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| **Masonry Contractors Australia Ltd** | * **Productivity Estimation Guide 2019** | | |  |
|  |  |  |  |  |
| **Summary** |  |  |  |  |
|  |  |  |  |  |
| The following is a guide only for bricklaying contractors to assess how many bricks per day on **average** are laid by each bricklayer to cover the | | | | |
| productivity required for a 2-1 ratio (2 bricklayers to 1 Labourer). | |  |  |  |
|  |  |  |  |  |
| The ratio of Bricklayers to Labours may vary from company to company and will have an impact on productivity averages. | | | |  |
|  |  |  |  |  |
| **What is Productivity** |  |  |  |  |
|  |  |  |  |  |
| Productivity being an average measure of the efficiency of production. It can be expressed as the ratio of output to inputs used in the production | | | | |
| process i.e. output per unit of input. When all outputs and inputs are included in the productivity measure it is called total productivity. | | | |  |
|  |  |  |  |  |
| Productivity measures that use one or more inputs or factors, but not all factors, are called partial productivities. A common example in | | | |  |
| economics is labour productivity, usually expressed as output per hour. At the company level, typical partial productivity measures are such | | | | |
| things as worker hours & materials per unit of production. | |  |  |  |
|  |  |  |  |  |
| **QUALIFIACTIONS** |  |  |  |  |
|  |  |  |  |  |
| 1. Productivity may vary from project to project depending upon complexity of the work and working environment. | | | |  |
| 2. The productivity guide reflects basic situations only; it is recommended to seek professional advice if projects are considered more difficult than normal. | | | | |
| 3. Productivity may vary considerably depending upon material quality and performance criteria. | | |  |  |
| 4. The productivity guide is not intended for tendering but purely for estimating guidance. | | |  |  |
| 5. A standard workday is based on an 8-hour shift. |  |  |  |  |
| 6. No allowance has been made for any productivity required for hoisting of materials. | | |  |  |
| 7. Every effort has been made to ensure the accuracy of this information, but the association will in no way accept liability for loss of any kind resulting | | | | |
| from the use of this guide. |  |  |  |  |
| 8. Any monetary values expressed in the guide do not include GST | |  |  |  |
|  |  |  |  |  |
| **Clay Brickwork** |  |  |  |  |
|  |  |  |  |  |
| **Example for a typical eight-hour day** | **Common bricks laid** | **Number of people** | **Ave. bricks per person** | **Ave. m2 per person** |
|  |  |  |  |  |
| 2 Bricklayers lay an average of **420\*** bricks | **840\*** | 3 | **280\*** | 5.78 |
| each per day with the assistance of 1 Labourer |  |  |  |  |
|  |  |  |  |  |
| **Common Bricks - Stretcher Bond** | **Size** | **Units per M2** | **Ave. number laid per day** | **Ave. per person 2-1 Team** |
