SAMPLE QUANTITIES REPORT

Masonry quantities

Example house: G+1, 1,000 sq ft per floor

PREPARED FOR	LOCATION	REPORT ID	DATE
Example house (sample)	Lucknow, Uttar Pradesh	NS-MA-SAMPLE	29 October 2026

This is a sample report
It is a real report from the same calculations a paid report uses, made for an example house (G+1, 1,000 sq ft on each floor, Lucknow). It is not your project and nothing in it applies to your plot. Your own report uses your plot, floors and city, so its figures will differ.

Your walls at a glance

WALLS
Red clay brick
230 × 115 × 75 mm

OUTER WALL
230 mm
One brick

INNER WALLS
115 mm
Half brick

FLOORS
2
3 m floor to floor

HOMES
1
One house

ROOMS COUNTED
9
3 bedrooms, 3 bathrooms, 1 kitchen, 2 living rooms

DOORS
10
Counted from the rooms

WINDOWS
12
With bathroom ventilators

PLASTER
Inside and outside
Outside 18 mm, two coats

What to order

The main totals. The line under each figure is the range the real number is likely to fall in.

BRICKS	CEMENT	SAND	PLASTER
30,400 nos	193 bags of 50 kg	34.6 m³	1,036 m²
24,928 to 36,480 nos	154 to 251 bags	27.7 to 45.0 m³	881 to 1,223 m²

How to use this report
This is a code-based planning estimate worked out from the answers you gave, not a design for your drawings. Use it to plan, to check a contractor's quantities for gross errors and to order the first lots. Where a figure rests on an assumption, the report says so. Final quantities come from the drawings and the professional who signs them.

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Walls, measured

Each kind of wall, summed over all floors. Openings come out with their lintels and sills, as IS 1200 (Part 3) measures them.

WALL	LENGTH (M)	HEIGHT (M)	THICKNESS (MM)	GROSS (M²)	OPENINGS OUT (M²)	NET (M²)
Outer walls	78.7	2.55	230	200.7	25.7	175.0
Inner walls	45.9	2.70	115	124.0	13.2	110.9
Plinth wall	39.3	0.60	230	23.6	0.0	23.6
Terrace parapet	39.3	1.00	115	39.3	0.0	39.3
Balcony edge walls	6.0	1.00	115	6.0	0.0	6.0
Terrace stair room	12.0	2.40	230	28.8	2.0	26.8
All walls	**221.3**			**422.4**	**40.9**	**381.6**

Outer walls stand between the floor and the beam above (2.55 m). Inner walls are 2.70 m, the average where they meet a slab or a beam.

How the walls were measured, floor by floor

The room plan is worked out from your answers: room sizes follow the bedrooms, bathrooms and kitchens, and every wall between two rooms is counted once.

FLOOR	OUTER WALL (M)	INNER WALLS (M)	WALLS BETWEEN FLATS (M)	FLOOR AREA INSIDE THE WALLS (M²)	ROOMS COUNTED
Ground floor	39.3	28.0	—	80.6	2 bed, 1 living, 1 kitchen, 2 bath
First floor	39.3	17.9	—	81.8	1 bed, 1 living, 0 kitchen, 1 bath

Outer wall length is 4.08 × the square root of the floor area, which is a plan of 1 to 1.5. If your plot is long and thin, the outer walls will be longer and the report will under-count.

Doors, windows and ventilators

Counted from the rooms. Sizes are the usual ones; no standard fixes them.

OPENING	SIZE (M)	NUMBER	EACH (M²)	OUT OF MASONRY (M²)	PLASTER RULE (IS 1200 PART 12)
Room door	0.90 × 2.10	4	1.89	8.1	Deducted once from plaster
Bathroom door	0.75 × 2.10	3	1.58	5.1	Deducted once from plaster
Bathroom ventilator	0.60 × 0.45	3	0.27	1.2	Not deducted from plaster
Bedroom window	1.50 × 1.20	3	1.80	6.4	Deducted once from plaster
Kitchen window	1.20 × 1.20	1	1.44	1.7	Deducted once from plaster
Living room window	1.80 × 1.20	3	2.16	8.0	Deducted once from plaster
Main door	1.00 × 2.10	1	2.10	2.3	Deducted once from plaster
Stair window	1.20 × 1.20	2	1.44	3.4	Deducted once from plaster
Balcony door	1.20 × 2.10	1	2.52	2.7	Deducted once from plaster

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OPENING	SIZE (M)	NUMBER	EACH (M²)	OUT OF MASONRY (M²)	PLASTER RULE (IS 1200 PART 12)
Door of the terrace stair room	0.90 × 2.10	1	1.89	2.0	Deducted once from plaster

Bricks and joint mortar

Joint mortar is the exact volume of the joints plus 25% for uneven units and waste.

WALL	NET AREA (M²)	BRICKS PER M²	NUMBER	WITH 5% BREAKAGE	JOINT MORTAR (M³)	MIX
Outer walls	175.0	94.1	16,469	17,293	9.47	1:6
Inner walls	110.9	49.0	5,434	5,706	2.46	1:4
Plinth wall	23.6	94.1	2,222	2,333	1.28	1:6
Terrace parapet	39.3	49.0	1,929	2,025	0.87	1:4
Balcony edge walls	6.0	49.0	294	309	0.13	1:4
Terrace stair room	26.8	94.1	2,520	2,646	1.45	1:6
All walls	**381.6**		**28,868**	**30,311**	**15.66**	

Red clay brick, 230 × 115 × 75 mm, joints of 10 mm. The common field size of red bricks. It is not a BIS size, and it varies from kiln to kiln..

Plaster

Measured to IS 1200 (Part 12). Mortar per m² is the CPWD Delhi Analysis of Rates yield for each item.

SURFACE	MEASURED (M²)	OUT (M²)	PLASTER (M²)	COAT AND MIX	MORTAR (M³)
Inner walls, both faces, and the inside of the outer walls	514.9	23.6	491.2	12 mm, 1:6	7.07
Ceilings, with the balcony undersides	175.9	0.0	175.9	6 mm, 1:3	1.27
Outside of the building, from ground to terrace	284.4	11.4	273.0	18 mm in two coats (12 mm 1:5, then 6 mm 1:6)	5.90
Terrace parapet, both faces and the top	83.2	0.0	83.2	18 mm in two coats (12 mm 1:5, then 6 mm 1:6)	1.80
Balcony edge walls, both faces and the top	12.7	0.0	12.7	18 mm in two coats (12 mm 1:5, then 6 mm 1:6)	0.27
All plaster	**1,071.1**	**35.0**	**1,036.1**		**16.31**

Inside and outside plaster of columns and beams is counted in the full wall height. Plaster on the underside of the roof slab is not counted if you chose to leave ceilings out.

Lintels and sills

One lintel over every opening, resting at least 0.15 m (or a tenth of the span) on each side, in M20 concrete.

OPENING	NUMBER	LENGTH EACH (M)	SECTION (MM)	CONCRETE (M³)	STEEL (KG)
Room door	4	1.20	115 × 150	0.083	13.0
Bathroom door	3	1.05	115 × 150	0.054	8.8

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OPENING	NUMBER	LENGTH EACH (M)	SECTION (MM)	CONCRETE (M³)	STEEL (KG)
Bathroom ventilator	3	0.90	230 × 150	0.093	8.4
Bedroom window	3	1.80	230 × 150	0.186	16.5
Kitchen window	1	1.50	230 × 150	0.052	4.6
Living room window	3	2.16	230 × 200	0.298	21.1
Main door	1	1.30	230 × 150	0.045	4.1
Stair window	2	1.50	230 × 150	0.104	9.2
Balcony door	1	1.50	230 × 150	0.052	4.6
Door of the terrace stair room	1	1.20	230 × 150	0.041	3.7
All lintels	**22**	**31.0**		**1.01**	**94.1**

Sills: 12 under the windows and ventilators, 17.1 m in all, 75 mm longer than the opening on each side. The sill material (stone, tile or concrete) is your choice and is not counted. Steel is two 10 mm bars below, two 8 mm above and 6 mm stirrups at 150 mm.

Cement and sand, use by use

Every mortar and the lintel concrete, added up.

USE	MIX	VOLUME (M³)	CEMENT (KG)	SAND (M³)	STONE (M³)
Joints: outer walls	1:6	9.47	2,430	10.12	–
Joints: inner walls	1:4	2.46	947	2.63	–
Joints: plinth wall	1:6	1.28	328	1.37	–
Joints: terrace parapet	1:4	0.87	336	0.93	–
Joints: balcony edge walls	1:4	0.13	51	0.14	–
Joints: terrace stair room	1:6	1.45	372	1.55	–
Plaster: inner walls	1:6	7.07	1,815	7.56	–
Plaster: ceilings	1:3	1.27	650	1.35	–
Plaster: outside of the building (12 mm coat)	1:5	3.93	1,210	4.20	–
Plaster: outside of the building (6 mm coat)	1:6	1.97	504	2.10	–
Plaster: terrace parapet (12 mm coat)	1:5	1.20	369	1.28	–
Plaster: terrace parapet (6 mm coat)	1:6	0.60	154	0.64	–
Plaster: balcony edge walls (12 mm coat)	1:5	0.18	56	0.20	–
Plaster: balcony edge walls (6 mm coat)	1:6	0.09	23	0.10	–
Lintels (M20 concrete)	1:1.5:3	1.01	403	0.43	0.86
Everything		**32.98**	**9,648**	**34.61**	**0.86**

Cement for each mix is 1,440 kg ÷ the sand part, plus 6.9% (that is how many bags the CPWD Delhi Analysis of Rates 2014 counts for 1:3 plaster: 513 kg a m³ against 480). Sand is 1.069 m³ for each m³ of mortar. Stone is 20 mm.

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Checked against the Indian Standards

PASS IS 4326:1993 cl 8.2.3 (note)

Outer wall thickness in a framed building

Your outer wall is 230 mm. Infill walls of at least 200 mm in storeys up to 3.5 m high, held at the top (the tool assumes they are), need no separate panel check.

PASS IS 1905:1987 Appendix D-3.1(b)

Inner walls: height against thickness

An inner wall held at its ends and at the top may be up to 30 times its thickness high: 3.45 m for 115 mm. Yours is about 2.70 m high.

