

SECTION 03 30 53
MISCELLANEOUS CONCRETE – STRUCTURAL BACKFILL

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. PRODUCT: STRUCTURAL BACKFILL
Definition: A formulated mix design of clean stone, cement and water that creates a permeable homogeneous zone (mass) when placed behind the retaining wall units.
- B. CEMENTITIOUS MATERIALS
1. Use materials meeting the following requirements
 - a. Hydraulic cement: ASTM C 150 or ASTM C 1157
 - b. Fly ash: ASTM C 618
 - c. Slag: ASTM C 989
 2. Normal-weight aggregate: ASTM C 33, number 6, 8 or 57
 3. Water: Potable
 4. Chemical admixtures:
 - a. Air entraining: ASTM C 260
 - b. Water reducers, accelerating and retarding: ASTM C 494
 - c. Admixtures with no standard designation shall be used only with the permission of the design professional when its use for specific properties is required.
- C. STRUCTURAL BACKFILL
1. Application: Retaining wall backfill
 2. Exposure: Possible sulfate, depending on soil-specific conditions
 3. Nominal maximum aggregate size: 0.5- to 1-inch
 4. Air content: Not applicable; however, the contractor, installer and/or manufacturer may choose to include air entrainment
 5. Maximum water-cementitious materials ratio by weight: 0.5

1.02 TYPICAL MIX DESIGN USING ABSOLUTE VOLUMES

This mix design is only an example. The actual mix design will need to be provided by the local supplier and will vary depending on local materials.

Guideline: A mix design will have an approximate stone to cement ratio of 6:1 or 7:1. Aggregate size is typically 0.5- to 1-inch. About 5 gallons of water are added to 100 pounds of cement.

1. Assuming 25% voids
2. Specific gravity of cement – 3.15
3. Specific gravity of fly ash – 2.5
4. Specific gravity of aggregates – 2.62
5. Cement weight – 400 pounds
6. Water weight – 166 pounds
7. Aggregate weight – 2,540 pounds