

Manual of Contract Documents for Highway Works

Geotechnics
Contract preparation

CP 606 Instructions for specifiers for CC 606 Reinforced Soil and Anchored Earth Structures (formerly Series 2500 Cl.2502)

(formerly)

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Contents

1. [Release Notes](#)
2. [Foreword](#)
3. [1. Reinforced soil and anchored earth structures](#)
 1. [General requirements for reinforced soil and anchored earth structures](#)
 1. [Contractor design of reinforced soil and anchored earth structures](#)
 2. [Product Acceptance Schemes for reinforced soil and anchored earth systems, units and elements](#)
 2. [Earthworks for reinforced soil and anchored earth structures](#)
 3. [Reinforcing elements for reinforced soil structures](#)
 1. [Product requirements for carbon steel reinforcing strips for reinforced soil structures](#)
 2. [Product requirements for stainless steel reinforcing strips for reinforced soil structures](#)
 3. [Product verification for reinforcing elements for reinforced soil structures](#)
 4. [Documentation requirements for reinforcing elements for reinforced soil structures](#)
 5. [Installation requirements for reinforcing elements for reinforced soil structures](#)
 6. [Installation verification for reinforcing elements for reinforced soil structures](#)
 7. [Documentation requirements for installation of reinforcing elements for reinforced soil structures](#)
 4. [Anchor elements for anchored earth structures](#)
 1. [Product requirements for anchor elements for anchored earth structures](#)
 2. [Product verification for anchor elements for anchored earth structures](#)
 3. [Documentation requirements for anchor elements for anchored earth structures](#)
 4. [Installation requirements for anchor elements for anchored earth structures](#)
 5. [Installation verification for anchor elements for anchored earth structures](#)
 6. [Documentation requirements for installation of anchor elements for anchored earth structures](#)
 5. [Bolts, screws, nuts and washers for reinforced soil and anchored earth structures](#)
 1. [Product requirements for bolts, screws, nuts and washers for reinforced soil and anchored earth structures](#)
 2. [Product verification for bolts, screws, nuts and washers for reinforced soil and anchored earth structures](#)

3. [Documentation requirements for bolts, screws, nuts and washers for reinforced soil and anchored earth structures](#)
 6. [Dowels and rods for anchored earth structures](#)
 1. [Product requirements for dowels and rods for anchored earth structures](#)
 2. [Product verification for reinforcing bars for dowels and rods for anchored earth structures](#)
 3. [Documentation requirements for reinforcing bars for dowels and rods for anchored earth structures](#)
 7. [Prefabricated steel facing units for reinforced soil and anchored earth structures](#)
 1. [Product requirements for prefabricated steel facing units for reinforced soil and anchored earth structures](#)
 2. [Product verification for carbon steel strips of sheets for facing units for reinforced soil and anchored earth structures](#)
 3. [Installation requirements for prefabricated steel facing units for reinforced soil and anchored earth structures](#)
 4. [Documentation requirements for prefabricated steel facing units for reinforced soil and anchored earth structures](#)
 8. [Precast concrete facing and capping units for reinforced soil and anchored earth structures](#)
 1. [Product requirements for precast concrete facing and capping units for reinforced soil and anchored earth structures](#)
 2. [Product verification for precast concrete facing and capping units for reinforced soil and anchored earth structures](#)
 3. [Installation requirements for precast facing and capping units for reinforced soil and anchored earth structures](#)
 9. [Proprietary facing units for reinforced soil and anchored earth structures](#)
 1. [Installation requirements for proprietary facing units for reinforced soil and anchored earth structures](#)
 2. [Documentation requirements for proprietary facing units for reinforced soil and anchored earth structures](#)
 10. [Material compatibility of metallic components for reinforced soil and anchored earth structures](#)
 1. [Product requirements for material compatibility of contacting metallic components buried in soil](#)
 2. [Documentation requirements for material compatibility of contacting metallic components buried in soil](#)
4. [2. Normative references](#)

Latest release notes

Docume nt Code	Version number	Date of publication of relevant change	Changes made to	Type of change
CP 606	LIVE_2024-09-30	Not available	Core document, England NAA, Northern Ireland NAA, Scotland NAA, Wales NAA	Change to policy, major revision, new document development
MCHW Series NG 2500, Clause NG 2502: Reinforced soil and anchored earth structures has been rewritten to make it compliant with the new National Highways standards drafting rules.				

Previous versions

Docume nt Code	Version number	Date of publication of relevant change	Changes made to	Type of change
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Foreword

This document provides specifier instructions for the production of the works specific requirements for CC 606 Reinforced Soil and Anchored Earth Structures (formerly Series 2500 Cl.2502).

This document does not form part of the works specification.

The works specification is made up of both the Specification for Highway Works and the works specific requirements completed by the Specifier.

This document is applicable for contracts throughout the UK, complemented by the additional specification requirements and contractual changes of each Overseeing Organisation.

Users are responsible for applying all appropriate documents applicable to their contract.

Users are responsible for archiving contract documentation in accordance with the user's quality management system.

1. Reinforced soil and anchored earth structures

General requirements for reinforced soil and anchored earth structures

1.1 Reinforced soil and anchored earth structures shall be in accordance with the requirements of this document.

1.2 The location and general arrangement of the structure shall be as stated in CC 606/WSR/001.

The location and general arrangement of the structure		
structure number	drawing/model number	drawing/model title
(a)	(b)	(c)

- a) Enter a unique reference.
- b) Enter a unique reference.

c) Enter text, to identify the drawing/model title.

