



Boulder Municipal Airport Master Plan Update January 2007

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History of Boulder Municipal Airport

Boulder Municipal Airport (BMA) is a general aviation airport that has been in existence since 1928 when it began as a dirt landing strip called "Hayden Field." In its early years, a small group of aviation pioneers started up the "Silver Wing Aircraft Company," one of the first aircraft manufacturers in the nation. Their premier aircraft, a two-seat plane with silver wings, was test flown on April 14, 1928 in front of a crowd of 1,000 spectators. Although the factory was located near 28th and Pine Streets, the company built the airfield's first hangar and secured the title to the Hayden Lake tract to officially designate the strip as an airport. In addition to constructing the Silver Wing aircraft, they also ran Boulder's first flight school.



Silver Wing aircraft on maiden flight, 1928 (Photo courtesy of Boulder Daily Camera archives)

In the early 1940s, the city of Boulder purchased 36 acres of the Hayden Field property and re-named it Boulder Municipal Airport. Shortly after its purchase, the city graded the primary runway, installed runway markers, and built the first city-owned building.

During World War II, the airport was home to the Army Air Corps' Civilian Pilot Training Program, training U.S. Navy aircrew how to fly the J-3 "Cub" trainer and surveillance plane. At that time, the airport had three runways. The primary runway was in the same location as the current runway 08/26, but the field also had two diagonal runways composed of grass.

Between 1953 and 1969, numerous improvements were made at the airport. In 1953, the airport installed runway lights and a flashing beacon. In 1958, the Civil Aeronautical Administration (now known as the Federal Aviation Administration) gave the airport its first grant of \$50,000 which helped the city fund a \$100,000 project to pave the primary runway. In 1958 and 1959, the city of Boulder purchased an additional 37 acres of land that now consists of the main hangar area and eastern end of the runway.

The airport has served the Boulder aviation community since its inception and currently has about 190 based aircraft and approximately 14 businesses or non-profit groups that call it home. The airport's activity continues its rich heritage centered around community-related aviation, to include recreational flying, local business-related flights, flight training, fire/rescue flights and parachuting.

The airport is classified as a general aviation airport by the Federal Aviation Administration's (FAA) National Plan of Integrated Airport Systems (NPIAS). The FAA and the state of Colorado Department of Transportation recognize the airports as an important transportation asset and a center for aviation-related business. Section 3.22 of



Aerial view of Boulder Municipal Airport, 1960



the 2005 Boulder Valley Comprehensive Plan states that "The Boulder Municipal Airport will continue as a small-scale general aviation airport." The city will seek to mitigate noise, safety and other impacts of airport operation while assuring that new development in proximity will be compatible with existing and planned use of the airport.

The Airport Today

Boulder Municipal Airport includes one runway (08/26) and one glider strip (08G/26G); runway and taxiway lighting; a visual approach slope indicator for runway 26; three underground fuel storage tanks; 130 paved tiedown spaces; 66 glider tie-down spaces; eight t-hangar buildings and 11 airport-related and/or executive hangar buildings (see diagrams on pages 18 and 19). The airport is home to several businesses that provide flight training, aircraft maintenance, aircraft sales and rentals, glider flights, parachuting and the manufacturing of helicopter components.

Noise Abatement



The FAA regulates all airspace over the United States and thus is the only agency that can impose restrictions as to its use. The FAA must balance many concerns when regulating the airspace, such as safety, noise, transportation and commerce. The airspace over Boulder Municipal Airport is classified as Class G. In Class G airspace, aircraft may fly without being in contact with air traffic control and must remain at least 1000 feet over populated areas and 500 feet over non-populated areas unless taking off or landing at an airport.

Although the FAA controls airspace usage and restrictions, Boulder Municipal Airport began measures in 1995 to institute a *voluntary* noise abatement program. The program is a local effort between the pilots, community and airport to mitigate aircraft noise. The program delineates where the populated areas are and designates routes and procedures for pilots to use that minimize noise while still providing a safe flight path to and from the airport and when operating in the airport traffic pattern. However, it's important to note that not all populated areas can be avoided due to operational reasons and growth around the airport. The program has experienced great success since its inception and continues to be a highly valued program that adapts and improves with input from community members and airport users. Some of the recommendations resulting from the master plan process can seen on pages 14 and 15.

Airport Funding

The airport is self-sustaining and does not receive subsidies from the city of Boulder General Fund or Transportation Fund. The Airport Fund functions as an enterprise entity; although, it is not officially designated as an enterprise fund. Revenue sources include building and land leases, fuel flowage fees, interest income, State of Colorado fuel excise tax, and federal and state airport grants.

Boulder Municipal Airport has received several FAA grants that help pay 90-95% of the costs associated with



Identifying improvements, maintenance and funding are key components to a Master Plan



airport upkeep and capital improvement projects. Due to the monetary investment, the FAA wants to ensure that the improvements will be used for public aviation use. FAA Order 5196A, *Grant Assurances*, covers this in much greater detail, but essentially is an agreement that the city, as the airport operator, will:

- Operate the airport safely and allow FAA inspections
- Abide by federal regulations (i.e. non-discrimination laws, environmental laws, etc.)
- Remain a public-use airport
- Retain and keep updated an airport master plan
- Repay the FAA for unused life of any improvements if airport use is changed

As stated in the last bullet, the assurance promises that the airport will remain open to the public for at least the useful life of the improvement. In most cases, "useful life" is considered to be 20 years from the date of acceptance of the grant and coincides with how long the improvement should remain in useable condition (i.e. a newly repaved runway should last 20 years).

FAA grants were also used to acquire 49 of the airport's 179 acres. Grant assurance agreements associated with land purchases carry no maximum time limit and the value of the grant (if it had to be repaid) is calculated on the market value of the land at today's highest market value at best use.



Over 80% of the aircraft based at Boulder Municipal Airport are registered to Boulder area residents (determined by airport database of hangar and tie-down leases)



Economic Impact

CDOT's 2003 study

The airport plays an important role in the local economy by contributing jobs and economic vitality. It also provides a vital role in the accessibility, prosperity and overall quality of Boulder's businesses.

In order to quantify the positive benefits of Colorado's public-use airports, the Colorado Department of Transportation (CDOT) Aeronautics Division conducted an economic impact study in 2003. The analysis, conducted by an independent contractor, determined that Boulder Municipal Airport provided approximately 675 jobs, \$24 million in wages and almost \$57 million to the Boulder economy each year. The results of the study and more information can be found on the CDOT website at: www.colorado-aeronautics.org.





Purpose of City of Boulder Master Plans

- Provide consistency of facility and service planning with overall city policies and plans
- Provide financial and programmatic planning for facility and service provision
- Provide integration and coordination between departments
- Guide capital improvement programming
- Identify costs associated with current system deficiencies and replacement needs

The Airport Master Plan

The purpose of the 2006 Airport Master Plan Update is to assess the current and anticipated needs of the Boulder Municipal Airport (BMA) and provide a plan for facility and management improvements for the next 20 years. FAA Order 5100.38 recommends an update to the Airport Master Plan every 10 years (or 5 years if there are significant changes at the airport).



The previous Airport Master Plan Update for BMA was approved in 1994. Some of the major facility improvements that were identified in that master plan and have since been constructed include: installation of an Automated Weather Observing System (AWOS), installation of taxiway lighting, repaving of runway 08/26, changes to the noise abatement program recording and reporting procedures, and installation of a wheelchair lift in the terminal building.

Current Master Plan Update

The Airport Master Plan Update process began in 2004 and included both technical tasks and public involvement activities. A Working Group composed of airport users, nearby residents, and staff from the city, state and federal aviation agencies reviewed the work products and give input on issues and analysis concerning the Airport Master Plan Update. The purpose of the Working Group was to have more in-depth information sharing and collaboration of various stakeholders and perspectives.

Several public open house meetings were held to review and discuss the Airport Master Plan Update issues and work products. The city also used public outreach tools including project newsletters and a project Web page with comment form. All public input that was received during the update process was considered and changes and improvements to the Airport Master Plan Update were made as applicable.

Approval Process

The Airport Master Plan Update has been presented to the Planning Board for their review and recommendation to City Council. The City Council will also review the Airport Master Plan Update document and take action on accepting the document. Once the FAA has reviewed the document and City Council approval is obtained, the FAA and city of Boulder will sign a joint approval agreement.



The Master Plan reinforces BMA's role as a community-oriented general aviation airport



Significant Issues & Goals of the Airport Master Plan

A goal of this Airport Master Plan Update was to evaluate the most significant issues facing Boulder Municipal Airport, as well as consider all of the public input and the best ways to address them in future plans. The significant issues are addressed in detail in Appendix A (see last page) and include:

- Existing/future airport demand
- The airport's role in the local economy and in the general aviation marketplace
- Airport compatibility with surrounding community
- Airport infrastructure condition and needs
- Economic impact of operating the airport
- General Aviation (GA) security measures
- Aircraft storage, current hangar use, and analysis of current leasing practices
- Aircraft flight paths
- "Right-sizing" the airport for the community and defining its niche
- Maintaining financial self-sufficiency of the airport
- Minimizing noise impacts on community when able and conduct an analysis of flight patterns
- Evaluating environmental issues (i.e., overflight of raptor nesting areas and controlling prairie dog habitat expansion)

Aviation Forecasts

Forecasts of aviation activity at BMA have been prepared to understand the potential needs and changes for the airport facility in the future. There are a number of factors that are considered indicators of future aviation activity. These include: existing population and population forecasts for the city and county of Boulder; employment and income conditions; weather conditions; national and regional aviation industry situation and the airport location and potential in the community. The forecasts also consider BMA's current and past annual aviation activity figures and the number of aircraft based at the airport.

