

Syllabus

For the trade of

BUILDING MAINTENANCE

Under Craftsmen Training Scheme (CTS)

Year 2002

Designed by

Government of India

Ministry of Labour (D.G.E.&T.)

**CENTRAL STAFF TRAINING AND RESEARCH
INSTITUTE**

**EN – Block, Sector – V, Salt Lake City,
Kolkata-700091.**

List of members of the Trade Committee Meeting to approve the syllabus for the Trade of “Building Maintenance” under CTS held on 28.11.2002 at CSTARI

1.	Shri H.Somasundaram, Director	CSTARI, Kolkata	Chairman
2.	Shri V.S.Gour, Jt. Director	CSTARI, Kolkata	Member
3.	Shri Sanat Saha, Architect	Architect Forum	Member
4.	Shri P.Karmakar	S.B.Associates	Member
5.	Shri Ashok Kr. Basu	K.M.D.A.	Member
6.	Shri S.Saha	Mackintosh Burn Ltd.	Member
7.	Shri Barun Mitra	--	Member
8.	Shri Parimal Kr. Pal	I.T.I., Kalyani.	Member
9.	Shri S.K.Sengupta	Bidhannagar Municipality	Member
10.	Sri S. Kumar, DDT	CSTARI, Kolkata	Member
11.	Shri R.N. Dohare, ADT	CSTARI, Kolkata	Member
12.	Shri M.S.Ekambaram, ADT	CSTARI, Kolkata	Member
13.	Sri P.K. Kolay, T.O.	CSTARI, Kolkata	Member
14.	Shri V.Kathiresan T.O.	CSTARI, Kolkata	Member

GENERAL INFORMATION

1. Name of the Trade : Building Maintenance
2. N.C.O. Code No. :
3. Entry Qualification : Passed 10th class
Examination under 10+2 system
of Education or its equivalent.
4. Duration of Craftsmen Training : 06 months (26 Weeks)
5. Unit Size : 16 Trainees
6. Space requirement : 80 sq.m.

Syllabus for the Trade of “Building Maintenance” under CTS.

Week No	Practical	Trade Theory	Engg. Drawing	Workshop Cal.& Science.
1	<p><u>Introduction to Training</u> To make the trainees familiar with workshop discipline layout of the shop tools and equipments safety precautions.</p>	Introduction to trade scope for training in the trade and its importance, Safety precaution.	Properties of lines, angles, triangles circles, Drawing as language of communication. Different types of lines and symbols used in building drawings.	Volume and surface-areas of simple geometrical solids as cubes and prisms.
2	<p><u>Stone Masonry and Brick Masonry</u> To raise a brick wall 10cm, 20cm and 33cm, English or Flemish bond to a height of 2.0 m, on spread footing. To repair and finish cracks in old brickwork and stone masonry. Pointing knowledge required.</p>	Defect in stone Masonry and their repair. Methods of laying bricks in walls. Precaution to be taken in construction of walls. Methods of fixing new work with old work (tooting, racking back and block bonding) Defects in brickwork, maintenance of brick masonry construction. Merit and demerit of brick masonry work. Knowledge regarding different types of bricks.	Simple isometric Scaled drawings, Isometric views of simple objects such as cubes, square and rectangular prisms and pyramids. Code of practice for General Engineering, Drawing as published by ISI to be understood and followed. National building code.	Menstruation applied to area of brick works – requirements of volume and its application to simple excavations area of damp-proof course. Estimate of bricks.
3	<p><u>Mortar & Concrete</u> To prepare cement concrete proportion and lime concrete of given mix.</p>	Concept of water cement ratio workability and curing. Tools plant required for preparation of concrete preparation and placing of concrete of different portion. Factor affecting strength of concrete.	-do-	Site problems involving multiplication-division-common fraction addition-subtraction. Application of fractions to site problems. Estimation of the bricks.

