RAPID CITY REGIONAL AIRPORT

Airport Master Plan Update

CHAPTER EIGHT
AIRPORT PLANS

This chapter is provided to present, in graphic and narrative form, the recommended development for Rapid City Regional Airport through the 20-year planning period. A set of detailed plans have been prepared, referred to as the **Airport Layout Plan**, which graphically outline the recommendations for airport layout and future land use on and around the airport. The Airport Layout Plan is included at the end of this chapter. The set of plans includes:

* Title Sheet
* Airport Layout Plan
* Airspace Drawing
* Runway 14-32 Approaches
* Runway 05-23 Approaches
* Centerline Profile
* Terminal Area Plan
* Land Use Plan
* Aerial Photo
* Airport Property Map

8.1 Facility Design Standards

In the interest of safety and to provide uniformity in the design and construction of airports, the Federal Aviation Administration has developed design standards for the construction of airports within the United States. The determination of appropriate design standards for the continued development of Rapid City Regional Airport was based on the physical characteristics of the largest aircraft which are expected to use the airport.

Previously, in Chapter Two, Rapid City Regional Airport was forecast to primarily accommodate aircraft in Airport Reference Code (ARC) C-III through the planning period. Identified as such, the airport should be planned and designed to accommodate business and commercial aircraft in Design Group C-III. The planning for future aircraft use is important to ensure that adequate size and separation between facilities is provided.

8.2 Airport Layout Plan

The Airport Layout Plan (ALP) illustrates the existing and proposed ultimate development recommendations for Rapid City Regional Airport. The improvements that are depicted are facilities that are necessary to meet the existing and future aviation demand in the area. Specific runway and airport data and characteristics are provided on the ALP to provide information and to enable interpretation of the Master Plan recommendations. The proposed layout is the result of investigations to determine the optimum plan to yield a safe and cost-effective facility. The ALP indicates that improvements are needed to both airfield and terminal area facilities. The airport layout plan set is included at the end of this chapter.

8.3 Airspace, Approach and Runway Protection Zones

In the interest of safety and to provide specific areas for airspace protection, imaginary approach and airspace surfaces are situated and defined around the airport. These areas, known as FAR Part 77 Airspace, outline parcels in and under which the type of structure and their heights must be controlled by easements or zoning.

Sizes of the *approach zones* vary according to the category and the type of runway they serve. The approach zones range in length from 5,000 feet on utility runways to 50,000 feet for transport category runways with a precision instrument approach. The *runway protection zone* (RPZ) is the innermost portion of the approach zone and ranges in length from 1,000 feet to 2,500 feet depending on runway category and instrument approach capabilities. It is within these innermost zones that development of any structure is strongly discouraged due to the dangers they pose to aircraft either approaching or departing the airport.

The Airspace Drawings are graphic illustrations of the areas of recommended land use control for the heights of objects. The drawings can be utilized by Rapid City and Pennington County in determining if construction of a proposed structure near the airport would penetrate any of the reserved airspace surfaces. The Airspace Plan for Rapid City Regional Airport is based on the provision of the continued ILS approach to Runway 32 and a non-precision approach to Runway 14. Visual approaches to Runways 05-23 would continue through the planning period.

Approaches - Runway 14-32 identifies existing roadways, structures, and features which lie in the approaches associated with the primary runway. The runway layout has been designed to allow adequate clearances over all existing roadways, buildings, and structures. The airport currently has control over all of the existing runway protection zones in fee simple.

The ultimate runway protection zones for Runway 14-32 are based on Airport Reference Code C-III. Runway protection zone dimensions for Runway 14-32 will remain the same during the planning period. The RPZ dimensions for Runway 32 are 1,000' x 2,500' x 1,750' and for Runway 14 they are 1,000' x 1,700' x 1,510'.

For Runway 32, a 50:1 approach applies to the first 10,000' and a 40:1 approach slope applies to the outer 40,000'. Runway 14 has a 10,000' approach at 34:1.

Approaches - Runway 05-23 identifies existing roadways, structures, and features which lie in the approaches associated with the secondary or crosswind runway. The runway has been designed to allow adequate clearances over all existing roadways, buildings and structures.

The existing runway protection zones for Runways 05 and 23 are 250' x 1,000' x 450' with visual, 20:1 approaches. These areas are indicated on the Airport Layout Plan drawing.

8.4 Centerline Profiles

The Centerline Profiles represent elevation views of the existing runways in their current and ultimate configurations. The centerline profile drawings assist in the identification of any line-of-sight problems that currently exist or that may be created in the future with runway extensions.

8.5 Terminal Area Plan

This section presents general plans for those facilities located within the landside of the airport defined as the terminal area. The major facilities included are:

- Commercial Service Terminal Building/Area
- Terminal Area Parking and Circulation
- General Aviation Areas.

The Terminal Area Plan represents a larger-scale detail for the construction of landside facilities to meet existing and future requirements. The ultimate plans for the terminal areas are designed to provide adequate general aviation, commercial service, and military aircraft parking both on the aprons and in hangars in a manner that will promote a clear, functional, and operational setting. The primary features of these plans are the improvement of the functional layout of the terminal areas and the addition of general aviation aircraft storage and parking areas. Additionally, the plans will provide adequate separation and clearances for future unrestricted development of all airport and navigational aids.

8.5.1 Aircraft Hangars

The forecast requirements for general aviation aircraft storage at Rapid City Regional Airport shown in Table 3-9 consists of increasing T-hangar capacity to an ultimate storage capacity of 61 units. The development plan calls for the construction of 23 additional units. Conventional hangar space should be increased by about 15,000 square feet over the next 20 years.

8.5.2 Airport Terminal Building (Commercial)

The basic philosophy applied to planning for the airport terminal building relates to the development of a facility that provides the most efficient balance between user, comfort and convenience, and maintenance costs. The building should be a facility that is flexible and capable of being responsive to, continued updating of forecasts and requirements. An expansion area around the terminal has been identified for long term development, possibly to provide a milti-modal rail link to serve the City and developing facilities in the Deadwood region.

8.5.3 Terminal Area Parking and Circulation

Parking should be planned at locations to achieve maximum separation of vehicles and aircraft and to provide airport users with minimum walking distances between parking vehicles and the terminal. Additional expansions areas have been located.

8.6 Airport and Vicinity Land Use

Planning for optimal use of land adjacent to airports has become a vital instrument for guiding urban growth and providing a healthful and aesthetically pleasing community environment. The principal factors influencing land use in the vicinity of the airport are runway protection zone areas, obstructions to flight, aesthetic features, factors relating to potential industrial development near the airport, and aircraft noise. An aerial photo is included in the plans set to show existing conditions and land uses in the airport vicinity. Land use recommendations have been developed in close coordination with current and future City and Penning County plans and policies.

Airport Land Use

- The land use is dictated by aeronautical needs including safety requirements for both the user and general public.
- Priorities for land use have been established to maximize airport revenue in order to offset operating costs and capital investment.
- A maximum amount of land has been provided for industrial and/or office purposes to provide contributions to local employment and local tax base.

Airport Vicinity Land Use

- Controlled and restrictive land uses are dictated by safety requirements for both the aviation user and general public.
- Noise impact areas that constitute a hazard to health (DNL 75) have been identified for which appropriate land use controls and/or conversion programs should be considered. Current and future DNL 75 noise contours are located exclusively within airport property boundaries.
- Noise impact areas that constitute a serious detriment to the quality of life (DNL 65) have been identified for which conditional land use should be specified and/or noise insulation codes should be adopted. Only a small 2-acre tract has been identified through the planning period.

8.6.1 Airport Land Use

The Airport Land Use Plan identifies on-airport land use recommendations for Rapid City Regional Airport. The objective of the plan is to coordinate uses of airport property in a manner compatible with the functional design of the airport facility. On-airport land use planning is also important for the orderly development and efficient use of available space.

The Land Use Plan identifies several major airport use categories including those required for aeronautical purposes and terminal development. The major airport use categories are as follows:

Airport Operations Area

- Runway Safety Area
- Terminal Operations
- Taxiway Safety Area

Public Aviation Uses

- Commercial Service
- Administrative Areas
- Transient Aircraft
- Public Parking
- Aircraft Displays

Private Aviation Uses

- Private Aircraft Storage
- Corporate Aircraft Storage
- Air Charter Aircraft/FBO
- Aircraft Displays

Light Industry/Commercial

Agricultural/Open Space

Agricultural uses can be used for buffer areas within the runway protection zones and the building restriction lines. However, these areas should be farmed in low-profile, non-grain crops. Crops over four feet in height should be avoided to maintain runway approach clearances and runway visibility requirements. Grain crops often attract birds and, therefore, they should be avoided in areas directly adjacent to the runway. The general criteria for agricultural use on the airport is as follows:

- Vacant or agriculture land use is exclusively recommended with runway protection zones where possible. All new development within these zones should be restricted.