There are 190 aircraft currently based at BMA. The majority are single engine aircraft (66%), followed by glider planes (24%), and multi-engine aircraft (10%)¹. Approximately 73% of the operations are categorized as "local operations," which consists of flight training, touch-and-go operations and recreational flying¹. The remaining 27% of the operations are described as "itinerant operations," which are aircraft stopping in for short periods (usually for business or transportation purposes). It's estimated that there were 59,400 annual operations at BMA in 2005, which included the types of aircraft seen in the graph on the next page.

Definitions at a Glance

Aircraft operation: One operation is defined as each time an aircraft lands or departs.

Local operation: When an aircraft takes off and lands at the same airport.

Itinerant operation: When an aircraft does not land at the same airport it took off from or is only passing through the airspace.

Boulder and the surrounding area, with its numerous educational and recreational opportunities, tourist activities, and affluent population base, provide a strong and definable market area for continued business and recreational flying opportunities, as well as glider activity. There has been a decline in aviation activity at BMA over the last several years which may be due to the economic recession in 2001, impacts to the aviation industry after the 9/11 attacks and lack of covered storage space for aircraft, as indicated by a large waiting list.

¹ As estimated by airport administration.

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Types of Aircraft Using BMA



As estimated by airport administration and fixed based operators.

Historical and Forecasted Activity





The FAA offers several forecast models that were considered in the creation of the aviation activity forecast for BMA. Forecasts from the 1994 BMA Master Plan Update were also reviewed. The forecasted scenario projects no growth in aviation activity for the first five years of the planning period and then a 1.7% annual growth rate, which remains below the national average of 1.9%. As can be seen in the forecast graph, this results in annual aviation activity rates that are similar to those experienced in the mid-to-late 1990s and through 2003.

The majority of operations will likely continue to be local operations with a mixture of aircraft similar to today's percentages. The forecast does anticipate a slight increase in turbine aircraft due to the newly developed category of very light jets (VLJ) that can land at smaller airports. Forecasting the effect from VLJs is very speculative since the technology is newly emerging and actual consumer interest is still unknown. Though the master plan is updated every ten years, airport management evaluates the forecast yearly based on national and regional aviation trends. Overall, BMA is expected to continue to operate as it does today, with its primary focus on serving the Boulder community at about 80,000 – 87,000 operations per year by 2023. (Refer to Appendix A, Section B for more information on aviation activity forecasts)

Analysis

Prior to the creation of a list of specific improvement projects, the current airfield layout and existing facilities were compared to current and future aviation activity. That way a more accurate assessment could be made to

determine if any major changes were needed at BMA. Factors such as the airfield layout and wind coverage conditions were used in the analysis. Major changes such as the addition of a cross-wind runway were removed from further consideration since the wind coverage conditions did not warrant such a change, nor is there available space to construct another runway or lengthen the current runways. Since BMA is expected to operate at existing activity levels or at levels seen in the 1990s, it was determined that the runway, taxiway, roadway, and parking systems all have more than adequate capacity to handle current and forecasted activity for the next 20 years.

The current and future type of aircraft operating at BMA is an important consideration in the design of any future airside facilities. BMA was designed to accommodate aircraft up to the size and characteristics of the Beech 200 Super King Air, which has been designated as the airport's "design aircraft". Since the design aircraft has not changed



Beech 200 Super King Air

Definition at a Glance

Design aircraft: The aircraft an airport uses for its design, so that the airport infrastructure can support its safe operation both in the air and on the ground.

from the previous airport master plan update, the current spacing between the runway and glider strip and widths required for runways and taxiways will also remain the same. The runway length is also deemed acceptable and no plans are being proposed to lengthen the runway.

Environmental Review

A preliminary assessment of environmental information was undertaken to identify any environmental resources that would need to be addressed prior to the implementation of any of the proposed projects and programs (outlined on pages 10-12). All area environmental agencies were contacted to gather information on critical resources. Through this effort, it was determined that none of the recommended projects or programs will likely require an environmental assessment prior to construction or implementation. The proposed



projects and programs are not expected to have significant impacts on the long-term quality of the air and water in the vicinity of the airport nor adversely affect any federally listed candidate, proposed, threatened or endangered species. Two historic resources adjacent to BMA were identified – North Boulder Farmers Ditch and the Boulder & Left Hand Ditch. At this time, no designated wetlands appear to be affected by the proposed projects and programs; however, if any projects are found to impact wetlands then a city of Boulder wetlands permit will need to be obtained. In addition to the preliminary analysis, each project will be evaluated prior to construction to determine if there is need for a Community and Environmental Assessment Process (CEAP). (See Appendix A, "Environmental Overview" chapter for further information)

A noise analysis was also conducted to determine both the noise levels resulting from existing aircraft operations as well as the potential noise levels that could be expected to occur in the future. This information was also useful in identifying any necessary changes to supporting land use planning in the area. The city of Boulder established Ordinance No. 5200, which defines a series of overlay zoning designations composing an "Airport Influence Zone" (AIZ). These zones promote land use compatibility in the vicinity of the airport and attempt to minimize aircraft noise impacts to adjacent

property owners and residents. The noise analysis found that the current and forecasted 2023 noise levels are very similar, which corresponds to the aviation forecasts which predict activity levels similar to current activity levels or those experienced in the mid- to late-1990s. The AIZ was also reviewed and it was recommended to be maintained. More details about the noise contours and AIZ can be found in Appendix A.

Identified Improvements

Navigational aid improvements, such as an instrument approach procedure and improved runway lighting, have been identified to further improve safety of aircraft operations at BMA. These improvements focus on the safety of BMA's users and will not influence net operations.

Current and future deficiencies in landside facilities (such as additional hangars and their associated access roads) were also examined to assess BMA's ability to match existing space with aviation needs, requirements and technology. Also identified was the possible sale of three acres of land located on the SW corner of the airport that is not feasible for aviation use due to lack of taxiway access and a significant slope. Upon approval of the Master Plan Update, the city can request release of this land from the FAA and place it on the market for sale. Additional improvements and projects will be discussed under the next section, "Planned Improvements."

Airside Planning Concepts

Following the completion of the capacity and requirements analysis, this Airport Master Plan Update looked at two airside planning concepts. More details may be obtained in Appendix A.

Option #1: The first airside planning concept kept the existing runway configuration and design standards and proposed an instrument approach to Runway 26.

Option #2: The second airside planning concept relocated the glider strip adjacent to runway 08/26, installed a north parallel taxiway, preserved runway 08/26 design standards and proposed

Definitions at a Glance

Airside: The part of the airport that consists of the runway and taxiway.

Landside: The part of the airport that contains the terminal building and associated support structures (hangars, parking lots, etc.)

Instrument approach: When a pilot uses instrumentation, either on the ground or via GPS satellite, to land an aircraft.

an instrument approach upgrade to runway 26. This option was not recommended due to the safety concerns of having powered and non-powered aircraft operating on essentially the same runway.



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Landside Planning Concepts

There were also two landside concepts proposed that were associated with the corresponding airside concepts. Following the feedback of these airside and landside planning concepts at the working group and public openhouse meetings, the project team recommended no changes to the basic airside layout (Option 1) and the incorporation of some of the landside improvements from the Option 2 concept.

By taking options from each of the recommended alternatives, the preferred alternative met the following Airport Master Plan Update goals. Further details on the landside analysis can be found in Appendix A.



Current Runway and Glider Strip Configuration in Option 1 (Recommended)



Location of Glider Strip, shown in green, in Option 2 (Not Recommended)

Planned Improvements

A list of specific airside and landside projects and airport-related programs (such as Voluntary Noise Abatement, Leasing/Business practices, Wildlife Management, Economic Sustainability and Security) has been

created and/or updated for this Airport Master Plan Update. These projects and programs are placed in one of three phases: Short-, Mid- and Long-term, depending on both priority and expected need (or market demand). The Short-, Mid-, and Long-term phases also equate to the city of Boulder's business planning model of Fiscally Constrained (Short-term), Action (Mid-term) and Vision (Longterm) plans. For example, capital projects such as runway resurfacing and apron resurfacing which have anticipated FAA funding sources are included in the short-term phase. Some of the private development t-hangar projects are included in the short-term phase because a demand for covered storage space appears to exist and it's anticipated that the private market will look to meet this demand by funding hangar construction. Other items are placed in the short-term phase due to their priority on safety, security, etc, although funding has not been secured from the FAA at present time. For projects that have a sponsor/city price associated with it, it is anticipated that the airport's internal budget can pay for the expense. Projects can be viewed by their number on the Phasing Plan diagram, page 13.

