

16240

**CARN GWAVAL, CHURCH ROAD,ST MARY'S,
ISLES OF SCILLY,TR21 0NA
CIVIL NBS SPECIFICATION**



JOB NUMBER : 16240



**CARN GWAVAL,
CHURCH ROAD,ST MARY'S,
ISLES OF SCILLY
TR21 0NA
CORNWALL**

CIVIL SPECIFICATIONS:

**R12 Drainage below ground
R13 Land Drainage**

STATUS: PRELIMINARY

REVISION: A

OCTOBER 2017

R12 BELOW GROUND DRAINAGE SYSTEMS

To be read with Preliminaries/ General Conditions.

GENERALLY

100 EXISTING DRAINS

- Setting out: **Before starting work, check invert levels and positions of existing drains, sewers, inspection chambers and manholes against drawings. Report any discrepancies.**
- Protection: Protect existing drains to be retained and maintain normal operation.

103 SEQUENCE OF WORK

- Maintain existing foul and surface water drainage flows during installation.

106 IN SITU CONCRETE FOR USE IN DRAINAGE BELOW GROUND

- Standard: To BS 5328-1, -2, -3 and -4, or to BS 8500-1, -2 and BS EN 206-1.
- Mix: GEN 3 or equivalent or better mix subject to approval.
- Equivalent or better mix: Submit proposals.
- Different mixes may be used for different parts of the drainage work.

110 BELOW GROUND DRAINAGE SYSTEM

- Surface water and rainwater drainage system: Yard gullies, rainwater downpipes (rest bend and bottle gully)
- Foul Drainage Sources: toilet connections, sanitary appliances,
- Land Drainage Sources – None
- Pressure Relief drainage sources – Land Drain in front of retaining wall as R16
- Pipes, bends and junctions: uPVC to BS EN 1401-1, class SN4, with flexible joints, Kitemark certified. See clauses 336-346.
- Manhole: PPIC, NEPPIC
Accessories – none
- Disposal: all foul sewers terminate to sewage treatment system as in R17, all surface water sewers terminate onto slipway
- Accessories – none

SYSTEM PERFORMANCE

211 DESIGN – BELOW GROUND DRAINAGE SYSTEMS

- Design: Below ground drainage system in accordance with BS EN 752, BS EN 1295-1 and BS EN 1610
- Ground Conditions: Please refer to South West Geotechnical Report No. 9017 dated April 2017 version 1.
- Performance Criteria: designed to comply with Building regulations
- Proposals.

PRODUCTS

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312 ADAPTORS TO PLASTICS DRAINAGE ABOVE GROUND.

- Material and standard: Plastics to BS 4660 and Kitemark certified or to BS EN 1401-1 and Kitemark certified.
- Type: DN (REFER TO ARCHITECTS SPEC) Rainwater pipe to DN150 plastic.
- Manufacturer: Polypipe.
 - Product reference: UG254 S/S Rainwater Adaptor.

316 CHANNEL DRAINS

- A heavy duty, precast polymer concrete channel drainage system with cast-in, ductile iron edge rails, heavy duty gratings with eight bolts per metre, sump unit, accessories and unions to sub surface drainage. Suitable for roads (slow moving traffic), airports, industrial, bus, coach and freight yards, military bases - especially suitable where heavy vehicles are turning - up to BS EN 1433 load class F900

S150 Range

- Manufacturer: ACO Technologies plc.
 - Web: www.aco.co.uk.
 - Tel: +44 (0)1462 816666.
 - Product reference: S150.
- Type of fall: [Constant invert].
[Stepped invert].
- Joints:
 - Type: [Drain union, PVC-U].
[Foul air trap, PVC-U].
[Roddable trap, PVC-U].
 - Size: [160 mm diameter].
[200 mm diameter].
- Accessories: [Sump unit top and base assembly].
[Sump unit raising piece].
[Endcap, closing piece].
[Endcap, outlet].
[Step connectors].
[Gully assembly comprising top, base, bucket and grating].

S200 Range

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- Manufacturer: ACO Technologies plc.
- Web: www.aco.co.uk.
- Tel: +44 (0)1462 816666.
- Product reference: S200.
- Accessories: [Endcap, closing piece].
[Endcap, outlet].
[Gully assembly comprising top, base, bucket and grating].

