

AutoCAD

Civil Engineering Drawing using AutoCAD Laboratory Manual

DEPARTMENT OF CIVIL ENGINEERING

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGINEERING & TECHNOLOGY

[AUTONOMOUS]

NANDYAL – 518501 (AP)


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NANDYAL-518 501.

14/12/2020

Experiment - I

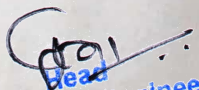
REINFORCED CONCRETE SLABS

Reinforced concrete slabs supported on all four sides with their effective span in the longer direction not exceeding two times the effective span in the shorter direction are designed as two way slab. Here the moments are maximum at centre of slab and the larger moment develops along shorter span

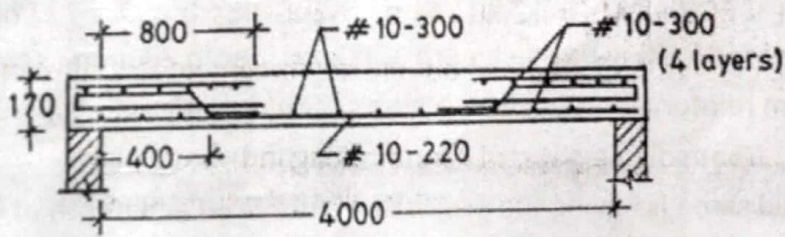
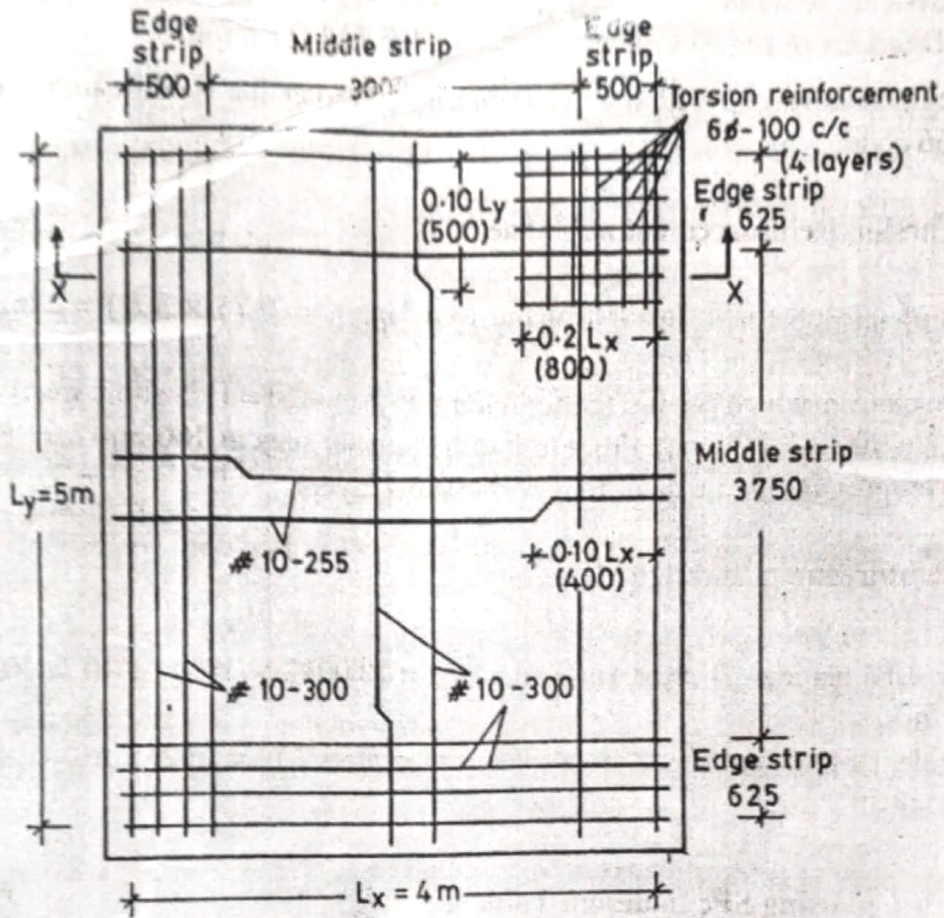
Draw reinforcement details (plan and section XX) for two way slab of size 4m X 5m with discontinuous and simply supported edge on all sides with corners prevented from lifting to support a live load of 4kN/sq.m ?

DIMENSIONS:

- ⇒ Effective depth : 145mm
- ⇒ cover : 25mm
- ⇒ Reinforcement in ,
 - ⇒ 1.Short span direction = 10mm diameter at 255mm c/c spacing
 - ⇒ 2.Long span direction = 10mm diameter at 300mm c/c spacing
 - ⇒ 3.Torsion reinforcement at 4 corners in 4 layers = 6mm diameter at 100mm c/c spacing for (1/5)th of short span length
 - ⇒ 4.Edge strip = 10mm diameter at 300mm c/c spacing


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Experiment - I



Section X X

All Dimensions are in mm

(Handwritten signature and 'Ly')

14/12/2020

Experiment - II

FOUNDATION

A foundation is the element of a structure which connects it to the ground, and transfers loads from the structure to the ground. Foundations are generally considered either shallow or deep.