Contractor design of reinforced soil and anchored earth structures

1.3 The Contractor-design items for reinforced soil and anchored earth structures shall be as stated in CC 606/WSR/001.

SI.1.3a The Contractor-design items shall be; [enter free text].

SI.1.3b The following site specific constraints shall apply; [enter free text].

1.4 The design of reinforced soil and anchored earth structures shall be in accordance with BS 8006-1 [Ref 1.N].

1.5 The design of reinforced soil and anchored earth structures shall be in accordance with CC 606/WSR/001.

1.6 The requirements for "Technical approval of highway structures" in Section 18 of GC 101 [Ref 10.N] shall apply to the design of reinforced soil and anchored earth structures.

1.7 The requirements for "Contractor design" in Section 17 of GC 101 [Ref 10.N] shall apply to the design of reinforced soil and anchored earth structures.

1.8 The special requirements limiting the choice of the full range of alternative elements and systems for reinforced soil and anchored earth structures shall be as stated in CC 606/WSR/001.

Sl.1.8 The special requirements limiting the choice of the full range of alternative elements and systems of reinforced soil and anchored earth structures shall be [enter free text].

1.9 The following Documentation shall be submitted for approval and be approved prior to the commencement of the works: 1. CG 300 [Ref 34.N] Approval in Principle, 2. CG 300 [Ref 34.N] Design and Check Certificate, 3. CD 622 [Ref 18.N] Geotechnical Design Report.

1.10 The requirements for "Documentation" in Section 2 of GC 101 [Ref 10.N] shall apply to the documentation for reinforced soil and anchored earth structures.

Product Acceptance Schemes for reinforced soil and anchored earth systems, units and elements

1.11 The requirements for "Product acceptance schemes" in Section 12 of GC 101 [Ref 10.N] shall apply to proprietary reinforcing elements, anchor elements, facing units, fasteners, and systems using such elements, units and fasteners for reinforced soil and anchored earth structures.

1.12 The following Documentation shall be submitted for proprietary reinforcing elements, anchor elements, facing units and fasteners and systems using such elements, units and fasteners for reinforced soil and anchored earth structures prior to the commencement of the works: Product Acceptance Scheme certificate.

1.13 The requirements for "Documentation" in Section 2 of GC 101 [Ref 10.N] shall apply to the documentation for proprietary reinforcing elements, anchor elements, facing units and fasteners and systems using such elements, units and fasteners for reinforced soil and anchored earth structures.

Earthworks for reinforced soil and anchored earth structures

1.14 Earthworks for reinforced soil and anchored earth structures shall be in accordance with CC 601 [Ref 4.N] and any additional requirements from the reinforced soil and anchored earth structural elements manufacturer's installation instructions.

Reinforcing elements for reinforced soil structures

Product requirements for carbon steel reinforcing strips for reinforced soil structures

1.15 Carbon steel reinforcing strips for reinforced soil structures shall be compliant with BS EN 10025-1 [Ref 17.N].

1.16 The carbon steel reinforcing strips shall meet the following performance characteristics: 1. Steel Grade S235JR or S355JR. 2. Tolerance on dimensions and shape: Pass.

1.17 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 10.N] shall apply to carbon steel reinforcing strips.

1.18 Carbon steel reinforcing strips for reinforced soil structures shall have a silicon content of not less than 0.25 % and not more than 0.40 %.

1.19 The carbon steel reinforcing strips shall be hot-dip galvanised in accordance with Hot dip galvanised coatings of CC 486 [Ref 26.N] after being fully fabricated to provide the required protection against corrosion.

1.20 Carbon steel strip reinforcing elements for reinforced soil structures shall be as stated in CC 606/WSR/001.

Carbon steel strip reinforcing elements for reinforced soil structures								
structure number	drawing/model number	reinforcing element ID	carbon steel grade	reinforcing element length	reinforcing element configuration	corrosion protection	zinc coating thickness	reinforcing element yield strength
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)

a) Enter a unique reference.

b) Enter a unique reference.

c) Enter a unique reference.

d) Enter text, to identify the carbon steel strip grade.

e) Enter a number in units of , to identify the length of the carbon steel reinforcing strips.

f) Enter text, to identify the configuration of the carbon steel reinforcing strips including spacing.

- g) Enter a number in units of , to identify required protection against corrosion.
- h) Enter a number in units of , to identity zinc coating thickness around hot-dip galvanised carbon steel reinforcing strips to provide the required protection against corrosion.
- i) Enter a number in units of , to identify yield strength along the carbon steel reinforcing strips according to steel grade.

Product requirements for stainless steel reinforcing strips for reinforced soil structures

1.21 Stainless steel reinforcing strips shall be manufactured of either cold-rolled or temper-rolled material.

1.22 Stainless steel reinforcing strips shall be compliant with BS EN 10088-4 [Ref 29.N].

1.23 The stainless steel reinforcing strips shall meet the following performance characteristics: 1. Stainless steel designation of either 1.4401 or 1.4436, 2. Tolerances on dimensions and form: Pass.

1.24 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 10.N] shall apply to the stainless steel reinforcing strips.

1.25 Cold-rolled stainless steel strips shall have steel designation of either 1.4401 or 1.4436.

1.26 Cold-rolled stainless steel reinforcing strips shall have minimum tensile strength of 540 N/mm² and minimum 0.2 % proof stress of 400 N/mm².

