DESIGN REPORT

PRE-ENGINEERED STEEL BUILDING

FOR

M/S. BANQUET HALL , ZIRAKPUR

AT

ZIRAKPUR

(BANQUET HALL BUILDING)

Job No. : JPF-P-47 Dated : 24-02-2015 Revision No. : 00

Submitted by :

JINDAL PRE-FAB PVT. LTD.

Manufacturers of Pre-Engineered Building System, Roofing and Wall Cladding Decking System & PUF Insulated Panels.

Job No.	JPF-P - 47	Rev. No.	0	
Customer	BANQUET HALL , ZIRAKPUR	Date	02/14/15	
Description	*Introduction*	Design By	JITENDRA	
		Checked By	JITENDRA	

INTRODUCTION

This Design Calculations Package has been prepared using the latest applicable AISC / MBMA / IS codes & standards and the latest developments in engineering practices. A competent design engineer prepared the calculations and another competent engineer checked his work. The initials of both engineers are shown on most pages.

For your easy reference, all pages have been numbered and a table of contents has been provided. We have divided the package into three sections as follows:

① **Design Information**: This section contains the description of the building designed, design codes and material specifications used, design assumptions, loads and design sketches showing building components layouts and members sizes.

② **Computer Design Printouts**: This section includes prints of all the output of computer programs used in the design along with explanations for the output where possible.

Please use this calculation package in conjunction with the drawing provided.

For any questions regarding this package please do not hesitate to contact at our office. In case of any doubt, please call our Design Section for the latest revision number and date on this calculation package.

Design Department
JINDAL PRE-FAB PVT LTD.
Office : Binola Industrial Area,
Gurgaon , Haryana (India)

TABLE OF CONTENTS

Job No.	JPF-P - 47	Rev. No.	0	
Customer	BANQUET HALL , ZIRAKPUR	Date	2/14/2015	
Description	*SECTION -1 DESIGN INFORMATION*	Design By	JITENDRA	
		Checked By	JITENDRA	

SECTION -1 DESIGN INFORMATION

Job No.	JPF-P - 47	Rev. No.	0	
Customer	BANQUET HALL , ZIRAKPUR	Date	2/14/2015	
Description	*1.1 APPLICABLE DESIGN CODES*	Design By	JITENDRA	
		Checked By	JITENDRA	

1.1 APPLICABLE DESIGN CODES

	Job No.	JPF-P - 47	Rev. No.	0	
	Customer	BANQUET HALL , ZIRAKPUR	Date	02/14/15	
	Description	*Applicable Design Codes*	Design By	JITENDRA	
			Checked By	JITENDRA	

APPLICABLE DESIGN CODES

The Pre-engineered Building described in these calculations is designed according to the latest AMERICAN & INDIAN Building Design Codes that have been referred to in the design:

1. **The loads as described in the Design Basis Sheet have been applied on the structure in accordance with:**
   IS -875 : Code of Practice for Design Loads for Building and Structures
   IS- 1893 (2002) : Criteria for Earthquake Resistance Design of Structures
   MBMA - 2006 : Wind Load Calculation

2. **Hot rolled sections and built up components have been designed in accordance with:**

   AISC - 96 : Code of practice for general Construction in Steel

3. **Cold formed components have been designed in accordance with:**

   IS - 801 (1975) : Code of Practice for use of Cold-Formed Light Guage Steel Structure Members in General Building Construction.

4. **Welding has been applied in accordance with:**

   AWS D.1.1.2008 "American Welding Society" Structural Welding Code - Steel

Job No.	JPF-P - 47	Rev. No.	0	
Customer	BANQUET HALL , ZIRAKPUR	Date	2/14/2015	
Description	*1.2 MATERIAL SPECIFICATIONS*	Design By	JITENDRA	
		Checked By	JITENDRA	

1.2 MATERIAL SPECIFICATIONS

Job No.	JPF-P - 47	Rev. No.	0	
Customer	BANQUET HALL , ZIRAKPUR	Date	2/14/2015	
Description	*Material Specifications*	Design By	JITENDRA	
		Checked By	JITENDRA	

MATERIAL SPECIFICATIONS

The following is the list of the material standards and specifications for which the building components have been designed

S.No.	Materials	Specifications	Steel Yields
1.	Built-up Members	ASTM A - 572 Gr 50	Fy = 345 MPa
2	Hot Rolled Secondary Members	IS - 2062	Fy = 250 MPa
3.	Cold Formed Secondary Members	ASTM A 1011 Gr 50	Fy = 345 MPa
4.	Sheeting Panels	ASTM A 792 M	Fy = 550 MPa
5.	X-Bracing Members, Rods	IS 2062 / 1732	Fy = 250 MPa
6.	Anchor Bolts	ASTM –F 1554 -1999	Fy = 250 MPa
7.	High Strength Bolts for Primary Connections.	IS:1367 (Part III) Gr. 8.8 / ASTM A325	-
8.	Machine Bolts for Secondary Connections.	IS:1367 (Part III) Gr. 4.6 / ASTM A307	-

Job No.	JPF-P - 47	Rev. No.	0	
Customer	BANQUET HALL , ZIRAKPUR	Date	2/14/2015	
Description	*1.3 DESIGN ASSUMPTIONS & LOAD COMBINATIONS*	Design By	JITENDRA	
		Checked By	JITENDRA	

1.3 DESIGN ASSUMPTIONS & LOAD COMBINATIONS

	Job No.	JPF-P - 47	Rev. No.	0		
	Customer	BANQUET HALL , ZIRAKPUR	Date	2/14/2015		
	Description	*Design Assumption & Load Combinations*	Design By	JITENDRA		
			Checked By	JITENDRA		

DESIGN ASSUMPTIONS AND LOAD COMBINATIONS

a) DESIGN ASSUMPTIONS

The main frames are moment resisting portals .

Support conditions are taken to be hinged for all Frame Columns of the building.

The roof purlins are continuous beams supported on rigid frame rafters and span the bay spacing of the building.

The side wall girts are continuous beams supported at rigid frame columns and span the bay spacing of the building.

The endwall girts are continuous beams supported at end wall column location.

b) LOAD COMBINATIONS (CRITICAL)

Dead Load + Live Load

Dead Load + Wind Load

Dead Load + Seismic Load

Job No.	JPF-P - 47	Rev. No.	0	
Customer	BANQUET HALL , ZIRAKPUR	Date	2/14/2015	
Description	*1.4 DESIGN BASIS*	Design By	JITENDRA	
		Checked By	JITENDRA	

1.4 DESIGN BASIS

LOAD CALCULATIONS (MBMA - 2006)

Job No.	:	JPF-P-47	Rev. No. :	R0
Project	:	PRE -ENGINEERED BUILDING	Date :	13/02/2015
Clint	:	BANQUET HALL , ZIRAKPUR	Designed by :	JB
Description	:	FRAME - 1	Checked by :	JB

Building Type	=	**TCCS**			
Length (o/o)	=	**48.000**	m		
Width (o/o)	=	**42.000**	m		
Width module	=	**1 @ 42**	m		
Bay spacing	=	**6.858**	m	End wall column spacing =	**0.000** m
Clear height	=	**10.000**	m		
Eaves height	=	**11.730**	m	Ridge Height =	**15.230** m
Roof slope (θ)	=	**5.71**	°		

DEAD LOAD (DL)

Wt. of sheet&purline	=	**15.00**	**Kg/m²**
➡ Dead Load (DL)	=	**1.03**	**KN/m**

LIVE LOAD (LL)

Live load/unit area, roof	=	**57.00**	**Kg/m²**
➡ Live Load (LL)	=	**3.91**	**KN/m**

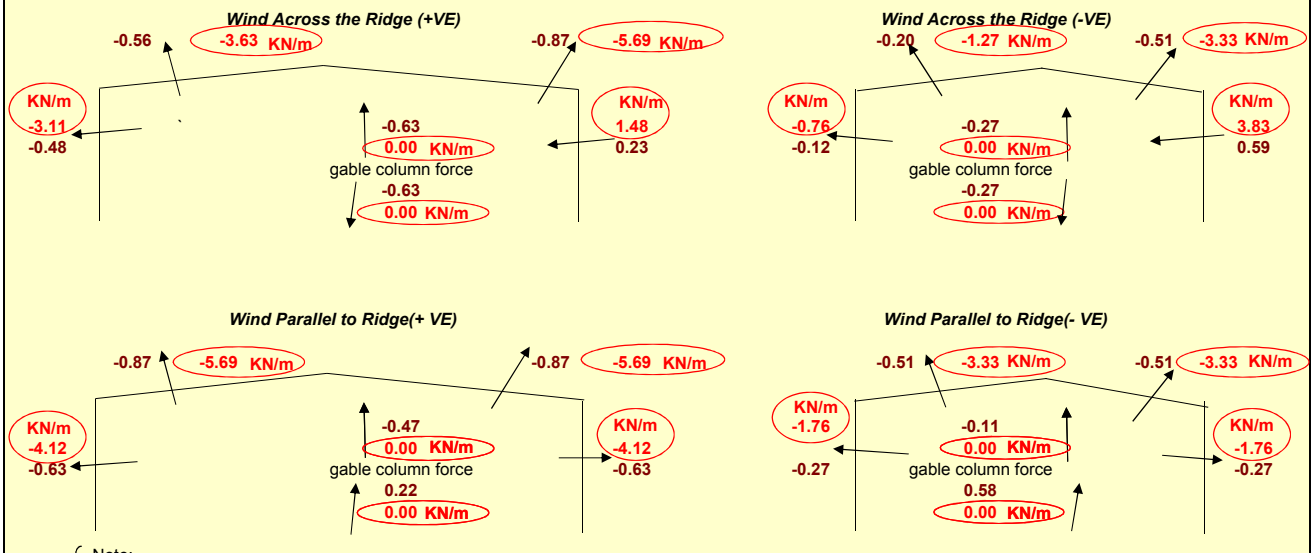
WIND LOAD (WL)

Basic wind speed V =	=	**47**	m/s	
	=	**108.1**	Miles Per Hour	
Mean Roof Height h	=	**44.23**	feet	Mean Roof Height = (Eaves height + Ridge height) / 2
Exposure Category	=	**B**		For , Exposure B and with h>=30 , Kz = 2.01 * (h / 1200) ^ (2 / 7)
Kz	=	**0.783**		For , Exposure C and with h>=15 , Kz = 2.01 * (h / 900) ^ (2 / 9.5)
Topographic Factor Kzt	=	**1**		
Directionality Factor Kd	=	**0.85**		
Importance Factor Iw	=	**1**		
Velocity Pressure qh	=	**19.90**	PSF	{ Velocity Pressure (qh) = 0.00256 * V^2 * Iw * Kz * Kzt * Kd }
	=	**0.95**	KN/m2	
Design wind pressure (P)	=	**qh * (GCpf-GCpi)**	KN/m2	
Design wind Force on Frames	=	**Wind Pressure * bay spacing**	KN/m	

➡ **Main Framing Coefficients [(GCpf) – (GCpi)]**

Wind	Coeff. For Wall		Coeff. For Roof		Coeff. For End wall	
Angle	Left	Right	Left	Right	Front	Back
0 degree (+ VE)	-0.48	0.23	-0.56	-0.87	-0.63	-0.63
0 degree (- VE)	-0.12	0.59	-0.20	-0.51	-0.27	-0.27
90 degree (+ VE)	-0.63	-0.63	-0.87	-0.87	0.22	-0.47
90 degree (- VE)	-0.27	-0.27	-0.51	-0.51	0.58	-0.11

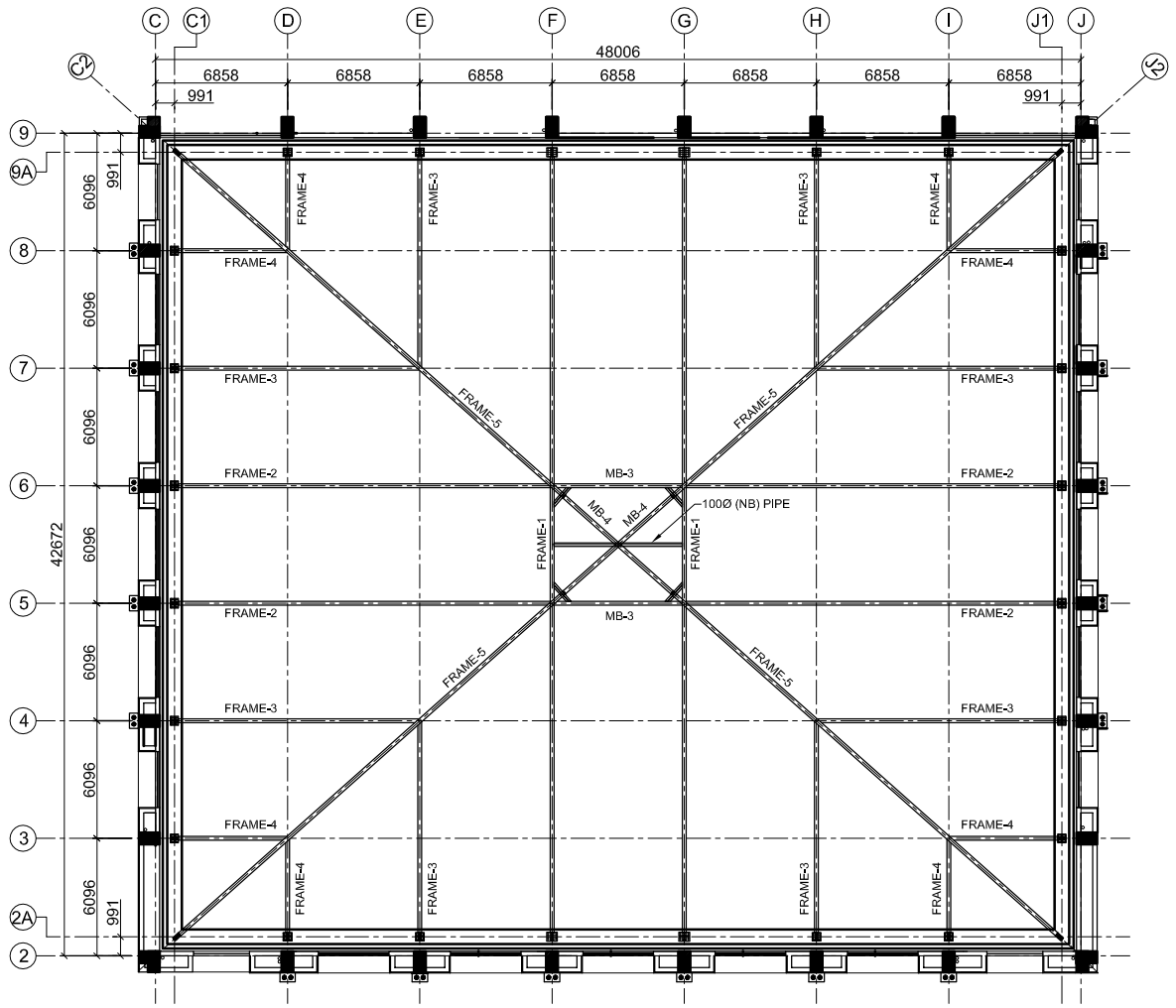
WIND LOAD DIAGRAMS:~



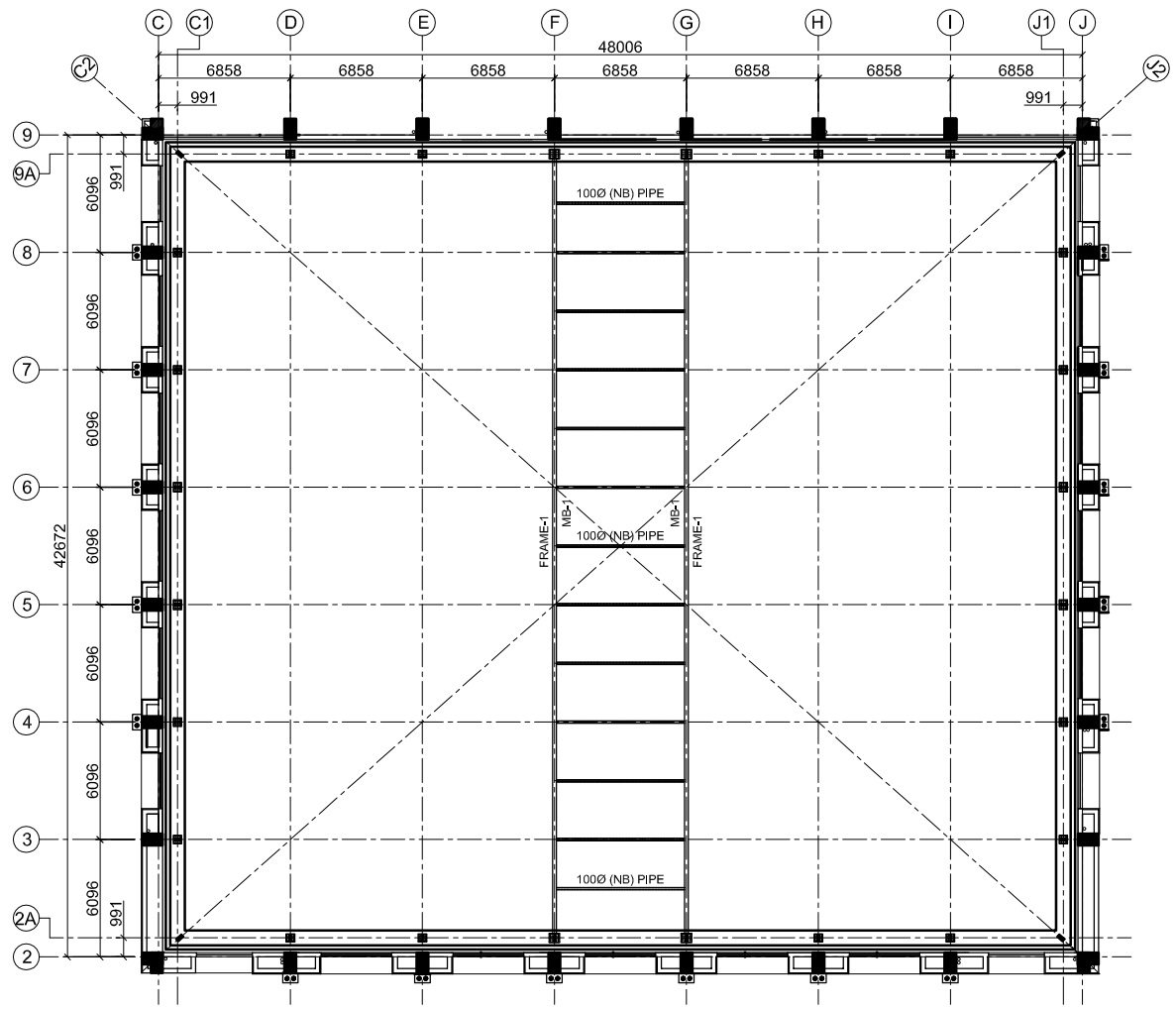
Note:
1) Values within the circles are the UDL
2) -Ve value means, load applied away from structure.
3) +Ve value means, load applied towards structure.

Job No.	JPF-P - 47	Rev. No.	0	
Customer	BANQUET HALL , ZIRAKPUR	Date	2/14/2015	
Description	*1.5 LAYOUT PLAN*	Design By	JITENDRA	
		Checked By	JITENDRA	

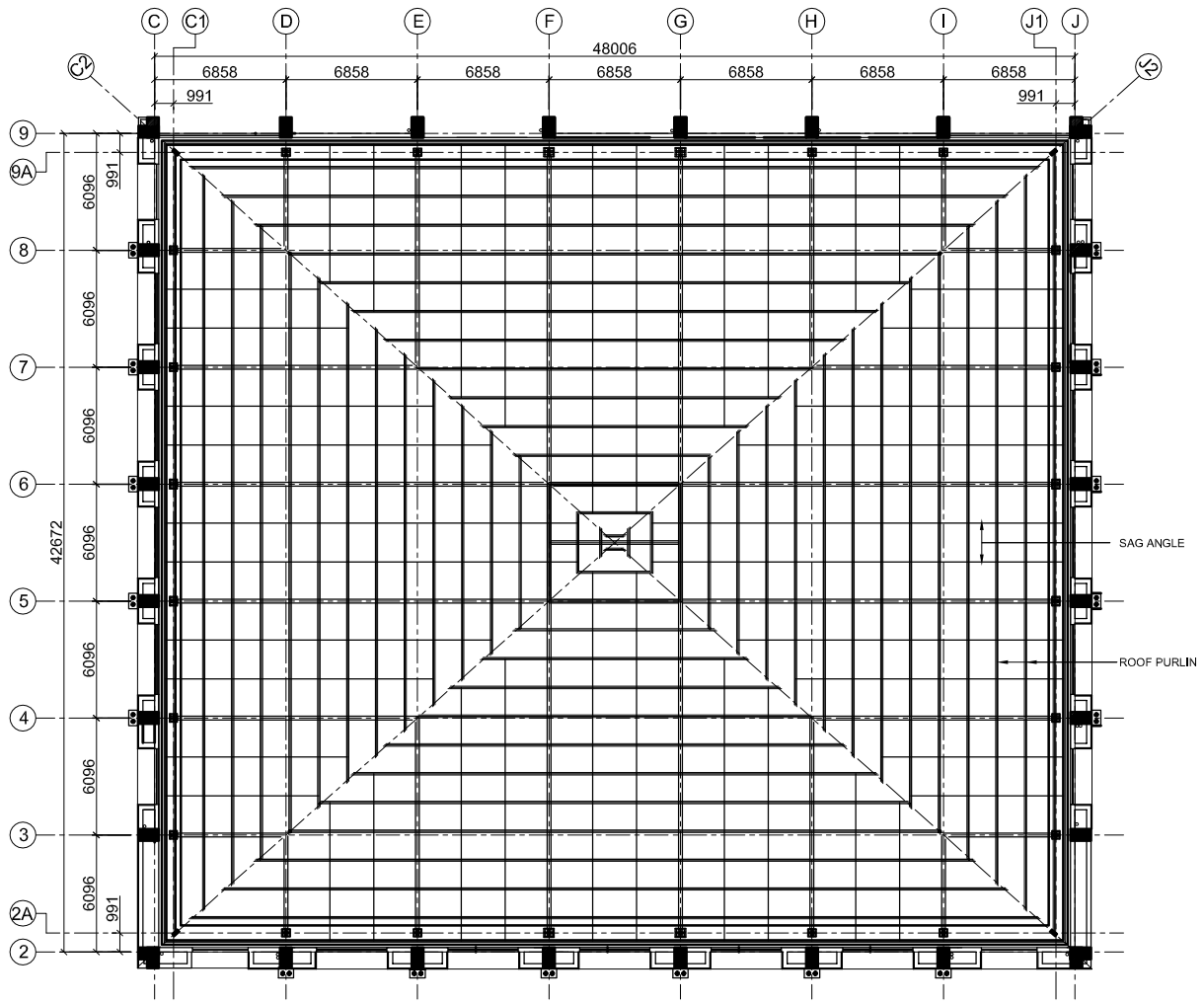
1.5 LAYOUT PLAN



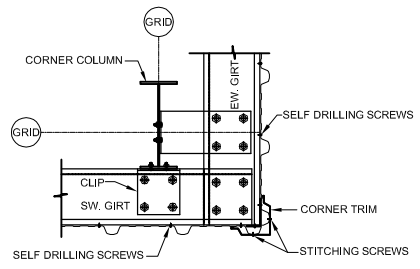
PLAN SHOWING FRAME DETAIL



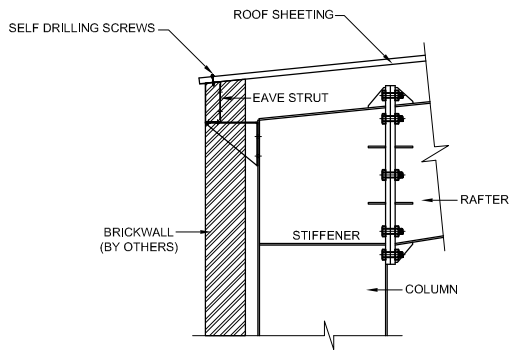
BOTTOM CHORD PLAN



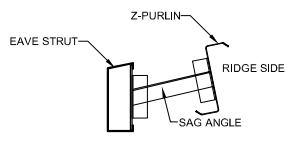
PLAN SHOWING PURLINS DETAIL



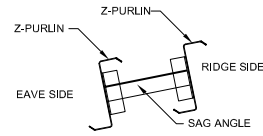
TYP. CORNER DETAIL



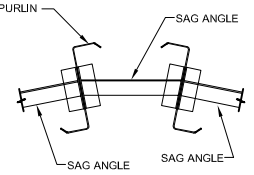
TYP. EAVE DETAIL



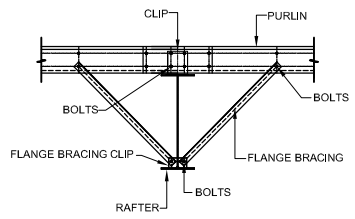
EAVE CONDITION



INTERMEDIATE CONDITION
SAG ANGLE DETAILS



RIDGE CONDITION
SAG ANGLE DETAILS



CONNECTION DETAIL OF PURLIN
ON MAIN FRAME

DRAWING CROSS REFERENCE

Drawing No:	Rev.	Description

GENERAL NOTES:–

1. ALL DIMENSIONS ARE IN mm & ALL LEVELS ARE IN Mtr. [U.N.O]
2. WALL CLADDING – COLOUR TO BE CONFIRMED BY CLIENT.
3. CANOPY LOCATIONS TO BE CONFIRMED BY CLIENT

LEGENDS:

FEW = FRONT END WALL
BEW = BACK END WALL
LSW = LEFT SIDE WALL
RSW = RIGHT SIDE WALL

MATERIAL SPECIFICATIONS

1.	ROOF SHEETING	0.50mm TCT HIGH TENSILE BARE GALVALUME ROOF SHEETING
2.	WALL CLADDING	0.50mm TCT HIGH TENSILE PRE COATED GALVALUME CLADDING
3.	SKY LIGHT PANEL	
4.	FLASHING	0.50mm. TCT COLOUR COATED AS PER STANDARD
5.	GUTTER	
6.	ROOF BRACING	
7.	COLUMN BRACING	
8.	TURBO VENT	
9.	ROOF PURLIN AND SIDE WALL GIRTS	200 Z 2MM TH.
10.	EAVE STRUT	200 C 2MM TH.

SCHEDULE OF OPENING

S. NO.	ITEM	NAME	SIZE

ISSUED FOR APPROVAL

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REVIEWED BY .....
NAME

....
SIGNATURE DATE

Rev.	Description	Name	Checked	Date
1.	REVISED AS PER ARCHITECT COMMENTS	CS	JB	06–02–2015

REVISIONS

Project:
PRE ENGINEERING BUILDING

Client:
BANQUET HALL

Architect:

Consultant:

Drawing Title:
GENERAL ARRANGEMENT DRAWING
[FRAME & ROOF PURLIN LAYOUT PLAN AND TYP. DETAILS]

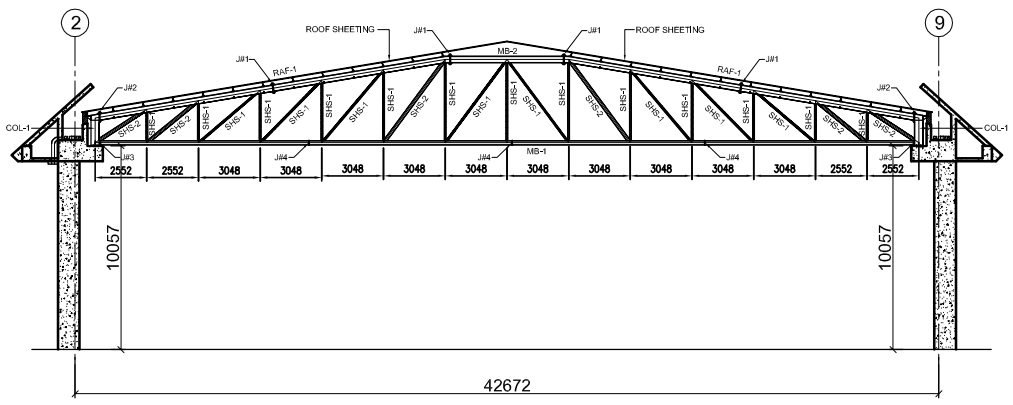
JINDAL PREFAB PVT. LTD.®
Manufacturers of Pre-Engineered Buildings with Various Skins Systems, PUF Insulated Panels & Decking.
DESIGN DIVISION
JINDAL PREFAB PVT. LTD.
Central Marketing Office 705, SEC–15, PART–II, GURGAON–122001(HR) &
Works:–Khasra No. 125, Industrial Space, Binola Industrial Area, Bhora Kalan, Gurgaon (HR) –122001 (India)

Drawn by:	CS		Scale:	NTS	Date: 29/11/2014	
Checked by:	JB	Str.: JB	Project No: JPF/P-47	sheet no 1 OF 1	Drawing No: BH/GA-01	Revision: 1
Approved by:						

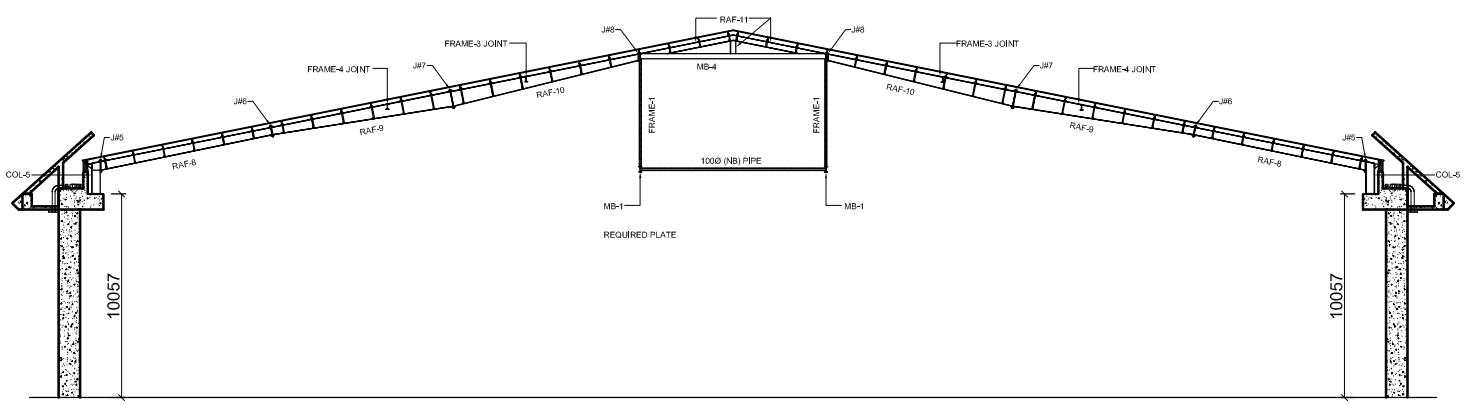
SHEET SIZE–A1

Job No.	JPF-P - 47	Rev. No.	0	
Customer	BANQUET HALL , ZIRAKPUR	Date	2/14/2015	
Description	*1.6 FRAME CROSS SECTION*	Design By	JITENDRA	
		Checked By	JITENDRA	

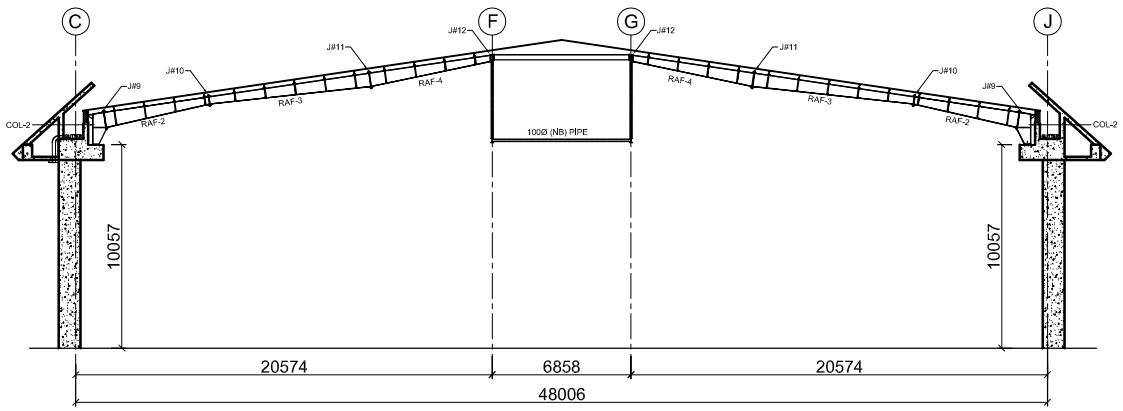
1.6 FRAME CROSS SECTION



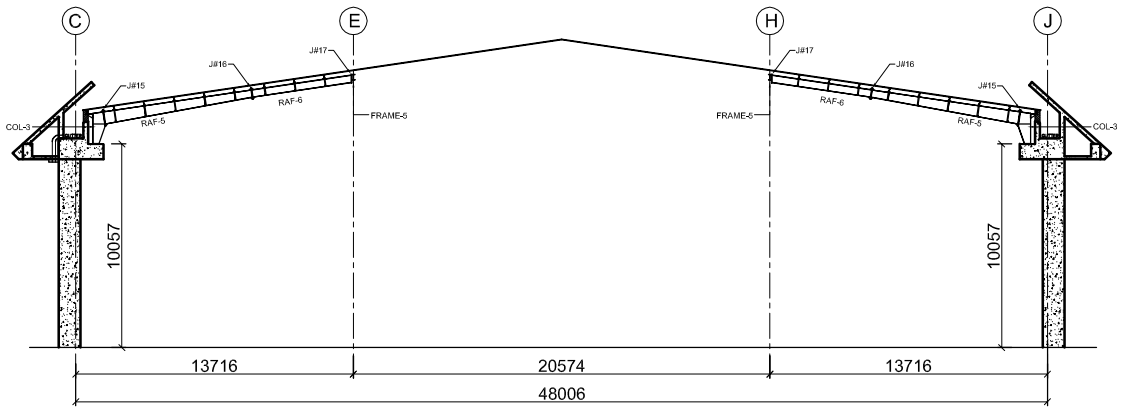
DETAIL OF FRAME-1 (ALONG GRID-F&G)



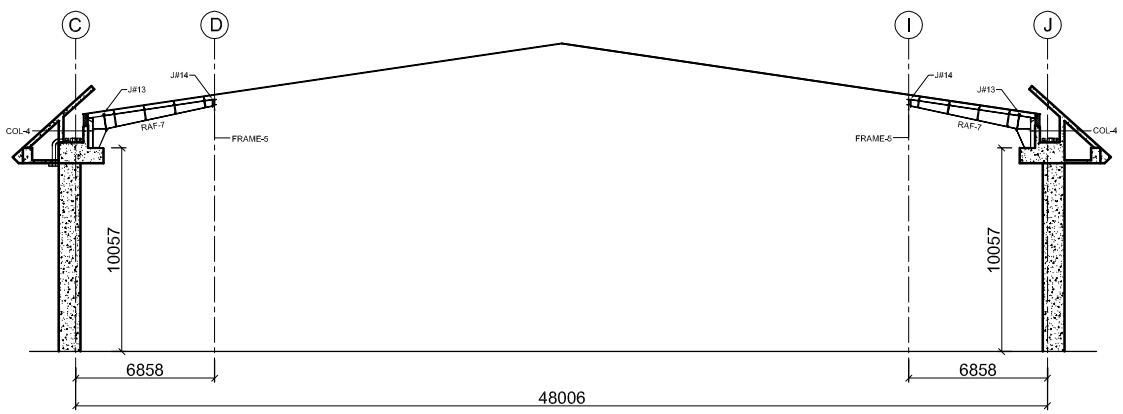
DETAIL OF FRAME-5



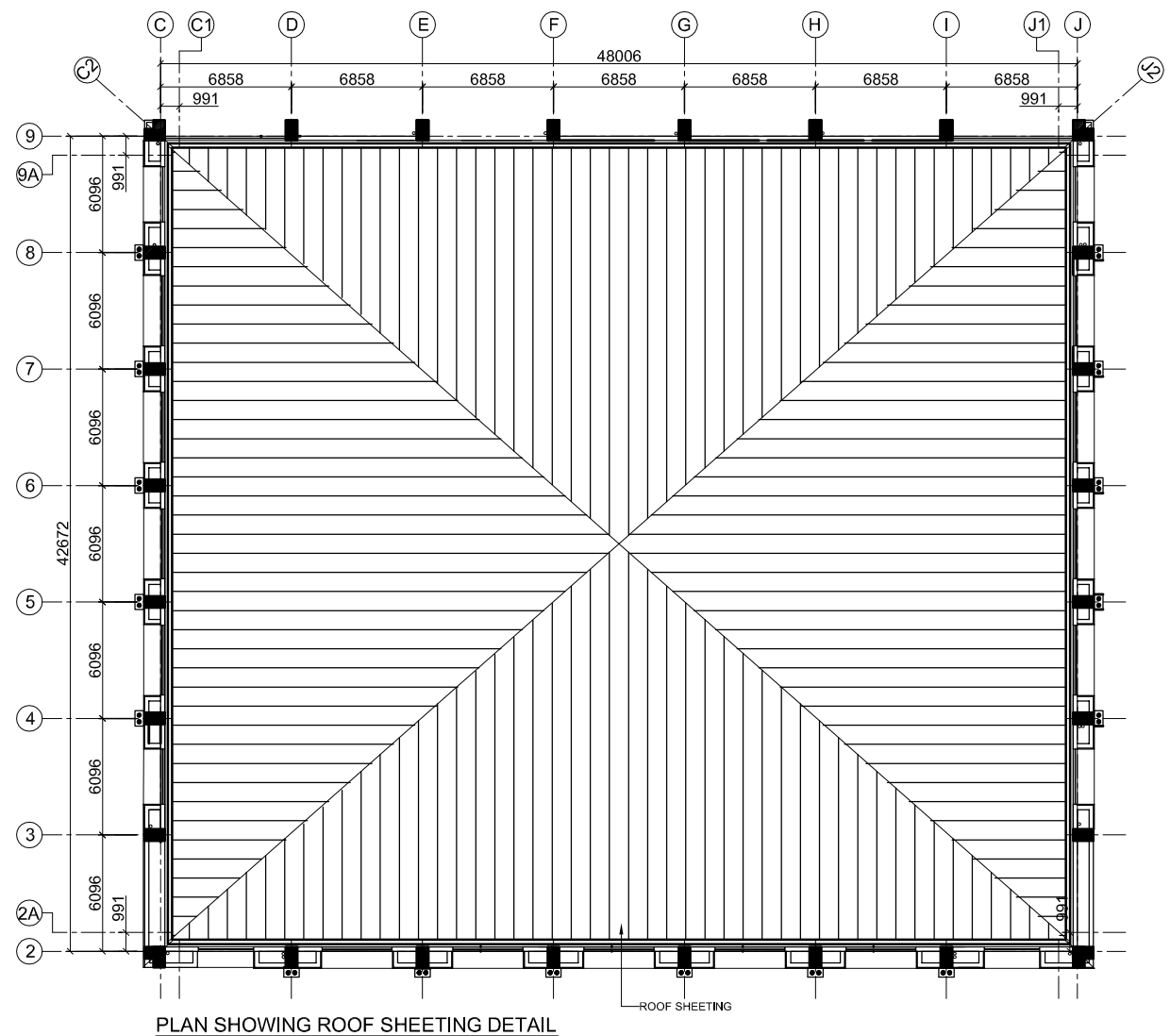
DETAIL OF FRAME-2 (ALONG GRID-5&6)



DETAIL OF FRAME-3 (ALONG GRID-4,7,E,H)



DETAIL OF FRAME-4 (ALONG GRID-3,8,D,I)



PLAN SHOWING ROOF SHEETING DETAIL

CONECTION DETAIL FRAME-1 TO 5			
JOINT NO.	NO OF BOLTS	BOLT OF DIA	PL. THICKNESS
J#1	10	24Ø	25
J#2	8	20Ø	16
J#3	4	27Ø	25
J#4	4	20Ø	16
J#5	4	20Ø	16
J#6	8	20Ø	16
J#7	10	24Ø	20
J#8	6	24Ø	20
J#9	16	24Ø	25
J#10	10	20Ø	16
J#11	10	24Ø	20
J#12	6	24Ø	20
J#13	8	24Ø	20
J#14	6	16Ø	16
J#15	12	24Ø	20
J#16	8	20Ø	16
J#17	6	20Ø	20

DRAWING CROSS REFERENCE

Drawing No:	Rev.	Description

FRAME MEMBER DESIGN

MEMBER MARKING	MEMBER DESIGN PROPERTY
COL-1	WEB-(400X5) & FLANGE-(200X10)
COL-2	WEB-(350-850X8) & FLANGE-(200X8)
COL-3	WEB-(350-700X6) & FLANGE-(180X8)
COL-4	WEB-(350-500X5) & FLANGE-(150X8)
COL-5	WEB-(350X5) & FLANGE-(150X8)
MB-1	WEB-(200X4) & FLANGE-(150X8)
MB-2	WEB-(300X4) & FLANGE-(180X8)
MB-3	WEB-(200X8) & FLANGE-(200X10)
MB-4	WEB-(350X4) & FLANGE-(200X10)
RAF-1	WEB-(300X4) & FLANGE-(150X8)
RAF-2	WEB-(850-350X6) & FLANGE-(300X10)
RAF-3	WEB-(350-700X5) & FLANGE-(255X10)
RAF-4	WEB-(700-350X5) & FLANGE-(300X10)
RAF-5	WEB-(700-400X5) & FLANGE-(225X8)
RAF-6	WEB-(400-350X4) & FLANGE-(200X8)
RAF-7	WEB-(500-350X5) & FLANGE-(180X8)
RAF-8	WEB-(350X5) & FLANGE-(200X8)
RAF-9	WEB-(350-600X5) & FLANGE-(240X8)
RAF-10	WEB-(600-300X5) & FLANGE-(300X16)
RAF-11	WEB-(200X4) & FLANGE-(150X8)
SHS-1	SHS(80X80X4)
SHS-2	SHS(150X150X5)

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   FABRICATION MAY PROCEED ON THE BASIS OF CORRECTIONS INDICATED.

