
BELLE VUE COOP ACADEMY

CIVILS SPECIFICATION

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Ss_15_10_30_25 Earthworks excavating systems

Systems

Ss_15_10_30_25 Earthworks excavating systems

1. System performance: [Ss_15_10_30/210 Testing, filling, compaction and treatment of formations](#)
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[Ss_15_10_30/652 Recorded features](#)
[Ss_15_10_30/654 Unrecorded features](#)
[Ac_15_75_50/810 Site Investigations](#)
3. Liability: Notwithstanding any approval or instructions given by the CA in respect of the excavation or any other matter or thing connected therewith, be responsible for taking the necessary safety precautions and for any damage, delay or costs arising from the operation
4. Site Features to be retained: Before starting the work, verify which existing fences, gates, walls, roads, paved areas and other site features are to be retained
5. Earthwork Support: The term will be deemed to cover whatever method is used to support the sides of the excavations, whether against the sides of public roads or elsewhere, and whether in existing hardcore or any other material

Be responsible for supporting the sides of all excavations. No claims for additional excavations, concrete or other material will be allowed in this respect

6. Execution: [Ss_15_10_30/624 Adjacent excavations](#); [Ss_15_10_30/626 Excavations next to existing foundations](#); [Ss_15_10_30/666 Excavations which encounter springs or running water](#); [Ss_15_10_30/660 Excess excavation](#); [Ss_15_10_30/632 Formations to receive concrete](#); [Ss_15_10_30/614 Handling topsoil](#); [Ss_15_10_30/638 Inspection of formations](#); [Ss_15_10_30/603 Monitoring of ground conditions during excavation](#); [Ss_15_10_30/672 Permanent drainage system](#); [Ss_15_10_30/602 Site clearance generally](#); [Ss_15_10_30/610 Stripping topsoil](#); [Ss_15_10_30/656 Treatment of existing structures crossing new foundations or walls](#); [Ss_15_10_30/662 Treatment of underground structures in landscape areas](#); [Ss_15_10_30/630 Tolerances for excavated and filled surfaces](#); [Ss_15_10_30/650 Unstable ground](#); [Ss_15_10_30/640 Unsuitable formations](#); [Ss_15_10_30/648 Foundations](#); [Ss_15_10_30/636 Inspecting formations in sand and gravel](#); [Ss_15_10_30/658 Treatment of existing buried structures beneath new ground supported slab](#)
7. Water: [Ss_15_10_30/670 Treatment of existing watercourses](#); [Ss_15_10_30/666 Water Type A](#)
[Ss_15_10_30/666 Excavations which encounter springs or running water](#); [Ss_15_10_30/664 Excavations below ground water level](#)
8. Disposal of Materials: [Ss_15_10_30/621 Storage of excavated subsoil](#); [Ss_15_10_30/618 Storage of excavated topsoil](#)
[Ss_15_10_30/622 Removal of excavated subsoil](#); [Ss_15_10_30/616 Removal of excavated topsoil](#)
[Ss_15_10_30/620 Treatment of excavated subsoil](#)
9. System completion: Verify finished ground levels

System performance

Ss_15_10_30/210 Testing, filling, compaction and treatment of formations

Shared by: [Ss_15_10_30_27 Earthworks filling systems](#)

1. Requirements for acceptability and testing: In accordance with Appendix 6/1 of the [Highways England MCHW Volume 1: Specification for highway works \(SHW\)](#).
2. Requirements for compaction: In accordance with Appendix 6/3 of the [Highways England MCHW Volume 1: Specification for highway works \(SHW\)](#).
3. Requirements to fill to structures and fill above structural foundations: In accordance with Appendix 6/6 of the [Highways England MCHW Volume 1: Specification for highway works \(SHW\)](#).

4. Requirements for sub-formation and capping and preparation and surface treatment of formation: In accordance with Appendix 6/7 of the [Highways England MCHW Volume 1: Specification for highway works \(SHW\)](#).
5. Requirements for earthwork environmental bunds, landscape areas, strengthened embankments: In accordance with Appendix 6/9 of the [Highways England MCHW Volume 1: Specification for highway works \(SHW\)](#).
6. Topography: as drawings

Execution

Ss_15_10_30/602 Site clearance generally

1. **General:** Clear site of rubbish, debris and vegetation. Do not compact topsoil.
2. **Timing:** Before topsoil stripping, if any.
3. **Removal of non-organic matter**
 - 3.1. Remove stones with any dimension exceeding: 75 mm.
 - 3.2. **Contamination:** Remove material containing toxins, pathogens or other extraneous substances harmful to plant, animal or human life.
4. **Application of herbicide**
 - 4.1. **Type of herbicide:** Non-residual.
 - 4.2. **Point of application:** To areas to receive gravel surfacing. Do not use herbicide without approval
5. **Arisings**
 - 5.1. **Arising materials:** Subsoil, stones, debris, wrapping material, canes, ties, temporary labelling, rubbish, prunings, and other undesirable matter.
 - 5.2. **Required actions:** as agreed
6. **Removing small trees, shrubs, hedges and roots:** Clearly mark trees to be removed
Cut down small trees, shrubs and hedges
Grub up roots and dispose of without undue disturbance of soils and adjacent areas
After cutting down and grubbing up roots of shrubs and trees, fill voids with approved materials
Comply with HSE/arboriculture and Forestry advisory group safety leaflets

Ss_15_10_30/603 Monitoring of ground conditions during excavation

1. **Purpose:** To identify differences between actual ground conditions and those assumed in Ground Investigation Report.
2. **Requirement:** Inspect and record sequence and soil types revealed in sides of excavations and nature of soil formations.
3. **Earthwork Support:** The term will be deemed to cover whatever method is used to support the sides of excavations, whether against the sides of public roads or elsewhere, and whether in existing hardcore or other material
Be responsible for supporting the sides of all excavations. No claim for additional excavations, concrete or other material will be allowed in this respect.

Ss_15_10_30/610 Stripping topsoil

1. **General requirements:** [Ss_15_10_30/602 Site clearance generally](#)
Before beginning general excavation or filling, strip topsoil from areas where there will be regrading, buildings, pavings, roads and other areas shown on drawings
2. **Depth of existing topsoil (estimated average value):** to be confirmed on site
3. **Topsoil strip**
 - 3.1. **Depth (average) to be removed:** TBC
 - 3.2. **Topsoil around trees:** Do not remove topsoil from below the spread of trees to be retained.
 - 3.3. **Give notice where the depth of topsoil is difficult to determine:**
4. **Notice (minimum)**

- 4.1. Period of notice (minimum): Seven days.
- 4.2. Timing: Before beginning general excavation or filling.
5. Site storage of topsoil: Keep separate from excavated sub-soil.
6. Treating Topsoil: Apply a suitable translocated non residual herbicide.
Timing: not less than two weeks before excavating topsoil
7. Handling Topsoil: [Ss_15_10_30/614 Handling topsoil](#)

Ss_15_10_30/614 Handling topsoil

1. Standard: To [BS 3882](#).
2. Multiple handling: Keep to a minimum. Use topsoil immediately after stripping where possible.
3. Earthmoving equipment: Select and use to minimise disturbance, trafficking and compaction
4. Material not to be mixed with topsoil: Subsoil, stone, hardcore, rubbish or material from demolition works. Other soil or material containing aggressive weeds, sharps, plastics and non-soil-forming materials and notifiable animal or plant diseases. Oil, fuel, cement or other substances harmful to plant growth. Other classifications of topsoil.
5. Aggressive weeds: Notify the presence of species included in the Weeds Act, section 2 or the [Wildlife and Countryside Act 1981](#) (as amended), Schedule 9, part II. Obtain instructions before moving topsoil
6. Wet conditions: Do not handle during or after heavy rainfall or when it is wetter than the plastic limit
7. Timing: Give notice.

Ss_15_10_30/616 Removal of excavated topsoil

1. Required actions: Remove surplus topsoil from site where required

Ss_15_10_30/618 Storage of excavated topsoil

1. Standard: To [BS 3882](#).
2. Temporary storage heaps
 - 2.1. Location of temporary storage heaps: Indicate extent and location of storage heaps on drawings.
 - 2.2. Protective fencing around topsoil spoil heaps: Erect protective fencing to BS 1722 PART 4. maintain and adjust fencing to suit site operations
clear away fencing on completion
 - 2.3. Limitations
 - 2.3.1.Height (maximum): TBA
 - 2.3.2.Width (maximum): TBA
 - 2.3.3.Special requirements: Tip soils loosely and firm the surface to encourage the shedding of water.
3. Protection: Do not place any other material on top of storage heaps. Do not allow construction plant to pass over storage heaps. Prevent compaction and contamination.
4. Treatment: Apply herbicide at appropriate times (minimum 2 weeks prior to excavation and spreading) to prevent seeding of weeds.

Ss_15_10_30/620 Treatment of excavated subsoil

1. Treatment: Apply translocated non-residual herbicide.
2. Timing: At least two weeks before excavating subsoil.

Ss_15_10_30/621 Storage of excavated subsoil

1. Material to be reused
 - 1.1. Temporary storage heaps
 - 1.1.1.Locations of temporary storage heaps: TBA with contractor
 - 1.2. Required actions: Spread and level surplus subsoil on site.

- 1.3. **Relocation of surplus subsoil:** Refer to cut and fill drawings, material management plan and/or remediation strategy drawings.

Remaining material: refer to levels strategy drawings

- 1.4. **Protected areas:** Do not raise soil level within root spread of trees that are to be retained.

Ss_15_10_30/622 Removal of excavated subsoil

1. **Required actions:** Remove surplus subsoil from site.

Ss_15_10_30/624 Adjacent excavations

1. **Excavations next to existing higher excavations or foundations:** Where an excavation encroaches below a line drawn at an angle from the nearest formation level of another higher excavation, the lower excavation, all work within it and backfilling thereto, must be completed before the higher excavation is made.
2. **Designated angle of repose:** 45°.
3. **Minimum width of undisturbed ground between adjacent backfilled trenches:** When the width of the undisturbed ground between the excavation is less than 900mm, assume that the ground between the trenches is unstable and provide side support accordingly

Ss_15_10_30/626 Excavations next to existing foundations

1. **Required actions before excavation:** Excavate and inspect trial pits next to existing foundations to determine extent and formation levels.
Allow for inspection of trial pits
Allow time for amendment of details if required
Time period: 10 working days
2. **Amendments to new foundation next to existing foundations:** Submit proposals
3. **Timing for submission of proposals:** Submit within 10 working days of discovery of unrecorded features.
4. **Timing for submission of trial pit report (minimum):** Submit within 10 working days of inspection.

Ss_15_10_30/630 Tolerances for excavated and filled surfaces

Shared by: [Ss_15_10_30_27 Earthworks filling systems](#)

1. **Permissible deviations from linear dimensions generally :** Generally +/-50mm
2. **Tolerances on inclination of slope surface:** ±2°.
3. **Permitted localized deviations from slope surface:** ±5 mm.

Ss_15_10_30/632 Formations to receive concrete

1. **Condition prior to filling:** Free from loose soil, topsoil, organic material, rubbish and standing water.
2. **Permissible deviations in levels**
 - 2.1. **Beneath mass concrete foundations:** ±25 mm.
 - 2.2. **Beneath ground bearing slabs:** +/-15mm
 - 2.3. **Beneath reinforced concrete foundations:** ±15 mm.
 - 2.4. **Embankments and cuttings:** ±50 mm.
 - 2.5. **Ground abutting external walls:** ±50 mm, with finished level at least 150 mm below dpc.
 - 2.6. **Beneath road and car park construction:** ±20 mm.

Ss_15_10_30/636 Inspecting formations in sand and gravel

1. **General requirements:**
2. **Preparation:** Just before inspection remove the last 150 mm of excavation. Trim to required profiles and levels. Mechanically compact formation.

Ss_15_10_30/638 Inspection of formations

1. **General requirements:** Give notice: make advance arrangements for inspection of formations for foundations and filling formations. Minimum 5 days

Preparation: just before inspection remove the last 150mm of excavation

Trim to required profiles and level. Remove loose materials

Seal within 4 hours of inspection, seal formations with blinding concrete.

2. **Inspection:** In shrinkable soils, Look for signs of conducting and fine moisture absorbing roots.
3. **Roots In the formation:** Give notice where significant quantities of roots are visible in the formation or in the bottom 75 mm of the walls of the excavation.

Ss_15_10_30/640 Unsuitable formations

1. **Natural bearing formation of undisturbed subsoil not obtained at depth shown on drawings:** Give notice immediately to engineer and submit proposals for additional excavation and filling, including proposed fill materials
2. **Formation contains soft or hard spots or highly variable material:** Give notice immediately to engineer and submit proposals for additional excavation and filling, including proposed fill materials

Ss_15_10_30/648 Foundations

1. **Foundation Bearing:** Foundations are designed to bear on:
 - STRATA: XXXXXXXX
 - ASSUMED SAFE BEARING CAPACITY: 120kPa min.Give notice if the material at the design depth of the foundation does not comply with this description or contains soft or hard spots of highly variable material.

