

**ATRIA INSTITUTE OF TECHNOLOGY
BANGALORE**



DEPARTMENT OF CIVIL ENGINEERING

VII Semester BE Civil Engineering

COMPUTER AIDED BUILDING PLANNING AND DRAWING

(18CVL77)

B. E. CIVIL ENGINEERING
Choice Based Credit System (CBCS) and Outcome Based Education (OBE)
SEMESTER - VII

COMPUTER AIDED DETAILING OF STRUCTURES

Course Code	18CVL76	CIE Marks	40
Teaching Hours/Week(L:T:P)	(0:2:2)	SEE Marks	60
Credits	02	Exam Hours	03

Course Learning Objectives: This course will enable students to

1. Be aware of the Scale Factors, Sections of drawings,
2. Draft the detailing of RC and Steel Structural member.

Module -1 Detailing of RCC Structures

- Beams – Simply supported, Cantilever and Continuous.
- Slab – One way, Two way and One-way continuous.
- Staircase – Doglegged
- Cantilever Retaining wall
- Counter Fort Retaining wall
- Circular Water Tank, Rectangular Water Tank.

Module -2 Detailing of Steel Structures

1. Connections – Beam to beam, Beam to Column by Bolted and Welded Connections.
2. Built-up Columns with lacings and battens
3. Column bases and Gusseted bases with bolted and welded connections.
4. Roof Truss – Welded and Bolted
5. Welded Plate girder
6. Gantry Girder

Course outcomes: After studying this course, students will be able to:

- Prepare detailed working drawings

Question paper pattern:

1. Two questions shall be asked from each Module.
2. One full question should be answered from each Module.
3. Each question carries 50 marks.

Textbooks:

1. N Krishna Raju, “Structural Design and Drawing of Reinforced Concrete and Steel”, University Press
2. Krishna Murthy, “Structural Design and Drawing – Concrete Structures”, CBS Publishers, New Delhi

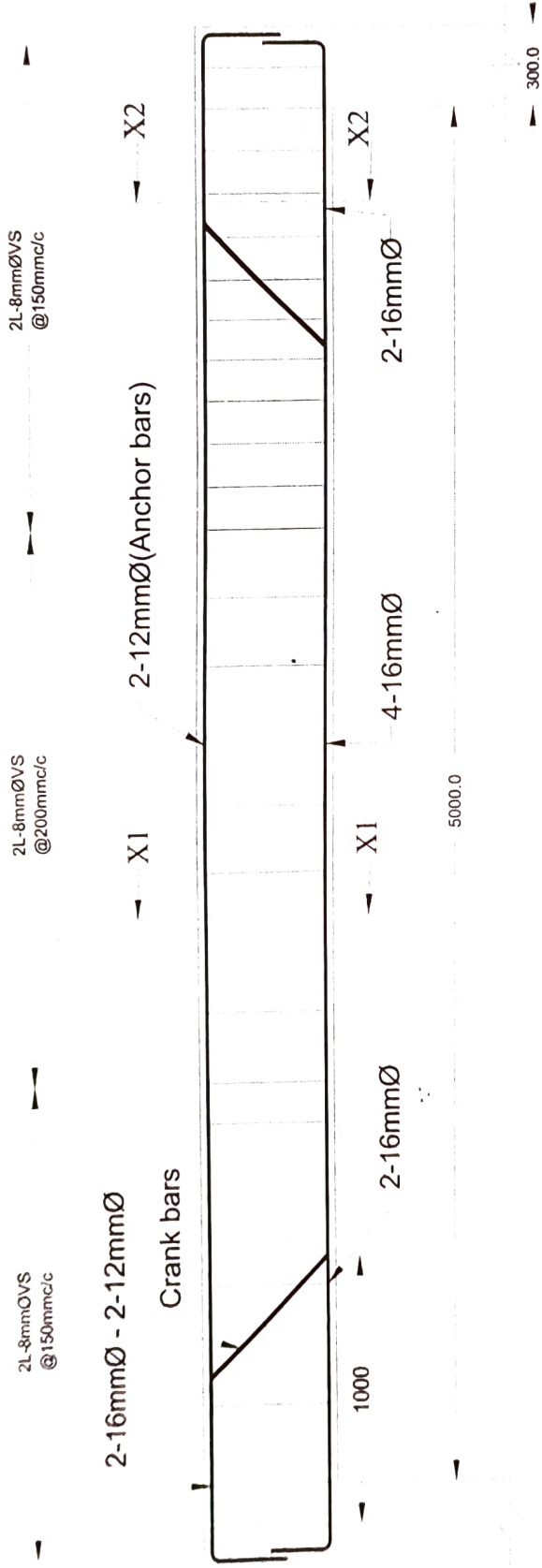
Reference Books:

1. SP 34: Handbook on Concrete Reinforcement and Detailing, Bureau of Indian Standards.
2. IS 13920, Ductile Design And Detailing Of Reinforced Concrete Structures Subjected To Seismic Forces - Code Of Practice, Bureau of Indian Standard.

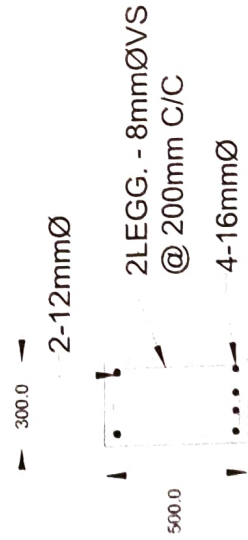
MODULE-1

Module -1 Detailing of RCC Structures	MARKS	RBT LEVEL
<ol style="list-style-type: none">1. Beams – Simply supported, Cantilever and Continuous.2. Slab – One way, Two way and One-way continuous.3. Staircase – Doglegged4. Cantilever Retaining wall5. Counter Fort Retaining wall6. Circular Water Tank, Rectangular Water Tank.	20 hours	L1,L2,L3

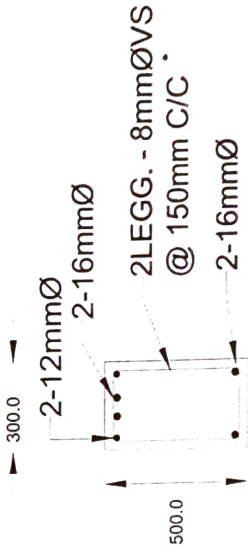
Problem-1



SECTIONAL ELEVATION

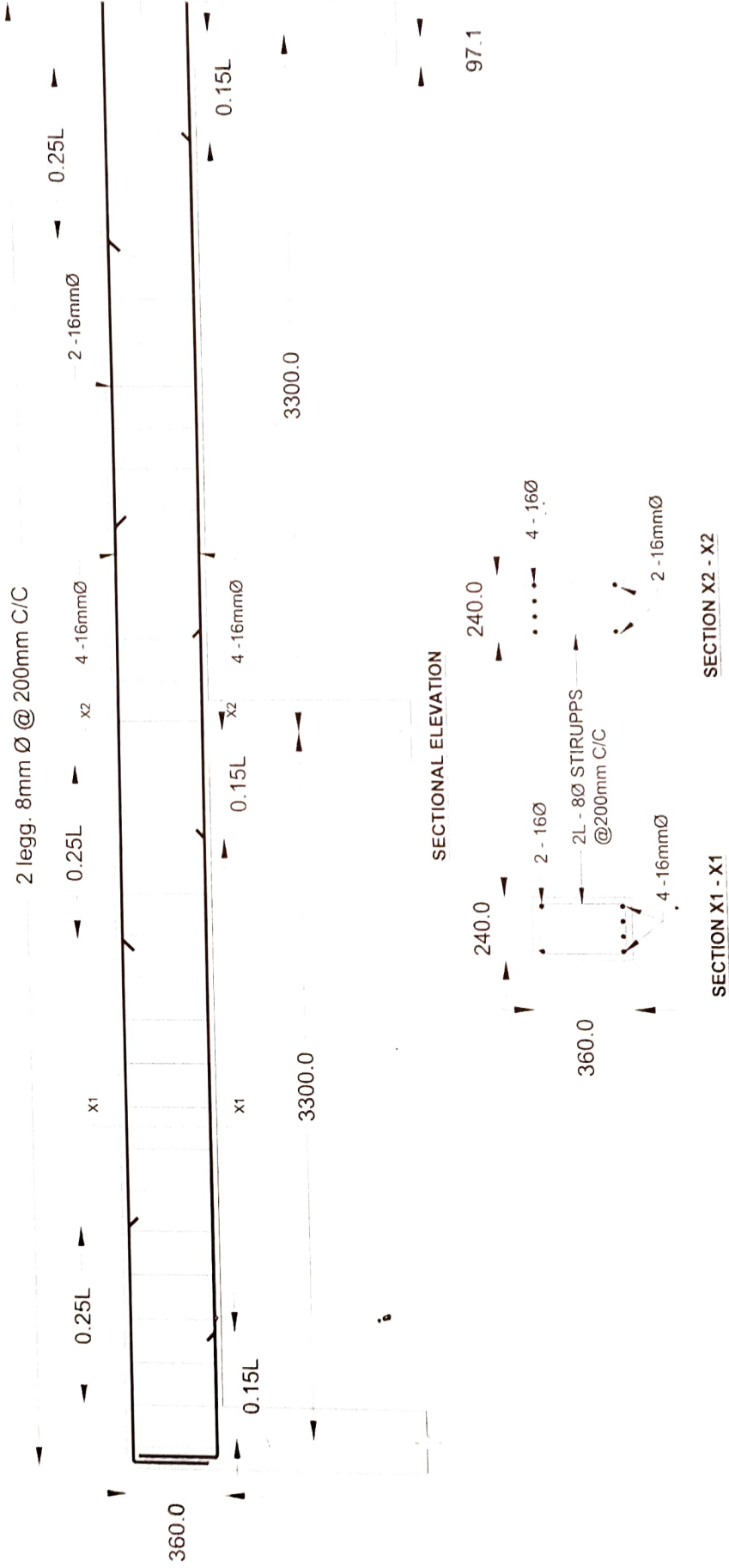


SECTION @ X1-X1



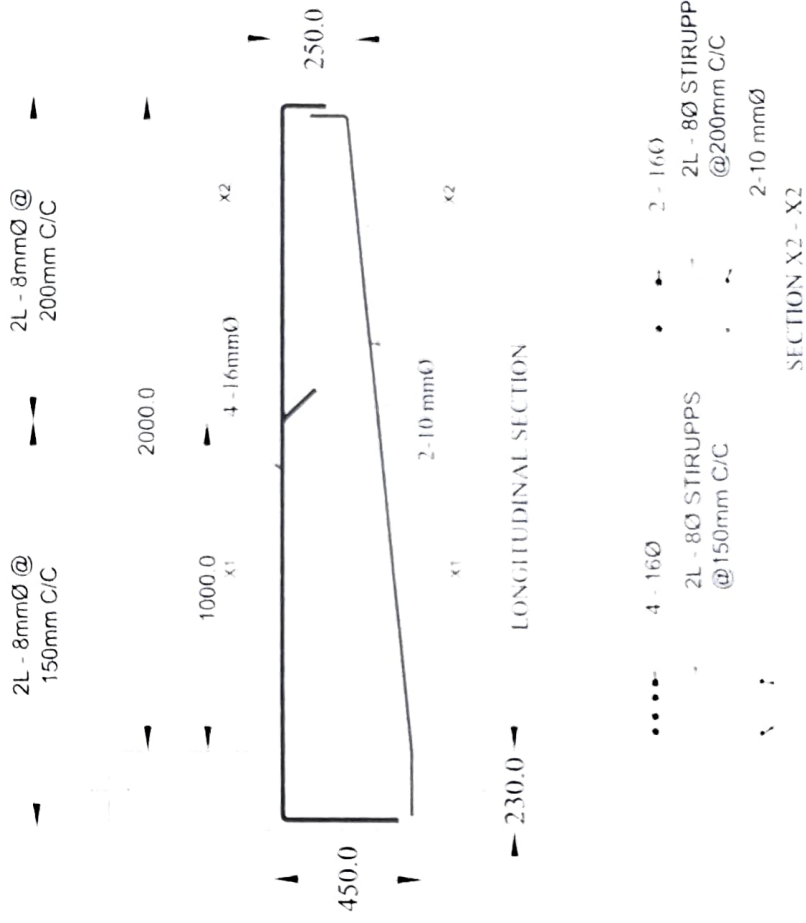
SECTION @ X2-X2

COLLEGE / INSTITUTION	DRAWING NAME :	NAME :
: Atria Institute of Technology, Hebbala	SIMPLY SUPPORTED BEAM	U.S.N. :
NOTE : All dimensions are in mm	SCALE : 1:1	SEC.: BATCH :
		FACULTY SIGN :

