KCS 11 75 15 : 2019

Rockfall Prevention Retaining Walls

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국토교통부

Foreword

- To address needs that were caused by changes in the construction standards code system, the overlaps and conflicts between existing construction standards (design standards, standard specification) were compared and reviewed and then integrated into a new document that can be maintained as a standard code.

- These standards were revised and enacted as standards by integrating the Construction Work Slope Surface Standard Specification and the corresponding parts of the Building Work Standard Specification. Major matters related to the enactment and revision of these standards are as follows:

Construction Standard	Major Contents	Enactment · Revision (Month, Year)
Construction Work Slope Surface Standard Specification	• Construction Work Slope Surface Design Standards enacted.	Enactment (May 2006)
Construction Work Slope Surface Standard Specification	• Construction Work Slope Surface Design Standards revised.	Revision (Dec 2011)
KCS 11 75 15 : 2016	• Integrated and maintained as a code according to changes in the construction standard code system.	Enactment (June 2016)
KCS 11 75 15 : 2016	• Revised to harmonize Korean Standards with Construction Standards.	Revision (July 2018)

Table of Contents

1. General Matters

1.1 Scope of Application

(1) These standards are applied to the construction of concrete retaining walls and gabion walls for preventing damages caused by rockfalls.

1.2 Reference Standard

- KCS 11 80 05 Concrete retaining wall
- KCS 11 80 15 Gabionade retaining wall

2. Materials

2.1 Materials

(1) The materials for rockfall prevention retaining walls are the same as the materials specified in KCS 11 80 05 and KCS 11 80 15. However, the concrete strength of a concrete retaining wall shall be in accordance with the design.

3. Construction

3.1 Work Preparation

(1) Positions where the occurrence of rockfall is highly probable shall be identified by considering the geographical features, and structurally vulnerable parts such as expansion joints shall not be constructed at the areas.

(2) The bearing capacity of the foundation bottom of a retaining wall shall be reviewed by performing a plate bearing test. If necessary, the foundation shall be reinforced.

3.2 Construction Standards

3.2.1 General Matters of Construction

(1) The method of constructing rockfall prevention retaining walls is the same as the general methods specified in KCS 11 80 05 and KCS 11 80 15. The details that are different from general retaining walls are as below.

3.2.2 Steel Reinforcement

(1) To prevent cracking of the retaining walls due to dry contraction and temperature change, steel reinforcements are recommended to be exposed to the outside of the ground surface of the retaining walls.

① The ratio of vertical steel reinforcements shall be at least 0.0015 to the area of the bottom of the retaining walls with respect to the effective length of the retaining walls.

② The ratio of horizontal steel reinforcements shall be at least 0.0025 to the cross-sectional area in the longitudinal direction of the installation.

(2) Assembly steel reinforcements shall be sufficiently arranged to ensure the appropriate strength.

(3) The end part of the steel reinforcements is connected to a semi-circular hook or the rectangular hook. The end parts shall be firmly anchored.

3.2.3 Contraction Joints / Expansion Joints

(1) V-shaped grooves shall be engraved on the surface of the retaining walls to install contraction joints for preventing contraction. Installation gaps shall be less than 9 m. The steel reinforcements shall not be damaged when engraving the grooves.

(2) Expansion joints shall be installed in the longitudinal direction of the retaining wall at intervals equal to or less than 20 m (10 m for gravity- and semi-gravity-type retaining walls). The expansion joints shall be installed at positions that are expected to be less affected by the impact of rockfalls in consideration of the geographical features.

(3) A connector, joint filler, joint sealing, and accessories shall be placed at the expansion joints. If an rail is installed at the top of the retaining wall, the rail shall be cut.

(4) The joint filler shall be sufficiently attached to the surface of the placed concrete to ensure watertightness. The joint filler shall be firmly anchored so that it may not become detached or be pushed by the concrete placement in the next section.

3.2.4 Drainage

(1) Drainage holes, weep holes, and necessary drainage facilities shall be constructed in cases where the presence of much surface water and ground water is expected on the back face of the retaining wall in consideration of the geographical features. The dimensions and structures of these facilities shall be determined in accordance with the site conditions.

3.2.5 Site Quality Management

(1) The quality management of rockfall prevention retaining walls is the same as specified in KCS 11 80 05 and KCS 11 80 15.