Ss_15_10_30/650 Unstable ground

1. **Excavation:** Keep stable at all times.
2. **Unstable excavations:** Submit proposals when newly excavated faces are too unstable to allow earthwork support to be installed.
3. **Instability likely to affect adjacent structures or roadways:** Take appropriate emergency action and contact Contract Administrator immediately.

Ss_15_10_30/652 Recorded features

1. **Recorded foundations, beds, drains, manholes, etc.:** refer to existing site information
2. **Contaminated earth:** Remove and disinfect as required by Local Authority.

Ss_15_10_30/654 Unrecorded features

1. **Actions for dealing with unrecorded features:** Give notice immediately if unrecorded foundations, beds, voids, basements, filling, tanks, pipes, cables, drains, manholes, watercourses, ditches etc. not shown on the drawings are encountered
2. **Timing for submission of proposals:** Within 3 working days of discovery of unrecorded features.

Ss_15_10_30/656 Treatment of existing structures crossing new foundations or walls

1. **Existing foundation or wall:** Break out where it clashes with the proposed new foundation or wall.
2. **Excavation dimensions**
 - 2.1. **Length of breaking out (minimum):** Width of new foundation or wall plus 50 mm either side.

- 2.2. **Depth of breaking out:** As necessary to permit the construction of the new foundation to its design cross section.
3. **Disturbed ground:** When the formation for the old foundation/ wall is deeper than the formation of the new foundation, submit proposals for reinstatement of formation to the required level for the new foundation.

Ss_15_10_30/658 Treatment of existing buried structures beneath new ground supported slab

1. Existing foundation or wall: Break out
2. Excavation dimensions
 - 2.1. Depth below slab formation level (minimum): 500mm
 - 2.2. **Disturbed ground:** Where ground has been disturbed during the excavations, submit proposals for reinstatement.
3. Depth of backfill greater than 600 mm: submit proposals

Ss_15_10_30/660 Excess excavation

1. Excavation taken wider than required: Backfill with hardcore - submit proposals
2. Excavation taken deeper than required: Backfill with mass concrete of the same grade as the foundations

Ss_15_10_30/662 Treatment of underground structures in landscape areas

1. Walls, roads, foundations, disused services, drains, manholes etc: Break out and remove to minimum depth
2. Excavation dimensions
 - 2.1. Depth below finished levels (minimum)
 - 2.1.1. Grass, ground cover and perennial planting: 500mm
 - 2.1.2. Shrub planting: 750mm
 - 2.1.3. Within 2 m of tree planting: 1000mm
3. Walls and slabs remaining: In every 10 m² of wall or slab, make a drainage hole at least 600 mm diameter.

Ss_15_10_30/664 Excavations below ground water level

1. Excavations below the water table: give notice immediately and submit proposals

Ss_15_10_30/666 Excavations which encounter springs or running water

1. Springs and running water: Give notice immediately if encountered and submit proposals for diversion.

Ss_15_10_30/666 Water Type A

1. **Keep excavations free from water until:** Formations are covered
Below ground constructions are covered
Basement structures and retaining walls are able to resist leakage, water pressure and floatation
2. **Drainage:** Form surfaces of excavations and fill to provide adequate falls
3. **Removal of water:** Provide temporary drains, sumps and pumping as necessary. Do not pollute watercourses with silt laden water
4. **Pumping:** Do not disturb excavated faces or stability of adjacent ground or structures.
Pumped water: discharge without flooding the site or adjoining property
Sumps: construct clear of excavations. Fill on completion. Location: contractors choice

Ss_15_10_30/668 Variations in ground water level

1. **Observed groundwater levels:** Inform the Contract Administrator as soon as levels are encountered that are significantly different from those indicated in the ground investigation report or previously measured.

Ss_15_10_30/670 Treatment of existing watercourses

1. **Diverted watercourses to be filled:** Before filling, remove vegetable growths and soft deposits.

Ss_15_10_30/672 Permanent drainage system

1. **Disposal of water from the excavations through system:** Not permitted

System completion

Ac_15_75_50/810 Site Investigations

1. **Available Reports:**
2. **Ground Water Levels:** Established during the site investigations at XXXX depth
Allow for variations from this level when working on any part of the site and notify engineer
3. **Existing Services:** Reference should be made to the buried services surveys
4. **Materials and Conditions:** Contractor to assess the nature of the works and the materials to be excavated. There is no guarantee that the materials and conditions encountered in site investigations will be found on other parts of the site

Ω End of System

Ss_15_10_30_27 Earthworks filling systems

Systems

Ss_15_10_30_27 Earthworks filling systems

1. System performance: [Ss_15_10_30/210 Testing, filling, compaction and treatment of formations](#)
2. Sub-grade improvement layer: Fill : To highways Agency "Specification for highway works", table 6/1, class 6F1 or 6F2

Filling: Place and compact to Highways Agency Specification for highway works, table 6/1, clause 612, 613
3. Venting layer: [Pr_15_31_26_36 Hardcore](#); [Pr_15_31_26_58 Open-graded granular unbound mixtures](#)
4. Fill materials: [Pr_15_31_26/310 Fill materials generally](#)
5. Ground stabilization products
 - 5.1. Type of ground stabilization product:
 - 5.2. Fixings for ground stabilization products:
 - 5.3. Fill to ground stabilization products:
6. Membranes:
7. Execution: [Ss_15_10_30/718 Backfilling around foundations](#); [Ss_15_10_30/628 Backfilling to excavations lower than foundation formation level](#); [Ss_15_10_30/702 Benching in fill](#); [Ss_15_10_30/722 Compacted general filling/ earthworks in accordance with the Highways England Specification for Highway Works](#); [Ss_15_10_30/704 Compacting fill for landscape areas](#); [Ss_15_10_30/714 Compaction of general fill](#); [Ss_15_10_30/720 Laying sand blinding to surfaces to receive sheet overlays or concrete](#); [Ss_15_10_30/690 Placing fill](#); [Ss_15_10_30/694 Placing hardcore fill](#); [Ss_15_10_30/710 Placing Types 1 and 2 unbound mixtures](#); [Ss_15_10_30/630 Tolerances for excavated and filled surfaces](#); [Ss_15_10_30/706 Loose tip filling for landscape areas](#); [Ss_15_10_30/692 Placing capping layer of compacted filling](#); [Ss_15_10_30/712 Placing subgrade improvement layer \(capping\)](#); [Ss_37_16_65/620 Backfilling to pipelines](#); [Ss_50_30_08/760 Backfilling over concrete](#); [Ss_15_10_30/718 Backfilling under Roads and Pavings Type A](#)
8. System completion: verify finished ground levels

System performance

See [Ss_15_10_30/210 Testing, filling, compaction and treatment of formations](#) in [Ss_15_10_30_25 Earthworks excavating systems](#)

Products

Pr_15_31_26/310 Fill materials generally

1. Supplied by: contractors choice
2. Proposed fill materials
 - 2.1. Documentation: Type and source of imported fill. Proposals for processing and reuse of material excavated on site. Test reports to demonstrate acceptability of fill materials.
 - 2.2. Submission of test reports: at least 21 days before starting filling
3. Prohibited materials
 - 3.1. Prohibited materials generally: do not use materials which would, either in themselves or in combination with other materials or ground water, give rise to a health hazard, damage to building structures or instability in the filling, including material that is:
 - frozen or containing ice
 - organic
 - contaminated or noxious

- susceptible to spontaneous combustion
- likely to erode or decay and cause voids
- with excessive moisture content, slurry, mud or from mashes or bogs
- clay of liquid limit exceeding 80 and or plasticity index exceeding 55
- unacceptable, class U2 as defined in the highways agency "specification for highways" clause 601

4. Permitted sulfate content

4.1. Water soluble sulfate (maximum): . 1500 mg/L in 2:1 water/ soil extract.

4.2. Total potential sulfate (maximum): 0.6%

4.3. Oxidizable sulfides (maximum): . 0.3% of total potential sulfate.

5. Frost susceptible materials

5.1. Requirement: Fill materials shall be non frost-susceptible as defined in [MCHW Volume 1: Specification for highway works \(SHW\)](#), clause 801.8.

5.2. Designated materials: Fine grained soil with a plasticity index of less than 20%. Coarse grained soil or crushed granite with more than 10% retained on a 0.063 mm sieve. Crushed chalk. Crushed limestone fill with average saturation moisture content in excess of 3%. Burnt colliery shale.

5.3. Test reports confirming designated materials are non frost-susceptible: Submit a laboratory report confirming they are non frost susceptible:

- Fine grained soil with a plasticity index of less than 20%.
- Coarse grained soil or crushed granite with more than 10% retained on a 0.063 mm sieve.
- Crushed chalk.
- Crushed limestone fill with average saturation moisture content in excess of 3%.
- Burnt colliery shale.

5.4. Permitted location of frost-susceptible fill materials: 450 mm minimum below finished ground surface.

Within the external walls of buildings below spaces that will be heated. Protect from frost during construction

Where frost heave will not affect structural members. To be agreed with engineer.

Pr_15_31_26_36 Hardcore

1. Description:

2. General requirements: [Pr_15_31_26/310 Fill materials generally](#)

3. Supplied by: Contractors choice

4. Fill: Granular material, free from excessive dust, well graded, all pieces less than 75 mm in any direction, minimum 10% fines value of 50 kN when tested in a soaked condition to [BS 812-111](#).

Spread and level in 150mm maximum layers, thoroughly compact each layer

5. Permitted materials in any one layer: Crushed rock (other than argillaceous rock) or quarry waste with not more binding material than is required to help hold the stone together.

Crushed concrete, crushed brick or tile, free from plaster, timber and metal.

Crushed non-expansive slag.

Gravel or hoggin with not more clay content than is required to bind the material together, and with no large lumps of clay.

Well-burned non-plastic colliery shale.

Natural gravel.

Natural sand.

6. Execution: [Pr_15_31_26/605 Testing of suitability of fill materials before start of filling](#)

Pr_15_31_26_58 Open-graded granular unbound mixtures

1. Description:
2. General requirements: [Pr_15_31_26/310 Fill materials generally](#)
3. Supplied by: contractors choice
4. Standard: To [Highways England MCHW Volume 1: Specification for highway works \(SHW\)](#), clauses 801 and 805.
5. Constituents: Crushed rock (other than argillaceous rock) with well-defined edges. Coarse crushed concrete aggregate. Crushed non-expansive slag.
6. Execution: [Pr_15_31_26/605 Testing of suitability of fill materials before start of filling](#)

Execution

Pr_15_31_26/605 Testing of suitability of fill materials before start of filling

Shared by: [Pr_15_31_26_96 Granular Material](#)

1. Testing house: [UKAS](#) accredited laboratory.
2. Submission of reports
 - 2.1. Timing: 2 copies to civil engineer at least 21 days before commencement of filling
3. Test samples
 - 3.1. Submission of samples: Supply to laboratory as required.
 - 3.2. Additional requirements: Supply 25 kg samples to offices of structural engineer. On request, collect and dispose.
4. Tests: as directed
5. Frequency of testing: submit with tender, proposed rate and frequency of testing to demonstrate continuing compliance of fill materials with specified properties

Ss_15_10_30/628 Backfilling to excavations lower than foundation formation level

1. Critical level of excavation
 - 1.1. When the distance between the near faces of foundations and lower excavation is less than 1m.: 150mm above foundation formation level
 - 1.2. When the distance between the near faces of foundations and lower excavation is more than 1m.: *150 mm above level at which line defined in clause 624 cuts near face of lower excavation*

See [Ss_15_10_30/630 Tolerances for excavated and filled surfaces](#) in [Ss_15_10_30_25 Earthworks excavating systems](#)

Ss_15_10_30/690 Placing fill

1. Condition of surfaces of excavations and areas to be filled: Free from loose soil, topsoil, organic material, rubbish and standing water.
2. Freezing conditions: Do not place fill on frozen surfaces. Remove material affected by frost. Replace and recompact if not damaged after thawing.
3. Placing fill against adjacent structures, on membranes and near buried services: Do not overload, destabilize or damage. Allow 14 days (minimum) before backfilling against in situ concrete structures.
4. Placing fill behind retaining walls: Generally compact in layers maximum 200 mm deep. Place and compact at each course of modular wall units as work proceeds.
5. Placing protective capping layer over expanded polystyrene blocks: Compact a 200 mm minimum layer of fill material over the blocks.
6. Layers
 - 6.1. Material: Place so that only one type of material occurs in each layer.
 - 6.2. Thickness (maximum): 150 mm.

6.3. **Compaction:** Spread, level and thoroughly compact.

