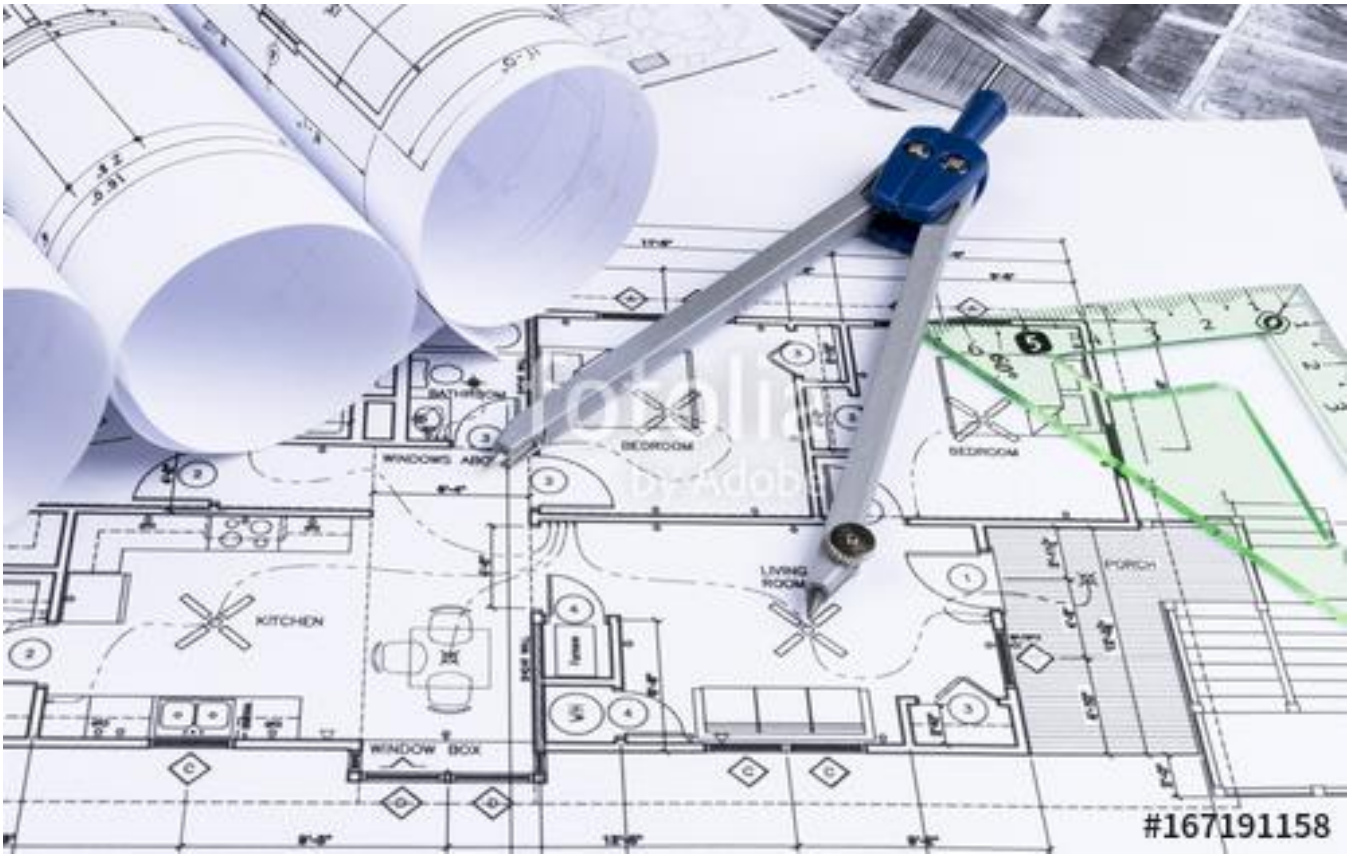
DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

COURSE FILE OF
COMPUTER AIDED CIVIL ENGINEERING DRAWING
(101303)



Faculty:

Mr. Akash

Assistant Professor
Department Of Civil Engineering

विज्ञान एवं प्रावैधिकी विभाग
Department of Science and Technology
Government of Bihar

CONTENTS

DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

DEPARTMENT OF CIVIL ENGINEERING

Vision

To bring forth competent engineers to serve national & multi-national industries and society and, encouraging them towards higher studies.

Mission

M1. To nurture graduates into competent and technologically capable professionals through motivated teaching-learning ambience and by collaborating with relevant industries.

M2. To encourage graduates towards research and innovation in the field of civil engineering.

M3. To inculcate humanitarian ethical values in graduates through various social-cultural activities.

Program Educational Objectives (PEOs)

PEO1. The graduates will be able to demonstrate knowledge and skills of civil engineering to solve engineering problems related to structural design.

PEO2. The graduates will be able to function in the evolving research and development as design consultant in the relevant industry using modern software tools.

PEO3. The graduates will be able to showcase professional skills encompassing societal and ethical values.

Program Specific Outcomes (PSO)

PSO1: Students will be able to use advanced modern methods and tools like GIS, Auto CAD, STAAD Pro, Total station to function as design consultants.

PSO2: Graduates will able to develop knowledge in some specific technical areas of civil engineering like Structural, Geotechnical, Transportation, Earthquake, Geomatics and Environmental Engineering.

Program Outcomes (POs):

Program Outcomes (POs) describe what students are expected to know and be able to do by the time of graduation to accomplish Program Educational Objectives (PEOs). The Program Outcomes for Civil Engineering students are:

PO 1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex civil engineering problems.

