

SECTION 733 - CONDUITS AND PITS FOR UNDERGROUND WIRING AND CABLING

##This section cross-references Section 173.

733.01 GENERAL

(a) Scope

This section covers the requirements for the supply and installation of conduits and pits, for underground electrical wiring and communications cabling within the state of Victoria for works supervised by VicRoads. This document shall be read in conjunction with VicRoads Standard Drawings and individual contract documents.

(b) General Requirements

The contractor shall be responsible for the installation of all electrical and communications conduits, electrical cable pits, telecommunications pits and any other associated works covered under this specification in accordance with individual contract documents.

Conduits shall be installed in accordance with the relevant utility and industry codes, regulations and standards applying to their intended use.

All conduit and cable pit installation works for electrical wiring shall be carried out by, or under the direct site supervision of, a registered electrical contractor as required by the Chief Electrical Inspector. In addition, the registered electrical contractor shall hold appropriate VicRoads pre-qualification for the work specified.

(c) Pre-Qualified Contractor

All works associated with the installation and of all conduits and pits covered under this specification shall be undertaken by contractors that are appropriately pre-qualified as detailed in Table 733.011 below.

Table 733.011 Contractor Pre-Qualification Level Requirements

Conduits and pits for	Pre-Qualification Level
Works on or associated with traffic signals	STS1
All other on-road electrical works	STCE
Works associated with VicRoads owned communications networks	STCE
Works associated with telecommunications carrier networks	SCTV (must hold AMCA licence)

Sub-contractors undertaking works covered under this specification shall be pre-qualified at the appropriate level under the VicRoads contractor pre-qualification scheme, in the sub-contractors own right.

733.02 MATERIALS

(a) Conduits

Unless otherwise specified, the Contractor shall provide all plastic conduits which shall comply with the following standards as appropriate:

- AS 1345 – Identification of pipes, conduits and ducts
- AS/NZS 2053 – Conduits and fittings for electrical installations,

All conduits installed underground for electrical wiring, traffic signals and traffic services shall be heavy duty grade, rigid, solid wall, orange, UPVC conduit to AS/NZS 2053.2;

All conduits installed underground for communication cables shall be heavy duty grade, rigid, solid wall, white UPVC communication conduit complying with AS/NZS 2053.2; and complying with all relevant Australian Communications and Media Authority (ACMA) publications and standards.

The use of HDPE continuous conduit for bored road crossing is permitted. Where HDPE continuous conduit is used for electrical cables, it shall not be smaller in internal diameter than the specified UPVC heavy duty conduit. See Table 733.021 for typical conduit sizes.

Where HDPE continuous conduit is used for communications cables, it shall not be smaller in internal diameter than the dimensions shown in Table 733.021 below.

Table 733.021 Typical Conduit sizes

	100mm HD UPVC Conduit		HDPE Continuous Conduit	
Electrical	114.1mm OD	101.7mm ID	125mm OD	103mm ID*
Comms	114mm OD	104.5mm ID	110mm OD	90mm ID

* HDPE Continuous conduit with a smaller ID than shown above shall not be used in place of 100mm HD UPVC.

NOTE: Profile Wall Smooth Bore conduits and sandwich wall type conduits shall not be used for any VicRoads works.

(b) General Arrangements and Specified Conduit Sizes

General arrangements and specified conduit sizes for VicRoads works shall be in accordance with the relevant VicRoads specifications, guidelines and standard drawings.

Relevant standard drawings for traffic signal and other general works are listed in Table 733.022.

Relevant standard drawings for managed motorway works are listed in Table 733.023

Table 733.022 List of Standard Drawings for Street Lighting, Traffic Signals and General Works

Drawing Number	Title
TC-1062	Electrical Distribution Cabinet – Type 1
TC-1071	Impact Absorbing Pole – Electrical Installation Details
TC-1072	Slip Base Pole – Electrical Installation Details
TC-1074	Electrical Distribution Cabinet – Type 2
TC-1200	Foundation for pedestals
TC-1201	Bored pile foundations for traffic signal posts
TC-1202	Spread footing for JUP's MA's and JUMA's
TC-1206	Assembly and installation of consumers mains and meter box
TC-1207	General layout – traffic signal ducting
TC-1208	Underground conduit warning Sign
TC-1210	Cable pit former – 600mm Dia
TC-1211	Heavy duty cable pit and cover
TC-1220	Cable pit access cover and frame 600mm Dia