- No growing crops should be permitted within the runway safety areas. Vegetation is limited to 12".

- Crops are permitted in areas 400' from the runway centerline and 93' from the taxiway centerline on Runway 14-32.

- Crops are permitted in areas 250' from the runway centerline and 65.5' from taxiway centerline from Runway 05-23.

8.6.2 Airport Vicinity Land Use

Because the airport facility is utilized by nearly all types of aircraft, it is necessary to determine the noise effects experienced by the area surrounding the airport.

The Federal Aviation Administration has developed a procedure for estimating exposure to aircraft noise at airports called Day-Night Average Sound Levels (DNL). From this method, contours of equal sound levels can be drawn based on an individual airport's site characteristics, annual number of aircraft operations, percentage of larger aircraft operating at the airport (aircraft mix),

and flight tracks. The NEM generated by this procedure then can be used as a "guide" by local planning officials in the development of compatible land use patterns in the vicinity of the airport.

Noise analysis was conducted for the current and ultimate forecast operating conditions at Rapid City Regional Airport. The study of future conditions indicated that present aircraft noise is relatively minor and that only a small area off airport property is currently subjected to noise levels in excess of 65 DNL; however, no significant negative noise impacts have been identified.

8.6.3 Property Regulation

There are many techniques for regulating development or bringing about conversion or modification of existing land uses to achieve greater compatibility between the airport and its environs. Some of these may be controls, such as zoning or building or housing codes; other methods influence development through acquisition or taxing power.

These techniques for controlling land use in the airport area are sufficiently varied as to require that their use be considered and evaluated on a case-by-case basis. No single technique will satisfy all the requirements for implementing a compatible land use plan. Since each technique has its advantages and disadvantages, a combination of strategies should be evaluated.

Regulations which control land use around airports consist of two sections, which may be combined in a single ordinance: zoning to achieve land use compatible with the noise and other environmental effects of the airport, and height and hazard airport zoning, which controls the location of potential obstructions to air operations.

Land Use Zoning is a control that can be used to regulate the use, height, area of buildings, and intensity of the use of land around airports.

The purpose of Airport Zoning is to prevent the creation or establishment of structures or objects of natural growth which would constitute hazards or obstructions to aircraft operating to, from and in the vicinity of an airport. The definition of imaginary surface zones and the allowable height of structures in relation to the airport are specified in FAR Part 77 of the Federal Aviation Regulations, "Objects Affecting Navigable Airspace," and are shown on the Airspace Drawing (Drawing No's. 3 and 4). Although the FAA has no direct authority to enforce the regulations on a local government, it may rule that use of a runway shall be curtailed if structures near the airport present a hazard and are in violation of Part 77. Airport zoning ordinances are enacted by local government in the same way as (or as part of) the local zoning ordinance.

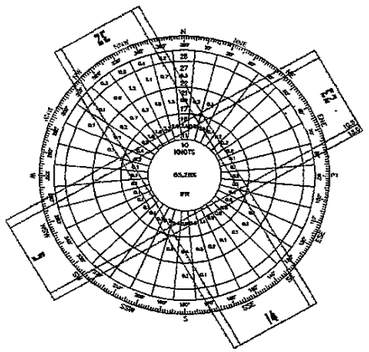
8.7 Airport Property Map

The outright acquisition of property by the airport sponsor to ensure compatibility of land adjacent to the airport affords the maximum flexibility in developing land and protects the airport against encroachment. **The Airport**

Property Map was prepared to indicate the various tracts of airport property, including when and how they were acquired, and easements. Proposed property limits are also indicated.

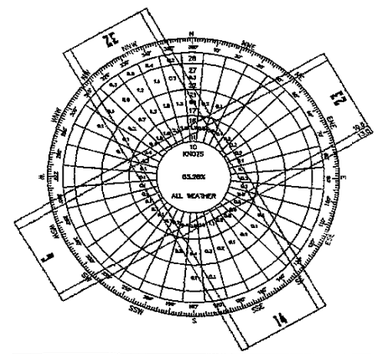
Rapid City Regional Airport has previously acquired property adjacent to the Airport for noise compatibility purposes and to ensure that airport operational approaches will be adequate. Only a small portion of additional property will be required in the 20 year planning period as identified in the development program.

AIRPORT LAYOUT PLANS
FOR THE
RAPID CITY REGIONAL AIRPORT
RAPID CITY, SOUTH DAKOTA



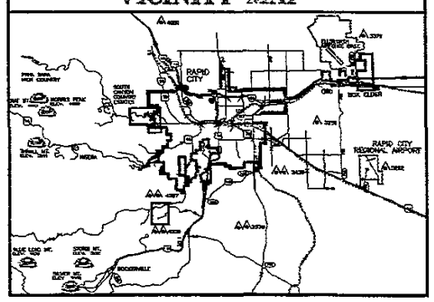
IFR WIND ROSE ANALYSIS		
RUNWAY ALIGNMENT	WIND VELOCITY	WIND COVERAGE
14 – 32	10.5 KNOTS	88.85%
	13.0 KNOTS	95.93%
	16.0 KNOTS	98.32%
05 – 23	10.5 KNOTS	62.84%
	13.0 KNOTS	71.47%
	16.0 KNOTS	81.07%
14 – 32 / 05 – 23	10.5 KNOTS	96.57%
	13.0 KNOTS	99.23%
	16.0 KNOTS	99.90%
CALM: 0–3 KNOTS = 3.28% 4–10.5 KNOTS = 46.40% 0–10.5 KNOTS = 49.68%	SOURCE: RAPID CITY REGIONAL AIRPORT IFR 4,752 OBSERVATIONS 1985–1995	

INDEX OF DRAWINGS



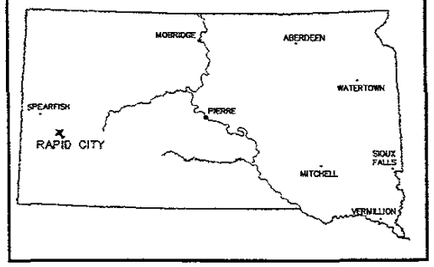
ALL WEATHER WIND ROSE ANALYSIS		
RUNWAY ALIGNMENT	WIND VELOCITY	WIND COVERAGE
14 – 32	10.5 KNOTS	85.90%
	13.0 KNOTS	98.70%
	16.0 KNOTS	99.52%
05 – 23	10.5 KNOTS	70.49%
	13.0 KNOTS	78.02%
	16.0 KNOTS	86.58%
14 – 32 / 05 – 23	10.5 KNOTS	98.24%
	13.0 KNOTS	99.92%
	16.0 KNOTS	99.68%
CALM: 0–3 KNOTS = 9.94% 4–10.5 KNOTS = 55.34% 0–10.5 KNOTS = 65.28%	SOURCE: RAPID CITY REGIONAL AIRPORT ALL–WEATHER, 84,720 OBSERVATIONS 1986–1995	

VICINITY MAP



Scale in Miles
1" = 4 MILES

LOCATION MAP



Scale in Miles

RAPID CITY, SOUTH DAKOTA

RAPID CITY REGIONAL AIRPORT

TITLE SHEET

JOB NO. 98211.08	DESIGNED BY: BCW	DATE: 10–22–97	REVISIONS
DRAWING NO. ONE	DRAWN BY: MFL	DATE: 10–22–97	
SCALE AS SHOWN	CHECKED BY: DRB	DATE: 8–10–99	
SHEET: 1 OF 10	BUCHER, WILLIS & RATLIFF CORPORATION		

