

PALMER-BOWLUS FLUME INSTALLATION INSTRUCTIONS

1. Follow all instructions provided by the project engineers in the form of specifications, blue prints, etc.
2. The upstream channel slope should not exceed 2% (less for larger size flumes).
3. There should be no drops, bends, flow junctions, etc. within twenty-five (25) flume diameters (D) upstream of the flume. The flume should be located in a straight section of the open channel.
4. The approaching flow should be uniformly distributed across the channel, tranquil, and subcritical.
5. The approaching flow should not be turbulent, surging, unbalanced, or possessing a poorly distributed velocity pattern.
6. If baffles are used to correct or smooth the flow, they should be placed upstream of the flume at a distance of at least 10 times the maximum head. Baffles are not recommended for sanitary flows.
7. The point of measurement is $D/2$ (D =flume size) upstream of the beginning of the throat (ramp). When taking level readings, if the depth is calculated from the surface of the water to the floor of the flume at the point of measurement, remember to deduct the height of the ramp ($D/6$) from the measured depth.
8. Due to the nature of the Palmer-Bowlus flume, there is always standing water upstream of the throat (ramp). Solids may settle out during periods of low or no flow.
9. The downstream channel's slope and size should be greater than or equal to the upstream channel's slope and size to ensure that submergence does not occur.

WARNING

DO NOT USE CABLES OR CHAINS TO UNLOAD FLUMES. UNLOAD FLUMES WITH FABRIC SLINGS IN CONJUNCTION WITH A SPREADER BAR OR BY LIFTING EYES (IF PROVIDED), SPREADING THE LOAD.

NOTICE

THE RAMP OF THE FLUME MUST BE SET DOWNSTREAM AND MUST BE LEVEL FROM FRONT TO BACK AND FROM SIDE TO SIDE. A LEVEL INSTALLATION IS CRITICAL TO THE PROPER OPERATION OF THE FLUME.

10. Set the flume in place and at the elevation indicated on the engineer's drawings.
11. For larger flumes, concrete piers may be poured perpendicular to the direction of flow for the flume to sit on. Pre-cast concrete blocks may also be used. When piers or blocks are used, the floor of the flume should rest on them and not on the stiffening ribs or flanges.
12. The flume must be secured from flotation. One of the following methods may be used:
 - a. Wire should be run from the anchor clips to rebar, or
 - b. Rebar should be run through the anchor clips.



WARNING

LINE THE INTERIOR OF THE FLUME WITH PLYWOOD AND BRACE THE FLUME INTERNALLY WITH 2 X 4'S TO ENSURE THAT THE DISTORTION DOES NOT OCCUR.

13. Sandbags may be placed inside the flume to prevent it from floating in wet concrete.
14. Grout the flume in place. The first pour should just cover the bottom of the flume and should be allowed to cure before the sidewalls are grouted. Once the first pour has set, grout the sidewalls in 6" lifts, letting each lift cure before proceeding.
15. With large flumes, grout one section between the piers (or blocks) at a time. Due to the distances involved, a grout hose may be required. Flow grout from only one side of the flume.
16. The use of a vibrator should be minimized as excessive use may bulge or distort the flume sidewalls and bottom. Chaining is recommended in lieu of vibrator sticks.

WARNING

NO VOIDS OR AIR POCKETS SHOULD REMAIN IN ANY GROUT POUR. FAILURE TO ELIMINATE VOIDS OR POCKETS WILL RESULT IN SETTELING OR BULGING OF THE FLUME AND IS NOT WARRANTABLE.

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By: Matt Kazmier