# Mobridge Municipal Airport

Master Plan Project Report to City Council

October 8, 2025

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# Agenda

- Project Review
- Preferred Airfield Alternative
- Terminal Area Alternative
- Implementation
- Airport Layout Plan

*Thank You Planning Advisory Committee*

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Heather Beck
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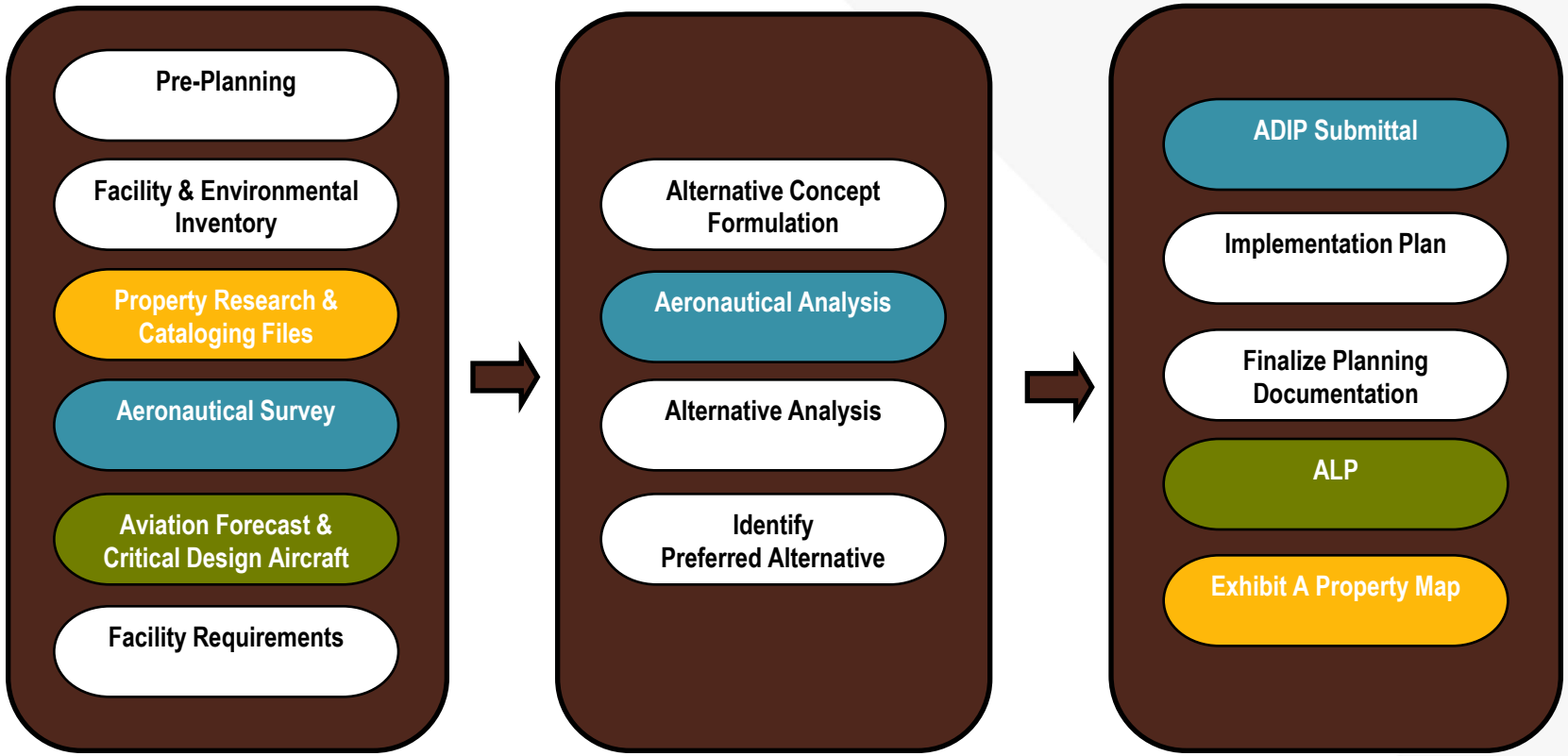
# Project Workflow

