

AXIS CONSULTANTS

<u>STANDARD CIVIL ENGINEERING SPECIFICATION</u>		
ISSUED: 15-09-2012	GENERAL PLASTER SPECIFICATION	REV. - 0

CONTENTS

PARA NO.	DESCRIPTION	PAGE NO.
1.0	<u>SCOPE</u>	3
2.0	<u>APPLICABLE CODES</u>	3
3.0	<u>PRIORITY OF REQUIREMENTS</u>	3
4.0	<u>MATERIALS</u>	4
4.1	Slaking Lime	4
4.2	Neeru	4
4.3	Cement	4
4.4	Sand	4
4.5	Water	4
5.0	<u>SCAFFOLDING</u>	4
6.0	<u>PREPARATION OF SURFACES</u>	5
7.0	<u>CEMENT LIME PLASTER</u>	6
7.1	Application	6
7.2	Wetting and Curing	7
8.0	<u>CEMENT PLASTER</u>	7
8.1	General	7
8.2	Proportioning	7
8.3	Mixing	7
9.0	<u>CEMENT PLASTER WITH WATER PROOFING COMPOUND</u>	8
10.0	<u>SEQUENCE OF OPERATIONS</u>	8
11.0	<u>SAND FACED PLASTER</u>	8
11.1	First coat	8
11.2	Second coat	9
12.0	<u>SMOOTH FACED NEERU PLASTER</u>	9
12.1	First coat	9
12.2	Second coat	10
13.0	<u>SMOOTH FINISHED CEMENT PLASTER</u>	10
13.1	First coat	10
13.2	Second coat	10

AXIS CONSULTANTS

<u>STANDARD CIVIL ENGINEERING SPECIFICATION</u>		
ISSUED: 15-09-2012	GENERAL PLASTER SPECIFICATION	REV. - 0

14.0	<u>ROUGH CAST PLASTER</u>	11
15.0	<u>PEBBLE DASH FINISH</u>	11
16.0	<u>DAMAGE RECTIFICATION</u>	11
17.0	<u>POINTING</u>	11
17.1	Surface Preparation	11
17.2	Application	11
18.0	<u>CURING</u>	12

AXIS CONSULTANTS

<u>STANDARD CIVIL ENGINEERING SPECIFICATION</u>		
ISSUED: 15-09-2012	GENERAL PLASTER SPECIFICATION	REV. - 0

1.0 **SCOPE**

This specification covers the general requirement for the different types of plaster and pointing to be carried out on brick masonry, stone masonry, laterite block work and concrete block work.

2.0 **APPLICABLE CODES**

Note: - Wherever reference is made to IS Codes, on any page of this Technical Specification (including annexures), applicable year of publication of IS Code is as stated below.

The Indian Standard codes applicable to this section shall include but not limited to the following :

IS 120 - 1962	:	Ready mixed paint, brushing, finishing, semi-gloss, for general purposes, to Indian Standard Colours No. 537, 538, 540, 541, 570 and 574.
IS 460 - 1985	:	Test sieves
Part 1	:	Wire cloth test sieves
Part 2	:	Perforated plate test sieves
Part 3	:	Methods of examination of apertures of test sieves.
IS 712 - 1984	:	Building limes
IS 1542 - 1992	:	Sand for plaster
IS 1661 - 1972	:	Code of practice for application of cement and cement-lime plaster finishes.
IS 2394 - 1984	:	Code of practice for application of lime plaster finish.
IS 2645 - 1975	:	Integral cement water proofing compounds.

3.0 **PRIORITY OF REQUIREMENTS**

In case of any variation and discrepancy in condition between the special conditions, this specification and codes, order of priority shall be as under :-

- (1) Special conditions
- (2) This specification
- (3) Codes

AXIS CONSULTANTS

<u>STANDARD CIVIL ENGINEERING SPECIFICATION</u>		
ISSUED: 15-09-2012	GENERAL PLASTER SPECIFICATION	REV. - 0

4.0 MATERIALS

4.1 Slaking Lime

All impurities ashes or pieces improperly burnt shall be screened or picket out and then slaked not less than one week nor more than two weeks before use. The slaked lime shall be screened through IS 240 sieve for mortars used for first coat or through IS 120 sieve for mortars used in subsequent coats. The slaked lime shall be stored in a weather proof shed with a impervious floor and shall conform to IS: 712. The lime shall be used when fresh. The lime shall be kept wet for atleast six days in a water tank (or drums) before using.