7. **Levels:** *Place fill to achieve levels indicated on the drawings.*
8. **Earthmoving equipment:** vary route to avoid rutting
9. **Approved Methods:** place filling using approved methods to required dimensions, levels, lines and profiles so that water may drain freely

Ss_15_10_30/692 Placing capping layer of compacted filling

1. **Required actions:** Compact thoroughly.
2. **Thickness (maximum):** 450mm

Ss_15_10_30/694 Placing hardcore fill

1. **Layers**
 - 1.1. **Thickness (maximum):** 150 mm.
 - 1.2. **Compaction.:** Spread, level and thoroughly compact.

Ss_15_10_30/702 Benching in fill

1. **Difference in level between adjacent areas of filling exceeding 600 mm:** Cut into edge of higher filling to form benches 600 mm minimum width and height equivalent to depth of a layer of compacted filling.
2. **New filling:** Spread and compact to ensure maximum continuity with previous filling.

Ss_15_10_30/704 Compacting fill for landscape areas

1. **Extent of fill for landscape areas:** Show the location and extent of filling on location drawings.
2. **Layers**
 - 2.1. **Thickness (maximum):** 200 mm.
 - 2.2. **Compaction:** Lightly compact each layer to produce a stable soil structure.

Ss_15_10_30/706 Loose tip filling for landscape areas

1. **Extent of loose tip filling for landscape areas:** Show the location and extent of filling on location drawings.
2. **Filling:** Do not firm, consolidate or compact when laying. Tip and grade to approximate levels in one operation with minimum of trafficking by plant.

Ss_15_10_30/710 Placing Types 1 and 2 unbound mixtures

1. **Filling:** To [MCHW Volume 1: Specification for highway works \(SHW\)](#), clause 801, 802, 803, 804.

Ss_15_10_30/712 Placing subgrade improvement layer (capping)

1. **Filling:** Place and compact to [MCHW Volume 1: Specification for highway works \(SHW\)](#), Table 6/1, class 6F1 or 6F2.

Ss_15_10_30/714 Compaction of general fill

1. **Filling:** Spread and level material in layers. As soon as possible, thoroughly compact each layer.
2. **Protection of compacted fill.:** temporary protective filling: before allowing construction traffic, raise level of compacted cohesive soil filling at least 150mm above formation level using properly compacted temporary filling

Removal: remove temporary protective filling from site before permanent construction

3. **Materials and methods**
 - 3.1. **Requirement:** Submit proposals
 - 3.2. **Timing:** To be agreed

- 3.3. **Content of proposals:** Materials to be used, including quantities of each type. Type of plant. Maximum depth of each compacted layer. Minimum number of passes per layer.
4. **Fill not specified to be left loose:** Compact as soon as possible after placing so that each layer achieves a well closed surface, showing no movement under compaction plant, and without cracks, holes, ridges or loose material
5. **Defective areas:** Remove and recompact to original requirements with new materials or submit proposals

Ss_15_10_30/718 Backfilling around foundations

1. **Backfilling under grassed or soil covered areas.:** Lay and compact in 300 mm maximum layers.
2. **Backfilling under oversite concrete and paving.:** Lay and compact hardcore or Type 1 unbound mixture in 300 mm maximum layers.

Ss_15_10_30/718 Backfilling under Roads and Pavings Type A

1. **Backfilling from top of surround or protective cushion up to formation level:** Granular subbase material, laid and compacted in 150mm layers

Ss_15_10_30/720 Laying sand blinding to surfaces to receive sheet overlays or concrete

1. **Sand blinding:** Apply to fill interstices. Moisten as necessary before final rolling to provide a flat, closed, smooth surface.

To BS EN 12620, grade 0/4 OR 0/2 MP

2. **Permissible deviations on surface level:** +0mm, -25mm

Ss_15_10_30/722 Compacted general filling/ earthworks in accordance with the Highways England Specification for Highway Works

1. **Standard**
 - 1.1. **Third party specification:** [MCHW Volume 1: Specification for highway works \(SHW\)](#), Earthworks section.
 - 1.2. **Highways England Specification for highway works clause:** 601.
 - 1.3. **Highways England Specification for highway works table:** Table 6/ 1.
 - 1.4. **Highways England Specification for highway works appendix:** 6/ 1. 6/ 2.
2. **Amendments to requirements in Highways England Specification for highway works:** None.
3. **Definition:** References to the 'Overseeing Organisation' are deemed to be to the issuer of this specification.
4. **Fill material**
 - 4.1. **Permitted classes and source:** Submit full details of proposed fill materials to demonstrate compliance with specification, including:
type and source of fill
proposals for processing and reuse of material excavated on site
test reports as required elsewhere

Timing: at least 21 days before starting filling
 - 4.2. **Assessment of acceptability:** Tests as Table 6/1 of the [Highways England MCHW Volume 1: Specification for highway works \(SHW\)](#)
 - 4.3. **Testing agency:** Contractor
 - 4.4. **Preliminary tests:** Required.
5. **Compaction:** As Table 6/4 of the [Highways England MCHW Volume 1: Specification for highway works \(SHW\)](#)

Ss_37_16_65/620 Backfilling to pipelines

1. Backfilling above top of surround: Material excavated from trench, compacted in layers 300 mm (maximum) thick.
2. Heavy compactors: Do not use before there is 600 mm (total) of material over pipes.

Ss_50_30_08/760 Backfilling over concrete

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#) and [Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems](#)

1. Minimum times from placing concrete
 - 1.1. Backfilling generally: 24 h.
 - 1.2. Heavy compactors and traffic loads: 72 h.

Ω End of System

Ss_50_30_06_66 Plastics inspection chamber systems

Systems

Ss_50_30_06_66 Plastics inspection chamber systems

1. Description:
2. System performance: [Ss_50_30_06/210 Design of access chambers for drainage](#)
3. Bedding: As pipeline systems.
4. Chamber: [Pr_65_52_01_64 Plastics inspection chambers](#)
5. Access components: [Pr_25_30_85_22 Drainage access chamber ladders](#); [Pr_25_30_85_23 Drainage access chamber steps](#)
6. Surround: [Pr_20_31_16_21 Concrete General Surround and base](#)
7. Collar: [Pr_20_31_16_21 Concrete General Surround and base](#)
8. Seating
 - 8.1. Seating units: [Pr_65_52_01_14 Concrete access cover seatings](#)
 - 8.2. Mortar: [Pr_20_31_53_10 Cement gauged designed mortars](#)
9. Covers and frames: [Pr_65_52_01_02 Access covers and frames Foul and Surface Water](#)
10. Backfill: As-dug material, free from vegetable matter, rubbish, frozen soil and material retained on a 40mm sieve. compaction by hand in 100mm layers
11. Execution: [Ss_50_30_06/615 Formation for beddings in below ground drainage access systems](#); [Ss_50_30_06/640 Installing Inspection Chambers - Plastics](#); [Ss_50_30_06/605 Removing below ground drainage access systems](#); [Ss_50_30_06/610 Survey of existing below ground drainage access systems](#)
12. System completion: [Ss_50_30_06/830 Documentation](#); [Ss_50_30_06/825 Handover at completion of access chamber systems](#); [Ss_50_30_06/810 Removal of debris and cleaning below ground drainage access systems](#); [Ss_50_30_06/820 Testing of ancillary components in below ground drainage access systems](#); [Ss_50_30_06/815 Water testing of manholes and inspection chambers](#)

System performance

Ss_50_30_06/210 Design of access chambers for drainage

Shared by: [Ss_50_35_06_14 Concrete manhole and Inspection Chamber systems](#)

1. Design: Complete the design of the access chamber system.
2. Standards: To [BS EN 752](#) and in accordance with National Annex NA.
3. Subsoil percolation rate: contractors choice
4. Permitted infiltration: contractors choice
5. Design life of system: contractors choice
6. Steps and ladders: contractors choice
7. Proposals: Submit detailed design drawings, technical information, calculations and manufacturers' literature.
8. Maintenance: Submit recommendations.

Products

Pr_20_31_16_21 Concrete General Surround and base

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#), [Ss_50_70_05_85 Below-ground drainage rigid attenuation systems](#), [Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems](#), [Pr_65_52_24_31 Floor gullies](#), [Pr_65_52_24_18 One-piece gullies - ROADS](#) and [Pr_65_52_24_18 One-piece gullies YARDS](#)

1. Description: For General surround and bases
2. Supplied by: Contractors choice
3. Ready mixed concrete producer
 - 3.1. Third party accreditation: Currently certified by a body accredited by UKAS to [BS EN ISO/IEC 17065](#) for product conformity certification of ready-mixed concrete.
 - 3.2. Source
 - 3.2.1. Name and address of depot: Submit before any concrete is delivered.
 - 3.2.2. Delivery notes: Retain for inspection.
 - 3.3. Information
 - 3.3.1. Product information to be provided to the producer: Provide concrete producer with information required by [BS 8500-1](#), clauses 4 and 5 and [BS EN 206](#).
 - 3.3.2. Product information to be provided by the producer: Certificate from a United Kingdom Accreditation Service (UKAS) approved independent laboratory that the concrete conforms to [BS 8500-1](#).
 - 3.3.3. Mix design robustness: Submit evidence to demonstrate robustness of mix design.
 - 3.4. Declarations of non-conformity from concrete producer: Notify immediately.
4. Standards: To [BS EN 206](#), [BS 8500-1](#), and [BS 8500-2](#).
5. Concrete designation: Designated, GEN1 or Standardized prescribed ST2.

Pr_20_31_53_10 Cement gauged designed mortars

Shared by: [Ss_50_35_06_14 Concrete manhole and Inspection Chamber systems](#)

1. Description:
2. Manufacturer: contractors choice
3. Standard: To [BS EN 998-2](#).
4. Mortar type: to be agreed
5. Mix: to be agreed
6. Admixture: contractors choice
7. Colour: natural
8. Reaction to fire classification: Class A1.
9. Additional requirements:
10. Execution: [Pr_20_31_53/605 Testing compressive strength of mortar](#)

Pr_25_30_85_22 Drainage access chamber ladders

Shared by: [Ss_50_35_06_14 Concrete manhole and Inspection Chamber systems](#)

1. Description:
2. Manufacturer: contractors choice
3. Standard: To [BS 4211](#).
4. Material: Aluminium.
5. Finish: Galvanized to [BS EN ISO 1461](#).
6. Integral accessories: Safety chains and hoops. Associated platforms.

Pr_25_30_85_23 Drainage access chamber steps

Shared by: [Ss_50_35_06_14 Concrete manhole and Inspection Chamber systems](#)

1. Description: Required in chambers over 900mm deep
2. Manufacturer: Contractors choice

3. Standard: To [BS EN 13101](#)
4. Form: Type
5. Material: Plastics coated steel
6. Configuration: Double.
7. Loading class: Class I.
8. Finish: Galvanize to [BS EN ISO 1461](#). Plastics encapsulation.

Pr_65_52_01_02 Access covers and frames Foul and Surface Water

Shared by: [Ss_50_70_05_85 Below-ground drainage rigid attenuation systems](#) and [Ss_50_35_06_14 Concrete manhole and Inspection Chamber systems](#)

1. Manufacturer: contractors choice
2. Standards: To [BS EN 124-1](#) and [BS EN 124-2](#).
3. Third party certification: BSI Kitemark
4. Material: Ductile cast iron and steel to suit internal/external finishes
5. Configuration: Double seals and grease, lock bolts.
Recessed covers.
Single seal.
6. Finish: Hot-dip galvanized to [BS EN ISO 1461](#).
Black bitumen painted.
Shot blasted and zinc sprayed to [BS EN ISO 2063](#).
Self-finish.
Plastics.
7. Clear opening (minimum): As schedule. Minimum 600x600mm
8. Load class (minimum): A 15.
B 125.
C 250.
D 400.
9. Frame or support: Mild steel angle, bolted to concrete.
10. Integral accessories: Independent sealing plates.
Stays to restrain covers.
11. Execution: [Ss_50_30_06/685 Installing access covers and frames to chambers for below ground drainage](#)

Pr_65_52_01_14 Concrete access cover seatings

Shared by: [Ss_50_35_06_14 Concrete manhole and Inspection Chamber systems](#)

1. Manufacturer: contractors choice
2. Standards: To [BS 5911-3](#) and [BS EN 1917](#).
3. Third party certification: BSI Kitemark
4. Configuration: Rectangular.
5. Opening sizes: To suit access covers.
6. Integral accessories: Submit proposals

Pr_65_52_01_64 Plastics inspection chambers

1. Manufacturer: contractor proposals
2. Standard: To [BS EN 13598-1](#).
To [BS EN 13598-2](#).
3. Third party certification: BSI Kitemark

4. Sizes (nominal): 450mm diameter
600mm diameter
5. Preformed bases: Product reference OSMA
6. Integral accessories: Access cover and frame. Raising pieces.
7. Loading grades: to BS EN 124 C250
8. Execution: [Ss_50_30_06/640 Installing Inspection Chambers - Plastics](#)

Execution

Pr_20_31_53/605 Testing compressive strength of mortar

1. Testing authority: A UKAS Accredited laboratory.
2. Test method: To [BS EN 1015-11](#).
3. Preliminary tests procedure
 - 3.1. Specimens
 - 3.1.1. Number: 6.
 - 3.1.2. Specimen type: 40 x 40 x 160 mm prisms.
 - 3.1.3. Preparation: At least six weeks before walling commences.
 - 3.2. Specimen testing: Half of specimens at 7 days, remainder at 28 days.
 - 3.3. Retarded mixes: Extend curing periods to include retardation period.
 - 3.4. Response to result: If mean compressive strength at 28 days is not within the range given below repeat tests with more suitable sand or next higher designation of mortar.
4. Site tests procedure
 - 4.1. Specimens
 - 4.1.1. Number: Six per 150m² of walling or per storey, whichever the more frequent.
 - 4.1.2. Specimen types: As preliminary test, but prepared during construction.
 - 4.1.3. Timing: Half of specimens at 7 days remainder at 28 days.
 - 4.1.4. Retarded mixes: Extend curing periods to include retardation period.
5. Required test mean compressive strength at 28 days (N/mm²)
 - 5.1. Walling type: TBC
 - 5.2. Preliminary tests minimum (N/mm²): TBC
 - 5.3. Preliminary tests maximum (N/mm²): TBC
 - 5.4. Site tests minimum (N/mm²): TBC
 - 5.5. Site tests maximum (N/mm²): TBC
6. Results: Submit.

