



Adding Depth To Solutions

Z-Axis
Has Engineered A Solution

SPAAD

(Steel Platform Analysis And Design Software)

A Tool To Save Time of Design Engineers

[Introduction](#)

SPAAD is a software that helps the Design Engineer to design Steel Platform members at an amazingly fast pace there by increasing the efficiency of the organization.

Please flip through the pages to know how exactly this software works and how is it beneficial to you and your organization.

For further enquiries and information contact:

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GEOMETRICAL INPUTS

The input is given as **Node** input and **Beam** input.

The screenshot displays the 'GEOMETRICAL INPUTS' window in Steel Platform Design. It is divided into two main sections: 'NODES' and 'BEAM DATA'.

NODES Table:

Node Id #	X Coordinate (m)	Y Coordinate (m)	Column Section	Column Orientation	Edit	Delete
5	0	10	15MB 500	Vertical	Edit	Delete
6	6.2	10	15MB 500	Vertical	Edit	Delete
7	11.2	10	15MB 500	Vertical	Edit	Delete
8	18	10	15MB 500	Vertical	Edit	Delete
9	11.2	6.05	15MB 250	Horizontal	Edit	Delete
1	0	0	15MB 500	Vertical	Edit	Delete
2	6.2	0	15MB 500	Vertical	Edit	Delete

BEAM DATA Table:

Beam Name	Left Parent	Right Parent	Section Type	Edit	Delete
B1	5	6	ISection	Edit	Delete
B2	6	7	ISection	Edit	Delete
B3	7	8	ISection	Edit	Delete
B4	B5@0.325	B6@0.9.325	Channel	Edit	Delete
B5	B5@6.65	B6@8.65	ISection	Edit	Delete
B6	B5@1.98	B5@6.05	ISection	Edit	Delete
B7	B5@7.88	B6@7.88	Channel	Edit	Delete
B8	B5@7.115	B6@7.115	Channel	Edit	Delete
B9	B5@0.92	B5@6.97	ISection	Edit	Delete
B10	B5@6.345	B6@6.345	ISection	Edit	Delete
B11	9	B5@6.05	Channel	Edit	Delete
B12	B6@1.59	B6@1.59	ISection	Edit	Delete
B13	B4@6.8	B5@6.8	ISection	Edit	Delete
B14	B5@6.8	B5@6.8	ISection	Edit	Delete
B15	B6@5.425	B6@0.925	Channel	Edit	Delete
B16	B6@0.925	B6@5.425	Channel	Edit	Delete
B17	B4@5.18	B5@5.18	Channel	Edit	Delete
B18	B5@5.18	B5@5.18	Channel	Edit	Delete

BEAM INPUT Table:

Beam Name	Left Parent	Right Parent	Section Type	Edit	Delete
B1	1	2	ISection	Edit	Delete
B2	3	4	15MB 200	Edit	Delete
B3	1	3	CompositeSection	Edit	Delete
B4	2	4	BuiltUpSection	Edit	Delete
B5	B1@1	B2@1	15MC 200	Edit	Delete

Item Description Table:

Item	Description	Example
Beam Name	The name assigned to the beam.	ex- B1
Left parent	Left parent is left support, (either beam or column)	ex- 1 or B2@1.2
Right parent	Right parent is right support, (either beam or column)	ex- 2 or B3@1.2
Beam section type	Beam section is the type of section that has to be used for design.	Select from the drop down list.
Section type	select	
Channel (To let program automatically select the section)	I section (To let program automatically select the channel)	
Channel (To let program automatically select the section)	Channel (To let program automatically select the channel)	

- ◆ **Node input** - includes node Id, X and Y coordinates of the node, column section and column orientation.
- ◆ **Beam input** - includes Beam name, Left parent and Right parent and Beam section type.