4.2 Neeru

“Run” lime shall be allowed to mellow for atleast 10 days in a tank or drums. The surplus water on top shall be allowed to run off and the top layer of lime formed into putty shall be skimmed off and well mixed with sand and jute in proportion of 4 cu.m. of lime putty to 1 cu.m. of fine washed sand (passing sieve no. 25) and fine chopped jute at the rate of 5 kg per every cubic metre of mortar and the mixture properly ground to a paste.

4.3 Cement

Cement shall conform to “GENERAL CONCRETE SPECIFICATION unless otherwise specified.

4.4 Sand

Sand for plastering and pointing shall conform to IS 1542. Sand shall be hard, durable, clean and free from adherent coatings and organic matter and shall not contain any appreciable amount of silt, clay balls or pallets. Sand shall not contain impurities such as iron pyrites, coal particles, lignite, mica shale etc.

Fine sand shall be obtained from river beds not affected by tidal water of the sea and shall be clean, sharp and free from excessive deleterious matter. The sand shall not contain more than 8 percent of mud and silt as determined by field test with a measuring cylinder.

4.5 Water

Water for plastering and pointing shall conform to “GENERAL CONCRETE SPECIFICATION.

5.0 SCAFFOLDING

Scaffolding shall be properly planned and designed by the CONTRACTOR. It shall be approved by Engineer-in-Charge before commencement of work. Double scaffolding,

AXIS CONSULTANTS

<u>STANDARD CIVIL ENGINEERING SPECIFICATION</u>		
ISSUED: 15-09-2012	GENERAL PLASTER SPECIFICATION	REV. - 0

sufficiently strong so as to withstand all loads likely to come upon it and having two sets of vertical supports, shall be provided. Where two sets of supports are not possible, the inner end of the horizontal scaffolding member shall rest in a hole provided in the header course only. Only one header for each member shall be left out. Such holes shall be filled up immediately after removal of scaffolding.

For internal plastering, scaffolding shall be erected independent of walls. No member of scaffolding shall be allowed to be housed in the walls being treated with plaster. Scaffolding for external plaster shall be supported independent of walls as far as possible to avoid patchy appearance.

The following measures shall be considered while designing and erecting of scaffolding.

- (a) Sufficient sills or under pinnings in addition to base plates shall be provided particularly where scaffoldings are erected on soft grounds.
- (b) Adjustable bases to compensate for uneven ground shall be used.
- (c) Proper anchoring of the scaffolding/ staging at reasonable intervals shall be provided in each case with the main structure, wherever available.
- (d) Horizontal braces shall be provided to prevent the scaffolding from rocking.
- (e) Diagonal braces shall be provided continuously from bottom to top between two adjacent rows of uprights.
- (f) The scaffolding shall be checked at every stage for plumb line.
- (g) All nuts and bolts shall be properly tightened.
- (h) Wherever steel tubes are used care shall be taken that all the clamps/ couplings are firmly tightened so as to avoid any slippage.

6.0 PREPARATION OF SURFACES

- 6.1 The surfaces shall be cleaned off all dust, loose mortar droppings, traces of algae, oil, efflorescence and other foreign matter by wire brushing, hacking, chiselling, etc. If the Engineer-in-Charge is not satisfied with the roughening achieved by these methods, he may order other methods such as washing with acid etc.
- 6.2 Joints shall be raked to a depth of 10mm minimum. Care shall be taken, not to damage masonry edges while raking.
- 6.3 All surfaces of concrete, old plaster and masonry shall be roughened sufficiently for bond.