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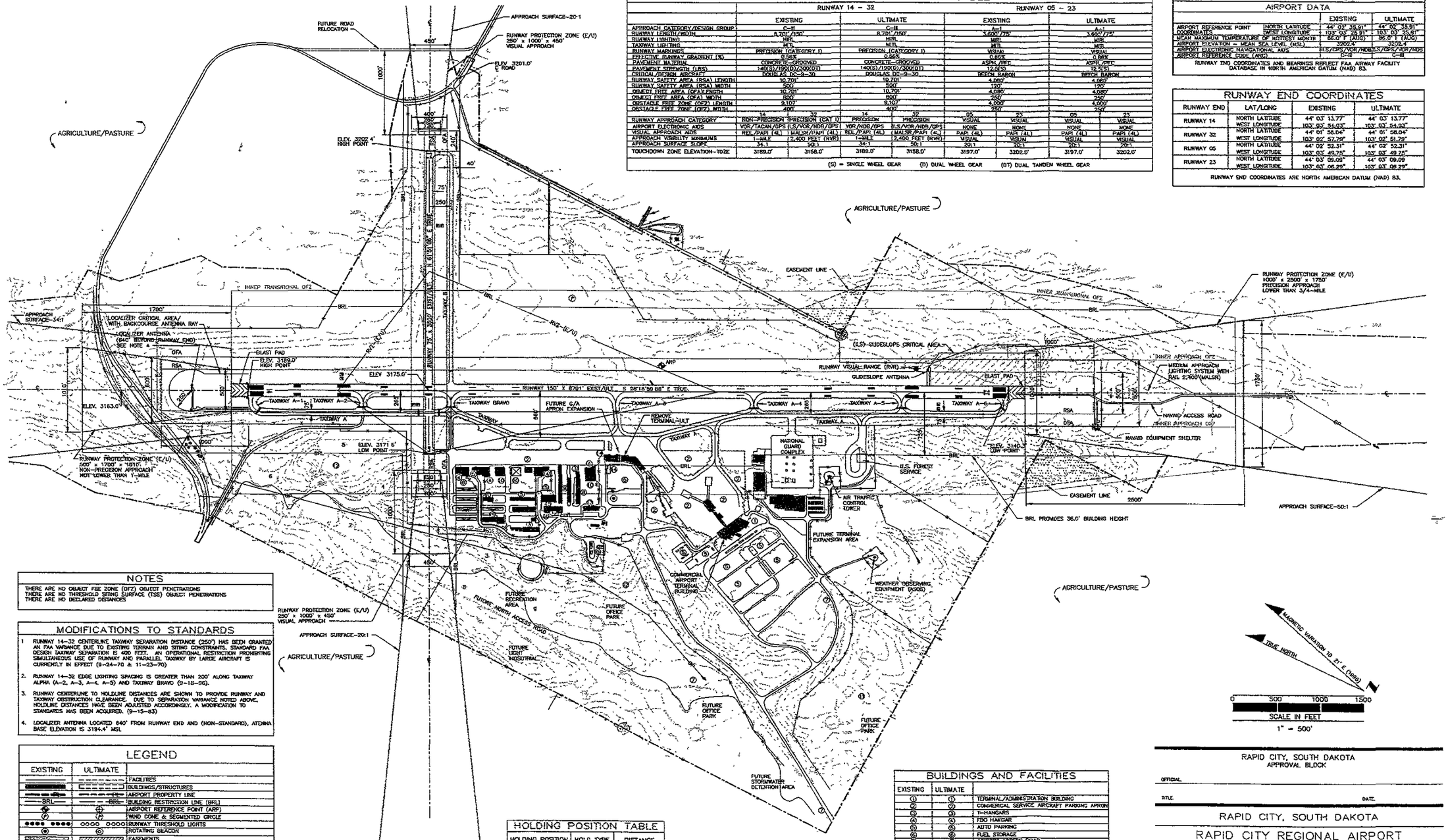
AIRPORT LAYOUT PLAN



RUNWAY DATA TABLE

	RUNWAY 14 - 32				RUNWAY 05 - 23			
	EXISTING		ULTIMATE		EXISTING		ULTIMATE	
APPROACH CATEGORY/DESIGN GROUP	C-II		C-II		A-I		A-I	
RUNWAY LENGTH/WIDTH	8,201'/150'		8,201'/150'		3,600'/75'		3,600'/75'	
RUNWAY LIGHTING	MIRL		MIRL		MIRL		MIRL	
TAXIWAY LIGHTING	MITL		MITL		MITL		MITL	
RUNWAY MARKINGS	PRECISION (CATEGORY I)		PRECISION (CATEGORY I)		VISUAL		VISUAL	
EFFECTIVE RUNWAY GRADIENT (%)	0.56%		0.56%		0.85%		0.88%	
PAVEMENT MATERIAL	CONCRETE-GROOVED		CONCRETE-GROOVED		ASPH./PFC		ASPH./PFC	
PAVEMENT STRENGTH (LBS)	140(S)/190(D)/300(DT)		140(S)/190(D)/300(DT)		12.5(S)		12.5(S)	
CRITICAL/DESIGN AIRCRAFT	DOUGLAS DC-9-30		DOUGLAS DC-9-30		BEECH BARON		BEECH BARON	
RUNWAY SAFETY AREA (RSA) LENGTH	10,701'		10,701'		4,080'		4,080'	
RUNWAY SAFETY AREA (RSA) WIDTH	500'		500'		120'		120'	
OBJECT FREE AREA (OFA) LENGTH	10,701'		10,701'		4,080'		4,080'	
OBJECT FREE AREA (OFA) WIDTH	800'		800'		250'		250'	
OBSTACLE FREE ZONE (OFZ) LENGTH	9,107'		9,107'		4,000'		4,000'	
OBSTACLE FREE ZONE (OFZ) WIDTH	400'		400'		250'		250'	
	14	32	14	32	05	23	05	23
RUNWAY APPROACH CATEGORY	NON-PRECISION	PRECISION (CAT I)	PRECISION	PRECISION	VISUAL	VISUAL	VISUAL	VISUAL
AIRPORT ELECTRONIC AIDS	VOR/TACAN/GPS	ILS/VOR/NDB/GPS	VOR/NDB/GPS	ILS/VOR/NDB/GPS	NONE	NONE	NONE	NONE
VISUAL APPROACH AIDS	REIL/PAPI (4L)	MALSR/PAPI (4L)	REIL/PAPI (4L)	MALSR/PAPI (4L)	PAPI (4L)	PAPI (4L)	PAPI (4L)	PAPI (4L)
APPROACH VISIBILITY MINIMUMS	1-MILE	2,400 FEET (RVR)	1-MILE	2,400 FEET (RVR)	VISUAL	VISUAL	VISUAL	VISUAL
APPROACH SURFACE SLOPE	34:1	50:1	34:1	50:1	20:1	20:1	20:1	20:1
TOUCHDOWN ZONE ELEVATION-TDZE	3189.0'	3158.0'	3189.0'	3158.0'	3197.0'	3202.0'	3197.0'	3202.0'

(S) = SINGLE WHEEL GEAR (D) DUAL WHEEL GEAR (DT) DUAL TANDEM WHEEL GEAR

BASIC DATA TABLE

AIRPORT DATA

		EXISTING	ULTIMATE
AIRPORT REFERENCE POINT COORDINATES	NORTH LATITUDE	44° 02' 38.91"	44° 02' 38.91"
	WEST LONGITUDE	103° 03' 29.81"	103° 03' 29.81"
MEAN MAXIMUM TEMPERATURE OF HOTTEST MONTH		86.0° F (AUG)	86.0° F (AUG)
AIRPORT ELEVATION - MEAN SEA LEVEL (MSL)		3202.4'	3202.4'
AIRPORT ELECTRONIC NAVIGATIONAL AIDS		ILS/GPS/VOR/NDB	ILS/GPS/VOR/NDB
AIRPORT REFERENCE CODE (ARC)		C-II	C-II

RUNWAY END COORDINATES AND BEARINGS REFLECT FAA AIRWAY FACILITY DATABASE IN NORTH AMERICAN DATUM (NAD) 83.

RUNWAY END COORDINATES

RUNWAY END	LAT/LONG	EXISTING	ULTIMATE
RUNWAY 14	NORTH LATITUDE	44° 03' 13.77"	44° 03' 13.77"
	WEST LONGITUDE	103° 03' 54.03"	103° 03' 54.03"
RUNWAY 32	NORTH LATITUDE	44° 01' 58.04"	44° 01' 58.04"
	WEST LONGITUDE	103° 02' 57.79"	103° 02' 57.79"
RUNWAY 05	NORTH LATITUDE	44° 02' 52.31"	44° 02' 52.31"
	WEST LONGITUDE	103° 03' 49.75"	103° 03' 49.75"
RUNWAY 23	NORTH LATITUDE	44° 03' 09.09"	44° 03' 09.09"
	WEST LONGITUDE	103° 03' 06.29"	103° 03' 06.29"

RUNWAY END COORDINATES ARE NORTH AMERICAN DATUM (NAD) 83.

