

DUCTBANK-LMX

This product line consists of two separate tools—an Excel-based design tool and an AutoCAD drafting add-on. Depending on the purchase, the user may have obtained either one tool individually or the combined bundle.

Excel Design Tool: A stand-alone Excel-based engineering tool for quick electrical duct bank design, parameter management, and early-stage coordination. Built on a one-cable-per-conduit assumption, it provides fast, consistent, defensible duct bank dimensions for routing studies and space reservation.

AutoCAD Add-On: A stand-alone AutoCAD LISP/FAS utility that generates duct bank cross-sections directly in the drawing environment. Accepts manual inputs and produces clean, consistent layouts with a single command — ideal for quick drafting and field coordination.

Future Versions: Planned enhancements include rebar placeholders, concrete volume estimation, multi-cable conduits, multi-run duct banks, automated section generation via DUCTBANK-LMD, and integration with upcoming tools such as CABLEROUTE-LMX, CONDUITSCHED-LMX, and CABLESCHED-LMX.

SCOPE & INTENDED USE

Purpose: Preliminary geometric sizing only—the tool is intended to reserve space for underground duct banks in layouts, corridors, and civil works, not to finalize electrical or structural design.

Design stage: Concept and early FEED use only. Final IFC design shall be based on detailed calculations, manufacturer data, and discipline-specific analyses outside this tool.

KEY ASSUMPTIONS

Uniform spacing and cover: Horizontal/vertical spacing and concrete cover values are assumed constant across the entire duct bank; local deviations, transitions, and terminations are not modeled.

Single cable per conduit: The tool assumes one cable per conduit and does not evaluate multi-cable fills, pulling tensions, or sidewall pressure.

Standard circular conduits: Conduit dimensions are based on nominal trade sizes and typical O.D. values; manufacturer-specific tolerances are not considered.

Simple rectangular geometry: Duct bank width and height are derived assuming a regular R × C grid with uniform edge cover; irregular shapes, offsets, or stepped banks are not represented.

LIMITATIONS AND EXCLUSIONS

No ampacity or thermal rating: The tool does not calculate cable ampacity or thermal derating (IEC 60287, IEEE 835, or equivalent). Final cable sizing and loading shall be determined by a dedicated thermal/ampacity study.

No structural or civil design: Concrete strength, reinforcement, crack control, soil–structure interaction, and traffic loading are outside the scope. Structural design of the duct bank and trench shall be performed by civil/structural engineering.

No code compliance verification: The tool does not ensure compliance with NEC, local electrical codes, utility standards, or right-of-way constraints. All clearances, separations, and routing must be checked against applicable standards and client requirements.

No constructability or installation checks: Bend radii, joint locations, pulling pits, access for installation, and phasing are not evaluated. The constructability of the proposed arrangement must be reviewed by construction and installation teams.

No clash or corridor management: The tool does not perform 3D clash detection with other utilities, foundations, or structures. Final routing and elevation shall be coordinated in the project model (e.g., BIM/CAD).

REQUIRED ENGINEER REVIEW

Validation of inputs: All input parameters (spacing, cover, conduit size, spare percentage) shall be selected and validated by a qualified engineer for each project and voltage level.

Check against project standards: Output dimensions are indicative only and must be checked against project-specific standards, utility requirements, and right-of-way limitations.

Update for non-standard conditions: For non-standard soil conditions, high load corridors, special thermal backfill, or congested utility zones, the tool's results shall be treated as a starting point only and refined by detailed analysis.

DISCLAIMER

Preliminary, non-binding results: Results generated by this tool are preliminary and non-binding. They are intended solely for space reservation and early coordination and shall not be used as the sole basis for construction, procurement, or final cable rating decisions.