Definitions at a Glance

Short-term: Projects or programs that are deemed a priority and/or may have necessary funding (FAA, state, city, or private) within the next six years. Referred to as a "Fiscally Constrained Plan" within the city of Boulder.

Mid-term: Projects or programs that are important, but not a priority, and are likely to be completed within the next 7-10 years. Defined by the city as an "Action Plan."

Long-term: Projects or programs that are ongoing or may need to take place within the next 11-20 years. Also known as a "Vision Plan."



Phase One (Short-term) Projects within the Fiscally Constrained Plan

Мар		Total	Reco	ommended	Financing N	Aethod
ID	Project Description	Costs	City (a)	State (b)		Federal (d)
Runv	vay, Taxiway and Apron Projects					
A.2	Acquire Easement for Runway 08 & 08G Runway					
	Protection Zone (approx. 6.5 acres)	\$162,500	\$4,063	\$4,063	\$ 0	\$154,375
A.12	Rehabilitate West Half of Taxiway "A" Pavement	\$750,000	\$18,750	\$18,750	\$ 0	\$712,500
A.13	Construct Aircraft Parking Apron Overlay Project	\$795,000	\$19,875	\$19,875	\$ 0	\$755,250
A.18	Construct Aircraft Apron/Taxilane to Serve New Hangars	\$405,000	\$20,250	\$ 0	\$ 0	\$384,750
A.20	Conduct Runway 08/26 Pavement Maintenance	\$35,000	\$1,750	\$1,750	\$ 0	\$31,500
A.21	Conduct Runway 08G/26G Pavement Maintenance	\$20,000	\$20,000	\$ 0	\$ 0	\$0
A.22	Conduct Taxiway Pavement Maintenance	\$35,000	\$1,750	\$1,750	\$ 0	\$31,500
Hang	gars and Infrastructure Projects					
A.1 A.6	Conduct General Aviation Aircraft Storage Market Analysis Implement Hangar/Building Maintenance Projects & Site	\$20,000	\$ 0	\$20,000	\$ 0	\$(
A.11	Enhancement Improvements (i.e. landscaping, signage, etc) Construct 5 Executive Hangars & Apron within General	\$70 , 000	\$70,000	\$ 0	\$0	\$0
A.14	Aviation Development Area Construct New Airport Access Road to Serve General	\$1,000,000	\$ 0	\$ 0	\$1,000,000	\$0
	Aviation Development Area	\$135,000	\$3,375	\$3,375	\$ 0	\$128,250
A.15	Implement Utility Infrastructure Extensions to Serve					
	Expanded General Aviation Development Area	\$72,000	\$72,000	\$ 0	\$ 0	\$
	Install Perimeter Fencing (Phase One) @ 4,400 l.f. w/4 Gates	\$165,000	\$8,250	\$ 0	\$ 0	\$156,75
A.17	Construct 4 Executive Hangars & One 13-Unit T-Hangar within Northeast Development Area	\$1,110,000	\$ 0	\$0	\$1,110,000	\$
A.23	Construct 1 Large Maintenance/Storage Hangar within					
	General Aviation Development Area	\$1,500,000	\$0	\$ 0	\$1,500,000	\$
A.24	Extend Sanitary Sewer Line to Hangar N	\$30,000	\$30,000	\$ 0	\$ 0	\$0
Safet	y and Security-Related Projects					
A.3	Conduct Runway 26 Type D Survey for Instrument					
	Approach Procedure	\$20,000	\$500	\$500	\$ 0	\$19,000
A.7	Implement Airport Lighting Improvements to Enhance					
	Ground Safety & Security	\$5,000	\$5,000	\$0	\$ 0	\$
A.8	Implement Runway 26 Instrument Approach Procedure					
	(Publication & Marking)	\$25,000	\$625	\$625	\$ 0	\$23,75
A.9	Implement ADA Improvements at General Aviation					
	Terminal Bldg. & Apron	\$500	\$500	\$0	\$ 0	\$
A.10	Install Runway 08 Visual Approach Slope Indicator (VASI)	\$24,000	\$600	\$600	\$ 0	\$22,80
Admi	inistration and Management					
A.4	Promote/Manage the Airport's Voluntary Noise					
	Abatement Program	\$12,500	\$12,500	\$0	\$0	\$
A.5	Design/Implement Wildlife Management Program	\$40,000	\$40,000	\$ 0	\$ 0	\$
A.19	Purchase Airport Maintenance Equip.	\$25,000	\$1,250	\$1,250	\$ 0	\$22,500
	Subtotal (Phase One)	\$6,456,500	\$331,038	\$72,538	\$3,610,000	\$2,442,92

(a) Airport Funding - current revenues, cash reserves, bonds, etc.
 (b) State Funding - Colorado Division of Aeronautics
 (c) Third Party Funding
 (d) EAAADD (Arona arona ar

(d) FAA AIP (Airport Improvement Program) - Unless Otherwise Noted

Boulder Municipal Airport 2007 Master Plan Update

Phase Two (Mid-term) Projects within the Action Plan

Map		Total Recommended Finar			nancing Metl	ancing Method	
ID	Project Description	Costs	City (a)	State (b)	Private (c)	Federal (d)	
Runv	vay, Taxiway and Apron Projects						
B.2	Construct Aircraft Apron/Taxilane to Serve New Hangars	\$42,500	\$ 0	\$ 0	\$42,500	\$0	
B.5	Conduct Runway Pavement Maintenance	\$15,000	\$750	\$750	\$0	\$13,500	
B.10	Conduct Apron Pavement Maintenance	\$20,000	\$1,000	\$1,000	\$ 0	\$18,000	
B.11	Widen Existing Westside Access Taxiway to Comply with						
	Aircraft Reference Code B-II Design Standards	\$81,000	\$4,050	\$4,050	\$ 0	\$72,900	
B.12	Conduct Runway 08G/26G Pavement Maintenance	\$13,500	\$13,500	\$ 0	\$ 0	\$0	
B.13	Construct New Access Taxiway to Serve Expanded						
	General Aviation Development Area	\$45,000	\$2,250	\$ 0	\$ 0	\$42,750	
B.14	Conduct Taxiway Pavement Maintenance	\$35,000	\$1,750	\$1,750	\$ 0	\$31,500	
B.16	Expand Existing General Aviation Apron at East End	\$60,000	\$3,000	\$3,000	\$ 0	\$54,000	
Hang	gars and Infrastructure Projects						
B.1	Construct 6 Executive Hangars within Northeast Development Area	\$1,350,000	\$ 0	\$ 0	\$1,350,000	\$ 0	
B. 7	Construct 1 Large Executive Hangar within Northeast						
	Development Area	\$450,000	\$ 0	\$ 0	\$450,000	\$0	
B.9	Implement Hangar/Building Maintenance Projects & Site						
	Enhancement Improvements (i.e. landscaping, signage, etc)	\$50,000	\$50,000	\$ 0	\$ 0	\$0	
B.15	Replace Four 10-Unit T-Hangars within Existing						
	Development Area	\$1,200,000	\$ 0	\$ 0	\$1,200,000	\$ 0	
Safet	y and Security-Related Projects						
B.6	Install Perimeter Fencing (Phase Two) @ 6,000 l.f.						
	w/4 Gates	\$205,000	\$10,250	\$ 0	\$ 0	\$194,750	
Admi	inistration and Management						
B.3	Implement the Airport's Wildlife Management Program	\$10,000	\$10,000	\$ 0	\$0	\$0	
B.4	Promote / Manage Voluntary Noise Abatement Program	\$10,000	\$10,000	\$ 0	\$ 0	\$0	
B.8	Purchase Airport Maintenance Equip.	\$25,000	\$1,250	\$1,250	\$ 0	\$22,500	
	Subtotal (Phase Two)	\$2,262,000	\$107,800	\$11,800	\$1,692,500	\$449,900	

(a) Airport Funding - current revenues, cash reserves, bonds, etc.
(b) State Funding - Colorado Division of Aeronautics
(c) Third Party Funding

