Title (en)

RETAINING ENGINEERING STRUCTURE AND DESIGN METHOD FOR STABILIZING DEEP EXCAVATIONS OR EARTH SLOPE INSTABILITY NEAR EXISTING CIVIL OBJECTS

Title (de)

RÜCKHALTEBAUSTRUKTUR UND ENTWURFSVERFAHREN ZUR STABILISIERUNG VON TIEFEN AUSHEBUNGEN ODER ERDHANGINSTABILITÄT IN DER NÄHE BESTEHENDER ZIVILOBJEKTE

Title (fr)

STRUCTURE D'INGÉNIERIE DE RETENUE ET PROCÉDÉ DE CONCEPTION POUR STABILISER DES EXCAVATIONS PROFONDES OU UNE INSTABILITÉ DE PENTE DU TERRAIN PRÈS D'OBJETS EXISTANTS DE GÉNIE CIVIL

Publication

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Application

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Priority

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Abstract (en)

[origin: WO2020021294A1] The present invention relates to a design method for stabilizing deep excavations or earth slope instability near existing civil objects by means of a retaining engineering structure comprising a vertical building structure and a plurality of tensile batter piles (1) disposed inclining downwardly towards backfill, the vertical building structure and each of the plurality of tensile batter piles (1) are mutually coupled by a coupling means and mutually arranged at an angle β, the angle β is the angle between each of the plurality of tensile batter piles (1) and the vertical building structure at the point of their coupling by said means to the vertical. The design method comprising the steps of determining a type of the retaining engineering structure according to a deepness of excavation; determining soil condition status; determining parameters of the retaining engineering structure according to the type; carrying out retaining engineering structure construction work, wherein irrespective of the type of the retaining engineering structure a horizontal load H on the vertical building structure is calculated according the expression $H = P_a - K_a \times A_n \times \cos \beta$ where P_a is a horizontal load generated by the ground mass G_1, K_a is coefficient of active earth pressure, and A_n is tensile force in each of the tensile batter pile (1), wherein the angle β is in a range between 15-20°. The present invention further relates to a retaining engineering structure which is suitable for carrying out said design method, the retaining engineering structure consisting of a vertical building structure and a plurality of tensile batter piles (1) disposed inclining downwardly towards backfill, the vertical building structure and each of the batter piles (1) are mutually coupled by a coupling means and are mutually arranged at an angle β to the vertical, wherein the angle β is the angle between each of the plurality of batter piles (1) and the vertical building structure at the point of their coupling by said means, the angle β is in a range between 15-20°.

IPC 8 full level

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