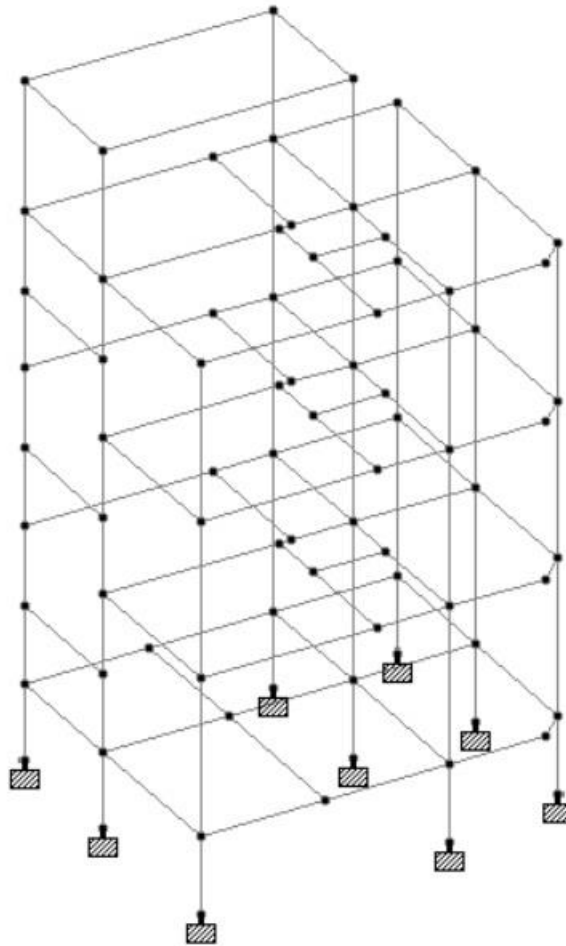




WHOLE STRUCTURE

```

*****
*                               *
*      STAAD.Pro                *
*      Version  2006      Bld 1002.US      *
*      Proprietary Program of              *
*      Research Engineers, Intl.            *
*      Date=    JAN  1, 2001                *
*      Time=    1:31:26                     *
*                               *
*****

```

1. STAAD SPACE DXF IMPORT OF STR.DXF

INPUT FILE: C:\Users\ASUS\OneDrive\Desktop\ARTISAN GRP_NEW\Prosenjit
Ghosh\Prasenjit Ghosh.STD

2. START JOB INFORMATION

3. ENGINEER DATE 15-MAR-22

4. END JOB INFORMATION

5. INPUT WIDTH 79

6. UNIT METER KN

7. JOINT COORDINATES

8. 1 0 3.05 0; 2 3.65 3.05 0; 3 4.825 3.05 0; 4 7.202 3.05 0; 5
9. 6 3.4 3.05 2.65; 7 3.65 3.05 2.65; 8 4.825 3.05 2.65; 9 7.202
10. 10 3.4 3.05 3.775; 11 4.825 3.05 3.775; 12 7.202 3.05 5.416
11. 14 3.4 3.05 5.913; 15 4.825 3.05 5.913; 16 6.684 3.05 5.913;
12. 18 4.825 -1.5 0; 19 7.202 -1.5 0; 20 0 -1.5 2.65; 21 4.825 -1.5 2.65