|  |  |  |  |  |
| Standard 76 | 230x110x76 | 48.5 | **420\*** | 280 |
| Standard 119 | 230x110x119 | 32.3 | 330 | 220 |
| Standard 162 | 230x110x162 | 24.25 | 270 | 180 |
| Exposure Grade 76 | 230x110x76 | 48.5 | 420 | 280 |
| Dry Pressed Common 76 | 230x110x76 | 48.5 | 405 | 270 |
| Maxi 76 | 290x90x76 | 38.8 | 390 | 260 |
| Maxi 119 | 290x90x119 | 25.8 | 285 | 190 |
| Maxi 162 | 290x90x162 | 19.4 | 234 | 156 |
| Through Wall 76 | 230x150x76 | 48.5 | 330 | 220 |
|  |  |  |  |  |
| **Face Bricks - Stretcher Bond** | **Size** |  |  |  |
|  |  |  |  |  |
| Face 76 | 230x110x76 | 48.5 | 330 | 220 |
| Double height 162 | 230x110x162 | 24.25 | 195 | 130 |
| Dry Pressed Face 76 | 230x110x76 | 48.5 | 300 | 200 |
|  |  |  |  |  |
| **Sundry labour tasks** | **Size** | **Units per LM** | **Ave. number laid per day** | **Ave. per person 2-1 Team** |
|  |  |  |  |  |
| Sills | 230x110x76 | 11.62 | 201 | 134 |
| Header | 230x110x76 | 11.62 | 258 | 172 |
| Soldier | 230x110x76 | 11.62 | 226.5 | 151 |
| Sill 45 Degree | 140x162x76 | 11.62 | 201 | 134 |
| Single Bullnose | 230x110x76 | 11.62 | 258 | 172 |
| Double Bullnose | 230x110x76 | 11.62 | 258 | 172 |
| Single Squint | 230x110x76 | 11.62 | 201 | 134 |
| Double Squint | 230x110x76 | 11.62 | 201 | 134 |
| Single Cant | 230x110x76 | 11.62 | 258 | 172 |
| Double Cant | 230x110x76 | 11.62 | 258 | 172 |
| Plinth Header | 230x110x76 | 8.33 | 212 | 141 |
| Plinth Stretcher | 230x110x76 | 4.16 | 199.5 | 133 |
|  |  |  |  |  |
| **Concrete Blockwork** |  |  |  |  |
|  |  |  |  |  |
| **Example for a typical eight-hour day (Team of 2 & 1)** | **Total blocks laid** | **Number of people** | **Ave. blocks per person** | **Ave. m2 per person** |
|  |  |  |  |  |
| 2 Blocklayers lay an average of 140 blocks | 280 | 3 | 93 | 7.44 |
| each per day with the assistance of 1 Labourer |  |  |  |  |
|  |  |  |  |  |
| **Natural Grey Block - Stretcher Bond** | **Size** | **Units per M2** | **Number laid per day** | **Ave. per person 2-1 Team** |
|  |  |  |  |  |
| 10.01 | 90x190x390 | 12.5 | 140 | 93 |
| 10.31 Solid | 90x190x390 | 12.5 | 130 | 86 |
| 15.01 | 140x190x390 | 12.5 | 135 | 90 |
| 15.42 Rebated | 140x190x390 | 12.5 | 135 | 90 |
| 15.91 H-Block | 140x190x390 | 12.5 | 135 | 90 |
| 15.03 | 140x190x390 | 12.5 | 130 | 86 |
| 15.04 | 140x190x390 | 12.5 | 125 | 83 |
| 20.01 | 190x190x390 | 12.5 | 130 | 86 |
| 20.42 Rebated | 190x190x390 | 12.5 | 130 | 86 |
| 20.91 H-Block | 190x190x390 | 12.5 | 130 | 86 |
| 20.03 | 190x190x390 | 12.5 | 120 | 80 |
| 20.04 | 190x190x390 | 12.5 | 112.5 | 75 |
| 30.42 Rebated | 290x190x390 | 12.5 | 106 | 71 |
| 30.91 H-Block | 290x190x390 | 12.5 | 106 | 71 |
|  |  |  |  |  |
| **Coloured Block - Stretcher Bond** | **Size** | **Units per M2** | **Number laid per day** | **Ave. per person 2-1 Team** |
|  |  |  |  |  |
| **Full Height Blocks** |  |  |  |  |
| 90mm smooth coloured | 90x190x390 | 12.5 | 127.5 | 85 |
| 140mm smooth coloured | 140x190x390 | 12.5 | 120 | 80 |