REVIEWED BY .....
NAME

....
SIGNATURE DATE

Rev.	Description	Name	Checked	Date
1.	REVISED AS PER ARCHITECT COMMENTS	CS	JB	06-02-2015

REVISIONS

Project:
PRE ENGINEERING BUILDING

Client:
BANQUET HALL

Architect:

Consultant:

Drawing Title:
GENERAL ARRANGEMENT DRAWING
[DETAILS OF CROSS SECTION AND ROOF PLAN]

JINDAL PREFAB PVT. LTD.®
Manufacturers of Pre-Engineered Buildings with Various Skins Systems, PUF Insulated Panels & Decking.
DESIGN DIVISION
JINDAL PREFAB PVT. LTD.
Central Marketing Office 705, SEC-15, PART-II, GURGAON-122001(HR) &
Works:-Khasra No. 125, Industrial Space, Binola Industrial Area, Bhora Kalan, Gurgaon (HR) -122001 (India)

Drawn by:	CS		Scale:	NTS	Date: 29/11/2014	
Checked by:	JB	Str.: JB	Project No: JPF/P-47	sheet no 1 OF 1	Drawing No: BH/GA-02	Revision: 1
Approved by:						

NOTE: –

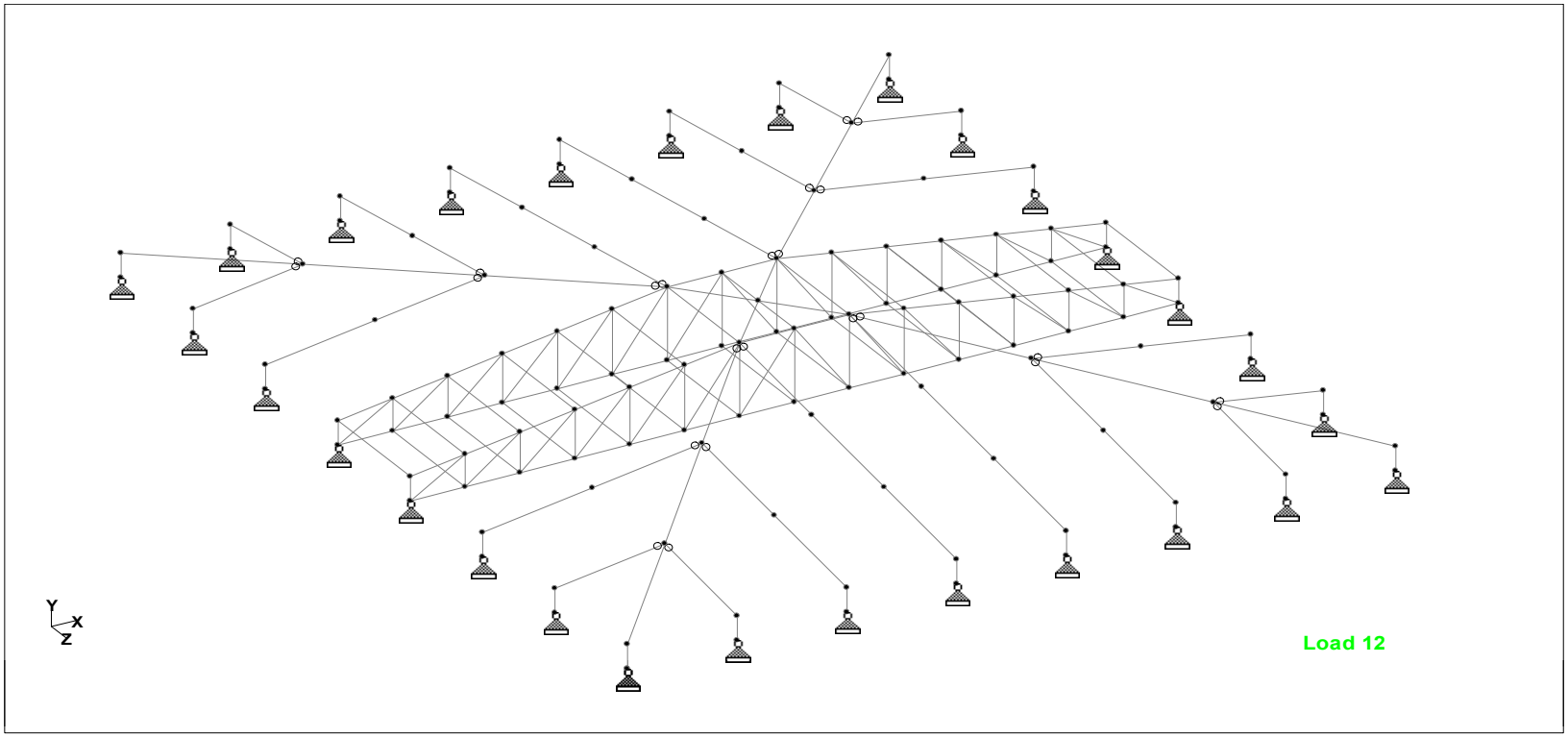
SHEET SIZE-A1

Job No.	JPF-P - 47	Rev. No.	0	
Customer	BANQUET HALL , ZIRAKPUR	Date	2/24/2015	
Description	*SECTION -2 COMPUTER DESIGN PRINTOUTS*	Design By	JITENDRA	
		Checked By	JITENDRA	

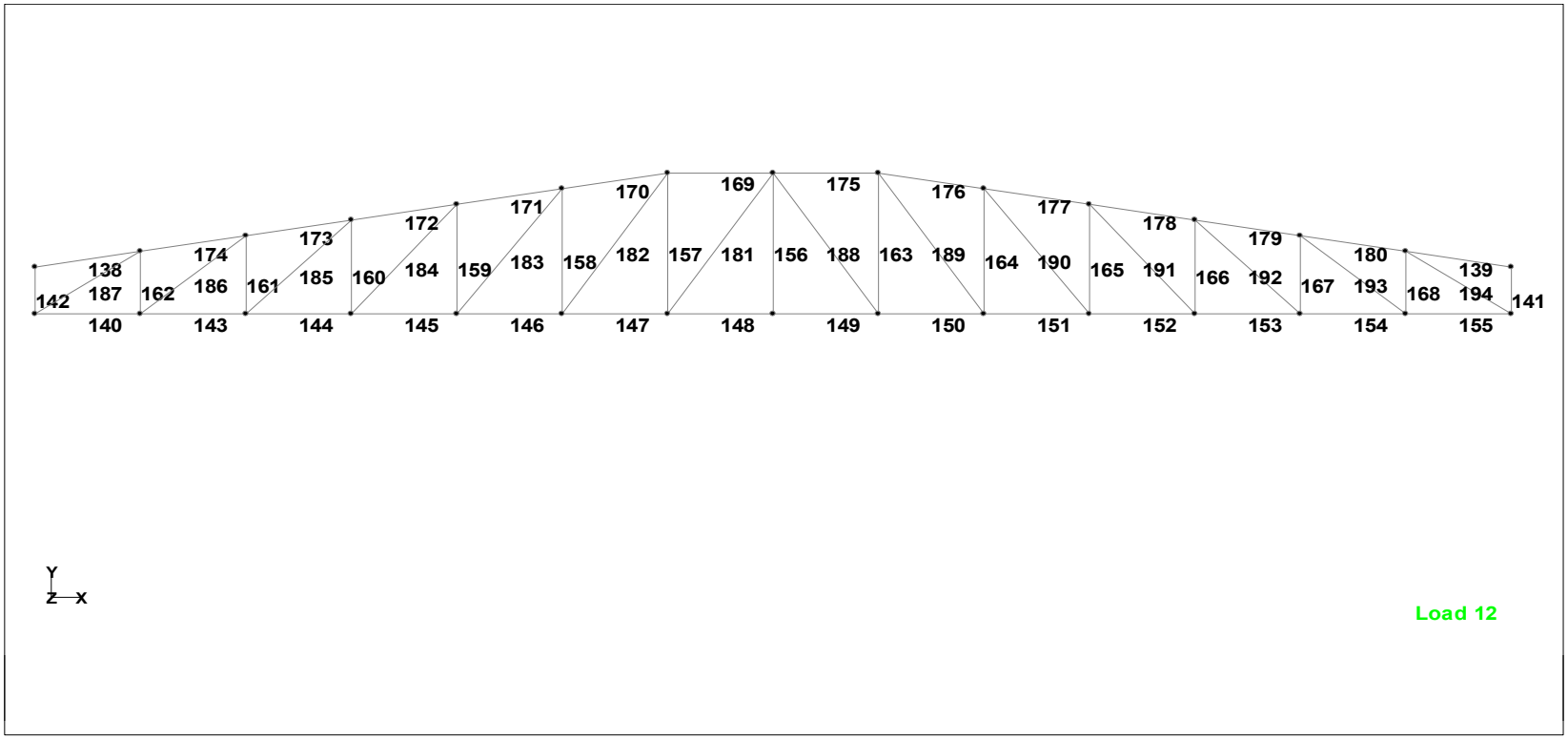
SECTION -2 COMPUTER DESIGN PRINTOUTS

Job No.	JPF-P - 47	Rev. No.	0	
Customer	BANQUET HALL , ZIRAKPUR	Date	2/24/2015	
Description	*2.1 STAAD DESIGN ANALYSIS*	Design By	JITENDRA	
		Checked By	JITENDRA	

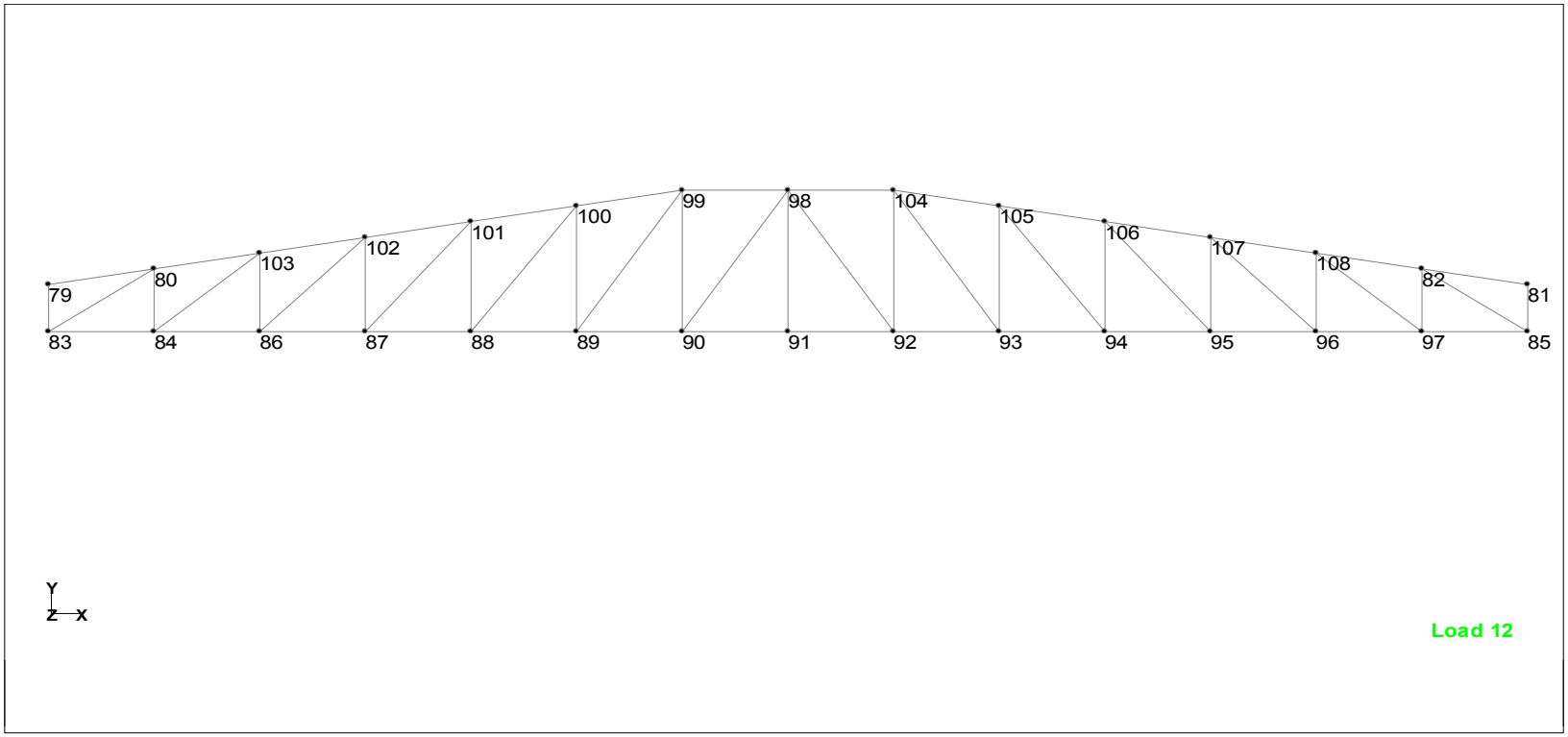
2.1 STAAD DESIGN ANALYSIS



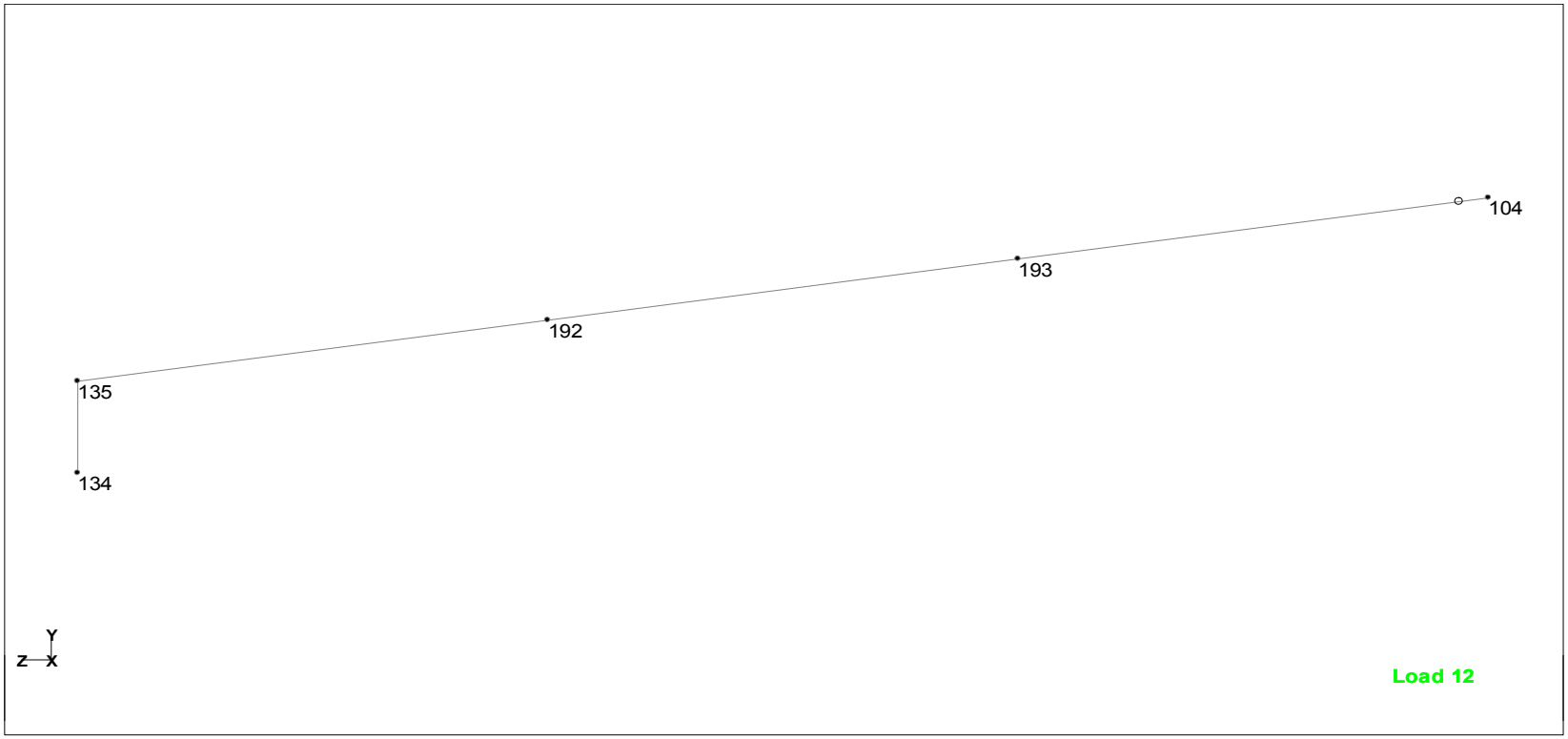
STRUCTURE IN 3-D (SHOWING ALL FRAMES)



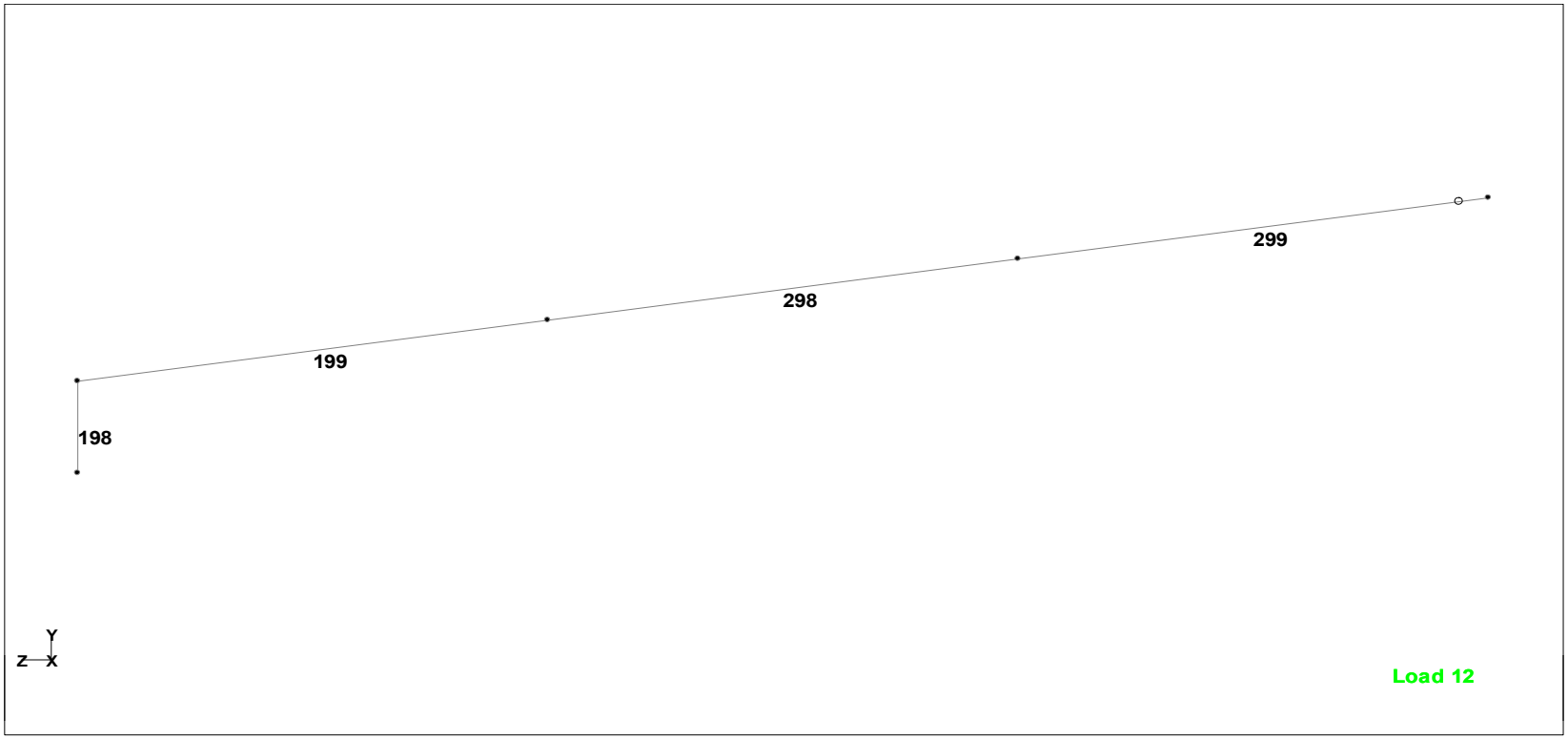
FRAME - 1 (BEAM NUMBERS)



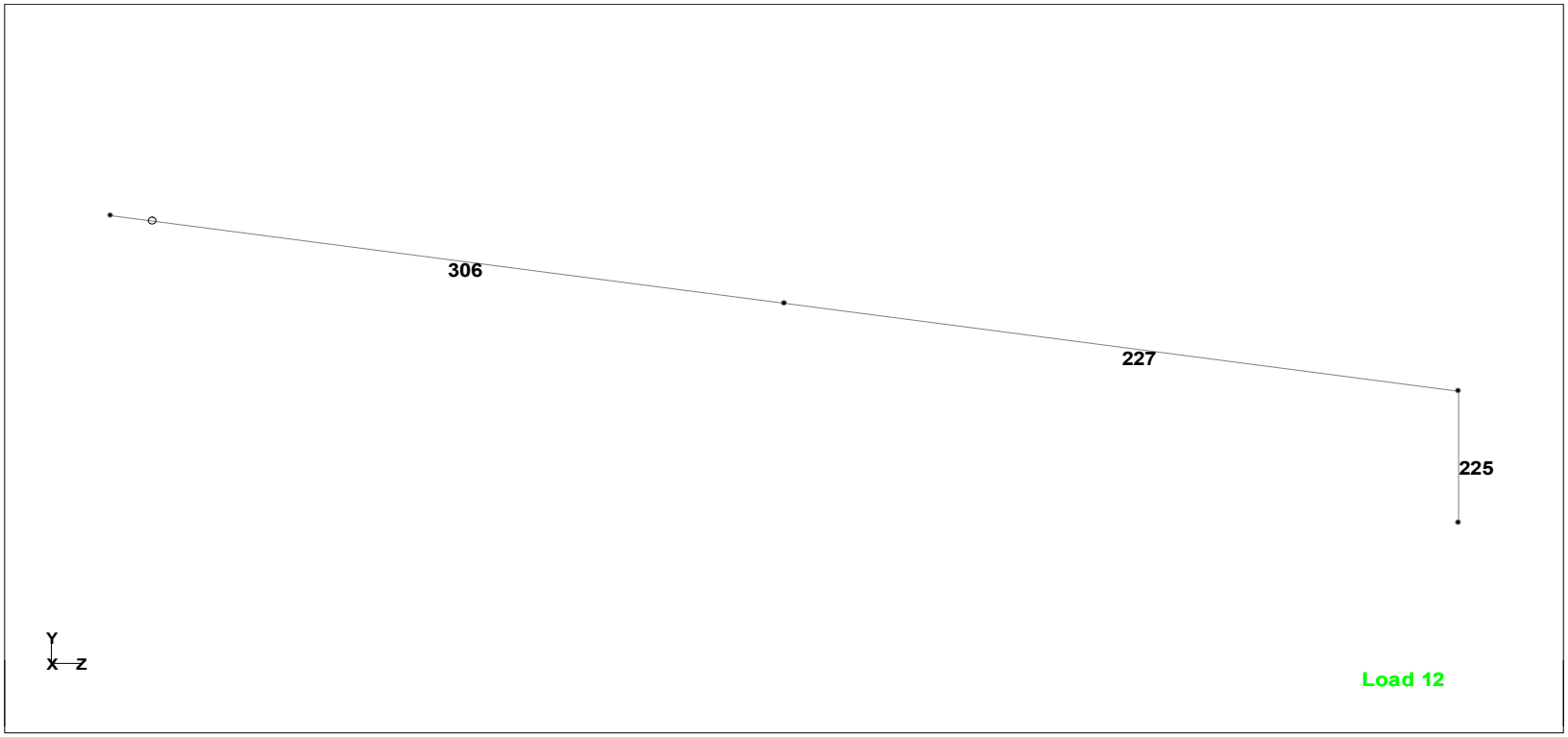
FRAME - 1 (NODE NUMBERS)



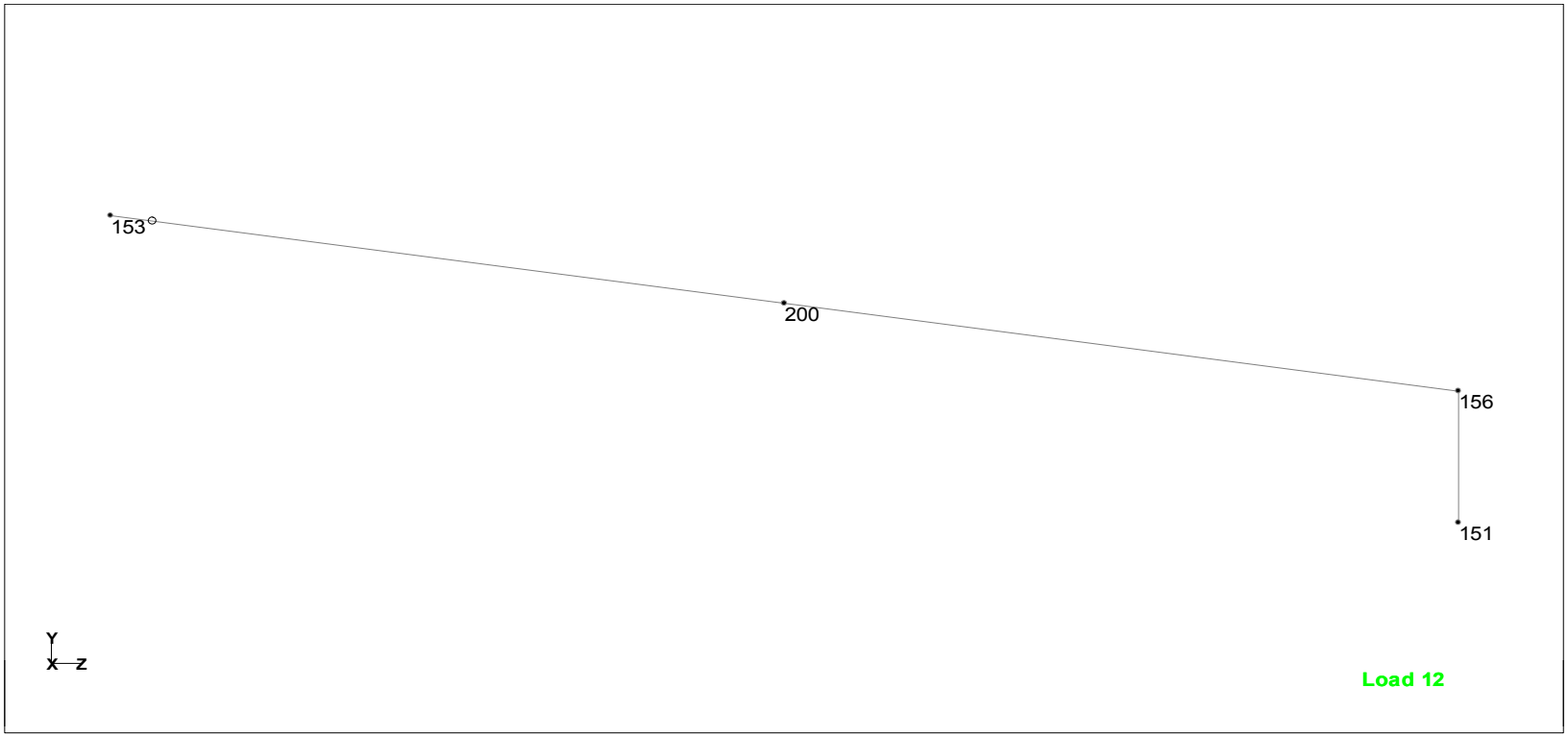
FRAME - 2 (NODE NUMBERS)



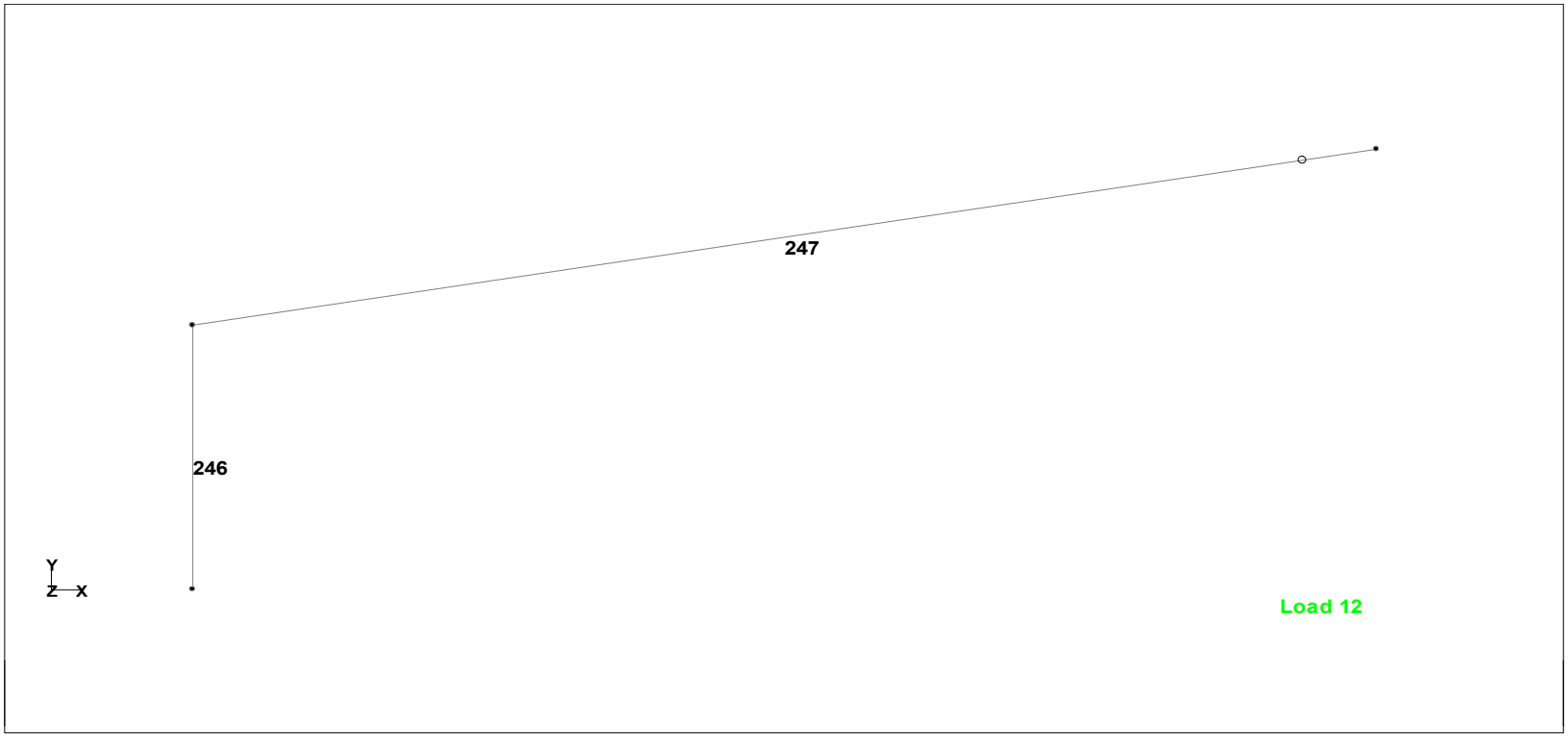
FRAME - 2 (BEAM NUMBERS)



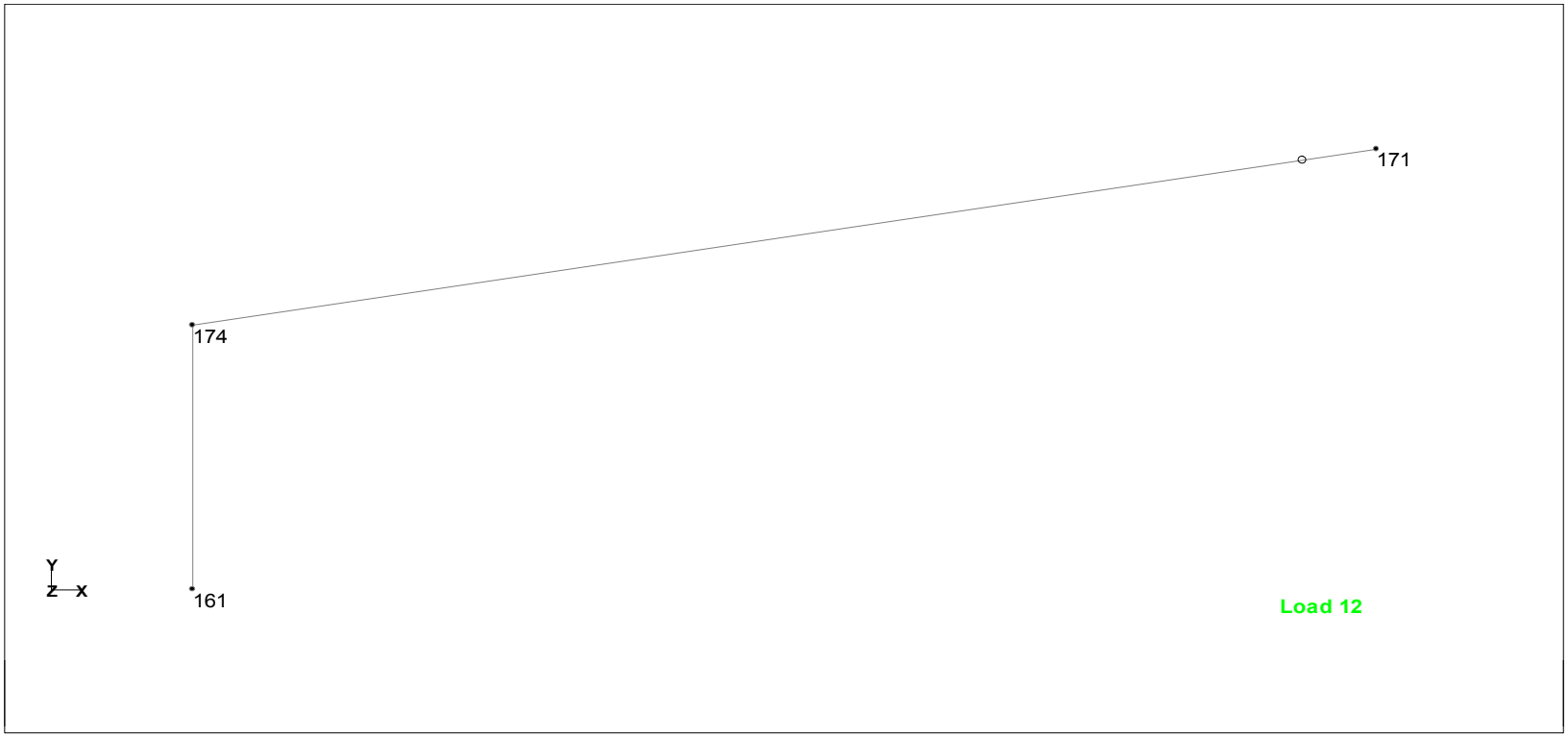
FRAME - 3 (BEAM NUMBERS)



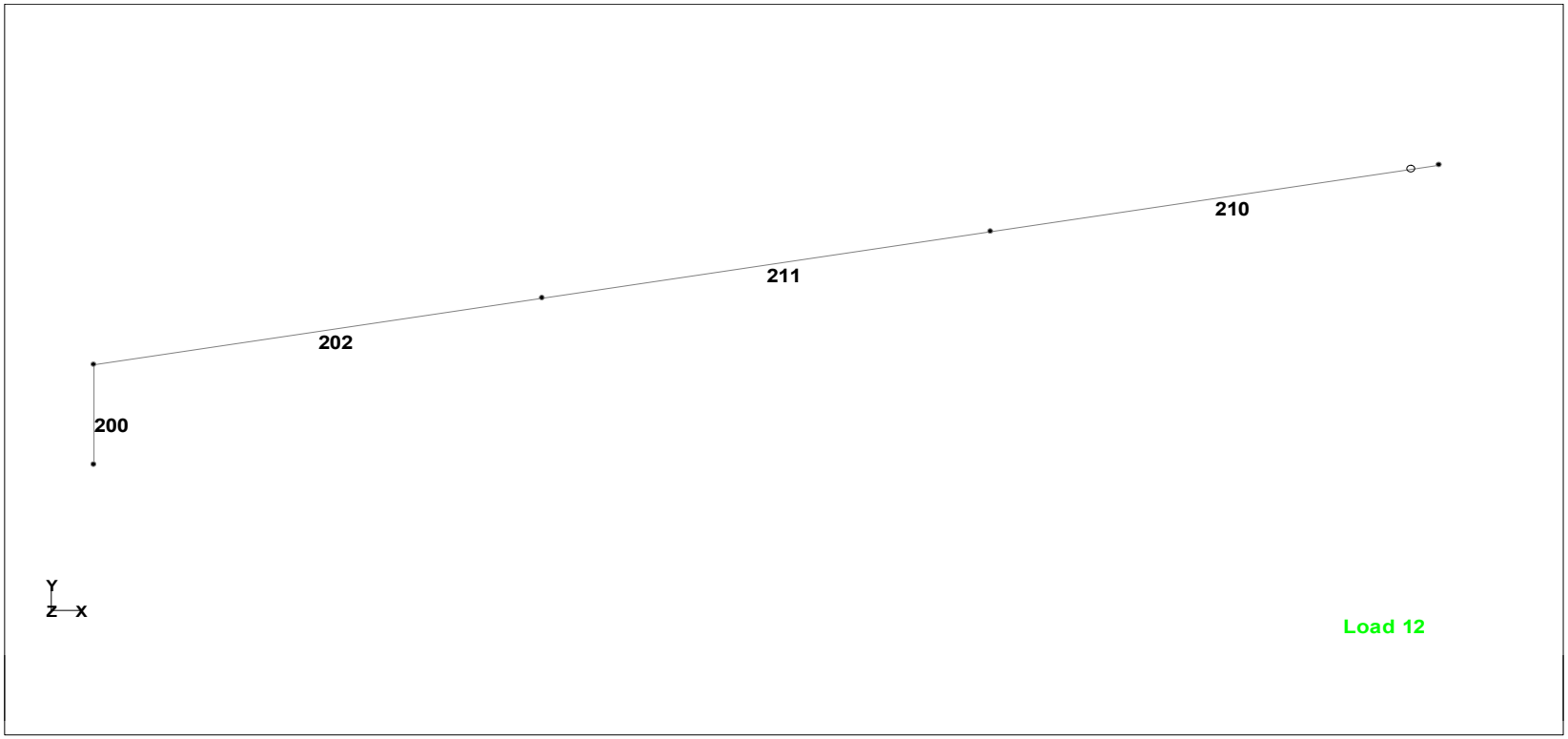
FRAME - 3 (NODE NUMBERS)



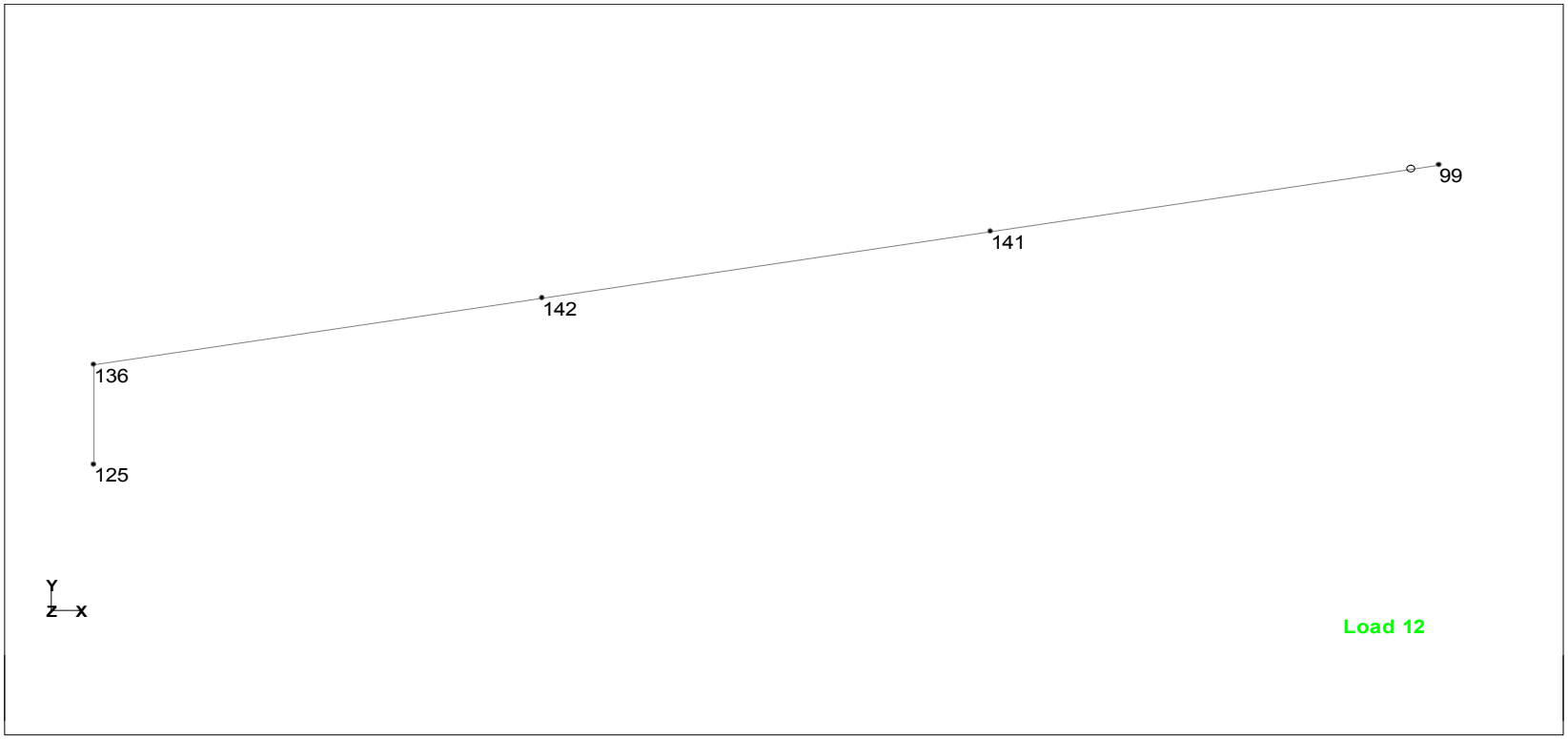
FRAME - 4 (BEAM NUMBERS)