Ss_50_30_06/605 Removing below ground drainage access systems

Shared by: [Ss_50_35_06_14 Concrete manhole and Inspection Chamber systems](#)

1. Scope: Entire installation.

Ss_50_30_06/610 Survey of existing below ground drainage access systems

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#) and [Ss_50_35_06_14 Concrete manhole and Inspection Chamber systems](#)

1. Extent of survey: Before starting work, check invert levels and positions of existing drains, sewers, inspection chambers and manholes against drawings. Report discrepancies.
2. Protection: Protect existing drains to be retained and maintain normal operation if in use.

Ss_50_30_06/615 Formation for beddings in below ground drainage access systems

Shared by: [Ss_50_35_06_14 Concrete manhole and Inspection Chamber systems](#)

1. **Timing:** Excavate to formation immediately before laying bases or beddings.
2. **Preparation:** Remove mud, rock projections, boulders and hard spots. Replace with Type 1 unbound mixture compacted to a level and uniform surface.
3. **Local soft spots:** Dig out and fill with Type 1 unbound mixture. Harden by tamping in bedding material.
4. **Inspection of excavated formations:** Give notice.

Ss_50_30_06/640 Installing Inspection Chambers - Plastics

1. **Standards:** To [BS EN 752](#), and in accordance with relevant parts of the National Annex (NA).
2. **Bedding:** 150mm granular material - natural, size 4/10 to BS EN 13242
3. **Concrete Collar:** Minimum 200mm thickness and width
4. **Chamber depth (cover level to pipeline invert):** see manhole schedule
5. **Concrete surround:** 150mm minimum
6. **Backfilling**
 - 6.1. **Laying fill:** Granular material (natural size 4/10 to BS EN 13242) to 100 mm above crown of pipes, then selected fill.
 - 6.2. **Compaction:** By hand in 100 mm layers.

Ss_50_30_06/685 Installing access covers and frames to chambers for below ground drainage

1. **Bedding and haunching of frames:** Top of haunching 30 mm below surrounding surfaces. Material 1:3 cement:sand mortar
2. **Vertical positioning of frames:** Level or marry in with levels of surrounding surfaces.
3. **Horizontal positioning of frames:** centred over openings square with joints in surrounding paving
4. **Permissible deviation in level of external covers and frames:** +0 to -6 mm.

System completion

Ss_50_30_06/810 Removal of debris and cleaning below ground drainage access systems

Shared by: [Ss_50_35_06_14 Concrete manhole and Inspection Chamber systems](#)

1. **Preparation:** Lift covers to manholes, inspection chambers and access points. Remove mortar droppings, debris and loose wrappings.
2. **Timing:** Before cleaning, final testing, CCTV inspection if specified, and immediately before handover.
3. **Cleaning:** Thoroughly flush pipelines with water to remove silt and check for blockages. Rod pipelines between access points if there is any indication that they may be obstructed.
4. **Washings and detritus:** Do not discharge into sewers or watercourses.
5. **Covers:** Securely replace after cleaning and testing.

Ss_50_30_06/815 Water testing of manholes and inspection chambers

Shared by: [Ss_50_35_06_14 Concrete manhole and Inspection Chamber systems](#)

1. **Timing:** Before backfilling.
2. **Testing**
 - 2.1. **Exfiltration:** To [BS EN 1610](#).

- 2.2. **Method:** Testing with water (method W).
- 2.3. **Infiltration:** No identifiable flow of water penetrating the chamber.

Ss_50_30_06/820 Testing of ancillary components in below ground drainage access systems

Shared by: [Ss_50_35_06_14 Concrete manhole and Inspection Chamber systems](#)

- 1. **Components:** Petrol interceptors and surface water storage tanks attenuation chambers
- 2. **Testing**
 - 2.1. **Standard:** To [BS EN 1610](#).
 - 2.2. **Tests:** In accordance with manufacturers requirements
 - 2.3. **Method:** In accordance with manufacturers requirements

Ss_50_30_06/825 Handover at completion of access chamber systems

Shared by: [Ss_50_35_06_14 Concrete manhole and Inspection Chamber systems](#)

- 1. **Tools** for operation, maintenance and cleaning, including keys for access covers: supply at completion

Ss_50_30_06/830 Documentation

Shared by: [Ss_50_35_06_14 Concrete manhole and Inspection Chamber systems](#)

- 1. **Operating and maintenance instructions**
 - 1.1. **Scope:** Submit for the system giving optimum settings for controls.
 - 1.2. **Product information:** Include product description, date of purchase, performance characteristics, application (suitability for use), method of operation and control, and cleaning and maintenance requirements.
 - 1.3. **Format:** Paper copy.
 - 1.4. **Number of copies:** Three.
- 2. **Record drawings**
 - 2.1. **Content:** Location and arrangement of plant in plant rooms. Location, size and route of below ground drainage services. Location of outlets.
 - 2.2. **Format:** A1 paper print. Electronic.
 - 2.3. **Number of copies:** Three.
- 3. **Submittal date:** At handover.

Ω End of System

Ss_50_30_08_30

Foul waste water below-ground drainage pipeline systems

Systems

Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems

1. Description:
2. System performance:
3. Water collectors: [Pr_65_52_24_31 Floor gullies](#)
4. Pipes, bends and junctions: [Pr_65_52_07_88 PVC-U solid wall FOUL](#); [Pr_65_52_07_97 Clay - Flexible Joints Entire Site](#); [Pr_65_52_03_66 Polypropylene \(PP\) solid wall FOUL DRAINAGE](#)
 - 4.1. Supply: From same manufacturer for each pipeline
5. Pipe accessories: [Pr_65_52_24_02 Adaptors to Clay Drainage - Entire Site](#); [Pr_65_52_07_28 Flexible couplings between below-ground drainage pipes ENTIRE SITE](#); [Pr_65_52_24_03 Adaptors to Plastic Drainage - Entire Site](#); [Pr_65_52_07_75 Saddle connectors to below-ground drainage pipes CONNECTION TO FOUL SEWER](#); [Pr_40_10_57_96 Warning marker tapes FOUL WASTE](#); [Pr_65_52_24_73 Rat barrier pipes](#)
6. Pipe protection materials
 - 6.1. Surround: [Pr_20_31_16_21 Concrete General Surround and base](#)
7. Execution: [Ss_50_30_08/755 Backfilling to below ground drainage pipelines generally](#); [Ss_50_30_08/760 Backfilling over concrete](#); [Ss_50_30_08/690 Casting concrete encasement for rigid, semi-rigid and flexible pipes](#); [Ss_50_30_08/695 Class Z Surround Where applicable](#); [Ss_50_30_08/740 Connecting to public sewers](#); [Ss_50_30_08/620 Excavating and filling drainage trenches in public roads and pavings](#); [Ss_50_30_08/625 Excavating combined trenches for below ground drainage pipelines at different levels](#); [Ss_50_30_08/615 Excavating drainage trenches generally](#); [Ss_50_30_08/750 Initial testing of below ground drainage pipelines](#); [Ss_50_30_08/745 Installing backdrop pipelines outside access chamber walls](#); [Ss_50_30_08/715 Installing below ground drainage pipelines passing through structures](#); [Ss_50_30_08/725 Installing bends in below ground drainage pipelines at base of discharge stacks](#); [Ss_50_30_08/730 Installing direct connection of ground floor WCs to below ground drainage pipelines](#); [Ss_50_30_08/720 Jointing below ground drainage pipes of different materials or sizes using clamped flexible couplings](#); [Ss_50_30_08/700 Laying and jointing below ground drainage pipelines generally](#); [Ss_50_30_08/765 Laying warning marker tapes for below ground drainage](#); [Ss_50_30_08/710 Protecting below ground rigid drainage pipelines at crossovers](#); [Ss_50_30_08/705 Protecting below ground drainage pipelines in trenches near foundations](#); [Ss_50_35_08/605 Removing or capping unused below ground drainage pipelines](#); [Ss_50_35_08/610 Retaining existing below ground drainage pipelines](#)
8. System completion: [Ss_50_30_08/810 Removal of debris and cleaning below ground drainage](#); [Ss_50_30_08/815 Testing and inspection of below ground drainage](#); [Ss_50_30_08/820 Final testing of private gravity drains and sewers up to DN300](#); [Ss_50_30_08/830 CCTV inspection of private pipelines](#); [Ss_50_30_08/850 Documentation](#)

Products

See [Pr_20_31_16_21 Concrete General Surround and base](#) in [Ss_50_30_06_66 Plastics inspection chamber systems](#)

Pr_40_10_57_96 Warning marker tapes FOUL WASTE

1. Description:
2. Manufacturer: Contractors choice
3. Standard: To [BS EN 12613](#), Type 1.
4. Material: Polyethylene.
5. Wire detection aid: Required.
6. Size

- 6.1. Length: To suit the length of service.
- 6.2. Width: 150 mm.
- 6.3. Thickness: contractor to confirm
7. Jointing method: Peg.
8. Format
 - 8.1. Background colour: white
 - 8.2. Text colour: Black.
9. Legend: FOUL WATER DRAIN BELOW
10. Execution: [Pr_40_10_57/700](#) Installing warning devices for underground cables and pipelines

Pr_65_52_03_66 Polypropylene (PP) solid wall FOUL DRAINAGE

1. Manufacturer: Contractors Choice
2. Standard: To [BS EN 1451-1](#), application area code B.
To BS EN 1852-1
3. Third-party product certification: BSI Kitemark
4. Jointing type: Ring seal spigot and socket
5. Nominal sizes: as per GA plan
6. Application area code: UD
7. Integral accessories: Access fittings.

Pr_65_52_07_28 Flexible couplings between below-ground drainage pipes ENTIRE SITE

Shared by: [Ss_50_30_08_85](#) Surface water below-ground drainage pipeline systems

1. Manufacturer: contractors choice
2. Standards: To [BS EN 295-4](#). To [WIS 04-41-01](#).
3. Third party certification: BSI Kitemark
4. Materials: Elastomeric with stainless steel clamping bands, grade 1.4400 to [BS EN 10088-2](#).
5. Sizes: as required
6. Integral accessories: Adaptor bushes.