13. 22 7.202 -1.5 2.65; 23 7.202 -1.5 5.416; 24 0 -1.5 5.913; 25 4.825 -1.5 5.913
 14. 26 0 0 0; 27 4.825 0 0; 28 7.202 0 0; 29 0 0 2.65; 30 4.825 0 2.65
 15. 31 7.202 0 2.65; 32 7.202 0 5.416; 33 0 0 5.913; 34 4.825 0 5.913
 16. 35 6.684 0 5.913; 36 2.4125 0 0; 37 2.4125 0 2.65; 38 2.4125 0 5.913
 17. 39 0 6.1 0; 40 3.65 6.1 0; 41 4.825 6.1 0; 42 7.202 6.1 0; 43 0 6.1 2.65
 18. 44 3.4 6.1 2.65; 45 3.65 6.1 2.65; 46 4.825 6.1 2.65; 47 7.202 6.1 2.65
 19. 48 3.4 6.1 3.775; 49 4.825 6.1 3.775; 50 7.202 6.1 5.416; 51 0 6.1 5.913
 20. 52 3.4 6.1 5.913; 53 4.825 6.1 5.913; 54 6.684 6.1 5.913; 55 0 9.15 0
 21. 56 3.65 9.15 0; 57 4.825 9.15 0; 58 7.202 9.15 0; 59 0 9.15 2.65
 22. 60 3.4 9.15 2.65; 61 3.65 9.15 2.65; 62 4.825 9.15 2.65; 63 7.202 9.15 2.65
 23. 64 3.4 9.15 3.775; 65 4.825 9.15 3.775; 66 7.202 9.15 5.416; 67 0 9.15 5.913
 24. 68 3.4 9.15 5.913; 69 4.825 9.15 5.913; 70 6.684 9.15 5.913; 71 0 4.55 2.65
 25. 72 0 4.55 0; 73 0 1.5 0; 74 0 1.5 2.65; 75 0 7.6 2.65; 76 0 7.6 0
 26. 77 0 11.65 0; 78 4.825 11.65 0; 79 0 11.65 2.65; 80 4.825 11.65 2.65
 27. MEMBER INCIDENCES
 28. 1 13 5; 2 7 2; 3 16 12; 4 4 3; 5 9 8; 6 16 15; 7 12 9; 8 6 10; 9 11 10; 10 3 8
 29. 11 8 7; 12 8 11; 13 7 6; 14 2 1; 15 9 4; 17 6 5; 18 14 13; 19 11 15; 20 10 14
 30. 21 3 2; 22 15 14; 23 17 26; 24 18 27; 25 19 28; 26 20 29; 27 21 30; 28 22 31
 31. 29 23 32; 30 24 33; 31 25 34; 32 26 73; 33 27 3; 34 28 4; 35 29 74; 36 30 8
 32. 37 31 9; 38 32 12; 39 33 13; 40 34 15; 41 26 36; 42 27 28; 43 29 37; 44 30 31
 33. 45 33 38; 46 26 29; 47 29 33; 48 27 30; 49 30 34; 50 28 31; 51 31 32; 52 35 32
 34. 53 35 34; 54 36 27; 55 37 30; 56 36 37; 57 38 34; 58 37 38; 59 51 43; 60 45 40
 35. 61 54 50; 62 42 41; 63 47 46; 64 54 53; 65 50 47; 66 44 48; 67 49 48; 68 41 46
 36. 69 46 45; 70 46 49; 71 45 44; 72 40 39; 73 47 42; 75 44 43; 76 52 51; 77 49 53
 37. 78 48 52; 79 41 40; 80 53 52; 81 67 59; 82 61 56; 83 70 66; 84 58 57; 85 63 62
 38. 86 70 69; 87 66 63; 88 60 64; 89 65 64; 90 57 62; 91 62 61; 92 62 65; 93 61 60
 39. 94 56 55; 95 63 58; 96 59 55; 97 60 59; 98 68 67; 99 65 69; 100 64 68
 40. 101 57 56; 102 69 68; 103 1 72; 104 39 76; 105 3 41; 106 41 57; 107 4 42
 41. 108 42 58; 109 5 71; 110 43 75; 111 8 46; 112 46 62; 113 9 47; 114 47 63
 42. 115 12 50; 116 50 66; 117 13 51; 118 51 67; 119 15 53; 120 53 69; 121 71 43
 43. 122 72 39; 123 71 72; 124 73 1; 125 74 5; 126 73 74; 127 75 59; 128 76 55
 44. 129 75 76; 130 55 77; 131 57 78; 132 59 79; 133 62 80; 134 77 78; 135 79 80
 45. 136 77 79; 137 78 80
 46. START GROUP DEFINITION
 47. FLOOR
 48. _TYP_FLOORS 1 TO 13 15 17 TO 22 59 TO 71 73 75 TO 80
 49. _ROOF 81 TO 93 95 97 TO 102
 50. _STAIR ROOF 134 TO 137
 51. END GROUP DEFINITION
 52. DEFINE MATERIAL START
 53. ISOTROPIC CONCRETE
 54. E 2.17185E+007
 55. POISSON 0.17
 56. DENSITY 23.5616
 57. ALPHA 1E-005
 58. DAMP 0.05
 59. TYPE CONCRETE
 60. STRENGTH FCU 27579
 61. END DEFINE MATERIAL
 62. MEMBER PROPERTY AMERICAN
 63. 41 TO 58 126 PRIS YD 0.35 ZD 0.25
 64. 1 TO 15 17 TO 22 59 TO 73 75 TO 102 123 129 PRIS YD 0.3 ZD 0.25
 65. 134 TO 137 PRIS YD 0.25 ZD 0.25
 66. 23 TO 40 103 TO 122 124 125 127 128 130 TO 133 PRIS YD 0.3 ZD 0.25
 67. CONSTANTS
 68. BETA 90 MEMB 25 28 29 34 37 38 107 108 113 TO 116
 69. MATERIAL CONCRETE ALL
 70. SUPPORTS
 71. 17 TO 25 FIXED
 72. DEFINE 1893 LOAD
 73. ZONE 0.16 RF 3 I 1 SS 2 ST 1 DM 0.05
 74. SELFWEIGHT 1
 75. MEMBER WEIGHT
 76. 1 3 4 6 7 14 15 18 21 22 59 61 62 64 65 72 73 76 79 80 UNI 11.2



77. 9 10 12 13 17 19 20 67 68 70 71 75 77 78 UNI 7.15
 78. 123 126 129 UNI 14.3
 79. 90 91 93 94 96 97 101 UNI 9.6
 80. 81 83 84 86 87 95 98 102 UNI 3
 81. FLOOR WEIGHT
 82. _TYP_FLOORS FLOAD 4.85
 83. _ROOF FLOAD 3.25
 84. _STAIR_ROOF FLOAD 2.75
 85. _TYP_FLOORS FLOAD 1.25
 86. DEFINE WIND LOAD
 87. TYPE 1 WIND 1
 88. INT 0.95 0.97 HEIG 10 15
 89. EXP 0.6 JOINT 1 TO 16 26 TO 80
 90. LOAD 1 LOADTYPE SEISMIC TITLE SL+X
 91. 1893 LOAD X 1
 92. LOAD 2 LOADTYPE SEISMIC TITLE SL-X
 93. 1893 LOAD X -1.
 94. LOAD 3 LOADTYPE SEISMIC TITLE SL+Z
 95. 1893 LOAD Z 1
 96. LOAD 4 LOADTYPE SEISMIC TITLE SL-Z
 97. 1893 LOAD Z -1.
 98. LOAD 5 LOADTYPE DEAD TITLE DL
 99. SELFWEIGHT Y -1
 100. MEMBER LOAD
 101. 1 3 4 6 7 14 15 18 21 22 59 61 62 64 65 72 73 76 79 80 UNI GY -11.2
 102. 9 10 12 13 17 19 20 67 68 70 71 75 77 78 UNI GY -7.15
 103. 123 126 129 UNI GY -14.3
 104. 90 91 93 94 96 97 101 UNI GY -9.6
 105. 81 83 84 86 87 95 98 102 UNI GY -3
 106. FLOOR LOAD
 107. _TYP_FLOORS FLOAD -4.85 GY
 108. _ROOF FLOAD -3.25 GY
 109. _STAIR_ROOF FLOAD -2.75 GY
 110. LOAD 6 LOADTYPE LIVE REDUCIBLE TITLE LL
 111. FLOOR LOAD
 112. _TYP_FLOORS FLOAD -2.5 GY
 113. _ROOF FLOAD -1.5 GY
 114. _STAIR_ROOF FLOAD -0.75 GY
 115. LOAD 7 LOADTYPE WIND TITLE WL+X
 116. WIND LOAD X 1 TYPE 1 YR 0 11.65
 117. LOAD 8 LOADTYPE WIND TITLE WL-X
 118. WIND LOAD X -1 TYPE 1 YR 0 11.65
 119. LOAD 9 LOADTYPE WIND TITLE WL+Z
 120. WIND LOAD Z 1 TYPE 1 YR 0 11.65
 121. LOAD 10 LOADTYPE WIND TITLE WL-Z
 122. WIND LOAD Z -1 TYPE 1 YR 0 11.65
 123. LOAD COMB 11 1.5 (DL+LL)
 124. 5 1.5 6 1.5
 125. LOAD COMB 12 1.2 (DL+LL+SL+X)
 126. 1 1.2 5 1.2 6 1.2
 127. LOAD COMB 13 1.2 (DL+LL+SL-X)
 128. 2 1.2 5 1.2 6 1.2
 129. LOAD COMB 14 1.2 (DL+LL+SL+Z)
 130. 3 1.2 5 1.2 6 1.2
 131. LOAD COMB 15 1.2 (DL+LL+SL-Z)
 132. 4 1.2 5 1.2 6 1.2
 133. LOAD COMB 16 1.2 (DL+LL+WL+X)
 134. 5 1.2 6 1.2 7 1.2
 135. LOAD COMB 17 1.2 (DL+LL+WL-X)
 136. 5 1.2 6 1.2 8 1.2
 137. LOAD COMB 18 1.2 (DL+LL+WL+Z)
 138. 5 1.2 6 1.2 9 1.2
 139. LOAD COMB 19 1.2 (DL+LL+WL-Z)
 140. 5 1.2 6 1.2 10 1.2