<p>4 -8</p>	<p><u>R.C.C. Structure</u> To make R.C.C. or brick lintel of any span after making proper arrangement of centering.</p> <p>To construct floors of various types of an area of 1.00 m X 1.00 m. To repair a given defective floor. Maintenance huts tiles.</p> <p>To repair cracks in various types of roofs to stop leakage. To repair the Mangalore tile roof covering. Repair of old damage structure reinforcement.</p>	<p>Method of using concrete for repair work shortcuts grouting and guniting. Knowledge of cements.</p> <p>Meaning and type of lintel. Tools required to lay RCC & RBC roofs. Method of lay on R.C.C. & R.B.C. roof (including knowledge for bending and binding and placement of bars). Repair of cracks in R.C.C. roofs - Methods, tools and materials required.</p> <p>Causes of defects in Brick, cement concrete, terrazzo and mosaic, marble and stone floors and their remedial measures. Repair of old floors. Methods of cleaning, cutting and polishing of mosaic, terrazzo and marble floors/granite (Materials and tools required). Laying, repair and maintenance of PVC and linoleum floor. Knowledge regarding flat tiles &-maintenance of ceramic tiles</p> <p>Knowledge regarding roof and lintel and Chemical treatment.</p>	<p>Free hand sketching of simple solids such as cubes, rectangular blocks, cylinders and the views of these objects when viewed perpendicular to their surface or axes.</p> <p>Free hand sketching of bricks-queen closer bats, half bats, half queen closers-king closer.</p> <p>-do-</p>	<p>Decimal addition, subtraction, multiplication and division, conversion of decimal to common fractions and vice-versa site problems. Conversion of metric system</p> <p>Square root-finding square root of perfect square-whole numbers-decimals.</p> <p>-do-</p>
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<p>9</p>	<p><u>Surface finishing</u> To plaster a given brick surface of area 1m X 1m To repair a defective plaster surface. Plinth Protection</p> <p>To do pointing on old brick masonry work.</p>	<p>Tools required for plastering. Methods of cement and lime plastering. Preparation of surface for plastering. Applications of plaster coats. Curing of plaster. Defects in plaster work and their preparations. Repair of defective plaster.</p> <p>Tools and material required for pointing. Operation involved pointing of masonry works. Repair of old pointing.</p>	<p>Preparation of free hand sketches in plan and elevation 4 ½ ft. wall straight and junction.</p> <p>Preparation of free hand sketches of rattrap bond, diagonal-bond, herring bond basket bond and other ornamental panels.</p>	<p>Metric system-metric weights and measurements-units-conversion factors-problem.</p> <p>Ratio and proportion – problems on the above such as finding out quantities of material for various mixes of mortar-concrete.</p>
<p>10</p>	<p><u>Painting</u> Painting of wood/ steel work. White washing/distempering colour washing/cement pointing. To practice/white washing/distempering/colour washing/cement painting of area of 2m x 2m. To repair wooden workout door/window/ventilators/other wooden structures. To replace broken glass panes, acrylic emulsion over plaster of parish.</p> <p>To replace broken glazed tiles. The students should be encouraged to affect repair work in the institution building under the guidance of the teacher; quality of work should be the main objective.</p>	<p>Knowledge about painting different types of washing.</p> <p>Knowledge of timber different type of fitting, knowledge of other type of doors and different types of joints.</p>	<p>Drawing of simple geometrical problems involving lines and squares and polygons.</p>	<p>Menstruation areas and perimeters of rectangles, square and triangles.</p>

11 to 14	<p><u>Painting of Iron and Steel works</u> Practice of painting on different steel structures and other surfaces of plasters.</p>	Methods of painting of new steel work. Methods of repairing and painting old iron steel work.	Problems involving circles, tangents-application to arches, mouldings.	Problems on perimeter and areas of polygons such as pentagon-hexagon-octagon.
15	<p><u>False Ceiling, wall paneling and wall papering.</u> False ceiling wall and wallpapering & construction and repairing. Mode of Measurement.</p>	Tools and materials required for false ceiling wall paneling and wallpapering. Process for placing wallpaper method of wall paneling and false ceiling with different materials in old and new walls. Knowledge of false ceiling	Drawing, architectural mouldings, such as ovalocaveto, torus, Scotia cyma recta, and cyma reverse.	Problems on perimeter and areas of polygons such as pentagon-hexagon-octagon.
16 to 17	<p><u>Damp Proofing.</u> Construction of course for damp proofing.</p>	Surface of dampness. Effect of dampness. Precautions to be taken to prevent dampness. Methods of damp proofing basements, ground floors, plinth and walls. Special damp proofing arrangement in bathroom W.C. and kitchen. Damp proofing for flat and pitched roofs and windowsills. Methods for laying damp proof course in existing buildings. Knowledge, reason and subsequent remedial measure. Knowledge required to different type of damp proofing material	Construction of ellipse by different methods.	Volume and surface-areas of simple geometrical solids as cubes and prisms.

18 to19	<p><u>Varnishing and Polishing.</u> Practice on varnishing and polishing coals in different methods.</p>	<p>proofing material bonding agents like sika high bond.</p> <p>Tool required for varnishing and polishing. Process of varnishing and polishing. Preparation of surface, knotting and priming. Application of varnish coats. Methods of polishing on metal surfaces.</p>	--	--
20	<p><u>Glazing work.</u> Practice on cutting and fixing glasses and replacement.</p>	<p>Replacement and cleaning of glazing work. Tools required. Methods of cutting glass and fixing glass as desired. Material required for cleaning old glass panes and method of cleaning.</p>	--	--
21.	<p><u>Vitrified Tiled Work.</u> Practice on method of cleaning of Chinas.</p>	<p>Method of cleaning of China clay glazed tiles and materials required for cleaning.</p>	--	--
22	<p><u>Anti termite Treatment in Building.</u> Practice on application.</p>	<p>Method of Anti termite Treatment for walls. Anti termite Treatment for soil/in foundation. Anti termite Treatment for wood work in Building.</p>	--	--
23 to 25	<p><u>Sanitary and drainage works.</u> Cutting of pipes to required</p>			

