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Measurement Book: A Vital Record for Contractors and Clients The "Measurement Book" serves as a crucial record where contractors and clients document measurements taken during construction projects. It is essential for tracking progress, verifying payments, and providing evidence in court cases. It is maintained by the Division and can be serially numbered to identify who issued it, when, and other relevant details. The Measurement Book contains vital information such as work location, contractor's name, work completion date, and measurement recording dates. Each entry starts with a specific format, including: - Work Name - Work Location - Contractor's Name - Work Completion Date - Work Commencement Date - Measurement Recording Date - Agreement Number and Date The book is recorded at two stages: progressive measurements and final measurements. Progressive Measurements: - Maintained in each stage of the project, typically monthly, to track work progress and output against payments made. - Essential for both measurement-based and daily wage payment systems. Final Measurements: - A complete record of physical interventions, taken at the completion of any physical intervention. - Allows for comparison between actual work done and the estimate, ensuring accuracy and accountability. In the Measurement Book, each entry includes: - Date of Measurement - Explanation of BOQ items to understand measurement details - Serial Number of new measurements - Unit of measurement (e.g., Cubic meter or Square meter) - Total quantity of measurement calculated The book is crucial for both contractors and clients, providing a permanent record of work progress, payments, and measurements. ****Drawing Requirements**** The drawing requires the construction of various elements, including footings, columns, and plinth beams. The following calculations are made to determine the quantity of materials required for each element. ****Footing Calculations**** * For 11 footings, each with dimensions of 1m x 1m: + Length = 0.6m (working space) + 1.0m (footing size) + 0.6m (working space) = 2.20m + Quantity: 84.12 Cu.m. * For another set of 11 footings, each with dimensions of 1m x 1m: + Length = 0.15m (P.C.C. working space) + 1.0m (footing size) + 0.15m (P.C.C. working space) = 1.30m + Quantity: 1.39 Cu.m. ****Column Calculations**** * For 11 columns, each with dimensions of 0.230m x 0.230m: + Height = 1.05m + Quantity: 0.61 Cu.m. ****Backfilling Calculations**** * Total quantity of backfilling required for 11 footings: + Footing excavation area: 84.12 Cu.m. + Deduction: - Footing P.C.C.: -1.39 Cu.m. - Footing R.C.C.: -4.95 Cu.m. - Column R.C.C.: -0.61 Cu.m. Total quantity: 77.16 Cu.m. ****Plinth Beam Calculations**** * Total quantity of plinth beam backfilling required: + Plinth area out to out: 47.25 Cu.m. + Deduction: - L-1: -4.24 Cu.m. - L-2: -1.66 Cu.m. - L-3: -1.66 Cu.m. - L-4: -0.21 Cu.m. - L-5: -0.32 Cu.m. Total quantity: 39.17 Cu.m. ****Plinth Beam R.C.C. Calculations**** * Total quantity of plinth beam R.C.C. required: + Lintel beam drawing requires: - L-1: 3 nos. - L-2: 4 nos. - L-3: 3 nos. - L-4: 1 nos - L-5: 1 nos Total quantity: 0.32 Cu.m. ****Grade Slab RCC Calculations**** * Total length x total breadth x thickness of grade slab RCC: + Quantity = (Total area - column grade slab RCC) The measurements for Grae Slab RCC, Brick Masonry, and In-Side Plaster are as follows: * Grae Slab RCC: + Total volume: 7.82 cubic meters + Measurement taken from drawing: column length and breadth = 0.230m, height = 2.650m (ground slab - ground floor - slab beam) * Brick Masonry: + 230mm thick wall: - Long Wall: 18.72 cubic meters - Shot Wall 1: 5.49 cubic meters - Deductions for columns, windows, doors, and vents * In-Side Plaster: + Bedroom Long Wall: 24 square meters (deducting 0.5 sq.m. below section) + Kitchen + Dining Long Wall: 24 square meters (deducting 0.5 sq.m. below section) + Verandah Long Wall: 18 square meters (deducting 0.5 sq.m. below section) + DRG. Room Long Wall: 33.30 square meters (deducting 0.5 sq.m. to 3.0 sq.m. between half deduction in area) Note that some measurements are listed twice, possibly due to the inclusion of multiple drawings or plans. ****Measurement of Plaster and Paint**** The measurements for plaster and paint are as follows: ****Inner Plaster**** + Area: 208.89 sq.m. + Calculated by subtracting deductions (doors, vents, etc.) from individual room areas + Includes passages, bedrooms, kitchen, dining, verandah, and W.C. ****Outer Plaster**** + Front side: 2 walls x 21.25 sq.m. each = 42.5 sq.m. + Back side: 1 wall x 36.72 sq.m. + Right side: 1 wall x 48.90 sq.m. + Left side: 1 wall x 48.90 sq.m. + Parapet walls: 2 walls x 22.32 sq.m. each = 44.64 sq.m. + Total outer plaster area: 197.87 sq.m. ****Ceiling Plaster**** + Bed room: 1 ceiling x 12.00 sq.m. + Kitchen + Dining: 1 ceiling x 16.00 sq.m. + Verandah: 1 ceiling x 9.00 sq.m. + DRG. Room: 1 ceiling x 22.20 sq.m. + Bath room: 1 ceiling x 1.80 sq.m. + W.C.: 1 ceiling x 1.50 sq.m. + Passage: 1 ceiling x 3.22 sq.m. Total ceiling plaster area: 65.72 sq.m. ****RCC Slab Measurement**** * ****Area**** 10.240 m x 7.690 m = 78.31 sq.m. ****Volume of RCC slab**** 78.31 sq.m. x 0.1 m (thickness) = 7.831 cu.m. * Total RCC slab volume: 12.59 cu.m. ****Paint Measurement**** ****Inner Paints**** + Bed room: long wall 2 x 24.00 sq.m., shot wall 2 x 18.00 sq.m. + Kitchen + Dining: long wall 2 x 24.00 sq.m., shot wall 2 x 24.00 sq.m. + Verandah: long wall 2 x 18.00 sq.m., short wall 1 x 9.00 sq.m., short wall 1 x 3.60 sq.m. Total inner paint area: [insert total] Note that the text is a bit difficult to follow due to its complex formatting and lack of clear headings. I've tried to simplify it as much as possible while still conveying the main information. ****Measurement Book Entries**** The following table lists various deductions and measurements for a construction project: * Deductions: + Door O: -2.00m x 1.20m x 2.10m = -5.04m² + Door D: -1.00m x 1.20m x 1.20m = -1.44m² + Window W: -1.00m x 2.00m x 1.20m = -2.40m² + ...and so on. * Bathroom measurements: + Long