| 190mm smooth coloured | 190x190x390 | 12.5 | 112.5 | 75 |
| 90mm split face coloured | 90x190x390 | 12.5 | 120 | 80 |
| 140mm split face coloured | 140x190x390 | 12.5 | 112.5 | 75 |
| 190mm split face coloured | 190x190x390 | 12.5 | 105 | 70 |
| 90mm 'Honed' coloured | 90x190x390 | 12.5 | 112.5 | 75 |
| 140mm 'Honed' coloured | 140x190x390 | 12.5 | 105 | 70 |
| 190mm 'Honed' coloured | 190x190x390 | 12.5 | 97.5 | 65 |
| 90mm 'Polished' coloured | 90x190x390 | 12.5 | 105 | 70 |
| 140mm 'Polished' coloured | 140x190x390 | 12.5 | 97.5 | 65 |
| 190mm 'Polished' coloured | 190x190x390 | 12.5 | 90 | 60 |
|  |  |  |  |  |
| **Coloured Block - Stretcher Bond** | **Size** | **Units per M2** | **Number laid per day** | **Ave. per person 2-1 Team** |
|  |  |  |  |  |
| **Half Height Blocks** |  |  |  |  |
| 90mm smooth coloured | 90x90x390 | 25 | 180 | 120 |
| 140mm smooth coloured | 140x90x390 | 25 | 172.5 | 115 |
| 190mm smooth coloured | 190x90x390 | 25 | 165 | 110 |
| 90mm split face coloured | 90x90x390 | 25 | 172.5 | 115 |
| 140mm split face coloured | 140x90x390 | 25 | 165 | 110 |
| 190mm split face coloured | 190x90x390 | 25 | 157.5 | 105 |
| 90mm 'Honed' coloured | 90x90x390 | 25 | 165 | 110 |
| 140mm 'Honed' coloured | 140x90x390 | 25 | 157.5 | 105 |
| 190mm 'Honed' coloured | 190x90x390 | 25 | 150 | 100 |
| 90mm 'Polished' coloured | 90x90x390 | 25 | 157.5 | 105 |
| 140mm 'Polished' coloured | 140x90x390 | 25 | 150 | 100 |
| 190mm 'Polished' coloured | 190x90x390 | 25 | 142.5 | 95 |
|  |  |  |  |  |
| **Capping's** | **Size** | **Units per LM** | **Number laid per day** | **Ave. per person 2-1 Team** |
|  |  |  |  |  |
| Natural Grey Capping block | 190x40x390 | 2.5 | 105 | 70 |
| Coloured smooth capping | 190x40x390 | 2.5 | 105 | 70 |
| Coloured 'Honed' capping | 190x40x390 | 2.5 | 105 | 70 |
| Coloured 'Polished' capping | 190x40x390 | 2.5 | 105 | 70 |
| Coloured smooth capping | 190x40x390 | 2.5 | 105 | 70 |
| Coloured 'Honed' capping | 190x40x390 | 2.5 | 105 | 70 |
| Coloured 'Polished' capping | 190x40x390 | 2.5 | 105 | 70 |
|  |  |  |  |  |
| **Installation Tasks** | **Size** | **LM installed per day** | **Ave. per person 2-1 Team** |  |
|  |  |  |  |  |
| Bond beam extra over | 190mm high | 24 | 16 |  |
| Form Up Washout | 190mm high | 75 | 50 |  |
| Attached Pier extra over | <400mm | 36 | 24 |  |
| Isolated Pier extra over | >400mm<1000mm | 18 | 12 |  |
|  |  |  |  |  |
| **Core Filling** | **Size** | **M2 installed per day** | **Ave. per person 2-1 Team** |  |
|  |  |  |  |  |
| Grout fill cavity with pump | 70mm wide | 55.5 | 37 |  |
| Core fill block with pump | 140x190x390 | 45.9 | 30.6 |  |
| Core fill block with pump | 190x190x390 | 39 | 26 |  |
| Core fill block with pump | 290x190x390 | 31.2 | 20.8 |  |
|  |  |  |  |  |
| Grout fill cavity manual by hand | 70mm wide | 39 | 26 |  |
| Core fill 140mm manual by hand | 140x190x390 | 33 | 22 |  |
| Core fill 190mm manual by hand | 190x190x390 | 24 | 16 |  |