1.27 Cold-rolled stainless steel reinforcing strips for reinforced soil structures shall be as stated in CC 606/WSR/001.

Cold-rolled stainless steel reinforcing strips for reinforced soil structures							
structure number	drawing/model number	reinforcing element ID	stainless steel designation	reinforcing element length	reinforcing element configuration	0.2 % proof stress	tensile strength
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)

- a) Enter a unique reference.
- b) Enter a unique reference.
- c) Enter a unique reference.
- d) Enter a value, from options 1.4401, 1.4436, to identify the steel designation of the cold-rolled stainless steel reinforcing strips.
- e) Enter a number in units of , to identify the length of the cold-rolled stainless steel reinforcing strips.
- f) Enter text, to identify the configuration of the cold-rolled stainless steel reinforcing strips including spacing.
- g) Enter a number in units of , to identify the 0.2 % proof stress along the cold-rolled stainless steel reinforcing strips.
- h) Enter a number in units of , to identify the tensile strength along the cold-rolled stainless steel reinforcing strips.

1.28 Temper-rolled stainless steel reinforcing strips shall have steel designation of 1.4401.

1.29 Temper-rolled stainless steel reinforcing strips shall have minimum 0.2 % proof stress of 310 N/mm².

1.30 Temper-rolled stainless steel reinforcing strips for reinforced earth structures shall be as stated in CC 606/WSR/001.

Temper-rolled stainless steel reinforcing strips for reinforced earth structures					
structure number	drawing/model number	reinforcing element ID	reinforcing element length	reinforcing element configuration	0.2 % proof stress
(a)	(b)	(c)	(d)	(e)	(f)

- a) Enter a unique reference.
- b) Enter a unique reference.
- c) Enter a unique reference.
- d) Enter a number in units of , to identify the length of the temper-rolled stainless steel reinforcing strips.

- e) Enter text, to identify the configuration of the temper-rolled stainless steel reinforcing elements including spacing.
- f) Enter a number in units of , to identify the 0.2 % proof stress along the temper-rolled stainless steel reinforcing strips.

Product verification for reinforcing elements for reinforced soil structures

1.31 Verification shall be undertaken for the reinforced soil reinforcing elements delivered to site by inspection in accordance with BS EN 14475 [Ref 5.N].

1.32 The frequency of verification for the reinforcing elements delivered to site shall be each batch unless otherwise stated in CC 606/WSR/001.

SI.1.32 The verification requirements of reinforced soil elements delivered to site shall be [enter free text].

1.33 The requirements for "Verification" in Section 14 of GC 101 [Ref 10.N] shall apply to the verification of reinforced soil elements delivered to site.

1.34 Verification shall be undertaken for the zinc coating thickness of hot-dip galvanised carbon steel strips in compliance with BS EN ISO 1461 [Ref 16.N].

1.35 The frequency of verification shall be in compliance with BS EN ISO 1461 [Ref 16.N].

1.36 The requirements for "Verification" in Section 14 of GC 101 [Ref 10.N] shall apply to the verification for the zinc coating thickness of carbon steel strips.

1.37 The method for testing the zinc coating thickness of carbon steel strips shall be as stated in CC 606/WSR/001.

SI.1.37 The method of testing the zinc coating thickness of carbon steel strips in compliance with BS EN ISO 1461 [Ref 16.N] shall be [enter free text].

Documentation requirements for reinforcing elements for reinforced soil structures

1.38 The following Documentation shall be submitted for the reinforcing elements for reinforced soil prior to the commencement of installation: evidence that the reinforcing elements meet the product requirements.

1.39 The requirements for "Documentation" in Section 2 of GC 101 [Ref 10.N] shall apply to the reinforcing elements for reinforced soil.

Installation requirements for reinforcing elements for reinforced soil structures

1.40 The installation of reinforcing elements shall be in accordance with BS EN 14475 [Ref 5.N] and the manufacturer's installation instructions.

1.41 The reinforcing elements shall be stored flat without damage occurring to the element.

Installation verification for reinforcing elements for reinforced soil structures

1.42 Verification shall be undertaken for the installation of reinforcing elements in accordance with BS EN 14475 [Ref 5.N] and the manufacturer's installation instructions.

1.43 The frequency of verification for the installation of reinforcing elements shall be in accordance with BS EN 14475 [Ref 5.N] and the manufacturer's installation instructions.

1.44 The requirements for "Verification" in Section 14 of GC 101 [Ref 10.N] shall apply to the verification of installation of reinforcing elements.

Documentation requirements for installation of reinforcing elements for reinforced soil structures

1.45 The following Documentation shall be submitted for the installation of reinforcing elements prior to the commencement of the works: manufacturer's installation instructions.

1.46 The requirements for "Documentation" in Section 2 of GC 101 [Ref 10.N] shall apply to the documentation for the installation of reinforcing elements.

Anchor elements for anchored earth structures

Product requirements for anchor elements for anchored earth structures

1.47 Anchor elements for anchored earth shall be made of cold-worked carbon steel reinforcing bar in compliance with BS EN 10080 [Ref 31.N].

1.48 The anchor elements shall be Steel Grade B500B in accordance with BS 4449 [Ref 30.N].

1.49 Fabricated anchor elements shall not contain a flash weld.

1.50 The carbon steel anchor elements shall be hot-dip galvanised in accordance with Hot dip galvanised coatings of CC 486 [Ref 26.N] after being fully fabricated to provide the required protection against corrosion.