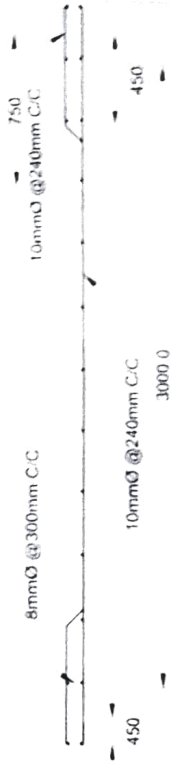


COLLEGE / INSTITUTION	DRAWING NAME :	NAME :
: Atria Institute of Technology, Hebbala	CONTINUOUS BEAM	U.S.N. :
NOTE : All dimensions are in mm	SCALE : 1:1	SEC.: BATCH :
		FACULTY SIGN :

Problem-3



COLLEGE / INSTITUTION : **DRAWING NAME :**
 : Atria Institute of Technology, **CANTILEVER BEAM**
 Hebbala
 NOTE : All dimensions are in mm **SCALE :** 1:1
 NAME : **BATCH :**
 U.S.N. : **FACULTY SIGN :**
 SEC.:
 FACULTY SIGN :



LONGITUDINAL SECTION OF SLAB

10mmØ @240mm C/C

10mmØ @240mm C/C

PLAN AT TOP

10mmØ @240mm C/C

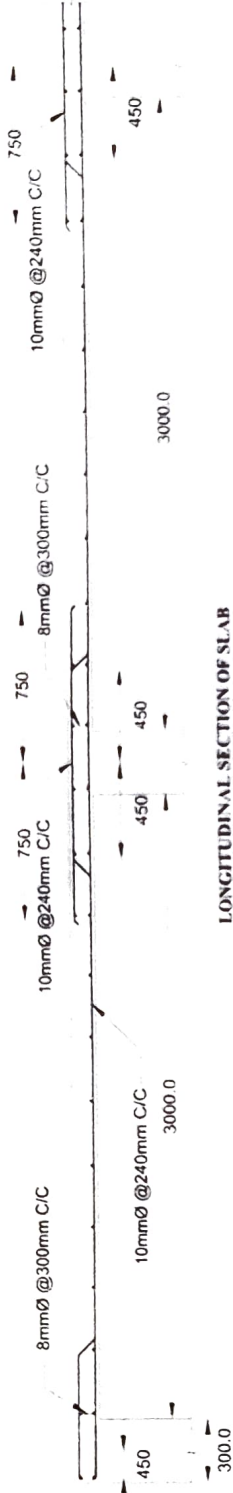
10mmØ @240mm C/C

PLAN AT BOTTOM

COLLEGE / INSTITUTION DRAWING NAME :
: Atria Institute of Technology, Hebbala
NAME :
U.S.N. :
SEC.:
FACULTY SIGN :
SCALE : 1:1
BATCH :

NOTE : All dimensions are in mm

Problem-5



LONGITUDINAL SECTION OF SLAB

10mmØ @240mm C/C

10mmØ @240mm C/C



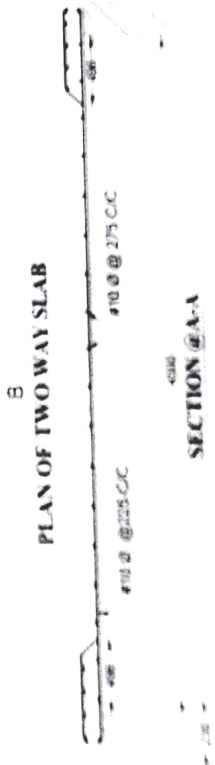
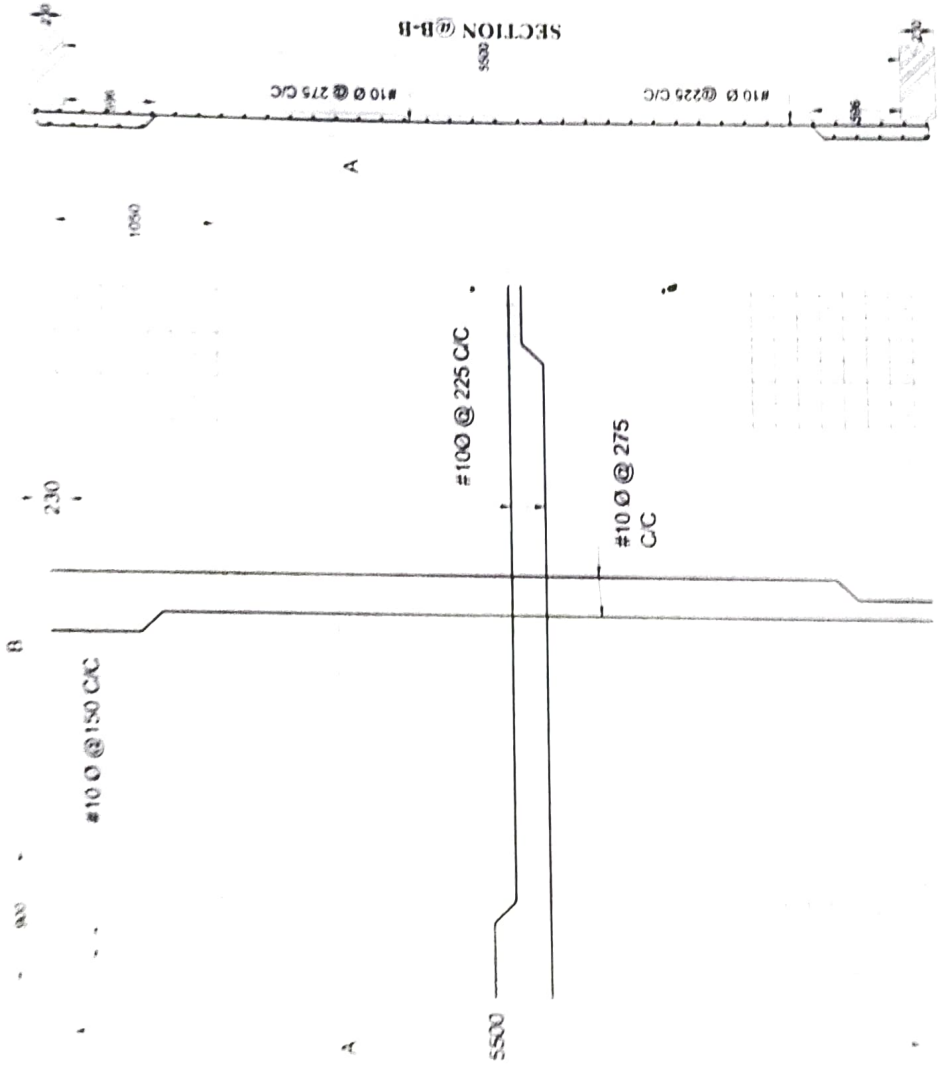
PLAN AT TOP

10mmØ @240mm C/C

10mmØ @240mm C/C

PLAN AT BOTTOM

COLLEGE / INSTITUTION DRAWING NAME : NAME :
; Atria Institute of Technology, ONE WAY CONTINUOUS SLAB U.S.N. :
Hebbala SEC.: BATCH :
NOTE : All dimensions are in mm SCALE : 1:1 FACULTY SIGN :



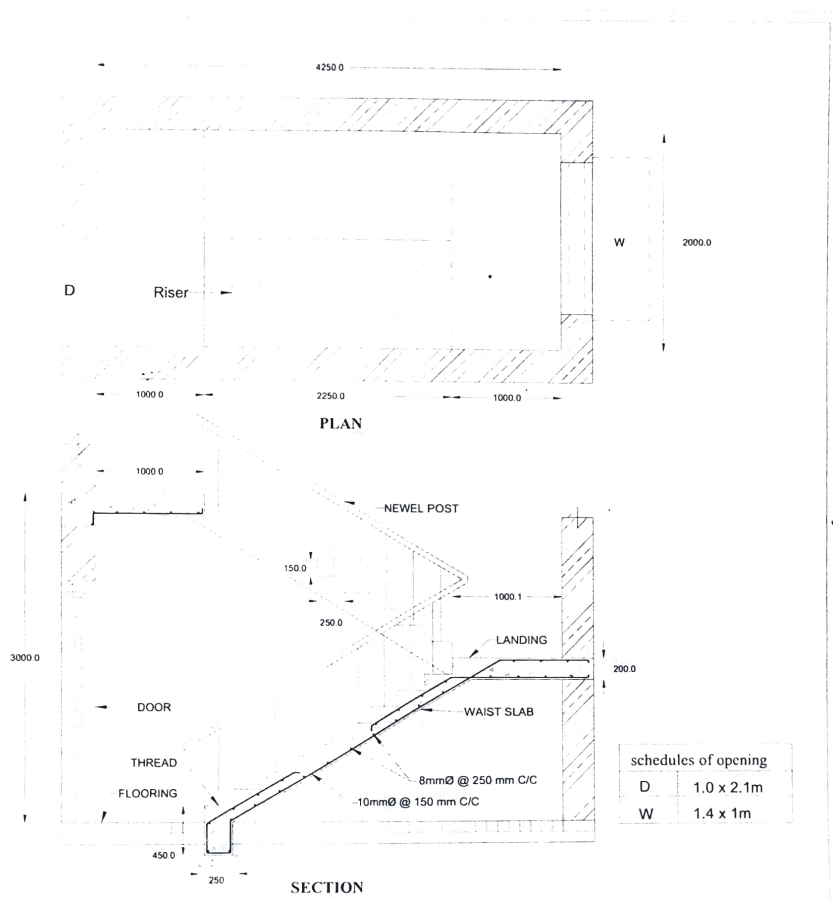
COLLEGE / INSTITUTION DRAWING NAME
 Agria Institute of Technology
 Hoshiabadi

NAME U.S.N
 SEC.
 BATCH

SCALE 1:1

NOTE: All dimensions are in mm.

FACULTY SIGN:



COLLEGE / INSTITUTION : Atria Institute of Technology, Hebbala

DRAWING NAME : DOG LEGGED STAIRCASE

NOTE : All dimensions are in mm

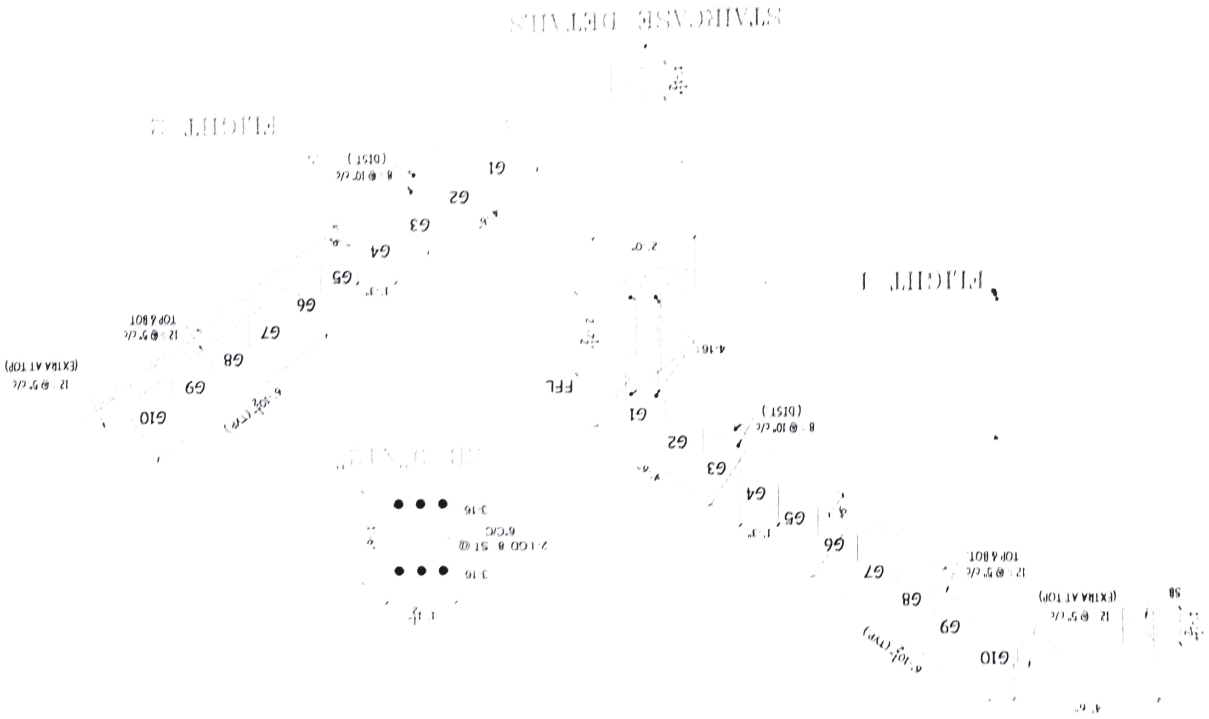
SCALE : 1:1

NAME : _____

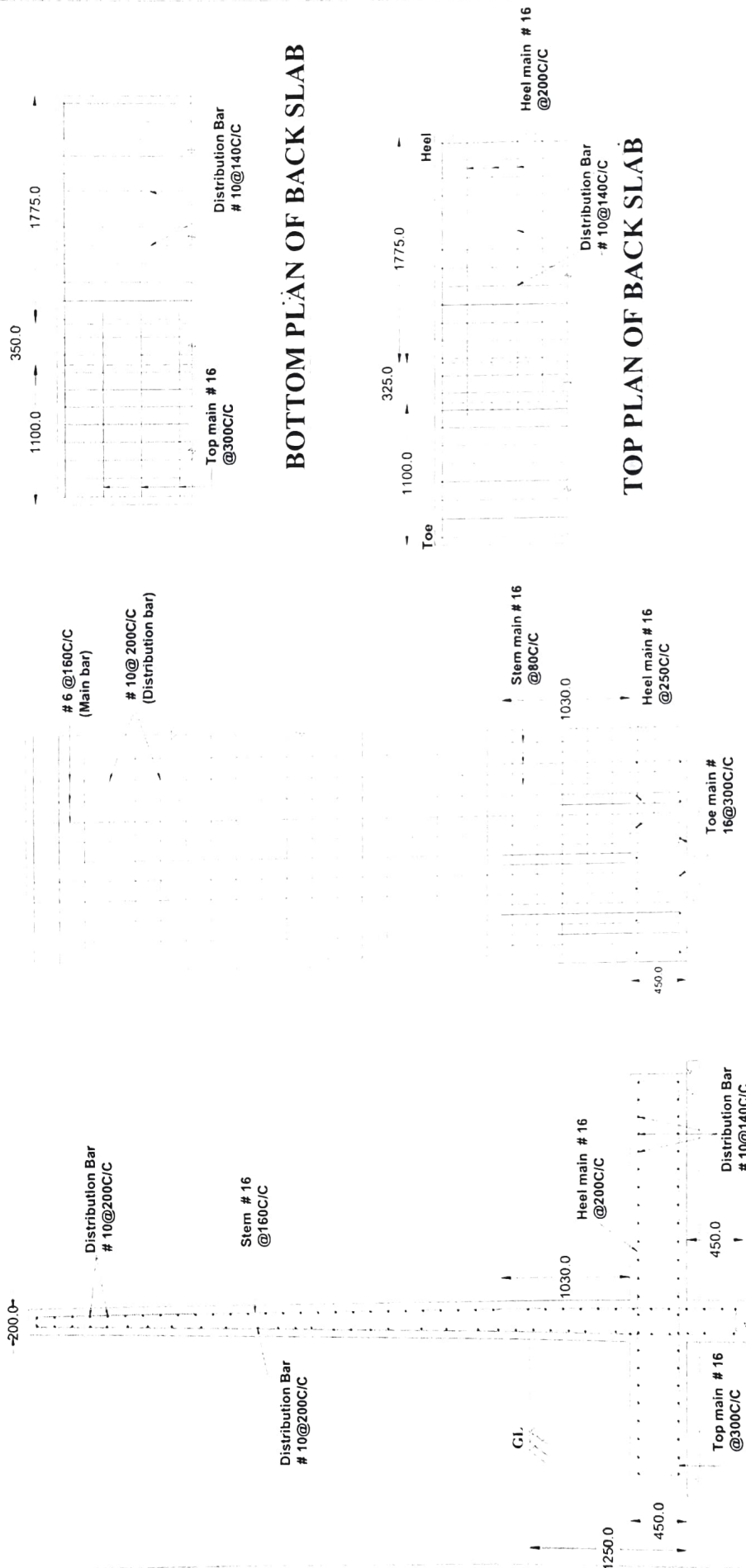
U.S.N. : _____

SEC. : _____ BATCH : _____

FACULTY SIGN : _____



COLLEGE INSTITUTION
 Atria Institute of Technology, Hebbala STAIRCASE
 DRAWING NAME : DOG LEGGED
 U.S.N. :
 NAME :
 SEC. :
 BATCH :
 SCALE : NOT TO SCALE
 FACULTY SIGN :
 NOTE : All dimensions are in mm



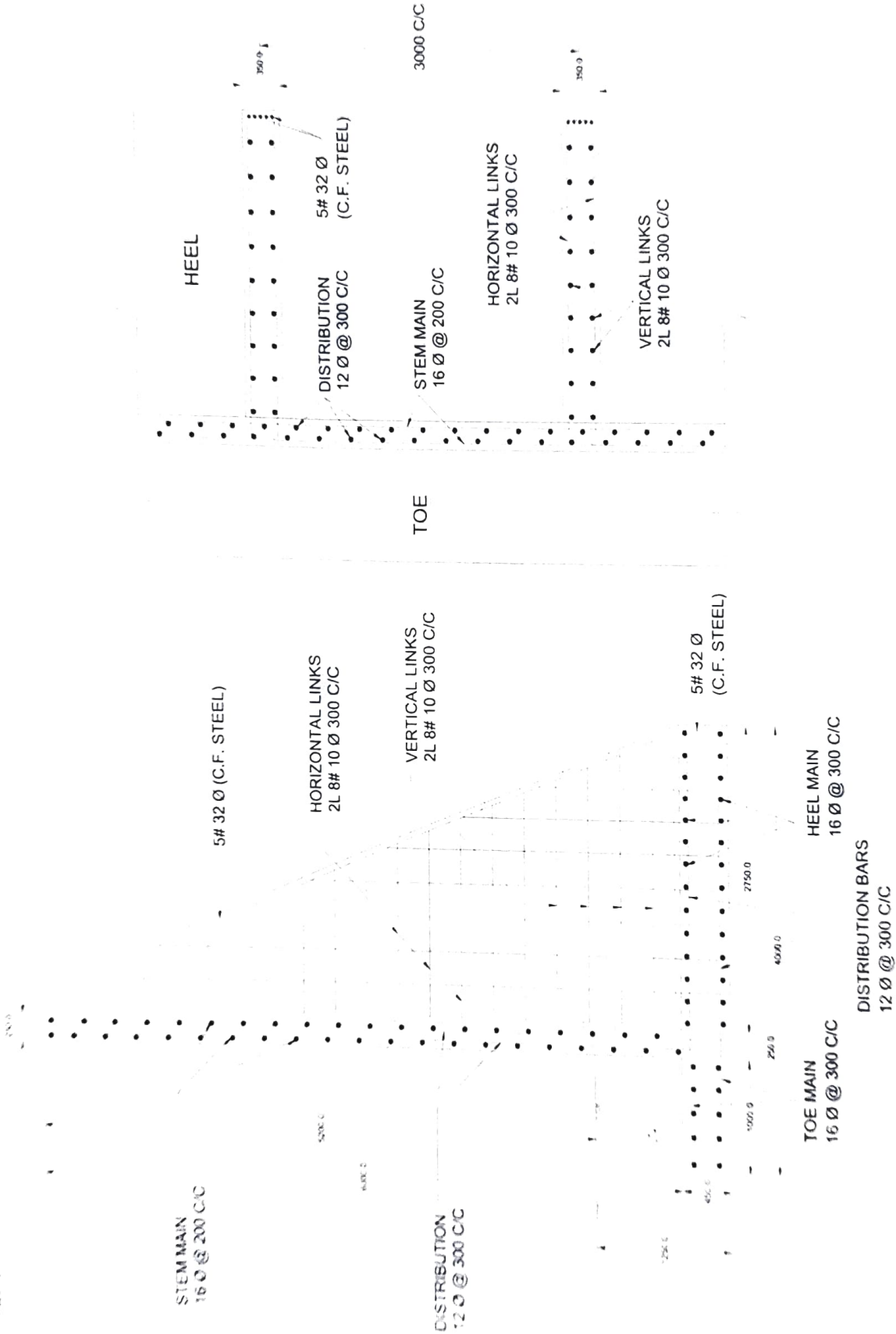
COLLEGE / INSTITUTION DRAWING NAME : CANTILEVER RETAINING WALL

: Atria Institute of Technology, Hebbala

NAME : U.S.N. : SEC.: BATCH :

NOTE : All dimensions are in mm SCALE : 1:1 FACULTY SIGN :

C:\work\118



NAME :
U.S.N.
SEC :
FACULTY SIGN :

COLLEGE :
Institution of Technology,
Madurai

INSTITUTION DRAWING NAME :
COUNTERFORT RETAINING WALL

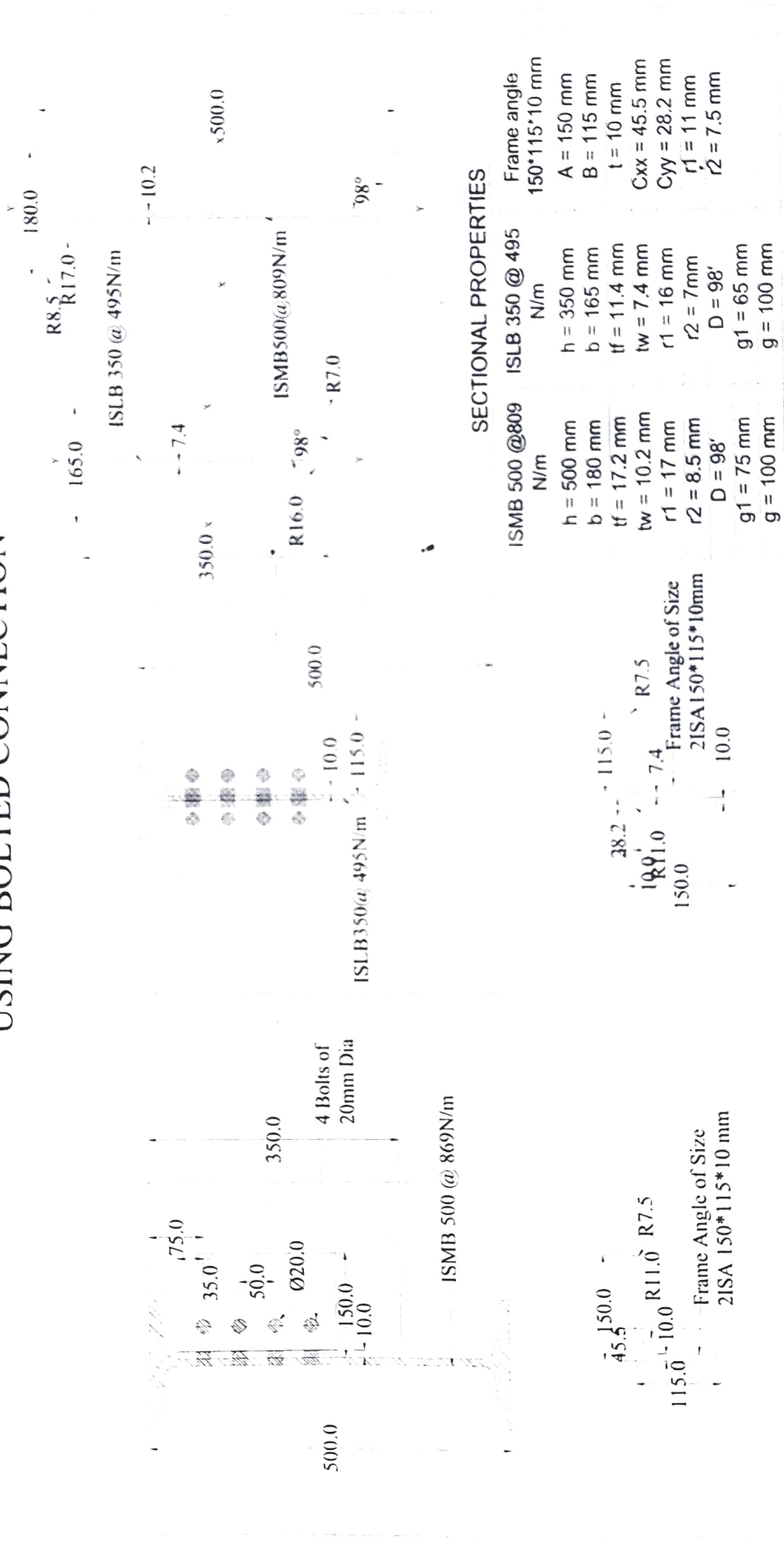
SCALE : 1:1

MODULE-2

Module -2 Detailing of Steel Structures	MARKS	RBT LEVEL
<ol style="list-style-type: none">1. Connections – Beam to beam, Beam to Column by Bolted and Welded Connections.2. Built-up Columns with lacings and battens3. Column bases and Gusseted bases with bolted and welded connections.4. Roof Truss – Welded and Bolted5. Beams with Bolted and Welded6. Gantry Girder	20 Hours	L1,L2,L3

