

Bomanite® GRASSCRETE

Grasscrete Molded Pulp Former Version Guideline Specification

SECTION 033000

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

- A. Work specified in this section includes all labor, materials, equipment and services necessary to complete the Grasscrete Molded Pulp Version, including single use formers, reinforcement and curing compound.
- B. Related Sections include the following:
 - 1. Division 1 Section "Product Requirements" for submittals and substitutions.
 - 2. Division 3 Section "Cast-in-Place Concrete" for concrete slabs.

1.3 DEFINITIONS

1.4 SUBMITTALS

- A. Product Requirements:
 - 1. Provide submittal information within 35 calendar days after the contractor has received the owner's notice to proceed.
- B. Product Data:
 - 1. Submit special concrete finishes manufacturer's specifications, test data and other data required for each type of manufactured material and product indicated.
 - 2. Submit special concrete finishes technical bulletins listing manufacturer's name, product name, descriptive data, curing time and application requirements.
 - 3. Submit special concrete finishes manufacturer's Material Safety Data Sheet (MSDS) and other safety requirements.

- C. Material Certificates:
- D. Field quality-control test and inspection reports.
 - 1. Documentation by the concrete contractor or General Contractor of the sub-grade compaction results prior to concrete placement.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: The contractor for this work shall be a Bomanite Grasscrete Licensed Contractor and Certified Applicator approved by The Bomanite Company (303) 369-1115.
 - 1. Provide letter of certification from The Bomanite Company stating that installer is a certified applicator of special concrete finishes and is familiar with proper procedures/installation requirements of the manufacturer.
 - 2. Use an authorized Bomanite Grasscrete Licensed Contractor and adequate number of skilled workmen who are thoroughly trained and experienced in the necessary craft.
 - 3. Applicator shall be familiar with the specified requirements and the methods needed for proper performance of work of this section.
 - 4. Applicator shall be familiar with the previously approved mock-ups that demonstrated standard of workmanship.
 - 5. Authorized installers limited to the following:
 - Colorado Hardscapes
 - 8085 E. Harvard Ave
 - Denver, CO 80231
 - Tel: (303) 750-8200
 - Fax: (303) 750-8886
- B. Manufacturer Qualifications: A firm experienced in the support and training of a national installer network and manufacturing products required/listed to complete the work.
- C. Source Limitations: Obtain each type or class of cementitious material of the same brand from same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.
- D. Mock-ups:
 - 1. Apply finish to mock-ups constructed by concrete contractor, using each type of finish to demonstrate finished appearance and standard of workmanship.
 - a. Mock-up shall include entire system, including sub-base, geotechnical fabric (if required), reinforcement, curbing detail (if a fully grassed system) and voids exposed.
 - b. Notify Architect seven days in advance of dates and time when mockups will be constructed.
 - c. Obtain from Architect approval of mock-ups before starting construction.
 - d. If the Architect determines that the mock-ups do not meet requirements, General Contractor will demolish and remove them from the site and arrange to assemble more until approved.
 - e. Maintain mock-ups during construction in an undisturbed condition as a standard for judging the completed work.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer labels indicating brand name and directions for storage, mixing with other components and application.
- B. Store materials to comply with manufacturer's written instructions to prevent deterioration from moisture or other detrimental effects.
- C. Dispense special concrete finish material from factory numbered and sealed containers. Maintain record of container numbers.

1.7 PROJECT CONDITIONS

- A. Environmental Limitations:
 - 1. Comply with manufacturer's written instructions for ambient temperature and other conditions affecting installation performance.
 - 2. Concrete must be cured a minimum of 14 days or as directed by the manufacturer before trafficking of Bomanite Grasscrete can begin.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce products, the following requirements apply to product selection:
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturer listed. For other manufacturers to be considered, submit according to the specifications in "Product Requirements."

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2.2 PERFORMANCE REQUIREMENTS

- A. The product is required to bear daily vehicular traffic in excess of 30,000 pounds traveling at speeds greater than 20 miles per hour.
- B. The product is required to be continuously reinforced with wire mesh or rebar spaced no greater than 16" on center.
- C. The product is required to be manufactured from cast-in-place concrete with a minimum thickness of 5 ½".

