

TECHNICAL BULLETIN

Guide to Forming for Grout Installations

Construction of forms and grouting should follow as soon as practical after erection and alignment of baseplates are completed. The forms should be compatible with (1) the placement method to be used, (2) consistency at which the grout will be placed, including pouring, pumping, damp or dry packing, and (3) the distance the grout must travel. Forms should be built to facilitate continuous, quick and complete filling of the space with these factors in mind. Forms should be watertight and strong enough to withstand the hydraulic pressure of plastic, flowable or fluid grout, without leaking, and especially rigid and strong, if dry pack is to be used.

Materials used in building forms include wood, polystyrene, steel and on rare occasions such exotic material as plexiglass. Wood is used in most instances, but, regardless of the material employed these forms should be caulked to prevent leakage. Forming materials, such as wood, which absorb water, should be coated with water resistant oil (form oil), a good curing compound or plastic coating. These coatings prevent loss of water from the grout and act as bond breakers so that smooth grout surfaces result after forms removal and the forms are protected for reuse.

Grout is preferably placed from only one direction, so forms should include a placing side, exit side, and side forms, all of which direct and contain the grout under the object being grouted. When flowing the grout into place, all forms for this method of placement should extend vertically at least 1 inch, preferably more, above the underside of the bedplate surface to help insure complete filling of the space to be grouted and prevent overflowing. The side forms

should not be tight against the plate, but should be erected 1 to 2 inches horizontally away from the plate so that air being displaced is not trapped below the plate.

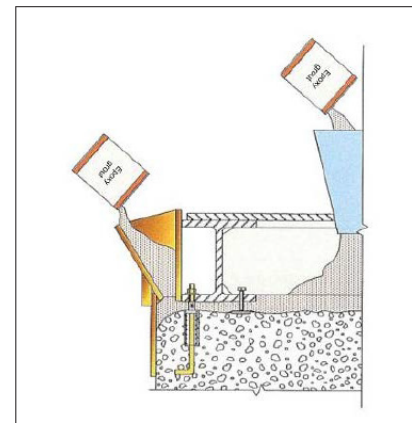
The vertical form on the exit side (opposite the placing side) should be extended 2 to 4 inches away from the plate so that straps or other placing aids can be inserted to assist movement of the grout should that become necessary. The form on the placing side should be extended 2 to 4 inches horizontally from the plate at the foundation and be slanted upward at an approximate 45 degree angle so that grout can be poured on it with a minimum of turbulence (and entrapment of air bubbles) while directing it smoothly on its way under the plate. A backboard (splash board) form should be built on top of the plate and at the plate edge, opposite the slanted headboard, to prevent spillage of grout and provide containment of the “head” of grout as it is being placed.

The further the grout must travel horizontally, the higher the slanted head box should be for a given consistency. This is to provide “head” pressure to direct the grout around shims, leveling screws, bolts, keys and other obstructions, to the exit side. For many applications, such as turbines and generators or other baseplates of lengthy dimensions, it is not prudent to build high, pouring “head” forms for these baseplate lengths. In lieu of this, low forms, sufficiently high to contain the grout and at least 1” above the bottom elevation of the plate to be grouted may be used. However, as a sloped pouring form is desirable, a portable “head box” which can be moved along the length of the plate as the grouting proceeds may be used. This portable “head box”

serves well in helping to place the grout and saves a lot on forming costs. The box with a sloped pouring surface should rest in part on the form, floor and/or baseplate and this method serves well, and often better than a long sloped form, as the thrust of the grout flow is better controlled.

Forms for dry packing should be strong, rigidly braced and provide containment on three sides. The placing side should be left open for ramming the grout into place between the foundation and underside of the plate.

After forms are erected they should be caulked sufficiently to prevent leakage of grout if it is to be placed in fluid or flowable consistency. The points to caulk are the interfaces between the form and rough foundation surface where grout might leak out during its placement or before setting. Vertical joints in the forms, at corners, may also leak if sloppy carpentry is evident, and these also should be caulked if large cracks are evident. The use of duct or “silver” tape applied on the inside of the form, at corners, is useful for this.



*Schematic of side view of grout flow through a head box.**



*Photo of several headboxes used to facilitate flowing epoxy grout across a large baseplate.**

Material used for caulking between the form and concrete surface may be a stiff consistency of sand-cement mixture or stiff consistency of the grout to be used. Some contractors will use a silicone product which can be extruded from a tube (with a consistency of toothpaste) and by squeezing this tube lay a bead of caulk along the joint to be tooled, or pushed into the crack with a finger. Where caulking might be architecturally unattractive, after form stripping, or in cases where organic or silicone products are used and cause a void in, or loss of bond of the “shoulder” grout next to the form location, caulking should be done on the outside edge of the form rather than the inside.

After caulking the foundation, the area within the forms to be grouted should be cleaned and flooded with water to see if there are any leaks in the form work, or between the form and foundation. A fluid grout (20-30 sec.) will not leak as easily as water, but if water can be successfully stopped from leaking, then surely these forms will not leak grout.

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