Problem-1 Bolted Connection

BEAM TO BEAM CONNECTION (TWO FLANGES ARE AT SAME LEVEL)
USING BOLTED CONNECTION



SECTIONAL PROPERTIES

ISMB 500 @809	N/m	ISLB 350 @ 495	N/m	Frame angle
h = 500 mm	h = 350 mm	A = 150 mm		150°115°10 mm
b = 180 mm	b = 165 mm	B = 115 mm		
tf = 17.2 mm	tf = 11.4 mm	t = 10 mm		
tw = 10.2 mm	tw = 7.4 mm	Cxx = 45.5 mm		
r1 = 17 mm	r1 = 16 mm	Cyy = 28.2 mm		
r2 = 8.5 mm	r2 = 7 mm	r1 = 11 mm		
D = 98°	D = 98°	r2 = 7.5 mm		
g1 = 75 mm	g1 = 65 mm			
g = 100 mm	g = 100 mm			

COLLEGE / INSTITUTION : _____

Atria Institute of Technology, Hebbala

DRAWING NAME : Beam to Beam Connection (Flanges are at same level) Bolted Connection

U.S.N. : _____

SCALE : 1:1

SEC.: _____

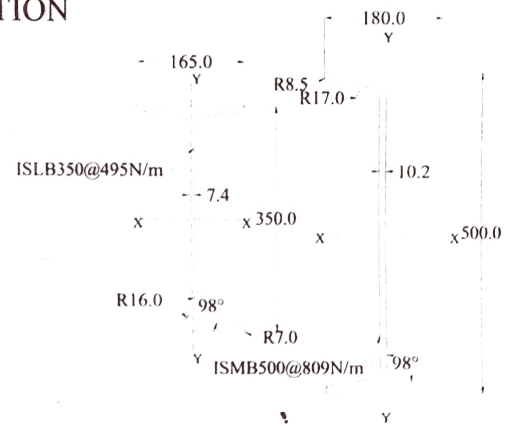
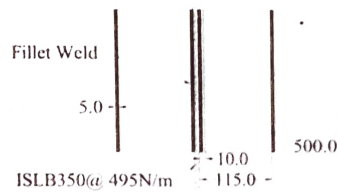
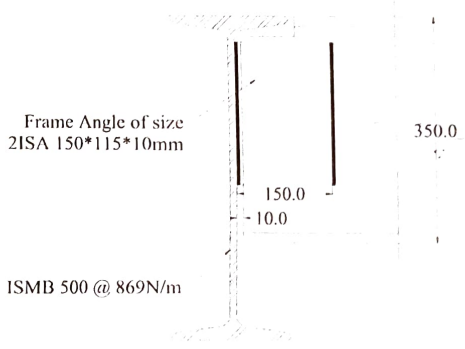
BATCH : _____

NOTE : All dimensions are in mm

FACULTY SIGN : _____

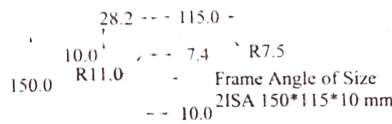
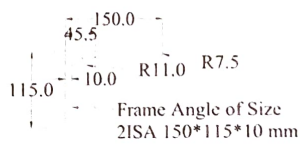
Problem-2 Welded Connection

BEAM TO BEAM CONNECTION (TWO FLANGES ARE AT SAME LEVEL)
USING WELDED CONNECTION



SECTIONAL PROPERTIES

ISMB 500 @ 809N/m	ISLB 350 @495 N/m	Frame angle 150*115*10 mm
h = 500 mm	h = 350 mm	A = 150 mm
b = 180 mm	b = 165 mm	B = 115 mm
tf = 17.2 mm	tf = 11.4 mm	t = 10 mm
tw = 10.2 mm	tw = 7.4 mm	Cxx = 45.5 mm
r1 = 17 mm	r1 = 16 mm	Cyy = 28.2 mm
r2 = 8.5 mm	r2 = 7mm	r1 = 11 mm
D = 98'	D = 98'	r2 = 7.5 mm
g1 = 75 mm	g1 = 65 mm	
g = 100 mm	g = 100 mm	



COLLEGE / INSTITUTION :

Atria Institute of Technology, Hebbala

DRAWING NAME : Beam to Beam
Connection (Flanges are at same level)
Welded Connection

NAME :

U.S.N. :

SEC.:

BATCH :

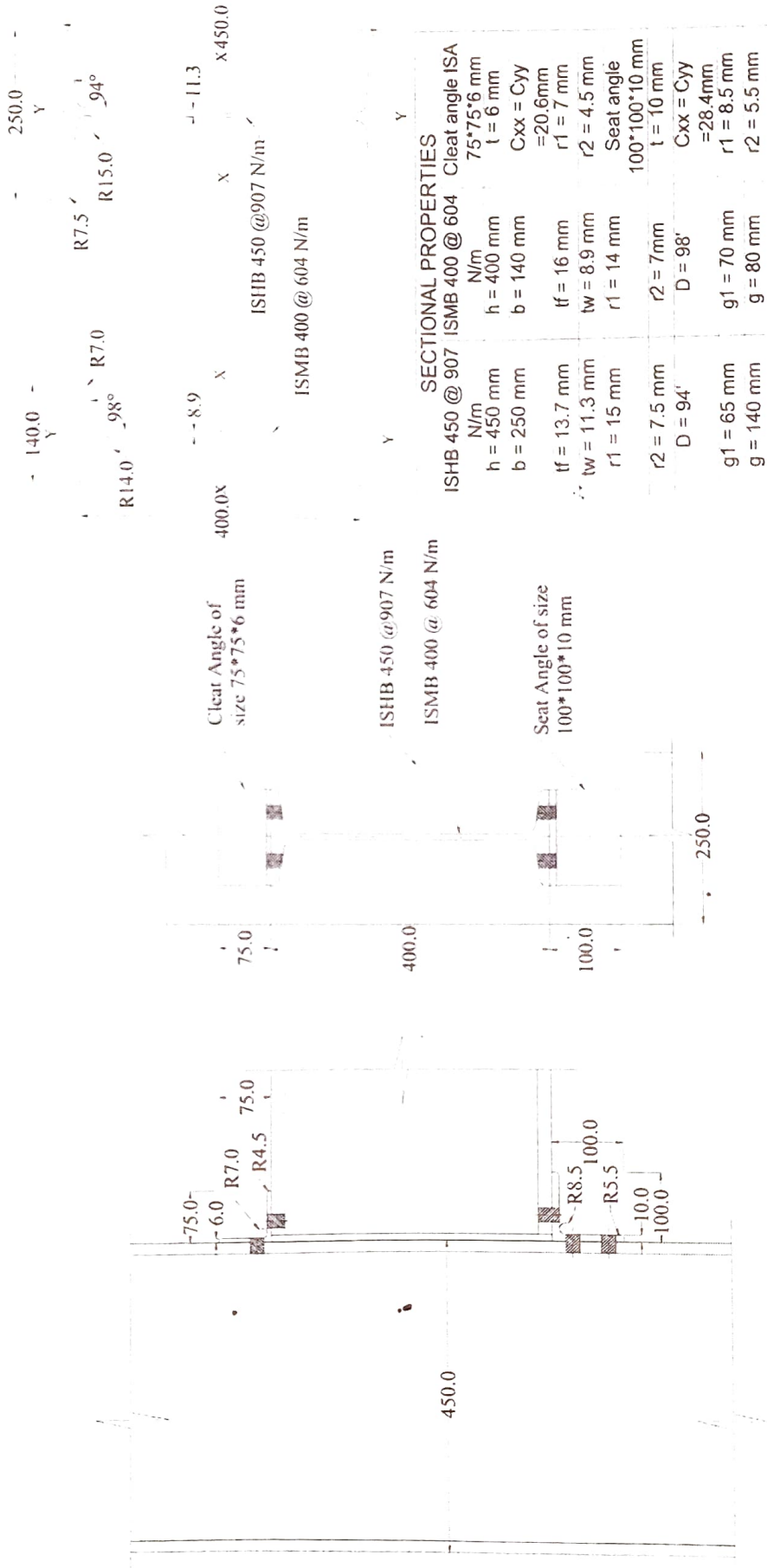
NOTE : All dimensions are in mm

SCALE : 1:1

FACULTY SIGN :

Problem 3

BEAM TO COLUMN CONNECTION (CONNECTED TO FLANGE OF COLUMN)
UNSTIFFENED SEATED CONNECTION (BOLTED CONNECTION)



COLLEGE / INSTITUTION :
Atria Institute of Technology, Hebbala

DRAWING NAME : Beam to Column
Connection (Connected to flange of
the Column)

NAME :
U.S.N. :

SEC.: BATCH :

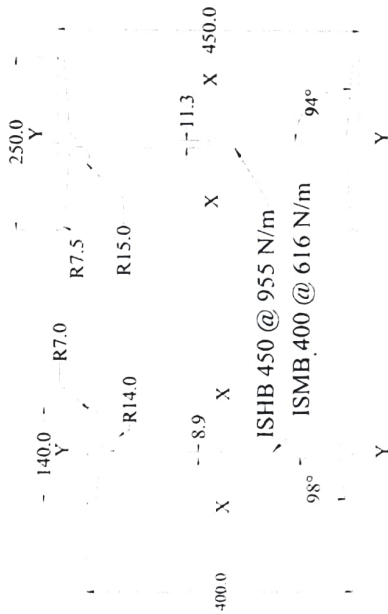
NOTE : All dimensions are in mm

SCALE : 1:1

FACULTY SIGN :

Problem 4

BEAM TO COLUMN CONNECTION (CONNECTED TO WEB OF COLUMN)
UNSTIFFENED SEATED CONNECTION (BOLTED CONNECTION)



COLUMN FLANGE
#2, 20mm Dia BOLTS

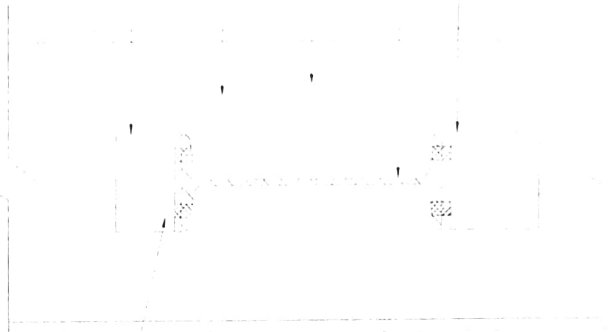
ISHB 450@ 95.5Kg/m

COLUMN WEB

ISMB 400@ 61.6Kg/m

SEAT ANGLE OF
SIZE 100*100*10mm

ISHB 450@ 95.5Kg/m



SIDE ELEVATION

SECTIONAL VIEW

SECTIONAL PROPERTIES	
ISHB 400 @ 616N/M	ISHB 450 @ 955N/M
h = 400 mm	Seat Angle ISA 115°150°15
b = 140 mm	Cleat Angle ISA 100°100°10
tf = 16 mm	A = 450 mm
tw = 8.9 mm	B = 250 mm
r1 = 14 mm	l = 15 mm
r2 = 7 mm	Cxx = 47.6 mm
D = 98°	Cyy = 30.2 mm
g = 80 mm	r1 = 11 mm
	r2 = 7.5 mm
	t = 10 mm
	Cxx = 28.5 mm
	Cyy = 28.5 mm
	r1 = 8.5 mm
	r2 = 5.5 mm

COLLEGE / INSTITUTION :
Atria Institute of Technology, Hebbala

DRAWING NAME : Beam to Column
Connection (Connected to Web of the
Column)

NAME :
U.S.N. :

SEC.: BATCH :