2.3 MATERIALS

- A. Bomanite Molded Pulp Formers: Vacuum formed bio-degradable tools.
 - 1. Sizing: Molded Pulp 5 ½" sized formers.
- B. Bomanite Clear Cure: Water-based acrylic polymer curing compound designed to bond to fresh concrete and holds in the mix water to achieve improved concrete properties and complies with ASTM C 309.

- C. Bomanite Fibers: Polypropylene monofilament fibers packaged in 1.5 pound water soluble bags for jobsite addition to the ready mix truck.
- D. Bomanite Coloration Concentrate: Concentrated dry powder iron oxide pigments designed to color concrete (optional- dependent upon Grasscrete System selected).
- E. No substitutions or alternates to the above will be accepted.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. The sub-grade for Grasscrete shall be prepared for expected loading and drainage requirements. Sub-grade for vehicle traffic shall be in accordance with local concrete street specifications. (NOTE: Because of the wide variety of soil types, weather and anticipated loading, it is not possible to recommend one specific sub-grade design. The specifier should keep in mind that Grasscrete is porous, and much of the water that falls on the surface will pass through to the sub-grade. For most applications, except for very heavy loads, native soil having a minimum "R" Value of 30 and a compaction of 95% will provide a suitable sub-grade. In areas having poor soil and/or very heavy anticipated loads, 4" or more of soil should be excavated and replaced with compacted base rock.) If an open void or gravel filled system is being utilized as a fully pervious system, a minimum of an 18" bed of clear granular stone will be required to provide an adequate reservoir. Consult General Contractor, Structural Engineer, Architect and Concrete Contractor prior to installation of concrete slab to ensure complete understanding of substrate preparation, reinforcement, penetrations, mix design, placing and finishing requirements, water capacity, elevations, etc.
- B. The concrete shall have a minimum compressive strength of 4,000 psi in 28 days when placed at a 6-8" slump. Portland Cement shall conform to ASTM C 150, Type I, II or V. Aggregates shall conform to ASTM C 33 and be 3/8" minus. Mixing water shall be fresh, clean and potable. In freeze-thaw areas, air entrainment of 6.5% to 8.5% shall be provided. Water-reducing admixtures and/or super-plasticizers are permitted and shall conform to ASTM C 494.
- C. The Grasscrete slab shall have a minimum thickness of 5 1/2". Grasscrete being installed as a fully grassed (concealed) system should be recessed 1" - 1 1/2" below adjoining surfaces to allow for grass and topsoil. All perimeters of Grasscrete should be restrained by an existing hard surface or a monolithic concrete border. Where used for emergency vehicle access roads or any driving surface, all edges shall be a monolithic concrete border having a minimum width of 12".
- D. The Grasscrete shall be reinforced with #3 bar 16" on center seated on the Formers 1 1/2" above the sub-grade or welded wire mesh of comparable gauge. Consult the Grasscrete Technical Bulletin for complete information on correct reinforcement for the project requirements.

3.2 PREPARATION

- A. Examine sub-grade, with installer present, for conditions affecting performance of finish. Rectify conditions detrimental to timely and proper work. Do not proceed until unsatisfactory conditions are corrected.
- B. Verify that elevations and compaction meet Project Conditions above.
- C. Prior to concrete pour, verify that formers are free of construction damage and contaminants.

3.3 INSTALLATION

- A. Construction Process:
 - 1. Sub-grade shall be leveled to a uniform plane 5 1/2" below the final grade of the Grasscrete slab and 6 1/2"- 7" below adjoining surfaces for fully grassed applications.
 - 2. Grasscrete formers shall be placed on the sub-grade.
 - 3. Steel reinforcement shall be placed on the formers.
 - 4. Fibers are added to the ready mix truck in conjunction with the high range water reducers (if required to meet mix design specifications).
 - 5. Concrete shall be placed and leveled to the top of the Grasscrete formers. The concrete surface shall have a rough broom finish.
 - 6. Grasscrete formers shall have the void tops removed after the concrete has hardened sufficiently.

3.4 PROTECTION

- A. General: Protect finished work from traffic until fully cured in accordance with manufacturer's recommendations.

END OF SECTION 033000