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# Existing Airfield

- Currently Design Group A/B-II
- Paved Runway 12-30
  - GPS Approach both ends
    - 1 mile visibility
    - 600’ ceiling
    - 2-light PAPI
    - Rwy 12 (No Night Approach)
- Turf Runway 17-35
- Previous ALP from 2005
  - No Aeronautical Survey
  - No Property Research
  - Previous FAA Design Standards

# Wind Analysis

| ALL-WEATHER WIND COVERAGE | | | | |
|---|---|---|---|---|
| CONFIGURATION | CROSSWIND COMPONENT | | | |
| | 10.5 KNOTS | 13 KNOTS | 16 KNOTS | 20 KNOTS |
| RUNWAY 12-30 | 92.67% | 96.90% | 99.03% | - |
| RUNWAY 17-35 | 88.29% | 93.95% | - | - |
| | - | - | - | - |
| COMBINED | 98.32% | 99.36% | 99.03% | - |
| *SOURCE: KMBG ASOS (2013-2022, HOURLY) FROM NATIONAL CLIMATIC DATA CENTER* | | | | |
| *86,117 TOTAL OBSERVATIONS* | | | | |

| INSTRUMENT FLIGHT RULES (IFR) WIND COVERAGE | | | | |
|---|---|---|---|---|
| CONFIGURATION | CROSSWIND COMPONENT | | | |
| | 10.5 KNOTS | 13 KNOTS | 16 KNOTS | 20 KNOTS |
| RUNWAY 12-30 | 85.23% | 92.64% | 96.82% | - |
| RUNWAY 17-35 | - | - | - | - |
| | - | - | - | - |
| COMBINED | 85.23% | 92.64% | 96.82% | - |
| *SOURCE: KMBG ASOS (2013-2022, HOURLY) FROM NATIONAL CLIMATIC DATA CENTER* | | | | |
| *5,573 TOTAL OBSERVATIONS* | | | | |
| *IFR = VISIBILITY LOWER THAN 3 MILES OR CEILING LOWER THAN 1,000 FEET* | | | | |

95% Desirable Wind Coverage

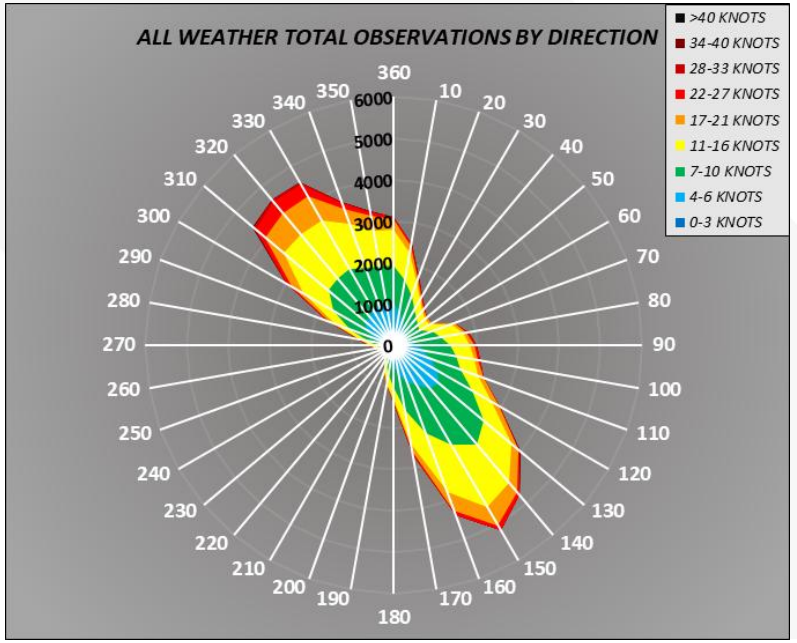


**Table B-1. Allowable Crosswind Component per Runway Design Code (RDC)**

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

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

# Instrument Meteorological Conditions

- Airport is accessible 97.8% of the time (93.5% VMC, 4.3% Usable IMC)
- 83% of IFR conditions occur between 1am and 10am
  - 42% between 1am and 6am
  - 41% between 7am and 10am
- Air medical companies stated can't use Runway 12 at night and if the winds are out of the south