PURPOSE OF PROVIDING FOUNDATION

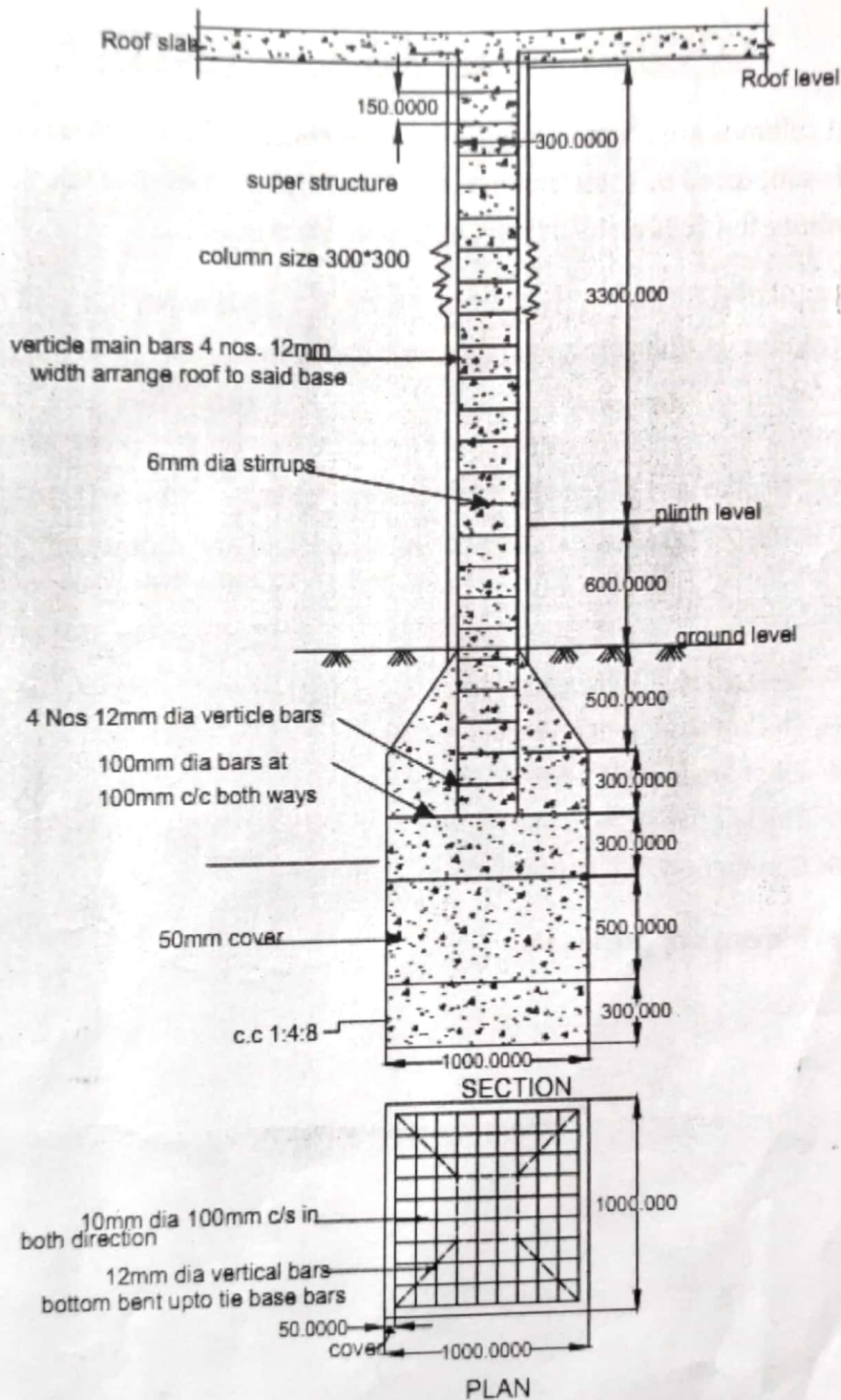
- To distribute the weight of the structure over large area so as to avoid over-loading of the soil beneath.
- To anchor the structures against the changing natural forces like Earthquakes, floods, frost-heave, tornado or wind.
- To load the sub-stratum evenly and thus prevent unequal settlement.
- To provide a level surface for building operations.
- To take the structure deep into the ground and thus increase its stability, preventing overloading.
- Specially designed foundation helps in avoiding the lateral movements of the supporting material.

Draw plan, section XX and YY of the isolated footing?

DIMENSIONS:

- ⇒ Base of the footing having length 1000mm, depth 200mm (cover for bottom reinforcement and top reinforcement is 50mm with P.C.C 1:4:8), 10mm dia bars with 100mm c/c in both ways.
- ⇒ Isolated slope is having the projection of 100mm and depth of the isolated slope is 500mm
- ⇒ Column is having height of 3900mm from G.L, P.L is 600mm from G.L, Roof level is 3300 from P.L. column size is 300x300mm consists of 4nos of 12mm dia vertical bars with 6mm dia stirrups 150mm c/c spacing
- ⇒ Roof slab is having a depth of 120mm

Experiment - II



All the Dimensions are in mm

leg

(82)

16/12/2020

Experiment - III

COLUMN GUSSET BASE CONNECTION

Steel columns are normally supported over concrete blocks. When the loads supported by these columns are large the columns may fail. So to distribute the column loads steel base plates are used .