TC-1230	Cable pit – Installation details
TC-1310	Detector pit and lid
TC-1320	Detector pit – Installation details
TC-2013	Camera column – Bored pile foundation installation details

Table 733.023 List of Standard Drawings for Managed Motorway Works

Drawing Number	Title
TC-2200	600mm round electrical cable pit
TC-2201	750mm round electrical cable pit
TC-2202	750mm round communication junction pit
TC-2203	P8 communication pit
TC-2204	Electrical and communication trenches
TC-2206	Multiple pit arrangements
TC-2207	General arrangement at gantries
TC-2208	General arrangement at an interchange
TC-2209	General arrangement at communication hut
TC-2210	Transition to bridge barrier – Typical arrangement
TC-2211	Typical arrangement at existing structures
TC-2215	General arrangement at point of supply
TC-2216	Cable pit former 750mm Dia to suit 600mm Dia lid
TC-2217	Cable pit access cover, frame and concrete surround 750mm Dia
TC-2220	VLS Pole and Base Plate
TC-2223	RC3 / TTS Pole Typical Arrangement
TC-2230	Typical single ITS Field cabinet foundation
TC-2231	Typical distribution cabinet Type 1
TC-2232	Typical distribution cabinet Type 3
TC-2233	VLS Pole foundation concrete
TC-2235	RC3 pole spread foundation Type 1 – typical arrangement
TC-2236	RC3 pole spread foundation Type 2 – typical arrangement
TC-2239	Double ITS Field cabinet foundation
TC-2250	Cantilever gantry for 2 lanes metered (sheet 1 of 2)
TC-2252	Portal gantry for 3 or more lanes metered (sheet 1 of 3)
TC-2264	Foundation conduit details - Typical arrangement (non-accessible gantry)
TC-2286	Foundation conduit details – Typical arrangement (accessible gantry)
TC-2297	TIRTL in-barrier - typical installation

TC-2298	TIRTL kerb - typical installation
TC-2302	Communications Hut Access arrangements and compound layout plan

(c) Bedding and Backfill Materials

Unless otherwise specified, the Contractor shall supply all bedding and backfill material in accordance with the requirements of Clause 733.06.

(d) Pits

Unless otherwise specified, the Contractor shall supply all pits and lids in accordance with the requirements of Clauses 733.07 and 733.08.

733.03 EXCAVATION, BORING AND TRENCHING

Unless otherwise specified, all conduits under a road carriageway shall be installed by boring.

HOLD POINT: DETAILED PROPOSALS FOR BORING UNDER CARRIAGEWAYS SHALL BE SUBMITTED TO THE SUPERINTENDENT FOR REVIEW TWO WEEKS PRIOR TO THE PROGRAMMED COMMENCEMENT OF WORK.

Boring by water jetting is not be permitted.

The annulus between the bore and the carrier conduits shall be filled by low thermal resistivity, flowable and pumpable grout mixture (comprising sand, cement and suitable additives such as flowable fill). The grout mixture shall be suitable for backfilling around conduits carrying high voltage electrical cables and shall have the following properties:

- low exothermic temperature generation during curing;
- a thermal resistivity (TR) value of less than 1.2K.m/W when fully dried;
- a maximum grout flow time through a standard flow cone test of 30 seconds in accordance with AS 1478.2;
- compressive strength in the range of 0.5 to 2.0 MPa at 28 days;
- a maximum heat of hydration of 35°C when tested in an insulated 300mm x 300mm cube.

Grouting shall fill the voids at low injection pressures without causing deformation to the conduits within the bore holes. The ends of conduits shall be sealed watertight to prevent ingress of grout.

HOLD POINT: BEFORE BACKFILLING THE BORE ACCESS EXCAVATION, THE PRESSURE GROUTING SHALL BE INSPECTED BY THE SUPERINTENDENT OR REPRESENTATIVE.

Unless otherwise shown on the drawings or specified, borings and trenches shall comply with the depth requirements specified in Table 733.031 below.

