Bentley <sup>-</sup>	Job No.	Sheet No.		Rev
Software licensed to Connected User: Ganesh Dhivar		1		
<sup>Job Title</sup> Ganesh Dhivar	Part	f	Re	
Client	B y	Date 05-A	Aug-25	Chd
File Practice Problem.std	Date Time 05-Aug-2025 11:28			

### **Job** Information

	Engineer	Checked	Approved
Name:			
Date:	05-Aug-25		

Comments:	
Structure Type:	SPACE FRAME

#### Geometry

Entity Type	Count	Highest
Nodes	10	10
Analytical Members	17	17

#### **Load Cases**

Load Case Type	Count
Primary	1

Included in this printout are data for:

All	The Whole Structure

#### **Load Case Table**

Included in this printout are results for load cases:

L/C	Туре	Name
1	Primary	LOAD CASE 1

#### **Nodes**

Node	X	Y	Z	
	(m)	(m)	(m)	
1	0.000	0.000	0.000	
2	0.000	3.000	0.000	
3	3.000	3.000	0.000	
4	3.000	0.000	0.000	
5	6.000	0.000	0.000	
6	6.000	3.000	0.000	
7	9.000	0.000	0.000	
8	12.000	0.000	0.000	
9	9.000	3.000	0.000	
10	12.000	3.000	0.000	

Bentley <sup>-</sup>	Job No.	Sheet No.	Rev
Software licensed to Connected User: Ganesh Dhivar		2	
<sup>Job Title</sup> Ganesh Dhivar	Part	Re f	
Client	B y	Date 05-Aug-25	Chd
File Practice Problem.std	Date Time 05-Au	g-2025 11:28	

### **Beams**

Beam	Node A	Node B	Length	Property	β
			(m)		(rad)
1	1	2	3.000	1	0.000
2	2	3	3.000	1	0.000
3	3	4	3.000	1	0.000
4	4	1	3.000	1	0.000
5	1	3	4.243	1	0.000
6	3	5	4.243	1	0.000
7	5	6	3.000	1	0.000
8	6	3	3.000	1	0.000
9	4	5	3.000	1	0.000
10	5	7	3.000	1	0.000
11	7	8	3.000	1	0.000
12	8	9	4.243	1	0.000
13	9	5	4.243	1	0.000
14	8	10	3.000	1	0.000
15	10	9	3.000	1	0.000
16	9	6	3.000	1	0.000
17	7	9	3.000	1	0.000

## **Sections**

Prop	Name	Area	Іуу	Izz	J	Material	Source
		(cm2)	(cm4)	(cm4)	(cm4)		
1	ISA 60x60x10	11.000	55.917	15.008	3.833	STEEL	Standard

## **Materials**

ı	Mat	Name	E	v	Density	α
ı			(kN/mm2)		(kg/m3)	(/°C)
	1	STEEL	205.000	0.300	7,833.409	0.000

## **Supports**

Node	X	Y	Z	rX	rY	rZ
	(kN/mm)	(kN/mm)	(kN/mm)	(kN-m/deg)	(kN-m/deg)	(kN-m/deg)
1	Fixed	Fixed	Fixed	-	-	-
8	-	Fixed	-	-	-	-

Bentley <sup>-</sup>	Job No.	Sheet No.	Rev
Software licensed to Connected User: Ganesh Dhivar		3	
Job Title Ganesh Dhivar	Part	Re f	
Client	B y	Date 05-Aug-25	Chd
File Practice Problem.std	Date Time 05-Aug-2025 11:28		

# **Basic Load Cases**

### **Primary Load Cases**

Number	Name	Туре		
1	LOAD CASE 1	Dead		

## **Nodal Loads**

L/C	Node	FX	FY	FZ	MX	MY	MZ	Туре
		(kN)	(kN)	(kN)	(kN-m)	(kN-m)	(kN-m)	
1	2	20.000	0.000	0.000	0.000	0.000	0.000	

## **Static Check**

L/C		FX	FY	FZ	МХ	MY	MZ
		(kN)	(kN)	(kN)	(kN-m)	(kN-m)	(kN-m)
1	Loads	20.000	0.000	0.000	0.000	0.000	-60.000
	Reactions	-20.000	0.000	0.000	0.000	0.000	60.000
	Differenc e	0.000	0.000	0.000	0.000	0.000	0.000