| Core fill 290mm manual by hand | 290x190x390 | 18 | 12 |  |
|  |  |  |  |  |
| **Sundry Labour Tasks** | **Metric Unit** | **Installation rate per day** | **Ave. per person 2-1 Team** |  |
|  |  |  |  |  |
| Measure & Saw Cut | lm | 21.83 | 14.55 |  |
|  |  |  |  |  |
| Brick on edge sill | lm | 17.30 | 11.53 |  |
| Brick on edge capping | lm | 22.28 | 14.85 |  |
| Capping 230mm brick on flat | lm | 33.60 | 22.4 |  |
| Capping 450mm wide brick on edge | lm | 16.80 | 11.2 |  |
| Capping 450mm wide brick on flat | lm | 25.05 | 16.7 |  |
| Soldier brick on edge | lm | 19.50 | 13 |  |
| Plinth Header | lm | 25.46 | 16.97 |  |
| Purpose made 45 angle sills | lm | 17.30 | 11.53 |  |
| Single Bullnose | lm | 22.20 | 14.8 |  |
| Double Bullnose | lm | 22.20 | 14.8 |  |
| Single Squint | lm | 17.30 | 11.53 |  |
| Double Squint | lm | 17.30 | 11.53 |  |
| Single Cant | lm | 22.20 | 14.8 |  |
| Double Cant | lm | 22.20 | 14.8 |  |
| Plinth Stretcher | lm | 47.96 | 31.97 |  |
| Stringer Course | lm | 69.00 | 46 |  |
| Corbel Course | lm | 42.00 | 28 |  |
| Recessed or projecting courses | lm | 69.00 | 46 |  |
|  |  |  |  |  |
| Attached Brick Pier extra over <240mm | lm | 28.5 | 19 |  |
| Isolated Brick Pier extra over >240mm | lm | 21.37 | 14.25 |  |
|  |  |  |  |  |
| **Sundry Labour Items** |  |  |  |  |
|  |  |  |  |  |
| Install Breather Foil (timber frame) | m2 | 114 |  |  |
| Install Breather Foil (metal frame) | m2 | 96 |  |  |
| Cavity Insulation (15mm) | m2 | 72 |  |  |
| Cavity Insulation (25mm) | m2 | 72 |  |  |
| Cavity Insulation (40mm) | m2 | 72 |  |  |
|  |  |  |  |  |
| **Cavity Flashing** |  |  |  |  |
|  |  |  |  |  |
| Install flashing up to 250mm wide | lm | 213 |  |  |
| Install flashing more than 250mm wide | lm | 116 |  |  |
| Install slip joint | lm | 55 |  |  |
| Install termite protection | lm | 44 |  |  |
|  |  |  |  |  |
| **Cavity Ties** |  |  |  |  |
|  |  |  |  |  |
| Install cavity ties (nailed to timber frame) | m2 | 252 |  |  |
| Install cavity ties (metal frame) | m2 | 157 |  |  |
| Install bed joint reinforcement | lm | 640 |  |  |
|  |  |  |  |  |
| **Expansion Joints** |  |  |  |  |
|  |  |  |  |  |
| Form expansion joints | lm | 232 |  |  |
| Install expansion ties | no. | 416 |  |  |
| Power fix expansion ties | no. | 208 |  |  |
| Sealant and backing rod to expansion joint | lm | 76 |  |  |
|  |  |  |  |  |
| **Lintels** |  |  |  |  |
|  |  |  |  |  |
| Install angle bar lintels | lm | 48 |  |  |
| Install 'T' bar lintels | lm | 18 |  |  |
| Install Galv. shelf angle | lm | 13.5 |  |  |
| Wall Stiffeners | lm | 22.33 |  |  |
| Drill and Epoxy Starter Bars | no. | 90 |  |  |
|  |  |  |  |  |
| **Metal Door Frames** |  |  |  |  |
|  |  |  |  |  |
| Install Metal Door Frame (Single) | no. | 9 |  |  |
| Install Metal Door Frame (Double) | no. | 6 |  |  |
| Install Metal Door Frame (Triple) | no. | 3 |  |  |
| Retro-fit Metal Door Frame | no. | 1.5 |  |  |