One type of steel base plate is Gusset base. It is used when the load over the column section is accompanied by bending moment.

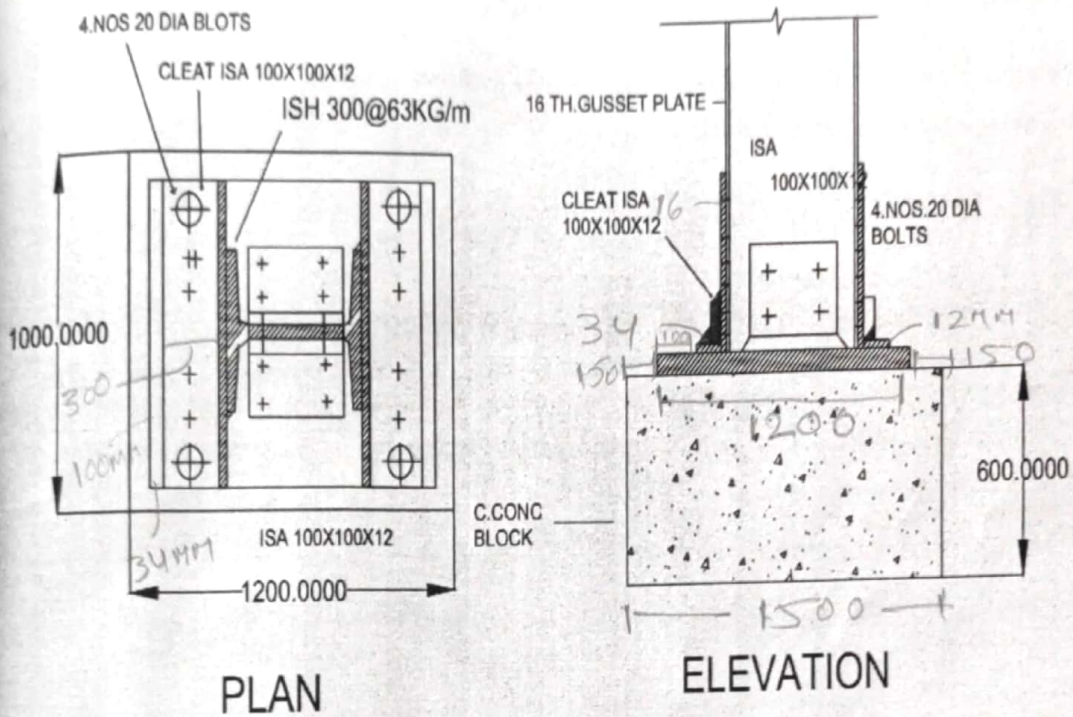
Draw the plan and elevation of column gusset base connection to support ISHB 300@63kg/m subjected to certain axial load and moment?

DIMENSIONS:

- ⇒ Base plate = 1200 x 1000
- ⇒ Thickness of concrete block = 600
- ⇒ Cleat angle = ISA 100 X 100 X 12
- ⇒ Thickness of gusset plate = 16
- ⇒ Connections = 4 bolts of 20mm diameter

Note: Dimensions are in mm.

Experiment - III



COLUMN GUSSETED -BASE GONNECTION

Handwritten signature and initials in red ink.

Experiment - IV

STOOL

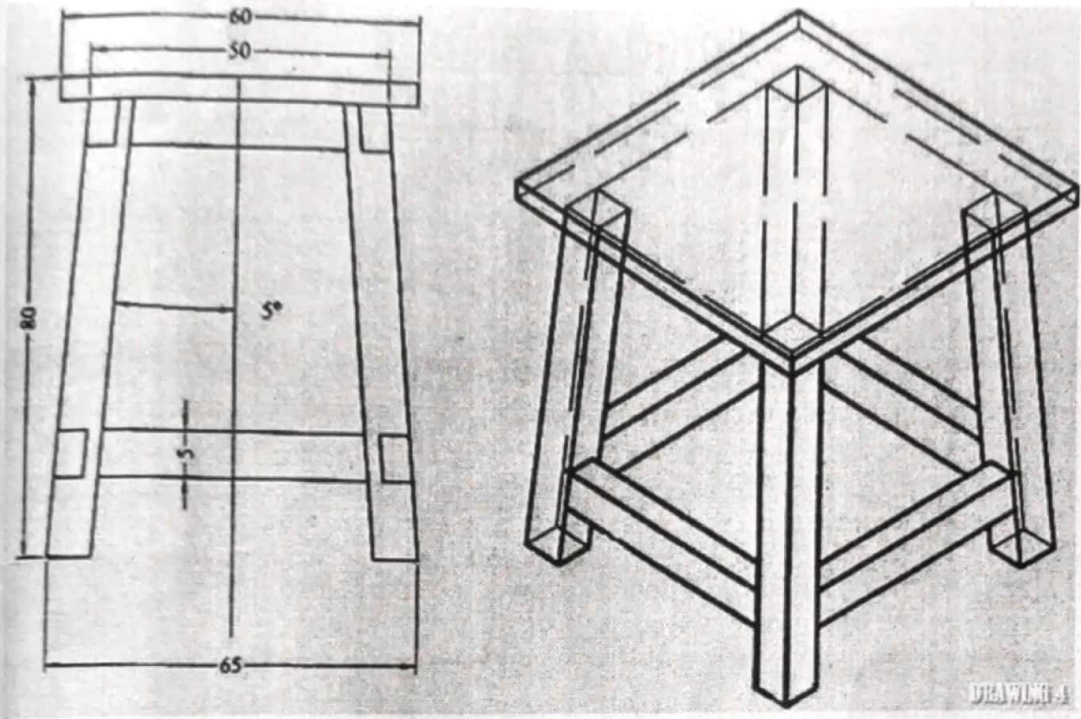
Draw plan and elevation of a stool with 4 cross vertical legs and 4 horizontal supportors with a top seat ?

