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Chapter 6

Airport Layout Plan

Missoula International Airport
Master Plan Update

Prepared for

Missoula County Airport Authority

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CH2MHILL

Contents

CHAPTER 6

ALP Narrative

6.1 Introduction

The Missoula International Airport (MSO) Master Plan Update (MPU) has evolved through the analysis in previous chapters, associated efforts such as the Study Resource Committee (SRC) meetings, Public Outreach meetings, and discussions with the Missoula County Airport Authority (MCAA). This chapter presents the resulting Airport Layout Plan (ALP) in a set of detailed drawings called the airport plans set.

The proposed 20-year development plan for the MSO ALP is a graphic depiction of existing and ultimate airport facilities that are projected to be required to accommodate forecast demand. In addition, facilities that are anticipated to be needed post planning period are shown for land reservation and planning purposes. The drawings were prepared in accordance with Federal Aviation Administration (FAA) guidelines as defined in FAA Advisory Circular 150/5070-6B, *Airport Master Plans*, and Advisory Circular 150/5300-13, *Airport Design*. In addition, the FAA Northwest Mountain Region ALP Checklist was used as a guide to ensure the correct depiction of airport facilities and design standards. Furthermore, the plan set contains both airport and airfield facility data and design criteria which is required to define relationships with applicable planning and design standards. Upon FAA approval, the plan set becomes the official planning guidance drawings for MSO.

FAA approval of the ALP means that the proposed projects are reasonable and comply with FAA planning and airspace standards. However, it does not necessarily mean that projects are eligible for federal funding or can be implemented without environmental review.

6.2 Airport Design Standards

FAA AC 150/5300-13 provides guidance on airport design standards, which are defined by the Airport Reference Code (ARC). The ARC is a coding system used by the FAA to relate airport design criteria to the operational and physical characteristics of the largest aircraft expected to regularly operate at the airport. The ARC has two components: Aircraft Approach Category (Category A through E) reflecting aircraft speed; and Airplane Design Group (Group I through VI) reflecting aircraft size.

Chapter 2, *Airfield Demand Capacity and Facility Requirements*, details the existing and future ARC requirements for MSO. The design of all future facilities should be in accordance with ARC C-III standards[1]. The previous MPU identified C-IV standards as the Airport Reference Code. Changes in aircraft utilization over the years since that time, however has reduced the need for these higher standards now and for the planning period. It is

[1] ARC C-III refers to aircraft with up to 118-foot wingspan and tail heights up to 45 feet, such as the Boeing 737 and MD-80.

recommended that the current ARC C-IV separation between existing facilities be maintained.

Most aircraft using Runway 7/25 weigh less than 12,500 pounds, therefore the ARC was B-I Small-Aircraft-Only. However, because MSO is an air carrier airport, the FAA recommends that B-I standard be used instead of B-I Small-Aircraft-Only, or A-I. For this reason, Runway 7/25 should be maintained as B-I Standard. The change to B-I standard causes the hold lines on taxiways that cross the runway to be relocated 200 feet from the centerline or requires a modification to standards.

6.3 Airport Layout Plan

Existing and proposed facilities detailed within the previous chapters are included in the airport plans set within the following drawings:

1. ***Title Sheet and Data Sheet:*** Includes pertinent information about the Airport, including an airport location map, vicinity map, existing and proposed runway design standards, runway weight limitations, navigational aids (NAVAIDs), and wind coverage.
2. ***Existing Airport Layout Plan:*** Graphic depiction of existing facilities on airport property, including representation of applicable design standards[2].
3. ***Future Airport Layout Plan:*** Graphic depiction of facilities proposed within the 20 year planning period to meet forecast demand, including applicable design standards. In the case of MSO, the Future ALP also depicts post planning period features such as a parallel runway for the purpose of airspace protection and land use planning within the planning period.
4. ***Terminal Area Plan:*** Enlarged view of the existing and future terminal area including parking lots and the on-airport roadway network.
5. ***Airspace and Inner Airspace Plans:*** Shows the Federal Aviation Regulations (FAR) Part 77 Imaginary Surfaces, including a list of current known obstructions to the imaginary surfaces. The Airspace Plan is also used to determine if a proposed structure will penetrate any existing, future, or post planning period airspace surface. Obstructions were identified based on previous obstruction studies, obstruction charts, aerial photography, and digital USGS Quad maps to identify terrain issues located in the outer airspace surfaces. USGS maps for the MSO area were last updated in the 1970's, and were retrieved from USGS/Beartooth Mapping Inc. Terrain contours are shown only to reflect general terrain features
6. ***Existing and Future Runway Approach Plan and Profiles:*** These sheets depict a large-scale view of the interior portion of the approach surface for each existing and proposed runway end based on Part 77.

[2] United States Geological Survey terrain elevation information differs significantly from surveyed Runway 11/29 elevations. Therefore, NGS terrain contours are shown only to reflect general terrain features.

7. ***Airport Property Map:*** Depicts parcels of land that constitute the airport property, including date acquired, acreage, source, and the Airport's interest in the property (such as whether the property is owned as fee-simple or as an easement).
8. ***Airport Land Use Plan:*** Depicts existing and proposed on-airport land use.

6.4 Airside Facilities

This section discusses the ALP sheets pertaining to airside facilities, including existing runway and taxiway systems, apron area needs, and pavement conditions.

6.4.1 Existing Runway System

The MSO runway system consists of two intersecting runways: main Runway 11/29 at 9,501 feet long by 150 feet wide, and crosswind Runway 7/25 at 4,612 feet long by 75 feet wide.

Runway 11 is a precision instrument runway with 50:1 approach surface and Runway 29 is a nonprecision runway with a 34:1 approach. The runway is marked as a precision runway and is most often used during VFR weather. Runway 29 is recommended to be upgraded to an ANA-LPV approach that has an inner approach slope of 50:1 followed by a 40:1 slope. The length of an ANA-LPV approach slope is shorter than typical precision approaches and, when evaluated, the LPV approach slope is not obstructed by terrain surrounding MSO.

The Runway 11/29 centerline profile line of sight (LOS) is violated by approximately 0.78 feet. The violation should be remedied at the time of a future project, such as full-depth reconstruction of Runway 11/29.

Runway 7/25 is a visual runway and, due to terrain and low use, it is not recommended that the approaches are upgraded within the 20-year planning period. The runway serves small, general aviation aircraft. Per FAA recommendation, the runway should be maintained at its current width of 75 feet (B-II).

6.4.2 Runway Capacity

Although airfield capacity of the existing runway system was determined to be adequate to accommodate demand through 2028, it is anticipated that MSO will require additional capacity beyond the planning period. The preferred post planning runway alternative is an air carrier runway south and parallel to Runway 11/29, at a runway centerline separation distance of approximately 2,800 feet with a length up to the existing Runway 11/29 length of 9,501 feet. This tentative separation allows for independent aircraft arrivals and departures, and allows for potential future stagger of runway thresholds. Future studies will further justify and refine the runway use and final design. At this time, no additional property acquisition is recommended. The post planning period runway is shown to reserve space for aviation and nonaviation development, and to protect airspace and encourage adjacent compatible land uses.

6.4.3 Taxiway System

Taxiway A, the parallel taxiway serving Runway 11/29, exceeds FAA standards for ARC C-III separation between runway centerline and taxiway centerline but will be maintained at this separation through the planning period.

The middle segment of Taxiway G is recommended to be widened to the FAA-recommended 60 feet and realigned perpendicular to Runway 11/29. The north segment of Taxiway G is also proposed to be widened to 60 feet. Also, high speed taxiway exits from Runway 11/29 are recommended in the long-term to assist tanker operations. Finally, based on *Engineering Brief No. 75: Incorporation of Runway Incursion Prevention into Taxiway and Apron Design* (EB-75), Taxiway E is proposed to be relocated away from the intersection with Runway 7/25 and Taxiway A, as shown in the Future ALP sheet.

6.4.4 Pavement Condition

The airfield pavement is generally in good condition, with the exception of Taxiway G, and Taxiway E, which are scheduled for upgrades in the airport capital improvement plan (CIP). Additionally, Runway 7/25 shoulder rehabilitation remains on-going. The Pavement Condition Evaluation, shown in **Appendix D,** includes a short-term (0 to 5 years) and medium-term (5 to 10 years) pavement management schedule.

6.4.5 Runway Approach Aids and Lighting

Runway 11 has a precision instrument approach with a localizer and glideslope antenna for Category (CAT) I ILS approaches. Runway 11 also has an ILS (Special) approach available to pilots who have been granted permission by the FAA to use it. Runway 11 is equipped with a Medium-Intensity Approach Lighting with Runway Alignment Indicators (MALSR) and is also served by an RNAV GPS nonprecision approach. The runway is also equipped with high intensity runway edge lighting (HIRL) and a Precision Approach Path Indicator (PAPI) system. Runway 7/25 is equipped with medium intensity runway edge lighting (MIRL) system and is classified as visual only.

Satellite-based RNAV (LPV) and RNP approaches are scheduled for August, 2009 publication on Runway 11 and Runway 29. This technology should duplicate, and over time, possibly replace older technology. Runway 29 should also be equipped with a MALSR or similar approach lighting system (to allow lowest possible minimums) with the RNAV/RNP approach.

6.4.6 Air Traffic Control Tower

Construction of a new tower located approximately 1,400 feet from the centerline of Runway 11/29 is planned within the next 5 years and is shown on the Future ALP sheet. An environmental assessment (EA) of this project is underway. The existing Air Traffic Control Tower (ATCT) will be decommissioned within the planning period.

6.4.7 General Aviation Facilities

MSO's two existing full-service FBOs, Minuteman and Northstar/Neptune, are in need of additional hangar space and apron expansions to accommodate demand through the planning period. Areas for future FBO expansion are defined around the existing FBO sites.

Actual development will be defined at the time of actual demand. Space required to double the size of Homestead Helicopters is also shown. A spot designated for helicopter refueling, parking, and staging, is shown on the east and west side GA development areas. Actual development will be defined at the time of actual demand.

To accommodate GA needs in the long-term, a midfield location is identified for GA expansion and a possible third FBO. T-hangars to replace the T-hangars lost through the expansion of the parking and access improvements are under construction near Runway 25.

6.5 Landside Facilities

The Landside Facilities ALP sheets provide a description of the terminal building and landside access exhibits.

6.5.1 Terminal Building

The MPU examined the needs of the existing terminal building, located north of the airfield, to meet demand through the planning period. The existing passenger terminal building expansion shown on the ALP accommodates existing need. The expansion reserves the ability to be flexible. Additionally, the terminal apron area is reserved for possible expansion near the existing terminal.

The terminal improvements are designed to provide MSO with the greatest amount of flexibility in future growth by keeping development options open. The area surrounding the terminal has been reserved for expansions within the planning period. The midfield area has been reserved for potential future terminal use beyond the planning period and is shown on the ALP for land use planning purposes.

6.5.2 Landside Access

Landside access will be improved along with expansion and reconfiguration of the terminal parking area. The proposed layout to accommodate demand within the planning period is shown. Also recommended in the Landside Master Plan (shown in Appendix C) is the realignment of the terminal entrance and exit roadway loop to provide easier access to the terminal arrival and departure curbs and short- and long-term parking. The proposed alignment is depicted on the ALP.

6.6 Airspace

The airport airspace drawings are based on Part 77. The drawing identifies imaginary surfaces which protect the runway approaches and the airport environment. The drawings are based on the ultimate planned runway length as well as the ultimate planned approaches to each runway end. (As noted previously, post planning period Runway 11R/29L is shown to protect airspace and encourage land use compatibility.)

Also provided are Plan and Profile drawings depicting the individual runway inner approach surfaces that identify potential obstructions, again based on ultimate runway length and ultimate planned approaches. Where penetrated, the sheets identify objects as obstructions and recommends appropriate action. These drawings are intended to facilitate

identification of roadways, utility lines, railroads, structures, and other possible obstructions that may lie within or pass through the confines of the inner approach surface area. The approach slopes for each runway are described below:

- Runway 11/29 is based on a 50:1 precision approach.
- Runway 7/25 is based on a 20:1 approach.

Few obstructions were identified on airport property, including fences and signs, which should be removed or relocated. Numerous obstructions were identified on the mountain to the northeast of the airport that fall within the inner horizontal surface. These obstructions cannot be removed and no action is recommended.

6.7 Land Considerations

Land considerations identify issues affecting the environment of the land surrounding the Airport, including present land use and any needs for land acquisition.

6.7.1 Future Land Acquisition

Land acquisition is not proposed within the planning period. Additional land may be required in the future to accommodate the post planning period runway and its safety areas. Should the airport move forward with the post planning period runway, at that time, the length and location will be reevaluated to determine if land acquisition is necessary.

6.7.2 Land Use

Existing and future land uses within the airport's property limits are shown on the Airport Land Use Plan sheet. Noise contours for the existing runway are from the MSO FAR Part 150 Study conducted in 2004 and approved by the FAA in 2005. Additionally, noise contours are not shown for the post planning period runway since implementation is not anticipated within the 20-year planning period.

6.8 Project Phasing

The projects identified within this Master Plan to meet the forecast demand are summarized in the following implementation schedule shown in **Table 6-1**. Projects are organized into the following phases:

- Short-term – Representative of projects implemented up to five years
- Interim – Representative of projects implemented in 6 to 10 years
- Long-term – Representative of projects implemented 11 to 20 years
- Post planning period – Representative of projects implemented beyond the 20-year planning period

Specific years and cost estimates are shown through 2014 that correlate to projects in the current Capital Improvement Plan (CIP), developed January 2009. Cost estimates are intended for preliminary planning purposes, and will be updated closer to project implementation. Additionally, projects shown on Table 7-1 are physical projects that are shown on the ALP.

Table 6-1
Phasing Plan

Project Description	Programmed CIP Year	Programmed CIP Amount
Short-term (0-5 years)		
Reconstruct TW E (Pavement and Electrical)	2009	$1,750,500
Rehabilitate RW 7/25, Install PAPIs and Upgrade Signs	2009	$310,000
Rehabilitate TW A & TWs A2, A3, A4, A5, A6, F, G Center	2009	$400,000
Rehabilitate TWs A3, D East-West and North G, Phase I (Design)	2009	$105,000
Supplement the ILS on RW 11 and add capability to RW 29 with satellite-based technology	2009	-
Construct Northstar/Neptune Ramp - Phase II (Construct)	2010	$1,161,500
Reconstruct Apron ACA-1	2010	$928,500
Design East GA Apron/GA-3/Northstar Ramp and Drainage Improvements - Phase I (Design)	2010	$737,000
Construct Security Improvements Phase II, Gates	2010	$862,500
Design Terminal Area Safety Enhancements (TASE) Phase I	2010	$162,490
Construct Air Traffic Control Tower (ATCT) - Phase II (Construct)	2010	$8,200,000
Rehabilitate RW 7/25, Install PAPIs and Upgrade Signs - Phase II (Construct)	2011	$2,456,000
Rehabilitate TW A & TWs A2, A3, A5, A6, F, G Center; Upgrade Electrical	2011	$2,996,250
Bid and Construct Storm Water Detention Pond	2011	$675,000
Design and Construct Access Road and Parking Expansion - Phase I (Construct)	2011	$4,425,500
Construct Security Improvements - Phase III	2011	$800,000
Construct Terminal Area Safety Enhancements (TASE Phase II) (Construct)	2011	$202,410
Rehabilitate TW A & TWs A2, A3, A5, A6, F, G Center; Upgrade Electrical	2012	$2,996,250
Expand Access Road and Parking - Phase II (Construct)	2012	$1,608,000
Expand Access Road and Parking - Phase III (Construct)	2012	$1,790,300
Construct Security Improvements - Phase III (Construct)	2012	$630,000
Construct East GA Apron/GA-3 and Drainage Improvements Phase II (Construct)	2013	$9,211,675
Rehabilitate Air Carrier Apron - Phase I	2013	$180,000
Rehabilitate GA West - 1/TL West Apron & TW - Phase I (Design)	2013	$147,000
Relocate Glideslope	2013	$100,000
Rehabilitate TWs A3, D and North G, Phase II (Construct)	2013	$1,462,000
Obtain complete topographic information of airport property	-	-
Construct 1,000 square yards apron for Homestead Helicopters, Inc.	-	-
Interim (6-10 years)		
Rehabilitate GA West - 1/TL West Apron & TW - Phase II	2014	$2,362,500
Rehabilitate Air Carrier Apron - Phase II	2014	$2,890,000
Rehabilitate Northstar Apron - NSA-2 - Phase I	2014	$150,000
Expand SRE Building	2014	$2,718,000
Expand Terminal	2014	$31,000,000
Remove the shed in the RPZ on the RW 11 approach	-	-
Relocate service roads outside of the RPZs on RW's 7, 11, and 29	-	-
Relocate the service road outside of the TW A OFA	-	-
Relocate obstructions out of RW 11 and 29	-	-

Notes: CIP information updated as of January 2009.

1/ Land acquisition shown on the Future ALP is not recommended for the RPZs on RW 10/28 because

2/ Projects shown are physical projects shown on the ALP. Other projects (training, etc) have been removed and are not shown.

NCA - No costs associated with the airport. Private funding.

Table 6-1
Phasing Plan

Project Description	Programmed CIP Year	Programmed CIP Amount
Long-term (11-20 years)		
Reconstruct RW 11/29 to fix the five-foot LOS violation	-	-
Construct a MALSR or other similar approach lighting for RW 29	-	-
Construct landside access to the Minuteman development area	-	-
Construct 43,288 square yards of apron in the Minuteman area	-	-
Construct 48,000 square yards of apron for Northstar/Neptune	-	-
Expand FBO fuel farm facilities	-	NCA
Expand Minuteman GA Development Area (hangars, maintenance, helicopter landing zones, etc.)	-	NCA
Expand Northstar/Neptune GA Development Area (hangars, maintenance, etc.)	-	NCA
Construct Terminal Alternative 1A	-	-
Post Planning Period (beyond 20 years)		
Construct RW 11R/29L and supporting infrastructure 1/	-	-
Develop access roadways to the Nonaviation Development area south of RW 11/29	-	-
Expand GA development facilities (taxiways, roadways, security, etc.) south of RW 11/29	-	-
Expand GA facilities south of RW 11/29 (hangars, parking, etc.)	-	NCA
Expand terminal and supporting development south of RW 11/29	-	-
Undertermined/As Available		
Acquire the property within the RW 25 RPZ.	-	-
Relocate Highway 10W from the RW 25 RPZ	-	-

Notes: CIP information updated as of January 2009.

1/ Land acquisition shown on the Future ALP is not recommended for the RPZs on RW 10/28 because shortening of the RW is anticipated .

2/ Projects shown are physical projects shown on the ALP. Other projects (training, etc) have been removed and are not shown.

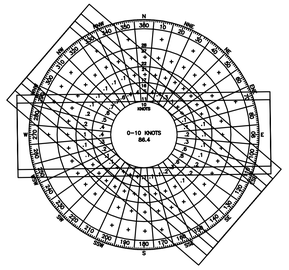
NCA - No costs associated with the airport. Private funding.

Missoula International Airport

NOTE: This is a draft final ALP set for document purposes only. This draft final is representative of the planning work completed for the 2009 Missoula International Airport Master Plan Update. Please see MCAA for the approved final full-size ALP set.

SHEET INDEX

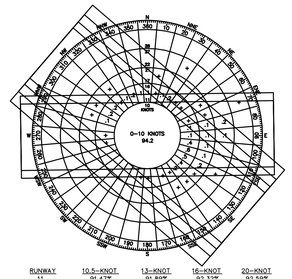
ALL WEATHER WINDROSE



RUNWAY	10.5-KNOT	13-KNOT	16-KNOT	20-KNOT
11/29	96.85%	98.51%	99.59%	99.91%
7/25	94.64%	97.29%	N/A	N/A
COMBINED	98.75%	99.30%	99.78%	99.93%

NOTE: National Oceanic and Atmospheric Administration, National Climatic Data Center, Station 72773, Missoula International Airport, Montana. Period of Record: 1990-1999.

IFR WINDROSE



RUNWAY	10.5-KNOT	13-KNOT	16-KNOT	20-KNOT
11	91.47%	91.89%	92.32%	92.59%
29	89.14%	89.40%	89.67%	89.71%
11/29	98.56%	99.07%	99.58%	99.87%
7	92.65%	93.30%	N/A	N/A
25	90.35%	90.85%	N/A	N/A
7/25	98.39%	99.32%	N/A	N/A
COMBINED	99.68%	99.78%	99.92%	99.96%

NOTE: National Oceanic and Atmospheric Administration, National Climatic Data Center, Station 72773, Missoula International Airport, Montana. Period of Record: 1990-1999.
- Ceiling of less than 1,000 feet, but equal to or greater than 200 feet and/or visibility less than 3 statute miles, but equal to or greater than 1/2 mile, max. tailwind component.
- Runway 11 equipped with existing ILS approach capabilities.

