Syllabus for the trade

Of

DRAUGHTSMAN (CIVIL)

(SEMESTER PATTERN)

Under

CRAFTSMAN TRAINING SCHEME

Designed in 2011

By

Government of India

CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE

Directorate General of Employment & Training

Ministry of Labour & Employment

EN-81, Sector-V, Salt Lake City,

Kolkata-700091

List of members of Trade Committee meeting for the Trade of "**Draughtsman (Civil)"** held on 17-10-2011, at Advanced Training Institute Kolkata.

Sl.No	Name & Designation S/Shri/Smt	Organisation	Remarks
1	N.K.Chatterjee,Director	A.T.I.Kolkata	Chairman
2	J.Ukil. Jt.Director	A.T.I.Kolkata	Member
3	G.C.Saha,ADT	A.T.I.Kolkata	Member
4	Prasanta Kumar Paul,JE	CPWD,Kolkata	Member
5	A.K.Kolay,Asst.Engg.	CPWD,Kolkata	Member
6	Saikat Dutta	Project Manager, M/s Unit Construction Co.(P) Ltd. Kolkata	Member
7	A.K.Dutta,ADT	A.T.I.Kolkata	Member
8	A.K.Mondal,ADT	A.T.I.Kolkata	Member
9	Sk.A.Hossain,T.O	A.T.I.Kolkata	Member
10	A.K.Naskar,T.O	A.T.I.Kolkata	Member
11	Soma Das,V.I	R.V.T.I.(W),Kolkata	Member
12	Manika Banerjee,	Don Bosco,SERI	Member
13	Abhijit kr.Porel	Representation of Govt. of W.B	Member
14	Debasis Hari,D/M(Civil)	Representation of Govt. of W.B	Member
15	P.K.Madavi,	CTI,Chennai	Member
16	Pradip Kumar Sarkar,Ins.	Representation of Govt. of W.B	Member
17	Somnath Adhikari	Consulting Engineer	Member
18	Goutam Nandi,	CSTARI,Kolkata	Member
19	Tapan Kumar Halder	ATI,Kolkata	Member
20	S.Rana,V.I	ATI, Kolkata	Member
21	Subrata Saha	Representation of Govt. of W.B	Member
22	S.P.Jana,CSAD	ATI,Kolkata	Member
23	S.Ghosh,V.I	ATI Kolkata	Member

List of members attended the Workshop to finalize the syllabi of existing CTS into Semester Pattern held from 6th to 10th May' 2013 at CSTARI, Kolkata.

Sl. No.	Name & Designation	Organisation	Remarks
1.	R.N. Bandyopadhyaya, Director	CSTARI, Kolkata-91	Chairman
2.	K. L. Kuli, Joint Director of Training	CSTARI, Kolkata-91	Member
3.	K. Srinivasa Rao, Joint Director of Training	CSTARI, Kolkata-91	Member
4.	L.K. Muhkerjee, Deputy Director of Training	CSTARI, Kolkata-91	Member
5.	Ashoke Rarhi, Deputy Director of Training	ATI-EPI, Dehradun	Member
6.	N. Nath, Assistant Director of Training	CSTARI, Kolkata-91	Member
7.	S. Srinivasu, Assistant Director of Training	ATI-EPI, Hyderabad-13	Member
8.	Sharanappa, Assistant Director of Training	ATI-EPI, Hyderabad-13	Member
9.	Ramakrishne Gowda, Assistant Director of Training	FTI, Bangalore	Member
10.	Goutam Das Modak, Assistant Director of Trg./Principal	RVTI, Kolkata-91	Member
11.	Venketesh. Ch. , Principal	Govt. ITI, Dollygunj, Andaman & Nicobar Island	Member
12.	A.K. Ghate, Training Officer	ATI, Mumbai	Member
13.	V.B. Zumbre, Training Officer	ATI, Mumbai	Member
14.	P.M. Radhakrishna pillai, Training Officer	CTI, Chennai-32	Member
15.	A.Jayaraman, Training officer	CTI Chennai-32,	Member
16.	S. Bandyopadhyay, Training Officer	ATI, Kanpur	Member
17.	Suriya Kumari .K , Training Officer	RVTI, Kolkata-91	Member
18.	R.K. Bhattacharyya, Training Officer	RVTI, Trivandrum	Member
19.	Vijay Kumar, Training Officer	ATI, Ludhiana	Member
20.	Anil Kumar, Training Officer	ATI, Ludhiana	Member
21.	Sunil M.K. Training Officer	ATI, Kolkata	Member
22.	Devender, Training Officer	ATI, Kolkata	Member
23.	R. N. Manna, Training Officer	CSTARI, Kolkata-91	Member
24.	Mrs. S. Das, Training Officer	CSTARI, Kolkata-91	Member
25.	Jyoti Balwani, Training Officer	RVTI, Kolkata-91	Member
26.	Pragna H. Ravat, Training Officer	RVTI, Kolkata-91	Member
27.	Sarbojit Neogi, Vocational Instructor	RVTI, Kolkata-91	Member
28.	Nilotpal Saha, Vocational Instructor	I.T.I., Berhampore, Murshidabad, (W.B.)	Member
29.	Vijay Kumar, Data Entry Operator	RVTI, Kolkata-91	Member