AXIS CONSULTANTS

<u>STANDARD CIVIL ENGINEERING SPECIFICATION</u>		
ISSUED: 15-09-2012	GENERAL PLASTER SPECIFICATION	REV. - 0

- 6.4 Soft or crumbling masonry work and other surfaces shall be dismantled and remade if required as per instructions of Engineer-in-Charge.
- 6.5 In case of concrete work, projecting burrs of mortar formed due to the gaps of joints in shuttering shall be removed. Such surface shall be scrubbed clean with wire brushes. The surface shall be marked with a pointed tool at spacing of not more than 50mm centres. The marks shall not be less than 3mm deep to ensure a proper key for the plaster.
- 6.6 All surfaces to be plastered shall be thoroughly wetted for 24 hours before commencing plaster and shall be kept damp during the progress of work. Wetting shall be uniform and shall be ensured by damping evenly.
- 6.7 To avoid cracks at the junction of concrete with masonry work, the plaster shall be reinforced at such junctions by fixing standard wire mesh IRCS-6 (6 x 6 x 6/6) as directed by the Engineer-in-Charge. The wire mesh shall overlap concrete and masonry surface by atleast 50mm.
- 6.8 The preparation of surfaces shall be inspected by the Engineer-in-Charge. Plastering shall not be commenced, until the preparation of surfaces are approved by the Engineer-in-Charge.

7.0 CEMENT LIME PLASTER

Lime putty and sand shall be mixed dry in the required proportions and kept protected from drying out till the time of use. The required quantity of cement shall then be added and the whole mass thoroughly mixed. Water shall be added if necessary but only to the minimum extent required to give a working consistency for the plaster.

Mixing shall be done mechanically in "Mortar Mill". If the Engineer-in-Charge allows handmixing, mixing shall be carried out on a clean, watertight platform, protected from Sun and Rain.

7.1 Application

Cement lime plaster shall be used within half an hour after the addition of water to cement provided it is kept agitated or turned over at intervals of at least 20 minutes. Any mortar for plaster which is partially set shall be rejected and removed forthwith from the site.

For external plaster the plastering operations shall be started from the top floor and carried downwards. For internal plaster, the plastering operations may be started wherever the building frame and cladding work are ready.

Patches of plaster 150 mm x 150 mm shall be placed about 3m apart as gauge to ensure even plastering. The mortar shall be firmly applied in a thickness slightly more than the required thickness and well pressed into the joints, rubbed and leveled with a flat wooden rule to required thickness.

AXIS CONSULTANTS

<u>STANDARD CIVIL ENGINEERING SPECIFICATION</u>		
ISSUED: 15-09-2012	GENERAL PLASTER SPECIFICATION	REV. - 0

All plastering shall be executed in a neat manner ensuring a good workmanship. All faces (other than for curved faces) shall be true and flat. Angles shall be straight and level or plumb.

All plastering shall be made good upto metal or wooden frames, skirting and around pipes or fittings. All surrounding areas and surfaces of equipment shall be kept scrupulously clean and the CONTRACTOR shall take strict precautions to adequately cover the same.

7.2 Wetting and Curing

Surfaces to be plastered shall be profusely watered well in advance before plastering so as to keep the surface damp. Plastered surfaces shall be kept thoroughly wet by sprinkling water for at least 7 days or as directed by the Engineer-in-Charge. Surfaces with craziness or cracks shall be rejected and the CONTRACTOR shall dismantle such plaster forthwith and apply plaster all over again at his cost cost.

8.0 CEMENT PLASTER

8.1 General

Cement mortar shall be prepared by mixing cement, sand and water in specified proportions. The mortar shall be used as soon as possible after mixing and before it has begun to set and in any case within 30 minutes after the water is added to the dry mixtures. Mortar unused for more than 30 minutes shall be rejected and removed from the site of work.

8.2 Proportioning

The unit of measurement for cement shall be a bag of cement weighing 50 Kgs and this shall be taken as 0.035 cubic meter (M³). Sand in specified proportion shall be measured in boxes of suitable size. It shall be measured on the basis of its dry volume. In case of damp sand its quantity shall be increased suitably to allow for bulkage.

8.3 Mixing

The mixing of mortar shall be done in mechanical mixer operated manually or by power. The Engineer-in-Charge may, however, relax this conditions at his discretion, taking into account the nature and location of work, practicability of the use of these machines. For items, where the mixers are not to be used, the CONTRACTOR shall take the approval of the Engineer-in-Charge before the commencement of work.

8.3.1 Mixing in Mechanical Mixer

Cement and sand in specified proportions shall be mixed dry thoroughly in a mixer. Water shall then be added gradually and wet mixing continued for at least one minute.

AXIS CONSULTANTS

<u>STANDARD CIVIL ENGINEERING SPECIFICATION</u>		
ISSUED: 15-09-2012	GENERAL PLASTER SPECIFICATION	REV. - 0

Care shall be taken not to add more water than that which shall bring the mortar to the consistency of a stiff paste.