| Weather Condition | Percentage | | | Days Per Year | Hours Per Year |
|---|---|---|---|---|---|
| VMC | 93.53% | | | 341.4 | 8,193 |
| Usable IMC - 1 Mile Visibility<br>557-foot Ceiling Runway 12<br>292-foot Ceiling Runway 30 | 4.29% | | | 15.7 | 376 |
| **Existing Usability** | **97.82%** | | | **357.1** | **8,569** |
| **Additional Capture with IMC Improvements** | **Rwy 12** | **Wind Calm** | **Rwy 30** | | |
| 1 Mile Visibility<br>300-foot Ceiling Runway 12<br>292-foot Ceiling Runway 30 | 0.66% | 0.00% | 0.00% | 2.4 | 58 |
| ¾ Mile Visibility<br>300-foot Ceiling Runway 12<br>292-foot Ceiling Runway 30<br>Parallel Taxiway Required | 0.11% | 0.01% | 0.17% | 1.0 | 24 |
| Below Weather Minimums | 2.18% | | | 7.9 | 191 |
| **Total** | **100.00%** | | | **365.0** | **8,760** |

Table 2-7 – Meteorological Analysis, p.2-5

# Aircraft

## Critical Design Aircraft

### Aircraft Approach Category **B**

- Represents speed that aircraft approaches runway
- 91 to 121 Kts

### Airplane Design Group **II**

- Represents wingspan and height of aircraft
- 49’ to 79’ wingspan

### Taxiway Design Group **2A**

- Represents pavement width and turning clearance needed by aircraft
- Main Gear Width – 15’ to 20’
- Cockpit to Main Gear – 20’ to 40’

Based on Cargo Aircraft


### Based Aircraft

- 13 single engine aircraft

### Operations

- 1,542 total itinerant
- 4,000 total local
- 5,542 Total Operations

# Outreach Findings

- Medical/Business users do not use the turf runway but would like a parallel taxiway (difficult to use turnarounds in winter)
- Local users would like a parallel taxiway but not at the expense of the turf runway.
- Apron space is adequate except during hunting season and do not like the layout, particularly location of the fueling island.

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| Airport and Runway Data | | |
|---|---|---|
| Longest Runway Length (Runway 12-30) | 4,410 feet | |
| Airport Elevation | 1,716.2 ft | |
| Mean Daily Maximum Temperature of Hottest Month | 87.4°F | |
| Aircraft Classification | Recommended Runway Length | |
| Small Airplanes 12,500 Pounds or less | | |
| 10 or more passenger seats | **4,410 feet** | |
| Less than 10 passenger seats at 100 percent of fleet | 4,280 feet | |
| Less than 10 passenger seats at 95 percent of fleet | 3,700 feet | |
| Small Aircraft Runway Length Analysis Tool | Dry | Wet |
| Cessna 172 Skyhawk | 2,074 feet | 2,385 feet |
| Cessna 182 Skylane | 1,947 feet | 2,239 feet |
| Cessna 340 | 4,544 feet | 5,226 feet |
| Cessna 402B | 4,098 feet | 4,713 feet |
| Cirrus SR 22 Turbo | 2,951 feet | 3,394 feet |
| Mooney M20J | 3,678 feet | 4,230 feet |
| Piper 28B Dakota | 1,997 feet | 2,297 feet |
| Beechcraft King Air B200GT | 3,916 feet | 4,503 feet |
| Beechcraft King Air C90 | 3,233 feet | 3,718 feet |
| Cessna 208 Caravan | 2,659 feet | 3,058 feet |
| Pilatus PC-12 | 3,648 feet | 4,195 feet |
| Piper PA-46 Malibu Meridian | 3,076 feet | 3,537 feet |
| Beechcraft 1900D | **3,850 feet** | - |
| Cessna 560 XL | 4,927 feet | 5,666 feet |
| Phenom 300 | 4,547 feet | 5,229 feet |

# Preferred Airfield

- Runway 12-30
  - 4,410’ x 75’
  - Instrument Approaches (12 & 30)
  - Parallel Taxiway (300’ separation)
  - Mitigate Obstructions (Trees)
- Runway 17-35
  - 2,207’ x 250’ Turf
  - Mitigate Obstructions (relocate threshold)