Windrose Source: 2004 ALP Update, NOAA National Climate Data Center, Station 72773, Missoula International Airport, Montana. Period of Record: 1990-1999

EXISTING DECLARED DISTANCES

RUNWAY END ID	TORA	TODA	ASDA	LDA	LDA: APPROACH END RSA LENGTH	LDA: STOP END RSA LENGTH	ASDA: RSA LENGTH	DATE OF APPROVAL
11	9,501'	9,501'	9,501'	9,501'	11,501'	11,501'	11,501'	
29	9,501'	9,501'	9,501'	9,501'	11,501'	11,501'	11,501'	
7	4,612'	4,612	4,612'	4,612'	5,092'	5,092'	5,092'	
25	4,612'	4,812'	4,612'	4,612'	5,092'	5,092'	5,092'	

ULTIMATE DECLARED DISTANCES

RUNWAY END ID	TORA	TODA	ASDA	LDA	LDA: APPROACH END RSA LENGTH	LDA: STOP END RSA LENGTH	ASDA: RSA LENGTH	DATE OF APPROVAL
11L	9,501'	9,501'	9,501'	9,501'	11,501'	11,501'	11,501'	
29R	9,501'	9,501'	9,501'	9,501'	11,501'	11,501'	11,501'	
7	4,612'	4,612	4,612'	4,612'	5,092'	5,092'	5,092'	
25	4,612'	4,812'	4,612'	4,612'	5,092'	5,092'	5,092'	
(P)11R	9,501'	9,501'	9,501'	9,501'	11,501'	11,501'	11,501'	
(P)29L	9,501'	9,501'	9,501'	9,501'	11,501'	11,501'	11,501'	

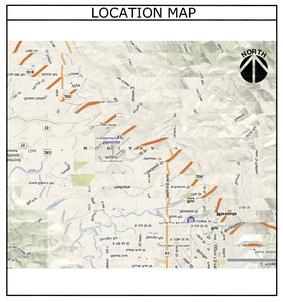
MONUMENT LOCATIONS

MONUMENT NUMBER	STATE PLANE NORTH	STATE PLANE EAST
MONUMENT #1	1002404.4309	827672.7402
MONUMENT #2	1003041.6538	826568.1197
MONUMENT #3	1004099.2700	825311.5834
MONUMENT #4	1006062.7764	823027.3348
MONUMENT #6	1009923.3638	818504.0398
MONUMENT #7	1006175.0489	826689.1149
MONUMENT #8 (NGS PACS "MISSOULA GPS")	1008573.1746	822863.0012

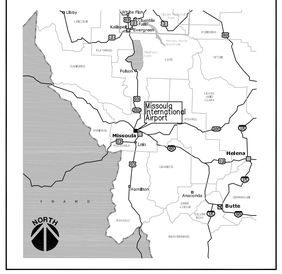
AIRPORT DATA

	EXISTING	*FUTURE*
AIRPORT ELEVATION (AMSL)	3205.2'	*SAME*
AIRPORT REFERENCE POINT (ARP)	LAT.46°54'58.66"N LON.114°05'26.01"W	*LAT.46°54'50"N LON.114°05'38"W*
AIRPORT REFERENCE CODE	C-III	*SAME*
NPIAS CATEGORY	PCS	*SAME*
MEAN MAX. TEMP. (HOTTEST MONTH)°F	87.7	*SAME*
TW LIGHTING	MITL	*SAME*
TW MARKING	YES	*SAME*
AIRPORT & TERMINAL NAVAIDS	VOR,GPS,ILS	VOR,GPS,ILS,RNP
MAGNETIC DECLINATION (Dec. 12, 2008)	14°34'E Changing 0°10'W/Year	

LOCATION MAP



VICINITY MAP



RUNWAY DATA TABLE

	Existing Runway 11/29		Ultimate Runway 11L/29R		Existing Runway 7/25		Ultimate Runway 7/25		(P) Runway 11R/29L	
RUNWAY DATA	11	29	11L	29R	7	25	7	25	11R	29L
Effective Gradient (%)	0.05%	0.05%	0.05%	0.05%	0.11%	0.11%	0.11%	0.11%	TBD	TBD
Max. Elevation (MSL)	3,205.2	3,205.2	3,205.2	3,205.2	3,203.8	3,203.8	3,203.8	3,203.8	TBD	TBD
Runway Length	9,501'	9,501'	9,501'	9,501'	4,612'	4,612'	4,612'	4,612'	9,501'	9,501'
Runway Width	150'	150'	150'	150'	75'***	75'***	75'***	75'***	100'	100'
Displaced Threshold	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Usable Runway Length	9,501'	9,501'	9,501'	9,501'	4,612'	4,612'	4,612'	4,612'	9,501'	9,501'
Surface Type	Asphalt - Grooved	Asphalt - Grooved	Asphalt - Grooved	Asphalt - Grooved	Asphalt - Grooved	Asphalt - Grooved	Asphalt - Grooved	Asphalt - Grooved	Asphalt - Grooved	Asphalt - Grooved
Pavement Strength (lbs)										
Single Wheel	145,000	145,000	145,000	145,000	30,000	30,000	30,000	30,000	145,000	145,000
Dual Wheel	170,000	170,000	170,000	170,000	50,000	50,000	50,000	50,000	170,000	170,000
Dual Tandem	255,000	255000	255,000	255000	N/A	N/A	N/A	N/A	255,000	255000
Approach Surface Slope	50:1	20:1	50:1	50:1	20:1	20:1	20:1	20:1	50:1	50:1
Approach Minimums	1/2-Mile	Visual	1/2-Mile	1/2-Mile	Visual > 1 Mile	Visual > 1 Mile	Visual > 1 Mile	Visual > 1 Mile	1/2-Mile	1/2-Mile
Visual Approach Aids	PAPI,MALSR	LDIN, PAPI, REIL	PAPI,MALSR	LDIN, PAPI,MALSR	NONE	NONE	NONE	NONE	PAPI,MALSR	PAPI,MALSR
Instrument Approach Aids	ILS,GPS	NONE	ILS,GPS	RNP	NONE	NONE	NONE	NONE	GPS, RNP	GPS, RNP
Runway Lighting	HIRL	HIRL	HIRL	HIRL	MIRL	MIRL	MIRL	MIRL	HIRL	HIRL
Runway Marking	PRECISION	NONPRECISION	PRECISION	PRECISION	VISUAL	VISUAL	VISUAL	VISUAL	PRECISION	PRECISION
Airport Reference Code (ARC)	C-III	C-III	C-III	C-III	B-1**	B-1**	B-1**	B-1**	C-III	C-III
Critical Aircraft	MD-80	MD-80	MD-80	MD-80	KINGAIR B100	KINGAIR B100	KINGAIR B100	KINGAIR B100	MD-80	MD-80
Runway Object Free Area (ROFA)										
Length Beyond Runway	1,000'	1,000'	1,000'	1,000'	240'	240'	240'	240'	1,000'	1,000'
Width	800**	800**	800**	800**	250'	400'	250'	400'	800'	800'
Runway Safety Area (RSA)										
Length Beyond Runway	1,000'	1,000'	1,000'	1,000'	240'	240'	240'	240'	1,000'	1,000'
Width	500**	500**	500**	500**	120'	120'	120'	120'	500'	500'
Object Free Zone (OFZ)										
Length Beyond Runway	200'	200'	200'	200'	200'	200'	200'	200'	200'	200'
Width	400'	400'	400'	400'	250'	250'	250'	250'	400'	400'
FAR Part 77 Category	PIR	PIR	PIR	PIR	VIS(B)	VIS(B)	VIS(B)	VIS(B)	PIR	PIR
Runway End Coordinates (NAD 83)										
Latitude	46°55'29.44"N	46°54'28.59"N	46°55'29.44"N	46°54'28.59"N	46°54'57.64"N	46°54'58.17"N	46°54'57.64"N	46°54'58.17"N	46°55'08.39"N	46°54'07.55"N
Longitude	114°06'23.61"W	114°04'39.51"W	114°06'23.61"W	114°04'39.51"W	114°05'47.81"W	114°04'41.39"W	114°05'47.81"W	114°04'41.39"W	114°06'49.79"N	114°05'05.70"N
Runway End Elevations (MSL)	3,192.0	3,205.2	3,192.0	3,205.2	3,198.9	3,105.2	3,198.9	3,105.2	3185	3198
Displaced Threshold Elevation (MSL)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TBD	TBD
TDZ Elevation (MSL)	3,199.9	3,205.2	3,199.9	3,205.2	3,198.9	3,203.8	3,198.9	3,203.8	TBD	TBD
Line of Sight Violations	Nonstandard	Nonstandard	Criteria Met	Criteria Met	Criteria Met	Criteria Met	Criteria Met	Criteria Met	Criteria Met	Criteria Met

NOTE:

* The ARC for Runway 11/29 is C-III, based on the FAA-approved forecast, however existing safety standards for C-IV are represented and should be maintained wherever possible, in order to preserve maximum flexibility.

** The users of Runway 7/25 are B-I SMALL AIRCRAFT ONLY or smaller. However, because MSO is a Part 139 carrier airport, per FAA direction, the existing B-I design standards should be maintained to provide an additional margin of safety.

*** The FAA recommends that the width of Runway 7/25 be maintained at 75 feet.

NON STANDARD CONDITIONS

DESCRIPTION	REMARKS
Runway centerline line of sight: the centerline profile for Runway 11/29 's five-foot line of sight is violated by approximately 0.78 feet. The violation will be remedied at the time of a future project, such as full-depth reconstruction of Runway 11/29.	
The location of the Glide Slope for the ILS does not meet FAA standards. As stated in FAA Order 6750.16D, it should be located on the side of the runway free from interference by aircraft. The relocation of the glide slope is in the MSO ACIP.	

NOTES

1. This drawing reflects planning standards specific to this airport, and is not a product of detailed engineering design analysis. It is not intended to be used for construction documentation or navigation.
2. Coordinates and Elevations taken from NOAA Obstruction Chart and Aeronautical Data dated August 13 1997.
3. Planimetrics drawn in Montana State Plane Zone MTBF3. Horizontal Datum NAD83: Vertical Datum NAVD88.
4. All Taxiways are 75' in width unless otherwise noted.
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7. NGS terrain elevation information differs significantly from surveyed Runway 11/29 elevations. Therefore, NGS terrain contours are shown only to reflect general terrain features.

REVISIONS

	DATE

ABBREVIATION GLOSSARY

ACIP	AIRPORT CAPITAL IMPROVEMENT PLAN
ALP	AIRPORT LAYOUT PLAN
ALS	APPROACH LIGHTING SYSTEM
AMSL	AVERAGE MEAN SEA LEVEL
ARC	AIRPORT REFERENCE CODE
ARFF	AIRPORT RESCUE FIRE FIGHTING
ARP	AIRPORT REFERENCE POINT
ASDA	ACCELERATE-STOP DISTANCE AVAILABLE
ASOS	AUTOMATED SURFACE OBSERVING SYSTEM
ASR	AIRPORT SURVEILLANCE RADAR
ATC	AIR TRAFFIC CONTROL
BRL	BUILDING RESTRICTION LINE
DNL	DAY/NIGHT AVERAGE NOISE LEVEL
FAA	FEDERAL AVIATION ADMINISTRATION
FBO	FIXED BASE OPERATIONS
GPS	GLOBAL POSITIONING SYSTEM
GS	GLIDE SLOPE
HIRL	HIGH INTENSITY RUNWAY LIGHTS
IFR	INSTRUMENT FLIGHT RULES
ILS	INSTRUMENT LANDING SYSTEM
LDA	LANDING DISTANCE AVAILABLE
LDIN	LEAD-IN LIGHTING SYSTEM
LOC	LOCALIZER BEAM
MALSR	MEDIUM INTENSITY APPROACH LIGHTING SYSTEM WITH RUNWAY ALIGNMENT INDICATOR LIGHTS
MCAA	MISSOULA COUNTY AIRPORT AUTHORITY
MITL	MEDIUM INTENSITY TAXIWAY LIGHTS
MSL	MEAN SEA LEVEL
NAVAID	NAVIGATIONAL AID
NGS	NATIONAL GEODETIC SURVEY
NOAA	NATIONAL OCEANIC AND ATMOSPHERE ADMINISTRATION
NPIAS	NATIONAL PLAN OF INTEGRATED AIRPORT SYSTEMS
OFA	OBJECT FREE AREA
OFZ	OBJECT FREE ZONE
PAPI	PRECISION APPROACH PATH INDICATOR
PIR	PRECISION INSTRUMENT RUNWAY
REIL	RUNWAY END IDENTIFIER LIGHTS
RNP	REQUIRED NAVIGATION PERFORMANCE
ROFA	RUNWAY OBJECT FREE AREA
RPU	REMOTE PROCESSING UNIT
RPZ	RUNWAY PROTECTION ZONE
RSA	RUNWAY SAFETY AREA
RTR	REMOTE TRANSMITTER/RECEIVER
RVR	RUNWAY VISUAL RANGE
RVZ	RUNWAY VISUAL ZONE
RW	RUNWAY
SRE	SNOW REMOVAL EQUIPMENT
TDZ	TOUCH DOWN ZONE
TDZE	TOUCH DOWN ZONE ELEVATION
TODA	TAKE-OFF DISTANCE AVAILABLE
TORA	TAKE-OFF RUN AVAILABLE
TOFA	TAXIWAY OBJECT FREE AREA
TSA	TAXIWAY SAFETY AREA
TW	TAXIWAY
USFS	UNITED STATES FORESTRY SERVICE
VOR	VHF OMNIRANGE NAVIGATION SYSTEM
VORTAC	VHF OMNIRANGE RADIO/TACTICAL AIR NAVIGATION

ABBREVIATIONS

(E) – Existing
(F) – Future
(P) – Potential Post Planning Period
(R) – Relocated
(CA) – Critical Area
(TBR) – To Be Removed

MISSOULA INTERNATIONAL AIRPORT
5225 Highway 10 West
Missoula, Montana 59808
www.flymissoula.com
(406) 728-4381

Airport Data Sheet

CH2MHILL

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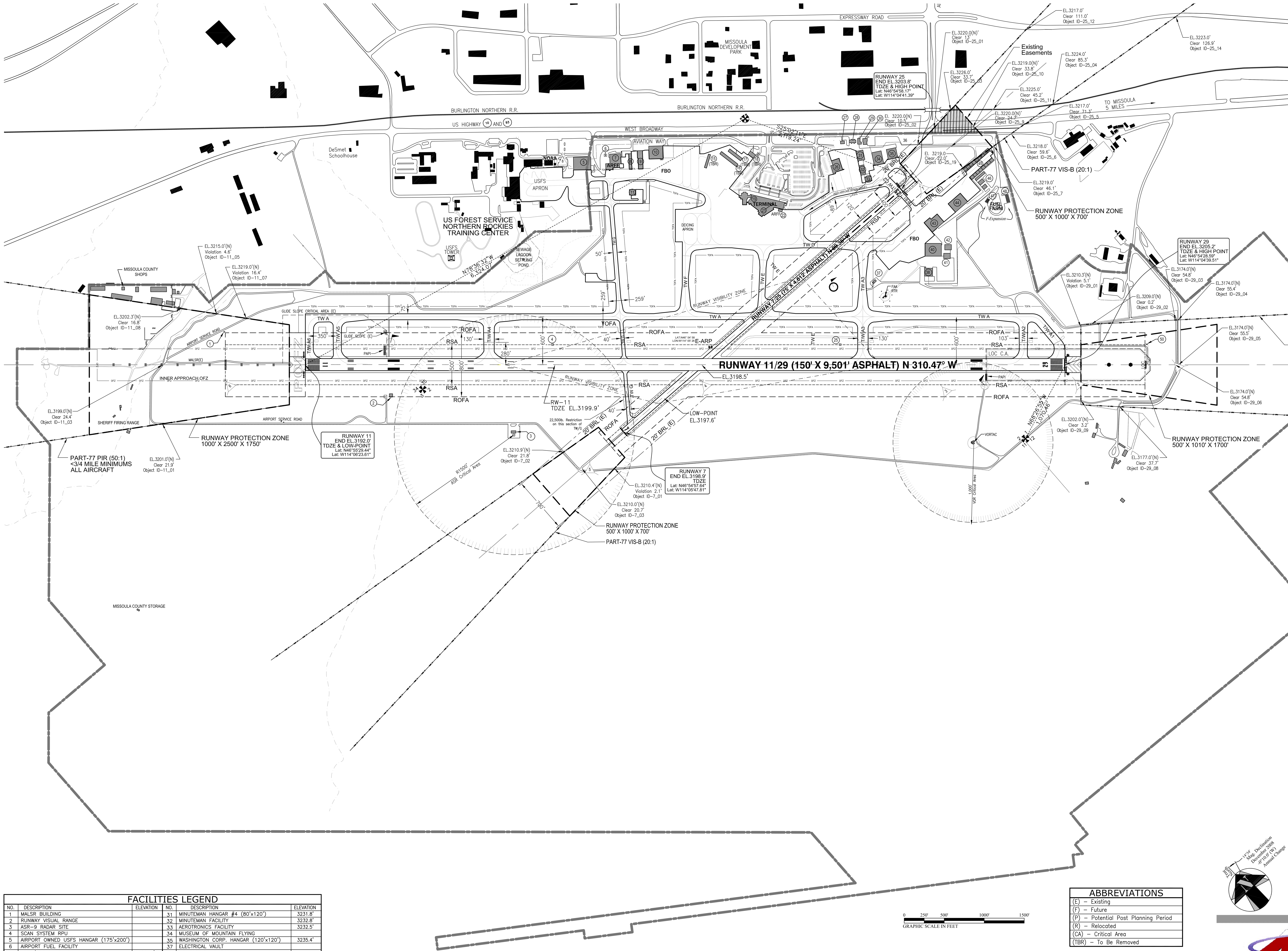
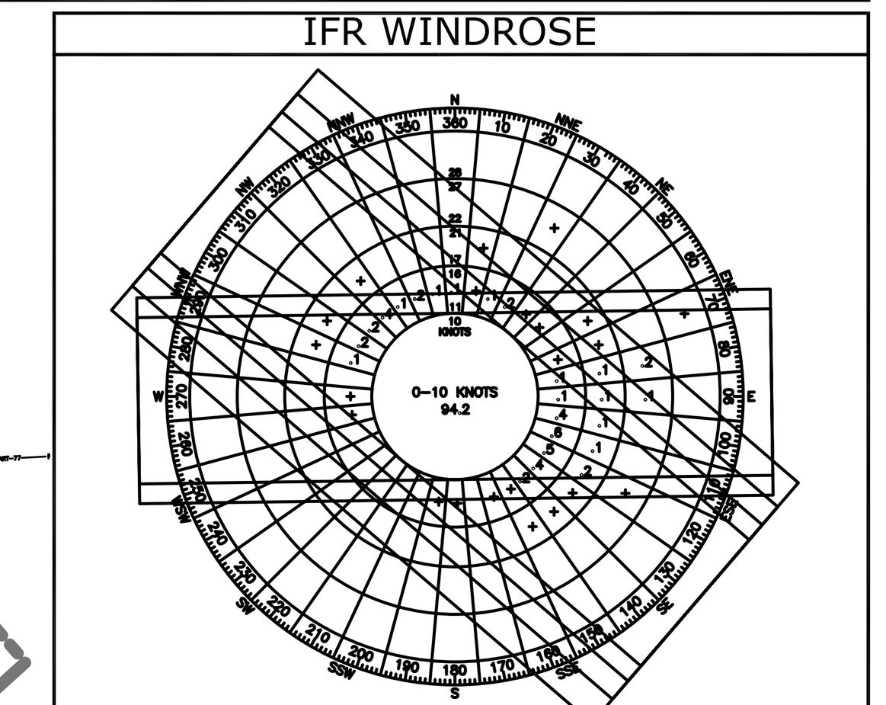
May 2009 — Scale N.A. — Drawing 1 of 17



LAYOUT PLAN LEGEND

	EXISTING
AIRPORT PROPERTY LINE	
AIRPORT SECURITY FENCE	
ON AIRPORT PROPERTY BUILDINGS	
OFF AIRPORT PROPERTY BUILDINGS	
AIRFIELD PAVEMENT	
AIRFIELD SHOULDER PAVEMENT	
AIRFIELD PAVEMENT (TO BE REMOVED)	
PAVED ROADS	
AVIGATION EASEMENT	
RUNWAY PROTECTION ZONE	
BUILDING RESTRICTION LINE	
RUNWAY SAFETY AREA	
RUNWAY OBJECT FREE AREA	
TAXIWAY OBJECT FREE AREA	TOFA
HYDROLOGY FEATURES	
SECTION CORNER	
AIRPORT BEACON	
LIGHTED WIND CONE & SEGMENTED CIRCLE	
ASOS	
PRECISION APPROACH PATH INDICATOR (PAPI)	
SURVEY MONUMENT	
DEVELOPMENT AREAS	
HOLDLINES & SIGNS HOLDLINES MINIMUM 280' FROM RUNWAY CENTERLINE	
GLIDE SLOPE/LOCALIZER CRITICAL AREA	LOC (E) GLIDE SLOPE (E)
REIL (RUNWAY END IDENTIFIER LIGHTS)	
AIRPORT REFERENCE POINT	
ASR/VOR CRITICAL AREA	

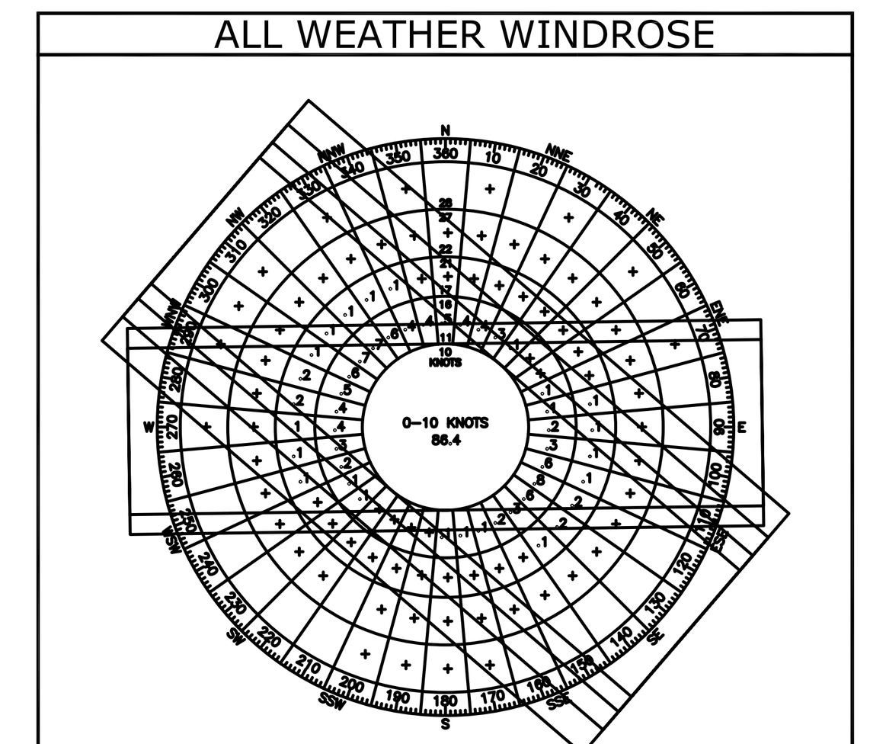
IFR WINDROSE



RUNWAY	10.5-KNOT	13-KNOT	16-KNOT	20-KNOT
11	91.47%	91.89%	92.32%	92.59%
29	89.14%	89.40%	89.67%	89.71%
11/29	98.56%	99.07%	99.58%	99.87%
7	92.65%	93.30%	N/A	N/A
25	90.35%	90.85%	N/A	N/A
7/25	98.39%	99.32%	N/A	N/A
COMBINED	99.68%	99.78%	99.92%	99.96%

NOTE: National Oceanic and Atmospheric Administration, National Climatic Data Center, Station 72773, Missoula International Airport, Montana. Period of Record: 1990–1999.
– Ceiling of less than 1,000 feet, but equal to or greater than 200 feet and/or visibility less than 3 statute miles, but equal to or greater than 1/2 mile, max. tailwind component.
– Runway 11 equipped with existing ILS approach capabilities.