S300 Range

- Manufacturer: ACO Technologies plc.
- Web: www.aco.co.uk.
- Tel: +44 (0)1462 816666.
- Product reference: S300.
- Joints:
 - Type: [Drain union, PVC-U].
[Foul air trap, PVC-U].
 - Size: [160 mm diameter].
[200 mm diameter].
- Accessories: [Endcap, closing piece].
[Endcap, outlet].
[S300 gully assembly comprising top, base, bucket and grating].

329 PIPES, BENDS AND JUNCTIONS - SUPPLY

- Pipes and fittings: From same manufacturer for each pipeline.

344 PIPES, BENDS AND JUNCTIONS - PLASTICS - STRUCTURED WALL (TRAFFICKED AREAS)

- Standard: BS EN 13476-1-2-3 / WIS 4-35-01
 - Supplementary requirements: Puncture resistance, jetting resistance and longitudinal bending to requirements of WIS 4-35-01, issue 2.
- Material: PE.
- Manufacturer: Polypipe .
 - Product reference: PS660, PS662, PS630, PS632.
- Recycled content: None.
- Sizes: DN 150, 225, 300, 375, 400, 525.
- Jointing type: Spigot and socket.

- 346 PIPES, BENDS AND JUNCTIONS - PVC-U - SOLID WALL (NON-TRAFFICKED AREAS)
Pipes, bends and junctions: PVC-U to BS EN 1401-1, class SN4, with flexible joints, Kitemark certified.
- Manufacturer: Polypipe Underground
 - Product reference: UG430, UG460, UG630, UG660
 - Recycled content: 10% or none permitted. If not, please refer to BS EN 1401-1 – places restrictions on sources of recycled content. Refer to Annex A
 - Sizes: DN100, DN150
 - Jointing: Spigot and Socket
- 352 ACCESS POINTS – PLASTICS
- Standard: To BS 4660 and Kitemark certified. To BS EN 13598-1, or Agrément certified
 - Manufacturer: Polypipe
 - Nominal Diameter: 0.5m
 - Access covers: A15, Pedestrian use, D400 Trafficked areas.
- 357 CONNECTORS - SADDLE
- Standards:
 - Cast iron: To BS 437 and Kitemark certified, or Agrément certified.
 - Clay: To BS EN 295-1 and Kitemark certified, or Agrément certified.
 - Concrete: To BS 5911-6 and Kitemark certified, or Agrément certified.
 - Plastics: To BS 4660 and Kitemark certified, or Agrément certified.
 - Material: Plastics.
 - Manufacturer: Polypipe
 - Product reference: UG605 (DN150)
 - Sizes: DN150.
- 371 RODDING POINTS
- Standards: Plastics: to BS 4660 and Kitemark certified, To BS EN 13598-1, or Agrément certified
 - Material – PP/Aluminium
 - Manufacturer: Polypipe
 - Product Reference: UG422
- 379 WARNING MARKER TAPES FOR FOUL AND SURFACE WATER PIPELINES
- Type: Heavy gauge polyethylene.
 - Manufacturer: Stokbord & Centritile or similar approved.
 - Product reference: _____.
 - Colour: Red with black lettering.
 - Widths: 150mm.
 - Message: FOUL SEWER BELOW / SURFACE WATER SEWER BELOW
 - Wire detection aid: Not required.
- 401 INSPECTION CHAMBERS - PLASTICS
- Standard: To BS 7158, BS EN 13598-1, BS EN 13598-2 or Agrément certified.
 - Diameter: 450mm
 - Manufacturer: Polypipe
 - Bases:
 - Product reference: UG440, UG670, ICDB3 (Non Man Entry), ICDB1 (Non Man Entry),
 - Shaft units:

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- Product reference: UG431, ICDR1(Non Man Entry), ICDR2 (Non Man Entry), ICDR4 (Non Man Entry), ICDR8 (Non Man Entry)
- Access covers and frames:
 - Product reference: ICDC1 (Non Man Entry), UG444, UG511, UG512 (square)
 - Loading grades to BS EN 124: A15 for pedestrian use, B125 for light traffic, C250 for slow moving heavy traffic and D400 in public roads.