## **Node Displacements**

Node	L/C	X	Y	Z	Result	rX	rY	rZ
		(mm)	(mm)	(mm)	ant (mm)	(rad)	(rad)	(rad)
1	1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2	1	0.920	0.000	0.000	0.920	0.000	0.000	0.000
3	1	0.654	-0.466	0.000	0.803	0.000	0.000	0.000
4	1	0.200	-0.466	0.000	0.507	0.000	0.000	0.000
5	1	0.399	-0.532	0.000	0.665	0.000	0.000	0.000
6	1	0.521	-0.532	0.000	0.744	0.000	0.000	0.000
7	1	0.466	-0.333	0.000	0.572	0.000	0.000	0.000
8	1	0.532	0.000	0.000	0.532	0.000	0.000	0.000
9	1	0.388	-0.333	0.000	0.511	0.000	0.000	0.000
10	1	0.388	0.000	0.000	0.388	0.000	0.000	0.000

Bentley <sup>-</sup>	Job No.	Sheet No.	Rev
Software licensed to Connected User: Ganesh Dhivar		4	
<sup>Job Title</sup> Ganesh Dhivar	Part	Re f	
Client	B y	Date 05-Aug-25	Chd
File Practice Problem.std	Date Time 05-Aug-2025 11:28		

### **Reactions**

		Horizontal	Vertical	Horizontal			
Node	L/C	FX	FY	FZ	MX	MY	MZ
		(kN)	(kN)	(kN)	(kN-m)	(kN-m)	(kN-m)
1	1	-20.000	-5.000	0.000	0.000	0.000	0.000
8	1	0.000	5.000	0.000	0.000	0.000	0.000

## **Reaction Summary**

			Horizont al	Vertical	Horizont al		Moment		
	Node	L/C	FX	FY	FZ	МХ	MY	MZ	
			(kN)	(kN)	(kN)	(kN-m)	(kN-m)	(kN-m)	
Max FX	8	1	0.000	5.000	0.000	0.000	0.000	0.000	
Min FX	1	1	-20.000	-5.000	0.000	0.000	0.000	0.000	
Max FY	8	1	0.000	5.000	0.000	0.000	0.000	0.000	
Min FY	1	1	-20.000	-5.000	0.000	0.000	0.000	0.000	
Max FZ	1	1	-20.000	-5.000	0.000	0.000	0.000	0.000	
Min FZ	1	1	-20.000	-5.000	0.000	0.000	0.000	0.000	
Max MX	1	1	-20.000	-5.000	0.000	0.000	0.000	0.000	
Min MX	1	1	-20.000	-5.000	0.000	0.000	0.000	0.000	
Max MY	1	1	-20.000	-5.000	0.000	0.000	0.000	0.000	
Min MY	1	1	-20.000	-5.000	0.000	0.000	0.000	0.000	
Max MZ	1	1	-20.000	-5.000	0.000	0.000	0.000	0.000	
Min MZ	1	1	-20.000	-5.000	0.000	0.000	0.000	0.000	

# **Beam Displacement Summary**

Туре	Beam	L/C	d	X	Y	Z	Result
			(m)	(mm)	(mm)	(mm)	ant (mm)
Max X	1	1	3.000	0.920	0.000	0.000	0.920
Min X	1	1	0.000	0.000	0.000	0.000	0.000
Max Y	17	1	3.000	0.388	-0.333	0.000	0.511
Min Y	17	1	1.500	0.426	-0.333	0.000	0.540
Max Z	1	1	0.000	0.000	0.000	0.000	0.000
Min Z	1	1	0.000	0.000	0.000	0.000	0.000
Max Rst	1	1	3.000	0.920	0.000	0.000	0.920

Bentley <sup>e</sup>	Job No.	Sheet No	-	Rev
Software licensed to Connected User: Ganesh Dhivar			5	
Job Title Ganesh Dhivar	Part		Re f	
Client	B y	Date 05	-Aug-25	Chd
File Practice Problem.std	Date Time 05-Au	g-2025 1	1:28	