NODE INPUT

NODES

Node Id #	X Coordinate	Y Coordinate	Column Section	Column Orientation	Edit	Delete
1	0	0	ISMB 200	Horizontal	Edit	Delete
2	2	0	ISMB 200	Horizontal	Edit	Delete
3	4	2	ISMB 200	Horizontal	Edit	Delete
4	2	2	ISMB 200	Horizontal	Edit	Delete

Node Id # X Coordinate Y Coordinate Column Section Type Column Orientation Add

BEAM DATA

Beam Name	Left Parent	Right Parent	Section Type	Edit	Delete
B1	1	2	ISection	Edit	Delete
B2	3	4	ISMB 200	Edit	Delete
B3	1	3	CompositeISection	Edit	Delete
B4	2	4	BuiltUpSection	Edit	Delete
B5	B1@1	B2@1	ISMC 200	Edit	Delete

Beam Name Left Parent Right Parent Beam Section Type Add

LOADS INPUTS

- ◆ Platform loads are the loads coming from the platform.
- ◆ The Reactions of Beams are automatically transferred as Point loads on the parent beams

The screenshot displays the 'LOADS INPUTS' tab in the Steel Platform Design software. The interface is divided into several sections:

- Menu and Toolbar:** Includes 'File', 'Edit', 'Settings', 'Help', 'Analyze And Design', 'Reports', 'GEOMETRICAL INPUTS', and 'LOAD INPUTS'.
- Beams List:** A vertical list of beams from B1 to B48.
- Drawing Area:** A grid showing the layout of beams with their respective dimensions and labels (e.g., B1, B2, B3, B4, B5, B6, B7, B8, B9, B10, B11, B12, B13, B14, B15, B16, B17, B18, B19, B20, B21, B22, B23, B24, B25, B26, B27, B28, B29, B30, B31, B32, B33, B34, B35, B36, B37, B38, B39, B40, B41, B42, B43, B44, B45, B46, B47, B48).
- INPUTS Section:**
 - PLATFORM LOADS:**
 - Beam Name: B5
 - Max. Lateral Span (m): 4.16
 - Beam Section Type: ISection
 - DL Intensity (kN/m²): 1.5
 - LL Intensity (kN/m²): 2.5
 - Platform Width (m): 0.72
 - Start Distance (m): 0
 - End Distance (m): 4.16
 - REMARKS:** A table with columns for Point Load (or UDL), Load Type, Load (kN), Start Distance (m), End Distance (m), Remarks, Edit, and Delete.

Point Load (or UDL)	Load Type	Load (kN)	Start Distance (m)	End Distance (m)	Remarks	Edit	Delete
Vertical Point Load	Dead Load	21.75	0.93	0.93	511.BF.550	Edit	Delete
Vertical Point Load	Live Load	23	0.93	0.93	511.BF.550	Edit	Delete
Vertical Point Load	Dead Load	21.75	2.735	2.735	511.BF.550	Edit	Delete
Vertical Point Load	Live Load	23	2.735	2.735	511.BF.550	Edit	Delete
- REACTIONS Section:**
 - Beam Name: [Empty]
 - Reaction of Left / Right: [Empty]
 - Distance from Left (m): [Empty]

The loads input are given to the program as Platform loads and Equipment loads

EQUIPMENT AND OTHER LOADS

Load Direction	Point Load (or) UDL	Load Type	Load (kN)	Start Distance (m)	End Distance (m)	Remarks	Edit	Delete
Vertical	Point Load	Dead Load	21.75	0.93		511.BF.550	Edit	Delete
Vertical	Point Load	Live Load	23	0.93		511.BF.550	Edit	Delete
Vertical	Point Load	Dead Load	21.75	2.735		511.BF.550	Edit	Delete
Vertical	Point Load	Live Load	23	2.735		511.BF.550	Edit	Delete

Load Direction: Vertical | Point Load / UDL: Point Load | Load Type: Dead Load | Load (kN): | Start Distance (m): | End Distance (m): | Remarks:

Add

PLATFORM LOADS

Platform Width	Start Distance (m)	End Distance (m)	Edit	Delete
0.5	0	2	Edit	Delete
0.4	1	2	Edit	Delete

Platform Width: Start Distance (m): End Distance (m): Add

REACTIONS

Beam Name	Reaction Of Left / Right	Distance From Left (m)
B5	Left	1

Supports : Vertical, Horizontal & Axial Loading on the Beams

Analysis & Design Process

- ◆ The platform loads are calculated based on the platform width, D.L and L.L intensity given.
- ◆ The equipment loads are user given loads in terms of Point load / U.D.L.
- ◆ Secondary beam calculations are done for the platform loads and Equipment loads coming on to the beam.
- ◆ Main beam calculations are done for the platform loads and Equipment loads coming on to the beam and the secondary beam reactions
- ◆ As this program is specific to Design Steel Platform members, all the members are specifically analyzed as Simply supported members
- ◆ The user can be rest assured that the most optimum section will be selected automatically And in case of section failure for the maximum possible section, the user can opt for Compound section or Built up section