GENERAL INFORMATION

1. Name of the Trade	: **DRAUGHTSMAN(CIVIL)**
2. NCO Code No	: 030.20
3. Duration	: Two year (Four semesters of each six months duration)
4. Power Norms	: 3.7 Kw.
5. Space Norms	: 64 Sq. Mtrs
6. Entry Qualification	:Passed 10th class examination under 10+2 system of education with Science and Mathematics or its equivalent.
7. Unit Size (No. Of students)	: 16

8. Instructor's/Trainer's Qualification:

a) Degree or Diploma in Civil Engineering with 1 or 2 years post qualification experience respectively.

Or, NTC in the relevant trade with 5 years post qualification experience.

Or, NAC in the relevant trade with 4 years post qualification experience.

b) Desirable Qualification: Preference will be given to a candidate with Craft Instructor Certificate.

* **Note:** At least one Instructor must have Degree or Diploma in Civil Engineering.

Syllabus for the trade of "Draughtsman (Civil)" under C.T.S.

Duration: Six Month

First Semester

Semester code:- DMC:SEM-I

Week no	Trade practical	Trade theory	Workshop Cal. & Science
1.	Familiarization with the INSTITUTE. Importance of trade training. Instruments used in the trade. Types of work done by the trainees in the trade. Types of jobs made by the trainees in the trade. Introduction to safety including fire fighting equipment and their uses etc. Free hand sketching of simple geometrical object. Use of drawing instruments and materials. Lay out of drawing sheets. Drawing conventional lines according to IS code. Folding of sheets.	Importance of safety and general precautions observed in the institute and in the section. Importance of the trade in the development of Industrial economy of the country. What is related instruction –subjects to be taught, achievement to be made. Recreational medical facilities and other extracurricular activities of the Institute. (All necessary guidance to be provided to the ne comes to become familiar, with the working of Industrial Training Institute. System including store procedures, professional prospects etc. Drawing office organisation. Drawing instruments, equipments materials their use, care & maintenance, safety precautions. Introduction to IS code of practice and architectural drawings.	----------
2 & 3	Lettering-basics, vertical and inclined, forms and proportions. Types of Lettering-strokes, composition, fonts (Gothic, Roman, etc.), writing sentence. Construction of plain geometrical figures (lines, angles, triangles, rhombus, quadrilaterals, polygons, ellipses, parabola, hyperbola, etc.)	Importance of lettering, writing of letters and figures sizes, proportion, etc. as per IS code. Geometrical drawing-definition, construction of plain geometrical figures. Method of construction of spiral and helix.	Applied trade problems- Involving multiplication, division, common fraction, addition, subtraction, multiplication & division application of fractions and decimals to trade problems.
4.	Scales - plain, diagonal and comparative. Use and applications of different types of lines and conventional sign & symbols.	Principles, representation and construction of different types of scales, graphic scales, recommended scales for drawing with reference to IS codes. Choice of scales. Types of lines and different	-do-