DIMENSIONS:

- ⇒ Horizontal supportors -50x5x5
- ⇒ Vertical legs 80x5x5(including thickness of top seat)
- ⇒ Top seat -60x60x3
- ⇒ Vertical legs are placed at a distance of 5cm from extreme corners at top. Horizontal supportors are placed at a distance of 10cm from bottom of vertical leg.

Note: (All dimensions are in cm)

Experiment - IV



ky

Experiment - V

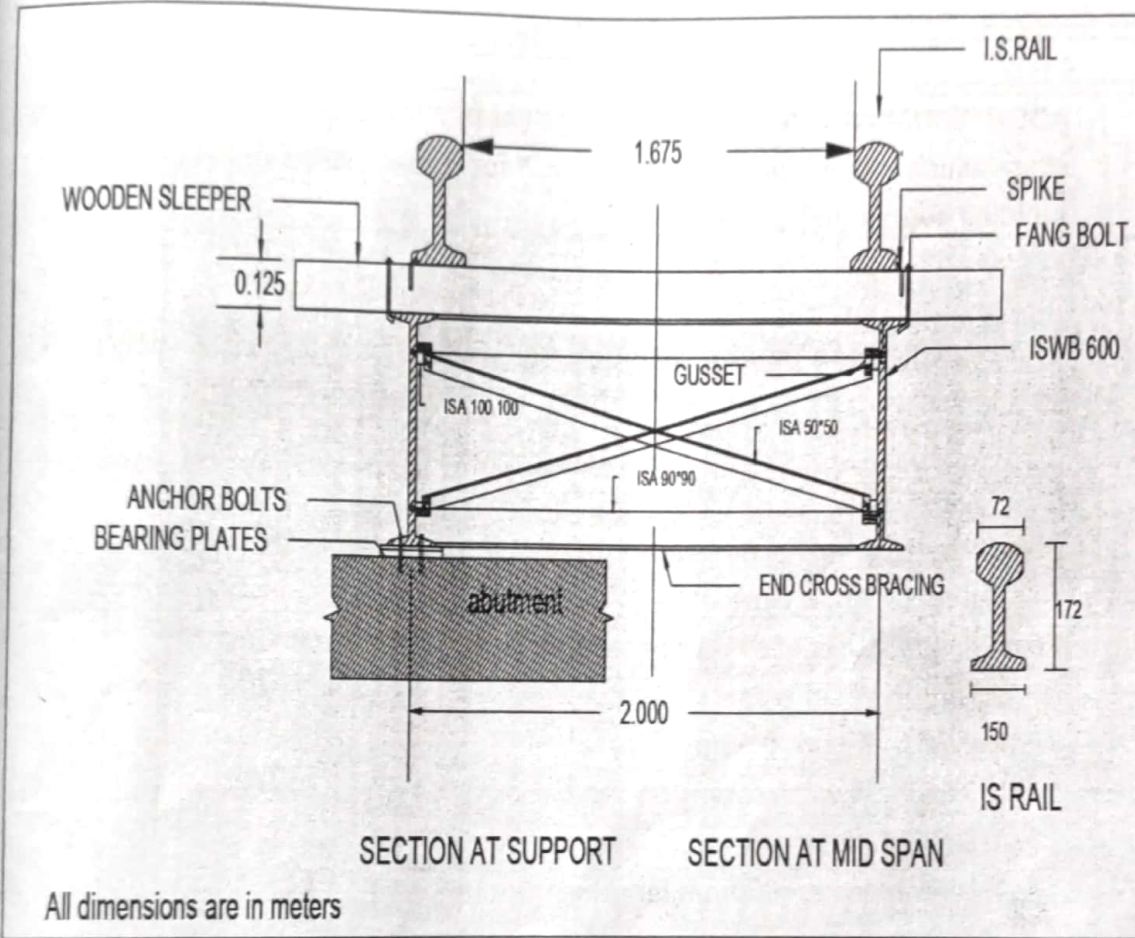
RAILWAY BRIDGE

Draw elevation of a railway bridge with following specifications?