Table 733.031 Minimum Conduit Cover

Location	Minimum Depth of Cover (mm)	Measured from
Under freeway pavement	1200	Top of conduit to pavement surface
Under Arterial Road pavement	1200	Top of conduit to pavement surface
Under local road pavement	600	Top of conduit to pavement surface
Under open drains	750	Top of conduit to invert level of drain

Under footpath or unpaved areas (low voltage circuits e.g. 240Vac)	600	Top of conduit to finished surface level
Under footpath or unpaved areas (Extra low voltage and comms conduits only)	300	Top of conduit to finished surface level
Under tram tracks	1200	Top of conduit to top of track surface level
*Under railway-road crossings	2000	*Top of conduit to top of track surface level

* An underground conduit warning sign shall be installed in accordance with VicRoads Standard Drawing TC-1208

Where minimum depth of cover is not possible, the contractor may submit a request for an exemption for consideration by the Superintendent. The contractor shall not install any conduits with a reduced depth of cover unless approved by the Superintendent in writing

Where a reduced depth of cover is approved, a warning sign shall be installed on the ground above the conduit warning of the shallow conduit. The warning sign shall be aluminium or similar weather resistant material with the warning engraved into the surface.

Open trenching shall be permitted in unpaved areas and across unpaved subgrade areas.

Where open trench methods are accepted, the lines of trenches wherever practical, shall be straight and form the shortest link between terminals.

Where the open trench method of crossing under a carriageway pavement is accepted, the line of the trench shall be at right angles to the carriageway, and the edges of trenches located within a road pavement shall be sawcut.

Trench/conduit depth shall be maintained between pits and graded to avoid low points in the conduit run.

Any drains or services disturbed during the excavation or laying of conduits shall be immediately reported to the Superintendent and shall be reinstated promptly.

733.04 INSTALLATION OF CONDUITS

(a) General

All conduits shall be installed as shown on the VicRoads Standard Drawings and Contract specific drawings, or as otherwise specified.

All conduits for electrical and communications cabling shall be installed to conform to the relevant requirements of controlling legislation, regulations, industry codes and standards, including:

- AS/NZS 3000 Electrical installations (Australian/New Zealand Wiring Rules)
- AS/ACIF S009 Installation requirements for customer cabling (Wiring Rules), and any other relevant requirements of the Australian Communications and Media Authority (ACMA) for connections to telecommunication carriers network.

Installation of conduits shall be carried out in accordance with the approved installation method for the type of conduit as shown in Table 733.041.

Table 733.041 Approved Conduit Types

Conduit Type	Installation Method
HD UPVC Plain	Thrust bore Open trench
HDPE continuous (must have ID not less than that of 100 mm HD UPVC for electrical and 90 mm HD UPVC for communications)	Directional Bore

Conduits installed for VicRoads works shall be installed to the following requirements:

- (i) all conduits shall terminate in a pit;
- (ii) only one size and type of conduit shall be used for a complete run between pits; unequal size conduits shall not be joined in the ground;
- (iii) all conduits shall be temporarily sealed prior to cabling to avoid blockage;
- (iv) Changes in direction of conduit shall only be made at approved cable pits.
- (v) changes in conduit direction to enable entry into the base of a cable pit may be by means of a sweep bend as shown in Table 733.042 below.
- (vi) Elbows and 'tees' shall not be used.;
- (vii) all conduit joints shall be correctly prepared and sealed with approved solvent cement;
- (viii) conduits for detector cables shall be installed as shown in VicRoads Standard Drawings TC-1207 and TC-1320; and
- (ix) a 50 mm electrical (orange) conduit shall be used to convey the detector feeder cable from the detector pit to the cable pit, as shown in VicRoads Standard Drawing TC-1207.

Table 733.042 Acceptable Conduit Types

Conduit Type	Minimum bend radius
HD UPVC Electrical	600mm
HD UPVC Communications	500mm

(b) Conduit Installation for Traffic Signals and other On-Road Electrical Installations

Conduits installed for traffic signals and other on-road electrical installations shall be installed in accordance with this standard specification, VicRoads Standard Drawings detailed in Table 733.022 and individual contract documents.

(c) Conduit Installation for Managed Motorways and Freeways

Conduits installed on Managed Motorways and freeways shall be installed in accordance with this standard specification, VicRoads Standard Drawings detailed in Table 733.023 and individual contract documents.

A marker tape with trace wire shall be placed above all conduits in accordance with the Wiring Rules.

(d) Asbestos conduits

Where an existing site is being upgraded and asbestos conduits exist on site, the conduits shall be removed and replaced in accordance with TCG-015.

733.05 DRAW CORDS

Each conduit for electrical wiring and communication cables shall be provided with one synthetic draw cord not less than 3 mm diameter and with a minimum breaking strain of 1.6 kN.