PO 2: Problem analysis: Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO 3: Design/development of solutions: Design solutions for complex civil engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions in the field of civil engineering.

PO 5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex civil engineering activities with an understanding of the limitations.

PO 6: The Engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO 7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: Communication: Communicate effectively on complex engineering activities with the civil engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Course Description

AutoCAD has not only reduced the time spent for drafting to a fraction, of that the same produced by hand drawings, but also any revisions in the drawing can be done quickly without having to redraw everything. Moreover, different views, such as front view, side views etc. can be easily created from the drawing. To use AutoCAD software efficiently, it is necessary to know all drafting tools to have a good control over the work. This lab manual intends to guide the students to know the fundamental tools to create, modify and manage documentation effectively through a skillful way. Upon completion, students should be able to utilize AutoCAD software for drawing of the plan, elevation and sectional views of buildings.

Course Objective

1. To teach the student usage of AutoCAD and basic drawing fundamentals in various civil engineering applications, especially in building drawing
2. To introduce the students to draft the plan, elevation and sectional views of buildings in accordance with development and bye-laws/control rules satisfying orientation and functional requirements as per National Building Code.

Prerequisites

Engineering Drawing

Course Outcomes

After Completion of this course, the students will be able to

COURSE OUTCOMES (COs): After the completion of this course, students will be able to ;

CO1: Explain the principle of planning of Building Drawing and Draw different kind s of Bonds in Brick Masonry

CO2: Understand AUTOCAD commands and draw lines, circles and different types of polygon.

CO3: Draw plan, elevation and cross-sectional views of residential building with AutoCAD

CO4: Draw staircases and Joinery section Door and Windows

CO5: Draw plan, elevation and cross-sectional views of workshop with trussed roof.

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CO-PO MAPPING

(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak)

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1: Explain the principle of planning of Building Drawing and Draw different kind s of Bonds in Brick Masonry	S	-	S	-	S	M	-	-	-	M	M	-	S	-
CO2: Understand AUTOCAD commands and draw lines, circles and different types of polygon.	S	-	-	-	S	-	-	-	-	M	M	-	S	-
CO3: Draw plan, elevation and cross-sectional views of residential building with AutoCAD	S	-	-	-	S	-	-	-	-	M	S	-	S	-

CO4: Draw staircases and Joinery section Door and Windows	-	-	W	-	S	-	-	-	-	M	S	-	S	-
CO5: Draw plan, elevation and cross-sectional views of workshop with trussed roof.			-		S					M	S		S	-

B. Tech. 2nd Year (3rd Semester)

Department of Civil Engineering

Course Code – 101303

Course Name- Computer-aided Civil Engineering Drawing

L	T	P	CREDIT
1	0	2	2

Course Syllabus

MODULE -1

INTRODUCTION

Introduction to concept of drawings, Interpretation of typical drawings, Planning drawings to show information concisely and comprehensively; optimal layout of drawings and Scales; Introduction to computer aided drawing, coordinate systems, and reference planes.

Commands: Initial settings, Drawing aids, Drawing basic entities, Modify commands, Layers, Text and Dimensioning, Blocks. Drawing presentation norms and standards. (2)

MODULE -2

SYMBOLS AND SIGN CONVENTIONS

Materials, Architectural, Structural, Electrical and Plumbing symbols. Rebar drawings and structural steel fabrication and connections drawing symbols, welding symbols; dimensioning standards (2)

MODULE -3

MASONRY BONDS

English Bond and Flemish Bond – Corner wall and Cross walls - One brick wall and one and half brick wall (1)

MODULE -4

BUILDING DRAWING

Terms, Elements of planning building drawing, Methods of making line drawing and detailed drawing. Site plan, floor plan, elevation and section drawing of small residential buildings. Foundation plan. Roof drainage plans. Depicting joinery, standard fittings & fixtures, finishes. Use of Notes to improve clarity (7)

MODULE -5

PICTORIAL VIEW

Principles of isometrics and perspective drawing. Perspective view of building. Fundamentals of Building Information Modelling (BIM) (3)

Total 15 sessions

List of Drawing Experiments:

1. Buildings with load bearing walls including details of doors and windows. 09
2. Taking standard drawings of a typical two storeyed building including all MEP, joinery, rebars, finishing and other details and writing out a description of the Facility in about 500 -700 words. 06
3. RCC framed structures 09
4. Reinforcement drawings for typical slabs, beams, columns and spread footings. 09
5. Industrial buildings - North light roof structures - Trusses 06
6. Perspective view of one and two storey buildings 06

Total 45 sessions

Text/Reference Books:

1. Subhash C Sharma & Gurucharan Singh (2005), "Civil Engineering Drawing", Standard Publishers
2. Ajeet Singh (2002), "Working with AUTOCAD 2000 with updates on AUTOCAD 200I", Tata- Mc Graw-Hill Company Limited, New Delhi
3. Sham Tickoo Swapna D (2009), "AUTOCAD for Engineers and Designers", Pearson Education,
4. Venugopal (2007), "Engineering Drawing and Graphics + AUTOCAD", New Age International Pvt. Ltd.,
5. Balagopal and Prabhu (1987), "Building Drawing and Detailing", Spades publishing KDR building, Calicut,
6. (Corresponding set of) CAD Software Theory and User Manuals.
7. Malik R.S., Meo, G.S. (2009) Civil Engineering Drawing, Computech Publication Ltd New Asian.
8. Sikka, V.B. (2013), A Course in Civil Engineering Drawing, S.K.Kataria& Sons,