Reports & Analysis

- ◆ The report is highly condensed and gives exactly what the Design Engineer would want.
- ◆ Gives the BOQ of all the beams in platform
- ◆ Accuracy & Time – The accuracy matches to that of other popular Analysis software.
- ◆ Very Less time required to give input of platform data including the loading etc.

Sample Abstract Design Report

ABSTRACT DESIGN REPORT BEAMS DESIGN REPORT WITH VERTICAL LOADS

PROJECT NO:		D08C53		DESIGNED BY:		Sudheer		DATE:		11/08/09		CHECKED BY:		Rajamohan		DATE:		11/08/09						
PROJECT NAME:		ICL Cement Mill Building		Support Reactions		Max. Bending Moment (kNm)		Distance from Left Support (m)		Sigma _{bc} (N/mm ²)		Z _{xx} Required (cm)		Z _{xx} Provided (cm)		Max. Shear Stress (Allowable) (N/mm ²)		Max. Deflection (mm)		Allowable Deflection (mm)		Weight of Member (Kg)		
WORK NAME:		Platform@+136.600 Axis 3 & 4		Left Reaction (kN)		Right Reaction (kN)																		
Beam Name	Designed Member	Section Predominated by	Span	Max. UnSupport Lateral Span	Support Reactions	Support Reactions	Support Reactions	Support Reactions	Support Reactions	Support Reactions	Support Reactions	Support Reactions	Support Reactions	Support Reactions	Support Reactions	Support Reactions	Support Reactions	Support Reactions	Support Reactions	Support Reactions	Support Reactions	Support Reactions	Support Reactions	Support Reactions
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
B1	ISMB 350	Bending	6.2	1.8	73.972	38.836	111.526	3.186	148.124	752.926	778.9	26.992	14.185 @ 3.013 m	19.077	324.86									
B2	ISMB 125	Deflection	5	3.8	1.21	6.35	4.596	3.8	87.381	52.602	71.8	11.546	9.736 @ 2.835 m	15.385	65									
B3	ISMB 600	Bending	6.8	4.16	157.519	168.527	301.58	1.945	122.058	2471.603	3060.4	23.407	5.545 @ 3.195 m	20.923	833.68									
B4	ISMC 125	Bending	4.16	4.16	5.616	5.616	5.641	2.08	94.81	61.603	66.6	8.986	12.041 @ 2.08 m	12.8	52.832									
B5	ISMB 350	Bending	4.16	4.16	56.265	45.416	61.787	2.733	99.856	618.757	778.9	19.776	3.893 @ 2.08 m	12.8	217.584									
B6	ISMB 125	Bending	1.94	0.97	12.395	10.539	9.767	0.85	152.269	65.15	71.8	22.537	3.401 @ 0.945 m	5.969	25.22									
B7	ISMC 150	Bending	4.16	4.16	6.405	6.405	6.653	2.08	99.298	67.098	103.9	7.909	7.338 @ 2.08 m	12.8	66.224									
B8	ISMC 150	Bending	4.16	4.16	6.405	6.405	6.653	2.08	99.298	67.098	103.9	7.909	7.338 @ 2.08 m	12.8	66.224									
B9	ISMB 150	Bending	1.94	1.94	12.269	10.413	8.996	0.85	121.001	74.491	96.9	17.04	1.944 @ 0.941 m	5.969	28.906									
B10	ISMB 350	Bending	4.16	1.8	80.923	64.336	94.601	2.359	148.124	638.664	778.9	26.544	5.934 @ 2.068 m	12.8	217.984									
B11	ISMC 75	Bending	1.94	1.94	1.785	1.785	0.856	0.97	127.136	8.809	20.3	5.408	2.126 @ 0.97 m	5.969	13.192									
