

Warroad International Memorial Airport

Agency Meeting – April 30, 2024



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Agenda

- Introductions
- Facility Needs
- Alternatives
 - Taxiway
 - Apron/Terminal Area
- Implementation / Near-Term Projects



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Facility Needs

- Critical Design Aircraft
 - AAC-B, ADG-II, TDG-2A



- Remove direct access to runway
- Evaluate Taxiway to Runway separation distance to allow for more room around on aircraft parking apron
- Identify future location for the AWOS-III that meets current siting standards



Facility Needs

- Apron sizing and layout should accommodate aircraft maneuvering, parking, and refueling
- Identify future location of fuel system
- Space for additional public and Marvin vehicle parking

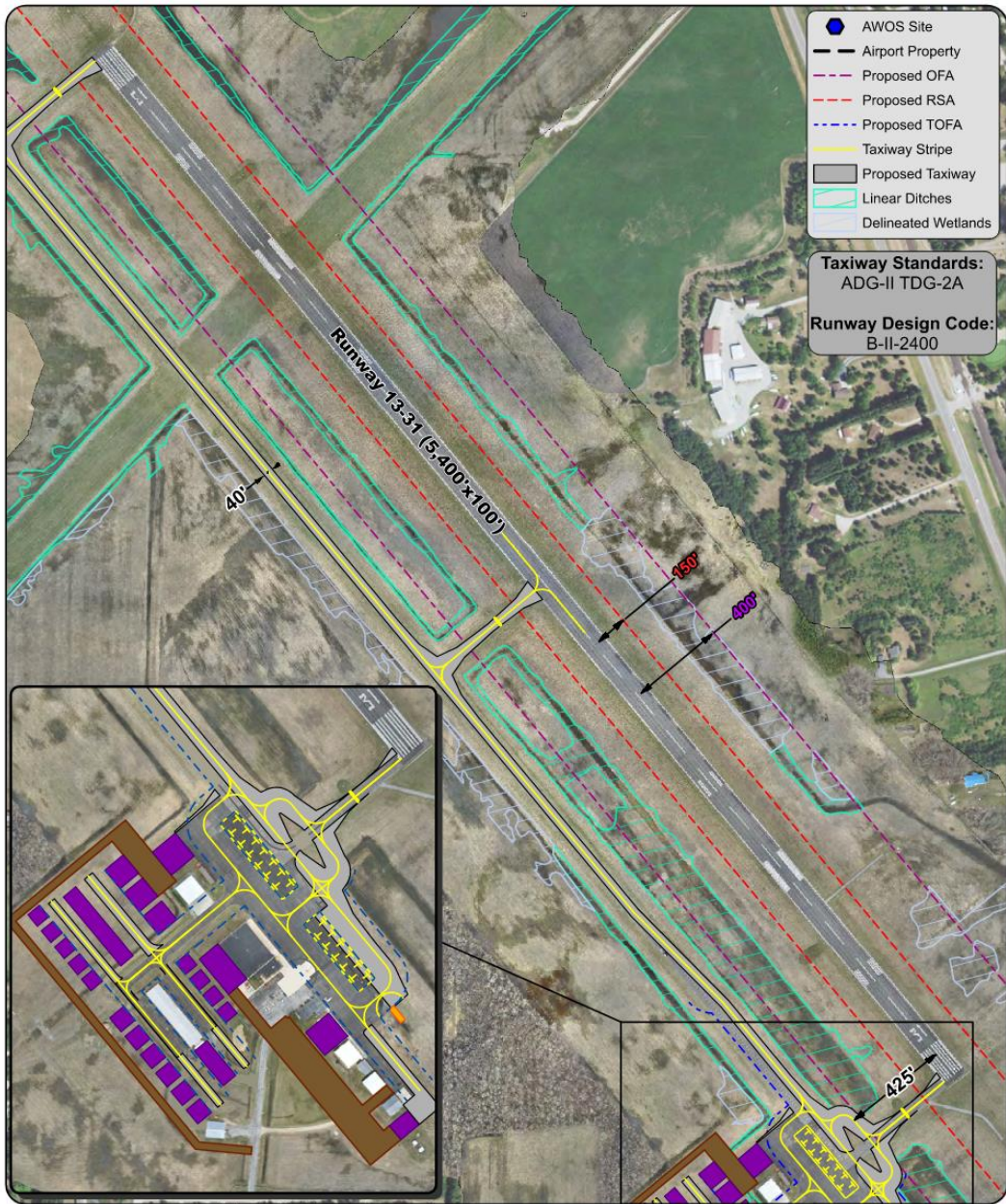
Table 3-7 – Aircraft Parking Area Sizing

Category	Existing	Base	PAL 1	PAL 2	PAL 3	PAL 4
Transient Parking Tie-downs	975	6.5	7.0	7.5	8.1	8.7
Based Aircraft Parking Tie-downs	-	-	1.0	1.0	1.0	1.0
Aerial Firefighting Tie-downs	1,600	5.0	5.0	5.0	5.0	5.0
Total Equivalent Tie-downs (Rounded)		11.5 (12)	13.0 (13)	13.5 (14)	14.1 (14)	14.7 (15)
Total Parking Area (SY)	2,575	3,924	4,251	4,578	4,578	4,905
Capacity/(Deficiency) (SY)	-	(1,349)	(1,676)	(2,003)	(2,003)	(2,330)

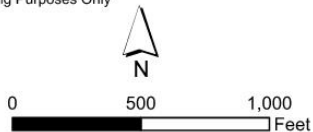
Source: KLJ Analysis. Note: RED indicates a deficiency to existing capacity.