### **Beam Max Moments**

Beam	Node A	Length	L/C		d	Max My	d	Max Mz
		(m)			(m)	(kN-m)	(m)	(kN-m)
1	1	3.000	1	Max +ve	0.000	0.000	0.000	0.003
1	1	3.000	1	Max -ve	0.000	0.000	3.000	-0.003
2	2	3.000	1	Max +ve	0.000	0.000	3.000	0.000
۷	2	3.000	1	Max -ve	0.000	0.000	0.000	-0.003
3	3	3.000	1	Max +ve	0.000	0.000	0.000	0.003
3		3.000	-	Max -ve	0.000	0.000	3.000	-0.003
4	4	3.000	1	Max +ve	0.000	0.000	0.000	0.000
,	'	3.000	1	Max -ve	0.000	0.000	3.000	-0.003
5	1	4.243	1	Max +ve	0.000	0.000	0.000	0.000
J	_		-	Max -ve	0.000	0.000	4.243	-0.001
6	3	4.243	1	Max +ve	0.000	0.000	0.000	0.000
			_	Max -ve	0.000	0.000	0.000	-0.001
7	5	3.000	1	Max +ve	0.000	0.000	0.000	0.003
		5 3.000		Max -ve	0.000	0.000	3.000	-0.003
8	6	3.000	1	Max +ve	0.000	0.000	0.000	0.001
				Max -ve	0.000	0.000	3.000	-0.003
9	4	3.000	1	Max +ve	0.000	0.000	3.000	0.001
				Max -ve	0.000	0.000	0.000	-0.003
10	5	3.000	1	Max +ve	0.000	0.000	3.000	0.001
-				Max -ve	0.000	0.000	0.000	-0.002
11	7	3.000	1	Max +ve	0.000	0.000	3.000	0.002
	,	3.000	-	Max -ve	0.000	0.000	0.000	-0.002
12	8	4.243	1	Max +ve	0.000	0.000	0.000	0.000
			-	Max -ve	0.000	0.000	4.243	0.000
13	9	4.243	1	Max +ve	0.000	0.000	0.000	0.000
·			1	Max -ve	0.000	0.000	0.000	-0.001
14	8	3.000	1	Max +ve	0.000	0.000	0.000	0.002
			_	Max -ve	0.000	0.000	3.000	-0.002

Bentley <sup>-</sup>	Job No.	Sheet No.		Rev
Software licensed to Connected User: Ganesh Dhivar			6	
Job Title Ganesh Dhivar	Part		Re f	
Client	B y	Date 05-	-Aug-25	Chd
File Practice Problem.std	Date Time 05-Aug-2025 11:28			

### **Beam Max Moments Cont...**

Beam	Node A	Length	L/C		d	Max My	d	Max Mz	
		(m)			(m)	(kN-m)	(m)	(kN-m)	
15	10	3.000	3 000	1	Max +ve	0.000	0.000	0.000	0.002
	15 10 51000	_	Max -ve	0.000	0.000	3.000	-0.002		
16	16 9 3.000	3 000	1	Max +ve	0.000	0.000	0.000	0.001	
		-	Max -ve	0.000	0.000	3.000	-0.002		
17	17 7 3,000	3.000 1	Max +ve	0.000	0.000	0.000	0.003		
7 3.000	5.000	3.000	Max -ve	0.000	0.000	3.000	-0.003		

## **Beam Max Shear Forces**

Beam	Node A	Length	L/C		d	Max Fz	d	Max Fy				
		(m)			(m)	(kN)	(m)	(kN)				
1	1 1 3.000	1	1 3.000	1	Max +ve	0.000	0.000	0.000	0.002			
_	_	3.000	_	Max -ve	0.000	0.000	0.000	0.000				
2	2	3.000	1	Max +ve	0.000	0.000	0.000	0.000				
			0	Max -ve	0.000	0.000	0.000	-0.001				
3	3	3.000	1	Max +ve	0.000	0.000	0.000	0.002				
				Max -ve	0.000	0.000	0.000	0.000				
4	4	3.000	1	Max +ve	0.000	0.000	0.000	0.001				
				Max -ve	0.000	0.000	0.000	0.000				
5	1 4	1 4.243	1 4.243	1 4.243	1 4.243 1	1	Max +ve	0.000	0.000	0.000	0.000	
-	_	1.2 13				•		3	3		Max -ve	0.000
6	3	4.243	1	Max +ve	0.000	0.000	0.000	0.000				
			3				Max -ve	0.000	0.000	0.000	0.000	
7	5	3.000	1	Max +ve	0.000	0.000	0.000	0.002				
				Max -ve	0.000	0.000	0.000	0.000				
8	6	3.000	1	Max +ve	0.000	0.000	0.000	0.001				
-		3.000		Max -ve	0.000	0.000	0.000	0.000				
9	4	3.000	1	Max +ve	0.000	0.000	0.000	0.000				
<u> </u>			_	Max -ve	0.000	0.000	0.000	-0.001				
10	5	3.000	1	Max +ve	0.000	0.000	0.000	0.000				

Bentley <sup>-</sup>	Job No.	Sheet No.		Rev
Software licensed to Connected User: Ganesh Dhivar			7	
<sup>Job Title</sup> Ganesh Dhivar	Part		Re f	
Client	B y	Date 05-	-Aug-25	Chd
File Practice Problem.std	Date Time 05-Aug-2025 11:28			

