Product Specification for:
Rapid Set® UltraFlow™ 4000/8

PART 1 GENERAL

1.1 SUMMARY

A. This section covers precision, fluid, nonshrink, extended working time, high early strength, cementitious, natural aggregate grout with high effective bearing area.

1.2 REFERENCES

A. ASTM C109-90 Test Method for Compressive Strength of Hydraulic Cement Mortars.

B. ASTM C309-03 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

C. ASTM C666-90 Test Method for Resistance of Concrete to Rapid Freezing and Thawing.

D. ASTM C827-95 Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures.

E. ASTM C939-87 Test Method for Flow of Grout for Preplaced Aggregate Concrete (Flow Cone Method).

F. ASTM C1090-88 Test Method for Measuring Changes in Height of Cylindrical Specimens from Hydraulic Cement Grout.

G. ASTM C1107-91 Standard Specification for Packaged Hydraulic-Cement Grout (Nonshrink) (CRD-C 621-92).

H. CRD C621-82A Corps of Engineers Non-Shrink Grout.

I. 24 Hour Test MBT Test Method for Grout Performance.

PART II PRODUCTS

2.1 Materials

Grout: “UltraFlow™ 4000/8” by Rapid Set®. A precision, nonshrink, natural aggregate, extended working time, fluid grout.

- Compressive Strength at fluid consistency (ASTM C 109-90): 4000 psi at 8 hours, 6500 psi at 1 day, 7500 psi at 3 days, 8000 psi at 7 days, 8500 psi at 28 days.
- Pass ASTM C1107 as a grade A, B, and C grout at the temperature extremes of 45°F and 90°F at a fluid consistency per ASTM C939 and remain fluid for the 30 minutes.
- Early Height Change (ASTM C827): 0.0 to 4.0%.
- Hardened Height Change (ASTM C1090): 0.0 to 0.3%.
- Effective Bearing Area (EBA): 98%.
- Freeze/Thaw Resistance (ASTM C666): 99% @ 300 cycles.
- Pass 24 Hour Grout Test for temperature and time at fluid consistency.

2.2 Forms: Watertight and nonabsorbent. C. Water: Potable. D. Curing Compound: Meeting ASTM C309.

PART III EXECUTION

3.1 PRE-JOB

Experienced Rapid Set® field representatives are available for jobsite service. Contact Rapid Set® at 800-929-3030 if grout will be pumped, mixed in a ready-mix truck, used with pea gravel, used at temperature extremes, less than ½” thick, over 6” thick, or if there are any unusual jobsite conditions. Please read the following carefully and call Rapid Set® with any questions.

3.2 SURFACE PREPARATION

- Concrete shall be clean, sound, and have a rough texture that exposes coarse aggregate.
- Bolt holes shall be cleaned out and grouted in advance.
- All surfaces shall be free from oil, grease, dust, laitance, and other contaminants.

- Remove rust and scale from metal surfaces.

- Equipment must be secured in place to prevent movement during the grouting procedure. Saturate the concrete (preferably by ponding) for a minimum of 8 hours prior to placing grout. Concrete must be SSD (Saturated, Surface Dry). Prior to placing grout standing water must be removed. Blowing the water from underneath using un-oiled air and then wet vacuuming is effective.

- Protect baseplate and concrete base from temperature extremes, such as direct sunlight for 24 hours prior to and following grouting.

3.3 FORMS

- Forms must be watertight and nonabsorbent.

- Use polyurethane foam, putty, or caulk to seal the joints.

- Forms must be coated or waxed.

- Use headbox with 45° angle to facilitate placement for large pours.

- Build forms 1” higher than bottom of plate and leave 2” to 3” between plate and form.

3.4 MIXING

- Add potable water to the mixer.

- Slowly add undamaged bags of UltraFlow 4000/8 that have been stored in a dry area. Never add cement, sand, or admixtures. Pea gravel may be added, but only after consulting with the Rapid Set® representative at 800-929-3030.

- Mix thoroughly for 5 minutes to a uniform consistency using a pump mixer or a paddle type mixer using enough water to achieve a consistency not less than 20 seconds through a flow cone per ASTM C939 and CRD C621. Variables affecting the amount of water needed include temperatures, efficiency of mixing, and consistency desired. Never mix by hand.

- Adjust water temperature to maintain mixed grout temperature from 45° F to 90° F.

- Do NOT retemper, add water, or remix after the grout stiffens. Grout that stiffens before use must be discarded.

3.5 PLACEMENT

- Verify that concrete, plate, and ambient temperatures are from 45° to 90° F and will remain in that range until the grout has reached final set.

- Place grout continuously from one side across the shortest dimension by pouring or pumping. Pour the grout onto 45° incline to minimize air entrapment.

- Use multiple mixers, if required to ensure continuous placement. Once placement has begun and the grout is in contact with the plate, the grout must remain in contact with the plate. It is important for the grout to extend at least ½" up the edges of the plate to provide a small head pressure that will keep the grout in contact with the plate bottom.

- Do NOT vibrate the grout, but steel straps may be inserted prior to placement on large pours and jiggled lightly if required.

- Immediately after placement, cover exposed grout surfaces with clean wet rags until it is time to cut back or finish. Shoulders may be cut back approximately 2 hours after placement when the grout is hard enough to keep its shape without sagging from the plate. Immediately after cut back, cover with clean wet rags until time for finishing.

- Have all required tools, equipment and materials as close to the grouting area as possible.

3.6 CURING

Apply curing compound immediately after finishing at the rate at which it meets ASTM C309.

3.7 IN-SERVICE

Grouted equipment may be put into service as soon as desired grout strengths are achieved. Exposed shoulders, particularly if they are wide, may have some hairline cracks. These cracks Do NOT affect the structural integrity of the grout and they have no negative effect upon the load transfer ability of the grout under the baseplate.