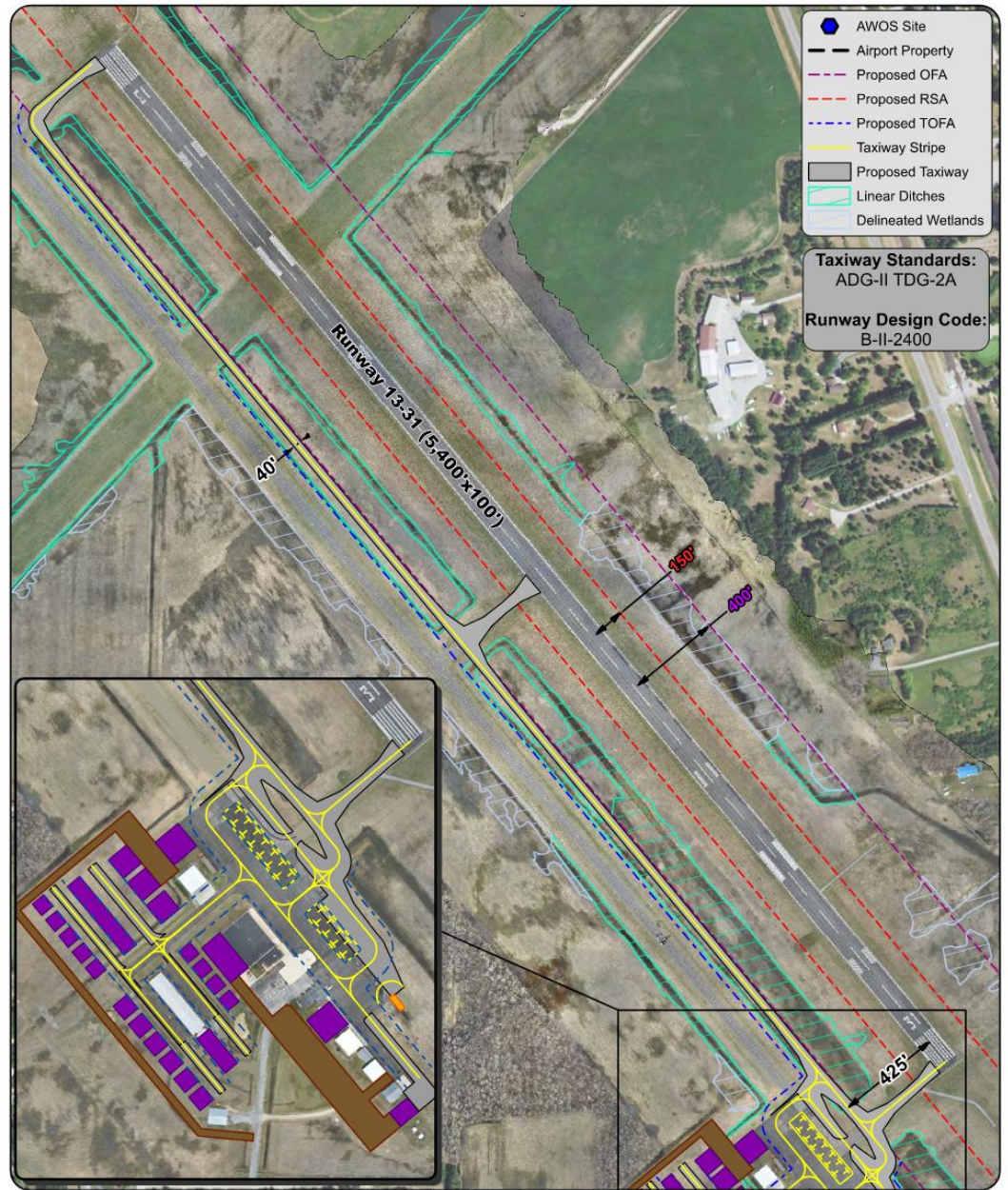
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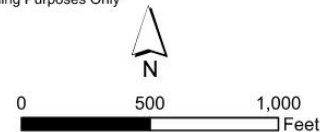
*Intended for Planning Purposes Only