|  |  |  |  |  |
| Install Window (max size 1.8x1.8m) | no. | 12 |  |  |
| Install Sliding Door (max size 2.1x2.1m) | no. | 11 |  |  |
|  |  |  |  |  |
| **Set Up** |  |  |  |  |
|  |  |  |  |  |
| Erect scaffolding (max 5m deck height) | m2 | 49.5 |  |  |
| Set up gable end | no. | 3 |  |  |
| Hoisting of materials | Not included | Not included |  |  |
|  |  |  |  |  |
| **Pointing** |  |  |  |  |
|  |  |  |  |  |
| Pointing reverse face | m2 | 85.85 |  |  |
| Cement bagging | m2 | 52.5 |  |  |
| Pressure clean walls | m2 | 105 |  |  |
|  |  |  |  |  |
| **Project Productivity Example** |  |  |  |  |
|  |  |  |  |  |
| **Based on two bricklayers & one Labourer (Ratio 2 & 1)** |  |  |  |  |
|  |  |  |  |  |
| Example for a typical eight-hour day | Quantity | Labour aver per person | Total number of days | Total number of bricks laid |
|  |  |  |  |  |
| **Bricks** |  |  |  |  |
|  |  |  |  |  |
| Common brick to garage walls | 5000 no. | **280\*** | 17.86 | 5,000 |
| Face brick to external veneer walls | 10000 no. | 220 | 45.46 | 10,000 |
|  |  |  |  |  |
| **Sundry Labour Tasks** |  |  |  |  |
|  |  |  |  |  |
| Saw cutting | 30 lm | 14.55 | 2.07 | 0 |
| Install cavity breather sheet | 200 m2 | 114 | 1.76 | 0 |
| Stand single metal door frame | 1 no. | 12 | 0.09 | 0 |
| Brick on edge capping | 20 lm | 14.85 | 1.35 | 232.4 |
| Brick sills | 40 lm | 11.53 | 3.47 | 464.8 |
|  |  |  |  |  |
| **Total Project Productivity** |  |  | **72.06** | **15,697.20** |
|  |  |  |  |  |
| Number of bricks installed | 15,697.20 |  |  |  |
|  |  |  |  |  |
| Divided by total days | 72.06 |  |  |  |
|  |  |  |  |  |
| **Average bricks per person per day** | **217.84 or (4.5m2)** |  |  |  |
|  |  |  |  |  |
| **Break Even Labour Cost Example** |  |  |  |  |
|  |  |  |  |  |
| An example showing how it works for a Team of 2 & 1. |  |  |  |  |
|  |  |  |  |  |
| Each bricklayer installing **420\*** common bricks per day |  |  |  |  |
|  |  |  |  |  |
| $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ per hour x 8 hours x \_\_\_\_\_\_\_\_ employees = $\_\_\_\_\_\_\_\_\_\_\_\_ per hour to operate.  (example cost $50 x 8hrs x 3 employees = $1,200.00 per day) | | | | |
| (Hourly labour cost)                              (Number of employees) | |  |  |  |
|  |  |  |  |  |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  divided by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  = $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  (example cost $1,200.00 / 820 laid = $1.47 per brick) | | | |  |
| Labour cost         Bricks laid                Break even | | |  |  |
|  |  |  |  |  |
| If you calculate your company overheads & labour cost accurately, you can then assess how much to charge for your services to break even | | | | |
|  |  |  |  |  |
| **Employment Cost Break Down Example** |  |  |  |  |
|  |  |  |  |  |
| **Factors** | **Metrics** | **CW3 Trade Bricklayer** |  |  |
| Hourly Rate of Pay |  | **$23.58** |  |  |