# Items Considered for Terminal/Hangar Alternatives

- Current Apron layout
- Group I & II T-Hangars and individual box hangars
- Large hangars on Apron for Group II aircraft
- Accommodate relocation of all North Tenants to South Area
- Fuel farm location
- Area for FBO/Maintenance Operator
- Landside access

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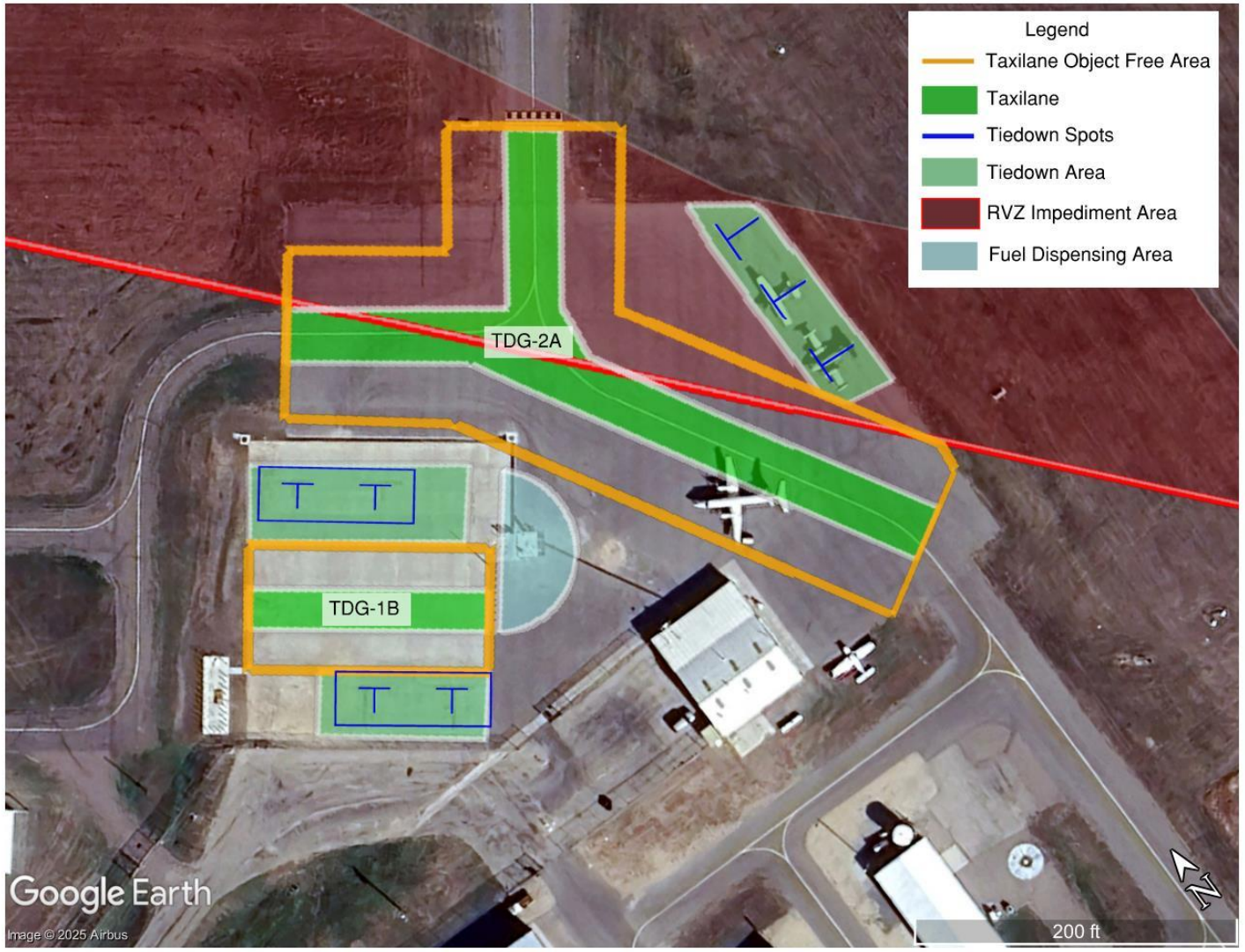
# Terminal/Hangar Area