FRAME - 4 (NODE NUMBERS)



FRAME - 5 (BEAM NUMBERS)



FRAME - 5 (NODE NUMBERS)

```
**************************************************
*                                                *
*           STAAD.Pro V8i SELECTseries4          *
*           Version  20.07.09.31                 *
*           Proprietary Program of               *
*           Bentley Systems, Inc.                *
*           Date=    FEB 13, 2015                *
*           Time=    17:13:10                    *
*                                                *
*      USER ID: jppl                             *
**************************************************
```

```
     1. STAAD SPACE
INPUT FILE: BANQUET HALL ZIRAKPUR--FINAL.STD
     2. START JOB INFORMATION
     3. ENGINEER DATE 19-AUG-10
     4. END JOB INFORMATION
     5. INPUT WIDTH 79
     6. ************************************************************
     7. UNIT METER KN
     8. JOINT COORDINATES
     9. 4 42 1.5 20.55; 35 0 1.5 20.55; 39 21 4.5 20.55; 40 42 0 20.55; 41 0 0 20.55
    10. 42 2.99957 0 20.55; 43 6.00014 0 20.55; 44 8.9997 0 20.55; 45 12.0003 0 20.55
    11. 46 14.9999 0 20.55; 47 18.0004 0 20.55; 48 21 0 20.55; 49 23.9996 0 20.55
    12. 50 26.9991 0 20.55; 51 29.9997 0 20.55; 52 33.0003 0 20.55; 53 35.9999 0 20.55
    13. 54 39.0004 0 20.55; 67 18.0004 4.5 20.55; 68 14.9999 4 20.55
    14. 69 12.0001 3.5 20.55; 70 8.9999 3 20.55; 71 6.00007 2.5 20.55
    15. 72 2.99974 2 20.55; 73 23.9996 4.5 20.55; 74 26.9991 4 20.55
    16. 75 29.9997 3.5 20.55; 76 33.0003 3 20.55; 77 35.9999 2.5 20.55
    17. 78 39.0004 2 20.55; 79 0 1.5 27.4; 80 2.99974 2 27.4; 81 42 1.5 27.4
    18. 82 39.0004 2 27.4; 83 0 0 27.4; 84 2.99957 0 27.4; 85 42 0 27.4
    19. 86 6.00014 0 27.4; 87 8.9997 0 27.4; 88 12.0003 0 27.4; 89 14.9999 0 27.4
    20. 90 18.0004 0 27.4; 91 21 0 27.4; 92 23.9996 0 27.4; 93 26.9991 0 27.4
    21. 94 29.9997 0 27.4; 95 33.0003 0 27.4; 96 35.9999 0 27.4; 97 39.0004 0 27.4
    22. 98 21 4.5 27.4; 99 18.0004 4.5 27.4; 100 14.9999 4 27.4; 101 12.0001 3.5 27.4
    23. 102 9 3 27.4; 103 6.00007 2.5 27.4; 104 23.9996 4.5 27.4; 105 26.9991 4 27.4
    24. 106 29.9997 3.5 27.4; 107 33.0003 3 27.4; 108 35.9999 2.5 27.4; 109 0 0 34.25
    25. 117 0 0 41.1; 125 0 0 47.95; 127 6.00014 0 47.95; 128 12.0003 0 47.95
    26. 129 18.0004 0 47.95; 133 18.0004 1.5 47.95; 134 23.9996 1.00136E-005 47.95
    27. 135 23.9996 1.5 47.95; 136 0 1.5 47.95; 141 12.0001 3.5 34.25
    28. 142 6.00014 2.5 41.1; 143 6.00014 1.5 47.95; 144 12.0003 1.5 47.95
    29. 145 0 1.5 41.1; 146 0 1.5 34.25; 147 42 0 34.25; 148 42 0 41.1; 149 42 0 47.95
    30. 150 35.9999 0 47.95; 151 29.9997 0 47.95; 152 42 1.5 47.95
    31. 153 29.9999 3.5 34.25; 154 35.9999 2.5 41.1; 155 35.9999 1.5 47.95
    32. 156 29.9997 1.5 47.95; 157 42 1.5 41.1; 158 42 1.5 34.25; 160 0 0 13.7
    33. 161 0 0 6.85; 162 0 0 0; 163 6.00014 0 0; 164 12.0003 0 0; 165 18.0004 0 0
    34. 166 18.0004 1.5 0; 167 23.9996 1.00136E-005 0; 168 23.9996 1.5 0; 169 0 1.5 0
    35. 170 12.0001 3.5 13.7; 171 6.00014 2.5 6.85; 172 6.00014 1.5 0
    36. 173 12.0003 1.5 0; 174 0 1.5 6.85; 175 0 1.5 13.7; 176 42 0 13.7
    37. 177 42 0 6.85; 178 42 0 0; 179 35.9999 0 0; 180 29.9997 0 0; 181 42 1.5 0
    38. 182 29.9999 3.5 13.7; 183 35.9999 2.5 6.85; 184 35.9999 1.5 0
```

```
39. 185 29.9997 1.5 0; 186 42 1.5 6.85; 187 42 1.5 13.7; 188 21 4.5 23.975
40. 189 21 5.164 23.975; 190 18 2.5 41.1; 191 18.0004 3.5 34.25
41. 192 23.9996 2.5 41.1; 193 23.9996 3.5 34.25; 194 18.0004 2.5 6.85
42. 195 18.0004 3.5 13.7; 196 23.9996 2.5 6.85; 197 23.9996 3.5 13.7
43. 198 12.0002 2.5 41.1; 199 6.00005 2.5 34.25; 200 29.9998 2.5 41.1
44. 201 36 2.5 34.25; 202 12.0002 2.5 6.85; 203 6.00005 2.5 13.7
45. 204 29.9998 2.5 6.85; 205 36 2.5 13.7
46. MEMBER INCIDENCES
47. 81 35 72; 82 4 78; 83 41 42; 84 40 4; 85 41 35; 86 42 43; 87 43 44; 88 44 45
48. 89 45 46; 90 46 47; 91 47 48; 92 48 49; 93 49 50; 94 50 51; 95 51 52; 96 52 53
49. 97 53 54; 98 54 40; 99 48 39; 100 47 67; 101 46 68; 102 45 69; 103 44 70
50. 104 43 71; 105 42 72; 106 49 73; 107 50 74; 108 51 75; 109 52 76; 110 53 77
51. 111 54 78; 112 67 39; 113 68 67; 114 69 68; 115 70 69; 116 71 70; 117 72 71
52. 118 73 39; 119 74 73; 120 75 74; 121 76 75; 122 77 76; 123 78 77; 124 47 39
53. 125 46 67; 126 45 68; 127 44 69; 128 43 70; 129 42 71; 130 41 72; 131 49 39
54. 132 50 73; 133 51 74; 134 52 75; 135 53 76; 136 54 77; 137 40 78; 138 79 80
55. 139 81 82; 140 83 84; 141 85 81; 142 83 79; 143 84 86; 144 86 87; 145 87 88
56. 146 88 89; 147 89 90; 148 90 91; 149 91 92; 150 92 93; 151 93 94; 152 94 95
57. 153 95 96; 154 96 97; 155 97 85; 156 91 98; 157 90 99; 158 89 100; 159 88 101
58. 160 87 102; 161 86 103; 162 84 80; 163 92 104; 164 93 105; 165 94 106
59. 166 95 107; 167 96 108; 168 97 82; 169 99 98; 170 100 99; 171 101 100
60. 172 102 101; 173 103 102; 174 80 103; 175 104 98; 176 105 104; 177 106 105
61. 178 107 106; 179 108 107; 180 82 108; 181 90 98; 182 89 99; 183 88 100
62. 184 87 101; 185 86 102; 186 84 103; 187 83 80; 188 92 98; 189 93 104
63. 190 94 105; 191 95 106; 192 96 107; 193 97 108; 194 85 82; 195 129 133
64. 197 133 190; 198 134 135; 199 135 192; 200 125 136; 202 136 142; 210 141 99
65. 211 142 141; 212 127 143; 213 128 144; 214 143 142; 215 144 198; 216 117 145
66. 217 145 142; 218 109 146; 219 146 199; 220 149 152; 221 152 154; 222 153 104
67. 223 154 153; 224 150 155; 225 151 156; 226 155 154; 227 156 200; 228 148 157
68. 229 157 154; 230 147 158; 231 158 201; 234 165 166; 235 166 194; 236 167 168
69. 237 168 196; 238 162 169; 239 169 171; 240 170 67; 241 171 170; 242 163 172
70. 243 164 173; 244 172 171; 245 173 202; 246 161 174; 247 174 171; 248 160 175
71. 249 175 203; 250 178 181; 251 181 183; 252 182 73; 253 183 182; 254 179 184
72. 255 180 185; 256 184 183; 257 185 204; 258 177 186; 259 186 183; 260 176 187
73. 261 187 205; 262 97 54; 263 96 53; 264 95 52; 265 94 51; 266 93 50; 267 92 49
74. 268 91 48; 269 90 47; 270 89 46; 271 88 45; 272 87 44; 273 86 43; 274 84 42
75. 277 188 189; 278 99 189; 279 104 189; 280 73 189; 281 67 189; 282 79 35
76. 283 80 72; 284 103 71; 285 102 70; 286 101 69; 287 100 68; 288 99 67
77. 289 104 73; 290 105 74; 291 106 75; 292 107 76; 293 108 77; 294 82 78
78. 295 81 4; 296 190 191; 297 191 99; 298 192 193; 299 193 104; 300 194 195
79. 301 195 67; 302 196 197; 303 197 73; 304 198 141; 305 199 141; 306 200 153
80. 307 201 153; 308 202 170; 309 203 170; 310 204 182; 311 205 182; 312 136 143
81. 313 143 144; 314 144 133; 315 133 135; 316 135 156; 317 156 155; 318 155 152
82. 319 136 145; 320 145 146; 321 152 157; 322 157 158; 323 175 174; 324 174 169
83. 325 169 172; 326 172 173; 327 173 166; 328 166 168; 329 168 185; 330 185 184
84. 331 184 181; 332 181 186; 333 186 187; 334 146 79; 335 175 35; 336 158 81
85. 337 187 4; 338 142 198; 339 198 190; 340 190 192; 341 192 200; 342 200 154
86. 343 141 191; 344 191 193; 345 193 153; 346 171 202; 347 202 194; 348 194 196
87. 349 196 204; 350 204 183; 351 170 195; 352 195 197; 353 197 182; 354 142 199
88. 355 154 201; 356 171 203; 357 183 205; 358 99 188; 359 67 188; 360 98 188
89. 361 188 73; 362 188 104; 363 188 39
90. **************************************************************
91. DEFINE MATERIAL START
92. ISOTROPIC STEEL
93. E 2E+008
94. POISSON 0.3
```

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 95. DENSITY 76.9822
 96. ALPHA 6.5E-006
 97. DAMP 0.03
 98. END DEFINE MATERIAL
 99. ***********************************************************
100. ***********************************************************
101. MEMBER PROPERTY INDIAN
102. 81 82 113 TO 117 119 TO 123 138 139 170 TO 174 176 TO 179 -
103. 180 TAPERED 0.316 0.004 0.316 0.15 0.008
104. MEMBER PROPERTY INDIAN
105. 83 86 TO 98 140 143 TO 155 TAPERED 0.216 0.004 0.216 0.15 0.008
106. 84 85 141 142 TAPERED 0.42 0.005 0.42 0.2 0.01
107. MEMBER PROPERTY TATASTRUCTURA
108. 99 100 102 106 108 156 157 159 163 165 TABLE ST 80X80X4.0SHS
109. 101 107 158 164 TABLE ST 80X80X4.0SHS
110. 103 TO 105 109 TO 111 160 TO 162 166 TO 168 TABLE ST 80X80X4.0SHS
111. 127 128 134 135 184 185 191 192 TABLE ST 80X80X4.0SHS
112. 125 129 130 132 136 137 182 186 187 189 193 194 TABLE ST 150X150X5.0SHS
113. 124 126 131 133 181 183 188 190 TABLE ST 80X80X4.0SHS
114. MEMBER PROPERTY TATASTRUCTURA
115. 358 359 361 362 TAPERED 0.37 0.004 0.37 0.2 0.01
116. MEMBER PROPERTY TATASTRUCTURA
117. 288 289 TAPERED 0.232 0.008 0.232 0.2 0.01
118. MEMBER PROPERTY TATASTRUCTURA
119. 277 TO 281 TAPERED 0.216 0.004 0.216 0.15 0.008
120. MEMBER PROPERTY COLDFORMED INDIAN
121. 312 TO 337 TABLE ST 200ZS60X2
122. MEMBER PROPERTY TATASTRUCTURA
123. 212 216 224 228 242 246 254 258 TAPERED 0.366 0.005 0.516 0.15 0.008
124. 214 217 226 229 244 247 256 259 TAPERED 0.516 0.005 0.366 0.18 0.008
125. 213 218 225 230 243 248 255 260 TAPERED 0.366 0.006 0.716 0.18 0.008
126. 215 219 227 231 245 249 257 261 TAPERED 0.716 0.005 0.416 0.225 0.008
127. 304 TO 311 TAPERED 0.416 0.004 0.366 0.2 0.008
128. 195 198 234 236 TAPERED 0.366 0.008 0.866 0.2 0.008
129. 197 199 235 237 TAPERED 0.87 0.006 0.37 0.3 0.01
130. 296 298 300 302 TAPERED 0.37 0.005 0.72 0.255 0.01
131. 297 299 301 303 TAPERED 0.72 0.005 0.37 0.3 0.01
132. 200 220 238 250 TAPERED 0.366 0.005 0.366 0.15 0.008
133. 202 221 239 251 TAPERED 0.366 0.005 0.366 0.2 0.008
134. 211 223 241 253 TAPERED 0.366 0.005 0.616 0.24 0.008
135. 210 222 240 252 TAPERED 0.632 0.005 0.382 0.3 0.016
136. MEMBER PROPERTY TATASTRUCTURA
137. 112 118 169 175 TAPERED 0.316 0.004 0.316 0.18 0.008
138. MEMBER PROPERTY INDIAN
139. 262 TO 274 282 TO 287 290 TO 295 338 TO 357 360 363 TABLE ST PIP1016M
140. CONSTANTS
141. BETA 90 MEMB 195 198 212 213 224 225 234 236 242 243 254 255
142. BETA 45 MEMB 200 220 238 250
143. MATERIAL STEEL ALL
144. ***********************************************************
145. ***********************************************************
146. SUPPORTS
147. 40 41 83 85 109 117 125 127 TO 129 134 147 TO 151 160 TO 165 167 176 TO 179 -
148. 180 PINNED
149. MEMBER RELEASE
150. 210 214 217 222 226 229 240 244 247 252 256 259 297 299 301 303 TO 310 -
```

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151. 311 END MY MZ
152. 278 TO 281 START MY MZ
153. 278 TO 281 END MY MZ
154. ************************************************************
155. DEFINE 1893 LOAD
156. ZONE 0.24 RF 5 I 1.5 SS 2 ST 2
157. MEMBER WEIGHT
158. 81 82 112 TO 123 138 139 169 TO 180 UNI 2.654
159. ************************************************************
160. ********************** EARTHQUAKE LOAD *************************
161. LOAD 1 EQ+
162. 1893 LOAD X 1
163. PERFORM ANALYSIS
```

P R O B L E M S T A T I S T I C S

NUMBER OF JOINTS	**134**	**NUMBER OF MEMBERS**	**270**
NUMBER OF PLATES	**0**	**NUMBER OF SOLIDS**	**0**
NUMBER OF SURFACES	**0**	**NUMBER OF SUPPORTS**	**28**

SOLVER USED IS THE OUT-OF-CORE BASIC SOLVER

ORIGINAL/FINAL BAND-WIDTH= 115/ 17/ 102 DOF
TOTAL PRIMARY LOAD CASES = 1, TOTAL DEGREES OF FREEDOM = 720
SIZE OF STIFFNESS MATRIX = 74 DOUBLE KILO-WORDS
REQRD/AVAIL. DISK SPACE = 13.1/ 96581.6 MB

```
*********************************************************
*                                                       *
* TIME PERIOD FOR X 1893 LOADING =    0.29118 SEC       *
* SA/G PER 1893=    2.500, LOAD FACTOR= 1.000           *
*      FACTOR V  PER 1893=    0.0900 X    225.57        *
*                                                       *
*********************************************************
```

```
164. CHANGE
165. LOAD 2 EQ -
166. 1893 LOAD X -1.
167. PERFORM ANALYSIS
```

```
*********************************************************
*                                                       *
* TIME PERIOD FOR X 1893 LOADING =    0.29118 SEC       *
* SA/G PER 1893=    2.500, LOAD FACTOR=-1.000           *
*      FACTOR V  PER 1893=    0.0900 X    225.57        *
*                                                       *
*********************************************************



168. CHANGE
169. ********************** DEAD LOAD ******************************
170. LOAD 3 DEAD LOAD DL
171. SELFWEIGHT Y -1.15
172. MEMBER LOAD
173. 81 82 112 TO 123 138 139 169 TO 180 197 199 214 215 217 219 226 227 229 231 -
174. 235 237 244 245 247 249 256 257 259 261 296 TO 311 UNI GY -1.03
175. ********************** LIVE LOAD ******************************
176. LOAD 4 LIVE LOAD LL
177. MEMBER LOAD
178. 81 82 112 TO 123 138 139 169 TO 180 195 197 TO 199 213 TO 215 217 219 225 -
179. 226 TO 227 229 231 235 237 244 245 247 249 256 257 259 261 296 TO 310 -
180. 311 UNI GY -3.91
181. JOINT LOAD
182. 40 TO 42 54 83 TO 85 97 FY -65
183. ********************** LIVE LOAD 2 ******************************
184. LOAD 18 LIVE LOAD LL2
185. MEMBER LOAD
186. 81 82 112 TO 123 138 139 169 TO 180 195 197 TO 199 213 TO 215 217 219 225 -
187. 226 TO 227 229 231 235 237 244 245 247 249 256 257 259 261 296 TO 310 -
188. 311 UNI GY -3.91
189. MEMBER LOAD
190. 83 86 TO 98 140 143 TO 155 UNI GY -6.5
191. ********************* WIND LOAD *******************************
192. LOAD 5 WIND WL5 ACROSS THE RIDGE (WITH +VE CPI) RIGHT
193. MEMBER LOAD
194. 82 118 TO 123 139 175 TO 180 197 199 214 215 217 219 226 227 229 231 235 237 -
195. 244 245 247 249 256 257 259 261 296 TO 311 UNI Y 5.69
196. 81 112 TO 117 138 169 TO 174 UNI Y 3.63
197. ********************* WIND LOAD *******************************
198. LOAD 6 WIND WL6 ACROSS THE RIDGE (WITH +VE CPI) LEFT
199. MEMBER LOAD
200. 81 112 TO 117 138 169 TO 174 197 199 214 215 217 219 226 227 229 231 235 237 -
201. 244 245 247 249 256 257 259 261 296 TO 311 UNI Y 5.69
202. 82 118 TO 123 139 175 TO 180 UNI Y 3.63
203. ********************* WIND LOAD *******************************
204. LOAD 7 WIND WL7 ACROSS THE RIDGE (WITH -VE CPI) RIGHT
205. MEMBER LOAD
206. 82 118 TO 123 139 175 TO 180 197 199 214 215 217 219 226 227 229 231 235 237 -
207. 244 245 247 249 256 257 259 261 296 TO 311 UNI Y 3.33
208. 81 112 TO 117 138 169 TO 174 UNI Y 1.27
```

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209. ********************** WIND LOAD ****************************
210. LOAD 8 WIND WL8 ACROSS THE RIDGE (WITH -VE CPI) LEFT
211. MEMBER LOAD
212. 81 112 TO 117 138 169 TO 174 197 199 214 215 217 219 226 227 229 231 235 237 -
213. 244 245 247 249 256 257 259 261 296 TO 311 UNI Y 3.33
214. 82 118 TO 123 139 175 TO 180 UNI Y 1.27
215. ********************** WIND LOAD ****************************
216. LOAD 9 WIND WL9 PARALLEL TO THE RIDGE (WITH +VE CPI)
217. MEMBER LOAD
218. 82 118 TO 123 139 175 TO 180 197 199 214 215 217 219 226 227 229 231 235 237 -
219. 244 245 247 249 256 257 259 261 296 TO 311 UNI Y 5.69
220. 81 112 TO 117 138 169 TO 174 UNI Y 5.69
221. ********************************************************
222. ***************** LOAD COBINATIONS **********************
223. ********************************************************
224. *****************  DEAD + EARTHQUAKE **********************
225. LOAD COMB 10 (1.0 DL + 1.0 EQ+X)
226. 3 1.0 1 1.0
227. LOAD COMB 11 ( 1.0 DL + 1.0 EQ-X)
228. 3 1.0 2 1.0
229. *****************  DEAD + LIVE **********************
230. LOAD COMB 12 (1.0 DL + 1.0 LL )
231. 3 1.0 4 1.0
232. LOAD COMB 19 (1.0 DL + 1.0 LL2 )
233. 3 1.0 18 1.0
234. ******************** DEAD + WIND ***************************
235. LOAD COMB 13 (.6 DL + 1 WL5)
236. 3 0.6 5 1.0
237. LOAD COMB 14 (.6 DL + 1 WL6)
238. 3 0.6 6 1.0
239. LOAD COMB 15 (.6 DL + 1 WL7)
240. 3 0.6 7 1.0
241. LOAD COMB 16 (.6 DL + 1 WL8)
242. 3 0.6 8 1.0
243. LOAD COMB 17 (.6 DL + 1 WL9)
244. 3 0.6 9 1.0
245. ************************************************************
246. PERFORM ANALYSIS


247. LOAD LIST 10 TO 17
248. ************************************************************
249. PARAMETER 1
250. CODE AISC
251. ************************************************************
252. ************************************************************
253. UNB 1.5 MEMB 197 199 202 210 211 214 215 217 219 221 TO 223 226 227 229 231 -
254. 235 237 239 TO 241 244 245 247 249 251 TO 253 256 257 259 261 296 TO 311
255. UNT 1.5 MEMB 197 199 202 210 211 214 215 217 219 221 TO 223 226 227 229 231 -
256. 235 237 239 TO 241 244 245 247 249 251 TO 253 256 257 259 261 296 TO 311
257. LZ 27.89 MEMB 202 210 211 221 TO 223 239 TO 241 251 TO 253
258. LZ 12.24 MEMB 219 231 249 261 305 307 309 311
259. LZ 13.97 MEMB 215 227 245 257 304 306 308 310
```

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260. LZ 20.96 MEMB 197 199 235 237 296 TO 303
261. KZ 2 MEMB 358 359 361 362
262. ************************************************************
263. FYLD 345000 MEMB 81 TO 98 112 TO 123 138 TO 155 169 TO 180 195 197 TO 200 -
264. 202 210 TO 231 234 TO 261 277 TO 281 296 TO 311 358 359 361 362
265. CHECK CODE MEMB 81 TO 195 197 TO 200 202 210 TO 231 234 TO 261 277 TO 281 -
266. 288 289 296 TO 311 358 359 361 362
```

STAAD.Pro CODE CHECKING - (AISC 9TH EDITION) v1.0
****

ALL UNITS ARE - KN METE (UNLESS OTHERWISE Noted)

MEMBER	TABLE	RESULT/ FX	CRITICAL COND/ MY	RATIO/ MZ	LOADING/ LOCATION
81	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H1-3	0.365	12
		25.91 C	0.07	20.58	0.00
82	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H1-3	0.365	12
		25.91 C	-0.07	20.57	0.00
83	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H1-3	0.412	12
		57.45 C	0.10	12.05	0.00
84	TAP ERED		(INDIAN SECTIONS)		
		PASS	SHEAR -Y	0.127	12
		21.43 C	-0.06	13.85	0.00
85	TAP ERED		(INDIAN SECTIONS)		
		PASS	SHEAR -Y	0.127	12
		21.43 C	-0.06	-13.85	0.00
86	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H2-1	0.115	12
		7.97 T	0.12	-4.84	0.00
87	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H1-3	0.114	14
		35.68 C	-0.03	1.19	3.00
88	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H1-3	0.100	14
		30.35 C	0.02	1.16	0.00
89	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H1-3	0.074	14
		16.73 C	0.07	1.31	0.00
90	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H2-1	0.039	13
		16.12 T	0.18	-0.16	0.00
91	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H1-3	0.024	12
		6.99 C	0.04	0.18	0.00
92	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H1-3	0.024	12
		6.99 C	0.04	0.19	3.00
93	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H2-1	0.039	14
		16.14 T	0.18	-0.16	3.00
94	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H1-3	0.074	13
		16.71 C	0.07	1.31	3.00
95	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H1-3	0.100	13
		30.33 C	0.02	1.16	3.00

ALL UNITS ARE - KN METE (UNLESS OTHERWISE Noted)

MEMBER	TABLE	RESULT/ FX	CRITICAL COND/ MY	RATIO/ MZ	LOADING/ LOCATION
96	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H1-3	0.114	13
		35.67 C	-0.03	1.19	0.00
97	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H2-1	0.115	12
		7.98 T	0.12	-4.84	3.00
98	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H1-3	0.412	12
		57.41 C	0.10	12.04	3.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
99	ST 80X80X4.0SHS		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H2-1	0.076	10
		1.16 T	-0.28	0.00	0.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
100	ST 80X80X4.0SHS		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.268	13
		11.22 C	0.28	0.02	4.50
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
101	ST 80X80X4.0SHS		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.594	12
		31.79 C	0.25	-0.20	4.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
102	ST 80X80X4.0SHS		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.295	12
		17.32 C	-0.26	0.19	0.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
103	ST 80X80X4.0SHS		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H2-1	0.126	11
		9.11 T	0.29	0.05	3.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
104	ST 80X80X4.0SHS		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H2-1	0.195	12
		22.90 T	-0.28	0.01	0.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
105	ST 80X80X4.0SHS		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H2-1	0.813	12
		111.91 T	0.21	0.58	2.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
106	ST 80X80X4.0SHS		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.269	14
		11.25 C	0.28	-0.02	4.50
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
107	ST 80X80X4.0SHS		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.595	12
		31.82 C	0.25	0.20	4.00

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     ***Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES***
108  ST   80X80X4.0SHS             (TATA STRUCTURA SECTIONS)
                     PASS     AISC- H1-1         0.295        12
                  17.33 C         -0.26          -0.19        0.00
     ***Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES***
109  ST   80X80X4.0SHS             (TATA STRUCTURA SECTIONS)
                     PASS     AISC- H2-1         0.126        10
                   9.10 T          0.29          -0.05        3.00
     ***Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES***
110  ST   80X80X4.0SHS             (TATA STRUCTURA SECTIONS)
                     PASS     AISC- H2-1         0.195        12
                  22.87 T         -0.28          -0.01        0.00
     ***Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES***
111  ST   80X80X4.0SHS             (TATA STRUCTURA SECTIONS)
                     PASS     AISC- H2-1         0.813        12
                 111.88 T          0.21          -0.58        2.00
112       TAP ERED                (TATA STRUCTURA SECTIONS)
                     PASS     AISC- H1-1         0.646        12
                 273.50 C         -0.81          10.61        0.00
113       TAP ERED                (INDIAN SECTIONS)
                     PASS     AISC- H1-1         0.925        12
                 333.19 C         -0.40           4.84        3.04
114       TAP ERED                (INDIAN SECTIONS)
                     PASS     AISC- H1-1         0.909        12
                 348.52 C          0.07          -4.89        1.52
115       TAP ERED                (INDIAN SECTIONS)
                     PASS     AISC- H1-1         0.914        12
                 349.20 C         -0.02          -5.80        1.52
116       TAP ERED                (INDIAN SECTIONS)
                     PASS     AISC- H1-1         0.860        12
                 329.82 C          0.03          -5.14        1.52
117       TAP ERED                (INDIAN SECTIONS)
                     PASS     AISC- H1-1         0.729        12
                 263.93 C          0.00          -7.61        1.27
118       TAP ERED                (TATA STRUCTURA SECTIONS)
                     PASS     AISC- H1-1         0.646        12
                 273.44 C          0.82          10.62        0.00
119       TAP ERED                (INDIAN SECTIONS)
                     PASS     AISC- H1-1         0.925        12
                 333.04 C          0.40           4.85        3.04
120       TAP ERED                (INDIAN SECTIONS)
                     PASS     AISC- H1-1         0.909        12
                 348.38 C         -0.07          -4.89        1.52
121       TAP ERED                (INDIAN SECTIONS)
                     PASS     AISC- H1-1         0.914        12
                 349.07 C          0.02          -5.80        1.52
122       TAP ERED                (INDIAN SECTIONS)
                     PASS     AISC- H1-1         0.859        12
                 329.72 C         -0.03          -5.14        1.52
123       TAP ERED                (INDIAN SECTIONS)
                     PASS     AISC- H1-1         0.729        12
                 263.87 C          0.00          -7.61        1.27
     ***Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES***
124  ST   80X80X4.0SHS             (TATA STRUCTURA SECTIONS)
                     PASS     AISC- H1-1         0.316        16
                  10.39 C          0.06           0.12        5.41
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     ***Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES***
125  ST   150X150X5.0SHS           (TATA STRUCTURA SECTIONS)
                     PASS     AISC- H1-3         0.229        14
                  35.45 C          1.37           0.76        5.41
     ***Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES***
126  ST   80X80X4.0SHS             (TATA STRUCTURA SECTIONS)
                     PASS     AISC- H1-1         0.587        14
                  22.41 C          0.09           0.16        5.00
     ***Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES***
127  ST   80X80X4.0SHS             (TATA STRUCTURA SECTIONS)
                     PASS     AISC- H1-1         0.244        11
                   9.85 C          0.13           0.12        4.61
     ***Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES***
128  ST   80X80X4.0SHS             (TATA STRUCTURA SECTIONS)
                     PASS     AISC- H1-1         0.502        12
                  27.47 C         -0.13           0.07        0.00
     ***Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES***
129  ST   150X150X5.0SHS           (TATA STRUCTURA SECTIONS)
                     PASS     AISC- H1-1         0.356        12
                  84.09 C         -0.33          -1.87        0.00
     ***Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES***
130  ST   150X150X5.0SHS           (TATA STRUCTURA SECTIONS)
                     PASS     AISC- H1-1         0.959        12
                 285.30 C         -0.05           1.80        0.00
     ***Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES***
131  ST   80X80X4.0SHS             (TATA STRUCTURA SECTIONS)
                     PASS     AISC- H1-1         0.316        15
                  10.38 C         -0.06           0.12        5.41
     ***Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES***
132  ST   150X150X5.0SHS           (TATA STRUCTURA SECTIONS)
                     PASS     AISC- H1-3         0.229        13
                  35.46 C         -1.37           0.76        5.41
     ***Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES***
133  ST   80X80X4.0SHS             (TATA STRUCTURA SECTIONS)
                     PASS     AISC- H1-1         0.588        13
                  22.41 C         -0.09           0.16        5.00
     ***Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES***
134  ST   80X80X4.0SHS             (TATA STRUCTURA SECTIONS)
                     PASS     AISC- H1-1         0.244        10
                   9.85 C         -0.13           0.12        4.61
     ***Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES***
135  ST   80X80X4.0SHS             (TATA STRUCTURA SECTIONS)
                     PASS     AISC- H1-1         0.501        12
                  27.43 C          0.13           0.07        0.00
     ***Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES***
136  ST   150X150X5.0SHS           (TATA STRUCTURA SECTIONS)
                     PASS     AISC- H1-1         0.355        12
                  84.05 C          0.33          -1.87        0.00
     ***Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES***
137  ST   150X150X5.0SHS           (TATA STRUCTURA SECTIONS)
                     PASS     AISC- H1-1         0.958        12
                 285.22 C          0.05           1.80        0.00
138       TAP ERED                (INDIAN SECTIONS)
                     PASS     AISC- H1-3         0.365        12
                  25.91 C         -0.07          20.57        0.00
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ALL UNITS ARE - KN METE (UNLESS OTHERWISE Noted)

MEMBER	TABLE	RESULT/ FX	CRITICAL COND/ MY	RATIO/ MZ	LOADING/ LOCATION
139	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H1-3	0.365	12
		25.91 C	0.07	20.58	0.00
140	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H1-3	0.412	12
		57.40 C	-0.10	12.05	0.00
141	TAP ERED		(INDIAN SECTIONS)		
		PASS	SHEAR -Y	0.127	12
		21.43 C	0.06	13.85	0.00
142	TAP ERED		(INDIAN SECTIONS)		
		PASS	SHEAR -Y	0.127	12
		21.43 C	0.06	-13.85	0.00
143	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H2-1	0.115	12
		7.98 T	-0.12	-4.84	0.00
144	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H1-3	0.114	14
		35.68 C	0.03	1.19	3.00
145	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H1-3	0.100	14
		30.33 C	-0.02	1.16	0.00
146	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H1-3	0.074	14
		16.71 C	-0.07	1.31	0.00
147	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H2-1	0.039	13
		16.14 T	-0.18	-0.16	0.00
148	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H1-3	0.024	12
		6.99 C	-0.04	0.19	0.00
149	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H1-3	0.024	12
		6.99 C	-0.04	0.18	3.00
150	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H2-1	0.039	14
		16.12 T	-0.18	-0.16	3.00
151	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H1-3	0.074	13
		16.73 C	-0.07	1.31	3.00
152	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H1-3	0.100	13
		30.35 C	-0.02	1.16	3.00
153	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H1-3	0.114	13
		35.68 C	0.03	1.19	0.00

ALL UNITS ARE - KN METE (UNLESS OTHERWISE Noted)

MEMBER	TABLE	RESULT/ FX	CRITICAL COND/ MY	RATIO/ MZ	LOADING/ LOCATION
154	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H2-1	0.115	12
		7.97 T	-0.12	-4.84	3.00
155	TAP ERED		(INDIAN SECTIONS)		
		PASS	AISC- H1-3	0.412	12
		57.46 C	-0.10	12.05	3.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
156	ST 80X80X4.0SHS		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H2-1	0.076	11
		1.16 T	0.28	0.00	0.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
157	ST 80X80X4.0SHS		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.269	13
		11.25 C	-0.28	0.02	4.50
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
158	ST 80X80X4.0SHS		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.594	12
		31.80 C	-0.25	-0.20	4.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
159	ST 80X80X4.0SHS		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.295	12
		17.34 C	0.26	0.19	0.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
160	ST 80X80X4.0SHS		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H2-1	0.126	11
		9.10 T	-0.29	0.05	3.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
161	ST 80X80X4.0SHS		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H2-1	0.195	12
		22.88 T	0.28	0.01	0.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
162	ST 80X80X4.0SHS		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H2-1	0.813	12
		111.88 T	-0.21	0.58	2.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
163	ST 80X80X4.0SHS		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.268	14
		11.22 C	-0.28	-0.02	4.50
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
164	ST 80X80X4.0SHS		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.595	12
		31.81 C	-0.25	0.20	4.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				

ALL UNITS ARE - KN METE (UNLESS OTHERWISE Noted)

MEMBER	TABLE	RESULT/ FX	CRITICAL COND/ MY	RATIO/ MZ	LOADING/ LOCATION
165	ST 80X80X4.0SHS	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-1	0.295	12
		17.31 C	0.26	-0.19	0.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
166	ST 80X80X4.0SHS	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H2-1	0.126	10
		9.11 T	-0.29	-0.05	3.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
167	ST 80X80X4.0SHS	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H2-1	0.195	12
		22.90 T	0.28	-0.01	0.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
168	ST 80X80X4.0SHS	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H2-1	0.813	12
		111.91 T	-0.21	-0.58	2.00
169	TAP ERED	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-1	0.646	12
		273.44 C	0.82	10.62	0.00
170	TAP ERED	(INDIAN SECTIONS)			
		PASS	AISC- H1-1	0.925	12
		333.03 C	0.40	4.85	3.04
171	TAP ERED	(INDIAN SECTIONS)			
		PASS	AISC- H1-1	0.909	12
		348.38 C	-0.07	-4.89	1.52
172	TAP ERED	(INDIAN SECTIONS)			
		PASS	AISC- H1-1	0.914	12
		349.09 C	0.02	-5.80	1.52
173	TAP ERED	(INDIAN SECTIONS)			
		PASS	AISC- H1-1	0.859	12
		329.72 C	-0.03	-5.14	1.52
174	TAP ERED	(INDIAN SECTIONS)			
		PASS	AISC- H1-1	0.729	12
		263.87 C	0.00	-7.61	1.27
175	TAP ERED	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-1	0.646	12
		273.50 C	-0.81	10.61	0.00
176	TAP ERED	(INDIAN SECTIONS)			
		PASS	AISC- H1-1	0.925	12
		333.19 C	-0.40	4.84	3.04
177	TAP ERED	(INDIAN SECTIONS)			
		PASS	AISC- H1-1	0.909	12
		348.52 C	0.07	-4.89	1.52
178	TAP ERED	(INDIAN SECTIONS)			
		PASS	AISC- H1-1	0.914	12
		349.20 C	-0.02	-5.80	1.52

ALL UNITS ARE - KN METE (UNLESS OTHERWISE Noted)

MEMBER	TABLE	RESULT/ FX	CRITICAL COND/ MY	RATIO/ MZ	LOADING/ LOCATION
179	TAP ERED	(INDIAN SECTIONS)			
		PASS	AISC- H1-1	0.860	12
		329.82 C	0.03	-5.14	1.52
180	TAP ERED	(INDIAN SECTIONS)			
		PASS	AISC- H1-1	0.729	12
		263.93 C	0.00	-7.61	1.27
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
181	ST 80X80X4.0SHS	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-1	0.316	16
		10.38 C	-0.06	0.12	5.41
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
182	ST 150X150X5.0SHS	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-3	0.229	14
		35.46 C	-1.37	0.76	5.41
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
183	ST 80X80X4.0SHS	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-1	0.587	14
		22.41 C	-0.09	0.16	5.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
184	ST 80X80X4.0SHS	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-1	0.244	11
		9.84 C	-0.13	0.12	4.61
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
185	ST 80X80X4.0SHS	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-1	0.502	12
		27.44 C	0.13	0.07	0.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
186	ST 150X150X5.0SHS	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-1	0.355	12
		84.04 C	0.33	-1.87	0.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
187	ST 150X150X5.0SHS	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-1	0.958	12
		285.23 C	0.05	1.80	0.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
188	ST 80X80X4.0SHS	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-1	0.316	15
		10.39 C	0.06	0.12	5.41
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
189	ST 150X150X5.0SHS	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-3	0.229	13
		35.46 C	1.37	0.76	5.41
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				

ALL UNITS ARE - KN METE (UNLESS OTHERWISE Noted)

MEMBER	TABLE	RESULT/ FX	CRITICAL COND/ MY	RATIO/ MZ	LOADING/ LOCATION
190	ST 80X80X4.0SHS	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-1	0.587	13
		22.41 C	0.09	0.16	5.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
191	ST 80X80X4.0SHS	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-1	0.244	10
		9.86 C	0.13	0.12	4.61
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
192	ST 80X80X4.0SHS	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-1	0.502	12
		27.46 C	-0.13	0.07	0.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
193	ST 150X150X5.0SHS	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-1	0.356	12
		84.09 C	-0.33	-1.87	0.00
	Note: DESIGN IN ACCORDANCE WITH ASD PROVISIONS FOR TUBES				
194	ST 150X150X5.0SHS	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-1	0.959	12
		285.29 C	-0.05	1.80	0.00
195	TAP ERED	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-3	0.892	12
		115.80 C	-0.12	378.45	1.50
197	TAP ERED	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-1	0.944	12
		266.33 C	0.00	378.45	0.00
198	TAP ERED	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-3	0.893	12
		115.82 C	-0.12	378.60	1.50
199	TAP ERED	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-1	0.944	12
		266.43 C	-0.01	378.60	0.00
200	TAP ERED	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-3	0.276	12
		5.52 C	-1.14	20.76	1.50
202	TAP ERED	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-3	0.265	12
		15.04 C	0.01	20.82	0.00
210	TAP ERED	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-1	0.741	12
		289.08 C	0.38	-58.95	3.05
211	TAP ERED	(TATA STRUCTURA SECTIONS)			
		PASS	AISC- H1-1	0.741	12
		99.30 C	0.58	-73.45	9.16

ALL UNITS ARE - KN METE (UNLESS OTHERWISE Noted)

MEMBER	TABLE	RESULT/ FX	CRITICAL COND/ MY	RATIO/ MZ	LOADING/ LOCATION
212	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-3	0.620	12
		41.95 C	-0.05	94.11	1.50
213	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	SHEAR -Y	0.802	12
		75.14 C	-0.07	214.55	1.50
214	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.778	12
		68.09 C	0.01	94.11	0.00
215	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.942	12
		152.33 C	0.02	214.55	0.00
216	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-3	0.792	12
		50.36 C	0.10	120.34	1.50
217	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.893	12
		87.33 C	0.00	120.34	0.00
218	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	SHEAR -Y	0.883	12
		79.81 C	-0.04	236.15	1.50
219	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.941	12
		168.37 C	-0.08	236.15	0.00
220	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-3	0.323	12
		2.10 C	-4.85	0.47	1.50
221	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-3	0.101	12
		3.79 C	0.20	8.83	9.16
222	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.725	12
		283.33 C	-0.39	-57.95	3.05
223	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.703	12
		93.33 C	-0.61	-71.95	9.16
224	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-3	0.666	12
		43.49 C	0.21	99.27	1.50
225	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	SHEAR -Y	0.803	12
		75.16 C	-0.17	214.80	1.50
226	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.821	12
		71.68 C	-0.02	99.27	0.00