(d) FAA AIP (Airport Improvement Program) - Unless Otherwise Noted



Phase Three (Long-term) Projects within the Vision Plan

Мар		Total	otal Recommended Financia		nancing Metl	ing Method	
ID	Project Description	Costs	City (a)	State (b)	Private (c)	Federal (d)	
Runw	vay, Taxiway and Apron Projects						
C.4	Rehabilitate Runway Pavement	\$1,673,500	\$167,350		\$ 0	\$1,506,150	
C.6	Construct Aircraft Apron/Taxilane to Serve						
	New Hangar Facilities	\$275,000	\$13,750	\$ 0	\$ 0	\$261,250	
C.8	Construct Aircraft Apron/Taxilane to Serve						
	New Hangar Facilities	\$330,000	\$16,500	\$0	\$ 0	\$313,500	
C.10	Conduct Apron Pavement Maintenance	\$25,000	\$1,250	\$1,250	\$ 0	\$22,500	
C.11	Conduct Taxiway Pavement Maintenance	\$35,000	\$1,750	\$1,750	\$ 0	\$31,500	
C.15	Conduct Runway 08G/26G Pavement Maintenance	\$35,000	\$1,750	\$1,750	\$0	\$31,500	
C.16	Construct Future Taxiway "A-3" connector	\$60,000	\$3,000	\$ 0	\$ 0	\$57,000	
Hang	ars and Infrastructure Projects						
C.5	Construct 6 Executive Hangars & One 9-Unit						
	T-Hangar within Southeast Development Area	\$1,340,000	\$0	\$ 0	\$1,340,000	\$ 0	
C.7	Construct Three 9-Unit T-Hangars within						
	Southeast Development Area	\$750,000	\$ 0	\$ 0	\$750,000	\$ 0	
C.12	Implement Hangar/Building Maintenance						
	Projects & Site Enhancement Improvements						
	(i.e., Landscaping, Signage, etc.)	\$25,000	\$25,000	\$ 0	\$0	\$ 0	
C.13	Construct Aircraft Maintenance/Storage Hangar						
	within Northwest Development Area	\$700,000	\$ 0	\$ 0	\$700,000	\$ 0	
C.14	Replace Two 10-Unit T-Hangars within						
	Existing Development Area	\$600,000	\$ 0	\$ 0	\$600,000	\$ 0	
Safety	and Security-Related Projects						
C.3	Install Perimeter Fencing (Phase Three)						
	@ 6,000 l.f. w/2 Gates	\$200,000	\$10,000	\$ 0	\$ 0	\$190,000	
Admi	nistration and Management						
C.1	Implement Wildlife Management Program	\$10,000	\$10,000	\$ 0	\$0	\$0	
C.2	Promote/Manage Voluntary Noise Abatement Program	\$10,000	\$10,000	\$ 0	\$0	\$ 0	
С.9	Purchase Airport Maintenance Equip.	\$25,000	\$1,250	\$ 0	\$0	\$23,750	
	Sub-Total Costs (Phase Three)	\$6,093,500	\$261,600	\$4,750	\$3,390,000	\$2,437,150	
	Total Costs/All Projects	\$14,812,000	\$700,438	\$89,088	\$8,692,500	\$5,329,975	

(a) Airport Funding - current revenues, cash reserves, bonds, etc.
 (b) State Funding - Colorado Division of Aeronautics
 (c) Third Party Funding

(d) FAA AIP (Airport Improvement Program) - Unless Otherwise Noted





AIRPORT ELEVATION (AMSL)	5288.0'	SAME
AIRPORT REFERENCE POINT (ARP)	LAT.40'02'21"N LON.105'13'35"W	SAME SAME
MEAN MAX. TEMP. HOTTEST MONTH	87.5°F	SAME
COMBINED WIND COVERAGE VFR/IFR(%) 13kt	94.64/91.90	SAME
AIRPORT REFERENCE CODE (ARC)	B-II	SAME
TAXIWAY LIGHTING	MITL	SAME
TAXIWAY STRIPING	CENTERLINE	SAME
NPIAS SERVICE LEVEL	GA	SAME
<u></u>		
DECLADED DICTANCE	C)	
DECLARED DISTANCE	5	
RUNWAY 8/26	EXISTING	FUTURE
TAKE OFF RUN AVAILABLE	4,100'/4,100'	SAME
TAKE OFF DISTANCE AVAILABLE	4,100'/4,100'	SAME
ACCELERATE STOP DISTANCE AVAILABLE	4,100'/3,900'	SAME
LANDING DISTANCE AVAILABLE	3,900'/3,900'	SAME
RUNWAY 8G/26G	EXISTING	FUTURE
TAKE OFF RUN AVAILABLE	4,100'/4,100'	SAME
TAKE OFF DISTANCE AVAILABLE	4,100'/4,100'	SAME
ACCELERATE STOP DISTANCE AVAILABLE	4,100'/4,100'	SAME
LANDING DISTANCE AVAILABLE	4,100'/4,100'	SAME

NO.	DESCRIPTION	estimated elevation	
1	TERMINAL BUILDING "J"	5307	
2A	FIXED BASE OPERATOR (FBO)	5301'	
2B	FIXED BASE OPERATOR (FBO) "F"	5306'	
3A	T-HANGAR "D"	5300.3'	
3B	T-HANGAR "C"	5300.3'	
3C	T-HANGAR "O"	5300'	
3D	T-HANGAR "P"	5296'	
3E	T-HANGAR "Q"	5301'	
3F	T-HANGAR "R"	5301	
3G	T-HANGAR "S"	5301'	
3H	T-HANGAR "T"	5296	
4A	STORAGE HANGAR "B5"	5295.5	
4B	STORAGE HANGAR	5298.5'	
4C	STORAGE HANGAR	5298.5	
4D	STORAGE HANGAR "W"	5298.5	
13A	MAINTENANCE HANGAR "H"	5313'	
13B	MAINTENANCE/EXECUTIVE HANGAR "B4"	5306'	
13C	MAINTENANCE HANGAR	5304	
14A	PRIVATE HANGAR	5295.5'	
14B	PRIVATE HANGAR	5300'	
16	AIRPORT MANAGEMENT	5298'	
17	LARGE EXECUTIVE HANGAR "E"	5312'	
21	AIRCRAFT SALES OFFICE	5301	
22	AUTOMATED WEATHER OBSERVATION STATION (AWOS)		
23	ELECTRICAL VAULT	5293'	
24	COMMUNICATIONS EQUIP. BLDG./TOWER	5295'	i L
F1	FUTURE LARGE EXECUTIVE HANGAR		
F2	FUTURE STORAGE HANGAR		
F3	FUTURE T-HANGAR		
F4	FUTURE LARGE EXECUTIVE HANGAR		
AL	L BUILDINGS MEET LATERAL CLEARANCE ST	ANDARDS	
_			

RUNWAY DATA	DUNING	V P /00	DUNIWAY	8G/26G
ITEM	EXISTING	RUNWAY 8/26 EXISTING FUTURE		86/266 FUTU
APPROACH VISIBILITY MINIMUMS	VISUAL/VISUAL	VISUAL/NON-PREC.	EXISTING VISUAL/VISUAL	SAM
PART 77 APPROACH SURFACES	20:1/20:1	20:1/34:1	20:1/20:1	SAM
FAR PART 77 CATEGORY	VISUAL-B	20:1/34:1 VISUAL-B/NP-C	VISUAL A	SAM
RUNWAY WIDTH AND LENGTH	75' X 4,100'	SAME	25' X 4,100'	SAM
PAVEMENT TYPE	ASPHALT	SAME	ASPHALT & TURF	SAM
PAVEMENT STRENGTH (IN 1000 LBS.)	16-SW, 30-DW	SAME	NA	SAM
RUNWAY LIGHTING	MIRI	SAME	NONE	SAM
RUNWAY MARKING	BASIC/BASIC	NPI/BASIC	NONE	SAM
	0.22%	SAME	0.22%	SAM
PERCENT GRADIENT MAXIMUM GRADE WITHIN R/W LENGTH	0.22%	SAME	0.22%	SAMI
LINE-OF-SIGHT REQUIREMENTS	MEETS CRITERIA	SAME	MEETS CRITERIA	SAM
VISUAL APPROACH AIDS (LIGHTING)	VASI	VASI.PAPI	NONE	SAM
INSTRUMENT APPROACH AIDS (LIGHTING)	NONE	GPS	NONE	SAM
AIRPORT REFERENCE CODE (ARC)	B-II	SAME	A-I	SAM
CRITICAL AIRCRAFT	BEECH SUPER KINGAIR B200	SAME	EIRIAVION PIK-20	SAM
RUNWAY SAFETY AREA WIDTH	150'	SAME	150'	SAM
R/W SAFETY AREA LENGTH BEYOND R/W END	300'/300'	SAME	300'/300'	SAM
RUNWAY OBJECT FREE AREA WIDTH	500'	SAME	500'	SAM
RUNWAT OBJECT FREE AREA WIDTH	300'/300'	SAME	300'/300'	SAM
RUNWAY OBSTACLE FREE ZONE WIDTH	250'	400'	250'	400
R/W OBSTACLE FREE ZONE LENGTH BEYOND R/W END		SAME	200'/200'	\$400 SAM
RUNWAY END ELEVATIONS	5287.0'/5274.8'	SAME	5287.0'/5274.8'	SAM
RUNWAY END COORDINATES RW 8 RW 26	N 40'02'20.79" W 105'14'00.37" N 40'02'20.79" W 105'13'07.65"	SAME	N 40'02'22.70" W 105'14'00.09" N 40'02'22.77 W 105'13'07.37"	SAM
DISPLACED THRESHOLD COORDINATES RW 8	N 40°02'20.79" W 105'13'56.51" NA	SAME NA	NA	NA
RUNWAY DISPLACED THRESHOLD ELEVATION	5287.2'/NA	SAME	NA/NA	SAM
RUNWAY TOUCHDOWN ZONE ELEVATION	5288.0'/5287.9'	SAME	5288.0 /5287.9	SAM
RUNWAY HIGHPOINT	5288.0'	SAME	5288.0'	SAM
RUNWAY LOWPOINT	5274.8'	SAME	5274.8'	SAM

LAYOUT PLAN LEGEND	
	EXISTING
AIRPORT PROPERTY LINE	
AIRPORT SECURITY FENCE	X
AIRPORT BUILDINGS	
AIRFIELD PAVEMENT	
PAVED ROADS	
AVIGATION EASEMENT	
RUNWAY PROTECTION ZONE	
BUILDING RESTRICTION LINE	BRL
RUNWAY SAFETY AREA	
RUNWAY OBJECT FREE AREA	
FUEL STORAGE AREA	Ð
AIRPORT BEACON	. ★
LIGHTED WIND CONE	đ
AUTOMATED WEATHER OBSERVATION SYSTEM (AWOS)	۲
VISUAL APPROACH SLOPE INDICATOR (VASI)	8 8
THRESHOLD LIGHTS	
HOLDLINES	
TREES	
NGS SURVEY MONUMENT	Δ

RE	VISIONS
NÔ.	DESCRIPTION
 <u> </u>	4





Phasing Plan

Operations and Management Recommendations

The vision of Boulder Municipal Airport is to provide a safe, self-sufficient, and community-oriented general aviation airport, serving the needs of both business and recreational aviation users. Specific operations and management improvement recommendations are presented below.