NOTE IS 6041:1985 cl 4.3; IS 2572:2005 cl 7.2.2

Parapet height against thickness

A parapet unbraced for more than 3 m may be at most 5 times its thickness high: 0.58 m for 115 mm. Your parapet is 1.0 m, so it needs stiffening columns at 3 m or less. They are not counted here. The same limit is used for brick as a guide.

PASS IS 2250:1981 cl 7.1.5; IS 4326:1993 cl 8.1.2

Mortar mix

Outer walls use 1:6 cement mortar and inner walls 1:4. Parapets use 1:4, because IS 2250 asks for a richer mortar for parapets taller than three times their thickness. The standard's own table of mixes could not be read, so the ratios follow IS 4326 and CPWD practice.

PASS IS 2402:1963 cl 6.13

Outside plaster thickness

Two coats, 12 mm and then 6 mm, are within IS 2402 (undercoat up to 12 mm, finish 3 to 8 mm).

PASS IS 6041 cl 12.2; IS 2572 cl 12.2

Inside plaster thickness

A single inside coat of 12 mm is within the 6 to 12 mm the block standards allow.

PASS IS 1200 (Part 3):1976 cl 4.1.4

Openings in masonry

10 doors and 12 windows and ventilators are taken out of the walls, each with its lintel and sill, because every one is over 0.1 m². Plaster is measured to IS 1200 (Part 12): no deduction up to 0.5 m², one face from 0.5 to 3 m², both faces and the reveals added above 3 m².

NOTE IS 4326:1993 cl 8.2.6

Walls tied to the frame

Infill walls must be bonded to the beams and columns by mortar or by dowels. Dowel bars, ties and any bands in tall walls are your engineer's call and are not counted here.

Please read

- Red bricks are not made to one size across India. The count here is for 230 × 115 × 75 mm; if your kiln's brick is larger or smaller, the count changes in the ratio of the volumes. Measure a few bricks before you order.

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How far off can this be

- Bricks: from 18% below to 20% above the figure shown.
- Cement: from 20% below to 30% above the figure shown.
- Sand: from 20% below to 30% above the figure shown.
- Plaster area: from 15% below to 18% above the figure shown.
- Lintel concrete and steel: from 30% below to 40% above the figure shown.

Assumptions

- Code: Red clay brick of 230 × 115 × 75 mm (The common field size of red bricks. It is not a BIS size, and it varies from kiln to kiln.); joints of 10 mm (IS 6041 cl 7.1 for AAC, IS 2572 cl 11.1.4 for concrete block, IS 2212 for brickwork). Walls are measured and openings deducted to IS 1200 (Part 3) and (Part 12).
- Derived: units per m² = the nominal thickness over the pitch of the unit in all three directions, so a one-brick wall of this brick holds 94.1 units a m². Joint mortar is the true volume of the joints, not the nominal one, which would run about a quarter high.
- Practice: plaster mortar per m² is the CPWD Delhi Analysis of Rates 2014 yield for each item (12 mm, 6 mm, 18 mm in two coats, 20 mm). Cement per m³ of mortar is calibrated to the CPWD figure of 513 kg for 1:3 and carried to the other mixes in the same ratio. The CPWD Volume 1 brickwork items were not used to check the joint mortar, and a published table based on them suggests the tool's joint mortar may be low, most of all in half-brick walls, so the masonry figures are the less certain ones.
- Assumed: the room plan. A bedroom is one share of the floor, a living room 1.3 shares plus 0.3 for each bedroom, a kitchen 0.75, a bathroom 0.33 and the passages about half a share; rooms are 1 to 1.3 in plan and passages 1 to 4. Walls between rooms are counted once.
- Assumed: outer wall length 4.08 × √(floor area), a plan of 1 to 1.5. Outer walls 2.55 m high (floor to beam, 0.45 m deep), inner walls 2.70 m. Floor to floor height 3.00 m, which matches the structure report.
- Assumed: door and window sizes in the schedule, one window in each bedroom and kitchen, two in a ground floor living room, a ventilator in each bathroom, a stair window on every floor above one storey.
- Assumed: lintels 0.15 m deep up to a 1.5 m span and 0.20 m above, resting 0.15 m or a tenth of the span on each side; the steel in them is two 10 mm bars, two 8 mm bars and 6 mm stirrups.
- Assumed: 5% breakage and cutting waste on bricks; 25% extra joint mortar. No standard gives either figure.
- Assumed: plinth masonry 0.6 m high; parapet and balcony edge walls 1.0 m high; a terrace stair room of 3 × 3 m and 2.4 m high; balconies 3.0 × 1.5 m with walls on three sides.
- Assumed: plaster of columns, beams and slab edges is measured with the wall at full height, so no separate plaster for them is counted; the ceiling plaster area is the floor area inside the walls.
- The free Brick Calculator uses the same brick sizes and joints as this report, for the one wall you describe. This report works from your rooms, so it also carries the room plan, the openings and the plaster, and its totals will not match a single wall.

Not counted in this report

- Dowel bars, ties, and any horizontal bands in tall walls (IS 4326 cl 8.2.6). Your engineer decides these.
- Stiffening columns and copings on parapets, and the stair, balcony and terrace slabs themselves (these are in the structure report).
- The compound wall, the steps of the staircase, chajjas, sunshades and the walls of tanks, septic tanks and chambers.
- Plinth protection, damp-proof course, waterproofing and terrace screed.
- Door and window frames, shutters, glass and grills (in InteriorPro).
- Putty, primer and paint, tiles and floors (in InteriorPro).
- Neat cement coats, textured finishes, rough cast and pebble dash.
- Scaffolding, curing water and the carriage of materials.

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Standards and sources used

- IS 1077:1992 Common burnt clay building bricks; IS 12894:2002 Fly ash lime bricks; IS 2212:1991 Brickwork
- IS 2185 (Part 1 to 3) Concrete masonry units; IS 6041:1985 AAC masonry; IS 2572:2005 Concrete masonry construction
- IS 1200 (Part 3):1976 and (Part 12):1976 Methods of measurement (1976 editions; BIS lists 2026 editions that supersede them, not checked here); IS 2250:1981 Masonry mortars; IS 2402:1963 External rendering
- IS 4326:1993 Earthquake-resistant construction; IS 1905:1987 Structural use of unreinforced masonry; IS 3362:1977 Natural ventilation
- CPWD Delhi Analysis of Rates 2014, Volume 1 (concrete, mortar) and Volume 2 (plaster)

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APPENDIX A

Calculation sheet

MasonryPro: how every figure in this report was worked out

What this sheet is

This sheet shows how MasonryPro worked out the bricks, mortar, cement, sand, plaster and lintels in your report. Each step gives the formula, the numbers put in, the answer and where the rule comes from, so that the working can be checked. The wall lengths come from the tool's room plan, which is an assumption and not a drawing, so checking the working checks the arithmetic and the rules named, not your building. Where the sheet says Assumed the figure is the tool's own planning value and not a code requirement.

How to read it

Each row is one step. STEP says what is being found. FORMULA gives it in symbols. WORKING puts the numbers in. RESULT is the answer with its unit. SOURCE names the clause or table the step rests on. The columns take turns being a lighter and a darker cream, so each figure sits under its own heading. Amber rows are inputs: a figure you gave, or a value read from a code table. Green rows are figures that appear in the report. Every sum was carried out at full precision and is shown rounded, so re-keying the rounded numbers by hand may differ in the last digit.

Method in brief

1. Your answers fix the wall material, the thickness of each kind of wall and the floor-to-floor height. The wall heights follow by taking off the depth of the beams and slab.
2. A room plan is worked out for each floor from its area and the number of bedrooms, bathrooms and kitchens. It gives the length of the outer walls, the inner walls and any walls between flats.
3. Doors, windows and ventilators are counted from the rooms. Each is taken out of its wall together with its lintel and its sill, the way IS 1200 (Part 3):1976 measures an opening (the 1976 edition, which a 2026 edition supersedes: see the limits).
4. Each kind of wall is measured: length times height is the gross area, and the openings come off to give the net area.
5. The bricks in a square metre of wall come from the size of the brick and the joint. The joint mortar in a square metre is the true volume of the joints, with an allowance added. Breakage is added to the count.
6. Plaster is measured to IS 1200 (Part 12):1976 (the 1976 edition, which a 2026 edition supersedes: see the limits): the surfaces of the walls, ceilings, parapet and balcony edges, less what the openings take off. The mortar in it comes from the CPWD analysis-of-rates figure for each plaster item.
7. Every lintel is sized from its opening: length, concrete, and steel in a fixed arrangement of bars and stirrups. Every mortar is turned into cement and sand on the CPWD analysis-of-rates basis, scaled by the tool from one CPWD figure, and the lintel concrete into cement, sand and stone with the M20 quantities.
8. The exact quantities are rounded to the sizes in which each material is ordered (hundreds of bricks, 50 kg bags, 5 kg of steel). The range under each total is the total times a low and a high factor, which the tool sets by its own judgement.
9. Finally every total, table row and order line of the report is compared with the figure this sheet worked out. The comparison is at the end of the sheet, and the sheet is printed only if every figure agrees. That shows the sheet and the report agree with each other, because the same sums were done twice. It is not a check against the standards or against what a site will use.

