APPENDIX C – PUBLIC INVOLVEMENT

Introduction

Rapid City Regional Airport understands the importance of public involvement in the Master Plan Update process. During the scoping meeting, the Airport and KLJ designed a transparent process that allows opportunities for stakeholders to be actively engaged. The Airport also believes that members of the public should have an opportunity to comment on decisions about actions that could affect their lives. This involvement took place in the form of public open houses, website information, and stakeholder outreach efforts. The Airport appreciates that public participation improves the decision-making process by recognizing and communicating the needs and interests of all participants. As a result of the public participation process we feel that the airport master plan offers a valuable path for developing the Minot International Airport.

Project Stakeholders

Communicating the Airport Master Plan with airport stakeholders is vital to a successful planning process. The following key groups/people were contacted for their insight into the Minot International Airport:

1. Airport Management/Staff
    a. Andy Solvig – Airport Director until 03/2016
    b. Rick Feltner – Airport Director after 06/2016
    c. Deanna Stoddard – Airport Operations Manager
    d. Steve Sessions
    e. JD Karhoff
    f. Maria Romanick
    g. Bob Lewis
2. Appointed Officials and City Officials
    a. Jim Hatelid, Airport Committee
    b. Don Larson, Airport Committee
    c. Doug Rued, Airport Committee
    d. David Lehner, City Council
    e. Melody Shelkey, City Finance
    f. Jenna Vollmer
    g. Kelli Flermoen, City Fire
    h. Stephen Parker, City Planning
    i. Lance Meyer, City Engineer
    j. Dan Jonasson, Public Works
    k. Lee Staab, City Manager
3. Air Traffic/TSA
    a. Jan Hartle, Midwest Air Traffic
    b. Mindy Zepeda, TSA
4. Airlines & Terminal Tenants
    a. Julie Bell, American/Allegiant
    b. Brynne Soukup, Trego/Dugan (Allegiant)
    c. Herbert Meeks, Delta/United
    d. Erik Olsen, Delta
    e. Rian Luehe, Hertz
    f. Donnie Ayers, Alamo/National
    g. Scott Meier, Avis
    h. Julie McGrath, Enterprise
    i. Amanda Wright, Enterprise
    j. Krystle Riba, Enterprise
    k. Kevin Gonzalez, Republic Parking
    l. Jordan Ramsdell, Republic Parking

5. Airfield Tenants
    a. Brian Sturm, Pietsch Aircraft
    b. Warren Pietsch, Pietsch Aircraft
    c. Shelly Cole, Minot Aero
    d. Don Larson, Museum
    e. Don Bessette, Bessette Aviation
    f. Mike Dockter, US Customs
    g. Mark Schumacher, NDARNG
6. Civic Groups
    a. Phyllis Burckhard, Visit Minot
    b. John MacMartin, Minot Area Chamber
    c. Carla Dolan, Minot Area Chamber
    d. Stephanie Hoffart, Minot Area Development Corporation

For this master planning effort it was determined that the use of focus groups would provide the best results. The following is a breakout of the focus groups:

1. Airlines/TSA/Air Traffic
2. Terminal Tenants
3. Airfield Tenants
4. Local Government/Civic Groups

Public Involvement Efforts

Public Outreach efforts throughout the Airport Master Plan project are identified below.

Date Outreach Occurred	Type of Public Information Process	Attendance (if available)	Information conveyed
8-3-2015 through 8-5-2015	Stakeholder Groups	24	Shared Master Plan process and gathered information on existing conditions and issues
8-5-2015	Airport Committee	20	Described master plan process to the general public and solicit input
4-26-2016	Advisory Committee	15	Shared Chapters 1, 2, 3 and 4
6-2016	New Airport Leadership	N/A	Briefing on Master Plan process, progress to date and Alternatives drafted
8-31-2016	Advisory Committee	18	Briefing on Master Plan progress and Alternatives
9-16-2016	Stakeholders	15	Briefing on Master Plan progress and Alternatives
10-19-2016	Public Open House	14	Briefing on Master Plan process, progress to date and Alternatives
12-6-2017	Stakeholders	17	Briefing on Master Plan progress and Preferred Alternative
12-6-2017	Advisory Committee	12	Briefing on Master Plan progress and Preferred Alternative
12-6-2017	Public Open House	12	Briefing on Master Plan progress and Preferred Alternative

Public Involvement Documents, References & Links

The following is a summary of the public involvement documents or links. Copies of the documents are included in following in this appendix.

Kickoff Meetings; August 3-5, 2016; Pages C-5 to C-13
- Presentation
- Briefing Paper
- Attendance Sheet(s)

Advisory Committee Meeting; April 26, 2016; Pages C-14 to C-21
- Presentation
- Briefing Paper
- Attendance Sheet

Advisory Committee Meeting; August 31, 2016; Pages C-22 to C-37
- Presentation
- Alternatives
- Attendance Sheet

Stakeholders Meeting; September 19, 2016; Pages C-38 to C-45
- Presentation
- Attendance Sheet

Public Open House; October 19, 2016; Pages C-46 to C-56
- Display Boards
- Briefing Paper
- Notifications/Press Coverage
- Attendance Sheet
- Comments

Stakeholder/Advisory Committee Meetings; December 6, 2017; Pages C-57 to C-67
- Presentation
- Preferred Alternative
- Attendance Sheet

Public Open House; December 6, 2017; Pages C-68 to C-72
- Display Boards
- Briefing Paper
- Attendance Sheet

Minot International Airport Master Plan Study

Master Plan Review Committee- Meeting #1
Minot City Hall
August 4, 2015

Agenda

- Introductions
- Airport Master Plans
- Roles & Responsibilities
- Planning Considerations
- Public Involvement

Introductions

- Aviation Planners
  - Kent Penney
  - Marcus Watson
  - Matt Nisbet
  - Tom Schauer
- Aviation Engineers
  - Mark Heine
  - Mike Mahoney
- Master Plan Review Committee
- Stakeholder Groups

Airport Master Plans

- What is an Airport Master Plan?

"An Airport Master Plan is a comprehensive study of an airport and usually describes the short-, medium- and long-term development plans to meet future aviation demand"

Federal Aviation Administration (FAA)
Advisory Circular 150/5070-6B, Airport Master Plans

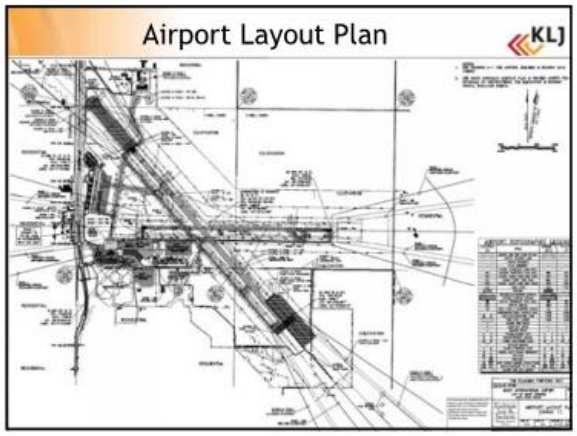
Airport Master Plans

Road map for efficiently meeting aviation demand through the foreseeable future while preserving the flexibility necessary to respond to changing conditions.

The master plan should allow the airport to cost-effectively keep pace with aviation growth, while also considering potential environmental and socioeconomic impacts.

Airport Master Plans

- Why is a Master Plan Update needed now?
  - Last Master Plan completed in 2010
  - New Local Planning Considerations
    - New Terminal / Disposition of Old Terminal
    - Oil Industry
    - Higher Aviation Demand (GA, Cargo, Operations, etc.)
    - New FAA Design and Planning Requirements


Airport Layout Plan
KLJ


Roles & Responsibilities
KLJ
KLJ Planning Team
Manage Study
Complete Technical Work
Provide Analysis
MP Review Committee
Review Master Plan
Provide Feedback & Recommendations
Tom Schauer
Project Manager
Kent Penney
Lead Planner
Marcus Watson
Airport Planner
Matt Nisbet
Airport Planner


Roles & Responsibilities
KLJ
City of Minot / Management Team
Provide Guiding Principles
Make Decisions
Review and Approve Master Plan & ALP
FAA & ND Aeronautics Commission
Provide Technical Guidance
Approve Aviation Forecasts
Review Master Plan
Approve ALP
MINOT
INTERNATIONAL AIRPORT


Airport Master Planning
KLJ
Airport Master Planning Process
Pre Planning
Facility & Environmental Inventory
Aviation Forecasts
Facility Requirements
Alternative Concept Formulation
Alternatives Analysis
Identify Preferred Alternatives
Financial Analysis
Implementation Plan
Master Plan Documentation
Electronic Airport Layout Plan
Public Involvement
Local Approval
FAA Approval Required


Airport Master Planning
KLJ
Minot International Airport Master Plan Project Schedule
2015
2016
2017
STUDY ELEMENTS
Existing Conditions
Aviation Forecasts
Facility Requirements
Alternatives Analysis & Review
Implementation Plan
Environmental Review
Airport Layout Plan & eALP
OUTREACH
MP Review Committee
Agency Meetings (FAA/NDAC)
Public Open House
Deliverables


Major Planning Elements
Disposition of Existing Terminal
New Terminal
Shift of Runway 8-26
Long-Term Cargo Development
Corporate Hangars
General Aviation (GA) Development
Location of the Existing VOR
Parking
Quick Turn / Rental Car Facilities


Public Involvement
KLJ
• Promote information sharing
• Collect feedback before major decisions are made
• Develop community "buy-in"
• MP Review Committee
• Stakeholder Meetings
• Public Open House Meetings
• Forecasts & Facility Requirements
• Development Alternatives
• Project Website


Discussion
KLJ


Thank You!
KLJ
Minot International Airport
Master Plan Review Committee- Meeting #1
August 4, 2015

Minot International Airport (MOT)
Airport Master Plan Update & Electronic Airport Layout Plan

Airport Master Planning (AMP)
An Airport Master Plan is a comprehensive study of an airport and usually describes the short-, medium-, and long term development plans to meet future aviation demand. The Master Plan includes an Electronic Airport Layout Plan (eALP) which is required for an airport to be considered for federal project funding.

What are the key focus areas of this AMP?

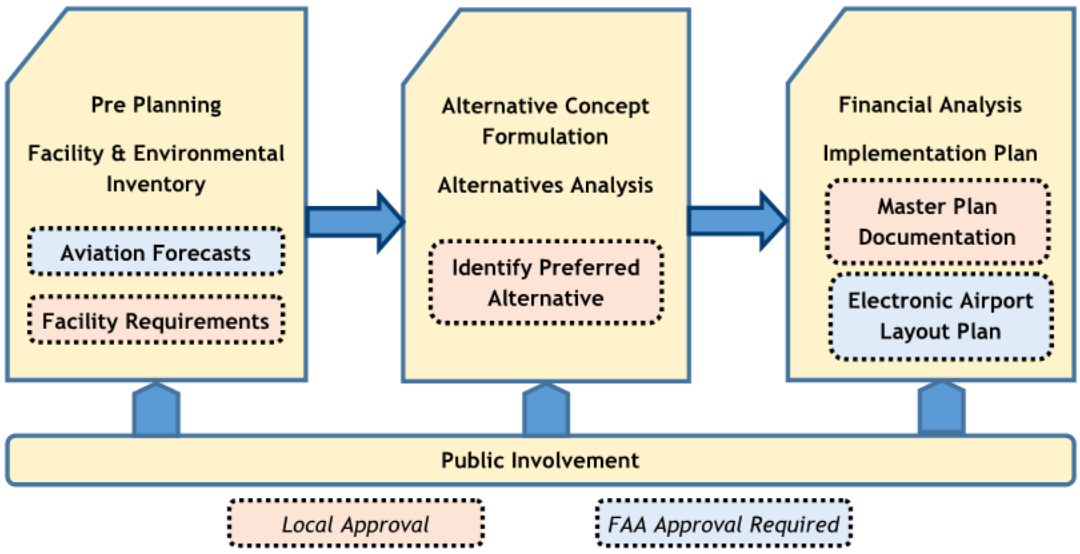
- Update Aviation Activity Forecasts
- Corporate Aviation Demand & Location
- Air Cargo Demand & Location
- General Aviation Demand & Layout/Location
- Disposition of Existing Airline Terminal
- Evaluate Critical Design Aircraft
- Evaluate Demand for Rental Car Quick Turn Around (QTA) Service Facility
- Evaluate Airport's Finances including Leases, Rates & Charges
- Pro Forma Cash Flow analysis for Airport Operations and Capital Development

Why an AMP Update now?
The last AMP was completed in 2010 and the plans are typically updated every 5-7 years. In addition, With the completion of the airline terminal and the growth that Minot has experienced as a result of oil production in the Bakken, aviation demand has been high for Minot. It is therefore prudent to look at all aspects of Minot International Airport to assure that the long term demand for aviation facilities can be accommodated in a way that makes the best use of space and financial resources.

Key Project Milestones

Aviation Forecasts/Existing Facilities	*Nov 2015*
Disposition of Existing Terminal	*Feb 2016*
Preliminary Concepts	*Apr 2016*
Preferred Concept Determined	*Jul 2016*
Implementation Plan	*Dec 2016*
Final Master Plan Documents	*Apr 2017*
Electronic Airport Layout Plan	*May 2017*

Airport Master Planning Process



MINOT INTERNATIONAL AIRPORT

Project Briefing #1: August 2015

KLJ

What information do we need from Stakeholders?

Existing Conditions/Facilities	Historic Activity	Issues/Constraints
Future Plans	Future Demand	Future Needs

Key Project Contacts

Tom Schauer, Project Manager/KLJ	tom.schauer@kljeng.com	701.250.5944
Kent Penney, Planner/KLJ	kent.penney@kljeng.com	605.721.5553
Marcus Watson, Planner/KLJ	marcus.watson@kljeng.com	651.222.2176
John DeCoster, Trillion Aviation	jdecoster@trillionav.com	763.234.1725

Comments can be made at – **www.surveymonkey.com/s/MOT-AMPUpdate**

MINOT INTERNATIONAL AIRPORT

Project Briefing #1: August 2015

KLJ

Minot International Airport
Airport Master Plan - Stakeholders Meetings
August 3-5, 2015

Airlines/TSA 09:30 @ Airport Office 08/03/2015

ATTENDANCE LIST

Name:	Organization/Business:	Phone:	Email:
Mindy Zepeda	TSA	701-852-0829	mindy.zepeda@tsa.dhs.gov
Brynne Sockup	Trego - Dugan Aviation	857-251-7859	brynnes.tregodugan@gmail.com
Herbert Meeks	Delta & United Airlines	832.217.0107	herbert.j.meeks@delta.com
Matt Nisbet	KLJ	-	-
Andy Solsvig	Airport	701-857-4724	
Tom Schauer	KLJ	701-250-5944	
Kent Penney	KLJ		

Minot International Airport
Airport Master Plan - Stakeholders Meetings
August 3-5, 2015

Rental Cars 08/03/2015 10:30 @ Airport Office

ATTENDANCE LIST

Name:	Organization/Business:	Phone:	Email:
Julie McGrath	Enterprise	406.495.9813	julia.a.mcgrath@ehi.com
Andy Wilcox	National		andy.wilcox@nationalcar.com
Donnie Ayers	National	701 852-5115	Donnie.Ayers@nationalcar.com
Rian Luehe	Hertz Minot Rent A Car Inc	701-833-8222	rentacar@srt.com
Matt Nisbet	KLJ		
Tom Schauer	KLJ		
Kent Penney	KLJ		

GA Tenants @ Minot Aero Center

13:00 08/03/2015

MINOT INTERNATIONAL AIRPORT

Minot International Airport
Airport Master Plan - Stakeholders Meetings
August 3-5, 2015

KLJ

ATTENDANCE LIST

Name:	Organization/Business:	Phone:	Email:
WARREN PIETSCH	MINOT AERO CENTER	701-852-4092	N180WP@SRT.COM
SHELLEY COLE	MINOT AERO CENTER	701 857 4738	MINOTAERO@SRT.COM
BRIAN STURM	Minot Aero Center	701-852-4092	bsturm@minot.com
Matt Nisbet	KLJ	-	
Tom Schauer	KLJ	-	
Kent Penney	KLJ		

08/03/2015 15:00 @ DPW office
Planning/Infrastructure

MINOT INTERNATIONAL AIRPORT

Minot International Airport
Airport Master Plan - Stakeholders Meetings
August 3-5, 2015

KLJ

ATTENDANCE LIST

Name:	Organization/Business:	Phone:	Email:
Stephen Parker	Planning Dept		stephen.parker@minotnd.org
Dan Jonasson	City of Minot Public Works Direct.	701-857-4140	DANI.JONASSON@MINOTND.ORG
Lance Meyer	City Engineer	701 857 4100	lance.meyer@minotnd.org
Matt Nisbet	KLJ	~	
Tom Schauer	KLJ	~	
Andy Solsvig	Airport		
Kent Penney	KLJ		

08/04/2015 Civic Group
09:00 @ Minot Chamber Office

MINOT INTERNATIONAL AIRPORT

Minot International Airport
Airport Master Plan - Stakeholders Meetings
August 3-5, 2015

KLJ

ATTENDANCE LIST

Name:	Organization/Business:	Phone:	Email:
Carla Dohn	Minot Chamber	857-8205	carla@minotchamber.org
Phyllis Burckhard	Visit Minot CVB	701-857-8206	phyllis@visitminot.org
John MacMartin	Minot Chamber	701-857-8203	macmarti@minotchamber.org
Matt Nisbet	KLJ		
Tom Schauer	KLJ		
Kent Penney	KLJ		

08/04/2015 Mgmt Staff
12:00

MINOT INTERNATIONAL AIRPORT

Minot International Airport
Airport Master Plan - Stakeholders Meetings
August 3-5, 2015

KLJ

ATTENDANCE LIST

Name:	Organization/Business:	Phone:	Email:
Maria Pomanick	Minot Airport	701-857-4724	maria.romanick@minotnd.org
Andy Solvig	Airport	701-857-4724	
Steve Sessions	Airport	857-4708	steve.sessions@minotnd.org
Bob Lewis	Airport	701-818-7888	robert.lewis@minotnd.org
J.D. Karhoff	Airport	701 857-4725	jd.karhoff@minotnd.org
Tom Schauer			
Matt Nisbet			
Kent Penney			

at City Council Chambers

MINOT INTERNATIONAL AIRPORT

Minot International Airport
Airport Master Plan – Review Committee
August 4, 2015 -- 3:00 p.m.

KLJ

ATTENDANCE LIST

Name:	Organization/Business:	Phone:	Email:
Mark Heine	KLJ		
Melody Shelkey	City Finance	701-857-4757	melody.shelkey@minotnd.org
Dan Jonassen	City P.W. Director	701-857-4140	
Jim Hartlieb	Airport comm chair	701-720-1387	JHARTLIEB@CMAIL.com
Andy Selvig	Airport	701-857-4724	
Steve Parker	Planning Dept		stephen.parker@minotnd.org
Lance Meyer	City Engineer	701 857 4100	lance.meyer@minotnd.org
Phyllis Burckhard	Visit Minot	701-721-7495	phyllis@visitminot.org
Lee Stabb	City Manager		Lee.stabb@minotnd.org
Tom Schaur	KLJ		
Kent Penney	KLJ		
Matt Nisbet	KLJ		
John Marc Martin	Minot Chamber of Commerce	701-857-8203	

Minot International Airport Master Plan Study

Technical Advisory Committee - Meeting #2
2nd Floor Airport Conference Room
April 26, 2016

MINOT INTERNATIONAL AIRPORT
www.WhyFlyMinot.com

Agenda

- Introductions
- Master Plan Process/Schedule
- Existing Conditions - Presentation and Feedback
- Aviation Forecasts - Presentation and Feedback
- Break for Lunch
- Preliminary Facility Requirements - Group Discussion
- Action Items/Next Steps

Airport Master Plans

- What is an Airport Master Plan?

"An Airport Master Plan is a comprehensive study of an airport and usually describes the short-, medium- and long-term development plans to meet future aviation demand"

Federal Aviation Administration (FAA)
Advisory Circular 150/5070-6B, Airport Master Plans

Airport Master Plans

"Road map" for **efficiently** meeting aviation demands through the foreseeable future while preserving the **flexibility** necessary to respond to changing conditions.

Plan should allow the airport to cost-effectively keep pace with aviation growth, while also considering potential environmental and socioeconomic **impacts**.

Roles & Responsibilities

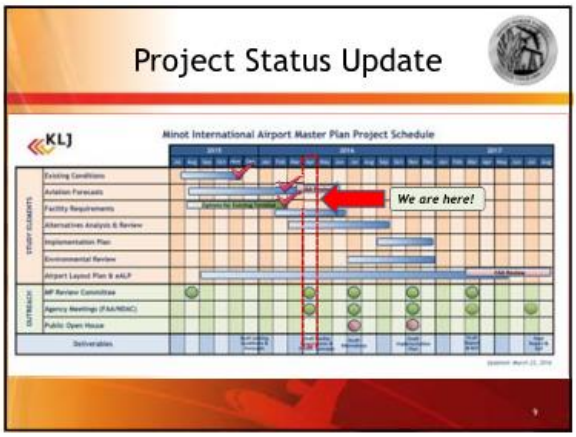
- KLJ Planning Team
  - Manage Study
  - Complete Technical Work
  - Provide Analysis
- Technical Advisory Committee
  - Review Master Plan
  - Provide Feedback & Recommendations

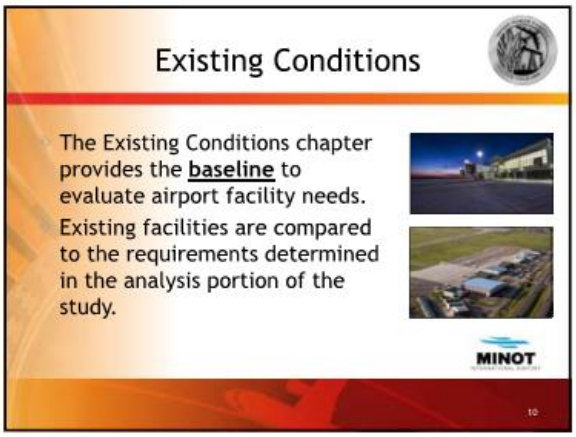
Roles & Responsibilities

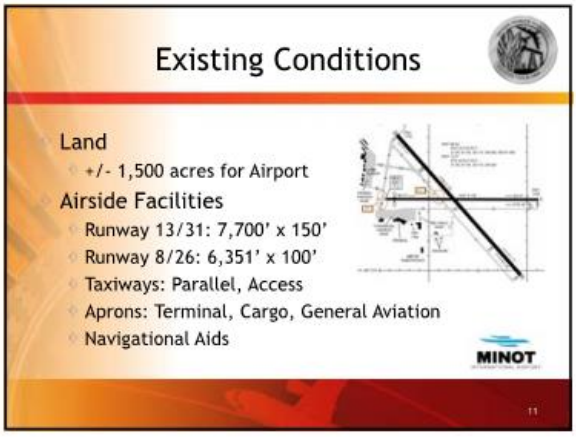
- City of Minot / Management Team
  - Provide Guiding Principles
  - Make Decisions
  - Review and Approve Master Plan & ALP
- FAA & ND Aeronautics Commission
  - Provide Technical Guidance
  - Approve Aviation Forecasts
  - Review Master Plan Report
  - Approve ALP


Major Planning Elements
Disposition of Existing Terminal
New Terminal
Runway 8-26 Disposition
Long-Term Cargo Development
Corporate Hangars
General Aviation (GA) Development
Location of the Existing VOR
Automobile Parking
Quick Turn Around Rental Car Facilities
Non-aeronautical Development
MINOT


Project Status Update
Completed Tasks
Facility Inventory
Old Terminal Disposition
Draft Aviation Forecasts
Awaiting FAA Approval (1st Round Revisions)
MINOT


Project Status Update
KLJ
Minot International Airport Master Plan Project Schedule
We are here!