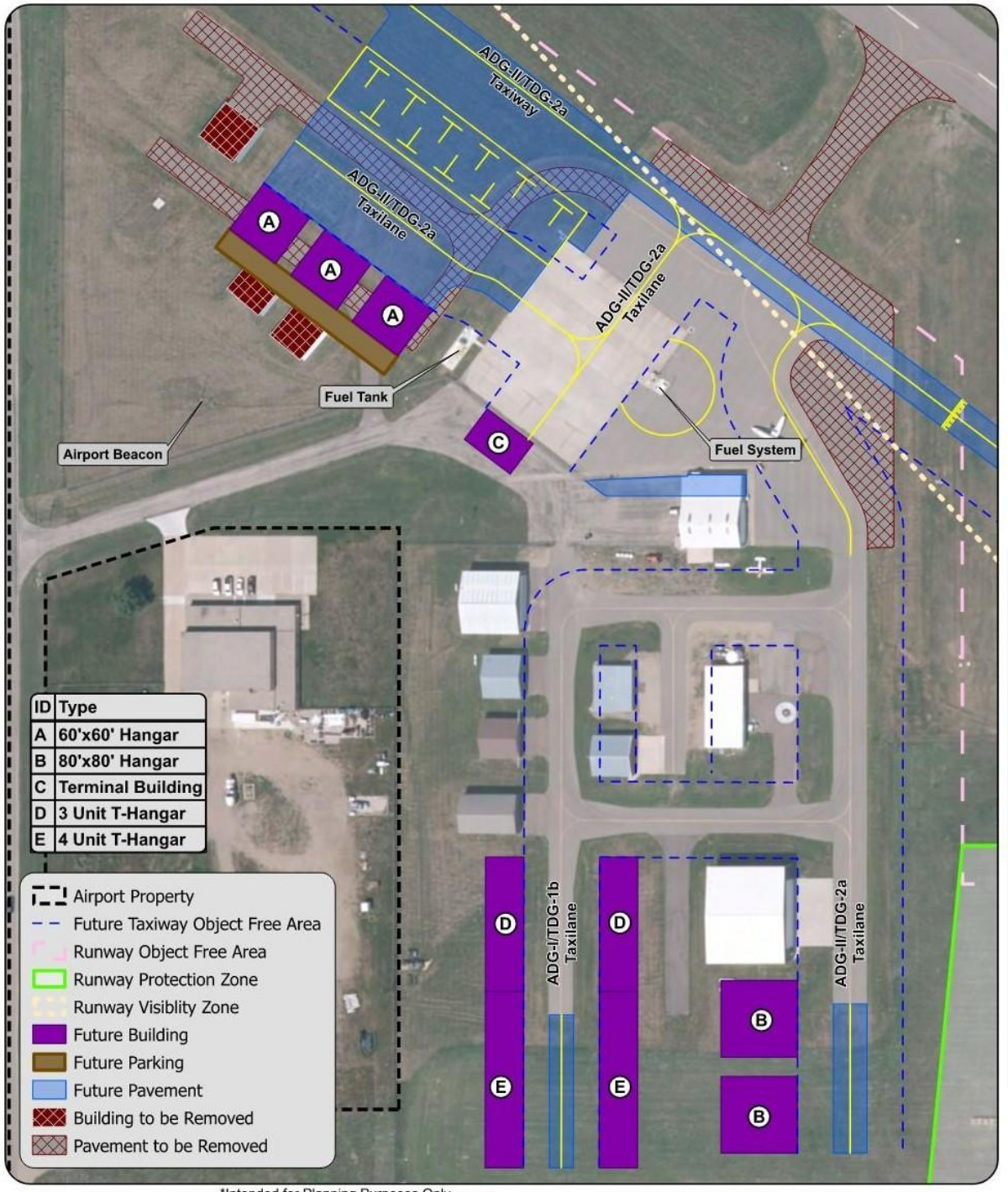
- 7 ADG I positions
- Need for ADG II
- Fuel Access
- Runway Visibility Zone



# Preferred Terminal Area

- Expand Apron North
- Maintain existing Fuel Farm and Fuel Island
- Remove tiedowns from RVZ
- Central location for Terminal
- ADG-II Hangars on Apron
- ADG-I Hangars on Taxilanes