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Read this before relying on the sheet

- The walls are not measured from your drawing. The length of outer and inner walls comes from a room plan the tool builds from your floor areas and room counts. If your plot is long and thin, or the rooms are laid out very differently, the real walls will be longer than the sheet shows.
- The room plan is built only to find wall lengths and the floor inside the walls. Another NirmanShastra tool may lay out the same rooms by its own rule, so a room's area here can differ from the same room in another NirmanShastra report.
- Door and window sizes and numbers, and the sizes of the plinth, parapet, balcony and stair room, are planning values. No standard fixes them. Change them on your drawing and the quantities change.
- IS 1200 (Part 3) and (Part 12) are cited here in their 1976 editions. BIS lists IS 1200 (Part 3):2026 and IS 1200 (Part 12):2026, which supersede them. The tool follows the 1976 rules (no deduction for an opening up to 0.1 m² in masonry; for plaster none up to 0.5 m², one face up to 3 m², both faces and the reveals above) and has not been checked against the 2026 text. A 2025 draft of the revision, read only in summary and not the published text, appears to keep these limits and the between-walls rule but numbers its clauses differently, so the clause numbers on this sheet are the 1976 numbers. Check them, and the limits, against the 2026 edition before relying on them.
- The outer wall length is the perimeter of the built-up area (39.3 m on the ground floor here). Measured between the walls, which is how IS 1200 (Part 12):1976 cl 3.12 measures plaster, the inside perimeter is shorter by 8 times the wall thickness (1.84 m here). The tool uses the built-up length for the brickwork and for the inside plaster of the outer walls, so both are a little high.
- No deduction is made for concrete columns standing inside a framed wall, while the Grand Total adds the columns of the frame separately. The masonry may be high by a few per cent for that reason.
- The count of bricks follows from the nominal size of the unit and a 10 mm joint. The 230 × 115 × 75 mm red brick is the common field size, not a BIS size; if your kiln's brick differs, the count changes in the ratio of the volumes. Measure a few. The 5% for breakage and the 25% extra joint mortar are assumptions; no standard gives either.
- For brickwork the tool counts the bricks on the nominal thickness (the wall plus one joint) but takes the exact joint volume on the actual thickness, and then adds 25%. The joint mortar comes out at 0.235 m³ for each m³ of 230 mm wall and 0.193 for each m³ of 115 mm wall. A published table based on the CPWD rates (Vol 1 brickwork items) implies about 0.25 to 0.27 for standard 230 mm brickwork. If that table is right, the joint mortar here is low, by up to about a quarter in half-brick walls. The method has not been changed to match; check the joint mortar against what your mason uses.
- Cement per cubic metre of mortar is calibrated to one CPWD figure (73.89 kg of cement for 10 m² of 12 mm plaster in 1:3, which is 513 kg in 1 m³; DAR 2014 Vol 2 item 13.21) and scaled by the tool to the other mixes. The scaled figures are not read from a CPWD table and differ slightly from published tables (up to about 3% from a third-party table based on the 2023 Delhi Schedule of Rates). The CPWD Volume 1 brickwork items were not used to check the joint mortar.
- Sand is the CPWD volume of loose sand for each cubic metre of mortar. The bulking of damp sand and the moisture in it are not allowed for, so the sand as delivered may measure differently.
- Inside plaster is taken as one coat of 12 mm for every wall and ceiling. Many sites use 15 to 20 mm; the plaster mortar rises in proportion to the thickness.
- Mortar mixes follow the tool's choice, not your seismic zone. IS 4326 Table 3 asks for a richer mortar (1:4 or better) in the higher zones and the tool does not ask for the zone. Your engineer decides the mortar grade; richer mortar raises the cement.
- The steel in the lintels is a standard arrangement for a small lintel (two 10 mm bars, two 8 mm bars, 6 mm stirrups at 150 mm). It is not the design of any lintel; the engineer who signs your drawings decides lintel sizes and steel. No allowance is made for cutting the bars to length or for laps; the rounding up to 5 kg is the only margin.
- Not counted: dowels, ties and horizontal bands in tall walls, stiffening columns and copings on parapets, damp-proof course and waterproofing, door and window frames, scaffolding and curing water. The report lists them. A 150 mm wall in a frame needs bracing and reinforcement that the engineer decides.
- The code checks compare a wall's thickness and height with limits taken from the standards. They are screening checks for estimating, not a seismic or structural design of the walls. The panel-wall check follows the Note to IS 4326:1993 cl 8.2.3 (200 mm or more thick, storey not more than 3.5 m, held at the top). The tool does not know whether the wall is held at the top and assumes it is. It tests the nominal thickness, the wall plus one 10 mm joint for brick, so a 190 mm modular-brick wall counts as 200 mm and passes.
- The limit of five times the thickness for a parapet comes from the block-masonry standards IS 6041 and IS 2572. The tool applies it to brick by analogy.
- The ranges under the totals are a judgement band set by the tool, not a statistical interval.

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- The sheet follows IS 4326:1993, IS 6041:1985 and IS 2572:2005. Newer editions exist (IS 4326:2013, and newer editions of IS 6041 and IS 2572), and their clause numbers and limits may differ.
- The clause number given for IS 2212 (cl 6.4.1), the item number given for CPWD DAR Vol 1 (item 4.1.2) and the mapping of grade MM 3 of IS 2250 to a mix are as found in the tool's research notes and were not re-read against the published text. Treat such a number as a pointer to check, not a quotation.
- The ok marks in the reconciliation at the end show that this sheet and the report agree with each other, because the same sums were done twice. They do not show that the figures agree with the standards or with what a site will use.
- State and city do not change any figure. Brick sizes and mixes vary from place to place, and the tool has no local factor, so confirm the brick size and the mortar mix with your mason before you order.
- Quantities are carried at full precision and rounded only for the order list in section 9. Re-keying the rounded figures printed here can differ in the last digit.

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1. Your answers and what the tool worked out from them

The answers you gave, the wall thicknesses and heights that follow from them, and the rooms placed on each floor.

1.1 The answers this sheet starts from

STEP	FORMULA	WORKING	RESULT	SOURCE
Floors Ground floor and 1 upper floor			**2**	
Building type			**A house**	
Bedrooms in the house			**3**	
Bathrooms in the house			**3**	
Kitchens in the house			**1**	
Balconies in the house			**1**	
Wall material 230 × 115 × 75 mm			**Red clay brick**	The common field size of red bricks. It is not a BIS size, and it varies from kiln to kiln.
Outside plaster			**18 mm in two coats (12 mm 1:5, then 6 mm 1:6)**	
Plaster the ceilings			**Yes**	
Stair room on the terrace			**Yes**	
Masonry parapet round the terrace			**Yes**	
Balcony edges are masonry walls			**Yes**	
Large sliding doors to the balcony			**No**	
Floor to floor height			**3.00 m**	
Place Written on the report. No quantity in this tool depends on the place			**Lucknow, Uttar Pradesh**	

1.2 What the tool works out from the answers

STEP	FORMULA	WORKING	RESULT	SOURCE
Joint between units Cement mortar bed and perpend joints			**10 mm**	IS 2212:1991 cl 6.4.1: joints up to 12 mm (clause number not re-read against the published text); the tool takes 10 mm
Breakage and cutting allowance Added to the count of bricks			**5 %**	NirmanShastra assumption: no standard gives it
Outer wall thickness One brick: the length of the brick			**230 mm**	Engine rule

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Inner wall thickness Half brick: the width of the brick			**115 mm**	Engine rule
Parapet and balcony edge wall thickness Half brick			**115 mm**	Engine rule
Plinth wall thickness Same as the outer wall			**230 mm**	Engine rule
Depth of the outer beam under each floor			**0.45 m**	NirmanShastra assumption
Slab thickness			**0.15 m**	NirmanShastra assumption
Inner walls: height lost where they meet a slab or a beam An inner wall meets a slab (0.15 m) or a beam (0.45 m): the average is taken off the height			**0.30 m**	NirmanShastra assumption
Outer wall height Plinth beam or floor up to the beam above	He = H − depth of beam	3.00 − 0.45	**2.55 m**	Engine rule
Inner wall height	Hi = H − 0.30	3.00 − 0.30	**2.70 m**	Engine rule
Clear height for plaster Floor up to the underside of the slab	Hc = H − slab thickness	3.00 − 0.15	**2.85 m**	IS 1200 (Part 12):1976 cl 3.12 (1976 edition; a 2026 edition exists and was not checked): floor to ceiling
Mortar mix, inner walls Table 3 gives cement-sand 1:6 for building categories B and C and 1:4 for D and E. The tool does not ask for your seismic zone, so it takes 1:6 and uses 1:4 for half-brick walls	half-brick wall → 1:4, other → 1:6		**1:4**	IS 4326:1993 cl 8.1.2 and Table 3, then the tool's own choice
Mortar mix, outer walls, plinth and stair room The 1:6 mix of Table 3 (categories B and C). For an ordinary building in zones IV and V the table asks for 1:4 or richer; ask your engineer	always		**1:6**	IS 4326:1993 cl 8.1.2 and Table 3, then the tool's own choice
Mortar mix, parapet and balcony edge walls Where a parapet is higher than three times its thickness the mortar is not to be weaker than grade MM 3. The table that gives the cement-sand ratio of that grade was not read. A secondary source gives MM 3 as 1:5, so the tool's 1:4 is on the safe side	always		**1:4**	IS 2250:1981 cl 7.1.5, then the tool's own reading

1.3 Floor areas and rooms on each floor

STEP	FORMULA	WORKING	RESULT	SOURCE
Floor area in m², ground floor	A = sq ft × 0.09290304	1,000 × 0.09290304	**92.90 m²**	Unit conversion: 1 sq ft = 0.09290304 m²

FLOOR	BUILT-UP (SQ FT)	BUILT-UP (M²)	BEDROOMS	BATHROOMS	KITCHENS	BALCONIES
Ground floor	1,000	92.9	2	2	1	0
First floor	1,000	92.9	1	1	0	1
All floors	**2,000**	**185.8**	**3**	**3**	**1**	**1**

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2. Wall lengths from the room plan

Outer wall, inner walls and walls between flats on each floor. These are planning figures from the tool's room plan; they are not taken off a drawing.