1.51 Carbon steel anchor elements for anchored earth structures shall be as stated in CC 606/WSR/001.

Carbon steel anchor elements for anchored earth structures							
structure number	drawing/model number	anchor element ID	anchor element cross-sectional area	anchor element length	anchor element configuration	corrosion protection	zinc coating thickness
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)

a) Enter a unique reference.

b) Enter a unique reference.

c) Enter a unique reference.

d) Enter a number in units of , to identify the cross sectional area of the anchor elements.

e) Enter a number in units of , to identify the length of the anchor elements.

f) Enter text, to identify the configuration of the anchor elements including spacing.

g) Enter a number in units of , to identify the required protection against corrosion.

h) Enter a number in units of , to identify the zinc coating thickness around hot-dip galvanised carbon steel anchor elements to provide the required protection against corrosion.

Product verification for anchor elements for anchored earth structures

1.52 Verification shall be undertaken for the anchor elements delivered to site by inspection in accordance with BS EN 14475 [Ref 5.N].

1.53 The frequency of verification for the anchor elements delivered to site shall be each batch unless otherwise stated in CC 606/WSR/001.

Sl.1.53 The verification requirements of the anchor elements delivered to site shall be [enter free text].

1.54 The requirements for "Verification" in Section 14 of GC 101 [Ref 10.N] shall apply to the verification of anchor elements delivered to site.

1.55 Verification shall be undertaken for the zinc coating thickness of hot-dip galvanised carbon steel anchor elements by inspection and testing in compliance with BS EN ISO 1461 [Ref 16.N].

1.56 The frequency of verification shall be in compliance with BS EN ISO 1461 [Ref 16.N].

1.57 The requirements for "Verification" in Section 14 of GC 101 [Ref 10.N] shall apply to the verification for the zinc coating thickness of anchor elements.

1.58 The method for testing the zinc coating thickness of hot-dip galvanised carbon steel anchor elements shall be as stated in CC 606/WSR/001.

Sl.1.58 The requirements on the method of testing the zinc coating thickness of anchor elements in compliance with BS EN ISO 1461 [Ref 16.N] shall be [enter free text].

Documentation requirements for anchor elements for anchored earth structures

1.59 The following Documentation shall be submitted for anchor elements for anchored earth structure prior to the commencement of installation: evidence that the anchor elements meet the product requirements.

1.60 The requirements for "Documentation" in Section 2 of GC 101 [Ref 10.N] shall apply to anchor elements for anchored earth structures.

Installation requirements for anchor elements for anchored earth structures

1.61 The installation of anchor elements shall be in accordance with BS EN 14475 [Ref 5.N] and the manufacturer's installation instructions.

1.62 The anchor elements shall be stored flat without damage occurring to the element.

Installation verification for anchor elements for anchored earth structures

1.63 Verification shall be undertaken for the installation of anchor elements by inspection in accordance with BS EN 14475 [Ref 5.N] and the manufacturer's installation instructions.

1.64 The frequency of verification for the installation of anchor elements shall be in accordance with BS EN 14475 [Ref 5.N] and the manufacturer's instructions.

1.65 The requirements for "Verification" in Section 14 of GC 101 [Ref 10.N] shall apply to the verification for installation of anchor elements.

Documentation requirements for installation of anchor elements for anchored earth structures

1.66 The following Documentation shall be submitted for the installation of anchor elements prior to the commencement of the works: manufacturer's installation requirements..

1.67 The requirements for "Documentation" in Section 2 of GC 101 [Ref 10.N] shall apply to the documentation for the installation of anchor elements.

Bolts, screws, nuts and washers for reinforced soil and anchored earth structures

Product requirements for bolts, screws, nuts and washers for reinforced soil and anchored earth structures

1.68 Bolts, screws and nuts for reinforced soil and anchored earth structures shall be manufactured from either carbon steel or stainless steel.

1.69 Carbon steel bolts, screws and nuts shall be hot-dip galvanised in accordance with Hot dip galvanised coatings of CC 486 [Ref 26.N] to provide the required protection against corrosion.

1.70 Carbon steel bolts, screws and nuts of Product Grade A and B shall be compliant with BS EN ISO 4014 [Ref 12.N] BS EN ISO 4017 [Ref 6.N] and BS EN ISO 4032 [Ref 15.N].

1.71 Product Grade A and B carbon steel bolts and screws shall be Property Class 8.8 compliant with BS EN ISO 898-1 [Ref 19.N].

1.72 Product Grade A and B carbon steel nuts shall be Property Class 8 compliant with BS EN ISO 898-2 [Ref 20.N].

1.73 Carbon steel bolts, screws and nuts of Product Grade C shall be compliant with BS EN ISO 4016 [Ref 11.N], BS EN ISO 4018 [Ref 13.N] and BS EN ISO 4034 [Ref 14.N].

1.74 Product Grade C carbon steel bolts and screws shall be minimum Property Class 4.6 compliant with BS EN ISO 898-1 [Ref 19.N].

1.75 Product Grade C carbon steel nuts shall be minimum Property Class 4.0 compliant with BS EN ISO 898-1 [Ref 19.N].

1.76 Stainless steel bolts, screws and nuts shall be designation 1.4401 or 1.4436 compliant with BS EN 10088-1 [Ref 27.N].

1.77 Stainless steel bolts shall provide minimum stress of 450 N/mm² at 0.2% elongation and minimum tensile strength of 700 N/mm² in accordance with BS EN ISO 3506-1 [Ref 7.N].