141. LOAD COMB 20 0.9DL+1.5SL+X
142. 1 1.5 5 0.9
143. LOAD COMB 21 0.9DL+1.5SL-X
144. 2 1.5 5 0.9
145. LOAD COMB 22 0.9DL+1.5SL+Z
146. 3 1.5 5 0.9
147. LOAD COMB 23 0.9DL+1.5SL-Z
148. 4 1.5 5 0.9
149. LOAD COMB 24 1.5 (DL+WLX)
150. 5 1.5 7 1.5
151. LOAD COMB 25 1.5 (DL-WLX)
152. 5 1.5 8 1.5
153. LOAD COMB 26 1.5 (DL+WLZ)
154. 5 1.5 9 1.5
155. LOAD COMB 27 1.5 (DL-WLZ)
156. 5 1.5 10 1.5
157. LOAD COMB 28 0.9DL+1.5WLX
158. 5 0.9 7 1.5
159. LOAD COMB 29 0.9DL-1.5WLX
160. 5 0.9 8 1.5
161. LOAD COMB 30 0.9DL+1.5WLZ
162. 5 0.9 9 1.5
163. LOAD COMB 31 0.9DL-1.5WLZ
164. 5 0.9 10 1.5
165. LOAD COMB 32 1.5 (DL+SLX)
166. 1 1.5 5 1.5
167. LOAD COMB 33 1.5 (DL-SLX)
168. 2 1.5 5 1.5
169. LOAD COMB 34 1.5 (DL+SLZ)
170. 3 1.5 5 1.5
171. LOAD COMB 35 1.5 (DL-SLZ)
172. 4 1.5 5 1.5
173. LOAD COMB 36 1.5DL
174. 5 1.5
175. LOAD COMB 37 1.0DL
176. 5 1.0
177. LOAD COMB 38 1.0 (DL+LL)
178. 5 1.0 6 1.0
179. LOAD COMB 39 1.0DL+0.8LL+0.8WLX
180. 5 1.0 6 0.8 7 0.8
181. LOAD COMB 40 1.0DL+0.8LL-0.8WLX
182. 5 1.0 6 0.8 8 0.8
183. LOAD COMB 41 1.0DL+0.8LL+0.8WLZ
184. 5 1.0 6 0.8 9 0.8
185. LOAD COMB 42 1.0DL+0.8LL-0.8WLZ
186. 5 1.0 6 0.8 10 0.8
187. LOAD COMB 43 1.0 (DL+WLX)
188. 5 1.0 7 1.0
189. LOAD COMB 44 1.0 (DL-WLX)
190. 5 1.0 8 1.0
191. LOAD COMB 45 1.0 (DL+WLZ)
192. 5 1.0 9 1.0
193. LOAD COMB 46 1.0 (DL-WLZ)
194. 5 1.0 10 1.0
195. LOAD COMB 47 1.0DL+0.8LL+0.8SLX
196. 1 0.8 5 1.0 6 0.8
197. LOAD COMB 48 1.0DL+0.8LL-0.8SLX
198. 5 1.0 6 0.8 2 0.8
199. LOAD COMB 49 1.0DL+0.8LL+0.8SLZ
200. 4 0.8 5 1.0 6 0.8
201. LOAD COMB 50 1.0DL+0.8LL-0.8SLZ
202. 4 0.8 5 1.0 6 0.8
203. LOAD COMB 51 1.0 (DL+SLX)
204. 1 1.0 5 1.0



205. LOAD COMB 52 1.0 (DL+SL-X)
206. 2 1.0 5 1.0
207. LOAD COMB 53 1.0 (DL+SL+Z)
208. 3 1.0 5 1.0
209. LOAD COMB 54 1.0 (DL+SL-Z)
210. 4 1.0 5 1.0
211. PERFORM ANALYSIS

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

NUMBER OF JOINTS	80	NUMBER OF MEMBERS	135
NUMBER OF PLATES	0	NUMBER OF SOLIDS	0
NUMBER OF SURFACES	0	NUMBER OF SUPPORTS	9

SOLVER USED IS THE OUT-OF-CORE BASIC SOLVER

ORIGINAL/FINAL BAND-WIDTH= 72/ 17/ 102 DOF
TOTAL PRIMARY LOAD CASES = 10, TOTAL DEGREES OF FREEDOM = 426
TOTAL LOAD COMBINATION CASES = 44 SO FAR.
SIZE OF STIFFNESS MATRIX = 44 DOUBLE KILO-WORDS
REQRD/AVAIL. DISK SPACE = 12.8/ 151553.9 MB