		conventional representation as per IS.	
5, 6 & 7	Drawing plan, elevation of points, lines, surfaces, solids, Dimensioning techniques.	Definition and types of projections. Methods of projection as per IS. Projection of points, lines, planes and solids. Sections of solid and their true shapes.	Ratio and proportion in trade problems. Units-Different system and conversion.
8 & 9	Isometric projection of different objects, combination of objects including furniture, etc. Conversion of Orthographic projection to Isometric projection and vice-versa.	Principle of Isometric & Axonometric projection, difference between Isometric drawing & Isometric projection, Isometric scale, dimensioning an Isometric drawing.	Algebra-simple equations and transposition. Problems involving trade problems, quadratic equations and problems connected to trade.
10 & 11	Reducing and enlargement of drawing objects by graphical method and by instrument and measured drawing of any object. **Perspective projection** – drawing of parallel or one point perspective projection of room with furniture in it. Determining vanishing points, change in perspective by changing vanishing points.	Reducing and enlargement technique by graphically and by instrument. **Perspective projection** – definition of picture plane, station point, horizontal line, vanishing point, cone of vision, central visual ray, spectator, eye level focus, fundamentals - diminution, foreshortening, convergence.	Unit of force, weight, equations of motion. Laws of motion, problems.
12	One point and two point perspective projection of a building.	Method of drawing of two point perspective. Comparative study of perspective by changing the position of spectator, vanishing point. Distortion, limits of exactness, limitation of field of vision.	-do-
13 to 15	Showing arrangement of bricks in differing parts of bonds, in walls, pillars coping drawing of shoring.	**Building materials:** Clay products like Bricks, tiles, terracotta, earthenware; stoneware, stone, cement, lime, surki, sand, timber, glass, paints, texture etc. **INTRODUCTION** Sequence of construction of a building. Names of different parts of building. Bricks masonry – principles of construction of bonds. Tools and equipment used. Scaffolding.	-do-
16 to 18	Drawing of scaffolding. Drawing details of brick and stone masonry including joints.	Stone masonry, terms used, principles of construction, classification, composite masonry	Areas of triangles, rectangles, square, circle, regular, polygons etc. And

		and strength of walls. **Timber**: Structure Indian timber uses	problems, logarithms.
19 to 22	Drawing different types of foundation, footing, piles, grillages, foundation raft & well foundation.	Foundation:-purpose, causes of failure of foundation, bearing capacity of soils, dead load, live load, wind load and seismic load. Examination of ground. Types of foundation .Drawing of footing foundation, setting out of building on ground excavation, shoring & simple machine foundations.	Calculation on volume and weight of simple solid bodies, such as cubes, squares etc. Simpson's Rule and problems.
23	Drawing details of damp proof courses and plinth protection.	Damp proof course, Sources and effects of dampness, method of prevention of dampness in building, periodic repair and care for prevention. Anti-termite treatment.	Reading & plotting of simple graph. Trigonometrical ratios & functions, applied problems on height and distance.
24	Drawing of conventional signs used in engineering survey, cadastral survey. Topography and building drawing. Practice in unfolding and folding chain, errors & adjustment of chains, alignment of chain / error chaining lines – measurements of distance between given points and their entry in field book. Practice in chaining and taking off-set, use of optical square and cross staff setting out right angles – booking of measurements testing of chain, tape, optical square and cross staff.	Surveying – their classifications, plane survey, geodetic survey, purpose of survey – instruments used in survey. Nature of surveyors work – importance of system. Common terms and definitions used in surveying conventional signs used in Field book and survey maps. Linear measuring instrument used by surveyors, their descriptions and uses. Types of chain and chain survey, compass survey, plane table survey and levelling.	Solution of triangles.
25	Project Work / Industrial Visit (Optional)		
26	Examination		

Achievements:

After completion of the semester-1,

The CTS trainees will be able to:

1. Use drawing, Inst., their care & maintenance.
2. Layout of sheets & folding of sheet.
3. Construct, read & use of plain, comparative, diagonal, vernier scales.
4. Construct plain geometrical figures.
5. Solve simple problems on projecting of points, lines surfaces & solids.
6. Draw sketches from models (plan, section, & elevation)
7. Have thorough knowledge in conventional signs & symbols.
8. Basic concept about Building Materials and Surveying.
9. Take up advanced semester of Draughtsman (Civil) / Architectural Assistant / Surveyor.

Syllabus for the trade of "Draughtsman (Civil)" under C.T.S.