1.78 Stainless steel nuts shall be of Grade A4-70 compliant with BS EN ISO 3506-2 [Ref 8.N].

1.79 Bolts, screws and nuts for reinforced soil and anchored earth structures shall be as stated in CC 606/WSR/001.

Bolts, screws and nuts for reinforced soil and anchored earth structures								
structure number	drawing/model number	fastener ID	fastener type	steel type	carbon steel product grade	carbon steel property class	corrosion protection	zinc coating thickness
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)

a) Enter a unique reference.

b) Enter a unique reference.

c) Enter a unique reference.

d) Enter a value, from options bolt, nut, screw, to identify the type of fastener.

e) Enter a value, from options carbon steel, stainless steel, to identify the fastener steel type.

f) Enter a value, from options A, B, C, to identify the product grade of carbon steel fasteners.

g) Enter text, to identify the property class of carbon steel fasteners.

- h) Enter a number in units of , to identify the required protection against corrosion.
- i) Enter a number in units of , to identify the thickness of the zinc coating around hot-dip galvanised carbon steel fasteners to provide the required protection against corrosion.

Bolts, screws and nuts for reinforced soil and anchored earth structures (continued)			
structure number	stainless steel designation	stainless steel bolt 0.2 % proof stress	stainless steel bolt tensile strength
(a)	(j)	(k)	(l)

- j) Enter a value, from options 1.4401, 1.4436, to identify the designation of the stainless steel fasteners.
- k) Enter a number in units of , to identify the 0.2 % proof stress of the stainless steel bolts.
- l) Enter a number in units of , to identify the tensile strength of the stainless steel bolts.

1.80 Plain washers shall be manufactured from either cold-rolled carbon steel or stainless steel.

1.81 Carbon steel plain washers shall be manufactured from cold-rolled carbon steel strip CS4 in compliance with BS 1449-1.1 [Ref 32.N].

1.82 Carbon steel plain washers shall be compliant with Product Grades A or C of BS EN ISO 898-3 [Ref 9.N].

1.83 Carbon steel plain washers of Product Grade A shall be compliant with BS EN ISO 7092 [Ref 25.N] and BS EN ISO 7093-1 [Ref 22.N].

1.84 Carbon steel plain washers of Product Grade C shall be compliant with BS EN ISO 7091 [Ref 24.N], BS EN ISO 7093-2 [Ref 23.N] and BS EN ISO 7094 [Ref 21.N].

1.85 Carbon steel plain washers shall be hot-dip galvanised in accordance with Hot-dip galvanised coatings of CC 486 [Ref 26.N] to provide the required protection against corrosion.

1.86 Stainless steel plain washers shall be compliant with BS EN 10088-4 [Ref 29.N].

1.87 The stainless steel plain washers shall meet the following performance characteristics: 1. Steel designation 1.4401 or 1.4436. 2 Tolerance on dimensions and form: Pass.

1.88 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 10.N] shall apply to stainless steel plain washers.

1.89 Steel plain washers for reinforced soil and anchored earth structures shall be as stated in CC 606/WSR/001.

Steel plain washers for reinforced soil and anchored earth structures								
structure number	drawing/model number	plain washer ID	plain washer size	steel type	carbon steel product grade	steel designation	corrosion protection	zinc coating thickness
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)

a) Enter a unique reference.

b) Enter a unique reference.

c) Enter a unique reference.

d) Enter text, to identify the plain washer size.

e) Enter a value, from options carbon steel, stainless steel, to identify the steel type of plain washers.

f) Enter a value, from options A, C, to identify the product grade of carbon steel plain washers.

g) Enter a value, from options CS4, 1.4401, 1.4436, to identify the steel of plain washers.

h) Enter a number in units of , to identify the required protection against corrosion.

i) Enter a number in units of , to identify the thickness of the zinc coating around hot-dip galvanised carbon steel plain washers to provide the required protection against corrosion.

Product verification for bolts, screws, nuts and washers for reinforced soil and anchored earth structures

1.90 Verification shall be undertaken for bolts, screws, nuts and washers for reinforced soil and anchored earth structures delivered to site by inspection in accordance with BS EN 14475 [Ref 5.N].

1.91 The frequency of verification of bolts, screws, nuts and washers delivered to site shall be each batch unless otherwise stated in CC 606/WSR/001.

SI.1.91 The verification requirements of bolts, screws, nuts and washers delivered to site shall be [enter free text].

1.92 The requirements for "Verification" in Section 14 of GC 101 [Ref 10.N] shall apply to bolts, screws, nuts and washers delivered to site.

Documentation requirements for bolts, screws, nuts and washers for reinforced soil and anchored earth structures

1.93 The following Documentation shall be submitted for bolts, screws, nuts and washers for the reinforced soil and anchored earth structures prior to the commencement of the works: documented evidence to demonstrate that the bolts, screws, nuts and washers meet the product requirements.

1.94 The requirements for "Documentation" in Section 2 of GC 101 [Ref 10.N] shall apply to bolts, screws, nuts and washers.

Dowels and rods for anchored earth structures

Product requirements for dowels and rods for anchored earth structures

1.95 Carbon steel reinforcing bars for anchored earth structures dowels and rods shall be compliant with BS EN 10080 [Ref 31.N].

1.96 Cold worked carbon steel reinforcing bars for anchored earth structures, dowels and rods shall be compliant with BS 4449 [Ref 30.N].

1.97 The steel reinforcing bars for anchored earth structures, dowels and rods shall meet the following performance characteristics: Grade B500B.

1.98 Hot rolled carbon steel dowels and rods for anchored earth structures shall be compliant with BS EN 10025-1 [Ref 17.N].

