1. Purpose

To detail the method for the construction of underground Joint boxes (Boxes) in accordance with the Openreach Specification LN 550, when the floor and walls are cast on separate visits.

2. Responsibilities

2.1 The Gang Foreman shall ensure that staff constructing underground Joint boxes where the floors and walls are cast on separate visits adhere to this method and are licensed under the BT scheme for the disciplines they are in charge of.

2.2 The Site Supervisor shall periodically monitor compliance to this method statement.

2.3 The Quality Manager will ensure that the process is monitored periodically.

2.4 If this method cannot be adhered to, contact your supervisor for advice before proceeding.

3. References & Definitions

3.1 References

- BT Specification LN 550 - Underground Duct Laying and Associated Works
- BT CPE/NNS/V011
- Safety at Street Works and Road Works – A Code of Practice
- BT CN Drawings
- New Roads and Street Works Act 1991
- HAUC – Specification for the Reinstatement of Openings in Highways
- NJUG – Codes of Practice
- HS (G) 47 Avoiding Danger from underground services
- Reporting Positive Gas Test Results

3.2 Definitions

- Chapter 8 - is the section of the New Roads and Street Works Act, which details the requirements of the road works guarding.
- Joint box – is an underground chamber, placed either in footway or carriageway, with a maximum depth of 1650mm and has access cover/s covering the majority or entire top surface.
- CCO is the Contractors Co-ordination Office

4. Safety considerations

4.1 Hazards

Traffic	√	Fumes/Gas	√	Falls of material	√	Mobile Plant & Vehicles	√
Buried Services	√	Dust	√	Demolition		Noise & Vibration	√
Overhead Services		Deep Excavations	√	Collapse of Structure	√	Lifting Operations	
Fire/Explosions		Confined Spaces	√	Soft Ground	√	Manual Handling	√
Flying		Lighting Levels	√	Falls on Level		Working near Water	
Heat		Falls from Height	√	Infected Materials		Adverse Weather	√

4.2 Precautions

- ASSESS THE RISK - Ensure that prior to starting work a SITE SPECIFIC RISK ASSESSMENT is conducted and recorded on MTS-FM-S-013 Site Specific Risk Assessment to identify specific risks that may be present. If in doubt contact your site supervisor.
- ROAD WORKS GUARDING

- To be in accordance with Chapter 8.
- Signs and barriers to be secured with sand bags if necessary.
- Maintain a safe route for pedestrians to by pass by the works.
- Guard pedestrians from vehicles when directed into carriageway.
- Where required lights to be attached to signing and guarding.

- PLANT, VEHICLES & WORK TOOLS

  - To be kept inside the work area.
  - To be in good working order and properly maintained.
  - To have mufflers and silencers fitted where practicable.
  - Vehicles to be fitted with, and use amber rotating beacon/s.
  - Plant operators to be trained and competent in the use of the plant they are using.
  - Switch plant off when not in use.
  - Ensure that all guards are properly secured and unauthorised persons do not use the plant/vehicle.
  - Rotate operators to reduce individual exposure.
  - Keep plant & vehicles away from the edge of the excavation.
  - Air hoses to be maintained in good order with joints correctly coupled.
  - Hose check arrestors to be fitted and used on all compressed air lines.
  - Dust suppression is to be used when saw cutting or using equipment that can cause airborne dust, i.e. water.
  - Fuel oil to be stored and handled safely to prevent spillage or contact with skin or clothing.
  - Ensure the correct PPE is used for the type of equipment.
  - Ensure fumes do not enter confined space.

- SAFE DIGGING

  - Utility safe dig prints to be available on site at all times.
  - Visual & CAT (and Genny, where required) surveys to take place.
  - All identified services to be marked on the surface.
  - Pilot Holes to be excavated by hand to confirm positions of services.
  - Ensure that correct trench wall supports are available and are used where necessary
  - Excavated material shall be stored a safe distance away from the excavation to stop possible collapse into the excavation, but kept within the guarded area.
  - Mechanical excavation equipment shall not be used in the vicinity of other utility services.
  - Adequate access/ingress to be maintained at all times.

