8 m Steel Water Tower 5,000 L

AOFS Reference Implementation: 8 m Steel Water Tower with 5,000 L nylon tank. Designed for **simple, off-the-shelf steel construction** using locally available materials.

This blueprint is **non-normative** and intended as a **practical, low-tech reference** for smallholder farms, NGOs, or off-grid installations.

Functional Purpose

- Store 5,000 L of water in a tank elevated ~8 m for gravity-fed irrigation
- Provide a higher-head water source for farms requiring greater pressure
- Integrate optionally with AOFS Field Controllers for water level monitoring

Structural Concept

- 8 m high **simple steel frame tower** (e.g., prefabricated angles or trusses)
- Supports a **standard 5,000 L nylon tank** (locally available)
- Open-top tank for inspection and filling
- Integrated Ladder for maintenance
- Tank should be secured to the steel frame to resist tipping or lateral movement.
- Consider temporary ballast or partial filling if the tank will be left empty for extended periods.
- Site placement should minimize exposure to prevailing winds.
- Designed to be **assembled with basic tools and local labor**

Hydraulic Layout

- Tank outlet feeds irrigation zones by gravity
- **Minimum outlet height prevents complete emptying** to maintain tank stability
- Isolation valve allows manual control
- Overflow routed safely to drainage or secondary container
- Optional integration with a small pump for secondary irrigation zones

Safety Considerations

- Keep steel frame connections tight and stable
- Ladder and hatch should be used carefully
- Ladder should be protected from being accessed by children
- Ensure the frame is level and anchored for basic stability
- Empty or near-empty tanks are more susceptible to wind forces; take care during strong wind events
- Ensure tank straps, brackets, or anchoring to the frame are installed and checked regularly

- Overflow and basic manual valve operation prevent flooding

Manual Operation Pathways

- Tank filling and irrigation can be done manually if electronics fail
- Paper-based logs or measurement sheets supported

Controller Integration Points

- Optional water level sensor for Field Controller logging
- AOFS control can read tank level for irrigation scheduling
- Controller can enforce a minimum water level to ensure the tank remains gravity-stable against wind forces
- Controller may connect to global weather forecasts when internet is available
    - High wind or storm warnings trigger alerts to the operator
    - Controller can temporarily fill or maintain tank level to prevent tipping during forecasted high winds
    - Irrigation may be suspended or modified to reduce risk to infrastructure
- Manual bypass always available — irrigation continues even if electronics are offline

Versioning Note

- This design is **simple and locally adjustable**, so traditional versioning does not really apply
- Builders may adapt frame dimensions, tank placement, or assembly method according to available steel, tools, and skills
- Basic stability and functional operation should be maintained

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