1.99 The dowels and rods shall meet the following performance characteristics: Grade S355 JR.

1.100 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 10.N] shall apply to performance of the dowels and rods.

1.101 Dowels and rods manufactured from carbon steel shall be hot-dip galvanised in accordance with Hot dip galvanised coatings of CC 486 [Ref 26.N] after being fully fabricated to provide the required protection against corrosion.

1.102 Carbon steel dowels and rods for anchored earth structures shall be as stated in CC 606/WSR/001.

Carbon steel dowels and rods for anchored earth structures						
structure number	drawing/model number	connector ID	connector type	carbon steel grade	corrosion protection	zinc coating thickness
(a)	(b)	(c)	(d)	(e)	(f)	(g)

a) Enter a unique reference.

b) Enter a unique reference.

c) Enter a unique reference.

d) Enter a value, from options dowel, rod, to identify the type of connector.

e) Enter a value, from options B500B, S355 JR, to identify the carbon steel grade of the connector.

f) Enter a number in units of , to identify the required protection against corrosion.

g) Enter a number in units of , to identify the thickness of the zinc coating around hot-dip galvanised carbon steel dowels and rods to provide the required protection against corrosion.

1.103 Stainless steel dowels and rods shall be steel designation 1.4401 or 1.4436 in accordance with BS EN 10088-1 [Ref 27.N].

1.104 Stainless steel dowels and rods shall be compliant with BS EN 10088-5 [Ref 28.N].

1.105 The stainless steel bars for dowels and rods shall meet the following performance characteristics: 1. 0.2% proof stress of not less than 450 N/mm². 2. Tensile strength of not less than 700 N/mm².

1.106 Stainless steel dowels and rods for anchored earth shall be as stated in CC 606/WSR/001.

Stainless steel dowels and rods for anchored earth						
structure number	drawing/model number	connector ID	connector type	stainless steel designation	0.2 % proof stress	tensile strength
(a)	(b)	(c)	(d)	(e)	(f)	(g)

- a) Enter a unique reference.
- b) Enter a unique reference.
- c) Enter a unique reference.
- d) Enter a value, from options dowel, rod, to identify the type of connector.
- e) Enter a value, from options 1.4401, 1.4436, to identify the stainless steel designation of dowels and rods.
- f) Enter a number in units of , to identify the 0.2 % proof stress of stainless steel dowels and rods.
- g) Enter a number in units of , to identify the tensile strength along the stainless steel dowels and rods.

Product verification for reinforcing bars for dowels and rods for anchored earth structures

1.107 Verification shall be undertaken for the dowels and rods for anchored earth structures delivered to site by inspection in accordance with BS EN 14475 [Ref 5.N].

1.108 The frequency of verification shall be each batch unless otherwise stated in CC 606/WSR/001.

SI.1.108 The verification of dowels and rods delivered to site shall be as follows [enter free text].

1.109 The requirements for "Verification" in Section 14 of GC 101 [Ref 10.N] shall apply to dowels and rods delivered to site.

Documentation requirements for reinforcing bars for dowels and rods for anchored earth structures

1.110 The following Documentation shall be submitted for reinforcing bars for anchored earth dowels and rods prior to the commencement of works:

evidence that reinforcing bars for anchored earth dowels and rods meet the product requirements.

1.111 The requirements for "Documentation" in Section 2 of GC 101 [Ref 10.N] shall apply to reinforcing bars for anchored earth dowels and rods.

Prefabricated steel facing units for reinforced soil and anchored earth structures

Product requirements for prefabricated steel facing units for reinforced soil and anchored earth structures

1.112 Carbon steel strips or sheets for prefabricated facing units for reinforced soil and anchored earth structures shall be compliant with BS EN 10025-1 [Ref 17.N].

1.113 The carbon steel strips or sheets shall meet the following performance characteristics: 1. Steel Grade S235JR or S355JR. 2. Tolerance on dimensions and shape: Pass.

1.114 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 10.N] shall apply to carbon steel or sheets for prefabricated facing units.

1.115 Carbon steel strips or sheets shall have a silicon content of not less than 0.25 % and not more than 0.40 %.

1.116 Prefabricated carbon steel strip or sheet facing units for reinforced soil and anchored earth structures shall be hot-dip galvanised in accordance with Hot dip galvanised coatings of CC 486 [Ref 26.N] after being fully fabricated to provide the required protection against corrosion.

1.117 Carbon steel strips or sheets for prefabricated facing units for reinforced soil and anchored earth structures shall be as stated in CC 606/WSR/001.

Carbon steel strips or sheets for prefabricated facing units for reinforced soil and anchored earth structures							
structu re number	drawing/ model number	facin g unit ID	facin g unit shap e	carbo n steel grade	corrosio n protecti on	zinc coating thickne ss	maximum wind speed for erection of large panels
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)

Carbon steel strips or sheets for prefabricated facing units for reinforced soil and anchored earth structures							
structure number	drawing/model number	facing unit ID	facing unit shape	carbon steel grade	corrosion protection	zinc coating thickness	maximum wind speed for erection of large panels

- a) Enter a unique reference.
- b) Enter a unique reference.
- c) Enter a unique reference.
- d) Enter a value, from options strip, sheet, to identify the shape of the prefabricated facing units.
- e) Enter text, to identify the carbon steel strip/sheet grade.
- f) Enter a number in units of , to identify the required protection against corrosion.
- g) Enter a number in units of , to identify the thickness of the zinc coating around prefabricated carbon steel facing units to provide the required protection against corrosion.
- h) Enter a number in units of , to identify any wind speed requirements for the erection of large facing panels.