Duration: Six Month

Second Semester

Semester code:- DMC:SEM-II

Week No.	Trade Practical	Trade Theory	Workshop cal. & science
1 to 4	Chain survey of small plots by triangulations, booking and plotting the same. Chain survey of built up plots, locating details, booking and plotting the same. Practice in setting up a compass and checking its accuracy – taking bearings and calculating angles. Setting up of plane table levelling, centering and orientation. Surveying an area with plane table by radiation and intersection methods.	Field book types- methods of entry of check lines – its importance. Locations of details – types of off-sets and their limit- town survey traversing with chain procedure in plotting chain lines skeleton, its check and filling in details. Technical terms used in compass survey , difference between angles and bearings- magnetic and true meridians declination and its variation , local attraction , its detection , and elimination. Plane table survey advantage & disadvantages of plane table surveying general instruction for Plate Table survey Methods of Plate tabling –Radiation – Intersection Traversing Resection. Two point and three point problems triangle of error and its elimination – Lehman's rule –mechanical and graphical method.	Properties of regular polygons, circles parallelogram, parabola and ellipse. Determination of sides, area of triangle, quadrilateral & polygons.
5 to 6	Surveying of a building site with chain entering field book & plotting calculating the area of site.(practice should also be given on exiting building from measurement and producing drawings from these dimensions taken).prismatic compass & its use.	Instruments employed, use, care & maintenance. Field problems. Field book plotting. Introduction to plane table in surveying. Instruments employed, use, care& maintenance. prismatic compass.	-do-

7,8&9	Handling of levelling instrument. Differential levelling. Surveying of a building site with chain & level with a view to computing earth work. Setting out level plotting of longitudinal cross- sections of a proposed road from given reduced levels marking, suitable formation levels & calculation of earth work. Plotting of block & block levelling and drawing of contours.	Instruments and accessories- their uses and description level book. Differential; levelling application of chain and levelling to building construction. Plotting, preparation of contour computing earth work by spot level and contours. Setting out work.	Determination of area of circles, sectors, segments and ellipse, simpson's rule.
10 to 12	Cross-sections showing the different types of roads. Drawing typical cross-section of railway tracks embankment, layout plans of railway platforms, marshalling yards siding, loop lines. Signalling points & crossing. Drawing typical cross section of railways tracks embankment lay out plan of railway.	Road: Introduction to roads, general principles of alignment. Classification and construction of different types of roads. Indian railways –their gauges, construction of permanent ways. Different rail sections. Indian railways and their gauge construction of permanent ways. Different rail section. Use of stone ballast in railway track. Use and types of sleepers.	Surface area and volumes of rectangular parallelopoids, cylinders, pyramids and spheres. Units of force and weight. Equation of motion.
13	Preparing drawing of a masonry culvert and take out various quantities of items of work & prepare abstract of cost. Preparing drawing of an arched bridge.	Bridge:-introduction to bridge, component parts of bridge. classification of culverts(IRC) Bridges-types, location of a bridge, tunnels.	Magnet and magnetism. Laws of magnetic attraction and repulsion
14,15 & 16	Drawing of different types of irrigation structures –viz. dams barrages, weir etc. with the help of given sketch & data. Longitudinal section of distributaries.	1. INTRODUCTON OF WATER RESOURCES ENGINEERING. Different terms used in irrigation. 2.Hydrology like duty, delta, base period, intensity of irrigation, hydrograph , peak flow, run off, catchment area, CCA, corps like, rabi, kharif etc. 3. Storage/ diversion head work definition: types of dam – masonry, concrete, arc and buttress dams, earth. (a)Reservoir –types of reservoirs viz . Single purpose and multipurpose, area, capacity	Magnetic substance – permanent magnet.

		of reservoir. B) CANALS:-canals, classification of canals and distribution system, canal structures via head regulators, escape, etc. Drawing of canal alignment including longitudinal and cross section of canals with the given data. Types of cross drainage works viz. aqueducts, siphon aqueduct, super passage, level crossing in irrigation.	
17 to 19	Public Health & sanitation. Preparation of drawings showing various pipe joints for underground drainage, method of sanitary fittings in multi storied building. Manholes and septic tank. Water supply system.	Introduction –terms used in public health engineering. System of sanitation house plumbing, sanitary fittings etc. types of supply system and purification of water.	Magnetic field and line of force proportions of magnetic lines of force. Magnetism and its natural ore.
20 to 21	Drawing details of RCC members. Rectangular beams, lintel chajjas, slab, stair including column with footing & continuous columns showing disposition of reinforcement.	Introduction to RCC uses materials proportions and form work, including bending of bars and construction reference to IS code. Reinforced brickwork. Material used for RCC, methods of concreting, construction selection of materials course aggregate cement –water, reinforcement, characteristics. Methods of mixing concrete-hand and machine, slump test, water cement ratio.	Kinds of magnet and system of magnetization. Revision on magnetism.
22	Method of floor and finishing.	**Flooring:** Different types of floors, materials used in floor and construction process.	Trigonometric ratios and functions of multiple angles functions of sub-multiple angle and compound angles radian measurement and relation between system of measurement of angles – formula connecting sides, angles and areas of triangles.
23 & 24	Drawing of different types of steel roof trusses, stanchion etc	Introduction to structural drafting. Arrangements of drawing, standard drawing.	-do-
25	Project Work / Industrial Visit (Optional)		
26	Examination		