Existing Conditions
The Existing Conditions chapter provides the baseline to evaluate airport facility needs.
Existing facilities are compared to the requirements determined in the analysis portion of the study.
MINOT


Existing Conditions
Land
+/- 1,500 acres for Airport
Airside Facilities
Runway 13/31: 7,700' x 150'
Runway 8/26: 6,351' x 100'
Taxiways: Parallel, Access
Aprons: Terminal, Cargo, General Aviation
Navigational Aids
MINOT


Existing Conditions
Passenger Terminal Complex
Terminal Buildings
Automobile Parking
Rental Car Facilities
Air Cargo (FedEx, UPS)
Apron
Sort Facilities
MINOT

Existing Conditions

- General Aviation
  - Aircraft Storage Hangars
  - Aircraft Parking
- Support Facilities & Other
  - Snow Removal Equipment (SRE) / Maintenance Building
  - Airport Rescue Fire Fighting (ARFF)
  - Airport Traffic Control Tower (ATCT)
- Operations
- Based Aircraft
- Passenger Enplanements

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Aviation Activity Forecasts

- Aviation Activity & Demands
  - Enplanements, Operations, Based Aircraft
- Critical Design Aircraft
- 20 Year Forecast; Drives Airport Facility Needs
- Basis for Planning Decisions
- FAA Approval Required

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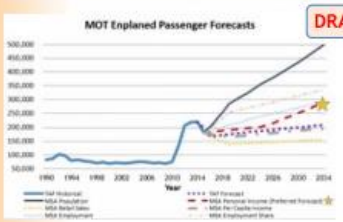
Aviation Activity Forecasts



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Aviation Activity Forecasts

Metric	2014	2019	2024	2029	2034	Annual Growth
Passenger Enplanements (Boardings)						
TOTAL	220,522	192,253	201,574	241,643	289,789	1.4%
Airport Operations (Takeoffs & Landings)						
Itinerant	22,718	19,120	17,941	18,913	20,451	-0.5%
Local	8,108	7,945	8,352	8,784	9,243	0.7%
TOTAL	30,826	27,065	26,293	27,697	29,694	-0.2%
Based Aircraft						
TOTAL	107	128	144	160	176	2.5%

DRAFT

MINOT

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Aviation Activity Forecasts

- MOT Critical Design Aircraft "Family"

McDonnell Douglas (Boeing) MD-83
FAA Airport Reference Code D-III
Taxiway Design Group 4
166,000 Pounds

Airbus A319 / A320
FAA Airport Reference Code C-III
Taxiway Design Group 3
172,000 Pounds

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Aviation Activity Forecasts

Aircraft	FAA Design	2015	2019	2024	2034
MOT Critical Design Aircraft					
MD-83	ARC D-III	532	718	0	0
CRJ-200	ARC D-II	3,989	1,500	0	0
CRJ-700/-900	ARC C-III	996	800	1,200	1,800
Embraer E-170/-175	ARC C-III	1,009	2,700	2,400	4,100
Airbus A319/A320	ARC C-III	180	85	1,120	1,800
Embraer E-145	ARC C-II	930	0	0	0

DRAFT

Minimum 500 annual operations in most demanding aircraft to qualify as "Design Aircraft"

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Aviation Activity Forecasts

- Notable Trends
  - Strong Based Aircraft Growth – Limiting Factors
  - Activity Sensitive to Oil Prices
  - Average Aircraft Size Increasing
    - 70 -> 100 seats
  - Critical Design Aircraft
    - Phase-out of MD-83 & CRJ-200 Aircraft
  - Peak Passenger Activity

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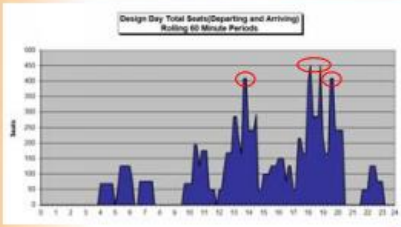
Aviation Activity Forecasts



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Airport Facility Requirements

- Calculated Needs Based on Demand
- Input from Stakeholders
- Consistency with Vision of the Airport
- Planning Activity Levels (PALs)
- FAA Requirements
- National Industry Guidance (ACRP)
- Analysis from Draft Forecasts

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Airport Facility Requirements

- Runways
- Taxiways
- Terminal Area
- General Aviation Areas
  - Apron, Aircraft Storage, etc.
- Air Cargo
- Support Facilities & Other
  - Airport Rescue and Fire Fighting (ARFF)
  - Snow Removal Equipment (SRE) & Maintenance Building
  - Fuel Facilities
  - Air Traffic Control Tower
  - Parking and Rental Cars

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Issues for Alternatives

- Formulated To Meet Facility Requirements
- Flexible Plans for Ultimate/Changing Needs
  - Minimize Need to Duplicate Efforts to Accommodate Changing Considerations
- Key Elements Reviewed To Date
  - Runway 13-31
  - Runway 8-26
  - Available Development Space

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23


KLJ
PRELIMINARY
MINOT
25


Next Steps
FAA Forecast Approval, Timeline
Facility Requirements Report
Prepare Preliminary Alternative Concepts
Alternatives Workshop (July 2016)
Public Open House #1 - Alternatives
Refine Alternatives & Select Preferred
MINOT
26


Thank You!
Technical Advisory Committee – Meeting #2
2nd Floor Airport Conference Room
April 26, 2016
MINOT
INTERNATIONAL AIRPORT
www.WhyFlyMinot.com
27

Minot International Airport (MOT)
Airport Master Plan Update & Electronic Airport Layout Plan

AVIATION ACTIVITY FORECASTS

What are "Forecasts"?

Forecasts of future levels of aviation activity are the basis for effective decision-making in airport planning. Forecasts are realistic and based on the latest available data at the time. Projections provide the basis for improved facilities to accommodate aviation demands.

Airport activity measures include passengers boarding commercial airlines (enplanements), takeoffs and landings (operations) and aircraft claiming the airport as their home base (based aircraft).

MOT Aviation Activity Forecasts

MOT aviation activity forecasts were developed by Trillion Aviation. Draft forecasts have been reviewed by MOT Airport Management and are currently being reviewed by FAA for their approval.

	2014 (Existing)	2019 (Short-Term)	2024 (Mid-Term)	2034 (Long-Term)	Annual Growth Rate
Passenger Enplanements	220,522	192,253	201,574	289,769	*1.4%*
Annual Operations	30,826	27,065	26,293	29,694	*-0.2%*
Based Aircraft	107	128	144	176	*2.5%*

Critical Design Aircraft

The critical design aircraft is a single aircraft or a family or similar aircraft with the most demanding operational characteristics. These aircraft are the basis for airport design standards.

McDonnell Douglas (Boeing) MD-83

Wingspan:	108' 0"
Overall Length:	147' 10"
Maximum Weight (lbs.):	166,000
FAA Airplane Reference Code:	D-III
FAA Taxiway Design Group:	4
2015 Operations @ MOT:	532
Forecast 2024 Operations @ MOT:	0

Airbus A319/A320

Wingspan:	111' 9"
Overall Length:	123' 3"
Maximum Weight (lbs.):	172,000
FAA Airplane Reference Code:	C-III
FAA Taxiway Design Group:	3
2015 Operations @ MOT:	180
Forecast 2024 Operations @ MOT:	1,120

MINOT INTERNATIONAL AIRPORT

Project Briefing #2: April 2016

AIRPORT FACILITY REQUIREMENTS (DRAFT)

Airfield

- Runway 8/26 needed to meet FAA wind coverage for ARC B-II aircraft (Business Jet)
- Runway 13/31: Existing runway length sufficient. Plan for ultimate extension from 7,700' to 8,500'
- Runway 13/31: Upgrade Runway 13 approach to achieve lower visibility minimums (3/4 mile)
- Runway 08/26: Maintain compatible land use on Runway 8 approach, ARC B-II Design Standards
- Runway 08/26: Plan for ultimate 5,500' x 75' runway to meet ARC B-II standards
- Taxiway design standards change from TDG-4 to TDG-3: 50' wide taxiways needed for largest airplanes

Air Cargo

- Look at consolidation of air cargo activities to one area
- Assess existing apron space
- Additional apron pavement strength needed for FedEx ATR-42

Passenger Terminal Complex

- Peak activity drives terminal space needs
- Four gates needed for overnight aircraft schedule
- Security checkpoint may need 4th lane for peak long-term activity
- Long-term parking undersized now
- Need additional space for rental car ready/return lot
- Rental car storage parking space
- Look into Consolidated rental car Quick Turnaround (QTA) facility

General Aviation

- FAA forecast is for 69 new based aircraft in next 20 years
- Require 47% additional hangar space for new based aircraft
- Up to 108% additional space needed if all aircraft are in hangars
- Existing GA apron is undersized by 22% (includes based aircraft)
- Require additional 44% of apron space for long-term demand

Support Facilities

- Aircraft Rescue & Fire Fighting (ARFF) Building needs additional crew quarter space
- Maintain Airport Traffic Control Tower line-of-sight or relocate facility
- VOR needed for FAA minimal operational network

Definitions

ARC = Airport Reference Code
GA = General Aviation
TDG = Taxiway Design Code
VOR = Very-High Frequency Omnidirectional Range

Updated Project Schedule	
Facility Requirements	Jun 2016
Alternatives / Preferred Concept	Sep 2016
Implementation Plan	Dec 2016
Draft Master Plan & ALP Documents	Mar 2017
Anticipated FAA Approval	Aug 2017

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Study comments can be submitted here:
https://www.surveymonkey.com/r/XZ9HYTB

MINOT
INTERNATIONAL AIRPORT

Project Briefing #2: April 2016

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Minot International Airport
Airport Master Plan - Technical Advisory Committee
April 26, 2016 -- 11:00 a.m.

KLJ
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Minot International Airport Master Plan Study

TAC Briefing
August 31, 2016

Agenda

- Master Plan Process/Schedule
- Review Draft Facility Requirements
- Review Draft Alternatives
- Action Items/Next Steps

Airport Master Planning

Project Status Update

Draft Chapter 4: Facility Requirements

Planning Activity Levels
from Chapter 3 - Forecast

Metric	Base	PAL 1 (5 Year)	PAL 2 (10 year)	PAL 3 (15 Year)	PAL 4 (20 Year)
Forecast Year	2014	2019	2024	2029	2034
Passengers					
Annual Enplanements	220,522	192,253	201,574	241,643	289,769
Peak Month Enplanements	20,486	17,860	18,726	22,449	26,920
Design Day Enplanements	698	783	821	984	1,180
Design Hour Enplanements	310	271	284	340	408
Design Hour Deplanements	379	330	346	415	498
Design Hour Total Passengers	450	391	398	485	571
Passenger Airline Operations					
Airline Operations	7,655	5,804	4,820	6,060	7,300
Design Hour	8.9	6.7	5.6	7.0	8.5
Total Operations					
Annual Operations	30,826	27,065	26,293	27,697	29,894
Peak Month	2,857	2,509	2,437	2,595	2,753
Design Day	117	103	100	107	113
Design Hour	20	17	17	18	19

Draft: Pending FAA Approval

Minot Runway Wind Coverage

95% FAA Standard

ALL-WEATHER

MOT ASOS (2005-2014) via FAA Airports GIS Website			
113,960 Observations	10.5 Knots	13 Knots	16 Knots
Runway 13-31	87.03%	93.15%	97.85%
Runway 8-26	85.81%	92.09%	97.09%
Combined	96.21%	98.62%	99.65%
Combined*		99.45%	

*13 knots for Runway 8-26 (B-II) and 16 knots for Runway 13-31 (C-II)

INSTRUMENT FLIGHT RULES (IFR)

MOT ASOS (2005-2014) via FAA Airports GIS Website			
23,416 Observations	10.5 Knots	13 Knots	16 Knots
Runway 13-31	87.84%	93.67%	97.97%
Runway 8-26	79.81%	87.03%	93.63%
Combined	94.90%	97.86%	99.34%
Combined*		99.18%	

*13 knots for Runway 8-26 (B-II) and 16 knots for Runway 13-31 (C-II)

Table 3-1. Allowable crosswind component per Runway Design Code (RDC)

RDC	Allowable Crosswind Component
A-I and B-I *	10.5 knots
A-II and B-II	13 knots
A-III, B-III, C-I through D-III D-I through D-III	16 knots
A-IV and B-IV, C-IV through C-VI, D-IV through D-VI	20 knots
E-I through E-VI	20 knots

* Includes A-I and B-I small aircraft

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Examples of ARC Aircraft

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Airfield: Runway 13/31

Recommendations

- Runway Length Sufficient (7,700')
- Ultimate 8,500' Runway Length
- Upgrade Runway 13 Approach
  - 3/4 mile visibility
- Protect for Runway 31 Approach Enhancements
- Runway Design Code: D-III to C-III
- Taxiway Design Group 4 to 3
  - 50' Width

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Airfield: Runway 8/26

Recommendations

- Runway 8 End Design/Incompatible Land Uses
- Wind Coverage Requires B-II Capability
- Runway Design Code C-III to B-II
- Taxiway Design Group 3 to 2 (35' Width)
- Need 5,500' x 75' Runway (Business Jets)
- Meet FAA Standards = Maximize FAA Funding
- Preserve Runway Width 100'
- Preserve Maximum Length 6,200'

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Taxiway System

Recommendations

1. Taxiway B
   - Former Runway 1-19
   - Realignment provides greater depth for GA development
   - Realignment eliminates in-line Runway 8
2. Taxiway F
   - Align with direct connection to Taxiway C
3. Taxiway D
   - Taxiway Size East & West of Runway 13-31
   - Realign further North along Commercial Apron

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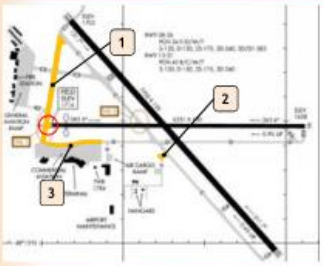
Taxiway System

Recommendations



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Passenger Terminal
pg. 37-47

- New terminal meets most forecasted needs; peak activity drives needs
- 6 gates needed in long-term
- Total gate hold room space sufficient
- Security delays avoided if 3-4 lanes are used in long-term
- Non-secure restroom fixtures near capacity in long-term
- Terminal apron depth limited for Gates 4, 5 and 6


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Air Cargo
pg. 48-50

- Consolidate operations to single public area
  - UPS, FedEx, Others
- Need nearly double existing south cargo apron in long-term
- Strengthen pavement for regular use of ATR-42

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Parking & Rental Cars
pg. 55-58

- Automobile Parking
  - Within 15% of long-term capacity
  - Public Parking surplus is 205
  - Employee Parking deficit is 22
- Rental Car
  - 60 -> 100 additional ready/return spaces
  - 200 -> 263 storage spaces
  - Consolidated rental car Quick Turnaround (QTA) facility


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Ground Access and Circulation
pg. 58-59

- Terminal Access
  - 21st Avenue connection to Airport Road
  - Primary Terminal Entry Point
  - Public Transit
- GA Access & Parking
  - Frontage Road along U.S. 83
  - Sufficient depth for parking between frontage road and buildings
  - Connecting GA frontage road to Terminal area
  - Public access to any hangar where business is conducted and to Group II hangars

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General Aviation Hangars
pg. 48-51

- Dakota Territory Aviation Museum
  - 25 of 107 current aircraft
  - Not included in projections
- Aircraft in Hangars vs. Apron Tie-Downs
  - 27 aircraft on apron
- Replacing Hangar Space
  - 36,500 sf of existing 128,840 sf
  - Dilapidated or functionally inadequate
- Long-term demand ranges from 76% to 135% of existing hangar space
- Larger average aircraft size


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Hangar Layout Types

	T-Hangars	Small Storage Less than 6,000 sf	Large Storage More than 6,000 sf	FBO/SASO
Photo Examples				
Dedicated Apron	None	None	Equal to depth of hangar	Equal to depth of hangar (plus apron for services)
Airport Apron Access	No	No	No	Yes
Setbacks from Taxilanes	Yes - for Design Group (I or II)	Yes - for Design Group (I or II)	Yes plus Apron - for Design Group (II+)	Yes plus Apron - for Design Group (II+)
Airside Taxi Route	Yes - for Design Group (I or II)	Yes - for Design Group (I or II)	Yes - for Design Group (II+)	Yes - for Design Group (II+)
Public Road Access/Parking	No	Yes or No *	Yes*	Yes*

* Any business/corporate hangar located on an airport should have public road access and parking for customers/passengers. Particularly those customers/passengers who are not trained in driving on an airport.

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Hangar Development Issues

- Hangar Types
  - T-Hangar, Small Box, Large Box, FBO/SASO
- Development Potential
  - Required Rental Rates vs. Current Rental Rates
- Target Markets
  - Premium User vs. Self Serve User
- T-hangars
  - Future Demand
  - Potential Tenants considering Rent Required
- Funding
  - City will not provide any funding for GA Hangars

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Hangar Development Issues

- Minimum Standards
  - Revised to support the preferred option
- Airport funding for GA Hangars
  - Slim possibility
- Reversion of Land Leases
  - Amortize investment then revert to airport and lease property as a building lease

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Potential Hangar Space Needs

pg. 53

Category	Existing	Base	PAL 1	PAL 2	PAL 3	PAL 4
Hangar Space Needs - Not Including Current Tie-Downs						
T-Hangar	15,900	15,750	17,905	19,066	19,895	21,884
Small Conventional	74,640	60,473	73,720	83,885	95,943	109,530
Large Conventional	38,300	26,303	35,191	45,696	57,225	62,353
Maintenance/Transient		20,505	25,363	29,729	34,613	37,953
Total	128,840	123,030	152,179	178,376	207,676	227,721
Capacity/(Deficiency)	-	26,315	(23,339)	(50,464)	(78,836)	(98,881)
Hangar Space Needs - Including Current Tie-Downs						
T-Hangar	15,900	33,548	38,138	40,610	42,376	46,613
Small Conventional	74,640	75,986	95,100	109,738	129,021	142,139
Large Conventional	38,300	33,491	44,968	57,430	72,084	78,793
Maintenance/Transient		21,454	26,731	31,167	36,522	40,132
Total	128,840	164,479	204,937	238,944	280,003	307,678
Capacity/(Deficiency)	-	(35,639)	(76,097)	(110,104)	(151,163)	(178,838)

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General Aviation Apron

pg. 53-55

- Hangaring vs. Tie-Downs
  - Primary Apron
  - Storage Apron/T-Hangar Area
  - Need varies from 29% surplus to 44% deficit
- Pavement Rehabilitation
  - North and South portions of GA apron
  - Add depth when increasing capacity

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Apron Space Needs

pg 54

Category	Existing	Base	PAL 1	PAL 2	PAL 3	PAL 4
Apron Area Need (Transient Only)						
Equivalent Aircraft	54	38	34	36	35	37
Area Per Aircraft (SY)	1,056	1,100	1,100	1,100	1,100	1,100
Apron Area (SY)	57,000	41,800	37,400	39,600	38,500	40,700
Deficit/Surplus	-	15,200	19,600	17,400	18,500	16,300
Apron Area Need (Transient & Based Aircraft)						
Equivalent Aircraft	54	63	63	68	69	75
Area Per Aircraft (SY)	1,056	1,100	1,100	1,100	1,100	1,100
Apron Area (SY)	57,000	69,300	69,520	74,470	76,120	82,060
Deficit/Surplus	-	(12,300)	(12,520)	(17,470)	(19,120)	(25,060)

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Support Facilities & Other

pg. 59-62

- Additional ARFF building space (crew)
- Fuel storage capacity
- Preserve ATCT line-of-sight to airfield
- Preserve VOR critical area
  - VOR needed for FAA minimal operational network

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Facility Requirements
Facility Element
Existing
Short-Term
Mid-Term
Long-Term
Runway 13/31
Runway 8 Compatibility
Runway 8/26 Dimensions
Air Cargo
Passenger Terminal
Parking & Rental Car
General Aviation
Support & Other
Fully Meets/Exceeds Needs
Primarily Meets Needs
Marginally Meets Needs
Does Not Meet Needs


Airfield Alternatives
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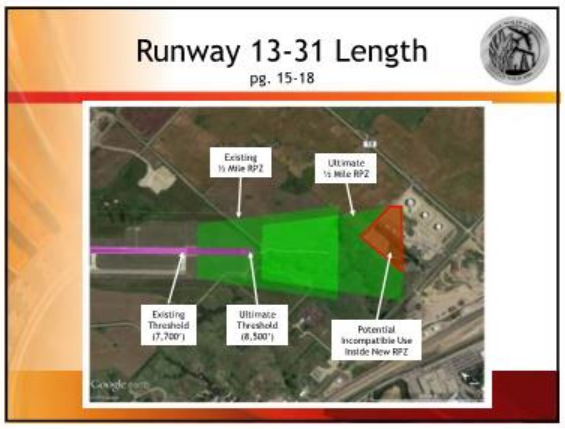
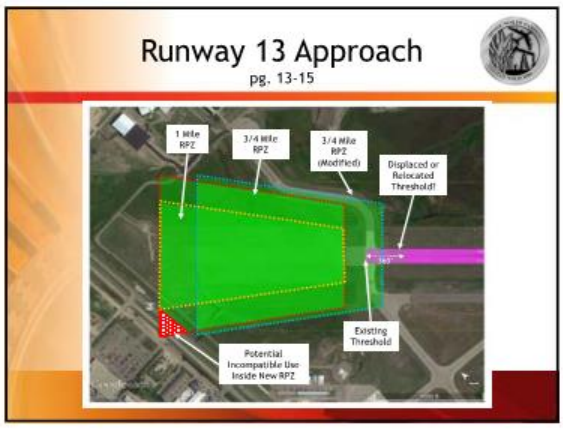

Runway 13-31 Length
pg. 15-18
Existing ½ Mile RPZ
Ultimate ½ Mile RPZ
Existing Threshold (7,700')
Ultimate Threshold (8,500')
Potential Incompatible Use Inside New RPZ


Runway 13 Approach
pg. 13-15
1 Mile RPZ
3/4 Mile RPZ
3/4 Mile RPZ (Modified)
Displaced or Relocated Threshold!
Existing Threshold
Potential Incompatible Use Inside New RPZ


Runway 8 Existing C-III
pg. 13-15
Departure RPZ
Approach RPZ
6,351' Runway with 393' Displacement
40:1 Departure Surface
20:1 Slope to Clear Approach Airspace


RPZ's and Airspace Surfaces
Departure Surface 40:1
6,300' Runway
RPZ (On-Airport)
31:1 Slope to Clear Approach Airspace

Summary of Minot International Airport Alternatives

Evaluation Approach

The alternatives presented each will have significant total dollar costs when the building development is included. It is recommended that the technical advisory committee focus their review on the location of development, type of development and the road, taxilane and apron layouts to enable the hangar construction. For the most part, the hangar development will be completed with private dollars. When considering the alternatives we looked at it in two primary phases of development which will be depicted in the final preferred alternative.

- Future (within next 0-10 years) - development the airport will often **proactively pursue or facilitate** based on forecast activity as well as safety and capacity needs through the study planning period.
- Ultimate (10-20+ years) - development which may occur whose depiction on the Airport Layout Plan (ALP) is primarily to **preserve the space** so that conflicting future development does not occur. There should be active efforts by the airport to preserve space for this potential development.