2.1 Outer wall, and the weights that share out the floor: ground floor as the worked example

STEP	FORMULA	WORKING	RESULT	SOURCE
Where these numbers come from	The room plan is the tool's own planning model, built to find wall lengths and the floor area inside the walls. No Indian Standard fixes room sizes or the length of inner walls. It is worked out for each floor in three steps: the outer wall, the share of the floor each room takes, and the inner walls that are left when every wall between two rooms is counted once.			NirmanShastra assumption: the room plan
Outer wall length, Ground floor The perimeter of a plan 1 to 1.5 (2 (1 + 1.5) ÷ √1.5 = 4.0825), taken as 4.082	P = k × √A	4.082 × √92.90	**39.34 m**	NirmanShastra assumption: the room plan
Room weight of a living room A bedroom weighs 1, a kitchen 0.75, a bathroom 0.33. On the upper floors of a house a living room weighs 0.9 + 0.2 × bedrooms	wLiv = 1.3 + 0.3 × bedrooms (ground floor and flats)	1.30 + 0.30 × 2	**1.90**	NirmanShastra assumption: the room plan
Room weight of the passages	wPass = 0.45 + 0.08 × (bedrooms + bathrooms + kitchens)	0.45 + 0.08 × (2 + 2 + 1)	**0.85**	NirmanShastra assumption: the room plan
Total room weight of one home	W = Σ (number × weight)	2 × 1.00 + 1.90 + 1 × 0.75 + 2 × 0.33 + 0.85	**6.16**	NirmanShastra assumption: the room plan

2.2 The four passes for the ground floor

STEP	FORMULA	WORKING	RESULT	SOURCE
Result of the plan, ground floor	Inner walls 28.03 m; floor inside the walls 80.63 m².			NirmanShastra assumption: the room plan

PASS	FLOOR INSIDE THE WALLS, TAKEN (M²)	SHARE PER UNIT WEIGHT, U (M²)	ALL ROOM PERIMETERS (M)	INNER WALL FOUND (M)	INNER WALL KEPT (M)	FLOOR INSIDE THE WALLS, FOUND (M²)
1	81.75	13.272	96.06	28.36	28.36	80.59
2	80.59	13.083	95.38	28.02	28.02	80.63
3	80.63	13.090	95.40	28.03	28.03	80.63
4	80.63	13.089	95.40	28.03	28.03	80.63

2.3 Room perimeters in the last pass

ROOM (ONE HOME)	NUMBER	WEIGHT	AREA EACH (M²)	LONG SIDE ÷ SHORT	PERIMETER EACH (M)	PERIMETER, ALL (M)
Bedroom	2	1.00	13.09	1.3	14.60	29.19
Living room	1	1.90	24.87	1.3	20.12	20.12
Kitchen	1	0.75	9.82	1.3	12.64	12.64
Bathroom	2	0.33	4.32	1.3	8.38	16.77
Passages	1	0.85	11.13	4.0	16.68	16.68

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One home	**95.40**

2.4 Wall lengths on every floor

FLOOR	BUILT-UP (M²)	OUTER WALL (M)	INNER WALLS (M)	WALLS BETWEEN FLATS (M)	FLOOR INSIDE THE WALLS (M²)	ROOMS COUNTED
Ground floor	92.9	39.3	28.0	—	80.6	2 bed, 1 living, 1 kitchen, 2 bath
First floor	92.9	39.3	17.9	—	81.8	1 bed, 1 living, 0 kitchen, 1 bath
All floors	**185.8**	**78.7**	**45.9**	**—**	**162.4**	

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3. Doors, windows and ventilators

Counted from the rooms, then taken out of the walls with their lintels and sills as IS 1200 (Part 3):1976 measures openings: no deduction for an opening of 0.1 m² or less, which none of these is. BIS lists a 2026 edition of Part 3 that supersedes the 1976 one. The tool follows the 1976 rules and has not been checked against the 2026 edition.

3.1 Openings taken out of the walls: worked examples, a door and a window

STEP	FORMULA	WORKING	RESULT	SOURCE
Worked example	Room door: the door that takes most out of the walls.			IS 1200 (Part 3):1976 cl 4.1.4 and its note (1976 edition; a 2026 edition exists and was not checked)
Width of the opening Usual size; no standard fixes it			**0.90 m**	NirmanShastra assumption
Height of the opening			**2.10 m**	NirmanShastra assumption
Area of the opening	a = w × h	0.90 × 2.10	**1.89 m²**	Arithmetic
Depth of the lintel over it	d = 0.15 m if w ≤ 1.5 m, otherwise 0.20 m		**0.15 m**	NirmanShastra assumption: no standard fixes the depth of a small lintel
Taken out of the wall, each The opening with its lintel: IS 1200 (Part 3):1976 counts a separate lintel or sill with the size of the opening, but not the ends of the lintel	w × (h + d)	0.90 × (2.10 + 0.15)	**2.025 m²**	IS 1200 (Part 3):1976 cl 4.1.4 and its note (1976 edition; a 2026 edition exists and was not checked)
Taken out of the walls, all of them	n × each	4 × 2.025	**8.10 m²**	IS 1200 (Part 3):1976 cl 4.1.4 and its note (1976 edition; a 2026 edition exists and was not checked)
Worked example	Living room window: the window that takes most out of the walls.			IS 1200 (Part 3):1976 cl 4.1.4 and its note (1976 edition; a 2026 edition exists and was not checked)
Width of the opening Usual size; no standard fixes it			**1.80 m**	NirmanShastra assumption
Height of the opening			**1.20 m**	NirmanShastra assumption
Area of the opening	a = w × h	1.80 × 1.20	**2.16 m²**	Arithmetic
Depth of the lintel over it	d = 0.15 m if w ≤ 1.5 m, otherwise 0.20 m		**0.20 m**	NirmanShastra assumption: no standard fixes the depth of a small lintel
Sill under a window IS 1200 (Part 3):1976 counts a separate sill with the size of the opening; the 75 mm depth is the tool's assumption			**0.075 m**	IS 1200 (Part 3):1976 cl 4.1.4 and its note (1976 edition; a 2026 edition exists and was not checked)
Taken out of the wall, each The opening with its lintel and sill: IS 1200 (Part 3):1976 counts a separate lintel or sill with the size of the opening, but not the ends of the lintel	w × (h + d + sill)	1.80 × (1.20 + 0.20 + 0.075)	**2.655 m²**	IS 1200 (Part 3):1976 cl 4.1.4 and its note (1976 edition; a 2026 edition exists and was not checked)

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Taken out of the walls, all of them	n × each	3 × 2.655	**7.97 m²**	IS 1200 (Part 3):1976 cl 4.1.4 and its note (1976 edition; a 2026 edition exists and was not checked)

3.2 Every opening in the building

OPENING	SIZE (M)	IN	NUMBER	AREA EACH (M²)	LINTEL DEPTH (M)	OUT OF MASONRY EACH (M²)	OUT OF MASONRY, ALL (M²)
Room door	0.90 × 2.10	Inner wall	4	1.89	0.15	2.025	8.1
Bathroom door	0.75 × 2.10	Inner wall	3	1.58	0.15	1.688	5.1
Bathroom ventilator	0.60 × 0.45	Outer wall	3	0.27	0.15	0.405	1.2
Bedroom window	1.50 × 1.20	Outer wall	3	1.80	0.15	2.137	6.4
Kitchen window	1.20 × 1.20	Outer wall	1	1.44	0.15	1.710	1.7
Living room window	1.80 × 1.20	Outer wall	3	2.16	0.20	2.655	8.0
Main door	1.00 × 2.10	Outer wall	1	2.10	0.15	2.250	2.3
Stair window	1.20 × 1.20	Outer wall	2	1.44	0.15	1.710	3.4
Balcony door	1.20 × 2.10	Outer wall	1	2.52	0.15	2.700	2.7
Door of the terrace stair room	0.90 × 2.10	Stair room wall	1	1.89	0.15	2.025	2.0
All openings			**22**				**40.9**

3.3 How each number is counted

OPENING	HOW THE NUMBER IS FOUND
Room door	One for every bedroom and every kitchen.
Bathroom door	One for every bathroom.
Bathroom ventilator	One for every bathroom.
Bedroom window	One for every bedroom.
Kitchen window	One for every kitchen.
Living room window	Two for each living room on the ground floor of a house and in flats; one on the upper floors of a house.
Main door	Flats: one for each home. House: one, on the ground floor.
Stair window	One stair window on every floor, when the building has two or more floors.
Balcony door	One for every balcony.
Door of the terrace stair room	One, when the terrace stair room is counted.

The sheet counts each opening again from the rooms of every floor, by these rules, and the count must equal the one in the report.

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4. Walls measured

Each kind of wall is length × height, less the openings in it, measured as IS 1200 (Part 3):1976 does (the 1976 edition, since superseded by a 2026 edition: see the limits). The plinth, parapet, balcony edge walls and stair room use the fixed sizes shown, which are planning assumptions.

4.1 Worked example: the outer walls

STEP	FORMULA	WORKING	RESULT	SOURCE
Length of outer walls, all floors The total of the outer wall column in table 2.4			**78.69 m**	NirmanShastra assumption: the room plan
Height of outer walls From 1.2			**2.55 m**	Engine rule
Gross area of outer walls	A = length × height	78.69 × 2.55	**200.66 m²**	IS 1200 (Part 3):1976 cl 4.1.4 and its note (1976 edition; a 2026 edition exists and was not checked)
Openings in outer walls, with lintels and sills From table 3.2, rows marked Outer wall	Σ n × w × (h + d + sill)	sum of the 7 openings above	**25.67 m²**	IS 1200 (Part 3):1976 cl 4.1.4 and its note (1976 edition; a 2026 edition exists and was not checked)
Net area of outer walls	net = gross − openings, not below 0	200.66 − 25.67, not below 0	**174.99 m²**	IS 1200 (Part 3):1976 cl 4.1.4 and its note (1976 edition; a 2026 edition exists and was not checked)

4.2 Every kind of wall

WALL	LENGTH (M)	HEIGHT (M)	THICKNESS (MM)	GROSS (M²)	OPENINGS OUT (M²)	NET (M²)
Outer walls	78.7	2.55	230	200.7	25.7	175.0
Inner walls	45.9	2.70	115	124.0	13.2	110.9
Plinth wall	39.3	0.60	230	23.6	0.0	23.6
Terrace parapet	39.3	1.00	115	39.3	0.0	39.3
Balcony edge walls	6.0	1.00	115	6.0	0.0	6.0
Terrace stair room	12.0	2.40	230	28.8	2.0	26.8
All walls	**221.3**			**422.4**	**40.9**	**381.6**

4.3 Where each length and height comes from

WALL	LENGTH IS	HEIGHT IS
Outer walls	The outer wall of every floor, added up	Plinth beam or floor to the beam above
Inner walls	The inner walls of every floor, added up	Floor to the slab or beam above, taken as the average
Plinth wall	The outer wall of the ground floor	Plinth beam to the ground floor level
Terrace parapet	The outer wall of the top floor	All round the terrace
Balcony edge walls	Balconies × 6 m	6 m round each balcony (3.0 m wide, 1.5 m deep)
Terrace stair room	Perimeter of the 9 m² stair room	A 3 × 3 m room, 2.4 m high

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5. Bricks and joint mortar

Red clay brick (230 × 115 × 75 mm). The count per square metre follows from the size of the unit and the joint; the joint mortar is the true volume of the joints, plus an allowance.