Pr_65_52_07_75 Saddle connectors to below-ground drainage pipes CONNECTION TO FOUL SEWER

Shared by: [Ss_50_30_08_85](#) Surface water below-ground drainage pipeline systems

1. Manufacturer: Contractors Choice
2. Material: Clay to [BS EN 295-1](#).
Plastics to [BS EN 13598-1](#).
Concrete to [BS 5911-6](#).
Cast iron to [BS 437](#).
3. Third party product certification: BSI kitemark certified
4. Sizes (nominal): as required, refer to drawings

Pr_65_52_07_88 PVC-U solid wall FOUL

Shared by: [Ss_50_70_05_85](#) Below-ground drainage rigid attenuation systems

1. Manufacturer: Contractors choice
2. Standard: To [BS EN 1401-1](#).
3. Third party certification: BSI kitemark

4. Stiffness: 100mm SN10, 150mm SN4 or SN8, 375mm
5. Application area code: UD
6. Recycled content: Contractors choice
7. Sizes (nominal): DN100,DN150,DN225
8. Jointing type: Flexible
9. Execution: [Pr_65_52_07/640 Jointing below ground drainage pipes of different materials or sizes using clamped flexible couplings](#)

Pr_65_52_07_97 Clay - Flexible Joints Entire Site

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. Manufacturer: Contractors Choice
2. Standard: To [BS EN 295-1](#).
3. Third party certification: BSI Kitemark certified
4. Form:
5. Sizes (nominal): DN 100. DN 150. DN 225. DN 300.
6. Crushing strength (minimum): 100-150mm FN40
225mm FN45
300-450mm FN72
in accordance with BS EN 295
7. Jointing type: Polypropylene sleeve for flexible jointing.
8. Integral accessories: As necessary:
Adaptors. Bends. Blank ends. Couplings. Junctions. Sealing rings.
9. Execution: [Pr_65_52_07/640 Jointing below ground drainage pipes of different materials or sizes using clamped flexible couplings](#)

Pr_65_52_24_02 Adaptors to Clay Drainage - Entire Site

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. Description: Polypropylene to BS EN295-1 and Kitemark certified
2. Manufacturer: contractors choice
3. Standard: To [BS EN 295-4](#).
4. Size: DN32 waste pipe to DN100 clay
DN40 waste pipe to DN100 clay
DN50 waste pipe to DN100 clay
DN68 rainwater pipe to DN100 clay
DN82 discharge stack to DN100 clay
DN100 discharge stack to DN100 clay
DN100 rainwater pipe to DN100 clay, and
DN100 rainwater pipe to DN150 clay

Pr_65_52_24_03 Adaptors to Plastic Drainage - Entire Site

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. Manufacturer: Contractors choice
2. Standard: To [BS 4660](#) or to [BS EN 1401-1](#).
3. Third party product certification: BSI Kitemark approved
4. Size: DN100 rainwater pipe to DN 100 plastics
DN100 rainwater pipe to DN150 plastics

Pr_65_52_24_31 Floor gullies

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. Description:
2. Manufacturer: Submit proposals
3. Standard: To [BS EN 1253-1](#). To [BS EN 1253-2](#).
4. Body
 - 4.1. Configuration: TBC
 - 4.2. Material: Cast iron to BS 437
Clay to BS EN 295-1
Concrete to BS 5911-6
Plastics to BS 4660
Polypropylene to BS EN 1852-1
5. Cover or grating
 - 5.1. Cover or grating type: Lockable gratings.
 - 5.2. Material: Stainless Steel
 - 5.3. Finish: Submit proposals
6. Outlet: As per BDP civils drawings
7. Load class (minimum): to BS EN 124: A15
8. Integral accessories:
9. Execution: [Pr_65_52_24/620 Installing gullies](#)

Pr_65_52_24_73 Rat barrier pipes

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. Manufacturer: Contractors Choice
2. Sizes (nominal): DN100/110

Execution

Pr_40_10_57/700 Installing warning devices for underground cables and pipelines

Shared by: [Pr_40_10_57_96 Warning marker tapes SURFACE WATER DRAINAGE](#)

1. Installation: Lay along the route of underground cables during backfilling of excavation, end-to-end of service with no gaps.
2. Marker position
 - 2.1. Cables: to be agreed
 - 2.2. Pipelines less than 2 m: Continuously, 200–300 mm above service pipe.
 - 2.3. Pipelines deeper than 2 m: Lay additional marker 600 mm above the top of the pipeline.
3. Location, depth, colour and markings: To requirements of service undertaker.

Pr_65_52_07/640 Jointing below ground drainage pipes of different materials or sizes using clamped flexible couplings

Shared by: [Pr_65_52_07_16 Concrete plain wall below-ground drainage pipes and fittings for flexible jointing](#) and [Pr_65_52_07_88 PVC-U - Solid Wall SURFACE WATER](#)

1. Ends of pipes to be joined: cut cleanly and square
2. Outer surfaces of pipes to be joined: . *Clean and smooth. Where necessary, e.g. on concrete or iron pipes, smooth out mould lines.*
3. Clamping bands: . *Tighten carefully to make gastight and watertight seals.*

Pr_65_52_24/620 Installing gullies

Shared by: [Pr_65_52_24_18 One-piece gullies - ROADS](#) and [Pr_65_52_24_18 One-piece gullies YARDS](#)

1. Alignment:

- Setting out relative to adjacent construction features: square and tightly jointed
- Permissible deviation in level of external covers and gratings: +0 to +6mm
- Raising pieces (clay and concrete units): joint with 1:3 cement:sand mortar
- Exposed openings: Fit purpose made temporary caps. Protect from traffic

2. Bedding

- 2.1. Material: [Pr_20_31_16_21 Concrete General Surround and base](#)
2.2. Thickness (minimum): 150mm

3. Surround

- 3.1. Material: [Pr_20_31_16_21 Concrete General Surround and base](#)
3.2. Width (minimum): 150mm
3.3. Depth: Full height

Ss_50_30_08/615 Excavating drainage trenches generally

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. Position: as drawings

2. Cover (minimum): as drawings

3. Trenches

- 3.1. Depth: contractors choice
3.2. Width: contractors choice
3.3. Trench sides: Battered.
3.4. Trench bottoms: Remove mud, rock projections, boulders and hard spots. Trim level.
3.5. Inspection of trenches for each section of the work: Give notice.

Ss_50_30_08/620 Excavating and filling drainage trenches in public roads and pavings

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. Excavating and backfilling of trenches: To Department for Transport [New roads and street works act 1991: Specification for the reinstatement of openings in highways: code of practice. 3rd edition \(England\)](#).

Ss_50_30_08/625 Excavating combined trenches for below ground drainage pipelines at different levels

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. Subtrench: Permitted provided soil of step is stable and unlikely to break away.
2. Subtrench not permitted or used: Trench depth as required for lower pipe. Increase thickness of bedding to upper pipe as necessary.
3. Lower pipe: Backfill with compacted granular material at least halfway up higher pipe.
4. Clear horizontal distance between pipes (minimum)
4.1. Pipes up to DN 700: 350 mm.
4.2. Pipes exceeding DN 700: 500 mm.

Ss_50_30_08/690 Casting concrete encasement for rigid, semi-rigid and flexible pipes

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. Trench blinding
 - 1.1. Thickness (minimum): 50 mm.
 - 1.2. Width: Full width of trench.
2. Pipes
 - 2.1. Temporary supports: Folding wedges of bitumen impregnated fibreboard. Prevent flotation.
 - 2.2. Clearance under pipes (minimum): 100mm minimum
 - 2.3. Adjustments: Adjust to line and gradient. Maintain minimum clearance under pipes. Fill gaps between spigots and sockets with mineral wool, or other inert resilient material, to prevent entry of concrete.
3. Initial testing after placing pipe: To [BS EN 1610](#).
4. Surround
 - 4.1. Depth (minimum): 400mm
 - 4.2. Width (minimum): Full width of trench.
 - 4.3. Compaction: Compact thoroughly. Compact by hand in 100 mm layers once the pipe is laid.
 - 4.4. Vertical joint material: 18 mm thick bitumen impregnated fibreboard precut to profile of pipe.

Ss_50_30_08/695 Class Z Surround Where applicable

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. Type of subsoil: Silt, clay, sandy clay - soft
2. Trench blinding
 - 2.1. Thickness (minimum): 25 mm.
 - 2.2. Material: Concrete
 - 2.3. Width: Full width of trench.
 - 2.4. Curing period: Allow to set before proceeding.
3. Pipes
 - 3.1. Temporary supports: Folding wedges of bitumen impregnated fibreboard. Prevent flotation.
 - 3.2. Clearance under pipes (minimum): 100mm
 - 3.3. Adjustments: Adjust to line and gradient. Maintain minimum clearance under pipes. Fill gaps between spigots and sockets with mineral wool, or other inert resilient material, to prevent entry of concrete.
4. Initial testing after placing pipe: To [BS EN 1610](#).
5. Surround
 - 5.1. Material: Concrete
 - 5.2. Depth (minimum): to 150mm above crown of pipe
 - 5.3. Width (minimum): full width of trench
 - 5.4. Compaction: Compact thoroughly. Compact by hand in 100 mm layers once the pipe is laid.
6. Vertical joint material: 18 mm thick bitumen impregnated fibreboard precut to profile of pipe.

Location: at face of flexible pipe joints

Socketed pipes: Fill gaps between spigots and sockets with resilient material to prevent entry of concrete

Ss_50_30_08/700 Laying and jointing below ground drainage pipelines generally

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. Installation, generally: Use laser levelling when laying pipes with a gradient of less than 1:250
2. Laying
 - 2.1. Gradient: To true line and regular gradient on even bed for full length of barrel with sockets (if any) facing up the gradient.
 - 2.2. Ingress of debris: Prevent. Seal exposed ends during construction.
 - 2.3. Timing: Minimize time between laying and testing.
3. Jointing
 - 3.1. Connections: Durable, effective and free from leakage.
 - 3.2. Junctions, including to differing pipework systems: With adaptors intended for the purpose.
 - 3.3. Cut ends of pipes: Clean and square. Remove burrs and swarf. Chamfer pipe ends before inserting into ring seal sockets.
 - 3.4. Jointing or mating surfaces: Clean and, where necessary, lubricate immediately before assembly.
 - 3.5. Allowance for movement: Provide and maintain appropriate clearance at ends of spigots as fixing and jointing proceeds.
 - 3.6. Jointing material: Do not allow to project into bore of pipes and fittings.
4. Tolerances: The position of the internal face of any pipeline shall not deviate from the line and level shown on the drawings by more than +20mm, provided that no pipe shall have a reverse gradient

Ss_50_30_08/705 Protecting below ground drainage pipelines in trenches near foundations

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. Trench less than 1 m from foundation and bottom of trench lower than bottom of foundation
 - 1.1. Protection: Provide class Z concrete surround.
 - 1.2. Level: Top of concrete surround not lower than bottom of foundation.
2. Trench more than 1 m from foundation and bottom of trench lower than bottom of foundation
 - 2.1. Protection: Provide class Z concrete surround.
 - 2.2. Offset: Determine values of horizontal distance of trench from foundation, less 150 mm.
 - 2.3. Level: Top of concrete surround not lower than calculated offset value below bottom of foundation.

Ss_50_30_08/710 Protecting below ground rigid drainage pipelines at crossovers

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. Protection: Provide class Z concrete surround where two pipelines (other than plastics pipes) cross with less than 300 mm separation.
2. Extent, on both pipes: 1 m centred on the crossing point, and beyond as necessary to come within 150 mm of nearest flexible joints.

Ss_50_30_08/715 Installing below ground drainage pipelines passing through structures

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. Pipelines that must be cast in or fixed to structures (including manholes, catchpits and inspection chambers)
 - 1.1. Provision of rocker pipes: *Provide 600 mm long rocker pipes adjacent to the external face of the structure (or both faces where appropriate, e.g. walls to footings), with flexible joints at both ends.*
 - 1.2. Distance to rocker pipe from structure (maximum): 150mm

2. **Provision for movement for pipelines:** Provision for movement for pipelines that need not be cast in or fixed to structures (walls to footings):
 - rocker pipes as specified above
 - or openings in the structures to give 50mm minimum clearance around the pipeline. Closely fit a rigid sheet to each side of opening to prevent ingress of fill or vermin

Ss_50_30_08/720 Jointing below ground drainage pipes of different materials or sizes using clamped flexible couplings

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. **Connections:** Durable, effective and free from leakage
2. **Junctions, including to differing pipework systems:** With adaptors intended for the purpose
3. **Ends of pipes to be joined:** Cut cleanly and square. Remove burrs and swarf. Chamfer pipe ends before inserting into ring seal sockets. lubricate immediately before assembly
4. **Outer surfaces of pipes to be joined:** Clean and smooth. Where necessary, e.g. on concrete or iron pipes, smooth out mould lines and/or apply a cement grout over the sampling area
5. **Clamping bands:** Tighten carefully to make gastight and watertight seals.
6. **Allowance for movement:** provide and maintain appropriate clearance at ends of spigots as fixings and jointing proceeds

Ss_50_30_08/725 Installing bends in below ground drainage pipelines at base of discharge stacks

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. **Bends**
 - 1.1. **Form:** Two nominal 45 degree bends
 - 1.2. **Radius to centreline of pipe (minimum):** 200mm
2. **Height of invert of horizontal drain at base of stack below centreline of lowest branch pipe (minimum):** 450mm
3. **Concrete bedding:** Do not impair flexibility of pipe couplings.

Ss_50_30_08/730 Installing direct connection of ground floor WCs to below ground drainage pipelines

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. **Maximum drop:** 1.3m from crown of WC trap to invert of drain
2. **Maximum horizontal distance:** 6 m from the drop to a ventilated drain.

Ss_50_30_08/740 Connecting to public sewers

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. **Requirement:** Connect new pipework to existing adopted sewers to the requirements of the adopting authority or its agent.

Ss_50_30_08/745 Installing backdrop pipelines outside access chamber walls

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. **Pipeline make-up thickness:** 150 mm (minimum).
2. **Pipe protection thickness:** 150 mm (minimum).

Ss_50_30_08/750 Initial testing of below ground drainage pipelines

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. Before testing
 - 1.1. Cement mortar jointing: Leave 24 h.
 - 1.2. Solvent welded pipelines: Leave 1 h.
2. Method: Block open ends of pipelines to be tested and pressurize. Air test short lengths to [BS EN 1610](#).