ALL UNITS ARE - KN METE (UNLESS OTHERWISE Noted)

MEMBER	TABLE	RESULT/ FX	CRITICAL COND/ MY	RATIO/ MZ	LOADING/ LOCATION
227	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.944	12
		152.50 C	-0.03	214.80	0.00
228	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-3	0.836	12
		51.77 C	0.28	-124.96	1.50
229	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.927	12
		90.58 C	0.00	124.96	0.00
230	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	SHEAR -Y	0.883	12
		79.83 C	-0.05	-236.29	1.50
231	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.942	12
		168.46 C	0.08	236.29	0.00
234	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-3	0.893	12
		115.82 C	0.12	-378.59	1.50
235	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.944	12
		266.42 C	-0.01	378.59	0.00
236	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-3	0.892	12
		115.80 C	0.10	-378.45	1.50
237	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.944	12
		266.33 C	0.00	378.45	0.00
238	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-3	0.323	12
		2.10 C	4.85	-0.47	1.50
239	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-3	0.101	12
		3.79 C	0.20	8.83	9.16
240	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.725	12
		283.32 C	-0.39	-57.95	3.05
241	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.703	12
		93.32 C	-0.61	-71.95	9.16
242	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-3	0.666	12
		43.48 C	-0.21	-99.26	1.50
243	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	SHEAR -Y	0.803	12
		75.16 C	0.17	-214.81	1.50

ALL UNITS ARE - KN METE (UNLESS OTHERWISE Noted)

MEMBER	TABLE	RESULT/ FX	CRITICAL COND/ MY	RATIO/ MZ	LOADING/ LOCATION
244	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.821	12
		71.67 C	-0.02	99.26	0.00
245	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.944	12
		152.51 C	-0.03	214.81	0.00
246	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-3	0.836	12
		51.77 C	-0.28	124.97	1.50
247	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.927	12
		90.59 C	0.00	124.97	0.00
248	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	SHEAR -Y	0.883	12
		79.83 C	0.05	236.29	1.50
249	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.942	12
		168.46 C	0.08	236.29	0.00
250	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-3	0.276	12
		5.52 C	1.14	-20.76	1.50
251	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-3	0.265	12
		15.04 C	0.01	20.82	0.00
252	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.741	12
		289.09 C	0.38	-58.95	3.05
253	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.741	12
		99.31 C	0.58	-73.45	9.16
254	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-3	0.620	12
		41.95 C	0.05	-94.12	1.50
255	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	SHEAR -Y	0.802	12
		75.14 C	0.08	-214.55	1.50
256	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.778	12
		68.10 C	0.01	94.12	0.00
257	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.942	12
		152.33 C	0.02	214.55	0.00
258	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-3	0.792	12
		50.36 C	-0.10	-120.33	1.50

ALL UNITS ARE - KN METE (UNLESS OTHERWISE Noted)

MEMBER	TABLE	RESULT/ FX	CRITICAL COND/ MY	RATIO/ MZ	LOADING/ LOCATION
259	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.893	12
		87.32 C	0.00	120.33	0.00
260	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	SHEAR -Y	0.883	12
		79.81 C	0.04	-236.16	1.50
261	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.941	12
		168.37 C	-0.08	236.16	0.00
277	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H2-1	0.052	12
		34.53 T	0.00	0.00	0.66
278	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.324	12
		65.41 C	0.00	-0.74	2.30
279	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.314	12
		63.26 C	0.00	-0.74	2.30
280	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.324	12
		65.41 C	0.00	-0.74	2.30
281	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.314	12
		63.26 C	0.00	-0.74	2.30
288	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.857	12
		213.68 C	0.07	5.75	6.85
289	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.857	12
		213.69 C	-0.07	5.75	0.00
296	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.953	12
		257.63 C	0.04	-118.15	3.46
297	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.776	12
		252.34 C	0.06	-119.21	2.88
298	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.951	12
		257.73 C	-0.01	-118.06	3.46
299	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.777	12
		252.44 C	-0.11	-119.18	2.88
300	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.951	12
		257.73 C	-0.01	-118.06	3.46

ALL UNITS ARE - KN METE (UNLESS OTHERWISE Noted)

MEMBER	TABLE	RESULT/ FX	CRITICAL COND/ MY	RATIO/ MZ	LOADING/ LOCATION
301	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.777	12
		252.44 C	-0.11	-119.18	2.88
302	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.953	12
		257.63 C	0.04	-118.15	3.46
303	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.776	12
		252.34 C	0.06	-119.21	2.88
304	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.944	12
		144.49 C	-0.01	-44.57	2.88
305	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.648	12
		162.79 C	-0.02	18.11	0.00
306	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.947	12
		144.66 C	0.03	-44.51	2.88
307	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.649	12
		162.89 C	0.03	18.19	0.00
308	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.947	12
		144.66 C	0.03	-44.51	2.88
309	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.649	12
		162.88 C	0.03	18.18	0.00
310	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.944	12
		144.49 C	-0.01	-44.57	2.88
311	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.648	12
		162.79 C	-0.02	18.11	0.00
358	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.672	12
		273.50 C	0.16	23.88	4.55
359	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.666	12
		270.01 C	-0.16	23.90	4.55
361	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.672	12
		273.50 C	-0.16	23.88	0.00
362	TAP ERED		(TATA STRUCTURA SECTIONS)		
		PASS	AISC- H1-1	0.666	12
		270.01 C	0.16	23.90	0.00

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268. PRINT MEMBER FORCES LIST 138 TO 194 198 TO 200 202 210 211 225 227 246 247 -
269. 298 299 306
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MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
138	10	79	6.59	3.81	0.02	0.00	-0.03	5.12
		80	-5.91	0.24	-0.02	0.00	-0.04	0.31
	11	79	6.62	3.84	0.02	0.00	-0.03	5.26
		80	-5.94	0.21	-0.02	0.00	-0.04	0.27
	12	79	25.91	16.00	0.04	0.00	-0.07	20.57
		80	-23.28	-0.22	-0.04	0.00	-0.05	4.09
	13	79	-6.06	-5.61	0.00	0.00	0.03	-5.21
		80	6.46	-3.00	0.00	0.00	-0.02	1.23
	14	79	-9.71	-9.63	-0.01	0.00	0.03	-8.28
		80	10.11	-5.25	0.01	0.00	-0.01	1.62
	15	79	0.01	-0.57	0.00	0.00	0.01	-0.16
		80	0.40	-0.86	0.00	0.00	-0.02	0.60
	16	79	-3.64	-4.59	0.00	0.00	0.01	-3.24
		80	4.04	-3.11	0.00	0.00	-0.02	0.99
	17	79	-10.67	-9.86	-0.01	0.00	0.03	-9.05
		80	11.07	-5.02	0.01	0.00	-0.01	1.69
139	10	81	6.62	3.84	-0.02	0.00	0.03	5.26
		82	-5.94	0.20	0.02	0.00	0.04	0.27
	11	81	6.59	3.81	-0.02	0.00	0.03	5.12
		82	-5.91	0.24	0.02	0.00	0.04	0.31
	12	81	25.91	16.00	-0.04	0.00	0.07	20.58
		82	-23.28	-0.23	0.04	0.00	0.05	4.09
	13	81	-9.71	-9.63	0.01	0.00	-0.03	-8.28
		82	10.11	-5.25	-0.01	0.00	0.01	1.62
	14	81	-6.06	-5.61	0.00	0.00	-0.03	-5.21
		82	6.46	-3.00	0.00	0.00	0.02	1.23
	15	81	-3.64	-4.59	0.00	0.00	-0.01	-3.24
		82	4.04	-3.11	0.00	0.00	0.02	0.99
	16	81	0.01	-0.57	0.00	0.00	-0.01	-0.16
		82	0.40	-0.86	0.00	0.00	0.02	0.60
	17	81	-10.67	-9.86	0.01	0.00	-0.03	-9.05
		82	11.07	-5.02	-0.01	0.00	0.01	1.69
140	10	83	39.22	1.79	0.08	0.00	-0.10	3.01
		84	-39.22	-0.94	-0.08	0.00	-0.13	1.09
	11	83	46.44	1.83	0.08	0.00	-0.10	3.11
		84	-46.44	-0.98	-0.08	0.00	-0.13	1.09
	12	83	57.40	6.87	0.08	0.00	-0.10	12.05
		84	-57.40	-6.02	-0.08	0.00	-0.13	7.29
	13	83	-39.43	-0.92	0.04	0.00	-0.04	-2.21
		84	39.43	1.43	-0.04	0.00	-0.07	-1.32

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	14	83	-7.07	-1.60	0.04	0.00	-0.04	-3.35
		84	7.07	2.11	-0.04	0.00	-0.07	-2.22
	15	83	-13.63	0.28	0.04	0.00	-0.05	0.17
		84	13.63	0.22	-0.04	0.00	-0.08	-0.08
	16	83	18.74	-0.40	0.04	0.00	-0.05	-0.98
		84	-18.74	0.91	-0.04	0.00	-0.08	-0.98
	17	83	-36.52	-1.82	0.04	0.00	-0.05	-3.89
		84	36.52	2.33	-0.04	0.00	-0.08	-2.34
141	10	85	6.26	5.98	-0.15	0.00	0.06	3.70
		81	-5.47	-5.98	0.15	0.00	0.17	5.26
	11	85	6.23	5.81	-0.15	0.00	0.06	3.59
		81	-5.43	-5.81	0.15	0.00	0.17	5.12
	12	85	21.43	22.95	-0.15	0.00	0.06	13.85
		81	-20.63	-22.95	0.15	0.00	0.17	20.58
	13	85	-10.28	-8.00	-0.14	0.00	0.06	-3.72
		81	10.76	8.00	0.14	0.00	0.16	-8.28
	14	85	-5.72	-5.06	-0.14	0.00	0.06	-2.39
		81	6.20	5.06	0.14	0.00	0.16	-5.21
	15	85	-4.31	-2.84	-0.13	0.00	0.05	-1.03
		81	4.78	2.84	0.13	0.00	0.14	-3.24
	16	85	0.25	0.10	-0.13	0.00	0.05	0.31
		81	0.22	-0.10	0.13	0.00	0.14	-0.16
	17	85	-10.66	-8.91	-0.13	0.00	0.05	-4.32
		81	11.14	8.91	0.13	0.00	0.14	-9.05
142	10	83	6.22	-5.81	-0.15	0.00	0.06	-3.59
		79	-5.43	5.81	0.15	0.00	0.17	-5.12
	11	83	6.26	-5.98	-0.15	0.00	0.06	-3.70
		79	-5.47	5.98	0.15	0.00	0.17	-5.26
	12	83	21.43	-22.95	-0.15	0.00	0.06	-13.85
		79	-20.63	22.95	0.15	0.00	0.17	-20.57
	13	83	-5.72	5.06	-0.14	0.00	0.06	2.39
		79	6.20	-5.06	0.14	0.00	0.16	5.21
	14	83	-10.28	8.00	-0.14	0.00	0.06	3.72
		79	10.76	-8.00	0.14	0.00	0.16	8.28
	15	83	0.25	-0.10	-0.13	0.00	0.05	-0.31
		79	0.22	0.10	0.13	0.00	0.14	0.16
	16	83	-4.31	2.84	-0.13	0.00	0.05	1.03
		79	4.78	-2.84	0.13	0.00	0.14	3.24
	17	83	-10.66	8.91	-0.13	0.00	0.05	4.32
		79	11.14	-8.91	0.13	0.00	0.14	9.05
143	10	84	5.12	0.17	0.06	0.00	-0.12	-0.58
		86	-5.12	0.68	-0.06	0.00	-0.07	-0.18

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	11	84	10.61	0.16	0.06	0.00	-0.12	-0.57
		86	-10.61	0.69	-0.06	0.00	-0.07	-0.22
	12	84	-7.98	-1.19	0.06	0.00	-0.12	-4.84
		86	7.98	2.04	-0.06	0.00	-0.07	0.00
	13	84	-13.27	0.37	0.04	0.00	-0.07	0.66
		86	13.27	0.14	-0.04	0.00	-0.04	-0.31
	14	84	27.58	0.44	0.04	0.00	-0.07	1.26
		86	-27.58	0.07	-0.04	0.00	-0.04	-0.70
	15	84	-14.05	0.21	0.04	0.00	-0.07	-0.01
		86	14.05	0.30	-0.04	0.00	-0.04	-0.12
	16	84	26.81	0.28	0.04	0.00	-0.07	0.59
		86	-26.81	0.23	-0.04	0.00	-0.04	-0.51
	17	84	6.59	0.48	0.04	0.00	-0.07	1.26
		86	-6.59	0.03	-0.04	0.00	-0.04	-0.58
144	10	86	-9.37	0.64	0.02	0.00	-0.03	0.18
		87	9.37	0.21	-0.02	0.00	-0.04	0.46
	11	86	-5.10	0.65	0.02	0.00	-0.03	0.22
		87	5.10	0.20	-0.02	0.00	-0.04	0.46
	12	86	-27.27	0.96	0.02	0.00	-0.03	-0.09
		87	27.27	-0.11	-0.02	0.00	-0.03	1.69
	13	86	-4.11	0.07	0.02	0.00	-0.02	0.20
		87	4.11	0.44	-0.02	0.00	-0.03	-0.76
	14	86	35.68	0.05	0.02	0.00	-0.02	0.58
		87	-35.68	0.46	-0.02	0.00	-0.03	-1.19
	15	86	-14.19	0.24	0.02	0.00	-0.02	0.07
		87	14.19	0.27	-0.02	0.00	-0.03	-0.12
	16	86	25.60	0.22	0.02	0.00	-0.02	0.45
		87	-25.60	0.29	-0.02	0.00	-0.03	-0.54
	17	86	19.96	-0.03	0.02	0.00	-0.02	0.43
		87	-19.96	0.53	-0.02	0.00	-0.03	-1.27
145	10	87	-14.85	0.38	0.03	0.00	-0.05	-0.51
		88	14.85	0.47	-0.03	0.00	-0.05	0.36
	11	87	-11.66	0.37	0.03	0.00	-0.05	-0.50
		88	11.66	0.48	-0.03	0.00	-0.05	0.35
	12	87	-26.67	0.30	0.04	0.00	-0.06	-1.82
		88	26.67	0.55	-0.04	0.00	-0.08	1.44
	13	87	-3.31	0.23	0.01	0.00	-0.02	0.68
		88	3.31	0.28	-0.01	0.00	0.00	-0.75
	14	87	30.33	0.25	0.00	0.00	-0.02	1.16
		88	-30.33	0.26	0.00	0.00	0.01	-1.19
	15	87	-14.33	0.22	0.01	0.00	-0.03	0.05
		88	14.33	0.29	-0.01	0.00	-0.01	-0.15
	16	87	19.31	0.24	0.01	0.00	-0.02	0.54
		88	-19.31	0.27	-0.01	0.00	-0.01	-0.59

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	17	87	18.62	0.25	0.00	0.00	-0.02	1.21
		88	-18.62	0.26	0.00	0.00	0.01	-1.23
146	10	88	-14.01	0.19	0.03	0.00	-0.04	-0.52
		89	14.01	0.66	-0.03	0.00	-0.03	-0.19
	11	88	-11.79	0.21	0.03	0.00	-0.04	-0.49
		89	11.79	0.64	-0.03	0.00	-0.04	-0.16
	12	88	-12.93	-0.39	-0.02	0.00	-0.01	-1.81
		89	12.93	1.24	0.02	0.00	0.08	-0.63
	13	88	-7.95	0.54	0.08	0.00	-0.07	0.76
		89	7.95	-0.03	-0.08	0.00	-0.18	0.11
	14	88	16.71	0.79	0.09	0.00	-0.07	1.31
		89	-16.71	-0.28	-0.09	0.00	-0.18	0.31
	15	88	-14.42	0.27	0.05	0.00	-0.05	0.08
		89	14.42	0.24	-0.05	0.00	-0.11	-0.03
	16	88	10.24	0.52	0.06	0.00	-0.05	0.63
		89	-10.24	-0.01	-0.06	0.00	-0.11	0.17
	17	88	7.85	0.77	0.09	0.00	-0.08	1.33
		89	-7.85	-0.26	-0.09	0.00	-0.19	0.23
147	10	89	-8.57	0.27	0.02	0.00	-0.03	-0.20
		90	8.57	0.58	-0.02	0.00	-0.03	-0.27
	11	89	-7.41	0.27	0.02	0.00	-0.03	-0.19
		90	7.41	0.58	-0.02	0.00	-0.03	-0.27
	12	89	10.52	0.24	-0.04	0.00	0.10	-0.17
		90	-10.52	0.61	0.04	0.00	0.01	-0.38
	13	89	-16.14	0.18	0.08	0.00	-0.18	-0.16
		90	16.14	0.33	-0.08	0.00	-0.07	-0.07
	14	89	-3.37	0.26	0.09	0.00	-0.19	0.07
		90	3.37	0.25	-0.09	0.00	-0.07	-0.06
	15	89	-14.16	0.15	0.05	0.00	-0.10	-0.20
		90	14.16	0.36	-0.05	0.00	-0.05	-0.12
	16	89	-1.39	0.23	0.05	0.00	-0.11	0.02
		90	1.39	0.28	-0.05	0.00	-0.05	-0.11
	17	89	-9.57	0.24	0.09	0.00	-0.19	-0.01
		90	9.57	0.27	-0.09	0.00	-0.08	-0.04
148	10	90	-9.27	0.45	0.01	0.00	-0.02	0.12
		91	9.27	0.40	-0.01	0.00	-0.01	-0.03
	11	90	-9.27	0.46	0.01	0.00	-0.02	0.13
		91	9.27	0.39	-0.01	0.00	-0.01	-0.03
	12	90	6.99	0.52	0.02	0.00	-0.04	0.19
		91	-6.99	0.33	-0.02	0.00	-0.02	0.11
	13	90	-7.86	0.14	-0.01	0.00	0.02	-0.04
		91	7.86	0.37	0.01	0.00	0.01	-0.29

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	14	90	-7.84	0.19	-0.01	0.00	0.02	0.07
		91	7.84	0.31	0.01	0.00	0.01	-0.25
	15	90	-7.28	0.20	0.00	0.00	0.01	-0.01
		91	7.28	0.31	0.00	0.00	0.00	-0.16
	16	90	-7.26	0.25	0.00	0.00	0.01	0.10
		91	7.26	0.26	0.00	0.00	0.00	-0.11
	17	90	-6.97	0.14	-0.01	0.00	0.02	0.00
		91	6.97	0.37	0.01	0.00	0.01	-0.35
149	10	91	-9.27	0.39	-0.01	0.00	0.01	0.03
		92	9.27	0.46	0.01	0.00	0.02	-0.13
	11	91	-9.28	0.40	-0.01	0.00	0.01	0.03
		92	9.28	0.45	0.01	0.00	0.02	-0.12
	12	91	6.99	0.33	-0.02	0.00	0.02	-0.11
		92	-6.99	0.52	0.02	0.00	0.04	-0.18
	13	91	-7.84	0.31	0.01	0.00	-0.01	0.25
		92	7.84	0.19	-0.01	0.00	-0.02	-0.07
	14	91	-7.86	0.37	0.01	0.00	-0.01	0.29
		92	7.86	0.14	-0.01	0.00	-0.02	0.04
	15	91	-7.26	0.26	0.00	0.00	0.00	0.11
		92	7.26	0.25	0.00	0.00	-0.01	-0.10
	16	91	-7.28	0.31	0.00	0.00	0.00	0.16
		92	7.28	0.20	0.00	0.00	-0.01	0.01
	17	91	-6.97	0.37	0.01	0.00	-0.01	0.35
		92	6.97	0.14	-0.01	0.00	-0.02	0.00
150	10	92	-7.44	0.58	-0.02	0.00	0.03	0.27
		93	7.44	0.27	0.02	0.00	0.03	0.19
	11	92	-8.60	0.58	-0.02	0.00	0.03	0.27
		93	8.60	0.27	0.02	0.00	0.03	0.20
	12	92	10.47	0.61	0.04	0.00	-0.01	0.38
		93	-10.47	0.24	-0.04	0.00	-0.09	0.17
	13	92	-3.35	0.25	-0.09	0.00	0.07	0.06
		93	3.35	0.26	0.09	0.00	0.19	-0.07
	14	92	-16.12	0.33	-0.08	0.00	0.07	0.07
		93	16.12	0.18	0.08	0.00	0.18	0.16
	15	92	-1.39	0.28	-0.05	0.00	0.05	0.11
		93	1.39	0.23	0.05	0.00	0.11	-0.02
	16	92	-14.15	0.36	-0.05	0.00	0.05	0.12
		93	14.15	0.15	0.05	0.00	0.10	0.20
	17	92	-9.55	0.27	-0.09	0.00	0.08	0.04
		93	9.55	0.24	0.09	0.00	0.19	0.01
151	10	93	-11.82	0.64	-0.03	0.00	0.03	0.16
		94	11.82	0.21	0.03	0.00	0.04	0.49

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	11	93	-14.04	0.66	-0.03	0.00	0.03	0.19
		94	14.04	0.19	0.03	0.00	0.04	0.52
	12	93	-12.98	1.24	0.02	0.00	-0.08	0.63
		94	12.98	-0.39	-0.02	0.00	0.01	1.81
	13	93	16.73	-0.28	-0.09	0.00	0.18	-0.31
		94	-16.73	0.79	0.09	0.00	0.07	-1.31
	14	93	-7.93	-0.03	-0.08	0.00	0.18	-0.11
		94	7.93	0.54	0.08	0.00	0.07	-0.76
	15	93	10.24	-0.01	-0.06	0.00	0.11	-0.17
		94	-10.24	0.52	0.06	0.00	0.05	-0.63
	16	93	-14.42	0.24	-0.05	0.00	0.11	0.03
		94	14.42	0.27	0.05	0.00	0.05	-0.08
	17	93	7.87	-0.26	-0.09	0.00	0.19	-0.23
		94	-7.87	0.77	0.09	0.00	0.08	-1.33
152	10	94	-11.68	0.48	-0.03	0.00	0.05	-0.35
		95	11.68	0.37	0.03	0.00	0.05	0.50
	11	94	-14.87	0.47	-0.03	0.00	0.05	-0.36
		95	14.87	0.38	0.03	0.00	0.05	0.51
	12	94	-26.71	0.55	-0.04	0.00	0.08	-1.44
		95	26.71	0.30	0.04	0.00	0.06	1.82
	13	94	30.35	0.26	0.00	0.00	-0.01	1.19
		95	-30.35	0.25	0.00	0.00	0.02	-1.16
	14	94	-3.29	0.28	-0.01	0.00	0.00	0.75
		95	3.29	0.23	0.01	0.00	0.02	-0.68
	15	94	19.31	0.27	-0.01	0.00	0.01	0.59
		95	-19.31	0.24	0.01	0.00	0.02	-0.54
	16	94	-14.33	0.29	-0.01	0.00	0.01	0.15
		95	14.33	0.22	0.01	0.00	0.03	-0.06
	17	94	18.64	0.26	0.00	0.00	-0.01	1.24
		95	-18.64	0.25	0.00	0.00	0.02	-1.21
153	10	95	-5.11	0.20	-0.02	0.00	0.04	-0.46
		96	5.11	0.65	0.02	0.00	0.03	-0.22
	11	95	-9.38	0.21	-0.02	0.00	0.04	-0.46
		96	9.38	0.64	0.02	0.00	0.03	-0.18
	12	95	-27.28	-0.11	-0.02	0.00	0.03	-1.69
		96	27.28	0.96	0.02	0.00	0.03	0.09
	13	95	35.68	0.46	-0.02	0.00	0.03	1.19
		96	-35.68	0.05	0.02	0.00	0.02	-0.58
	14	95	-4.10	0.44	-0.02	0.00	0.03	0.76
		96	4.10	0.07	0.02	0.00	0.02	-0.20
	15	95	25.60	0.29	-0.02	0.00	0.03	0.54
		96	-25.60	0.22	0.02	0.00	0.02	-0.45
	16	95	-14.18	0.27	-0.02	0.00	0.03	0.12
		96	14.18	0.24	0.02	0.00	0.02	-0.07

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	17	95	19.97	0.53	-0.02	0.00	0.03	1.27
		96	-19.97	-0.03	0.02	0.00	0.02	-0.43
154	10	96	10.61	0.69	-0.06	0.00	0.07	0.22
		97	-10.61	0.16	0.06	0.00	0.12	0.57
	11	96	5.12	0.68	-0.06	0.00	0.07	0.18
		97	-5.12	0.17	0.06	0.00	0.12	0.58
	12	96	-7.97	2.04	-0.06	0.00	0.07	0.00
		97	7.97	-1.19	0.06	0.00	0.12	4.84
	13	96	27.58	0.07	-0.04	0.00	0.04	0.70
		97	-27.58	0.44	0.04	0.00	0.07	-1.26
	14	96	-13.27	0.14	-0.04	0.00	0.04	0.31
		97	13.27	0.37	0.04	0.00	0.07	-0.66
	15	96	26.81	0.23	-0.04	0.00	0.04	0.51
		97	-26.81	0.28	0.04	0.00	0.07	-0.59
	16	96	-14.05	0.30	-0.04	0.00	0.04	0.12
		97	14.05	0.21	0.04	0.00	0.07	0.01
	17	96	6.59	0.03	-0.04	0.00	0.04	0.58
		97	-6.59	0.48	0.04	0.00	0.07	-1.26
155	10	97	46.46	-0.98	-0.08	0.00	0.13	-1.10
		85	-46.46	1.83	0.08	0.00	0.10	-3.11
	11	97	39.25	-0.94	-0.08	0.00	0.13	-1.09
		85	-39.25	1.79	0.08	0.00	0.10	-3.01
	12	97	57.46	-6.02	-0.08	0.00	0.13	-7.29
		85	-57.46	6.87	0.08	0.00	0.10	-12.05
	13	97	-7.09	2.11	-0.04	0.00	0.07	2.22
		85	7.09	-1.61	0.04	0.00	0.04	3.36
	14	97	-39.45	1.43	-0.04	0.00	0.07	1.32
		85	39.45	-0.92	0.04	0.00	0.04	2.21
	15	97	18.73	0.91	-0.04	0.00	0.08	0.98
		85	-18.73	-0.40	0.04	0.00	0.05	0.98
	16	97	-13.63	0.22	-0.04	0.00	0.08	0.08
		85	13.63	0.28	0.04	0.00	0.05	-0.17
	17	97	-36.54	2.33	-0.04	0.00	0.08	2.34
		85	36.54	-1.82	0.04	0.00	0.05	3.89
156	10	91	-1.16	0.00	-0.08	0.00	0.28	0.00
		98	1.63	0.00	0.08	0.00	0.07	0.00
	11	91	-1.16	0.00	-0.08	0.00	0.28	0.00
		98	1.63	0.00	0.08	0.00	0.07	0.00
	12	91	-1.03	0.00	-0.05	0.00	0.26	0.00
		98	1.50	0.00	0.05	0.00	-0.05	0.00
	13	91	-0.90	0.02	-0.09	0.00	0.20	0.04
		98	1.18	-0.02	0.09	0.00	0.20	0.06

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	14	91	-0.90	-0.02	-0.09	0.00	0.20	-0.04
		98	1.18	0.02	0.09	0.00	0.20	-0.06
	15	91	-0.79	0.02	-0.07	0.00	0.19	0.04
		98	1.07	-0.02	0.07	0.00	0.13	0.06
	16	91	-0.79	-0.02	-0.07	0.00	0.19	-0.04
		98	1.07	0.02	0.07	0.00	0.13	-0.06
	17	91	-0.97	0.00	-0.09	0.00	0.20	0.00
		98	1.25	0.00	0.09	0.00	0.22	0.00
157	10	90	-2.76	0.01	-0.06	0.00	0.20	0.02
		99	3.23	-0.01	0.06	0.00	0.06	0.03
	11	90	-4.49	0.01	-0.06	0.00	0.20	0.02
		99	4.96	-0.01	0.06	0.00	0.06	0.03
	12	90	-7.15	0.04	-0.01	0.00	0.16	0.07
		99	7.61	-0.04	0.01	0.00	-0.11	0.10
	13	90	11.53	-0.01	-0.10	0.00	0.18	0.00
		99	-11.25	0.01	0.10	0.00	0.28	-0.02
	14	90	-7.47	-0.03	-0.11	0.00	0.19	-0.07
		99	7.75	0.03	0.11	0.00	0.29	-0.09
	15	90	9.33	0.01	-0.07	0.00	0.16	0.02
		99	-9.05	-0.01	0.07	0.00	0.17	0.01
	16	90	-9.67	-0.02	-0.08	0.00	0.16	-0.05
		99	9.96	0.02	0.08	0.00	0.18	-0.05
	17	90	3.14	-0.02	-0.11	0.00	0.19	-0.04
		99	-2.86	0.02	0.11	0.00	0.30	-0.06
158	10	89	6.08	0.02	-0.10	0.00	0.18	0.04
		100	-5.67	-0.02	0.10	0.00	0.23	0.04
	11	89	4.54	0.02	-0.10	0.00	0.17	0.03
		100	-4.12	-0.02	0.10	0.00	0.23	0.04
	12	89	32.22	0.09	-0.12	0.00	0.24	0.17
		100	-31.80	-0.09	0.12	0.00	0.25	0.20
	13	89	-12.93	-0.03	-0.03	0.01	0.01	-0.06
		100	13.18	0.03	0.03	-0.01	0.12	-0.07
	14	89	-30.28	-0.07	-0.03	0.01	0.01	-0.13
		100	30.53	0.07	0.03	-0.01	0.12	-0.14
	15	89	-0.66	0.00	-0.05	0.00	0.05	0.00
		100	0.90	0.00	0.05	0.00	0.13	-0.01
	16	89	-18.01	-0.04	-0.04	0.00	0.05	-0.07
		100	18.26	0.04	0.04	0.00	0.13	-0.07
	17	89	-26.40	-0.06	-0.03	0.01	0.01	-0.12
		100	26.65	0.06	0.03	-0.01	0.12	-0.13
159	10	88	-0.20	0.01	-0.15	0.01	0.26	0.03
		101	0.57	-0.01	0.15	-0.01	0.27	0.02

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	11	88	-1.51	0.01	-0.15	0.01	0.26	0.02
		101	1.87	-0.01	0.15	-0.01	0.27	0.02
	12	88	17.34	0.11	-0.15	0.01	0.26	0.19
		101	-16.97	-0.11	0.15	-0.01	0.27	0.19
	13	88	-7.32	-0.04	-0.09	0.00	0.16	-0.07
		101	7.54	0.04	0.09	0.00	0.16	-0.06
	14	88	-19.45	-0.08	-0.09	0.00	0.16	-0.14
		101	19.67	0.08	0.09	0.00	0.16	-0.14
	15	88	-1.05	0.00	-0.09	0.00	0.16	-0.01
		101	1.27	0.00	0.09	0.00	0.16	-0.01
	16	88	-13.18	-0.05	-0.09	0.00	0.16	-0.09
		101	13.40	0.05	0.09	0.00	0.16	-0.08
	17	88	-15.64	-0.07	-0.09	0.00	0.16	-0.13
		101	15.86	0.07	0.09	0.00	0.16	-0.12
160	10	87	-7.55	-0.03	-0.19	0.00	0.28	-0.04
		102	7.86	0.03	0.19	0.00	0.29	-0.04
	11	87	-8.79	-0.03	-0.19	0.00	0.28	-0.05
		102	9.10	0.03	0.19	0.00	0.29	-0.05
	12	87	-0.15	0.03	-0.19	0.00	0.28	0.05
		102	0.47	-0.03	0.19	0.00	0.29	0.05
	13	87	-0.11	0.00	-0.11	0.00	0.17	-0.01
		102	0.29	0.00	0.11	0.00	0.17	0.00
	14	87	-7.25	-0.03	-0.11	0.00	0.17	-0.04
		102	7.44	0.03	0.11	0.00	0.17	-0.04
	15	87	-1.02	-0.01	-0.11	0.00	0.17	-0.01
		102	1.21	0.01	0.11	0.00	0.17	-0.01
	16	87	-8.17	-0.03	-0.11	0.00	0.17	-0.05
		102	8.36	0.03	0.11	0.00	0.17	-0.04
	17	87	-2.69	-0.01	-0.11	0.00	0.17	-0.02
		102	2.88	0.01	0.11	0.00	0.17	-0.02
161	10	86	-16.33	-0.06	-0.20	0.01	0.28	-0.07
		103	16.59	0.06	0.20	-0.01	0.22	-0.07
	11	86	-17.56	-0.06	-0.20	0.01	0.28	-0.08
		103	17.82	0.06	0.20	-0.01	0.22	-0.07
	12	86	-22.88	0.00	-0.20	0.01	0.28	0.01
		103	23.14	0.00	0.20	-0.01	0.22	-0.01
	13	86	8.57	0.02	-0.12	0.00	0.17	0.03
		103	-8.41	-0.02	0.12	0.00	0.13	0.03
	14	86	7.59	0.03	-0.12	0.00	0.17	0.03
		103	-7.43	-0.03	0.12	0.00	0.13	0.04
	15	86	-1.02	-0.01	-0.12	0.00	0.17	-0.01
		103	1.18	0.01	0.12	0.00	0.13	-0.01
	16	86	-2.00	-0.01	-0.12	0.00	0.17	-0.01
		103	2.16	0.01	0.12	0.00	0.13	0.00

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	17	86	12.96	0.04	-0.12	0.00	0.17	0.05
		103	-12.81	-0.04	0.12	0.00	0.13	0.06
162	10	84	-28.06	-0.16	-0.21	0.00	0.20	-0.17
		80	28.27	0.16	0.21	0.00	0.21	-0.16
	11	84	-29.44	-0.17	-0.21	0.00	0.20	-0.17
		80	29.65	0.17	0.21	0.00	0.21	-0.16
	12	84	-111.67	-0.58	-0.21	0.00	0.20	-0.58
		80	111.88	0.58	0.21	0.00	0.21	-0.58
	13	84	19.18	0.11	-0.12	0.00	0.12	0.11
		80	-19.05	-0.11	0.12	0.00	0.12	0.11
	14	84	25.36	0.20	-0.12	0.00	0.12	0.20
		80	-25.23	-0.20	0.12	0.00	0.12	0.20
	15	84	-1.27	-0.02	-0.12	0.00	0.12	-0.02
		80	1.40	0.02	0.12	0.00	0.12	-0.02
	16	84	4.90	0.07	-0.12	0.00	0.12	0.07
		80	-4.78	-0.07	0.12	0.00	0.12	0.07
	17	84	32.06	0.22	-0.12	0.00	0.12	0.22
		80	-31.93	-0.22	0.12	0.00	0.12	0.22
163	10	92	-4.45	-0.01	-0.06	0.00	0.20	-0.02
		104	4.92	0.01	0.06	0.00	0.06	-0.03
	11	92	-2.72	-0.01	-0.06	0.00	0.20	-0.02
		104	3.19	0.01	0.06	0.00	0.06	-0.03
	12	92	-7.06	-0.04	-0.01	0.00	0.16	-0.07
		104	7.53	0.04	0.01	0.00	-0.11	-0.10
	13	92	-7.50	0.03	-0.11	0.00	0.19	0.07
		104	7.78	-0.03	0.11	0.00	0.29	0.09
	14	92	11.50	0.01	-0.10	0.00	0.18	0.00
		104	-11.22	-0.01	0.10	0.00	0.28	0.02
	15	92	-9.68	0.02	-0.08	0.00	0.16	0.05
		104	9.96	-0.02	0.08	0.00	0.18	0.05
	16	92	9.32	-0.01	-0.07	0.00	0.16	-0.02
		104	-9.04	0.01	0.07	0.00	0.17	-0.01
	17	92	3.11	0.02	-0.11	0.00	0.19	0.04
		104	-2.83	-0.02	0.11	0.00	0.30	0.06
164	10	93	4.54	-0.02	-0.10	0.00	0.17	-0.03
		105	-4.13	0.02	0.10	0.00	0.23	-0.04
	11	93	6.08	-0.02	-0.10	0.00	0.18	-0.04
		105	-5.67	0.02	0.10	0.00	0.23	-0.04
	12	93	32.23	-0.09	-0.12	0.00	0.24	-0.17
		105	-31.81	0.09	0.12	0.00	0.25	-0.20
	13	93	-30.29	0.07	-0.03	-0.01	0.01	0.13
		105	30.54	-0.07	0.03	0.01	0.12	0.14

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	14	93	-12.93	0.03	-0.03	-0.01	0.01	0.06
		105	13.18	-0.03	0.03	0.01	0.12	0.07
	15	93	-18.01	0.04	-0.04	0.00	0.05	0.07
		105	18.26	-0.04	0.04	0.00	0.13	0.07
	16	93	-0.65	0.00	-0.05	0.00	0.05	0.00
		105	0.90	0.00	0.05	0.00	0.13	0.01
	17	93	-26.41	0.06	-0.03	-0.01	0.01	0.12
		105	26.66	-0.06	0.03	0.01	0.12	0.13
165	10	94	-1.52	-0.01	-0.15	-0.01	0.26	-0.02
		106	1.88	0.01	0.15	0.01	0.27	-0.02
	11	94	-0.22	-0.01	-0.15	-0.01	0.26	-0.02
		106	0.58	0.01	0.15	0.01	0.27	-0.02
	12	94	17.31	-0.11	-0.15	-0.01	0.26	-0.19
		106	-16.95	0.11	0.15	0.01	0.27	-0.18
	13	94	-19.44	0.08	-0.09	0.00	0.16	0.14
		106	19.66	-0.08	0.09	0.00	0.16	0.14
	14	94	-7.32	0.04	-0.09	0.00	0.16	0.07
		106	7.53	-0.04	0.09	0.00	0.16	0.06
	15	94	-13.18	0.05	-0.09	0.00	0.16	0.09
		106	13.39	-0.05	0.09	0.00	0.16	0.08
	16	94	-1.05	0.00	-0.09	0.00	0.16	0.01
		106	1.27	0.00	0.09	0.00	0.16	0.01
	17	94	-15.63	0.07	-0.09	0.00	0.16	0.13
		106	15.85	-0.07	0.09	0.00	0.16	0.12
166	10	95	-8.80	0.03	-0.19	0.00	0.28	0.05
		107	9.11	-0.03	0.19	0.00	0.29	0.05
	11	95	-7.56	0.03	-0.19	0.00	0.28	0.04
		107	7.87	-0.03	0.19	0.00	0.29	0.04
	12	95	-0.18	-0.03	-0.19	0.00	0.28	-0.05
		107	0.50	0.03	0.19	0.00	0.29	-0.05
	13	95	-7.24	0.03	-0.11	0.00	0.17	0.04
		107	7.43	-0.03	0.11	0.00	0.17	0.04
	14	95	-0.09	0.00	-0.11	0.00	0.17	0.01
		107	0.28	0.00	0.11	0.00	0.17	0.00
	15	95	-8.17	0.03	-0.11	0.00	0.17	0.05
		107	8.36	-0.03	0.11	0.00	0.17	0.04
	16	95	-1.02	0.01	-0.11	0.00	0.17	0.01
		107	1.21	-0.01	0.11	0.00	0.17	0.01
	17	95	-2.67	0.01	-0.11	0.00	0.17	0.02
		107	2.86	-0.01	0.11	0.00	0.17	0.02
167	10	96	-17.57	0.06	-0.20	-0.01	0.28	0.08
		108	17.83	-0.06	0.20	0.01	0.22	0.07

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	11	96	-16.34	0.06	-0.20	-0.01	0.28	0.07
		108	16.60	-0.06	0.20	0.01	0.22	0.07
	12	96	-22.90	0.00	-0.20	-0.01	0.28	-0.01
		108	23.16	0.00	0.20	0.01	0.22	0.01
	13	96	7.60	-0.03	-0.12	0.00	0.17	-0.03
		108	-7.44	0.03	0.12	0.00	0.13	-0.04
	14	96	8.58	-0.02	-0.12	0.00	0.17	-0.03
		108	-8.42	0.02	0.12	0.00	0.13	-0.03
	15	96	-2.00	0.01	-0.12	0.00	0.17	0.01
		108	2.16	-0.01	0.12	0.00	0.13	0.00
	16	96	-1.02	0.01	-0.12	0.00	0.17	0.01
		108	1.18	-0.01	0.12	0.00	0.13	0.01
	17	96	12.97	-0.04	-0.12	0.00	0.17	-0.05
		108	-12.81	0.04	0.12	0.00	0.13	-0.06
168	10	97	-29.45	0.17	-0.21	0.00	0.20	0.17
		82	29.66	-0.17	0.21	0.00	0.21	0.16
	11	97	-28.08	0.16	-0.21	0.00	0.20	0.17
		82	28.28	-0.16	0.21	0.00	0.21	0.16
	12	97	-111.70	0.58	-0.21	0.00	0.20	0.58
		82	111.91	-0.58	0.21	0.00	0.21	0.58
	13	97	25.37	-0.20	-0.12	0.00	0.12	-0.20
		82	-25.24	0.20	0.12	0.00	0.12	-0.20
	14	97	19.19	-0.11	-0.12	0.00	0.12	-0.11
		82	-19.06	0.11	0.12	0.00	0.12	-0.11
	15	97	4.91	-0.07	-0.12	0.00	0.12	-0.07
		82	-4.78	0.07	0.12	0.00	0.12	-0.07
	16	97	-1.27	0.02	-0.12	0.00	0.12	0.02
		82	1.40	-0.02	0.12	0.00	0.12	0.02
	17	97	32.07	-0.22	-0.12	0.00	0.12	-0.22
		82	-31.95	0.22	0.12	0.00	0.12	-0.22
169	10	99	103.53	3.40	-0.14	0.00	0.21	3.23
		98	-103.53	0.77	0.14	0.00	0.20	0.72
	11	99	103.68	3.45	-0.14	0.00	0.21	3.36
		98	-103.68	0.72	0.14	0.00	0.20	0.73
	12	99	273.44	11.59	-0.52	0.00	0.82	10.62
		98	-273.44	4.31	0.52	0.00	0.73	0.29
	13	99	-99.64	-6.06	0.48	0.00	-0.74	-6.30
		98	99.64	-2.33	-0.48	0.00	-0.69	0.70
	14	99	-112.38	-9.29	0.48	0.00	-0.75	-6.87
		98	112.38	-5.27	-0.48	0.00	-0.69	0.84
	15	99	-15.65	-1.20	0.24	0.00	-0.37	-2.12
		98	15.65	-0.11	-0.24	0.00	-0.35	0.49
	16	99	-28.38	-4.43	0.24	0.00	-0.38	-2.69
		98	28.38	-3.05	-0.24	0.00	-0.35	0.63