ALL WEATHER WINDROSE



RUNWAY	10.5-KNOT	13-KNOT	16-KNOT	20-KNOT
11/29	96.85%	98.51%	99.59%	99.91%
7/25	94.64%	97.29%	N/A	N/A
COMBINED	98.75%	99.30%	99.78%	99.93%

NOTE: National Oceanic and Atmospheric Administration, National Climatic Data Center, Station 72773, Missoula International Airport, Montana. Period of Record: 1990–1999.

Windrose Source: 2004 ALP Update, NOAA National Climate Data Center, Station 72773, Missoula International Airport, Montana. Period of Record: 1990-1999

AIRPORT APPROVAL SIGNATURE

APPROVED DATE

FAA APPROVAL SIGNATURE

APPROVED DATE CASE #

FACILITIES LEGEND

NO.	DESCRIPTION	ELEVATION	NO.	DESCRIPTION	ELEVATION
1	MALSR BUILDING		31	MINUTEMAN HANGAR #4 (80'x120')	3231.8'
2	RUNWAY VISUAL RANGE		32	MINUTEMAN FACILITY	3232.8'
3	ASR-9 RADAR SITE		33	AEROTRONICS FACILITY	3232.5'
4	SCAN SYSTEM RPU		34	MUSEUM OF MOUNTAIN FLYING	
5	AIRPORT OWNED USFS HANGAR (175'x200')		35	WASHINGTON CORP. HANGAR (120'x120')	3235.4'
6	AIRPORT FUEL FACILITY		37	ELECTRICAL VAULT	
7	ARFF/SRE BUILDING	3249.8'	38	HOMESTEAD HELICOPTERS	
8	KEMBEL / STEVENS HANGAR (35'x190')	3215.2'	40	NEPTUNE HANGAR (160'x200')	3232.0'
9	MINUTEMAN T-HANGAR #1 (55'x225')	3219.8'	41	NORTHSTAR ENGINE SHOP	
10	MINUTEMAN HANGAR #1 (160'x175')	3244.3'	42	NORTHSTAR ENGINE SHOP	
11	METRO AVIATION/MEDSTAR HANGAR (70'x80')		43	NORTHSTAR HANGAR (130'x190')	3237.0'
15	MINUTEMAN T-HANGAR #2 (TBR) (28'x175')	3209.9'	44	NORTHSTAR HANGAR (140'x200')	
16	MINUTEMAN T-HANGARS (TBR) (35'x260')	3213.1'	45	T-HANGARS (COMPLETED EARLY 2009)	
17	MINUTEMAN T-HANGAR #3 (TBR) (35'x195')	3213.5'	46	CAR CONDO	
18	MINUTEMAN HANGAR #3 (TBR) (50'x80')		47	NORTHSTAR FUEL FACILITY	
19	TERMINAL BUILDING	3294.1'	48	MINUTEMAN FUEL FACILITY	
20	FUTURE TERMINAL EXPANSION		50	ILS LOCALIZER TRANSMITTER BUILDING	
21	AIR TRAFFIC CONTROL TOWER AND BEACON				
22	TERMINAL ARFF				
25	SCAN SYSTEM RPU				
26	MINUTEMAN EAST HANGAR #2 (100'x150')	3232.8'			
27	RENTAL CAR FUEL FACILITY				
28	MCAA / RENTAL CAR SERVICE FACILITY				
29	AUTOMATED CARWASH				
30	MCAA / FAA SECTOR FIELD OFFICE				

AIRPORT DATA

	EXISTING	FUTURE
AIRPORT ELEVATION (AMSL)	3205.2'	*SAME*
AIRPORT REFERENCE POINT (ARP)	LAT.46°54'58.66"N LON.114°05'26.01"W	*LAT.46°54'50"N* *LON.114°05'38"W*
AIRPORT REFERENCE CODE	C-III	*SAME*
NPIAS CATEGORY	PCS	*SAME*
MEAN MAX. TEMP. (HOTTEST MONTH)°F	87.7	*SAME*
TW LIGHTING	MITL	*SAME*
TW MARKING	YES	*SAME*
AIRPORT & TERMINAL NAVAIDS	VOR,GPS,ILS	VOR,GPS,ILS,RNP
MAGNETIC DECLINATION (Dec. 12, 2008)	14°34'E Changing 0°10'W/Year	

NOTES

1. This drawing reflects planning standards specific to this airport, and is not a product of detailed engineering design analysis. It is not intended to be used for construction documentation or navigation.
2. Coordinates and Elevations taken from NOAA Obstruction Chart and Aeronautical Data dated August 13 1997.
3. Planimetrics drawn in Montana State Plane Zone MT8F3. Horizontal Datum NAD83: Verticle Datum NAVD88.
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6. Per FAR Part-77.23B traverse ways must be increased by the following; 10' for a (P)rivate roadway, 15' for a (N)on Interstate, 17' for an (I)nterstate, and 23' for (R)ailroads. Per 150/5070B all traverses must be shown at intersection of approach surfaces, whether or not they are an obstruction.
7. NGS terrain elevation information differs significantly from surveyed Runway 11/29 elevations. Therefore, NGS terrain contours are shown only to reflect general terrain features.
8. T-Hangars at the end of Runway End 25 shown inside 20' BRL. FAA approved to be inside due to elevation.

REVISIONS

	DATE

ABBREVIATIONS

(E) – Existing
(F) – Future
(P) – Potential Post Planning Period
(R) – Relocated
(CA) – Critical Area
(TBR) – To Be Removed

0 250' 500' 1000' 1500'
GRAPHIC SCALE IN FEET

True North
14°34' Mag. Declination December 2008
-0°10.0' (W) Annual Change

MISSOULA INTERNATIONAL AIRPORT
5225 Highway 10 West
Missoula, Montana 59808
www.flymissoula.com
(406) 728-4381

Airport Layout Plan Existing

CH2MHILL

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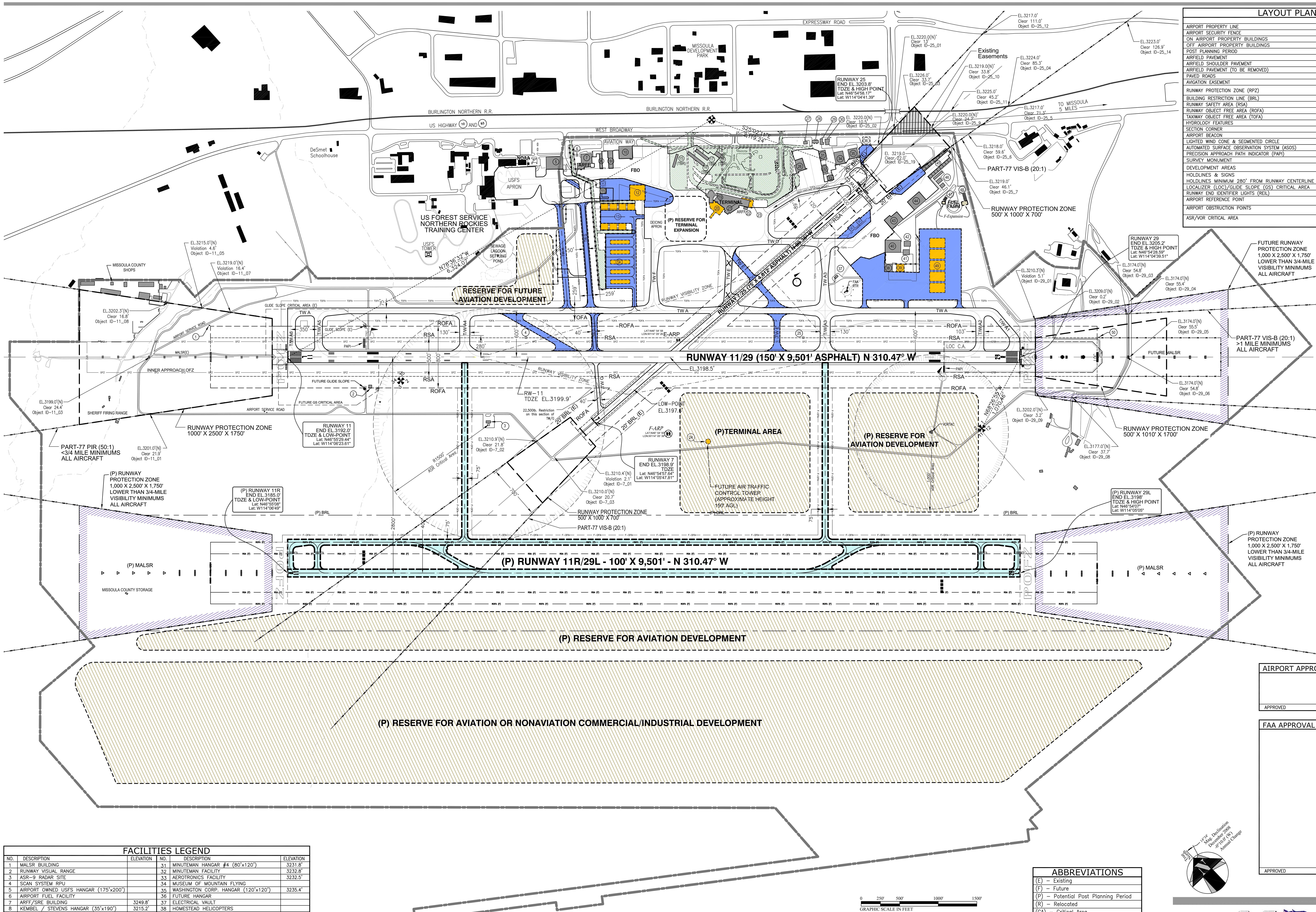
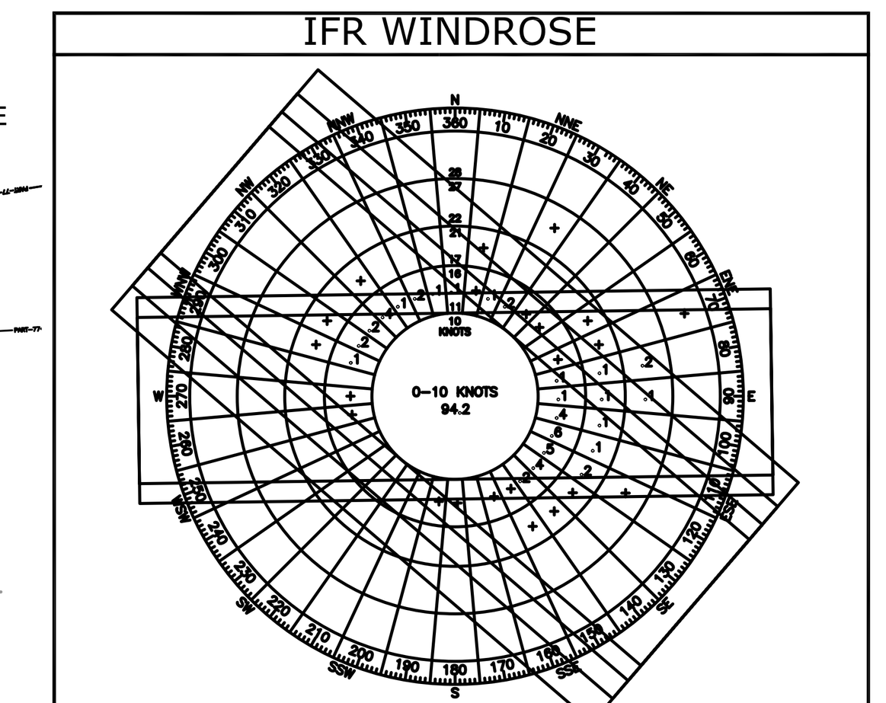


LAYOUT PLAN LEGEND

	EXISTING	FUTURE
AIRPORT PROPERTY LINE		N/A
AIRPORT SECURITY FENCE		
ON AIRPORT PROPERTY BUILDINGS		
OFF AIRPORT PROPERTY BUILDINGS		N/A
POST PLANNING PERIOD		
AIRFIELD PAVEMENT		
AIRFIELD SHOULDER PAVEMENT		N/A
AIRFIELD PAVEMENT (TO BE REMOVED)		N/A
PAVED ROADS		
AVIGATION EASEMENT		
RUNWAY PROTECTION ZONE (RPZ)		
BUILDING RESTRICTION LINE (BRL)	BRL	
RUNWAY SAFETY AREA (RSA)		RSA (F)
RUNWAY OBJECT FREE AREA (ROFA)		ROFA (F)
TAXIWAY OBJECT FREE AREA (TOFA)	TOFA	F-OFA
HYDROLOGY FEATURES		N/A
SECTION CORNER		N/A
AIRPORT BEACON		
LIGHTED WIND CONE & SEGMENTED CIRCLE		
AUTOMATED SURFACE OBSERVATION SYSTEM (ASOS)		ASOS (F)
PRECISION APPROACH PATH INDICATOR (PAPI)		
SURVEY MONUMENT		N/A
DEVELOPMENT AREAS	N/A	
HOLDLINES & SIGNS HOLDLINES MINIMUM 280' FROM RUNWAY CENTERLINE		
LOCALIZER (LOC)/GLIDE SLOPE (GS) CRITICAL AREA	LOC (E) GLIDE SLOPE (E)	LOC (F) GLIDE SLOPE (F)
RUNWAY END IDENTIFIER LIGHTS (REIL)		
AIRPORT REFERENCE POINT		
AIRPORT OBSTRUCTION POINTS		
ASR/VOR CRITICAL AREA		N/A

IFR WINDROSE



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7/25	98.39%	99.32%	N/A	N/A
COMBINED	99.68%	99.78%	99.92%	99.96%

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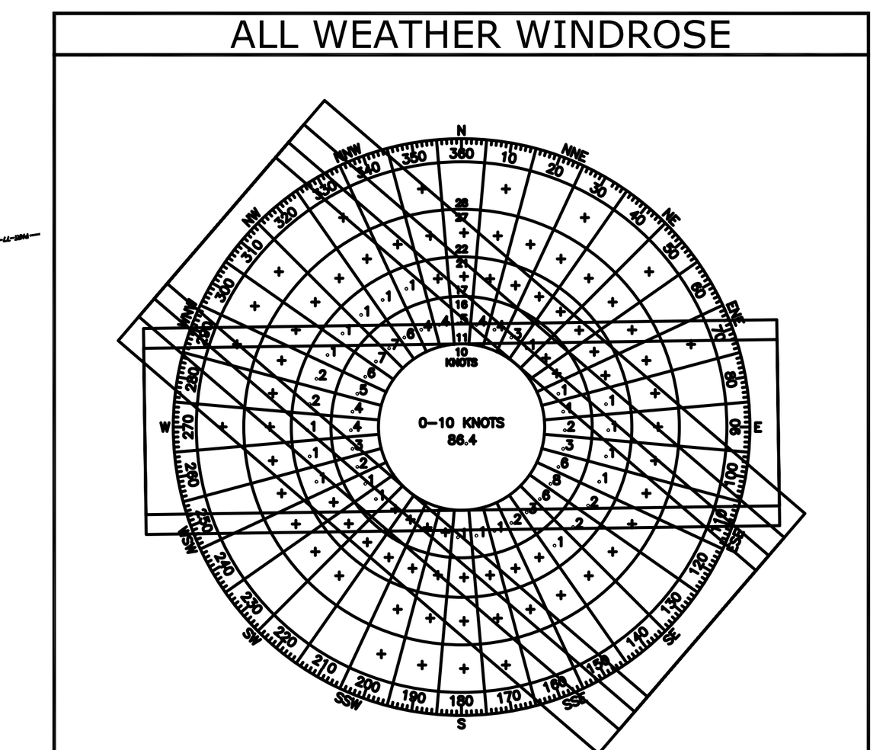
ALL WEATHER WINDROSE



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COMBINED	98.75%	99.30%	99.78%	99.93%

NOTE: National Oceanic and Atmospheric Administration, National Climatic Data Center, Station 72773, Missoula International Airport, Montana.
Period of Record: 1990–1999.

Windrose Source: Barnard Dunkelberg 2004 ALP Update

AIRPORT APPROVAL SIGNATURE

APPROVED DATE

FAA APPROVAL SIGNATURE

APPROVED DATE CASE #

FACILITIES LEGEND

NO.	DESCRIPTION	ELEVATION	NO.	DESCRIPTION	ELEVATION
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2	RUNWAY VISUAL RANGE		32	MINUTEMAN FACILITY	3232.8'
3	ASR-9 RADAR SITE		33	AEROTRONICS FACILITY	3232.5'
4	SCAN SYSTEM RPU		34	MUSEUM OF MOUNTAIN FLYING	
5	AIRPORT OWNED USFS HANGAR (175'x200')		35	WASHINGTON CORP. HANGAR (120'x120')	3235.4'
6	AIRPORT FUEL FACILITY		36	FUTURE HANGAR	
7	ARFF/SRE BUILDING	3249.8'	37	ELECTRICAL VAULT	
8	KEMBEL / STEVENS HANGAR (35'x190')	3215.2'	38	HOMESTEAD HELICOPTERS	
9	MINUTEMAN T-HANGAR #1 (55'x225')	3219.8'	39	FUTURE CORPORATE HANGAR	
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11	METRO AVIATION/MEDSTAR HANGAR (70'x80')		41	NORTHSTAR ENGINE SHOP	
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13	FUTURE CORPORATE HANGARS		43	NORTHSTAR HANGAR (130'x190')	3237.0'
14	FUTURE T-HANGARS		44	NORTHSTAR HANGAR (140'x200')	
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16	MINUTEMAN T-HANGARS (TBR) (35'x260')	3213.1'	46	CAR CONDO	
17	MINUTEMAN T-HANGAR #3 (TBR) (35'x195')	3213.5'	47	NORTHSTAR FUEL FACILITY	
18	MINUTEMAN HANGAR #3 (TBR) (50'x80')		48	MINUTEMAN FUEL FACILITY	
19	TERMINAL BUILDING	3294.1'	49	FUTURE CORPORATE HANGARS	
20	FUTURE TERMINAL EXPANSION		50	ILS LOCALIZER TRANSMITTER BUILDING	
21	AIR TRAFFIC CONTROL TOWER AND BEACON		51		
22	TERMINAL ARFF		52		
23	FUTURE TERMINAL EXPANSION		53		
24	FUTURE AIR TRAFFIC CONTROL TOWER		54		
25	SCAN SYSTEM RPU		55		
26	MINUTEMAN EAST HANGAR #2 (100'x150')	3232.8'	56		
27	RENTAL CAR FUEL FACILITY		57		
28	MCAA / RENTAL CAR SERVICE FACILITY		58		
29	AUTOMATED CARWASH		59		
30	MCAA / FAA SECTOR FIELD OFFICE		60		

AIRPORT DATA

	EXISTING	FUTURE
AIRPORT ELEVATION (AMSL)	3205.2'	*SAME*
AIRPORT REFERENCE POINT (ARP)	LAT.46°54'58.66"N LON.114°05'26.01"W	*LAT.46°54'50"N* *LON.114°05'38"W*
AIRPORT REFERENCE CODE	C-III	*SAME*
NPIAS CATEGORY	PCS	*SAME*
MEAN MAX. TEMP. (HOTTEST MONTH)°F	87.7	*SAME*
TW LIGHTING	MITL	*SAME*
TW MARKING	YES	*SAME*
AIRPORT & TERMINAL NAVAIDS	VOR,GPS,ILS	VOR,GPS,ILS,RNP
MAGNETIC DECLINATION (Dec. 12, 2008)	14°34'E Changing 0°10'W/Year	

NOTES

1. This drawing reflects planning standards specific to this airport, and is not a product of detailed engineering design analysis. It is not intended to be used for construction documentation or navigation.
2. Coordinates and Elevations taken from NOAA Obstruction Chart and Aeronautical Data dated August 13 1997.
3. Planimetrics drawn in Montana State Plane Zone MT8F3. Horizontal Datum NAD83: Verticle Datum NAVD88.
4. All Taxiways are 75' in width unless otherwise noted.
5. When TW "G" between Runway 11-29 and TW "A" is rehabilitated, it will be widened to class III standards, 60'.
6. Per FAR Part-77.23B traverse ways must be increased by the following; 10' for a (P)rivate Roadway, 15' for a (N)on Interstate, 17' for an (I)nterstate, and 23' for (R)ailroads. Per 150/5070B all traverses must be shown at intersection of approach surfaces, whether or not they are an obstruction.
7. NGS terrain elevation information differs significantly from surveyed Runway 11/29 elevations. Therefore, NGS terrain contours are shown only to reflect general terrain features.
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REVISIONS

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(CA) – Critical Area
(TBR) – To Be Removed

True North
14°34' Mag. Declination December 2008 -0°10.0' (W) Annual Change

MISSOULA INTERNATIONAL AIRPORT
5225 Highway 10 West
Missoula, Montana 59808
www.flymissoula.com
(406) 728-4381