NOTES

THERE ARE NO OBJECT FEE ZONE (OFZ) OBJECT PENETRATIONS
THERE ARE NO THRESHOLD SITING SURFACE (TSS) OBJECT PENETRATIONS
THERE ARE NO DECLARED DISTANCES

MODIFICATIONS TO STANDARDS

1. RUNWAY 14-32 CENTERLINE TAXIWAY SEPARATION DISTANCE (250') HAS BEEN GRANTED AN FAA VARIANCE DUE TO EXISTING TERRAIN AND SITING CONSTRAINTS. STANDARD FAA DESIGN TAXIWAY SEPARATION IS 400 FEET. AN OPERATIONAL RESTRICTION PROHIBITING SIMULTANEOUS USE OF RUNWAY AND PARALLEL TAXIWAY BY LARGE AIRCRAFT IS CURRENTLY IN EFFECT (9-24-70 & 11-23-70)
2. RUNWAY 14-32 EDGE LIGHTING SPACING IS GREATER THAN 200' ALONG TAXIWAY ALPHA (A-2, A-3, A-4, A-5) AND TAXIWAY BRAVO (9-18-96).
3. RUNWAY CENTERLINE TO HOLDLINE DISTANCES ARE SHOWN TO PROVIDE RUNWAY AND TAXIWAY OBSTRUCTION CLEARANCE. DUE TO SEPARATION VARIANCE NOTED ABOVE, HOLDLINE DISTANCES HAVE BEEN ADJUSTED ACCORDINGLY. A MODIFICATION TO STANDARDS HAS BEEN ACQUIRED. (9-15-83)
4. LOCALIZER ANTENNA LOCATED 840' FROM RUNWAY END AND (NON-STANDARD), ANTENNA BASE ELEVATION IS 3194.4' MSL

LEGEND

EXISTING	ULTIMATE	
		FACILITIES
		BUILDINGS/STRUCTURES
		AIRPORT PROPERTY LINE
-BRL-	-BRL-	BUILDING RESTRICTION LINE (BRL)
		AIRPORT REFERENCE POINT (ARF)
		WIND CONE & SEGMENTED CIRCLE
		RUNWAY THRESHOLD LIGHTS
		ROTATING BEACON
		EASEMENTS
-X-	-X-	FENCING
		RUNWAY END IDENTIFICATION LIGHTS (REIL)
RSA/OFA	RSA/OFA	RUNWAY SAFETY AREA/OBJECT FREE AREA
OFZ	OFZ	OBSTACLE FREE ZONE (OFZ)
		PRECISION APPROACH PATH INDICATORS (PAPI)
RVZ	RVZ	RUNWAY VISIBILITY ZONE (RVZ)
RPZ	RPZ	RUNWAY PROTECTION ZONE (RPZ)
	SAME	HOLDING POSITION LINE
	SAME	RUNWAY VISUAL RANGE

HOLDING POSITION TABLE

HOLDING POSITION	HOLD TYPE	DISTANCE
A-1	RUNWAY	250 FEET
A-2	RUNWAY	200 FEET
A-3	RUNWAY	250 FEET
A-4	RUNWAY	200 FEET
A-5	RUNWAY	200 FEET
A-6	RUNWAY	200 FEET
BRAVO (NORTH END)	RUNWAY	125 FEET
BRAVO (SOUTH END)	RUNWAY	125 FEET

BUILDINGS AND FACILITIES

EXISTING	ULTIMATE	
1	1	TERMINAL/ADMINISTRATION BUILDING
2	2	COMMERCIAL SERVICE AIRCRAFT PARKING APRON
3	3	T-HANGARS
4	4	FBO HANGAR
5	5	AUTO PARKING
6	6	FUEL STORAGE
7	7	AIRPORT ACCESS ROAD
8	8	GENERAL AVIATION AIRCRAFT PARKING APRON
9	9	LIGHT INDUSTRIAL AREA
10	10	CONVENTIONAL HANGAR
11	11	OFFICE AREA
12	12	RECREATIONAL AREA
13	13	FAA BUILDING
14	14	ARFF BUILDING
15	15	SRE STORAGE FACILITY
16	16	MAINTENANCE FACILITY

RAPID CITY, SOUTH DAKOTA
APPROVAL BLOCK

OFFICIAL _____
TITLE _____ DATE _____

RAPID CITY, SOUTH DAKOTA

RAPID CITY REGIONAL AIRPORT

AIRPORT LAYOUT PLAN

JOB NO. 96211.08
DRAWING NO. TWO
SCALE AS SHOWN
SHEET 2 OF 10

DESIGNED BY: BCW DATE: 9-10-97
DRAWN BY: MFL DATE: 9-10-97
CHECKED BY: DRB DATE: 8-10-99

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MAGNETIC VARIATION 10° 21' E (1998)

TRUE NORTH

0 2000 4000 8000

SCALE IN FEET

1" = 2000'

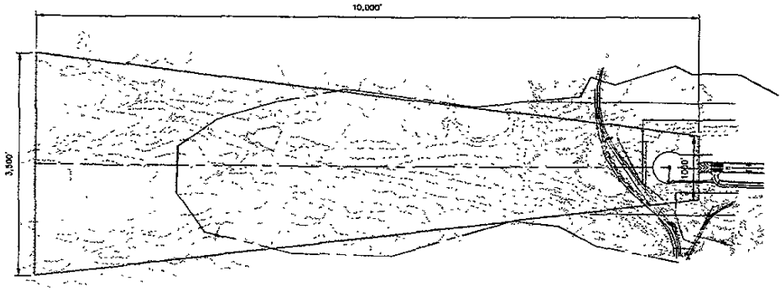
RAPID CITY, SOUTH DAKOTA

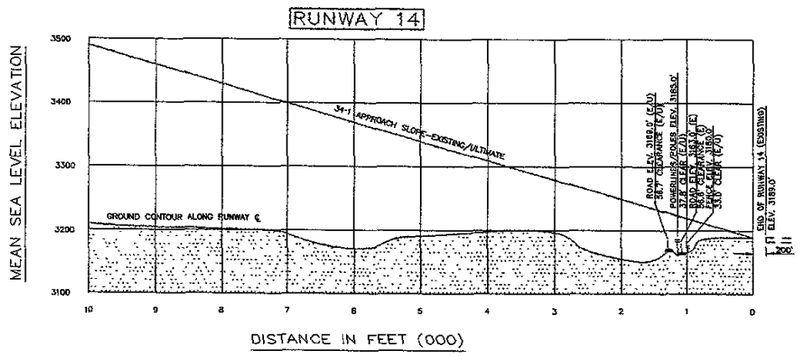
RAPID CITY REGIONAL AIRPORT

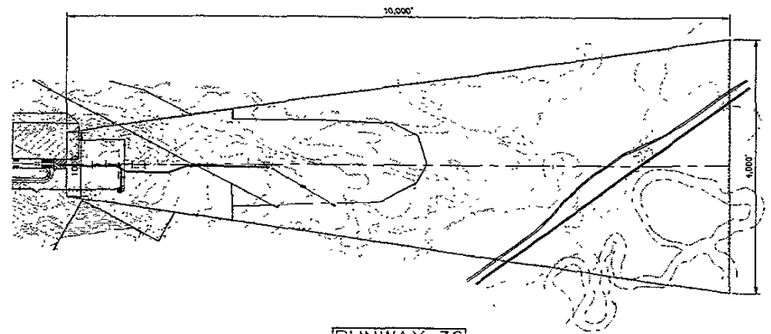
AIRSPACE DRAWING

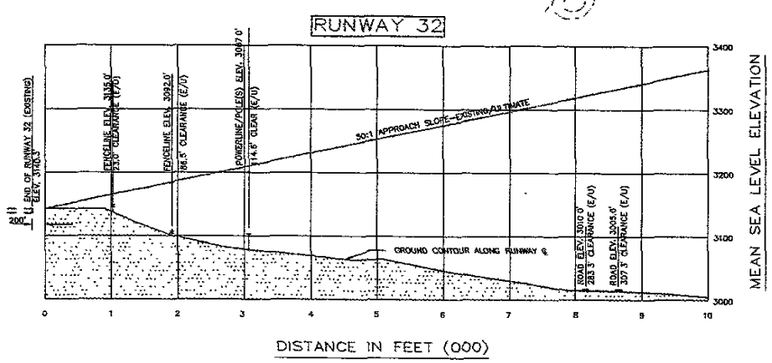
JOB NO. 96211.06	DESIGNED BY: BCW	DATE: 9-10-97	REVISIONS
DRAWING NO. FOUR	DRAWN BY: MFL	DATE: 9-10-97	
SCALE AS SHOWN	CHECKED BY: DRB	DATE: 8-2-99	
SHEET: 4 OF 10	BUCHER, WILLIS & RATLIFF CORPORATION		