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	17	99	-140.35	-9.67	0.49	0.00	-0.78	-8.09
		98	140.35	-4.90	-0.49	0.00	-0.70	0.94
170	10	100	126.64	1.80	0.07	0.00	-0.09	0.02
		99	-125.96	2.25	-0.07	0.00	-0.12	-0.71
	11	100	128.07	1.75	0.07	0.00	-0.09	-0.02
		99	-127.40	2.30	-0.07	0.00	-0.12	-0.81
	12	100	335.66	6.82	0.21	0.00	-0.24	1.58
		99	-333.03	8.96	-0.21	0.00	-0.40	-4.85
	13	100	-98.91	-3.65	-0.20	0.00	0.20	-1.26
		99	99.32	-4.96	0.20	0.00	0.40	3.25
	14	100	-122.99	-7.03	-0.20	0.00	0.21	-2.80
		99	123.40	-7.85	0.20	0.00	0.41	4.05
	15	100	-1.76	-0.47	-0.10	0.00	0.10	-0.28
		99	2.17	-0.97	0.10	0.00	0.21	1.03
	16	100	-25.84	-3.84	-0.10	0.00	0.10	-1.82
		99	26.24	-3.86	0.10	0.00	0.22	1.84
	17	100	-157.82	-6.61	-0.19	0.00	0.20	-2.36
		99	158.23	-8.27	0.19	0.00	0.39	4.87
171	10	101	126.48	1.98	0.00	0.00	-0.02	-0.18
		100	-125.80	2.07	0.00	0.00	0.01	0.05
	11	101	129.04	2.01	0.00	0.00	-0.02	-0.14
		100	-128.36	2.04	0.00	0.00	0.01	0.10
	12	101	349.69	7.46	-0.05	0.00	0.01	0.46
		100	-347.06	8.31	0.05	0.00	0.15	-1.76
	13	101	-101.86	-4.17	0.10	0.00	-0.08	-1.01
		100	102.27	-4.45	-0.10	0.00	-0.21	1.44
	14	101	-133.89	-6.94	0.10	0.00	-0.08	-1.57
		100	134.30	-7.94	-0.10	0.00	-0.22	3.09
	15	101	-1.25	-0.73	0.06	0.00	-0.05	-0.41
		100	1.66	-0.70	-0.06	0.00	-0.12	0.37
	16	101	-33.28	-3.51	0.06	0.00	-0.05	-0.97
		100	33.68	-4.19	-0.06	0.00	-0.13	2.01
	17	101	-165.93	-7.08	0.09	0.00	-0.08	-1.55
		100	166.33	-7.80	-0.09	0.00	-0.21	2.64
172	10	102	120.16	1.96	0.02	0.00	-0.02	-0.48
		101	-119.49	2.09	-0.02	0.00	-0.04	0.28
	11	102	123.22	1.95	0.02	0.00	-0.02	-0.47
		101	-122.54	2.10	-0.02	0.00	-0.04	0.24
	12	102	350.40	7.64	0.03	0.00	-0.03	-0.18
		101	-347.77	8.14	-0.03	0.00	-0.07	-0.59
	13	102	-99.25	-4.18	-0.01	0.00	0.00	-0.78
		101	99.66	-4.43	0.01	0.00	0.03	1.17

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	14	102	-136.53	-7.27	-0.01	0.00	0.00	-1.31
		101	136.94	-7.61	0.01	0.00	0.03	1.83
	15	102	-0.74	-0.69	0.00	0.00	0.00	-0.41
		101	1.15	-0.75	0.00	0.00	0.01	0.49
	16	102	-38.03	-3.78	0.00	0.00	0.00	-0.94
		101	38.43	-3.92	0.00	0.00	0.01	1.16
	17	102	-164.49	-7.24	-0.01	0.00	0.00	-1.17
		101	164.89	-7.64	0.01	0.00	0.03	1.78
173	10	103	105.02	2.59	0.05	0.00	-0.10	1.08
		102	-104.35	1.46	-0.05	0.00	-0.05	0.65
	11	103	108.02	2.62	0.05	0.00	-0.10	1.18
		102	-107.35	1.42	-0.05	0.00	-0.05	0.64
	12	103	331.03	8.59	0.05	0.00	-0.10	1.93
		102	-328.41	7.18	-0.05	0.00	-0.04	0.22
	13	103	-88.23	-4.64	0.04	0.00	-0.07	-1.87
		102	88.63	-3.97	-0.04	0.00	-0.04	0.85
	14	103	-125.59	-7.81	0.04	0.00	-0.06	-2.57
		102	126.00	-7.06	-0.04	0.00	-0.04	1.43
	15	103	-0.24	-0.69	0.03	0.00	-0.06	-0.39
		102	0.64	-0.75	-0.03	0.00	-0.04	0.48
	16	103	-37.60	-3.86	0.03	0.00	-0.06	-1.09
		102	38.01	-3.84	-0.03	0.00	-0.04	1.07
	17	103	-148.22	-7.98	0.04	0.00	-0.06	-2.90
		102	148.63	-6.90	-0.04	0.00	-0.04	1.26
174	10	80	70.03	1.92	0.06	0.00	-0.08	0.10
		103	-69.36	2.12	-0.06	0.00	-0.11	-0.40
	11	80	72.09	1.92	0.06	0.00	-0.08	0.16
		103	-71.42	2.13	-0.06	0.00	-0.11	-0.47
	12	80	264.97	6.41	0.06	0.00	-0.07	-3.66
		103	-262.34	9.37	-0.06	0.00	-0.11	-0.84
	13	80	-59.86	-4.13	0.03	0.00	-0.04	-1.21
		103	60.27	-4.48	-0.03	0.00	-0.06	1.75
	14	80	-87.64	-7.14	0.03	0.00	-0.04	-1.57
		103	88.04	-7.74	-0.03	0.00	-0.06	2.47
	15	80	-0.01	-0.69	0.04	0.00	-0.04	-0.47
		103	0.42	-0.74	-0.04	0.00	-0.07	0.55
	16	80	-27.79	-3.71	0.04	0.00	-0.04	-0.83
		103	28.19	-3.99	-0.04	0.00	-0.07	1.27
	17	80	-101.67	-7.13	0.04	0.00	-0.05	-1.71
		103	102.07	-7.75	-0.04	0.00	-0.07	2.65
175	10	104	103.69	3.45	0.14	0.00	-0.21	3.35
		98	-103.69	0.72	-0.14	0.00	-0.20	0.73

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	11	104	103.58	3.40	0.14	0.00	-0.21	3.22
		98	-103.58	0.77	-0.14	0.00	-0.20	0.72
	12	104	273.50	11.58	0.51	0.00	-0.81	10.61
		98	-273.50	4.32	-0.51	0.00	-0.73	0.29
	13	104	-112.40	-9.29	-0.48	0.00	0.75	-6.87
		98	112.40	-5.27	0.48	0.00	0.69	0.84
	14	104	-99.66	-6.06	-0.48	0.00	0.74	-6.29
		98	99.66	-2.33	0.48	0.00	0.69	0.70
	15	104	-28.39	-4.43	-0.24	0.00	0.38	-2.69
		98	28.39	-3.05	0.24	0.00	0.35	0.63
	16	104	-15.65	-1.20	-0.24	0.00	0.37	-2.12
		98	15.65	-0.11	0.24	0.00	0.35	0.49
	17	104	-140.37	-9.67	-0.49	0.00	0.77	-8.09
		98	140.37	-4.90	0.49	0.00	0.70	0.94
176	10	105	128.14	1.75	-0.07	0.00	0.09	-0.02
		104	-127.47	2.30	0.07	0.00	0.12	-0.81
	11	105	126.72	1.80	-0.07	0.00	0.09	0.02
		104	-126.04	2.25	0.07	0.00	0.12	-0.70
	12	105	335.82	6.81	-0.21	0.00	0.24	1.58
		104	-333.19	8.96	0.21	0.00	0.40	-4.84
	13	105	-123.05	-7.02	0.20	0.00	-0.21	-2.79
		104	123.45	-7.85	-0.20	0.00	-0.41	4.05
	14	105	-98.97	-3.65	0.20	0.00	-0.20	-1.26
		104	99.37	-4.96	-0.20	0.00	-0.40	3.24
	15	105	-25.85	-3.84	0.10	0.00	-0.10	-1.82
		104	26.25	-3.86	-0.10	0.00	-0.22	1.84
	16	105	-1.77	-0.47	0.10	0.00	-0.10	-0.28
		104	2.18	-0.97	-0.10	0.00	-0.21	1.03
	17	105	-157.88	-6.61	0.19	0.00	-0.20	-2.35
		104	158.29	-8.26	-0.19	0.00	-0.39	4.87
177	10	106	129.10	2.01	0.00	0.00	0.02	-0.14
		105	-128.42	2.04	0.00	0.00	-0.01	0.10
	11	106	126.55	1.98	0.00	0.00	0.02	-0.18
		105	-125.87	2.07	0.00	0.00	-0.01	0.05
	12	106	349.83	7.47	0.05	0.00	-0.01	0.46
		105	-347.20	8.31	-0.05	0.00	-0.15	-1.75
	13	106	-133.94	-6.94	-0.10	0.00	0.08	-1.58
		105	134.35	-7.94	0.10	0.00	0.22	3.09
	14	106	-101.91	-4.17	-0.10	0.00	0.08	-1.02
		105	102.32	-4.45	0.10	0.00	0.21	1.44
	15	106	-33.29	-3.51	-0.06	0.00	0.05	-0.97
		105	33.70	-4.19	0.06	0.00	0.13	2.01
	16	106	-1.26	-0.73	-0.06	0.00	0.05	-0.41
		105	1.67	-0.70	0.06	0.00	0.12	0.37

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	17	106	-165.98	-7.08	-0.09	0.00	0.08	-1.55
		105	166.39	-7.80	0.09	0.00	0.21	2.64
178	10	107	123.27	1.95	-0.02	0.00	0.02	-0.47
		106	-122.59	2.10	0.02	0.00	0.04	0.24
	11	107	120.22	1.96	-0.02	0.00	0.02	-0.48
		106	-119.55	2.09	0.02	0.00	0.04	0.28
	12	107	350.51	7.64	-0.03	0.00	0.03	-0.18
		106	-347.88	8.14	0.03	0.00	0.07	-0.59
	13	107	-136.57	-7.27	0.01	0.00	0.00	-1.31
		106	136.98	-7.61	-0.01	0.00	-0.03	1.84
	14	107	-99.29	-4.18	0.01	0.00	0.00	-0.78
		106	99.70	-4.43	-0.01	0.00	-0.03	1.17
	15	107	-38.04	-3.78	0.00	0.00	0.00	-0.94
		106	38.44	-3.92	0.00	0.00	-0.01	1.16
	16	107	-0.75	-0.69	0.00	0.00	0.00	-0.41
		106	1.16	-0.75	0.00	0.00	-0.01	0.49
	17	107	-164.53	-7.24	0.01	0.00	0.00	-1.17
		106	164.93	-7.64	-0.01	0.00	-0.03	1.78
179	10	108	108.07	2.62	-0.05	0.00	0.10	1.18
		107	-107.39	1.42	0.05	0.00	0.05	0.64
	11	108	105.07	2.59	-0.05	0.00	0.10	1.08
		107	-104.39	1.46	0.05	0.00	0.05	0.65
	12	108	331.13	8.59	-0.05	0.00	0.10	1.93
		107	-328.50	7.18	0.05	0.00	0.04	0.22
	13	108	-125.63	-7.81	-0.04	0.00	0.07	-2.57
		107	126.03	-7.06	0.04	0.00	0.04	1.43
	14	108	-88.26	-4.64	-0.04	0.00	0.07	-1.87
		107	88.67	-3.97	0.04	0.00	0.04	0.85
	15	108	-37.61	-3.86	-0.03	0.00	0.06	-1.09
		107	38.02	-3.84	0.03	0.00	0.04	1.07
	16	108	-0.25	-0.69	-0.03	0.00	0.06	-0.39
		107	0.65	-0.75	0.03	0.00	0.04	0.48
	17	108	-148.26	-7.98	-0.04	0.00	0.06	-2.90
		107	148.67	-6.90	0.04	0.00	0.04	1.26
180	10	82	72.12	1.92	-0.06	0.00	0.08	0.16
		108	-71.44	2.13	0.06	0.00	0.11	-0.47
	11	82	70.06	1.92	-0.06	0.00	0.08	0.10
		108	-69.39	2.12	0.06	0.00	0.11	-0.40
	12	82	265.02	6.41	-0.06	0.00	0.07	-3.66
		108	-262.39	9.37	0.06	0.00	0.11	-0.84
	13	82	-87.66	-7.14	-0.04	0.00	0.04	-1.57
		108	88.06	-7.74	0.04	0.00	0.06	2.47

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	14	82	-59.88	-4.13	-0.03	0.00	0.04	-1.21
		108	60.29	-4.48	0.03	0.00	0.06	1.75
	15	82	-27.79	-3.71	-0.04	0.00	0.04	-0.83
		108	28.20	-3.99	0.04	0.00	0.07	1.27
	16	82	-0.02	-0.69	-0.04	0.00	0.04	-0.47
		108	0.42	-0.74	0.04	0.00	0.07	0.55
	17	82	-101.69	-7.13	-0.04	0.00	0.05	-1.71
		108	102.09	-7.75	0.04	0.00	0.07	2.65
181	10	90	1.52	0.16	-0.03	-0.02	0.13	0.14
		98	-1.05	0.16	0.03	0.02	0.02	-0.14
	11	90	3.60	0.15	-0.03	-0.02	0.13	0.13
		98	-3.13	0.16	0.03	0.02	0.02	-0.15
	12	90	6.68	0.15	-0.01	-0.04	0.13	0.13
		98	-6.21	0.16	0.01	0.04	-0.06	-0.15
	13	90	-14.77	0.11	-0.03	0.01	0.07	0.11
		98	15.05	0.08	0.03	-0.01	0.11	-0.05
	14	90	8.12	0.08	-0.03	0.01	0.07	0.06
		98	-7.84	0.11	0.03	-0.01	0.11	-0.12
	15	90	-12.23	0.11	-0.03	0.00	0.07	0.11
		98	12.51	0.08	0.03	0.00	0.06	-0.05
	16	90	10.66	0.08	-0.03	0.00	0.07	0.06
		98	-10.38	0.11	0.03	0.00	0.06	-0.12
	17	90	-4.60	0.09	-0.04	0.01	0.07	0.09
		98	4.88	0.09	0.04	-0.01	0.12	-0.08
182	10	89	-9.15	0.41	-0.02	-0.07	0.22	0.36
		99	10.28	0.34	0.02	0.07	-0.11	-0.17
	11	89	-7.26	0.40	-0.02	-0.07	0.22	0.32
		99	8.39	0.36	0.02	0.07	-0.11	-0.21
	12	89	-41.31	0.53	0.21	-0.23	0.00	0.63
		99	42.44	0.22	-0.21	0.23	-1.13	0.22
	13	89	14.97	0.18	-0.32	0.15	0.42	0.11
		99	-14.29	0.27	0.32	-0.15	1.31	-0.34
	14	89	36.13	0.04	-0.33	0.16	0.44	-0.25
		99	-35.46	0.41	0.33	-0.16	1.37	-0.76
	15	89	-0.11	0.24	-0.18	0.06	0.29	0.24
		99	0.79	0.21	0.18	-0.06	0.69	-0.14
	16	89	21.05	0.10	-0.20	0.07	0.31	-0.12
		99	-20.38	0.35	0.20	-0.07	0.76	-0.56
	17	89	31.44	0.10	-0.34	0.17	0.45	-0.10
		99	-30.76	0.36	0.34	-0.17	1.42	-0.60
183	10	88	-1.16	0.16	-0.06	0.01	0.14	0.13
		100	1.57	0.15	0.06	-0.01	0.16	-0.11

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	11	88	0.44	0.16	-0.06	0.01	0.14	0.12
		100	-0.03	0.15	0.06	-0.01	0.16	-0.11
	12	88	-22.48	0.19	-0.06	0.00	0.14	0.18
		100	22.90	0.13	0.06	0.00	0.16	-0.03
	13	88	7.79	0.08	-0.04	0.01	0.09	0.06
		100	-7.54	0.11	0.04	-0.01	0.09	-0.12
	14	88	22.66	0.07	-0.04	0.01	0.09	0.02
		100	-22.41	0.12	0.04	-0.01	0.09	-0.16
	15	88	0.27	0.09	-0.04	0.01	0.09	0.07
		100	-0.02	0.10	0.04	-0.01	0.09	-0.08
	16	88	15.14	0.08	-0.04	0.01	0.09	0.04
		100	-14.89	0.11	0.04	-0.01	0.09	-0.12
	17	88	17.92	0.07	-0.04	0.01	0.09	0.03
		100	-17.67	0.12	0.04	-0.01	0.09	-0.15
184	10	87	8.55	0.15	-0.06	0.01	0.13	0.09
		101	-8.18	0.16	0.06	-0.01	0.13	-0.12
	11	87	10.21	0.15	-0.06	0.01	0.13	0.08
		101	-9.84	0.16	0.06	-0.01	0.13	-0.12
	12	87	-0.67	0.16	-0.06	0.01	0.13	0.09
		101	1.04	0.15	0.06	-0.01	0.13	-0.06
	13	87	-1.12	0.09	-0.04	0.00	0.08	0.08
		101	1.34	0.10	0.04	0.00	0.08	-0.09
	14	87	8.26	0.08	-0.04	0.00	0.08	0.06
		101	-8.04	0.11	0.04	0.00	0.08	-0.13
	15	87	0.32	0.09	-0.03	0.00	0.08	0.07
		101	-0.10	0.09	0.03	0.00	0.08	-0.07
	16	87	9.71	0.08	-0.03	0.00	0.08	0.05
		101	-9.49	0.11	0.03	0.00	0.08	-0.11
	17	87	2.14	0.09	-0.04	0.00	0.08	0.08
		101	-1.92	0.10	0.04	0.00	0.08	-0.11
185	10	86	20.56	0.14	-0.06	0.00	0.13	0.07
		102	-20.25	0.17	0.06	0.00	0.13	-0.13
	11	86	22.27	0.14	-0.06	0.00	0.13	0.07
		102	-21.96	0.17	0.06	0.00	0.13	-0.13
	12	86	27.44	0.15	-0.06	0.00	0.13	0.07
		102	-27.13	0.16	0.06	0.00	0.13	-0.08
	13	86	-12.83	0.10	-0.04	0.00	0.08	0.09
		102	13.01	0.09	0.04	0.00	0.08	-0.07
	14	86	-11.31	0.09	-0.04	0.00	0.08	0.09
		102	11.50	0.09	0.04	0.00	0.08	-0.09
	15	86	0.28	0.09	-0.04	0.00	0.08	0.06
		102	-0.09	0.09	0.04	0.00	0.08	-0.07
	16	86	1.79	0.09	-0.04	0.00	0.08	0.06
		102	-1.61	0.10	0.04	0.00	0.08	-0.09

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	17	86	-18.75	0.10	-0.04	0.00	0.08	0.10
		102	18.94	0.09	0.04	0.00	0.08	-0.07
186	10	84	44.29	0.14	-0.16	0.01	0.33	-0.33
		103	-43.66	0.62	0.16	-0.01	0.31	-0.60
	11	84	46.53	0.12	-0.16	0.01	0.33	-0.35
		103	-45.90	0.63	0.16	-0.01	0.31	-0.63
	12	84	84.04	-0.38	-0.16	0.02	0.33	-1.87
		103	-83.42	1.13	0.16	-0.02	0.31	-1.08
	13	84	-33.59	0.39	-0.10	0.01	0.20	0.55
		103	33.96	0.06	0.10	-0.01	0.19	0.08
	14	84	-44.48	0.44	-0.10	0.01	0.20	0.77
		103	44.86	0.01	0.10	-0.01	0.19	0.06
	15	84	0.70	0.21	-0.10	0.01	0.20	0.10
		103	-0.32	0.24	0.10	-0.01	0.19	-0.15
	16	84	-10.19	0.26	-0.10	0.01	0.20	0.32
		103	10.57	0.19	0.10	-0.01	0.19	-0.17
	17	84	-55.42	0.50	-0.10	0.01	0.20	0.86
		103	55.80	-0.04	0.10	-0.01	0.19	0.19
187	10	83	75.40	0.47	-0.07	0.10	0.05	0.59
		80	-74.90	0.28	0.07	-0.10	0.22	-0.25
	11	83	78.43	0.47	-0.07	0.10	0.05	0.59
		80	-77.92	0.28	0.07	-0.10	0.22	-0.26
	12	83	285.23	0.92	-0.08	0.10	0.05	1.80
		80	-284.73	-0.16	0.08	-0.10	0.22	0.14
	13	83	-61.67	0.14	-0.03	0.07	0.01	-0.18
		80	61.97	0.31	0.03	-0.07	0.12	-0.13
	14	83	-89.19	0.05	-0.03	0.07	0.01	-0.37
		80	89.49	0.40	0.03	-0.07	0.12	-0.25
	15	83	0.90	0.23	-0.04	0.07	0.01	0.14
		80	-0.60	0.22	0.04	-0.07	0.12	-0.11
	16	83	-26.62	0.15	-0.04	0.07	0.01	-0.05
		80	26.92	0.30	0.04	-0.07	0.12	-0.23
	17	83	-104.71	0.05	-0.04	0.07	0.01	-0.42
		80	105.01	0.40	0.04	-0.07	0.12	-0.19
188	10	92	3.55	0.15	0.03	0.02	-0.13	0.13
		98	-3.08	0.16	-0.03	-0.02	-0.02	-0.15
	11	92	1.47	0.16	0.03	0.02	-0.13	0.14
		98	-1.00	0.16	-0.03	-0.02	-0.02	-0.14
	12	92	6.57	0.15	0.01	0.04	-0.13	0.13
		98	-6.11	0.16	-0.01	-0.04	0.06	-0.15
	13	92	8.15	0.08	0.03	-0.01	-0.07	0.06
		98	-7.87	0.11	-0.03	0.01	-0.11	-0.12

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	14	92	-14.73	0.11	0.03	-0.01	-0.07	0.11
		98	15.01	0.08	-0.03	0.01	-0.11	-0.05
	15	92	10.67	0.08	0.03	0.00	-0.07	0.06
		98	-10.39	0.11	-0.03	0.00	-0.06	-0.12
	16	92	-12.22	0.11	0.03	0.00	-0.07	0.11
		98	12.50	0.08	-0.03	0.00	-0.06	-0.05
	17	92	-4.56	0.09	0.04	-0.01	-0.07	0.09
		98	4.84	0.09	-0.04	0.01	-0.12	-0.08
189	10	93	-7.27	0.40	0.02	0.07	-0.22	0.32
		104	8.40	0.36	-0.02	-0.07	0.11	-0.21
	11	93	-9.15	0.41	0.02	0.07	-0.22	0.36
		104	10.28	0.34	-0.02	-0.07	0.11	-0.17
	12	93	-41.31	0.53	-0.21	0.23	0.00	0.63
		104	42.44	0.22	0.21	-0.23	1.13	0.23
	13	93	36.13	0.04	0.33	-0.16	-0.44	-0.25
		104	-35.46	0.41	-0.33	0.16	-1.37	-0.76
	14	93	14.97	0.18	0.32	-0.15	-0.42	0.11
		104	-14.30	0.27	-0.32	0.15	-1.31	-0.34
	15	93	21.05	0.10	0.20	-0.07	-0.31	-0.12
		104	-20.37	0.35	-0.20	0.07	-0.76	-0.56
	16	93	-0.11	0.24	0.18	-0.06	-0.29	0.24
		104	0.79	0.21	-0.18	0.06	-0.69	-0.14
	17	93	31.44	0.10	0.34	-0.17	-0.45	-0.10
		104	-30.76	0.36	-0.34	0.17	-1.42	-0.61
190	10	94	0.46	0.16	0.06	-0.01	-0.14	0.12
		105	-0.04	0.15	-0.06	0.01	-0.16	-0.11
	11	94	-1.14	0.16	0.06	-0.01	-0.14	0.13
		105	1.56	0.15	-0.06	0.01	-0.16	-0.11
	12	94	-22.45	0.19	0.06	0.00	-0.14	0.18
		105	22.87	0.13	-0.06	0.00	-0.16	-0.03
	13	94	22.66	0.07	0.04	-0.01	-0.09	0.02
		105	-22.41	0.12	-0.04	0.01	-0.09	-0.16
	14	94	7.78	0.08	0.04	-0.01	-0.09	0.06
		105	-7.53	0.11	-0.04	0.01	-0.09	-0.12
	15	94	15.14	0.08	0.04	-0.01	-0.09	0.04
		105	-14.89	0.11	-0.04	0.01	-0.09	-0.12
	16	94	0.26	0.09	0.04	-0.01	-0.09	0.07
		105	-0.01	0.10	-0.04	0.01	-0.09	-0.08
	17	94	17.91	0.07	0.04	-0.01	-0.09	0.03
		105	-17.66	0.12	-0.04	0.01	-0.09	-0.15
191	10	95	10.22	0.15	0.06	-0.01	-0.13	0.08
		106	-9.86	0.16	-0.06	0.01	-0.13	-0.12

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	11	95	8.56	0.15	0.06	-0.01	-0.13	0.09
		106	-8.20	0.16	-0.06	0.01	-0.13	-0.12
	12	95	-0.63	0.16	0.06	-0.01	-0.13	0.09
		106	1.00	0.15	-0.06	0.01	-0.13	-0.06
	13	95	8.25	0.08	0.04	0.00	-0.08	0.06
		106	-8.03	0.11	-0.04	0.00	-0.08	-0.13
	14	95	-1.14	0.09	0.04	0.00	-0.08	0.08
		106	1.36	0.10	-0.04	0.00	-0.08	-0.09
	15	95	9.70	0.08	0.03	0.00	-0.08	0.05
		106	-9.49	0.11	-0.03	0.00	-0.08	-0.11
	16	95	0.32	0.09	0.03	0.00	-0.08	0.07
		106	-0.10	0.09	-0.03	0.00	-0.08	-0.07
	17	95	2.12	0.09	0.04	0.00	-0.08	0.08
		106	-1.91	0.10	-0.04	0.00	-0.08	-0.11
192	10	96	22.28	0.14	0.06	0.00	-0.13	0.07
		107	-21.97	0.17	-0.06	0.00	-0.13	-0.13
	11	96	20.57	0.14	0.06	0.00	-0.13	0.07
		107	-20.26	0.17	-0.06	0.00	-0.13	-0.13
	12	96	27.46	0.15	0.06	0.00	-0.13	0.07
		107	-27.15	0.16	-0.06	0.00	-0.13	-0.08
	13	96	-11.32	0.09	0.04	0.00	-0.08	0.09
		107	11.51	0.09	-0.04	0.00	-0.08	-0.09
	14	96	-12.84	0.10	0.04	0.00	-0.08	0.09
		107	13.02	0.09	-0.04	0.00	-0.08	-0.07
	15	96	1.79	0.09	0.04	0.00	-0.08	0.06
		107	-1.60	0.10	-0.04	0.00	-0.08	-0.09
	16	96	0.28	0.09	0.04	0.00	-0.08	0.06
		107	-0.09	0.09	-0.04	0.00	-0.08	-0.07
	17	96	-18.76	0.10	0.04	0.00	-0.08	0.10
		107	18.95	0.09	-0.04	0.00	-0.08	-0.07
193	10	97	46.55	0.12	0.16	-0.01	-0.33	-0.35
		108	-45.93	0.63	-0.16	0.01	-0.31	-0.63
	11	97	44.32	0.14	0.16	-0.01	-0.33	-0.34
		108	-43.69	0.62	-0.16	0.01	-0.31	-0.60
	12	97	84.09	-0.38	0.16	-0.02	-0.33	-1.87
		108	-83.47	1.13	-0.16	0.02	-0.31	-1.08
	13	97	-44.50	0.44	0.10	-0.01	-0.20	0.77
		108	44.88	0.01	-0.10	0.01	-0.19	0.06
	14	97	-33.61	0.39	0.10	-0.01	-0.20	0.55
		108	33.98	0.06	-0.10	0.01	-0.19	0.08
	15	97	-10.20	0.26	0.10	-0.01	-0.20	0.32
		108	10.57	0.19	-0.10	0.01	-0.19	-0.17
	16	97	0.70	0.21	0.10	-0.01	-0.20	0.10
		108	-0.32	0.24	-0.10	0.01	-0.19	-0.15

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	17	97	-55.44	0.50	0.10	-0.01	-0.20	0.87
		108	55.82	-0.04	-0.10	0.01	-0.19	0.19
194	10	85	78.45	0.47	0.07	-0.10	-0.05	0.59
		82	-77.95	0.28	-0.07	0.10	-0.22	-0.26
	11	85	75.43	0.47	0.07	-0.10	-0.05	0.59
		82	-74.93	0.28	-0.07	0.10	-0.22	-0.25
	12	85	285.29	0.92	0.08	-0.10	-0.05	1.80
		82	-284.79	-0.16	-0.08	0.10	-0.22	0.14
	13	85	-89.21	0.05	0.03	-0.07	-0.01	-0.37
		82	89.51	0.40	-0.03	0.07	-0.12	-0.25
	14	85	-61.69	0.14	0.03	-0.07	-0.01	-0.18
		82	61.99	0.31	-0.03	0.07	-0.12	-0.13
	15	85	-26.62	0.15	0.04	-0.07	-0.01	-0.05
		82	26.92	0.30	-0.04	0.07	-0.12	-0.23
	16	85	0.89	0.23	0.04	-0.07	-0.01	0.14
		82	-0.59	0.22	-0.04	0.07	-0.12	-0.11
	17	85	-104.73	0.05	0.04	-0.07	-0.01	-0.42
		82	105.03	0.40	-0.04	0.07	-0.12	-0.19
198	10	134	39.28	-83.45	-0.06	0.00	0.00	0.00
		135	-38.22	83.45	0.06	0.00	0.09	-125.17
	11	134	39.30	-83.54	-0.02	0.00	0.00	0.00
		135	-38.24	83.54	0.02	0.00	0.03	-125.31
	12	134	122.75	-252.40	-0.08	0.00	0.00	0.00
		135	-115.82	252.40	0.08	0.00	0.12	-378.60
	13	134	-87.66	185.06	-0.01	0.00	0.00	0.00
		135	88.30	-185.06	0.01	0.00	0.02	277.59
	14	134	-87.25	183.25	-0.03	0.00	0.00	0.00
		135	87.89	-183.25	0.03	0.00	0.04	274.87
	15	134	-41.17	85.88	-0.02	0.00	0.00	0.00
		135	41.80	-85.88	0.02	0.00	0.03	128.82
	16	134	-40.76	84.07	-0.04	0.00	0.00	0.00
		135	41.40	-84.07	0.04	0.00	0.05	126.10
	17	134	-88.52	189.03	0.00	0.00	0.00	0.00
		135	89.16	-189.03	0.00	0.00	0.01	283.55
199	10	135	88.04	25.39	0.01	0.00	-0.01	125.17
		192	-86.16	-12.51	-0.01	0.00	-0.07	4.97
	11	135	88.14	25.40	0.01	0.00	-0.01	125.31
		192	-86.26	-12.52	-0.01	0.00	-0.08	4.89
	12	135	266.43	77.77	0.03	0.00	-0.01	378.60
		192	-260.64	-38.11	-0.03	0.00	-0.18	21.47
	13	135	-195.90	-60.84	-0.01	0.00	0.01	-277.59
		192	197.03	29.18	0.01	0.00	0.09	-34.60

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	14	135	-194.05	-60.70	-0.01	0.00	0.01	-274.87
		192	195.18	29.04	0.01	0.00	0.09	-36.36
	15	135	-91.05	-29.17	0.00	0.00	0.00	-128.82
		192	92.18	13.84	0.00	0.00	0.03	-20.68
	16	135	-89.19	-29.03	-0.01	0.00	0.00	-126.10
		192	90.32	13.70	0.01	0.00	0.03	-22.43
	17	135	-199.96	-61.12	-0.01	0.00	0.01	-283.55
		192	201.09	29.46	0.01	0.00	0.09	-30.62
200	10	125	4.20	-6.47	-0.37	0.00	0.00	0.00
		136	-3.65	6.47	0.37	0.00	0.55	-9.70
	11	125	4.26	-6.59	-0.36	0.00	0.00	0.00
		136	-3.71	6.59	0.36	0.00	0.54	-9.89
	12	125	6.07	-13.84	-0.76	0.00	0.00	0.00
		136	-5.52	13.84	0.76	0.00	1.14	-20.76
	13	125	0.88	5.16	0.28	0.00	0.00	0.00
		136	-0.55	-5.16	-0.28	0.00	-0.42	7.74
	14	125	0.90	5.14	0.27	0.00	0.00	0.00
		136	-0.57	-5.14	-0.27	0.00	-0.41	7.71
	15	125	1.69	1.23	0.07	0.00	0.00	0.00
		136	-1.36	-1.23	-0.07	0.00	-0.10	1.85
	16	125	1.70	1.22	0.06	0.00	0.00	0.00
		136	-1.37	-1.22	-0.06	0.00	-0.09	1.83
	17	125	0.59	5.54	0.30	0.00	0.00	0.00
		136	-0.26	-5.54	-0.30	0.00	-0.44	8.31
202	10	136	7.37	2.50	-0.01	0.00	0.01	9.56
		142	-6.93	1.49	0.01	0.00	0.07	-4.96
	11	136	7.69	2.51	-0.01	0.00	0.01	9.72
		142	-7.25	1.48	0.01	0.00	0.07	-4.99
	12	136	15.04	3.59	-0.02	0.00	0.01	20.82
		142	-14.60	0.40	0.02	0.00	0.17	-6.22
	13	136	1.40	-0.05	0.01	0.00	-0.01	-8.51
		142	-1.13	2.44	-0.01	0.00	-0.08	-2.87
	14	136	1.34	-0.02	0.01	0.00	-0.01	-8.47
		142	-1.08	2.41	-0.01	0.00	-0.07	-2.68
	15	136	3.67	0.59	0.00	0.00	0.00	-2.39
		142	-3.40	1.80	0.00	0.00	-0.02	-3.17
	16	136	3.61	0.62	0.00	0.00	0.00	-2.35
		142	-3.35	1.78	0.00	0.00	-0.02	-2.97
	17	136	-0.96	-0.03	0.01	0.00	-0.01	-8.96
		142	1.22	2.42	-0.01	0.00	-0.08	-2.29
210	10	141	100.41	1.89	-0.02	0.01	0.21	-27.69
		99	-99.35	7.77	0.02	-0.01	0.00	0.00

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	11	141	100.79	1.91	-0.02	0.01	0.20	-27.50
		99	-99.73	7.75	0.02	-0.01	0.00	0.00
	12	141	289.43	-3.12	-0.06	0.03	0.57	-73.59
		99	-288.37	12.78	0.06	-0.03	0.00	0.00
	13	141	-214.89	9.09	0.05	-0.02	-0.41	56.24
		99	215.53	-3.29	-0.05	0.02	0.00	0.00
	14	141	-215.52	8.98	0.05	-0.02	-0.42	55.29
		99	216.16	-3.19	-0.05	0.02	0.00	0.00
	15	141	-97.81	5.95	0.02	-0.01	-0.19	27.51
		99	98.45	-0.16	-0.02	0.01	0.00	0.00
	16	141	-98.44	5.85	0.02	-0.01	-0.20	26.56
		99	99.08	-0.05	-0.02	0.01	0.00	0.00
	17	141	-221.92	8.70	0.04	-0.02	-0.41	52.71
		99	222.56	-2.91	-0.04	0.02	0.00	0.00
211	10	142	38.78	5.93	0.03	0.00	-0.07	4.57
		141	-38.23	-0.92	-0.03	0.00	-0.24	27.61
	11	142	39.03	5.92	0.03	0.00	-0.07	4.60
		141	-38.48	-0.91	-0.03	0.00	-0.23	27.42
	12	142	99.85	11.10	0.08	0.00	-0.17	6.01
		141	-99.30	-6.08	-0.08	0.00	-0.58	73.45
	13	142	-60.32	-4.42	-0.05	0.00	0.08	2.38
		141	60.65	7.43	0.05	0.00	0.37	-56.19
	14	142	-60.24	-4.34	-0.05	0.00	0.08	2.19
		141	60.57	7.34	0.05	0.00	0.38	-55.24
	15	142	-24.20	-1.25	-0.02	0.00	0.03	2.77
		141	24.53	4.25	0.02	0.00	0.16	-27.50
	16	142	-24.12	-1.16	-0.02	0.00	0.03	2.59
		141	24.45	4.17	0.02	0.00	0.17	-26.55
	17	142	-63.74	-4.10	-0.05	0.00	0.09	1.81
		141	64.07	7.10	0.05	0.00	0.37	-52.65
225	10	151	24.24	-46.64	-0.08	0.00	0.00	0.00
		156	-23.44	46.64	0.08	0.00	0.12	-69.96
	11	151	24.21	-46.54	-0.04	0.00	0.00	0.00
		156	-23.41	46.54	0.04	0.00	0.06	-69.80
	12	151	81.83	-143.20	-0.11	0.00	0.00	0.00
		156	-75.16	143.20	0.11	0.00	0.17	-214.80
	13	151	-59.48	105.92	-0.08	0.00	0.00	0.00
		156	59.96	-105.92	0.08	0.00	0.12	158.88
	14	151	-59.35	105.41	-0.09	0.00	0.00	0.00
		156	59.83	-105.41	0.09	0.00	0.14	158.11
	15	151	-28.56	49.51	-0.07	0.00	0.00	0.00
		156	29.04	-49.51	0.07	0.00	0.11	74.26
	16	151	-28.43	48.99	-0.09	0.00	0.00	0.00
		156	28.91	-48.99	0.09	0.00	0.13	73.49

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	17	151	-60.02	108.06	-0.05	0.00	0.00	0.00
		156	60.50	-108.06	0.05	0.00	0.07	162.09
227	10	156	49.48	16.09	0.01	0.00	-0.01	69.96
		200	-47.89	-5.19	-0.01	0.00	-0.05	3.17
	11	156	49.38	16.08	0.01	0.00	-0.01	69.80
		200	-47.78	-5.17	-0.01	0.00	-0.05	3.24
	12	156	152.50	53.34	0.02	0.00	-0.03	214.80
		200	-147.00	-15.65	-0.02	0.00	-0.12	23.50
	13	156	-113.50	-44.25	-0.02	0.00	0.02	-158.88
		200	114.45	11.41	0.02	0.00	0.09	-34.08
	14	156	-112.97	-44.20	-0.02	0.00	0.02	-158.11
		200	113.93	11.35	0.02	0.00	0.10	-34.50
	15	156	-53.21	-21.80	-0.01	0.00	0.01	-74.26
		200	54.17	5.29	0.01	0.00	0.04	-19.82
	16	156	-52.69	-21.75	-0.01	0.00	0.01	-73.49
		200	53.64	5.24	0.01	0.00	0.05	-20.23
	17	156	-115.70	-44.48	-0.02	0.00	0.02	-162.09
		200	116.65	11.64	0.02	0.00	0.08	-32.47
246	10	161	18.87	-31.73	-0.08	0.00	0.00	0.00
		174	-18.27	31.73	0.08	0.00	0.12	-47.59
	11	161	18.86	-31.71	-0.07	0.00	0.00	0.00
		174	-18.26	31.71	0.07	0.00	0.11	-47.57
	12	161	52.37	-83.31	-0.18	0.00	0.00	0.00
		174	-51.77	83.31	0.18	0.00	0.28	-124.97
	13	161	-38.32	57.55	0.30	0.00	0.00	0.00
		174	38.68	-57.55	-0.30	0.00	-0.45	86.32
	14	161	-38.29	57.46	0.30	0.00	0.00	0.00
		174	38.65	-57.46	-0.30	0.00	-0.45	86.19
	15	161	-17.92	26.23	0.18	0.00	0.00	0.00
		174	18.28	-26.23	-0.18	0.00	-0.27	39.34
	16	161	-17.88	26.14	0.18	0.00	0.00	0.00
		174	18.24	-26.14	-0.18	0.00	-0.27	39.21
	17	161	-37.87	56.48	0.24	0.00	0.00	0.00
		174	38.23	-56.48	-0.24	0.00	-0.36	84.72
247	10	174	34.21	12.28	0.00	0.00	0.00	47.59
		171	-32.74	-3.44	0.00	0.00	0.00	0.00
	11	174	34.19	12.27	0.00	0.00	0.00	47.57
		171	-32.72	-3.43	0.00	0.00	0.00	0.00
	12	174	90.59	36.73	0.00	0.00	0.00	124.97
		171	-85.20	-4.43	0.00	0.00	0.00	0.00
	13	174	-63.15	-28.82	0.00	0.00	-0.01	-86.32
		171	64.03	-0.48	0.00	0.00	0.00	0.00

