BOQ PREAMBLES | MEASUREMENT AND INCLUSIONS

3D-printed concrete walls — draft estimating basis, subject to project specifications and contract documents

No.	Topic	Requirement / QS instruction	Reference
01	Scope	Division 03 / Section 03 37 00 is the specialty-placed concrete classification. '3D-Printed Concrete Walls' is a project-specific work-package name, not a verified standard CSI section title.	
02	Strength and acceptance	The 35 MPa strength in the printed-concrete item is a placeholder example supplied for drafting purposes; confirm the required grade, age, method and specimen orientation with the engineer. Compressive strength alone is not complete qualification of the printed wall system.	
03	Design precedence	Only quantities from a designed or clearly identified preliminary structural arrangement can be used for meaningful pricing. A BOQ does not determine required wall thickness, core geometry, reinforcement or connections.	
04	Measurement — printed material	Measure net deposited volume of the approved printed wall beads in m³. Do not measure cavities and do not multiply full envelope wall thickness by net wall area where the profile is hollow. Agree tolerance, opening deductions, waste and supply method in contract measurement rules.	
05	Measurement — structural infill	Measure net volume of grout or conventional concrete placed within printed cavities or cores, separately from printed material, unless expressly included in a composite printed-wall item.	
06	Measurement — reinforcement	Measure reinforcement from approved bar bending schedules, generally by mass (kg), including only items defined as within the pay item. Do not price duplicate items under raft/foundation or conventional concrete works.	
07	Measurement — formwork	Where conventional lintels, bond beams or closure pours require temporary forms, measure separately in m², unless expressly included in their concrete item.	

08	Rate inclusions	Rates should cover all plant and labour needed for each completed priced item. A printer/pump hourly cost should be reflected in the printed-wall rate. A distinct mobilisation item covers one-off setup/demobilisation and should not be recharged within the operating rate.	
09	Quality / inspections	Routine contractor production quality checks and records are included in installed-work rates. Additional independent verification may be a separate provisional or measured item only when explicitly required in the project specification.	
10	Defects liability	As for ordinary civil engineering works, defective or nonconforming work is corrected at the contractor's cost in accordance with the contract and defects-liability provisions. This is a general contractual obligation and is not a separate BOQ quantity. Do not use ambiguous 'all imaginable works' wording.	
11	MEP / finishes	Sleeves and boxes may be under this bill OR the MEP bill, never both. General wall plastering/painting and thermal treatment normally belong to corresponding finishing/envelope divisions unless specifically made part of the 3D wall scope.	
12	Use of optional items	Items annotated as optional must be excluded, deleted or revised when not applicable. Do not combine 'all-inclusive complete printed wall m²' with detailed printed concrete, reinforcement and infill items unless scopes are explicitly separated.	
13	Currency and prices	Leave rates and quantities blank. Only the quantity surveyor or estimator supplies local project rates, designed quantities and any appropriate preliminaries or markups.	
14	Draft status	This is an editable project-specific draft BOQ, not an approved design, universally applicable specification or standard measurement code.	

RESEARCH SOURCES / TECHNICAL BACKGROUND

Source	Publisher	URL	Use

CSI MasterFormat Division and section classification	Construction Specifications Institute	https://www.csiresources.org/westregion/practice/standards/masterformat	Background; verify project applicability
MasterFormat numbers/titles: 03 37 00 Specialty Placed Concrete	Los Alamos National Laboratory / CSI list	https://engstandards.lanl.gov/specs/CSI-MasterFormat-2016.pdf	Background; verify project applicability
ICC 1150-2026 requirements for 3D printed wall configurations	International Code Council	https://shop.iccsafe.org/standards/icc-1150-2026-standard-for-3d-automated-construction-technology-for-3d-concrete-walls.html	Background; verify project applicability
Published 3DCP cost model (research rate build-up, not contractual BOQ)	Applied Sciences (MDPI)	https://www.mdpi.com/2076-3417/11/9/3865	Background; verify project applicability
Quollnet method statement for onsite printing	Quollnet	https://quollnet.com/methods/method-statement-onsite-3d-concrete-printing-of-building-walls-robotic-extrusion	Background; verify project applicability