5.1 The unit, the joint and the allowances

STEP	FORMULA	WORKING	RESULT	SOURCE
Unit			**Red clay brick, 230 × 115 × 75 mm**	The common field size of red bricks. It is not a BIS size, and it varies from kiln to kiln.
Joint Bed and perpend joints alike			**10 mm**	IS 2212:1991 cl 6.4.1: joints up to 12 mm (clause number not re-read against the published text); the tool takes 10 mm
Allowance on the exact joint mortar			**25 %**	NirmanShastra assumption: no standard gives it
Breakage and cutting			**5 %**	NirmanShastra assumption: no standard gives it

5.2 Worked example: the outer walls

STEP	FORMULA	WORKING	RESULT	SOURCE
Worked example	Outer walls: Red clay brick, 230 × 115 × 75 mm, wall 230 mm thick.			
Length × width × height of the brick			**230 × 115 × 75 mm**	The common field size of red bricks. It is not a BIS size, and it varies from kiln to kiln.
Length with a joint	L + J	0.230 + 0.010	**0.240 m**	IS 2212:1991 cl 6.4.1: joints up to 12 mm (clause number not re-read against the published text); the tool takes 10 mm
Width with a joint	W + J	0.115 + 0.010	**0.125 m**	IS 2212:1991 cl 6.4.1: joints up to 12 mm (clause number not re-read against the published text); the tool takes 10 mm
Height with a joint	H + J	0.075 + 0.010	**0.085 m**	IS 2212:1991 cl 6.4.1: joints up to 12 mm (clause number not re-read against the published text); the tool takes 10 mm
Volume of one brick with its joints	Vn = (L + J)(W + J)(H + J)	0.240 × 0.125 × 0.085	**0.002550 m³**	Arithmetic: the brick and the mortar around it
Bricks in 1 m² of wall The nominal thickness is the wall plus one joint, so the count is one over the pitch of the brick in the two directions across the wall face	n = (t + J) ÷ Vn	(0.230 + 0.010) ÷ 0.002550	**94.12 bricks per m²**	Derived from the unit size and joint (module method: nominal thickness ÷ nominal volume)
Volume of the bricks in 1 m² of wall	Vb = n × L × W × H	94.12 × 0.230 × 0.115 × 0.075	**0.1867 m³**	Arithmetic

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Joint mortar in 1 m² of wall, exact joints The wall is taken at its actual thickness, t; the count above used the nominal thickness, t + J	m = t – Vb	0.230 – 0.1867	**0.0433 m³ per m²**	Derived: the true volume of the joints, not the nominal one (which would run about a quarter high)
Joint mortar with the allowance for waste For uneven units, frogs, droppings and mortar left on the board	m′ = m × 1.25	0.0433 × 1.25	**0.0541 m³ per m²**	NirmanShastra assumption: no standard gives it
Joint mortar in 1 m³ of wall, with the allowance The mortar as a share of the volume of the wall	m′ ÷ t	0.0541 ÷ 0.230	**0.235 m³ per m³**	Arithmetic
Joint mortar: a check against a published table	The count uses the nominal thickness (0.240 m) but the exact joint volume uses the actual thickness (0.230 m): 0.0433 m³ per m² against 0.0533 m³ per m² on the nominal thickness. The 25% allowance then brings the figure up to about the nominal one. The result is 0.235 m³ of mortar for each m³ of 230 mm wall and 0.193 for each m³ of 115 mm wall. A published table based on the CPWD rates implies about 0.25 to 0.27 for standard 230 mm brickwork. If that table is right, the joint mortar here is low, by up to about a quarter in half-brick walls. The method is unchanged; check the mortar against what your mason uses.			CPWD Delhi Analysis of Rates 2014 (DAR), Vol 1 brickwork items, as reported by a published table; not read in full by the tool
Bricks needed	N = net area × n	174.986 × 94.118	**16,469.3 bricks**	Arithmetic
With 5% for breakage and cutting	N × (1 + b)	16,469.3 × (1 + 0.05)	**17,292.8 bricks**	NirmanShastra assumption: no standard gives it
Joint mortar needed m′ is the mortar per m² with the allowance, from the line above (it already includes the 25%)	M = net area × m′	174.99 × 0.0541	**9.47 m³**	NirmanShastra assumption: no standard gives it

5.3 Units and joint mortar per m², for each kind of wall

WALL	THICKNESS (MM)	UNIT	BRICKS PER M²	JOINT MORTAR PER M², EXACT (M³)	JOINT MORTAR PER M², WITH 25% (M³)	MIX
Outer walls	230	Red clay brick	94.12	0.0433	0.0541	1:6
Inner walls	115	Red clay brick	49.02	0.0178	0.0222	1:4
Plinth wall	230	Red clay brick	94.12	0.0433	0.0541	1:6
Terrace parapet	115	Red clay brick	49.02	0.0178	0.0222	1:4
Balcony edge walls	115	Red clay brick	49.02	0.0178	0.0222	1:4
Terrace stair room	230	Red clay brick	94.12	0.0433	0.0541	1:6

5.4 Units and joint mortar for every wall

WALL	NET AREA (M²)	BRICKS PER M²	NUMBER	WITH 5% BREAKAGE	JOINT MORTAR (M³)	MIX
Outer walls	175.0	94.1	16,469	17,293	9.47	1:6
Inner walls	110.9	49.0	5,434	5,706	2.46	1:4
Plinth wall	23.6	94.1	2,222	2,333	1.28	1:6
Terrace parapet	39.3	49.0	1,929	2,025	0.87	1:4
Balcony edge walls	6.0	49.0	294	309	0.13	1:4
Terrace stair room	26.8	94.1	2,520	2,646	1.45	1:6
All walls	**381.6**		**28,868**	**30,311**	**15.66**	

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6. Plaster

Measured to IS 1200 (Part 12):1976: the plaster area is the area of the surfaces less what the openings take off. BIS lists a 2026 edition of Part 12 that supersedes the 1976 one; the rules in 6.1 and their limits of 0.5 m² and 3 m² are the 1976 ones and have not been checked against the 2026 edition. The mortar in the plaster comes from the CPWD analysis-of-rates yield for each plaster item.

6.1 How plaster is measured

STEP	FORMULA	WORKING	RESULT	SOURCE
Rule 1	An opening of 0.5 m² or less is not deducted from plaster, and no reveals are added.			IS 1200 (Part 12):1976 cl 3.8.1(a) (1976 edition; a 2026 edition exists and was not checked)
Rule 2	An opening over 0.5 m² and up to 3 m² comes off once, no reveals added. In an inner wall (plastered alike on both faces) it comes off one face. In an outer wall, where the two faces are plastered differently and the reveals are taken as equal, half comes off each face.			IS 1200 (Part 12):1976 cl 3.8.1(b)(1) and (2) (1976 edition; a 2026 edition exists and was not checked)
Rule 3	An opening over 3 m² comes off each face and its jambs and soffit are measured and added. The tool adds one set of reveals, as width + 2 × height, deep by the wall thickness less a 100 mm frame (assumed).			IS 1200 (Part 12):1976 cl 3.8.2 (1976 edition; a 2026 edition exists and was not checked)
Rule 4	Wall plaster is measured between walls for length, and from the floor to the ceiling for height.			IS 1200 (Part 12):1976 cl 3.12 (1976 edition; a 2026 edition exists and was not checked)
Rule 5	The tool takes the plaster of columns, beams and slab edges as part of the wall at full height and adds nothing for them. The inside half of an outer-wall opening is deducted even where the outside is left bare; cl 3.8.1(b)(3) of the 1976 edition would deduct nothing there if the reveals are equal, so the plaster is slightly under-counted in that case.			Engine rule

6.2 What the openings take off the plaster

OPENING	NUMBER	AREA EACH (M²)	RULE	OFF INNER WALLS (M²)	OFF INSIDE OF OUTER WALLS (M²)	OFF OUTSIDE (M²)	REVEALS ADDED (M²)
Room door	4	1.89	Deducted once from plaster	7.56	0.00	0.00	0.00
Bathroom door	3	1.58	Deducted once from plaster	4.73	0.00	0.00	0.00
Bathroom ventilator	3	0.27	Not deducted from plaster	0.00	0.00	0.00	0.00
Bedroom window	3	1.80	Deducted once from plaster	0.00	2.70	2.70	0.00
Kitchen window	1	1.44	Deducted once from plaster	0.00	0.72	0.72	0.00
Living room window	3	2.16	Deducted once from plaster	0.00	3.24	3.24	0.00
Main door	1	2.10	Deducted once from plaster	0.00	1.05	1.05	0.00
Stair window	2	1.44	Deducted once from plaster	0.00	1.44	1.44	0.00
Balcony door	1	2.52	Deducted once from plaster	0.00	1.26	1.26	0.00
Door of the terrace stair room	1	1.89	Deducted once from plaster	0.00	0.95	0.95	0.00
All openings				**12.29**	**11.36**	**11.36**	**0.00**

6.3 The surfaces plastered

STEP	FORMULA	WORKING	RESULT	SOURCE

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Both faces of inner walls and of walls between flats	Σ 2 × length × Hc	2 × 45.933 × 2.850 + 2 × 0.000 × 2.850	**261.82 m²**	IS 1200 (Part 12):1976 cl 3.8 and 3.12 (1976 edition; a 2026 edition exists and was not checked); the sums are the tool's
Inside face of the outer walls and the stair room	Σ P × Hc + stair room	78.69 × 2.85 + 12.00 × 2.40	**253.07 m²**	IS 1200 (Part 12):1976 cl 3.8 and 3.12 (1976 edition; a 2026 edition exists and was not checked); the sums are the tool's
Inside plaster, measured	both faces + inside of outer walls + reveals	261.816 + 253.066 + 0.000	**514.88 m²**	IS 1200 (Part 12):1976 cl 3.8 and 3.12 (1976 edition; a 2026 edition exists and was not checked); the sums are the tool's
Inside plaster, taken off	inner walls + inside of outer walls	12.285 + 11.355	**23.64 m²**	IS 1200 (Part 12):1976 cl 3.8 and 3.12 (1976 edition; a 2026 edition exists and was not checked); the sums are the tool's
Inside plaster	measured – taken off, not below 0	514.88 – 23.64, not below 0	**491.24 m²**	IS 1200 (Part 12):1976 cl 3.8 and 3.12 (1976 edition; a 2026 edition exists and was not checked); the sums are the tool's
Ceilings, with the balcony undersides and the stair room The ceiling is the floor area inside the walls; a balcony underside is 3.0 × 1.5 m	floor inside the walls + balconies × area + stair room	162.43 + 1 × 4.5 + 9.0	**175.93 m²**	IS 1200 (Part 12):1976 cl 3.8 and 3.12 (1976 edition; a 2026 edition exists and was not checked); the sums are the tool's
Outside of the building, ground to terrace Every floor is taken at the full floor-to-floor height, so beams and slab edges are plastered in the same measure	Σ P × H + plinth above ground + stair room	78.69 × 3.00 + 39.34 × 0.45 + 12.00 × (2.40 + 0.15)	**284.37 m²**	IS 1200 (Part 12):1976 cl 3.8 and 3.12 (1976 edition; a 2026 edition exists and was not checked); the sums are the tool's
Outside plaster	measured – taken off, not below 0	284.374 – 11.355, not below 0	**273.02 m²**	IS 1200 (Part 12):1976 cl 3.8 and 3.12 (1976 edition; a 2026 edition exists and was not checked); the sums are the tool's
Terrace parapet, both faces and the top	P × (2 × height + thickness)	39.345 × (2 × 1.000 + 0.1150)	**83.21 m²**	IS 1200 (Part 12):1976 cl 3.8 and 3.12 (1976 edition; a 2026 edition exists and was not checked); the sums are the tool's
Balcony edge walls, both faces and the top	edge length × (2 × height + thickness)	6.00 × (2 × 1.00 + 0.115)	**12.69 m²**	IS 1200 (Part 12):1976 cl 3.8 and 3.12 (1976 edition; a 2026 edition exists and was not checked); the sums are the tool's