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	14	174	-63.06	-28.80	0.00	0.00	-0.01	-86.19
		171	63.94	-0.50	0.00	0.00	0.00	0.00
	15	174	-28.91	-13.92	0.00	0.00	-0.01	-39.34
		171	29.80	-1.03	0.00	0.00	0.00	0.00
	16	174	-28.82	-13.90	0.00	0.00	-0.01	-39.21
		171	29.70	-1.05	0.00	0.00	0.00	0.00
	17	174	-62.03	-28.56	0.00	0.00	-0.01	-84.72
		171	62.91	-0.75	0.00	0.00	0.00	0.00
298	10	192	86.06	11.87	-0.02	0.00	0.06	-4.97
		193	-84.35	-0.13	0.02	0.00	0.06	47.13
	11	192	86.16	11.88	-0.02	0.00	0.07	-4.89
		193	-84.45	-0.14	0.02	0.00	0.07	47.10
	12	192	260.54	37.46	-0.05	0.00	0.17	-21.44
		193	-254.92	1.07	0.05	0.00	0.18	148.01
	13	192	-197.09	-29.54	0.02	0.00	-0.07	34.56
		193	198.12	-2.81	-0.02	0.00	-0.06	-126.71
	14	192	-195.23	-29.41	0.02	0.00	-0.08	36.31
		193	196.25	-2.93	-0.02	0.00	-0.05	-127.60
	15	192	-92.23	-14.21	0.00	0.00	-0.01	20.65
		193	93.26	-1.80	0.00	0.00	-0.01	-63.26
	16	192	-90.37	-14.09	0.00	0.00	-0.03	22.41
		193	91.40	-1.92	0.00	0.00	0.00	-64.14
	17	192	-201.14	-29.83	0.02	0.00	-0.09	30.57
		193	202.17	-2.52	-0.02	0.00	-0.09	-124.73
299	10	193	84.25	-0.57	0.01	0.00	-0.06	-47.08
		104	-82.46	12.86	-0.01	0.00	0.00	0.00
	11	193	84.35	-0.56	0.01	0.00	-0.08	-47.05
		104	-82.56	12.85	-0.01	0.00	0.00	0.00
	12	193	254.82	-1.74	0.03	0.00	-0.19	-147.92
		104	-249.11	40.81	-0.03	0.00	0.00	0.00
	13	193	-198.18	2.34	-0.01	0.01	0.07	126.68
		104	199.25	-34.36	0.01	-0.01	0.00	0.00
	14	193	-196.30	2.47	-0.01	0.00	0.05	127.58
		104	197.38	-34.49	0.01	0.00	0.00	0.00
	15	193	-93.32	1.35	0.00	0.00	0.02	63.25
		104	94.40	-17.03	0.00	0.00	0.00	0.00
	16	193	-91.45	1.48	0.00	0.00	-0.01	64.15
		104	92.53	-17.16	0.00	0.00	0.00	0.00
	17	193	-202.22	2.06	-0.01	0.01	0.09	124.70
		104	203.30	-34.08	0.01	-0.01	0.00	0.00
306	10	200	47.79	4.51	0.00	0.00	0.02	-3.14
		153	-46.35	5.40	0.00	0.00	0.00	0.00

MEMBER END FORCES STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KN METE (LOCAL)

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	11	200	47.69	4.50	0.00	0.00	0.02	-3.22
		153	-46.24	5.41	0.00	0.00	0.00	0.00
	12	200	146.89	14.98	-0.01	0.00	0.06	-23.38
		153	-141.53	21.71	0.01	0.00	0.00	0.00
	13	200	-114.50	-11.81	0.00	0.00	-0.03	33.96
		153	115.37	-21.64	0.00	0.00	0.00	0.00
	14	200	-113.98	-11.75	0.00	0.00	-0.03	34.38
		153	114.84	-21.70	0.00	0.00	0.00	0.00
	15	200	-54.22	-5.70	0.00	0.00	-0.01	19.75
		153	55.08	-11.41	0.00	0.00	0.00	0.00
	16	200	-53.69	-5.63	0.00	0.00	-0.01	20.17
		153	54.56	-11.47	0.00	0.00	0.00	0.00
	17	200	-116.70	-12.04	0.00	0.00	-0.03	32.35
		153	117.57	-21.40	0.00	0.00	0.00	0.00

********** END OF LATEST ANALYSIS RESULT **********

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270. PRINT JOINT DISPLACEMENTS LIST 79 TO 108 125 134 TO 136 141 142 151 153 156 -
271. 161 171 174 192 193 200
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JOINT DISPLACEMENT (CM RADIANS) STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
79	10	0.0982	-0.0007	0.0007	0.0000	0.0000	-0.0007
	11	0.0910	-0.0007	0.0007	0.0000	0.0000	-0.0007
	12	0.3254	-0.0026	0.0009	0.0000	0.0000	-0.0025
	13	-0.0824	0.0007	0.0061	0.0000	0.0001	0.0006
	14	-0.1466	0.0013	0.0060	0.0000	0.0001	0.0011
	15	0.0050	0.0000	0.0045	0.0000	0.0000	0.0000
	16	-0.0592	0.0006	0.0044	0.0000	0.0000	0.0004
	17	-0.1541	0.0014	0.0042	0.0000	0.0001	0.0012
80	10	0.1464	-0.3056	-0.0004	-0.0003	-0.0001	-0.0011
	11	0.1376	-0.2959	-0.0006	-0.0003	-0.0001	-0.0010
	12	0.4918	-1.0641	-0.0005	-0.0003	-0.0001	-0.0035
	13	-0.1219	0.2537	-0.0002	-0.0002	0.0000	0.0009
	14	-0.2123	0.4208	-0.0002	-0.0002	0.0000	0.0014
	15	0.0070	-0.0114	-0.0002	-0.0002	0.0000	0.0000
	16	-0.0834	0.1558	-0.0003	-0.0002	0.0000	0.0005
	17	-0.2256	0.4585	-0.0002	-0.0002	0.0000	0.0015
81	10	-0.0911	-0.0007	0.0006	0.0000	0.0000	0.0007
	11	-0.0982	-0.0007	0.0002	0.0000	0.0000	0.0007
	12	-0.3254	-0.0026	0.0004	0.0000	0.0000	0.0025
	13	0.1467	0.0013	0.0061	0.0000	-0.0001	-0.0011
	14	0.0824	0.0007	0.0062	0.0000	-0.0001	-0.0006
	15	0.0592	0.0006	0.0044	0.0000	0.0000	-0.0004
	16	-0.0050	0.0000	0.0045	0.0000	0.0000	0.0000
	17	0.1541	0.0014	0.0043	0.0000	-0.0001	-0.0012
82	10	-0.1376	-0.2959	-0.0003	-0.0003	0.0001	0.0010
	11	-0.1464	-0.3057	-0.0005	-0.0003	0.0001	0.0011
	12	-0.4918	-1.0642	-0.0003	-0.0003	0.0001	0.0035
	13	0.2123	0.4209	-0.0003	-0.0002	0.0000	-0.0014
	14	0.1219	0.2537	-0.0003	-0.0002	0.0000	-0.0009
	15	0.0834	0.1558	-0.0003	-0.0002	0.0000	-0.0005
	16	-0.0070	-0.0113	-0.0003	-0.0002	0.0000	0.0000
	17	0.2256	0.4586	-0.0003	-0.0002	0.0000	-0.0015
83	10	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0007
	11	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0007
	12	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0024
	13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006
	14	0.0000	0.0000	0.0000	0.0000	0.0000	0.0010
	15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	16	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004
	17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0011
84	10	-0.0184	-0.3296	0.0005	-0.0003	-0.0001	-0.0011
	11	-0.0218	-0.3210	0.0004	-0.0003	-0.0001	-0.0011
	12	-0.0269	-1.1592	0.0004	-0.0003	-0.0001	-0.0035
	13	0.0185	0.2699	0.0004	-0.0002	-0.0001	0.0009
	14	0.0033	0.4423	0.0004	-0.0002	-0.0001	0.0014
	15	0.0064	-0.0125	0.0003	-0.0002	-0.0001	0.0000

JOINT DISPLACEMENT (CM RADIANS) STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
	16	-0.0088	0.1599	0.0003	-0.0002	-0.0001	0.0005
	17	0.0171	0.4858	0.0004	-0.0002	-0.0001	0.0016
85	10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0007
	11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0007
	12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0024
	13	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0010
	14	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0006
	15	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0004
	16	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	17	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0011
86	10	-0.0208	-0.6146	0.0003	-0.0006	0.0000	-0.0009
	11	-0.0267	-0.6012	0.0002	-0.0006	0.0000	-0.0009
	12	-0.0232	-1.9288	0.0001	-0.0006	0.0000	-0.0021
	13	0.0247	0.5005	0.0004	-0.0004	0.0000	0.0007
	14	-0.0096	0.7828	0.0004	-0.0004	0.0000	0.0009
	15	0.0130	-0.0157	0.0003	-0.0004	0.0000	0.0000
	16	-0.0213	0.2667	0.0003	-0.0004	0.0000	0.0002
	17	0.0140	0.8798	0.0004	-0.0004	0.0000	0.0011
87	10	-0.0164	-0.8597	0.0002	-0.0006	0.0000	-0.0007
	11	-0.0243	-0.8463	0.0000	-0.0006	0.0000	-0.0007
	12	-0.0104	-2.4985	-0.0001	-0.0006	0.0000	-0.0015
	13	0.0266	0.6888	0.0004	-0.0004	0.0000	0.0005
	14	-0.0263	1.0142	0.0004	-0.0004	0.0000	0.0005
	15	0.0196	-0.0117	0.0003	-0.0004	0.0000	0.0000
	16	-0.0333	0.3138	0.0003	-0.0004	0.0000	0.0001
	17	0.0047	1.1771	0.0004	-0.0004	0.0000	0.0008
88	10	-0.0094	-1.0146	0.0001	-0.0007	0.0000	-0.0004
	11	-0.0189	-1.0033	-0.0001	-0.0007	0.0000	-0.0004
	12	0.0021	-2.8081	-0.0002	-0.0006	-0.0001	-0.0006
	13	0.0282	0.7963	0.0003	-0.0004	0.0000	0.0002
	14	-0.0406	1.0954	0.0003	-0.0004	0.0000	0.0000
	15	0.0263	-0.0022	0.0002	-0.0004	0.0000	0.0000
	16	-0.0424	0.2969	0.0002	-0.0004	0.0000	-0.0002
	17	-0.0041	1.3199	0.0003	-0.0004	0.0000	0.0002
89	10	-0.0029	-1.0809	0.0000	-0.0004	0.0000	-0.0002
	11	-0.0134	-1.0735	-0.0002	-0.0004	0.0000	-0.0002
	12	0.0082	-2.8796	-0.0007	-0.0007	0.0001	-0.0001
	13	0.0319	0.8285	0.0007	0.0003	-0.0002	0.0001
	14	-0.0484	1.0409	0.0007	0.0003	-0.0002	-0.0002
	15	0.0331	0.0128	0.0004	0.0001	-0.0001	0.0001
	16	-0.0472	0.2252	0.0004	0.0001	-0.0001	-0.0002
	17	-0.0077	1.3202	0.0008	0.0003	-0.0002	0.0000
90	10	0.0012	-1.1073	0.0001	-0.0012	0.0000	-0.0001
	11	-0.0099	-1.1034	-0.0002	-0.0012	0.0000	-0.0001
	12	0.0032	-2.9073	-0.0004	-0.0016	0.0000	-0.0001
	13	0.0395	0.8744	0.0005	-0.0002	0.0000	0.0002

JOINT DISPLACEMENT (CM RADIANS) STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
	14	-0.0468	0.9854	0.0005	-0.0002	0.0000	-0.0002
	15	0.0397	0.0520	0.0003	-0.0004	0.0000	0.0002
	16	-0.0465	0.1631	0.0002	-0.0004	0.0000	-0.0002
	17	-0.0033	1.3196	0.0005	-0.0001	0.0000	0.0000
91	10	0.0055	-1.1174	0.0003	-0.0017	0.0000	0.0000
	11	-0.0055	-1.1174	0.0000	-0.0017	0.0000	0.0000
	12	0.0000	-2.9255	0.0001	-0.0019	0.0000	0.0000
	13	0.0432	0.9351	0.0001	-0.0007	0.0000	0.0002
	14	-0.0431	0.9351	0.0001	-0.0007	0.0000	-0.0002
	15	0.0431	0.1060	0.0001	-0.0008	0.0000	0.0002
	16	-0.0431	0.1060	0.0001	-0.0008	0.0000	-0.0002
	17	0.0000	1.3284	0.0001	-0.0006	0.0000	0.0000
92	10	0.0099	-1.1035	0.0004	-0.0012	0.0000	0.0001
	11	-0.0012	-1.1076	0.0002	-0.0012	0.0000	0.0001
	12	-0.0033	-2.9078	0.0003	-0.0016	0.0000	0.0001
	13	0.0468	0.9856	0.0002	-0.0002	0.0000	0.0002
	14	-0.0394	0.8745	0.0002	-0.0002	0.0000	-0.0002
	15	0.0466	0.1631	0.0002	-0.0004	0.0000	0.0002
	16	-0.0397	0.0520	0.0002	-0.0004	0.0000	-0.0002
	17	0.0033	1.3198	0.0002	-0.0001	0.0000	0.0000
93	10	0.0133	-1.0738	0.0006	-0.0004	0.0000	0.0002
	11	0.0028	-1.0813	0.0003	-0.0004	0.0000	0.0002
	12	-0.0082	-2.8803	0.0005	-0.0007	-0.0001	0.0001
	13	0.0484	1.0411	0.0003	0.0003	0.0002	0.0002
	14	-0.0319	0.8287	0.0003	0.0003	0.0002	-0.0001
	15	0.0472	0.2253	0.0003	0.0001	0.0001	0.0002
	16	-0.0331	0.0129	0.0003	0.0001	0.0001	-0.0001
	17	0.0078	1.3205	0.0003	0.0003	0.0002	0.0000
94	10	0.0189	-1.0035	0.0007	-0.0006	0.0000	0.0004
	11	0.0094	-1.0149	0.0005	-0.0006	0.0000	0.0004
	12	-0.0021	-2.8087	0.0010	-0.0006	0.0001	0.0006
	13	0.0406	1.0957	-0.0001	-0.0004	0.0000	0.0000
	14	-0.0282	0.7965	-0.0002	-0.0004	0.0000	-0.0002
	15	0.0424	0.2970	0.0001	-0.0004	0.0000	0.0002
	16	-0.0263	-0.0022	0.0001	-0.0004	0.0000	0.0000
	17	0.0041	1.3201	-0.0002	-0.0004	0.0000	-0.0002
95	10	0.0244	-0.8465	0.0006	-0.0006	0.0000	0.0007
	11	0.0164	-0.8599	0.0004	-0.0006	0.0000	0.0007
	12	0.0104	-2.4990	0.0008	-0.0006	0.0000	0.0015
	13	0.0263	1.0144	0.0001	-0.0004	0.0000	-0.0005
	14	-0.0266	0.6889	0.0000	-0.0004	0.0000	-0.0005
	15	0.0333	0.3138	0.0002	-0.0004	0.0000	-0.0001
	16	-0.0196	-0.0117	0.0002	-0.0004	0.0000	0.0000
	17	-0.0047	1.1773	0.0000	-0.0004	0.0000	-0.0008
96	10	0.0267	-0.6013	0.0006	-0.0006	0.0000	0.0009
	11	0.0208	-0.6148	0.0005	-0.0006	0.0000	0.0009

JOINT DISPLACEMENT (CM RADIANS) STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
	12	0.0232	-1.9291	0.0008	-0.0006	0.0000	0.0021
	13	0.0096	0.7830	0.0001	-0.0004	0.0000	-0.0009
	14	-0.0247	0.5006	0.0001	-0.0004	0.0000	-0.0007
	15	0.0213	0.2667	0.0002	-0.0004	0.0000	-0.0002
	16	-0.0130	-0.0157	0.0002	-0.0004	0.0000	0.0000
	17	-0.0140	0.8799	0.0001	-0.0004	0.0000	-0.0011
97	10	0.0218	-0.3211	0.0006	-0.0003	0.0001	0.0011
	11	0.0184	-0.3297	0.0006	-0.0003	0.0001	0.0011
	12	0.0269	-1.1594	0.0007	-0.0003	0.0001	0.0035
	13	-0.0033	0.4424	0.0002	-0.0002	0.0001	-0.0014
	14	-0.0185	0.2700	0.0002	-0.0002	0.0001	-0.0009
	15	0.0088	0.1599	0.0003	-0.0002	0.0001	-0.0005
	16	-0.0064	-0.0125	0.0003	-0.0002	0.0001	0.0000
	17	-0.0171	0.4858	0.0002	-0.0002	0.0001	-0.0016
98	10	0.0069	-1.1147	-0.0005	0.0005	0.0000	0.0000
	11	-0.0068	-1.1148	-0.0007	0.0005	0.0000	0.0000
	12	0.0001	-2.9230	-0.0015	0.0012	0.0000	0.0000
	13	0.0073	0.9371	0.0011	-0.0007	0.0000	0.0003
	14	-0.0073	0.9371	0.0011	-0.0007	0.0000	-0.0003
	15	0.0073	0.1078	0.0005	-0.0003	0.0000	0.0003
	16	-0.0073	0.1078	0.0005	-0.0003	0.0000	-0.0003
	17	0.0000	1.3305	0.0011	-0.0008	0.0000	0.0000
99	10	0.0449	-1.1016	-0.0196	0.0002	0.0000	0.0001
	11	0.0313	-1.0943	-0.0199	0.0002	0.0000	0.0000
	12	0.1006	-2.8932	-0.0651	0.0012	0.0001	0.0002
	13	-0.0294	0.8525	0.0633	-0.0011	-0.0001	0.0000
	14	-0.0486	1.0000	0.0640	-0.0012	-0.0001	-0.0003
	15	0.0015	0.0344	0.0326	-0.0005	0.0000	0.0001
	16	-0.0177	0.1819	0.0333	-0.0006	0.0000	-0.0003
	17	-0.0516	1.3138	0.0621	-0.0012	-0.0001	-0.0002
100	10	0.0972	-1.0909	-0.0007	-0.0009	-0.0001	-0.0001
	11	0.0838	-1.0809	-0.0009	-0.0009	-0.0001	-0.0001
	12	0.2506	-2.9341	-0.0016	-0.0008	0.0000	0.0000
	13	-0.0715	0.8507	0.0007	-0.0007	-0.0003	0.0000
	14	-0.1168	1.0927	0.0007	-0.0007	-0.0003	-0.0003
	15	0.0041	0.0141	0.0002	-0.0006	-0.0002	0.0001
	16	-0.0413	0.2561	0.0002	-0.0006	-0.0002	-0.0002
	17	-0.1279	1.3654	0.0007	-0.0007	-0.0003	-0.0001
101	10	0.1384	-1.0140	-0.0006	-0.0007	-0.0002	-0.0004
	11	0.1255	-1.0007	-0.0008	-0.0007	-0.0002	-0.0004
	12	0.3830	-2.8336	-0.0010	-0.0007	-0.0002	-0.0006
	13	-0.1080	0.8074	0.0000	-0.0004	0.0000	0.0002
	14	-0.1796	1.1245	0.0000	-0.0004	0.0000	0.0001
	15	0.0059	-0.0005	-0.0002	-0.0004	-0.0001	0.0000
	16	-0.0657	0.3167	-0.0002	-0.0004	-0.0001	-0.0001
	17	-0.1953	1.3433	0.0000	-0.0004	0.0000	0.0003

JOINT DISPLACEMENT (CM RADIANS) STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
102	10	0.1624	-0.8498	-0.0005	-0.0007	-0.0001	-0.0007
	11	0.1505	-0.8349	-0.0007	-0.0007	-0.0001	-0.0007
	12	0.4766	-2.4982	-0.0009	-0.0007	-0.0001	-0.0015
	13	-0.1309	0.6890	0.0001	-0.0004	-0.0001	0.0005
	14	-0.2213	1.0236	0.0001	-0.0004	-0.0001	0.0006
	15	0.0071	-0.0103	-0.0001	-0.0004	-0.0001	0.0000
	16	-0.0833	0.3243	-0.0001	-0.0004	-0.0001	0.0001
	17	-0.2388	1.1807	0.0001	-0.0004	-0.0001	0.0008
103	10	0.1651	-0.5971	-0.0006	-0.0003	-0.0001	-0.0009
	11	0.1546	-0.5824	-0.0007	-0.0003	-0.0001	-0.0009
	12	0.5188	-1.9043	-0.0008	-0.0003	-0.0001	-0.0022
	13	-0.1358	0.4914	-0.0002	-0.0002	-0.0001	0.0007
	14	-0.2337	0.7749	-0.0002	-0.0002	-0.0001	0.0010
	15	0.0076	-0.0145	-0.0003	-0.0002	-0.0001	0.0000
	16	-0.0903	0.2689	-0.0003	-0.0002	-0.0001	0.0003
	17	-0.2499	0.8660	-0.0001	-0.0002	-0.0001	0.0012
104	10	-0.0313	-1.0945	-0.0188	0.0002	0.0000	0.0000
	11	-0.0449	-1.1020	-0.0189	0.0002	0.0000	-0.0001
	12	-0.1005	-2.8938	-0.0633	0.0012	-0.0001	-0.0002
	13	0.0486	1.0002	0.0633	-0.0012	0.0001	0.0003
	14	0.0293	0.8527	0.0626	-0.0011	0.0001	0.0000
	15	0.0177	0.1819	0.0332	-0.0006	0.0000	0.0003
	16	-0.0015	0.0344	0.0325	-0.0005	0.0000	-0.0001
	17	0.0516	1.3141	0.0613	-0.0012	0.0001	0.0002
105	10	-0.0838	-1.0812	0.0003	-0.0009	0.0001	0.0001
	11	-0.0972	-1.0913	0.0001	-0.0009	0.0001	0.0001
	12	-0.2505	-2.9348	0.0004	-0.0008	0.0000	0.0000
	13	0.1168	1.0929	-0.0001	-0.0007	0.0003	0.0003
	14	0.0715	0.8509	-0.0001	-0.0007	0.0003	0.0000
	15	0.0412	0.2562	0.0000	-0.0006	0.0002	0.0002
	16	-0.0041	0.0142	0.0000	-0.0006	0.0002	-0.0001
	17	0.1279	1.3657	-0.0001	-0.0007	0.0003	0.0001
106	10	-0.1255	-1.0010	0.0002	-0.0007	0.0002	0.0004
	11	-0.1384	-1.0143	0.0001	-0.0007	0.0002	0.0004
	12	-0.3830	-2.8342	0.0007	-0.0007	0.0002	0.0006
	13	0.1796	1.1248	-0.0006	-0.0004	0.0000	-0.0001
	14	0.1080	0.8076	-0.0007	-0.0004	0.0000	-0.0002
	15	0.0657	0.3168	-0.0003	-0.0004	0.0001	0.0001
	16	-0.0059	-0.0004	-0.0003	-0.0004	0.0001	0.0000
	17	0.1954	1.3436	-0.0007	-0.0004	0.0000	-0.0003
107	10	-0.1506	-0.8351	0.0001	-0.0007	0.0001	0.0007
	11	-0.1624	-0.8501	-0.0001	-0.0007	0.0001	0.0007
	12	-0.4767	-2.4986	0.0003	-0.0007	0.0001	0.0015
	13	0.2213	1.0238	-0.0004	-0.0004	0.0001	-0.0006
	14	0.1309	0.6892	-0.0004	-0.0004	0.0001	-0.0005
	15	0.0833	0.3244	-0.0002	-0.0004	0.0001	-0.0001

JOINT DISPLACEMENT (CM RADIANS) STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
	16	-0.0071	-0.0103	-0.0002	-0.0004	0.0001	0.0000
	17	0.2388	1.1808	-0.0004	-0.0004	0.0001	-0.0008
108	10	-0.1546	-0.5825	-0.0002	-0.0003	0.0001	0.0009
	11	-0.1651	-0.5972	-0.0004	-0.0003	0.0001	0.0009
	12	-0.5189	-1.9046	-0.0001	-0.0003	0.0001	0.0022
	13	0.2337	0.7750	-0.0005	-0.0002	0.0001	-0.0010
	14	0.1358	0.4916	-0.0005	-0.0002	0.0001	-0.0007
	15	0.0903	0.2689	-0.0003	-0.0002	0.0001	-0.0003
	16	-0.0076	-0.0145	-0.0003	-0.0002	0.0001	0.0000
	17	0.2499	0.8662	-0.0005	-0.0002	0.0001	-0.0012
125	10	0.0000	0.0000	0.0000	0.0002	0.0000	-0.0001
	11	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000
	12	0.0000	0.0000	0.0000	0.0004	-0.0001	-0.0001
	13	0.0000	0.0000	0.0000	0.0004	0.0000	0.0005
	14	0.0000	0.0000	0.0000	0.0004	0.0000	0.0005
	15	0.0000	0.0000	0.0000	0.0003	0.0000	0.0003
	16	0.0000	0.0000	0.0000	0.0003	0.0000	0.0003
	17	0.0000	0.0000	0.0000	0.0002	0.0000	0.0004
134	10	0.0000	0.0000	0.0000	0.0006	0.0000	-0.0001
	11	0.0000	0.0000	0.0000	0.0006	0.0000	0.0000
	12	0.0000	0.0000	0.0000	0.0015	0.0001	-0.0001
	13	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000
	14	0.0000	0.0000	0.0000	0.0003	0.0000	0.0000
	15	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000
	16	0.0000	0.0000	0.0000	0.0005	0.0000	0.0000
	17	0.0000	0.0000	0.0000	-0.0001	0.0000	0.0000
135	10	0.0108	-0.0037	0.0358	-0.0003	0.0000	-0.0001
	11	0.0032	-0.0037	0.0366	-0.0003	0.0000	0.0000
	12	0.0139	-0.0115	0.0410	-0.0012	0.0001	-0.0001
	13	0.0021	0.0084	0.1614	0.0022	0.0000	0.0000
	14	0.0049	0.0084	0.1800	0.0023	0.0000	0.0000
	15	0.0036	0.0040	0.1212	0.0013	0.0000	0.0000
	16	0.0064	0.0039	0.1398	0.0014	0.0000	0.0000
	17	0.0007	0.0085	0.1186	0.0019	0.0000	0.0000
136	10	0.0045	-0.0007	0.0076	-0.0004	0.0000	0.0000
	11	-0.0041	-0.0007	0.0099	-0.0004	0.0000	0.0000
	12	0.0073	-0.0010	0.0106	-0.0008	-0.0001	-0.0001
	13	-0.0674	-0.0001	0.0739	0.0008	0.0000	0.0005
	14	-0.0642	-0.0001	0.0731	0.0008	0.0000	0.0004
	15	-0.0473	-0.0003	0.0548	0.0004	0.0000	0.0003
	16	-0.0441	-0.0003	0.0539	0.0004	0.0000	0.0003
	17	-0.0484	-0.0001	0.0514	0.0007	0.0000	0.0003
141	10	0.0544	-2.1327	-0.2130	0.0015	0.0001	-0.0012
	11	0.0470	-2.1132	-0.2062	0.0015	0.0001	-0.0012
	12	0.1194	-5.2209	-0.5364	0.0034	0.0003	-0.0026
	13	-0.0797	2.9585	0.4368	-0.0031	-0.0002	0.0015

JOINT DISPLACEMENT (CM RADIANS) STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
	14	-0.0829	2.9960	0.4359	-0.0030	-0.0002	0.0015
	15	-0.0347	1.1696	0.2169	-0.0016	-0.0001	0.0006
	16	-0.0379	1.2071	0.2159	-0.0015	-0.0001	0.0006
	17	-0.0781	3.0393	0.4045	-0.0027	-0.0002	0.0015
142	10	0.0605	-1.1437	-0.1013	-0.0018	0.0001	-0.0008
	11	0.0529	-1.1239	-0.0949	-0.0018	0.0001	-0.0008
	12	0.1451	-2.8547	-0.2670	-0.0031	0.0004	-0.0035
	13	-0.1323	1.9810	0.3079	0.0005	-0.0005	0.0035
	14	-0.1289	1.9699	0.3055	0.0005	-0.0005	0.0035
	15	-0.0688	0.9084	0.1730	-0.0002	-0.0003	0.0018
	16	-0.0655	0.8973	0.1705	-0.0002	-0.0003	0.0019
	17	-0.1189	1.9059	0.2665	0.0005	-0.0005	0.0035
151	10	0.0000	0.0000	0.0000	0.0006	0.0001	-0.0001
	11	0.0000	0.0000	0.0000	0.0006	0.0001	0.0000
	12	0.0000	0.0000	0.0000	0.0013	0.0002	-0.0001
	13	0.0000	0.0000	0.0000	0.0002	-0.0001	-0.0001
	14	0.0000	0.0000	0.0000	0.0003	-0.0001	-0.0002
	15	0.0000	0.0000	0.0000	0.0004	0.0000	-0.0001
	16	0.0000	0.0000	0.0000	0.0004	0.0000	-0.0001
	17	0.0000	0.0000	0.0000	0.0000	-0.0001	-0.0001
153	10	-0.0460	-2.1123	-0.2044	0.0015	-0.0001	0.0012
	11	-0.0535	-2.1323	-0.2115	0.0015	-0.0001	0.0012
	12	-0.1173	-5.2196	-0.5330	0.0034	-0.0003	0.0025
	13	0.0821	2.9955	0.4347	-0.0030	0.0002	-0.0015
	14	0.0789	2.9580	0.4356	-0.0031	0.0002	-0.0015
	15	0.0377	1.2070	0.2157	-0.0015	0.0001	-0.0006
	16	0.0345	1.1695	0.2166	-0.0016	0.0001	-0.0006
	17	0.0772	3.0387	0.4033	-0.0027	0.0002	-0.0015
156	10	0.0130	-0.0030	0.0416	-0.0002	0.0001	0.0000
	11	0.0052	-0.0030	0.0375	-0.0002	0.0001	0.0000
	12	0.0163	-0.0099	0.0374	-0.0012	0.0002	-0.0001
	13	0.0187	0.0075	0.1471	0.0021	-0.0001	-0.0001
	14	0.0216	0.0075	0.1529	0.0021	-0.0001	-0.0001
	15	0.0158	0.0036	0.1104	0.0012	0.0000	-0.0001
	16	0.0187	0.0036	0.1161	0.0013	0.0000	-0.0001
	17	0.0124	0.0076	0.1122	0.0018	-0.0001	-0.0001
161	10	0.0000	0.0000	0.0000	0.0000	-0.0002	0.0012
	11	0.0000	0.0000	0.0000	0.0000	-0.0002	0.0012
	12	0.0000	0.0000	0.0000	0.0000	-0.0005	0.0030
	13	0.0000	0.0000	0.0000	-0.0005	0.0004	-0.0018
	14	0.0000	0.0000	0.0000	-0.0005	0.0004	-0.0018
	15	0.0000	0.0000	0.0000	-0.0003	0.0002	-0.0008
	16	0.0000	0.0000	0.0000	-0.0003	0.0002	-0.0008
	17	0.0000	0.0000	0.0000	-0.0003	0.0004	-0.0018
171	10	0.0683	-1.2166	0.1002	0.0017	-0.0001	-0.0006
	11	0.0607	-1.1977	0.0936	0.0017	-0.0001	-0.0006

JOINT DISPLACEMENT (CM RADIANS) STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
	12	0.1616	-3.0102	0.2643	0.0028	-0.0004	-0.0032
	13	-0.1385	2.0390	-0.3069	-0.0004	0.0005	0.0034
	14	-0.1351	2.0278	-0.3044	-0.0004	0.0005	0.0034
	15	-0.0703	0.9223	-0.1727	0.0002	0.0003	0.0018
	16	-0.0670	0.9110	-0.1702	0.0002	0.0003	0.0018
	17	-0.1256	1.9683	-0.2654	-0.0004	0.0005	0.0034
174	10	-0.1133	-0.0031	-0.0049	-0.0001	-0.0002	0.0001
	11	-0.1178	-0.0031	-0.0067	-0.0001	-0.0002	0.0001
	12	-0.2844	-0.0087	-0.0070	-0.0002	-0.0005	0.0001
	13	0.1610	0.0064	-0.0505	-0.0001	0.0004	0.0002
	14	0.1625	0.0064	-0.0499	-0.0001	0.0004	0.0002
	15	0.0648	0.0030	-0.0374	-0.0001	0.0002	0.0001
	16	0.0663	0.0030	-0.0368	-0.0001	0.0002	0.0001
	17	0.1628	0.0063	-0.0351	0.0000	0.0004	0.0002
192	10	-0.0122	-1.1126	-0.0941	-0.0024	0.0000	0.0000
	11	-0.0197	-1.1109	-0.0930	-0.0024	0.0000	0.0000
	12	-0.0388	-3.6238	-0.3896	-0.0074	0.0001	-0.0002
	13	0.0282	3.3831	0.5819	0.0058	0.0000	0.0000
	14	0.0315	3.4251	0.6072	0.0058	0.0000	0.0001
	15	0.0127	1.7452	0.3418	0.0028	0.0000	0.0000
	16	0.0160	1.7872	0.3671	0.0028	0.0000	0.0000
	17	0.0278	3.2819	0.5228	0.0059	0.0000	0.0001
193	10	-0.0126	-1.9197	-0.1732	0.0001	0.0001	-0.0007
	11	-0.0200	-1.9217	-0.1725	0.0001	0.0001	-0.0007
	12	-0.0385	-5.8660	-0.5997	0.0010	0.0000	0.0002
	13	0.0282	4.4898	0.6536	-0.0022	0.0003	-0.0019
	14	0.0250	4.4576	0.6690	-0.0024	0.0003	-0.0020
	15	0.0135	2.1246	0.3550	-0.0014	0.0002	-0.0013
	16	0.0104	2.0924	0.3704	-0.0016	0.0002	-0.0014
	17	0.0255	4.5501	0.6163	-0.0019	0.0003	-0.0020
200	10	-0.0364	-1.1551	-0.0997	-0.0024	0.0001	-0.0003
	11	-0.0440	-1.1693	-0.1059	-0.0024	0.0001	-0.0003
	12	-0.1002	-3.7219	-0.4217	-0.0067	0.0001	0.0000
	13	0.0817	3.2658	0.5597	0.0047	0.0001	-0.0009
	14	0.0850	3.2698	0.5663	0.0047	0.0001	-0.0009
	15	0.0399	1.6502	0.3210	0.0022	0.0001	-0.0006
	16	0.0432	1.6542	0.3277	0.0021	0.0001	-0.0006
	17	0.0767	3.1979	0.5137	0.0048	0.0001	-0.0009

********** END OF LATEST ANALYSIS RESULT **********

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272. PRINT SUPPORT REACTION LIST 40 41 83 85 109 117 125 127 TO 129 134 -
273. 147 TO 151 160 TO 165 167 176 TO 180
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SUPPORT REACTIONS -UNIT KN METE STRUCTURE TYPE = SPACE

JOINT	LOAD	FORCE-X	FORCE-Y	FORCE-Z	MOM-X	MOM-Y	MOM Z
40	10	-117.41	51.98	0.15	0.00	0.00	0.00
	11	-107.50	50.23	0.15	0.00	0.00	0.00
	12	-317.16	252.29	0.15	0.00	0.00	0.00
	13	89.31	-61.32	0.14	0.00	0.00	0.00
	14	95.89	-40.74	0.14	0.00	0.00	0.00
	15	6.33	-19.35	0.12	0.00	0.00	0.00
	16	12.91	1.23	0.13	0.00	0.00	0.00
	17	132.58	-70.52	0.12	0.00	0.00	0.00
41	10	107.55	50.25	0.15	0.00	0.00	0.00
	11	117.45	52.00	0.15	0.00	0.00	0.00
	12	317.26	252.33	0.15	0.00	0.00	0.00
	13	-95.92	-40.75	0.14	0.00	0.00	0.00
	14	-89.35	-61.33	0.14	0.00	0.00	0.00
	15	-12.92	1.23	0.13	0.00	0.00	0.00
	16	-6.34	-19.35	0.12	0.00	0.00	0.00
	17	-132.63	-70.54	0.12	0.00	0.00	0.00
83	10	107.50	50.23	-0.15	0.00	0.00	0.00
	11	117.41	51.99	-0.15	0.00	0.00	0.00
	12	317.16	252.29	-0.15	0.00	0.00	0.00
	13	-95.89	-40.74	-0.14	0.00	0.00	0.00
	14	-89.31	-61.32	-0.14	0.00	0.00	0.00
	15	-12.91	1.23	-0.13	0.00	0.00	0.00
	16	-6.33	-19.35	-0.12	0.00	0.00	0.00
	17	-132.59	-70.53	-0.12	0.00	0.00	0.00
85	10	-117.45	52.00	-0.15	0.00	0.00	0.00
	11	-107.55	50.25	-0.15	0.00	0.00	0.00
	12	-317.26	252.33	-0.15	0.00	0.00	0.00
	13	89.35	-61.33	-0.14	0.00	0.00	0.00
	14	95.92	-40.75	-0.14	0.00	0.00	0.00
	15	6.34	-19.35	-0.12	0.00	0.00	0.00
	16	12.92	1.23	-0.13	0.00	0.00	0.00
	17	132.62	-70.54	-0.12	0.00	0.00	0.00
109	10	54.34	26.74	-0.01	0.00	0.00	0.00
	11	54.44	26.77	-0.02	0.00	0.00	0.00
	12	157.43	80.61	-0.02	0.00	0.00	0.00
	13	-112.87	-61.51	-0.12	0.00	0.00	0.00
	14	-113.31	-61.64	-0.12	0.00	0.00	0.00
	15	-51.93	-29.17	-0.09	0.00	0.00	0.00
	16	-52.37	-29.30	-0.09	0.00	0.00	0.00
	17	-114.30	-61.92	-0.08	0.00	0.00	0.00
117	10	30.28	18.21	0.02	0.00	0.00	0.00
	11	30.24	18.19	0.02	0.00	0.00	0.00
	12	80.23	50.97	0.06	0.00	0.00	0.00
	13	-56.40	-37.80	-0.26	0.00	0.00	0.00
	14	-56.32	-37.76	-0.25	0.00	0.00	0.00
	15	-25.95	-17.80	-0.17	0.00	0.00	0.00

SUPPORT REACTIONS -UNIT KN METE STRUCTURE TYPE = SPACE

JOINT	LOAD	FORCE-X	FORCE-Y	FORCE-Z	MOM-X	MOM-Y	MOM Z
	16	-25.87	-17.76	-0.17	0.00	0.00	0.00
	17	-55.25	-37.31	-0.19	0.00	0.00	0.00
125	10	4.31	4.20	-4.83	0.00	0.00	0.00
	11	4.41	4.26	-4.92	0.00	0.00	0.00
	12	9.25	6.07	-10.32	0.00	0.00	0.00
	13	-3.45	0.88	3.85	0.00	0.00	0.00
	14	-3.44	0.90	3.83	0.00	0.00	0.00
	15	-0.83	1.69	0.92	0.00	0.00	0.00
	16	-0.82	1.70	0.90	0.00	0.00	0.00
	17	-3.71	0.59	4.13	0.00	0.00	0.00
127	10	-0.02	14.57	-23.18	0.00	0.00	0.00
	11	0.01	14.55	-23.13	0.00	0.00	0.00
	12	-0.03	42.55	-62.74	0.00	0.00	0.00
	13	0.23	-30.92	40.10	0.00	0.00	0.00
	14	0.21	-30.89	40.01	0.00	0.00	0.00
	15	0.16	-14.35	17.37	0.00	0.00	0.00
	16	0.14	-14.32	17.28	0.00	0.00	0.00
	17	0.16	-31.20	40.91	0.00	0.00	0.00
128	10	-0.04	24.20	-46.46	0.00	0.00	0.00
	11	0.00	24.22	-46.55	0.00	0.00	0.00
	12	-0.05	81.81	-143.03	0.00	0.00	0.00
	13	0.15	-59.34	105.35	0.00	0.00	0.00
	14	0.14	-59.47	105.86	0.00	0.00	0.00
	15	0.10	-28.43	48.98	0.00	0.00	0.00
	16	0.09	-28.55	49.49	0.00	0.00	0.00
	17	0.11	-60.01	108.00	0.00	0.00	0.00
129	10	-0.06	39.29	-83.51	0.00	0.00	0.00
	11	-0.01	39.27	-83.39	0.00	0.00	0.00
	12	-0.08	122.73	-252.30	0.00	0.00	0.00
	13	0.09	-87.24	183.21	0.00	0.00	0.00
	14	0.07	-87.65	185.03	0.00	0.00	0.00
	15	0.05	-40.76	84.06	0.00	0.00	0.00
	16	0.04	-41.17	85.87	0.00	0.00	0.00
	17	0.07	-88.51	188.99	0.00	0.00	0.00
134	10	-0.06	39.28	-83.45	0.00	0.00	0.00
	11	-0.02	39.30	-83.54	0.00	0.00	0.00
	12	-0.08	122.75	-252.40	0.00	0.00	0.00
	13	-0.01	-87.66	185.06	0.00	0.00	0.00
	14	-0.03	-87.25	183.25	0.00	0.00	0.00
	15	-0.02	-41.17	85.88	0.00	0.00	0.00
	16	-0.04	-40.76	84.07	0.00	0.00	0.00
	17	0.00	-88.52	189.03	0.00	0.00	0.00
147	10	-54.48	26.78	-0.02	0.00	0.00	0.00
	11	-54.39	26.75	-0.02	0.00	0.00	0.00
	12	-157.53	80.63	-0.04	0.00	0.00	0.00
	13	113.35	-61.64	-0.11	0.00	0.00	0.00