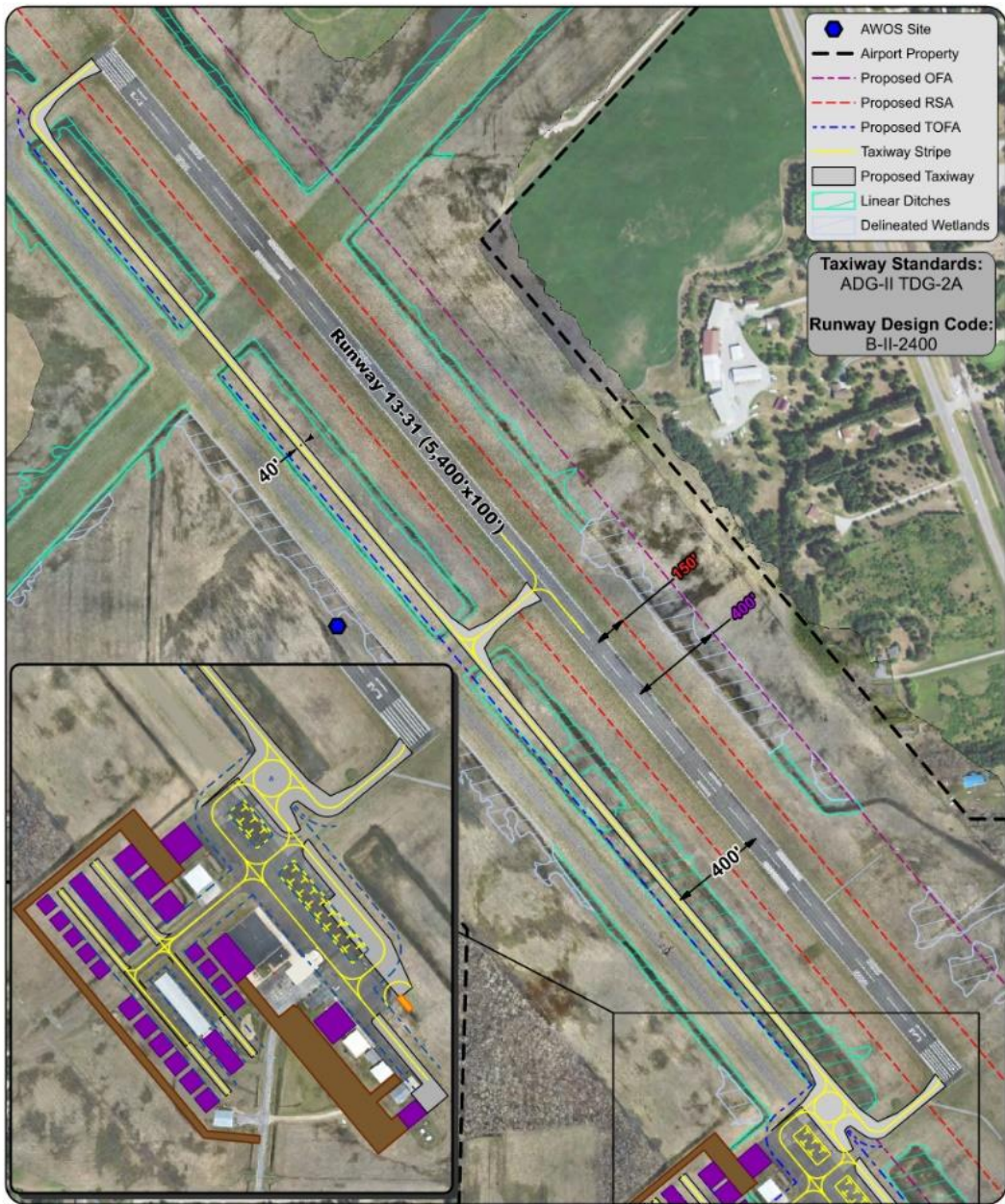
**Warroad International
Memorial Airport
Proposed Parallel Taxiway
425-Foot Separation
Terminal Area Alternative 5a**



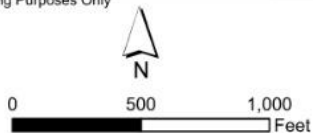
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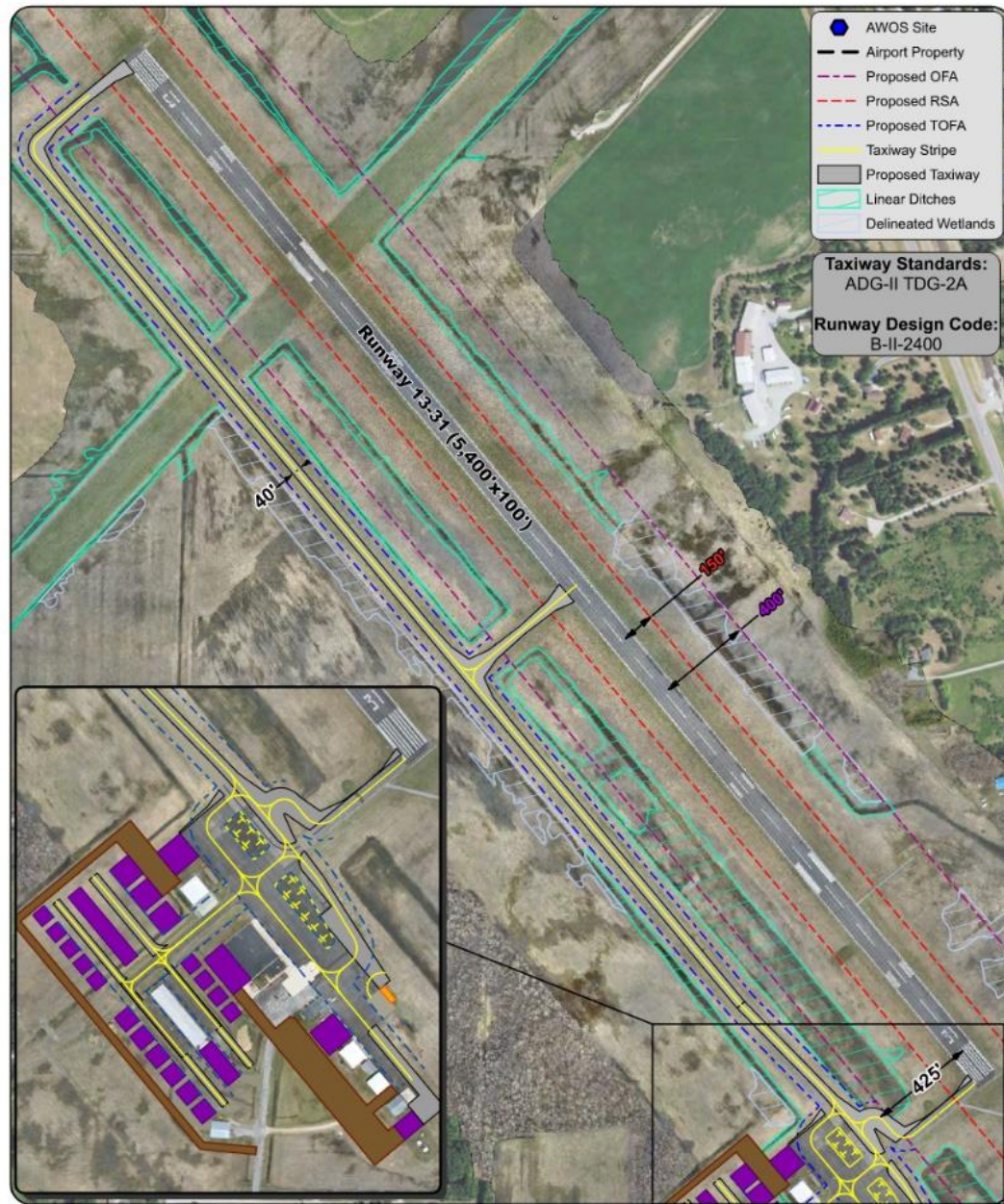
**Warroad International
Memorial Airport
Proposed Parallel Taxiway
425-Foot Separation
Terminal Area Alternative 5b**