RUNWAY 14-32 INNER APPROACH



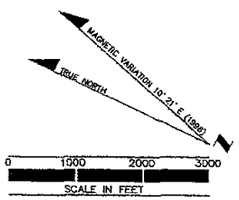




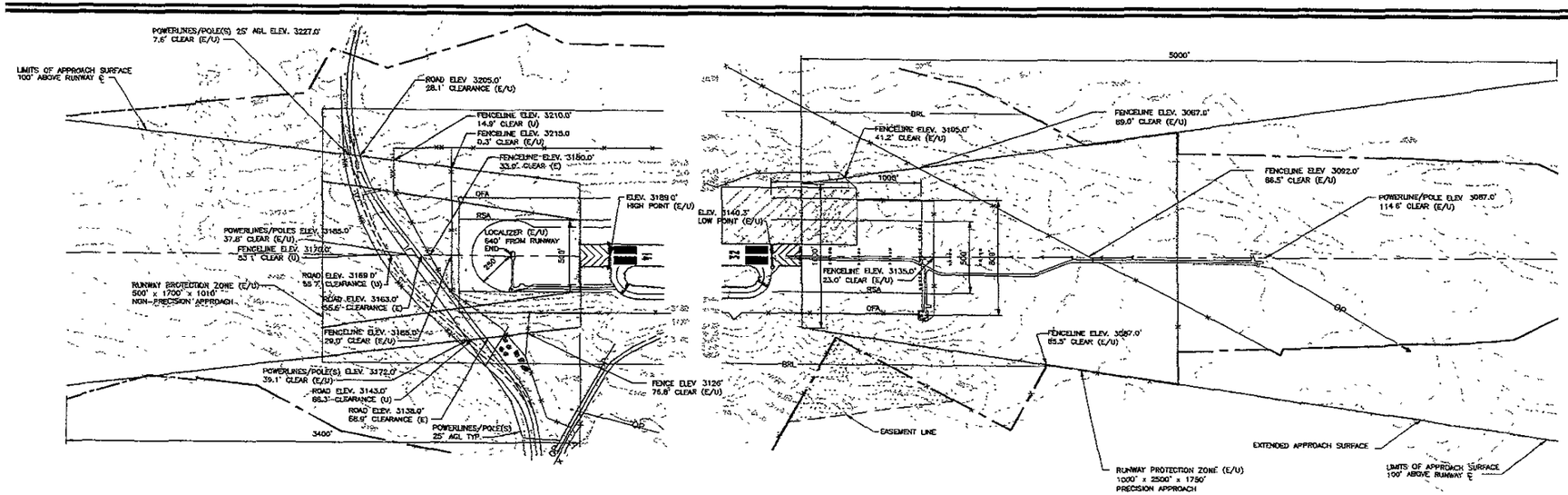


APPROACH ZONES

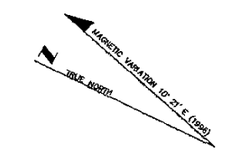
OBSTRUCTION TABLE
* NO EXISTING OR FUTURE OBSTRUCTIONS



SCALE IN FEET
HORIZONTAL SCALE 1" = 1000'
VERTICAL SCALE 1" = 100'



INNER APPROACH SURFACE



SCALE IN FEET
HORIZONTAL SCALE 1" = 400'
VERTICAL SCALE 1" = 40'

FAR PART 77 OBSTRUCTION TABLE
ELEVATIONS ESTIMATED FROM USGS MAP AND SURVEY BY ALLIANCE (4/97).
NO FUTURE OBSTRUCTIONS NO FUTURE OBSTACLE FREE ZONE (OFZ) OBJECT PENETRATIONS NO FUTURE THRESHOLD SITING SURFACE OBJECT PENETRATIONS
NOTE: LOCALIZER LOCATED 640' FROM RUNWAY END WITH BASE ELEVATION OF 3194.4' (NO OBSTRUCTION)

RUNWAY 14

FAR PART 77 OBSTRUCTION TABLE
ELEVATIONS ESTIMATED FROM USGS MAP AND SURVEY BY ALLIANCE (4/97).
NO FUTURE OBSTRUCTIONS NO FUTURE OBSTACLE FREE ZONE (OFZ) OBJECT PENETRATIONS NO FUTURE THRESHOLD SITING SURFACE OBJECT PENETRATIONS

RUNWAY 32

RAPID CITY, SOUTH DAKOTA

RAPID CITY REGIONAL AIRPORT

RUNWAY 14-32 INNER APPROACH

JOB NO. 98211.08	DESIGNED BY: BCW	DATE: 10-23-97	REVISIONS
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SHEET 5 OF 10	BUCHER, WILLIS & RATLIFF CORPORATION		

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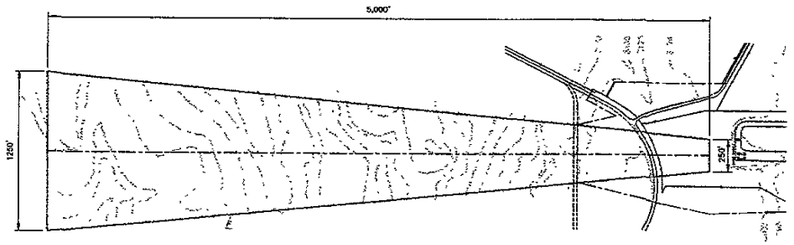
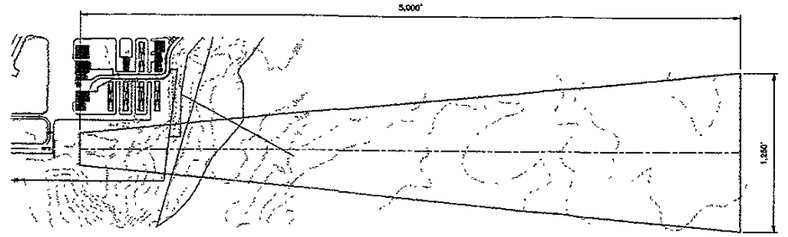
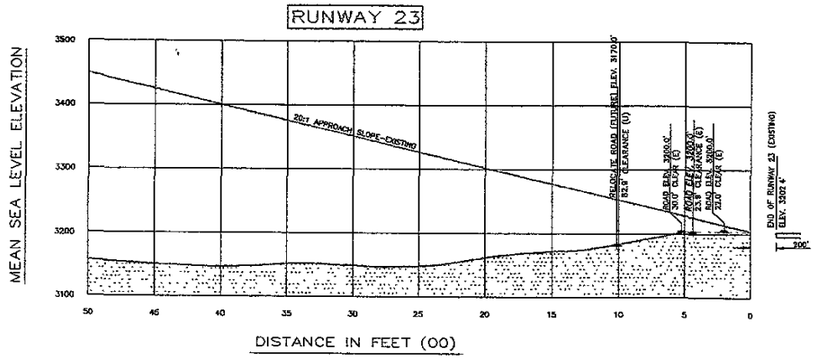
RUNWAY 5-23 INNER APPROACH

