AIRCRAFT FUELING SYSTEMS FOR GENERAL AVIATION AIRPORTS

WAMA First Friday | Corley McFarland, P.E. | Precision Approach Engineering

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Key Presentation Topics

- Definitions
- Fueling Equipment Component Selection
- Siting, Code Requirements, and Site Development
- Procurement, Site Preparation, Installation, and Commissioning
- Typical GA Fuel System

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Definitions

AHJ	Authority Having Jurisdiction
AST	Above Ground Storage Tank
ATA-103	Airlines for America Standard for Fuel Quality Control
BIL	FAA Bipartisan Infrastructure Law
CARB	WSDOT Community Airport Revitalization Board
DOE	Washington Department of Ecology
EPA	Environmental Protection Agency
GPM	Gallons Per Minute
NEPA	National Environmental Policy Act
OPD	Overflow prevention device
OWS	Oil Water Separator
SEPA	State Environmental Policy Act
SPCC	Spill Prevention, Control and Countermeasure Regulation

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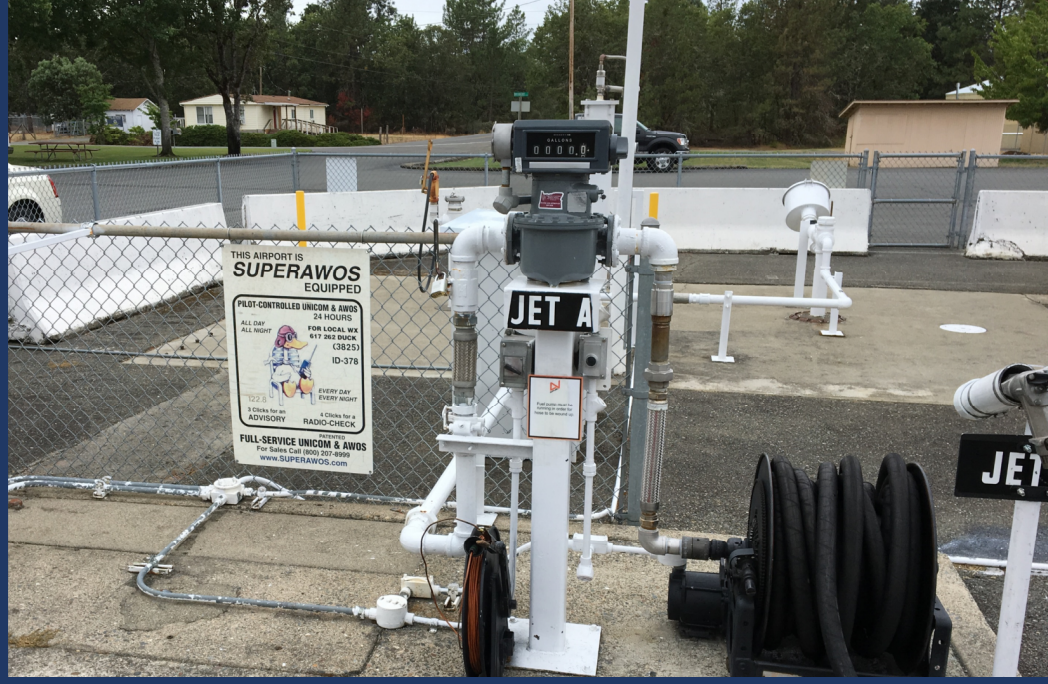

Why Install a New Above Ground Fuel System

- Replace aging underground storage tank
- Adding fuel type not presently available or additional capacity
- Reduced operations and maintenance versus underground tank
- Reduced liability and insurance premiums versus underground tank

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Fuel System Components

- Tank: Capacity, UL-2085 Fireguard VS UL-142, tank saddle VS skid support, floating suction, personnel access
- Delivery Tanker Offloading: Utilize pump on inbound transport or ability to bulk offload with system pump
- Fuel Distribution: Overwing, single-point (underwing), GPM, filtration incl ATA-103, self-serve, mobile refueler
- Fuel Recovery: Sampling, filter changes

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Fuel System Components (cont.)

