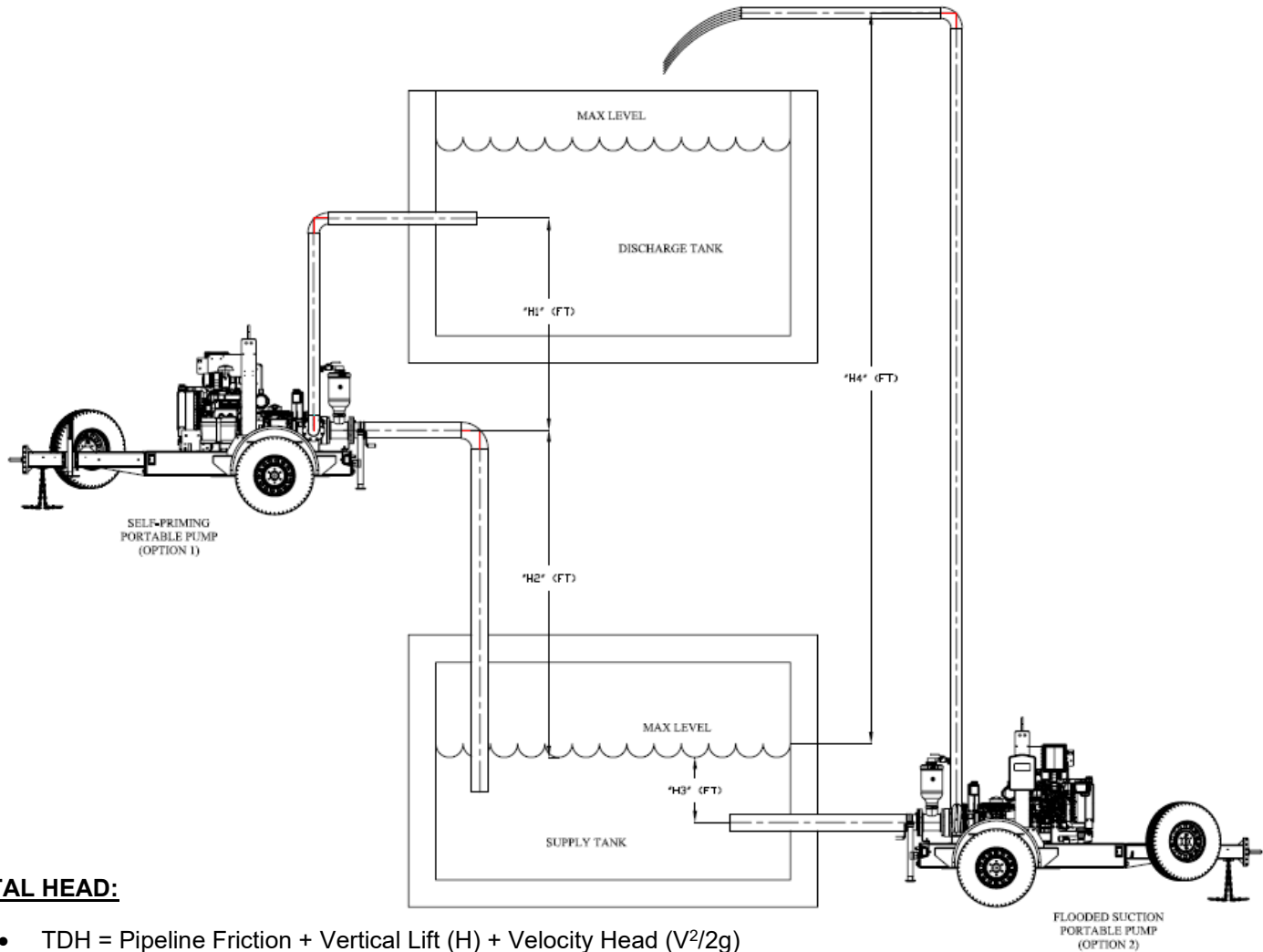


TOTAL HEAD CALCULATIONS

PORTABLE



TOTAL HEAD:

- $TDH = \text{Pipeline Friction} + \text{Vertical Lift (H)} + \text{Velocity Head (} V^2/2g \text{)}$
 - Pipeline Friction = $[\text{Pipe Length (ft)} / 100] \times \text{friction factor (table on form V137)}$
- Water friction tables are suitable for sewage & most water-borne slurries up to 5% solids. For high solids loadings & heavy organic sludge, use the biological friction table on form V137.
 - Vertical Lift = feet up from supply tank low-water level to high level in discharge tank, or to the center of the open discharge pipe.
 - Note: - Lift may be negative (-) if the pipeline is downhill.
 - The pump shutoff head must be higher than H4 in order to initiate flow.
 - Velocity Head = Energy in the liquid being discharged due to its velocity.
 - Note: - Usually ignored as insignificant in low head sump pump systems.
 - For high head systems, use nozzle manufacturer's printed data, or calculate using data as follows:
 - V = Velocity of the stream at the discharge diameter (ft/sec)
 - G = Acceleration due to gravity (32.2 ft/sec²)

NOTE:

For specific pump characteristics, refer to applicable Vaughan specification sheets, performance curves and drawings.

SPECIAL CASES:

Pipelines with valves & fitting, add appropriate equivalent pipe length.

Pressurized supply or discharge tanks, add the discharge tank pressure, in feet, less any supply tank pressure, in feet, to the above Total Head calculation. Gauge pressure, in psi $\times 2.31 =$ head in feet.

Very high solids content sludges & slurries, contact Vaughan on reliable test data for friction values.