General Information

There are two primary groups of general aviation aircraft that the hangar development is intended to address. These are Group I Aircraft (<49' wingspan, with a 79' Taxilane Object Free Area TOFA) and Group II Aircraft (>49' but <79' wingspan, with a 115' TOFA). To simplify how the alternatives are examined the development areas are divided into five areas which are shown on the following exhibit:

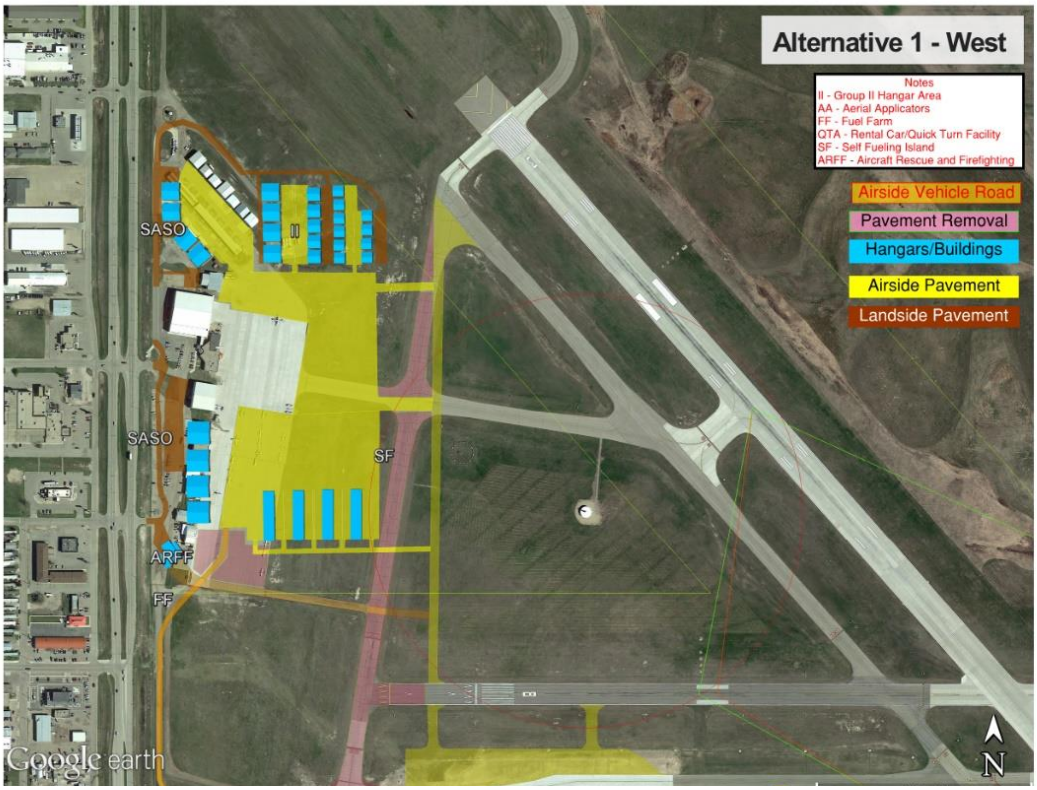
South Area (GREEN) - all development south of Runway 8/26 and west of Runway 13/31 excluding the terminal area.
Terminal Area (YELLOW) - all development around the terminal including auto parking, roads and commercial apron.
West Area (PURPLE) - all development west of Runway 13/31 and north of Runway 8/26. For discussions this will sometimes be subdivided into North and South. The dividing line is the south edge of the newest portion of concrete apron noted below with the dashed line.
North Area (BLUE) - all development north of Runway 13 including the Guard and Museum
East Area (RED) - all development east of Runway 13/31 excluding the north area.

East Area
Alternative 1
East side has no utilities or road access so this infrastructure will be necessary for any development. Also some wetlands exist east of Runway 13-31 which will impact development.
• ATCT and Cargo south of Runway 26 • Airfield access to Taxiway D • Road access to 27th Street NE
Pros
• Makes use of existing Taxiway D for access to the airfield • Convenient location to industrial areas on east side of Minot • ATCT development in this area could enable the base infrastructure for other development • FTZ can be used for aeronautical and non-aeronautical uses
Cons
• No existing infrastructure on east side (i.e. water, sewer, paved roads, electrical, gas etc...)

South Area			
Alternative 1	**Alternative 2**	**Alternative 3**	**Alternative 4**
Develop the area for Group I aircraft with limited landside access. ATCT stays in current location and there is no hangar development that conflicts with ATCT line of site.	Develop the area for Group II aircraft with landside access to most all hangars. ATCT stays in current location and there is no hangar development that conflicts with ATCT line of site.	Develop the area for Group II and I aircraft with partial landside access. ATCT relocated in south area removing all ATCT line of site constraints.	Develop the area for Group II aircraft as currently configured with limited landside access. ATCT relocated to east side removing all ATCT line of site constraints.
• Cargo expanded in the current cargo area with room for FedEx and UPS • Taxiway F connected directly to Taxiway C at the existing pad • Group I and T-Hangar development • Self-Fueling established on pad area off Taxiway F • New taxiway connecting from the south edge of the hangar area directly to Taxiway C	• Cargo apron expanded • Aerial Applicators hangars adjacent to Cargo • Hangar taxilane connected directly to Taxiway C with a new hold pad • Group II conventional hangar development • Self-Fueling established on pad area off Taxiway F	• Cargo expanded in the current cargo area with room for FedEx and UPS • Aerial Applicators hangars adjacent to Cargo • Hangar taxilane connected directly to Taxiway C • New taxiway connecting from the south edge of the hangar area directly to Taxiway C • Group I T-Hangar development • Group II conventional hangar development • Self-Fueling established on pad area off Taxiway F	• Cargo expanded in the current cargo area with room for FedEx and UPS • Taxiway F connected directly to Taxiway C • Group II conventional and group hangar development • Self-Fueling established on pad area off Taxiway F • New taxiway connecting from the south edge of the hangar area directly to Taxiway C
Pros			
• Maximizes the use of the area for Group I aircraft • Cargo remains in current location for FedEx • Two taxiways to exit/enter area	• Landside access to most all hangars • Group II aircraft only as existing taxilane spacing was designed • Space for Aerial Applicators	• New ATCT location removes line of sight problems • Mixture of hangars including Group II and T-Hangars • Landside access to most Group II hangars • Cargo for FedEx and others	• Group II aircraft only as existing taxilane spacing was designed • New A/L1 east of Runway 13/31 removes line of sight problems
Cons			
• Development limited by ATCT line of sight • New taxilanes required to maximize use of space • Limited landside access to hangars	• Development limited by ATCT line of sight • One taxiway to enter/exit area • Only Cargo for FedEx	• Relocation of ATCT required •	• Relocation of ATCT required •

Terminal Area			
Alternative 1	**Alternative 2**	**Alternative 3**	**Alternative 4**
With the new terminal the most pressing matters remaining are the need for Rental Cars to have establish Ready/Return positions, storage and a Quick-Turn-Around (QTA) facility and secondly the future location of Taxiway B as it connects to the apron. The remaining items are long term planning considerations.			
• ATCT remains in current location • QTA west of terminal opening N-S • Rental Car Ready/Return and Storage west of terminal • GSE west end of apron opening E • Deicing west end of apron facing W • Twy directly connects apron to Rwy 8 threshold • Twy connects apron N to Rwy 8 continuing to Twy C	• ARFF in current ATCT location opening N • QTA far west of terminal opening E-W • Rental Car Ready/Return and Storage west of terminal • GSE adjacent to west end of terminal opening N • Deicing at the terminal gates • Airport Road realigned to 21st Avenue • Twy B directly connects apron to Rwy 8 threshold	• QTA west of terminal opening N-S • Rental Car Ready/Return and Storage west of terminal • GSE west of terminal opening N • Deicing west end of apron facing NW • ARFF west end of apron opening E • Entry to terminal/parking relocated to the curve of Airport Road • GA frontage road tied to ARFF road • Apron expanded N 200' and Twy B directly connects apron to Rwy 8 threshold	• QTA far west of terminal opening N-S • Rental Car Ready/Return and Storage west of terminal • GSE east of terminal opening N • Deicing east end of apron facing NW • GA frontage road tied to Airport Road • Twy B connect to Rwy 8 approximately 400' E of threshold
Pros			
• Makes interim use of existing parking for rental cars • Expanded terminal apron • No road realignments • Exit lot creates a loop and Exit parking	• Cell Loop creates a loop and parallel cell parking • No road realignments	• Makes use of existing parking for Cell lot • Loop road added with access to Cell lot • New intuitive terminal entry • New large vehicle entry for employees, ATCT and south hangars	• ARFF near airline service • No use of existing public parking for other uses • New intuitive terminal entry
Cons			
• Relocating Parking Exit required • Existing non-intuitive terminal entry remains	• Loop road is almost parallel to existing airport road • No additional employee parking • Existing non-intuitive terminal entry remains	• Relocating Parking Exit required • Requires new road construction • QTA over old terminal limits expansion of Rental Car ready return	• Requires new road construction • QTA over old terminal limits expansion of Rental Car ready return • Requires moving large truck entry south to allow separation between terminal entry and large truck entry

West Area				
Alternative 1	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Alternative 5**
Develop the area with minimal impact on existing buildings except as dictated by private development timelines	Develop the area by squaring up all buildings to be in alignment with U.S. 83 and a north-south aligned Taxiway B. No area for T-Hangars.	Develop the area by squaring up all buildings to be in alignment with U.S. 83 and a north-south aligned Taxiway B.	Develop the area with minimal impact on existing buildings except as dictated by private development timelines. No area for T-Hangars.	Develop the area with hangar development possible immediately east of the existing apron. No area for T-Hangars.
• Taxiway B aligned connecting new Runway 8 threshold directly north to Runway 13 • Expand Apron east and square with Taxiway B and U.S. 83 • Remove T-Hangars and develop northwest portion as an enclave for Group II SASO activity while not impacting southwest facing hangars • Relocate Fuel Farm south of existing apron • Construct internal road west of Runway 8 connecting GA apron with terminal apron • Relocate ARFF to south end of existing apron and use existing Taxiway B2 and portion of apron for ARFF access directly to Taxiway B • Establish Group II+ SASO area on southern portion of existing apron with buildings square with new apron alignment • Establish Group II and Group I conventional hangar area north of the existing apron • Establish Group I T-Hangar/Tie-Down area in southern portion of the existing apron • Self-Fueling added on east edge of apron	• Taxiway B aligned connecting new Runway 8 threshold directly north to Runway 13 • Expand Apron east and square with Taxiway B and U.S. 83 • Remove T-Hangars and other small hangars in the north area • Establish SASO, Group II and Group I conventional hangar area north of the existing apron • Relocate Fuel Farm north of new SASO hangar area • Construct internal road west of Runway 8 connecting GA apron with terminal apron • Relocate ARFF to south end of existing apron • Establish Group II+ SASO area on southern portion of existing apron with buildings square with new apron alignment • Self-Fueling added on east edge of apron	• Taxiway B aligned connecting new Runway 8 threshold directly north to Runway 13 • Expand Apron east and square with Taxiway B and U.S. 83 • Remove T-Hangars and other small hangars in the north area • Establish SASO, Group II and Group I conventional hangar area north of the existing apron • Relocate Fuel Farm north near old fuel farm location • Construct internal road west of Runway 8 connecting GA apron with terminal apron • Expand and Remodel ARFF in its current location • Establish Group II+ SASO area on southern portion of existing apron with buildings square with new apron alignment • Establish Group I T-Hangar/Tie-Down area in southern portion of the existing apron • Self-Fueling added on east edge of apron	• Maintains existing FBO area but allows new large hangar and apron area after relocation of the VOR • Taxiway B reconstructed to connect to Runway 13 at the north and Runway 8 at the south but not through • Expand northern portion of Apron east and square with Taxiway B and U.S. 83 • Remove T-Hangars and develop northwest portion as an enclave for Group II SASO activity while not impacting southwest facing hangars • Establish Group II and Group I conventional hangar area north of the existing apron • Establish Group II+ SASO area and new apron near existing VOR • Construct new taxiway connecting terminal apron to Taxiway C3, east of the new apron • Relocate Fuel Farm to new east apron area • Self-Fueling at south end of new apron • Relocate ARFF to terminal area	• Taxiway B aligned connecting new Runway 8 threshold directly north to Runway 13 • Remove T-Hangars and other small hangars in the north area • Establish SASO conventional hangar area • Retain current Fuel Farm • Relocate ARFF to terminal area • Establish Group II+ SASO area on southern portion of existing apron • Establish Group I conventional hangar area east of existing apron with landside access from the south
Pros				
• Maintains all hangars in the north except as needed for replacement • T-Hangars developed in west area • Self-Fueling added	• Deep apron for all large hangars • T • Self-Fueling Added	• Reconstruct ARFF in current location • T-Hangars developed in west area • Self-Fueling Added	• Narrow apron width for current apron • VOR Removed • Opens areas along U.S. 83 for non-aeronautical development	• Fuel Farm stays in place • Hangars front east portion of hangar minimizing construction cost • Landside access to new hangars east of the apron
Cons				
• Taxiway B reduced from 75' to 50' or 35' wide • VOR Remains in place	• Taxiway B reduced from 75' to 50' or 35' wide • VOR Remains in place • No T-Hangars only tie downs as option • All north hangars would be removed/relocated	• Taxiway B reduced from 75' to 50' or 35' wide • VOR Remains in place • All north hangars would be removed/relocated	• Taxiway B relocated east • Contingent on VOR removal	• Taxiway B reduced from 75' to 50' or 35' wide • VOR Remains in place • Airside road for fuel trucks requires exiting and reentering the fenced airport


Alternative 1 - West
Notes
II - Group II Hangar Area
AA - Aerial Applicators
FF - Fuel Farm
QTA - Rental Car/Quick Turn Facility
SF - Self Fueling Island
ARFF - Aircraft Rescue and Firefighting
Airside Vehicle Road
Pavement Removal
Hangars/Buildings
Airside Pavement
Landside Pavement
SASO
SASO
SF
ARFF
FF
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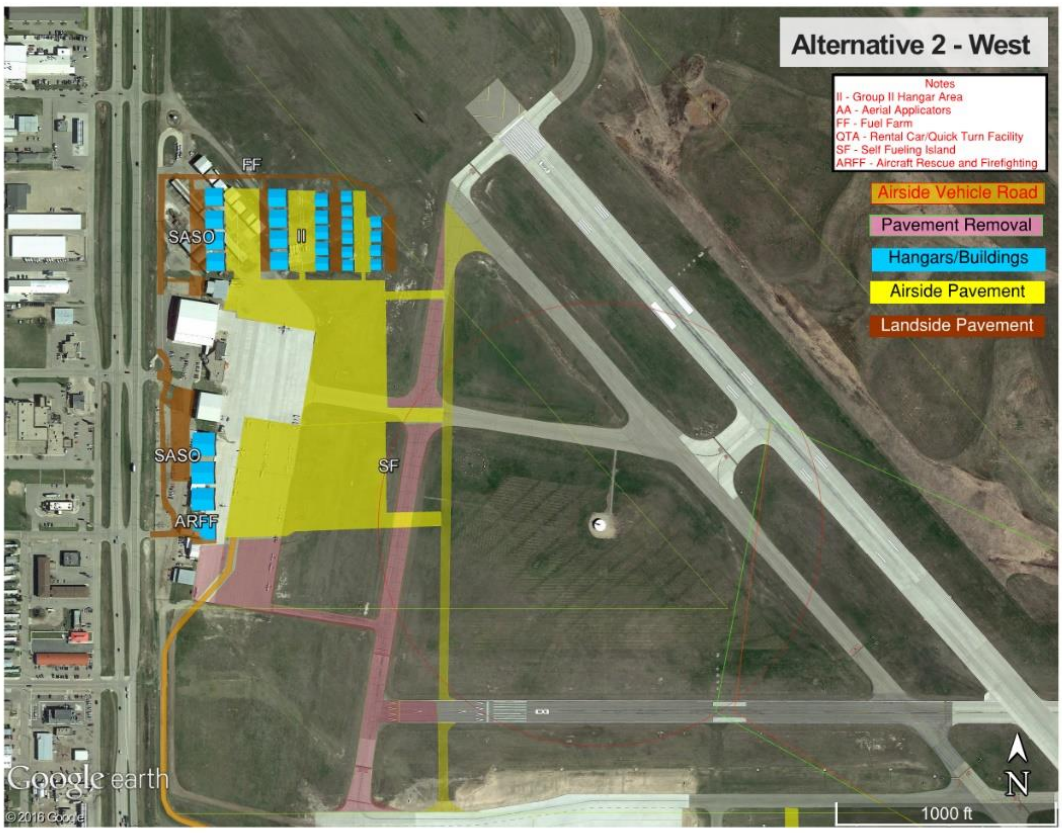
N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Notes
II - Group II Hangar Area
AA - Aerial Applicators
FF - Fuel Farm
QTA - Rental Car/Quick Turn Facility
SF - Self Fueling Island
ARFF - Aircraft Rescue and Firefighting
Airside Vehicle Road
Pavement Removal
Hangars/Buildings
Airside Pavement
Landside Pavement
FF
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SF
ARFF
Google earth
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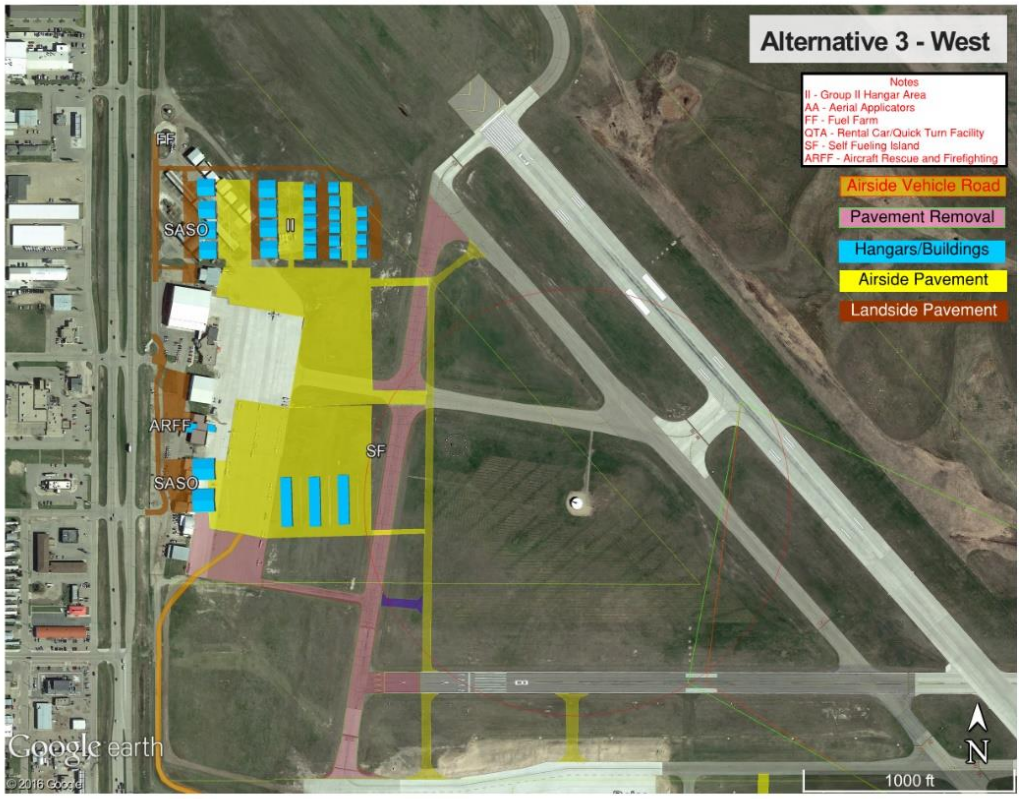
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AA - Aerial Applicators
FF - Fuel Farm
QTA - Rental Car/Quick Turn Facility
SF - Self Fueling Island
ARFF - Aircraft Rescue and Firefighting
Airside Vehicle Road
Pavement Removal
Hangars/Buildings
Airside Pavement
Landside Pavement
FF
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ARFF
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Google earth
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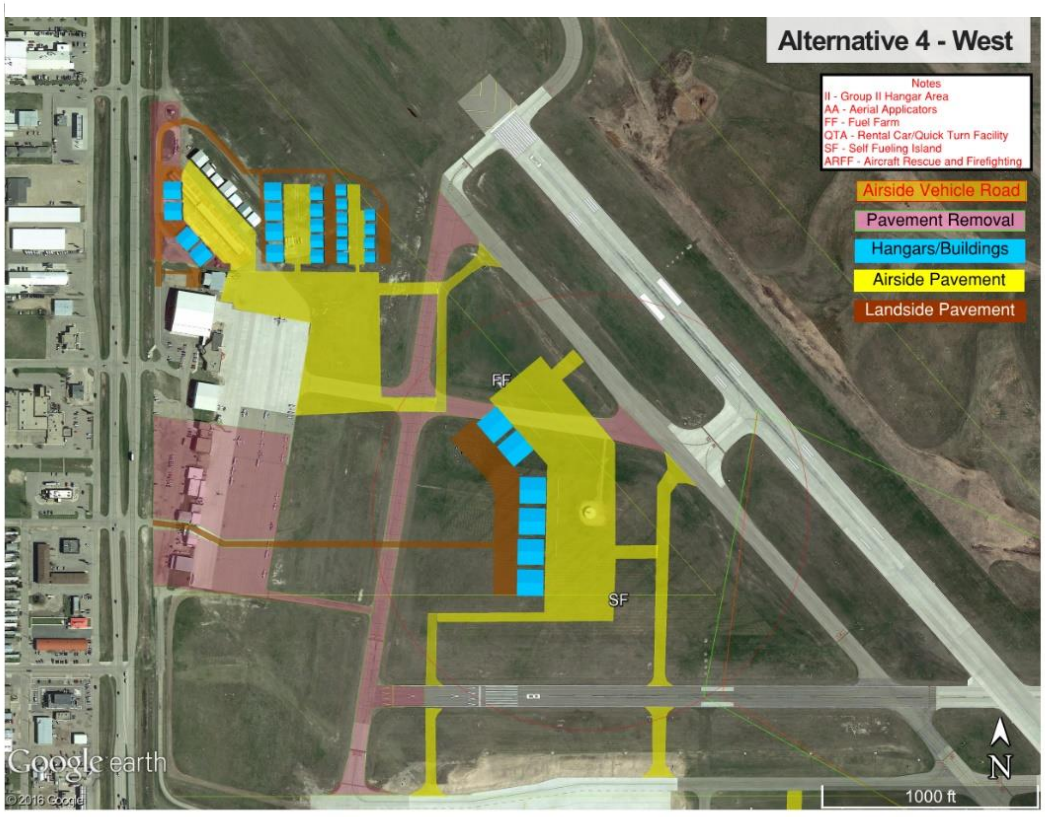
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Notes
II - Group II Hangar Area
AA - Aerial Applicators
FF - Fuel Farm
QTA - Rental Car/Quick Turn Facility
SF - Self Fueling Island
ARFF - Aircraft Rescue and Firefighting
Airside Vehicle Road
Pavement Removal
Hangars/Buildings
Airside Pavement
Landside Pavement
FF
SF
Google earth
1000 ft
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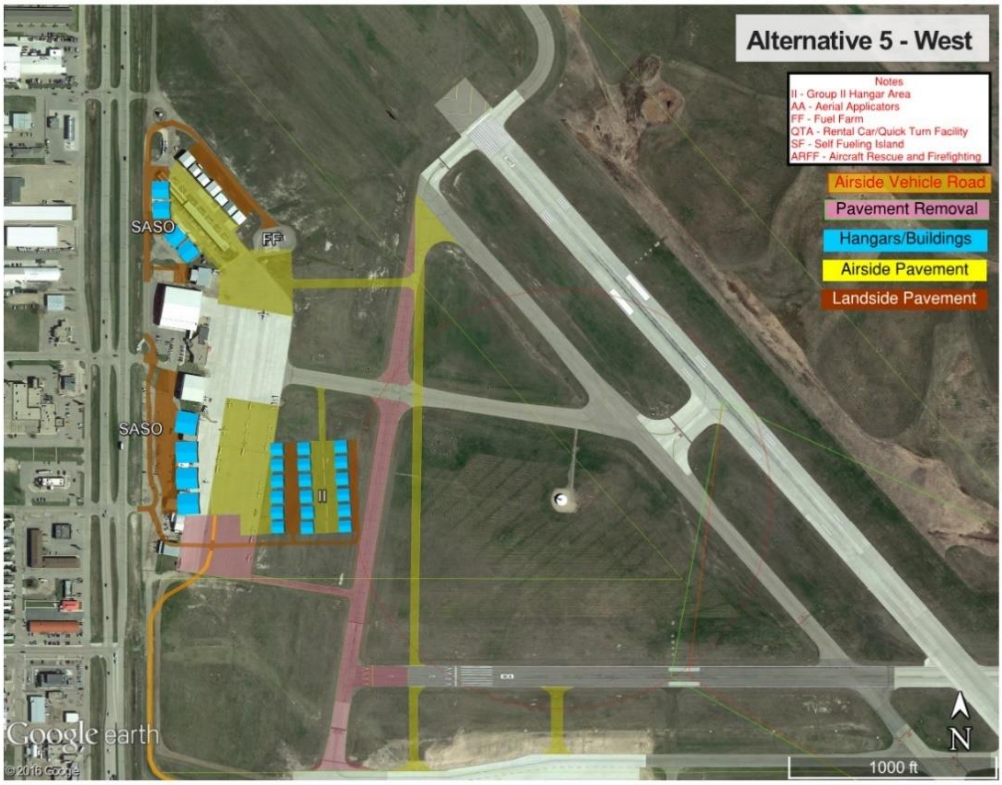
Alternative 5 - West
Notes
II - Group II Hangar Area
AA - Aerial Applicators
FF - Fuel Farm
QTA - Rental Car/Quick Turn Facility
SF - Self Fueling Island
ARFF - Aircraft Rescue and Firefighting
Airside Vehicle Road
Pavement Removal
Hangars/Buildings
Airside Pavement
Landside Pavement
SASO
FF
SASO
II
Google earth
N
1000 ft