*Allows Different Types of Development without impediment*



# Implementation

- CIP
  - Apron Expansion
  - Parallel Taxiway
- Restore Runway 12 Approach
- Compatible Land Use
  - Residence in RPZ
- Clear Zone Easements
  - Enacted 1958-59 (Federally Funded)
  - 40:1 Surfaces for Runway 12 & 30
- Obstruction Mitigation
  - Grading
  - Trees
  - Runway 17 Threshold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# Capital Improvement Plan

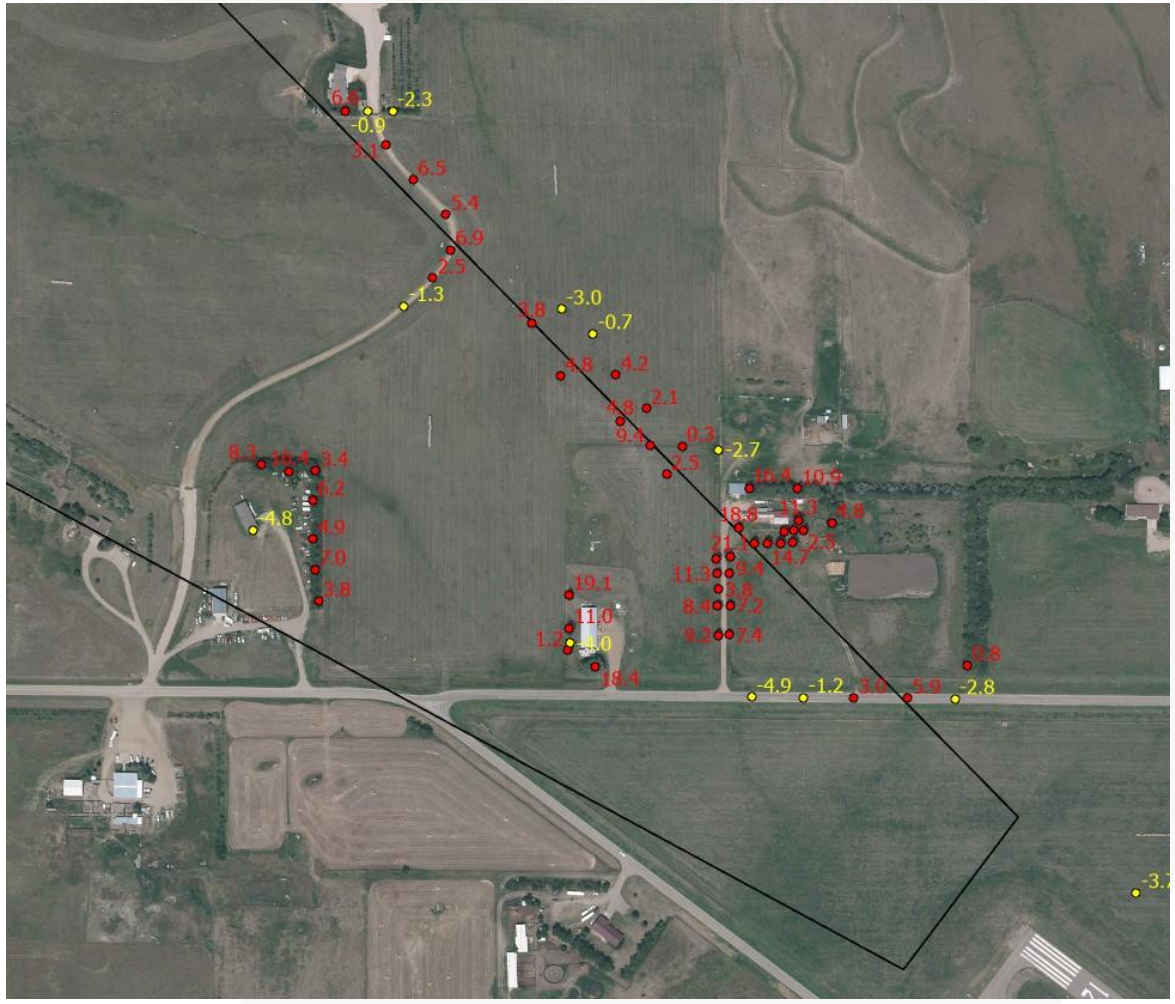
| Year | Project | Scope | Estimated Cost | FAA Funds | State Funds | Local Funds | Other |
|---|---|---|---|---|---|---|---|
| **Near-Term (2025-2030)** | | | | | | | |
| 2027 | Phase 1 Apron Extension Design | Design to relocate three tiedowns to extended apron, remove hangar taxilane & apron expansion | $140,000 | $126,000 | $7,000 | $7,000 | - |
| 2027 | Remove Hangars | Remove hangars 1, 3, & 4 | $24,000 | - | - | $24,000 | - |
| 2028 | Phase 1 Apron Extension Construction | Relocate three tiedowns, remove hangar taxilane & extend apron north (4,000 SY) and five tiedowns | $1,580,000 | $1,422,000 | $79,000 | $79,000 | - |
| 2028 | Airfield Pavement Maintenance | State pavement maintenance project, crack seal | $100,000 | $90,000 | $5,000 | $5,000 | - |
| | | Sub-Total | $1,844,000 | $1,638,000 | $91,000 | $115,000 | $ 0 |
| **Mid-Term (2031-2035)** | | | | | | | |
| | Parallel Taxiway (South) | New taxiway from Runway 30 turnaround to the south edge of the current apron with connector, 605'x35' & 80'x35' | $1,330,000 | $1,197,000 | $66,500 | $66,500 | - |
| | Row Hangar (3 unit) | New 3-unit row hangar on current southwest taxilane | $800,000 | $0 | $0 | $800,000 | - |
