



097.13-DPWH
01-24-2011

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

JAN 21 2011


DEPARTMENT ORDER)
No. 04)
Series of 2011 MKSA 01-24-11)

SUBJECT : DPWH Standard Specifications
for Concrete Roof Tile, Item
1037

In line with the mandate of the Department of providing effective standards for application in the implementation of various infrastructure projects and in view of the need of setting standard specifications for concrete roof tile, the attached **DPWH Standard Specifications for Concrete Roof Tile, Item 1037**, is hereby prescribed, for the guidance and compliance of all concerned.

This specification shall form part of the revised edition of the DPWH Standard Specifications for Public Works Structures (Volume III – Buildings, Ports and Harbors, Flood Control and Drainage Structure and Water Supply Systems).

This Order shall take effect immediately.


ROGELIO L. SINGSON
Secretary



WIN1U00472

ENCL. As stated.

vmg/ml/jap

ITEM 1037 – DPWH STANDARD SPECIFICATIONS FOR CONCRETE ROOF TILE

1037.1 Description

This item shall consist of furnishing all plant, labor, tools, equipment and concrete roof tiles required to complete the roofing as shown on the Plans and in accordance with this Specification.

1037.2 Classification of Concrete Roof Tiles

Concrete roof tiles manufactured shall be classified as follows:

1037.2.1 Type I - High Profile Tile

Tiles having a rise to width ratio greater than 1:5.

1037.2.2 Type II - Medium Profile Tile

Tiles having a rise greater than 5.08 mm and rise to width ratio of less than or equal to 1:5.

1037.2.3 Type III - Low Profile Tile

Tiles having a rise equal to or less than 5.08 mm.

1037.2.4 Type IV - Accessory Tile

It shall include those tiles such as ridge, rake, hip, and valley tile used in conjunction with those tiles listed in Subsection 1037.2.1 to Subsection 1037.2.3.

1037.3 Materials Requirements

1037.3.1 Concrete Roof Tiles

1037.3.1.1 Cementitious materials shall conform to the applicable requirements of Item 700, Hydraulic Cement.

1037.3.1.2 Aggregates shall conform to the applicable requirements of Item 703, Aggregates.

1037.3.1.3 Water used shall be reasonably clean and free of oil, salt, acid, alkali, grass or other substances injurious to the tiles produced.

Water will be tested in accordance with and shall meet the requirements of Item 714, Water. Water which is drinkable may be used without test.

1037.3.1.4 Admixture shall conform to the applicable requirements of Item 708, Chemical Admixtures for Concrete.

1037.3.1.5 Pigments shall meet the requirements of ASTM C979, Specification for Integrally Colored Concrete. Any color applied shall not contain material that is deleterious to the product and shall not contain any toxic material.

1037.3.1.6 Texture and Color

The texture and color of concrete roof tiles should be specified by the purchaser and mutually agreed upon between purchaser and supplier with reference to a sample of the type specified representing the possible range of textures and shades of color.

1037.3.2 Battens

Wood battens shall be 25 mm x 50 mm pressure treated lumber properly laid to concrete roof tiles and accessories as indicated on the Plans. Corrosion resistant metal battens, or other man made material shall meet the approval of the Engineer.

1037.3.3 Fasteners

Fasteners shall be manufactured from non-corrosive materials. The head of the nail used for tile fastening shall not be less than 7.9375 mm (5/16 inch.) and # 16 tie wires to be copper or brass as the case maybe.

Nails for fastening battens shall have sufficient length to penetrate at least 19.05 mm (¾ inch.) into the roof frame or sheathing.

Nails for fastening roof tiles shall penetrate at least 19.05 mm (¾ inch.) into the batten or through the thickness of the deck, whichever is less but should not penetrate the underlayment.

Where nail(s) are required for fastening accessories, such nails shall have sufficient length to penetrate at least 19.05 mm (¾ inch.) into the supporting member.

1037.3.4 Tinsmithry Works (Gutters, Valley and Flashing)

Gutters and valleys shall be set in place before wood battens are installed. Use 0.60 mm thick (gauge 24) plain galvanized iron sheet moulded true to profile section indicated on the plan or as directed by the Engineer.

Flashing shall be a minimum number gauge 26 galvanized steel sheet.

1037.3.5 Underlayment

Single layer underlayments shall meet the minimum requirements of ASTM D 226 Type II (No. 30 Felt) (ASTM D 4869 Type IV) or approved equal as minimum underlayment on all concrete roof tile applications. Other underlayments shall be allowed as approved by the Engineer.

1037.3 Construction Requirements

Before any work is started the Contractor shall secure approved roof framing plan and determine/evaluate actual site condition. In case modification is necessary the Contractor shall submit shop drawings to the Engineer for approval.

1037.3.1 Delivery, Storage and Handling

- a. Store concrete roof tiles in safe place, away from traffic and construction activity.
- b. Tiles on roof shall not be stack in manner which could endanger stability of structure due to concentrated loads; distribute stacks of tile uniformly.

1037.3.2 Marking Off

Chalk horizontal and vertical lines on the underlayment to guide the application. Layout rows in accordance with manufacturers layout instructions. Provide for a tile head lap per manufacturers written instructions.

1037.3.3 Installation

- a. Stack tiles uniformly on roof to facilitate application, roof loading and minimize tile movement, in accordance with manufacturer's instructions. Leave tiles stacked for a period of not less than 48 hours before starting tile installation, to allow roof structure to adjust to the weight of the tile.
- b. Ensure all tile overhangs drip edge evenly.

- c. Nails/Screws, Mortar and Foam. Use in accordance with National Building Code.
- d. Wall Abutments. Cut tile to fit adjacent to wall-to-wall base. Place mortar along base of wall to fill small voids between tile and wall and to provide consistent line along wall. Point to match tile contour.
- e. Roof Protusions. Cut tile to accommodate all roof penetrations and fill all voids with mortar. Point to match tile surface.
- f. Flush Gables. Fill space between tiles and deck with mortar and finish flush with metal edge.
- g. Acrylic Sealer. Apply to all exposed mortar.
- h. Do not walk on roofing for a minimum of 72 hours after installations is complete.

1037.3.4 Adjust and Clean

- a. Damaged Tile Replacement. Remove damaged tile and nails (if any). Repair torn underlayment and seal nail penetrations, if any, with plastic cement. Apply 9.525 mm (3/8 inch.) wide bead adhesive 50.8 mm (2 inch.) in length long underside of butt end of replacement tile. Immediately set tile in position assuming proper contact with adhesive is made. Leave undisturbed a minimum of 72 hours.
- b. Re-adhering Loose Tile. Lift butt end of loose tile and apply 3/8 inch wide bead of adhesive full tile width along the head of the lower tile course where overlapping tile makes contact. Immediately press tile into position assuring proper contact with adhesive is made. Leave undisturbed a minimum of 72 hours.
- c. Clean-up. Remove broken tiles and other debris. Sweep entire roof to remove cement dust and any foreign materials.

1037.4 Method of Measurement

This Item shall be measured by actual roof area laid with concrete roof tiles and accessories in square meters or part thereof, for work completed and accepted to the satisfaction of the Engineer.

1037.5 Basis of Payment

The accepted work quantified and provided in the Bill of Quantities shall be paid for at the unit Bid price which constitutes full compensation for furnishing all materials, labor, tools, equipment and other incidentals necessary to complete this Item.

Payment will be made under:

Pay Item Number	Description	Unit of Measurement
1037	Concrete Roof Tile	m ²