year period, using 36-point)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	(a). Crosswind coverage (include individual and combined for;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	- Runways with 10.5kt crosswind,	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	- Runways with 13kt crosswind	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	- Runways with 16kt crosswind	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	- Runways with 20kt crosswind	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	(b). Source of data and time period of data collection				
9.	Airport data table				
	(a). Airport elevation (nearest 0.1ft)				
	(b). ARP coordinates (nearest second); indicate by symbol				
	(c). Mean maximum temperature of hottest month				
	(d). Airport and Terminal Navigational Aids (TVOR, NDB, ASR, Beacon, etc.)				
	(e). Miscellaneous facilities (lighted wind cone(s), ceilometer, etc.)				
	(f). Design Critical Aircraft Data for each runway or airfield components				
	- approach category				
	- design group				
	- tail height				
	(g) Airport Reference Code (ARC)				
Remarks					

		Yes	No	N/A	Remarks
III. Airport Data Sheet (continued)					
Sheet size 34" X 22" (ANSI D)					
10.	Runway Data Table for each runway (Existing and Ultimate)				
	(a). Identify runway as "Instrument", "Utility" or "Other Than Utility"				
	(b). Approach visibility Minimums (V, 1 mi, 3/4 mi, CAT II, CAT III)				
	(c). Runway orientation (end nos.)				
	(d). Threshold True Bearing (nearest 0.01" degree}				
	(e). Runway Dimensions - length & width within the outline of the runway				
	(f). Declared Distances (if applicable) (TORA, TODA, LDA, ASDA)				
	(g). Airport Reference Code for each runway				
	(h). Approach Type (precision, non-precision, visual)				
	(i). Approach Surface slope ratio for each runway (50:1; 34:1; 20:1)				
	(j). Threshold Elevation				
	(k). Runway Marking (V, NP, or P) for threshold, hold lines offsets				
	(l). Magnetic Declination and date				
	(m). Pavement Strength (Weight Bearing Capacity) & Type				
	(n). Percentage Wind Coverage				
	(o). Effective Runway Gradient (%)				
	(p). Runway Safety Area Dimensions – Width, Landing Threshold and Runway End (existing and ultimate)				
	(q). Runway Strip dimensions				
	(r). Displaced Threshold length				
	(s). Runway Threshold/End Coordinates –existing and ultimate (WGS-84 to nearest 0.01 second)				
	(t). Displaced threshold coordinates (if applicable) to the nearest 0.01 second				
	(u). Runway high/low points (existing and future)				
	(v). Runway Touchdown Zone Elevation (highest point within first 3,000 of RWY)				
	(w). Runway Threshold Lighting Type (HIRL, MIRL, LIRL)				
	(x). Runway Electronic Aids (ILS) for each runway end (i.e. Localizer, Glideslope, MALSR.....)				
	(y). Runway Visual Aids for each runway end (REIL, VGSI (i.e. PAPI, VASI etc)				
Remarks					

		Yes	No	N/A	Remarks
IV. Airport Layout Drawing					
Scale 1"=200 to 600'					
Sheet size 34" X 22" (ANSI D)					
1.	Title and Revision Blocks				
	(a). Name and location of the airport				
	(b). Name of preparer				
	(c). Date of drawing				
	(d). Drawing title				
	(e). Revision block				
	(f). GCAA disclaimer				
	(g). Approval block				
2.	North Arrow				
	(a). True and Magnetic North				
	(b). Year of magnetic declination				
	(c). Orient drawing so that north is to the top or left of the sheet				
3.	Airport Data Table				
	(a). Airport Elevation (nearest 0.1ft)				
	(b). ARP coordinates (nearest second); indicate by symbol				
	(c). Mean maximum temperature of hottest month				
	(d). Airport and Terminal Navigational Aids (i.e. TVOR, NDB, ASR, Beacon, etc.)				
	(e). Aircraft Design Group & Approach Category				
	(f). Survey Source and Type				
	(g). Miscellaneous facilities (lighted wind cone(s), ceilometer, etc.)				
	(h). Design Critical Aircraft Data for each runway or airfield components				
	- approach category				
	- design group				
	- tail height				
<i>Remarks</i>					

