

RESTRICTED

SECTION 103– CEMENT GROUTING

2349. Very thin, lean or liquid mortars are termed as Grout (cement +water). Cement grouting, also called “colloidal concrete”. Provides a quick and comparatively simple method of laying an all-weather surface, but a high proportion of cement is needed and weak patches are difficult to avoid.

2350. Method. A layer of coarse aggregate is spread over the prepared formation of sub-base, and a cement/sand grout is pumped or poured over it to fill the interstices. Compaction by roller is preferable, but hand tamping may be used. No joints are necessary except in cold weather, when expansion joints are advisable at 200 ft intervals.

2351. Formwork. The forms between which the aggregate is spread must be water tight, to prevent grout from escaping.

2352. Materials.

a. Coarse aggregate:- Hard, clean material, from 3 in to 1 ½ in gauge, which is heavy enough not to float on the grout. Well graded aggregate, having a smaller proportion of voids, requires less grout, but particles less than 1-in gauge can only be penetrated by water and relatively weak grout. Broken stone is best, but hardcore, ballast, or slag can be used. Crushed hard chalk is suitable if frost action can be avoided but it must be well moistened before grouting.

b. Sand:- All particles larger than $\frac{3}{16}$ -in should be screened out. Fine sand is less harmful; than in ordinary concrete.

c. Cement:- Ordinary Portland cement.

d. Water:- As for normal concrete.

2353. Grout proportions:-

Cement	--	--	1 cut bag
Sand	--	--	-- 2cut ft
Water	--	--	-- 7 gals

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2354. Mixing. Grout may be mixed in and ordinary tilting drum mixer or, preferably, in a grout pan or a special colloidal mixer. The latter comprise an engine, two mixing tanks, a transfer pump, and a discharge pump. In the first tank the cement is dispersed in water to form a slurry. Slurry is then transferred to the second tank, where sand is added. After mixing the finished grout s pumped to the work, when using a grout mixing machine, a large stock of pump gland seals should be held (minimum one per pump per week's work), as they wear pit rapidly.