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6.4 Mortar per m² of plaster (CPWD analysis-of-rates basis)

CPWD DAR ITEM	COAT	MIX	MORTAR PER 10 M² (M³)	MORTAR PER M² (M³)	MORTAR ÷ NOMINAL VOLUME
DAR item 13.4	12 mm	1:6	0.144	0.0144	1.20
DAR item 13.16	6 mm	1:3	0.072	0.0072	1.20
DAR item 13.11	12 mm	1:5	0.144	0.0144	1.20
DAR item 13.11	6 mm	1:6	0.072	0.0072	1.20

6.5 Plaster and its mortar

SURFACE	MEASURED (M²)	OUT (M²)	PLASTER (M²)	COAT AND MIX	MORTAR PER M² (M³)	MORTAR (M³)
Inner walls, both faces, and the inside of the outer walls	514.9	23.6	491.2	12 mm, 1:6	0.0144	7.07
Ceilings, with the balcony undersides	175.9	0.0	175.9	6 mm, 1:3	0.0072	1.27
Outside of the building, from ground to terrace	284.4	11.4	273.0	18 mm in two coats (12 mm 1:5, then 6 mm 1:6)	0.0216	5.90
Terrace parapet, both faces and the top	83.2	0.0	83.2	18 mm in two coats (12 mm 1:5, then 6 mm 1:6)	0.0216	1.80
Balcony edge walls, both faces and the top	12.7	0.0	12.7	18 mm in two coats (12 mm 1:5, then 6 mm 1:6)	0.0216	0.27
All plaster	**1,071.1**	**35.0**	**1,036.1**			**16.31**

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7. Lintels and sills

One lintel over every opening, in M20 concrete. The steel is the tool's standard arrangement for a small lintel; it is not a design.

7.1 Steel in a lintel: mass per metre of bar

STEP	FORMULA	WORKING	RESULT	SOURCE
Mass of the two bottom bars, 10 mm, per metre The tool uses the tabulated 0.617 kg/m	π/4 × d² × 0.00785	π ÷ 4 × 10² × 0.00785	**0.617 kg/m**	IS 1786:2008 cl 3.6 (nominal mass, density 0.00785 kg/mm²/m) and Table 1
Mass of the two top bars, 8 mm, per metre The tool uses the tabulated 0.395 kg/m	π/4 × d² × 0.00785	π ÷ 4 × 8² × 0.00785	**0.395 kg/m**	IS 1786:2008 cl 3.6 (nominal mass, density 0.00785 kg/mm²/m) and Table 1
Mass of the stirrups, 6 mm, per metre The tool uses the tabulated 0.222 kg/m	π/4 × d² × 0.00785	π ÷ 4 × 6² × 0.00785	**0.222 kg/m**	IS 1786:2008 cl 3.6 (nominal mass, density 0.00785 kg/mm²/m) and Table 1

7.2 Worked example: one lintel

STEP	FORMULA	WORKING	RESULT	SOURCE
Worked example	Living room window: the lintel that takes most concrete, 3 of them.			
Width of the opening			**1.80 m**	NirmanShastra assumption
Thickness of the wall An outer wall			**230 mm**	Engine rule
Depth of the lintel	d = 0.15 m if w ≤ 1.5 m, otherwise 0.20 m		**0.20 m**	NirmanShastra assumption
Bearing on the wall at each end	b = larger of 0.15 m and w ÷ 10	max(0.15, 1.80 ÷ 10)	**0.180 m**	IS 1905:1987 cl 5.3.3 asks for 90 mm or a tenth of the span, whichever is more; the tool uses 150 mm as its minimum
Length of the lintel	L = w + 2 b	1.80 + 2 × 0.180	**2.160 m**	Engine rule
Concrete in one lintel M20 concrete (section 8)	V = L × t × d	2.160 × 0.230 × 0.20	**0.0994 m³**	Arithmetic
Number of stirrups Rounded up to a whole stirrup	ns = L ÷ 0.15, rounded up, + 1	2.160 ÷ 0.15, rounded up, + 1	**16**	NirmanShastra assumption: 6 mm stirrups at 150 mm
Length of one stirrup 25 mm cover on each side, and 100 mm for the hooks	ls = 2 (b′ + d′) + hooks	2 × (max(0.05, 0.230 − 0.05) + (0.20 − 0.05)) + 0.10	**0.760 m**	NirmanShastra assumption
Two 10 mm bars at the bottom	2 × L × 0.617	2 × 2.160 × 0.617	**2.665 kg**	NirmanShastra assumption: not a design of any lintel
Two 8 mm bars at the top Stopped 25 mm short of each end	2 × (L − 0.05) × 0.395	2 × (2.160 − 0.05) × 0.395	**1.667 kg**	NirmanShastra assumption
Stirrups	ns × ls × 0.222	16 × 0.760 × 0.222	**2.700 kg**	NirmanShastra assumption
Steel in one lintel	sum of the three	2.665 + 1.667 + 2.700	**7.032 kg**	Arithmetic

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Concrete in all 3 lintels	n × V	3 × 0.0994	**0.298 m³**	Arithmetic
Steel in all 3 lintels	n × steel	3 × 7.032	**21.1 kg**	Arithmetic

7.3 Every lintel

OPENING	NUMBER	LENGTH EACH (M)	SECTION (MM)	CONCRETE (M³)	STEEL (KG)
Room door	4	1.20	115 × 150	0.083	13.0
Bathroom door	3	1.05	115 × 150	0.054	8.8
Bathroom ventilator	3	0.90	230 × 150	0.093	8.4
Bedroom window	3	1.80	230 × 150	0.186	16.5
Kitchen window	1	1.50	230 × 150	0.052	4.6
Living room window	3	2.16	230 × 200	0.298	21.1
Main door	1	1.30	230 × 150	0.045	4.1
Stair window	2	1.50	230 × 150	0.104	9.2
Balcony door	1	1.50	230 × 150	0.052	4.6
Door of the terrace stair room	1	1.20	230 × 150	0.041	3.7
All lintels	**22**	**31.0**		**1.01**	**94.1**

7.4 Sills

STEP	FORMULA	WORKING	RESULT	SOURCE
Length of one sill, living room window The tool takes a sill 75 mm longer than the opening on each side	w + 2 × 75 mm	1.80 + 2 × 0.075	**1.950 m**	Engine rule
Sills in the building: number	Σ windows and ventilators	sum of the 10 opening kinds above	**12 nos**	Engine rule
Sills in the building: length The sill material (stone, tile or concrete) is your choice and is not counted	Σ n × (w + 0.15)	sum of the 10 opening kinds above	**17.1 m**	Engine rule

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8. Mortar mixes, cement and sand

Every mortar and the lintel concrete, converted to cement and sand. The 1:3 figure is the CPWD Delhi Analysis of Rates 2014 figure; the tool scales it to the other mixes, as 8.1 shows.

8.1 Cement and sand in a cubic metre of mortar: the CPWD analysis-of-rates basis

STEP	FORMULA	WORKING	RESULT	SOURCE
Bulk density of cement			**1,440 kg/m³**	Assumed: the usual figure in rate analyses (a 50 kg bag is about 0.035 m³)
CPWD cement for 10 m² of 12 mm plaster in 1:3 The one CPWD figure the tool is calibrated to			**73.89 kg**	CPWD Delhi Analysis of Rates 2014 (DAR), Vol 2 item 13.21
CPWD mortar for the same 10 m² of plaster			**0.144 m³**	CPWD Delhi Analysis of Rates 2014 (DAR), Vol 2 item 13.21
Cement in 1 m³ of 1:3 mortar, as CPWD counts it The tool carries 513 kg, rounded	cement ÷ mortar	73.89 ÷ 0.144	**513.1 kg**	CPWD Delhi Analysis of Rates 2014 (DAR), Vol 2 item 13.21
Cement in 1 m³ by the simple count, 1:3	1440 ÷ 3	1,440 ÷ 3	**480 kg**	Arithmetic: the cement is a third of the volume of the sand
CPWD factor The tool uses 1.069, rounded	f = CPWD cement ÷ simple count	513 ÷ 480	**1.0688**	CPWD Delhi Analysis of Rates 2014 (DAR), Vol 2 item 13.21
Factor used The same factor is applied to every mix: cement 1,440 ÷ X × f, sand f			**1.069**	Engine rule: one factor for every mix
Sand in 1 m³ of mortar	Sand is the factor, in m³, for every mix: 1 m³ of mortar takes 1.069 m³ of loose sand. The cement is the part of that sand volume that the mix calls for, by the bulk density above. The same factor is used for the sand as for the cement; that is the tool's choice and was not read from a CPWD table.			Engine rule: scaled from the 1:3 figure
Cement in 1 m³ of 1:3 mortar 10.26 bags of 50 kg; sand 1.069 m³	C = 1440 ÷ X × f	1,440 ÷ 3 × 1.069	**513.1 kg**	CPWD Delhi Analysis of Rates 2014 (DAR), Vol 2 item 13.21
Cement in 1 m³ of 1:4 mortar 7.70 bags of 50 kg; sand 1.069 m³	C = 1440 ÷ X × f	1,440 ÷ 4 × 1.069	**384.8 kg**	Scaled from the 1:3 figure by the tool (1,440 ÷ 4 × 1.069); not read from a CPWD table
Cement in 1 m³ of 1:5 mortar 6.16 bags of 50 kg; sand 1.069 m³	C = 1440 ÷ X × f	1,440 ÷ 5 × 1.069	**307.9 kg**	Scaled from the 1:3 figure by the tool (1,440 ÷ 5 × 1.069); not read from a CPWD table
Cement in 1 m³ of 1:6 mortar 5.13 bags of 50 kg; sand 1.069 m³	C = 1440 ÷ X × f	1,440 ÷ 6 × 1.069	**256.6 kg**	Scaled from the 1:3 figure by the tool (1,440 ÷ 6 × 1.069); not read from a CPWD table

Only the mixes used in this report are listed. The one CPWD figure the tool was calibrated to is for 1:3 plaster (item 13.21). The tool scales it to the other mixes in the same ratio, so the figures for 1:4, 1:5 and 1:6 (385, 308 and 257 kg) are scaled, not read from the CPWD table. A third-party table based on

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the 2023 Delhi Schedule of Rates gives about 380, 310 and 250 kg for those three mixes, so the scaled figures differ slightly from published tables (by up to about 3%).