B12	ISMB 100	Bending	1.06	1.06	10	10	5.3	0.53	152.051	34.857	51.5	25	0.918 @ 0.53 m	3.262	12.19									
B13	ISMB 400	Bending	6.2	1.8	89.224	48.168	134.062	3.186	147.791	907.104	1022.9	25.063	11.374 @ 3.013 m	19.077	381.92									
B14	ISMB 450	Bending	6.34	3.53	37.574	39.306	121.457	3.532	113.905	1066.305	1350.7	9.292	7.897 @ 3.498 m	21.354	502.456									
B15	ISMC 100	Bending	2.861	2.861	5.292	5.292	3.785	1.43	108.045	35.029	37.3	11.26	8.228 @ 1.43 m	8.802	26.316									
B16	ISMC 75	Bending	1.801	1.801	3.332	3.332	1.5	0.9	130.177	11.524	20.3	10.997	3.176 @ 0.9 m	5.542	12.247									
B17	ISMC 200	Bending	6.2	6.2	7.688	7.688	11.916	3.1	74.983	158.922	181.9	6.302	12.489 @ 3.1 m	19.077	137.02									
B18	ISMC 200	Deflection	3.41	3.41	4.228	4.228	3.605	1.705	105.902	34.038	66.6	6.765	4.993 @ 1.705 m	10.492	48.307									
B19	ISMC 150	Bending	3.53	2.265	11.499	8.994	11.902	1.267	132.198	90.034	103.9	14.196	8.506 @ 1.591 m	10.862	57.892									
B20	ISMB 100	Bending	1.06	1.06	10.562	10.562	5.449	0.53	152.051	35.836	51.5	26.404	0.918 @ 0.53 m	3.262	12.19									
B21	ISMB 350	Bending	6.2	6.2	19.312	22.215	46.653	3.546	73.835	631.856	778.9	7.835	5.704 @ 3.187 m	19.077	324.86									
B22	ISMB 250	Bending	3.41	3.41	15.949	15.89	22.081	1.702	114.899	192.175	410.5	9.246	2.1 @ 1.705 m	10.492	127.193									
B23	ISMC 225	Bending	4.16	1.8	25.569	21.585	32.615	2.359	143.923	226.613	239.5	17.756	9.991 @ 2.051 m	12.8	107.744									
B24	ISMB 200	Bending	3.53	2.265	17.532	12.473	19.597	1.267	129.365	152.666	223.5	15.466	4.636 @ 1.67 m	10.862	89.662									
B25	ISMB 300	Bending	6.2	3.165	23.786	27.532	56.674	3.546	118.852	476.844	573.6	12.37	11.163 @ 3.187 m	19.077	274.04									
B26	ISMB 250	Bending	3.41	3.41	17.395	17.336	23.313	1.702	114.899	202.902	410.5	10.864	2.239 @ 1.705 m	10.492	127.193									
B27	ISMB 200	Bending	4.16	1.595	23.018	21.542	28.347	2.367	144.432	196.267	223.5	20.191	10.506 @ 2.047 m	12.8	105.664									
B28	ISMC 175	Bending	3.53	2.265	15.191	16.09	16.09	1.267	131.968	121.925	139.8	15.229	7.203 @ 1.664 m	10.862	67.423									
B29	ISMC 225	Bending	6.2	3.165	14.234	15.236	25.014	3.168	116.062	215.574	239.5	10.58	17.257 @ 3.131 m	19.077	160.56									
B30	ISMB 125	Bending	3.41	3.41	6.274	6.274	5.349	1.765	93.503	57.206	71.8	11.408	6.871 @ 1.705 m	10.492	44.33									
B31	ISMC 125	Bending	3.53	3.53	6.107	6.107	5.389	1.765	103.982	51.83	66.6	9.771	8 @ 1.765 m	10.862	44.831									
B32	ISMC 225	Bending	6.2	6.2	10.564	10.564	16.529	3.1	76.965	214.763	239.5	7.406	11.695 @ 3.1 m	19.077	160.56									
B33	ISMC 125	Bending	3.53	3.53	5.154	5.154	4.546	1.765	103.982	43.741	66.6	8.245	6.751 @ 1.765 m	10.862	44.831									