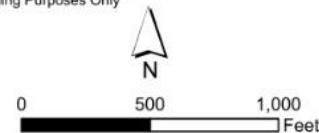
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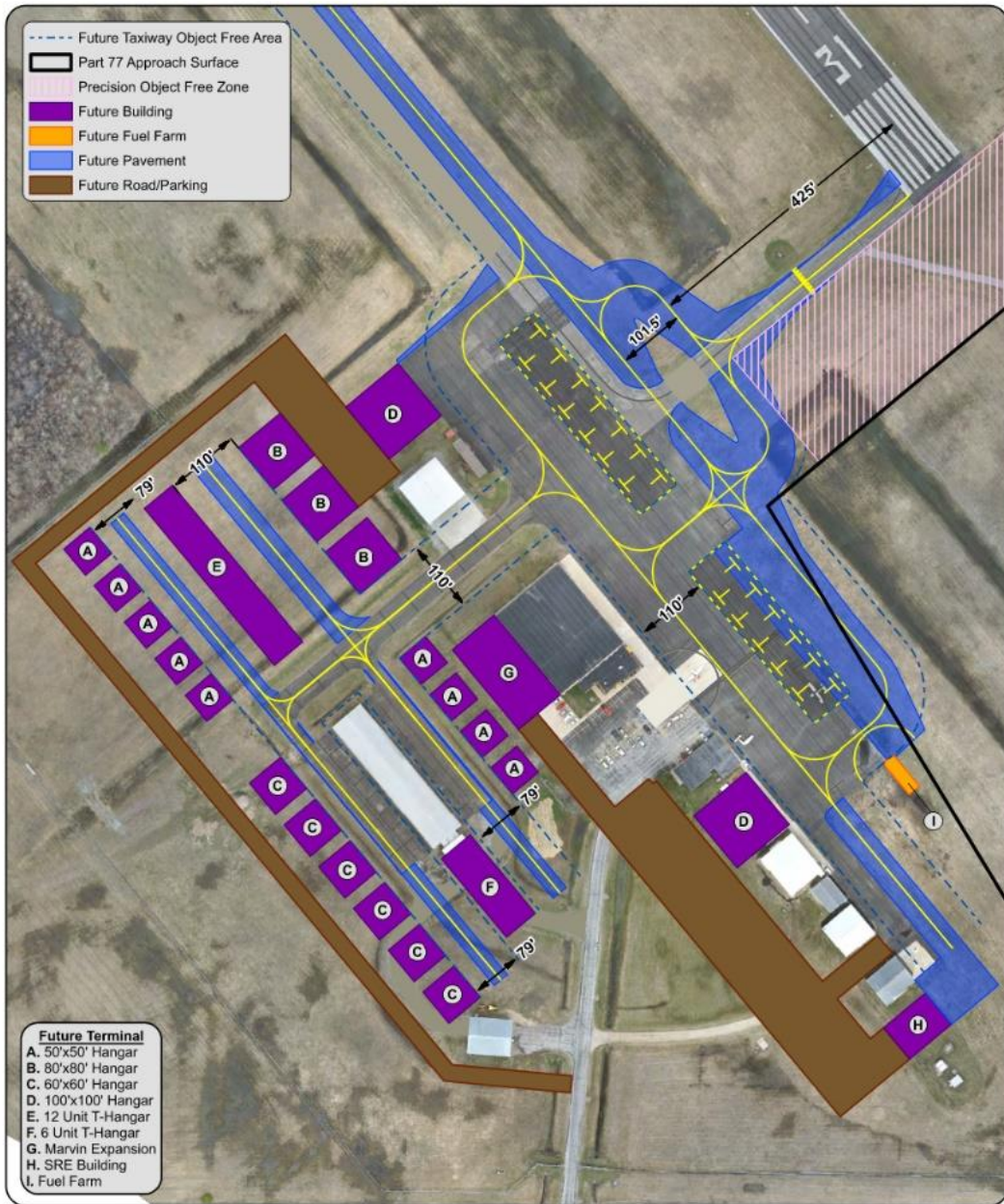
Warroad International
Memorial Airport
Proposed Parallel Taxiway
400-Foot Separation
Terminal Area Alternative 5C