DIMENSIONS:

- ⇒ An abutment is placed at left support, to support weight of the construction
- ⇒ Bearing plates are placed on the abutment with two layers of each 0.010m thick
- ⇒ An ISWB600 is placed on bearing plates with anchor bolts of 0.01m diameters to hold ISWB firmly. Center to center distance between ISWB 600 is 2m
- ⇒ ISA 90*90 is placed horizontally with 150mm thickness
- ⇒ ISA 50*50 is connected diagonally to the gusset
- ⇒ Gusset depth 0.08m
- ⇒ Width 0.12m
- ⇒ At diagonally placed ISA 50*50 sections, bolts of 0.015m diameter are placed for connection
- ⇒ On ISWB 600 0.125m thick wooden sleeper
- ⇒ Place wooden sleeper on pedestal IS rail of height 0.172m, top width of ---mm, bottom width of 0.150m
- ⇒ A spike of 0.10m thick is used to connect IS rail 0.10m
- ⇒ Center to center spacing between ISWB 600 is 0.2000
- ⇒ Clear distance between IS Rail is 0.1675m
- ⇒ Fang bolt of 10mm thick is placed to hold wooden sleeper and ISWB 600

Experiment - V



Handwritten signature in red ink.

Experiment - VI

AUDITORIUM

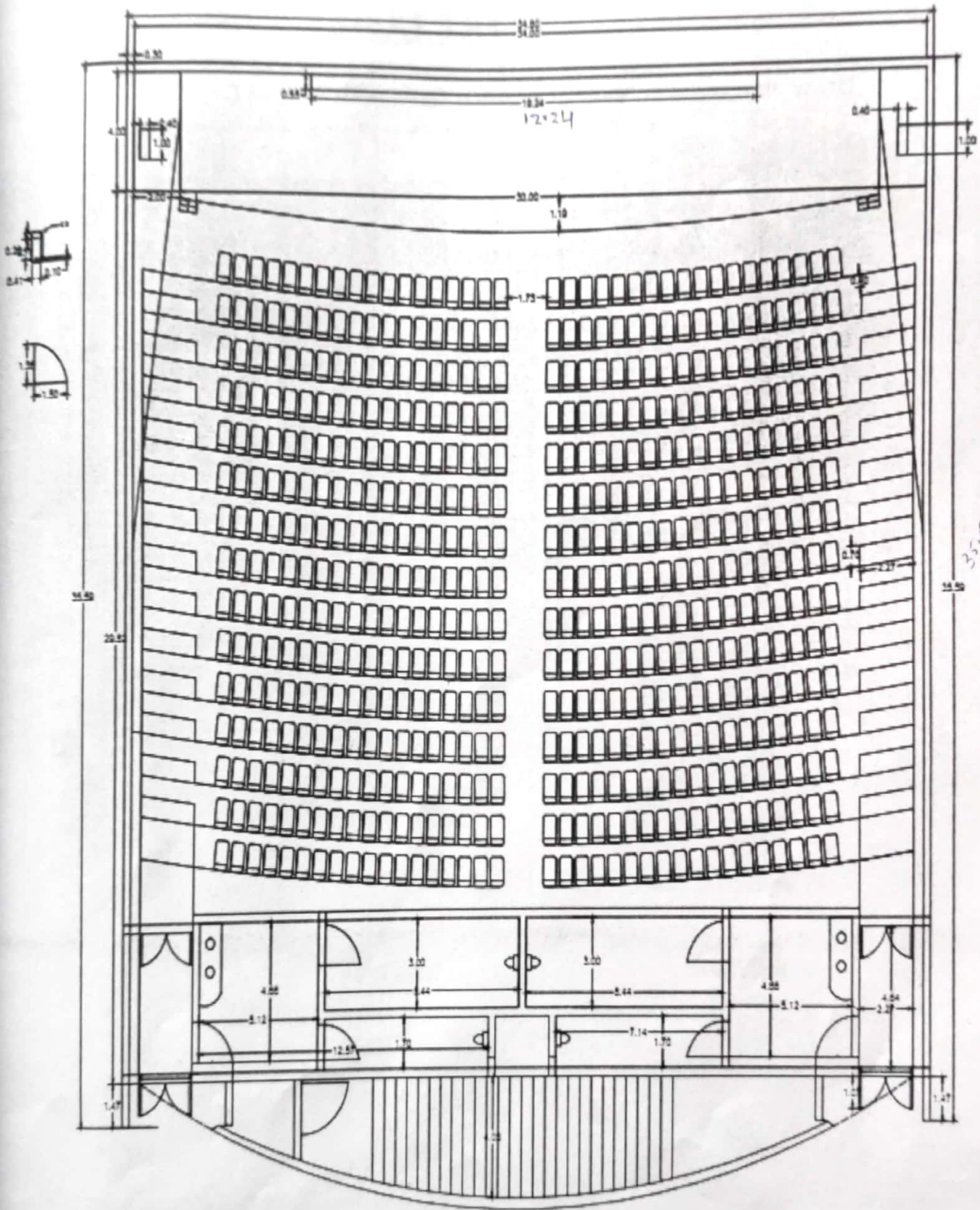
AUDITORIUM : An auditorium is a large room with rows of seats and often a stage which is used for performance and for public events or meetings, or a building containing such a room

Draw the plan of a theatre with on arrangement of chairs in 15 rows with 36 each?