Darbhanga College of Engineering

3rd Semester w.e.f:

DAY	Dept.	09:00-11:00	11:00-01:00	01:00-02:00	02:00-5:00
MONDAY	EEE	EMFT	ECA		√. EM-I Lab
	CE	BIO	Humanity		√.Survey & Geomatics LAB
	CSE	√. AE Lab	DS		√. DS Lab
	ME	TD	BE		Virtual EM Lab - M1
TUESDAY	EEE	EM-I	DE		REMIDAL CLASSES
	CE	Survey & Geomatics	EM		√. BE LAB
	CSE	√. DS Lab	OOPS		REMIDAL CLASSES
	ME	EM	MATH-III		Virtual MD Lab
WEDNESDAY	EEE	EM	ECA		REMIDAL CLASSES
	CE	ICE	M-III		√. CACED LAB
	CSE	√. OOPS Lab	DS		Internship
	ME	BE(T1)	√REMIDAL LAB		MATH-III
THURSDAY	EEE	DE	EMFT		√. EM-I Lab
	CE	INTERNSHIP	EM		√. Survey & Geomatics LAB
	CSE	Tech. Writing	OOPS		√. OOPS Lab
	ME	BIO	MATH-III		Virtual EM Lab - M2
FRIDAY	EEE	HVPE	EM-I		Internship
	CE	Humanity	CACED		Project
	CSE	MIII	AE		√. AE Lab
	ME	TD	EM		Virtual MD Lab
SATURDAY	EEE	EM	HVPE		Project
	CE	BE	INTERNSHIP		REMIDAL CLASSES
	CSE	AE	MIII		REMIDAL CLASSES
	ME	BIO	BE		REMIDAL CLASSES

EEE (3rd Sem)

SN.	Subject	Faculty
1	ECA	Mr. Diwakar Verma
2	EM-I	Mr. Prabhat Kumar
3	DE	Ms. Sweta Kumari
4	EM	Mr. Vikash/Dr. Abhishek
5	EMFT	Dr. Ravi Ranjan/Mr. Ravi Kumar
6	HVPE	Dr. Ratnakshi Roy
7	CD Project	All faculty
8	Intership	All Faculty
9	MOOCS	All Faculty

ME (3rd Sem)

SN.	Subject	Faculty
1	MATH-III	GL-I (MATH)
2	EM	Mr. Vikash Kumar
3	TD	Mr. Navdeep Pandey
4	BE	Mr. Deepak Singh
5	MD	Dr. Md. Asjad Mokhtar
6	BIO	GL (BIO)

CE (3rd Sem)

SN.	Subject	Faculty
1	BE	Mr. Deepak Kumar
2	BIO	Kumari Neeraj
3	CACED	Mr. Akash
4	EM	Mr. S. S. Chhoudhary
5	S & Geomatics	Mr. Akash
6	M-III	Dr. R. K. Jha
7	Humanities-I	Dr. Ratnakshi Roy
8	ICE	Mr. Ahsan Rabbani
9	Internship	All Faculty

CSE (3rd Sem)

SN.	Subject	Faculty
1	DS	Mis. Poonam Prabha
2	OOPS	Mr. Dhirendr Kumar
3	MIII	Mr. Amrit Mahato
4	Tech. Writing	
5	CD Project	All faculty
6	Intership	Mr. Dhirendr Kumar
7	MOOCS	Mr. Anand Kamal

15/07/2020
for.
HOD (EEE)

15/07/2020
HOD (CE)

15/07/2020
HOD (ME)

15/07/2020
HOD(CSE)

15/7/2020
Asst. Routine Incharge

15/7/2020
Routine Incharge

15/07/2020
Principal
DCE Darbhanga

List of Students (2019-2023) 3rd Semester		
SI. No.	**Registration No.**	**Name of Student**
1	18101111003	Abhishek Sagar
2	18101111013	Raushan Kumar
3	18101111022	Suraj Kumar
4	18101111026	MD Shamshad Alam
5	18101111042	Niranjan Kumar
6	18101111044	Ravi Kumar
7	18101111048	Vikash Kumar
8	19101111001	Prabhat Kumar
9	19101111002	Vikash Chandra
10	19101111003	Raja Kumar
11	19101111004	Akshansh Ranjan
12	19101111005	Sonam Kumari
13	19101111006	Avinash Kumar
14	19101111007	Ankit Kumar
15	19101111008	Sarvesh Suman
16	19101111009	Nagendra Safi
17	19101111010	MD Shahbaz
18	19101111011	Abhinav Bhardwaj
19	19101111012	Abhishek Kumar
20	19101111013	Anshu Kumari
21	19101111014	Dilkhush Kumar
22	19101111015	Mantu Kumar
23	19101111016	Ajesh Kumar
24	19101111017	Rupesh Kumar
25	19101111018	Kundan Kumar
26	19101111019	Suraj Kumar
27	19101111020	Sahil Kumar
28	19101111021	Vicky Kumar
29	19101111022	Pintu Kumar
30	19101111023	Durgesh Kumar
31	19101111024	Rishabh Kumar
32	19101111025	Abhay Kumar
33	19101111026	Navin Prakash
34	19101111027	Saurav Samdarshi
35	19101111028	Avinash Kumar
36	19101111029	Amit Raj