SUPPORT REACTIONS -UNIT KN METE STRUCTURE TYPE = SPACE

JOINT	LOAD	FORCE-X	FORCE-Y	FORCE-Z	MOM-X	MOM-Y	MOM Z
	14	112.91	-61.52	-0.11	0.00	0.00	0.00
	15	52.38	-29.30	-0.09	0.00	0.00	0.00
	16	51.94	-29.17	-0.09	0.00	0.00	0.00
	17	114.34	-61.93	-0.07	0.00	0.00	0.00
148	10	-31.71	18.86	0.07	0.00	0.00	0.00
	11	-31.73	18.87	0.08	0.00	0.00	0.00
	12	-83.31	52.37	0.18	0.00	0.00	0.00
	13	57.46	-38.29	-0.30	0.00	0.00	0.00
	14	57.54	-38.32	-0.30	0.00	0.00	0.00
	15	26.14	-17.88	-0.18	0.00	0.00	0.00
	16	26.22	-17.92	-0.18	0.00	0.00	0.00
	17	56.48	-37.87	-0.24	0.00	0.00	0.00
149	10	-0.98	2.63	-1.19	0.00	0.00	0.00
	11	-0.95	2.60	-1.18	0.00	0.00	0.00
	12	-2.06	2.66	-2.51	0.00	0.00	0.00
	13	0.77	2.16	0.93	0.00	0.00	0.00
	14	0.77	2.15	0.93	0.00	0.00	0.00
	15	0.19	2.00	0.22	0.00	0.00	0.00
	16	0.19	1.99	0.22	0.00	0.00	0.00
	17	0.83	1.96	1.00	0.00	0.00	0.00
150	10	0.04	15.29	-24.77	0.00	0.00	0.00
	11	0.07	15.29	-24.78	0.00	0.00	0.00
	12	0.14	44.09	-66.18	0.00	0.00	0.00
	13	-0.25	-31.46	41.30	0.00	0.00	0.00
	14	-0.27	-31.50	41.39	0.00	0.00	0.00
	15	-0.15	-14.46	17.59	0.00	0.00	0.00
	16	-0.17	-14.49	17.68	0.00	0.00	0.00
	17	-0.20	-31.82	42.30	0.00	0.00	0.00
151	10	-0.08	24.24	-46.64	0.00	0.00	0.00
	11	-0.04	24.21	-46.54	0.00	0.00	0.00
	12	-0.11	81.83	-143.20	0.00	0.00	0.00
	13	-0.08	-59.48	105.92	0.00	0.00	0.00
	14	-0.09	-59.35	105.41	0.00	0.00	0.00
	15	-0.07	-28.56	49.51	0.00	0.00	0.00
	16	-0.09	-28.43	48.99	0.00	0.00	0.00
	17	-0.05	-60.02	108.06	0.00	0.00	0.00
160	10	54.39	26.75	0.02	0.00	0.00	0.00
	11	54.48	26.78	0.02	0.00	0.00	0.00
	12	157.53	80.63	0.04	0.00	0.00	0.00
	13	-112.91	-61.51	0.11	0.00	0.00	0.00
	14	-113.35	-61.64	0.11	0.00	0.00	0.00
	15	-51.94	-29.17	0.09	0.00	0.00	0.00
	16	-52.38	-29.30	0.09	0.00	0.00	0.00
	17	-114.34	-61.93	0.07	0.00	0.00	0.00
161	10	31.73	18.87	-0.08	0.00	0.00	0.00
	11	31.71	18.86	-0.07	0.00	0.00	0.00

SUPPORT REACTIONS -UNIT KN METE STRUCTURE TYPE = SPACE

JOINT	LOAD	FORCE-X	FORCE-Y	FORCE-Z	MOM-X	MOM-Y	MOM Z
	12	83.31	52.37	-0.18	0.00	0.00	0.00
	13	-57.55	-38.32	0.30	0.00	0.00	0.00
	14	-57.46	-38.29	0.30	0.00	0.00	0.00
	15	-26.23	-17.92	0.18	0.00	0.00	0.00
	16	-26.14	-17.88	0.18	0.00	0.00	0.00
	17	-56.48	-37.87	0.24	0.00	0.00	0.00
162	10	0.95	2.60	1.18	0.00	0.00	0.00
	11	0.98	2.63	1.19	0.00	0.00	0.00
	12	2.06	2.66	2.51	0.00	0.00	0.00
	13	-0.77	2.15	-0.93	0.00	0.00	0.00
	14	-0.77	2.16	-0.93	0.00	0.00	0.00
	15	-0.19	1.99	-0.22	0.00	0.00	0.00
	16	-0.19	2.00	-0.22	0.00	0.00	0.00
	17	-0.83	1.96	-1.00	0.00	0.00	0.00
163	10	-0.07	15.29	24.78	0.00	0.00	0.00
	11	-0.04	15.29	24.77	0.00	0.00	0.00
	12	-0.14	44.08	66.17	0.00	0.00	0.00
	13	0.27	-31.49	-41.39	0.00	0.00	0.00
	14	0.25	-31.46	-41.29	0.00	0.00	0.00
	15	0.17	-14.49	-17.68	0.00	0.00	0.00
	16	0.15	-14.46	-17.58	0.00	0.00	0.00
	17	0.20	-31.82	-42.29	0.00	0.00	0.00
164	10	0.04	24.21	46.54	0.00	0.00	0.00
	11	0.08	24.24	46.64	0.00	0.00	0.00
	12	0.11	75.97	143.20	0.00	0.00	0.00
	13	0.09	-59.35	-105.41	0.00	0.00	0.00
	14	0.08	-59.48	-105.92	0.00	0.00	0.00
	15	0.09	-28.43	-48.99	0.00	0.00	0.00
	16	0.07	-28.56	-49.51	0.00	0.00	0.00
	17	0.05	-60.02	-108.06	0.00	0.00	0.00
165	10	0.02	39.30	83.54	0.00	0.00	0.00
	11	0.06	39.28	83.45	0.00	0.00	0.00
	12	0.08	116.88	252.40	0.00	0.00	0.00
	13	0.03	-87.25	-183.25	0.00	0.00	0.00
	14	0.01	-87.66	-185.06	0.00	0.00	0.00
	15	0.04	-40.76	-84.06	0.00	0.00	0.00
	16	0.02	-41.17	-85.88	0.00	0.00	0.00
	17	0.00	-88.52	-189.03	0.00	0.00	0.00
167	10	0.01	39.27	83.39	0.00	0.00	0.00
	11	0.05	39.29	83.51	0.00	0.00	0.00
	12	0.07	116.86	252.30	0.00	0.00	0.00
	13	-0.07	-87.65	-185.03	0.00	0.00	0.00
	14	-0.08	-87.25	-183.21	0.00	0.00	0.00
	15	-0.03	-41.17	-85.87	0.00	0.00	0.00
	16	-0.05	-40.76	-84.06	0.00	0.00	0.00
	17	-0.06	-88.51	-188.99	0.00	0.00	0.00

SUPPORT REACTIONS -UNIT KN METE STRUCTURE TYPE = SPACE

JOINT	LOAD	FORCE-X	FORCE-Y	FORCE-Z	MOM-X	MOM-Y	MOM Z
176	10	-54.44	26.77	0.02	0.00	0.00	0.00
	11	-54.34	26.74	0.01	0.00	0.00	0.00
	12	-157.44	80.61	0.02	0.00	0.00	0.00
	13	113.31	-61.64	0.12	0.00	0.00	0.00
	14	112.87	-61.51	0.12	0.00	0.00	0.00
	15	52.37	-29.30	0.09	0.00	0.00	0.00
	16	51.93	-29.17	0.09	0.00	0.00	0.00
	17	114.30	-61.92	0.08	0.00	0.00	0.00
177	10	-30.24	18.19	-0.02	0.00	0.00	0.00
	11	-30.28	18.21	-0.02	0.00	0.00	0.00
	12	-80.22	50.96	-0.06	0.00	0.00	0.00
	13	56.31	-37.76	0.25	0.00	0.00	0.00
	14	56.39	-37.80	0.26	0.00	0.00	0.00
	15	25.87	-17.76	0.17	0.00	0.00	0.00
	16	25.95	-17.79	0.17	0.00	0.00	0.00
	17	55.24	-37.31	0.19	0.00	0.00	0.00
178	10	-4.41	4.26	4.92	0.00	0.00	0.00
	11	-4.31	4.20	4.83	0.00	0.00	0.00
	12	-9.25	6.07	10.32	0.00	0.00	0.00
	13	3.44	0.90	-3.83	0.00	0.00	0.00
	14	3.45	0.88	-3.85	0.00	0.00	0.00
	15	0.82	1.70	-0.91	0.00	0.00	0.00
	16	0.83	1.69	-0.92	0.00	0.00	0.00
	17	3.71	0.59	-4.13	0.00	0.00	0.00
179	10	-0.01	14.56	23.14	0.00	0.00	0.00
	11	0.02	14.58	23.18	0.00	0.00	0.00
	12	0.03	42.55	62.75	0.00	0.00	0.00
	13	-0.21	-30.89	-40.02	0.00	0.00	0.00
	14	-0.23	-30.92	-40.11	0.00	0.00	0.00
	15	-0.14	-14.32	-17.28	0.00	0.00	0.00
	16	-0.16	-14.36	-17.37	0.00	0.00	0.00
	17	-0.16	-31.20	-40.92	0.00	0.00	0.00
180	10	0.00	24.22	46.55	0.00	0.00	0.00
	11	0.04	24.20	46.46	0.00	0.00	0.00
	12	0.05	75.94	143.03	0.00	0.00	0.00
	13	-0.14	-59.47	-105.86	0.00	0.00	0.00
	14	-0.15	-59.34	-105.34	0.00	0.00	0.00
	15	-0.09	-28.55	-49.49	0.00	0.00	0.00
	16	-0.10	-28.43	-48.98	0.00	0.00	0.00
	17	-0.11	-60.01	-107.99	0.00	0.00	0.00

********** END OF LATEST ANALYSIS RESULT **********

274. **
275. FINISH

********** END OF THE STAAD.Pro RUN **********

**** DATE= FEB 13,2015 TIME= 17:13:21 ****

Job No.	JPF-P - 47	Rev. No.	0	
Customer	BANQUET HALL , ZIRAKPUR	Date	2/24/2015	
Description	*2.2 CONNECTION DESIGN*	Design By	JITENDRA	
		Checked By	JITENDRA	

2.2 CONNECTION DESIGN

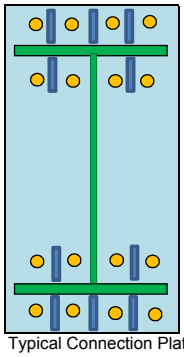
DETAIL	BEAM NO.	LOAD CASE	NODE
J# 1	177	19	106

END PLATE CONNECTION DESIGN (INDIAN METHOD)

Depth of connected beam 'd' = **300** mm
Width of beam flange 'bf' = **150** mm
thickness of beam flange 'tf' = **8** mm
thickness of beam web 'tw' = **4** mm

Axial Force 'A' = **593** KN
Shear Force 'S' = **8** KN
Bending Moment 'M' = **3** KN-m

Yield stress of material 'Fy' = **345** N-mm2


Typical Connection Plate

1 CONNECTION BOLT DESIGN

Total Tension in bolt due to moment (Tm) = Moment / Lever arm
= 3 / 316
= **9.49** KN

Tension in bolts due to axial Force A = **593** KN

Total Tension in the bolts (T) = Tm + A = **602.49** KN

No. of bolts per side (n) = **5**

Tension per bolt 'Tb' = (T) /n = 602.49 / 5
= **120.5** KN Ratio **0.95** **{SAFE}**

Total no. of bolts (N) = **10**

Shear per bolt 'Sb' = S / N = **0.80** KN **0.01** **{SAFE}**

Diameter of bolt = **24** mm

As per IS:4000-1992 Table 2 - For 24 mm Dia Bolt
Permissible Tension Capacity 'Ta' = **127** KN
Permissible Shear Capacity 'Sa' = **73** KN

Combined Tension & Shear Ratio = $(T_b/Ta) + (S_b/Sa) \le 1.4$

=	0.96	<	1.4	[SAFE]

2 PLATE THICKNESS DESIGN

Distance from centreline of bolt to nearer surface of the tension flange = 39 mm

Thickness of weld of plate to the flange plate = 6 mm

Effective bolt distance from tension flange d = 33 mm

Moment in plate due to bolt tension (M) = (T_b x d) / (2d)
= 60.245 KN-mm/mm

Required thickness at joint (tp) = $\sqrt{\frac{6 \times M}{0.66 \times Fy}}$

Required thickness at joint (tp) = **40** mm

Provided Two plates of	25	mm Thick with Stiffners

3 TOP FLANGE TO END PLATE WELD :

Allowable Shear Stress in weld fs = **110** N/mm2

size of weld required t_{weld} = $\frac{T}{(2*bf + n1*e*2)*0.707*fs}$ { n1 = 3 No. of Stiffners

10 mm

Provide Full Penetration Groove Weld with Stiffners.

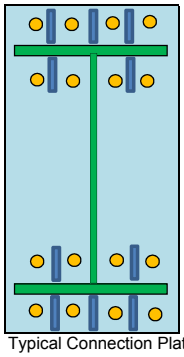
DETAIL	BEAM NO.	LOAD CASE	NODE
J# 2	139	19	81

END PLATE CONNECTION DESIGN (INDIAN METHOD)

Depth of connected beam 'd' = **300** mm
Width of beam flange 'bf' = **150** mm
thickness of beam flange 'tf' = **8** mm
thickness of beam web 'tw' = **4** mm

Axial Force 'A' = **34** KN
Shear Force 'S' = **17** KN
Bending Moment 'M' = **25** KN-m

Yield stress of material 'Fy' = **345** N-mm2


Typical Connection Plate

1 CONNECTION BOLT DESIGN

Total Tension in bolt due to moment (Tm) = Moment / Lever arm
= 25 / 316
= **79.11** KN

Tension in bolts due to axial Force A = **34** KN

Total Tension in the bolts (T) = Tm + A = **113.11** KN

No. of bolts per side (n) = **4**

Tension per bolt 'Tb' = (T) /n = 113.11 / 4
= **28.3** KN Ratio **0.32** **{SAFE}**

Total no. of bolts (N) = **8**

Shear per bolt 'Sb' = S / N = **2.12** KN **0.04** **{SAFE}**

Diameter of bolt = **20** mm

As per IS:4000-1992 Table 2 - For 20 mm Dia Bolt
Permissible Tension Capacity 'Ta' = **88** KN
Permissible Shear Capacity 'Sa' = **50** KN

Combined Tension & Shear Ratio = $(T_b/Ta) + (S_b/Sa) \le 1.4$

=	0.36	<	1.4	[SAFE]

2 PLATE THICKNESS DESIGN

Distance from centreline of bolt to nearer surface of the tension flange = 33 mm

Thickness of weld of plate to the flange plate = 6 mm

Effective bolt distance from tension flange d = 27 mm

Moment in plate due to bolt tension (M) = (T_b x d) / (2d)
= 14.135 KN-mm/mm

Required thickness at joint (tp) = $\sqrt{\frac{6 \times M}{0.66 \times Fy}}$

Required thickness at joint (tp) = **19** mm

Provided Two plates of	16	mm Thick with Stiffners

3 TOP FLANGE TO END PLATE WELD :

Allowable Shear Stress in weld fs = **110** N/mm2

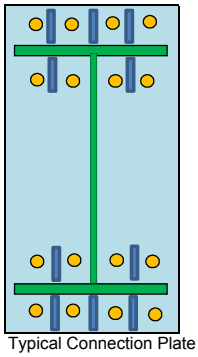
size of weld required t_{weld} = $\frac{T}{(2*bf + n1*e*2)*0.707*fs}$ { n1 = 2 No. of Stiffners

3 mm

Provide Full Penetration Groove Weld with Stiffners.

DETAIL	BEAM NO.	LOAD CASE	NODE
J# 3	155	19	85

END PLATE CONNECTION DESIGN (INDIAN METHOD)


Typical Connection Plate

Depth of connected beam 'd' = **200** mm
Width of beam flange 'bf' = **150** mm
thickness of beam flange 'tf' = **8** mm
thickness of beam web 'tw' = **4** mm

Axial Force 'A' = **180** KN
Shear Force 'S' = **18** KN
Bending Moment 'M' = **19** KN-m

Yield stress of material 'Fy' = **345** N-mm2

1 CONNECTION BOLT DESIGN

Total Tension in bolt due to moment (Tm) = Moment / Lever arm
= 19 / 216
= **87.96** KN

Tension in bolts due to axial Force A = **180** KN

Total Tension in the bolts (T) = Tm + A = **267.96** KN

No. of bolts per side (n) = **2**

Tension per bolt 'Tb' = (T) /n = 267.96 / 2
= **134.0** KN Ratio **0.82** **{SAFE}**

Total no. of bolts (N) = **4**

Shear per bolt 'Sb' = S / N = **4.50** KN **0.05** **{SAFE}**

Diameter of bolt = **27** mm

As per IS:4000-1992 Table 2 - For 27 mm Dia Bolt
Permissible Tension Capacity 'Ta' = **164** KN
Permissible Shear Capacity 'Sa' = **94** KN

Combined Tension & Shear Ratio = $(T_b/Ta) + (S_b/Sa) \le 1.4$

=	0.86	<	1.4	[SAFE]

2 PLATE THICKNESS DESIGN

Distance from centreline of bolt to nearer surface of the tension flange = 43.5 mm

Thickness of weld of plate to the flange plate = 6 mm

Effective bolt distance from tension flange d = 37.5 mm

Moment in plate due to bolt tension (M) = (T_b x d) / (2d)
= 66.99 KN-mm/mm

Required thickness at joint (tp) = $\sqrt{\frac{6 \times M}{0.66 \times Fy}}$

Required thickness at joint (tp) = **42** mm

Provided Two plates of	25	mm Thick with Stiffners

3 TOP FLANGE TO END PLATE WELD :

Allowable Shear Stress in weld fs = **110** N/mm2

size of weld required t_{weld} = $\frac{T}{(2*bf + n1*e*2)*0.707*fs}$ { n1 = 2 No. of Stiffners

5 mm

Provide Full Penetration Groove Weld with Stiffners.

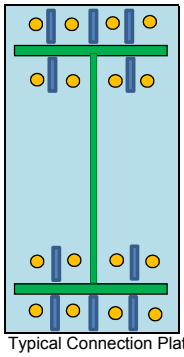
DETAIL	BEAM NO.	LOAD CASE	NODE
J# 4	152	19	95

END PLATE CONNECTION DESIGN (INDIAN METHOD)

Depth of connected beam 'd' = **200** mm
Width of beam flange 'bf' = **150** mm
thickness of beam flange 'tf' = **8** mm
thickness of beam web 'tw' = **4** mm

Axial Force 'A' = **65** KN
Shear Force 'S' = **11** KN
Bending Moment 'M' = **2** KN-m

Yield stress of material 'Fy' = **345** N-mm2


Typical Connection Plate

1 CONNECTION BOLT DESIGN

Total Tension in bolt due to moment (Tm) = Moment / Lever arm
= 2 / 216
= **9.26** KN

Tension in bolts due to axial Force A = **65** KN

Total Tension in the bolts (T) = Tm + A = **74.26** KN

No. of bolts per side (n) = **2**

Tension per bolt 'Tb' = (T) /n = 74.26 / 2
= **37.1** KN Ratio **0.42** **{SAFE}**

Total no. of bolts (N) = **4**

Shear per bolt 'Sb' = S / N = **2.75** KN **0.06** **{SAFE}**

Diameter of bolt = **20** mm

As per IS:4000-1992 Table 2 - For 20 mm Dia Bolt
Permissible Tension Capacity 'Ta' = **88** KN
Permissible Shear Capacity 'Sa' = **50** KN

Combined Tension & Shear Ratio = $(T_b/Ta) + (S_b/Sa) \le 1.4$

=	0.48	<	1.4	[SAFE]

2 PLATE THICKNESS DESIGN

Distance from centreline of bolt to nearer surface of the tension flange = 33 mm

Thickness of weld of plate to the flange plate = 6 mm

Effective bolt distance from tension flange d = 27 mm

Moment in plate due to bolt tension (M) = (T_b x d) / (2d)
= 18.56 KN-mm/mm

Required thickness at joint (tp) = $\sqrt{\frac{6 \times M}{0.66 \times Fy}}$

Required thickness at joint (tp) = **22** mm

Provided Two plates of	16	mm Thick with Stiffners

3 TOP FLANGE TO END PLATE WELD :

Allowable Shear Stress in weld fs = **110** N/mm2

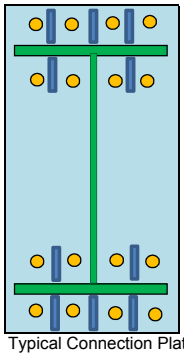
size of weld required t_{weld} = $\frac{T}{(2*bf + n1*e*2)*0.707*fs}$ { n1 = 2 No. of Stiffners

2 mm

Provide Full Penetration Groove Weld with Stiffners.

DETAIL	BEAM NO.	LOAD CASE	NODE
J# 5	202	19	136

END PLATE CONNECTION DESIGN (INDIAN METHOD)


Typical Connection Plate

Depth of connected beam 'd' = **350** mm
Width of beam flange 'bf' = **200** mm
thickness of beam flange 'tf' = **8** mm
thickness of beam web 'tw' = **5** mm

Axial Force 'A' = **28** KN
Shear Force 'S' = **4** KN
Bending Moment 'M' = **24** KN-m

Yield stress of material 'Fy' = **345** N-mm2

1 CONNECTION BOLT DESIGN

Total Tension in bolt due to moment (Tm) = Moment / Lever arm
= 24 / 366
= **65.57** KN

Tension in bolts due to axial Force A = **28** KN

Total Tension in the bolts (T) = Tm + A = **93.57** KN

No. of bolts per side (n) = **2**

Tension per bolt 'Tb' = (T) /n = 93.57 / 2
= **46.8** KN

Ratio **0.53** **{SAFE}**

Total no. of bolts (N) = **4**

Shear per bolt 'Sb' = S / N = **1.00** KN **0.02** **{SAFE}**

Diameter of bolt = **20** mm

As per IS:4000-1992 Table 2 - For 20 mm Dia Bolt
Permissible Tension Capacity 'Ta' = **88** KN
Permissible Shear Capacity 'Sa' = **50** KN

Combined Tension & Shear Ratio = $(T_b/Ta) + (S_b/Sa) \le 1.4$

=	0.55	<	1.4	[SAFE]

2 PLATE THICKNESS DESIGN

Distance from centreline of bolt to nearer surface of the tension flange = 33 mm

Thickness of weld of plate to the flange plate = 6 mm

Effective bolt distance from tension flange d = 27 mm

Moment in plate due to bolt tension (M) = (T_b x d) / (2d)
= 23.39 KN-mm/mm

Required thickness at joint (tp) = $\sqrt{\frac{6 \times M}{0.66 \times Fy}}$

Required thickness at joint (tp) = **25** mm

Provided Two plates of	16	mm Thick with Stiffners

3 TOP FLANGE TO END PLATE WELD :

Allowable Shear Stress in weld fs = **110** N/mm2

size of weld required t_{weld} = $\frac{T}{(2*bf + n1*e*2)*0.707*fs}$ { n1 = 2 No. of Stiffners

2 mm

Provide Full Penetration Groove Weld with Stiffners.

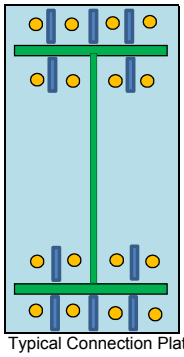
DETAIL	BEAM NO.	LOAD CASE	NODE
J# 6	211	19	142

END PLATE CONNECTION DESIGN (INDIAN METHOD)

Depth of connected beam 'd' = **350** mm
Width of beam flange 'bf' = **200** mm
thickness of beam flange 'tf' = **8** mm
thickness of beam web 'tw' = **5** mm

Axial Force 'A' = **119** KN
Shear Force 'S' = **10** KN
Bending Moment 'M' = **9** KN-m

Yield stress of material 'Fy' = **345** N-mm2


Typical Connection Plate

1 CONNECTION BOLT DESIGN

Total Tension in bolt due to moment (Tm) = Moment / Lever arm
= 9 / 366
= **24.59** KN

Tension in bolts due to axial Force A = **119** KN

Total Tension in the bolts (T) = Tm + A = **143.59** KN

No. of bolts per side (n) = **4**

Tension per bolt 'Tb' = (T) /n = 143.59 / 4
= **35.9** KN Ratio **0.41** **{SAFE}**

Total no. of bolts (N) = **8**

Shear per bolt 'Sb' = S / N = **1.25** KN **0.03** **{SAFE}**

Diameter of bolt = **20** mm

As per IS:4000-1992 Table 2 - For 20 mm Dia Bolt
Permissible Tension Capacity 'Ta' = **88** KN
Permissible Shear Capacity 'Sa' = **50** KN

Combined Tension & Shear Ratio = $(T_b/Ta) + (S_b/Sa) \le 1.4$

=	0.43	<	1.4	[SAFE]

2 PLATE THICKNESS DESIGN

Distance from centreline of bolt to nearer surface of the tension flange = 33 mm

Thickness of weld of plate to the flange plate = 6 mm

Effective bolt distance from tension flange d = 27 mm

Moment in plate due to bolt tension (M) = (T_b x d) / (2d)
= 17.945 KN-mm/mm

Required thickness at joint (tp) = $\sqrt{\frac{6 \times M}{0.66 \times Fy}}$

Required thickness at joint (tp) = **22** mm

Provided Two plates of	16	mm Thick with Stiffners

3 TOP FLANGE TO END PLATE WELD :

Allowable Shear Stress in weld fs = **110** N/mm2

size of weld required t_{weld} = $\frac{T}{(2*bf + n1*e*2)*0.707*fs}$ { n1 = 2 No. of Stiffners

3 mm

Provide Full Penetration Groove Weld with Stiffners.

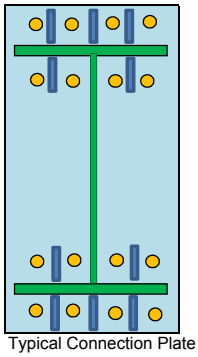
DETAIL	BEAM NO.	LOAD CASE	NODE
J# 7	210	12	141

END PLATE CONNECTION DESIGN (INDIAN METHOD)

Depth of connected beam 'd' = **600** mm
Width of beam flange 'bf' = **300** mm
thickness of beam flange 'tf' = **16** mm
thickness of beam web 'tw' = **5** mm

Axial Force 'A' = **290** KN
Shear Force 'S' = **4** KN
Bending Moment 'M' = **74** KN-m

Yield stress of material 'Fy' = **345** N-mm2


Typical Connection Plate

1 CONNECTION BOLT DESIGN

Total Tension in bolt due to moment (Tm) = Moment / Lever arm
= 74 / 632
= **117.09** KN

Tension in bolts due to axial Force A = **290** KN

Total Tension in the bolts (T) = Tm + A = **407.09** KN

No. of bolts per side (n) = **5**

Tension per bolt 'Tb' = (T) /n = 407.09 / 5
= **81.4** KN Ratio **0.64** **{SAFE}**

Total no. of bolts (N) = **10**

Shear per bolt 'Sb' = S / N = **0.40** KN **0.01** **{SAFE}**

Diameter of bolt = **24** mm

As per IS:4000-1992 Table 2 - For 24 mm Dia Bolt
Permissible Tension Capacity 'Ta' = **127** KN
Permissible Shear Capacity 'Sa' = **73** KN

Combined Tension & Shear Ratio = $(T_b/Ta) + (S_b/Sa) \le 1.4$

=	0.65	<	1.4	[SAFE]

2 PLATE THICKNESS DESIGN

Distance from centreline of bolt to nearer surface of the tension flange = 39 mm

Thickness of weld of plate to the flange plate = 6 mm

Effective bolt distance from tension flange d = 33 mm

Moment in plate due to bolt tension (M) = (T_b x d) / (2d)
= 40.705 KN-mm/mm

Required thickness at joint (tp) = $\sqrt{\frac{6 \times M}{0.66 \times Fy}}$

Required thickness at joint (tp) = **33** mm

Provided Two plates of	20	mm Thick with Stiffners

3 TOP FLANGE TO END PLATE WELD :

Allowable Shear Stress in weld fs = **110** N/mm2

size of weld required t_{weld} = $\frac{T}{(2*bf + n1*e*2)*0.707*fs}$ { n1 = 3 No. of Stiffners

5 mm

Provide Full Penetration Groove Weld with Stiffners.

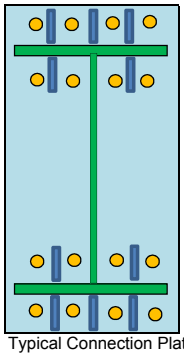
DETAIL	BEAM NO.	LOAD CASE	NODE
J# 8	210	19	99

END PLATE CONNECTION DESIGN (INDIAN METHOD)

Depth of connected beam 'd' = **350** mm
Width of beam flange 'bf' = **300** mm
thickness of beam flange 'tf' = **16** mm
thickness of beam web 'tw' = **5** mm

Axial Force 'A' = **325** KN
Shear Force 'S' = **11** KN
Bending Moment 'M' = **0** KN-m

Yield stress of material 'Fy' = **345** N-mm2


Typical Connection Plate

1 CONNECTION BOLT DESIGN

Total Tension in bolt due to moment (Tm) = Moment / Lever arm
= 0 / 382
0.00 KN

Tension in bolts due to axial Force A = **325** KN

Total Tension in the bolts (T) = Tm + A = **325.00** KN

No. of bolts per side (n) = **3**

Tension per bolt 'Tb' = (T) /n = 325.00 / 3
= **108.3** KN

Ratio **0.85** **{SAFE}**

Total no. of bolts (N) = **6**

Shear per bolt 'Sb' = S / N = **1.83** KN **0.03** **{SAFE}**

Diameter of bolt = **24** mm

As per IS:4000-1992 Table 2 - For 24 mm Dia Bolt
Permissible Tension Capacity 'Ta' = **127** KN
Permissible Shear Capacity 'Sa' = **73** KN

Combined Tension & Shear Ratio = $(T_b/Ta) + (S_b/Sa) \le 1.4$

=	0.88	<	1.4	[SAFE]

2 PLATE THICKNESS DESIGN

Distance from centreline of bolt to nearer surface of the tension flange = 39 mm

Thickness of weld of plate to the flange plate = 6 mm

Effective bolt distance from tension flange d = 33 mm

Moment in plate due to bolt tension (M) = (T_b x d) / (2d)
= 54.165 KN-mm/mm

Required thickness at joint (tp) = $\sqrt{\frac{6 \times M}{0.66 \times Fy}}$

Required thickness at joint (tp) = **38** mm

Provided Two plates of	20	mm Thick with Stiffners

3 TOP FLANGE TO END PLATE WELD :

Allowable Shear Stress in weld fs = **110** N/mm2

size of weld required t_{weld} = $\frac{T}{(2*bf + n1*e*2)*0.707*fs}$ { n1 = 3 No. of Stiffners

4 mm

Provide Full Penetration Groove Weld with Stiffners.

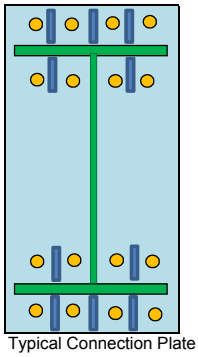
DETAIL	BEAM NO.	LOAD CASE	NODE
J# 9	199	19	135

END PLATE CONNECTION DESIGN (INDIAN METHOD)

Depth of connected beam 'd' = **850** mm
Width of beam flange 'bf' = **300** mm
thickness of beam flange 'tf' = **10** mm
thickness of beam web 'tw' = **6** mm

Axial Force 'A' = **294** KN
Shear Force 'S' = **80** KN
Bending Moment 'M' = **418** KN-m

Yield stress of material 'Fy' = **345** N-mm2


Typical Connection Plate

1 CONNECTION BOLT DESIGN

Total Tension in bolt due to moment (Tm) = Moment / Lever arm
= 418 / 870
= **480.46** KN

Tension in bolts due to axial Force A = **294** KN

Total Tension in the bolts (T) = Tm + A = **774.46** KN

No. of bolts per side (n) = **8**

Tension per bolt 'Tb' = (T) /n = 774.46 / 8
= **96.8** KN

Ratio **0.76** **{SAFE}**

Total no. of bolts (N) = **16**

Shear per bolt 'Sb' = S / N = **5.00** KN

Ratio **0.07** **{SAFE}**

Diameter of bolt = **24** mm

As per IS:4000-1992 Table 2 - For 24 mm Dia Bolt
Permissible Tension Capacity 'Ta' = **127** KN
Permissible Shear Capacity 'Sa' = **73** KN

Combined Tension & Shear Ratio = $(T_b/Ta) + (S_b/Sa) \le 1.4$

= 0.83 < 1.4 [SAFE]

2 PLATE THICKNESS DESIGN

Distance from centreline of bolt to nearer surface of the tension flange = 39 mm

Thickness of weld of plate to the flange plate = 6 mm

Effective bolt distance from tension flange d = 33 mm

Moment in plate due to bolt tension (M) = (T_b x d) / (2d)
= 48.4 KN-mm/mm

Required thickness at joint (tp) = $\sqrt{\frac{6 \times M}{0.66 \times Fy}}$

Required thickness at joint (tp) = **36** mm

Provided Two plates of 25 mm Thick with Stiffners

3 TOP FLANGE TO END PLATE WELD :

Allowable Shear Stress in weld fs = **110** N/mm2

size of weld required t_{weld} = $\frac{T}{(2*bf + n1*e*2)*0.707*fs}$ { n1 = 6 No. of Stiffners

6 mm

Provide Full Penetration Groove Weld with Stiffners.

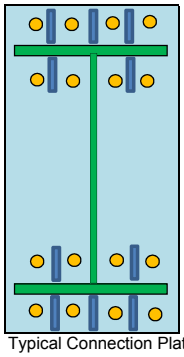
DETAIL	BEAM NO.	LOAD CASE	NODE
J# 10	199	19	192

END PLATE CONNECTION DESIGN (INDIAN METHOD)

Depth of connected beam 'd' = **350** mm
Width of beam flange 'bf' = **300** mm
thickness of beam flange 'tf' = **10** mm
thickness of beam web 'tw' = **6** mm

Axial Force 'A' = **288** KN
Shear Force 'S' = **41** KN
Bending Moment 'M' = **5** KN-m

Yield stress of material 'Fy' = **345** N-mm2


Typical Connection Plate

1 CONNECTION BOLT DESIGN

Total Tension in bolt due to moment (Tm) = Moment / Lever arm
= 5 / 370
= **13.51** KN

Tension in bolts due to axial Force A = **288** KN

Total Tension in the bolts (T) = Tm + A = **301.51** KN

No. of bolts per side (n) = **5**

Tension per bolt 'Tb' = (T) /n = 301.51 / 5
= **60.3** KN

Ratio **0.69** **{SAFE}**

Total no. of bolts (N) = **10**

Shear per bolt 'Sb' = S / N = **4.10** KN **0.08** **{SAFE}**

Diameter of bolt = **20** mm

As per IS:4000-1992 Table 2 - For 20 mm Dia Bolt
Permissible Tension Capacity 'Ta' = **88** KN
Permissible Shear Capacity 'Sa' = **50** KN

Combined Tension & Shear Ratio = $(T_b/Ta) + (S_b/Sa) \le 1.4$

=	0.77	<	1.4	[SAFE]

2 PLATE THICKNESS DESIGN

Distance from centreline of bolt to nearer surface of the tension flange = 33 mm

Thickness of weld of plate to the flange plate = 6 mm

Effective bolt distance from tension flange d = 27 mm

Moment in plate due to bolt tension (M) = (T_b x d) / (2d)
= 30.15 KN-mm/mm

Required thickness at joint (tp) = $\sqrt{\frac{6 \times M}{0.66 \times Fy}}$

Required thickness at joint (tp) = **28** mm

Provided Two plates of	16	mm Thick with Stiffners

3 TOP FLANGE TO END PLATE WELD :

Allowable Shear Stress in weld fs = **110** N/mm2

size of weld required t_{weld} = $\frac{T}{(2*bf + n1*e*2)*0.707*fs}$ { n1 = 3 No. of Stiffners

4 mm

Provide Full Penetration Groove Weld with Stiffners.

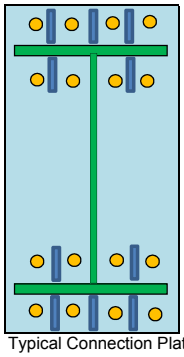
DETAIL	BEAM NO.	LOAD CASE	NODE
J# 11	298	12	193

END PLATE CONNECTION DESIGN (INDIAN METHOD)

Depth of connected beam 'd' = **700** mm
Width of beam flange 'bf' = **255** mm
thickness of beam flange 'tf' = **10** mm
thickness of beam web 'tw' = **5** mm

Axial Force 'A' = **255** KN
Shear Force 'S' = **2** KN
Bending Moment 'M' = **149** KN-m

Yield stress of material 'Fy' = **345** N-mm2


Typical Connection Plate

1 CONNECTION BOLT DESIGN

Total Tension in bolt due to moment (Tm) = Moment / Lever arm
= 149 / 720
= **206.94** KN

Tension in bolts due to axial Force A = **255** KN

Total Tension in the bolts (T) = Tm + A = **461.94** KN

No. of bolts per side (n) = **5**

Tension per bolt 'Tb' = (T) /n = 461.94 / 5
= **92.4** KN

Ratio **0.73** **{SAFE}**

Total no. of bolts (N) = **10**

Shear per bolt 'Sb' = S / N = **0.20** KN **0.00** **{SAFE}**

Diameter of bolt = **24** mm

As per IS:4000-1992 Table 2 - For 24 mm Dia Bolt
Permissible Tension Capacity 'Ta' = **127** KN
Permissible Shear Capacity 'Sa' = **73** KN

Combined Tension & Shear Ratio = $(T_b/Ta) + (S_b/Sa) \le 1.4$

=	0.73	<	1.4	[SAFE]

2 PLATE THICKNESS DESIGN

Distance from centreline of bolt to nearer surface of the tension flange = 39 mm

Thickness of weld of plate to the flange plate = 6 mm

Effective bolt distance from tension flange d = 33 mm

Moment in plate due to bolt tension (M) = (T_b x d) / (2d)
= 46.19 KN-mm/mm

Required thickness at joint (tp) = $\sqrt{\frac{6 \times M}{0.66 \times Fy}}$

Required thickness at joint (tp) = **35** mm

Provided Two plates of	20	mm Thick with Stiffners

3 TOP FLANGE TO END PLATE WELD :

Allowable Shear Stress in weld fs = **110** N/mm2

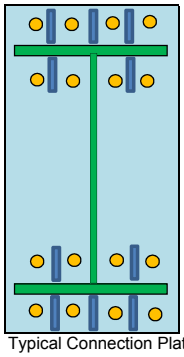
size of weld required t_{weld} = $\frac{T}{(2*bf + n1*e*2)*0.707*fs}$ { n1 = 3 No. of Stiffners

6 mm

Provide Full Penetration Groove Weld with Stiffners.

DETAIL	BEAM NO.	LOAD CASE	NODE
J# 12	299	19	104

END PLATE CONNECTION DESIGN (INDIAN METHOD)


Typical Connection Plate

Depth of connected beam 'd' = **350** mm
Width of beam flange 'bf' = **300** mm
thickness of beam flange 'tf' = **10** mm
thickness of beam web 'tw' = **5** mm

Axial Force 'A' = **276** KN
Shear Force 'S' = **39** KN
Bending Moment 'M' = **0** KN-m

Yield stress of material 'Fy' = **345** N-mm2

1 CONNECTION BOLT DESIGN

Total Tension in bolt due to moment (Tm) = Moment / Lever arm
= 0 / 370
0.00 KN

Tension in bolts due to axial Force A = **276** KN

Total Tension in the bolts (T) = Tm + A = **276.00** KN

No. of bolts per side (n) = **3**

Tension per bolt 'Tb' = (T) /n = 276.00 / 3
= **92.0** KN Ratio **0.72** **{SAFE}**

Total no. of bolts (N) = **6**

Shear per bolt 'Sb' = S / N = **6.50** KN **0.09** **{SAFE}**

Diameter of bolt = **24** mm

As per IS:4000-1992 Table 2 - For 24 mm Dia Bolt
Permissible Tension Capacity 'Ta' = **127** KN
Permissible Shear Capacity 'Sa' = **73** KN

Combined Tension & Shear Ratio = $(T_b/Ta) + (S_b/Sa) \le 1.4$

=	0.81	<	1.4	[SAFE]

2 PLATE THICKNESS DESIGN

Distance from centreline of bolt to nearer surface of the tension flange = 39 mm

Thickness of weld of plate to the flange plate = 6 mm

Effective bolt distance from tension flange d = 33 mm

Moment in plate due to bolt tension (M) = (T_b x d) / (2d)
= 46 KN-mm/mm

Required thickness at joint (tp) = $\sqrt{\frac{6 \times M}{0.66 \times Fy}}$

Required thickness at joint (tp) = **35** mm

Provided Two plates of	20	mm Thick with Stiffners

3 TOP FLANGE TO END PLATE WELD :

Allowable Shear Stress in weld fs = **110** N/mm2

size of weld required t_{weld} = $\frac{T}{(2*bf + n1*e*2)*0.707*fs}$ { n1 = 3 No. of Stiffners

3 mm

Provide Full Penetration Groove Weld with Stiffners.

