



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
OFFICE OF THE SECRETARY
MANILA

097.13 DPWH

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DEPARTMENT ORDER)
No. 52)
Series of 2007)

SUBJECT : DPWH Standard Specifications
for Wet Stone Masonry (Cobble
Stone), Item 516

In line with the mandate of the Department to provide effective standard specifications to be used in the implementation of various infrastructure projects and in view of the need of setting standard specification for wet stone masonry, the attached DPWH Standard Specifications for Wet Stone Masonry (Cobble Stone), Item 516, are hereby prescribed, for the guidance and compliance of all concerned.

These specifications shall form part of the revised edition of the DPWH Standard Specifications (Volume II Highways, Bridges and Airports).

This Order shall take effect immediately.

HERMOGENES E. ERDANE, JR.
Secretary



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DPWH STANDARD SPECIFICATION FOR

ITEM 516 – WET STONE MASONRY (COBBLE STONE)

516.1 Description

This item shall consist of the construction of wet stone masonry using cobble stone for revetment of banks, dikes, drainage, slope protection of bridge and at any other places, constructed in the prepared foundation bed, in accordance with this Specification and in conformity with the lines, grades, sections and dimensions as shown on the Plans or as ordered in writing by the Engineer.

516.2 Material Requirements

516.2.1 Concrete and Mortar Grout

The materials for concrete and mortar grout of the wet cobble masonry shall conform to Item 405, Structural Concrete of the following type:

Cap, base and partition wall concrete	:	210	kg/cm ²	Compressive strength at 28 days
Filling concrete	:	100	kg/cm ²	Compressive strength at 28 days
Filling mortar	:	One part water, two parts Portland cement and six parts sand by weight		

516.2.2 Reinforcing Steel

Reinforcing Steel shall conform to Item 710, Reinforcing Steel and Wire Rope.

516.2.3 Cobble Stone

Material for cobble stone shall be classified into the following group as to size and process of manufacture:

516.2.3.1 Cobble Stone, 150~300 mm

Stone materials shall be those deposited in riverbed, or broken or crushed rock at the quarry site, rounded or cubiform in shape having a specific gravity of not less than 2.5, and possessing sufficient strength and durability as required for its use. The stone shall be of the weight ranging from 20 kg to 40 kg and approximately uniform in size with 150 mm to 300 mm in diameter per piece.

516.2.3.2 Cobble Stone, 100~150 mm

Stone materials shall be of the same gravity as specified per above Sub-Clause 516.2.3.1 except for the weight and size which shall be 15 kg to 20 kg per piece, and approximately 100 mm to 150 mm in diameter, respectively.

516.2.4 Gravel Bedding and Filling

Materials for gravel bedding and filling shall be well-graded gravel as follows:

Sieve Size (mm)	Percentage by Weight Passing (%)
60	100
50	70-100
25	60-90
5	35-75
2	20-50
0.425	5-25
0.075	1-7

516.3 Construction Requirements

516.3.1 Cap, Base and Partition Wall Concrete

Concrete works such as cap, base and partition wall as called for on the Plans and/or as directed by the Engineer shall be constructed ahead of placing masonry materials and filling concrete. They shall be constructed to the line, elevation, location and dimension as shown on the Plans.

516.3.2 Cobble Stone Bedding and Filling

The cobble stone bedding shall be prepared on the compacted surface of the river bank slope or other embankment and shall be sufficiently compacted by plate compactor, flat-faced tamper or other approve equipment with the bedding materials

having appropriate amount of moisture to lessen the voids. The compacted gravel bedding shall have a thickness of 200 mm unless otherwise shown on the approved Plans.

Cobble stone filling shall be carefully placed between the wet masonry wall and backfilling as shown on the approved Plans or as directed by the Engineer.

The cobble stone bedding and filling shall be placed by manual together with the graded gravel to conform with the line, location and thickness as shown on the approved Plans or as directed by the Engineer.

516.3.3 Placement of Cobble Stone

Before placing cobble stone, the stone shall be cleaned and be properly moistened enough. The stone shall be so placed such that it is completely surrounded by concrete filling. Concrete filling shall be used for jointing in such a manner that it is in complete contact with the cobble stone in all joints. The stones shall be struck and thoroughly consolidated and those broken thereafter shall be removed.

Placing of the stone shall not be done during prolonged or heavy rains to avoid the washing-joint of concrete from the masonry.

516.3.4 Mortar Finishing

Joints on the face of the wet cobble masonry exposed to view shall be neatly finished. The concrete in the joints of the wet cobble masonry shall first be removed to a depth of 30 mm. The joints shall be cleaned thoroughly of all loose materials with a wire brush and filled with cement mortar. The surface of the stone shall be cleaned of all excess mortar upon the completion of the activity.

516.3.5 Joint Filler and Weepholes

The joint filler shall be provided at the expansion joint of the wet cobble masonry as shown on the approved Plans or as directed by the Engineer. When one piece is necessary for a joint, abutting ends shall be fastened and held securely to shape by stapling or other positive fastening.

Unless otherwise specified the weepholes shall be placed at the lowest points where the outlets of water can be obtained and shall be spaced not more than three (3) meters center to center as shown on the approved Plans or as directed by the Engineer.

516.4 Method of Measurement

The quantity to be paid for shall be the number of linear meters of wall in place, completed and accepted by the Engineer in accordance with the Specification and as shown on the Plans. Payment and measurement of quantity will be based within the dimensions limit shown on the Plans or as determined by the Engineer.

516.5 Basis of Payment

The accepted quantity of wet stone masonry, determined as provided in Section 516.4, Method of Measurement, shall be paid for at the contract unit price per linear meter for wet masonry, wherein price and payment shall be full compensation for furnishing and placing all materials, and for all labor, equipment, tools and incidentals necessary to complete the Item of work.

Payment will be made under:

Pay Item Number	Description	Unit of Measurement
516	Wet Stone Masonry	Linear Meter