| | Apron Hangar | New large box hangar on Phase 1 apron extension | $825,000 | $742,500 | $0 | $82,500 | - |
| | T-Hangar (3 unit) | New 3-unit T-Hangar between current southwest and south center taxilanes | $660,000 | $0 | $0 | $660,000 | - |
| | Parallel Taxiway (Center) | New taxiway from north corner of apron to the new connector, 495'x35' & 245'x35'; Remove 2,480 SY of apron and connecting taxiway | $2,344,000 | $2,109,600 | $117,200 | $117,200 | - |
| | | Sub-Total | $5,959,000 | $4,049,100 | $183,700 | $1,726,200 | $0 |
| **Long-Term (2036-2045)** | | | | | | | |
| | Parallel Taxiway (North) | New taxiway from connector to Runway 12 turnaround, 2,740'x35' | $5,760,300 | $5,184,270 | $288,015 | $288,015 | - |
| | Phase 2 Apron Extension | Add apron (3,200 SY) north of Phase 1 extension (four tiedowns) | $1,000,000 | $900,000 | $50,000 | $50,000 | - |
| | Access Road & Parking | New 200'x25' access road and parking behind new apron hangars | $300,000 | $270,000 | $15,000 | $15,000 | - |
| | Terminal | New 60'x30' terminal building, reconfigure parking lot, remove existing terminal, and replace with pavement (365 SY) | $2,100,000 | $1,890,000 | $105,000 | $105,000 | - |
| | Phase 3 Apron Extension | Add apron (3,200 SY) north of Phase 2 extension (three tiedowns) | $1,000,000 | $900,000 | $50,000 | $50,000 | - |
| | | Sub-Total | $10,160,300 | $9,144,270 | $508,015 | $508,015 | $ 0 |
| | | TOTAL | $17,963,300 | $14,831,370 | $782,715 | $2,349,215 | $ 0 |
| | | Hangar Development (Demand Based) | $2,285,000 | $742,500 | $0 | $1,542,500 | |
| | | Other Development (Demand Based) | $8,060,300 | $7,254,270 | $403,015 | $403,015 | |

*Blue highlight – Demand based Hangars. Orange highlight – Demand based Other development.*