Only the quantity of mortar which can be used within 30 minutes of its mixing, shall be prepared at a time.

Mixer shall be cleaned with water each time before suspending the work.

8.3.2 Hand Mixing

The measured quantity of sand shall be levelled on clean water tight platform and cement bags emptied on top. The cement and sand shall be thoroughly mixed dry by being turned over and over, backward and forward, several times till the mixture is of a uniform colour. The quantity of dry mix which can be used within 30 minutes shall then be mixed with just sufficient quantity of water to bring the mortar to the consistency of a stiff paste.

9.0 **CEMENT PLASTER WITH WATERPROOFING COMPOUND**

Water proofing compound shall conform to IS 2645 (CICO or approved equivalent). The compound shall be well mixed with dry cement in the proportion of 2% by weight or as recommended by manufacturer.

10.0 **SEQUENCE OF OPERATIONS**

- 10.1 For external plaster, the plastering operations shall be started from the top floor and carried downwards. For internal plaster, the plastering may be started wherever the building frame, roofing, and brick work are ready.
- 10.2 The first underlayer shall be applied to ceilings. After the ceiling plaster is complete, plastering on walls shall be started.

11.0 **SAND FACED PLASTER**

11.1 First coat

The first coat shall be 12mm thick of 1:4, cement-sand proportion by volume. Guide stripes 150mm wide and of suitable length shall be first put up on the surface for the first coat. These guide strips shall be brought to absolutely plumb vertically and to the same plane horizontally all through. These guide strips shall be put up sufficiently earlier, so that at the commencement of plaster, these guide strips shall have sufficiently hardened. The plastered surface then shall be firmly pressed to a uniform plumb and plane. The surface shall then be sufficiently scratched to receive the second coat. The surface of the first coat shall be thoroughly combed, so that 5mm deep grooves at 12mm apart are formed, when the mortar is in the plastic stage. The surface shall be cured for atleast 3 days.

AXIS CONSULTANTS

<u>STANDARD CIVIL ENGINEERING SPECIFICATION</u>		
ISSUED: 15-09-2012	GENERAL PLASTER SPECIFICATION	REV. - 0

11.2 Second coat

Sand used for the second coat shall be sieved. Sand passing through 3mm sieve shall be used. The sand shall be of uniform size.

The second coat shall be 8mm thick of 1:4, cement sand proportion by volume. The second coat shall be struck uniformly over the first scratched coat and firmly pressed and levelled using a batten. The surface shall then be firmly trowelled and sponge floated to remove excess moisture and to bring the sand to the surface.

A sponge dipped in cement water shall be used with circular motion to get the sandy appearance.

The surface thus prepared shall be uniformly roughened for texture by running a fine wire brush lightly over the surface, as per the instructions of Engineer-in-Charge.

The surface of the plaster shall be kept moist, for a minimum period of 7 days and shall be protected from sun rays.

12.0 **SMOOTH FINISHED NEERU PLASTER**

12.1 First coat

All internal surfaces including ceilings shall be thoroughly cleaned and wetted 24 hours in advance.

Before commencement, the surfaces shall be made uniformly damp but not very wet.

All the corners shall be finished with 15mm radius and brought to true lines and levels.

Guide strips 150mm wide and suitable length, of the thickness of the first coat shall be put in advance. These shall be plumb, levelled to one plane.

Guide strips shall be sufficiently hardened at the commencement of plaster.

The first coat shall be 1:4 cement sand proportion by volume and of the following thickness :

12mm for 20mm thick overall plaster

10mm for 16mm thick overall plaster

8mm for 12mm thick overall plaster

6mm for 6mm thick overall ceiling plaster

AXIS CONSULTANTS

<u>STANDARD CIVIL ENGINEERING SPECIFICATION</u>		
ISSUED: 15-09-2012	GENERAL PLASTER SPECIFICATION	REV. - 0

This coat shall be firmly stuck, levelled, planed and shall be well trowelled.

After bringing the coat to the uniform plane, it shall be scratched.

12.2 Second coat

The second coat shall consist of lime paste plaster and shall be applied immediately after the first coat has obtained the initial set of 4 hours.

The second coat shall be of the following thickness :

6mm for 16mm thick overall plaster

4mm for 12mm thick overall plaster

This coat shall be well trowelled into the first coat. Trowel marks shall be removed and the surface made plain, even and level.