471 ACCESS COVERS AND FRAMES - NEPPIC

- Standards: To BS EN 124
- Types: NEPPIC reducer
- Manufacturer: Polypipe
- Product reference: ICDC1 – square cover and frame
UG514 – restricted access reducer
- Material: Polypropylene
- Finishes: Flush with ground
- Sizes: 350mm entry – 450mm entry and chamber size
- Loading grades to BS EN 124: B125
- Edging trims: plastic
- Accessories - none

472 ACCESS COVERS AND FRAMES - PPIC

- Standards: To BS EN 124
- Types: PPIC
- Manufacturer: Polypipe
- Product reference: UG 513 – Square ductile Iron cover (B125) – for use in driveway
UG 512 – square polypropylene cover
- Material: Polypropylene/cast iron
- Finishes: Flush with ground
- Sizes: 450mm entry and chamber size
- Loading grades to BS EN 124: tested for light vehicular traffic on driveways
- Edging trims: plastic
- Accessories – none

473 INTERNAL ACCESS COVERS AND FRAMES – PPIC R

- Standards: To BS EN 124
- Types: PPIC
- Manufacturer: Polypipe
- Product reference: UG 513 – Square ductile Iron cover (B125) – for use in driveway
UG 512 – square polypropylene cover
- Material: Polypropylene/cast iron
- Finishes: Flush with ground
- Sizes: 450mm entry and chamber size
- Loading grades to BS EN 124: tested for light vehicular traffic on driveways
- Edging trims: plastic
- Accessories – 450 x 450 x 41mm Triple Sealed & Locking Aluminium Recessed Manhole Cover.

483 CONCRETE

- Standard: BS 8500-2
- Concrete: Please see E10 for details, designated prescribed – GEN1, GEN3 and C20.

492 GEOTEXTILE MEMBRANES – FILTER

- Manufacturer: Terram
- Product Reference – T1000

496 GRANULAR MATERIAL – NATURAL

- Standards: To Water Industry Specifications WIS 4-08-02 (as amended by WIS 4-08-02A, 2008), which incorporates BS 882, BS 1047, BS 1377, BS 3797 and BS 8005
- Supplier: Chosen by contractor, can be on site material if suitable.
- Recycled content: specified by supplier
- Size: dependant on locations – see Execution clauses in this section, and in section R16, R17 and R18 if used

496 GRANULAR MATERIAL – NATURAL

- Standards: To Water Industry Specifications WIS 4-08-02 (as amended by WIS 4-08-02A, 2008), which incorporates BS 882, BS 1047, BS 1377, BS 3797 and BS 8005
- Manufacturer: Chosen by Contractor.
- Material: suitable local stone
- Recycled content: specified by supplier
- Size: dependant on locations – see Execution clauses in this section, and in section R16, R17 and R18 if used

498 GRANULAR SUB-BASE MATERIAL

- Standard: to Highways Agency Volume 1, 'Specification for Highway Works', Type 1 Unbound mixtures for sub-base.
- Recycled content – as specified

EXECUTION

610 STRIPPING OUT

- Extent of Stripping out – across site.
- Exposed ends of existing drainage to be abandoned – seal with concrete (general)

613 EXCAVATED MATERIAL

- Turf, topsoil, hardcore etc: set aside for use in reinstatement.

616 SELECTED FILL FOR BACKFILLING

- Selected fill: As-dug material, free from vegetable matter, rubbish, frozen soil and material retained on a 40mm sieve.
- compaction: by hand in 100mm layers

623 LOWER PART OF THE TRENCH – GENERAL

- Trench from bottom up to 300 mm above crown of pipe: With vertical sides and of a width as small as practicable but not less than external diameter of pipe plus 300 mm.