# Obstruction Analysis – Runway 12 End

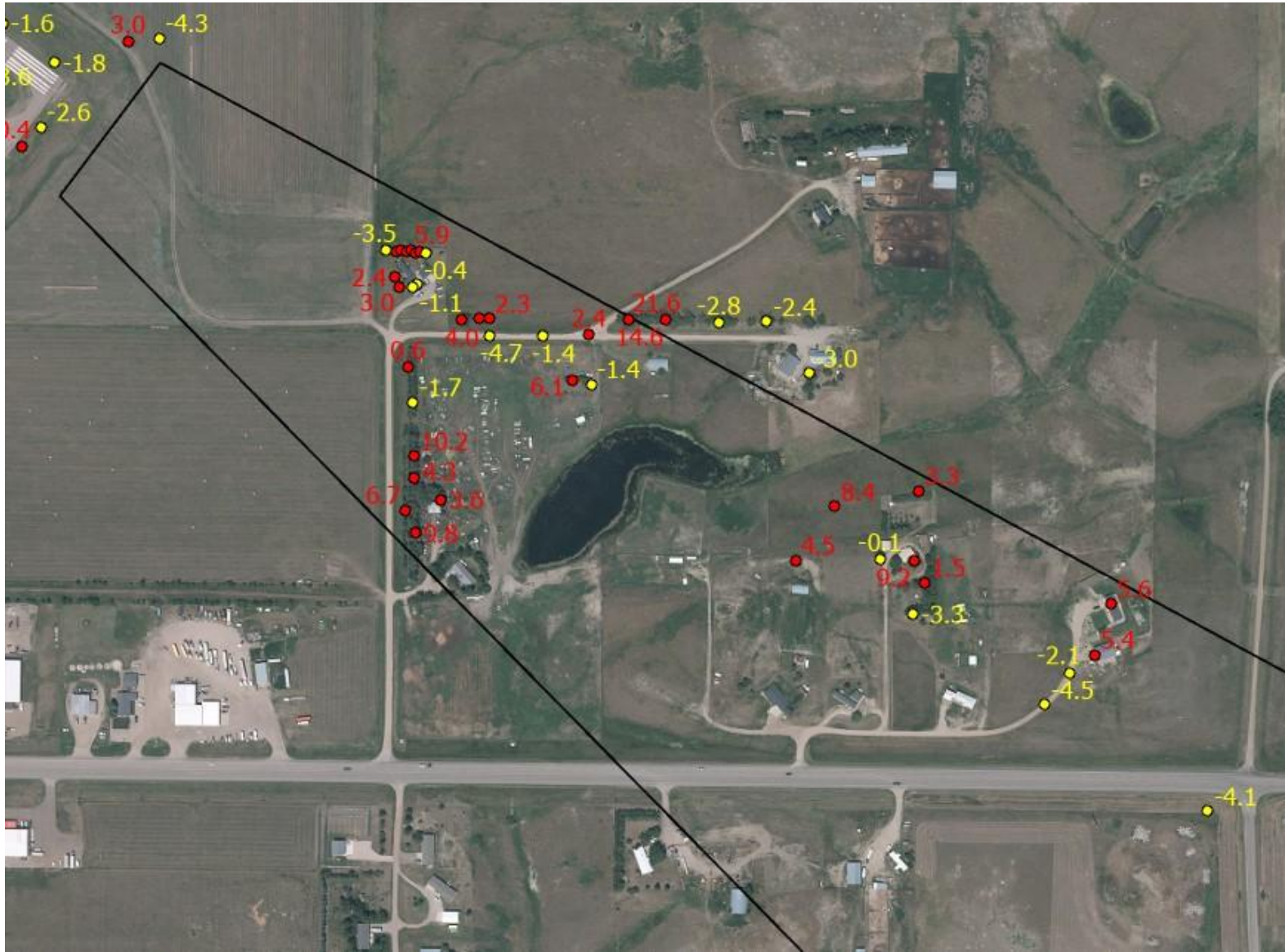
## 13B (20:1)


## Part 77 (34:1)



# Obstruction Analysis – Runway 30 End (Part 77 34:1)

- Obstacle Action Plan
  - Tree Mitigation
  - Obstruction Evaluation
  - Relocate Runway 17 Threshold



# Next Steps

- Finalize Airport Layout Plan
- Submit ALP to FAA for Review (6-18 months)
- Implementation Steps

https://inputcentral.com/mobridge-airport-plan

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# Questions/Comments

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