Alternative 5 edited - West
Notes
II - Group II Hangar Area
AA - Aerial Applicators
FF - Fuel Farm
QTA - Rental Car/Quick Turn Facility
SF - Self Fueling Island
ARFF - Aircraft Rescue and Firefighting
Airside Vehicle Road
Pavement Removal
Hangars/Buildings
Airside Pavement
Landside Pavement
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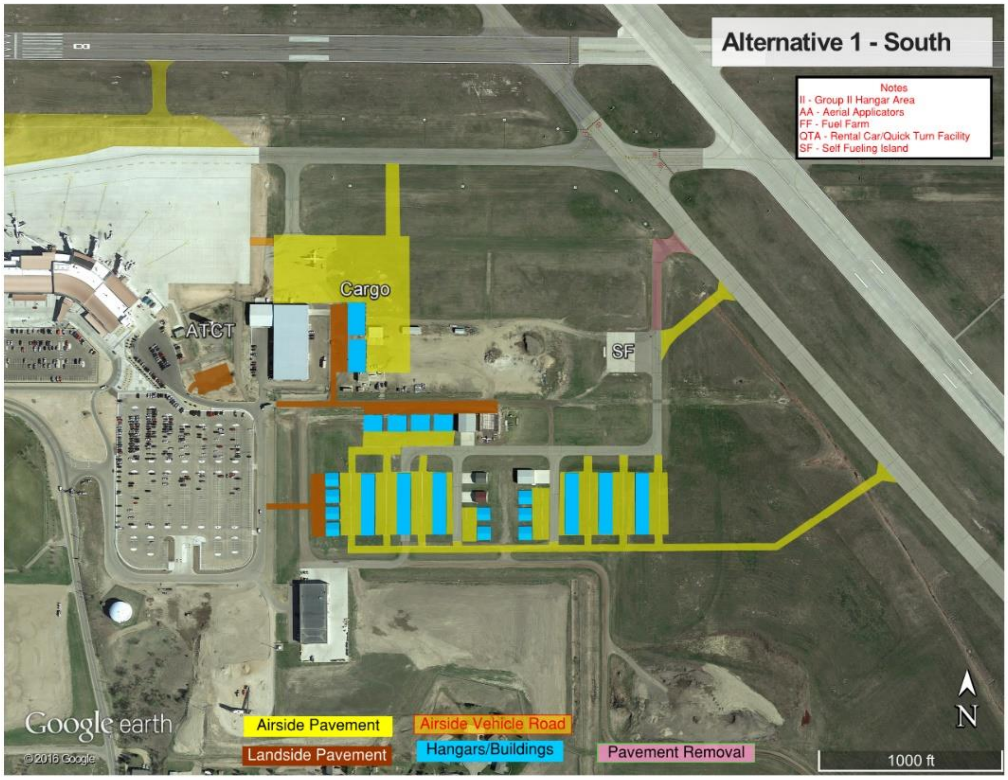
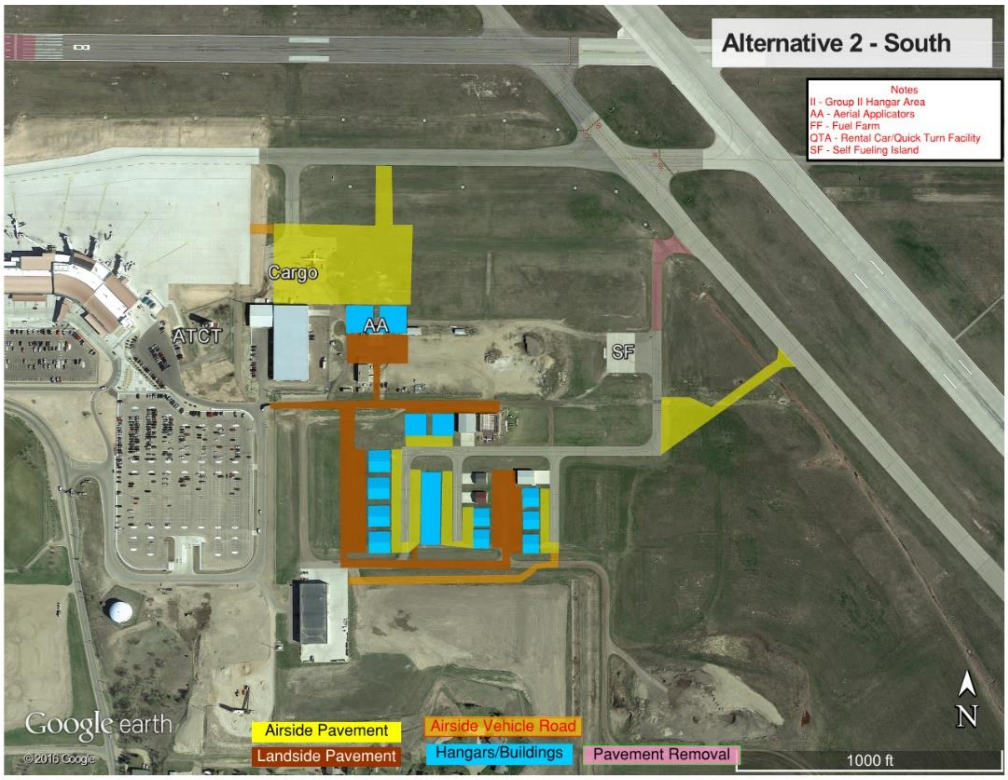

Alternative 1 - South
Notes
II - Group II Hangar Area
AA - Aerial Applicators
FF - Fuel Farm
QTA - Rental Car/Quick Turn Facility
SF - Self Fueling Island
Cargo
ATCT
SF
Google earth
© 2016 Google
Airside Pavement
Airside Vehicle Road
Landside Pavement
Hangars/Buildings
Pavement Removal
N
1000 ft


Alternative 2 - South
Notes
II - Group II Hangar Area
AA - Aerial Applicators
FF - Fuel Farm
QTA - Rental Car/Quick Turn Facility
SF - Self Fueling Island
Cargo
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Google earth
© 2016 Google
Airside Pavement
Airside Vehicle Road
Landside Pavement
Hangars/Buildings
Pavement Removal
N
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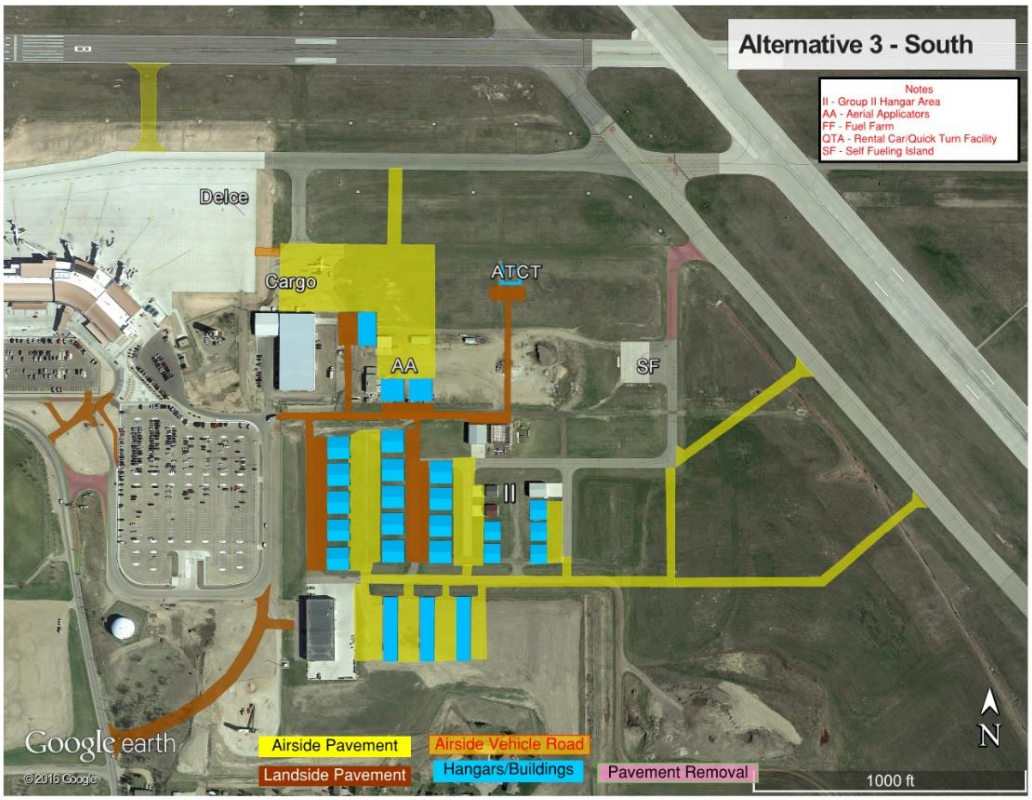
Alternative 3 - South
Notes
II - Group II Hangar Area
AA - Aerial Applicators
FF - Fuel Farm
QTA - Rental Car/Quick Turn Facility
SF - Self Fueling Island
Delce
Cargo
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Google earth
©2016 Google
Airside Pavement
Landside Pavement
Airside Vehicle Road
Hangars/Buildings
Pavement Removal
1000 ft
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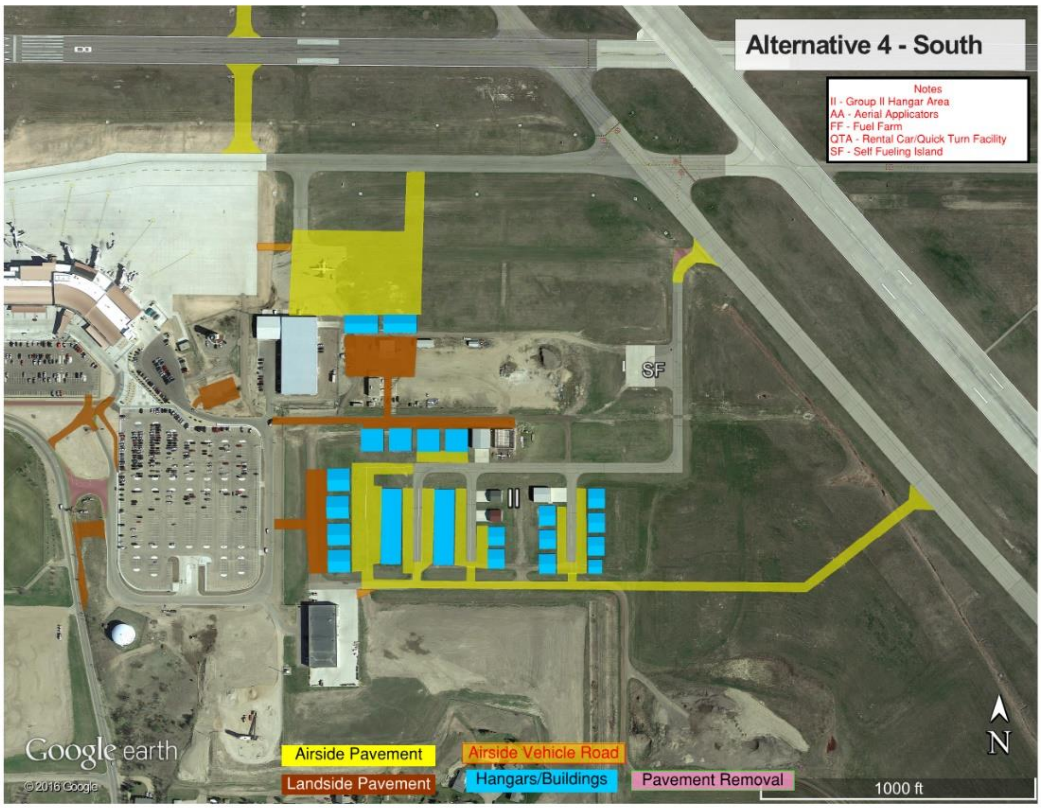
Alternative 4 - South
Notes
II - Group II Hangar Area
AA - Aerial Applicators
FF - Fuel Farm
QTA - Rental Car/Quick Turn Facility
SF - Self Fueling Island
SF
II
Google earth
©2016 Google
Airside Pavement
Landside Pavement
Airside Vehicle Road
Hangars/Buildings
Pavement Removal
1000 ft
N


Delce
Future Rental Storage
QTA
Parking Exit
Rental Storage
Cell
ATCT
Cargo
Employee Parking
Notes
II - Group II Hangar Area
AA - Aerial Applicators
FF - Fuel Farm
QTA - Rental Car/Quick Turn Facility
SF - Self Fueling Island
Alternative 1 - Terminal
Airside Vehicle Road
Pavement Removal
Hangars/Buildings
Airside Pavement
Landside Pavement
Google earth
© 2016 Google
1000 ft
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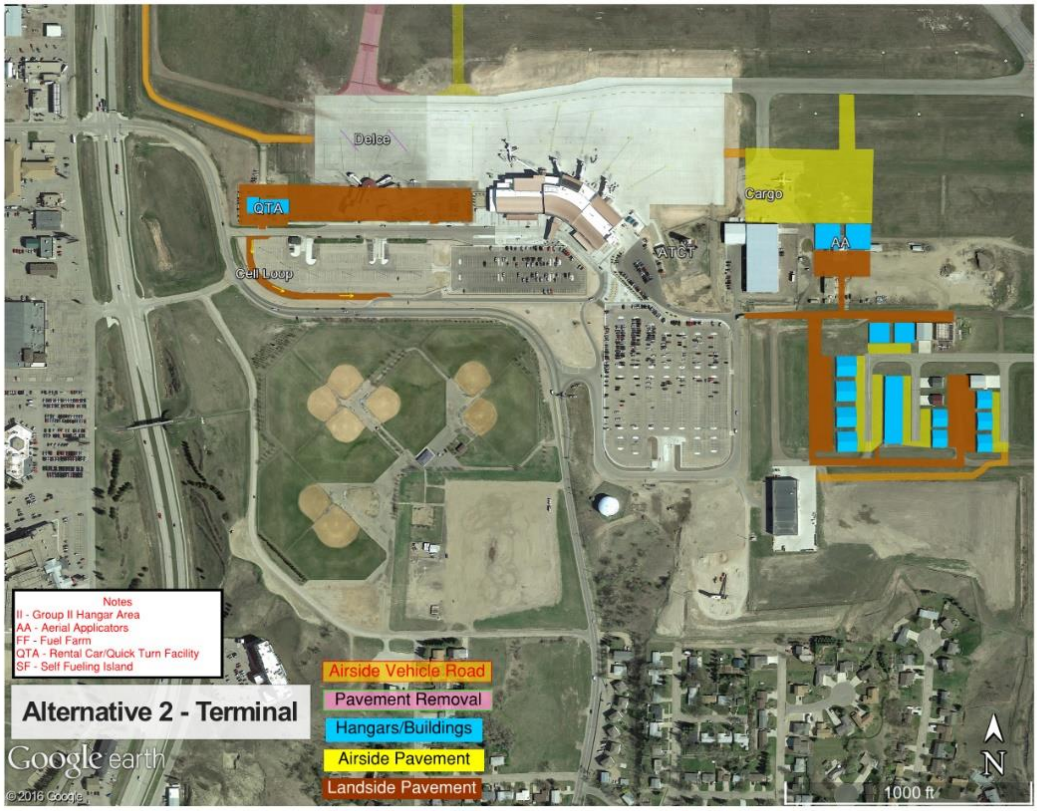
Delce
QTA
Cell Loop
ATCT
Cargo
AA
Notes
II - Group II Hangar Area
AA - Aerial Applicators
FF - Fuel Farm
QTA - Rental Car/Quick Turn Facility
SF - Self Fueling Island
Alternative 2 - Terminal
Airside Vehicle Road
Pavement Removal
Hangars/Buildings
Airside Pavement
Landside Pavement
Google earth
© 2016 Google
1000 ft
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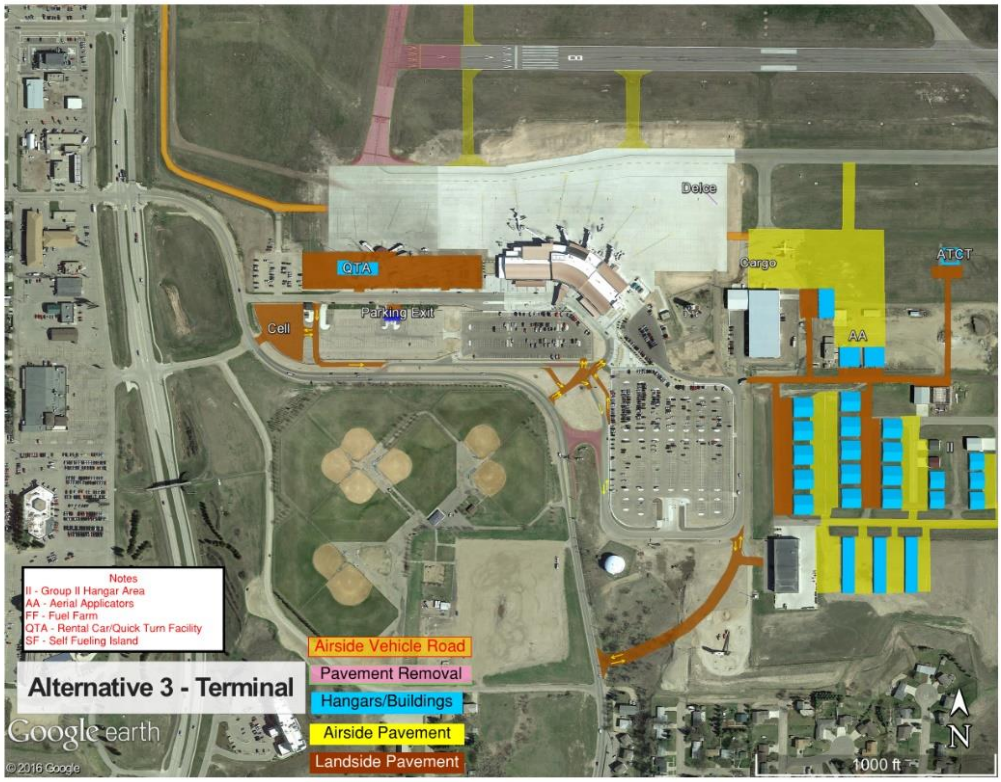
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Parking Exit
Cell
Cargo
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AA
Notes
II - Group II Hangar Area
AA - Aerial Applicators
FF - Fuel Farm
QTA - Rental Car/Quick Turn Facility
SF - Self Fueling Island
Alternative 3 - Terminal
Airside Vehicle Road
Pavement Removal
Hangars/Buildings
Airside Pavement
Landside Pavement
Google earth
© 2016 Google
1000 ft
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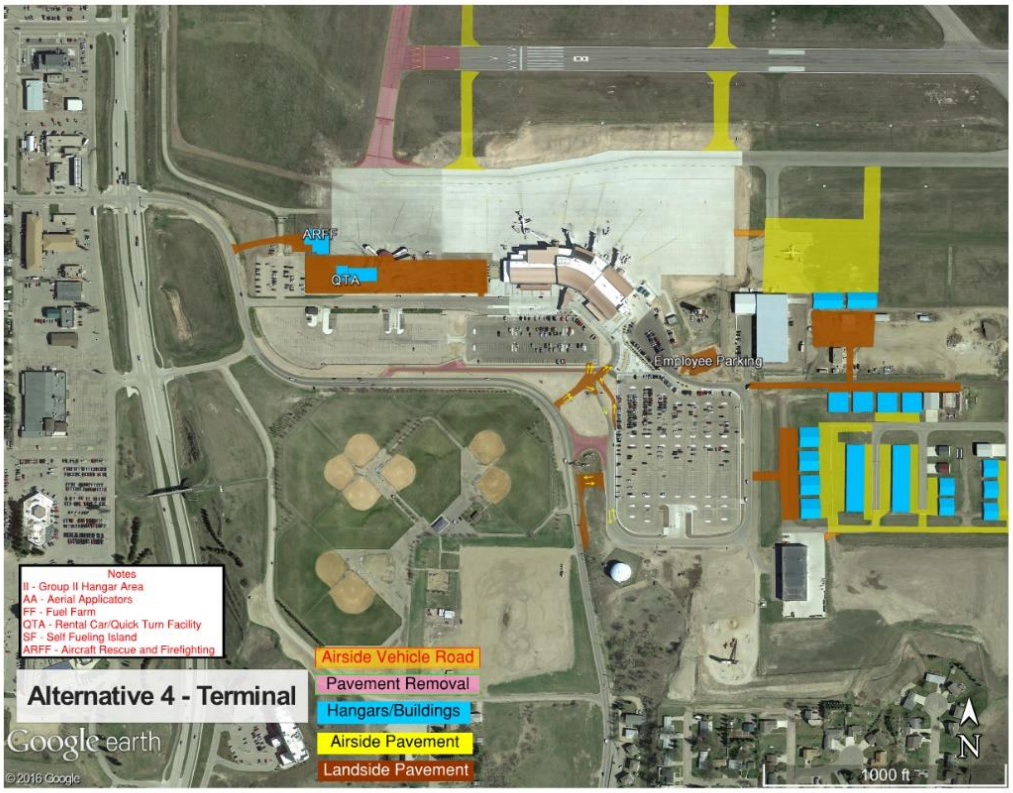
ARFF
QTA
Employee Parking
Notes
II - Group II Hangar Area
AA - Aerial Applicators
FF - Fuel Farm
QTA - Rental Car/Quick Turn Facility
SF - Self Fueling Island
ARFF - Aircraft Rescue and Firefighting
Alternative 4 - Terminal
Airside Vehicle Road
Pavement Removal
Hangars/Buildings
Airside Pavement
Landside Pavement
Google earth
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1000 ft
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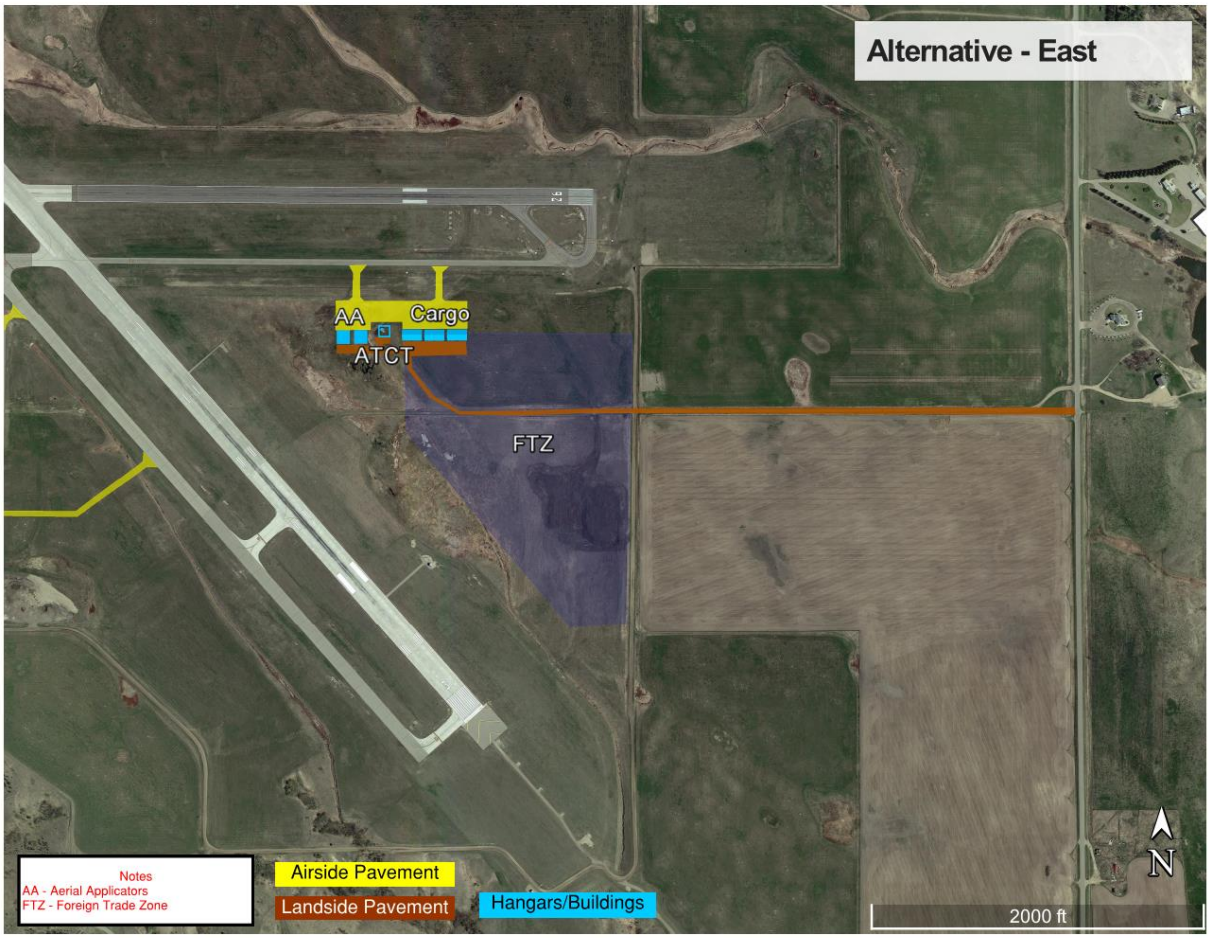
Alternative - East
AA
Cargo
ATCT
FTZ
Notes
AA - Aerial Applicators
FTZ - Foreign Trade Zone
Airside Pavement
Landside Pavement
Hangars/Buildings
N
2000 ft