624 LOWER PART OF TRENCH - TRANSITION DEPTH

- Depth of cover exceeding transition depth: Trench width up to 300 mm above crown of pipe to be not more than:
- | Nominal pipe size DN | 100 | 150 | 225 | 300 |
|---------------------------|-----|-----|-----|-----|
| Transition depth (m) | 6.0 | 5.4 | 4.0 | 2.9 |
| Maximum trench width (mm) | 600 | 700 | 800 | 900 |

631 TYPE OF SUBSOIL

- General: Where type of subsoil at level of crown of pipe differs from that stated for the type of pipeline, obtain instructions before proceeding.

635 FORMATION FOR BEDS

- Timing: Excavate to formation immediately before laying beds or pipes.
- Mud, rock projections, boulders and hard spots: Remove. Replace with consolidated bedding material.
- Local soft spots: Harden by tamping in bedding material.
- Inspection of excavated formations: Give notice.

663 CLASS P FULL DEPTH GRANULAR SUPPORT

- Type of subsoil – II or III
- Granular material: To Water Industry Specifications WIS 4-08-02 (as amended by WIS 4-08-02A, 2008), which incorporates BS 882, BS 1047, BS 1377, BS 3797 and BS 8005
- Pipe size (DN) Nominal single Graded
- size (mm) size (mm)
- 100 & 150 10 Not permitted
- 225 & 300 10 or 20 20 to 5
- Bedding: Granular material, compacted over full width of trench.
- Thickness (minimum): 100 mm.
- Pipes: Digging slightly into bed, resting uniformly on their barrels and adjusted to line and gradient.
- Granular support:
- Timing: Laid after successful initial testing.
- Depth: To slightly above crown of pipe.
- Compaction: By hand.
- Backfilling:
- Material/ Depth: Either:
- Protective cushion of selected fill, free from vegetable matter, rubbish, frozen soil and material retained on a 40 mm sieve, to 300 mm above crown of pipe, or:
- Additional granular material, to 100 mm above crown of pipe.
- Compaction: By hand in 100 mm layers.

661 CLASS O BEDDING

- Type of Subsoil: I to VII
- Granular Material: Manufactured, Natural, Contractors choice, submit proposals
- sizes. To waster industry specification. WIS 4-08-02 (as amended by WIS 4-08-02A, 2008)
- Bedding:
- Material: Granular, compacted over full width of trench.

- Thickness (minimum): 100mm
- pipes: Dig slightly into bedding, rest uniformly on barrels and adjust to line and gradient.
- Initial testing before backfilling: see clause 705, insert required or not required
- Support:
 - material: Granular
 - depth: to slightly above crown of pipe
 - Compaction: By hand.
- backfilling:
 - material: protective cushion of selected fill to 300mm above crown of pipe, or additional granular material to 100mm above crown of pipe,
 - depth: 150mm (250mm for adoptable sewers) above crown of pipe
 - Compaction: By hand in 100mm layers.

665 CLASS Q SURROUND

- Type of Subsoil: I to VII
- Granular Material: Manufactured, Natural, Contractors choice, submit proposals sizes. To waster industry specification. WIS 4-08-02 (as amended by WIS 4-08-02A, 2008)
- Bedding:
 - Material: Granular, compacted over full width of trench.
 - Thickness (minimum): 100mm
- pipes: Dig slightly into bedding, rest uniformly on barrels and adjust to line and gradient.
- Initial testing before backfilling: Not Required
- Surround:
 - material: Granular
 - depth: to 75mm above crown of pipe
 - Compaction: By hand.
- Flexible filler:
 - material: Compressible material/flexible filler
 - laying: Continuously over completed surround before laying protection slabs
- Protection Slabs
 - Material: concrete
 - type: Required
 - thickness: 75mm or as specified
 - reinforcement: Not Required
- Backfilling: Suitably Excavated Material free of all organic material and rubbish, Frozen soil and material retained on a 40mm sieve.

