**Inspection and Test Plan – Stormwater Drainage Installation**

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| **Project no.** | | **CC-0371** | **Project name** | Parkville Urban Realm Works | | **Date** |  | | **Approved by** | Billy Dando |
| **ITP no.** | SYM-ITP-006 | | **Revision date** | 28/09/2022 | **Plant and equipment used** | | |  | | |
| **Lot no.** |  | | **Location (chainages, detailed description or marked up plan)** | | | | |  | | |

Attach Dockets, Certificates and QA Documents to ITP

|  |  |  |  |  | **Verification of acceptance by** | | | | | **Remarks/record (eg. Test frequency reports, certificates, checklist etc)** |
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|  |  |  |  |  | **Symal** | | | **CYP D&C JV** | |
| **Item no.** | **Activity** | **Ref docs** | **Acceptance criteria** | **Freq** | **Key** | **Resp** | **Initial/ date** | **Key** | **Sign/ date** |
| **1.0 Pre-start activities** | | | | | | | | | | |
| **1.1** | Conformity with Drawings | VR Clause 701.10 | **Are the drawings, complete & current?**  **Yes □ No □ N/A □** | Prior to start of works | **H** | **SE/PE** |  | **H** | **PE** | Attach Recent IFC Drawings |
| **1.2** | Define Work Lot | VR Clause 173.02  701.20  701.10  IFC Drawings | Lot shall be defined from pit to pit (or endwall, where applicable).  **Do survey boundaries clearly define the Underground Drainage Construction works?**  **Yes □ No □ N/A □** | Prior to start of works | **H** | **SE/PE** |  | **H** | **PE** |  |
| **1.3** | Acceptance of Box Culverts | VR Clause 619.22  IFC Drawings | **Is the Box Culvert free of defects and to drawing dimensions?**  **Yes □ No □ N/A □** | Prior to start of works | **H** | **SE/PE** |  | **H** | **PE** |  |
| **1.4** | Acceptance of Precast Reinforced Concrete/HDPE Pipes | VR Clause 701.05  701.05(e)  701.31(a) IFC Drawing | **Is the Pipes free of defects and to drawing dimensions?**  **Yes □ No □ N/A □** | Prior to start of works | **H** | **SE/PE** |  | **H** | **PE** |  |
| **1.5** | Acceptance of Precast Covers, Grates, Lids and Pits | VR Clause 705.04  (a)(ii)  705.04  (d)  705.07  IFC Drawings | **Have proposed precast Covers, Grates, Lids and Pits been approved for use?**  **Yes □ No □ N/A □** | Prior to start of works | **H** | **SE/PE** |  | **H** | **PE** | Shop Cards  **Yes □ No □** |
| **1.6** | Bedding and Backfill Materials | VR Clause 701.09(e)  Table 701.091  Table 701.092 | **Is material free from perishable matter and lumps?**  **Yes □ No □ N/A □**  **Does the material comply with Table 701.091 & Table 701.092 below? Has the material been approved for use?**  **Yes □ No □ N/A □**  Table  Description automatically generated | Prior to start of works | **H** | **PE** |  | **H** | **PE** | Bedding and Backfill Material Conformance  **Yes □ No □** |
| **1.7** | Pipe/Box Culver/PIT Size & Class |  | SIZE =……………………  CLASS =…………………  DIA= 150 / 225 / 300 / 375 / 450 / 525 / 1050.  PIT REF=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  PIT REF=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  PIT REF=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Each lot | S | SE |  |  |  |  |
| **1.8** | Stage/Zone | Site Layout | 1A / 1B/ 1C/ 1D / 1E / 1F / 1G / 2A / 2B / 2C / 2D / 2E / 2F / 2G / 3A / 3B / 3C / 4A / 4B / 4C / 5A / 5B / 5D / 6A / 6B  Stage\_\_\_\_\_\_\_\_\_\_\_ | Each lot | S | SE |  |  |  |  |
| **2.0 Excavation** | | | | | | | | | | |
| **2.1** | Excavation of Trench Pipes/Culverts | VR Clause 701.15  Table 701.151  701.08 | **Is the trench clearance width between 300mm to 600mm?**  **Yes □ No □ N/A □**  Table  Description automatically generated  **Is the excavation at a sufficient depth for pipe/box culvert bedding?**  **Yes □ No □ N/A □** | Each lot | S | SE |  | S | SE |  |
| **2.2** | Excavation for Pits | VR Clause 705.05 | **Is the pit excavation not less than 400mm from external pit wall to side of excavation?**  **Yes □ No □ N/A □**  **Is the excavation at a sufficient depth for pit bedding?**  **Yes □ No □ N/A □** | Each Lot | S | SE |  | S | SE |  |