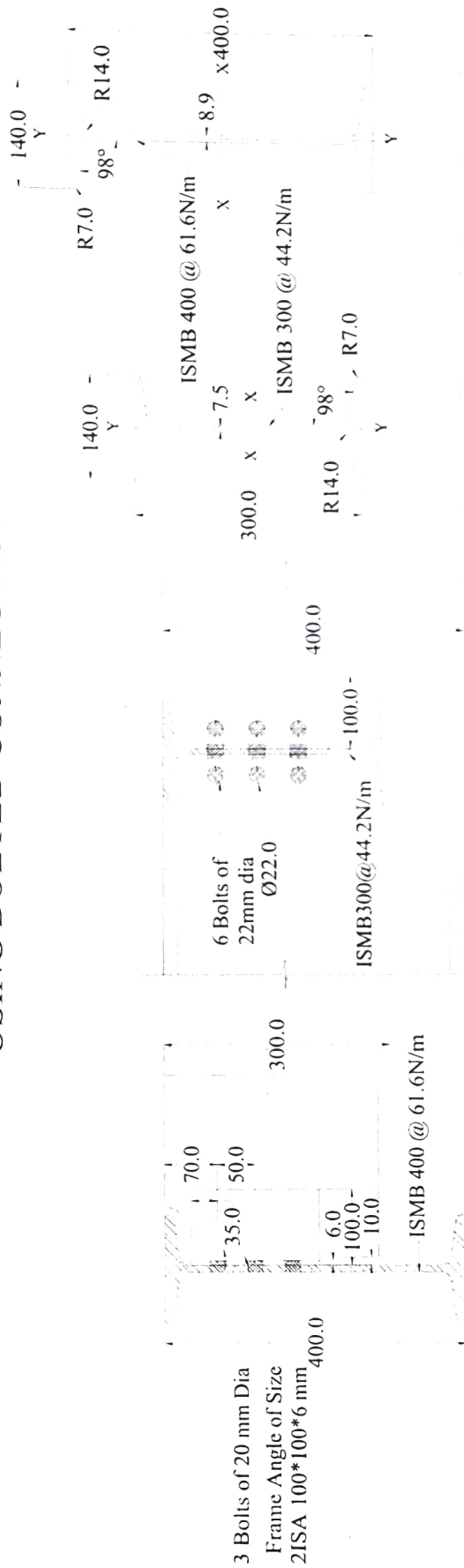
NOTE : All dimensions are in mm

SCALE : 1:1

FACULTY SIGN :

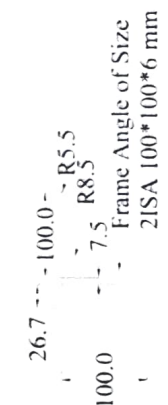
Problem -5

BEAM TO BEAM CONNECTION (TWO FLANGES ARE AT SAME LEVEL) USING BOLTED CONNECTION



SECTIONAL PROPERTIES

ISMB 300 @44.2	ISMB 400 @ 61.6
kg/m	kg/m
h = 300 mm	h = 400 mm
b = 140 mm	b = 140 mm
tf = 12.4 mm	tf = 16 mm
tw = 7.5 mm	tw = 8.9 mm
r1 = 14 mm	r1 = 14 mm
r2 = 7 mm	r2 = 7 mm
D = 98°	D = 98°
g1 = 65 mm	g1 = 70 mm
g = 80 mm	g = 80 mm
A = 100 mm	A = 100 mm
B = 100 mm	B = 100 mm
t = 6 mm	t = 6 mm
Cxx = 26.7 mm	Cxx = 26.7 mm
Cyy = 26.7 mm	Cyy = 26.7 mm
r1 = 8.5 mm	r1 = 8.5 mm
r2 = 5.5 mm	r2 = 5.5 mm

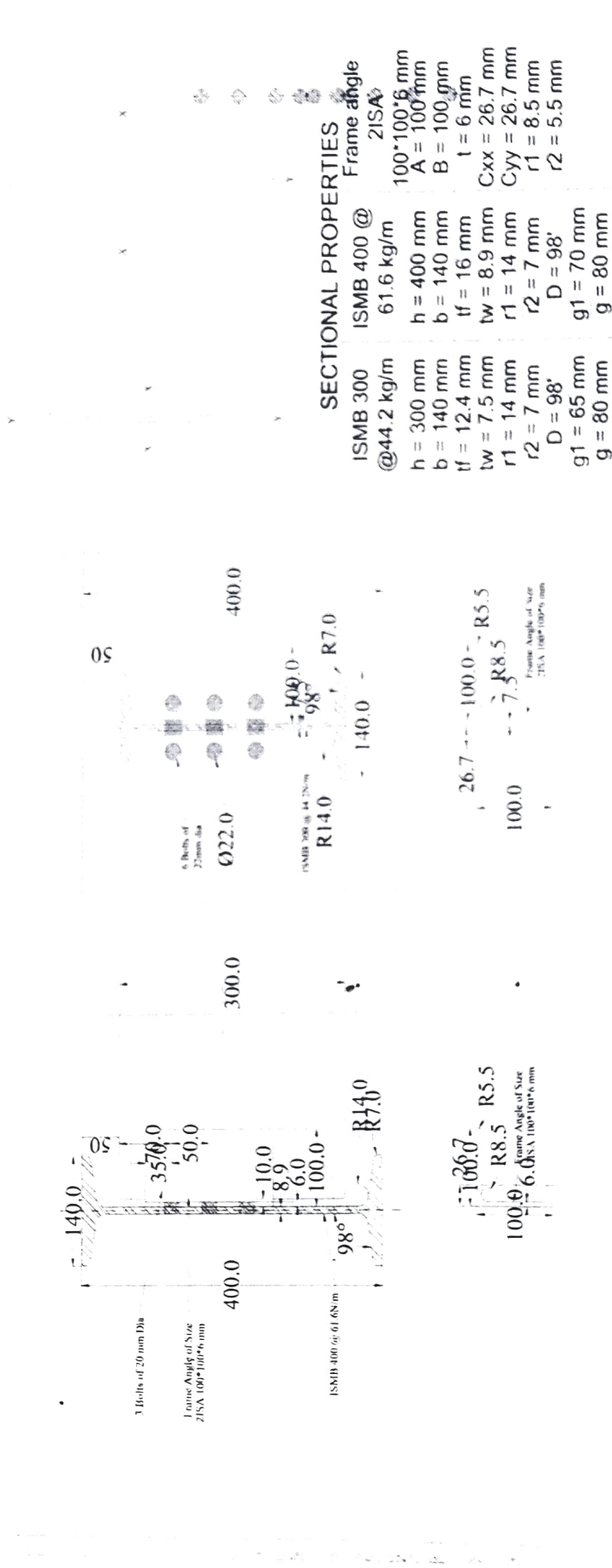


COLLEGE / INSTITUTION : **Atria Institute of Technology, Hebbala**
 DRAWING NAME : **Beam to Beam Connection (Flanges are at same level) Bolted Connection**
 U.S.N. :
 SEC.:
 BATCH :

NOTE : All dimensions are in mm
 SCALE : 1:1
 FACULTY SIGN :

Problem -6

BEAM TO BEAM CONNECTION (FLANGES ARE AT DIFFERENT LEVEL)
USING BOLTED CONNECTION



COLLEGE / INSTITUTION : Atria Institute of Technology, Hebbala

DRAWING NAME : Beam to Beam Connection (Flanges are at same level)

NAME : U.S.N.

SCALE : 1:1

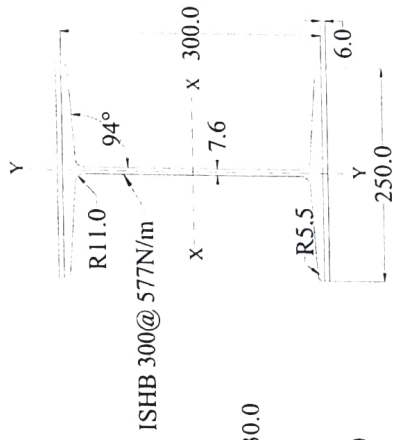
SEC.: Bolted Connection

BATCH :

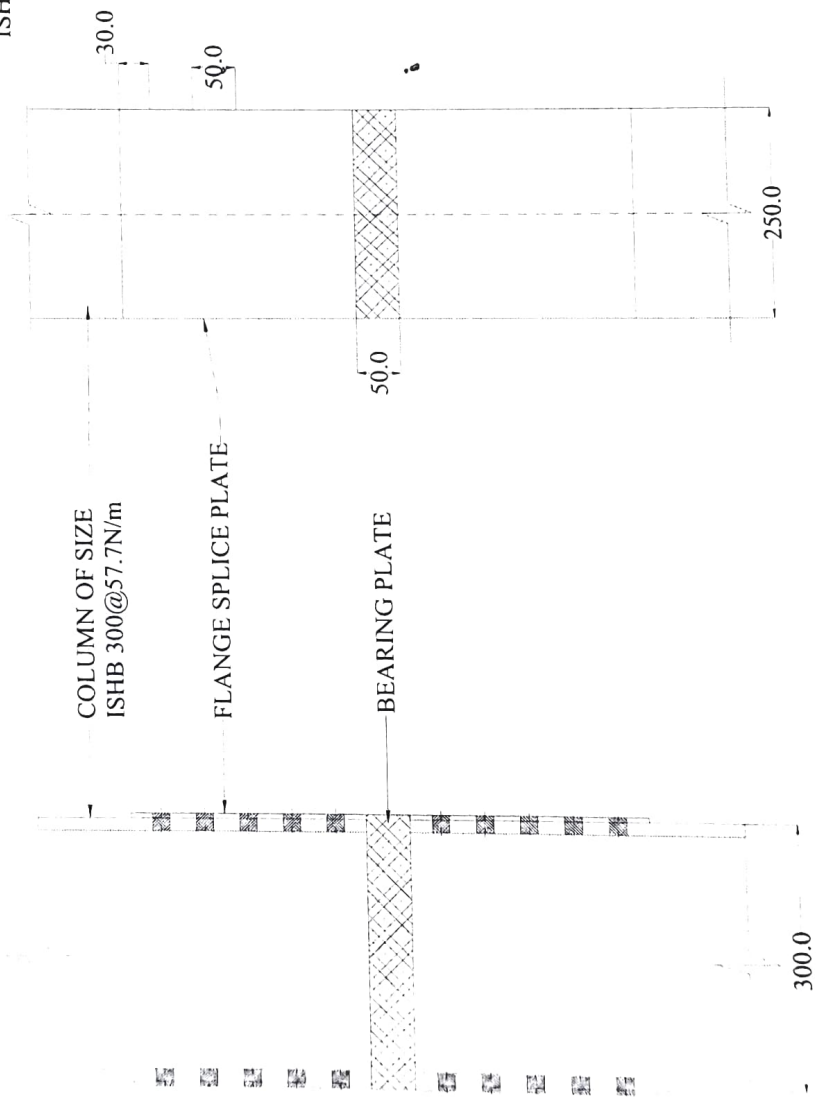
NOTE : All dimensions are in mm

FACULTY SIGN :

COLUMN TO COLUMN CONNECTION OF SAME SIZES USING SPLICE PLATE



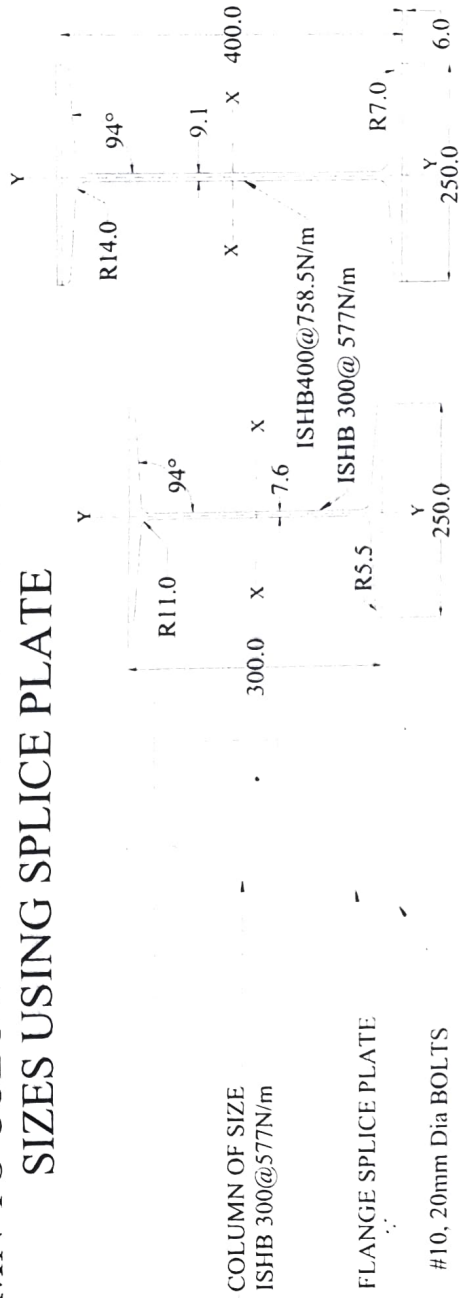
SECTIONAL PROPERTIES	
ISHB 300@ 577N/m	
h =	300mm
b =	250mm
tf =	10.6mm
tw =	7.6mm
r1 =	11mm
r2 =	5.5mm
D =	94°
g =	140mm
g1 =	60mm