Ss_50_30_08/755 Backfilling to below ground drainage pipelines generally

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. Backfilling above top of surround or protective cushion: Material excavated from trench, compacted in layers 300 mm (maximum) thick.
2. Heavy compactors: Do not use before there is 600 mm (total) of material over pipes.

See [Ss_50_30_08/760 Backfilling over concrete](#) in [Ss_15_10_30_27 Earthworks filling systems](#)

Ss_50_30_08/765 Laying warning marker tapes for below ground drainage

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. Installation: During backfilling, lay continuously over pipelines.
2. Depth: 300–400 mm.
3. Pipelines deeper than 2 m: Lay an additional tape 600 mm above the top of the pipeline.

Ss_50_35_08/605 Removing or capping unused below ground drainage pipelines

1. Extent of stripping out: Refer to drawings

Ss_50_35_08/610 Retaining existing below ground drainage pipelines

1. Setting out: *Before starting work, check invert levels and positions of existing drainage against drawings. Report discrepancies.*
2. Protection: *Protect existing drains to be retained and maintain normal operation if in use.*

System completion

Ss_50_30_08/810 Removal of debris and cleaning below ground drainage

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. Preparation: Lift covers to manholes, inspection chambers and access points. Remove mortar droppings, debris and loose wrappings.
2. Timing: Before cleaning, final testing, CCTV inspection (if specified), and immediately before handover.
3. Cleaning: Thoroughly flush pipelines with water to remove silt and check for blockages. Rod pipelines between access points if there is any indication that they may be obstructed.
4. Washings and detritus: Do not discharge into sewers or watercourses.
5. Covers: Securely replace after cleaning and testing.

Ss_50_30_08/815 Testing and inspection of below ground drainage

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. Dates for testing and inspection: Give notice.
2. Period of notice (minimum): 10 working days

Ss_50_30_08/820 Final testing of private gravity drains and sewers up to DN300

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. Standard: To [BS EN 1610](#).
2. Before testing
 - 2.1. Cement mortar jointing: Leave 24 h.
 - 2.2. Solvent welded pipelines: Leave 1 h.
3. Method: Air

Ss_50_30_08/830 CCTV inspection of private pipelines

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. Requirement: Carry out and record internal inspection using CCTV equipment
2. Locations to be inspected: Private foul wastewater and surface water pipelines. Entire network
3. Illumination: Of adequate intensity.
4. Recording
 - 4.1. Requirement: Allow for continuous position recording, still photographs and stopping of the camera at any point.
 - 4.2. Recording and documentation: Submit.

Ss_50_30_08/850 Documentation

Shared by: [Ss_50_30_08_85 Surface water below-ground drainage pipeline systems](#)

1. Operating and maintenance instructions
 - 1.1. Scope: Submit for the system, giving optimum settings for controls.
 - 1.2. Product information: Include product description, date of purchase, performance characteristics, application (suitability for use), method of operation and control, and cleaning and maintenance requirements.
 - 1.3. Format: Paper copy.
 - 1.4. Number of copies: Three.
2. Record drawings
 - 2.1. Content: Details of pipeline make-ups. Location and arrangement of plant in plant rooms. Location, size and route of drainage services. Location of outlets. Location of connections to downstream private and public sewerage networks.
 - 2.2. Format: Electronic. A1 paper print.
 - 2.3. Number of copies: Three.
3. Submittal date: At handover.

Ω End of System

Ss_50_30_08_85

Surface water below-ground drainage pipeline systems

Systems

Ss_50_30_08_85 Surface water below-ground drainage pipeline systems

1. Water collectors: [Pr_65_52_24_31 Floor gullies](#)
[Pr_65_52_24_18 One-piece gullies - ROADS](#)
[Pr_65_52_24_18 One-piece gullies YARDS](#)
2. Pipes, bends and junctions: [Pr_65_52_07_97 Clay - Flexible Joints Entire Site](#); [Pr_65_52_07_16 Concrete plain wall below-ground drainage pipes and fittings for flexible jointing](#); [Pr_65_52_07_88 PVC-U - Solid Wall SURFACE WATER](#); [Pr_65_52_07_65 Plastics - Structured wall SURFACE WATER DRAINAGE](#)
 - 2.1. Supply: Pipes and fittings from same manufacturer for each pipeline
3. Pipe accessories: [Pr_65_52_24_02 Adaptors to Clay Drainage - Entire Site](#); [Pr_65_52_07_28 Flexible couplings between below-ground drainage pipes ENTIRE SITE](#); [Pr_65_52_24_03 Adaptors to Plastic Drainage - Entire Site](#); [Pr_65_52_24_61 Rodding Points SURFACE WATER](#); [Pr_40_10_57_96 Warning marker tapes SURFACE WATER DRAINAGE](#); [Pr_65_52_07_75 Saddle connectors to below-ground drainage pipes CONNECTION TO FOUL SEWER](#); [Pr_65_52_24_73 Rat barrier pipes](#); [Pr_65_54_24_04 Anti-flood valves TO SURFACE WATER OUTFALL PIPE](#)
4. Pipe protection materials
 - 4.1. Surround: [Pr_20_31_16_21 Concrete General Surround and base](#)
5. Execution: [Ss_50_30_08/615 Excavating drainage trenches generally](#); [Ss_50_30_08/740 Connecting to public sewers](#); [Ss_50_30_08/755 Backfilling to below ground drainage pipelines generally](#); [Ss_50_30_08/760 Backfilling over concrete](#); [Ss_50_30_08/690 Casting concrete encasement for rigid, semi-rigid and flexible pipes](#); [Ss_50_30_08/695 Class Z Surround Where applicable](#); [Ss_50_30_08/620 Excavating and filling drainage trenches in public roads and pavings](#); [Ss_50_30_08/625 Excavating combined trenches for below ground drainage pipelines at different levels](#); [Ss_50_30_08/750 Initial testing of below ground drainage pipelines](#); [Ss_50_30_08/745 Installing backdrop pipelines outside access chamber walls](#); [Ss_50_30_08/725 Installing bends in below ground drainage pipelines at base of discharge stacks](#); [Ss_50_30_08/730 Installing direct connection of ground floor WCs to below ground drainage pipelines](#); [Ss_50_30_08/720 Jointing below ground drainage pipes of different materials or sizes using clamped flexible couplings](#); [Ss_50_30_08/700 Laying and jointing below ground drainage pipelines generally](#); [Ss_50_30_08/670 Class S Surround - Typical](#); [Ss_50_30_08/705 Protecting below ground drainage pipelines in trenches near foundations](#); [Ss_50_30_08/765 Laying warning marker tapes for below ground drainage](#); [Ss_50_30_08/715 Installing below ground drainage pipelines passing through structures](#); [Ss_50_30_08/710 Protecting below ground rigid drainage pipelines at crossovers](#); [Ss_50_30_06/610 Survey of existing below ground drainage access systems](#)
6. System completion: [Ss_50_30_08/810 Removal of debris and cleaning below ground drainage](#); [Ss_50_30_08/815 Testing and inspection of below ground drainage](#); [Ss_50_30_08/820 Final testing of private gravity drains and sewers up to DN300](#); [Ss_50_30_08/830 CCTV inspection of private pipelines](#); [Ss_50_30_08/850 Documentation](#); [Ss_50_35_08/830 CCTV inspection of adoptable pipelines Type A](#); [Ss_50_35_08/820 Final testing of adoptable and large private sewers Type B](#); [Ss_50_35_08/820 Ovality Testing of Plastic Pipelines Type A](#)

Products

See [Pr_20_31_16_21 Concrete General Surround and base](#) in [Ss_50_30_06_66 Plastics inspection chamber systems](#)

Pr_40_10_57_96 Warning marker tapes SURFACE WATER DRAINAGE

1. Description: SURFACE WATER DRAINAGE
2. Manufacturer:
3. Standard: To [BS EN 12613](#), Type 1.

4. Material: Polyethylene.
5. Wire detection aid: Required.
6. Size
 - 6.1. Length: To suit the length of service.
 - 6.2. Width: 150 mm.
 - 6.3. Thickness: submit proposals
7. Jointing method: Peg.
8. Format
 - 8.1. Background colour: White
 - 8.2. Text colour: Black.
9. Legend: SURFACE WATER DRAIN BELOW
10. Execution: [Pr_40_10_57/700 Installing warning devices for underground cables and pipelines](#)

Pr_65_52_07_16 Concrete plain wall below-ground drainage pipes and fittings for flexible jointing

1. Manufacturer: Contractors choice
2. Standards: To [BS 5911-1](#) and [BS EN 1916](#).
3. Sizes (nominal): Greater than DN300
4. Form: Circular
5. End joints: flexible joints
6. Execution: [Pr_65_52_07/640 Jointing below ground drainage pipes of different materials or sizes using clamped flexible couplings](#)

See [Pr_65_52_07_28 Flexible couplings between below-ground drainage pipes ENTIRE SITE](#) in [Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems](#)

Pr_65_52_07_65 Plastics - Structured wall SURFACE WATER DRAINAGE

1. Manufacturer: Contractors Choice
2. Standards: To BS EN 13476-1 and -2 or -3
3. Supplementary Requirements: Puncture resistance, jetting resistance, longitudinal bending to requirements of WIS 4-35-01, issue 03

Recycled content: Contractors Choice

Material: PE

4. Certification: BSI Kitemark approved
5. Jointing Type: Double spigot
6. Sizes: As per latest GA plan:
 - DN 100
 - DN 150
 - DN 255
 - DN 300

See [Pr_65_52_07_75 Saddle connectors to below-ground drainage pipes CONNECTION TO FOUL SEWER](#) in [Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems](#)

Pr_65_52_07_88 PVC-U - Solid Wall SURFACE WATER

Shared by: [Ss_50_70_05_85 Below-ground drainage rigid attenuation systems](#)

1. Description: Surface water
2. Manufacturer: Contractors choice

3. Standard: To [BS EN 1401-1](#) with flexible joints
4. Third party certification: BSI Kitemark
5. Stiffness: SN4
6. Application area code: UD
7. Recycled content: Contractors choice
8. Sizes (nominal): DN100, DN150, DN225, DN300
Refer to latest GA drawings
9. Execution: [Pr_65_52_07/640 Jointing below ground drainage pipes of different materials or sizes using clamped flexible couplings](#)

See [Pr_65_52_07_97 Clay - Flexible Joints Entire Site](#) in [Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems](#)

See [Pr_65_52_24_02 Adaptors to Clay Drainage - Entire Site](#) in [Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems](#)

See [Pr_65_52_24_03 Adaptors to Plastic Drainage - Entire Site](#) in [Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems](#)

Pr_65_52_24_18 One-piece gullies - ROADS

1. Manufacturer: Contractors Choice
2. Standards: To BS EN 1253-1, -2, -3, -4 AND -5 or:

Cast Iron : To BS EN 437

Concrete: To [BS 5911-6](#).

Clay: To BS EN 295-1

Plastics: To BS EN 4660

Polypropylene: To BS EN 1852-1

3. Material: Concrete
4. Third party certification: BSI Kitemark certified
5. Design chemical class:
6. Sizes: 750 x 375 mm.
7. Outlet sizes: DN 150.
8. Silt Buckets: None
9. Execution: [Pr_65_52_24/620 Installing gullies](#)

Pr_65_52_24_18 One-piece gullies YARDS

1. Manufacturer: Contractors Choice
2. Standards: To BS EN 1253-1, -2, -3, -4 AND -5 or:

Cast Iron : To BS EN 437

Concrete: To [BS 5911-6](#).

Clay: To BS EN 295-1

Plastics: To BS EN 4660

Polypropylene: To BS EN 1852-1

3. Material: Plastics
4. Third party certification: BSI Kitemark certified
5. Sizes: 600 x 300 mm.
6. Outlet sizes: DN 150.
7. Silt Buckets: None
8. Covers: Durey Castings:
Product Reference: DU507C

Type: Hinged grating
Material: Ductile cast iron
Sizes: 150x150mm
Loading grades to BS EN 124: c250

9. Execution: [Pr_65_52_24/620 Installing gullies](#)

See [Pr_65_52_24_31 Floor gullies](#) in [Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems](#)

Pr_65_52_24_61 Rodding Points SURFACE WATER

1. Manufacturer: Contractors choice
2. Standard: Plastics To [BS 4660](#).and BS EN 13598-1
Cast Iron to BS437
Clay to BS EN 295-1
Concrete to BS 5911-6
3. Material: submit proposal
4. Third party certification: BSI kitemark certified
5. Sizes (nominal): DN150 and DN160
6. Cover plates: as required
7. Integral accessories: submit proposal
8. Installation: Bedding and surround: 150mm concrete
Permissible deviation in level of external covers and gratings +0 to +6mm

See [Pr_65_52_24_73 Rat barrier pipes](#) in [Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems](#)

Pr_65_54_24_04 Anti-flood valves TO SURFACE WATER OUTFALL PIPE

1. Manufacturer: Contractors Choice
2. Standard: To [BS EN 13564-1](#).
3. Third-party certification: [Water Regulations Advisory Scheme](#)-approved.
4. Connections: DN 100.
DN 150.
DN 225.
DN 300.
5. Execution: [Pr_65_54_95/610 Installation of valves generally](#)

Execution

See [Pr_40_10_57/700 Installing warning devices for underground cables and pipelines](#) in [Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems](#)

See [Pr_65_52_07/640 Jointing below ground drainage pipes of different materials or sizes using clamped flexible couplings](#) in [Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems](#)

See [Pr_65_52_24/620 Installing gullies](#) in [Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems](#)

Pr_65_54_95/610 Installation of valves generally

1. Installation: In accordance with [BS 6683](#).
2. Position:
3. Isolation and regulation valves: Provide at equipment and on sub-circuits.
4. Access: Locate valves so they can be readily operated and maintained. Locate next to equipment which is to be isolated.
5. Connection to pipework: Fit with joints that suit the pipe material.