37	19101111030	Kunal Kishor
38	19101111031	MD Ragib Hasan
39	19101111032	Sumit Raushan
40	19101111033	Anisha
41	19101111034	Aradhana Kumari
42	19101111035	Suraj Kumar
43	19101111036	Bharat Kumar
44	19101111037	Alok Kumar Singh
45	19101111038	shyam salone
46	19101111039	Sandhya Bharti
47	19101111040	Shailesh Kumar
48	19101111041	Rajnikant Kumar
49	19101111042	Sumit Anand
50	19101111043	Subodh Kumar
51	19101111044	Gautam Kumar
52	19101111045	Rohit Kumar Mishara
53	19101111046	Vishaka Kumari
54	19101111047	Ankit Kumar Pandey
55	19101111048	Saquib Johar
56	19101111049	Prakash Kumar
57	19101111050	Ranveer Kumar
58	19101111051	Avinash Shivam krishna
59	19101111052	Abhinandan Kumar
60	19101111053	Rohit Kumar
61	19101111054	Ram Vinay Yadav
62	19101111055	Abhishek Ranjan
63	19101111056	Avinash
64	19101111057	Ranjan kumar Bhagat
65	19101111058	Mayank Kumar
66	19101111059	MD Aatif Raza
67	19101111060	Prince Kumar
68	20-LE-CE-01	Prafull Singh
69	20-LE-CE-02	Ashish Kumar Bharti
70	20-LE-CE-03	Vijay Shekhar
71	20-LE-CE-04	Vikram Ray
72	20-LE-CE-05	Arpit Kumar
73	20-LE-CE-06	Raushan Prasad Singh
74	20-LE-CE-07	Sannidev Kumar Ram
75	20-LE-CE-08	Aman Kumar

Institute/College Name:	Darbhanga College of Engineering, Darbhanga
Program Name:	B.Tech (CE,3rd semester)
Course Code:	101303
Course Name:	COMPUTER AIDED CIVIL ENGINEERING DRAWING
Lecture/Tutorial (per week):	1/0
Course Credits:	2
Course Co-ordinator Name:	Mr. Akash

LECTURE PLAN:

1	1	1.1	Introduction to concept of drawings, Interpretation of typical drawings, Planning drawings to show information concisely and comprehensively; optimal layout of drawings and Scales;
		1.2	Introduction to computer aided drawing, coordinate systems, reference planes. Commands: Initial settings, Drawing aids, Drawing basic entities, Modify commands, Layers, Text and Dimensioning, Blocks. Drawing presentation norms and standards
2	2	2.1	Symbols and Sign Conventions Materials, Architectural, Structural, Electrical and Plumbing symbols. welding symbols; dimensioning standards
		2.2	Rebar drawings and structural steel fabrication and connections drawing symbols,
3	3	3.1	Masonry Bonds: English Bond and Flemish Bond – Corner wall and Cross walls - One brick wall and one and half brick wall
4	4	4.1	Building Drawing: Terms, Elements of planning building drawing,
		4.2	Methods of making line drawing and detailed drawing. Site plan, floor plan, elevation and section drawing of small residential buildings. Foundation plan.
		4.3	Roof drainage plans. Depicting joinery,
		4.4	Standard fittings & fixtures, finishes. Use of Notes to improve clarity
5	5	5.1	Pictorial View: Principles of isometrics and perspective drawing. Perspective view of building.
		5.2	Fundamentals of Building Information Modelling (BIM)

Darbhanga College of Engineering, Darbhanga

Department Of Civil Engineering

Course: Computer aided Civil Engineering Drawing

Assignment _1

BRICK MASONRY BOND

1. Draw two consecutive courses for ***corner joints*** of the following walls in **English Bond**
    a. One brick thick wall
    b. One and half brick thick wall
    c. Two brick thick wall
    d. Two and half brick thick wall
2. Draw two consecutive courses for ***corner joints*** of the following walls in **Double Flemish Bond**
    a. One brick thick wall
    b. One and half brick thick wall
    c. Two brick thick wall
3. Draw two consecutive courses for ***corner joints*** of the following walls in **Single Flemish Bond**
    a. One and half brick thick wall
    b. Two brick thick wall

SECTIONAL VIEW OF FOUNDATION OF LOAD BEARING WALL

4. Draw cross-section of a foundation to be provided for a load bearing wall of 230 mm thick in burnt brick masonry in superstructure of a residential building for the following given details.