Where the conduit terminates in a pit, not less than 500 mm of the draw cord shall be tied to a marker peg 25 mm x 25 mm, not less than 300 mm long, and left coiled in the pit. A length of 100mm diameter conduit not less than 200mm may be used.

Where the conduit does not terminate in a pit, the draw cords shall be tied to a marker peg 100 mm x 100 mm, not less than 400 mm long, driven firmly into the ground with the top 50 mm projecting above finished surface and painted yellow.

733.06 BACKFILLING

(a) Material

Unless otherwise specified, materials used for bedding and backfilling shall be free from perishable matter and shall conform with the appropriate grading and plasticity index requirements specified in Table 733.061.

Table 733.061 Approved bedding and backfilling material

Material	Sieve Size - AS (mm)					Plasticity Index	
	75.0	37.5	19.0	2.36	0.075	Min	Max
	Percentage Passing (by mass)						
Bedding	-	-	100	-	10-40	2	10
Selected backfill	-	100	-	-	10-40	5	20
Common backfill	100	-	-	40-100	-	-	-

Pavement material shall be as specified and shall comply with the relevant requirements of the appropriate pavement sections.

(b) Bedding

Bedding material shall be placed and compacted for the full width of the trench to a depth of not less than 80 mm on an earth foundation or 200 mm on a rock foundation.

Following compaction, the bedding material shall be shaped sufficiently to maintain the conduit in line as the sections are placed in position. Shaping of bedding material is not required for conduits less than 100 mm nominal diameter.

HOLD POINT: ONCE THE BEDDING MATERIAL HAS BEEN LAID AND THE CONDUITS PUT IN PLACE, WORKS SHALL NOT PROCEED PRIOR TO INSPECTION BY SUPERINTENDENT OR REPRESENTATIVE.

When conduit sections are in position, additional layers of bedding material shall be placed and compacted to a height 150 mm above the bedding previously placed.

Bedding material must not be the same material excavated for the trench, it shall be clearly identifiable as introduced material.

(c) Filling

Unless otherwise specified or shown on the drawings, selected and common backfill shall be placed and compacted as follows under, around, and above the conduit after the sections are bedded:

(i) Conduits under Area to be Paved

Where the trench has been excavated from the design subgrade level or above, the trench shall be backfilled to design subgrade level with selected backfill material, and above that level with common backfill material or the specified pavement material.

Where the trench is excavated from below design subgrade level, the trench shall be filled with selected backfill material.

(ii) Conduits under Area not to be Paved

The trench shall be backfilled with selected backfill material to a level of 0.4 m above the top of the conduit and with common backfill above that level.

(iii) Conduits through Existing Paved Area

Unless otherwise specified or shown on the drawings, the trench shall be backfilled to the existing subgrade level with selected backfill material and the pavement restored using materials in accordance with sub-clause (e) below.

(d) Compaction

Unless otherwise specified, bedding and backfill materials shall have during compaction, a uniform moisture content within the range 85% to 115% of the optimum moisture content as determined in the Standard Compaction test. Where backfill material contains material retained on a 37.5 mm AS sieve, the Standard compactive effort will be performed on the material passing the 37.5 mm AS sieve, and during compaction the moisture content of the material passing the 37.5 mm AS sieve shall be in the range 85% to 115% of the optimum moisture content so determined.

Bedding and backfill, the whole of which passes the 37.5 mm AS sieve, shall be compacted in layers to a density ratio of not less than 95% using hand held mechanical plant or excavator attached DPU for steep inclines.

Detailed proposals for the compaction of backfill materials of nominal size greater than 40 mm shall be submitted to the Superintendent for review before commencing work.

Where specified, pavement material shall be assessed for compaction in lots as defined in Section 173. The number of tests per lot shall be three. All pavement material shall have during compaction, uniform moisture content within the range 85% to 115% of the optimum moisture content as determined in the Modified Compaction test. All pavement layers shall be placed and compacted in layers to a density ratio of not less than 98%. The calculation of density ratio shall be based on Modified compactive effort.

(e) Pavement Composition

Pavement Layer	Material Type	Thickness (mm)
##:		

733.07 CABLE PITS AND PIT LIDS (ELECTRICAL AND COMMUNICATIONS)

(a) General

All Cable pits, cable pit lids and preformed cable pit lid surrounds shall be VicRoads Type Approved.