See [Ss_50_30_06/610 Survey of existing below ground drainage access systems in Ss_50_30_06_66 Plastics inspection chamber systems](#)

See [Ss_50_30_08/615 Excavating drainage trenches generally in Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems](#)

See [Ss_50_30_08/620 Excavating and filling drainage trenches in public roads and pavings in Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems](#)

See [Ss_50_30_08/625 Excavating combined trenches for below ground drainage pipelines at different levels in Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems](#)

Ss_50_30_08/670 Class S Surround - Typical

1. Type of subsoil: Silt, clay, sandy clay - soft
2. Trench width up to 300mm above crown of pipe (maximum): DN100 nominal pipe size: 600mm
DN150 nominal pipe size: 700mm
DN225 nominal pipe size: 800mm
DN300 nominal pipe size: 900mm
3. Lower bedding
 - 3.1. Depth (minimum): External diameter of pipe x 0.17.
50mm for sleeve jointed pipes, 100mm for socket jointed pipes. Where trench bottom is uneven, increase depth by 100mm
 - 3.2. Width (minimum): Full width of trench.
 - 3.3. Compaction: Compact thoroughly.
 - 3.4. Material: Granular material to contractors choice.
Sizes to water industry specification WIS 4-08-02
4. Pipes: Dig slightly into bedding, rest uniformly on barrels and adjust to line and gradient.
5. Initial testing before placing upper bedding: To [BS EN 1610](#).
6. Upper bedding and sidefill
 - 6.1. Depth (minimum): To a distance equivalent to the external diameter of the pipe x 0.17 above crown of pipe.
 - 6.2. Width (minimum): Full width of trench.
 - 6.3. Compaction: Compact thoroughly by hand in 100mm layers
7. Initial testing before backfilling: To [BS EN 1610](#).
8. Initial backfill
 - 8.1. Depth (minimum): To 300 mm above crown of pipe.
 - 8.2. Width (minimum): Full width of trench.
 - 8.3. Compaction: By hand in 100 mm layers.
 - 8.4. Material: Protective cushion of selected fill
9. Testing after backfilling: To [BS EN 1610](#)

See [Ss_50_30_08/690 Casting concrete encasement for rigid, semi-rigid and flexible pipes in Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems](#)

See [Ss_50_30_08/695 Class Z Surround Where applicable in Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems](#)

See [Ss_50_30_08/700 Laying and jointing below ground drainage pipelines generally in Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems](#)

See [Ss_50_30_08/705 Protecting below ground drainage pipelines in trenches near foundations in Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems](#)

See Ss_50_30_08/710 Protecting below ground rigid drainage pipelines at crossovers in Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems

See Ss_50_30_08/715 Installing below ground drainage pipelines passing through structures in Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems

See Ss_50_30_08/720 Jointing below ground drainage pipes of different materials or sizes using clamped flexible couplings in Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems

See Ss_50_30_08/725 Installing bends in below ground drainage pipelines at base of discharge stacks in Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems

See Ss_50_30_08/730 Installing direct connection of ground floor WCs to below ground drainage pipelines in Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems

See Ss_50_30_08/740 Connecting to public sewers in Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems

See Ss_50_30_08/745 Installing backdrop pipelines outside access chamber walls in Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems

See Ss_50_30_08/750 Initial testing of below ground drainage pipelines in Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems

See Ss_50_30_08/755 Backfilling to below ground drainage pipelines generally in Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems

See Ss_50_30_08/760 Backfilling over concrete in Ss_15_10_30_27 Earthworks filling systems

See Ss_50_30_08/765 Laying warning marker tapes for below ground drainage in Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems

System completion

See Ss_50_30_08/810 Removal of debris and cleaning below ground drainage in Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems

See Ss_50_30_08/815 Testing and inspection of below ground drainage in Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems

See Ss_50_30_08/820 Final testing of private gravity drains and sewers up to DN300 in Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems

See Ss_50_30_08/830 CCTV inspection of private pipelines in Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems

See Ss_50_30_08/850 Documentation in Ss_50_30_08_30 Foul waste water below-ground drainage pipeline systems

Ss_50_35_08/820 Ovality Testing of Plastic Pipelines Type A

1. Immediately after backfilling: Pass through a sphere 3% smaller than the pipe bore. If sphere sticks, pass through progressively smaller sizes to establish maximum pipe deformation.
2. Immediately before Practical Completion: Pass through a sphere 5% smaller than pipe bore. If sphere sticks, pass through progressively smaller sizes to establish maximum pipe deformation
3. Pipe deformation: If maximum pipe deformation exceeds 5% of the pipe bore, retest 3 months after completion of works to establish maximum pipe deformation.

Pipe deformation must not exceed 7% of the pipe bore at any stage of testing

Ss_50_35_08/820 Final testing of adoptable and large private sewers Type B

1. **Standard:** For sewers up to and including DN 750:

England, Wales and NI: To WRc "Sewers for adoption"
Scotland: To WRc "Sewers for Scotland"

2. **Method:** Contractors Choice

Ss_50_35_08/830 CCTV inspection of adoptable pipelines Type A

1. **Requirement:** Permit the Adopting Authority or its agent to carry out and record internal CCTV inspection of pipelines and associated manholes after completion
2. **Locations to be inspected:** Final connections into sewers/culverts
3. **Illumination:** Of adequate intensity.
4. **Pipelines under highways:** Complete construction, except for laying of wearing course, before inspection.
5. **Recording**
 - 5.1. **Requirement:** Allow for continuous position recording, still photographs and stopping of the camera at any point.
 - 5.2. **Recording and documentation:** Submit.

Ω End of System

Ss_50_35_06_14

Concrete manhole and Inspection Chamber systems

Systems

Ss_50_35_06_14 Concrete manhole and Inspection Chamber systems

1. System performance: [Ss_50_30_06/210 Design of access chambers for drainage](#)
2. Standards: To BS 5911-3 and BS EN 1917, Kite mark certified, or To BS 5911-4 and BS EN 1917
3. Sizes: DN 1050
DN 1200
DN 1350
DN 1500
DN 1800
4. Shape: Circular
5. Chamber sections: Contractors choice
Jointing type: bituminous strips
6. Vortex flow control units: [Pr_65_52_01_95 Vortex flow drainage controllers](#)
7. Base: 225mm concrete minimum
8. Surround: 150mm minimum, concrete, full height
9. Backfilling: Granular material - natural, size 4/10 to BS EN 13242, to 100mm above crown of pipes, then selected fill.
compaction by hand in 100mm layers
10. Walls
 - 10.1. Precast units: [Pr_65_52_01_21 Concrete manhole chamber sections](#)
 - 10.2. Jointing and sealing: [Pr_30_31_76_16 SEALING FOR CONCRETE MANHOLES - BITUMINOUS STRIPS Type A](#); [Pr_30_31_76_16 SEALING FOR CONCRETE MANHOLES - MORTAR](#); [Pr_30_31_76_16 SEALING FOR CONCRETE MANHOLES - SEALANT Type B](#)
11. Reducing units: [Pr_65_52_01_24 Concrete manholes and soakaway cover slabs](#); [Pr_65_52_01_23 Concrete manhole transition sections](#)
12. Channels and benching
 - 12.1. Channels: [Pr_65_52_24_91 Vitrified clay access chamber channels](#)
13. Access components: [Pr_25_30_85_22 Drainage access chamber ladders](#); [Pr_25_30_85_23 Drainage access chamber steps](#)
14. Covers: [Pr_65_52_01_24 Concrete manholes and soakaway cover slabs](#)
15. Seating
 - 15.1. Seating units: [Pr_65_52_01_14 Concrete access cover seatings](#)
Brickwork
 - 15.2. Mortar: [Pr_20_31_53_10 Cement gauged designed mortars](#)
16. Covers and frames: [Pr_65_52_01_02 Access covers and frames Foul and Surface Water](#)
17. Execution: [Ss_50_35_06/685 Installing access covers and frames to chambers for below ground drainage Type A](#); [Ss_50_35_06/670 Laying conventional channels, branches and benching in access chambers for below ground drainage](#); [Ss_50_35_06/675 Laying preformed plastics channels, branches and benching in access chambers for below ground drainage](#); [Ss_50_35_06/680 Laying sealed access fittings, branches and benching in access chambers for below ground drainage](#); [Ss_50_30_06/605 Removing below ground drainage access systems](#); [Ss_50_30_06/610 Survey of existing below ground drainage access systems](#); [Ss_50_30_06/615 Formation for beddings in below ground drainage access systems](#); [Ss_50_35_06/665 Jointing concrete below ground drainage access systems](#); [Ss_50_35_06/660 Fixing steps in below ground drainage access systems](#)
18. System completion: [Ss_50_30_06/830 Documentation](#); [Ss_50_30_06/825 Handover at completion of access chamber systems](#); [Ss_50_30_06/810 Removal of debris and cleaning below ground drainage](#)

access systems; [Ss_50_30_06/820 Testing of ancillary components in below ground drainage access systems](#); [Ss_50_30_06/815 Water testing of manholes and inspection chambers](#)

System performance

See [Ss_50_30_06/210 Design of access chambers for drainage in Ss_50_30_06_66 Plastics inspection chamber systems](#)

Products

See [Pr_20_31_53_10 Cement gauged designed mortars in Ss_50_30_06_66 Plastics inspection chamber systems](#)

See [Pr_25_30_85_22 Drainage access chamber ladders in Ss_50_30_06_66 Plastics inspection chamber systems](#)

See [Pr_25_30_85_23 Drainage access chamber steps in Ss_50_30_06_66 Plastics inspection chamber systems](#)

Pr_30_31_76_16 SEALING FOR CONCRETE MANHOLES - MORTAR

1. Manufacturer: Contractors Choice
2. Standard: To [BS EN ISO 11600](#).

Pr_30_31_76_16 SEALING FOR CONCRETE MANHOLES - BITUMINOUS STRIPS Type A

1. Manufacturer: Contractors Choice
2. Standard: To [BS EN ISO 11600](#).

Pr_30_31_76_16 SEALING FOR CONCRETE MANHOLES - SEALANT Type B

1. Manufacturer: Contractors Choice
2. Standard: To [BS EN ISO 11600](#).

See [Pr_65_52_01_02 Access covers and frames Foul and Surface Water in Ss_50_30_06_66 Plastics inspection chamber systems](#)

See [Pr_65_52_01_14 Concrete access cover seatings in Ss_50_30_06_66 Plastics inspection chamber systems](#)

Pr_65_52_01_21 Concrete manhole chamber sections

1. Manufacturer: Contractors Choice
2. Standards: To [BS 5911-3](#) and [BS EN 1917](#).
3. Third party certification: BSI KITEMARK

Pr_65_52_01_23 Concrete manhole transition sections

1. Manufacturer: Contractors choice
2. Standards: To [BS 5911-3](#) and [BS EN 1917](#).
3. Third party certification: BSI Kitemark
4. Design chemical class: As per rest of manhole
5. Dimensions
 - 5.1. Size: As required

Pr_65_52_01_24 Concrete manholes and soakaway cover slabs

1. Manufacturer: Contractors Choice
2. Standards: To [BS 5911-3](#) and [BS EN 1917](#).

3. Third party certification: BSI Kitemark
4. Design chemical class: DC-1.
5. Dimensions
 - 5.1. Internal diameter: As per schedule
 - 5.2. Thickness (maximum): 175mm
 - 5.3. Openings: To suit access covers

Pr_65_52_01_95 Vortex flow drainage controllers

Shared by: [Ss_50_70_05_85 Below-ground drainage rigid attenuation systems](#)

1. Description:
2. Manufacturer: Hydro international or equally approved, submit proposals

For specific hydrobrake reference, refer to GA plans

Optimum head =
max outflow=

3. Third party certification: BBA Agreement
4. Material: Stainless steel
5. Drain down secondary outlet pipe
 - 5.1. Control type: Disc valve
 - 5.2. Operation: from surface
6. Execution: [Ss_50_35_06/655 Installing vortex flow control units in access chambers for below ground drainage](#)

Pr_65_52_24_91 Vitrified clay access chamber channels

1. Manufacturer: Contractors Choice
2. Standard: To [BS 65](#).
3. Third party certification: BSI Kitemark
4. Branch connectors
 - 4.1. Sizes: DN 100.
DN 150.
DN 225.
DN 300.
DN 400.
DN 450.
DN 500.
DN 600.
 - 4.2. Form: Contractors choice

Execution

See [Pr_20_31_53/605 Testing compressive strength of mortar](#) in [Ss_50_30_06_66 Plastics inspection chamber systems](#)

See [Ss_50_30_06/605 Removing below ground drainage access systems](#) in [Ss_50_30_06_66 Plastics inspection chamber systems](#)

See [Ss_50_30_06/610 Survey of existing below ground drainage access systems](#) in [Ss_50_30_06_66 Plastics inspection chamber systems](#)

See [Ss_50_30_06/615 Formation for beddings in below ground drainage access systems](#) in [Ss_50_30_06_66 Plastics inspection chamber systems](#)

See [Ss_50_30_06/685 Installing access covers and frames to chambers for below ground drainage](#) in [Ss_50_30_06_66 Plastics inspection chamber systems](#)

Ss_50_35_06/655 Installing vortex flow control units in access chambers for below ground drainage

1. **Benching:** Material: concrete
Profile: rise from manhole base to a level not lower than soffit of outlet pipe, then slope upwards at 10% towards soffit of inlet pipe
Topping: Concrete.
Application: Before benching concrete has set, and with dense smooth uniform finish
2. **Cast in place mounting block profile:** Rise from manhole vertically to provide plane surface for attachment of unit.