Airport Layout Plan Future

CH2MHILL

Colortable: CH2M ALP BY LWT.ctb LTScale: 0.5000 LwDefault: 0.010
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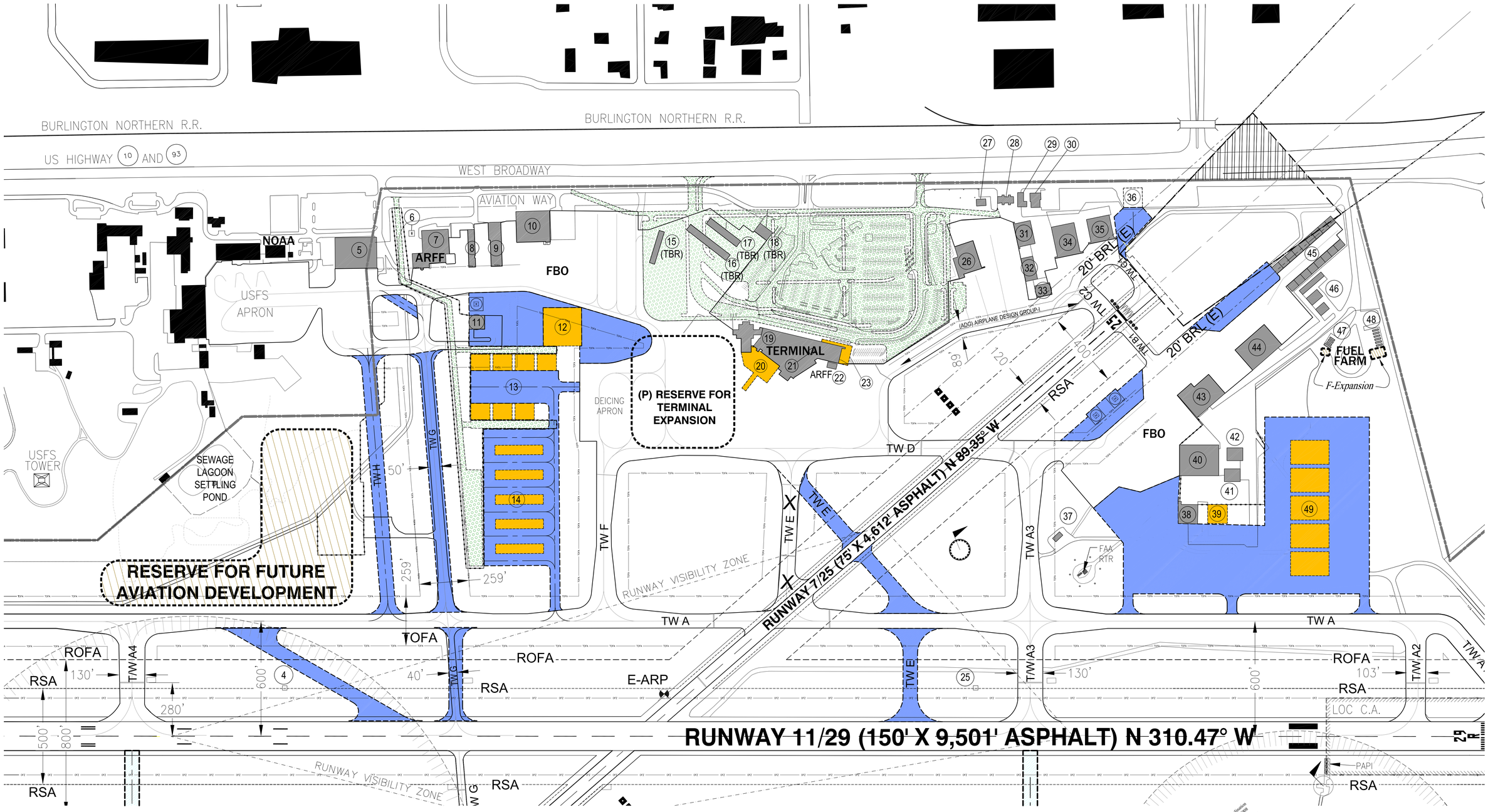
May 2009 Scale 1" = 500' Drawing 3 of 17



FACILITIES LEGEND

NO.	DESCRIPTION	ELEVATION	NO.	DESCRIPTION	ELEVATION
1	MALSR BUILDING		31	MINUTEMAN HANGAR #4 (80'x120')	3231.8'
2	RUNWAY VISUAL RANGE		32	MINUTEMAN FACILITY	3232.8'
3	ASR-9 RADAR SITE		33	AEROTRONICS FACILITY	3232.5'
4	SCAN SYSTEM RPU		34	MUSEUM OF MOUNTAIN FLYING	
5	AIRPORT OWNED USFS HANGAR (175'x200')		35	WASHINGTON CORP. HANGAR (120'x120')	3235.4'
6	AIRPORT FUEL FACILITY		36	FUTURE HANGAR	
7	ARFF/SRE BUILDING	3249.8'	37	ELECTRICAL VAULT	
8	KEMBEL / STEVENS HANGAR (35'x190')	3215.2'	38	HOMESTEAD HELICOPTERS	
9	MINUTEMAN T-HANGAR #1 (55'x225')	3219.8'	39	FUTURE CORPORATE HANGAR	
10	MINUTEMAN HANGAR #1 (160'x175')	3244.3'	40	NEPTUNE HANGAR (160'x200')	3232.0'
11	METRO AVIATION/MEDSTAR HANGAR (70'x80')		41	NORTHSTAR ENGINE SHOP	
12	FUTURE MAINTENANCE HANGAR		42	NORTHSTAR ENGINE SHOP	
13	FUTURE CORPORATE HANGARS		43	NORTHSTAR HANGAR (130'x190')	3237.0'
14	FUTURE T-HANGARS		44	NORTHSTAR HANGAR (140'x200')	
15	MINUTEMAN T-HANGAR #2 (TBR) (28'x175')	3209.9'	45	T-HANGARS (COMPLETED EARLY 2009)	
16	MINUTEMAN T-HANGARS (TBR) (35'x260')	3213.1'	46	CAR CONDO	
17	MINUTEMAN T-HANGAR #3 (TBR) (35'x195')	3213.5'	47	NORTHSTAR FUEL FACILITY	
18	MINUTEMAN HANGAR #3 (TBR) (50'x80')		48	MINUTEMAN FUEL FACILITY	
19	TERMINAL BUILDING	3294.1'	49	FUTURE CORPORATE HANGARS	
20	FUTURE TERMINAL EXPANSION		50	ILS LOCALIZER TRANSMITTER BUILDING	
21	AIR TRAFFIC CONTROL TOWER AND BEACON		51		
22	TERMINAL ARFF		52		
23	FUTURE TERMINAL EXPANSION		53		
24	FUTURE AIR TRAFFIC CONTROL TOWER		54		
25	SCAN SYSTEM RPU		55		
26	MINUTEMAN EAST HANGAR #2 (100'x150')	3232.8'	56		
27	RENTAL CAR FUEL FACILITY		57		
28	MCAA / RENTAL CAR SERVICE FACILITY		58		
29	AUTOMATED CARWASH		59		
30	MCAA / FAA SECTOR FIELD OFFICE		60		

LAYOUT PLAN LEGEND

	EXISTING	FUTURE
AIRPORT PROPERTY LINE		N/A
AIRPORT SECURITY FENCE		
ON AIRPORT PROPERTY BUILDINGS		
OFF AIRPORT PROPERTY BUILDINGS		
POST PLANNING PERIOD		
AIRFIELD PAVEMENT		
AIRFIELD SHOULDER PAVEMENT		N/A
AIRFIELD PAVEMENT (TO BE REMOVED)		N/A
PAVED ROADS		
AVIGATION EASEMENT		
RUNWAY PROTECTION ZONE (RPZ)		
BUILDING RESTRICTION LINE (BRL)		
RUNWAY SAFETY AREA (RSA)		
RUNWAY OBJECT FREE AREA (ROFA)		
TAXIWAY OBJECT FREE AREA (TOFA)		
HYDROLOGY FEATURES		N/A
SECTION CORNER		N/A
AIRPORT BEACON		
LIGHTED WIND CONE & SEGMENTED CIRCLE		
AUTOMATED SURFACE OBSERVATION SYSTEM (ASOS)		ASOS (?)
PRECISION APPROACH PATH INDICATOR (PAPI)		
SURVEY MONUMENT		N/A
DEVELOPMENT AREAS	N/A	
HOLDLINES & SIGNS		
HOLDLINES MINIMUM 280' FROM RUNWAY CENTERLINE		
LOCALIZER (LOC)/GLIDE SLOPE (GS) CRITICAL AREA	LOC (E) GLIDE SLOPE (E)	LOC (F) GLIDE SLOPE (F)
RUNWAY END IDENTIFIER LIGHTS (REIL)		
AIRPORT REFERENCE POINT		
AIRPORT OBSTRUCTION POINTS		
ASR/VOR CRITICAL AREA		N/A

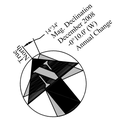
NOTES

1. This drawing reflects planning standards specific to this airport, and is not a product of detailed engineering design analysis. It is not intended to be used for construction documentation or navigation.
2. Coordinates and Elevations taken from NOAA Obstruction Chart and Aeronautical Data dated August 13 1997.
3. Planimetrics drawn in Montana State Plane Zone MTBF3. Horizontal Datum NAD83: Vertical Datum NAVD88.
4. All Taxiways are 75' in width unless otherwise noted.
5. When TW "G" between Runway 11-29 and TW "A" is rehabilitated, it will be widened to class III standards, 60'.
6. Per FAR part-77.23B traverse ways must be increased by the following; 10' for a (P)rivate Roadway, 15' for a (N)on Interstate, 17' for an (I)nterstate, and 23' for (R)ailroads. Per 150/5070B all traverses must be shown at intersection of approach surfaces, whether or not they are an obstruction.
7. NGS terrain elevation information differs significantly from surveyed Runway 11/29 elevations. Therefore, NGS terrain contours are shown only to reflect general terrain features.
8. FAA's approval of this Airport Layout Plan (ALP) represents acceptance of the general location of future facilities depicted. During the preliminary design phase, the airport owner is required to resubmit for approval the final locations, heights and exterior finish of structures. FAA's concern is obstructions, impact on electronic aids or adverse effects on controller view of aircraft approach and ground movement areas which could adversely affect the safety, efficiency or utility of the airport.

ABBREVIATIONS

(E) – Existing
(F) – Future
(P) – Potential Post Planning Period
(R) – Relocated
(CA) – Critical Area
(TBR) – To Be Removed

REVISIONS



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Terminal Area Plan

CH2MHILL

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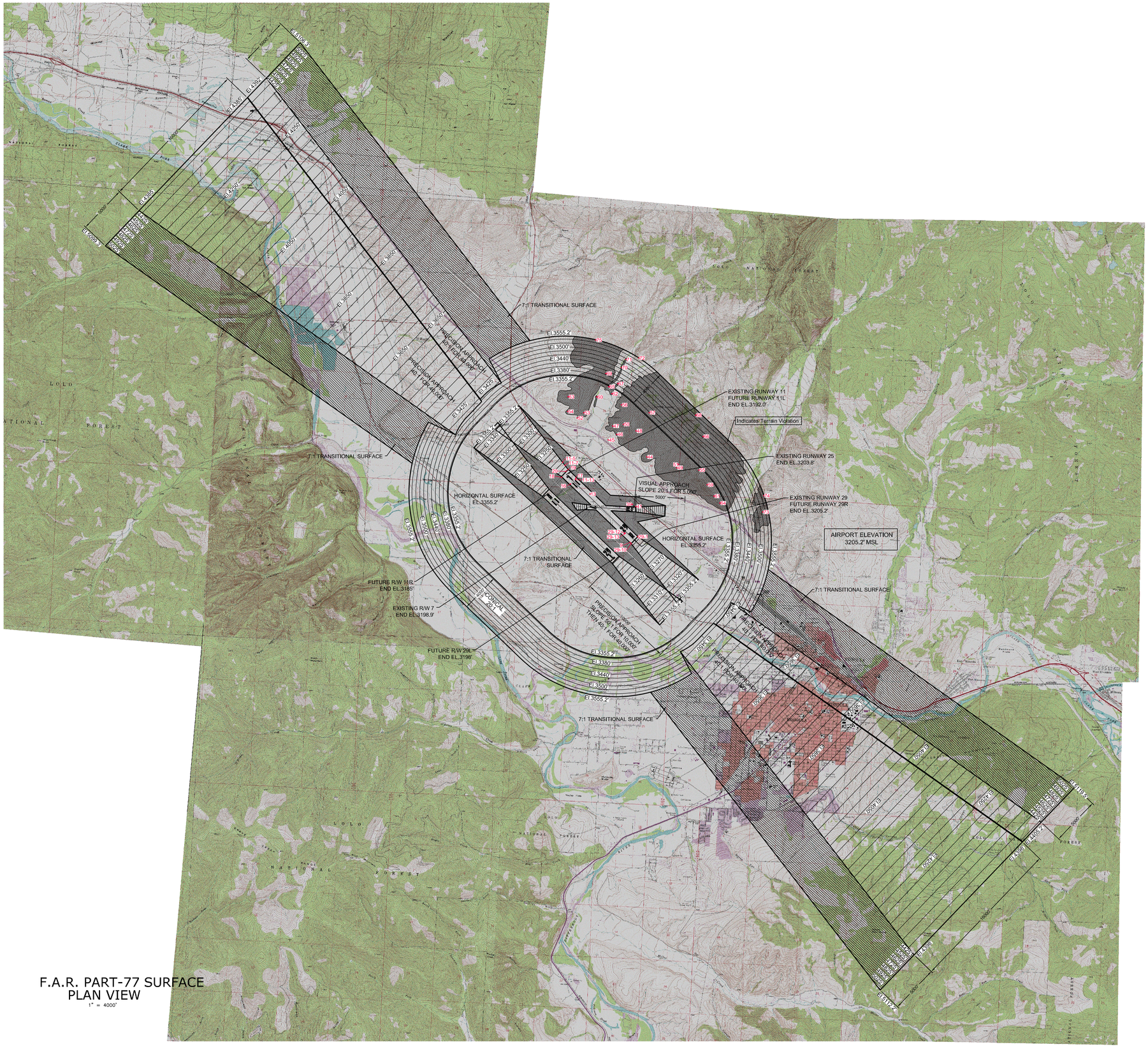
May 2009 — Scale 1" = 200' — Drawing 4 of 17



F.A.R. PART-77 SURFACE
PLAN VIEW
1" = 4000'

Obstruction Data

ID	Description	Top Elev	Penetration	Surface Name	Disposition
9	FENCE	3213.0	7.8	PRIMARY	To Be Addressed Based on FAA Airspace Findings
13	OBSTRUCTION LIGHT ON POLE	3205.0	5.2	PRIMARY	To Remain
16	TRANSMISSOMETER (TMOM)	3210.0	15.5	PRIMARY	To Remain
17	OBSTRUCTION LIGHT ON GLIDE SLOPE	3221.0	26.5	PRIMARY	To Remain
18	GROUND	3197.0	0.1	TRANSITIONAL-RW11	To Be Graded
19	SIGN	3195.0	2.8	PIR-APPROACH-RW11	To Be Addressed Based on FAA Airspace Findings
20	SIGN	3195.0	2.5	PIR-APPROACH-RW11	To Be Addressed Based on FAA Airspace Findings
39	OBSTRUCTION LIGHT ON LIGHTED TOWER	3262.0	21.9	TRANSITIONAL-RW25	To Remain
41	OBSTRUCTION LIGHT ON HANGAR	3236.0	21.5	TRANSITIONAL-RW25	To Remain
44	GROUND	3467.0	117.1	HORIZONTAL	To Remain
45	POLE	3360.0	10.1	HORIZONTAL	To Remain
46	BUSH	3375.0	25.1	HORIZONTAL	To Remain
47	TANK	3475.0	125.1	HORIZONTAL	To Remain
48	GROUND	3659.0	309.2	HORIZONTAL	To Remain
49	GROUND	3743.0	393.1	HORIZONTAL	To Remain
50	GROUND	3588.0	238.1	HORIZONTAL	To Remain
51	BUILDING	3769.0	419.1	HORIZONTAL	To Remain
52	POLE	3391.0	41.1	HORIZONTAL	To Remain
53	POLE	3423.0	73.1	HORIZONTAL	To Remain
54	POLE	3418.0	68.1	HORIZONTAL	To Remain
55	GROUND	3875.0	525.1	HORIZONTAL	To Remain
56	POLE	3441.0	91.1	HORIZONTAL	To Remain
57	GROUND	3878.0	507.4	CONICAL	To Remain
59	GROUND	3856.0	506.1	HORIZONTAL	To Remain
60	TREE	3396.0	46.1	HORIZONTAL	To Remain
61	POLE	3704.0	354.1	HORIZONTAL	To Remain
62	TREE	3431.0	81.1	HORIZONTAL	To Remain
63	GROUND	3460.0	110.1	HORIZONTAL	To Remain
64	GROUND	3575.0	225.1	HORIZONTAL	To Remain
65	TREE	3421.0	71.1	HORIZONTAL	To Remain
66	GROUND	4113.0	638.3	CONICAL	To Remain
67	TREE	3453.0	71.6	CONICAL	To Remain
68	TREE	4387.0	860.2	CONICAL	To Remain
69	GROUND	3607.0	206.5	CONICAL	To Remain
70	TREE	3501.0	38.6	CONICAL	To Remain
71	TREE	3521.0	11.4	CONICAL	To Remain
73	GROUND	3727.0	205.1	CONICAL	To Remain
74	GROUND	3820.0	270.7	CONICAL	To Remain
75	GROUND	3861.0	312.5	CONICAL	To Remain
11_13	WINDSOCK	3222.0	27.4	PRIMARY	To Remain
11_05	ROAD(N)	3215.0	4.6	TRANSITIONAL-RW11	To Remain (Controlled Airport Road)
11_07	ROAD(N)	3219.0	16.4	TRANSITIONAL-RW11	To Remain (Controlled Airport Road)
29_01	ROAD(N)	3210.3	5.1	PIR-APPROACH-RW29	To Remain (Controlled Airport Road)
29_10	FENCE	3210.0	4.8	PIR-APPROACH-RW29	To Be Removed/Relocated
29_13	WINDSOCK	3218.0	14.3	PRIMARY	To Remain
29-12	PAPI	3204.0	0.3	PRIMARY	To Remain

REVISIONS	DATE

NOTES

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True North
15°43'
Mag. Dec.
June 2008
-0°10.0' (W)
Annual Change

0 2000' 4000' 8000' 12000'
GRAPHIC SCALE IN FEET

MISSOULA INTERNATIONAL AIRPORT
5225 Highway 10 West
Missoula, Montana 59808
www.flymissoula.com
(406) 728-4381

Airspace Layout
Future Part77

CH2MHILL

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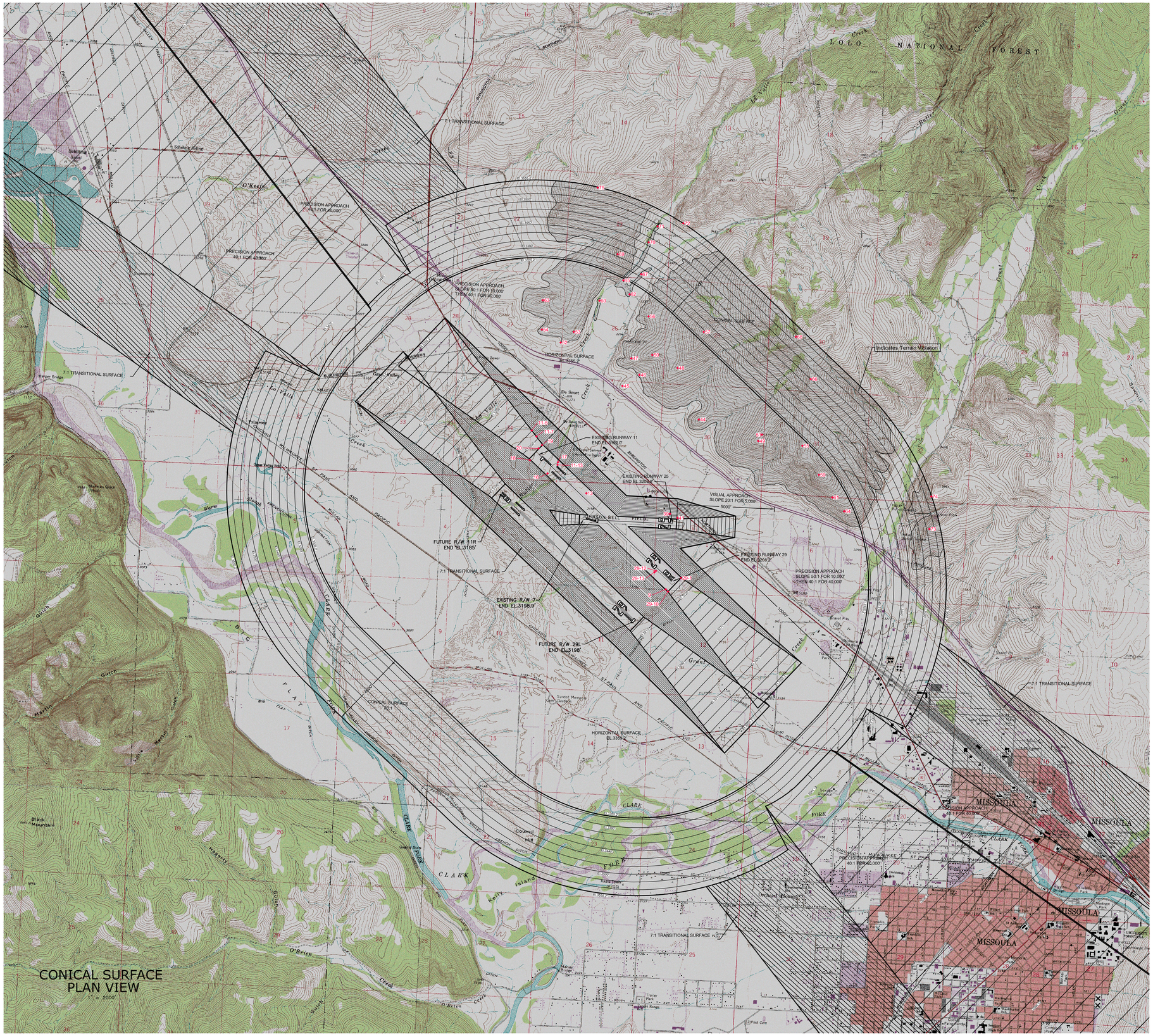
May 2009 — Scale 1" = 4000' — Drawing 5 of 17