Sample Detailed Design Report

DETAILED DESIGN REPORT BEAMS DESIGN REPORT WITH VERTICAL LOADS

PROJECT NO: 8001		Designed by: Somesh		DATE: 03/06/09		Checked by: Somesh		DATE: 03/06/09		OUT PUTS																									
PROJECT NAME: Steel Platform Mill Building		Ultimate Load Factor: DL		1		Ultimate Load Factor: LL		1		Support Reactions (DL)		Support Reactions (LL)		Support Reactions		Zkx Required (cm)		Zkx Provided (cm)		Max. Shear Stress (N/mm ²) (Allowable ϕ 100)		Final Member		Max. Deflection Of Member (mm)		Allowable Deflection Of Member (mm)		Weight Of Member (kg)							
Beam Name	Span (m)	Max. Unsupported Lateral Span (m)	Beam Section Type	Platform Loads		Equipment and Other Loads				Reactions		Support Reactions (DL)		Support Reactions (LL)		Support Reactions		Dist. From Left (m)	Sigma _{bc} (N/mm ²)	Zkx Required (cm)	Zkx Provided (cm)	Max. Shear Stress (N/mm ²) (Allowable ϕ 100)	Final Member	Max. Deflection Of Member (mm)	Allowable Deflection Of Member (mm)	Weight Of Member (kg)									
				Intensity of Dead Load (DL in N/m ²)	Intensity of Live Load (LL in N/m ²)	Point Load / UDL	Load Type	Load (kN)	Start Distance (m)	End Distance (m)	End Remarks	Beam Name	Reaction Of Left / Right	Distance From Left (m)	Left Reaction (kN)	Right Reaction (kN)	Left Reaction (kN)										Right Reaction (kN)	Left Reaction (kN)	Right Reaction (kN)	Left Reaction (kN)	Right Reaction (kN)				
B1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32				
B1	10	2	I Section	2.5	0	10	UDL	DL	10	0	10		B8	Left	2	83.75	83.75	56.25	56.25	140	140	370	5	155.555	2378.561	3060.4	19.444	ISMB 600	20.042 @ 5 m	30.769	1226				
													B9	Left	4																				
													B10	Left	6																				
													B11	Left	8																				
B2	5	2	I Section				UDL	DL	10	0	5		B12	Left	2	30	0	0	30	30	30	41.25	2.5	138.116	298.62	305.9	20.513	ISMB 225	14.661 @ 2.5 m	15.385	156				
													B13	Left	3																				
B3	10	2	I Section	2.5	0	10	Point Load	DL	10	5			B8	Right	2	38.75	38.75	56.25	56.25	95	95	270	5	151.23	1785.365	1808.7	18.627	ISMB 500	29.175 @ 5 m	30.769	869				
													B9	Right	4																				
													B10	Right	6																				
													B11	Right	8																				
B4	5	2	I Section	2.5	0	5	Point Load	DL	10	2.5			B14	Right	2	19.375	19.375	15.625	15.625	35	35	53.75	2.5	142.912	376.06	410.5	20.29	ISMB 250	12.25 @ 2.5 m	15.385	186.5				
													B15	Left	3																				
B5	5	5	Channel	1	0	5	UDL	DL	5	0	5					16.25	16.25	6.25	6.25	22.5	22.5	28.125	2.5	86.334	325.77	424.2	9.668	ISMC 300	5.482 @ 2.5 m	15.385	179				
B8	5	5	Channel	2	0	5										7.5	7.5	12.5	12.5	20	20	25	2.5	90.204	277.49	305.3	11.269	ISMC 250	8.123 @ 2.5 m	15.385	152				
B9	5	5	I Section	2	0	5										7.5	7.5	12.5	12.5	20	20	25	2.5	85.963	290.822	305.9	13.675	ISMB 225	9.007 @ 2.5 m	15.385	156				
B10	5	5	I Section	2	0	5										7.5	7.5	12.5	12.5	20	20	25	2.5	85.963	290.822	305.9	13.675	ISMB 225	9.007 @ 2.5 m	15.385	156				
B11	5	5	I Section	2	0	5										7.5	7.5	12.5	12.5	20	20	25	2.5	85.963	290.822	305.9	13.675	ISMB 225	9.007 @ 2.5 m	15.385	156				
B12	2.828	2.828	Channel				Point Load	DL	10	1.414						5	5	0	0	5	5	7.071	1.414	116.087	60.911	66.6	8	ISMC 125	5.391 @ 1.414 m	8.703	35.921				
B13	2.828	2.828	Channel				Point Load	DL	10	1.414						5	5	0	0	5	5	7.071	1.414	116.087	60.911	66.6	8	ISMC 125	5.391 @ 1.414 m	8.703	35.921				
B14	2.828	2.828	Channel				Point Load	DL	10	1.414						5	5	0	0	5	5	7.071	1.414	116.087	60.911	66.6	8	ISMC 125	5.391 @ 1.414 m	8.703	35.921				
B15	2.828	2.828	Channel				Point Load	DL	10	1.414						5	5	0	0	5	5	7.071	1.414	116.087	60.911	66.6	8	ISMC 125	5.391 @ 1.414 m	8.703	35.921				