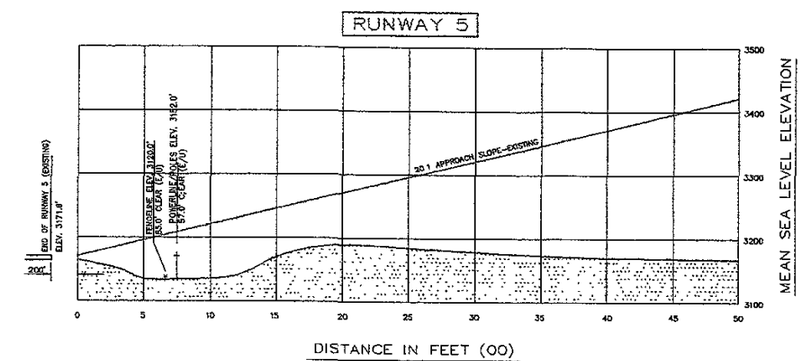


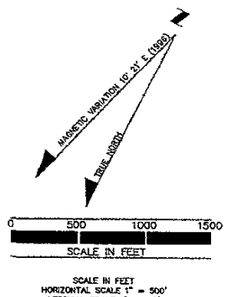


APPROACH ZONES

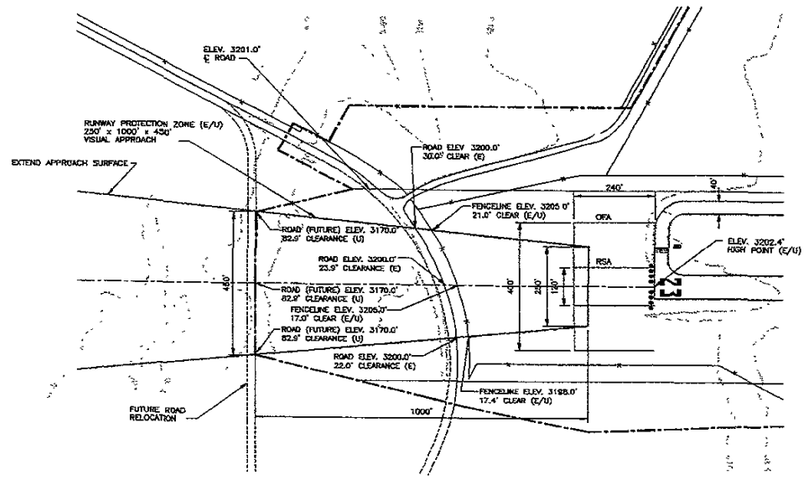
OBSTRUCTION TABLE
* NO EXISTING OR FUTURE OBSTRUCTIONS





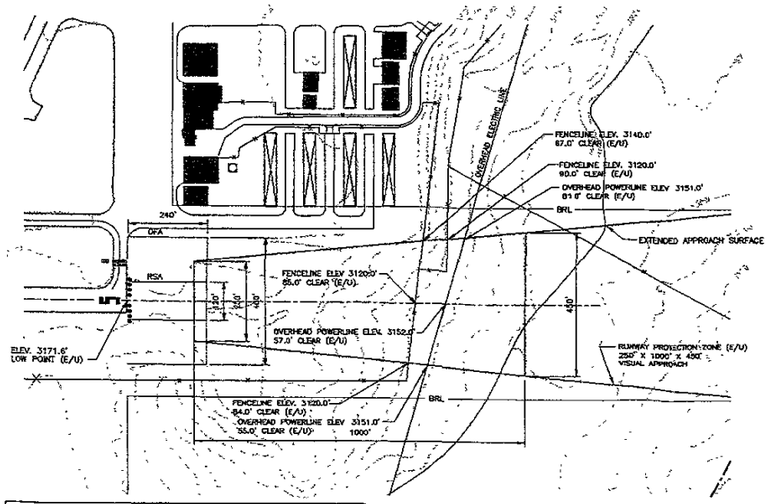


SCALE IN FEET
HORIZONTAL SCALE 1" = 500'
VERTICAL SCALE 1" = 100'



FAR PART 77 OBSTRUCTION TABLE
ELEVATIONS ESTIMATED FROM USGS MAP AND SURVEY BY ALLIANCE (4/97) NO FUTURE OBSTRUCTIONS NO FUTURE OBSTACLE FREE ZONE (OFZ) OBJECT PENETRATIONS NO FUTURE THRESHOLD SITING SURFACE OBJECT PENETRATIONS

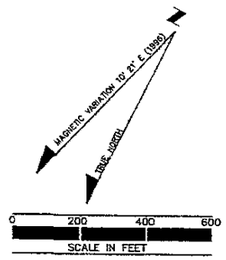
RUNWAY 23



FAR PART 77 OBSTRUCTION TABLE
ELEVATIONS ESTIMATED FROM USGS MAP AND SURVEY BY ALLIANCE (4/97). NO FUTURE OBSTRUCTIONS NO FUTURE OBSTACLE FREE ZONE (OFZ) OBJECT PENETRATIONS NO FUTURE THRESHOLD SITING SURFACE OBJECT PENETRATIONS

RUNWAY 5

INNER APPROACH SURFACE



SCALE IN FEET
HORIZONTAL SCALE 1" = 200'
VERTICAL SCALE 1" = 20'

RAPID CITY, SOUTH DAKOTA

RAPID CITY REGIONAL AIRPORT

RUNWAY 5-23 INNER APPROACH

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SHEET 6 OF 10	BUCHER, WILLIS & RATLIFF CORPORATION		

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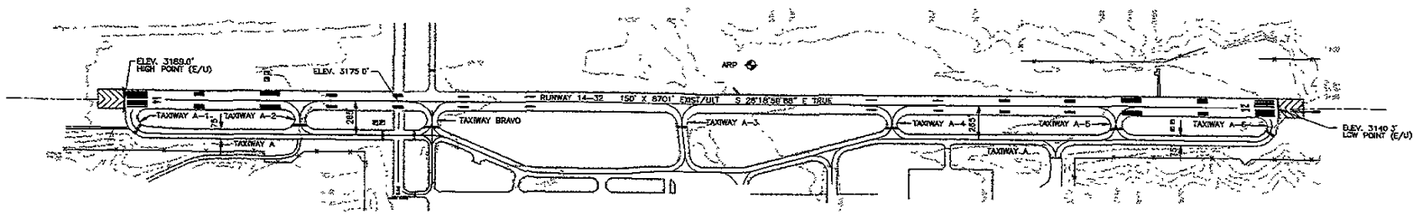
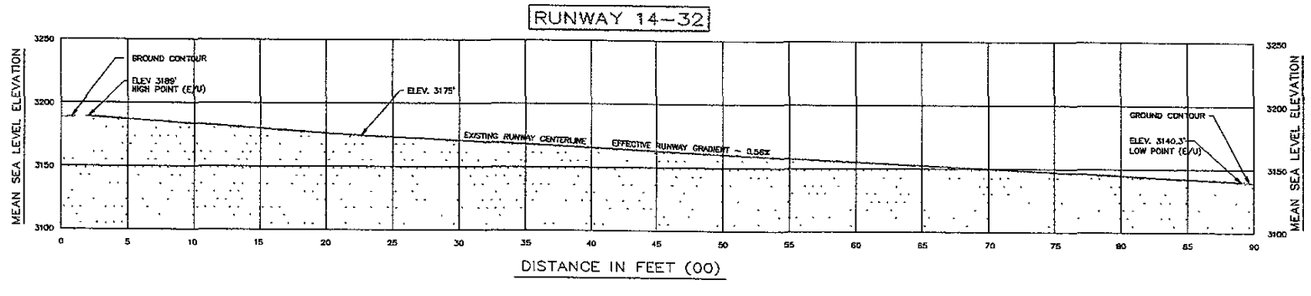
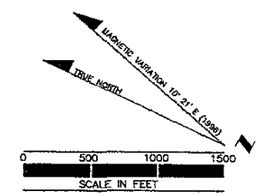
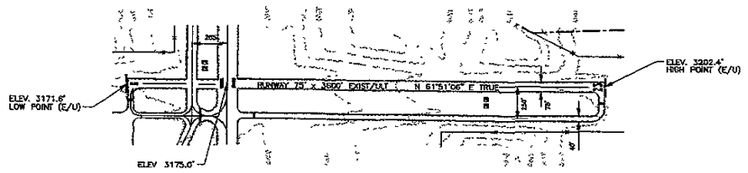
CENTERLINE PROFILE
RUNWAYS 5-23 & 14-32