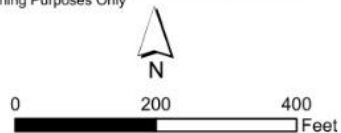
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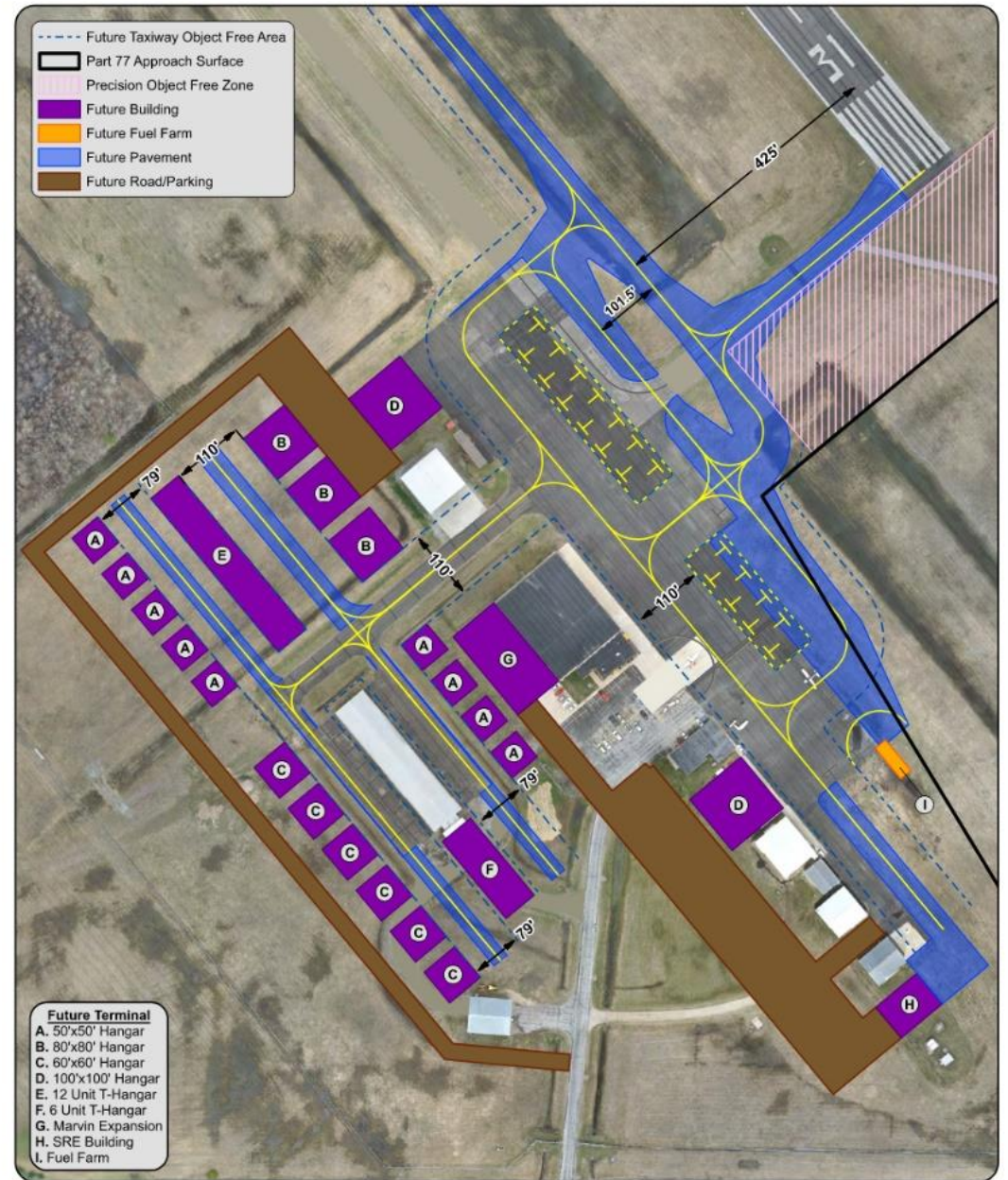
Warroad International
Memorial Airport
Proposed Parallel Taxiway
425-Foot Separation
Terminal Area Alternative 5d