		Yes	No	N/A	Remarks
IV. Airport Layout Drawing(continued)					
4.	Runway Data Table for each runway (Existing and Ultimate)				
	(a). Identify runway as "Instrument Runway", "Utility" or "Other Than Utility"				
	(b). Approach visibility Minimums (V, 1 mile, 3/4 mile, CAT II, CAT III)				
	(c). Runway orientation (end nos)				
	(d). Threshold True Bearing (nearest 0.01" degree}				
	(e). Runway Dimensions - length & width within the outline of the runway				
	(f). Declared Distances, if applicable (TORA, TODA, LDA, ASDA)				
	(g). Airport Reference Code for each runway				
	(h). Approach Type (precision, non-precision, visual)				
	(i). Approach Surface slope ratio for each runway (50:1; 34:1; 20:1)				
	(j). Threshold elevation				
	(k). Runway Marking (V, NP, or P) for threshold, hold lines offsets				
	(l). Magnetic Declination and date				
	(m). Pavement Strength (Weight Bearing Capacity) & Type				
	(n). Percentage Wind Coverage				
	(o). Effective Runway Gradient (%)				
	(p). Runway Safety Area Dimensions – Width, Landing Threshold and Runway End (existing and ultimate)				
	(q). Runway Strip dimensions				
	(r). Displaced Threshold length				
	(s). Runway Threshold/End Coordinates –existing and ultimate (WGS-84 to nearest 0.01 second)				
	(t). Displaced threshold coordinates (if applicable) to the nearest 0.01 second				
	(u). Runway high and low points (existing and future)				
	(v). Runway Touchdown Zone Elevation (highest point within first 3,000 of RWY)				
	(w). Runway Threshold Lighting Type (HIRL, MIRL, LIRL)				
	(x). Runway Electronic Aids (ILS) for each runway end (i.e. Localizer, Glideslope, MALSR.....)				
	(y). Runway Visual Aids for each runway end REIL, VGSI (i.e. PAPI, VASI etc)				
5.	Runway separation distances				
	(a). Aircraft Parking				
	(b). Building Restriction Line				
	(c). Parallel Runway				
	(d). Parallel Taxiway/ Taxilane				
<i>Remarks</i>					

		Yes	No	N/A	Remarks
IV. Airport Layout Drawing (continued)					
6.	Taxiway Details				
	(a).Dimensions – length and width (existing and ultimate)				
	(b).Taxiway safety area dimensions				
	(c).Taxiway Centerline Separation from:				
	i. Runway centerline				
	ii. Parallel taxiway				
	iii. Aircraft parking				
	iv. Objects/safety areas				
	(d). Taxiway Lighting & Marking				
7.	Legend Tables (existing and future airport facility and buildings)				
	(a). Airport Reference Point (ARP)				
	(b). Buildings				
	(c). BRL				
	(d). Fencing				
	(e). Property Lines				
	(f). Roads				
	(g). Rotating Beacon				
	(h). Threshold				
	(i). Trees				
	(j). VASI or PAPI (Is PAPI pad shown on the drawings?)				
	(k). Wind Cone/ Segmented Circle, beacon				
8.	Non-Standard Conditions and/or Modification to Standards Block				
9.	Topographic Info (Contours 2' to 10'), lightly drawn				
10.	Building Restriction Line (BRL) and associated OLS height at the BRL				
11.	Monuments (survey monuments & markers)				
12.	Fences (identify height)				
13.	Apron <ul style="list-style-type: none"> – Locations – Dimensions – Aircraft parking 				
14.	Roads				
16.	Building table (including building elevations) If a terminal area plan is not included, show top elevations of structures on this sheet.				
17.	Any ATCT line of sight shadow areas (use separate sheet if necessary)				
18.	General Aviation development area (i.e., fuel facilities, FBO, hangars, etc) – greater detail can be shown on the				

	terminal area drawing				
19.	Existing and future airport property lines and easements				
20.	Major airport drainage ditches				
21	Facilities and movement areas that are to be phased out, if any, are described				
<i>Remarks</i>					