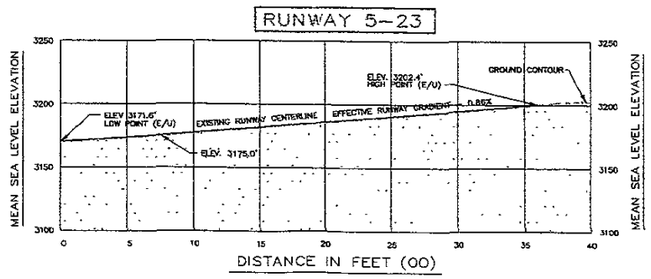


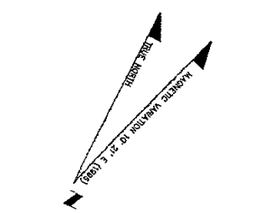




HORIZONTAL SCALE 1" = 500'
VERTICAL SCALE 1" = 50'







HORIZONTAL SCALE 1" = 500'
VERTICAL SCALE 1" = 50'

RAPID CITY, SOUTH DATOKA

RAPID CITY REGIONAL AIRPORT

CENTERLINE PROFILE
RUNWAYS 5-23 & 14-32

JOB NO. 96211.08	DESIGNED BY: BCW	DATE: 9-10-97	REVISIONS
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SHEET: 7 OF 10	BUCHER, WILLIS & RATLIFF CORPORATION		

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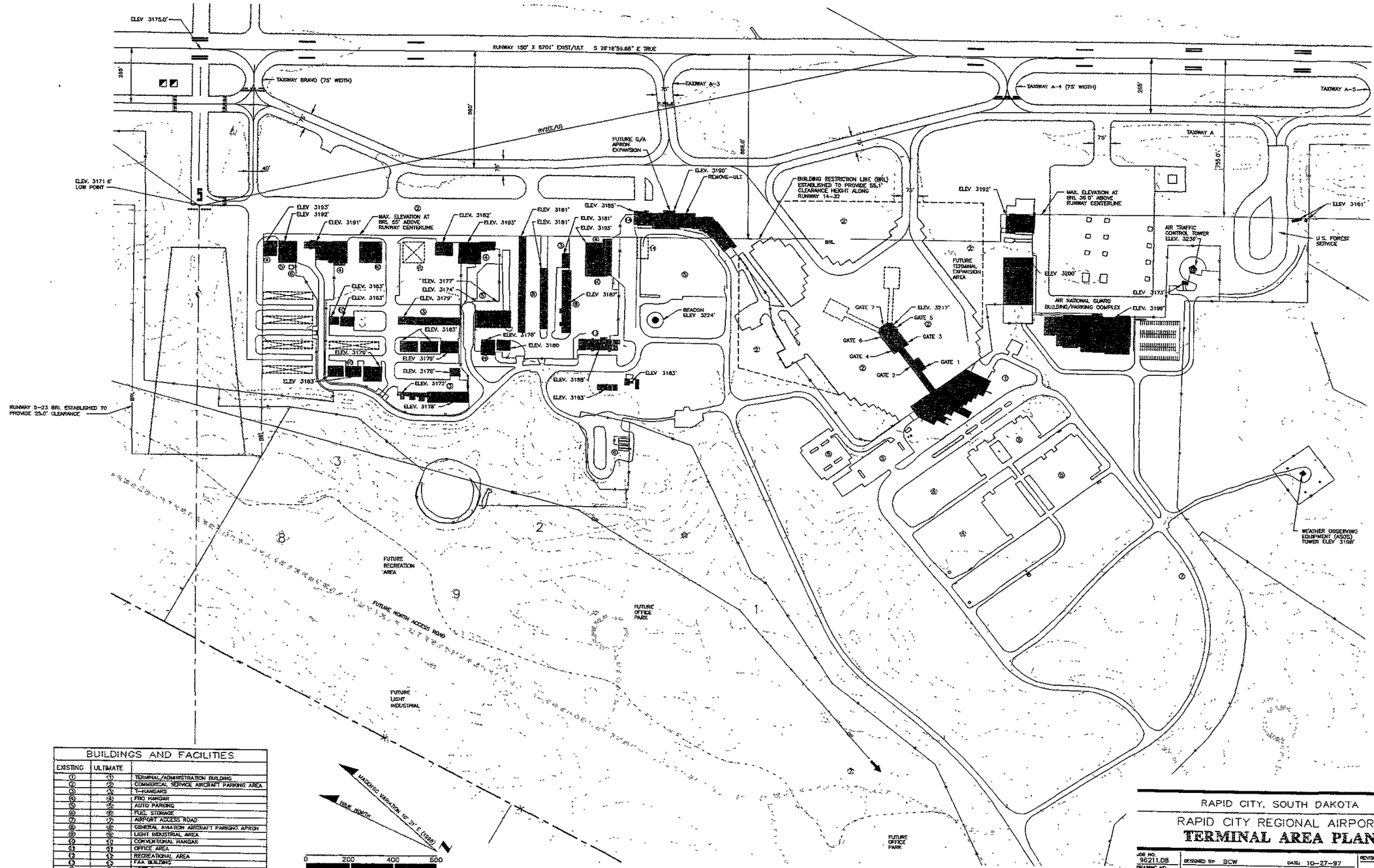
TERMINAL AREA PLAN



BUILDINGS AND FACILITIES		
EXISTING	ULTIMATE	
①	①	TERMINAL/ADMINISTRATION BUILDING
②	②	COMMERCIAL SERVICE AIRCRAFT PARKING AREA
③	③	T-HANGARS
④	④	FBO HANGAR
⑤	⑤	AUTO PARKING
⑥	⑥	FUEL STORAGE
⑦	⑦	AIRPORT ACCESS ROAD
⑧	⑧	GENERAL AVIATION AIRCRAFT PARKING APRON
⑨	⑨	LIGHT INDUSTRIAL AREA
⑩	⑩	CONVENTIONAL HANGAR
⑪	⑪	OFFICE AREA
⑫	⑫	RECREATIONAL AREA
⑬	⑬	FAA BUILDING
⑭	⑭	ARFF BUILDING
⑮	⑮	SRE STORAGE FACILITY
⑯	⑯	MAINTENANCE FACILITY

RAPID CITY, SOUTH DAKOTA

RAPID CITY REGIONAL AIRPORT

TERMINAL AREA PLAN

JOB NO. 96211.08	DESIGNED BY: SCW	DATE: 10-27-97	REVISIONS
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SCALE AS SHOWN	CHECKED BY: DRB	DATE: 8-10-99	
SHEET 8 OF 10	BUCHER, WILLIS & RATLIFF CORPORATION		

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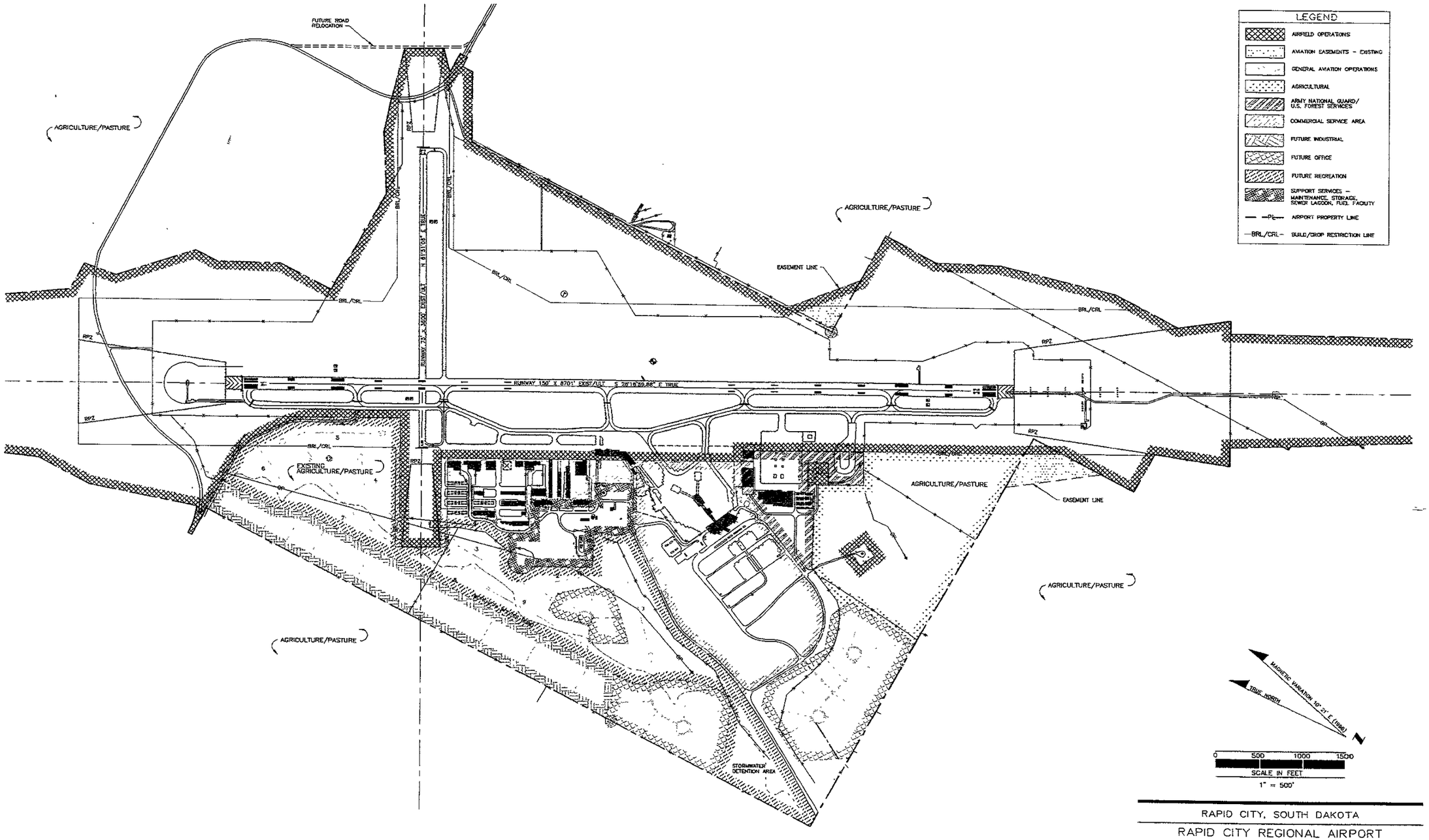
LAND USE PLAN