1.118 Stainless steel strips or sheets for facing units for reinforced soil and anchored earth structures shall be in accordance with BS EN ISO 9445-1 [Ref 2.N] and BS EN ISO 9445-2 [Ref 3.N].

1.119 Stainless steel strips or sheets for facing units for reinforced soil and anchored earth structures shall be compliant with BS EN 10088-4 [Ref 29.N].

1.120 The stainless steep strips or sheets for facing units shall meet the following performance characteristics: 1. steel designation 1.4401 or 1.4436. 2. Tolerances on dimensions and shape: Pass.

1.121 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 10.N] shall apply to stainless steel strips and sheets for reinforced soil and anchored earth structure facing units.

1.122 Stainless steel strips or sheets for prefabricated facing units for reinforced soil and anchored earth structures shall be as stated in CC 606/WSR/001.

Stainless steel strips or sheets for prefabricated facing units for reinforced soil and anchored earth structures					
structure number	drawing/model number	facing unit ID	facing unit shape	stainless steel designation	maximum wind speed for erection of large panels
(a)	(b)	(c)	(d)	(e)	(f)

- a) Enter a unique reference.
- b) Enter a unique reference.
- c) Enter a unique reference.
- d) Enter a value, from options strip, sheet, to identify the shape of the prefabricated facing units.
- e) Enter a value, from options 1.4401, 1.4436, to identify the stainless steel strip/sheet designation.
- f) Enter a number in units of , to identify any wind speed requirements for the erection of large facing panels.

Product verification for carbon steel strips of sheets for facing units for reinforced soil and anchored earth structures

1.123 Verification shall be undertaken for the zinc coating thickness of carbon steel strips or sheets for facing units for reinforced soil and anchored earth structures by inspection and testing in compliance with BS EN ISO 1461 [Ref 16.N].

1.124 The frequency of verification shall be in compliance with BS EN ISO 1461 [Ref 16.N].

1.125 The requirements for "Verification" in Section 14 of GC 101 [Ref 10.N] shall apply to the verification for the zinc coating thickness of carbon steel strips or sheets facing units for reinforced soil and anchored earth structures.

1.126 The method for testing the zinc coating thickness of carbon steel strips or sheets facing units shall be as stated in CC 606/WSR/001.

Sl.1.126 The requirements on the method of testing the zinc coating thickness of carbon steel strips or sheets in compliance with BS EN ISO 1461 [Ref 16.N] shall be [enter free text].

Installation requirements for prefabricated steel facing units for reinforced soil and anchored earth structures

1.127 The installation of prefabricated steel facing units shall be as stated in CC 606/WSR/001.

Sl.1.127 The installation requirements of prefabricated steel facing units shall be [enter free text].

Documentation requirements for prefabricated steel facing units for reinforced soil and anchored earth structures

1.128 The following Documentation shall be submitted for prefabricated steel facing units for reinforced soil and anchored earth structures prior to the commencement of installation: evidence that the facing units meet the product requirements.

1.129 The requirements for "Documentation" in Section 2 of GC 101 [Ref 10.N] shall apply to prefabricated steel facing units for reinforced soil and anchored earth structures.

Precast concrete facing and capping units for reinforced soil and anchored earth structures

Product requirements for precast concrete facing and capping units for reinforced soil and anchored earth structures

1.130 Concrete requirements for precast facing and capping units for reinforced soil and anchored earth structures shall be in accordance with Concreting for structural concrete and Precast structural concrete of CC 482 [Ref 33.N].

1.131 The waterproofing at the rear of precast concrete facing units shall be as stated in CC 606/WSR/001.

Sl.1.131 The waterproofing requirements for precast concrete facing units shall be [enter free text].

Product verification for precast concrete facing and capping units for reinforced soil and anchored earth structures

1.132 Verification shall be undertaken for the precast concrete facing and capping units in accordance with CC 482 [Ref 33.N].

1.133 The frequency of verification for the precast concrete facing and capping units shall be in accordance with CC 482 [Ref 33.N].

1.134 The requirements for "Verification" in Section 14 of GC 101 [Ref 10.N] shall apply to the verification for precast concrete facing and capping units.

Installation requirements for precast facing and capping units for reinforced soil and anchored earth structures

1.135 The installation of precast facing and capping units shall be as stated in CC 606/WSR/001.

SI.1.135 The installation requirements of precast facing and capping units shall be [enter free text].

Proprietary facing units for reinforced soil and anchored earth structures

1.136 Proprietary units for reinforced soil and anchored earth structures shall be compliant with a Product Acceptance Scheme.

1.137 The waterproofing at the rear of proprietary concrete facing units shall be as stated in CC 606/WSR/001.

SI.1.137 The waterproofing requirements for proprietary concrete facing units shall be [enter free text].

Installation requirements for proprietary facing units for reinforced soil and anchored earth structures

1.138 The installation of proprietary facing units shall be in accordance with manufacturer's installation instructions.

Documentation requirements for proprietary facing units for reinforced soil and anchored earth structures

1.139 The following Documentation shall be submitted for the installation of proprietary facing units prior to the commencement of the works: manufacturer's installation instructions.

1.140 The requirements for "Documentation" in Section 2 of GC 101 [Ref 10.N] shall apply to the documentation for the installation of proprietary facing units.

Material compatibility of metallic components for reinforced soil and anchored earth structures

Product requirements for material compatibility of contacting metallic components buried in soil

1.141 All contacting metallic components buried in soil shall be of electrolytically compatible materials to avoid preferential corrosion, unless otherwise electrolytically insulated.