Airport Operations

- Improve data collection and information gathering on aircraft operational activity to better inform city staff and the public of the type and numbers of aircraft operations and activity trends.
- Continuously review and revise the airport's voluntary noise abatement program. Provide improvements in outreach and education among the pilots and the community at large.
 - Increase the promotion of the airport's existing Voluntary Noise Abatement Program through an updated and comprehensive pilot education program that includes distribution of updated "Fly Friendly" brochures, the display of "Fly Friendly" posters, and the installation of noise abatement airport signage.



Boulder-based gliders have set numerous distance and altitude records (www.ssa.org/members/badgesandrecords/usrecords.asp)

- Consider an incentive program to promote adherence to the Voluntary Noise Abatement Program for aircraft operators based at the airport.
- Promote bi-annual pilot meetings that include a "Fly Friendly" educational program.
- Research and promote proven technologies to improve land use compatibility within the Airport environs (e.g., retrofit aircraft propellers or engines to provide quieter operations and investigate alternative glider launch mechanisms, etc.).
- Communicate with commercial glider operators and glider clubs to review and coordinate minor modifications to existing tow plane patterns. In addition, tow plane operators should continue to monitor compliance with the specified flight tracks, as well as minimize repeated overflights of noise sensitive land within the defined soaring areas. It is also recommended that the existing glider clubs and commercial glider operators maintain current operational rules and regulations on file with the airport manager.
- Work with airports in the region to share noise abatement information and expand outreach.



Aerial view of Boulder

See page 21-22 for diagram of routes and airport influence zones. Also see Appendix A for more information on BMA's voluntary noise abatement program.



Community Outreach



In addition to those operations and management recommendations listed on this and the preceding page, the following improvements to the community outreach program were examined:

• Generate quarterly and annual reports on airport activity levels and aircraft noise impact observations. These reports could also include general information on airport events and construction projects.

- Conduct periodic check-ins through public discussions regarding noise and community impacts.
- Evaluate options to establish an Airport Noise Measurement Program.
- Continue to promote overflight protection of raptor nesting areas.

Airport Management

- Maintain an appealing appearance of the airport, using the same high standard of quality and condition used for other city-owned buildings. Bring grounds and buildings, both city-owned and non city-owned, up to this standard of condition.
- Develop and promote fair and equitable leasing practices at the airport for business development and retention. Methods to accomplish these goals include:
 - Establish a formal bidding process for the leasing of airport facilities.
 - Evaluate property reversion clause and the maximum number of years allowed in a lease term (i.e., 30 years) for those leases involving new construction.
 - Update airport's Site Review plan to ensure accurate depiction of possible development areas and total square footage allowed.
 - Establish a city of Boulder staff team to review proposals and leases.
 - Develop a marketing program for available space and businesses at the airport.
 - Provide incentives for businesses to thrive, generating quality jobs and income.
 - Ensure airport leasing practices promote the best interests of the city and airport.



Many airport buildings are 30+ years old



Fueling is a city-monitored lease

city's environmentally sustainable techniques such as integrated pest management, Leadership in Energy and Environmental Design (LEED), wildlife management policies, etc.

Boulder Municipal Airport 2007 Master Plan Update

Airport Master Plan Implementation

The Airport Master Plan establishes the future vision for the Boulder Municipal Airport. From this vision projects, programs and management actions have been identified to advance the preferred future for the BMA. Implementation of major elements of the Master Plan is reviewed at critical decision points to assure that actions are properly supported and endorsed by required codes, regulations, City Council and the community.

Capital Improvements Program

Major projects funded through the city's capital improvements program are reviewed annually through the capital improvements program. The CIP is reviewed through staff level, Planning Board and City Council to assure consistency with adopted plans and the city's future vision defined by the Boulder Valley Comprehensive Plan. Through this process projects which may have significant environmental and/or community impacts are identified to go through a Community Environmental Assessment Process (CEAP) to assure the city's environmental and community values are properly assessed and mitigated. Projects that will go through the CIP process are the runway, taxiway and aircraft apron capital maintenance projects.



Hangar and Associated Infrastructure

The development of additional covered aircraft storage is outlined in the AMPU. The first step will be to commission a market analysis to better understand the market demand and financial feasibility. Based on a positive outcome of the market analysis the city will begin a phased implementation of additional T-hanger, executive hangers and associated infrastructure. Hanger development will be through a public/private partnership. Facility plans will be reviewed through the city's permitting process to assure compliance with the approved airport site review. Execution of the new facility then requires City Council approval of the associated long-term land lease.



Ongoing Routine Maintenance

Ongoing routine maintenance and operating programs are reviewed annually through the city's budget process.

Periodic Update

Course review and adjustment of the Airport Master Plan occurs during the periodic updates of the plan.





Aerial view of Boulder Municipal Airport, May 2006. (Courtesy of Rubino Surveying, Boulder, Colorado)

Conclusion

This Airport Master Plan Update determined that the goals and vision of the Boulder Municipal Airport remain unchanged, in that its role is to provide a safe, self-sufficient, and community-oriented general aviation airport, serving the needs of Boulder's business and recreational aviation users. The number of aircraft operations is forecasted to remain at current levels and slowly return to those levels experienced at the airport in the mid- to late- 1990s. Major changes or additions to the facility are not expected to occur; the proposed improvements that have been identified are intended to maintain BMA in a safe, service-oriented condition meeting both the needs of the aviation community while also being considerate of its impacts, such as aircraft noise, to neighboring residential areas.

This Airport Master Plan Update is a guide to help plan for the short, mid and long-term phases of the airport (through 2023). It is based on the current situation and future projections. Implementation of the plan will be flexible in order to respond to the aviation market demand and any unexpected conditions. The focus of plan implementation will be on Safety, Service and Self-sufficiency.









LAND USE ORDINACE	S)	
BOULDER REVISED CODE, 1981, CHAI BOULDER REVISED CODE, 1981, CHAI BOULDER REVISED CODE, 1981, CHAI		NE
NOTES		
	VSTRUCTION DOCUMENTATION OR NAVIGATION. ORT LAYOUT DRAWING", BY WASHINGTON INFU E OBJECT PENETRATIONS. S AT T/W "A1" WILL REMAIN DUTSIDE OF TAX 30. TOWNSHIP 1 NORTH, RANGE 70 WEST. 5 NADB3. RUNWAY END COORDINATES DETERN	IWAY OBJECT FREE AREA



RPORT DATA			LAYOUT PLAN LEGEND	
	EXISTING	FUTURE		EXISTING
PORT ELEVATION (AMSL)	5288.0'	SAME	AIRPORT PROPERTY LINE	
ORT REFERENCE POINT (ARP)	LAT.40'02'21"N	SAME	AIRPORT SECURITY FENCE	——————————————————————————————————————
	LON.105'13'35"W	SAME	AIRPORT BUILDINGS	
N MAX. TEMP. HOTTEST MONTH	87.5°F	SAME	AIRFIELD PAVEMENT	
ORT REFERENCE CODE (ARC)	B-II	SAME	PAVED ROADS	
WAY LIGHTING	MITL	SAME	AVIGATION EASEMENT	TITT
WAY STRIPING	CENTERLINE	SAME	RUNWAY PROTECTION ZONE	
AS SERVICE LEVEL	GA	SAME	BUILDING RESTRICTION LINE	BRL
			RUNWAY SAFETY AREA	
			RUNWAY OBJECT FREE AREA	
			FUEL STORAGE AREA	
			AIRPORT BEACON	×
			LIGHTED WIND CONE	đ
			AUTOMATED WEATHER OBSERVATION SYSTEM (AWOS)	۲
IVISIONS			VISUAL APPROACH SLOPE INDICATOR (VASI)	
DESCRIPTION		DATE	THRESHOLD LIGHTS	0000 0000
			HOLDLINES	
			TREES	
			NGS SURVEY MONUMENT	A
1				

Traffic Pattern.

Noise Abatement Procedures and Traffic Patterns

Pattern altitude is 6,300 feet MSL. Left traffic for Runway 8, right traffic for Runway 26. Use Runway 08 in calm wind conditions. Glider operations on adjacent grass strip north of main runway. Glider traffic pattern is inside power-aircraft pattern for Runways 8 and 26. Glider operations immediately south of field. Please avoid overflight of residential areas at high power settings below 7,500 feet MSL.