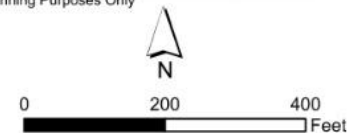
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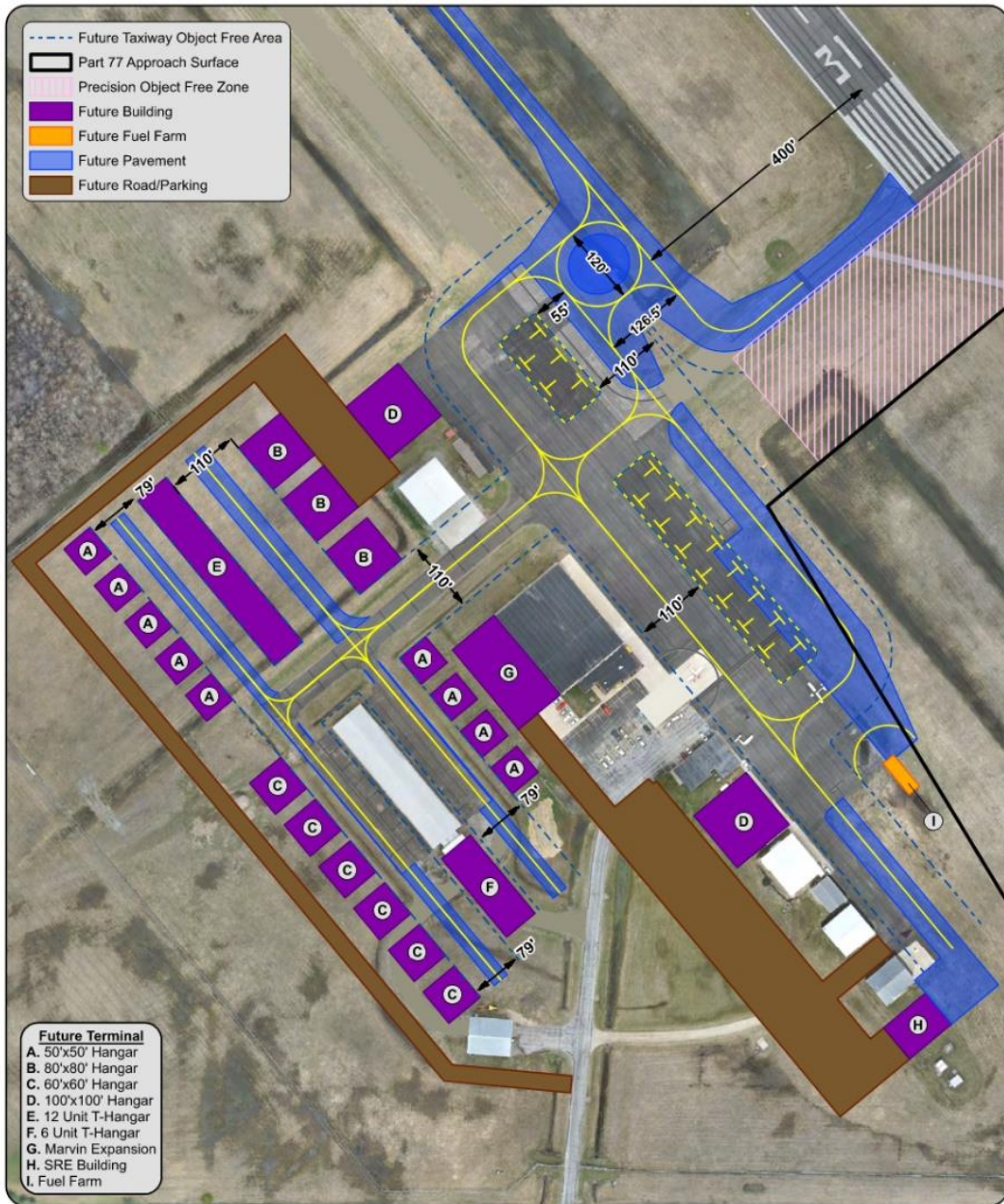
Warroad International Memorial Airport Terminal Area Alternative 5A



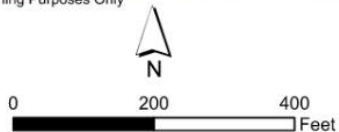
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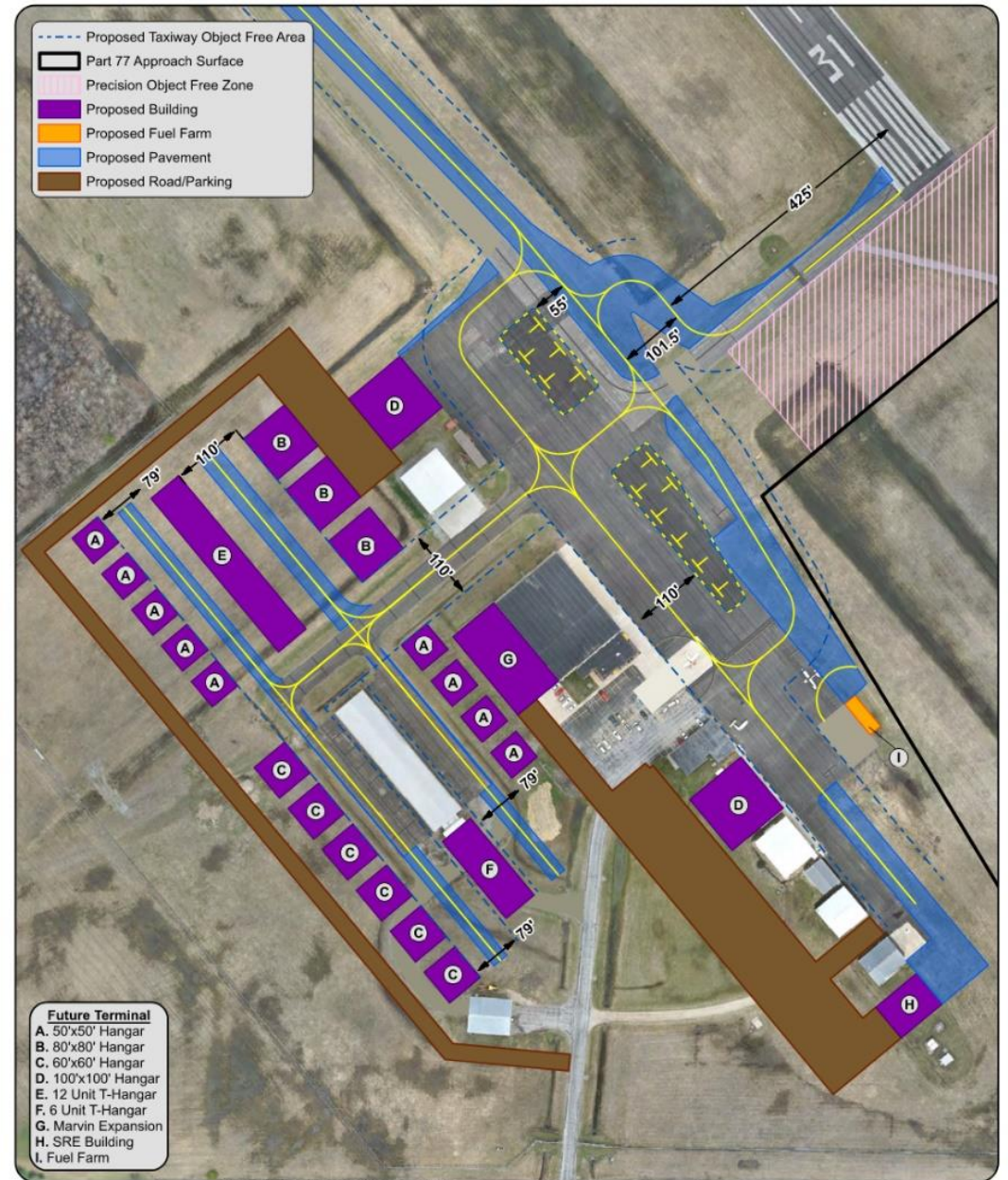
Warroad International Memorial Airport Terminal Area Alternative 5B