MINOT
NTERNATIONAL AIRPORT

Minot International Airport
Airport Master Plan - Technical Advisory Committee
August 31, 2016 -- 1:00 p.m.

KLJ

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Kent Penney KLJ

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Minot International Airport Master Plan Study

Stakeholder Briefing
September 16, 2016

MINOT INTERNATIONAL AIRPORT

Airport Master Planning

Planning Activity Levels
from Chapter 3 - Forecast

Metric	Base	PAL 1 (5 Year)	PAL 2 (10 year)	PAL 3 (15 Year)	PAL 4 (20 Year)
Forecast Year	2014	2019	2024	2029	2034
Passengers					
Annual Enplanements	220,522	192,253	201,574	241,643	289,769
Peak Month Enplanements	20,486	17,860	18,726	22,449	26,920
Design Day Enplanements	898	783	821	984	1,180
Design Hour Enplanements	310	271	284	340	408
Design Hour Deplanements	379	330	346	415	498
Design Hour Total Passengers	450	391	398	485	571
Passenger Airline Operations					
Airline Operations	7,655	5,804	4,820	6,060	7,300
Design Hour	8.9	6.7	5.6	7.0	8.5
Total Operations					
Annual Operations	30,826	27,065	26,293	27,697	29,694
Peak Month	2,857	2,509	2,437	2,595	2,753
Design Day	117	103	100	107	113
Design Hour	20	17	17	18	19

Draft: Pending FAA Approval

Minot Runway Wind Coverage
95% FAA Standard

ALL-WEATHER
MOT ASOS (2005-2014) via FAA Airports GIS Website

113,960 Observations	10.5 Knots	13 Knots	16 Knots
Runway 13-31	87.03%	93.13%	97.85%
Runway 8-26	85.81%	93.09%	97.09%
Combined	96.21%	98.62%	99.65%
Combined*		99.45%	

*13 knots for Runway 8-26 (B-II) and 16 knots for Runway 13-31 (C-II)

INSTRUMENT FLIGHT RULES (IFR)
MOT ASOS (2005-2014) via FAA Airports GIS Website

23,416 Observations	10.5 Knots	13 Knots	16 Knots
Runway 13-31	87.84%	93.67%	97.97%
Runway 8-26	79.81%	87.03%	93.63%
Combined	94.90%	97.86%	99.34%
Combined*		99.18%	

*13 knots for Runway 8-26 (B-II) and 16 knots for Runway 13-31 (C-II)

Table 3-1. Allowable crosswind component per Runway Design Code (RDC)

RDC	Allowable Crosswind Component
A-I and B-I *	10.5 knots
A-II and B-II	13 knots
A-III, B-III, C-I through D-III D-I through D-III	16 knots
A-IV and B-IV, C-IV through C-VI, D-IV through D-VI	20 knots
E-I through E-VI	20 knots

* Includes A-I and B-I small aircraft.

Examples of ARC Aircraft

Airfield: Runway 13/31
Recommendations

- Runway Length Sufficient (7,700')
- Ultimate 8,500' Runway Length
- Upgrade Runway 13 Approach
  - 3/4 mile visibility
- Protect for Runway 31 Approach Enhancements
- Runway Design Code: D-III to C-III
- Taxiway Design Group 4 to 3
  - 50' Width

Airfield: Runway 8/26
Recommendations

- Runway 8 End Design/Incompatible Land Uses
- Wind Coverage Requires B-II Capability
- Runway Design Code C-III to B-II
- Taxiway Design Group 3 to 2 (35' Width)
- Need 5,500' x 75' Runway (Business Jets)
- Meet FAA Standards = Maximize FAA Funding
- Preserve Runway Width 100'
- Preserve Maximum Length 6,200'

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Taxiway System
Recommendations

1. Taxiway B
   - Former Runway 1-19
   - Realignment provides greater depth for GA development
   - Realignment eliminates in-line Runway 8
2. Taxiway F
   - Align with direct connection to Taxiway C
3. Taxiway D
   - Taxiway Size East & West of Runway 13-31
   - Realign further North along Commercial Apron

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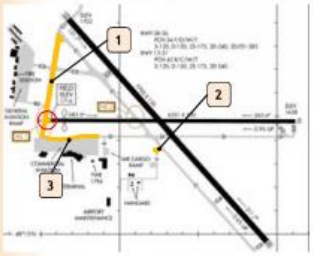
Taxiway System
Recommendations



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Passenger Terminal
pg. 37-47

- New terminal meets most forecasted needs; peak activity drives needs
- 6 gates needed in long-term
- Total gate hold room space sufficient
- Security delays avoided if 3-4 lanes are used in long-term
- Non-secure restroom fixtures near capacity in long-term
- Terminal apron depth limited for Gates 4, 5 and 6

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Air Cargo
pg. 48-50

- Consolidate operations to single public area
  - UPS, FedEx, Others
- Need nearly double existing south cargo apron in long-term
- Strengthen pavement for regular use of ATR-42

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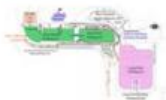
Parking & Rental Cars
pg. 55-58

- Automobile Parking
  - Within 15% of long-term capacity
  - Public Parking surplus is 205
  - Employee Parking deficit is 22
- Rental Car
  - 60 -> 100 additional ready/return spaces
  - 200 -> 263 storage spaces
  - Consolidated rental car Quick Turnaround (QTA) facility



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Ground Access and Circulation

pg. 58-59

- Terminal Access
  - 21st Avenue connection to Airport Road
  - Primary Terminal Entry Point
  - Public Transit
- GA Access & Parking
  - Frontage Road along U.S. 83
  - Sufficient depth for parking between frontage road and buildings
  - Connecting GA frontage road to Terminal area
  - Public access to any hangar where business is conducted and to Group II hangars

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General Aviation Hangars

pg. 48-51

- Dakota Territory Aviation Museum
  - 25 of 107 current aircraft
  - Not included in projections
- Aircraft in Hangars vs. Apron Tie-Downs
  - 27 aircraft on apron
- Replacing Hangar Space
  - 36,500 sf of existing 128,840 sf
  - Dilapidated or functionally inadequate
- Long-term demand ranges from 76% to 135% of existing hangar space
- Larger average aircraft size

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Hangar Layout Types

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Hangar Development Issues

- Hangar Types
  - T-Hangar, Small Box, Large Box, FBO/SASO
- Development Potential
  - Required Rental Rates vs. Current Rental Rates
- Target Markets
  - Premium User vs. Self Serve User
- T-hangars
  - Future Demand
  - Potential Tenants considering Rent Required
- Funding
  - City will not provide any funding for GA Hangars

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Hangar Development Issues

- Minimum Standards
  - Revised to support the preferred option
- Airport funding for GA Hangars
  - Slim possibility
- Reversion of Land Leases
  - Amortize investment then revert to airport and lease property as a building lease

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Potential Hangar Space Needs

pg. 53

Category	Existing	Base	PAL 1	PAL 2	PAL 3	PAL 4
Hangar Space Needs - Not Including Current Tie-Downs						
T-Hangar	75,900	75,750	77,905	79,066	79,895	81,884
Small Conventional	74,640	60,473	73,720	83,885	95,943	105,530
Large Conventional	38,300	26,303	35,191	45,696	57,225	62,353
Maintenance/ Transient		20,505	25,363	29,729	34,613	37,953
Total	128,840	123,030	152,179	178,376	207,676	227,721
Capacity/ (Deficiency)	-	26,315	(23,339)	(50,464)	(78,836)	(98,881)
Hangar Space Needs - Including Current Tie-Downs						
T-Hangar	75,900	33,548	38,138	40,610	42,376	46,613
Small Conventional	74,640	75,986	95,100	109,758	129,021	142,139
Large Conventional	38,300	33,491	44,968	57,430	72,084	78,793
Maintenance/ Transient		21,454	26,731	31,167	36,522	40,132
Total	128,840	164,479	204,937	238,944	280,003	307,678
Capacity/ (Deficiency)	-	(35,639)	(76,097)	(110,104)	(151,163)	(178,838)

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General Aviation Apron
pg. 53-55

- Hangaring vs. Tie-Downs
  - Primary Apron
  - Storage Apron/T-Hangar Area
  - Need varies from 29% surplus to 44% deficit
- Pavement Rehabilitation
  - North and South portions of GA apron
  - Add depth when increasing capacity

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Apron Space Needs
pg 54

Category	Existing	Base	PAL 1	PAL 2	PAL 3	PAL 4
Apron Area Need (Transient Only)						
Equivalent Aircraft	54	38	34	36	35	37
Area Per Aircraft (SY)	1,056	1,100	1,100	1,100	1,100	1,100
Apron Area (SY)	57,000	41,800	37,400	39,600	38,500	40,700
Deficit/Surplus	-	*15,200*	*19,600*	*17,400*	*18,500*	*16,300*
Apron Area Need (Transient & Based Aircraft)						
Equivalent Aircraft	54	63	63	68	69	75
Area Per Aircraft (SY)	1,056	1,100	1,100	1,100	1,100	1,100
Apron Area (SY)	57,000	69,300	69,520	74,470	76,120	82,060
Deficit/Surplus	-	*(12,300)*	*(12,520)*	*(17,470)*	*(19,120)*	*(25,060)*

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Support Facilities & Other
pg. 59-62

- Additional ARFF building space (crew)
- Fuel storage capacity
- Preserve ATCT line-of-sight to airfield
- Preserve VOR critical area
  - VOR needed for FAA minimal operational network

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Airfield Alternatives

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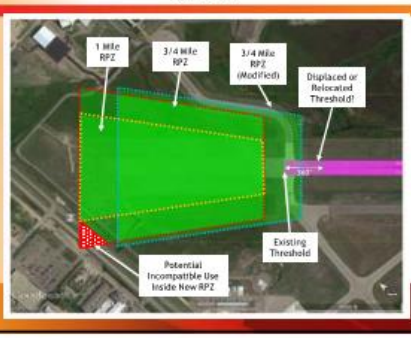
Runway 13-31 Length
pg. 15-18

Runway 13 Approach
pg. 13-15




Runway 8 Existing C-III
pg. 13-15
Departure RPZ
Approach RPZ
6,351' Runway with 393' Displacement
40:1 Departure Surface
29:1 Slope to Clear Approach Airspace


RPZ's and Airspace Surfaces
Departure Surface 40:1
6,175' Runway
RPZ (On-Airport)
31:1 Slope to Clear Approach Airspace


Planning Considerations
Developable Space
VOR Critical Area
6,200' Runway
Potential Taxiway Location
Potential Development Area Impacted by Departure Surface
Developable Space

All alternatives provided on August 31, 2016 to the Advisory Committee were provided to the stakeholders for feedback.

Minot Stakeholder Meetings – Sign-In Sheet – September 16, 2016

MINOT INTERNATIONAL AIRPORT

Minot International Airport
Airport Master Plan - Stakeholder Meetings (9:00 a.m.)
September 2016

KLJ

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MINOT INTERNATIONAL AIRPORT

Minot International Airport
Airport Master Plan - Stakeholder Meetings
September 2016 10:30 am

KLJ

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Warren Pietsch	Pietsch Aircraft/Minot Aero	701-720-6792	N180WP@SRT.com
Shelley Cole	Minot Aero Center	701 857 4121	LINEMANAGER@MINOTAEROCENTER.COM

MINOT
NTERNATIONAL AIRPORT

Minot International Airport
Airport Master Plan - Stakeholder Meetings (1:00 p.m.)
September 2016

KLJ
ATTENDANCE LIST

Name:	Organization/Business:	Phone:	Email:
Erik Olsen	DGS	715-204-5064	Erik.Olsen@delta.com
JAN HARTLE	TOWER	701-852-2346	janice.hartle@nidwestfotos.com
Brynne Soukup	TDA	857-251-7859	brynnes.treyodugan@gmail.com

WELCOME TO THE MASTER PLAN OPEN HOUSE

AIRPORT MASTER PLAN UPDATE

- Please sign in and take a handout.
- If you have any questions, staff members from the Airport and KLJ are on hand to assist.
- Don't forget to fill out your comment sheet and help yourself to some refreshments.
- THANK YOU FOR JOINING US!

MINOT INTERNATIONAL AIRPORT — OPEN HOUSE - OCT 19, 2016 — KLJ

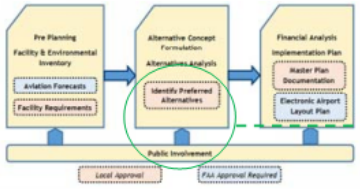
MASTER PLAN OVERVIEW

AIRPORT MASTER PLAN UPDATE

What is an Airport Master Plan?

- Official Airport Planning Document
- Reviewed by FAA and NDAC
- Reflects City of Minot's Goals for the Airport
- Depicts Future Airport Development Over 10-20 Years
- Future Projects Contingent Upon Demand, FAA Funding, and Environmental Approval

Airport Master Planning Process



The purpose of the Open House is to provide an update on the Master Plan progress and to gather public input on proposed development alternatives.

MINOT INTERNATIONAL AIRPORT — OPEN HOUSE - OCT 19, 2016 — KLJ

AIRPORT DIAGRAM AND DESIGN DEFICIENCIES

AIRPORT MASTER PLAN UPDATE

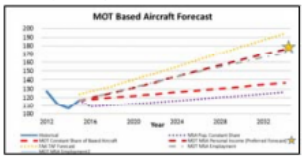
MINOT INTERNATIONAL AIRPORT — OPEN HOUSE - OCT 19, 2016 — KLJ

AVIATION ACTIVITY FORECASTS

AIRPORT MASTER PLAN UPDATE

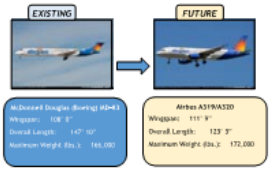
What are "Forecasts"?

- Forecasts of future levels of aviation activity are the basis for effective decisions in airport planning.
- Forecasts should be realistic and based on the latest available data at the time.
- Projections provide the basis for improved facilities to accommodate aviation demands.
- Airport activity measures including passengers boarding commercial airlines (enplanements), takeoffs and landings (operations), and aircraft claiming the airport as their home base (based aircraft).



Critical Design Aircraft

- The critical design aircraft is a single aircraft or a family or similar aircraft with the most demanding operational characteristics.
- These aircraft are the basis for airport design standards.



Overview of MOT Aviation Activity Forecasts

	2014 (Existing)	2019 (Short-Term)	2024 (Mid-Term)	2034 (Long-Term)	Compound Annual Growth Rate
Passenger Enplanements	220,522	192,253	201,574	289,769	1.4%
Annual Operations	30,826	27,065	26,293	29,694	-0.2%
Based Aircraft	107	128	144	176	2.5%

MINOT INTERNATIONAL AIRPORT — OPEN HOUSE - OCT 19, 2016 — KLJ

DISPOSITION OF OLD PASSENGER TERMINAL

AIRPORT MASTER PLAN UPDATE

Points of Consideration

- Location of Structure
- Condition of Structure
- Potential Uses
- Federal Policies/ Regulations

Findings

- Cost of Rehabilitation $750k to $1.5m over next 5 years
- Cost of Demolition $450k (eligible for FAA Reimbursement)
- Aeronautical Uses—must be as self-sustaining as possible
- Non-Aeronautical Uses—Must receive fair market value, be compatible with airport, approved by FAA

Departure Surface Impact

Based on the previous Airport Layout Plan the Runway 8 Threshold creates a departure surface limiting the use of the area around the old passenger terminal.

Conclusion

It was concluded by the City to demolish the building using an FAA grant to make space for activities at the airport which were consistent with the location. Cost to the City was the grant match of approximately $39,000.

MINOT INTERNATIONAL AIRPORT — OPEN HOUSE - OCT 19, 2016 — KLJ

AIRPORT FACILITY REQUIREMENTS

AIRPORT MASTER PLAN UPDATE

Planning Activity Levels

The activity levels that could possibly occur within the planning period.

Metric	Base	PAL 1 (5 Year)	PAL 2 (10 year)	PAL 3 (15 Year)	PAL 4 (20 Year)
Forecast Year	2014	2019	2024	2029	2034
Passengers					
Annual Enplanements	220,522	192,253	201,574	241,645	289,769
Design Day Enplanements	890	783	821	984	1,180
Design Hour (also Passengers)	490	391	786	985	1,180
Peak Hour Arrivals					
Annual Operations	30,826	27,065	26,293	27,697	29,694
Design Day	117	103	100	107	113
Based Aircraft					
Total Based Aircraft	107	128	144	160	176

Airfield

Runway 8/26 needed to meet FAA wind coverage for ARC C-II aircraft (Business Jets)

Runway 13/31: Existing runway length sufficient. Reserve space for ultimate extension From 7,709' to 8,500'

Runway 13/31: Upgrade Runway 13 approach to achieve lower visibility minimums (3/4 mile)

Runway 08/26: Minimum 5,500' x 75' runway required. Preserve 6, 175' length.

General Aviation

- Forecast 69 additional based aircraft in next 20 years
- 47% additional hangar space to accommodate new based aircraft
- Long-term demand ranges from 76% to 135% increase over existing hangar space depending on number of aircraft stored on the apron
- Existing GA apron requirements heavily dependent on the number of based aircraft stored on the apron.
- Apron need varies. Ranges from a 29% surplus to a 44% deficit.