General Aviation Noise Abatement Approach & Landing, Departure, and Pattern Procedures—VFR Only.

Your compliance with the following procedures is requested, unless otherwise required by FARs, weather conditions, or aircraft limitations.

General Procedures.

> Avoid Overflying Noise Sensitive and Residential Areas. > If You Must Overfly Shaded Noise

> Avoid High RPM Prop Settings.

> Do Not Fly North of **Jay Road** on

> Traffic Pattern Altitude 6,300' MSL.

Sensitive Areas, Maintain 7,500' MSL or

- > Heavy Glider Operations on Parallel Runway.
- > Frequent "No Radio" Operations.
- > Pilots are Requested to Avoid Making Touch and Go Landings Before 8:00 AM and After 5:00 PM.
- > Pilots are Requested to Avoid Flight **Operations Between 11:00 PM** and 7:00 AM.

Runway 8

Downwind Leg.

Higher.

Runway 8 Preferred Under Calm and Light Wind Conditions.

APPROACH & LANDING

- > No Straight-Ins to Runway 8.
- > Rwy 8: Base Entries Discouraged.
- > No Approaches West of 28th Street.
- > Avoid Flying West of 30th Street.
- > Fly Close Steep Approach (Avoid "Dragging It In").

DEPARTURE

- > No Turn Below 5,800' MSL for Closed Traffic.
- > Depart Straight Out. Turn North Only After Passing Residential Area.

Runway 26 Westerly Winds Only.

APPROACH & LANDING

- > CAUTION Severe Turbulence and Down Draft on Short Final Approach During Strong Westerly Winds.
- > 6,300' MSL and 1,000' AGL.
- > Rwy 26: Crosswind and Base Entries Discouraged.
- > RIGHT HAND TRAFFIC!

DEPARTURE

> Crosswind Leg East of 30th Street. Depart via Downwind.



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Source: Base Map: Microsoft Street & Trips 2006. Influence Area: City of Boulder Airport Influence Overlay Zoning Map.



Airport Airspace Drawing Plan View Conical Surface

CRADU

Y 8G/26 REFER TO INNER APPROACH DRAWINGS FOR CLOSE IN OBSTRUCTIONS

NOTES: 1. THIS DRAWING REFLECTS PLANNING STANDARDS SPECIFIC TO THIS ARPORT, AND IS NOT A PRODUCT OF DETAILED ENGINEERING ANALYSS. IT IS NOT INTENDED TO BE USED FOR CONSTRUCTION DOCUMENTATION OR NAVIGATION. 2. THERE IS NO DESTRUCTION CHART FOR THIS ARPORT.

 TOPOGRAPHIC DATA WAS OBTAINED FROM USGS 7.5 MINUTE SURVEY MAPS, "LAFAYETTE", "LOUISVILLE", "ELDORADO SPRINGS", "ERIE", "NIMOT", AND "BOULDER", COLORADO. 4. THE CITY OF BOULDER HAS ESTABLISHED AN AIRPORT INFLUENCE OVERLAY ZONE AND ASSOCIATED REGULATIONS THAT GOVERN THE TYPES OF DEVELOPMENT WITHIN THE AREA SURROUNDING THE AIRPORT TO ENSURE COMPATIBLE LAND USES IN CLOSE PROXIMITY TO THE AIRPORT.

Boulder Municipal Airport Airport Master Plan Update

0B1	ROADWAY	5280'	5'	TRANS.	NONE				
0B2	TREE *	5330'	35'	TRANS.	NONE				
0B3	POWER POLE *	5305	35'	TRANS.	LIGHTED				
OB4	POWER LINE	5305'	33'	TRANS.	LIGHTED				
0B5	ROADWAY	5275'	12'	TRANS.	NONE				
0B6	FENCE *	5288'	3'	PRIMARY	NONE				
0B7	LIGHT POLE *	5308'	18'	PRIMARY	LIGHTED				
NOTE: OBSTRUCTIONS DETERMINED FROM AERIAL PHOTOGRAPHY AND USGS QUADRANGLE MAPS. OBSTRUCTION SURVEY WILL BE REQUED TO DETERMINE ACCURATE LOCATION, ELEVATION, AND DISPOSITION.									
1	* MULTIPLE LOCATIONS PARALLEL TO RUNWAY 80/260								





1	́ОВ	STRUCTIO	DNS)					
	NO.	DESCRIPTION	ELEVATION	PENETRATION	SURFACE	DISPOSITION			
	OB6	FENCE *	5288'	3'	PRIMARY	NONE			
	0B7	LIGHT POLE *	5308'	18'	PRIMARY	LIGHTED			
SIGN	NOTE: OBSTRUCTIONS DETERMINED FROM AERIAL PHOTOGRAPHY AND USGS QUADRANGLE MAPS. OBSTRUCTION SURVEY WILL BE REQUIED TO DETERMINE ACCURATE LOCATION, ELEVATION, AND DISPOSITION.								
	* MULTIPLE LOCATIONS PARALLEL TO RUNWAY 8G/26G								
SURFACES.		REFER TO INNER	APPROACH D	RAWINGS FOR (CLOSE IN C	BSTRUCTIONS			

NOTES: THE DRAWING REFLECTS FLANNING STANDARDS SPECIFIC TO THIS AIPPORT, AND IS NOT A PRODUCT OF DETAILED ENGINEERING DES THE IS IN DISTINCTION CHART FOR THIS AIRPORT. 3. TOFOGRAPHIC DATA WAS OBTAINED FROM USES 7.5 MINUTE SURVEY MAPS, "LAFAYETE", "LOUISVILLE", "ELDORADO SPRINGS", TERE", "MANUT AND "BOULDER", COLORADO. 4. TERRAIN PROFILE REPRESENTS THE HIGHEST POINT ACROSS THE WIDTH AND ALONG THE LENGHT OF THE APPROACH AND PRIMARY

Boulder Municipal Airport Airport Master Plan Update

Airport Airspace Profiles Runway Profile Views





AIRPORT DATA			RUNWAY DATA		-			LAYOUT PLAN LEGEND	
	EXISTING	FUTURE	ITEM	RUNWA	NY 8/26	RUNWAY	8G/26G		EXISTING
AIRPORT ELEVATION (AMSL)	5288.0'	SAME	IIEM	EXISTING	FUTURE	EXISTING	FUTURE	AIRPORT PROPERTY LINE	
AIRPORT REFERENCE POINT (ARP)	LAT.40'02'21 N	SAME	APPROACH VISIBILITY MINIMUMS	VISUAL/VISUAL	VISUAL/NON-PREC.	VISUAL/VISUAL	SAME	AIRPORT SECURITY FENCE	
	LON.105'13'35"W	SAME	PART 77 APPROACH SURFACES	20:1/20:1	20:1/34:1	20:1/20:1	SAME	AIRPORT BUILDINGS	
MEAN MAX. TEMP. HOTTEST MONTH	87.5'F	SAME	FAR PART 77 CATEGORY	VISUAL-B	VISUAL-B/NP-C	VISUAL A	SAME	AIRFIELD PAVEMENT	
COMBINED WIND COVERAGE VFR/IFR(%) 13kt	94.64/91.90	SAME	RUNWAY WIDTH AND LENGTH	75' X 4,100'	SAME	25' X 4,100'	SAME	PAVED ROADS	
AIRPORT REFERENCE CODE (ARC)	B-II	SAME	PAVEMENT TYPE	ASPHALT	SAME	ASPHALT & TURF	SAME	AVIGATION EASEMENT	
TAXIWAY LIGHTING	MITL	SAME	PAVEMENT STRENGTH (IN 1000 LBS.)	16-SW, 30-DW	SAME	NA	SAME	RUNWAY PROTECTION ZONE	
TAXIWAY STRIPING	CENTERLINE	SAME	RUNWAY LIGHTING	MIRL	SAME	NONE	SAME	BUILDING RESTRICTION LINE	BRL
NPIAS SERVICE LEVEL	GA	SAME	RUNWAY MARKING	BASIC/BASIC	NPI/BASIC	NONE	SAME	RUNWAY SAFETY AREA	
			PERCENT GRADIENT	0.22%	SAME	0.22%	SAME	RUNWAY OBJECT FREE AREA	
			MAXIMUM GRADE WITHIN R/W LENGTH	0.48%	SAME	0.48%	SAME	FUEL STORAGE AREA	(F)
			LINE-OF-SIGHT REQUIREMENTS	MEETS CRITERIA	SAME	MEETS CRITERIA	SAME	AIRPORT BEACON	¥
<u> </u>			VISUAL APPROACH AIDS (LIGHTING)	VASI	VASI,PAPI	NONE	SAME	LIGHTED WIND CONE	ర
	\mathbf{c}		INSTRUMENT APPROACH AIDS	NONE	GPS	NONE	SAME	AUTOMATED WEATHER OBSERVATION SYSTEM (AWOS)	۲
(DECLARED DISTANCE	5		AIRPORT REFERENCE CODE (ARC)	B-II	SAME	A-I	SAME	VISUAL APPROACH SLOPE INDICATOR (VASI)	8 8
			CRITICAL AIRCRAFT	BEECH SUPER KINGAR B200	SAME	EIRIAVION PIK-20	SAME	THRESHOLD LIGHTS	
RUNWAY 8/26	EXISTING	FUTURE	RUNWAY SAFETY AREA WIDTH	150'	SAME	150'	SAME	HOLDLINES	
TAKE OFF RUN AVAILABLE	4,100'/4,100		R/W SAFETY AREA LENGTH BEYOND R/W END	300'/300'	SAME	300'/300'	SAME	TREES	
TAKE OFF DISTANCE AVAILABLE	4,100'/4,100		RUNWAY OBJECT FREE AREA WIDTH	500	SAME	500'	SAME	NGS SURVEY MONUMENT	A
ACCELERATE STOP DISTANCE AVAILABLE	4,100 / 3,900		R/W OBJECT FREE AREA LENGTH BEYOND R/W END	300'/300'	SAME	300'/300'	SAME		
LANDING DISTANCE AVAILABLE	3,900'/3,900	SAME	RUNWAY OBSTACLE FREE ZONE WIDTH	250	400'	250	400'		
			R/W OBSTACLE FREE ZONE LENGTH BEYOND R/W END		SAME	200'/200'	SAME		<u> </u>
RUNWAY 8G/26G	EXISTING	FUTURE	RUNWAY END ELEVATIONS	5287.0'/5274.8'	SAME	5287.0'/5274.8'	SAME		
TAKE OFF RUN AVAILABLE	4,100'/4,100		RUNWAY END COORDINATES BW 8	N 40 02 20.79		N 40 02 22.70		REVISIONS	
TAKE OFF DISTANCE AVAILABLE	4,100'/4,100	SAME	····· -	W 105*14'00.37" N 40*02'20.79"	SAME	W 105 14 00.09 N 40 02 22.77	SAME	NO. DESCRIPTION	
ACCELERATE STOP DISTANCE AVAILABLE	4,100'/4,100		RW 26	W 105 13 07.65		W 105 13 07.37	0.00		
LANDING DISTANCE AVAILABLE	4,100'/4,100	SAME	DISPLACED THRESHOLD COORDINATES RW 8	N 40'02'20.79"	SAME				
			RW 26	w 105'13'56.51* NA	NA	NA	NA		
			RUNWAY DISPLACED THRESHOLD ELEVATION	5287.2'/NA	SAME	NA/NA	SAME		
			RUNWAY TOUCHDOWN ZONE ELEVATION	5288.0'/5287.9'	SAME	5288.0'/5287.9'	SAME		
			RUNWAY HIGHPOINT	5288.0'	SAME	5288.0'	SAME		
			RUNWAT HIGHPOINT	5288.0	SAME	5288.0	SAME		
				JZ/4.8	SAME	52/4.8	SAME		