<p>26</p> <p>Revision & Test</p>	<p>length and also thread on a given piece of pipes. Jointing G.I. pipes, plastic pipes by suitable methods. Jointing of sewerage pipes cast-iron and stoneware.</p> <p>Exercises involving the fitting of various pipe fittings and also involving the fitting of various sewerage fittings. Student should be attached in batches to work with a plumber who is executing work locally or in Government public health work. Installation and maintenance of water pumps. Prepare Layout plan (from modification point of view) of concealed and open type water line (GI) of a bathroom.</p> <p>Visit to New Construction area.</p>	<p>Brief idea of inspection chamber, manhole, intercepting chamber ventilating pipes, soak pit, septic tank and different type of fittings and specials.</p> <p>Gradient followed in house sewers, connection of house sewer with municipal service. Measurement, inspection and quality control parameters. Problem and problem shooting and remedies.</p>	<p>--</p>	<p>--</p>
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**LIST OF TOOLS AND EQUIPMENT FOR A UNIT OF 16 TRAINEES
FOR THE TRADE OF “BUILDING MAINTENANCE.”**

Sl.No.	Items	Quantity
1.	Bolster – 100 mm	16 nos.
2.	Pitching tool (Masons)	16 nos.
3.	Chisel Masons Hammer Headed Punch	16 nos.
4.	-do- 12 mm	32 nos
5.	-do- 25 mm	32 nos
6.	Cross cut type	16 nos
7.	-do- 18 mm	16 nos
8.	-do- 35 mm	16 nos
9.	Hammer Masons (club) 1 kg	16 nos
10.	Hammer brick mason (600-800 gm)	16 nos
11.	Helmets	16 nos
12.	Leather gloves	16 nos
13.	Goggles	16 nos
14.	Level masons 1 mt (plumb level)	16 nos
15.	Pins (line)	16 nos
16.	Plumb boot	16 nos
17.	Square (steel) 0.75 m x .5 m	16 nos
18.	Trowel Plastering double	16 nos
19.	Wooden floats	16 nos
20.	Trowel brick 25 cm long	16 nos
21.	Trowel pointing 15 cm	16 nos
22.	Spade	8 nos
23.	Tasla (tin) pans	16 nos
24.	Showels	8 nos
25.	Measuring tape steel 12 mt.	2 nos.
26.	Measuring Tape 50 mt.	1 no.
27.	Wooden straight edges 1.5 mt.	1 no.
28.	Ladders of different sizes – 2, 3 & 4 mts.	1 no. of each size
29.	Sledge hammer 4 kg.	2 nos.

30.	Bucket		16 nos.
31.	Drums - 200 lts.		2 nos
32.	G.I.Pipe - 25mm		200 nos.
33.	Rubber hose pipe 25 mm superior		200 nos.
34.	G.I. Pipe - 12 mm		150 nos.
35.	Shalitex board		2 nos.
36.	Spirit level - 15 cm		16 nos.
37.	Bar Bending tool and cutting tool		1 set
38.	Screw Driver		4 nos.
39.	Sprit level 30 cms		4 nos.
40.	Pocket steel tape (2 mts.)		16 nos.
41.	Four fold foot rule - 30 cm		16 nos.
42.	Pick axes		4 nos.
43.	Grow bars – 5 mt. Long		8 nos.
44.	Scrapers		16 nos.
45.	Snip straight – 25 cm		4 nos.
46.	Carpenter tool kit consisting of		16 sets.
	a) Hand saw	-	1
	b) Mortise chisel	-	1
	c) Tennon saw	-	1
	d) Firmer chisel	-	1
	e) Mallet	-	1
	f) Carpenter claw hammer	-	1
	g) Hand brace with bits	-	1
	h) Plane	-	1
47.	Wheel barrow		3 nos.
48.	Tubular scaffolding 25 mm dia.with coupling And fitting complete		as required
49.	Steel measuring boxes - 6 nos. (.06 cft – 3 nos. & 12 cft - 3 nos.)		
50.	Adjustable props. Steel		24 nos.
51.	Flat form – 1.5m x 1.5m x 2mt.		2 nos.
52.	Bending rods		2 nos.
53.	Dumpy level with stand & staff		1 set
54.	Steel shuttering – 200 sq.mts.		1 no.
55.	Bench grinder		1 no.