COLLEGE / INSTITUTION :	NAME :
Atria Institute of Technology, Hebbala	U.S.N. :
	SEC.: ' BATCH :'
NOTE : All dimensions are in mm	FACULTY SIGN :
	SCALE : 1:1

Problem -8

COLUMN TO COLUMN CONNECTION OF DIFFERENT SIZES USING SPLICE PLATE



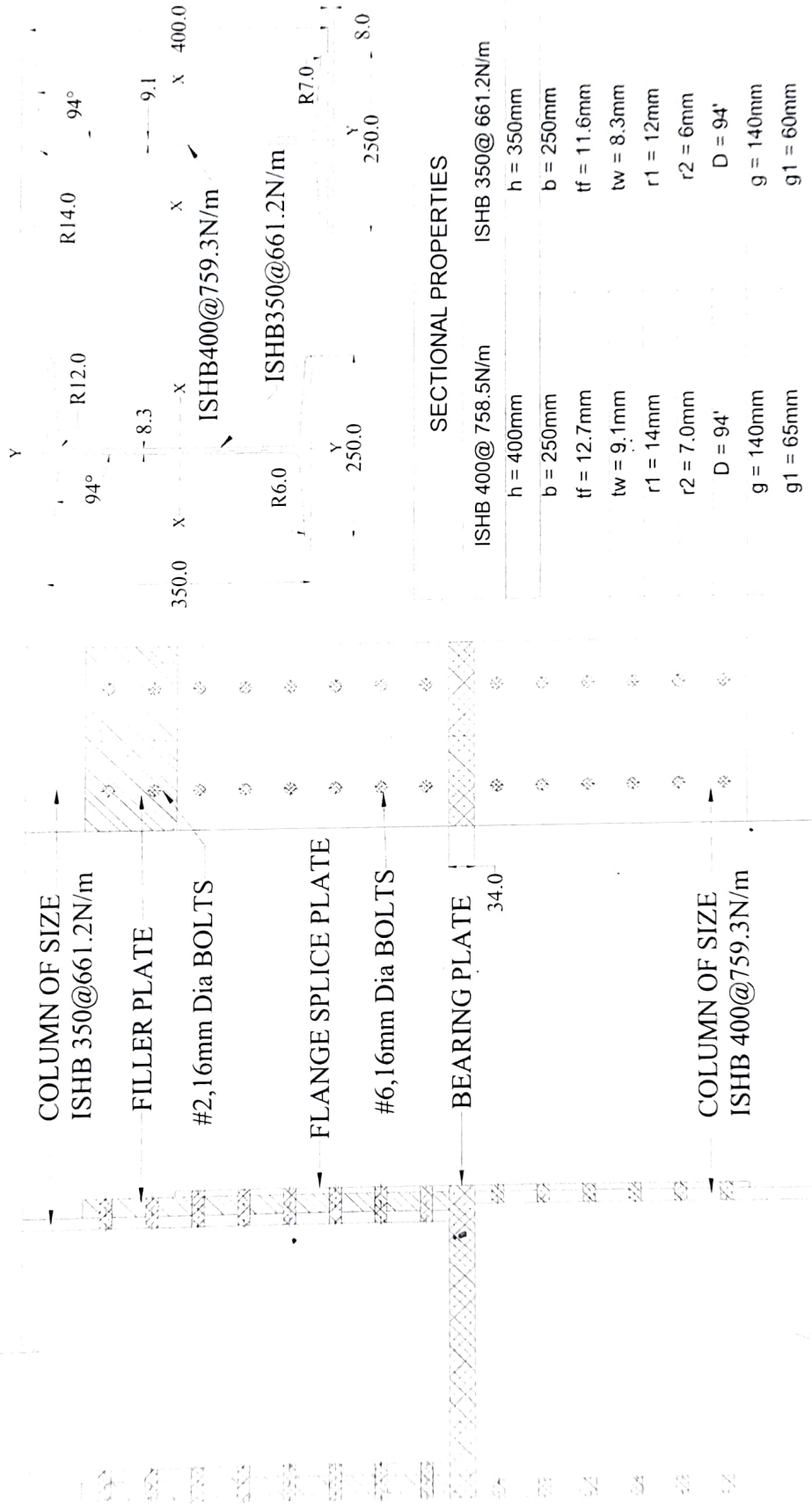
SECTIONAL PROPERTIES

SECTION	SECTIONAL PROPERTIES
COLUMN OF SIZE ISHB 400@758.5N/m	ISHB 400@758.5N/m h = 400mm b = 250mm tf = 12.7mm tw = 9.1mm r1 = 14mm r2 = 7.0mm D = 94' g = 140mm g1 = 65mm
COLUMN OF SIZE ISHB 300@577N/m	ISHB 300@577N/m h = 300mm b = 250mm tf = 10.6mm tw = 7.6mm r1 = 11mm r2 = 5.5mm D = 94' g = 140mm g1 = 60mm

COLLEGE / INSTITUTION : Atria Institute of Technology, Hebbala
 DRAWING NAME : Column to Column Connection of different sizes using Splice Plate
 NAME : U.S.N.
 SCALE : 1:1
 SEC.:
 BATCH :
 FACULTY SIGN :

NOTE : All dimensions are in mm

COLUMN TO COLUMN CONNECTION OF DIFFERENT SIZES USING SPLICE PLATE, FILLER PLATE, BEARING PLATE



COLLEGE / INSTITUTION : Atria Institute of Technology, Hebbala

DRAWING NAME : Column to Column Connection of different sizes using Splice Plate, Filler plate

NAME : U.S.N.

SEC.: 'B'

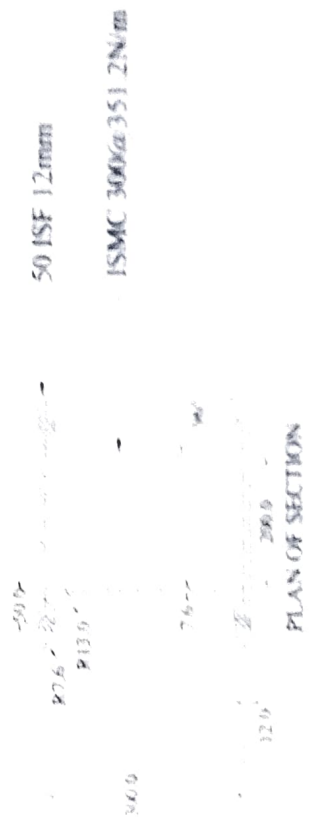
BATCH :

SCALE : 1:1

FACULTY SIGN :

NOTE : All dimensions are in mm

BUILT-UP COLUMN WITH SINGLE LACING SYSTEM USING BOLTED CONNECTION



PLAN OF SECTION

SECTIONAL PROPERTIES

ISMC 300 (a35) 2N/m
$A = 3800 \text{ mm}^2$
$S_x = 50000 \text{ mm}^3$
$I_x = 750000 \text{ mm}^4$
$I_y = 70000 \text{ mm}^4$
$r_x = 120 \text{ mm}$
$r_y = 42 \text{ mm}$
$Z_x = 1000 \text{ mm}^3$
$Z_y = 100 \text{ mm}^3$
$S_y = 50000 \text{ mm}^3$
$I_z = 80000 \text{ mm}^4$

16mm Dia BOLT

SINGLE LACING FLAT

FRONT ELEVATION SHOWING AT LEAST 4 LACINGS

COLLEGE INSTITUTE
 Anna Institute of Technology,
 Hebbala

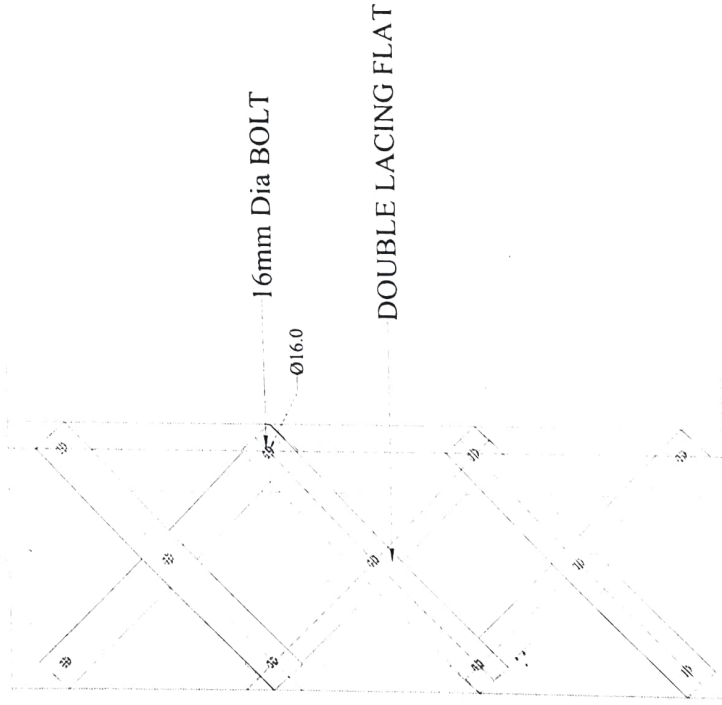
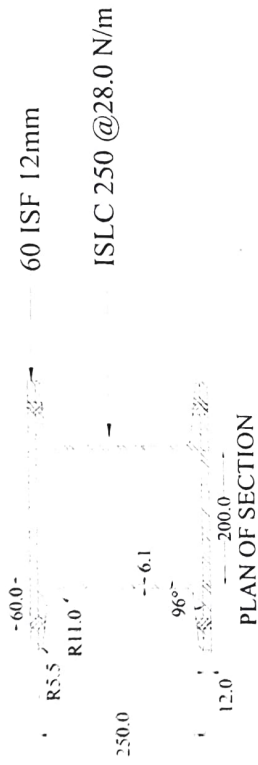
DRAWING NAME : Built-up
 Column with Single Lacing System
 using Bolted Connection

NAME :
 U.S.N :
 SEC : B BATCH
 FACULTY SIGN :

NOTE : All dimensions are in mm

SCALE : 1:1

BUILT-UP COLUMN WITH DOUBLE LACING SYSTEM USING BOLTED CONNECTION



SECTIONAL PROPERTIES	
ISMC 250 @280.0 N/m	
h =	250mm
b =	100mm
tf =	10.7mm
tw =	6.1mm
r1 =	11mm
r2 =	5.5mm
D =	96'
g =	60mm
g' =	60mm

FRONT ELEVATION

COLLEGE / INSTITUTION :
 Atria Institute of Technology,
 Hebbala

DRAWING NAME : Built-up
 Column with Double Lacing System
 using Bolted Connection

NAME :
 U.S.N. :
 SEC.:
 BATCH :