RAPID CITY, SOUTH DAKOTA

RAPID CITY REGIONAL AIRPORT

LAND USE PLAN

JOB NO. 96211.08	DESIGNED BY: BCW	DATE: 10-20-97	REVISIONS
DRAWING NO. NINE	DRAWN BY: MFL	DATE: 10-20-97	
SCALE AS SHOWN	CHECKED BY: DRB	DATE: 8-10-99	
SHEET 9 OF 10	BUCHER, WILLIS & RATLIFF CORPORATION		

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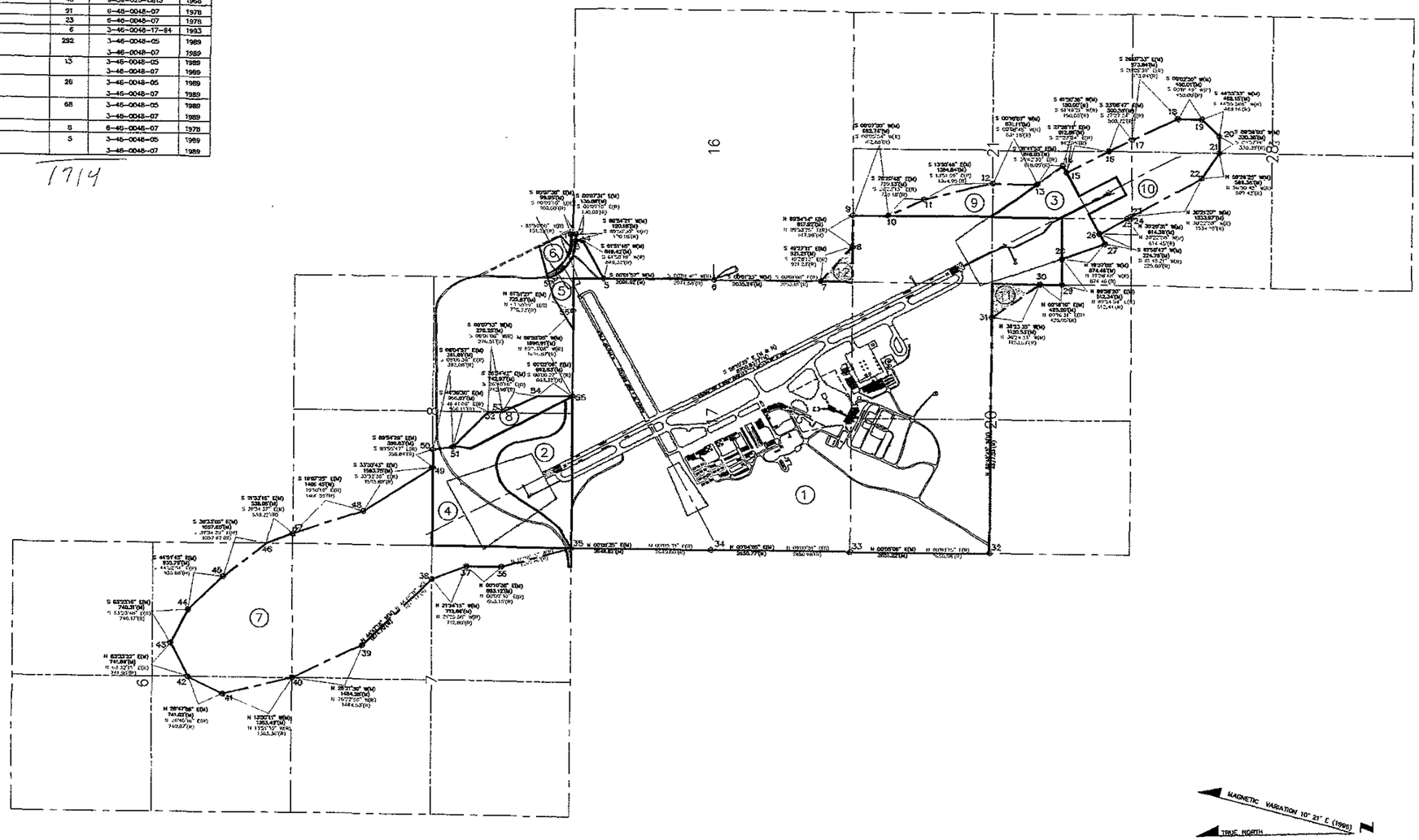
PROPERTY MAP

AIRPORT PROPERTY – DATA TABLE					
TRACT	CURRENT PROPERTY OWNER	PROPERTY INTEREST	ACREAGE	FEDERAL PROJECT NO.	YEAR
1	RAPID CITY, SOUTH DAKOTA	FEE SIMPLE	1104	9-39-020-801	1948
2	RAPID CITY, SOUTH DAKOTA	FEE SIMPLE	51	9-39-020-C712	1967
3	RAPID CITY, SOUTH DAKOTA	FEE SIMPLE	40	9-39-020-C813	1968
4	RAPID CITY, SOUTH DAKOTA	FEE SIMPLE	21	6-46-0048-07	1978
5	RAPID CITY, SOUTH DAKOTA	FEE SIMPLE	23	6-46-0048-07	1978
6	RAPID CITY, SOUTH DAKOTA	FEE SIMPLE	6	3-46-0048-17-84	1993
7	RAPID CITY, SOUTH DAKOTA	FEE SIMPLE	292	3-46-0048-05 3-46-0048-07	1989 1989
8	RAPID CITY, SOUTH DAKOTA	FEE SIMPLE	13	3-46-0048-05 3-46-0048-07	1989 1989
9	RAPID CITY, SOUTH DAKOTA	FEE SIMPLE	36	3-46-0048-05 3-46-0048-07	1989 1989
10	RAPID CITY, SOUTH DAKOTA	FEE SIMPLE	68	3-46-0048-05 3-46-0048-07	1989 1989
11	RAPID CITY, SOUTH DAKOTA	EASEMENT	8	6-46-0048-07	1978
12	RAPID CITY, SOUTH DAKOTA	EASEMENT	5	3-46-0048-05 3-46-0048-07	1989 1989

1714



MAGNETIC VARIATION 10° 21' E (1998)

TRUE NORTH

0 1000 2000 3000

SCALE IN FEET

1" = 1000'

LEGEND

- AIRPORT PROPERTY LINE–EXISTING
- AIRPORT EASEMENTS–EXISTING TOTAL – 17 ACRES
- TRACT NUMBER

RAPID CITY, SOUTH DAKOTA

RAPID CITY REGIONAL AIRPORT

PROPERTY MAP

JOB NO. 36211.08	DESIGNED BY: BCW	DATE: 10-22-97	REVISIONS:
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