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REVISIONS

	DATE

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15°43' Mag. Dec. June 2008 0°10.0' (W) Annual Change

0 1,000' 2,000' 4,000' 6,000'
GRAPHIC SCALE IN FEET

MISSOULA INTERNATIONAL AIRPORT
5225 Highway 10 West
Missoula, Montana 59808
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Airspace Layout- Conical Surface

CH2MHILL

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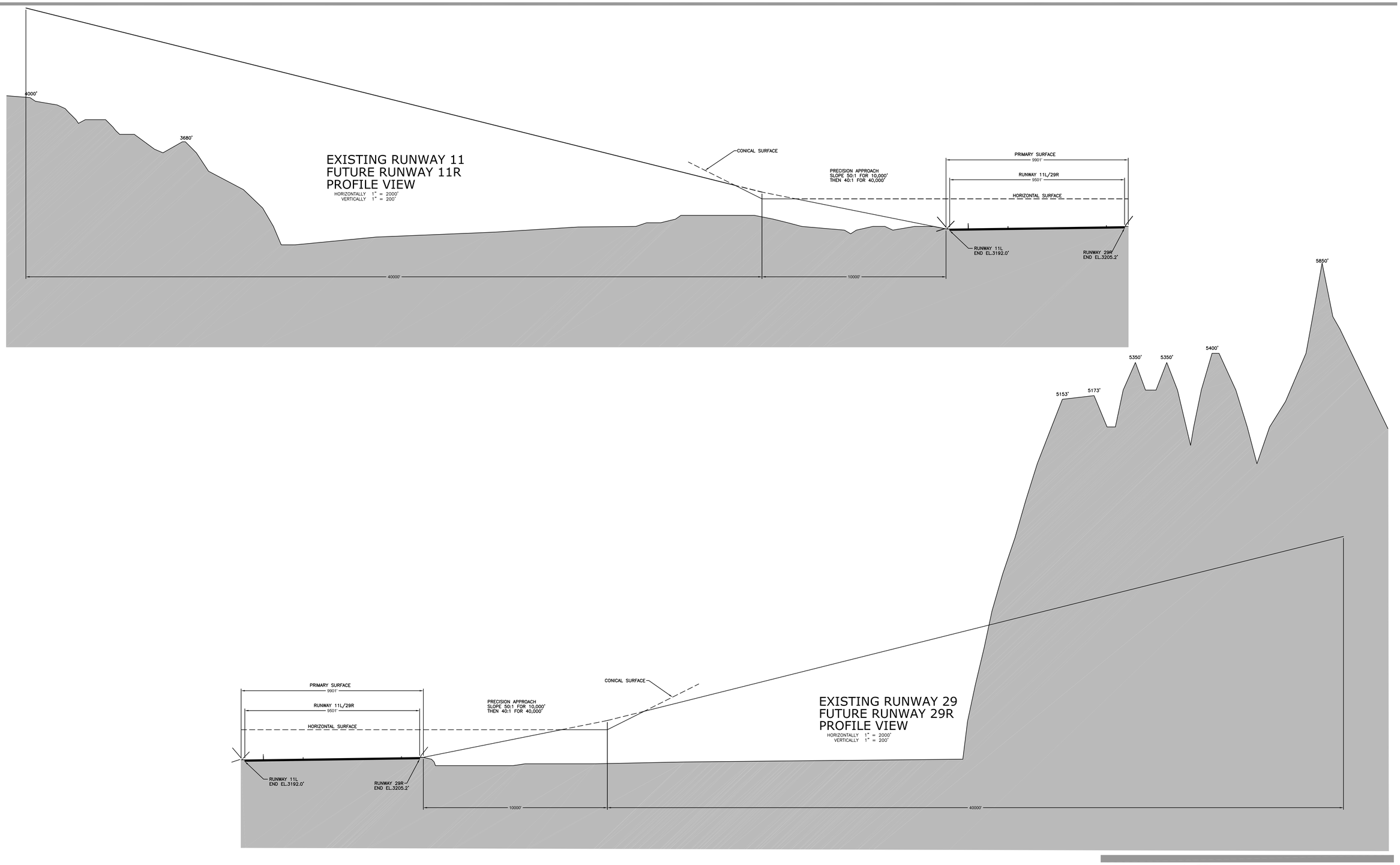
May 2009 — Scale 1" = 2000' — Drawing 6 of 17



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5. Terrain profile represents the highest point along the length and across the width of the extended approach surface.

REVISIONS

	DATE

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Airspace Profile
Existing Runway 11/29
Future Runway 11L/29R

CH2MHILL

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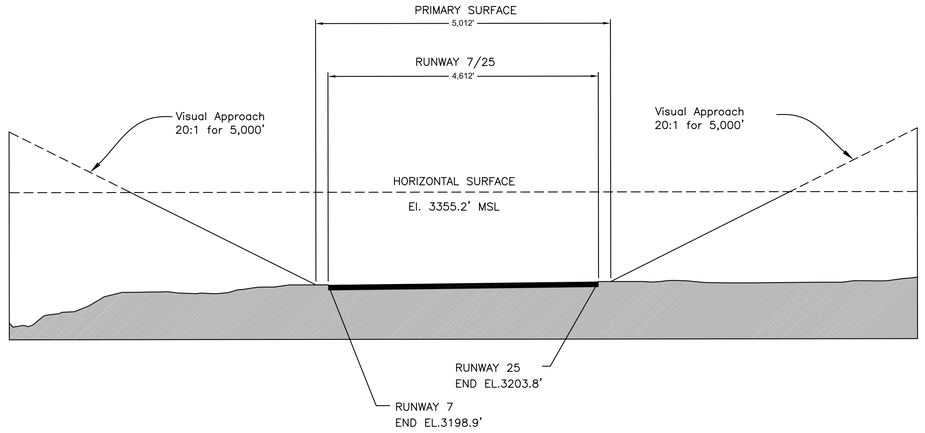
May 2009 — Scale 1" = 200' — Drawing 7 of 17



RUNWAY 7-25
PROFILE VIEW

HORIZONTALLY 1" = 1000'
VERTICALLY 1" = 100'

NOTES

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REVISIONS

	DATE

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Airspace Profile
Runway 7-25

CH2MHILL

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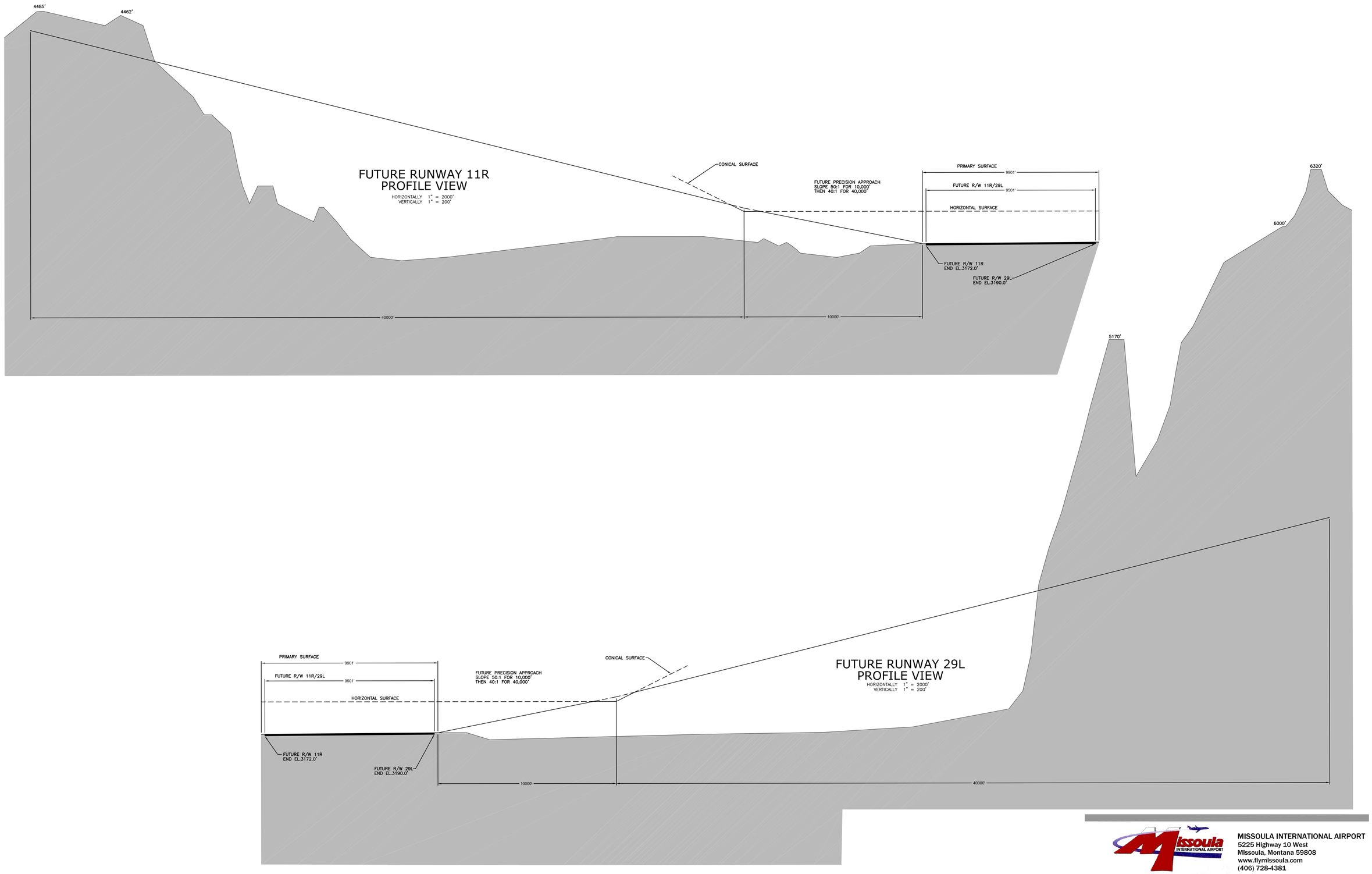
May 2009 — Scale 1" = 100' — Drawing 8 of 17



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REVISIONS

	DATE

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5225 Highway 10 West
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Airspace Profile
Future Runway 11R-29L

CH2MHILL

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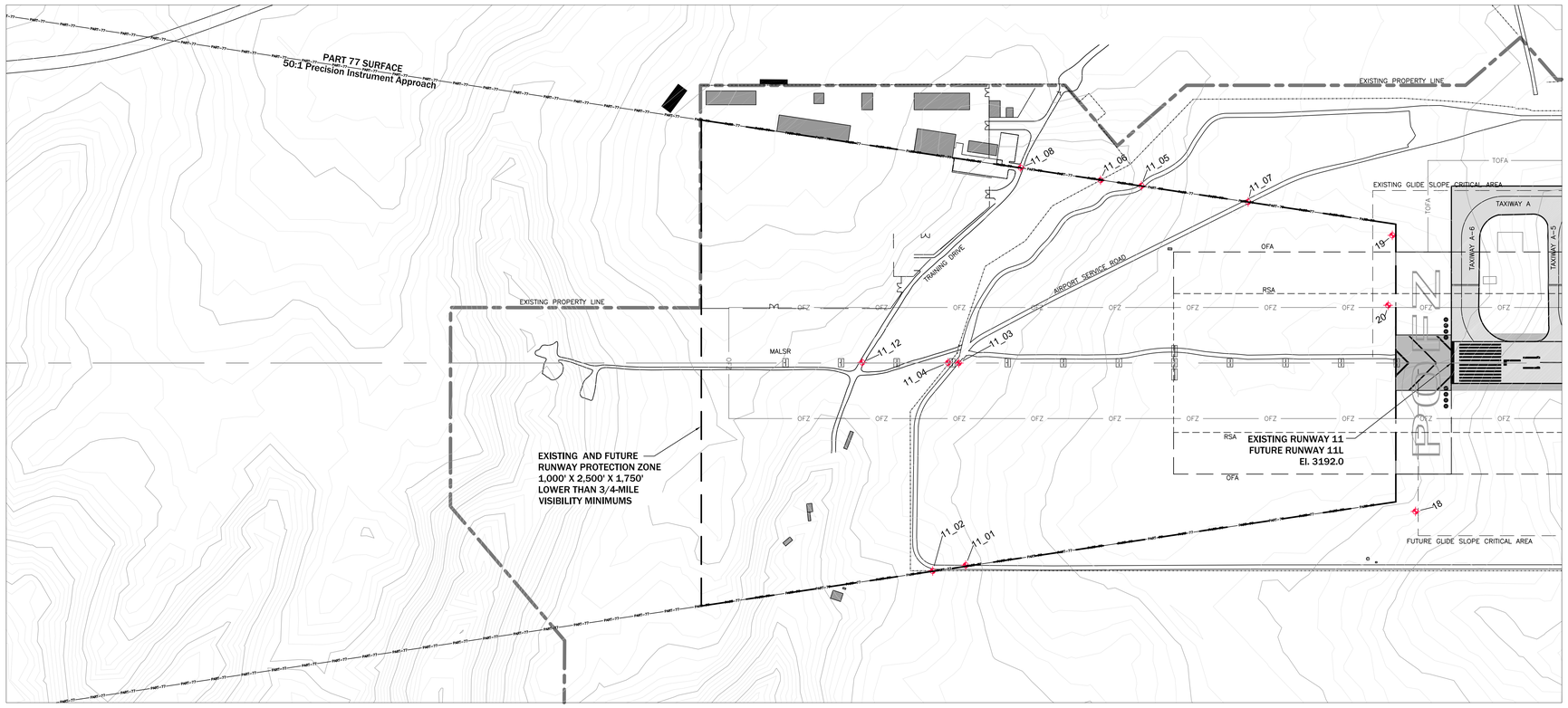
May 2009 — Scale 1" = 200' — Drawing 9 of 17

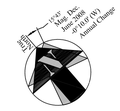


LAYOUT PLAN LEGEND

	EXISTING	FUTURE
AIRPORT PROPERTY LINE		N/A
AIRPORT SECURITY FENCE		
ON AIRPORT PROPERTY BUILDINGS		
OFF AIRPORT PROPERTY BUILDINGS		N/A
POST PLANNING PERIOD		
AIRFIELD PAVEMENT		
AIRFIELD SHOULDER PAVEMENT		N/A
AIRFIELD PAVEMENT (TO BE REMOVED)		
PAVED ROADS		
AVIGATION EASEMENT		
RUNWAY PROTECTION ZONE (RPZ)		
BUILDING RESTRICTION LINE (BRL)	BRL	
RUNWAY SAFETY AREA (RSA)		RSA (F)
RUNWAY OBJECT FREE AREA (ROFA)		ROFA (F)
TAXIWAY OBJECT FREE AREA (TOFA)	TOFA TOFA TOFA	F-OFA F-OFA
HYDROLOGY FEATURES		N/A
SECTION CORNER		N/A
AIRPORT BEACON		
LIGHTED WIND CONE & SEGMENTED CIRCLE		
AUTOMATED SURFACE OBSERVATION SYSTEM (ASOS)		ASOS (F)
PRECISION APPROACH PATH INDICATOR (PAPI)		
SURVEY MONUMENT		N/A
DEVELOPMENT AREAS	N/A	
HOLDLINES & SIGNS HOLDLINES MINIMUM 280' FROM RUNWAY CENTERLINE		
LOCALIZER (LOC)/GLIDE SLOPE (GS) CRITICAL AREA	LOC (E) GLIDE SLOPE (E)	LOC (F) GLIDE SLOPE (F)
RUNWAY END IDENTIFIER LIGHTS (REL)		
AIRPORT REFERENCE POINT		
AIRPORT OBSTRUCTION POINTS		
ASR/VOR CRITICAL AREA		N/A

ABBREVIATIONS

(E) – Existing
(F) – Future
(P) – Potential Post Planning Period
(R) – Relocated
(CA) – Critical Area
(TBR) – To Be Removed



Existing Runway 11/Future Runway 11L- Plan View

HORIZONTAL 1" = 200'

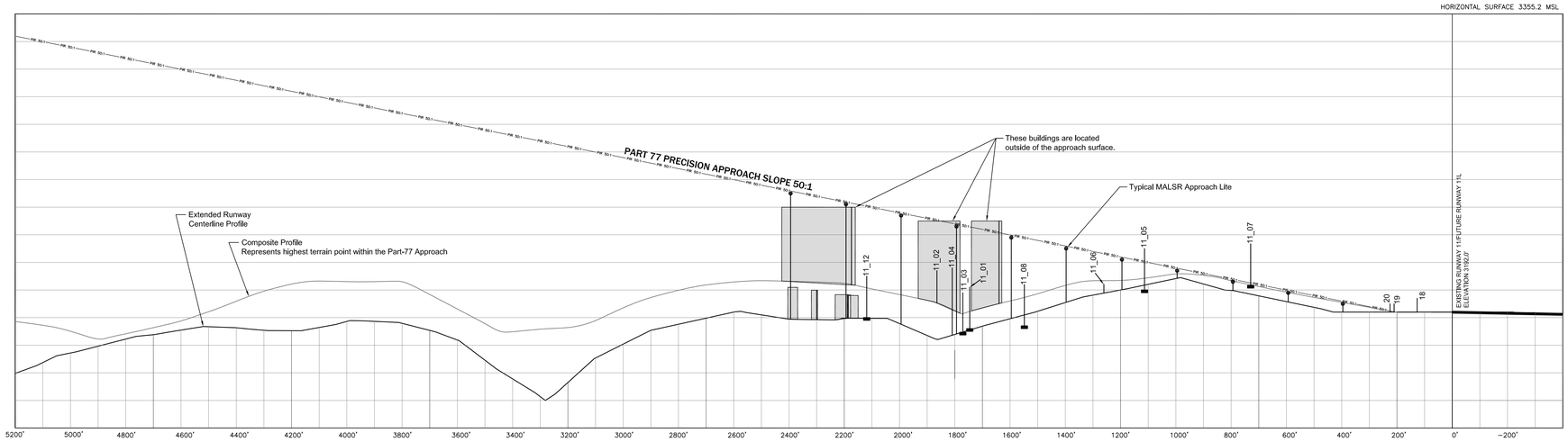
0 100' 200' 400' 600'

Existing Runway 11/Future Runway 11L - Profile View

VERTICAL 1" = 20'

HORIZONTAL 1" = 200'

0 100' 200' 400' 600'



EXISTING RUNWAY 11/FUTURE RUNWAY 11L OBSTRUCTION DATA

Object-ID	Description	Top Elev	Penetration	Surface Name	Disposition
18	GROUND	3197.0	0.1	TRANSITIONAL-RW11	To Be Graded
19	SIGN	3195.0	2.8	PIR-APPROACH-RW11	To Be Addressed Based on FAA Airspace Findings
20	SIGN	3195.0	2.5	PIR-APPROACH-RW11	To Be Addressed Based on FAA Airspace Findings
11_01	ROAD(N)	3201.0	-21.9	PT77-APPR-FACE	N/A
11_02	FENCE	3207.0	-18.3	PT77-APPR-RW11	N/A
11_03	ROAD(N)	3199.0	-24.4	PT77-APPR-FACE	N/A
11_04	FENCE	3208.0	-16.2	PT77-APPR-RW11	N/A
11_05	ROAD(N)	3215.0	4.6	PIR-APPROACH-RW11	To Be Addressed Based on FAA Airspace Findings
11_06	FENCE	3202.0	-11.2	PT77-APPR-RW11	N/A
11_07	ROAD(N)	3219.0	16.4	PIR-APPROACH-RW11	To Be Addressed Based on FAA Airspace Findings
11_08	ROAD(N)	3202.3	-16.8	PT77-APPR-FACE	N/A
11_12	ROAD(N)	3205.0	-25.4	PT77-APPR-FACE	N/A

SEE NOTE #5

REVISIONS

	DATE

NOTES

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2. Topographic information taken from USGS 7.5 Minute Survey Maps, "Blue Mountain, Montana",1978, "Diamond Point, Montana", 1964, Frenchtown, Montana", 1984, "Huson, Montana",1984, "Northwest Missoula, Montana", 1978, "Northwest Missoula, Montana", 1978, "Primrose, Montana", 1978, "Southeast Missoula, Montana", 1978, and "Southwest Missoula, Montana", 1973.
3. NGS terrain elevation information differs significantly from surveyed Runway 11/29 elevations. Therefore, NGS terrain contours are shown only to reflect general terrain features.
4. Obstruction information taken from Airport Obstruction Chart (OC #266), Published June 1999, with additional information taken from NGS ANA-LPV survey conducted in November 2007.
5. Per FAR Part-77.238 traverse ways must be increased by; 10' for a (P)rivate roadway, 15' for a (N)on interstate, 17' for an (I)nterstate, and 23' for (R)ailroads. Per 150/5070B all traverses must be shown at intersection of approach surfaces, whether or not they are an obstruction.