- CONFINED SPACE WORKING

  - Ensure that gas-testing equipment is available, and is used when entering joint boxes or manholes.
  - Where man entry is required ensure that all involved are trained and competent in confined space working and that there is an approved safe system of work and the confined space is continually gas monitored.
  - Ensure that in confined spaces where there is no free flow of clean air, ensure there is adequate ventilation and where practicable used forced ventilation.

- SAFE LIFTING TECHNIQUES

  - When lifting materials and tools from/to the excavation or onto/off the truck ensure that items are not too heavy. Either reduce them into lighter pieces or/and seek assistance to spread the load or use suitable lift equipment. If in doubt seek advice.

- When lifting manhole or box covers ensure that the proper lifting keys are used and that safe lifting techniques are employed. For carriageway covers lifting aids shall be used for lifting the covers wherever practicable, i.e. a suitable manhole lifter.

4.3 Personal Protective Equipment

- Ensure the following is worn at all times during the works:
  - Hard Hat
  - Safety boots or wellingtons
  - High visibility jacket or jerkin
  - Flame retardant Coveralls
- Ensure the following is worn as required during the works:
  - Eye protection – grinding, sawing and cutting
  - Ear protection – grinding, sawing, cutting, using jackhammers.
  - Dust masks – grinding, sawing, cutting or conducting activities that involve airborne dust.
  - Gloves – when using power equipment or manual handling.
  - Waterproofs – in wet weather.

5. Method

5.1 Prior to commencing work

- Survey the works to be done, picking the best position/route to excavate, taking note the required size of your excavation, the vicinity of previous excavations and other utility services.
- Ensure that a full set of Box timber for shuttering has been collected, checked for damage and the dimensions are correct for the type of box being built.
- Ensure that if steelwork is required for the Box, that a box set (including spacers) has been collected for the type of Box being built and checked against the Bar Schedule.
- Erect road works guarding and signs in accordance with Chapter 8.
- Read the service prints and conduct a survey with the CAT and where practicable mark all services in the vicinity of the excavation.
- Ensure the area to be excavated for the Box is free from other services.
- Gas test Chambers directly prior to entering and continuously during the works. If gases are found within the Chamber, no work must take place and your Supervisor informed.
- Conduct trail holes to locate existing services and to see what effect they might have on the works.
- Provided the works vicinity is free from all services the area for the Box location shall be marked.

The external Box dimensions as defined in the BT CN Drawings shall determine the size of the excavation.

5.2 De-Watering

- If de-watering is required during any stage of the work, then pumps and hoses should be positioned as to avoid any inconvenience to pedestrians, road traffic or other 3rd parties.
- Before de-watering ensure that your site supervisor has agreed all discharge points.
- Samples of water should be taken prior to setting up the de-watering equipment.
- If the water shows any sign of contamination then the water should not be discharged and the site supervisor contacted.
- Ensure silt is not drawn from the excavation and where necessary use a settlement tank.

5.3 Breaking the Surface & Excavating

- Mark the area to be excavated.
- Where practicable, for large excavations in blacktop the surface shall be cut with a suitable road saw, however for small excavations a Sthil saw can be used.
- All excavation equipment used should be suitable for the work undertaken.
- Mechanical excavating equipment should not be used near other services.

- Service damage caused by you or a previous excavator should be reported to your site supervisor.
- Excavated materials must be strictly controlled during all stages of the works, ensuring that it is stored at a practical and safe distance from the excavation, within the road works guarding.
- Material being collected by a grab wagon should be done in such a way to ensure that minimum disruption is caused to pedestrians, road traffic or any other 3rd parties.
- Materials for re-use e.g. topsoil and granular materials, etc. should be kept free from contamination and where necessary protected from weather conditions.
- Where excavations are deeper than 1.2 metres or in unsound ground, appropriate trench supports shall be used.
- Ensure that all BT apparatus is protected from damage prior to and during the works.
- All excavated services shall be adequately supported to prevent damage occurring to them.