*
* TIME PERIOD FOR X 1893 LOADING = 0.51791 SEC *
* SA/G PER 1893= 2.500, LOAD FACTOR= 1.000 *
* VB PER 1893= 0.0667 X 2116.62= 141.11 KN *
*

*
* TIME PERIOD FOR X 1893 LOADING = 0.51791 SEC *
* SA/G PER 1893= 2.500, LOAD FACTOR=-1.000 *
* VB PER 1893= 0.0667 X 2116.62= -141.11 KN *
*

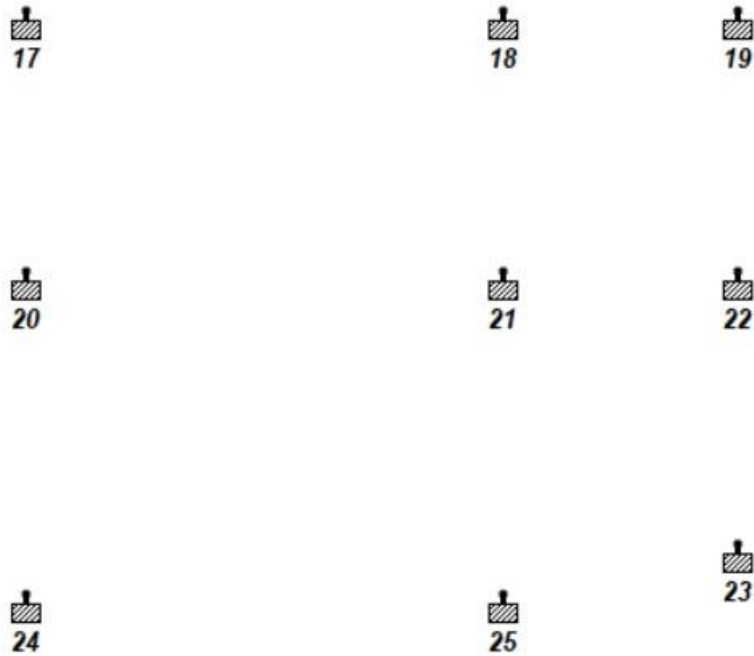
*
* TIME PERIOD FOR Z 1893 LOADING = 0.51791 SEC *
* SA/G PER 1893= 2.500, LOAD FACTOR= 1.000 *
* VB PER 1893= 0.0667 X 2116.62= 141.11 KN *
*

*
* TIME PERIOD FOR Z 1893 LOADING = 0.51791 SEC *
* SA/G PER 1893= 2.500, LOAD FACTOR=-1.000 *
* VB PER 1893= 0.0667 X 2116.62= -141.11 KN *
*

352. LOAD LIST 11 TO 19



SUPPORT IDENTIFICATION



Node	L/C	Force-X kN	Force-Y kN	Force-Z kN	Moment-X kNm	Moment-Y kNm	Moment-Z kNm
17	37	1.308	223.057	-0.045	0.000	0.020	-0.884
	38	1.293	227.680	-0.049	-0.028	0.032	-0.926
	39	-0.693	222.046	-0.045	-0.016	0.014	2.147
	40	3.349	231.111	-0.114	-0.089	0.034	-3.916
	41	1.427	206.379	-4.408	-4.285	0.014	-1.137
	42	1.160	247.088	4.265	4.201	0.041	-0.689
	43	-1.179	217.171	-0.040	0.008	0.000	2.946
	44	3.874	228.502	-0.126	-0.084	0.025	-4.632
	45	1.472	197.587	-5.494	-5.328	0.000	-1.159
	46	1.138	248.472	5.348	5.279	0.034	-0.599
	47	-7.364	200.073	0.160	0.192	0.055	12.621
	48	9.956	253.438	-0.257	-0.236	0.003	-14.456
	49	0.910	310.469	13.848	13.891	0.186	-0.258
	50	0.910	310.469	13.848	13.891	0.186	-0.258
	51	-9.517	189.704	0.216	0.267	0.052	16.039
	52	12.133	256.410	-0.306	-0.267	-0.013	-17.807
	53	1.790	118.416	-17.415	-17.392	-0.176	-1.708
18	54	0.826	327.698	17.326	17.392	0.21	
	37	-0.704	256.306	0.420	0.107	-0.01	
	38	-0.612	277.997	0.444	0.091	-0.01	
	39	-4.987	265.312	0.383	0.033	-0.01	
	40	3.547	281.864	0.469	0.134	-0.02	
	41	-0.189	261.252	-2.811	-3.215	-0.10	
	42	-1.079	286.060	3.647	3.370	0.07	
	43	-6.149	245.872	0.349	0.029	-0.01	
44	4.518	266.562	0.458	0.156	-0.01		
45	-0.153	240.798	-3.642	-4.031	-0.119	-0.301	