### Beam Max Shear Forces Cont...

Beam	Node A	Length	L/C		d	Max Fz	d	Max Fy	
		(m)			(m)	(kN)	(m)	(kN)	
10	5	3.000	1	Max -ve	0.000	0.000	0.000	-0.001	
11	7	3.000	1	Max +ve	0.000	0.000	0.000	0.000	
				Max -ve	0.000	0.000	0.000	-0.001	
12	8	4.243	1	Max +ve	0.000	0.000	0.000	0.000	
				Max -ve	0.000	0.000	0.000	0.000	
13	9	4.243	1	Max +ve	0.000	0.000	0.000	0.000	
			_	Max -ve	0.000	0.000	0.000	0.000	
14	8 3,000	8	8 3.000	1	Max +ve	0.000	0.000	0.000	0.001
		3.000	_	Max -ve	0.000	0.000	0.000	0.000	
15	10	3.000	1	Max +ve	0.000	0.000	0.000	0.001	
				Max -ve	0.000	0.000	0.000	0.000	
16	9	3.000	1	Max +ve	0.000	0.000	0.000	0.001	
			-	Max -ve	0.000	0.000	0.000	0.000	
17	17 7 3	7 3.000 1	1	Max +ve	0.000	0.000	0.000	0.002	
		2.555		Max -ve	0.000	0.000	0.000	0.000	

## **Beam Max Axial Forces**

	Length	L/C		d	Max Fx	
	(m)			(m)	(kN)	
1	2 000	1	Max +ve	0.000	0.000	
1 1 3.0	3.000	1	Max -ve	0.000	-0.001	
2	2.000	4	Max +ve	0.000	19.998	
2	3.000	1	Max -ve	0.000	0.000	
2	2 222		Max +ve	0.000	0.000	
3 3.000	3.000	1	Max -ve	0.000	0.000	
	2.000		Max +ve	0.000	0.000	
4	3.000	1	Max -ve	0.000	-15.000	
_	4.243	_	Max +ve	0.000	0.000	
1		4.243	4.243 1	1	Max -ve	0.000
3	4 2 4 2	_	Max +ve	0.000	7.068	
	3 4.2	4.243	1	Max -ve	0.000	0.000
	1 2 3 4 1	1 3.000   2 3.000   3 3.000   4 3.000   1 4.243	1 3.000 1   2 3.000 1   3 3.000 1   4 3.000 1   1 4.243 1	1 3.000 1	1 3.000 1 Max +ve 0.000   2 3.000 1 Max +ve 0.000   3 3.000 1 Max +ve 0.000   4 3.000 1 Max +ve 0.000   4 3.000 1 Max +ve 0.000   Max -ve 0.000 Max -ve 0.000   Max -ve 0.000 Max -ve 0.000   Max -ve 0.000 Max -ve 0.000   Max -ve 0.000 Max +ve 0.000   3 4.243 1 Max +ve 0.000	

Bentley <sup>-</sup>	Job No.	Sheet No		Rev
Software licensed to Connected User: Ganesh Dhivar			8	
Job Title Ganesh Dhivar	Part		Re f	
Client	B y	Date 05	-Aug-25	Chd
File Practice Problem.std	Date Time 05-Aug-2025 11:28			

### Beam Max Axial Forces Cont...

Beam	Node A	Length	L/C		d	Max Fx	
		(m)			(m)	(kN)	
7	5	3.000	1	Max +ve	0.000	0.000	
/	5	3.000	1	Max -ve	0.000	0.000	
8	8 6	3.000	1	Max +ve	0.000	10.000	
0	0	3.000	1	Max -ve	0.000	0.000	
9	4	3.000	1	Max +ve	0.000	0.000	
9	7	3.000	1	Max -ve	0.000	-14.998	
10	5	3.000	1	Max +ve	0.000	0.000	
10	3	3.000	1	Max -ve	0.000	-5.000	
11	7	3.000	1	Max +ve	0.000	0.000	
11	,	3.000	1	Max -ve	0.000	-4.999	
12	8	0 4 242	0 4 242	8 4.243 1	Max +ve	0.000	7.067
12	0	7.273	1	Max -ve	0.000	0.000	
13	9	4.243	1	Max +ve	0.000	0.000	
13	9	7.273	1	Max -ve	0.000	-7.068	
14	8	3.000	1	Max +ve	0.000	0.001	
17	0	3.000	1	Max -ve	0.000	0.000	
15	10	3.000	1	Max +ve	0.000	0.001	
13	10	3.000	1	Max -ve	0.000	0.000	
16	9	3.000	1	Max +ve	0.000	9.998	
10	3	3.000	U I	Max -ve	0.000	0.000	
17	7	7 2.000	1	Max +ve	0.000	0.000	
1/	,	3.000		Max -ve	0.000	0.000	