- Self-Serve Retail Point of Sale (Fuel Management System): QTPod M4000, Fuelmaster, etc.
- Power Requirements: Single vs three phase depending on GPM, variable frequency drive if no three-phase power
- Appurtenances: Emergency shutoff, tank gauging, leak detection, overfill protection, FSII (Jet-A), overwing auto-off
- Coordinate components with fuel supplier

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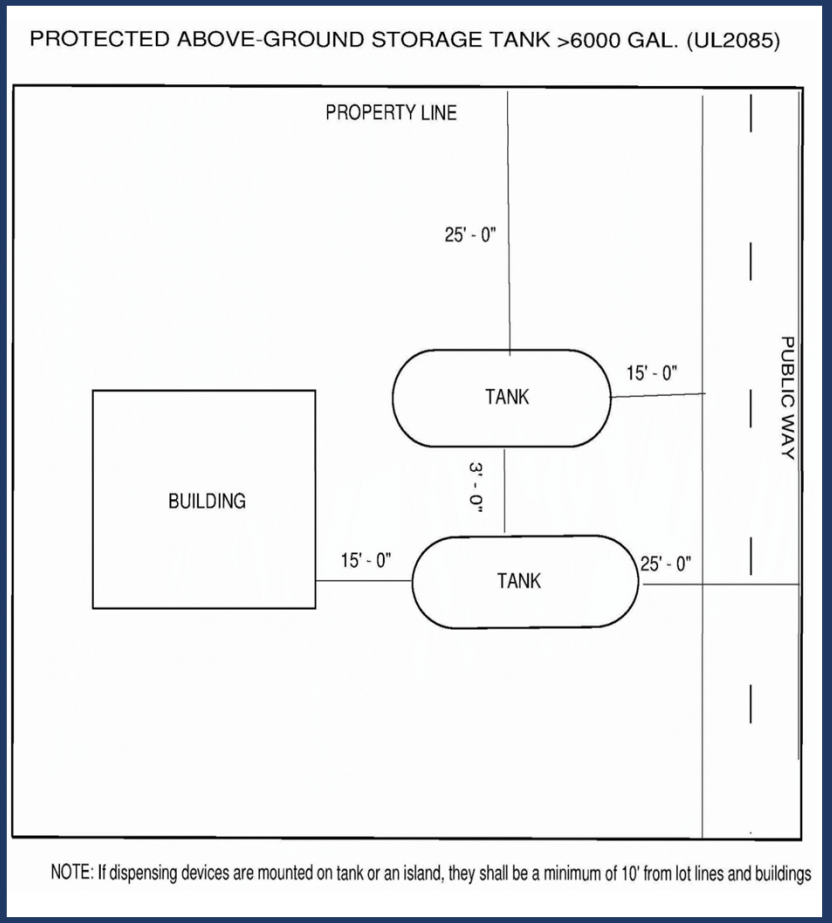
Fuel System Siting and Code Requirements

- **Access: Aircraft, inbound tanker transport, mobile refueler, fire apparatus**
- **Proximity to Utilities: Power and communications**
- **Other: ALP compatibility, FAA airspace, critical area setbacks**
- **Code Requirements: Tank setbacks, impact protection, emergency shutoff, SPCC, grounding, fire extinguisher(s), signage/placards, refueler OPD**
- **Permits: Local, fire marshal, SEPA, NEPA, weights and measures**