19	46	-1.264	271.808	4.430	4.201	0.094	0.632
	47	-19.149	226.353	0.197	-0.182	0.019	18.245
	48	17.889	320.966	0.682	0.371	-0.050	-18.065
	49	-1.956	326.302	9.587	9.917	0.150	1.190
	50	-1.956	326.302	9.587	9.917	0.150	1.190
	51	-23.853	197.173	0.117	-0.239	0.031	22.853
	52	22.446	315.440	0.724	0.452	-0.056	-22.534
	53	0.953	190.503	-11.014	-12.171	-0.219	-1.215
	54	-2.361	322.110	11.854	12.384	0.194	1.534
	37	-0.363	113.380	0.128	0.009	-0.015	0.061
	38	-0.346	122.972	0.089	-0.025	-0.018	0.024
	39	-3.126	133.622	0.002	-0.129	-0.029	2.815
	40	2.351	108.916	0.271	0.178	-0.018	-2.680
	41	-0.112	109.063	-2.753	-3.403	-0.088	-0.194
	42	-0.592	133.069	2.933	3.354	0.051	0.263
	43	-3.834	129.090	0.009	-0.130	-0.030	3.541
	44	3.012	98.208	0.346	0.254	-0.016	-3.328
	45	-0.066	98.392	-3.435	-4.222	-0.103	-0.220
	46	-0.666	128.399	3.673	4.224	0.070	0.351
	47	-12.163	192.310	-0.533	-0.748	0.011	12.238
20	48	11.465	49.798	0.727	0.712	-0.046	-12.176
	49	-1.045	172.100	9.499	11.589	0.117	0.693
	50	-1.045	172.100	9.499	11.589	0.117	0.693
	51	-15.130	202.451	-0.660	-0.904	0.021	15.320
	52	14.405	24.310	0.915	0.922	-0.052	-15.198
	53	0.507	49.573	-11.625	-14.499	-0.184	-0.765
	54	-1.233	177.188	11.880	14.517	0.153	0.888
	37	1.473	300.164	0.267	0.094	0.009	-0.923
	38	1.152	327.056	0.185	0.026	0.017	-0.858
	39	-1.003	316.561	0.213	0.050	0.009	2.447
	40	3.454	326.746	0.104	-0.043	0.014	-4.035
	41	1.140	331.044	-5.719	-4.956	-0.011	-0.792
	42	1.290	312.337	6.198	5.062	0.043	-0.943
	43	-1.302	293.769	0.281	0.107	0.002	3.224
	44	4.270	306.500	0.145	-0.009	0.007	-4.878
	45	1.377	311.872	-7.134	-6.150	-0.024	-0.825
	46	1.565	288.488	7.763	6.372	0.043	-1.014
	47	-7.373	291.958	0.507	0.299	0.036	12.565
	48	9.805	351.397	-0.104	-0.220	-0.006	-14.307
	49	1.499	284.090	19.857	16.672	0.162	-1.161
21	50	1.499	284.090	19.857	16.672	0.162	-1.161
	51	-9.264	263.015	0.648	0.418	0.035	15.872
	52	12.209	337.314	-0.115	-0.230	-0.018	-17.718
	53	1.119	347.148	-24.303	-20.696	-0.175	-0.560
	54	1.827	253.180	24.836	20.884	0.193	-1.286
	37	-0.904	358.684	-0.358	-0.276	-0.005	0.333
	38	-0.574	420.261	-0.455	-0.353	-0.007	0.127
	39	-5.317	400.170	-0.527	-0.416	-0.007	4.595
	40	3.772	415.482	-0.377	-0.285	-0.016	-4.030
	41	-0.731	411.556	-5.057	-4.291	-0.077	0.255
	42	-0.561	404.346	4.204	3.632	0.064	0.092
	43	-6.750	348.964	-0.472	-0.374	-0.005	5.866
	44	4.611	368.104	-0.285	-0.210	-0.011	-5.866
	45	-1.018	363.197	-6.135	-5.218	-0.091	-5.866
	46	-0.805	354.184	5.442	4.686	0.081	-5.866
	47	-18.972	364.841	-0.837	-0.690	0.021	-18.972
	48	17.693	451.050	-0.034	0.015	-0.031	17.693
	49	-0.310	393.068	13.401	11.737	0.141	-0.310
	50	-0.310	393.068	13.401	11.737	0.141	-0.310
	51	-23.820	304.803	-0.859	-0.716	0.031	-23.820
	52	22.012	412.564	0.144	0.164	-0.041	-22.168



22	53	-1.316	377.280	-17.654	-15.369	-0.191	0.724
	54	-0.492	340.087	16.938	14.817	0.182	-0.058
	37	-0.904	154.908	-0.163	-0.148	-0.012	0.369
	38	-1.011	175.253	-0.209	-0.189	-0.015	0.387
	39	-3.976	183.290	-0.434	-0.359	-0.012	3.352
	40	1.887	159.424	0.148	0.098	-0.013	-2.479
	41	-1.054	172.196	-4.811	-4.387	-0.063	0.445
	42	-0.932	170.186	4.426	4.038	0.036	0.329
	43	-4.638	170.040	-0.456	-0.370	-0.009	4.079
	44	2.691	140.208	0.271	0.201	-0.010	-3.210
23	45	-0.985	156.173	-5.927	-5.406	-0.073	0.445
	46	-0.832	153.661	5.619	5.126	0.051	0.301
	47	-12.671	239.482	-1.549	-1.253	0.011	12.480
	48	10.693	102.885	1.149	0.892	-0.039	-11.713
	49	-0.757	166.909	15.534	14.410	0.097	0.164
	50	-0.757	166.909	15.534	14.410	0.097	0.164
	51	-15.507	240.281	-1.849	-1.489	0.019	15.490
	52	13.698	69.535	1.523	1.193	-0.043	-14.752
	53	-1.195	160.251	-19.830	-18.387	-0.151	0.643
	54	-0.614	149.564	19.504	18.091	0.127	0.094
24	37	-0.530	125.388	0.176	-0.010	0.015	0.179
	38	-0.569	137.881	0.232	-0.006	0.015	0.167
	39	-2.804	146.951	0.719	0.158	0.017	2.703
	40	1.647	124.174	-0.167	-0.072	-0.035	-2.316
	41	-0.533	145.267	-2.582	-3.358	-0.037	0.293
	42	-0.583	125.465	3.032	3.353	0.072	0.037
	43	-3.333	139.848	0.797	0.197	0.016	3.346
	44	2.230	111.377	-0.310	-0.091	-0.047	-2.928
	45	-0.495	137.743	-3.328	-4.198	-0.050	0.334
	46	-0.558	112.990	3.689	4.190	0.085	0.014
25	47	-9.699	200.530	2.263	0.514	0.047	10.983
	48	8.577	70.234	-1.821	-0.528	-0.016	-10.644
	49	-0.683	93.197	9.582	11.581	0.137	-0.266
	50	-0.683	93.197	9.582	11.581	0.137	-0.266
	51	-11.953	206.823	2.728	0.641	0.054	13.696
	52	10.893	43.953	-2.377	-0.661	-0.024	-13.338
	53	-0.377	178.119	-11.526	-14.496	-0.137	0.723
	54	-0.683	72.656	11.877	14.475	0.167	-0.365
	37	0.518	212.052	-0.135	-0.139	-0.000	-0.553
	38	0.186	237.443	-0.017	-0.119	-0.004	-0.479
25	39	-1.990	227.754	-0.038	-0.116	0.013	2.701
	40	2.310	236.903	-0.106	-0.190	-0.020	-3.448
	41	-0.015	242.910	-4.297	-4.292	-0.003	-0.102
	42	0.532	221.841	4.149	4.022	-0.001	-0.903
	43	-2.285	206.288	-0.132	-0.131	0.020	3.441
	44	3.091	217.725	-0.216	-0.223	-0.021	-4.246
	45	0.184	225.233	-5.456	-5.350	0.001	-0.064
	46	0.868	198.897	5.102	5.042	0.002	-1.065
	47	-8.379	205.938	0.170	0.090	0.039	12.821
	48	8.884	258.792	-0.251	-0.336	-0.046	-13.808
25	49	1.034	188.228	13.417	13.457	0.126	-1.699
	50	1.034	188.228	13.417	13.457	0.126	-1.699
	51	-10.271	179.018	0.128	0.127	0.05	10.271
	52	11.308	245.085	-0.399	-0.406	-0.05	-11.308
	53	-0.459	267.223	-16.958	-17.114	-0.16	0.459
	54	1.495	156.880	16.687	16.835	0.16	-1.495
	37	0.105	290.725	-0.289	-0.275	-0.01	-0.105
	38	0.480	330.807	-0.220	-0.280	-0.01	-0.480
	39	-3.838	317.108	-0.273	-0.332	-0.00	3.838
	40	4.382	328.193	-0.228	-0.253	-0.02	-4.382
	41	0.068	333.146	-3.189	-3.426	-0.106	0.068