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Plan and Profile
Existing Runway 11/ Future Runway 11L

CH2MHILL

Colortable: CH2M ALP BY LWT.ctb LTScale: 1.0000 LwDefault: 0.010
Last Saved: 7/22/2009 11:53 AM Plotted On: 7/22/2009 2:30 PM
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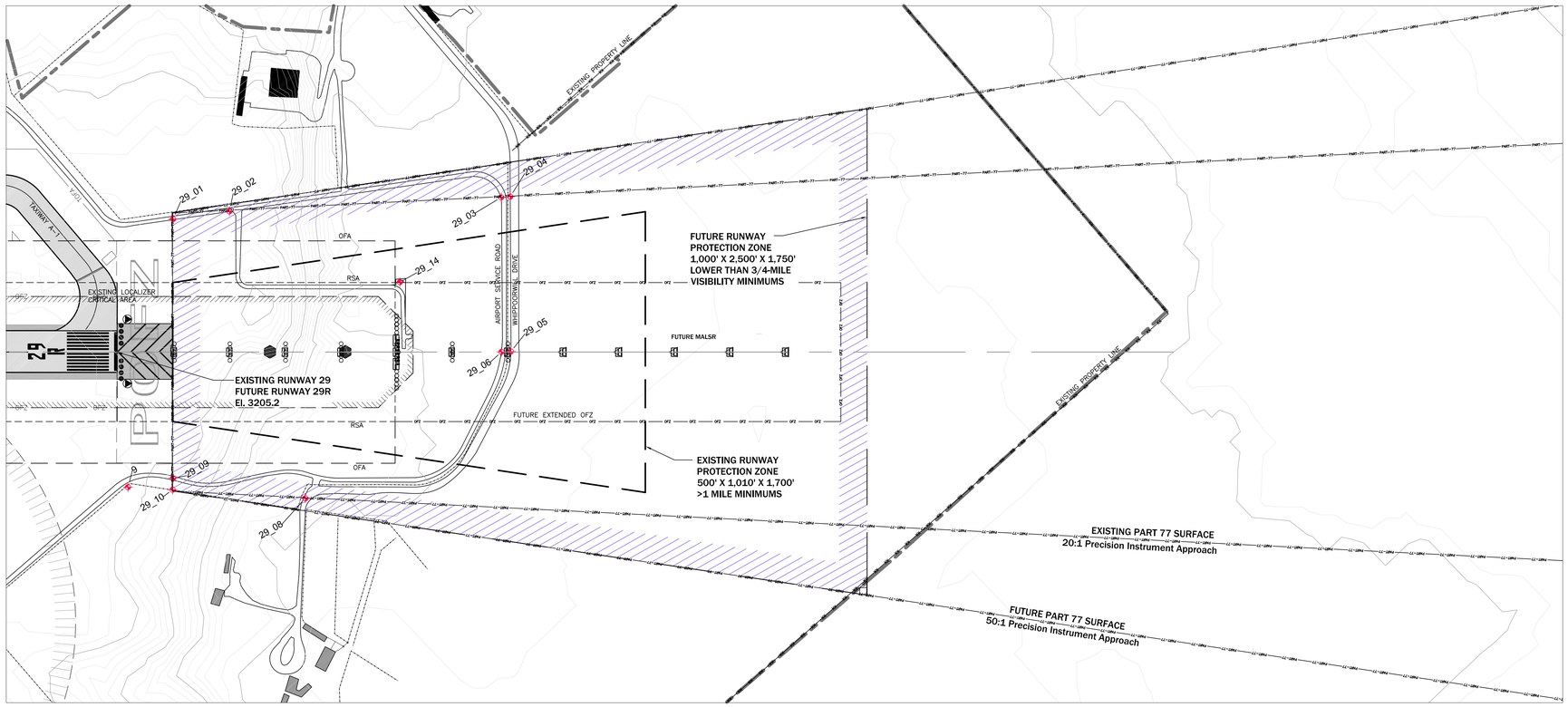
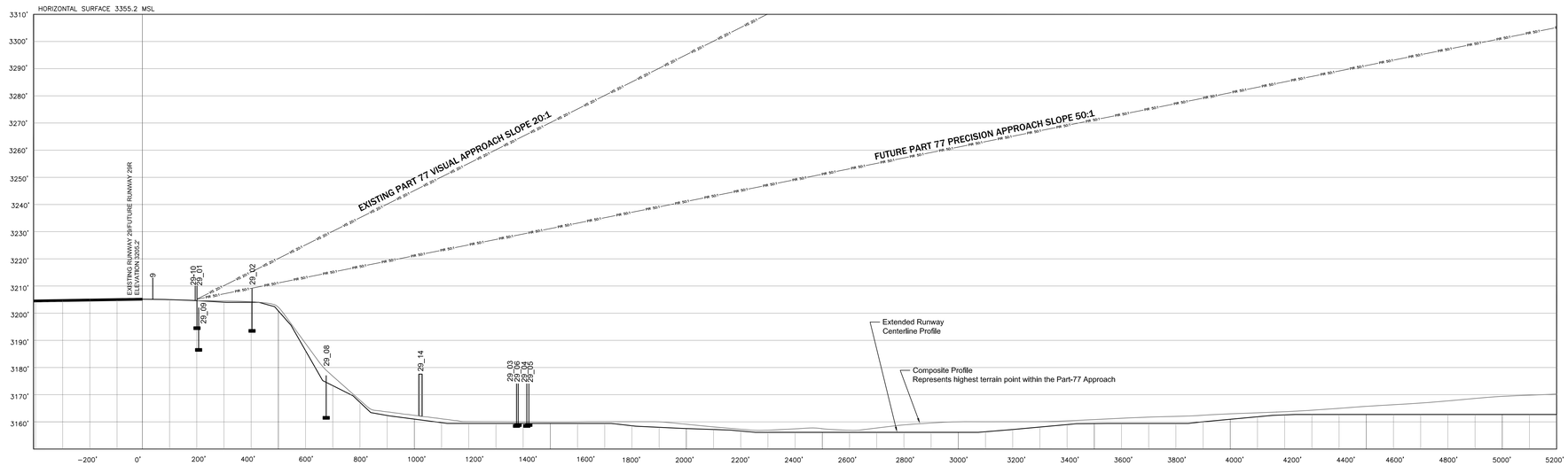
May 2009 — Scale 1" = 200' — Drawing 10 of 17



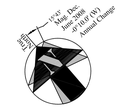


LAYOUT PLAN LEGEND

	EXISTING	FUTURE
AIRPORT PROPERTY LINE		N/A
AIRPORT SECURITY FENCE		
ON AIRPORT PROPERTY BUILDINGS		
OFF AIRPORT PROPERTY BUILDINGS		N/A
POST PLANNING PERIOD		
AIRFIELD PAVEMENT		
AIRFIELD SHOULDER PAVEMENT		N/A
AIRFIELD PAVEMENT (TO BE REMOVED)		N/A
PAVED ROADS		
AVIGATION EASEMENT		
RUNWAY PROTECTION ZONE (RPZ)		
BUILDING RESTRICTION LINE (BRL)	BRL	
RUNWAY SAFETY AREA (RSA)	RSA	RSA (F)
RUNWAY OBJECT FREE AREA (ROFA)	ROFA	ROFA (F)
TAXIWAY OBJECT FREE AREA (TOFA)	TOFA TOFA TOFA	F-OFA F-OFA
HYDROLOGY FEATURES		N/A
SECTION CORNER		N/A
AIRPORT BEACON		
LIGHTED WIND CONE & SEGMENTED CIRCLE		
AUTOMATED SURFACE OBSERVATION SYSTEM (ASOS)		ASOS (F)
PRECISION APPROACH PATH INDICATOR (PAPI)		
SURVEY MONUMENT		N/A
DEVELOPMENT AREAS	N/A	
HOLDLINES & SIGNS		
HOLDLINES MINIMUM 280' FROM RUNWAY CENTERLINE		
LOCALIZER (LOC)/GLIDE SLOPE (GS) CRITICAL AREA	LOC (E) GLIDE SLOPE (E)	LOC (F) GLIDE SLOPE (F)
RUNWAY END IDENTIFIER LIGHTS (REL)		
AIRPORT REFERENCE POINT		
AIRPORT OBSTRUCTION POINTS		
ASR/VOR CRITICAL AREA		N/A

ABBREVIATIONS

(E) – Existing
(F) – Future
(P) – Potential Post Planning Period
(R) – Relocated
(CA) – Critical Area
(TBR) – To Be Removed



Existing Runway 29/Future Runway 29R - Plan View

HORIZONTAL 1" = 200'
0 100' 200' 400' 600'

Existing Runway 29/Future Runway 29R - Profile View

VERTICAL 1" = 20'
HORIZONTAL 1" = 200'
0 100' 200' 400' 600'

EXISTING RUNWAY 29/FUTURE RUNWAY 29R OBSTRUCTION DATA

Object-ID	Description	Top Elev	Penetration	Surface Name	Disposition
9	FENCE	3213.0	7.8	PRIMARY	To Be Addressed Based on FAA Airspace Findings
29_01	ROAD(N)	3210.3	5.1	PIR-APPROACH-RW29	To Be Addressed Based on FAA Airspace Findings
29_02	ROAD(N)	3209.0	-0.2	PT77-APPR-FACE	N/A
29_03	ROAD(N)	3174.0	-54.8	PT77-APPR-FACE	N/A
29_04	ROAD(N)	3174.0	-55.4	PT77-APPR-FACE	N/A
29_05	ROAD(N)	3174.0	-55.5	PT77-APPR-FACE	N/A
29_06	ROAD(N)	3174.0	-54.8	PT77-APPR-FACE	N/A
29_08	ROAD(N)	3177.0	-37.7	PT77-APPR-FACE	N/A
29_09	ROAD(N)	3202.0	-3.2	PT77-APPR-FACE	N/A
29_10	FENCE	3210.0	4.8	PIR-APPROACH-RW29	To Be Addressed Based on FAA Airspace Findings
29_14	LOC SHED	3178.0	-44.0	PT77-APPR-FACE	N/A

SEE NOTE #5

REVISIONS

	DATE

NOTES

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5. Per FAR Part-77.23B traverse ways must be increased by; 10' for a (P)rivate roadway, 15' for a (N)on interstate, 17' for an ()interstate, and 23' for (R)ailroads. Per 150/5070B all traverses must be shown at intersection of approach surfaces, whether or not they are an obstruction.

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Plan and Profile
Existing Runway 29/ Future Runway 29R

CH2MHILL

Colortable: CH2M ALP BY LWT.ctb LTScale: 1.0000 LwDefault: 0.010
Last Saved: 7/22/2009 11:53 AM Plotted On: 7/22/2009 2:31 PM
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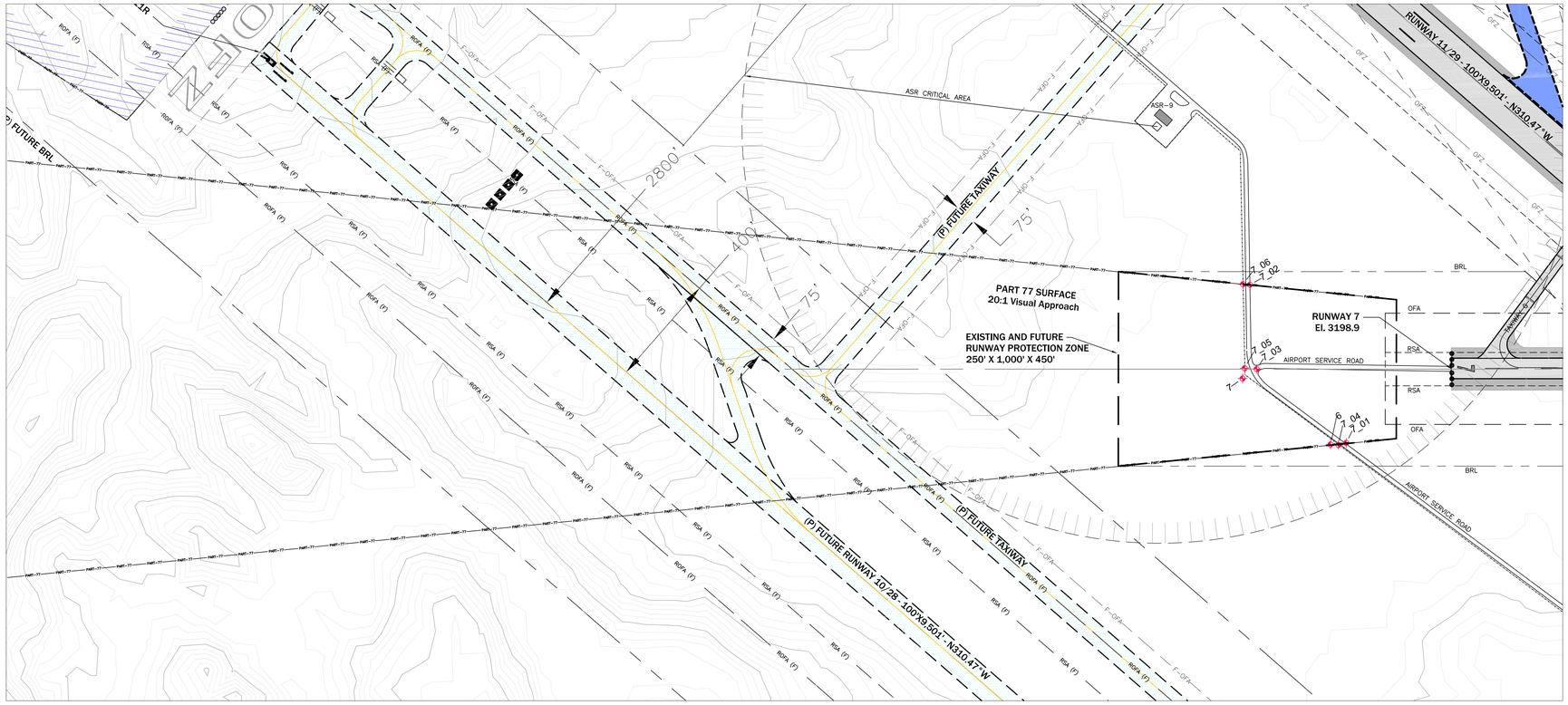
May 2009 — Scale 1" = 200' — Drawing 11 of 17



LAYOUT PLAN LEGEND

	EXISTING	FUTURE
AIRPORT PROPERTY LINE		N/A
AIRPORT SECURITY FENCE		
ON AIRPORT PROPERTY BUILDINGS		
OFF AIRPORT PROPERTY BUILDINGS		N/A
POST PLANNING PERIOD		
AIRFIELD PAVEMENT		
AIRFIELD SHOULDER PAVEMENT		N/A
AIRFIELD PAVEMENT (TO BE REMOVED)		N/A
PAVED ROADS		
AVIGATION EASEMENT		
RUNWAY PROTECTION ZONE (RPZ)		
BUILDING RESTRICTION LINE (BRL)	BRL	
RUNWAY SAFETY AREA (RSA)		RSA (F)
RUNWAY OBJECT FREE AREA (ROFA)		ROFA (F)
TAXIWAY OBJECT FREE AREA (TOFA)	TOFA TOFA TOFA	F-OFA F-OFA
HYDROLOGY FEATURES		N/A
SECTION CORNER		N/A
AIRPORT BEACON		
LIGHTED WIND CONE & SEGMENTED CIRCLE		
AUTOMATED SURFACE OBSERVATION SYSTEM (ASOS)		ASOS (F)
PRECISION APPROACH PATH INDICATOR (PAPI)		
SURVEY MONUMENT		N/A
DEVELOPMENT AREAS	N/A	
HOLDLINES & SIGNS		
HOLDLINES MINIMUM 280' FROM RUNWAY CENTERLINE		
LOCALIZER (LOC)/GLIDE SLOPE (GS) CRITICAL AREA	LOC (E) GLIDE SLOPE (E)	LOC (F) GLIDE SLOPE (F)
RUNWAY END IDENTIFIER LIGHTS (REL)		
AIRPORT REFERENCE POINT		
AIRPORT OBSTRUCTION POINTS		
ASR/VOR CRITICAL AREA		N/A

ABBREVIATIONS

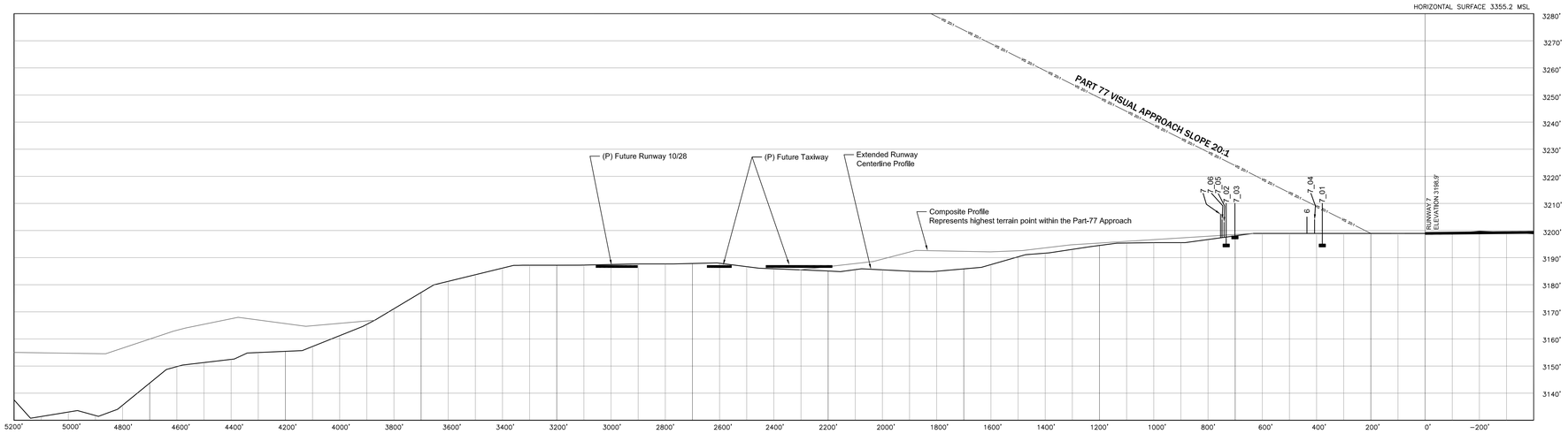
(E) – Existing
(F) – Future
(P) – Potential Post Planning Period
(R) – Relocated
(CA) – Critical Area
(TBR) – To Be Removed

Runway 7 - Plan View

HORIZONTAL 1" = 200'

0 100' 200' 400' 600'

Runway 7 - Profile View



VERTICAL 1" = 20'

HORIZONTAL 1" = 200'

0 100' 200' 400' 600'

REVISIONS

	DATE

NOTES

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4. Obstruction information taken from Airport Obstruction Chart (OC #266), Published June 1999, with additional information taken from NGS ANA-LPV survey conducted in November 2007.
5. Per FAR Part-77.23(b) traverse ways must be increased by; 10' for a (P)rivate roadway, 15' for a (N)on Interstate, 17' for an (I)nterstate, and 23' for (R)ailroads. Per 150/5070B all traverses must be shown at intersection of approach surfaces, whether or not they are an obstruction.

RUNWAY 7 OBSTRUCTION DATA

Object-ID	Description	Top Elev	Penetration	Surface Name	Disposition
6	FENCE	3205.0	-23.4	PT77-TRAN-FACE	N/A
7	FENCE	3206.0	-20.6	PT77-APPR-FACE	N/A
7_01	ROAD(N)	3210.4	2.1	PT77-APPR-RW07	N/A
7_02	ROAD(N)	3210.9	-21.8	PT77-APPR-RW07	N/A
7_03	ROAD(N)	3210.0	-20.7	PT77-APPR-RW07	N/A
7_04	FENCE	3204.0	-13.2	PT77-APPR-RW07	N/A
7_05	FENCE	3203.0	-23.2	PT77-APPR-RW07	N/A
7_06	FENCE	3204.0	-22.2	PT77-APPR-RW07	N/A