RUNWAY 8 PLAN 1" = 200'

5390

5330'

5320'

5310' RUNWAY 8 PROFILE

NOTES

1" = 200' HORIZONTALLY 1" = 20' VERTICALLY

5290'

5280

5270'

5260'

5250'



Yrue North - 6, 54	E Mar De-				
1 ma Ports	0'	100'	200'	400'	600'
	GRAP	HIC SC	ALE IN FI	er	

Boulder Municipal Airport Airport Master Plan Update

Inner Approach Surface Drawing Runway 8 Plan & Profile

🔉 Barnard Dunkelberg & Company



-200	0 200 400	800	800	1000 1200 140	1600	1800	2000	2200	2400		2800	3000	3200
(NOTES	(AIRPORT DATA			(RUNWAY DATA) (LA`	YOUT PLAN	I LEGEND	1	
1. THIS DRAWING REFLECTS PLANNING STANDARDS SPECIFIC TO THIS AIRPORT, AND IS NOT A PRODUCT OF DETAILED ENGINEERING DESIGN ANALYSIS.	AIRPORT ELEVATION (AMSL)	EXISTING	FUTURE	ПЕМ		Y 8/26	RUNWAY			T DOODEDDA UNE		EXISTING	FUTURI
IT IS NOT INTENDED TO BE USED FOR CONSTRUCTION DOCUMENTATION OR NAVIGATION. 2. ALP BASE INFORMATION TAKEN FROM "AIRPORT LAYOUT DRAWING", BY WASHINGTON INFRASTRUCTURE SERVICES, INC., AUGUST 2001.	AIRPORT ELEVATION (AMSL)	5288.0' LAT.40'02'21"N	SAME SAME	APPROACH VISIBILITY MINIMUMS	EXISTING VISUAL/VISUAL	FUTURE VISUAL/NON-PRE	EXISTING C. VISUAL/VISUAL	FUTURE SAME		RT PROPERTY LINE			<u> </u>
3. THERE ARE NO THRESHOLD SITING SURFACE OBJECT PENETRATIONS. 4. AIRCRAFT PERFORMING RUN-UP OPERATIONS AT T/W A1 WILL REMAIN DUTSIDE OF TAXIWAY OBJECT FREE AREA		LON.105*13'35"W	SAME	PART 77 APPROACH SURFACES	20:1/20:1	20:1/34:1	20:1/20:1	SAME		RT BUILDINGS			
 AIRCRAFT PERFORMING RON-OF OPERATIONS AT 1/W AT WILL REMAIN DUISIDE OF TAXIWAT OBJECT FREE AREA MEETING AIRPLANE DESIGN GROUP III CRITERIA. 	MEAN MAX. TEMP. HOTTEST MONTH	87.5°F	SAME	FAR PART 77 CATEGORY	VISUAL-B	VISUAL-B/NP-	C VISUAL A	SAME	AIRFIEL	_D PAVEMENT			
5. AIRPORT LOCATED IN SECTIONS 21 AND 22, TOWNSHIP 1 NORTH, RANGE 70 WEST.	COMBINED WIND COVERAGE VFR/IFR(%) 13kt	94.64/91.90	SAME	RUNWAY WIDTH AND LENGTH	75' X 4,100'	SAME	25' X 4,100'	SAME	PAVED	ROADS			===
 ALL LAT./LONG. COORDINATE INFORMATION IS NADB3. RUNWAY END COORDINATES DETERMINED WITH GEODETIC CALCULATOR BASED ON NGS MARKER (PID LL1137) DESCRIPTION. NO SITE SURVEY WAS PERFORMED. 	AIRPORT REFERENCE CODE (ARC)	B-II	SAME	PAVEMENT TYPE	ASPHALT	SAME	ASPHALT & TURF	SAME	AVIGAT	ION EASEMENT			7.12,12
	TAXIWAY LIGHTING	MITL	SAME	PAVEMENT STRENGTH (IN 1000 LBS.)	16-SW, 30-DW	SAME	NA	SAME	RUNWA	AY PROTECTION ZONE			C
	TAXIWAY STRIPING	CENTERLINE	SAME	RUNWAY LIGHTING	MIRL	SAME	NONE	SAME	BUILDI	NG RESTRICTION LINE		BRL	— — BRL
	NPIAS SERVICE LEVEL	GA	SAME	RUNWAY MARKING	BASIC/BASIC	NPI/BASIC	NONE	SAME	RUNWA	AY SAFETY AREA			RSA (F)
				PERCENT GRADIENT	0.22%	SAME	0.22%	SAME	RUNWA	AY OBJECT FREE AREA	4		
				MAXIMUM GRADE WITHIN R/W LENGTH	0.48%	SAME	0.48%	SAME	FUEL S	STORAGE AREA		F	Û
				LINE-OF-SIGHT REQUIREMENTS	MEETS CRITERIA	SAME	MEETS CRITERIA	SAME		RT BEACON		*	
				VISUAL APPROACH AIDS (LIGHTING)	VASI	VASI, PAPI	NONE	SAME	LIGHTE	D WIND CONE		đ	
	DECLARED DISTANCE	c)		INSTRUMENT APPROACH AIDS	NONE	GPS	NONE	SAME		ATED WEATHER OBSERV		۲	0
	DECERTED DISTRICE	5		AIRPORT REFERENCE CODE (ARC)	B-II	SAME	A-I	SAME		APPROACH SLOPE IN	NDICATOR (VASI)	1 1	0
					BEECH SUPER KINGAR B200	SAME	EIRIAVION PIK-20	SAME		HOLD LIGHTS			0000 0000
	RUNWAY 8/26	EXISTING	FUTURE	RUNWAY SAFETY AREA WIDTH	150'	SAME	150'	SAME	HOLDL				
	TAKE OFF RUN AVAILABLE	4,100'/4,100'	SAME	R/W SAFETY AREA LENGTH BEYOND R/W END	300'/300'	SAME	300'/300'	SAME	TREES				
	TAKE OFF DISTANCE AVAILABLE	4.100 / 4.100	SAME	RUNWAY OBJECT FREE AREA WIDTH	500'	SAME	500'	SAME	NGS S	SURVEY MONUMENT		<u>A</u>	
	ACCELERATE STOP DISTANCE AVAILABLE	4,100 / 3,900	SAME	R/W OBJECT FREE AREA LENGTH BEYOND R/W END	300'/300'	SAME	300'/300'	SAME					
	LANDING DISTANCE AVAILABLE	3,900'/3,900'	SAME	RUNWAY OBSTACLE FREE ZONE WIDTH	250'	400'	250'	400'					
				R/W OBSTACLE FREE ZONE LENGTH BEYOND R/W END	200'/200'	SAME	200'/200'	SAME					_
	RUNWAY 8G/26G	EXISTING	FUTURE	RUNWAY END ELEVATIONS	5287.0'/5274.8'	SAME	5287.0'/5274.8'	SAME		VISIONS		1	
	TAKE OFF RUN AVAILABLE	4,100'/4,100'		RUNWAY END COORDINATES RW 8	N 40'02'20.79" W 105'14'00.37		N 40'02'22.70"						
	TAKE OFF DISTANCE AVAILABLE	4,100 / 4,100		RW 26	N 40'02'20.79	SAME	W 105 14 00.09 N 40 02 22.77	SAME	NO.	DESCRIPTION			
	ACCELERATE STOP DISTANCE AVAILABLE	4,100 / 4,100			W 105'13'07.65		W 105 13'07.37"						
	LANDING DISTANCE AVAILABLE	4,100'/4,100'	SAME	DISPLACED THRESHOLD COORDINATES RW 8	N 40'02'20.79" W 105'13'56.51"	SAME							
				RW_26	W 1051336.51	NA	NA	NA					
				RUNWAY DISPLACED THRESHOLD ELEVATION	5287.2'/NA	SAME	NA/NA	SAME					
				RUNWAY TOUCHDOWN ZONE ELEVATION	5288.0'/5287.9'	SAME	5288.0'/5287.9'	SAME					
				RUNWAY HIGHPOINT	5288.0'	SAME	5288.0	SAME					
age 26	l			RUNWAY LOWPOINT	5274.8'	SAME	5274.8'	SAME	$\exists \cup \mid$				
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Boulder Municipal Airport Airport Master Plan Update