42	0.765	312.423	2.772	2.915	0.078	-0.810
43	-5.198	283.622	-0.338	-0.342	0.006	4.960
44	5.076	297.478	-0.282	-0.242	-0.018	-5.009
45	-0.316	303.669	-3.983	-4.208	-0.125	0.353
46	0.556	277.765	3.467	3.717	0.105	-0.744
47	-17.115	291.328	-0.379	-0.508	0.027	17.126
48	17.925	354.254	-0.089	-0.050	-0.057	-17.844
49	1.308	278.451	8.162	9.186	0.154	-1.622
50	1.308	278.451	8.162	9.186	0.154	-1.622
51	-21.794	251.396	-0.470	-0.562	0.041	21.675
52	22.005	330.054	-0.108	0.012	-0.063	-22.036
53	-1.023	346.151	-10.784	-12.107	-0.223	1.398
54	1.234	235.300	10.206	11.557	0.201	-1.760

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

212. START CONCRETE DESIGN
213. CODE INDIAN
214. CLEAR 0.025 MEMB 1 TO 15 17 TO 22 41 TO 73 75 TO 102 123 126 129 134 TO 137
215. CLEAR 0.04 MEMB 23 TO 40 103 TO 122 124 125 127 128 130 TO 133
216. ENSH 1 MEMB 1 TO 15 17 TO 22 41 TO 73 75 TO 102 123 126 129 134 TO 137
217. FC 25000 ALL
218. FYMAIN 500000 ALL
219. FYSEC 415000 MEMB 1 TO 15 17 TO 22 41 TO 73 75 TO 102 123 126 129 134 TO 137
220. MAXMAIN 16 ALL
221. MAXSEC 12 MEMB 1 TO 15 17 TO 22 41 TO 73 75 TO 102 123 126 129 134 TO 137
222. MINMAIN 10 ALL
223. MINSEC 8 MEMB 1 TO 15 17 TO 22 41 TO 73 75 TO 102 123 126 129 134 TO 137
224. TORSION 1 MEMB 1 TO 15 17 TO 22 41 TO 73 75 TO 102 123 126 129 134 TO 137
225. TRACK 1 ALL
226. DESIGN BEAM 1 TO 15 17 TO 22 41 TO 73 75 TO 102 123 126 129 134 TO 137

BEAM & COLUM DESIGN

BEAM NO. 1 DESIGN RESULTS

M25

Fe500 (Main)

Fe415 (Sec.)

LENGTH: 3263.0 mm

SIZE: 250.0 mm X 300.0 mm

COVER: 25.0 mm

DESIGN LOAD SUMMARY (KN MET)

SECTION (in mm)	FLEXURE (Maxm. Sagging/Hogging moments)				SHEAR		
	P	MZ	MX	Load Case	VY	MX	Load Case
0.0	0.00	34.17	0.00	23	73.55	0.00	34
	0.00	-66.95	0.00	34			
271.9	0.00	32.35	0.00	23	68.1		4
	0.00	-47.69	0.00	34			
543.8	0.00	29.58	0.00	23	61.6		4
	0.00	-30.01	0.00	34			
815.8	0.00	28.69	0.00	35	55.2		4
	0.00	-17.00	0.00	22			
1087.7	0.00	22.41	0.00	15	48.6		4
	0.00	-8.68	0.00	3			
1359.6	0.00	21.38	0.00	35	39.69	0.00	34

		0.00	-3.11	0.00	3			
1631.5		0.00	21.90	0.00	34		32.14	0.00 34
		0.00	-2.46	0.00	4			
1903.4		0.00	29.53	0.00	34		-36.91	0.00 35
		0.00	-8.04	0.00	4			
2175.3		0.00	34.96	0.00	34		-45.83	0.00 35
		0.00	-11.69	0.00	23			
2447.2		0.00	38.35	0.00	34		-52.48	0.00 35
		0.00	-23.03	0.00	23			
2719.2		0.00	39.90	0.00	34		-58.83	0.00 35
		0.00	-35.48	0.00	23			
2991.1		0.00	42.02	0.00	22		-65.33	0.00 35
		0.00	-51.30	0.00	35			
3263.0		0.00	44.29	0.00	22		-70.77	0.00 35
		0.00	-69.80	0.00	35			

SUMMARY OF REINF. AREA (Sq.mm)