| Hours in Day | hrs | 8 |  |  |
| Sick Day (10 per year) | days | 4.00% |  |  |
| Inclement weather (10 per year) | days | 4.00% |  |  |
| Public Holidays (12per year) | days | 4.61% |  |  |
| Training days (1 per year) | days | 0.40% |  |  |
| LSL | 0.00% | 0.00% |  |  |
| Payroll Tax | 5.00% | 5.00% |  |  |
| Workers Comp | 8.50% | 8.50% |  |  |
| Heavy Block Allowance (per/hour) | 5.80% | $1.19 |  |  |
| Multi-storey Allowance (per/hour) | 2.60% | $0.10 |  |  |
| Superannuation (per week) | 9.50% | $92.30 |  |  |
| Redundancy Fund (per week) | week | $50.00 |  |  |
| Travel Allowance (per day) | day | $17.43 |  |  |
| Income Protection Insurance (per week) | week | $0.00 |  |  |
|  |  |  |  |  |
| **Calculations** |  |  |  |  |
| Base rate | hr | $23.58 |  |  |
| Special Allowance | hr | $0.20 |  |  |
| Tool Allowance | hr | $0.57 |  |  |
| Industry Allowance | hr | $0.72 |  |  |
| Hourly Base Rate of Pay |  | **$25.07** |  |  |
| Base Pay - 8hrs |  | $188.64 |  |  |
| Travel |  | $17.43 |  |  |
| Heavy Block & Multi Storey |  | $10.32 |  |  |
| **Sub Total** |  | ***$216.39*** |  |  |
|  |  |  |  |  |
| Income Protection Insurance |  | $ 0.00 |  |  |
| Annual leave / Holiday Pay | 20 days per year | $13.68 |  |  |
| Leave Loading | 17.50% | $ 2.39 |  |  |
| Sick Pay | 10 per year | $7.55 |  |  |
| Public Holidays | 12 per year | $ 8.70 |  |  |
| Rain Days | 10 per year | $7.55 |  |  |
| Training | 1 per year | $0.75 |  |  |
| LSL |  | $0.00 |  |  |
| Payroll Tax |  | $10.82 |  |  |
| Workers Comp |  | $105.73 |  |  |
| Superannuation |  | $18.46 |  |  |
| ACIRT |  | $10.00 |  |  |
| Safety Clothing (PPE) per day |  | $3.00 |  |  |
| **TOTAL per day** |  | ***$405.01*** |  |  |
|  |  |  |  |  |
| **Hourly rate of pay** |  | **$50.63** |  |  |
|  |  |  |  |  |
| **Weekly rate** |  | **$2,025.07** |  |  |
|  |  |  |  |  |
| **Saturday (5 hours)** |  |  |  |  |
| \*1.5 | 2 hrs time/half | $70.74 |  |  |
| \*2 | 3 hrs double time | $141.48 |  |  |
| Travel |  | $17.43 |  |  |
| Heavy Block Allowance |  | $5.95 |  |  |
| Multi Storey |  | $0.50 |  |  |
| Payroll Tax |  | $11.81 |  |  |
| Workers Comp |  | $19.32 |  |  |
| **Subtotal** |  | **$267.23** |  |  |
|  |  |  |  |  |
| **Subtotal 5 1/2 days** |  | **$2,292.30** |  |  |
| **Daily Rate** |  | **$407,52** |  |  |
| **Hourly Rate incl. Saturday** |  | **$ 50.94** |  |  |
|  |  |  |  |  |
| **Contributors to this guide** |  |  |  |  |
|  |  |  |  |  |
| Masonry Contractors Australia Ltd |  |  |  |  |
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| Trade-Up Pty Ltd |  |  |  |  |
| Morris Estimating Pty Ltd |  |  |  |  |
|  |  |  |  |  |
| **This material has been prepared for the general information of Members of the MCA. It is not intended to take the place of professional advise** | | | | |
| **and readers should not take action on specific issues in reliance upon any matter or information contained in this guide.** | | | |  |