SEE NOTE #5

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Plan and Profile

Existing Runway 7/ Future Runway 7

CH2MHILL

Colortable: CH2M ALP BY LWT.ctb LTScale: 1.0000 LwDefault: 0.010
Last Saved: 7/22/2009 11:53 AM Plotted On: 7/22/2009 2:31 PM
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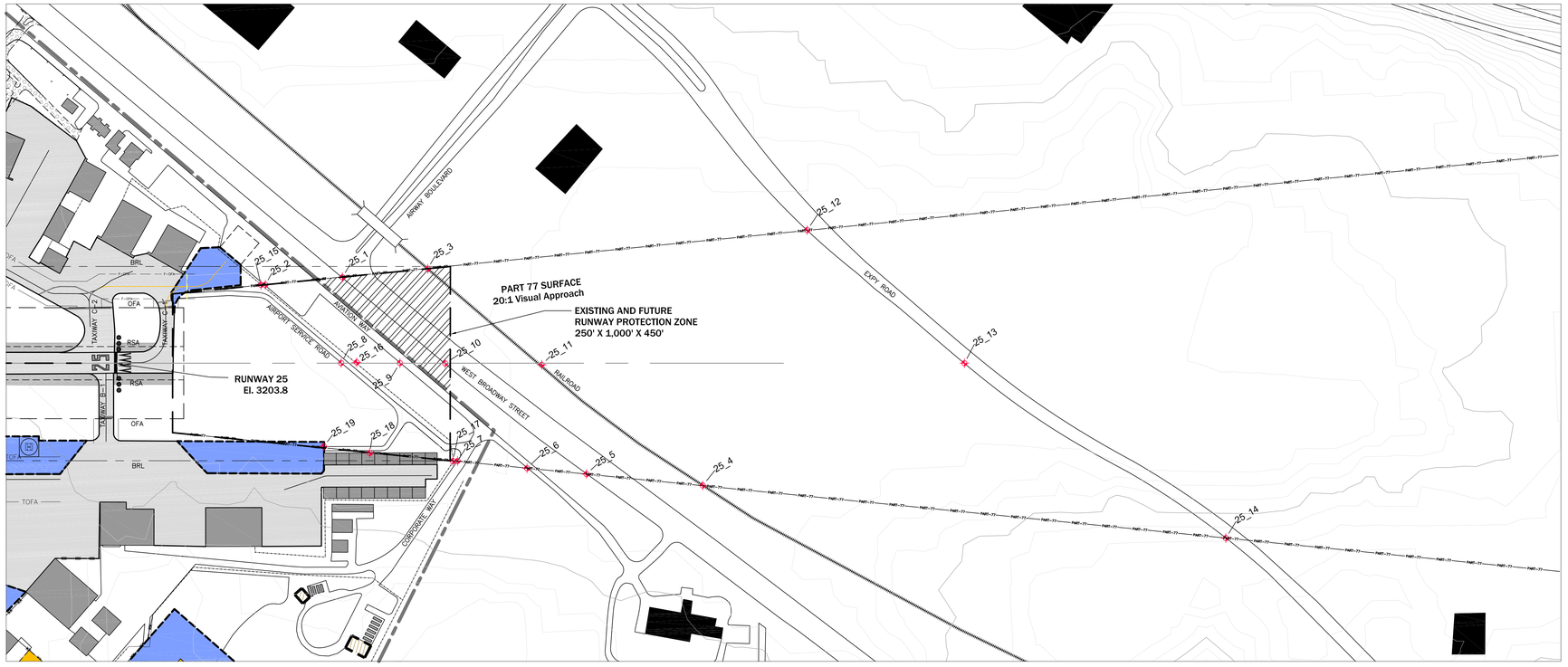
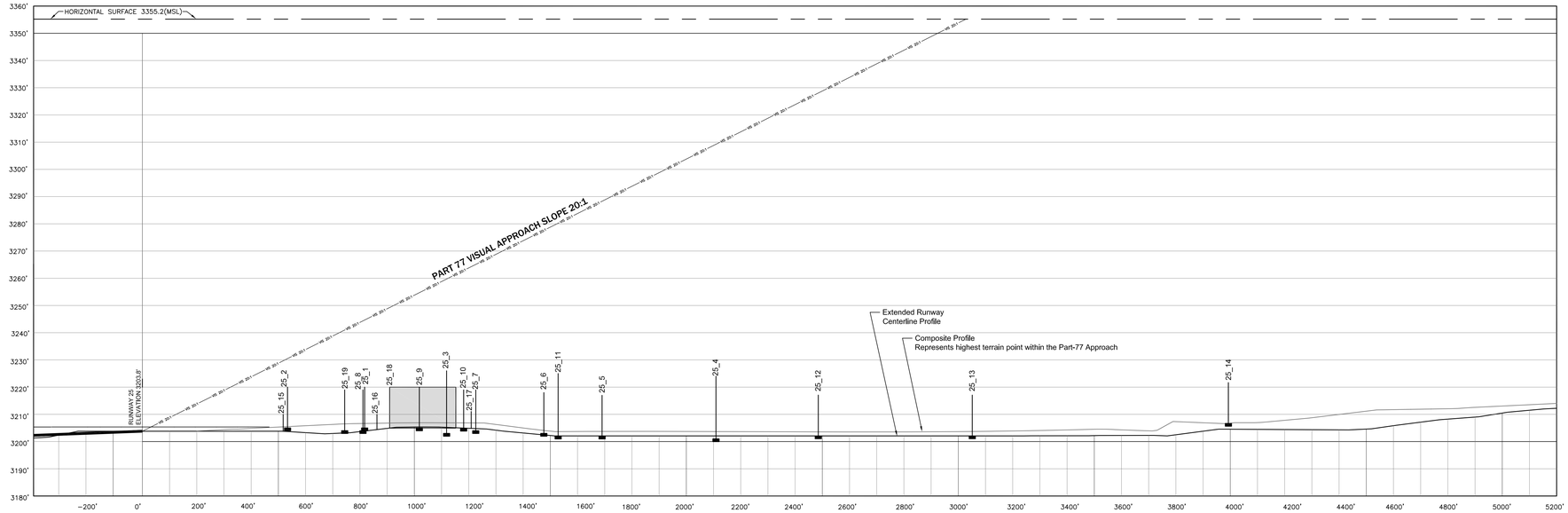
May 2009 — Scale 1" = 200' — Drawing 12 of 17





LAYOUT PLAN LEGEND

	EXISTING	FUTURE
AIRPORT PROPERTY LINE		N/A
AIRPORT SECURITY FENCE		
ON AIRPORT PROPERTY BUILDINGS		
OFF AIRPORT PROPERTY BUILDINGS		N/A
POST PLANNING PERIOD		
AIRFIELD PAVEMENT		
AIRFIELD SHOULDER PAVEMENT		N/A
AIRFIELD PAVEMENT (TO BE REMOVED)		N/A
PAVED ROADS		
AVIGATION EASEMENT		
RUNWAY PROTECTION ZONE (RPZ)		
BUILDING RESTRICTION LINE (BRL)	BRL	
RUNWAY SAFETY AREA (RSA)		RSA (F)
RUNWAY OBJECT FREE AREA (ROFA)		ROFA (F)
TAXIWAY OBJECT FREE AREA (TOFA)	TOFA TOFA TOFA	F-OFA F-OFA
HYDROLOGY FEATURES		N/A
SECTION CORNER		N/A
AIRPORT BEACON		
LIGHTED WIND CONE & SEGMENTED CIRCLE		
AUTOMATED SURFACE OBSERVATION SYSTEM (ASOS)		ASOS (F)
PRECISION APPROACH PATH INDICATOR (PAPI)		
SURVEY MONUMENT		N/A
DEVELOPMENT AREAS	N/A	
HOLDLINES & SIGNS		
HOLDLINES MINIMUM 280' FROM RUNWAY CENTERLINE		
LOCALIZER (LOC)/GLIDE SLOPE (GS) CRITICAL AREA	LOC (E) GLIDE SLOPE (E)	LOC (F) GLIDE SLOPE (F)
RUNWAY END IDENTIFIER LIGHTS (REL)		
AIRPORT REFERENCE POINT		
AIRPORT OBSTRUCTION POINTS		
ASR/VOR CRITICAL AREA		N/A

ABBREVIATIONS

(E) – Existing
(F) – Future
(P) – Potential Post Planning Period
(R) – Relocated
(CA) – Critical Area
(TBR) – To Be Removed

RUNWAY 25 OBSTRUCTION DATA

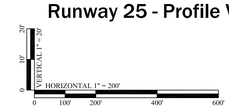
Object-ID	Description	Top Elev	Penetration	Surface Name	Disposition
25_01	ROAD(N)	3220.0	-24.7	PT77-APPR-FACE	N/A
25_02	ROAD(N)	3220.0	-10.5	PT77-APPR-FACE	N/A
25_03	RAILROAD	3226.0	-33.7	PT77-APPR-FACE	N/A
25_04	RAILROAD	3224.0	-85.3	PT77-APPR-FACE	N/A
25_05	ROAD(N)	3217.0	-71.3	PT77-APPR-FACE	N/A
25_06	ROAD(N)	3218.0	-59.6	PT77-APPR-FACE	N/A
25_07	ROAD(N)	3219.9	-46.1	PT77-APPR-FACE	N/A
25_08	ROAD(N)	3219.0	-15.1	PT77-APPR-FACE	N/A
25_09	ROAD(N)	3220.0	-24.7	PT77-APPR-FACE	N/A
25_10	ROAD(N)	3219.0	-33.8	PT77-APPR-FACE	N/A
25_11	RAILROAD	3225.0	-45.2	PT77-APPR-FACE	N/A
25_12	ROAD(N)	3217.0	-111.0	PT77-APPR-FACE	N/A
25_13	ROAD(N)	3217.0	-132.9	PT77-APPR-FACE	N/A
25_14	ROAD(N)	3223.0	-126.9	PT77-APPR-FACE	N/A
25_15	FENCE	3210.0	-19.7	PT77-APPR-FACE	N/A
25_16	FENCE	3210.0	-36.9	PT77-APPR-FACE	N/A
25_17	FENCE	3211.0	-53.2	PT77-APPR-FACE	N/A
25_18	BUILDING	3220.0	-29.3	PT77-APPR-FACE	N/A
25_19	ROAD(N)	3219.0	-22.0	PT77-APPR-FACE	N/A

SEE NOTE #5

Runway 25 - Plan View

HORIZONTAL 1" = 200'
0 100' 200' 400' 600'

Runway 25 - Profile View



REVISIONS

	DATE

NOTES

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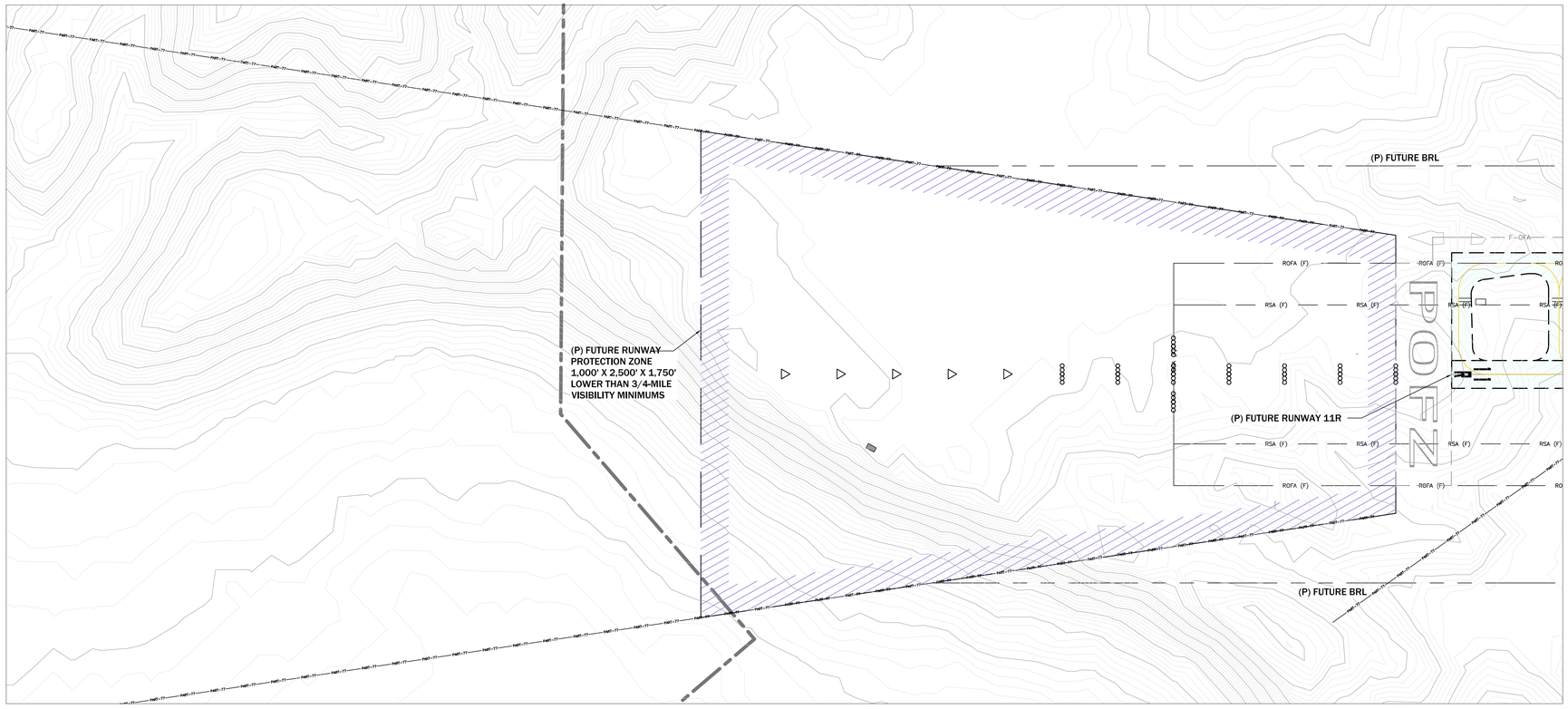
Plan and Profile
Existing Runway 25/ Future Runway 25

CH2MHILL

Colortable: CH2M ALP BY LWT.ctb LTScale: 1.0000 LwDefault: 0.010
Last Saved: 7/22/2009 11:53 AM Plotted On: 7/22/2009 2:31 PM
File: P:\Airports\MSO-Missoula\CAD\ALP\MSO-Plan And Profiles.dwg Layout: RW 25

May 2009 — Scale 1" = 200' — Drawing 13 of 17



LAYOUT PLAN LEGEND

	EXISTING	FUTURE
AIRPORT PROPERTY LINE		N/A
AIRPORT SECURITY FENCE	X X X X X X X X	XX XX XX XX XX XX
ON AIRPORT PROPERTY BUILDINGS		
OFF AIRPORT PROPERTY BUILDINGS		N/A
POST PLANNING PERIOD		
AIRFIELD PAVEMENT		
AIRFIELD SHOULDER PAVEMENT		N/A
AIRFIELD PAVEMENT (TO BE REMOVED)		N/A
PAVED ROADS		
AVIGATION EASEMENT		
RUNWAY PROTECTION ZONE (RPZ)		
BUILDING RESTRICTION LINE (BRL)	BRL	
RUNWAY SAFETY AREA (RSA)		RSA (F)
RUNWAY OBJECT FREE AREA (ROFA)		ROFA (F)
TAXIWAY OBJECT FREE AREA (TOFA)	TOFA TOFA TOFA	F-OFA F-OFA
HYDROLOGY FEATURES		N/A
SECTION CORNER		N/A
AIRPORT BEACON		
LIGHTED WIND CONE & SEGMENTED CIRCLE		
AUTOMATED SURFACE OBSERVATION SYSTEM (ASOS)		ASOS (F)
PRECISION APPROACH PATH INDICATOR (PAPI)		
SURVEY MONUMENT		N/A
DEVELOPMENT AREAS	N/A	
HOLDLINES & SIGNS		
HOLDLINES MINIMUM 280' FROM RUNWAY CENTERLINE		
LOCALIZER (LOC)/GLIDE SLOPE (GS) CRITICAL AREA	LOC (E) GLIDE SLOPE (E)	LOC (F) GLIDE SLOPE (F)
RUNWAY END IDENTIFIER LIGHTS (REIL)		
AIRPORT REFERENCE POINT		
AIRPORT OBSTRUCTION POINTS		
ASR/VOR CRITICAL AREA		N/A

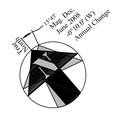
ABBREVIATIONS

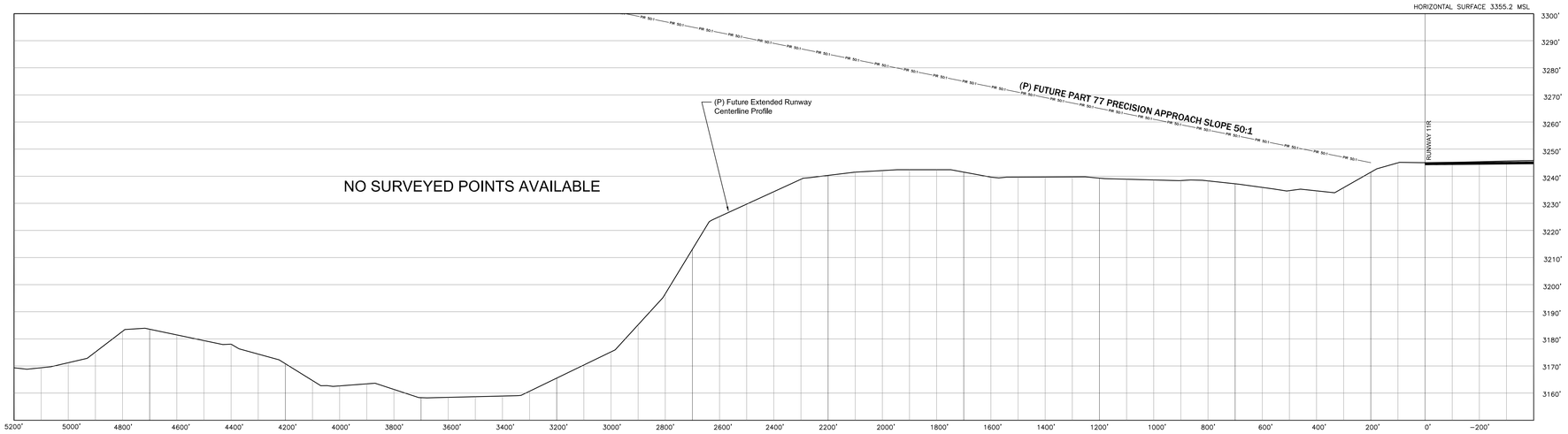
(E) – Existing
(F) – Future
(P) – Potential Post Planning Period
(R) – Relocated
(CA) – Critical Area
(TBR) – To Be Removed

Runway 11R - Plan View

HORIZONTAL 1" = 200'

0 100' 200' 400' 600'





Runway 11R - Profile View

VERTICAL 1" = 20'

HORIZONTAL 1" = 200'

0 100' 200' 400' 600'

REVISIONS

	DATE

NOTES

1. This drawing reflects planning standards specific to this airport, and is not a product of detailed engineering design analysis. It is not intended to be used for construction documentation or navigation.
2. Topographic information taken from USGS 7.5 Minute Survey Maps, "Blue Mountain, Montana",1978, "Diamond Point, Montana", 1964, Frenchtown, Montana", 1984, "Huson, Montana",1984, "Northeast Missoula, Montana", 1978, "Northwest Missoula, Montana", 1978, "Primrose, Montana", 1978, "Southeast Missoula, Montana", 1978, and "Southwest Missoula, Montana", 1973.
3. NGS terrain elevation information differs significantly from surveyed Runway 11/29 elevations. Therefore, NGS terrain contours are shown only to reflect general terrain features.
4. Obstruction information taken from Airport Obstruction Chart (OC #266), Published June 1999, with additional information taken from NGS ANA-LPV survey conducted in November 2007.
5. Per FAR Part-77.23B traverse ways must be increased by; 10' for a (P)rivate roadway, 15' for a (N)on interstate, 17' for an (I)nterstate, and 23' for (R)ailroads. Per 150/5070B all traverses must be shown at intersection of approach surfaces, whether or not they are an obstruction.

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Plan and Profile
Future Runway 11R

CH2MHILL

Colortable: CH2M ALP BY LWT.ctb LTScale: 1.0000 LwDefault: 0.010
Last Saved: 7/22/2009 11:53 AM Plotted On: 7/22/2009 2:31 PM
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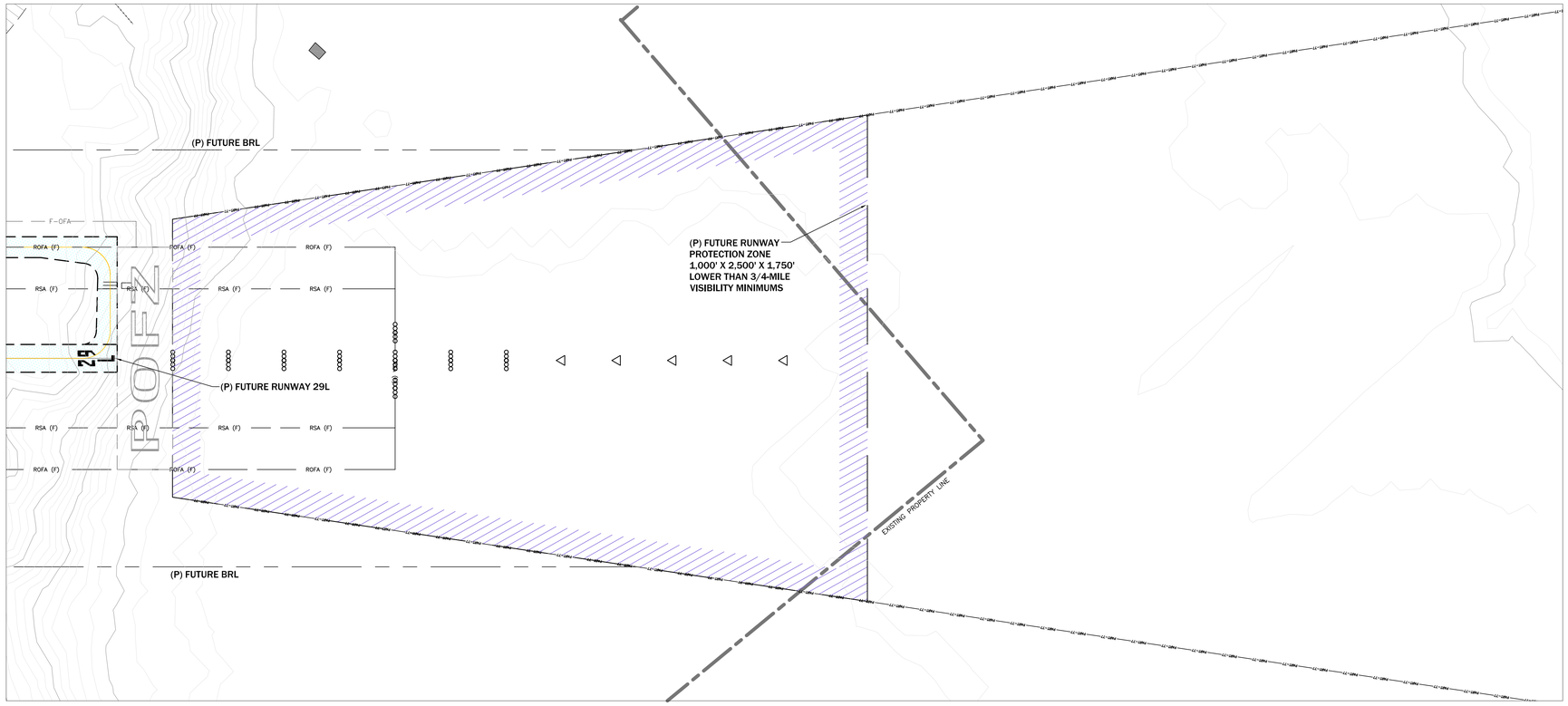
May 2009 — Scale 1" = 200' — Drawing 14 of 17