DIMENSIONS:

- ⇒ Isle (spacing for movement of people) = 2.27m on either side of wall and 1.73m at center
- ⇒ Spacing of seat to seat+ column wise = 0.4m
- ⇒ Length of seat = 1m
- ⇒ Width of seat = 0.43m
- ⇒ Provide 4 wash rooms on the back side of seating arrangement
- ⇒ D = 0.9m x 2.1m
- ⇒ Water closet = 800mm length x 600mm height

Experiment - VI



Experiment - VII

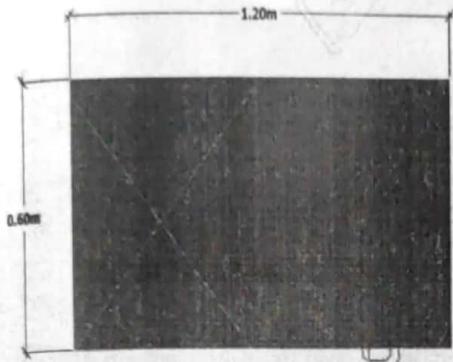
OFFICE TABLE

Draw plan and elevation of a Office Table with 2 racks ?

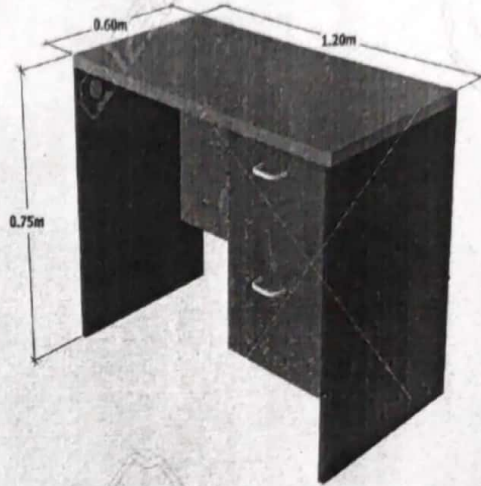
DIMENSIONS:

- ⇒ Length of table = 1.20m
- ⇒ Width of table = 0.60m
- ⇒ Depth of table = 0.75m
- ⇒ Thickness of top base table = 0.03m
- ⇒ Distance from ground to bottom rack = 0.20m
- ⇒ Height of each rack = 0.26m
- ⇒ Length of each rack = 0.40m