| **3.0 Bedding** | | | | | | | | | | |
| **3.1** | Bedding - Pipes | VR Clause 701.16 | **Is the Pipe Diameter less than 1500mm? If so, has 100mm of bedding been placed?**  **Yes □ No □ N/A □**  **Is the Pipe Diameter greater than 1500mm? If so, has 200mm of bedding been placed?**  **Yes □ No □ N/A □**  (D = Pipe Diameter/Culvert Width). | Each lot | S | SE |  | S | SE |  |
| **3.2** | Bedding - Pits | VR Clause 705.05  Table 701.091 & 701.092 | **Has bedding been placed and compacted to a thickness not less than 80mm on clay foundation?**  **Yes □ No □ N/A □**  **Has bedding been placed and compacted to a thickness not less than 150mm on a rock foundation?**  **Yes □ No □ N/A □** | Each Lot | S | SE |  | S | SE | Bedding and Backfill Material Conformance  **Yes □ No □** |
| **3.3** | Bedding Material - Compaction | VR Clause 701.20 | **Has bedding been compacted to refusal?**  **Yes □ No □ N/A □** | Each lot | S | SE |  | S | SE |  |
| **4.0 Installation of Pipes/Pits/Culverts** | | | | | | | | | | |
| **4.1** | Laying of Pipes | VR Clause 701.17 (a)  701.17 (e) | **Are pipes being laid from downstream end?**  **Yes □ No □ N/A □**  **Are socket ends of pipes being placed facing upstream and fully entered?**  **Yes □ No □ N/A □**  **Is the pipe in full contact with the bedding for the full length of each section?**  **Yes □ No □ N/A □**  The compacted bedding shall be shaped to accommodate the joint collar and ensure that the pipe is supported along its full length. | Each lot | I | PE |  | S | SE |  |
| **4.2** | Installation of Pits | VR Clause 705.07  705.08  705.09  705.11 | **Have pre-cast pits been installed at the correct location and to the dimensions shown on the drawings?**  **Yes □ No □ N/A □**  **Have subsurface drainage connections been cored at appropriate dimensions?**  **Yes □ No □ N/A □** | Each Lot | S | SE |  |  |  | Test results for fibres and fibre content (if applicable) (Compliance Certificate provided by Supplier)  **Yes □ No □** |
| **4.3** | Step Iron Fitting | VR Clause 705.12 | **Have pits greater than 1.0 meter been fitted with step irons?**  **Yes □ No □ N/A □**  Step irons shall not obstruct openings or be fitted to a wall which has openings.  **Have step Irons shall be installed in accordance with the manufacturer’s instructions and are an approved proprietary type?**  **Yes □ No □ N/A □** | Each Lot | S | SE |  |  |  | Material Conformance Certificates  **Yes □ No □** |
| **4.4** | Shaping the floor and Surface Finish | VR Clause 705.13  705.14 | **Has the drainage pit floors been smoothly shaped from the inlets to the outlet for a height of one third of the diameter of the outlet pipe with cementitious mortar?**  **Yes □ No □ N/A □**  Surfaces shall be finished uniform in appearance with a Class 2 surface finish in accordance with the requirements of Section 610. | Each Lot | S | SE |  |  |  |  |
| **4.5** | Jointing - Pits | VR Clause 705.14  705.16  610.32 | **Has the joints between drainage pits, access chambers and pipes shall be made watertight using a cementitious mortar?**  **Yes □ No □ N/A □** | Each Lot | S | SE |  |  |  |  |
| **4.6** | Jointing – Pipes | VR Clause 701.18 | **Are rubber rings to be used on rubber ring joint pipes clean and free of debris?**  **Yes □ No □ N/A □**  **Have all interlocking joint reinforced concrete pipes been jointed or wrapped with 200mm wide external joint rubber band? Has the rubber band been placed between the spigot and socket?**  **Yes □ No □ N/A □**  **Have pipes with lifting holes been placed with lifting holes uppermost? Have lifting holes been plugged after pipe installation?**  **Yes □ No □ N/A □** | Each lot | S | SE |  |  |  |  |
| **4.7** | Fitting of Covers | VR Clause 705.17 | **Pit Downstream**  Pit Number\_\_\_\_\_\_\_\_\_\_\_  Lid Class\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Lid Type\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **Pit Upstream**  Pit Number\_\_\_\_\_\_\_\_\_\_\_  Lid Class\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Lid Type\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Each Lot | S | SE |  |  |  | Survey Conformance Report  **Yes □ No □** |