wall: 2.00m x 3.00m x 9.00m² + Shot wall: 2.00m x 3.00m x 7.20m² + Ceiling: 1.50m x 1.20m x 1.80m² * W.C. measurements: + Long wall: 2.00m x 3.00m x 9.00m² + Shot wall: 2.00m x 3.00m x 6.00m² + Ceiling: 1.50m x 1.00m x 1.50m² * Passage measurements: + Long wall: 2.32m x 3.00m x 13.92m² + Shot wall: 1.39m x 3.00m x 8.34m² + Ceiling: 2.32m x 1.39m x 3.22m² ****Total Measurements**** The total quantity of measurements for the inside plaster is 252.14m², while the outside plaster measurements total 191.18m². This text also provides an overview of what a measurement book is, why it's important in construction projects, and who is responsible for maintaining it. As construction projects advance, it's crucial to maintain accurate records of measurements. Measurement books are versatile tools that can be used for various types of projects, including residential, commercial, and infrastructure developments. The format may vary depending on the project requirements. If discrepancies arise, they should be addressed immediately by reviewing the measurements, correcting errors, and documenting changes in the measurement book. Measurement books assist in project management by tracking progress, managing costs, and ensuring work is completed according to specifications. They also provide a clear record for auditing and resolving contractual disputes. To use measurement books effectively, best practices include ensuring accurate and prompt entries, regular reviewing and verifying of data, keeping the book secure and accessible only to authorized personnel, using consistent terminology and format, and maintaining a well-organized and legible recording system. A well-maintained measurement book is essential in civil engineering, as it ensures the accuracy of work measurements, facilitating smooth financial transactions and protecting all parties involved. Measurement books are important records that document measurements for work done by contractors, materials received at site, or services rendered. They belong to the division responsible for issuing them and can be serially numbered with details such as date of issue, etc. Contractor payments are made based on the measurements recorded in the measurement book, which is considered a vital account record that should be preserved carefully and correctly. In case of disputes, it serves as substantial evidence in court. Measurements should be written legibly to ensure transactions are readily traceable, with each set of measurements starting with entries such as work name, location, contractor's name, completion date, commencement date, measurement recording date, agreement number, and date. Measurement Book: A Crucial Tool in Construction Projects ****BOQ (Bill of Quantities)****: This document is essential for accurate entries in the measurement book, listing materials, labor, and costs. It's vital for civil engineering projects. The Measurement Book Rules: * Accurate record-keeping is crucial to ensure the integrity of records. * The measurement book needs to be kept updated with precise measurements to avoid disputes or errors. * Each entry should adhere to these rules, ensuring consistency and accuracy throughout the project. Procedure of Recording Measurement Book: 1. ****Progressive Measurement****: * Maintained in completion of different stages of watershed activity or before each running payment. * A monthly bill is maintained in this case, as project work is a long-term process requiring monthly payments based on progress. * This measurement helps track the progress of work and output signal against payments made. 2. ****Final Measurement****: * Complete measurement of physical intervention recorded at completion. * Compares actual work done with estimates, keeping all measurements in one place. Industry Uses: * In residential construction, the civil engineering measurement book tracks small-scale projects like housing developments, where precision is crucial for foundations and wall lengths. * In commercial construction, the measurement book documents large-scale projects like office buildings and shopping complexes, requiring detailed records of materials and work progress for budget and timeline management. There are several common mistakes to avoid when using the measurement book in construction. One frequent error is incorrect measurements due to oversight or miscalculation, which can lead to significant issues later in the project. To prevent this, ensure that all measurements are double-checked and verified before recording them in the measurement book format. Another common mistake is neglecting to update the measurement book regularly, which can cause discrepancies between actual work done and recorded work. Consistent updates and reviews of the measurement book can prevent these issues. When entering records in the measurement book, write down the Date of Measurement taken and explain the Item of BOQ to understand what the measurement is and where it's taken from. Include the Serial Number of new measurements along with the Item number of BOQ, as shown in the above table. Clearly state the unit of measurement like Cubic meter or M3 for volumetric measurements. Digital tools and software can assist in the measurement recording process, streamlining documentation and reducing errors. Software like MS Excel offers customizable templates that align with the format of the measurement book, making it easier to keep track of measurements. Additionally, project management software such as AutoCAD can integrate with measurement books for more precise data recording. Downloadable templates are available for various projects, particularly useful for those new to maintaining a standard measurement book or need a starting point. These templates can be easily modified to suit the measurement book requirements. For the foundation's excavation work, a total of 1.58 cubic meters of earthwork is required. The footings will be constructed at a depth of 2.2 meters below ground level, with an additional 0.6 meter allowance for working space. In total, there are 11 individual footings to be excavated as per the provided drawing.