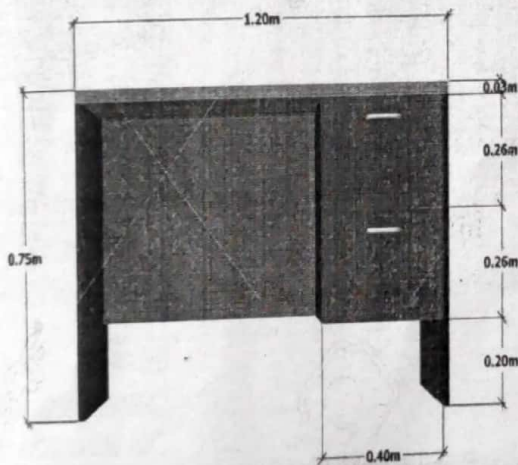
Experiment - VII



TOP VIEW



PERSPECTIVE



FRONT VIEW


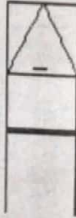

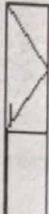

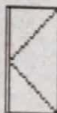

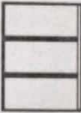


SIDE VIEW

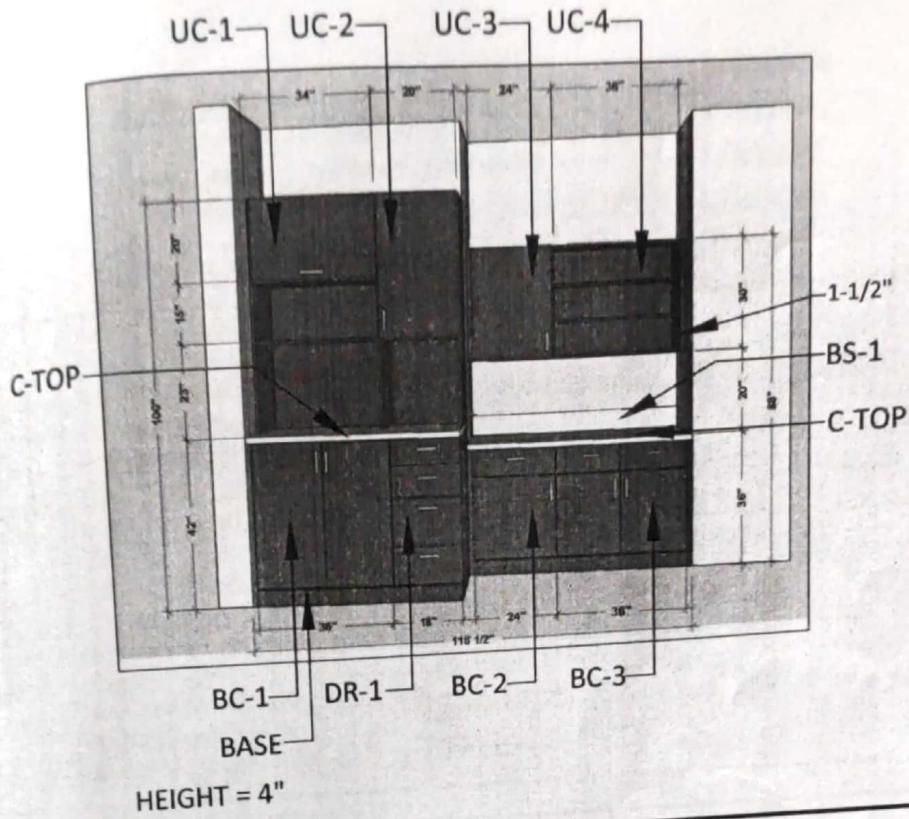
Experiment - VIII


NOTE: First provide rough hand sketch in A4 Sheet (Mandatory)
Draw the plan view, one plan section, elevation & one vertical section
for the given isometric view with presentation.

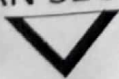
PANELS - All panels shown in the image are $3/4"$ thickness

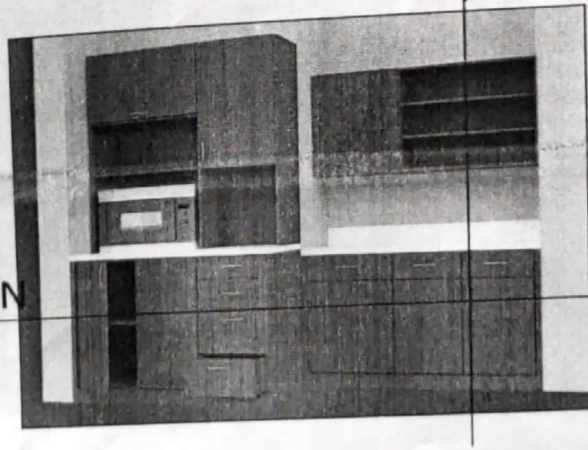
Base cabinet		Upper cabinet	
 <p>1-1/2"</p>	<p>BC-1 Cabinet Depth - 24" Cabinet Length - 36" Cabinet height - 36-1/2" Base height - 4"</p>		<p>UC-1 Cabinet Depth - 15" Cabinet Length - 34" Cabinet height - 58"</p>
 <p>1-1/2"</p>	<p>DR-1 Drawer Depth - 24" Drawer Length - 18" Drawers height - 36-1/2" Base height - 4"</p>		<p>UC-2 Cabinet Depth - 15" Cabinet Length - 20" Cabinet height - 58"</p>
 <p>1-1/2"</p>	<p>BC-2 Cabinet Depth - 24" Cabinet Length - 24" Cabinet height - 24-1/2" Drawer height - 6" Base height - 4"</p>	 <p>1-1/2"</p>	<p>UC-3 Cabinet Depth - 15" Cabinet Length - 24" Cabinet height - 30"</p>
 <p>1-1/2"</p>	<p>BC-3 Cabinet Depth - 24" Cabinet Length - 36" Cabinet height - 24-1/2" Drawer height - 6" Base height - 4"</p>	 <p>3/8" 1-1/2"</p>	<p>UC-4 Cabinet Depth - 15" Cabinet Length - 36" Cabinet height - 90"</p>
<p><u>Counter-Top</u></p> <p>C-TOP Counter Depth - 25" Counter Thickness - 1-1/2"</p>		<p><u>Back Splash</u></p> <p>BS-1 Back Splash Thickness - 3/4 in Back Splash Height - 4"</p>	