673 CLASS W GRANULAR SURROUND

- Type of subsoil – II or III
- Timing: Excavate trench after hardcore has been laid and compacted.
- Granular material to Water Industry Specifications WIS 4-08-02 (as amended by WIS 4-08-02A, 2008), which incorporates BS 882, BS 1047, BS 1377, BS 3797 and BS 8005
- Pipe size (DN) Nominal single size (mm)

100 & 150	10
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- 225 & 300 10 or 20
- Granular bedding, compacted over full width of trench:
 - Thickness (minimum): 100 mm.
 - Pipes: Digging slightly into bed, resting uniformly on their barrels and adjusted to line and gradient.
 - Granular surround:
 - Timing: Lay after successful initial testing.
 - Depth: To 100 mm above crown of pipe.
 - Compaction: By hand.
 - Backfilling:
 - Material: Hardcore or granular material.
 - Depth: Up to slab formation.
 - Compaction: In 300 mm (maximum) thick layers.
- 676 CLASS Y CONCRETE SURROUND FOR SHALLOW PIPES UNDER BUILDINGS
- Type of subsoil: type II or III
 - Locations: Where crown of pipe is less than 300 mm below underside of slab.
 - Timing: Excavate trench after hardcore has been laid and compacted.
 - Concrete blinding (over full width of trench): Allow to set before laying pipes.
 - Thickness: 25 mm.
 - Width: full width of trench
 - Allow to set before proceeding
 - Pipes:
 - Temporary support: Folding wedges of compressible board. Prevent flotation.
 - Height above blinding (minimum): 100 mm.
 - adjust pipes to line and gradient
 - Surround: Encase pipe in concrete of same mix as slab and cast integrally with the slab and width to be external diameter of pipe +200mm
 - Extent of surround: To within 150 mm of next nearest flexible joint.
- 678 CLASS Z CONCRETE SURROUND
- Type of subsoil: type II or III
 - Concrete blinding (over full width of trench): Allow to set before laying pipes.
 - Thickness: 25 mm.
 - Temporary pipe support: Folding wedges of compressible board. Prevent flotation.
 - clearance under pipes (minimum) 100mm
 - Surround, to full width of trench:
 - adjust pipes to line and gradients
 - Timing: After successful initial testing.
 - Depth: To 150 mm above crown of pipe or as shown on drawings.
 - Vertical construction joints: At face of flexible pipe joints using 18 mm thick compressible board pre-cut to profile of pipe.
 - Socketed pipes: Fill gaps between spigots and sockets with resilient material to prevent entry of concrete.
- 680 PIPE RUNS NEAR FOUNDATIONS
- Class Z concrete surround: Provide in locations where bottom of trench is lower than bottom of foundation. Measurements are horizontal clear distances between nearest edges of foundations and pipe trenches.
 - Trenches less than one metre from foundations: Top of concrete surround not lower than bottom of foundation.

- Trenches more than one metre from foundations: Top of concrete surround not lower than D mm below bottom of foundation, where D mm is horizontal distance of trench from foundation, less 150 mm.
- 681 COMBINED TRENCHES
- Pipes at different levels in common trench:
 - Subtrench: Permissible provided soil of step is stable and unlikely to break away.
 - Subtrench not permissible: Relate trench depth to lower pipe. Increase thickness of bedding to upper pipe as necessary.
 - Lower pipe: Backfill with compacted granular material to not less than half way up higher pipe.
- 683 LAYING PIPELINES
- Laying Pipes: To true line and regular gradient on even bed for full length of barrel with sockets (if any) facing up the gradients
 - Ingress of debris: Seal exposed ends during construction.
 - Timing: Minimize time between laying and testing.
- 685 JOINTING PIPELINES
- Connections: Durable, effective and free from leakage.
 - Junctions, including to differing pipework systems.
- 689 PIPELINES PASSING THROUGH STRUCTURES
- Pipelines that must be cast in or fixed structures (including manholes, catchpits and chambers): Provide 600mm 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.
 - Distance to rocker pipe from structure (maximum): 150mm
 - Provision for movement for pipelines that need not be cast in or fixed to structures
 - Rocker Pipes as specified above; or
 - Openings in the structures to give 50mm clearance around the pipeline.
- Closely Fit a rigid sheet to each side of opening to prevent ingress of fill or vermin.
- 691 BENDS AT BASE OF SOIL STACKS/ RAIN WATER PIPE CONNECTIONS
- Unless specified otherwise, use nominal 90° rest bend with a minimum radius of 200mm to centreline of pipe.
 - Invert of horizontal drain at base of stack to be not less than 450mm below centreline of lowest branch pipe.
 - Stabilize bend(s) by bedding in concrete without impairing the flexibility of couplings.
 - Refer to MBA Details Sheets
- 693 DIRECT CONNECTION OF GROUND FLOOR WCS TO DRAINS
- Drop from crown of WC trap to invert of drain must not exceed 1.3m
 - Horizontal distance from the drop to a ventilated drain must not exceed 6m.
 - Refer to MBA Details Sheets
- 697 INSTALLING FLEXIBLE COUPLINGS
- Ends of pipes to be joined: cut cleanly and square
 - 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 sealing area

- Clamping Bands: tighten carefully to make gastight and watertight seals.

