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Install duct banks within footprint (linear) – QA Checklist

Install duct banks within footprint (linear) using an interactive checklist that’s commentable and can export as PDF/Excel. Ensure spacers, encasement, cover, tape, and markers.

Project:
Date:
Filled by:

Pre-Excavation and Layout	
1	Verify permits, utility locates, and clearances using GPR and potholing; record locate tickets, pothole photos with depth scale, and approvals per approved project specifications and authority requirements.
2	Set out duct bank alignment and grade with total station; establish offset stakes and benchmarks; tolerance ±10 mm horizontal, ±10 mm vertical; save survey file and stake photos.
3	Confirm materials on site: conduits, spacers, reinforcement (if required), concrete mix submittals, warning tape, markers; record delivery tickets, lot numbers, and approvals.

Trench Excavation and Bedding	
4	Excavate trench to design line/grade with shoring or sloped sides as required; trench width = duct bank OD + ≥150 mm clearance each side; daily excavation inspection signed and photographed.
5	Trim and compact subgrade to 95% MDD (Standard Proctor) using plate compactor; verify with in-situ density test; level tolerance ±10 mm; attach test report and level readings.
6	Place 75–100 mm fine granular or sand bedding; screed level; compact lightly; confirm thickness at start, mid, end with measuring rod; photo evidence with scale.

Spacers and Conduit Placement	
7	Assemble spacers to maintain conduit separation per approved project specifications and authority requirements (e.g., ≥50 mm clear); verify at start and every 3 m; photo each check.
8	Place conduits into spacers to design grade; check fall 0–5 mm/m toward structures if specified; digital level readings every 6 m; acceptance ±5 mm/m; record readings.
9	Secure spacers and any reinforcement to prevent float using tie wire at ≤1.5 m intervals; gently wiggle test before pour; supervisor sign-off and photos.
10	Install movement sleeves/expansion joints where ducts cross structures or joints as specified; provide 10–15 mm movement gap; photo joint detail with ruler.
11	Cap and label all conduit ends to prevent debris and water ingress; labels match drawings; photo caps and tags; record tag schema in checklist.

Concrete Encasement and Curing	
12	Confirm minimum concrete cover around conduits ≥50 mm on all sides using spacer chairs/gauge blocks; measure at start and mid-bay; photo with scale.
13	Verify concrete mix, slump 75–125 mm unless otherwise approved; record batch tickets, on-site slump tests, and sample IDs for compressive tests.
14	Place concrete by pump/chute, top-down; use pencil vibrator to consolidate without moving ducts; continuous observer confirms no spacer shift; sign inspection log and attach video/photo.
15	Screed and finish encasement top to uniform level; tolerance ±10 mm from design; check with straightedge and staff; photo finished surface.
16	Protect and cure: wet burlap or curing compound applied per data sheet; minimum 24 h before backfill; record application time, ambient temperature, and curing method.

Cover Depth, Backfill, and Warning Tape	
17	Survey top-of-encasement and verify cover depth to finished grade per approved project specifications and authority requirements (typically ≥600 mm); check every 10 m; attach survey points.
18	Backfill in 150–200 mm lifts with approved material; compact to 95% MDD; document lift-by-lift density tests and roller/compactor model used.
19	Install non-detectable or detectable warning tape 300 mm above duct bank, continuous and centered; photo with tape depth measurement and tape specification.
20	Restore surface (subbase, asphalt, concrete, or topsoil) to match adjacent profile; crossfall and level within ±10 mm; photos before/after and level checks.

Markers, As-Builts, and Handover	
21	Install route markers at changes in direction, entries, and ≤50 m intervals; include durable labels; capture GPS coordinates and photos of each marker.
22	Fix marker plates in structures/curbs where required; engraving per specification; photo close-up and context; record plate IDs in log.
23	Survey as-built: centerline, elevations, cover depths; produce redlined drawings and point files; submit for review; attach survey report and photo index.
24	Final inspection with stakeholders; confirm cable pulls are excluded from this scope; collect signatures, warranties, and QR-linked digital QA pack.

Comments:

Filled by:

Signature:

Introduction	How to use this checklist
Install duct banks within footprint (linear) is a focused scope for building concrete-encased conduit banks along a set alignment inside project limits. This checklist guides utility duct bank installation, trench work, conduit spacers, concrete encasement, cover depth verification, warning tape, and permanent markers—while expressly excluding cable pulls. It emphasizes survey-led layout, safe excavation, controlled conduit separation, and uniform concrete placement so the bank remains stable, drainable, and locatable after backfill. Acceptance cues use SI units with practical tolerances, batch and density records, and geo-referenced photos. Following these steps reduces strike risk, prevents float or deformation during pour, and ensures compliant cover and marking for future maintenance. Use this interactive, commentable page to tick steps, capture evidence, and flag nonconformities. When complete, export as PDF/Excel and secure records with a QR code for quick field verification and stakeholder handover.	1. Preparation: confirm drawings, specifications, permits, and utility locates; gather tools (total station, digital level, compaction tester, slump cone), safety gear, and forms; brief crew on roles and evidence requirements. 2. Using the Interactive Checklist: start interactive mode, assign items to team members, tick steps as completed, attach photos, test reports, and survey files; add comments for nonconformities and tag reviewers. 3. Export and Sharing: generate a timestamped PDF/Excel export, including photos and logs; share the QR code so stakeholders can verify authenticity and access the live record in the field. 4. Sign-Off: collect digital signatures from contractor, inspector, and owner’s representative; finalize approvals; archive the signed package with QR authentication in the project CDE.