    Width of the foundation=1000 mm

    Depth of the foundation below GL=1050 mm

    Thickness of PCC =150 mm

    Width of PCC =1000 mm

    Width of plinth beam=300 mm

    Thickness of plinth beam=300 mm

    Thickness of DPC in 1:2:4= 25 mm

    Width of 1st footing above PCC =740 mm

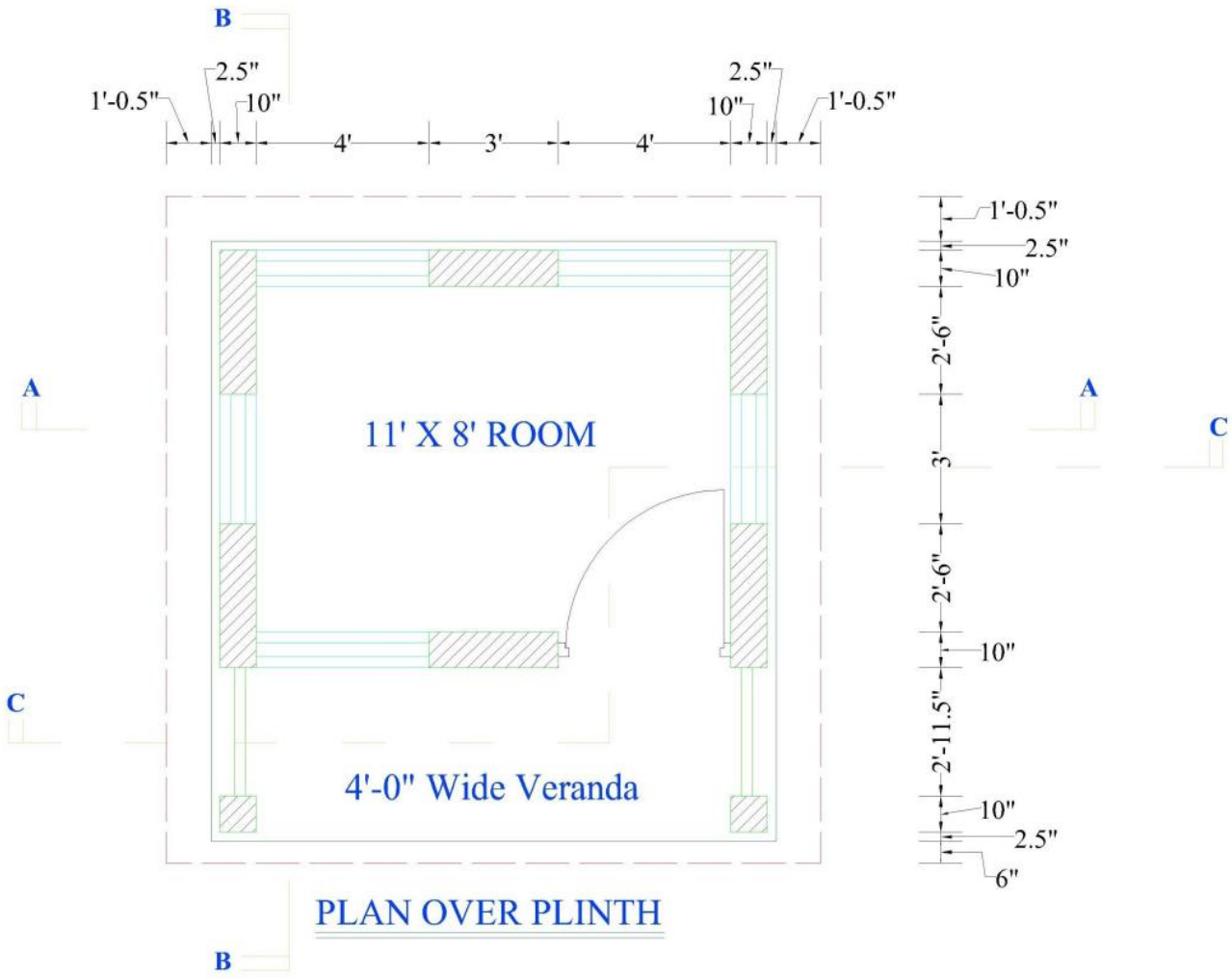
    Width of 2nd footing above PCC=570 mm

    Width of 3rd footing above PCC= 300 mm

    Depth of each footing = 300 mm

Plinth level is 500 mm above the ground level.