The surface shall be cured for 7 days.

When plaster starts drying, one coat of lime wash shall be given on all neeru finished surfaces after 10 days to prevent hair cracks.

13.0 **SMOOTH FINISHED CEMENT PLASTER**

The preparatory work shall be similar to as described above, except for the following.

13.1 First coat

The first coat shall be 1:4 cement sand proportion by volume and of the following thickness :

12mm for 20mm thick overall plaster.

10mm for 16mm thick overall plaster.

8mm for 12mm thick overall plaster.

6mm for 6mm thick overall ceiling plaster.

13.2 Second coat

The second coat shall be of 1:4 cement sand proportion by volume and of the following thickness :

8mm for 20mm thick overall plaster.

6mm thick for 16mm thick overall plaster.

AXIS CONSULTANTS

<u>STANDARD CIVIL ENGINEERING SPECIFICATION</u>		
ISSUED: 15-09-2012	GENERAL PLASTER SPECIFICATION	REV. - 0

4mm thick for 12mm thick overall plaster.

14.0 ROUGH CAST PLASTER

The surface shall be prepared as for cement plaster and then 12mm backing coat of cement mortar 1:4 (cement - sand) shall be applied. Subsequently a top coat of 16mm thick of cement and stone chips mixture in proportion 1:3 (1 cement : 3 stone chips, 10mm size and below) shall be applied by striking the mixture on top with trowel to produce uniform rough texture.

The surface shall afterwards be cured for 10 days. After curing, the surface shall be brushed with hard wire brush to remove loose chips from the surface. A coat of cement wash shall then be applied.

15.0 PEBBLE DASH FINISH

The cement mortar of 1:4 proportion shall be applied on walls to a thickness of 12 mm and shall be rough trowelled. Small pebbles of 10 mm maximum size and retained on No. 8 mesh sieve shall be mixed with cement at the rate of 1 part of cement and 4 parts of pebbles and shall be splashed with force against the wet cement mortar surface. The pebbles shall be lightly pressed or trapped into the mortar. The whole surface shall be kept watered for ten days.

16.0 DAMAGE RECTIFICATION

Any cracks, damages, any part of work which sound hollow when tapped or found damaged or defective otherwise shall be cut out in rectangular shape and redone as directed by Engineer-in-Charge at no extra cost.

17.0 POINTING

17.1 Surface Preparation

The joints of the masonry either brick stone or laterite to be flat pointed shall be raked to a depth of atleast 12mm. Raking shall be done carefully and on no account shall any chipping of the masonry be permitted. In new work the raking out shall be done when the mortar in the joint is still green and fresh.

Before pointing is commenced, the whole raked surface shall be properly cleaned with wire brushes, washed with water and kept well wetted.

17.2 Application

Unless stated otherwise, the mix for pointing shall be of 1:2 (cement – sand) proportion. It shall be properly worked with sufficient water to produce a smooth paste.

AXIS CONSULTANTS

<u>STANDARD CIVIL ENGINEERING SPECIFICATION</u>		
ISSUED: 15-09-2012	GENERAL PLASTER SPECIFICATION	REV. - 0

The mix shall be pushed into the joints and superfluous mortar properly removed with a trowel.

The pointing lines shall be regular and uniform in breadth and shall be finished flush, raised etc as specified.

The edges of the pointing shall be cut off parallel so as to leave well defined lines.

In recessed pointing, the mortar shall be struck off, with a trowel and the work left, showing the natural irregularities, in line and surface of the stones themselves.

In case of raised pointing, it shall project from the wall facing with its edges cut parallel, so as to have a uniformly raised band of about 6mm and width 10mm or more as directed, showing the natural irregularities in line and surface of stones themselves. The pointing shall be kept wet for 7 days or as directed by Engineer-in-Charge.

18.0 CURING

All plaster and mortar works shall be kept damp continuously for a minimum period of 7 days after the application of the final coat.

Curing shall commence, 24 hours after the plaster is laid.

To prevent excessive evaporation on the sunny or windowed sides of buildings in hot dry weather, matting or gunny bags shall be hung over the outside of the plaster and kept moist.

In case the plaster/mortar cracks through neglect of watering or any other fault of CONTRACTOR, the plaster shall be removed and redone at his cost.