Category	Base	PAL 1	PAL 2	PAL 3	PAL 4
Design Hour Airside Operations (Peak Hour)					
Single Engine (C)	78,700	97,333	99,287	99,474	99,420
Multi-Engine (C)	17,000	17,000	17,000	17,000	17,000
Turboprop (C)	14,000	31,000	32,750	32,900	32,900
Helicopter (C)	1,000	1,000	1,000	1,000	1,000
Itinerant Operations	30,700	49,333	50,037	50,374	50,320
Total	122,000	192,000	198,000	207,000	207,000
Capacity Deficiency	78,700	[illegible]	[illegible]	[illegible]	[illegible]
Design Hour Landside Operations (Peak Hour)					
Single Engine (C)	117,825	127,127	128,261	131,251	131,251
Multi-Engine (C)	17,000	17,000	17,000	17,000	17,000
Turboprop (C)	14,000	31,000	32,750	32,900	32,900
Helicopter (C)	1,000	1,000	1,000	1,000	1,000
Itinerant Operations	30,700	49,333	50,037	50,374	50,320
Total	122,000	192,000	198,000	207,000	207,000
Capacity Deficiency	78,700	[illegible]	[illegible]	[illegible]	[illegible]

MINOT INTERNATIONAL AIRPORT — OPEN HOUSE - OCT 19, 2016 — KLJ

AIRPORT FACILITY REQUIREMENTS CONT'D

AIRPORT MASTER PLAN UPDATE

Terminal Area Parking

- Public parking surplus of approximately 200 spaces; space available will be within 15% of long-term capacity needs.
- Need additional space for employee parking
- Need additional space for rental car ready/return and rental car storage
- Look into Consolidated rental car Quick Turnaround (QTA) facility

Employee Parking	Base	FAC 1	FAC 2	FAC 3	FAC 4
Employee Parking Demand	127	71	82	92	102
Effective Employee Parking Supply	81	81	81	81	81
Surplus (Deficiency)	(46)	10	(1)	(11)	(21)

Rental Car Ready/Return					
Peak Hour Transactions (Demand)	107	119	133	147	161
Effective Ready/Return Supply	90	90	90	90	90
Capacity (Deficiency)	(17)	(29)	(43)	(57)	(71)

Rental Car Storage					
Rental Car Storage Demand	207	229	257	279	307
Effective Rental Car Storage Supply	0	0	0	0	0
Capacity (Deficiency)	(207)	(229)	(257)	(279)	(307)

Passenger Terminal Complex

- Peak activity drives terminal space needs
- Four gates needed for overnight aircraft schedule; Five gates needed for peak activity
- Security checkpoint may need 4th lane for peak long-term activity to maintain short processing times

Support Facilities

- Aircraft Rescue & Fire Fighting (ARFF) Building needs additional crew quarter space
- Limit Hangar Development to maintain Airport Traffic Control Tower line-of-sight or relocate facility

Air Cargo

- Look at consolidation of air cargo activities to one area
- Need nearly double existing cargo apron in long-term
- Additional apron pavement strength needed for FedEx ATR-42

Category	Existing	Base	FAC 1	FAC 2	FAC 3	FAC 4
Cargo Aircraft						
Design Group I	1	1	1	1	1	1
Design Group II	1	1	1	1	1	1
Design Group III	1	1	1	1	1	1
Total	3	3	3	3	3	3
Cargo Apron Space (SY)						
Design Group I		1,200	1,200	1,200	1,200	1,200
Design Group II		2,400	2,400	2,400	2,400	2,400
Design Group III		5,400	5,400	5,400	5,400	5,400
Total Space	9,000	9,000	9,000	9,000	9,000	9,000

ALTERNATIVES OVERVIEW AND PROCESS

AIRPORT MASTER PLAN UPDATE

Airport development shown in each of the alternatives consists of two primary phases:

- Future (within next 0-10 years) - development the airport should pro-actively pursue or facilitate based on forecast activity as well as safety and capacity needs through the study planning period.
- Ultimate (10-20+ years) – development which may occur whose depiction on the Airport Layout Plan (ALP) is primarily to preserve the space so that conflicting future development does not occur. There should be active efforts by the airport to preserve space for this potential development.

Input on these alternatives was provided by airport users and stakeholders such as the airlines, rental car companies, hangar tenants, FBO operator, Air Traffic Control, and more. Additionally, other departments and organizations within the City of Minot such as the Finance Department, Fire Department, Chamber of Commerce, and Area Development Corporation also weighed in on the alternatives formulation.

Once public feedback has been received, the development alternatives will be further evaluated based on financial costs, operational feasibility, environmental impacts, FAA design standards, and flexibility for future growth. This additional vetting, combined with the stakeholder feedback and public input, will lead to selection of the Preferred Alternative, which is the overall recommended plan of development for the airport. The Preferred Alternative will be shown on the ALP and presented to the City and FAA for approval, thus culminating the Master Plan Process.

To simplify how the alternatives were examined, the airport was divided into five development areas as shown above and described below:

South Area (GREEN) - south of Runway 8/26 and west of Runway 13/31 excluding the terminal area.

West Area (PURPLE) - west of Runway 13/31 and north of Runway 8/26.

Terminal Area (YELLOW) - around the terminal including auto parking, roads, and commercial space.

East Area (RED) - east of Runway 13/31 excluding the north area.

North Area (BLUE) - north of Runway 13 including the Guard and Museum.

WIND COVERAGE AND INSTRUMENT APPROACHES

AIRPORT MASTER PLAN UPDATE

Wind Coverage

ALL-WEATHER

ADT ASOS (2005-2014) via FAA Airports GIS Website			
All-Wx Observations	10.5 Knots	13 Knots	16 Knots
Runway 13-31	87.02%	93.13%	97.83%
Runway 8-26	85.81%	92.09%	97.09%
Combined	96.23%	98.62%	99.65%
Combined*		99.45%	

*13 knots for Runway 8-26 and 16 knots for Runway 13-31

INSTRUMENT FLIGHT RULES (IFR)

ADT ASOS (2005-2014) via OurAirports GIS Website			
IFR/All Observations	10.5 Knots	13 Knots	16 Knots
Runway 13-31	87.84%	93.67%	97.97%
Runway 8-26	79.81%	87.03%	93.63%
Combined	94.90%	97.86%	99.24%
Combined*		99.18%	

*13 knots for Runway 8-26 and 16 knots for Runway 13-31

Table 3-1. Allowable crosswind component per Runway Design Code (RDC)

RDC	Allowable Crosswind Component
A-I and B-I*	10.5 knots
A-II and B-II	13 knots
A-III, B-III, C-I through D-III	16 knots
A-IV and B-IV, C-IV through C-VI, D-IV through D-VI	20 knots
E-I through E-VI	20 knots

*Includes A-I and B-I small aircraft

Instrument Approach Improvement Potential

Runway End	Approach Type	Proposed Minimums	Additional Cost Item	Additional Cost Item (Percentage)	Non-Additional Capacity	Non-Additional Ability
13	APV	350 feet, 1 mile	1 ILS	16.66%	0.0125	12.5%
31	NPA/GPS	700 feet, 1 mile	1 ILS	16.66%	0.0125	12.5%
31	LNAV/VNAV	350 feet, 1 mile	1 ILS	16.66%	0.0125	12.5%
8	APV	350 feet, 1 mile	1 ILS	16.66%	0.0125	12.5%
8	NPA/GPS	700 feet, 1 mile	1 ILS	16.66%	0.0125	12.5%
26	APV	350 feet, 1 mile	1 ILS	16.66%	0.0125	12.5%
26	NPA/GPS	700 feet, 1 mile	1 ILS	16.66%	0.0125	12.5%

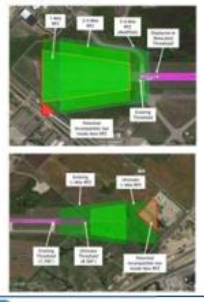
Source: FAA Airports GIS Website Data for Minot International Airport (2005-2014); KLJ Analysis
APV = Runway Visual Range, i.e., a station who important, ILS = Instrument Landing System
*Wind coverage by runway end only. 16.7 level commercial component for Runway 13-31, 13 knot unwanted for Runway 8-26

RUNWAY AND APPROACH ALTERNATIVES

AIRPORT MASTER PLAN UPDATE

Runway 13-31

- Runway 13 Approach Visibility Improvements—1 mile to 3/4 mile
- Runway Length—7,700' to 8,500'



Runway 8-26

- Design Aircraft from C-II to B-II
- Relocate Runway 8 Threshold to eliminate incompatible land uses in Runway Protection Zone

TERMINAL AREA ALTERNATIVES

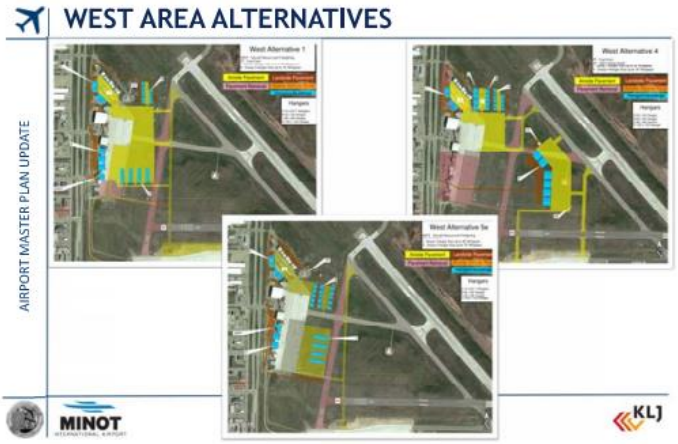
AIRPORT MASTER PLAN UPDATE

Alternative 2	Alternative 4
•QTA far west of terminal •Rental Car Ready/Return and Storage west of terminal •Commercial Apron expanded to the North •Fuel & direct to connects apron to Hwy 83 & reroute •Drill Loop combining loop road and parallel parking for greeters waiting for passengers •Additional Employee Parking	•QTA far west of terminal •Rental Car Ready/Return and Storage west of terminal •Commercial Apron stays as is •ARFF on west end of commercial apron •Loop Road to return to terminal •Drill out connected to Airport Road and Loop Road •Additional Employee Parking
Pros	
•Drill Loop creates a loop and parallel car parking •Additional Depth for Gates 4, 5, and 6	•ARFF near active service •New parking entry exit booth for Long Term
Cons	
•Loop road is almost parallel to existing airport road	•Additional Taxiway needed for Long Term Booth

EAST AREA ALTERNATIVES

AIRPORT MASTER PLAN UPDATE

Alternative 1
East side has no utilities or road access so this infrastructure will be necessary for any development. Also some wetlands exist east of Runway 13-31 which will impact development.
•ATCT and Cargo south of Runway 26 •Aerial Applicators east of Runway 31 •Airfield access to Taxiway D •Road access to 27th Street NE
Pros
•Makes use of existing Taxiway D for access to the airfield •Convenient location to industrial areas on east side of Minot •ATCT development in this area could enable the base infrastructure for other development •FTZ can be used for aeronautical and non-aeronautical uses
Cons
•No existing infrastructure on east side (i.e. water, sewer, paved roads, electrical, gas etc.)


WEST AREA ALTERNATIVES
AIRPORT MASTER PLAN UPDATE
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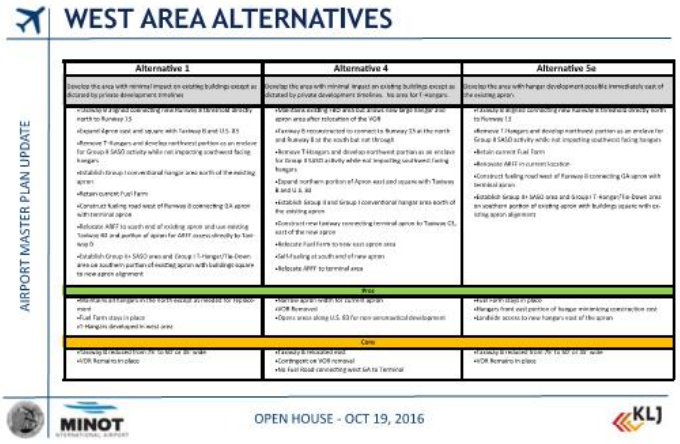
WEST AREA ALTERNATIVES
AIRPORT MASTER PLAN UPDATE
Alternative 1
Alternative 4
Alternative 5e
Pros
Cons
MINOT
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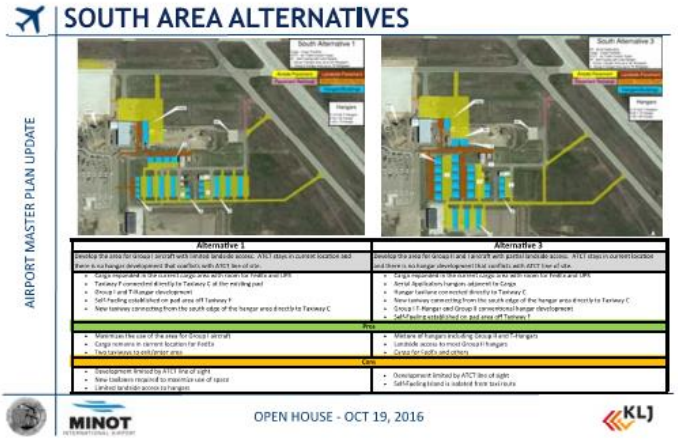
KLJ


SOUTH AREA ALTERNATIVES
AIRPORT MASTER PLAN UPDATE
Alternative 1
Alternative 3
Pros
Cons
MINOT
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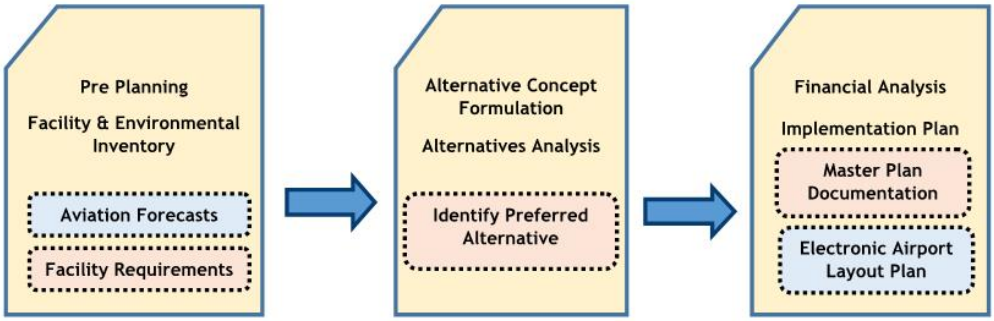
Minot International Airport (MOT)
Airport Master Plan Update & Electronic Airport Layout Plan

Airport Master Planning (AMP)

An Airport Master Plan is a comprehensive study of an airport and usually describes the short-, medium-, and long term development plans to meet future aviation demand. The Master Plan includes an Electronic Airport Layout Plan (eALP) which is required for an airport to be considered for federal project funding.



Aviation Forecasts

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	2014 (Existing)	2019 (Short-Term)	2024 (Mid-Term)	2034 (Long-Term)	Annual Growth Rate
Passenger Enplanements	220,522	192,253	201,574	289,769	*1.4%*
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Based Aircraft	107	128	144	176	*2.5%*

Critical Design Aircraft

The critical design aircraft is a single aircraft or a family or similar aircraft with the most demanding operational characteristics. These aircraft are the basis for airport design standards.

McDonnell Douglas (Boeing) MD-83

Wingspan:	108' 0"
Overall Length:	147' 10"
Maximum Weight (lbs.):	166,000
FAA Airplane Reference Code:	D-III
FAA Taxiway Design Group:	4
2015 Operations @ MOT:	532
Forecast 2024 Operations @ MOT:	0

Airbus A319/A320

Wingspan:	111' 9"
Overall Length:	123' 3"
Maximum Weight (lbs.):	172,000
FAA Airplane Reference Code:	C-III
FAA Taxiway Design Group:	3
2015 Operations @ MOT:	180
Forecast 2024 Operations @ MOT:	1,120

MINOT INTERNATIONAL AIRPORT

Project Briefing: October 2016

KLJ

AIRPORT FACILITY REQUIREMENTS

Airfield

- Runway 8/26 needed to meet FAA wind coverage for ARC B-II aircraft (Business Jet)
- Runway 13/31: Existing runway length sufficient. Plan for ultimate extension from 7,700' to 8,500'
- Runway 13/31: Upgrade Runway 13 approach to achieve lower visibility minimums (3/4 mile)
- Runway 08/26: Maintain compatible land use on Runway 8 approach, ARC B-II Design Standards
- Runway 08/26: Plan for ultimate 5,500' x 75' runway to meet ARC B-II standards; Maintain 6,175' x 100'
- Taxiway design standards change from TDG-4 to TDG-3: 50' wide taxiways needed for largest airplanes

Air Cargo

- Look at consolidation of air cargo activities to one area
- Assess existing apron space
- Additional apron pavement strength needed for FedEx ATR-42

Passenger Terminal Complex

- Peak activity drives terminal space needs
- Four gates needed for overnight aircraft schedule
- Security checkpoint may need 4th lane for peak long-term activity
- Need additional space for rental car ready/return and storage
- Look into consolidated rental car Quick Turnaround (QTA) facility

General Aviation

- FAA forecast is for 69 new based aircraft in next 20 years
- 47% additional hangar space for new based aircraft
- Long-term demand ranges from 76% to 135% increase over existing hangar space depending on number of aircraft stored on the apron
- Existing GA apron requirements heavily dependent on the number of based aircraft stored on the apron.
- Apron need varies. Ranges from a 29% surplus to a 44% deficit.

Support Facilities

- Aircraft Rescue & Fire Fighting (ARFF) Building needs additional crew quarter space
- Maintain Airport Traffic Control Tower line-of-sight or relocate facility
- VOR needed for FAA minimal operational network

Definitions

ARC = Airport Reference Code
GA = General Aviation
TDG = Taxiway Design Code
VOR = Very-High Frequency Omnidirectional Range

Updated Project Schedule

Facility Requirements	Jun 2016
Alternatives / Preferred Concept	Sep 2016
Implementation Plan	Dec 2016
Draft Master Plan & ALP Documents	Mar 2017
Anticipated FAA Approval	Aug 2017

Project Contacts

Rick Feltner, Airport Director	701.857.4724
Tom Schauer, Project Manager (KLJ)	701.250.5944
Kent Penney, Airport Planner (KLJ)	605.721.5553

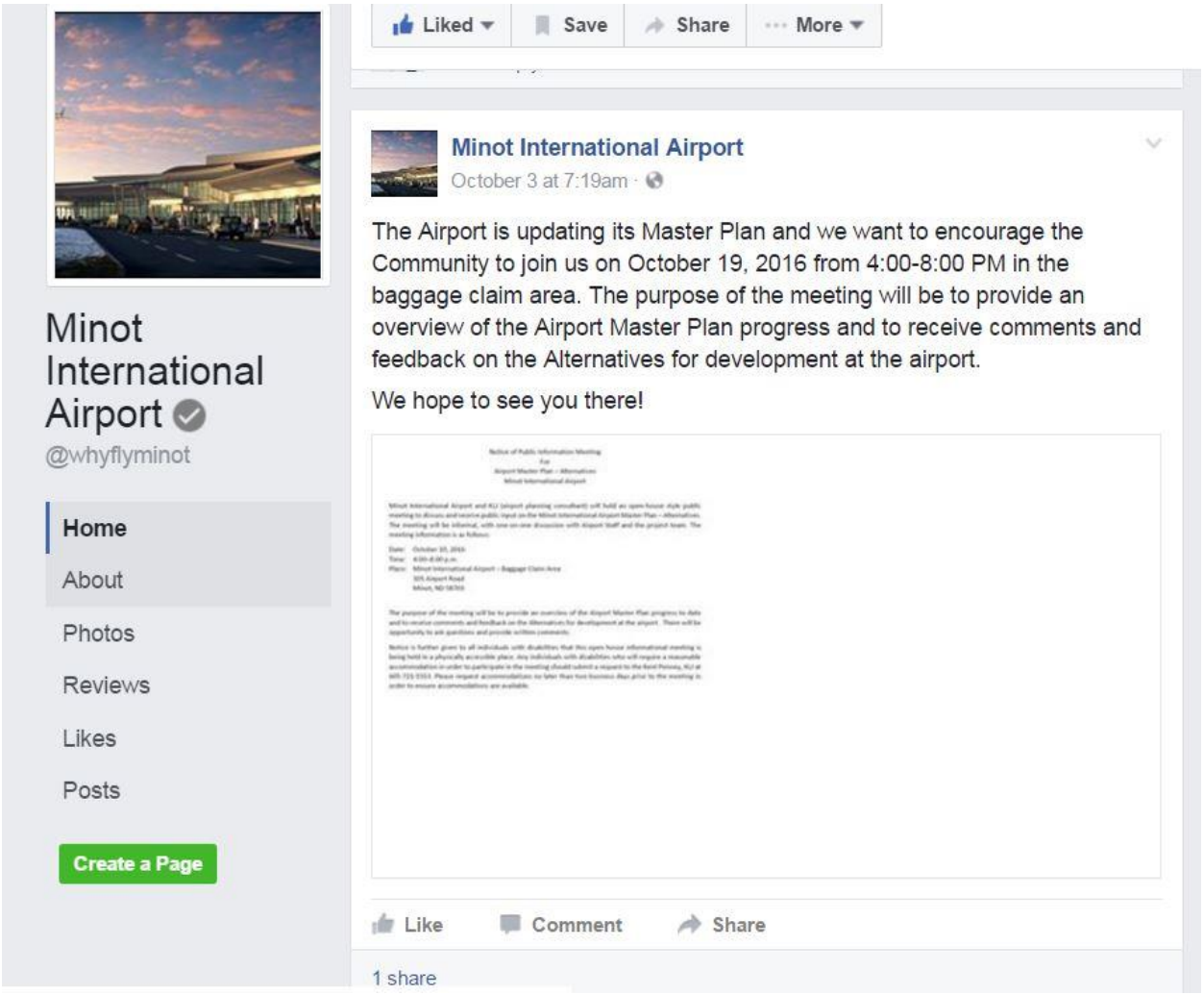
Study comments can be submitted here:
https://www.surveymonkey.com/r/XZ9HYTB

MINOT INTERNATIONAL AIRPORT

Project Briefing: October 2016

KLJ

Minot Public Open House – Facebook Announcement – October 19, 2016



Airport looks to future

By JILL SCHRAMM

New, more modern hangars, a redesigned taxiway and a vehicle preparation facility for rental car companies are among proposals being examined in a 20-year master plan for Minot International Airport.

"We have built a beautiful building here that's going to serve our needs into the foreseeable future," Airport Director Rick Feltner said of the brand new $43 million terminal. "We don't plan to make any changes here. But there's the rest of the airport that needs attention."

The airport hosted an open house with display boards to introduce the public to the planning that is occurring. Public input is sought to help guide the process going forward.

Replacing the deteriorating hangars built in the 1950s with new hangars is one of the priorities at the airport.

"We need to figure out where we should put some new hangars, what that funding would look like and where you would put the occupants in the meantime," said Deanna Stoddard, airport operations manager.

Another item being looked at for the short-term is a quick turnaround facility for rental car companies. Currently, companies must take vehicles off airport premises to have them prepped for customers, often having to cross Broadway. Having a facility on the airport would be safer and more efficient.

Replacing an old taxiway that had been converted from a former runway to better meet federal standards is another goal. There's also work needed in storm water management and in cooperation with the fire department to improve the airport fire station. The master plan study also is reviewing cargo handling facilities to see if improvements can be made.

Not all proposals would require airport spending, said Kent Penney with the consulting firm, KLJ. Some developments on airport property might include private investment.

Also, during development of the master plan draft, it was determined that an existing plan to someday move an east-west runway farther east isn't necessary. The concern has been that the safe zone at the west end of the runway extends off airport property and across Broadway. However, a review showed the airport's north-south runway is adequate to accommodate larger planes in any wind conditions, allowing the east-west runway to be primarily for smaller planes with shorter safe zones. That keeps the safe zone from extending off the airport and saves a major construction expense, Penney said.

Much of the purpose of the master plan, though, isn't to identify projects but to guide potential development and ensure that development is orderly and space is maximized. Various options were presented Wednesday for doing that.

"We have developed alternatives and we have narrowed things now to the point where the airport is trying to determine what the proper alternative is," Penney said.

People can find out more by going to the airport section at minotnd.org.

http://www.mynewsonthego.com/minot/EPaper/?id=8dab5e0c-627f-4293-a66b-676574f0... 10/22/2016

Minot International Airport Wants Public Input on Master Plan

Published 10/19 2016 09:02PM Updated 10/19 2016 10:27PM (Becky Farr/KX News) Today, the airport held an open house revealing potential alternatives for its master plan.
The public is urged to provide their input on what they would like to see.
(Kent Penney/Aviation Planner, KLJ) "What we're in the process of doing is providing information to the general public about what's been identified within the master plan."
(Farr) The airports terminal is good to go for the next 20 to 30 years.
But, it's the surrounding grounds for general aviation that need some work.
(Rick Feltner/Minot International Airport Director) "We've built a world class terminal here, and we want to kind of continue that tradition with what we do with the rest of the airfield. We want to make it safe, and secure."
(Farr) Airport officials recognize that runway and taxiway maintenance is needed.
Some of the hangars on the North Side of the airport may also need to be replaced.
The fire station is in need of restoration or maybe even replacement.
But, one question with both the hangars and the fire station is - if they are to be replaced - should they be relocated or stay where they are?
(Penney) "The airport is looking for feedback just to determine how much more development needs to go, in which areas and what type of development that would be."
(Farr)One leading idea in the master plan follows the demolition of the old airport building.
Where the building will have once stood, may become a car rental quick-turn, allowing for cars to be serviced and put back into rental rotation all on site.
To submit your feedback, send all suggestions to kent.penney@kljeng.com.