Material: concrete
3. **Outlet pipe:** Build in.
4. **Drain down secondary outlet pipe:** N/A

Ss_50_35_06/660 Fixing steps in below ground drainage access systems

1. **Fixing:** Secure to chamber wall
2. **Position:** 300 mm vertical centres staggered 300 mm horizontally, with lowest step 300 mm (maximum) above benching and top step 450 mm (maximum) below top of cover.

Ss_50_35_06/665 Jointing concrete below ground drainage access systems

1. **Inner joint surface:** Trim surplus jointing material extruded into chamber and point neatly. Ensure a smooth surface to mitigate blockage risks.

Ss_50_35_06/670 Laying conventional channels, branches and benching in access chambers for below ground drainage

1. **Main channel:** Bed solid in 1:3 cement:sand mortar.
2. **Branches**
 - 2.1. **General:** Connect to channel, preferably at half pipe level, so that discharge flows smoothly in direction of main flow.
 - 2.2. **Branches greater than nominal size 150 mm:** Connect the branch soffit level with the main drain soffit.
 - 2.3. **Connecting angles more than 45° to direction of flow:** Use three-quarter section channel bends.
3. **Benching**
 - 3.1. **Profile:** Rise vertically from top of main channel to a level not lower than soffit of outlet pipe, then slope upwards at between 3% and 10% to walls.
 - 3.2. **Topping:** Concrete
 - 3.3. **Application:** Before benching concrete has set and with dense smooth uniform finish

Ss_50_35_06/675 Laying preformed plastics channels, branches and benching in access chambers for below ground drainage

1. **Main channel:** Bed solid in 1:3 cement:sand mortar.
2. **Branches**
 - 2.1. **General:** Connect to channel, preferably at half pipe level, so that discharge flows smoothly in direction of main flow.
 - 2.2. **Branches greater than nominal size 150 mm:** Connect the branch soffit level with the main drain soffit.
 - 2.3. **Connecting angles more than 45° to direction of flow:** Use three-quarter section channel bends.

3. Benching

- 3.1. Profile: Rise vertically from top of main channel to a level not lower than soffit of outlet pipe, then slope upwards at between 3% and 10% to walls.
- 3.2. Topping:
- 3.3. Application: Before benching concrete has set.

Ss_50_35_06/680 Laying sealed access fittings, branches and benching in access chambers for below ground drainage

1. Unused branches: Fit caps.
2. Bedding: 1:3 cement:sand mortar.
3. Benching
 - 3.1. Profile: Rise vertically from top of main channel to a level not lower than soffit of outlet pipe, then slope upwards at between 3% and 10% to walls.
 - 3.2. Topping: Concrete
 - 3.3. Application: Before benching concrete has set and with dense smooth uniform finish.

Ss_50_35_06/685 Installing access covers and frames to chambers for below ground drainage Type A

1. Bedding and haunching of frames: Top of haunching 30 mm below surrounding surfaces.
2. Vertical positioning of frames: Level or marry in with levels of surrounding surfaces.
3. Permissible deviation in level of external covers and frames: +0 to -6 mm.

System completion

See [Ss_50_30_06/810 Removal of debris and cleaning below ground drainage access systems](#) in [Ss_50_30_06_66 Plastics inspection chamber systems](#)

See [Ss_50_30_06/815 Water testing of manholes and inspection chambers](#) in [Ss_50_30_06_66 Plastics inspection chamber systems](#)

See [Ss_50_30_06/820 Testing of ancillary components in below ground drainage access systems](#) in [Ss_50_30_06_66 Plastics inspection chamber systems](#)

See [Ss_50_30_06/825 Handover at completion of access chamber systems](#) in [Ss_50_30_06_66 Plastics inspection chamber systems](#)

See [Ss_50_30_06/830 Documentation](#) in [Ss_50_30_06_66 Plastics inspection chamber systems](#)

Ω End of System

Ss_50_70_05_83 Oil and petrol separator units - Plastics

Systems

Ss_50_70_05_83 Oil and petrol separator units - Plastics

1. System performance: Donstream Defender or equally approved, submit proposals
2. System manufacturer: Hydro-international. 1.2m dia.
3. Standards: To environment Agency PPG 3 and BS EN 858-1 with oil level alarm
4. Execution: [Ss_50_70_05/640 Installing oil and petrol separators](#)
5. Sizes: Inlet pipe size DN 225
Outlet pipe size DN 225

Execution

Ss_50_70_05/640 Installing oil and petrol separators

1. Standard: In accordance with [BS EN 858-2](#).
 2. Protection from weather: Install oil and petrol separators in good weather using methods suitable for the site conditions.
 3. Base
 - 3.1. Finish: To be level, smooth and without sharp projections.
 - 3.2. Thickness: 150mm concrete
 4. Surround
 - 4.1. Preparation: Prevent flotation of oil separator.
 - 4.2. Thickness (minimum): 150mm concrete
 - 4.3. Height: As required by manufacturer to suit ground conditions.
 5. Backfilling
 - 5.1. Compaction: Avoid uneven loading, damage or disruption to any pipes. Do not damage separator unit.
 - 5.2. Thickness: Granular material, 100mm above crown of pipes then selected fill
 6. Installation: Fill tank with water then encase tank and access shafts with concrete to fully support tank
- Ω End of System

Ss_50_70_05_85

Below-ground drainage rigid attenuation systems

Systems

Ss_50_70_05_85 Below-ground drainage rigid attenuation systems

1. System manufacturer: ACO or equal approved, submit proposals
Product: Wavin Aquacell Plus
2. Base:
Refer to manufacturers recommendations for thickness [Pr_20_31_16_21 Concrete General Surround and base](#)
3. Unit Size:
4. Tank capacity/size (minimum):
5. Top surface: [Pr_25_57_51_66 Geotextile Membranes Filter Permeable](#); [Pr_25_57_51_66 Geotextile Membranes Impervious - Attenuation Systems](#)
6. Surround: [Pr_20_31_16_21 Concrete General Surround and base](#)
7. Backfill: [Pr_15_31_26_96 Granular Material](#)
8. Inspection pipes: [Pr_65_52_07_88 PVC-U - Solid Wall SURFACE WATER](#); [Pr_65_52_07_88 PVC-U solid wall FOUL](#)
9. Flow control: [Pr_65_52_01_95 Vortex flow drainage controllers](#)
10. Covers and frames: [Pr_65_52_01_02 Access covers and frames Foul and Surface Water](#)
11. Execution: [Ss_50_70_05/635 Installing below ground surface water storage tanks](#)
12. System completion: [Ss_50_70_05/820 Documentation for drainage disposal systems](#);
[Ss_50_70_05/830 Hand over at completion of drainage storage, treatment and disposal systems](#);
[Ss_50_70_05/825 Verification of performance](#)

Products

Pr_15_31_26_96 Granular Material

1. General requirements:
2. Supplied by: Contractors choice
3. Standard: To [Highways England MCHW Volume 1: Specification for highway works \(SHW\)](#), clauses 801 and 803.

Water Industry Specification WIS 4-08-02

4. Execution: [Pr_15_31_26/605 Testing of suitability of fill materials before start of filling](#)

See [Pr_20_31_16_21 Concrete General Surround and base](#) in [Ss_50_30_06_66 Plastics inspection chamber systems](#)

Pr_25_57_51_66 Geotextile Membranes Filter Permeable

1. Supplied by: Contractors Choice

Pr_25_57_51_66 Geotextile Membranes Impervious - Attenuation Systems

1. Manufacturer: Visqueen 200g or quality approved, submit proposals

See [Pr_65_52_01_02 Access covers and frames Foul and Surface Water](#) in [Ss_50_30_06_66 Plastics inspection chamber systems](#)

See [Pr_65_52_01_95 Vortex flow drainage controllers](#) in [Ss_50_35_06_14 Concrete manhole and Inspection Chamber systems](#)

See [Pr_65_52_07_88](#) PVC-U solid wall FOUL in [Ss_50_30_08_30](#) Foul waste water below-ground drainage pipeline systems

See [Pr_65_52_07_88](#) PVC-U - Solid Wall SURFACE WATER in [Ss_50_30_08_85](#) Surface water below-ground drainage pipeline systems

Execution

See [Pr_15_31_26/605](#) Testing of suitability of fill materials before start of filling in [Ss_15_10_30_27](#) Earthworks filling systems

See [Pr_65_52_07/640](#) Jointing below ground drainage pipes of different materials or sizes using clamped flexible couplings in [Ss_50_30_08_30](#) Foul waste water below-ground drainage pipeline systems

See [Ss_50_30_06/685](#) Installing access covers and frames to chambers for below ground drainage in [Ss_50_30_06_66](#) Plastics inspection chamber systems

See [Ss_50_35_06/655](#) Installing vortex flow control units in access chambers for below ground drainage in [Ss_50_35_06_14](#) Concrete manhole and Inspection Chamber systems

Ss_50_70_05/635 Installing below ground surface water storage tanks

1. Weather conditions
 - 1.1. Requirement: Install below ground surface water storage tanks in good weather using methods suitable for the site conditions.
 - 1.2. Plastics pipes: Do not install or backfill at temperatures lower than 5°C.
2. Base
 - 2.1. Finish: Concrete.
 - 2.2. Thickness: Refer to manufacturers recommendations for thickness
3. Trench lining
 - 3.1. Preparation: Protect lining from damage during subsequent construction.
 - 3.2. Placing: Wrap free lengths of geotextile over top surface and overlap by 300 mm.
4. Inspection pipes: Levels and gradients as shown on drawings.
5. Tank units: Place in position. Connect units securely with manufacturer's recommended fasteners.
6. Top surface
 - 6.1. Preparation: Protect top layer from damage during subsequent construction.
 - 6.2. Placing: Tuck top layer down trench side by 100 mm.
7. Surround
 - 7.1. Preparation: Prevent flotation of tank.
 - 7.2. Thickness (minimum): Refer to manufacturers recommendations
 - 7.3. Height: Refer to manufacturers recommendations
8. Backfilling
 - 8.1. Compaction: By hand in 100mm layers
 - 8.2. Thickness: Refer to manufacturers recommendations for thickness

System completion

Ss_50_70_05/820 Documentation for drainage disposal systems

1. Operating and maintenance instructions
 - 1.1. Scope: Submit for the system, giving optimum settings for controls.
 - 1.2. Product information: Include product description, date of purchase, performance characteristics, application (suitability for use), method of operation and control, and cleaning and maintenance requirements.

- 1.3. **Format:** electronic
2. **Record drawings**
 - 2.1. **Content:** Details of system make-ups.
Location and arrangement of services. Location of inlets.
Location of outlets.
System plans and location.
 - 2.2. **Format:** Electronic.
3. **Submittal date:** At handover.

Ss_50_70_05/825 Verification of performance

1. **Requirement:** Check completed system and provide assurance of compliance with specified performance.
2. **Submittals**
 - 2.1. **Format:** Provide description of inspections, water testing results (if performed) and actions taken (if any), remedial works carried out and certification of compliance.
 - 2.2. **Timing:** At completion

Ss_50_70_05/830 Hand over at completion of drainage storage, treatment and disposal systems

1. **Tools for operation, maintenance and cleaning, including keys for access covers:** Supply at completion
Ω End of System

BDP.