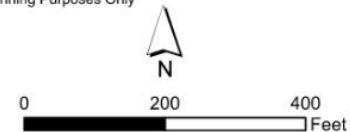
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Warroad International Memorial Airport Terminal Area Alternative 5C



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Warroad International Memorial Airport Terminal Area Alternative 5d

Summary Table

Taxiway and Terminal Alternatives Summary Table

Metric	Alternatives			
	Alternative 5A	Alternative 5B	Alternative 5C	Alternative 5D
Taxiway Configuration	Extended Tie-in to Existing Taxiway	Relocated Parallel Taxiway - 425' Separation	Relocated Parallel Taxiway - 400' Separation	Immediate Tie-in to Existing Taxiway
Penetrate Runway Protection Zone	Yes	Yes	Yes	No
Penetrate Precision Obstacle Free Zone	Yes	Yes	No	No
Refueling Area Inside TLOFA	Yes	No	No	No
Tiedowns / Parking Area	24 Tiedowns (4,600 SY)	21 Tiedowns (4,400 SY)	20 Tiedowns (4,030 SY)	12 Tiedowns (2,800 SY)
Apron Expansion (NW) Considerations	Potential Taxiway Regrading May be Needed	Taxiway Does Not Impede Apron Expansion	Taxiway Does Not Impede Apron Expansion	Reconstruction of Taxiway Tie-in Will be Needed
Water Resource Impacts - Linear Ditch	0.59 Acres	6.01 Acres	5.41 Acres	0.30 Acres
Anticipated Environmental Documentation	CATEX	EA	EA	CATEX
Total Estimated Cost	\$6,510,000*	\$6,635,000	\$6,495,000	\$5,810,000**

Source: KLJ Analysis.

*\$3,485,000 – If existing taxiway is mill and overlay rehabilitation instead of limited frost protection reconstruction

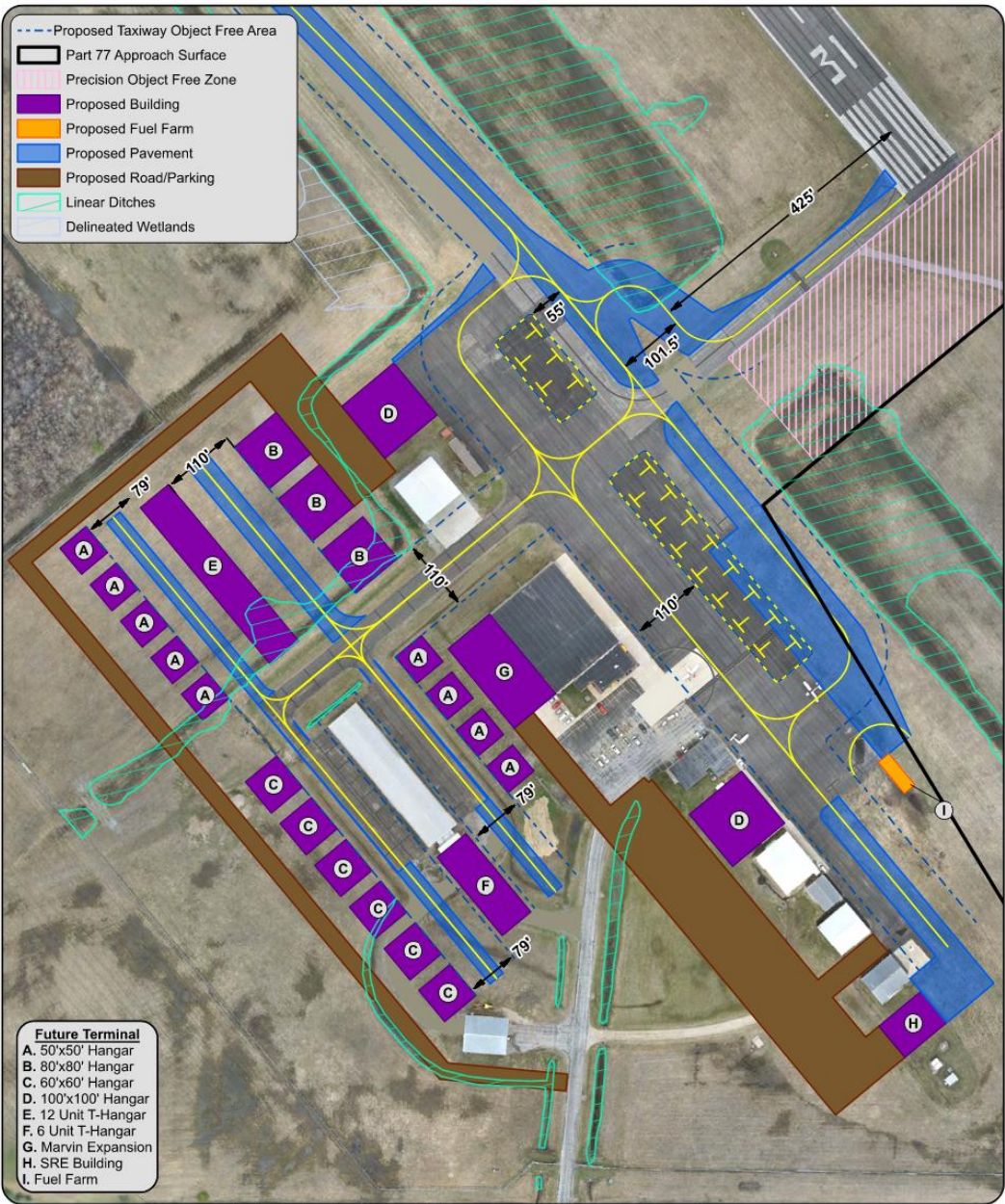
** \$2,770,000 – If existing taxiway is mill and overlay rehabilitation instead of limited frost protection reconstruction