8.2 Cement, sand and stone in a cubic metre of lintel concrete

STEP	FORMULA	WORKING	RESULT	SOURCE
Cement in 1 m³ of M20 concrete Mix 1:1.5:3 by volume			**400 kg**	CPWD Delhi Analysis of Rates 2014 (DAR) Vol 1 item 4.1.2 (not re-read); IS 456:2000 cl 9.3: nominal mix concrete may be used for M 20 or lower
Sand in 1 m³ of M20 concrete			**0.425 m³**	CPWD Delhi Analysis of Rates 2014 (DAR) Vol 1 item 4.1.2
Stone (20 mm) in 1 m³ of M20 concrete			**0.850 m³**	CPWD Delhi Analysis of Rates 2014 (DAR) Vol 1 item 4.1.2

The quantities for M20 are CPWD DAR 2014 Vol 1 item 4.1.2. That item number is as given in the tool's research notes and was not re-read against the published volume; treat it as a pointer to check.

8.3 Worked examples: a joint, a coat of plaster, and the lintel concrete

STEP	FORMULA	WORKING	RESULT	SOURCE
Worked example	Joints: outer walls, mix 1:6.			
Volume of mortar			**9.470 m³**	Carried forward: Joint mortar of that wall, from the section 5 table of every wall
Cement	volume × 1440 ÷ X × f	9.470 × 1,440 ÷ 6 × 1.069	**2,429.6 kg**	CPWD Delhi Analysis of Rates 2014 (DAR)
Sand	volume × f	9.470 × 1.069	**10.123 m³**	CPWD Delhi Analysis of Rates 2014 (DAR)
Worked example	Plaster: inner walls, mix 1:6.			
Volume of mortar			**7.074 m³**	Carried forward: Mortar of that coat, from table 6.5
Cement	volume × 1440 ÷ X × f	7.074 × 1,440 ÷ 6 × 1.069	**1,814.9 kg**	CPWD Delhi Analysis of Rates 2014 (DAR)
Sand	volume × f	7.074 × 1.069	**7.562 m³**	CPWD Delhi Analysis of Rates 2014 (DAR)
Worked example	Lintels (M20 concrete), mix 1:1.5:3.			
Volume of concrete			**1.008 m³**	Carried forward: Concrete in all lintels, from table 7.3
Cement	volume × 400	1.008 × 400	**403.2 kg**	CPWD Delhi Analysis of Rates 2014 (DAR) Vol 1 item 4.1.2
Sand	volume × 0.425	1.008 × 0.425	**0.428 m³**	CPWD Delhi Analysis of Rates 2014 (DAR) Vol 1 item 4.1.2
Stone, 20 mm	volume × 0.85	1.008 × 0.850	**0.857 m³**	CPWD Delhi Analysis of Rates 2014 (DAR) Vol 1 item 4.1.2

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8.4 Cement and sand, use by use

USE	MIX	VOLUME (M³)	CEMENT (KG)	SAND (M³)	STONE (M³)
Joints: outer walls	1:6	9.47	2,430	10.12	—
Joints: inner walls	1:4	2.46	947	2.63	—
Joints: plinth wall	1:6	1.28	328	1.37	—

Joints: terrace parapet	1:4	0.87	336	0.93	—
Joints: balcony edge walls	1:4	0.13	51	0.14	—
Joints: terrace stair room	1:6	1.45	372	1.55	—
Plaster: inner walls	1:6	7.07	1,815	7.56	—
Plaster: ceilings	1:3	1.27	650	1.35	—
Plaster: outside of the building (12 mm coat)	1:5	3.93	1,210	4.20	—
Plaster: outside of the building (6 mm coat)	1:6	1.97	504	2.10	—
Plaster: terrace parapet (12 mm coat)	1:5	1.20	369	1.28	—
Plaster: terrace parapet (6 mm coat)	1:6	0.60	154	0.64	—
Plaster: balcony edge walls (12 mm coat)	1:5	0.18	56	0.20	—
Plaster: balcony edge walls (6 mm coat)	1:6	0.09	23	0.10	—
Lintels (M20 concrete)	1:1.5:3	1.01	403	0.43	0.86
Everything		**32.98**	**9,648**	**34.61**	**0.86**

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9. What to buy: the order sizes

The exact quantities are rounded to the sizes in which the material is ordered. This rounding moves the figures in the report, so it is shown here.

9.1 Rounding to order sizes

STEP	FORMULA	WORKING	RESULT	SOURCE
Bricks: Red clay brick The count including breakage, rounded up to the order size	round up to 100	30,311.4 → next 100	**30,400 nos**	Engine rule: bricks are sold by the hundred
Cement Joints, plaster and lintels	bags = kg ÷ 50, rounded up	9,648 ÷ 50, rounded up	**193 bags of 50 kg**	Engine rule
Sand Joints, plaster and lintels	rounded to 0.1 m³	round(34.607, 1 place)	**34.6 m³**	Engine rule
Stone aggregate 20 mm Lintel concrete	rounded to 0.01 m³	round(0.857, 2 places)	**0.86 m³**	Engine rule
Steel for lintels (10, 8 and 6 mm) Bars and stirrups	round up to 5 kg	94.1 → next 5 kg	**95 kg**	Engine rule

9.2 The order list

ITEM	EXACT QUANTITY	ROUNDED HOW	ORDER QUANTITY
Red clay brick 230 × 115 × 75 mm	30,311.4 nos	up to the next 100	30,400 nos
Cement	9,648.5 kg	bags of 50 kg, up to the next whole bag	193 bags of 50 kg
Sand	34.61 m³	to the nearest 0.1 m³	34.6 m³
Stone aggregate 20 mm	0.86 m³	to the nearest 0.01 m³	0.86 m³
Steel for lintels (10, 8 and 6 mm)	94.1 kg	up to the next 5 kg	95 kg

9.3 Lintels counted in the StructurePro report as well

STEP	FORMULA	WORKING	RESULT	SOURCE
Why	The StructurePro report also counts the lintels over doors and windows. If you hold both reports, the Grand Total takes the lintel concrete and steel below out once, so they are not ordered twice. On its own each report is complete.			Engine rule
Cement in the lintels	lintel concrete × 400 kg ÷ 50 kg	from tables 7.3 and 8.2	**8.06 bags of 50 kg**	Engine rule
Sand in the lintels	lintel concrete × 0.425	from tables 7.3 and 8.2	**0.43 m³**	Engine rule
Stone aggregate in the lintels	lintel concrete × 0.85	from tables 7.3 and 8.2	**0.86 m³**	Engine rule
Steel in the lintels	lintel steel, rounded up to 5 kg	from table 7.3	**95.00 kg**	Engine rule

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10. How far off the figures can be

The report gives, under each total, a range that the tool's own judgement puts the real figure in. It is a judgement band, not a statistical interval. These are the factors behind it.

10.1 The bands

FIGURE	LOW FACTOR	HIGH FACTOR	AS PRINTED IN THE REPORT
Bricks	0.82	1.20	18% below to 20% above
Cement	0.80	1.30	20% below to 30% above
Sand	0.80	1.30	20% below to 30% above
Plaster area	0.85	1.18	15% below to 18% above
Lintel concrete and steel	0.70	1.40	30% below to 40% above

10.2 The range under each total

STEP	FORMULA	WORKING	RESULT	SOURCE
Range for Bricks: low end	total × low factor	30,400 × 0.82	**24,928 nos**	NirmanShastra assumption
Range for Bricks: high end	total × high factor	30,400 × 1.20	**36,480 nos**	NirmanShastra assumption
Range for Cement: low end	total × low factor	193 × 0.80	**154 bags of 50 kg**	NirmanShastra assumption
Range for Cement: high end	total × high factor	193 × 1.30	**251 bags of 50 kg**	NirmanShastra assumption
Range for Sand: low end	total × low factor	34.6 × 0.80	**27.7 m³**	NirmanShastra assumption
Range for Sand: high end	total × high factor	34.6 × 1.30	**45.0 m³**	NirmanShastra assumption
Range for Plaster: low end	total × low factor	1,036 × 0.85	**881 m²**	NirmanShastra assumption
Range for Plaster: high end	total × high factor	1,036.1 × 1.180	**1,223 m²**	NirmanShastra assumption

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11. Code checks that depend on a number

The report's checks against the Indian Standards. Three of them compare a size with a limit; they are worked here. The others (mortar mix, plaster thickness, ties to the frame) are statements of practice and carry no sum. The editions followed are IS 4326:1993, IS 6041:1985, IS 2572:2005 and IS 1905:1987; newer editions of some of them exist and were not checked.