SECTION	0.0 mm	815.8 mm	1631.5 mm	2447.2 mm	3263.0 mm
TOP REINF.	721.13 (Sq. mm)	151.66 (Sq. mm)	114.75 (Sq. mm)	209.23 (Sq. mm)	749.77 (Sq. mm)
BOTTOM REINF.	323.46 (Sq. mm)	266.54 (Sq. mm)	199.12 (Sq. mm)	368.54 (Sq. mm)	435.37 (Sq. mm)

SUMMARY OF PROVIDED REINF. AREA

SECTION	0.0 mm	815.8 mm	1631.5 mm	2447.2 mm	3263.0 mm
TOP REINF.	10-10 $\bar{1}$ 2 layer(s)	3-10 $\bar{1}$ 1 layer(s)	3-10 $\bar{1}$ 1 layer(s)	3-10 $\bar{1}$ 1 layer(s)	10-10 $\bar{1}$ 2 layer(s)
BOTTOM REINF.	3-12 $\bar{1}$ 1 layer(s)	3-12 $\bar{1}$ 1 layer(s)	3-12 $\bar{1}$ 1 layer(s)	4-12 $\bar{1}$ 1 layer(s)	4-12 $\bar{1}$ 1 layer(s)
SHEAR REINF.	2 legged 8 $\bar{1}$ @ 195 mm c/c	2 legged 8 $\bar{1}$ @ 200 mm c/c	2 legged 8 $\bar{1}$ @ 200 mm c/c	2 legged 8 $\bar{1}$ @ 200 mm c/c	2 legged 8 $\bar{1}$ @ 195 mm c/c

SHEAR DESIGN RESULTS AT DISTANCE d (EFFECTIVE DEPTH) FROM FACE OF THE SUPPORT

SHEAR DESIGN RESULTS AT 385.0 mm AWAY FROM START SUPPORT

VY = 65.20 MX = 0.00 LD= 34
Provide 2 Legged 8 $\bar{1}$ @ 200 mm c/c

SHEAR DESIGN RESULTS AT 385.0 mm AWAY FROM END SUPPORT

VY = -62.97 MX = 0.00 LD= 35
Provide 2 Legged 8 $\bar{1}$ @ 195 mm c/c



*****END OF BEAM DESIGN RESULTS*****

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B E A M N O . 1 7 D E S I G N R E S U L T S

M25

Fe500 (Main)

Fe415 (Sec.)

LENGTH: 3400.0 mm

SIZE: 250.0 mm X 300.0 mm

COVER: 25.0 mm

DESIGN LOAD SUMMARY (KN MET)

SECTION (in mm)	FLEXURE (Maxm. Sagging/Hogging moments)				SHEAR		
	P	MZ	MX	Load Case	VY	MX	Load Case
0.0	0.00	43.68	0.00	33	11.65	0.00	35
	0.00	-10.12	0.00	1			
283.3	0.00	41.68	0.00	33	7.71	0.00	35
	0.00	-6.92	0.00	1			
566.7	0.00	38.86	0.00	11	2.71	0.00	35
	0.00	-0.01	0.00	4			
850.0	0.00	32.94	0.00	35	-2.14	0.00	35
	0.00	-0.05	0.00	4			
1133.3	0.00	31.50	0.00	35	-8.96	0.00	35
	0.00	-0.09	0.00	4			
1416.7	0.00	28.25	0.00	35	-14.71	0.00	35
	0.00	-0.13	0.00	4			
1700.0	0.00	37.02	0.00	32	-21.59	0.00	35
	0.00	-9.09	0.00	2			
1983.3	0.00	34.77	0.00	32	-28.46	0.00	35
	0.00	-8.63	0.00	21			
2266.7	0.00	30.65	0.00	32	-34.21	0.00	35
	0.00	-18.79	0.00	21			
2550.0	0.00	26.05	0.00	20	-41.03	0.00	35
	0.00	-31.35	0.00	33			
2833.3	0.00	23.50	0.00	20	-45.88	0.00	35
	0.00	-48.41	0.00	33			
3116.7	0.00	25.10	0.00	1	-50.88	0.00	35
	0.00	-66.88	0.00	33			
3400.0	0.00	28.30	0.00	1	-54.82	0.00	35
	0.00	-86.59	0.00	33			

DXF IMPORT OF STR.DXF

-- PAGE NO. 26

SUMMARY OF REINF. AREA (Sq.mm)

SECTION	0.0 mm	850.0 mm	1700.0 mm	2550.0 mm	3400.0 mm
TOP	114.75	114.75	114.75	292.53	926.71
REINF.	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)
BOTTOM	428.30	310.51	354.05	239.99	341.89
REINF.	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)

SUMMARY OF PROVIDED REINF. AREA

SECTION	0.0 mm	850.0 mm	1700.0 mm	2550.0 mm
TOP	3-10 ϕ	3-10 ϕ	3-10 ϕ	4-10 ϕ
REINF.	1 layer(s)	1 layer(s)	1 layer(s)	1 layer(s)



BOTTOM	4-12i	3-12i	4-12i	3-12i	4-12i
REINF.	1 layer(s)	1 layer(s)	1 layer(s)	1 layer(s)	1 layer(s)
SHEAR	2 legged 8i	2 legged 8i	2 legged 8i	2 legged 8i	2 legged 8i
REINF.	@ 200 mm c/c	@ 200 mm c/c	@ 200 mm c/c	@ 200 mm c/c	@ 190 mm c/c

SHEAR DESIGN RESULTS AT DISTANCE d (EFFECTIVE DEPTH) FROM FACE OF THE SUPPORT

SHEAR DESIGN RESULTS AT 407.5 mm AWAY FROM END SUPPORT

VY = -49.05 MX = 0.00 LD= 35

Provide 2 Legged 8i @ 195 mm c/c

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227. DESIGN COLUMN 23 TO 40 103 TO 122 124 125 127 128 130 TO 133

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C O L U M N N O. 38 D E S I G N R E S U L T S

M25

Fe500 (Main)

Fe415 (Sec.)

