



**Cities and
Villages**
MUTUAL INSURANCE
COMPANY

City of Plymouth Wastewater

**Roof Fall Protection Equipment Selection,
Equipment Implementation, Training, and
Fall Protection Policy**

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Disclaimer

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Welcome and Introductions



Background and History

- Received email from safety consultant
- Verified non-compliance with our insurance rep
- OSHA and State DSPS compliance for fall protection (4-feet general industry / 6-feet construction).
- Concern from operators on digester roof
 - ✓ Steps (expensive) / Stay off (what about maintenance?)

Gaining Management Support

-How much does a fall injury cost versus fixing the problem (direct and indirect costs)?

***Most research suggests that INDIRECT costs are 4-10 times the DIRECT Costs**

-Discussion with DPW and City Administrator

- ✓ Obtained estimate for (6) roofs
- ✓ City Council approved the expenditure
- ✓ Project deadline set by City Administrator
- ✓ CVMIC Grant Program helped offset cost

Addressing the Hazard



- Fall Arrest v. Fall Restraint?

- Started with equipment most frequently maintained and addressed one building at a time

Advice in design-Raise Existing Parapet wall?

- Developed a written policy that governed the use of the fall protection equipment

- Employee Training and Education

Addressing the Hazard

Service Building- Proper exhaust fan operation and maintenance



Fixed Ladder with Guardrail

Mobile Anchor Point-Fall Restraint



Addressing the Hazard

Sludge Pump Building- Proper exhaust fan operation and maintenance



Fixed Ladder with Railing

Addressing the Hazard

Filtration Building- Proper exhaust fan operation and maintenance



Non-Penetrating Guardrail

Addressing the Hazard

Blower Building- Proper exhaust fan operation and maintenance



Self-Retracting lifelines with Roof Anchors

Addressing the Hazard

Digester Building- Inspect the linear mixer and grease the rails



Fixed Ladder / Guardrail / Self-Retracting Lifelines / Strap Tie Off

Addressing the Hazard

Raw Pump Building- Proper exhaust fan operation and maintenance



Fixed Ladder and Guardrail

Written Policy

Key Elements:

- ✓ Types Used at the Plant-Methods of protection
- ✓ Required Equipment for Fall Arrest System
- ✓ Process for Equipment Inspection
- ✓ Storage and Maintenance
- ✓ Employee Training
- ✓ Rescue Procedures
- ✓ Program Evaluation
- ✓ Equipment Compatibility
- ✓ Contractors

Written Policy-Sample Excerpt

ROOFTOP FALL PROTECTION

Various types of roof fall protection are used at the plant. Some buildings utilize fixed ladders with guardrails and swinging gates, while others utilize a combination of fixed ladders and self-retracting lifelines. Each building with roof access is outlined below along with the corresponding fall protection system used.

It should be noted that guardrails are installed in proximity to systems that are inspected, serviced, or maintained on a routine or semi-routine basis. The guardrails (where installed) serve as the primary means of fall protection in these areas. **Employees are NOT to travel closer than 15-feet to any unprotected leading roof edge outside of the guarded area without wearing proper personal fall protection (arrest or restraint as appropriate).**

Service Building-



Fixed Ladder with Guardrail



Mobile Anchor with Fall Restraint

Inspection & Maintenance

All systems are inspected and re-certified on an annual basis by a “competent person.”

This is required by most manufacturers and by OSHA / State DSPS.



Show and Tell

Fall Protection Equipment





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