Pits and lids shall be installed in accordance with the appropriate VicRoads standard drawing and any pit manufacturers specific installation requirements.

Pits shall be located in accessible locations for maintenance activities.

Pits SHALL NOT be installed within the trafficable area on a freeway or managed motorway.

On arterial roads pits shall not be installed within the trafficable area of the roadway. In extreme circumstances, the Superintendent may consider requests to install a pit in a trafficable area on an arterial road. In these instances, where approved, Heavy duty pit lids shall be provided where the pit is located within a road pavement.

Pits shall be constructed such that the level of the top of the pit lid matches the surrounding finished surface level.

The top of the pit wall shall be neatly finished such that the lid fits without movement.

Cable pit lids shall be labelled in accordance with TC-1220 as appropriate.

The pit former shape shall not be distorted during installation.

Pits shall be placed, as far as is practicable, in an area that has an incline (i.e. slope) not more than 20°. Where the surrounding surface level is inclined greater than 20°, the pit lid shall be installed in accordance with the following requirements:

- (i) The pit former shall be vertical.
- (ii) The lid shall be horizontal.
- (iii) The lid shall be installed within a re-enforced concrete apron 'standing area' to enable safe access to the pit lid. The apron shall be large enough to enable temporary storage of a removed lid.
- (iv) A retaining wall shall be installed on the angled sides and high side of the slope. The retaining wall shall extend a minimum of 100mm above the surrounding surface level.
- (v) A post, a minimum of 600mm in height, shall be located on each upper corner of the retaining wall to ensure visibility for mowers and other maintenance personnel.
- (vi) Hand rails and access steps shall be installed where required by Australian Standards.

All pits, junction boxes or terminal pits for electrical purposes shall be either watertight or suitably drained.

All conduit connections to cable pits shall be neatly made and the ends of the conduits trimmed off and fitted with a conduit bush. The area between the conduit bush and pit wall shall be stopped with a suitable sealant that bonds to the pit wall and the conduit.

The maximum spacing between cable pits shall not be greater than 100m.

(b) Asbestos pits

Where an existing site is being upgraded and asbestos pits exist on site, the pits shall be removed and replaced in accordance with TCG-015.

(c) Pit lid surrounds

Cable pit lids and frames shall be installed with an approved surround. The approved types of pit lid surround are:

- (i) A poured 'in-situ' concrete surround (i.e. a poured 'in-situ', rounds concrete collar).
- (ii) A poured 'in-situ' concrete apron (typically used where two or more pits are co-located).
- (iii) A steel pre-formed collar that requires concrete in-filling 'in-situ'.
- (iv) A pre-formed concrete collar.
- (v) A pre-formed composite material collar.

All surrounds shall be installed in accordance with the appropriate VicRoads standard drawing and shall ensure that no load is placed on the cable pit former.

For pre-formed collars, concrete or composite material, the collar shall be bedded into a base of cement to ensure it remains level with the surrounding surface and that no load is placed on the pit former. The cement bedding shall be a minimum of 200mm thick and extend a minimum of 100mm past the outer diameter of the collar.

HOLD POINT: BEFORE THE PIT LID SURROUND OR PRE-FORMED COLLAR IS CEMENTED INTO POSITION AN INSPECTION BY VICROADS SUPERINTENDENT OR REPRESENTATIVE MUST BE CARRIED OUT.

(d) Cable Pits and Lids for Traffic Signals and other on-road electrical installations

Cable pits shall be constructed and installed as shown in the drawings detailed in Table 733.071 below.

Table 733.071 List of Standard Drawings for Pits for Traffic Signals and General Works

Drawing Number	Title
TC-1210	Cable pit former – 600mm Dia
TC-1211	Heavy duty cable pit and cover
TC-1220	Cable pit access cover and frame 600mm Dia
TC-1230	Cable pit – Installation details

(e) Cable Pits and Lids for Managed Motorways and freeways

Cable pits shall be constructed and installed as shown in the drawings detailed in Table 733.072 below.

Cable pits shall be numbered in accordance with Contract specific requirements.