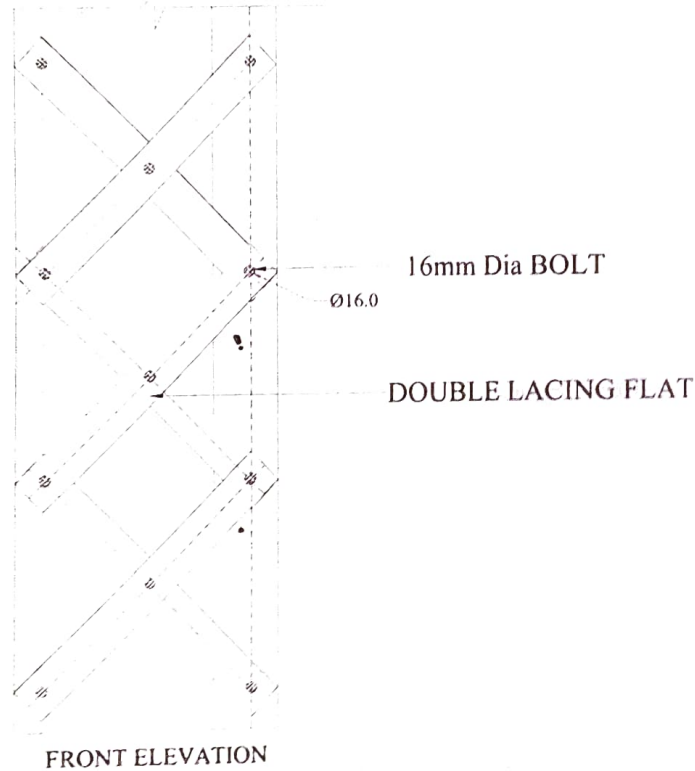
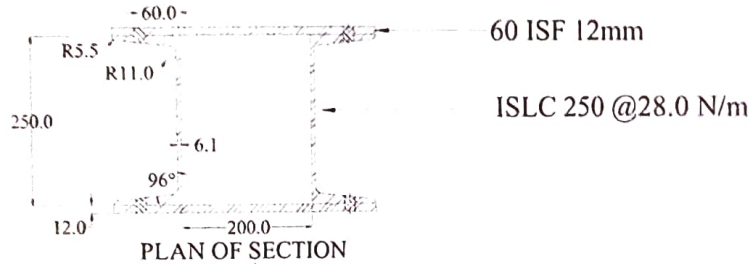
NOTE : All dimensions are in mm

SCALE : 1:1

FACULTY SIGN :

Problem -11

BUILT-UP COLUMN WITH DOUBLE LACING SYSTEM USING BOLTED CONNECTION



SECTIONAL PROPERTIES

ISMC 250 @ 280.0 N/m

$h = 250\text{mm}$

$b = 100\text{mm}$

$t_f = 10.7\text{mm}$

$t_w = 6.1\text{mm}$

$r_1 = 11\text{mm}$

$r_2 = 5.5\text{mm}$

$D = 96^\circ$

$g = 60\text{mm}$

$g' = 60\text{mm}$

COLLEGE / INSTITUTION :
Atria Institute of Technology,
Hebbala

DRAWING NAME : Built-up
Column with Double Lacing System
using Bolted Connection

NAME :

U.S.N. :

SEC. :

BATCH :

FACULTY SIGN :

NOTE : All dimensions are in mm

SCALE : 1:1

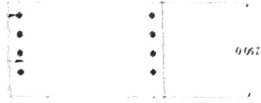
BATTENED SYSTEM OF COLUMN USING BOLTED CONNECTION

BUILT-UP COLUMN OF
4ISA 90*90*8mm
BATTENS OF SIZE 250*6mm



END BATTEN OF 250*6mm

20mm Dia BOLTS



INTERMEDIATE BATTENS OF 150*6mm



SECTIONAL PROPERTIES

ISA 90*90*8mm

A = 90 mm

B = 90 mm

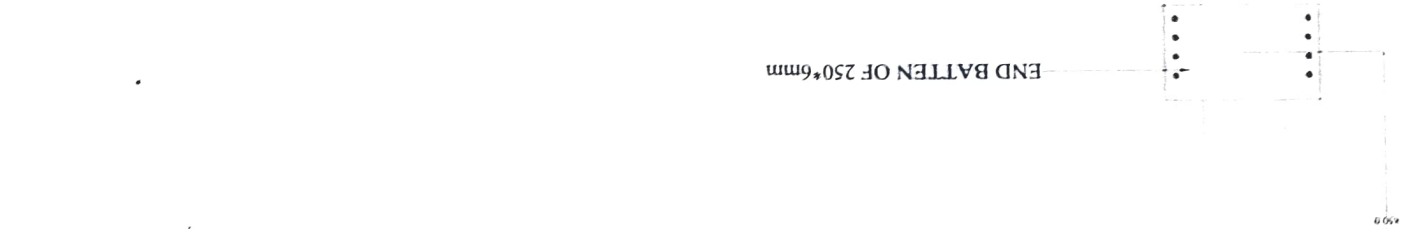
t = 8 mm

Cxx = Cyy = 251 mm

IZZ = IYY = 54.9 mm

r1 = 8.5 mm

r2 = 5.5 mm



COLLEGE / INSTITUTION : Atria
Institute of Technology, Hebbala

DRAWING NAME : Battered System of
column using Bolted Connection

NAME :
U.S.N. :

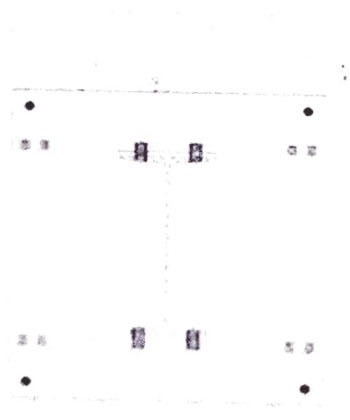
SEC.:
BATCH :

FACULTY SIGN :

SCALE : 1:1

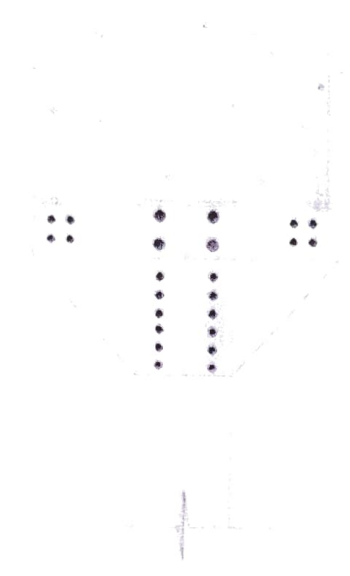
NOTE : All dimensions are in mm

GUSSETED BASE



PLAN OF COLUMN BASE

- COLUMN OF SIZE: ISHB-450@ 855.4N/m
- COVER PLATE OF SECTION 250*12mm
- GUSSET PLATE OF 12mm THICKNESS
- #6, 20mm Dia BOLTS
- #4, 30mm Dia BOLTS
- GUSSET ANGLE OF SIZE ISA 150*150*12mm
- BASE PLATE OF SIZE 800*800*20mm
- #4, ANCHORAGE BOLTS OF SIZE 25MM Dia
- CONCRETE BASE OF SIZE 1000*1000*500MM



SIDE VIEW OF COLUMN BASE



ELEVATION OF COLUMN BASE

SECTIONAL PROPERTIES	
ISHB 450 @ 855.4N/m	ISMB-450@ 855.4N/m
h = 450 mm	h = 450 mm
b = 250 mm	b = 250 mm
t _f = 13.7 mm	t _f = 13 mm
t _w = 11.3 mm	t _w = 11.3 mm
r _x = 13 mm	r _x = 12 mm
r _y = 73 mm	r _y = 68 mm
I _x = 11.3 mm	I _x = 11.3 mm
I _y = 11.3 mm	I _y = 11.3 mm
Z _x = 11.3 mm	Z _x = 11.3 mm
Z _y = 11.3 mm	Z _y = 11.3 mm
W _x = 11.3 mm	W _x = 11.3 mm
W _y = 11.3 mm	W _y = 11.3 mm

COLLEGE / INSTITUTION : Atria Institute of Technology, Hebbala

DRAWING NAME : Gussetted Base

NAME : _____

U.S.N. : _____

SEC. : _____

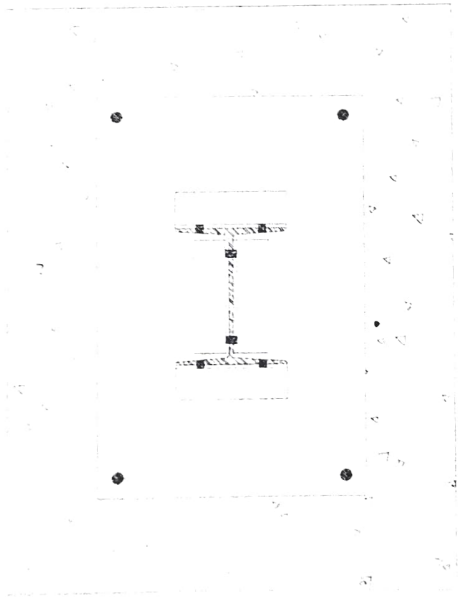
BATCH : _____

FACULTY SIGN : _____

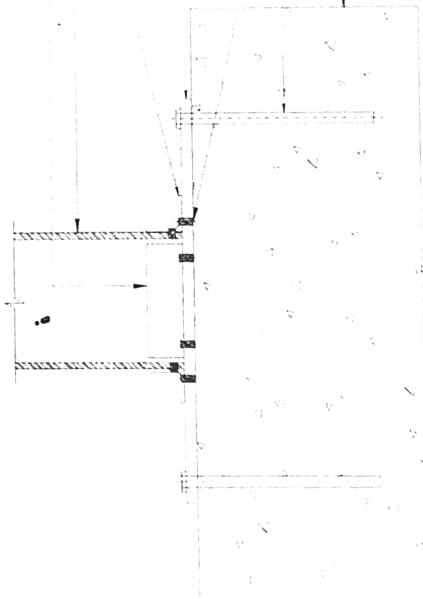
SCALE : 1:1

NOTE : All dimensions are in mm

COLUMN BASE



PLAN OF COLUMN BASE



ELEVATION OF COLUMN BASE

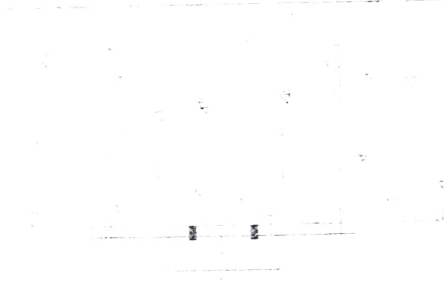
WEB CLEAT ANGLE
COLUMN BASE
— FLANGE CLEAT ANGLE

BASE PLATE OF SIZE:
900*600*25mm

ANGLE PLATE BOLTS
OF 16mm Dia

ANCHORAGE BOLT
OF SIZE 25mm Dia

CONCRETE BASE OF
SIZE 1100*800*500mm



SIDE VIEW OF COLUMN BASE

SECTIONAL PROPERTIES

ISRB. 300(B) 6.1.06kg/m

h = 300mm
b = 250mm
t_w = 10.6mm
t_f = 9.4mm
r₁ = 11mm
r₂ = 5.5mm
D = 94°
g = 140mm
g₁ = 60mm

WEB & FLANGE CLEAT ANGLE

A = 80mm
B = 80mm
L = 8mm
C_{xx} = 22.7mm⁴
C_{yy} = 22.7mm⁴
r₁ = 8.0mm
r₂ = 4.5mm