705 INITIAL TESTING OF PIPELINES

- Before testing:
- Cement Mortar Jointing: leave 24 h.
- Solvent Welded Pipelines: leave 1 h.

711 TRENCH SUPPORTS

- Removal of trench supports and other obstacles: Sufficient to permit compacted filling of all spaces.

715 BACKFILLING TO PIPELINES

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

718 BACKFILLING OVER CONCRETE

- Minimum times from placing concrete:
 - Backfilling generally: 24 hours.
 - Heavy compactors and traffic loads: 72 hours.

728 LAYING WARNING MARKER TAPES

- Installation: during backfilling, lay continuously over pipelines
- Depth: 300-400mm
- Pipelines deeper than 2m: Lay an additional tape 600mm over the top of the pipeline

732 TEMPORARY BRIDGES

- Trench bridges: As necessary to prevent construction traffic damaging pipes after backfilling.

734 INSTALLING ACCESS POINTS AND GULLIES

- Bedding: 100mm suitable 'as dug' or granular material.
- Surround: 150mm sidefill of suitable 'as dug' or granular material.
- Backfilling: 10mm single size to BS802. – compacting by and in 100mm layers
- Concrete collar: 150mm wide by 225mm deep in private driveways
- 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): joints with 1:3 cement:sand mortar
- Exposed openings: Fit purpose made temporary caps. Protect from traffic

736 INSTALL RODDING POINTS

- Bedding and surround:
 - Material: concrete (general)
 - Thickness (minimum): 150mm
 - Permissible deviation in level of external covers and grating: +0 to -6mm

741 INSTALLING INSPECTION CHAMBERS - PPIC

- Bedding:
 - Material: Granular Material
 - Thickness (minimum): 100mm

- Surround:
 - Material: granular material
 - Thickness (minimum): 100mm granular material
- Backfilling
 - 150mm surround of the granular material: selected site material with no stones over 25mm compacting by hand in 100mm layers.
- Concrete Collar
 - Material: Concrete
 - Thickness (minimum): 150mm
 - Width (minimum) 300x225mm

742 INSTALLING INPECTION CHAMBERS - NEPPIC

- Bedding:
 - Material: Granular Material
 - Thickness (minimum): 100mm
- Surround:
 - Material: granular material
 - Thickness (minimum): 100mm granular material
- Backfilling
 - 150mm surround of the granular material: selected site material with no stones over 25mm compacting by hand in 100mm layers.
- Concrete Collar
 - Material: Concrete
 - Thickness (minimum): 150mm
 - Width (minimum) 300x225mm

757 – LAYING CONVENTIONAL CHANNELS, BRANCHES AND BENCHING

- Main channel: Bed solid in 1:3 cement: sand mortar.
 - Branches: Connect to channel, preferably at half pipe level, so that discharge flows smoothly in direction of main flow.
 - Branches greater than nominal size 150 mm: Connect with the soffit level with that of the main drain.
 - Connecting angle more than 45° to direction of flow: Use three-quarter section channel bends.
- Plastics channels: Use clips or ensure adequate mechanical key when bedding on to mortar.
- Benching: Form in concrete, to rise vertically from top of main channel to a level not lower than soffit of outlet pipe, then slope upwards at 10% to walls.
 - Topping: For private sewers – Grade C20 concrete.
 - Application: Before benching concrete has set, and with dense smooth uniform finish.