5.4 Preparing the Excavation

- The excavation shall be checked to ensure the dimensions are suitable for the bottom and sides to act as back shuttering.
- Where the sides are unsuitable for back shuttering plywood shall be positioned to act as back shuttering.
- Prior to any concrete being placed, a polythene membrane of 1000 or 1200 gauge, shall be placed on the inside of the excavation and any shuttering used to fully line the bottom and sides. This will act as a barrier to prevent ground contaminants attacking the concrete during the life of the box.

5.5 Steelwork

- For JRF106 and bigger boxes, steel reinforcement is required when constructing the box, refer to CN drawings and/or box schematics.
- Layout the steel and/or mesh and secure into position for the floor, using reinforcement bar clips or standard wire ties.
- Ensure spacers are used and centred at no more than 600mm from one another.
- Ensure the cover of concrete over the steelwork is no less than 40mm.

5.6 Concrete

- For joint boxes in the footway or the carriageway, either a wet ready mixed RC 40 concrete from an approved concrete supplier or an approved site mixed concrete can be used.
- The slump shall be 50mm ▯▯25mm (25mm to 75mm).
- The strength of the cured concrete shall be a minimum of 40Newtons/mm² at 28 days
- If wet ready mixed concrete is delivered to site, no additional water is to be added to the concrete at any time. The delivery ticket is to be retained with the job pack

5.7 Casting the Concrete Box Floor

- Ensure the excavation is properly prepared and where applicable the steelwork, anchor irons and the sump have been properly fixed into position.
- A square sump or circular sump shall be installed where specified by the BT CN Drawing; the internal diameter of the circular sump is to be 230mm ▯▯5mm and to a depth specified by the BT CN Drawing
- There shall be a slight fall to one end of the floor or to the sump to allow any water to collect for a pump head
- Place the concrete and consolidate using a vibrating poker, ensuring that the vibrating poker does not dislodge the steelwork.
- Once the required thickness of floor is achieved and is properly consolidated, level the floor off to a smooth finish.
- Protect the concrete from the environment and allow curing for a minimum of 48 hours.

- If an approved rapid hardening concrete is used the cure time can be reduced in accordance with the manufacturer's recommendations.

5.8 Position the Shuttering for the Walls

- All concrete joints areas are to be wire brushed, cleaned and wetted prior to jointing.
- All duct entries, steel reinforcement and box furniture shall be correctly positioned and secured.
- The shuttering shall be positioned to ensure that the box walls are the correct thickness and the concrete cover over the steelwork is at least 40mm.
- The length and verticality of the walls and the squareness of the corners is checked and correct.

5.9 Casting the Concrete Walls

- Ensure the concrete is placed in layers and each layer is consolidated using a vibrating poker, ensuring the steelwork, furniture and ducts are not dislodged with the vibrating poker.
- All the walls are to be cast in one operation.
- Level off the tops of the walls at the correct height ready to fit the frame and covers.
  - Protect the concrete from the environment and allow curing for the correct time before removing the shuttering.

5.10 Concrete in Cold Weather

- In cold conditions ensure the concrete is not exposed to frost prior to curing and the concrete is not placed when the temperature of the concrete is below 5□C or the air temperature is 3□C and falling.
- Refer to BT Specification LN 550 Part 511

5.11 Curing Times

- BT Specification LN 550 Part 518 refers to the curing time for concrete jointing chambers and manholes

5.12 Installing Frames & Covers

- Remove the shuttering, finish off the duct mouths and ensure that the structure and box furniture complies with the applicable CN drawings.
- If a sump is present ensure there is a 25mm drop towards the sump over the length of the box.
- The frames and covers are installed as per BT Specification LN 550 Part 521 and the Method Statement MTS-MS-Civils-005 Fitting Frames & Covers

5.13 Housekeeping

- The roadwork's guarding and signs should be regularly checked to ensure they always meet the requirements of Chapter 8.
- All spoil, materials, vehicles and plant should be properly guarded in accordance with Chapter 8.
- The site should be kept as clean and tidy practicable during the works.
- Always be polite to the general public within the vicinity of the works and where necessary liaise with the local residents and other contractors present.