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Minot Public Open House – Sign-In Sheet – October 19, 2016

MINOT INTERNATIONAL AIRPORT

Minot International Airport
Airport Master Plan – Public Open House
October 19, 2016

KLJ

ATTENDANCE LIST

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Deana Putnam	TSA		
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Bob Schempp			
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Rian Luehe	HERTZ	833-8222	
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Aaron Lawinger	Ulteig		
Rick Feltner	MOT		
Kent Penney	KLJ		
Matt Nisbet	KLJ	701-355-8449	matt.nisbet@kljeng.com

AIRPORT MASTER PLAN ALTERNATIVE FEEDBACK

The goal of the Minot Airport Master Plan study is to determine a preferred development alternative that meets airport and community needs for the next 20 years and beyond. After reviewing the alternatives presented please provide any comments. Please indicate your preference for the proposed alternatives in the following areas:

EAST AREA

Any expansion to the east would affect Enbridge's high-pressure, underground crude oil pipeline that runs north-south immediately east of the current runway (including on some of the current airport property).

WEST AREA (ALTERNATIVE PREFERENCE NUMBER WITH COMMENTS)

SOUTH AREA (ALTERNATIVE PREFERENCE NUMBER WITH COMMENTS)

- any expansion of the RPZ to the Southeast would impact Enbridge tanks, pipelines, and property at the corner of Railway Ave and Co Rd 19.

TERMINAL AREA (ALTERNATIVE PREFERENCE NUMBER WITH COMMENTS)

OTHER COMMENTS

ENBRIDGE

Greg Demme
Team Lead, Land Services

Tel 701 857 0933
Fax 713 457 6029
Cell 701 500 2755
greg.demme@enbridge.com

Enbridge
2505 16th St SW
Minot, ND 58701-6947

Operator, North Dakota Pipeline Company, LLC

y@kljeng.com

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AIRPORT MASTER PLAN ALTERNATIVE FEEDBACK

The goal of the Minot Airport Master Plan study is to determine a preferred development alternative that meets airport and community needs for the next 20 years and beyond. After reviewing the alternatives presented please provide any comments. Please indicate your preference for the proposed alternatives in the following areas:

EAST AREA

WEST AREA (ALTERNATIVE PREFERENCE NUMBER WITH COMMENTS)

SOUTH AREA (ALTERNATIVE PREFERENCE NUMBER WITH COMMENTS)

NEED TO GET FUEL TRUCKS TO THAT AREA
BOTH AVGAS & JET A. POSSIBLE TEMPORARY SOLUTION

TERMINAL AREA (ALTERNATIVE PREFERENCE NUMBER WITH COMMENTS) FUEL TRUCKS USE TAXIWAY.

OTHER COMMENTS

CONTACT INFORMATION (OPTIONAL)

Name: [illegible]

Address: 2807 - 8TH ST SW

Phone: 838 0287 Email: RCOHLE@BASSETTL.COM

Please return feedback to Kent Penney at kent.penney@kljeng.com

Minot International Airport Master Plan Update

TAC/Stakeholder Briefing
December 6, 2017

MINOT INTERNATIONAL AIRPORT

Agenda

- Introductions
- Overview of Master Plan Process
- Review of Forecasts and Facility Requirements
- Recommended Alternatives
- Next Steps

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Master Plan Process

Gap Analysis

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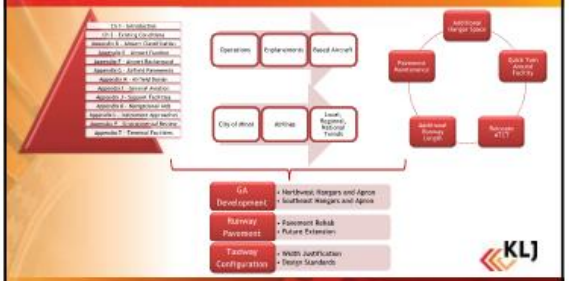
Master Plan Process



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Planning Activity Levels

from Chapter 3 - Forecast

Metric	Base	PAL 1 (5 Year)	PAL 2 (10 year)	PAL 3 (15 Year)	PAL 4 (20 Year)
Forecast Year	2014	2019	2024	2029	2034
Passengers					
Annual Enplanements	220,522	192,253	201,574	241,643	289,769
Peak Month Enplanements	20,486	17,860	18,726	22,449	26,920
Design Day Enplanements	898	783	821	984	1,180
Design Hour Enplanements	310	271	284	340	408
Design Hour Deplanements	379	330	346	415	498
Design Hour Total Passengers	450	391	398	485	571
Passenger Airline Operations					
Airline Operations	7,655	5,804	4,820	6,060	7,300
Design Hour	8.9	6.7	5.6	7.0	8.5
Total Operations					
Annual Operations	30,826	27,065	26,293	27,697	29,694
Peak Month	2,857	2,509	2,437	2,595	2,753
Design Day	117	103	100	107	113
Design Hour	20	17	17	18	19

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General Aviation Hangars

Chapter 4 pg. 54-58

- Dakota Territory Aviation Museum
  - 25 of 107 current aircraft
  - Not included in projections
- Aircraft in Hangars vs. Apron Tie-Downs
  - 27 aircraft on apron
- Replacing Hangar Space
  - 36,500 sf of existing 128,840 sf
  - Dilapidated or functionally inadequate
- Long-term demand ranges from 76% to 135% of existing hangar space
- Larger average aircraft size

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Potential Hangar Space Needs

Chapter 4 pg. 58

Category	Existing	Base	PAL1	PAL2	PAL3	PAL4
Hangar Space Needs - Not Including Current Tie-Downs						
T-Hangar	15,900	15,750	17,905	19,066	19,895	21,884
Small Conventional	74,640	60,473	73,720	83,885	95,941	105,530
Large Conventional	38,300	26,303	35,191	45,696	57,225	62,353
Maintenance/Transient		20,505	25,363	29,729	34,613	37,953
Total	128,840	123,030	152,179	178,376	207,676	227,721
Capacity/ (Deficiency)		26,315	(23,339)	(50,464)	(78,836)	(98,881)
Hangar Space Needs - Including Current Tie-Downs						
T-Hangar	15,900	33,548	38,138	40,610	42,376	46,613
Small Conventional	74,640	75,986	95,100	109,738	129,021	142,139
Large Conventional	38,300	33,491	44,968	57,430	72,084	78,793
Maintenance/Transient		21,454	26,731	31,167	36,522	40,132
Total	128,840	164,479	204,937	238,944	280,003	307,678
Capacity/ (Deficiency)		(35,639)	(76,079)	(110,104)	(151,163)	(178,838)

Airfield: Runway 8/26

Recommendations

- Runway 8 End Design/Incompatible Land Uses
- Wind Coverage Requires B-II Capability
- Runway Design Code C-III to B-II
- Taxiway Design Group 3 to 2 (35' Width)
- Need 5,500' x 75' Runway (Business Jets)
- Meet FAA Standards = Maximize FAA Funding
- Preserve Runway Width 100'
- Preserve Maximum Length 6,310'

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Airfield: Runway 13/31

Recommendations

- Runway Length Sufficient (7,700')
- Ultimate 8,500' Runway Length
- Upgrade Runway 13 Approach
  - 3/4 mile visibility
- Protect for Runway 31 Approach Enhancements
- Runway Design Code: D-III to C-III
- Taxiway Design Group 4 to 3
  - 50' Width

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Recommended Alternatives

(Subject to FAA Review and Acceptance)

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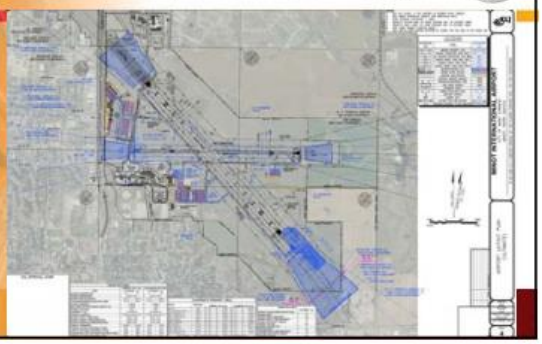
ALP (Future/Ultimate)



West GA Area

Chapter 5 pg. 46

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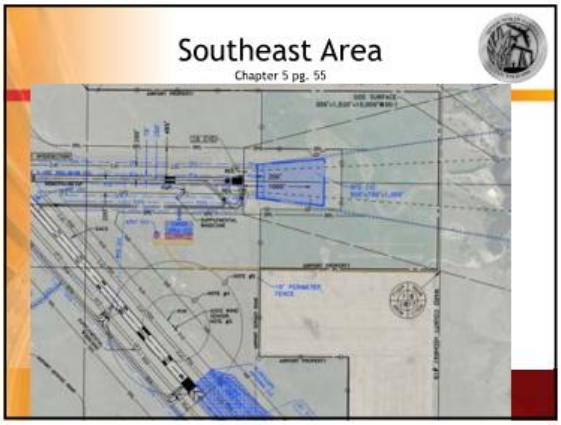
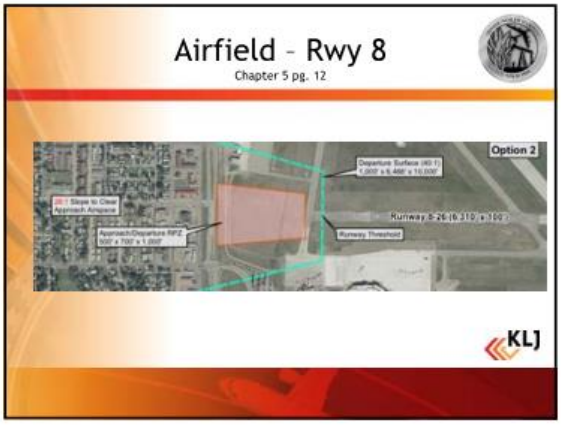
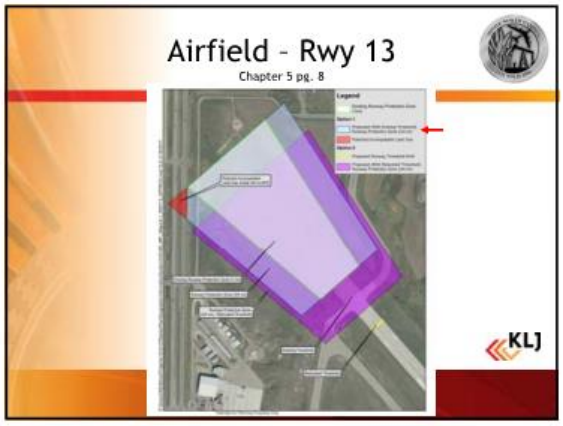
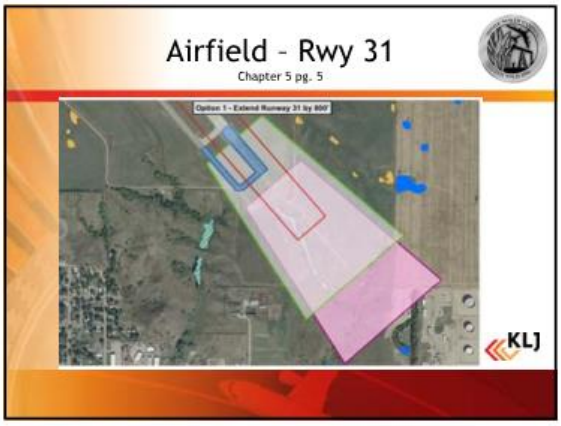
South GA Area
Chapter 5 pg. 61

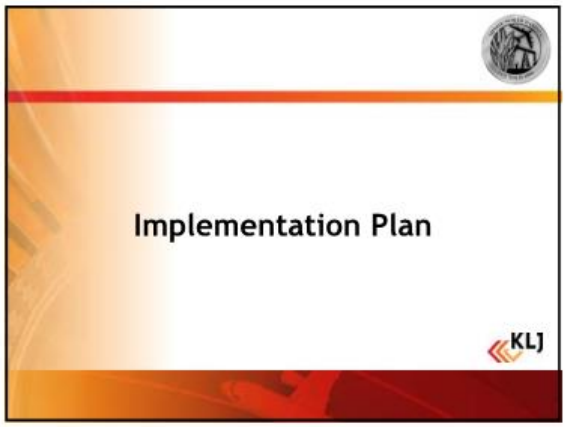

Southeast Area
Chapter 5 pg. 55


Terminal Area
Chapter 5 pg. 32


Airfield – Rwy 8
Chapter 5 pg. 12
Option 2
KLJ


Airfield – Rwy 13
Chapter 5 pg. 8
KLJ


Airfield – Rwy 31
Chapter 5 pg. 5
KLJ


Implementation Plan
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Capital Improvements
Chapter 6, Page 6-6
Time Frame
Short-Term (2018 to 2022)
Mid-Term (2023 to 2027), and
Long-Term (2028 to 2037)
Demand Driven for most Building Development
Project Types
Safety
Maintenance
Capacity
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Short Term (2018-2022)
ARFF Station Rehab
GA Apron Phase II and III
Cargo Apron Phase I
QTA Facility
Storm Water Pond
GA Landside Access
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Mid Term (2023-2027)
Runway 8-26 Rehab
Replace T-Hangars
Cargo Apron Expansion
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Long Term (2028-2037)
Taxiway B & C3 Rehab
ATCT Relocation
Taxiway C Rehab
Runway 31 Extension
Replace Perimeter Fence
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Funding Sources
FAA Grants (Entitlement, Discretionary)
North Dakota Aeronautics Commission
Third Party
PFC - Passenger Facility Charges
CFC - Customer Facility Charges (Rental Cars)
Airport Cash & Bonds
Mill Levy
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Airport Operating Revenue

Revenue Source	2018 Budget	
Airline Fees	$ 1,380,900	31.7%
Fuel Flowage Fees	133,900	3.1%
Restaurant/Concessions	194,900	4.5%
Public Parking	1,601,500	36.8%
Rental Cars	786,900	18.1%
Building/Ground Rent	257,300	5.9%
Total Operating Revenue	$ 4,355,400	

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Implementation Summary

Chapter 6, page 6-14

- PFC's committed to existing debt service until 2035
- Insufficient Revenue to Accomplish some near term Capital Improvements
  - Defer or Delay Projects
  - Seek FAA Discretionary Grants
  - Prioritize Revenue Producing projects (e.g. CFC)
  - Issue Airport Bonds
- Sufficient Revenues for Mid & Long Term
- Project Prioritization is subject to FAA concurrence

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Next Steps

- Revise per TAC, Stakeholder, and FAA Comments
- Submit to FAA for Review and Acceptance
- Submit to City Council for Approval
- Estimated Time Frame

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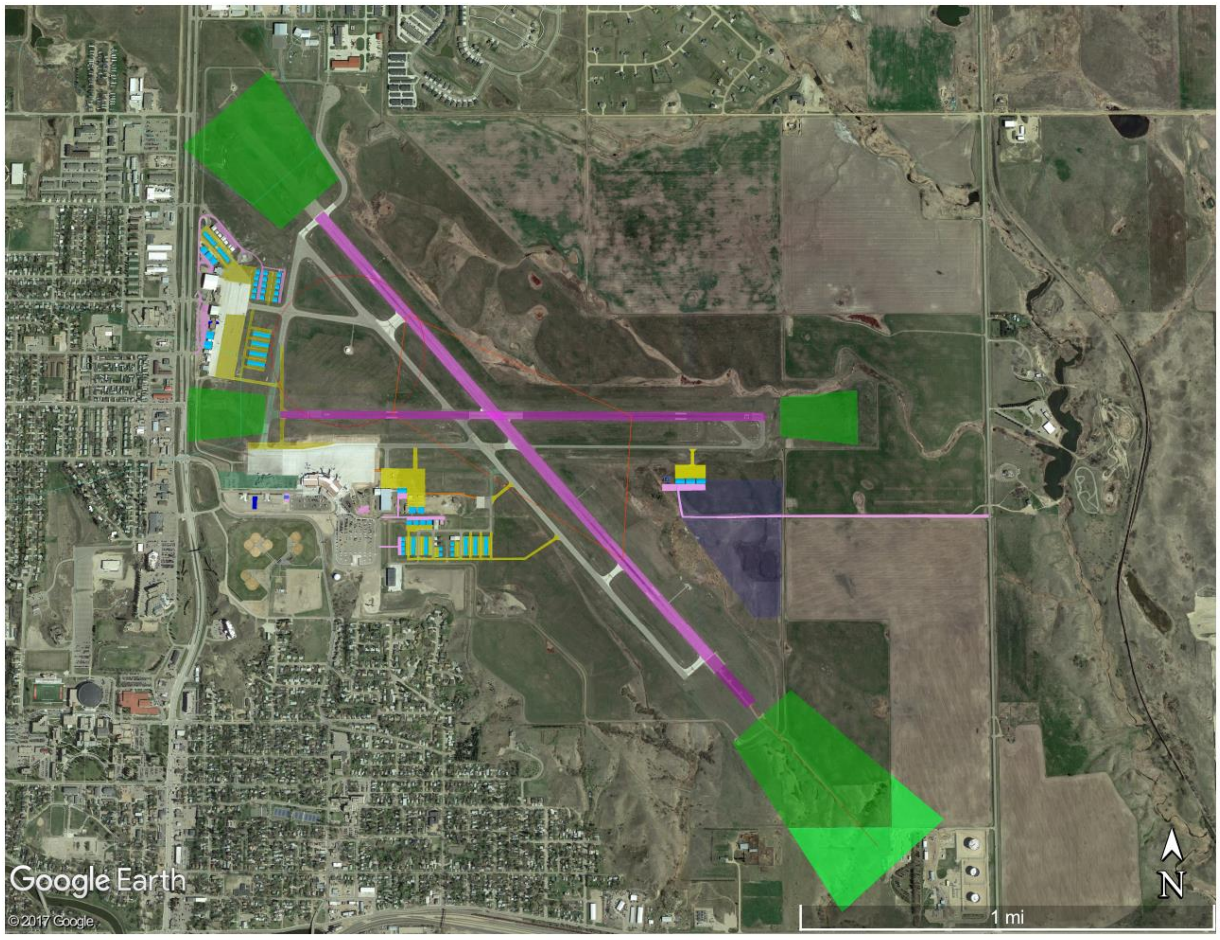
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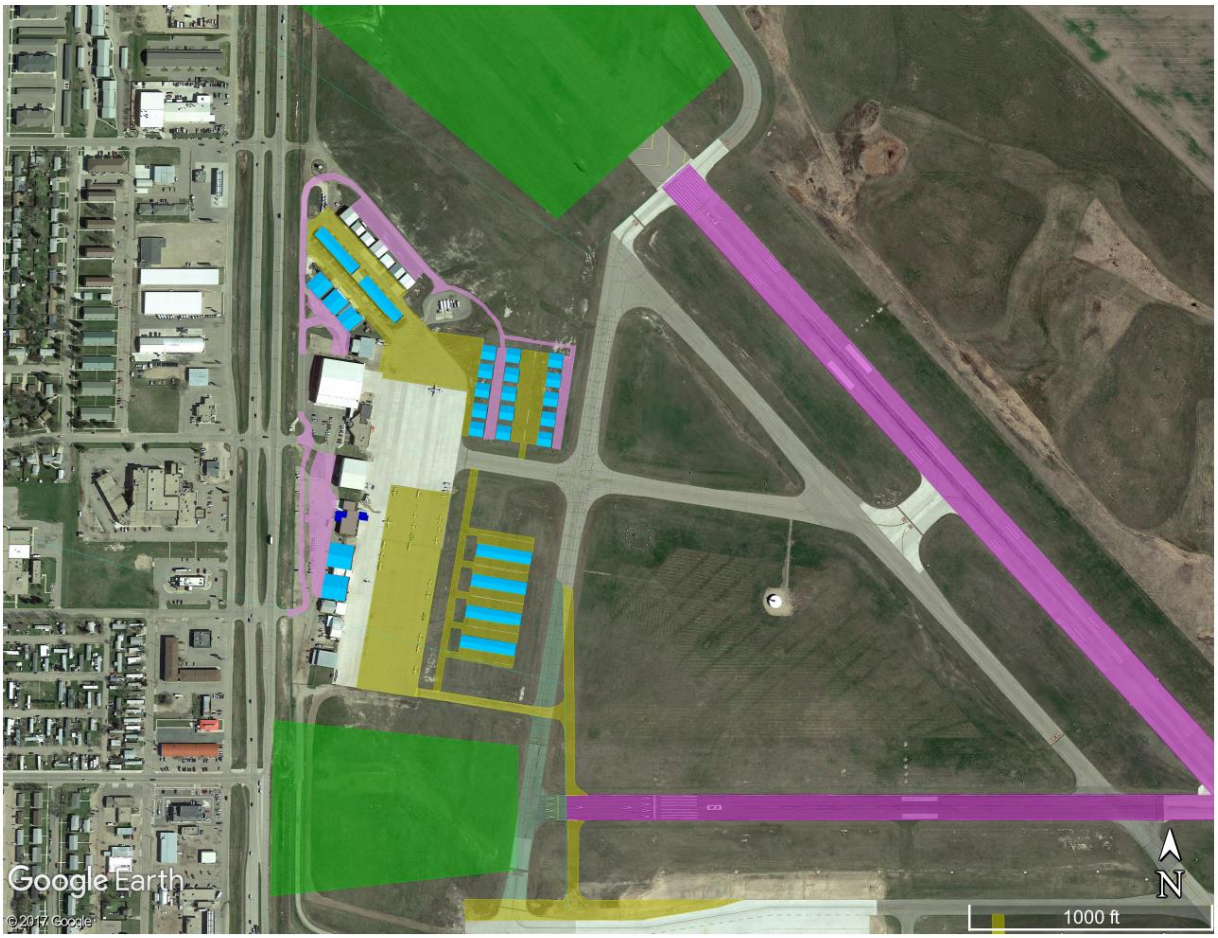
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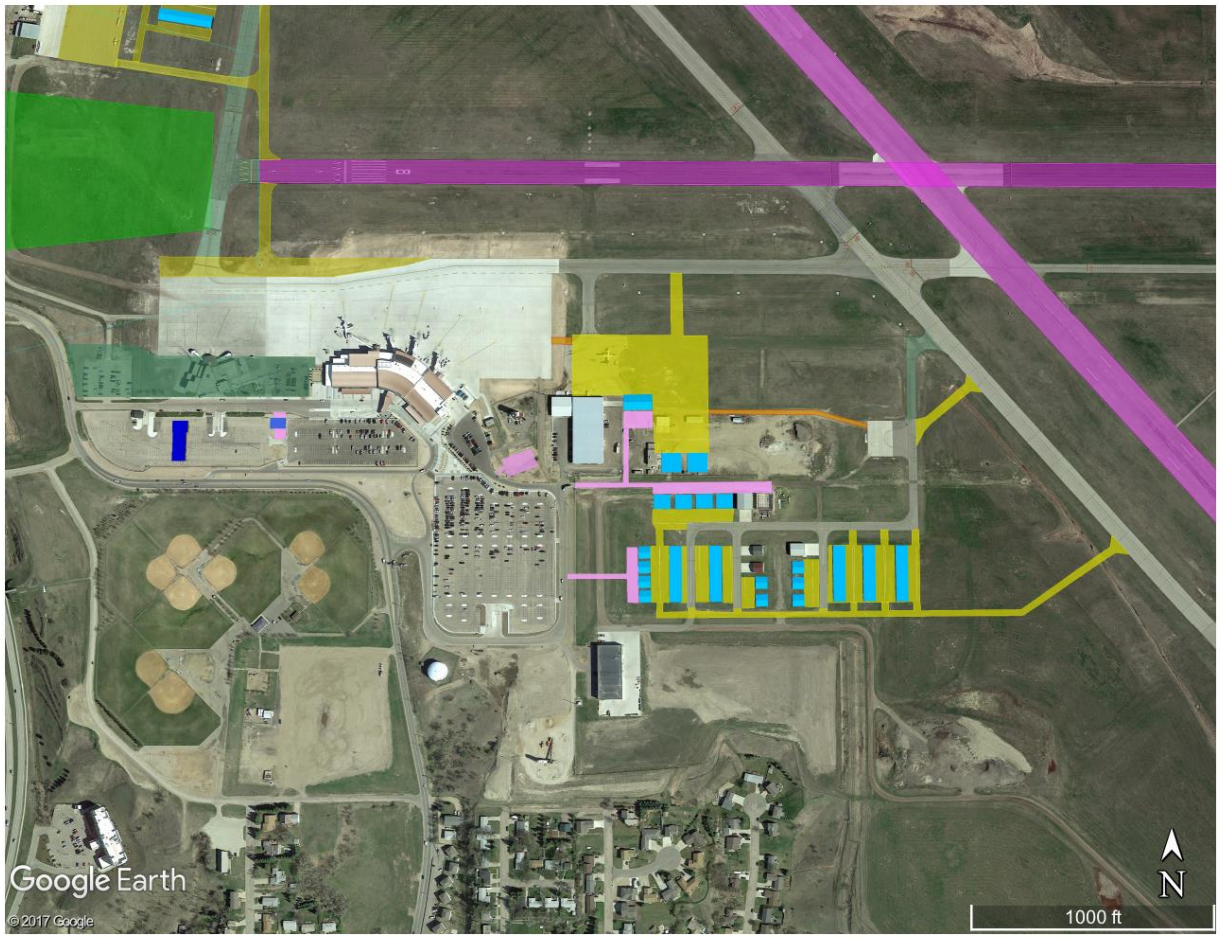
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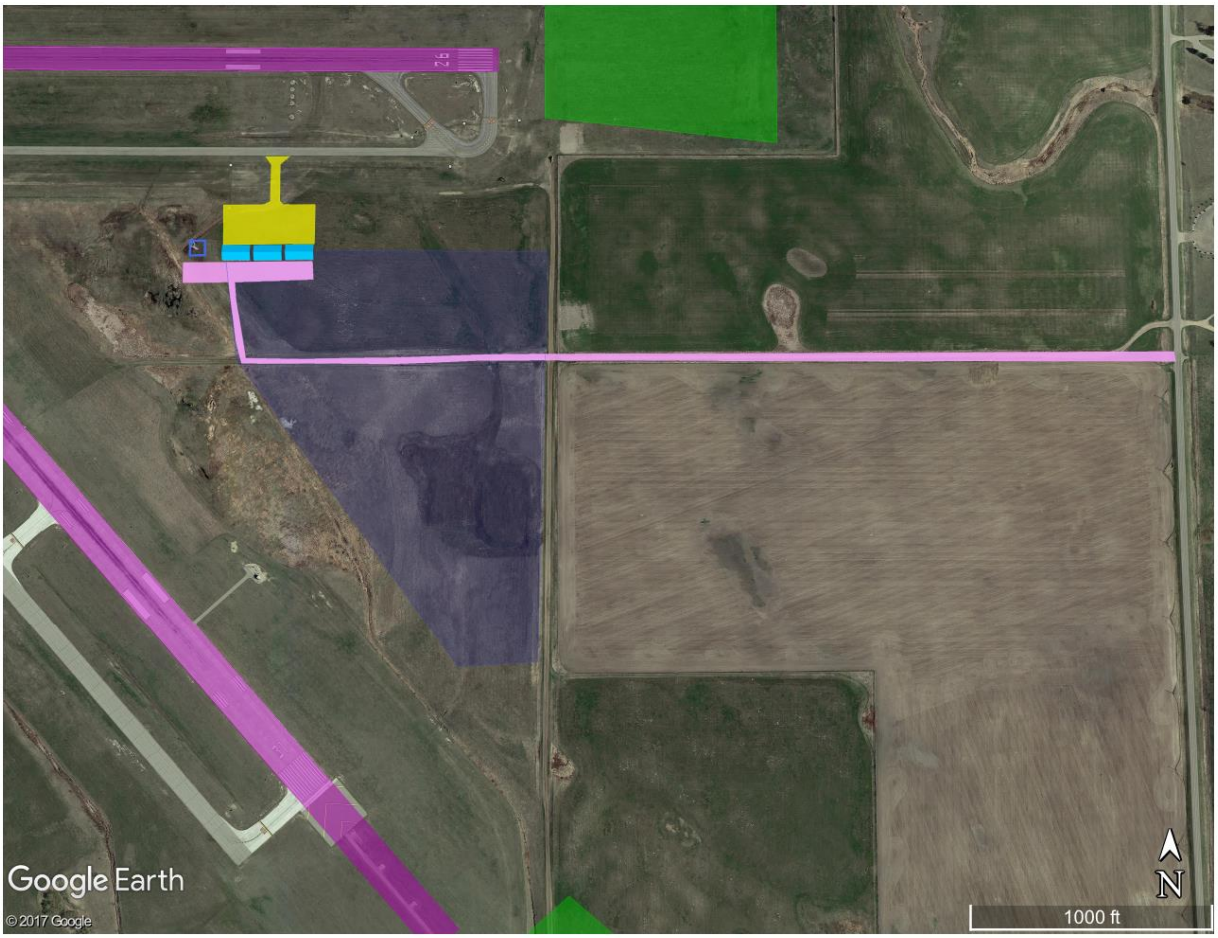
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Minot Stakeholder/Advisory Meetings – Sign-In Sheet – December 6, 2017