Table 733.072 List of Standard Drawings for Pits for Managed Motorways and freeways

Drawing Number	Title
TC-2200	600mm round electrical cable pit
TC-2201	750mm round electrical cable pit
TC-2206	Multiple pit arrangements
TC-2207	General arrangement at gantries
TC-2208	General arrangement at an interchange
TC-2209	General arrangements at communications huts
TC-2210	Transition to bridge barrier - Typical arrangement
TC-2211	Typical arrangement at existing structures
TC-2215	General arrangement at point of supply
TC-2216	Cable pit former 750mm Dia. To suit 600mm Dia. lid
TC-2217	Cable pit access cover, frame and concrete surround – 750mm Dia.

(f) Communication Pits and Lids for Managed Motorways and freeways

Communications pits shall be constructed and installed as shown in the drawings detailed in Table 733.073 below.

Communications pits shall be numbered in accordance with Contract specific requirements.

Table 733.073 List of Standard Drawings for Communication Pits for Managed Motorways and freeways

Drawing Number	Title
TC-2202	750mm round communication junction pit
TC-2203	P9 communication pit
TC-2206	Multiple pit arrangement
TC-2207	General arrangement at gantries
TC-2208	General arrangement at an interchange
TC-2209	General arrangements at communications huts
TC-2211	Typical arrangement at existing structures
TC-2217	Cable pit access cover, frame and concrete surround – 750mm Dia.

(g) Communication Pits and Lids for Arterial Roads

Communications pits shall be constructed and installed as shown in the drawings detailed in Table 733.074 below.

Table 733.074 List of Standard Drawings for Communication Pits for Arterial Roads

Drawing Number	Title
TC-2202	600mm round communication junction pit
TC-2203	P9 communication pit
TC-2217	Cable pit access cover, frame and concrete surround – 750mm Dia.

(h) Maximum number of conduits per pit type

The number of conduits terminating in a pit shall be dependent on the individual contract requirements and the electrical/communications network designs.

Table 733.075 below provides details of the maximum number of conduits allowed for each pit type. Under no circumstances shall the maximum number of conduits shown in Table 733.075 be exceeded.

Table 733.075 List of Standard Drawings for Communication Pits for Arterial Roads

Pit Type	Maximum Number of Conduits
600mm round pit	6 X 100mm 1 X 50mm
750mm round pit	9 X 100mm 1 X 50mm
P9 communications pit	4 X 100mm (2 in and 2 out)
Detector Pit	1 X 50mm

733.08 DETECTOR PITS

Detector pits are typically used to enable the connection of loop cables to detector feeder cables.

Detector pits for traffic signals shall be installed as shown on the traffic signal plans and as detailed in individual contract documents.

Detector pits for freeway data stations or other required purposes shall be installed as detailed in individual contract documents.

Detector pits and detector pit covers shall be constructed and installed in accordance with VicRoads Standard Drawings TC-1310 and TC-1320.

Where a detector pit is installed within a grassed area with no kerbing, a round concrete collar shall be installed around the pit. The collar shall be a minimum of 200mm wide at the narrowest point and a minimum of 100mm thick.

The pit cover shall be securely fixed to the pit using the fixing device supplied.

Detector pits shall be located so as to ensure adequate separation between pits and other features such as expansion joints, drainage, electrical or communication pits, culverts, etc.

733.09 CLEANING OF SITE

Surplus excavated material shall be removed from the road reserve. Areas affected by the work shall be restored to a condition similar to that which existed prior to the commencement of the work.

733.10 IDENTIFICATION AND RECORDING

All conduit locations not identified by pits immediately installed at the ends shall be marked with 75 x 38 mm stakes projecting 0.4 m above the ground, with the top 150 mm painted yellow stakes, or as otherwise agreed by the Superintendent. Conduits under road pavement shall be marked with stakes clear of the road pavement. Conduits not under road pavement shall be marked with stakes at the ends, at changes of direction, and at intervals of not more than 30 m. This staking will be additional to any marker pegs to which draw cords are tied.

Unless otherwise specified, the actual installed location and depth of conduits, and location of pits, shall be accurately recorded on as-built drawings in a format agreed by the Superintendent.

733.11 DOCUMENTATION

All documentation relating to conduit and pit installation required under the contract specific requirements shall be provided. Notwithstanding the contract specific documentation requirements, the contractor shall provide, as a minimum, the following:

- (i) 'As built' drawings showing the complete conduit network including conduit types, sizes and depths.
- (ii) The above 'as built' drawings shall also show all pits, pit types and pit sizes.
- (iii) Certificates of electrical safety for all conduits and pits installed.
- (iv) Documentation demonstrating that all pits and conduits installed, have been installed in accordance with the requirements of this specification.