		Yes	No	N/A	Remarks
V. Airport Airspace Drawing					
Scale :					
<i>For Plan View (Existing & Ultimate) : 1"=1000' to 3000'</i>					
<i>For Approach Profile View: Horizontal is 1"=1000' to 3000' Vertical is 1"=100' to 400'</i>					
Sheet size: 34" X 22" (ANSI D)					
1.	Title and Revision Block (same as airport layout drawing)				
2.	Sponsor Approval Block				
2.	Plan view of all surfaces (based on ultimate runway lengths)				
	(a). Runway end numbers				
	(b). Elevation Contours (even 50' elevation intervals on all sloping surfaces)				
	(c). Top elevations of penetrating objects (add notes for penetrations located within the inner portion of the approach surface)				
	(d). Show close-in obstructions as well as all objects within 5 ft below surfaces				
	(e). For precision instrument runways, show balance of 40,000 ft approach on separate sheet.				
	(f). Note specifying height restriction (ordinances/statutes)				
3.	Profile view (existing and ultimate)				
	(a). Ground profile along extended runway centerline representing the composite profile, based on the highest terrain across the width and along the length of the approach surface.				
	(b). Significant objects (rivers, roads, schools, towers, etc.) and top elevations within the approach surfaces, regardless of whether or not they are obstructions				
	(c). Show existing and ultimate runway ends and approach slopes				
4.	Obstruction Data Tables				
	(a). Obstruction identification number				
	(b). Obstruction Elevation				
	(c). Description of Obstruction				

	(d). Amount of surface penetration				
	(e). Proposed or existing disposition of the obstruction				
<i>Remarks</i>					
		Yes	No	N/A	Remarks
VI. Inner Portion of the Approach Surface Drawing					
1.	Sheet size 34" X 22" (ANSI D)				
2.	Plan View (Existing & Ultimate) – Scale (1"=200')				
	(a). Inner Portion of approaches (usually limited to the RPZ areas)				
	(b). Aerial Photo for base map when available				
	(c). Obstructions (identified by numbers)				
	(d). Depict Property Line within the approaches				
	(e). Elevations of Road & Railroad (RR), movable objects height (at points where they intersect Approach Surface & extended runway centerline. Also show computed vertical clearance in the approach				
	(f). Physical End of RWY, End Number, Elevation				
	(g). Airport Design Surfaces				
	i. Runway Safety Area				
	ii. Runway Strips				
	(h). Ground Contours at intervals of 2' to 10', lightly drawn				
3.	Profile View - Scale (1"=200' horizontal and 1"=20' vertical)				
	(a). Projected View of Plan View				
	(b). Approach Surface				
	(c). Depict Terrain and significant items in extended centerline especially in the Safety Area (fences, roadways, streams, etc.)				
	(d). Identify Obstructions (same numbers as plan view)				
	(e). Touchdown zone elevation (highest point in first 3,000 of RWY)				
	(f). Cross Section of Roads & Railroads with dashed lines at edge of approach				
4.	Obstruction table details				
	(a). Separate table for each Approach Surface				
	(b). Obstruction identification number				
	(c). Description of Obstruction				
	(d). Obstruction Elevation				
	(e). Amount of surface penetration				
	(f). Proposed disposition of Surface obstructions				
	(g). Triggering Event (i.e., Runway extension) – Timeframe/expected date for removal				
<i>Remarks</i>					

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		Yes	No	N/A	Remarks
VII. Terminal Area and /or Building Drawing					
Scale - Range 1"=50' to 200')					
Sheet size 34" X 22" (ANSI D)					
1.	Title and Revision Blocks				
	Legend				
2.	Plan view of aprons, buildings, hangars, parking lots				
3.	Building data table (list structures and show pertinent information about them. Include space and columns for:				
	(a). Structure identification number				
	(b). Top elevation of structures (AMSL)				
	(c). Obstruction marking/lighting (existing/future)				
4.	Buildings Restriction Line (BRL) (Identify use and (note structures to be removed or relocated)				
5.	Fueling facilities, existing and future				
6.	Aircraft gates positions shown, indicated by circles (existing/future)				
7.	Existing and future security fencing with gates				
9.	Taxiway or taxilane centerlines designated				
10.	Aprons, taxiways, clearances, etc. dimensioned				
11.	Auto parking (existing/future)				
	Entrance Road				
12.	Major airport drainage ditches				
13	Special Use Area (i.e., Agricultural spraying)				
<i>Remarks</i>					

