



Republic of the Philippines
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
OFFICE OF THE SECRETARY
 Bonifacio Drive, Port Area Manila



097-13 DPWH
 12.05.2024

DEC 04 2024

DEPARTMENT ORDER)
)
NO. 223)
)
Series of 2024)
 * 12/5/2024

SUBJECT: DPWH Standard Specification for Item 404 (5) - Stainless Reinforcing Steel

In order to ensure uniformity in the application/adoption of the Pay Item of Work to be used/adopted by those who are involved in the preparation of the Design Plans and Quantities, Program of Works (POW) and Approved Budget for the Contract (ABC) for infrastructures Project Nationwide, the attached **DPWH Standard Specification for Item 404 (5) - Stainless Reinforcing Steel** is hereby prescribed for adoption in Government infrastructure projects that require the utilization of such on the Program of Works.

The Standard Specification shall form part of the DPWH Standard Specifications for Highways, Bridges and Airports, Volume II and is now included in the Project and Contract Management Application (PCMA).

This Order shall take effect immediately.

MANUEL M. BONOAN
 Secretary

Department of Public Works and Highways
 Office of the Secretary



WIN4U02071

Encl: DPWH Standard Specification for Item 404 (5) - Stainless Reinforcing Steel

14.1.2 MLL/GAM/JDV

Website: <https://www.dpwh.gov.ph>
 Tel. No(s): 5304-3000 / (02) 165-02



**DPWH Standard Specification for
ITEM 404(5) - Stainless Reinforcing Steel**

404 (5).1 Description

This Item shall consist of furnishing, cutting, bending, fabricating, welding, splicing, and placing of stainless reinforcing steel of the type, size, shape and grade required in accordance with this Specification and as shown on the Plans.

404 (5).2 Material Requirements

It shall conform to the material requirement of ASTM A955, Standard Specification for Deformed and Plain Stainless-Steel for Concrete Reinforcement.

404 (5).3 Construction Requirements

404 (5).3.1 Handling and Storage

It shall be stored on top of platforms, skids, or other acceptable supports and shall be protected as far as practicable from mechanical injury and surface deterioration caused by exposure to harmful elements. It shall be handled and stored in a manner to prevent damage to bars. If rainy or exceptionally humid weather occurs or is anticipated, reinforcing steel bar shall be stored under cover immediately upon delivery to site. It shall be covered with polyethylene or other materials to prevent exposure to direct sunlight. The covering shall be secured adequately, and allow for air circulation around the bars to minimize condensation under the covering.

404 (5).3.2 Rebar Fabrication and Installation

Fabrication and installation of rebar shall be done by a competent steel man to ensure good workmanship. There shall be proper supervision by the Contractor for the cutting and bending of reinforcing bars specified under Subsection 404 (5).3.3, Bending and Subsection 404 (5).3.4, Placing and Fastening, and frequent checking of bar schedule and clearances conducted from the beginning until complete installation of reinforcing steel bars.

404 (5).3.3 Bending

All reinforcing bars requiring bending shall be cold-bent to the shapes shown on the Plans or as required by the Engineer. Bars shall be bent around a circular pin having the following diameters (D) in relation to the nominal diameter of the bar (d):

Nominal diameter, d, mm	Pin diameter (D)
10 to 20	6d
25 to 28	8d
32 and greater	10d

✓ Bends and hooks in stirrups or ties shall be bent to the diameter of the principal bar enclosed therein.

404 (5).3.4 Placing and Fastening

All steel reinforcement shall be accurately and firmly placed in the position shown on the Plans or as required by the Engineer prior to pouring and setting of the concrete. Bars shall be tied at all intersections except where spacing is less than 300 mm in each direction, in which case, alternate intersections shall be tied. Ties shall be fastened inside.

Distance from the forms shall be maintained by means of stays, blocks, ties, hangers, or other approved supports, so that it does not vary from the position indicated on the Plans by more than 6 mm. Blocks for holding reinforcement from contact with the forms shall be precast mortar blocks of approved shapes and dimensions. Layers of bars shall be separated by precast mortar blocks or by other equally suitable devices. The use of pebbles, pieces of broken stone or brick, metal pipe and wooden blocks shall not be permitted. Unless otherwise shown on the Plans or as required by the Engineer, the minimum distance between bars shall be 40 mm. Reinforcement in any member shall be placed and then inspected and approved by the Engineer before the pouring of concrete begins. Concrete placed in violation of this provision may be rejected and removal may be required. If fabric reinforcement is shipped in rolls, it shall be straightened before being placed. Bundled bars shall be tied together at not more than 1.8 m intervals.

404 (5).3.5 Splicing

404 (5).3.5.1 Lap Splice

All reinforcement shall be furnished in the full lengths indicated on the Plans. Splicing of bars, except where shown on the Plans, shall not be permitted without the written approval of the Engineer. Splices shall be staggered as far as possible and with a minimum separation of not less than 40 bar diameters. Not more than one-third (1/3) of the bars may be spliced in the same cross-section, except where shown on the Plans.

In lapped splices, the bars shall be placed in contact and wired together. Welding of reinforcing steel shall be done only if detailed on the Plans or if authorized by the Engineer in writing. Spiral reinforcement shall be spliced by lapping at least 3/2 turns or by butt welding unless otherwise shown on the Plans.

Splicing shall conform to the following requirements unless otherwise shown on the Plans.

1. Lap splices shall not be permitted for bars larger than 36 mm dia.
2. For contact lap splices of parallel non-prestressed reinforcement in a horizontal layer, minimum clear spacing between the contact lap splice and adjacent splices or bars shall be whichever is the largest of the following:
 - a. 50 mm; or
 - b. nominal diameter of bar; or
 - c. 4/3 nominal maximum size of coarse aggregates

3. For non-contact splices in flexural members, the transverse center-to-center spacing of spliced bars shall be 1/5 of the required lap splice length but not less than 150 mm.
4. Lap splices of bundled bars shall be in accordance with the requirements below.
 - a. Lap splices of bars in the bundle shall be based on the lap splice length required for the individual bars within the bundle.
 - b. Individual bar splices within a bundle shall not overlap.
 - c. Entire bundles shall not be lap spliced.

404 (5).3.5.2 Mechanical Splice

Mechanical splicing of reinforcing steel shall conform to the applicable requirements of Item 737, Mechanical Couplers for Reinforcing Steel.

404 (5).3.6 Lapping of Bar Mat

Sheets of mesh or bar mat reinforcement shall overlap each other sufficiently to maintain a uniform strength and shall be securely fastened at the ends and edges. The overlap shall not be less than one (1) mesh in width.

404 (5).3.7 Welding

Welding of stainless reinforcing steel shall conform to American Welding Society, AWS D1.6/D1.6M, Structural Welding Code - Stainless Steel.

404 (5).4 Method of Measurement

The quantity of stainless reinforcing steel to be paid for shall be the final quantity placed and accepted by the Engineer.

404 (5).5 Basis of Payment

The accepted quantity, measured as prescribed in Section 404(5).4, Method of Measurement, shall be paid for at the Contract Unit Price for stainless reinforcing steel which price and payment shall be full compensation for furnishing and placing all materials, including all labor, equipment, tools and incidentals necessary to complete the work prescribed in this Item.

Payment shall be made under:

Pay Item Number	Description	Unit of Measurement
404 (5)a	Stainless Reinforcing Steel, Grade 60	Kilogram
404 (5)b	Stainless Reinforcing Steel, Grade 75	Kilogram
404 (5)c	Stainless Reinforcing Steel, Grade 80	Kilogram