Swine Manure Solids Concrete Settling Basin Design

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Average animal live weight at full capacity  =  354,250 lbs
(250-sow farrow-to-finish unit)

Total fresh manure production:
354,250 lbs  x  83.4 lbs/day/1000 lbs =  29,547 lbs/day

Total manure solids production:
29,547 lbs/day  x  0.12 lbs TS/lb manure =  3,680 lbs/day

Total settleable manure solids:
3,680 lbs/day  x  0.50 lbs SettS/lb TS =  1,840 lbs/day

Settleable solids volume:
1,840 lbs/day  x  1 ft3/50 lbs =  36.8 ft3/day

30-day settled solids storage volume:
36.8 ft3/day  x  30 days =  1,104 ft3

Largest flush tank capacity (finishing floor):
16 ft  x  192 ft  x  1 hd/8 ft2  x  220 lbs/hd
x  1.5 gals/100 lbs  x  1 ft3/7.48 gals =  169 ft3

Total effective basin liquid/solids storage:
1,104 ft3  +  169 ft3 =  1,273 ft3

Suggested basin dimensions:
Total depth =  3.0 ft
Effective liquid depth =  2.5 ft
Entrance ramp slope =  8:1
Inside dimensions (including ramp) =  20 ft  x  40 ft

Figures not included
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