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		Yes	No	N/A	Remarks
VIII. Land Use Drawing					
Scale Range: 1"=200' to 600')					
Sheet size 34" X 22" (ANSI D)					
1.	Title and Revision Blocks				
2.	Arial base map				
3.	Land use legend (symbols and use descriptions)				
4.	Airport Property lines (existing and future) including easement (i.e. zoning of adjacent property to airport				
5.	Plan view of land uses by category (Agricultural, Aeronautical, Commercial, Residential, etc.)				
6.	Boundaries of local government				
7.	Public facilities (schools, hospitals, parks, churches etc.)				
8.	Show on and off-airport property use (include industrial, residential etc) to at least out to 65 LDN contour, if available				
9.	Drawing Details - show Aprons, BRL, Property Boundary, Runways, Taxiways, Safety Runway protection zones & Nav aids				

<i>Remarks</i>					

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	Yes	No	N/A	Remarks
IX. Airport Property Map				
Scale Range: 1"=200' to 600'				
Sheet size 34" X 22" (ANSI D)				
1.				Title and Revision Blocks
3.				Legend – shading/cross hatching, symbols indicating type of monumentation, survey monuments, etc.
2.				Plan View showing Tracts and Parcels of Land
				(a). Property line (Fee) - existing and future
				(b). Property interest areas (Easement) - existing and future
				i. OLS protection
				ii. Compatible Land Use
				(c). Type of acquisition indicated
4.				Township/Range and vicinity map
5.				Data Table (Property Status)
				(a). Number or letter and area of each parcel or easement
				(b). Date property was acquired or property status
				(c). Mode under which property was acquired.
				(d). Acreage
				(e). Show existing and future airport features (i.e. runways, RPZs, navigational aids and so forth) that would indicate a future aeronautical need for airport property.

<i>Remarks</i>

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	Yes	No	N/A	Remarks
X. Airport Departure Surface Drawing				
Scale: <i>Plan View:</i> 1"=1000' <i>Profile View:</i> Horizontal is 1"=1000' to 2000' Vertical is 1"=100' Sheet size 34" X 22" (ANSI D)				
Large scale plan and profile views of departure surfaces for each runway end that is designated primarily for instrument departures. The one-engine inoperative (OEI) obstacle identification surfaces (OIS) should be shown for any departure any departure supporting air carrier operations. Drawing covers distance out to 10,000 ft beyond runway strip (i.e 10,200ft beyond rwy end) for a slope ration of 1: 40				
1. Plan View Details				
(a). Aerial photos for base maps				
(b). Obstacle identification numbers				
(c). Depict property line, including easements				
(d). Identify, by numbers, all transverse ways with elevations and computed vertical clearance in the departure surface				
(e). Depict runway end numbers and elevations				
(f). Show Ground contours (lightly drawn)				
(g). Runway Safety Areas				
2. Profile View Details				
(a). Depict terrain along extended centerline of runway (significant objects including fences, roadways, rivers, structures, buildings)				
(b). Obstructions identified by numbers (nos also shown on plan view)				
(c). Show roads and railroads with dashed lines at edge of the approach				
3. Obstruction Table				
(a). Prepare separate table for each departure surface				
(b). Obstruction identification Number				

	(c). Description of Obstruction				
	(d). Obstruction Elevation				
	(e). Amount of surface penetration				
	(f). Proposed disposition of Surface obstructions				

Remarks

		Yes	No	N/A	Remarks
XI. Declared Distances Drawing					
Scale Range: 1"=200' to 600'					
Sheet size 34" X 22" (ANSI D)					
1.	Clearway Identified (500' x 1000' on a 1.25% plane or 1:80 slope)				
2.	Stopway Identified				
3.	Displaced Threshold identified				
4.	Relocated Threshold identified				
5.	End Coordinates of each threshold				
6.	Declared Distances Table				
	(a). Takeoff Run Available (TORA)				
	(b). Takeoff Distance Available (TODA)				
	(c). Accelerated Stop Distance Available (ASDA)				
	(d). Landing Distance Available (LDA)				
7.	Runway Safety Area				

Remarks