| **5.0 Installation of Box Culverts** | | | | | | | | | | |
| **5.1** | Laying Box Culverts | VR Clause 701.17 (a) (c) (d) | **Have consecutive sections of box culverts been firmly butted together?**  **Yes □ No □ N/A □**  **Does the mortar have a minimum 28 day compressive strength of not less than 40MPa? Is it at least Type C Class?**  **Yes □ No □ N/A □** | Each lot | S | SE |  |  |  | Technical Data Sheet  **Yes □ No □** |
| **6.0 Backfilling** | | | | | | | | | | |
| **6.1** | Backfill – Pipes/Culverts | VR Clause 701.19 | **Has the haunch zone been extended from top of bedding layer to 1/3 pipe diameter? Haunch zone material to be same as bedding layer. Haunch zone to be compacted to refusal in max 150mm layer.**  **Yes □ No □ N/A □**  **Is the pipe to be backfilled in under an area to be paved? If so, has excavation below design subgrade level been backfilled with select backfill material? And within the pavement layer backfilled with appropriate pavement material?**  **Yes □ No □ N/A □**  **Is the pipe to be backfilled in under an area to be paved? If so, has excavation below design subgrade level been backfilled with select backfill material? And within the pavement layer backfilled with appropriate pavement material?**  **Yes □ No □ N/A □**  **Is the pipe to be backfilled in under an area not to be paved? If so, has the trench been backfilled with select backfill material to a level 0.3m above the top of the culvert? Ordinary backfill may be used above that level.**  **Yes □ No □ N/A □**  **Has the backfill material been backfilled in max 150mm layers?**  **Yes □ No □ N/A □** | Each lot | S | SE |  |  |  | NATA Test Report: Compaction  **Yes □ No □** |
| **6.2** | Backfill - Pits | VR Clause 705.18 | **Has the pit been backfilled in layers not exceeding 300mm? Pit backfill to be compacted to refusal using hand held equipment.**  **Yes □ No □ N/A □** | Each Lot | S | SE |  |  |  |  |
| **7.0 Completion** | | | | | | | | | | |
| **7.1** | As-built Survey | VR Clause 705.19  610.47  610.46 | **Has the pipe been laid with adequate fall and invert levels within ±10mm of design?**  **Yes □ No □ N/A □**  **Is the invert level of pipes at pipes ±50mm of design?**  **Yes □ No □ N/A □**  **Is the line of the pit cover been installed ±10mm of the design kerb line?**  **Yes □ No □ N/A □**  **Is the pit cover level ±10 mm of the design level for that point?**  **Yes □ No □ N/A □**  **Is the offset of entry pits within ±20 mm of kerbs/barriers?**  **Yes □ No □ N/A □**  **Is the offset of entry pits within ±20 mm of kerbs/barries?**  **Yes □ No □ N/A □**  **Is the plan location of pits other than offsets to kerb lines or barriers ±100 mm?**  **Yes □ No □ N/A □** | Each Lot | R  **H** | SE |  | **H** |  | Survey Conformance Certificate  **Yes □ No □** |
| **7.2** | Compaction and moisture content of  backfill & bedding material | 701.20a  701.20b | **Has a total of 3 compaction tests taken place, per lot, inclusive of pit compaction, achieving 97% compaction?**  Yes ☐ No ☐ N/A ☐ | At 20% of all lots | R  H | SE |  | **H** |  |  Attach Compaction Reports |
| **7.3** | CCTV Inspection | 701.30 | **Have all storm water lines been inspected by CCTV and found to be free of defects prior to placement of pavement?**  **Yes □ No □ N/A □** | Each lot | **H** | **PE** |  | **H** | **PE** | CCTV Inspection Report  **Yes □ No □** |

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| **Works complete (signer SS)** | |  | | | **Date works complete** | |  | | | |
| **Lot conforms (signer PE)** |  | | **Date lot closed** |  | | **NCR/s no. raised** | |  | **Date NCR closed for this lot** |  |

**Responsibility (Resp.) Key**: **PM**-Project Manager, **PE**-Project Engineer, **SE**- Site Engineer, **CS**-Civil Superintendent, **SS**-Site Supervisor, **SV**-Surveyor, **CR**-Client Representative

**SI –** Superintendent

**Inspection Key: W –** Witness, **H –** Hold Point, **S –** Surveillance, **R –** Review Point, **I –** Inspection Point.