Inner Approach Surface Drawing Runway 26 Plan & Profile



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	(AIRPORT DATA			(RUNWAY DATA) (LAYOUT PLAN LEGEND)		
		EXISTING	FUTURE		RUNWA	Y 8/26	RUNWAY	8G/26G		EXISTING	T
ALYSIS.	AIRPORT ELEVATION (AMSL)	5288.0'	SAME	ITEM	EXISTING	FUTURE	EXISTING	FUTURE	AIRPORT PROPERTY LINE		1 -
	AIRPORT REFERENCE POINT (ARP)	LAT.40'02'21"N	SAME SAME	APPROACH VISIBILITY MINIMUMS	VISUAL/VISUAL	VISUAL/NON-PREC.	VISUAL/VISUAL	SAME	AIRPORT SECURITY FENCE	X	-
		LON.105'13'35"W		PART 77 APPROACH SURFACES	20:1/20:1	20:1/34:1	20:1/20:1	SAME	AIRPORT BUILDINGS		T
	MEAN MAX. TEMP. HOTTEST MONTH	87.5°F	SAME	FAR PART 77 CATEGORY	VISUAL-B	VISUAL-B/NP-C	VISUAL A	SAME	AIRFIELD PAVEMENT		
	COMBINED WIND COVERAGE VFR/IFR(%) 13kt	94.64/91.90	SAME	RUNWAY WIDTH AND LENGTH	75' X 4,100'	SAME	25' X 4,100'	SAME	PAVED ROADS		
N	AIRPORT REFERENCE CODE (ARC)	B-II	SAME	PAVEMENT TYPE	ASPHALT	SAME	ASPHALT & TURF	SAME	AVIGATION EASEMENT		
	TAXIWAY LIGHTING	MITL	SAME	PAVEMENT STRENGTH (IN 1000 LBS.)	16-SW, 30-DW	SAME	NA	SAME	RUNWAY PROTECTION ZONE		T
	TAXIWAY STRIPING	CENTERLINE	SAME	RUNWAY LIGHTING	MIRL	SAME	NONE	SAME	BUILDING RESTRICTION LINE	BRL	-
	NPIAS SERVICE LEVEL	GA	SAME	RUNWAY MARKING	BASIC/BASIC	NPI/BASIC	NONE	SAME	RUNWAY SAFETY AREA		-
				PERCENT GRADIENT	0.22%	SAME	0.22%	SAME	RUNWAY OBJECT FREE AREA		1-
				MAXIMUM GRADE WITHIN R/W LENGTH	0.48%	SAME	0.48%	SAME	FUEL STORAGE AREA	Ð	
				LINE-OF-SIGHT REQUIREMENTS	MEETS CRITERIA	SAME	MEETS CRITERIA	SAME	AIRPORT BEACON	*	
				VISUAL APPROACH AIDS (LIGHTING)	VASI	VASI,PAPI	NONE	SAME	LIGHTED WIND CONE	Ċ	
	DECLARED DISTANCES			INSTRUMENT APPROACH AIDS	NONE	GPS	NONE	SAME	AUTOMATED WEATHER OBSERVATION SYSTEM (AWOS)	۲	
	DECEARED DISTANCE.	5		AIRPORT REFERENCE CODE (ARC)	B-II	SAME	A-I	SAME	VISUAL APPROACH SLOPE INDICATOR (VASI)		
				CRITICAL AIRCRAFT	BEECH SUPER KINGAIR B200	SAME	EIRIAVION PIK-20	SAME	THRESHOLD LIGHTS	0000 0000	
	RUNWAY 8/26	EXISTING	FUTURE	RUNWAY SAFETY AREA WIDTH	150'	SAME	150'	SAME	HOLDLINES		
	TAKE OFF RUN AVAILABLE	4,100'/4,100'	SAME	R/W SAFETY AREA LENGTH BEYOND R/W END	300'/300'	SAME	300'/300'	SAME	TREES		
	TAKE OFF DISTANCE AVAILABLE	4,100'/4,100'	SAME	RUNWAY OBJECT FREE AREA WIDTH	500'	SAME	500'	SAME	NGS SURVEY MONUMENT	A	
	ACCELERATE STOP DISTANCE AVAILABLE	4,100 / 3,900	SAME	R/W OBJECT FREE AREA LENGTH BEYOND R/W END	300'/300'	SAME	300'/300'	SAME			
	LANDING DISTANCE AVAILABLE	3,900'/3,900'	SAME	RUNWAY OBSTACLE FREE ZONE WIDTH	250'	400'	250'	400'			T
				R/W OBSTACLE FREE ZONE LENGTH BEYOND R/W END		SAME	200'/200'	SAME			-
	RUNWAY 8G/26G	EXISTING	FUTURE	RUNWAY END ELEVATIONS	5287.0'/5274.8'	SAME	5287.0'/5274.8'	SAME	REVISIONS		
	TAKE OFF RUN AVAILABLE	4,100'/4,100'	SAME	RUNWAY END COORDINATES RW 8	N 40'02'20.79 W 105'14'00.37		N 40'02'22.70" W 105'14'00.09				_
	TAKE OFF DISTANCE AVAILABLE	4,100'/4,100'	SAME	RW 26		SAME	N 40 02 22.77	SAME	NO. DESCRIPTION		
	ACCELERATE STOP DISTANCE AVAILABLE	4,100'/4,100'	SAME		W 10513'07.65 N 40'02'20.79		W 105'13'07.37"		╡┝──┼──────		
	LANDING DISTANCE AVAILABLE	4,100'/4,100'	SAME	DISPLACED THRESHOLD COORDINATES RW 8	W 105 13 56.51	SAME	NA	NA			
				RW 26	NA	NA	NA NA	NA			
				RUNWAY DISPLACED THRESHOLD ELEVATION	5287.2 /NA	SAME	NA/NA	SAME]		
				RUNWAY TOUCHDOWN ZONE ELEVATION	5288.0'/5287.9'	SAME	5288.0'/5287.9'	SAME]		
				RUNWAY HIGHPOINT	5288.0	SAME	5288.0	SAME]		
	l			RUNWAY LOWPOINT	5274.8'	SAME	5274.8'	SAME			
	<u> </u>			· · ·	-						



RUNWAY 26G PROFILE 1" = 200' HORIZONTALLY 1" = 20' VERTICALLY

-ROADWAY EL. 5169' (160' CLEAR) 2400' 1200' 1400' 1600' 1800' 2000' 2200' 2600'

ROADWAY EL. 5169'-ROADWAY EL. 5165'-ROADWAY EL. 5162



Information on Appendix A:

The analysis and working papers that were developed during this process and helped to create the Airport Master Plan Update recommendations are referred to as Appendix A. The unabridged, 200+ page document can be viewed electronically via the Airport's web site at: http://www.bouldercolorado.gov/airport or by visiting the main Boulder Public Library, at 1000 Canyon Blvd, Boulder, Colorado 80302.

Appendix A was compiled through the combined efforts of city of Boulder staff, community working group members, the public, Boulder Municipal Airport users and the planning-consulting firm of Barnard Dunkelberg & Company (1743 Wazee Street, Suite 400, Denver, Colorado 80202).

Cover Photo Credits: 1944 Aerial photo with bi-planes in foreground courtesy of Boulder's Carnegie Branch Library; Airport in 1960 courtesy of Boulder Daily Camera; Current photograph of pilots in airplane courtesy of Tim Head.