PLAN, ELEVATIONS AND SECTIONAL ELEVETIONS OF A BUILDING WITH LOAD BEARING WALLS INCLUDING DETAILS OF DOORS AND WINDOWS



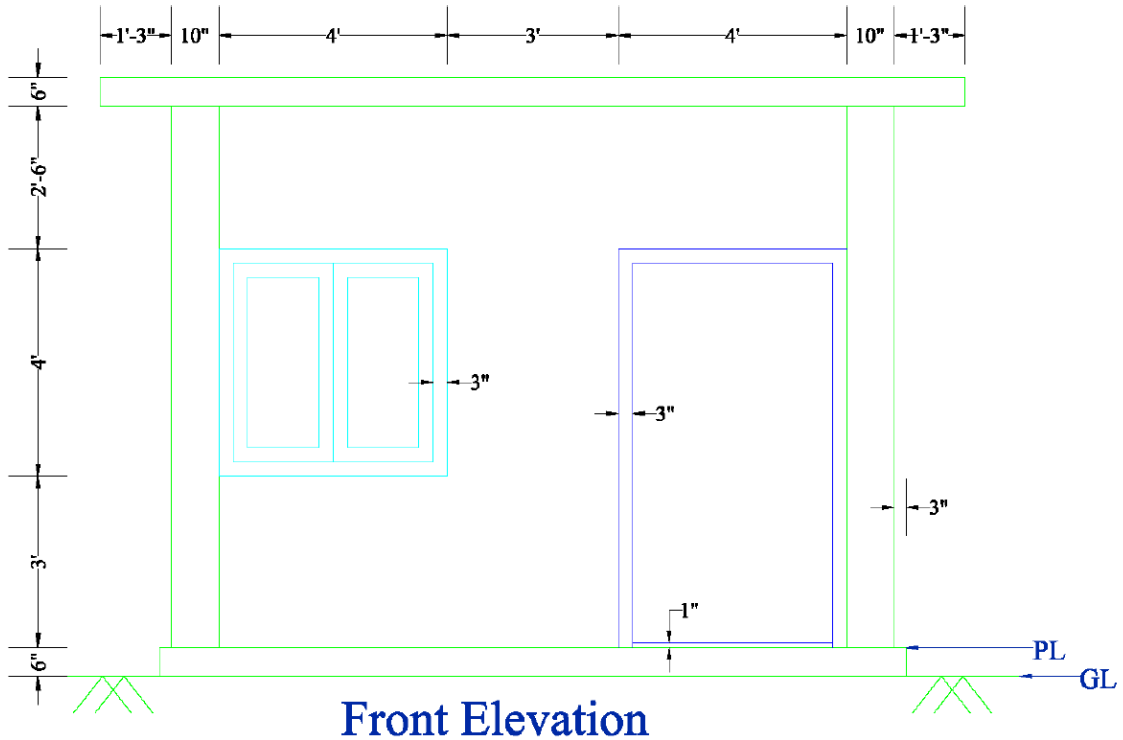
PLAN OVER PLINTH

Darbhanga College of Engineering, Darbhanga

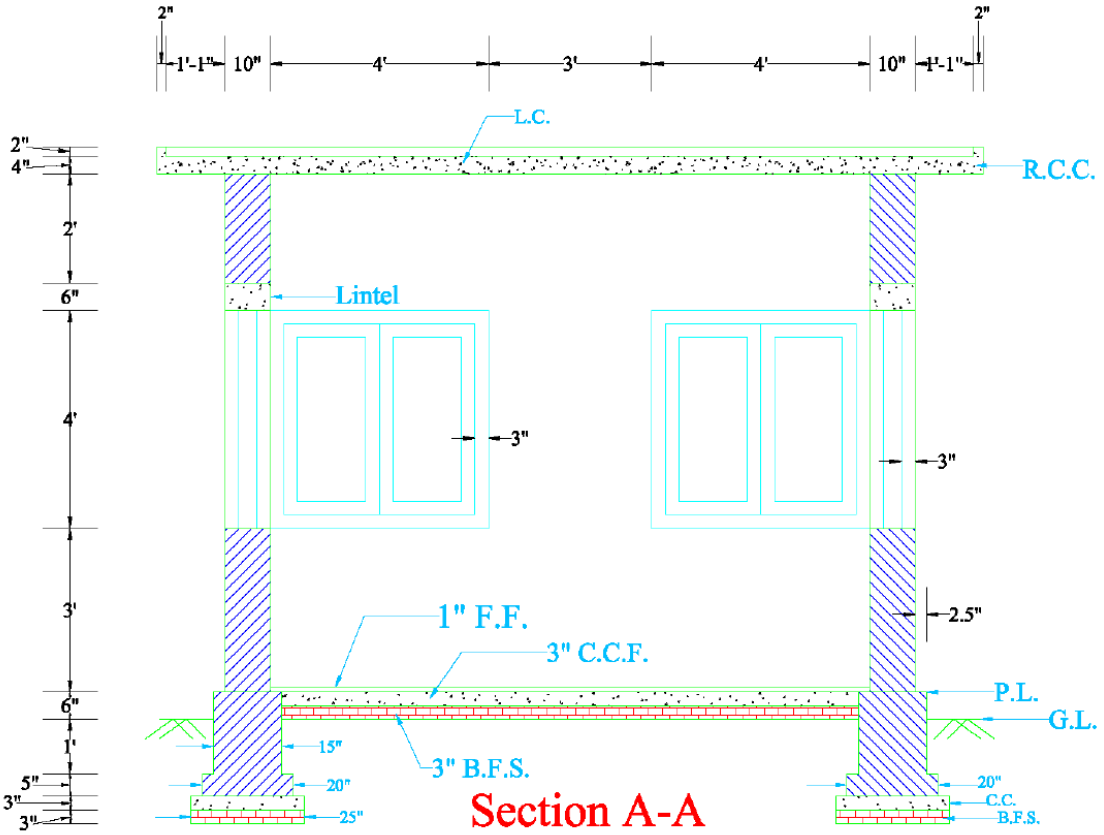
Department Of Civil Engineering

Course: Computer aided Civil Engineering Drawing

Assignment _1



Front Elevation



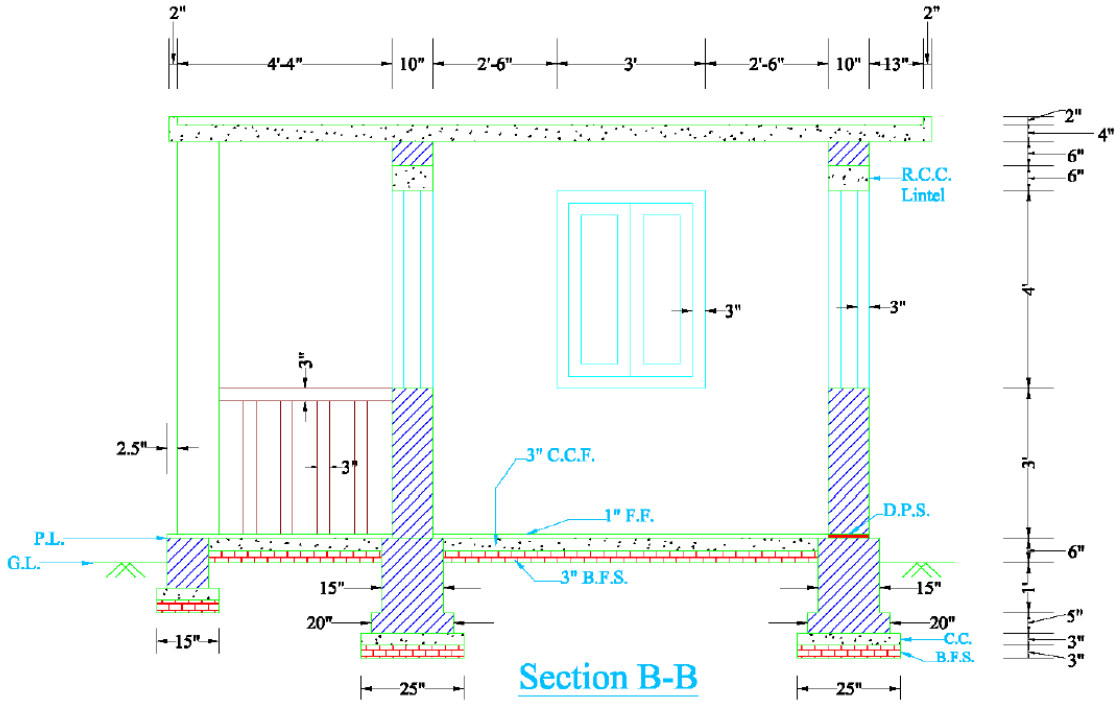
Section A-A

Darbhanga College of Engineering, Darbhanga

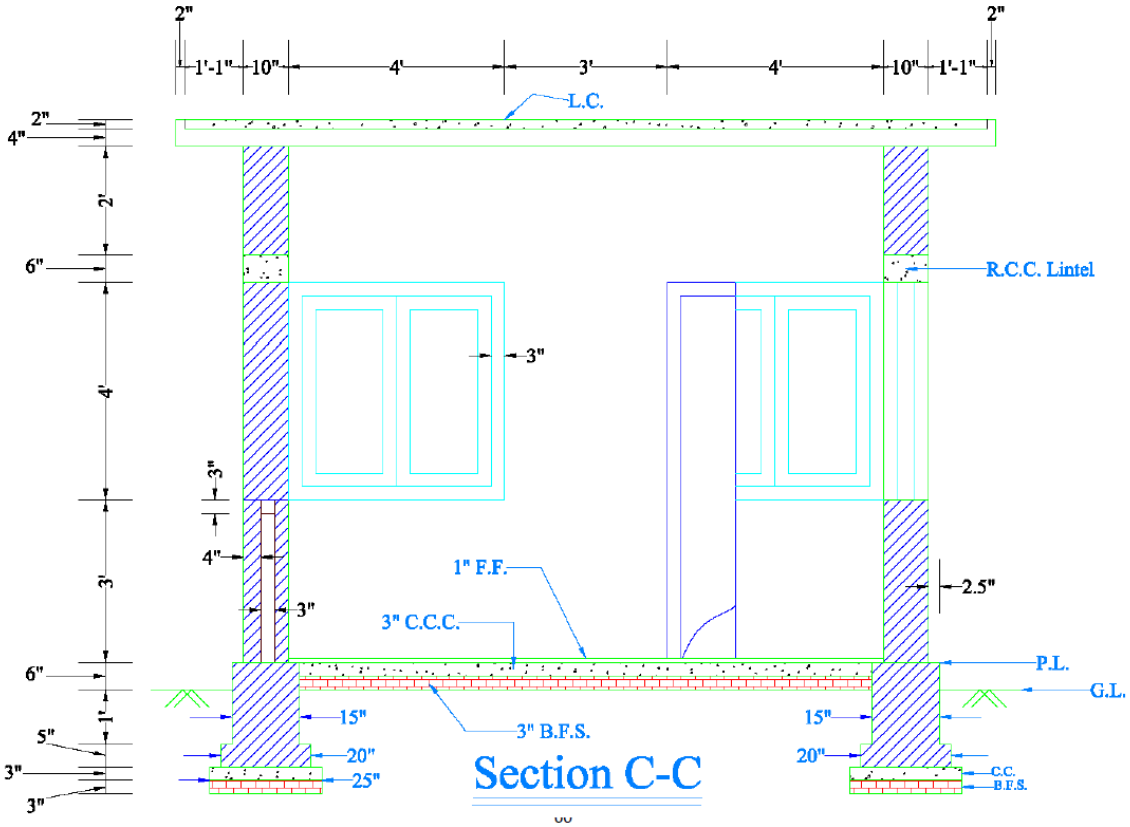
Department Of Civil Engineering

Course: Computer aided Civil Engineering Drawing

Assignment _1



Section B-B



Section C-C

DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

Department of Civil Engineering

B.Tech. 3rd Semester Mid Exam., 2019

Computer-Aided Civil Engineering Drawing

Subject Code – 101303

Reg. No…….

Time: 2 hours **Full Marks: 20**

Instructions: Answer all questions.

Si. No.	Questions	Marks	CO	BL
1.	Draw the conventional signs for the following represented in sectional elevation (a) Brick (b) Concrete (c) Wood (d) Indian type water closet **OR,** Discuss usefulness of AutoCAD over manual drawing in Civil Engineering	04	CO1	L2