1.142 Insulation between electrolytically incompatible metallic components of reinforced soil and anchored earth buried in soil shall be as stated in CC 606/WSR/001.

Insulation between electrolytically incompatible metallic components of reinforced soil and anchored earth buried in soil			
structure number	drawing/model number	electrolytical insulation type	durability of insulation
(a)	(b)	(c)	(d)

- a) Enter a unique reference.
- b) Enter a unique reference.
- c) Enter text, to identify insulation between electrolytically incompatible contacting metallic components buried in soil for the reinforced soil and anchored earth structure.
- d) Enter a number in units of , to match with the durability requirement for the reinforced soil and anchored earth structure.

Documentation requirements for material compatibility of contacting metallic components buried in soil

1.143 The following Documentation shall be submitted for insulation between electrolytically incompatible metallic components in contact buried in soil prior to the commencement of installation: evidence that insulation meets product requirement.

2. Normative references

The following documents, in whole or in part, are normative references for this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Ref	Document
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Ref 1.N	BSI. BS 8006-1, 'Code of practice for strengthened / reinforced soils and other fills'
Ref 2.N	BSI. BS EN ISO 9445-1, 'Continuously cold-rolled stainless steel. Tolerances on dimensions and form. Narrow strip and cut lengths'
Ref 3.N	BSI. BS EN ISO 9445-2, 'Continuously cold-rolled stainless steel. Tolerances on dimensions and form. Wide strip and plate/sheet'
Ref 4.N	National Highways. CC 601, 'Earthworks'
Ref 5.N	BSI. BS EN 14475, 'Execution of special geotechnical works. Reinforced fill.'
Ref 6.N	BSI. BS EN ISO 4017, 'Fasteners. Hexagon head screws. Product grades A and B'
Ref 7.N	BSI. BS EN ISO 3506-1, 'Fasteners. Mechanical properties of corrosion-resistant stainless steel fasteners. Bolts, screws and studs with specified grades and property classes.'
Ref 8.N	BSI. BS EN ISO 3506-2, 'Fasteners. Mechanical properties of corrosion-resistant stainless steel fasteners. Nuts with specified grades and property classes.'
Ref 9.N	BSI. BS EN ISO 898-3, 'Fasteners. Mechanical properties of fasteners made of carbon steel and alloy steel. Flat washers with specified property classes'
Ref 10. N	National Highways. GC 101 'General requirements for the Specification for Highway Works'
Ref 11. N	BSI. BS EN ISO 4016, 'Hexagon head bolts. Product grade C '
Ref 12.	BSI. BS EN ISO 4014, 'Hexagon head bolts. Product grades A

N	and B'
Ref 13. N	BSI. BS EN ISO 4018, 'Hexagon head screws. Product grade C'
Ref 14. N	BSI. BS EN ISO 4034, 'Hexagon regular nuts (style 1). Product grade C'
Ref 15. N	BSI. BS EN ISO 4032, 'Hexagon regular nuts (style 1). Product grades A and B '
Ref 16. N	BSI. BS EN ISO 1461, 'Hot dip galvanized coatings on fabricated iron and steel articles. Specifications and test methods'
Ref 17. N	BSI. BS EN 10025-1, 'Hot rolled products of structural steels. General technical delivery conditions (Designated Standard - CPR)'
Ref 18. N	National Highways. CD 622, 'Managing geotechnical risk'
Ref 19. N	BSI. BS EN ISO 898-1, 'Mechanical properties of fasteners made of carbon steel and alloy steel. Bolts, screws and studs with specified property classes. Coarse thread and fine pitch thread '
Ref 20. N	BSI. BS EN ISO 898-2, 'Mechanical properties of fasteners made of carbon steel and alloy steel. Nuts with specified property classes. Coarse thread and fine pitch thread'
Ref 21. N	BSI. BS EN ISO 7094, 'Plain washers. Extra large series. Product grade C'
Ref 22. N	BSI. BS EN ISO 7093-1, 'Plain washers. Large series. Product grade A'
Ref 23. N	BSI. BS EN ISO 7093-2, 'Plain washers. Large series. Product grade C'
Ref 24. N	BSI. BS EN ISO 7091, 'Plain washers. Normal series. Product grade C'
Ref 25.	BSI. BS EN ISO 7092, 'Plain washers. Small series. Product grade A'

N	
Ref 26. N	National Highways. CC 486, 'Protection of steelwork against corrosion'
Ref 27. N	BSI. BS EN 10088-1, 'Stainless steels. List of stainless steels'
Ref 28. N	BSI. BS EN 10088-5, 'Stainless steels. Technical delivery conditions for bars, rods, wire, sections and bright products of corrosion resisting steels for construction purposes (Designated Standard - CPR)'
Ref 29. N	BSI. BS EN 10088-4, 'Stainless steels. Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for construction purposes. (Designated Standard - CPR)'
Ref 30. N	BSI. BS 4449, 'Steel for the reinforcement of concrete. Weldable reinforcing steel. Bar, coil and decoiled product. Specification'
Ref 31. N	BSI. BS EN 10080, 'Steel for the reinforcement of concrete. Weldable reinforcing steel. General'
Ref 32. N	BSI. BS 1449-1.1, 'Steel plate, sheet and strip. Carbon and carbon-manganese plate, sheet and strip. General specification'
Ref 33. N	National Highways. CC 482, 'Structural concrete'
Ref 34. N	National Highways. CG 300, 'Technical approval of highway structures'

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