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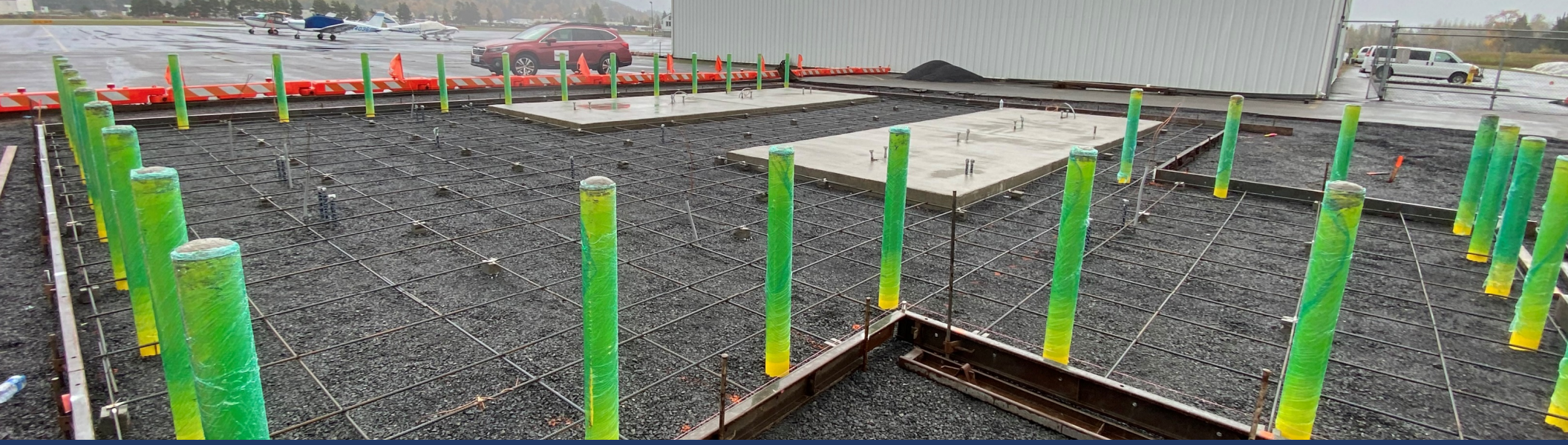
Site Development Considerations

- Fuel Equipment Site Work: AST and fuel skid foundation(s) and perimeter slab
- Pavement Improvements: Aircraft apron and access road expansion
- Vehicle Impact Protection: Bollards etc. to protect fuel distribution equipment
- Secondary Containment / Stormwater: Grading, curbing, dikes, spill containment shutoffs, OWS, drainage infrastructure
- Utility Infrastructure: Power incl. standby, communications, grounding, emergency shutoff provisions
- Other: Area lighting, signage, existing fueling system decommissioning, temporary fuel provisions



Procurement and Site Preparation

- Funding: FAA BIL, WSDOT CARB
- Schedule: Tanks are 18-22 weeks lead time following submittal approval
- Specification: Incorporate desired components
- Bid Procurement(s): Equipment and site development work combined or separate
- Self Performance Work: Clearing, foundation preparation, concrete work

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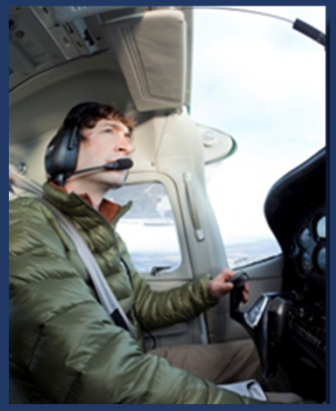
Installation and Commissioning

- **Installation: Site contractor, crane, and equipment supplier coordination. Electrical/communication connections, anchor equipment**
- **Signoffs to Fill Tank: Fire marshal and other AHJs**
- **Coordinate In Advance Of Fuel Delivery: Fuel supplier quality control testing, point of sale credit card processing setup**
- **Initial Fill: Fuel quality testing, equipment calibration, staff training**
- **EPA SPCC: Update existing or provide new SPCC, spill kits, etc. Due within 6 months of system installation**

Typical General Aviation Fuel System

- Tank: Saddle mount UL-2085, 6,000 – 12,000 gallons
- Bulk offload deliveries with skid pump: Avgas – No; Jet-A - Yes
- Fuel Skid - Avgas: 30 GPM overwing with VF-22 filter/monitor
- Fuel Skid – Jet-A: ~30 GPM overwing, 200 GPM offload/refueler with filtration and static relaxation
- Other: Fuel reclaim system, automated tank gauging, refueler OPD, initial tank fill and testing costs

QUESTIONS ?



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