Achievements:

After completion of the semester-II

The D/M(Civil) and Surveyor CTS trainees will be able to:

1. Survey a plot of land with chain & plain table & plot the same.
2. Able to calculate area of site with planimeter. Reducing & enlarging with pentagraph.
3. Set up &read a levelling instrument , find difference of level between two points by fly levelling , surveying of building site with chain & plain table , setting out level of earth work & carrying out block levelling , plotting of longitudinal & cross section of a road from given reduced level. Calculation of earth work plotting of block levels & drawing of contour maps from given data.
4. Preparing drawing details of types of road, c/s of railway tracks, culverts & bridges. Estimate the quantities masonry culverts & abstract the same.
5. Prepare working drawing of various type of irrigation structure such as aqueduct.
6. Prepare working drawing of various drawing & sanitary proposal, connected with building.
7. Make drawing details of bar bending in different parts of buildings.
   Draw different steel section used in buildings, bridges etc

Syllabus for the trade of "Draughtsman (Civil)" under C.T.S.

Duration: Six Month

Third Semester

Semester code:- DMC:SEM-III

Week No.	Trade Practical	Trade Theory	Workshop Cal.& Science
1&2	Drawing details of ground floors concrete brick on edge, tiled, timber, patent stone, mosaic and steel floor.	Types of mortar & concrete proportion and mixing. Plastering and pointing. White washing &distempering. Types of ground floor and methods of constructing granolithic, mosaic brick tiles etc. floors.	Centre of gravity, moment of inertia for different sections.
3&4	Drawring forms of arches, lintels and centering& Shuttering.	Arches &lintel-technical terms ,forms of brick and stone ,form work and centering . Market forms and sizes.	Survey practical
5&6	Making drawing of CARPENTRY JOINTS: Lengthening ,bearing housing, framing, panelling & moulding.	Carpentry joints terms, classification of joints.	Various types of load & supports, bending moment, shearing force, cantilever & simply supported beams, overhang beams.
7&8	Making detailed drawing of different types of doors including panelled, glazed and flush door.	Door: parts of door , location, sizes, and types	-do-
9	Making detailed drawing of windows and ventilators.	Windows and ventilators: including steel windows and ventilators fixtures and fastening used in doors. Windows and ventilators.	-do-
10&11	Drawing details of pitched roof including king & queen post, roof trusses. Drawing details of a wooden roof truss, showing details connections.	Roof: pitched roof types, roof covering, and component parts of roof. Theory of trussing, king and queen post trusses.	Loads-Various types, bending moment, shearing force, cantilever, simply supported beams & overhanging beams.
12&13	Drawing details of upper floor, wooden floor, stone, jack arch, madras terrace and brick nogged.	Classification and construction of upper floors including water-proofing, general principles of construction of masonry & R.C.C. Knowledge about	-do-

		innovative construction technology for safety against earth quake, monolithic RCC construction etc.	
14 to 16	Drawing details of brick, stone, wooden, steel & RCC stairs. Preparing drawing of details of parts of wooden stair. Preparing drawing of straight, open newel, dog legged geometrical and bifurcated stairs & spiral stairs.	STAIRS: Terms, forms materials, planning and designing of stairs. Details of construction.	Problems on over-hanging beams, point of contra-flexure, problems related to trade.
17	Allied Trade Training :- Plumbing :- use of Plumbing tools. Layout drawing of water supply & sanitary arrangements.	Safety precaution & elementary first aid, forge and fuel. Lighting fire. Common hand tools – their descriptions and use. Description of plumbing operations	-do-
18	Carpentry: - Use of carpenters' hand tools and practice. Tools involving sawing, planning & chiselling. Marking out & making simple joints used in doors and trusses.	Safety precautions & elementary first aid. Carpenters' hand tools, their names description and uses. Common joints Use of nails, screws , hinges, dowels etc. Preparation of glue & putty. Grinding & sharpening of tools .Their care & maintenance. Use of different types of joints properties and uses of different timbers used in construction work.	Analysis of perfect frames (Graphical Method)
19	Wiring (Electrical):- wiring in different system.	Safety precautions and elementary first aid. Artificial respiration and treatment of electrical shock. Elementary electricity. General idea of supply system. Wireman' tool kits. Wiring materials. Electric fittings. System of wiring. Wiring installation for domestic lighting.	-do-