MINOT INTERNATIONAL AIRPORT

Minot International Airport
Airport Master Plan - Stakeholders Meeting
December 6, 2017
Terminal Group

KLJ ATTENDANCE LIST

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Cary Baker	Delta Global Services	701-781-9169	cary.baker@delta.com
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Deanna Stoddard	MOT		
Kent Penney	KLJ		
Matt Nisbet	KLJ		
Shane Steiner	KLJ		

MINOT INTERNATIONAL AIRPORT

Minot International Airport
Airport Master Plan - Stakeholders Meeting
December 6, 2017
GA Group

KLJ ATTENDANCE LIST

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JANICE HARTLE	MAGIC CITY	852-2346	janicehartle@midwestgtcs.com
Rick Feltner	MOT		
Deanna Stoddard	MOT		
Kent Penney	KLJ		
Matt Nisbet	KLJ		
Shane Steiner	KLJ		

MINOT INTERNATIONAL AIRPORT

Minot International Airport
Airport Master Plan - Technical Advisory Committee
December 6, 2017

KLJ

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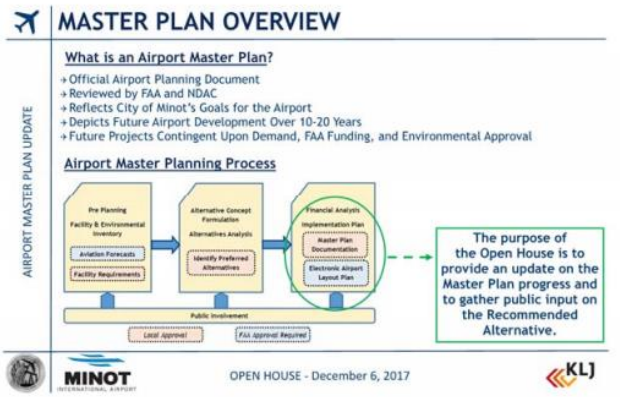
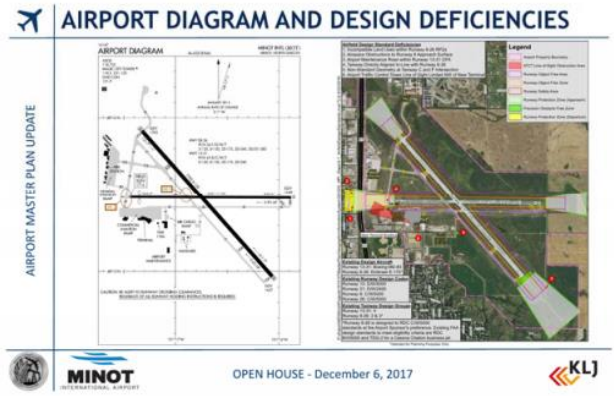
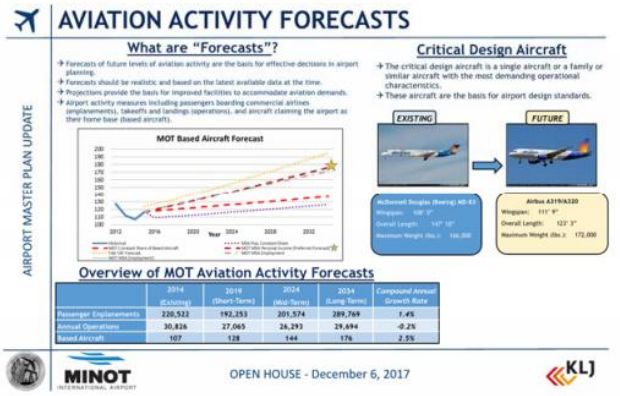
Rick Feltner	MOT		
Kent Penney	KLJ		
Matt Nisbet	KLJ		
Shane Steiner	KLJ		







	2014 (Existing)	2019 (Short-Term)	2024 (Mid-Term)	2034 (Long-Term)	Compound Annual Growth Rate
Passenger Enplanements	220,522	192,253	201,574	289,769	1.4%
Annual Operations	30,826	27,065	26,293	29,694	-0.2%
Based Aircraft	107	128	144	176	2.5%


Runway & Approach Recommended Alternative
AIRPORT MASTER PLAN UPDATE
Runway 13-31
Runway 13 Approach Visibility Improvements–1 mile to 3/4 mile
Runway Length–7,700' to 8,500'
Runway 13
Runway 31
Runway 8-26
Design Aircraft from C-III to B-II
Relocate Runway 8 Threshold to eliminate incompatible land uses in Runway Protection Zone
Runway 8 Existing
Runway 8 Preferred
MINOT
OPEN HOUSE - December 6, 2017
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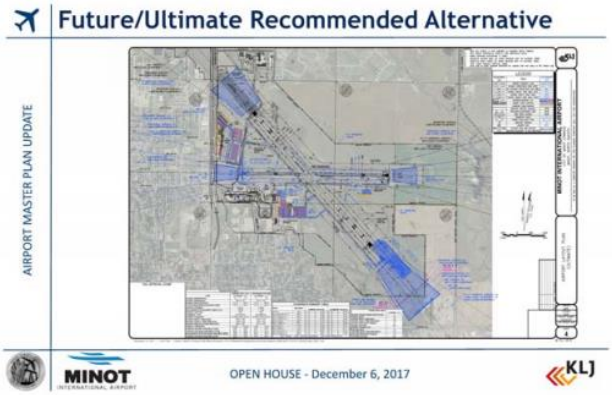
Future/Ultimate Recommended Alternative
AIRPORT MASTER PLAN UPDATE
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OPEN HOUSE - December 6, 2017
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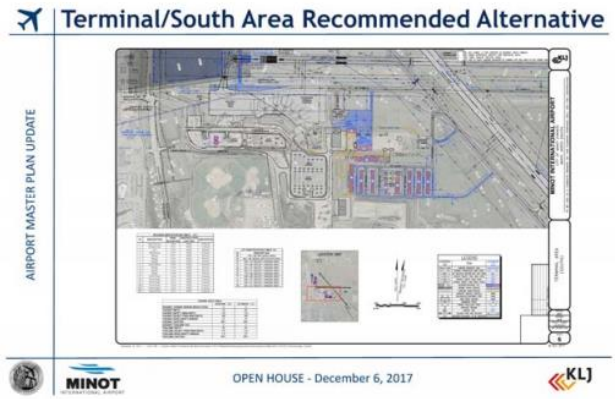
Terminal/South Area Recommended Alternative
AIRPORT MASTER PLAN UPDATE
MINOT
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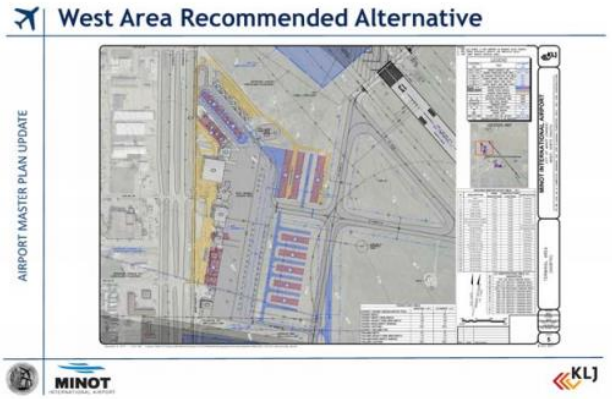
West Area Recommended Alternative
AIRPORT MASTER PLAN UPDATE
MINOT
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CAPITAL IMPROVEMENT PLAN
AIRPORT MASTER PLAN UPDATE
Major Projects
Short Term (2018-2022)
ARFF Station Rehabilitation
GA Apron Phase II and III
Cargo Apron Phase I
Rental Car QTA Facility
Storm Water Improvements
GA Landside Access
Mid Term (2023-2027)
Runway 8-26 Rehabilitation
Replace T-Hangars
Cargo Apron Expansion
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Overall Project Implementation is based on Demand and Funding Availability
MINOT
OPEN HOUSE - December 6, 2017
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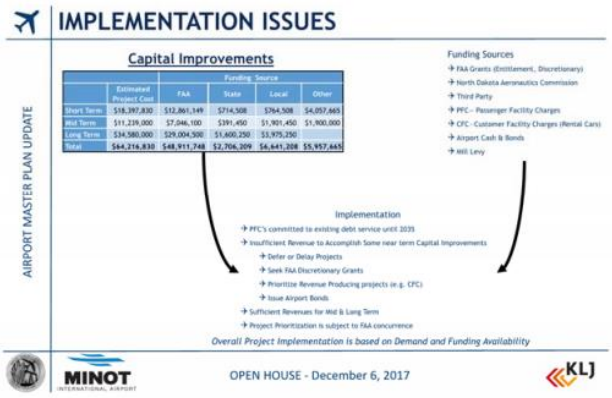
IMPLEMENTATION ISSUES
AIRPORT MASTER PLAN UPDATE
Capital Improvements
Funding Source
Estimated Project Cost
FAA
State
Local
Other
Short Term $18,397,830 $12,861,149 $714,508 $764,508 $4,057,665
Mid Term $11,239,000 $7,046,100 $391,450 $1,901,450 $1,900,000
Long Term $34,580,000 $29,004,500 $1,600,250 $3,975,250
Total $64,216,830 $48,911,749 $2,706,209 $6,641,208 $5,957,665
Funding Sources
FAA Grants (Entitlement, Discretionary)
North Dakota Aeronautics Commission
Third Party
PFC – Passenger Facility Charges
CFC – Customer Facility Charges (Rental Cars)
Airport Cash & Bonds
Mill Levy
Implementation
PFC's committed to existing debt service until 2035
Insufficient Revenue to Accomplish Some near term Capital Improvements
Defer or Delay Projects
Seek FAA Discretionary Grants
Prioritize Revenue Producing projects (e.g. CFC)
Issue Airport Bonds
Sufficient Revenues for Mid & Long Term
Project Prioritization is subject to FAA concurrence
Overall Project Implementation is based on Demand and Funding Availability
MINOT
OPEN HOUSE - December 6, 2017
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Minot International Airport (MOT)
Airport Master Plan Update & Electronic Airport Layout Plan

Aviation Forecasts
Forecasts of future levels of aviation activity are the basis for effective decision-making in airport planning. Forecasts are realistic and based on the latest available data at the time. Projections Airport activity measures include passengers boarding commercial airlines (enplanements), takeoffs and landings (operations) and aircraft claiming the airport as their home base (based aircraft).

	2014 (Existing)	2019 (Short-Term)	2024 (Mid-Term)	2034 (Long-Term)	Annual Growth Rate
Passenger Enplanements	220,522	192,253	201,574	289,769	*1.4%*
Annual Operations	30,826	27,065	26,293	29,694	*-0.2%*
Based Aircraft	107	128	144	176	*2.5%*

AIRPORT FACILITY REQUIREMENTS

Airfield
- Runway 13/31: Existing runway length sufficient. Plan for ultimate extension from 7,700' to 8,500'
- Runway 13/31: Upgrade Runway 13 approach to achieve lower visibility minimums (3/4 mile)
- Runway 08/26: Maintain compatible land use on Runway 8 approach, ARC B-II Design Standards
- Taxiway design standards change from TDG-4 to TDG-3: 50' wide taxiways needed for largest airplanes

Air Cargo
- Look at consolidation of air cargo activities to one area
- Additional apron pavement strength needed for FedEx ATR-42

General Aviation
- FAA forecast is for 69 new based aircraft in next 20 years
- 47% additional hangar space for new based aircraft
- Long-term demand ranges from 76% to 135% increase over existing hangar space depending on number of aircraft stored on the apron
- Existing GA apron requirements heavily dependent on the number of based aircraft stored on the apron.
- Apron need varies. Ranges from a 29% surplus to a 44% deficit.

Support Facilities
- Aircraft Rescue & Fire Fighting (ARFF) Building needs additional crew quarter space
- Maintain Airport Traffic Control Tower line-of-sight or relocate facility
- VOR needed for FAA minimal operational network

Definitions
ARC = Airport Reference Code
GA = General Aviation
TDG = Taxiway Design Code
VOR = Very-High Frequency Omnidirectional Range

Recent Project Items

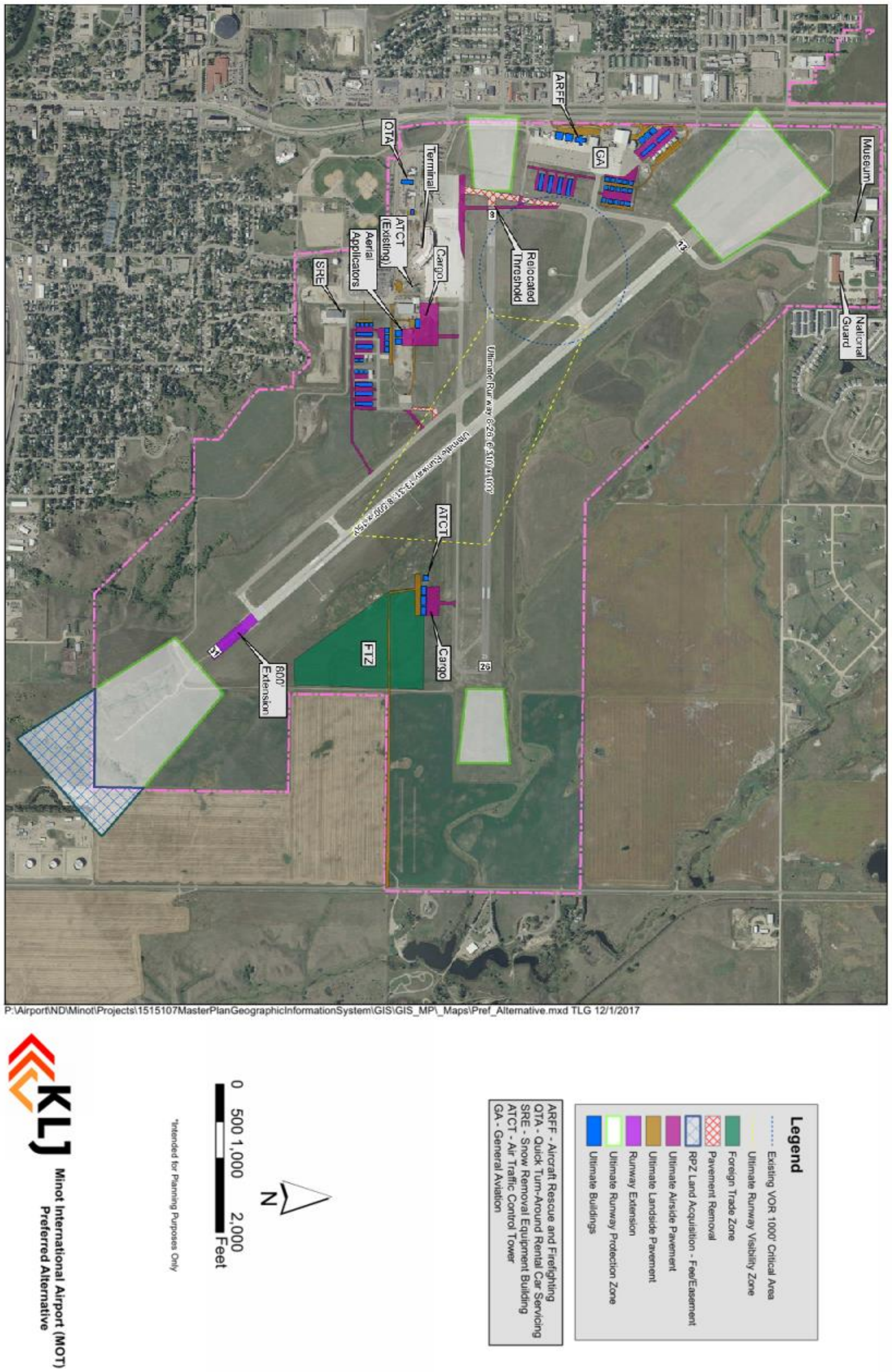
Alternatives / Preferred Concept	Jun 2017
Implementation Plan	Nov 2017
Draft Master Plan & ALP Documents	Dec 2017

Project Contacts

Rick Feltner, Airport Director	701.857.4724
Tom Schauer, Project Manager (KLJ)	701.250.5944
Kent Penney, Airport Planner (KLJ)	605.721.5553

MINOT INTERNATIONAL AIRPORT

Project Briefing: December 2017



ARFF
QTA
Terminal
GA
Museum
ATCT (Existing)
Cargo
Aerial Applicators
SRE
Relocated Threshold
National Guard
ATCT
Cargo
FTZ
600' Extension
P:\Airport\ND\Minot\Projects\1515107MasterPlanGeographicInformationSystem\GIS\GIS_MP_Maps\Pref_Alternative.mxd TLG 12/1/2017
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Minot International Airport (MOT)
Preferred Alternative
*Intended for Planning Purposes Only
0 500 1,000 2,000 Feet
N
Legend
Existing VOR 1000' Critical Area
Ultimate Runway Visibility Zone
Foreign Trade Zone
Pavement Removal
RPZ Land Acquisition - Fee/Easement
Ultimate Airside Pavement
Ultimate Landside Pavement
Runway Extension
Ultimate Runway Protection Zone
Ultimate Buildings
ARFF - Aircraft Rescue and Firefighting
QTA - Quick Turn-Around Rental Car Servicing
SRE - Snow Removal Equipment Building
ATCT - Air Traffic Control Tower
GA - General Aviation

Minot Public Open House – Sign-In Sheet – December 6, 2017

MINOT INTERNATIONAL AIRPORT

Minot International Airport
Airport Master Plan – Public Open House
December 6, 2017

KLJ

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