759 LAYING PREFORMED PLASTICS CHANNELS, BRANCHES AND BENCHING

- Main channel: Bed solid in 1:3 cement:sand mortar.
 - Branches: Connect to channel, preferably at half pipe level, so that discharge flows smoothly in direction of main flow.
 - Connecting angles more than 45° to direction of flow: Use three-quarter section channel bends.
- Bedding: 1:3 cement:sand mortar. Use clips or ensure adequate mechanical key.
- Benching:
 - Material: Concrete (general).

- Profile: Rise vertically from top of main channel to a level not lower than soffit of outlet pipe, then slope upwards at 10% to walls.
- Topping:
Material: C35 Concrete (structural) or 1:3 Cement:sand mortar.
Application: Before benching concrete has set, and with dense smooth uniform finish.

761 LAYING SEALED ACCESS FITTING, BRANCHES AND BENCHING

- Unused branches: Fit Caps
- Bedding: 1:3 Mortar
- Benching
- Material: Concrete (general)
Profile: 10% fall from manhole walls to component rim
- Topping: Material
- Material: concrete
 - Before benching concrete has set, and with dense smooth uniform finish

773 INSTALLING ACCESS COVERS AND FRAMES

- Seating: Brickwork
- Bedding and haunching of the frames: Continuously
 - material: m1 mortar
 - top of haunching: 30mm below surrounding surfaces.
- horizontal positioning of frames
 - centred over openings
 - square with joints in surrounding paving.
- Vertical position of frames:
 - level; or
 - marry in with levels of surrounding paving.
- permissible deviation in level of external covers and frames: +0 to -6mm

776 EXPOSED OPENINGS IN INSPECTION CHAMBERS, ACCESS POINTS, FITTINGS AND EQUIPMENT

- General: Fit purpose made temporary caps. Protect from site traffic.

COMPLETION

901 REMOVAL OF DEBRIS AND CLEANING

- Preparation: Lift covers to manholes, inspection chambers and access points. Remove mortar droppings, debris and loose wrappings.
 - Timing: Before cleaning, final testing, CCTV inspection if specified, and immediately before handover.
- 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.
- Washings and detritus: Do not discharge into sewers or watercourses.
- Covers: Securely replace after cleaning and testing.

903 TEMPORARY MEASURES

- Water used to stabilize tanks and the like during installation: Drain

911 TESTING/ INSPECTION

- Dates for inspection: Give notice.
 - period of notice: as agreed with contractor
- Attendance: Provide water, assistance and apparatus as required.
- Remedial work: Repair leaks.

921 WATER/ AIR TESTING OF GRAVITY DRAINS AND PRIVATE SEWERS UP TO DN 300

- before testing
 - cement mortar jointing: leave 24h
 - solvent welded pipelines: leave 1h
- Initial testing: To ensure that pipelines are sound and properly installed, air test short lengths to BS 8301, clause 25.6.3 immediately after completion of bedding/ surround.
- Final testing: For final checking and statutory authority approval, water test to BS 8301, clause 25.6.2 all lengths of pipeline from terminals and connections to manholes/ chambers and between manholes/ chambers.

941 WATER TESTING OF MANHOLES/ INSPECTION CHAMBERS

- Timing: Before backfilling.
- Standard:
 - Exfiltration: To BS EN 1610, clause 13.3.
 - Method: Testing with water (method W)
 - Infiltration: No identifiable flow of water penetrating the chamber.

971 CCTV INSPECTION OF PRIVATE PIPELINES

- General: Carry out and record internal inspection using CCTV equipment.
 - Locations to be inspected: _____ .
- Illumination: Of adequate intensity.
- Recording: Provide continuous position recording, still photographs and stopping of the camera at any point.
 - Copy of videotape recording: Submit.

976 CCTV INSPECTION OF ADOPTABLE PIPELINES

- General: Permit the Adopting Authority or its agent to carry out and record internal CCTV inspection of pipelines and associated manholes after completion.
 - Locations to be inspected: _____ .
- Pipelines under highways: Complete construction, except for laying of wearing course, before inspection.

978 LIFTING KEYS

- Lifting Keys: Supply suitable keys for each type of access cover.
 - Timing: at completion

980 INSTRUCTIONS

- manufacturer's users instructions – documentation to be provided by contractor.

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CIVIL NBS SPECIFICATION