11.1 The three checks that depend on a number

STEP	FORMULA	WORKING	RESULT	SOURCE
Outer wall, nominal thickness A brick wall's nominal thickness includes one joint	tn = t + J	0.230 + 0.010	**0.240 m**	Engine rule
Panel wall in a frame: need no separate panel check The Note to IS 4326:1993 cl 8.2.3 reads: For panel walls of 200 mm or larger thickness having a storey height not more than 3.5 metres and laterally supported at the top, this check need not be exercised. The tool does not check the support at the top: it assumes the wall is held there. It tests the nominal thickness (the wall plus one 10 mm joint), so a 190 mm modular-brick wall counts as 200 mm and passes.	tn ≥ 0.20 m and storey ≤ 3.5 m		**0.240 m against 0.20 m, and 3.00 m against 3.5 m: pass**	IS 4326:1993 cl 8.2.3 Note; cl 8.2.6 sends bonded filler walls to cl 8.2.3
Inner wall: greatest height	H ≤ 30 × thickness	30 × 0.115	**3.45 m**	IS 1905:1987 App. D-3.1(b): a panel held at its ends and at the top, of any length, may be 30 times its thickness high
Inner wall: result	inner wall height ≤ limit		**2.70 m against 3.45 m: pass**	IS 1905:1987 App. D-3.1(b)
Parapet: greatest height unbraced These two standards are for block masonry; the tool applies the limit to brick by analogy	H ≤ 5 × thickness	5 × 0.115	**0.58 m**	IS 6041:1985 cl 4.3; IS 2572:2005 cl 7.2.2: unless braced at 3 m or less, five times the thickness
Parapet: result	parapet height ≤ limit		**1.00 m against 0.58 m: advisory (needs stiffening columns, not counted)**	IS 6041:1985 cl 4.3; IS 2572:2005 cl 7.2.2

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Reconciliation: the report against this sheet

The totals printed in the report, rebuilt from the working above. Every row must read the same on both sides. This shows that the report and this sheet agree with each other, which is a check of the arithmetic; it does not show that either one is right against a standard or against your site.

ITEM	IN THE REPORT	FROM THIS SHEET	MATCH
Rows in the table: How the walls were measured, floor by floor	2	2	Yes
Rows in the table: Doors, windows and ventilators	10	10	Yes
Rows in the table: Walls, measured	6	6	Yes
Walls: all walls, length	221.3 m	221.3 m	Yes
Walls: all walls, gross area	422.4 m²	422.4 m²	Yes
Walls: openings out	40.9 m²	40.9 m²	Yes
Walls: all walls, net area	381.6 m²	381.6 m²	Yes
Rows in the table: Bricks and joint mortar	6	6	Yes
Units table: net area	381.6 m²	381.6 m²	Yes
Units table: number	28,868 bricks	28,868 bricks	Yes
Units table: with 5% breakage	30,311 bricks	30,311 bricks	Yes
Units table: joint mortar	15.66 m³	15.66 m³	Yes
Rows in the table: Plaster	5	5	Yes
Plaster: measured	1,071.1 m²	1,071.1 m²	Yes
Plaster: taken off	35.0 m²	35.0 m²	Yes
Plaster: area to plaster	1,036.1 m²	1,036.1 m²	Yes
Plaster: mortar	16.31 m³	16.31 m³	Yes
Rows in the table: Lintels and sills	10	10	Yes
Lintels: number	22 nos	22 nos	Yes
Lintels: length	31.0 m	31.0 m	Yes
Lintels: concrete	1.01 m³	1.01 m³	Yes
Lintels: steel	94.1 kg	94.1 kg	Yes
Sills: number	12 nos	12 nos	Yes
Sills: length	17.1 m	17.1 m	Yes
Rows in the table: Cement and sand, use by use	15	15	Yes
Cement and sand: volume	32.98 m³	32.98 m³	Yes
Cement and sand: cement	9,648 kg	9,648 kg	Yes
Cement and sand: sand	34.61 m³	34.61 m³	Yes
Cement and sand: stone	0.86 m³	0.86 m³	Yes
Rows in the table: The order lines	5	5	Yes
Order line: Red clay brick 230 × 115 × 75 mm	30,400 nos	30,400 nos	Yes
Order line: Cement	193 bags of 50 kg	193 bags of 50 kg	Yes
Order line: Sand	34.6 m³	34.6 m³	Yes
Order line: Stone aggregate 20 mm	0.86 m³	0.86 m³	Yes

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Order line: Steel for lintels (10, 8 and 6 mm)	95 kg	95 kg	Yes
Rows in the table: What to order: the main totals	4	4	Yes
Total: Bricks	30,400 nos	30,400 nos	Yes
Range, low end: Bricks	24,928 nos	24,928 nos	Yes
Range, high end: Bricks	36,480 nos	36,480 nos	Yes
Total: Cement	193 bags of 50 kg	193 bags of 50 kg	Yes
Range, low end: Cement	154 bags of 50 kg	154 bags of 50 kg	Yes
Range, high end: Cement	251 bags of 50 kg	251 bags of 50 kg	Yes
Total: Sand	34.6 m³	34.6 m³	Yes
Range, low end: Sand	27.7 m³	27.7 m³	Yes
Range, high end: Sand	45.0 m³	45.0 m³	Yes
Total: Plaster	1,036 m²	1,036 m²	Yes
Range, low end: Plaster	881 m²	881 m²	Yes
Range, high end: Plaster	1,223 m²	1,223 m²	Yes
Rows in the table: Lintels counted in both reports	4	4	Yes
Counted in both reports: cement in the lintels	8.06 bags of 50 kg	8.06 bags of 50 kg	Yes
Counted in both reports: sand in the lintels	0.43 m³	0.43 m³	Yes
Counted in both reports: stone aggregate in the lintels	0.86 m³	0.86 m³	Yes
Counted in both reports: steel in the lintels	95.00 kg	95.00 kg	Yes
Band: Bricks	18% below to 20% above	18% below to 20% above	Yes
Band: Cement	20% below to 30% above	20% below to 30% above	Yes
Band: Sand	20% below to 30% above	20% below to 30% above	Yes
Band: Plaster area	15% below to 18% above	15% below to 18% above	Yes
Band: Lintel concrete and steel	30% below to 40% above	30% below to 40% above	Yes
Check: Outer wall thickness in a framed building	Pass	Pass	Yes
Check: Inner walls: height against thickness	Pass	Pass	Yes
Check: Parapet height against thickness	Advisory	Advisory	Yes
Floors	2	2	Yes
Homes	1	1	Yes
Rooms counted	9	9	Yes
Doors	10	10	Yes
Windows and ventilators	12	12	Yes
Outer wall thickness	230 mm	230 mm	Yes
Inner wall thickness	115 mm	115 mm	Yes

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Standards and references used in this sheet

DOCUMENT	TITLE	USED FOR
IS 1200 (Part 3):1976	Method of measurement of building and civil engineering works, Part III: Brickwork	Taking openings, with their lintels and sills, out of the walls (cl 4.1.4 and its note). This is the 1976 edition. BIS lists IS 1200 (Part 3):2026, which supersedes it; the tool follows the 1976 rules and has not been checked against the 2026 edition.
IS 1200 (Part 12):1976	Method of measurement of building and civil engineering works, Part XII: Plastering and pointing	Measuring plaster and deducting openings from it (cl 3.8, 3.12). This is the 1976 edition. BIS lists IS 1200 (Part 12):2026, which supersedes it; the tool follows the 1976 rules and has not been checked against the 2026 edition.
IS 1077:1992	Common burnt clay building bricks: Specification	The modular brick, 190 × 90 × 90 mm.
IS 12894:2002	Pulverized fuel ash-lime bricks: Specification	The fly-ash brick, 230 × 110 × 70 mm (cl 5.1.2).
IS 2185 (Part 1):2005	Concrete masonry units, Part 1: Hollow and solid concrete blocks	The 400 × 200 mm concrete block; the nominal size includes the mortar joint (cl 4.2, 4.2.1).
IS 2185 (Part 3):1984	Concrete masonry units, Part 3: Autoclaved cellular (aerated) concrete blocks	The 600 × 200 mm AAC block face (with the makers' data).
IS 6041:1985	Construction of autoclaved cellular concrete block masonry: Code of practice	The 10 mm joint (cl 7.1); minimum thickness of internal and external panel walls (cl 4.2.1); parapet height (cl 4.3). This sheet follows the 1985 edition; a newer edition exists and was not checked.
IS 2572:2005	Construction of hollow and solid concrete block masonry: Code of practice	The 10 mm joint (cl 11.1.4); minimum thickness of internal partitions (cl 7.2.1.2) and external panel walls (cl 7.2.1.3); parapet height (cl 7.2.2). This sheet follows the 2005 edition; a newer edition exists and was not checked.
IS 2212:1991	Brickwork: Code of practice	The code of practice for brickwork. Its joint limit of 12 mm (cl 6.4.1) is as given in the tool's research notes and was not re-read against the published text; the tool takes 10 mm.
IS 2250:1981	Preparation and use of masonry mortars: Code of practice	Richer mortar for parapets higher than three times their thickness (cl 7.1.5). The grade named there (MM 3) and its cement-sand ratio were not read; a secondary source gives MM 3 as 1:5, so the tool's 1:4 is on the safe side.
IS 1905:1987	Structural use of unreinforced masonry: Code of practice	Bearing of a lintel on the wall (cl 5.3.3) and the height of a held panel against its thickness (App. D-3.1(b)).
IS 4326:1993	Earthquake resistant design and construction of buildings: Code of practice	Recommended mortar mixes (cl 8.1.2, Table 3); panel walls in a frame (cl 8.2.3 and its Note for walls of 200 mm or more in storeys of 3.5 m or less, held at the top; cl 8.2.6 sends bonded filler walls to cl 8.2.3). This sheet follows the 1993 edition; IS 4326:2013 is a newer edition and was not checked.
IS 1786:2008	High strength deformed steel bars and wires for concrete reinforcement: Specification	Mass per metre of the 6, 8 and 10 mm bars in the lintels (Table 1).
IS 456:2000	Plain and reinforced concrete: Code of practice	Nominal mix concrete may be used for M 20 or lower (cl 9.3): the lintels.
CPWD DAR 2014	Delhi Analysis of Rates 2014, Volumes 1 and 2 (Central Public Works Department)	Mortar in each plaster item (Vol 2 items 13.3, 13.4, 13.11, 13.16); cement in 1:3 plaster mortar (Vol 2 item 13.21); the M20 concrete quantities (Vol 1 item 4.1.2, as given in the tool's research notes and not re-read against the published volume). These are the CPWD analysis-of-rates basis the tool uses; they are not Indian Standard clauses. The cement for the other mixes is scaled by the tool from the 1:3 figure.

This sheet shows the method and the arithmetic behind a planning-level quantity estimate. It lets a qualified person check the formulas and the working. It is not a structural design, a drawing or a certificate, and it does not replace the drawings and calculations that a licensed professional signs for your building.

SAMPLE
example house, not your project