2.	Draw two consecutive courses for corner joints of walls in English Bond – *Two brick thick wall (i.e. 400 x 400)* **OR,** Draw two consecutive courses for corner joints of the walls in Double Flemish Bond – *One brick thick wall (i.e. 200 thick).*	04	CO2	L3
3.	Draw two consecutive courses for corner joints of the walls in Single Flemish Bond – *One and a half brick thick wall (i.e. 300 thick*) **OR,** Differentiate Single and Double Flemish Bond in Brick Masonry with neat sketch.	04	CO2	L3
4.	(i) State the minimum area (in m^2) for the following places of activities as per Building Bye-Laws. (a) Bedrooms (b) Kitchen (c) Drawing room/Living room (d) Water Closet (W.C.) (e.) Bathroom (f) Bath and W.C. (ii) Define following (a) Site Plan (b) Line Plan (c) Foundation Plan **OR,** Explain detailed drawing of a building and describe its different views.	04	CO3	L2
5.	(i) How to draw following in AutoCAD. (a) Line (b) Rectangle (c) Circle (d) Arc (e.) Ellipse (ii) Write some of Editing Commands used in AutoCAD. **OR,** (i) Differentiate Cartesian and Polar Coordinate System in AutoCAD. (ii) What do you mean by Layer and Block in AutoCAD?	04	CO4	L6

DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

Department of Civil Engineering

B.Tech. 3rd Semester Mid Exam(LE), 2020

Computer-Aided Civil Engineering Drawing

Subject Code – 101303

Reg. No…….

Time: 2 hours **Full Marks: 20**

Instructions: Answer all questions.

1. Draw the conventional signs/symbols for the following;
   (a) Brick (b) Concrete (c) Sink with left hand drainer (d) Indian type water closet (e.) Wash Basin

2. Define the following

   (a) Line Plan (b) Foundation Plan (c) Detailed Floor Plan (d) Elevation View

   (e.) Sectional Elevation

3. Draw two consecutive courses for corner joints of the walls in Double Flemish Bond – *One brick thick wall (i.e. 200 thick).*

4. Draw typical floor plan of 2 BHK (Stilt+2) storied residential building. Provide adequate entrance, lobby, passage, staircase, circulation area etc.

Code : 101303

B.Tech 3rd Semester Exam., 2019
(New Course)

COMPUTER AIDED CIVIL ENGINEERING DRAWING

Time : 3 hours *Full Marks* : 70

Instructions :

(i) The marks are indicated in the right-hand margin.

*(ii) There are **NINE** questions in this paper.*

*(iii) Attempt **FIVE** questions in all.*

*(iv) Question No. **1** is compulsory.*

1. Choose the correct answer (any *seven*) : 2×7=14

(a) Which of the following publications made by Bureau of Indian Standards includes standard techniques for line conventions and lettering in detail?

(i) SP 46

(ii) BIS 9609

(iii) ASME Y14.2M

(iv) ISO 9000

(b) The length to height ratio of a closed filled arrowhead is

(i) 1 : 3

(ii) 3 : 1

(iii) 1 : 2

(iv) 2 : 1

(c) Which of the following is not a specified method for dimensioning?

(i) Parallel dimensioning

(ii) Perpendicular dimensioning

(iii) Continuous dimensioning

(iv) Dimensioning by coordinates

(d) For drawing the components of a wrist-watch, the scale used is

(i) reducing scale

(ii) full scale

(iii) enlarging scale

(iv) Any of these

(e) Scale used for two systems of units measurement is

(i) plain scale

(ii) diagonal scale

(iii) comparative scale

(iv) Vernier scale

(f) Why should you pay attention to when learning AutoCAD?

(i) The Command Line

(ii) The Status Bar

(iii) The Title Bar

(iv) Floating Toolbar

(g) Units command of AutoCAD is not used to set

(i) units for linear measurement

(ii) units for angular measurement

(iii) limits of drawing

(iv) direction in which angle is to be measured

(h) To obtain parallel lines, concentric circles and parallel curves; _____ is used.

(i) array

(ii) fillet

(iii) copy

(iv) offset

(i) Which line is drawn to make the section evident?

(i) Long-break line

(ii) Chain thick

(iii) Borderline

(iv) Hatching line

(j) Guidelines for dimensions at International level on a drawing is controlled by

(i) Bureau of Indian Standards

(ii) Corporate Drafting Standards

(iii) ANSI

(iv) ISO

2. (a) What do you understand by building drawing? Explain about coordinate systems and reference planes. 8

(b) What do you mean by—

(i) plan;

(ii) elevation;

(iii) section? 6

3. *(a)* Differentiate between substructure and superstructure of a building with neat sketch.

(b) Explain the various types of line used in civil engineering drawing. 14

4. It is proposed to construct a residential apartment (Stilt + 4) storied on a plot area of 38 into 34. The building, RCC framed structure, is having two flats : 1BHK and 2BHK. Provide adequate entrance, lobby, passage, staircase, lift, circulation area, etc. Draw typical floor plan. 14

5. Propose suitable drainage plan for the residential building as mentioned in Question No. **4**. Also propose an appropriate foundation plan. 14

6. Give neat sketches to indicate the conventional signs for the following : 1×14=14

(a) Glass

(b) Brick Masonry

(c) Stone Masonry

(d) Plaster

(e) Plain Concrete

(f) Rock

(g) Timber

(h) Steel

(i) Slope in Embankment

(j) Earth in Section

(k) Woodwork

(l) Railway Line

(m) Random Rubble Masonry

(n) Reinforced Concrete

7. (a) Show, with the help of sketch, the various types of closer brick. Also explain its importance in different masonry bond systems.

(b) Draw plans of alternate courses of—

(i) 1-brick thick wall in English and Flemish bond;

(ii) 2-brick thick wall in English and Flemish bond. 14

8. (a) Explain the various dimension methods of AutoCAD. 8

(b) What are the steps to followed in a planning of a drawing? 6

9. List the basic editing commands of AutoCAD. Explain the following commands with neat sketch : 14

(a) Break

(b) Mirror

(c) Trim

(d) Hatch

★ ★ ★