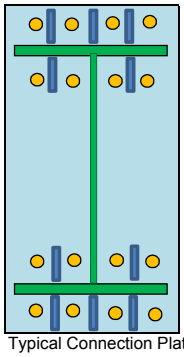
DETAIL	BEAM NO.	LOAD CASE	NODE
J# 13	247	12	174

END PLATE CONNECTION DESIGN (INDIAN METHOD)

Depth of connected beam 'd' = **500** mm
Width of beam flange 'bf' = **180** mm
thickness of beam flange 'tf' = **8** mm
thickness of beam web 'tw' = **5** mm

Axial Force 'A' = **91** KN
Shear Force 'S' = **37** KN
Bending Moment 'M' = **125** KN-m

Yield stress of material 'Fy' = **345** N-mm2


Typical Connection Plate

1 CONNECTION BOLT DESIGN

Total Tension in bolt due to moment (Tm) = Moment / Lever arm
= 125 / 516
= **242.25** KN

Tension in bolts due to axial Force A = **91** KN

Total Tension in the bolts (T) = Tm + A = **333.25** KN

No. of bolts per side (n) = **4**

Tension per bolt 'Tb' = (T) /n = 333.25 / 4
= **83.3** KN Ratio **0.66** **{SAFE}**

Total no. of bolts (N) = **8**

Shear per bolt 'Sb' = S / N = **4.62** KN **0.06** **{SAFE}**

Diameter of bolt = **24** mm

As per IS:4000-1992 Table 2 - For 24 mm Dia Bolt
Permissible Tension Capacity 'Ta' = **127** KN
Permissible Shear Capacity 'Sa' = **73** KN

Combined Tension & Shear Ratio = $(T_b/Ta) + (S_b/Sa) \le 1.4$

=	0.72	<	1.4	[SAFE]

2 PLATE THICKNESS DESIGN

Distance from centreline of bolt to nearer surface of the tension flange = 39 mm

Thickness of weld of plate to the flange plate = 6 mm

Effective bolt distance from tension flange d = 33 mm

Moment in plate due to bolt tension (M) = (T_b x d) / (2d)
= 41.655 KN-mm/mm

Required thickness at joint (tp) = $\sqrt{\frac{6 \times M}{0.66 \times Fy}}$

Required thickness at joint (tp) = **33** mm

Provided Two plates of	20	mm Thick with Stiffners

3 TOP FLANGE TO END PLATE WELD :

Allowable Shear Stress in weld fs = **110** N/mm2

size of weld required t_{weld} = $\frac{T}{(2*bf + n1*e*2)*0.707*fs}$ { n1 = 2 No. of Stiffners

6 mm

Provide Full Penetration Groove Weld with Stiffners.

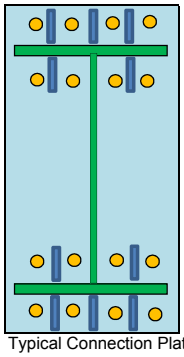
DETAIL	BEAM NO.	LOAD CASE	NODE
J# 14	247	12	171

END PLATE CONNECTION DESIGN (INDIAN METHOD)

Depth of connected beam 'd' = **350** mm
Width of beam flange 'bf' = **180** mm
thickness of beam flange 'tf' = **8** mm
thickness of beam web 'tw' = **5** mm

Axial Force 'A' = **86** KN
Shear Force 'S' = **5** KN
Bending Moment 'M' = **0** KN-m

Yield stress of material 'Fy' = **345** N-mm2


Typical Connection Plate

1 CONNECTION BOLT DESIGN

Total Tension in bolt due to moment (Tm) = Moment / Lever arm
= 0 / 366
0.00 KN

Tension in bolts due to axial Force A = **86** KN

Total Tension in the bolts (T) = Tm + A = **86.00** KN

No. of bolts per side (n) = **3**

Tension per bolt 'Tb' = (T) /n = 86.00 / 3
= **28.7** KN Ratio **0.51** **{SAFE}**

Total no. of bolts (N) = **6**

Shear per bolt 'Sb' = S / N = **0.83** KN **0.03** **{SAFE}**

Diameter of bolt = **16** mm

As per IS:4000-1992 Table 2 - For 16 mm Dia Bolt
Permissible Tension Capacity 'Ta' = **56** KN
Permissible Shear Capacity 'Sa' = **31** KN

Combined Tension & Shear Ratio = $(T_b/Ta) + (S_b/Sa) \le 1.4$

=	0.54	<	1.4	[SAFE]

2 PLATE THICKNESS DESIGN

Distance from centreline of bolt to nearer surface of the tension flange = 27 mm

Thickness of weld of plate to the flange plate = 6 mm

Effective bolt distance from tension flange d = 21 mm

Moment in plate due to bolt tension (M) = (T_b x d) / (2d)
= 14.33 KN-mm/mm

Required thickness at joint (tp) = $\sqrt{\frac{6 \times M}{0.66 \times Fy}}$

Required thickness at joint (tp) = **19** mm

Provided Two plates of	16	mm Thick with Stiffners

3 TOP FLANGE TO END PLATE WELD :

Allowable Shear Stress in weld fs = **110** N/mm2

size of weld required t_{weld} = $\frac{T}{(2*bf + n1*e*2)*0.707*fs}$ { n1 = 2 No. of Stiffners

2 mm

Provide Full Penetration Groove Weld with Stiffners.

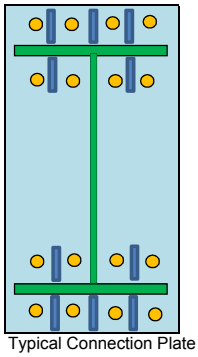
DETAIL	BEAM NO.	LOAD CASE	NODE
J# 15	227	19	156

END PLATE CONNECTION DESIGN (INDIAN METHOD)

Depth of connected beam 'd' = **700** mm
Width of beam flange 'bf' = **225** mm
thickness of beam flange 'tf' = **8** mm
thickness of beam web 'tw' = **5** mm

Axial Force 'A' = **166** KN
Shear Force 'S' = **55** KN
Bending Moment 'M' = **235** KN-m

Yield stress of material 'Fy' = **345** N-mm2


Typical Connection Plate

1 CONNECTION BOLT DESIGN

Total Tension in bolt due to moment (Tm) = Moment / Lever arm
= 235 / 716
= **328.21** KN

Tension in bolts due to axial Force A = **166** KN

Total Tension in the bolts (T) = Tm + A = **494.21** KN

No. of bolts per side (n) = **6**

Tension per bolt 'Tb' = (T) /n = 494.21 / 6
= **82.4** KN

Ratio **0.65** **{SAFE}**

Total no. of bolts (N) = **12**

Shear per bolt 'Sb' = S / N = **4.58** KN

Ratio **0.06** **{SAFE}**

Diameter of bolt = **24** mm

As per IS:4000-1992 Table 2 - For 24 mm Dia Bolt
Permissible Tension Capacity 'Ta' = **127** KN
Permissible Shear Capacity 'Sa' = **73** KN

Combined Tension & Shear Ratio = $(T_b/Ta) + (S_b/Sa) \le 1.4$

=	0.71	<	1.4	[SAFE]

2 PLATE THICKNESS DESIGN

Distance from centreline of bolt to nearer surface of the tension flange = 39 mm

Thickness of weld of plate to the flange plate = 6 mm

Effective bolt distance from tension flange d = 33 mm

Moment in plate due to bolt tension (M) = (T_b x d) / (2d)
= 41.18 KN-mm/mm

Required thickness at joint (tp) = $\sqrt{\frac{6 \times M}{0.66 \times Fy}}$

Required thickness at joint (tp) = **33** mm

Provided Two plates of	20	mm Thick with Stiffners

3 TOP FLANGE TO END PLATE WELD :

Allowable Shear Stress in weld fs = **110** N/mm2

size of weld required t_{weld} = $\frac{T}{(2*bf + n1*e*2)*0.707*fs}$ { n1 = 2 No. of Stiffners

8 mm

Provide Full Penetration Groove Weld with Stiffners.

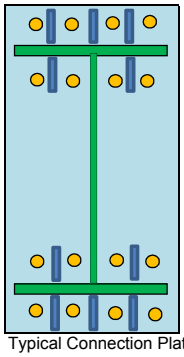
DETAIL	BEAM NO.	LOAD CASE	NODE
J# 16	227	12	200

END PLATE CONNECTION DESIGN (INDIAN METHOD)

Depth of connected beam 'd' = **400** mm
Width of beam flange 'bf' = **225** mm
thickness of beam flange 'tf' = **8** mm
thickness of beam web 'tw' = **5** mm

Axial Force 'A' = **147** KN
Shear Force 'S' = **16** KN
Bending Moment 'M' = **24** KN-m

Yield stress of material 'Fy' = **345** N-mm2


Typical Connection Plate

1 CONNECTION BOLT DESIGN

Total Tension in bolt due to moment (Tm) = Moment / Lever arm
= 24 / 416
= **57.69** KN

Tension in bolts due to axial Force A = **147** KN

Total Tension in the bolts (T) = Tm + A = **204.69** KN

No. of bolts per side (n) = **4**

Tension per bolt 'Tb' = (T) /n = 204.69 / 4
= **51.2** KN Ratio **0.58** **{SAFE}**

Total no. of bolts (N) = **8**

Shear per bolt 'Sb' = S / N = **2.00** KN **0.04** **{SAFE}**

Diameter of bolt = **20** mm

As per IS:4000-1992 Table 2 - For 20 mm Dia Bolt
Permissible Tension Capacity 'Ta' = **88** KN
Permissible Shear Capacity 'Sa' = **50** KN

Combined Tension & Shear Ratio = $(T_b/Ta) + (S_b/Sa) \le 1.4$

=	0.62	<	1.4	[SAFE]

2 PLATE THICKNESS DESIGN

Distance from centreline of bolt to nearer surface of the tension flange = 33 mm

Thickness of weld of plate to the flange plate = 6 mm

Effective bolt distance from tension flange d = 27 mm

Moment in plate due to bolt tension (M) = (T_b x d) / (2d)
= 25.585 KN-mm/mm

Required thickness at joint (tp) = $\sqrt{\frac{6 \times M}{0.66 \times Fy}}$

Required thickness at joint (tp) = **26** mm

Provided Two plates of	16	mm Thick with Stiffners

3 TOP FLANGE TO END PLATE WELD :

Allowable Shear Stress in weld fs = **110** N/mm2

size of weld required t_{weld} = $\frac{T}{(2*bf + n1*e*2)*0.707*fs}$ { n1 = 2 No. of Stiffners

4 mm

Provide Full Penetration Groove Weld with Stiffners.

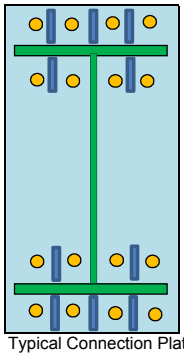
DETAIL	BEAM NO.	LOAD CASE	NODE
J# 17	306	19	153

END PLATE CONNECTION DESIGN (INDIAN METHOD)

Depth of connected beam 'd' = **350** mm
Width of beam flange 'bf' = **200** mm
thickness of beam flange 'tf' = **8** mm
thickness of beam web 'tw' = **5** mm

Axial Force 'A' = **155** KN
Shear Force 'S' = **21** KN
Bending Moment 'M' = **0** KN-m

Yield stress of material 'Fy' = **345** N-mm2


Typical Connection Plate

1 CONNECTION BOLT DESIGN

Total Tension in bolt due to moment (Tm) = Moment / Lever arm
= 0 / 366
= **0.00** KN

Tension in bolts due to axial Force A = **155** KN

Total Tension in the bolts (T) = Tm + A = **155.00** KN

No. of bolts per side (n) = **3**

Tension per bolt 'Tb' = (T) /n = 155.00 / 3
= **51.7** KN Ratio **0.59** **{SAFE}**

Total no. of bolts (N) = **6**

Shear per bolt 'Sb' = S / N = **3.50** KN **0.07** **{SAFE}**

Diameter of bolt = **20** mm

As per IS:4000-1992 Table 2 - For 20 mm Dia Bolt
Permissible Tension Capacity 'Ta' = **88** KN
Permissible Shear Capacity 'Sa' = **50** KN

Combined Tension & Shear Ratio = $(T_b/Ta) + (S_b/Sa) \le 1.4$

=	0.66	<	1.4	[SAFE]

2 PLATE THICKNESS DESIGN

Distance from centreline of bolt to nearer surface of the tension flange = 33 mm

Thickness of weld of plate to the flange plate = 6 mm

Effective bolt distance from tension flange d = 27 mm

Moment in plate due to bolt tension (M) = (T_b x d) / (2d)
= 25.83 KN-mm/mm

Required thickness at joint (tp) = $\sqrt{\frac{6 \times M}{0.66 \times Fy}}$

Required thickness at joint (tp) = **26** mm

Provided Two plates of	20	mm Thick with Stiffners

3 TOP FLANGE TO END PLATE WELD :

Allowable Shear Stress in weld fs = **110** N/mm2

size of weld required t_{weld} = $\frac{T}{(2*bf + n1*e*2)*0.707*fs}$ { n1 = 2 No. of Stiffners

3 mm

Provide Full Penetration Groove Weld with Stiffners.

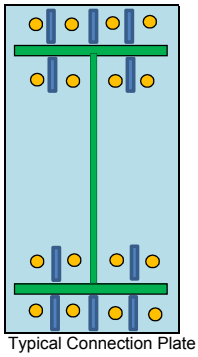
DETAIL	BEAM NO.	LOAD CASE	NODE
J# 18	306	19	153

END PLATE CONNECTION DESIGN (INDIAN METHOD)

Depth of connected beam 'd' = **300** mm
Width of beam flange 'bf' = **180** mm
thickness of beam flange 'tf' = **8** mm
thickness of beam web 'tw' = **4** mm

Axial Force 'A' = **452** KN
Shear Force 'S' = **15** KN
Bending Moment 'M' = **16** KN-m

Yield stress of material 'Fy' = **345** N-mm2


Typical Connection Plate

1 CONNECTION BOLT DESIGN

Total Tension in bolt due to moment (Tm) = Moment / Lever arm
= 16 / 316
= **50.63** KN

Tension in bolts due to axial Force A = **452** KN

Total Tension in the bolts (T) = Tm + A = **502.63** KN

No. of bolts per side (n) = **4**

Tension per bolt 'Tb' = (T) /n = 502.63 / 4
= **125.7** KN Ratio **0.77** **{SAFE}**

Total no. of bolts (N) = **8**

Shear per bolt 'Sb' = S / N = **1.87** KN **0.02** **{SAFE}**

Diameter of bolt = **27** mm

As per IS:4000-1992 Table 2 - For 27 mm Dia Bolt
Permissible Tension Capacity 'Ta' = **164** KN
Permissible Shear Capacity 'Sa' = **94** KN

Combined Tension & Shear Ratio = $(T_b/Ta) + (S_b/Sa) \le 1.4$

=	0.79	<	1.4	[SAFE]

2 PLATE THICKNESS DESIGN

Distance from centreline of bolt to nearer surface of the tension flange = 43.5 mm

Thickness of weld of plate to the flange plate = 6 mm

Effective bolt distance from tension flange d = 37.5 mm

Moment in plate due to bolt tension (M) = (T_b x d) / (2d)
= 62.825 KN-mm/mm

Required thickness at joint (tp) = $\sqrt{\frac{6 \times M}{0.66 \times Fy}}$

Required thickness at joint (tp) = **41** mm

Provided Two plates of	25	mm Thick with Stiffners

3 TOP FLANGE TO END PLATE WELD :

Allowable Shear Stress in weld fs = **110** N/mm2

size of weld required t_{weld} = $\frac{T}{(2*bf + n1*e*2)*0.707*fs}$ { n1 = 6 No. of Stiffners

5 mm

Provide Full Penetration Groove Weld with Stiffners.

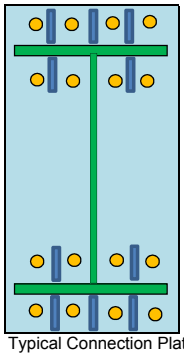
DETAIL	BEAM NO.	LOAD CASE	NODE
J# 19	289	12	104

END PLATE CONNECTION DESIGN (INDIAN METHOD)

Depth of connected beam 'd' = **200** mm
Width of beam flange 'bf' = **200** mm
thickness of beam flange 'tf' = **10** mm
thickness of beam web 'tw' = **8** mm

Axial Force 'A' = **214** KN
Shear Force 'S' = **2** KN
Bending Moment 'M' = **6** KN-m

Yield stress of material 'Fy' = **345** N-mm2


Typical Connection Plate

1 CONNECTION BOLT DESIGN

Total Tension in bolt due to moment (Tm) = Moment / Lever arm
= 6 / 220
= **27.27** KN

Tension in bolts due to axial Force A = **214** KN

Total Tension in the bolts (T) = Tm + A = **241.27** KN

No. of bolts per side (n) = **2**

Tension per bolt 'Tb' = (T) /n = 241.27 / 2
= **120.6** KN Ratio **0.74** **{SAFE}**

Total no. of bolts (N) = **4**

Shear per bolt 'Sb' = S / N = **0.50** KN **0.01** **{SAFE}**

Diameter of bolt = **27** mm

As per IS:4000-1992 Table 2 - For 27 mm Dia Bolt
Permissible Tension Capacity 'Ta' = **164** KN
Permissible Shear Capacity 'Sa' = **94** KN

Combined Tension & Shear Ratio = $(T_b/Ta) + (S_b/Sa) \le 1.4$

=	0.74	<	1.4	[SAFE]

2 PLATE THICKNESS DESIGN

Distance from centreline of bolt to nearer surface of the tension flange = 43.5 mm

Thickness of weld of plate to the flange plate = 6 mm

Effective bolt distance from tension flange d = 37.5 mm

Moment in plate due to bolt tension (M) = (T_b x d) / (2d)
= 60.315 KN-mm/mm

Required thickness at joint (tp) = $\sqrt{\frac{6 \times M}{0.66 \times Fy}}$

Required thickness at joint (tp) = **40** mm

Provided Two plates of	25	mm Thick with Stiffners

3 TOP FLANGE TO END PLATE WELD :

Allowable Shear Stress in weld fs = **110** N/mm2

size of weld required t_{weld} = $\frac{T}{(2*bf + n1*e*2)*0.707*fs}$ { n1 = 2 No. of Stiffners

4 mm

Provide Full Penetration Groove Weld with Stiffners.

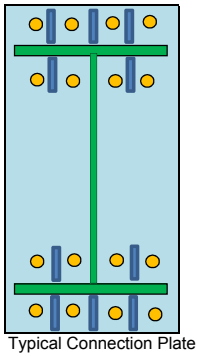
DETAIL	BEAM NO.	LOAD CASE	NODE
J# 20	358	19	188

END PLATE CONNECTION DESIGN (INDIAN METHOD)

Depth of connected beam 'd' = **350** mm
Width of beam flange 'bf' = **200** mm
thickness of beam flange 'tf' = **10** mm
thickness of beam web 'tw' = **4** mm

Axial Force 'A' = **362** KN
Shear Force 'S' = **11** KN
Bending Moment 'M' = **32** KN-m

Yield stress of material 'Fy' = **345** N-mm2


Typical Connection Plate

1 CONNECTION BOLT DESIGN

Total Tension in bolt due to moment (Tm) = Moment / Lever arm

= 32 / 370

86.49 KN

Tension in bolts due to axial Force A = **362** KN

Total Tension in the bolts (T) = Tm + A = **448.49** KN

No. of bolts per side (n) = **5**

Tension per bolt 'Tb' = (T) /n = 448.49 / 5

= **89.7** KN Ratio **0.71** **{SAFE}**

Total no. of bolts (N) = **10**

Shear per bolt 'Sb' = S / N = **1.10** KN **0.02** **{SAFE}**

Diameter of bolt = **24** mm

As per IS:4000-1992 Table 2 - For 24 mm Dia Bolt
Permissible Tension Capacity 'Ta' = **127** KN
Permissible Shear Capacity 'Sa' = **73** KN

Combined Tension & Shear Ratio = $(T_b/Ta) + (S_b/Sa) \le 1.4$

=	0.72	<	1.4	[SAFE]

2 PLATE THICKNESS DESIGN

Distance from centreline of bolt to nearer surface of the tension flange = 39 mm

Thickness of weld of plate to the flange plate = 6 mm

Effective bolt distance from tension flange d = 33 mm

Moment in plate due to bolt tension (M) = (T_b x d) / (2d)

= 44.845 KN-mm/mm

Required thickness at joint (tp) = $\sqrt{\frac{6 \times M}{0.66 \times Fy}}$

Required thickness at joint (tp) = **34** mm

Provided Two plates of	20	mm Thick with Stiffners

3 TOP FLANGE TO END PLATE WELD :

Allowable Shear Stress in weld fs = **110** N/mm2

size of weld required t_{weld} = $\frac{T}{(2*bf + n1*e*2)*0.707*fs}$ { n1 = 3 No. of Stiffners

7 mm

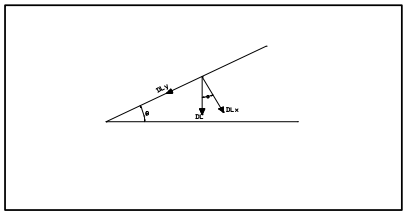
Provide Full Penetration Groove Weld with Stiffners.

Job No.	JPF-P - 47	Rev. No.	0	
Customer	BANQUET HALL , ZIRAKPUR	Date	2/24/2015	
Description	*2.3 PURLIN DESIGN*	Design By	JITENDRA	
		Checked By	JITENDRA	

2.3 PURLIN DESIGN

DESIGN OF ROOF PURLIN

The Purlin shall be designed as 4-Span Continuous Purlin



LOAD CALCULATION :

Bay Spacing	L =	6.858			
Purlin Spacing (maximum)	Ps =	1.5	m		
Roof Slope (1:10)	X =	6		Kx = 0.986	
	Y =	1		Ky = 0.164	
Dead Load Intensity	DL =	15	Kg/m2		
Collateral load	CL =	0	Kg/m2		
Live Load Intensity	LL =	57	Kg/m2		
Wind Load Intensity	WL =	97	Kg/m2		
Total Pr. Co-eff for Wind =	Cp1 =	0.87		Ref. Table 5, IS:875-(III)-1987	
Grade of Steel	Fy =	345	Mpa		

COMBINATION - I [DEAD LOAD + LIVE LOAD]

Total Load per metre = [(DL + LL+ CL) x Kx] x Ps = **106.53** Kg/m DOWNWARD

COMBINATION - II [WIND LOAD - DEAD LOAD]

Total Load per metre = For End Purlin [(WL x Cp1 - DL x Kx) x Ps] = **104.39** Kg/m UPWARD

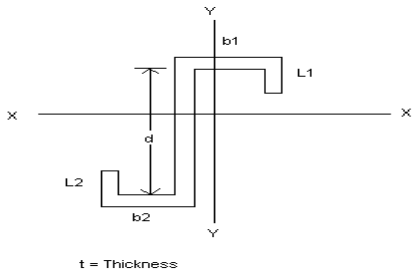
Total Load per metre = For Intermediate Purlin [(WL x Cp2 - DL x Kx) x Ps] = **104.39** Kg/m UPWARD

Design of Purlin for End Span :

Maximum Span Moment (DL+LL+CL)	M_{span}=	**387**	Kg-m
	M_{supp}=	**537**	Kg-m
Maximum negative Moment near Support(DL+LL+CL)			
Maximum Span Moment (DL+WL)	M_{span}=	**379**	Kg-m
	M_{supp}=	**526**	Kg-m
Maximum negative Moment near Support (DL+WL)			

Try with following Z-Section :-

t	d	b_1	b_2	L_1	L_2	D
2	196	60	60	20	20	200



Input the value of section properties in mm

X =	100.00	mm	=	**10.00 cm**
I_{xx} =	4179418.67	mm^4	=	**417.94 cm^4**
$Z1_{xx}$ top	41794.19	mm^3	=	**41.79 cm^3**
$Z1_{xx}$ bot	41794.19	mm^3	=	**41.79 cm^3**
Y =	59.00	mm	=	**5.90 cm**
I_{yy} =	516048.00	mm^4	=	**51.60 cm^4**
$Z_{yy\ right}$	8746.58	mm^3	=	**8.75 cm^3**
$Z_{yy\ left}$	8746.58	mm^3	=	**8.75 cm^3**
Area =	7.04	cm^2		
Wt/m =	5.53	Kg.		

As per IS: 801-1975 cl. No. 5.2.4

Overall Depth < 150*t

200 < 300 ***OK***

Required Lip depth as per cl. No. 5.2.2.1 of IS : 801-1975

$=2.8\ t\ \sqrt{6\ (b1/t)^2 - 281200/Fy}$ but not less then 4.8t

here Fy = 345 N/sqmm

11.74 not less then 4.8*t

11.74 > 9.60 ***OK***

Calculation for laterally unbraced Purlins

Calculation of effective design width of compression element as per cl. No. 5.2.1.1, IS 801-1975

$(b1/t)_{lim} = 1435/(f)^{1/2}$

Considering f (actual stress in compression element) f = 925.49 kgf/cm2

$\frac{w}{t} = \frac{b1}{2.00} = \frac{60}{2.00} = 30.00$ (w / t) actual

$\frac{1435}{\sqrt{f}} = \frac{1435}{30.42} =$ **47.17 > 30.00** ***OK***

(w / t) allowed > (w / t) actual

Hence full flange effective in compression.

Referring to Cl. No. 6.3 (b) of IS: 801-1975

$\frac{L^2 S_{xc}}{dI_{yc}}$

L= unbraced length of the member = 2.00 m (considering sag rods at 3.75m spacing)

Iyc = moment of inertia of the compression portion of a section about the gravity axis of the entire section parallel to web = Iyy/2 25.80 cm4

Sxc= Compression Section Modulus of the entire section about major axis, Ixx/ distance to extreme fibre = Zx = 41.79 cm3

d = Depth of section = 20.00 cm

$\frac{L^2 \times Zx}{depth \times Iyc}$

= 3239.56 ——— (1)

$\frac{0.18\ (Pi)^2\ E\ C_b}{Fy}$ ——— (2)

= 1054.55

$\frac{0.90\ (Pi)^2\ E\ C_b}{Fy}$

= 5272.74 ——————————— (3)

(i) is > **(ii)**
< **(iii)**

hence

$$Fb = \frac{2\ Fy}{3} - \frac{Fy}{2.7\ (pi)^2\ E\ Cb} \times \frac{L^2\ S_{xc}}{d\ I_{yc}}$$

$$Fb = \frac{2x\ 3450}{3} - \frac{3450x3450}{2.7x\ (pi)2\ x\ 2050000\ x1} \times 3239.56$$

Fb= 2300.00 - 0.22 x 3239.56

Fb= 1593.44 kg/cm^2

Fb= 159.34 N/mm^2

FOR (DEAD +WIND)

Restraint to bottom flange is provided by sag rods

NEAR SUPPORT

Sectional Modulus of Purlin over Support, = 2 x Zxx

Fb (permissible) = 159.34 N/mm^2

Fb (actual) **62.91** N/mm^2 < **159.34** N/mm^2 ***OK***

NEAR MID-SPAN

Fb (permissible) = 159.34 N/mm^2

Fb (actual) (DEAD+WIND) = **90.69** N/mm^2 < **159.34** N/mm^2 ***OK***

FOR (DEAD + LIVE)

NEAR SUPPORT

Sectional Modulus of Purlin over Support, = 2 x Zxx

Fb (permissible) = 159.34 N/mm^2

Fb (actual) = **64.20** N/mm^2 < **159.34** N/mm^2 ***OK***

NEAR MID-SPAN

Fb (permissible) = 159.34 N/mm^2

Fb (actual) = **92.55** N/mm^2 < **159.34** N/mm^2 ***OK***

Check for deflection.

Permissible deflection for purlin = Span/ 150 = **45.72** mm

(DL + LL + CL) = 1.065 kg/cm

(WL - DL) = 1.044 kg/cm

W_{max} = 1.065 kg/cm

Max. Deflection = $0.0078\ W_{max}L^4/EI$ = **21.99** mm < **45.72** mm ***OK***

Use Z - Section of 200 Z 2 as Purlin

Job No.	JPF-P - 47	Rev. No.	0	
Customer	BANQUET HALL , ZIRAKPUR	Date	2/24/2015	
Description	*2.4 ANCHOR BOLT AND BASE PLATE DESIGN*	Design By	JITENDRA	
		Checked By	JITENDRA	

2.4 ANCHOR BOLT AND BASE PLATE DESIGN

DESIGN OF ANCHOR BOLT -- PINNED BASE

DETAIL - A NODE-- 85 LOAD CASE -- 19

AXIAL UPWARD FORCE P = 71 KN

SHEAR FORCE S = 519 KN

Ref. Clause 8.9.4.5 for combined shear and tension Check in bolts :--

$= \{ (\sigma_{tf,cal.} / \sigma_{tf}) + (\tau_{vf,cal.} / \tau_{vf}) \} < 1.4$

Where -- $\tau_{vf,cal.}$ = Calculated Shear Stress in Bolt in N/mm2

$\sigma_{tf,cal.}$ = Calculated Axial Stress in Bolt in N/mm2

τ_{vf} = Permissible Shear in Bolt = 80 N/mm2

(As per IS : 800 - 1984, Clause 8.9.4.1 , Table 8.1)

σ_{tf} = Permissible Axial Tension in Bolt = 120 N/mm2

$$= \frac{71 \times 1000}{8 \times 813.888} \Big/ 120 + \frac{519 \times 1000}{8 \times 813.888} \Big/ 80$$

$= 0.09 < 1 + 1.00 < 1$

OK in TENSION OK in SHEAR

$= 1.09 < 1.4$

OK in COMBINED TENSION & SHEAR

Root Area of 36 mm Dia. bolt = 813.888 mm²

Therefore , Provide 8 Nos. 36 mm ø bolt

Calculation for Anchor Bolt Length

AXIAL FORCE P = 71 KN

No. of Anchor Bolts Provided = 8 Nos.

Tension in each bolt = 8.875 KN

Refering IS: 456 - Table 21 :

Permissible Bond Stress for Plain Bars in Tension = 0.9 N/mm2

Therefore , Anchor Length = 8.875 * 1000 / (3.14 * 20 * 0.9) mm

Required Anchor Length = 87 mm for 36 mm ø Bolt

Provided Anchor Bolt Length = 1200 mm

DESIGN OF BASE PLATE

DESIGN CALCULATON FOR BASE PLATE DETAIL A

LOADS

	FORCE(KN)	MOMENT(KN-m)
DL+LL=	248.0	0.0
DL+WL =	71.0	0.0

PROVIDE BASE PLATE

LENGTH (L)	430	mm	Permissible Bending Stress=	258.75 Mpa
BREATH (B)	230	mm		
MAX. CANTILIVER DIST.	15	mm		
MIN. CANTILIVER DIST.	15	mm		

Case 1 DL + LL+COL

BEARING PRESSURE UNDER BASE PLATE

= (P / A) +(6 x M) / (BxL^2)

$$= \frac{248 \times 10^3}{430 \times 230} + \frac{6 \times 0 \times 10^6}{230 \times 430^2}$$

= 2.5 N/mm2 *< 6.3 N/mm2* *(HENCE SAFE)*

Thickness required

$$= \sqrt{\frac{(2.5x3)(15^2-(15^2/4)}{258.75}}$$

= **2.21** **mm**

Provide **20** **mm** thick base plate

CASE 2 DL + WL

BEARING PRESSURE UNDER BASE PLATE

= (P / A) +(6 x M) / (BxL^2)

$$= \frac{71 \times 10^3}{430 \times 230} + \frac{6 \times 0 \times 10^6}{230 \times 430^2}$$

= 0.71 N/mm2 *< 6.3 N/mm2* *(HENCE SAFE)*

Thickness required

$$= \sqrt{\frac{(0.71x3)(15^2-(15^2/4)}{258.75}}$$

= **1.17** **mm**

Provide **20** **mm** thick base plate

Provide Base Plate	**430**	**x**	**230**	**x**	**20**	**mm**

DESIGN OF ANCHOR BOLT -- PINNED BASE

DETAIL - B NODE-- 125 LOAD CASE -- 19

AXIAL UPWARD FORCE P = 8 KN

SHEAR FORCE S = 22 KN

Ref. Clause 8.9.4.5 for combined shear and tension Check in bolts :--

$= \{ (\sigma_{tf,cal.} / \sigma_{tf}) + (\tau_{vf,cal.} / \tau_{vf}) \} < 1.4$

Where -- $\tau_{vf,cal.}$ = Calculated Shear Stress in Bolt in N/mm2

$\sigma_{tf,cal.}$ = Calculated Axial Stress in Bolt in N/mm2

τ_{vf} = Permissible Shear in Bolt = 80 N/mm2

(As per IS : 800 - 1984, Clause 8.9.4.1 , Table 8.1)

σ_{tf} = Permissible Axial Tension in Bolt = 120 N/mm2

$$= \frac{8 \times 1000}{6 \times 251.2} \Big/ 120 + \frac{22 \times 1000}{6 \times 251.2} \Big/ 80$$

= 0.04 < 1 + 0.18 < 1

OK in TENSION OK in SHEAR

= 0.23 < 1.4

OK in COMBINED TENSION & SHEAR

Root Area of 20 mm Dia. bolt = 251.2 mm²

Therefore , Provide 6 Nos. 20 mm ø bolt

Calculation for Anchor Bolt Length

AXIAL FORCE P = 8 KN

No. of Anchor Bolts Provided = 6 Nos.

Tension in each bolt = 1.333 KN

Refering IS: 456 - Table 21 :

Permissible Bond Stress for Plain Bars in Tension = 0.9 N/mm2

Therefore , Anchor Length = 1.333 * 1000 / (3.14 * 20 * 0.9) mm

Required Anchor Length = 24 mm for 20 mm ø Bolt

Provided Anchor Bolt Length = 800 mm

DESIGN OF BASE PLATE

DESIGN CALCULATON FOR BASE PLATE | DETAIL | B

LOADS

	FORCE(KN)	MOMENT(KN-m)
DL+LL=	8.0	0.0
DL+WL =	8.0	0.0

PROVIDE BASE PLATE

LENGTH (L)	400	mm	Permissible Bending Stress=	258.75 Mpa
BREATH (B)	180	mm		
MAX. CANTILIVER DIST.	15	mm		
MIN. CANTILIVER DIST.	15	mm		

Case 1 DL + LL+COL

BEARING PRESSURE UNDER BASE PLATE

= (P / A) +(6 x M) / (BxL^2)

$$= \frac{8 \times 10^3}{400 \times 180} + \frac{6 \times 0 \times 10^6}{180 \times 400^2}$$

= 0.11 N/mm2 *< 6.3 N/mm2* *(HENCE SAFE)*

Thickness required

$$= \sqrt{\frac{(0.11 \times 3)(15^2-(15^2/4)}{258.75}}$$

= **0.46** **mm**

Provide **20** **mm** thick base plate

CASE 2 DL + WL

BEARING PRESSURE UNDER BASE PLATE

= (P / A) +(6 x M) / (BxL^2)

$$= \frac{8 \times 10^3}{400 \times 180} + \frac{6 \times 0 \times 10^6}{180 \times 400^2}$$

= 0.11 N/mm2 *< 6.3 N/mm2* *(HENCE SAFE)*

Thickness required

$$= \sqrt{\frac{(0.11 \times 3)(15^2-(15^2/4)}{258.75}}$$

= **0.46** **mm**

Provide **20** **mm** thick base plate

Provide Base Plate	**400**	**x**	**180**	**x**	**20**	**mm**

DESIGN OF ANCHOR BOLT -- PINNED BASE

DETAIL - C NODE-- 160 LOAD CASE -- 19

AXIAL UPWARD FORCE P = 62 KN

SHEAR FORCE S = 164 KN

Ref. Clause 8.9.4.5 for combined shear and tension Check in bolts :--

$= \{ (\sigma_{tf,cal.} / \sigma_{tf}) + (\tau_{vf,cal.} / \tau_{vf}) \} < 1.4$

Where -- $\tau_{vf,cal.}$ = Calculated Shear Stress in Bolt in N/mm2

$\sigma_{tf,cal.}$ = Calculated Axial Stress in Bolt in N/mm2

τ_{vf} = Permissible Shear in Bolt = 80 N/mm2

(As per IS : 800 - 1984, Clause 8.9.4.1 , Table 8.1)

σ_{tf} = Permissible Axial Tension in Bolt = 120 N/mm2

$$= \frac{62 \times 1000}{8 \times 361.728} \Big/ 120 + \frac{164 \times 1000}{8 \times 361.728} \Big/ 80$$

= 0.18 < 1 + 0.71 < 1

OK in TENSION OK in SHEAR

= 0.89 < 1.4

OK in COMBINED TENSION & SHEAR

Root Area of 24 mm Dia. bolt = 361.728 mm²

Therefore , Provide 8 Nos. 24 mm ø bolt

Calculation for Anchor Bolt Length

AXIAL FORCE P = 62 KN

No. of Anchor Bolts Provided = 8 Nos.

Tension in each bolt = 7.750 KN

Refering IS: 456 - Table 21 :

Permissible Bond Stress for Plain Bars in Tension = 0.9 N/mm2

Therefore , Anchor Length = 7.750 * 1000 / (3.14 * 20 * 0.9) mm

Required Anchor Length = 114 mm for 24 mm ø Bolt

Provided Anchor Bolt Length = 900 mm

DESIGN OF BASE PLATE

DESIGN CALCULATON FOR BASE PLATE | DETAIL | C

LOADS

	FORCE(KN)	MOMENT(KN-m)
DL+LL=	83.0	0.0
DL+WL =	62.0	0.0

PROVIDE BASE PLATE

LENGTH (L)	400	mm
BREATH (B)	180	mm
MAX. CANTILIVER DIST.	15	mm
MIN. CANTILIVER DIST.	15	mm

Permissible Bending Stress= **258.75** **Mpa**

Case 1 DL + LL+COL

BEARING PRESSURE UNDER BASE PLATE

= (P / A) +(6 x M) / (BxL^2)

$$= \frac{83 \times 10^3}{400 \times 180} + \frac{6 \times 0 \times 10^6}{180 \times 400^2}$$

= 1.15 N/mm2 ***< 6.3 N/mm2*** ***(HENCE SAFE)***

Thickness required

$$= \sqrt{\frac{(1.15x3)(15^2-(15^2/4)}{258.75}}$$

= **1.5** **mm**

Provide **20** **mm** thick base plate

CASE 2 DL + WL

BEARING PRESSURE UNDER BASE PLATE

= (P / A) +(6 x M) / (BxL^2)

$$= \frac{62 \times 10^3}{400 \times 180} + \frac{6 \times 0 \times 10^6}{180 \times 400^2}$$

= 0.86 N/mm2 ***< 6.3 N/mm2*** ***(HENCE SAFE)***

Thickness required

$$= \sqrt{\frac{(0.86x3)(15^2-(15^2/4)}{258.75}}$$

= **1.29** **mm**

Provide **20** **mm** thick base plate

Provide Base Plate	**400**	**x**	**180**	**x**	**20**	**mm**

DESIGN OF ANCHOR BOLT -- PINNED BASE

DETAIL - D NODE-- 134 LOAD CASE -- 19

AXIAL UPWARD FORCE P = 89 KN

SHEAR FORCE S = 279 KN

Ref. Clause 8.9.4.5 for combined shear and tension Check in bolts :--

$= \{ (\sigma_{tf,cal.} / \sigma_{tf}) + (\tau_{vf,cal.} / \tau_{vf}) \} < 1.4$

Where -- $\tau_{vf,cal.}$ = Calculated Shear Stress in Bolt in N/mm2

$\sigma_{tf,cal.}$ = Calculated Axial Stress in Bolt in N/mm2

τ_{vf} = Permissible Shear in Bolt = 80 N/mm2

(As per IS : 800 - 1984, Clause 8.9.4.1 , Table 8.1)

σ_{tf} = Permissible Axial Tension in Bolt = 120 N/mm2

$$= \frac{89 \times 1000}{8 \times 492.352} \Big/ 120 + \frac{279 \times 1000}{8 \times 492.352} \Big/ 80$$

$= 0.19 < 1$ + $0.89 < 1$

OK in TENSION OK in SHEAR

$= 1.07 < 1.4$

OK in COMBINED TENSION & SHEAR

Root Area of 28 mm Dia. bolt = 492.352 mm²

Therefore , Provide 8 Nos. 28 mm ø bolt

Calculation for Anchor Bolt Length

AXIAL FORCE P = 89 KN

No. of Anchor Bolts Provided = 8 Nos.

Tension in each bolt = 11.125 KN

Refering IS: 456 - Table 21 :

Permissible Bond Stress for Plain Bars in Tension = 0.9 N/mm2

Therefore , Anchor Length = 11.125 * 1000 / (3.14 * 20 * 0.9) mm

Required Anchor Length = 141 mm for 28 mm ø Bolt

Provided Anchor Bolt Length = 1000 mm

DESIGN OF BASE PLATE

DESIGN CALCULATON FOR BASE PLATE | DETAIL | D

LOADS

	FORCE(KN)	MOMENT(KN-m)
DL+LL=	129.0	0.0
DL+WL =	89.0	0.0

PROVIDE BASE PLATE

LENGTH (L)	400	mm	Permissible Bending Stress=	258.75 Mpa
BREATH (B)	180	mm		
MAX. CANTILIVER DIST.	15	mm		
MIN. CANTILIVER DIST.	15	mm		

Case 1 DL + LL+COL

BEARING PRESSURE UNDER BASE PLATE

= (P / A) +(6 x M) / (BxL^2)

$$= \frac{129 \times 10^3}{400 \times 180} + \frac{6 \times 0 \times 10^6}{180 \times 400^2}$$

= 1.79 N/mm2 *< 6.3 N/mm2 (HENCE SAFE)*

Thickness required

$$= \sqrt{\frac{(1.79x3)(15^2-(15^2/4)}{258.75}}$$

= **1.87** **mm**

Provide **20** **mm** thick base plate

CASE 2 DL + WL

BEARING PRESSURE UNDER BASE PLATE

= (P / A) +(6 x M) / (BxL^2)

$$= \frac{89 \times 10^3}{400 \times 180} + \frac{6 \times 0 \times 10^6}{180 \times 400^2}$$

= 1.23 N/mm2 *< 6.3 N/mm2 (HENCE SAFE)*

Thickness required

$$= \sqrt{\frac{(1.23x3)(15^2-(15^2/4)}{258.75}}$$

= **1.55** **mm**

Provide **20** **mm** thick base plate

Provide Base Plate	**400**	**x**	**180**	**x**	**20**	**mm**