LAYOUT PLAN LEGEND

	EXISTING	FUTURE
AIRPORT PROPERTY LINE		N/A
AIRPORT SECURITY FENCE		
ON AIRPORT PROPERTY BUILDINGS		
OFF AIRPORT PROPERTY BUILDINGS		N/A
POST PLANNING PERIOD		
AIRFIELD PAVEMENT		
AIRFIELD SHOULDER PAVEMENT		N/A
AIRFIELD PAVEMENT (TO BE REMOVED)		N/A
PAVED ROADS		
AVIGATION EASEMENT		
RUNWAY PROTECTION ZONE (RPZ)		
BUILDING RESTRICTION LINE (BRL)	BRL	
RUNWAY SAFETY AREA (RSA)		RSA (F)
RUNWAY OBJECT FREE AREA (ROFA)		ROFA (F)
TAXIWAY OBJECT FREE AREA (TOFA)	TOFA TOFA TOFA	F-OFA F-OFA
HYDROLOGY FEATURES		N/A
SECTION CORNER		N/A
AIRPORT BEACON		
LIGHTED WIND CONE & SEGMENTED CIRCLE		
AUTOMATED SURFACE OBSERVATION SYSTEM (ASOS)		ASOS (F)
PRECISION APPROACH PATH INDICATOR (PAPI)		
SURVEY MONUMENT		N/A
DEVELOPMENT AREAS	N/A	
HOLDLINES & SIGNS		
HOLDLINES MINIMUM 280' FROM RUNWAY CENTERLINE		
LOCALIZER (LOC)/GLIDE SLOPE (GS) CRITICAL AREA	LOC (E) GLIDE SLOPE (E)	LOC (F) GLIDE SLOPE (F)
RUNWAY END IDENTIFIER LIGHTS (REL)		
AIRPORT REFERENCE POINT		
AIRPORT OBSTRUCTION POINTS		
ASR/VOR CRITICAL AREA		N/A

ABBREVIATIONS

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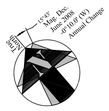
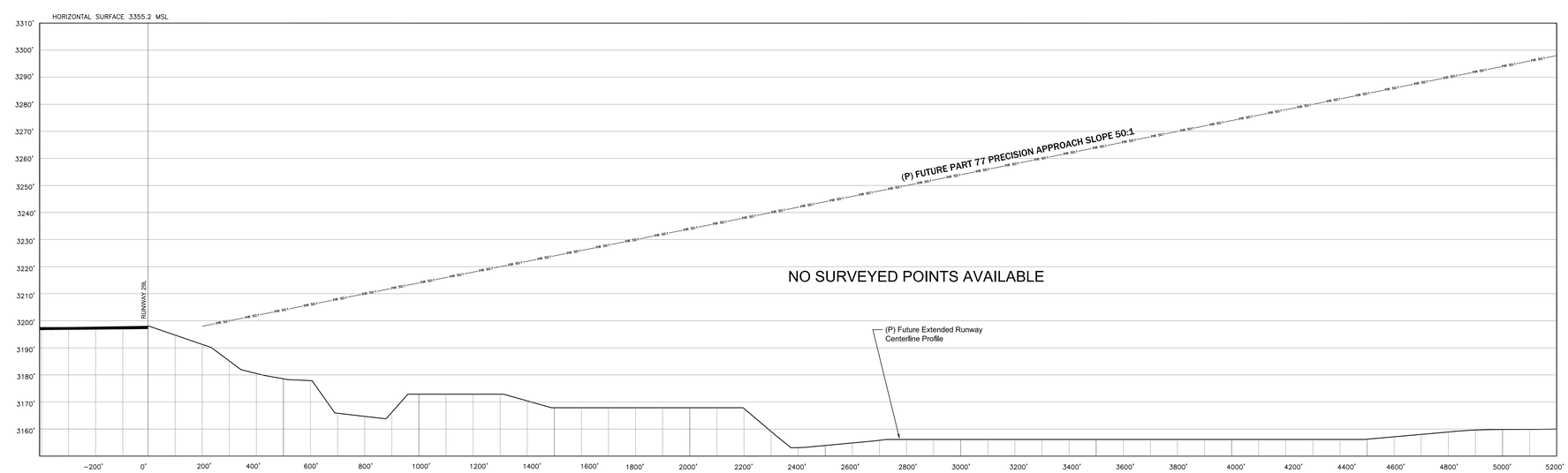


Runway 29L - Plan View

HORIZONTAL 1" = 200'

0 100' 200' 400' 600'



Runway 29L - Profile View

VERTICAL 1" = 20'

HORIZONTAL 1" = 200'

0 100' 200' 400' 600'

REVISIONS

	DATE

NOTES

1. This drawing reflects planning standards specific to this airport, and is not a product of detailed engineering design analysis. It is not intended to be used for construction documentation or navigation.
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Plan and Profile
Future Runway 29L

CH2MHILL

Colortable: CH2M ALP BY LWT.ctb LTScale: 1.0000 LwDefault: 0.010
Last Saved: 7/22/2009 11:53 AM Plotted On: 7/22/2009 2:32 PM
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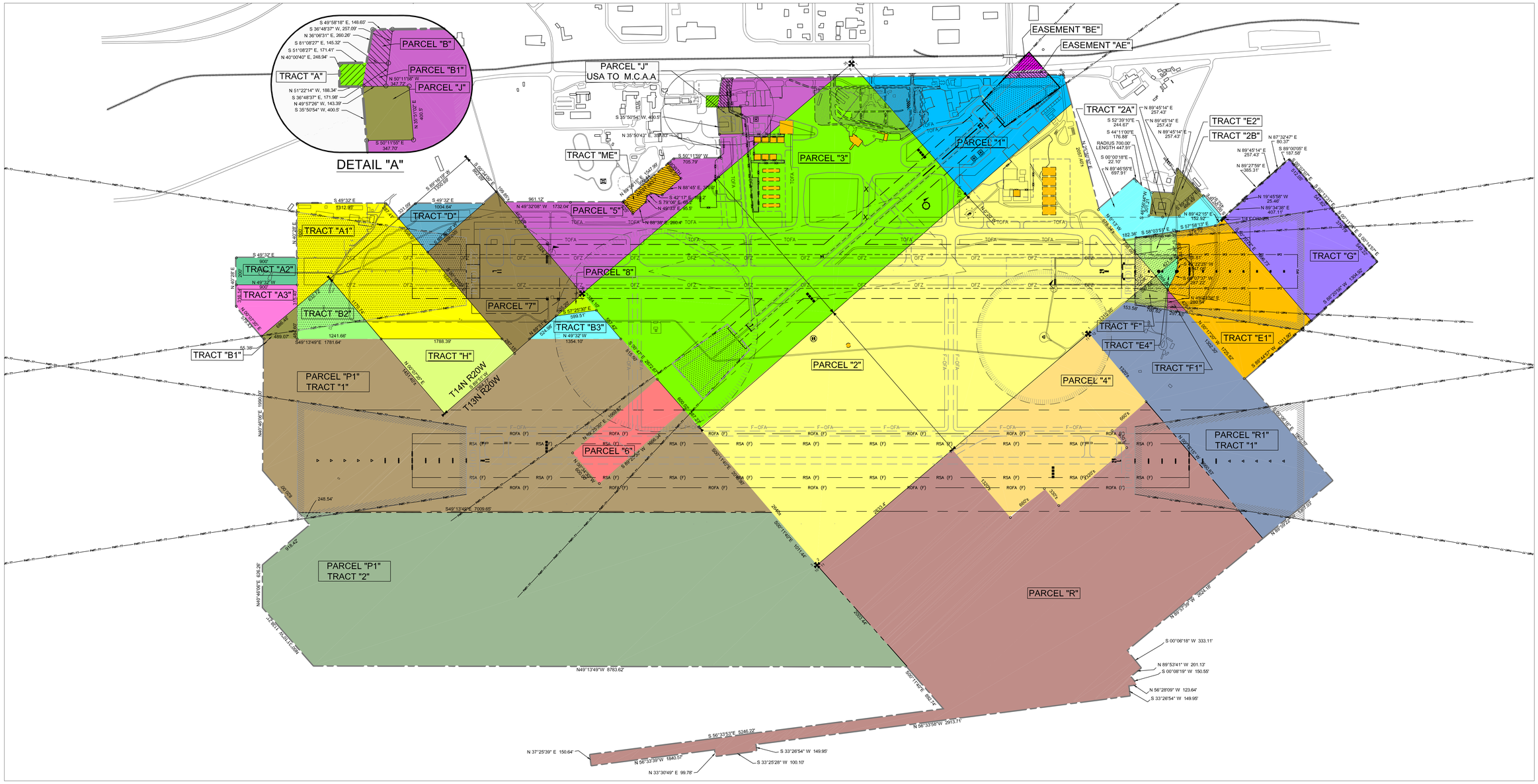
May 2009 — Scale 1" = 200' — Drawing 15 of 17



EXISTING PROPERTY INFORMATION

PARCEL/TRACT #	FAA PROJECT #	ACQUIRED FROM	INTEREST	RECORDING DATA	ACREAGE	DATE
PARCEL "1"	N/A	ENGLAND	FEE	BK 123 PG 440	71.9	5/12/37
PARCEL "2"	N/A	McCULLOUGH	FEE	BK 124 PG 336	409.8	10/18/38
TRACT "2A"	N/A	LEFLER & HALL	FEE	BK 634 PG 1118	17.78	12/04/00
TRACT "2B"	N/A	LEFLER & HALL	FEE	BK 634 PG 1118	5.95	12/04/00
PARCEL "3	N/A	SHAUGHNESSY	FEE	BK 123 PG 339	323	1/9/40
PARCEL "4"	N/A	DASI	FEE	BK 138 PG 392	90±	12/3/45
PARCEL "5"	N/A	LEHSOU	FEE	BK 126 PG 186	98.359	11/28/39
PARCEL "6"	AIP 3-30-0056-09	DESCHAMPS	FEE	BK 363 PG 1300	22.97	3/7/92
PARCEL "7"	N/A	LEISCHNER	FEE	BK 229 PG 422	60	6/6/63
PARCEL "8"	ADAP 9-24-040-C511	DESCHAMPS	FEE	BK 7 MICRO PG 1239	1.88	5/22/67
TRACT "A1"	ADAP 9-24-040-13	FETSCHER'S INC.	FEE	BK 18 MICRO PG 1268	84.292	7/21/69
TRACT "A2"	ADAP 9-24-040-13	FETSCHER'S INC.	FEE	BK 18 MICRO PG 1268	8.264	7/21/69
TRACT "A3"	ADAP 9-24-040-13	FETSCHER'S INC.	FEE	BK 18 MICRO PG 1268	11.090	7/21/69
TRACT "B1"	ADAP 9-24-040-13	DESCHAMPS	FEE	BK 18 MICRO PG 1153	3.157	7/16/69
TRACT "B2"	ADAP 9-24-040-13	DESCHAMPS	FEE	BK 18 MICRO PG 1153	15.409	7/16/69
TRACT "B3"	ADAP 9-24-040-13	DESCHAMPS	FEE	BK 18 MICRO PG 1153	8.544	7/16/69
TRACT "D"	ADAP 9-24-040-13	LEISCHNER	FEE	BK 18 MICRO PG 803	10.784	6/30/69
TRACT "E1"	AIP 3-30-0056-09	BAUER	FEE	BK 342 MICRO PG 2313	61.214	12/11/91
TRACT "E2"	ADAP 9-24-040-13	FLYNN	FEE	BK 19 MICRO PG 1559	7.221	10/9/69
TRACT "E3"	INCLUDED WITH E1				INCLUDED WITH E1	
TRACT "E4"	ADAP 9-24-040-13	FLYNN	FEE	BK 19 MICRO PG 1561	1.590	10/9/69
TRACT "F"	ADAP 9-24-040-13	PRUYN	FEE	BK 19 MICRO PG 352	3.813	8/14/69
TRACT "F1"	ADAP 3-30-0056-09	PRUYN	FEE	BK 375 MICRO PG 129	.95	3/3/93
TRACT "G"	AIP 3-30-0056-09	FLYNN	FEE	BK 348 MICRO PG 1553	60±	3/20/92
TRACT "H"	ADAP 9-24-040-13	FETSCHER'S INC.	FEE	BK 18 MICRO PG 1268	27.20	7/21/69
PARCEL "J"	N/A	U.S. DEPT. OF AGRICULTURE	FEE	BK 98 MICRO PG 688	3,190	12/22/76
PARCEL "P1" TRACT "1"	N/A	DESCHAMPS	FEE	BK 710 PG 166	329.80	6/25/03
PARCEL "P1" TRACT "2"	N/A	DESCHAMPS	FEE	BK 710 PG 167	429.20	6/25/03
PARCEL "R"	N/A	PRUYN	FEE	BK 823 PG 260	375.79	7/18/08
PARCEL "R"	N/A	PRUYN	FEE	BK 823 PG 259	29.01	7/18/08
PARCEL "R1" TRACT "1"	N/A	PRUYN	FEE	BK 722 PG 867	115.38	11/20/03
PARCEL "B"	N/A	EASEMENT TO U.S.F.S	FEE	BK 723 MICRO PG 1669	0.87	N/A
PARCEL "B1"	N/A	EASEMENT TO U.S.F.S	FEE	BK 723 MICRO PG 1669	0.56	N/A
EASEMENT "AE"	N/A	MONTANA DEPT. OF HWY.	EASEMENT	BK 233 MICRO PG 1958	1.02	1/9/86
EASEMENT "BE"	N/A	BURLINGTON NORTHERN R.R.	EASEMENT	BK 254 MICRO PG 2030	1.93	2/10/87
TRACT "ME"	N/A	EASEMENT TO U.S.F.S.	FEE	BK 3 PG 988	5±	7/11/66
TRACT "A"	N/A	EASEMENT TO U.S.F.S.	FEE	BK 723 MICRO PG 1669	1.02	N/A
TOTAL					2,700±	

ENCUMBRANCES ON AIRPORT PROPERTY

PARCEL/TRACT #	FAA PROJECT #	ACQUIRED FROM	INTEREST	RECORDING DATA	ACREAGE	DATE
TRACT "2A"	N/A	FLYNN	EASEMENT	BK 218 PG 452	INCLUDED WITH 2A	11/29/60
TRACT "2A"	N/A	BAUER/DOUGHERTY	EASEMENT	BK 357 MICRO PG 2315	INCLUDED WITH 2A	12/20/91
TRACT "2A"	N/A	PUBLIC ROADWAY UTILITIES	EASEMENT	BK 24 PG 12	INCLUDED WITH 2A	N/A
TRACT "2A"	N/A	MISSOULA ELECTRIC COOP	EASEMENT	BK 542 MICRO PG 154	INCLUDED WITH 2A	05/20/98
TRACT "2A"	N/A	N/A	COVENANTS	BK 529 MICRO PG 677	INCLUDED WITH 2A	02/03/98
PARCEL "R1" TRACT "1"	N/A	PRUYN	EASEMENT	BK 60 MICRO PG 1558	INCLUDED WITH R1-T1	08/01/74
PARCEL "R1" TRACT "1"	N/A	MISSOULA COUNTY	EASEMENT	BK S PG 540	INCLUDED WITH R1-T1	12/10/57
PARCEL "R1" TRACT "1"	N/A	MISSOULA ELECTRIC COOP	EASEMENT	BK 540 MICRO PG 1838	INCLUDED WITH R1-T1	05/11/98
PARCEL "R1" TRACT "1"	N/A	MISSOULA COUNTY	EASEMENT	BK 139 PG 252	INCLUDED WITH R1-T1	08/07/45
PARCEL "R1" TRACT "1"	N/A	MONTANA POWER	EASEMENT	BK 169 MICRO PG 736	INCLUDED WITH R1-T1	12/09/81
PARCEL "R1" TRACT "1"	N/A	MONTANA POWER	EASEMENT	BK 432 MICRO PG 1909	INCLUDED WITH R1-T1	01/10/95
PARCEL "R1" TRACT "1"	N/A	MONTANA POWER	EASEMENT	BK 566 MICRO PG 415	INCLUDED WITH R1-T1	12/1798
PARCEL "R1" TRACT "1"	N/A	MISSOULA COUNTY	EASEMENT	BK 699 MICRO PG 617-618	INCLUDED WITH R1-T1	02/14/03
PARCEL "R1" TRACT "1"	N/A	MONTANA POWER	EASEMENT	BK 168 MICRO PG 736	INCLUDED WITH R1-T1	12/09/81
PARCEL "R1" TRACT "1"	N/A	SPRINT COMMUNICATION	EASEMENT	BK 335 MICRO PG 1365	INCLUDED WITH R1-T1	08/21/91
PARCEL "R1" TRACT "1"	N/A	N/A	EASEMENT	BK 685 MICRO PG 278	INCLUDED WITH R1-T1	07/16/02

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NOTES

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2. This drawing was created using the "Exhibit 'A' Property Map" for Missoula International Airport, by Isbill Associates, Aurora, Colorado, June 1997.

15°45' Mag. Dec. June 2008 -0°10.0' (W) Annual Change

0 300' 600' 1200' 1800'
GRAPHIC SCALE IN FEET

DATE

MISSOULA INTERNATIONAL AIRPORT
5225 Highway 10 West
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Property Map Exhibit-A

CH2MHILL

Colortable: CH2M ALP BY LWT.ctb LTScale: 1.0000 LwDefault: 0.010
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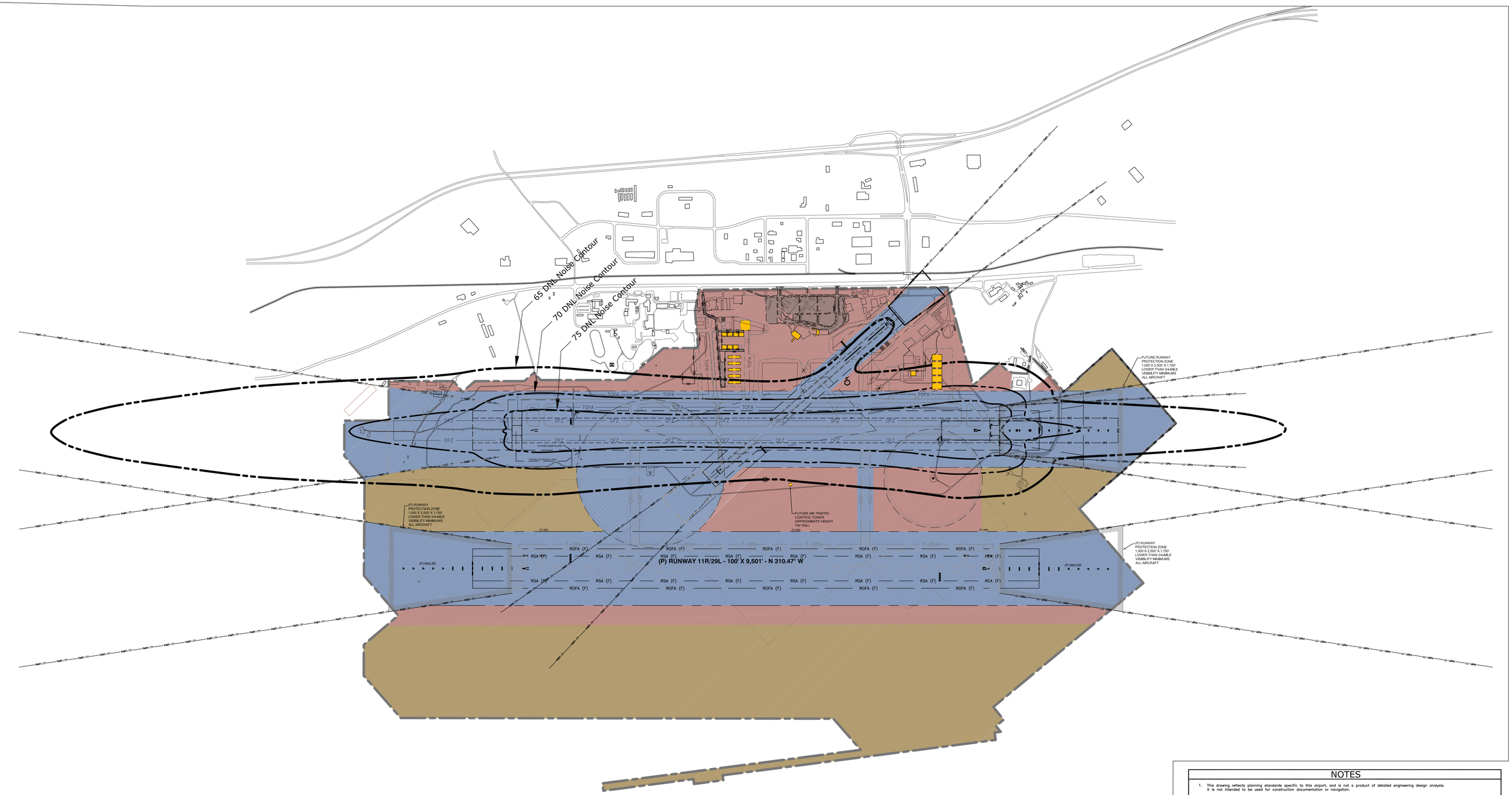
May 2009 — Scale 1" = 600' — Drawing 16 of 17



LAND USE LEGEND

- 65-70-75 DNL Noise Contour (Noise contour is carried over from the 2005 Part 150 Update for the existing runway. New noise contours were not generated for the proposed post planning period runway because demand does not exist within the timeframe of the Master Plan Update.)
- Runway, Taxiway, Instrumentation, & Approach Protection Area
- Aviation-Use Facilities Development Area
- Aviation-Use or Non-Aviation-Use Facilities Development Area

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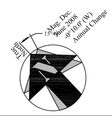

0 400' 800' 1600' 2400'
GRAPHIC SCALE IN FEET

MISSOULA INTERNATIONAL AIRPORT
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Missoula, Montana 59808
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Noise Contour and Land Use Plan

CH2MHILL

Colortable: CH2M ALP BY LWT.ctb LTScale: 1.0000 LwDefault: ~~0.010~~
Last Saved: 7/14/2009 4:20 PM Plotted On: 7/22/2009 3:41 PM
File: P:\Airports\MSO-Missoula\CAD\ALP\MSO-Property Map And Land Use.dwg Layout: Land Use

May 2009 — Scale 1" = 800' — Drawing 17 of 17