

Grasscrete Parking Lot for Roper Energy Apartments, Blacksburg, Virginia

Layout

- Parking spaces: 5.5" Grasscrete with #89 stone (1/4"-3/8") in voids; 2' strip between cars: 5.5" finished concrete
- Driveway between parking spaces: 5.5" Grasscrete with sandy topsoil, with polyacrylamide water retention additive, in voids; grass planted in topsoil. (Grass is not planted on top of the concrete portions of Grasscrete since snow plowing occurs during winters.)

Base

- All areas should be leveled to 5.5" below final grade after base additions.
- Top of base is 1" of resin-bonded sand to make it easy to level plastic form.
- In accordance with local concrete street specifications. (E.g., soil with minimum R value of 30 and compaction of 95%; poor soil should be removed down at least 4" and replaced with compacted #57 stone (1/2"-3/2") topped by 1" resin-bonded sand.) (Minimum ground bearing of $45 \text{ kN/m}^2 = 45 \text{ kPa} = 0.45 \text{ millibar} = 6.5 \text{ psi}$) (If cohesive clay, underlying large-stone drainage blanket surrounded by geotextile.)
- Typically 6" of #57 stone with 95% compaction, topped by 1" resin-bonded sand is adequate base.

Concrete

- Minimum compressive strength of 3000 psi in 28 days
- Portland Cement: ASTM C 150, Type I, II or V
- Aggregates: ASTM C 33 with 3/8" minimum size
- Can have ~45% fly ash with 100% reclaimed crushed concrete aggregate.
- Can use fiber reinforcement.
- Welded wire mesh: 6" x 6" and 10 gauge x 10 gauge, chaired 2"-3" above subgrade.
- Expansion joints (1/2" impregnated fiberboard) at 30' intervals with 4" trowelled margins to both sides of expansion joints
- Use staging board on which to pour concrete and smooth to top of plastic forms with rubber squeegee; no other finish is required.
- 4" finished-concrete margins at parking-lot edges
- Do not tamp concrete.

Curing

- Use curing membrane.
- After 48 hours use flame gun to melt plastic form to accumulate in bottom of voids.
- Put rocks or topsoil in voids; allow settling for 14 days, then top up rocks or topsoil.
- After 14 days plant local grass seed mix for traffic durability (Zoysia, Fescue, Bermuda).
- No traffic for 14 days and only after installation of topsoil or rocks in voids.
- 28 days for 100% of design load (75,000 GVW).

References

- Grasscrete Technical Bulletin: <http://www.bomanite.com/specs/bulletin/Grasscrete%20Systems%20Tech%20Bulletin.pdf>
- Grasscrete Suggested Mix Designs: <http://www.bomanite.com/products/PDF/Bomanite%20Grasscrete%20Molded%20Pulp%20Star%20ting%20Mix%20Designs.pdf>
- Grasscrete FAQs: <http://www.bomanite.com/products/PDF/Bomanite%20Grasscrete%20FAQ%27s.pdf>
- Soil R value: [http://en.wikipedia.org/wiki/R-value_\(soils\)](http://en.wikipedia.org/wiki/R-value_(soils))
- Stone sizes: http://www.fldirt.com/57_stone.html
- Polyacrylamide soil conditioner: http://en.wikipedia.org/wiki/Polyacrylamide#Soil_Conditioner