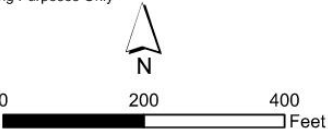
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Preferred

- Preliminary – Airport in discussion with users
- Combines taxiway and direct access from 5D with apron area of 5C
- Minimizes wetland impact and best utilization of apron pavement



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Warroad International Memorial Airport Terminal Area
DRAFT - Preferred



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Near Term Projects

Year	Item No.	Project Description	Timeline	Current Total Estimated Cost	FAA Funding					Total FAA Share	Local Share	MnDOT Share
					Airport Improvement Program (AIP) Funding		Remaining Entitlement Balance	BIL (AIG) Funding				
					Entitlement Funding	FAA Discretionary / State Apportionment		BIL (AIG) Funding	Remaining BIL Balance			
Carryover Balances →							\$ 559,959		\$ 262,000			
Annual Entitlement →					\$ 150,000		\$ 709,959	\$ 113,000	\$ 375,000			
2024	1	SRE Acquisition (Wheel Loader w/Blower and Plow Attachments)	Bid Spring 2024. Acquire Fall 2024.	\$ 625,000	\$ 562,500	\$ -	\$ 147,459	\$ -	\$ 375,000	\$ 562,500	\$ 31,250	\$ 31,250
	2	Reconstruct & Realign Parallel Taxiway and Connecting Taxiways; GA Apron Expansion (Design)	Design winter/spring 2025. Bid summer 2025. Construct summer 2026.	\$ 210,000	\$ -	\$ -	\$ 147,459	\$ 189,000	\$ 186,000	\$ 189,000	\$ 10,500	\$ 10,500
2024 Totals				\$ 835,000					\$ 751,500	\$ 41,750	\$ 41,750	
Annual Entitlement →					\$ 150,000		\$ 297,459	\$ 150,000	\$ 336,000			
2025	3	Reconstruct & Realign Parallel Taxiway and Connecting Taxiways (AIP Construction)	Design winter/spring 2025. Bid summer 2025. Construct summer 2026.	\$ 5,700,000	\$ 297,459	\$ -	\$ -	\$ 336,000	\$ -	\$ 5,130,000	\$ 285,000	\$ 285,000
	4	Reconstruct & Realign Parallel Taxiway and Connecting Taxiways (Non-AIP Construction)	Design winter/spring 2025. Bid summer 2025. Construct summer 2026.	\$ 300,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 75,000	\$ 225,000
	5	GA Apron Expansion (Construction)	Design winter/spring 2025. Bid summer 2025. Construct summer 2026.	\$ 300,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 270,000	\$ 15,000	\$ 15,000
	6	Replace AWOS (Design)	Design winter 2023-2024. Bid spring 2024. Construct summer/fall 2024.	\$ 40,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 40,000
	7	Replace AWOS (Construction)	Design winter 2023-2024. Bid spring 2024. Construct summer/fall 2024.	\$ 100,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100,000
	8	Acquire Mower Attachment		\$ 20,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 5,000	\$ 15,000
2025 Totals				\$ 6,460,000					\$ 5,400,000	\$ 380,000	\$ 680,000	
Annual Entitlement →					\$ 150,000		\$ 150,000	\$ 150,000	\$ 150,000			
2026	9	Crack Seal Airfield Pavements		\$ 50,000	\$ -	\$ -	\$ 150,000	\$ -	\$ 150,000	\$ -	\$ 12,500	\$ 37,500
	2026 Totals				\$ 50,000					\$ -	\$ 12,500	\$ 37,500
Annual Entitlement →					\$ 150,000		\$ 300,000	\$ -	\$ 150,000			
2027	10	Acquire Deicing Sprayer		\$ 20,000	\$ -	\$ -	\$ 300,000	\$ -	\$ 150,000	\$ -	\$ 5,000	\$ 15,000
	2027 Totals				\$ 20,000					\$ -	\$ 5,000	\$ 15,000
Annual Entitlement →					\$ 150,000		\$ 450,000	\$ -	\$ 150,000			
2028	11	Airfield Lighting Rehabilitation (Design)	Design winter/spring 2029. Bid summer 2029. Construct summer 2030.	\$ 80,000	\$ -	\$ -	\$ 450,000	\$ 72,000	\$ 78,000	\$ 72,000	\$ 4,000	\$ 4,000
	12	Rehabilitate (Mill and Overlay) Runway 13-31 (Design)	Design winter/spring 2029. Bid summer 2029. Construct summer 2030.	\$ 120,000	\$ 30,000	\$ -	\$ 420,000	\$ 78,000	\$ -	\$ 108,000	\$ 6,000	\$ 6,000
2028 Totals				\$ 200,000					\$ 180,000	\$ 10,000	\$ 10,000	
2024-2028 Totals				\$ 7,565,000					\$ 6,331,500	\$ 449,250	\$ 784,250	



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Questions/Comments

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AWOS Siting

Siting Options