20 & 21	BUILDING CONSTRUCTION DRAWING: Construction of straight walls in English bond and one & half brick thick with a right angled quoin, one end toothed and the other end racking back. Construction of cross wall.	Masonry tools: Safety precautions, description, uses and their care.	Use & practises, with plan meter and pantograh.
22	Forming a door or window opening, method of fixing door or window frame to wall with hold fast.	Details of different bonding wall and section according to IS	-do-
23 to 24	Survey - using instruments of digital theodolite and total station.	Introduction to theodolite, temporary adjustment of theodolite – procedure in setting up – method of measurement of horizontal & vertical angles and height.	Bending stress, simple reflection, column rivet etc. Problems.
25	Project work / Industrial Visit (Optional)		
26	Examination		

Achievements:

After completion of the semester -3,

The D/M/Civil CTS trainees will be able to:-

1. Have knowledge to prevent the structure with DPC.
2. Draw different type of floors.
3. Draw various types of arches & lintels.
4. Draw different type of doors & windows i/ c knowledge of carpentry joints.
5. Draw different types of roofs with all details.
6. Have general idea of blacksmith, carpentry & wiring.
7. Draw upper floors i/c general principles of construction.
8. Draw & design staircases.
9. Operate theodolite and total station.

Syllabus for the trade of "Draughtsman (Civil)" under C.T.S.

Duration: Six Month

Fourth Semester

Semester code:- DMC:SEM-IV

Week No.	Trade Practical	Trade Theory	Workshop Cal.& Science
1 to 5	Drawing details of single storied residential house with single room (drawing should be of both pitched and flat roof). Drawing plan, elevation, and section with aid of line diagrams. Lay out and detailing of residential building.	Residential building. Principles of planning. Orientation local building bye-laws including IS code, type of residential building, rooms services, utilities which constitute as dwelling house. Estimating. Method and find out quantities for a single storied residential building.	Simple estimate in connection with trade, rate of analysis including R.C.C. and R.B.C.
6	Drawing details of reinforcement drawing of different structures viz. column, footing, beams, slabs, stair case, lintels etc.	Preparing bar bending schedules.	-do-
7 to10	Preparation of estimate for residential building, culverts, septic tank, underground reservoir and over head reservoir etc.	Building Estimating. Types of estimate, standard method of taking out quantity, labour & material detailed & abstract estimate. Analysis of rates for simple items of work. Schedule of rates, specifications.	-do-
11to15	Preparation of the working drawing of public building such as rest house, hospital, primary health centre high school, shopping complex, workshop building of an ITI. Tracing &Blue printing.	Residential building, Planning of building, local bye-laws including IS code. Types of residential building rooms service utilities which constitute a dwelling house. Building bye-laws of State urban Development authorities / boards, Improvement trust etc.	Revision
16 to 20	1.Elementary windows 2.knowledge of editor 3) CAD commands and use of different menus of CAD - File Management, different co-ordinate systems, Geometrical drawing and 2 D Drawing, Editing of drafting, Creating Library.	1)Window command and their uses and Familiarization with word processing software. 2) CAD commands and use of different menus of CAD - Use of different co –	-do-

		ordinate system, geometrical drawing and 2 D Drafting, different edit commands, Concept of 3d Drafting, layout and printing of drawing.	
21 to 22	Practice of Building Drawing and structural Drawing using CAD software.	Architectural Desk top and creating modeling.	-do-
23 & 24	Project work-Isometric view, perspective view. Light tracing, copying, valuation of new and old building. Architectural model making and landscaping.		-do-
25	Revision		
26	Examination		

Achievements:

After completion of the semester -4

The D/M/civil CTS trainees will be able to:

1. Draw plan, elevation of section of residential building (single & double storied) with help of sketches, and line diagram.
2. Follow principle of planning, local building bye-laws.
3. Prepare estimates and bar bending schedule for all types of structures.
4. Prepare working drawing of public buildings.
5. To operate computer & able to draw various drawing using “Auto-Cad”.
6. Learn standard office work & drawing by local civil Eng. Drawings and design office.