Experiment - VIII



VERTICAL SECTION 

PLAN SECTION 



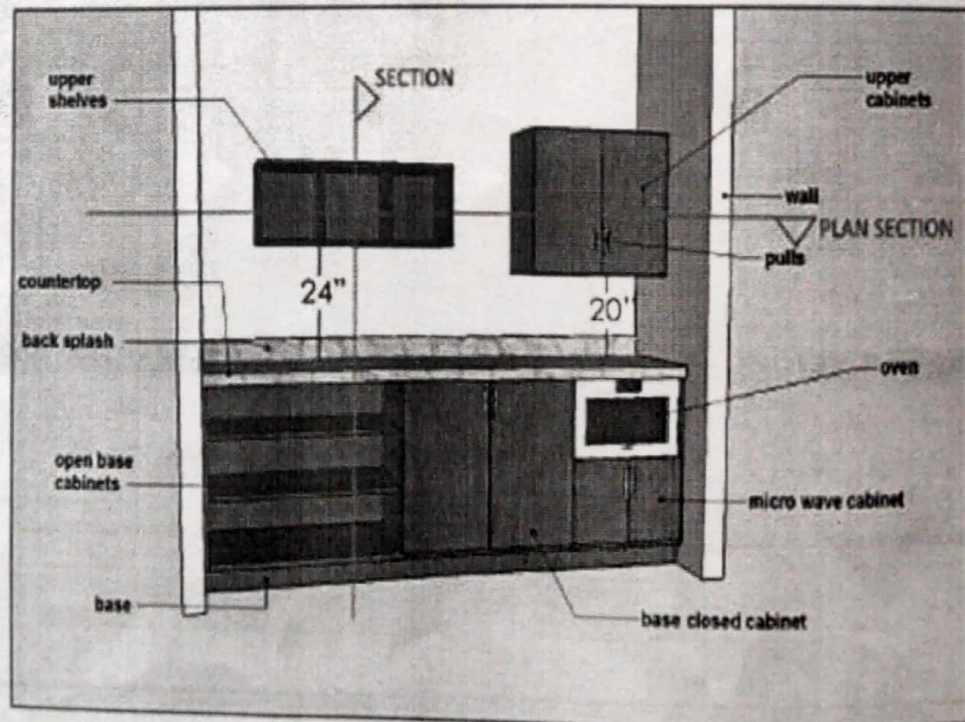
Experiment - IX

NOTE: First provide rough hand sketch in A4 Sheet (Mandatory)
 Draw the plan view, one plan section, elevation & one vertical section for the given isometric view with presentation.

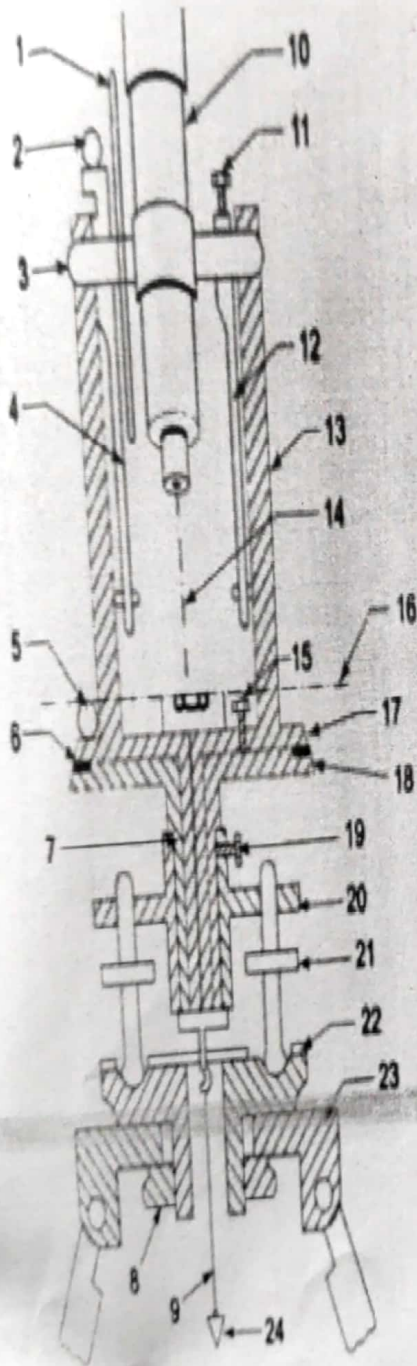
Counter top - (Length 94" X Depth 25" X 2" Thk) height - 36"

Back Splash - (Length 94" X $\frac{3}{4}$ " Thk) 4" height

<p style="text-align: center;">Open base cabinets</p> <p>Cabinet Depth - 24" Cabinet Length - 36" Only base cabinet height - 30" Base height - 4"</p>	<p style="text-align: center;">Micro wave cabinet</p> <p>Cabinet Depth - 24" Cabinet Length - 28" Only base cabinet and micro wave height - 30" Base height - 4"</p>
<p style="text-align: center;">Base closed cabinet</p> <p>Cabinet Depth - 24" Cabinet Length - 30" Only base cabinet height - 30" Base height - 4"</p>	<p style="text-align: center;">Upper cabinets</p> <p>Cabinet Depth - 15" Cabinet Length - 30" Cabinet height - 26"</p>
	<p style="text-align: center;">Upper shelves</p> <p>Upper shelves Depth - 12" Upper shelves height - 20" Upper shelves Length - 36"</p>



Experiment - X



- | | |
|------------------------------------|--------------------------------------|
| 1. Vertical circle | 2. Altitude bubble |
| 3. Horizontal axes | 4. Vernier arm |
| 5. Plate bubble | 6. Graduated arc |
| 7. Levelling head | 8. Clamping nut |
| 9. Vertical axis | 10. Telescope |
| 11. Vertical circle clamping screw | 12. Arm of the vertical circle clamp |
| 13. Standard | 14. Line of sight |
| 15. Upper plate clamping screw | 16. Axis of plate bubble |
| 17. Upper plate | 18. Lower plate |
| 19. Lower plate clamping screw | 20. Tribrach |
| 21. Foot screw | 22. Trivet |
| 23. Tripod top | 24. Plumb bob |

Experiment - XI