Loads Data Output

Description	Load	Start Distance	End Distance	Remarks
Project: Steel Platform Mill Building				
Work Name : Steel Platform at +10.000m LVL				
Beam Name = B1				
DEAD LOADS(VERTICAL)				
UDL	3.75 kN/m	0 m	10 m	Platform Load
UDL	10 kN/m	0 m	10 m	UDL
POINT LOAD	7.5 kN	2 m		Left Reaction from B8
POINT LOAD	7.5 kN	4 m		Left Reaction from B9
POINT LOAD	7.5 kN	6 m		Left Reaction from B10
POINT LOAD	7.5 kN	8 m		Left Reaction from B11
LIVE LOADS(VERTICAL)				
UDL	6.25 kN/m	0 m	10 m	Platform Load
POINT LOAD	12.5 kN	2 m		Left Reaction from B8
POINT LOAD	12.5 kN	4 m		Left Reaction from B9
POINT LOAD	12.5 kN	6 m		Left Reaction from B10
POINT LOAD	12.5 kN	8 m		Left Reaction from B11
Beam Name = B2				
DEAD LOADS(VERTICAL)				
UDL	10 kN/m	0 m	5 m	UDL
POINT LOAD	5 kN	2 m		Left Reaction from B12
POINT LOAD	5 kN	3 m		Left Reaction from B13
Beam Name = B3				
DEAD LOADS(VERTICAL)				
UDL	3.75 kN/m	0 m	10 m	Platform Load
POINT LOAD	10 kN	5 m		POINT LOAD
POINT LOAD	7.5 kN	2 m		Right Reaction from B8
POINT LOAD	7.5 kN	4 m		Right Reaction from B9
POINT LOAD	7.5 kN	6 m		Right Reaction from B10
POINT LOAD	7.5 kN	8 m		Right Reaction from B11
LIVE LOADS(VERTICAL)				
UDL	6.25 kN/m	0 m	10 m	Platform Load
POINT LOAD	12.5 kN	2 m		Right Reaction from B8
POINT LOAD	12.5 kN	4 m		Right Reaction from B9
POINT LOAD	12.5 kN	6 m		Right Reaction from B10

BOQ of all the beams in platform

PROJECT NO:		8001	DESIGNED BY:	Somesh	DATE:	03/08/09
PROJECT NAME:		Steel Platform Mill Building	CHECKED BY:	Somesh	DATE:	03/08/09
WORK NAME:		Steel Platform at +10.000m LVL				
BILL OF QUANTITIES						
SI No.	Description	Beam Names	Unit	Unit Weight	Total Weight (Kg)	
STANDARD SECTIONS						
1	ISMB 225	B2,B9,B10,B11	20 m	31.2 Kg/m	624	
2	ISMB 250	B4	5 m	37.3 Kg/m	186.5	
3	ISMB 450	B7	5 m	72.4 Kg/m	362	
4	ISMB 500	B3	10 m	86.9 Kg/m	869	
5	ISMB 600	B1	10 m	122.6 Kg/m	1226	
6	ISMC 125	B12,B13,B14,B15	11.3136 m	12.7 Kg/m	143.6827	
7	ISMC 250	B8	5 m	30.4 Kg/m	152	
8	ISMC 300	B5	5 m	35.8 Kg/m	179	
TOTAL					3742.1827	