NAME : _____

U.S.N. : _____

SEC.: ' _____ BATCH: ' _____

FACULTY SIGN : _____

COLLEGE / INSTITUTION : _____

Atria Institute of Technology, Hebbala

DRAWING NAME : _____

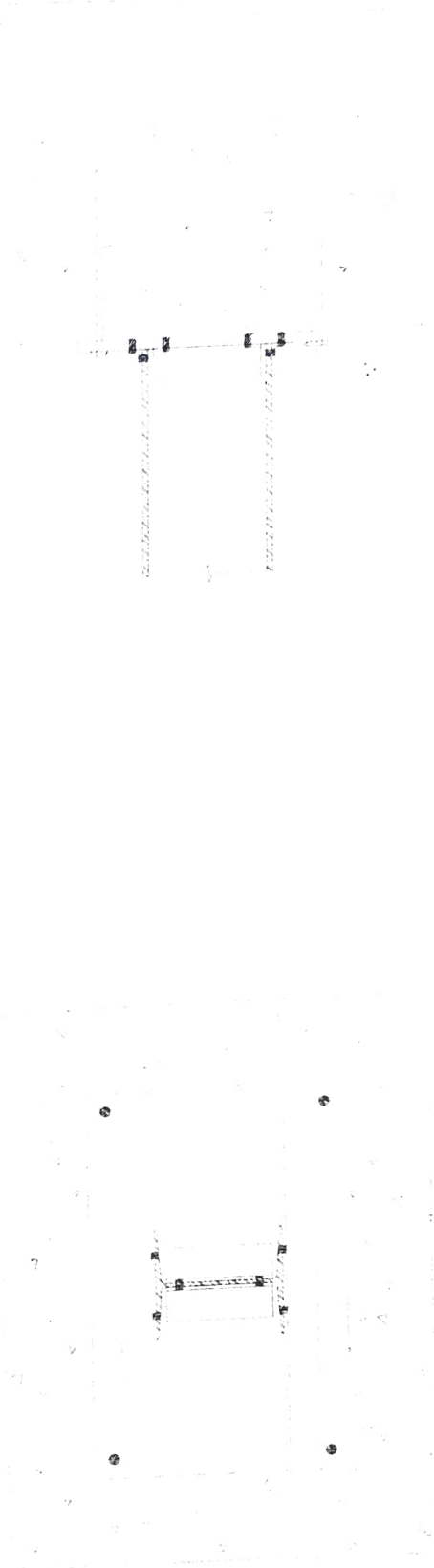
Column Base

NOTE : All dimensions are in mm

SCALE : _____ : 1:1

PROBLEM-16

COLUMN BASE



PLAN OF COLUMN BASE

SIDE VIEW OF COLUMN BASE

COLUMN OF SIZE
ISHB 300 @ 63.0Kg/m

FLANGE CLEAT ANGLE
COLUMN BASE OF
SIZE 900*600*25MM

#2, 16MM Dia BOLTS

#4, ANCHORAGE BOLTS
OF SIZE 25MM Dia

CONCRETE BASE OF
SIZE 1100*800*500MM

SECTIONAL PROPERTIES

ISHB 300 @ 63.0Kg/m

h = 300mm

b = 250mm

tf = 10.6mm

tw = 9.4mm

rl = 11mm

r2 = 5.5mm

D = 94

g = 140mm

gl = 60mm

WEB & FLANGE CLEAT ANGLE

A = 80mm

D = 80mm

l = 8mm

Cxx = 27.7mm

Cyy = 27.7mm

r1 = 8.0mm

r2 = 4.5mm

ELEVATION OF COLUMN BASE

COLLEGE / INSTITUTION : Atria Institute of Technology, Hebbala

DRAWING NAME : Column Base

NAME : _____

U.S.N. : _____

SEC. : _____

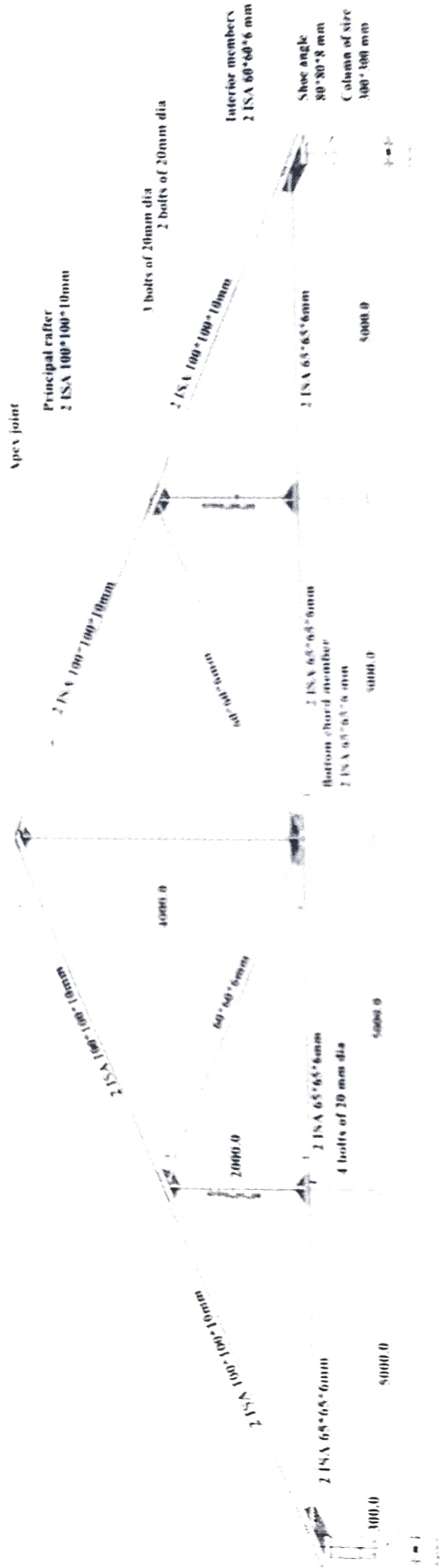
BATCH : _____

FACULTY SIGN : _____

NOTE : All dimensions are in mm

SCALE : 1:1

ROOF TRUSS WITH BOLTED CONNECTION



SECTIONAL PROPERTIES

TOP CHORD MEMBER	BOTTOM CHORD MEMBER	INTERIOR MEMBER
2 ISA 100*100*10 mm	2 ISA 65*65*6 mm	2 ISA 60*60*6 mm
A = 100mm	A = 65mm	A = 60 mm
B = 100mm	B = 65 mm	B = 60 mm
t = 10mm	t = 6mm	t = 6 mm
C _{xx} = 28.4mm	C _{xx} = 18.1 mm	C _{xx} = 15.7 mm
C _{yy} = 28.4mm	C _{yy} = 18.1 mm	C _{yy} = 15.7 mm
r _x = 8.5mm	r _x = 6.5 mm	r _x = 6.5 mm
r _y = 5.5	r _y = 4.5 mm	r _y = 4.5mm

COLLEGE / INSTITUTION : _____ DRAWING NAME : Roof truss with Bolted Connection

Atria Institute of Technology, Hebbala

NAME : _____ U.S.N. : _____

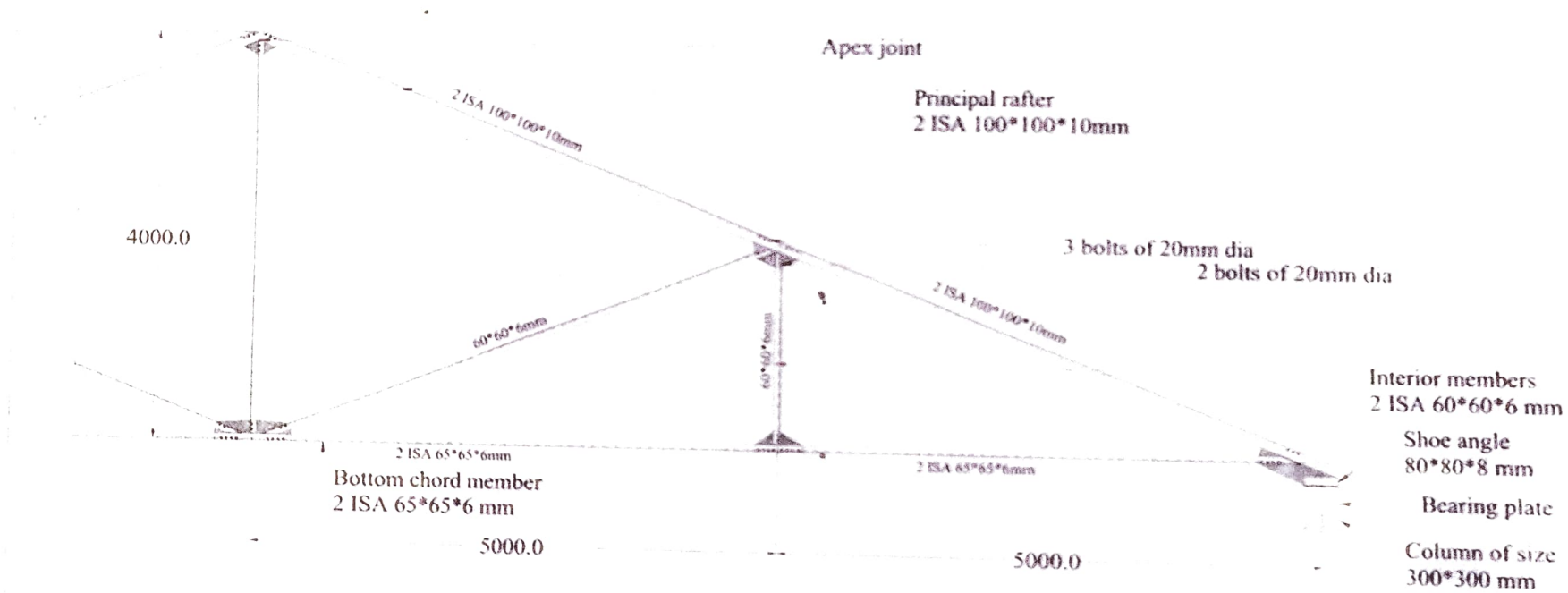
SEC : _____ BATCH : _____

SCALE : _____ FACULTY SIGN : _____

NOTE : All dimensions are in mm

Problem -18

ELEVATION OF ROOF TRUSS MORE THAN HALF SPAN



COLLEGE / INSTITUTION :
Atria Institute of Technology, Hebbala

DRAWING NAME : Elevation of Roof Truss
more than half span

NAME :

U.S.N. : 1

SEC.:

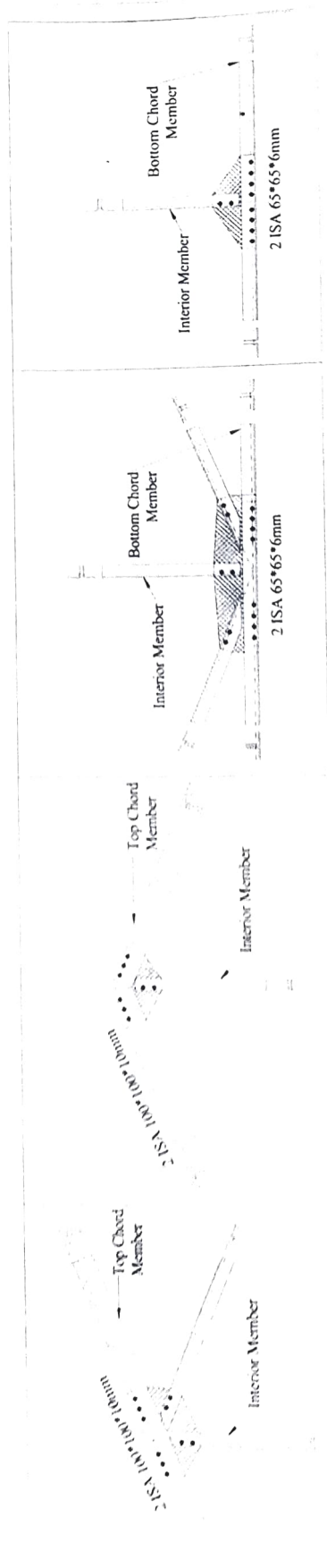
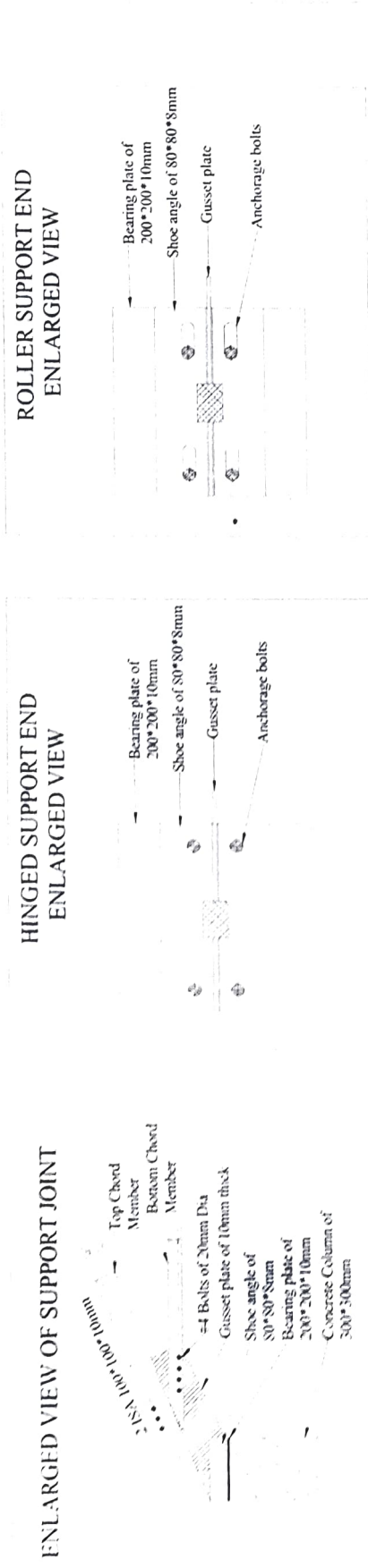
BATCH :

NOTE : All dimensions are in mm

SCALE : 1:5

FACULTY SIGN :

SECTIONAL VIEW OF SUPPORT AND SUPPORT JOINTS OF ROOF TRUSS



COLLEGE / INSTITUTION : Atria Institute of Technology, Hebbala

DRAWING NAME : Sectional view of Support and Support joints of Roof Truss

NAME : U.S.N. :

SEC.: BATCH :

NOTE : All dimensions are in mm

SCALE : 1:5

FACULTY SIGN :