LENGTH: 3050.0 mm CROSS SECTION: 250.0 mm X 300.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 21 SHORT(Z) /BRACED LONG(Y)

DESIGN FORCES (KNS-MET)

DESIGN AXIAL FORCE (Pu)	:	16.17	
		About Z	About Y
INITIAL MOMENTS	:	7.02	11.27
MOMENTS DUE TO MINIMUM ECC.	:	0.32	0.32
SLENDERNESS RATIOS	:	10.17	12.20
MOMENTS DUE TO SLENDERNESS EFFECT	:	0.00	0.30
MOMENT REDUCTION FACTORS	:	1.00	1.00
ADDITION MOMENTS (Maz and May)	:	0.00	0.30
TOTAL DESIGN MOMENTS	:	7.02	28.18

REQD. STEEL AREA : 888.66 Sq.mm.

REQD. CONCRETE AREA: 74111.34 Sq.mm.

MAIN REINFORCEMENT : Provide 8 - 12 dia. (1.21%, 904.78 Sq.mm.)
(Equally distributed)

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 1167.00 Muz1 : 42.84 Muy1 : 33.85

INTERACTION RATIO: 1.00 (as per Cl. 39.6, IS456:2000)

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 21

Puz : 1172.86 Muz : 44.72 Muy : 35.17 IR: 0

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C O L U M N N O . 111 D E S I G N R E S U L T S

M25

Fe500 (Main)

Fe415 (Sec.)

LENGTH: 3050.0 mm CROSS SECTION: 250.0 mm X 300.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 32 SHORT (Z) /BRACED LONG (Y)

DESIGN FORCES (KNS-MET)

DESIGN AXIAL FORCE (Pu)	:	306.72	
		About Z	About Y
INITIAL MOMENTS	:	71.65	2.13
MOMENTS DUE TO MINIMUM ECC.	:	6.13	6.13
SLENDERNESS RATIOS	:	10.17	12.20
MOMENTS DUE TO SLENDERNESS EFFECT	:	0.00	5.71
MOMENT REDUCTION FACTORS	:	1.00	1.00
ADDITION MOMENTS (Maz and May)	:	0.00	5.71
TOTAL DESIGN MOMENTS	:	71.65	11.84

REQD. STEEL AREA : 2046.62 Sq.mm.

REQD. CONCRETE AREA: 72953.38 Sq.mm.

MAIN REINFORCEMENT : Provide 12 - 16 dia. (3.22%, 2412.74 Sq.mm.)
(Equally distributed)

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 250 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 1588.21 Muz1 : 87.28 Muy1 : 66.57

INTERACTION RATIO: 1.00 (as per Cl. 39.6, IS456:2000)

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 32

Puz : 1721.39 Muz : 97.53 Muy : 73.32 IR: 0.90

*****END OF COLUMN DESIGN RESULTS*****

TOTAL VOLUME OF CONCRETE = 23.5 CU.METER

BAR DIA (in mm)	WEIGHT (in New)
8	4907
10	5853
12	6794
16	6944
*** TOTAL=	24499

404. CONCRETE TAKE
405. END CONCRETE DESIGN
486. FINISH

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



Design Module = Two-Way Rectangular Slab**Country Code = Indian****Job Name = S1****Input Pages Report****Geometry Data**

Item	Value	Unit
Length along shorter direction	4.45	m
Length along longer direction	5	m
Panel Type	Two adjacent edges discontinuous	
Criteria for Depth	User-Defined Depth	
User Defined Depth	0.125	m

Material Data

Item	Value	Unit
Grade of Concrete	M20	
Grade of Steel	Fe415	
Unit weight of concrete	2500	kg/m3

Loads

Item	Value	Unit
Include self-weight?	Yes	
Superimposed dead load	4	kN/m2
Live load	2	kN/m2
Other load	1	kN/m2

Loads Combinations

LOAD COMBINATION FACTOR = 1.5

Reinforcement Data

Item	Value	Unit
Barsize along shorter dirn.(mm)	8	
Barsize along longer dirn.(mm)	8	
Clear Cover	0.015	m
Shear Consideration	Increase Steel Percentage	
Steel % along X-dirn. at top	0.12	
Steel % along Y-dirn. at top	0.12	

Calculation Sheet Report**Design Data**

Clear Length of shorter span of the slab , L_x = 4450.000 mm
Clear Length of longer span of the slab , L_y = 5000.000 mm
Panel Type is Two adjacent Edge Discontinuous
Uniformly Distributed Live Load , W_l = 0.00200 N/sq. mm
Characteristic Strength of concrete , F_{ck} = 20.000 N/sq. mm
Characteristic Strength of steel , F_y = 415.000 N/sq. mm
Unit Weight Of Concrete, g_c = 0.0000245 N/cubic mm
Bar size for reinf. in shorter Dir. , f_x = 8.000 mm
Bar size for reinf. in longer Dir. , f_y = 8.000 mm



Clr. Cover to the outermost Reinf. Bar of the slab , $d' = 15.000$ mm

Calculation Of Reinforcement

Overall Depth of the Slab, $D = 125.000$ mm

Dead Load Of Slab , $W_d = D * g = 0.00306$ N/sq. mm

Effective Depth Of The Slab , $d = D - d' - f_y/2 = 106.000$ mm

Effective Thickness Of the Slab along X-Dir , $d_x = d = 106.000$ mm

Effective Thickness Of the Slab along Y-Dir , $d_y = d - f_y/2 - f_y/2 = 98.000$ mm

Effective Length of shorter span of the slab , $L_{ex} = L_x + d = 4556.000$ mm

Effective Length of longer span of the slab , $L_{ey} = L_y + d_y = 5098.000$ mm

Ratio of longer to shorter span , $r = L_y/L_x = 1.119$

Max. Factored Load among all comb. , $W = 0.01059$ N/sq. mm

Moment Co-efficient in shorter dir. at span , $a_x = 0.04095$

Moment Co-efficient in shorter dir. at edge , $a_{x'} = 0.05433$

Moment Co-efficient in longer dir. at span , $a_y = 0.03500$

Moment Co-efficient in longer dir. at edge , $a_{y'} = 0.04700$

Factored Moment at ,

Span in shorter direction , $M_{ux} = a_x * W * L_x^2 = 8998.79771$ Nmm

Span in longer direction , $M_{uy} = a_y * W * L_y^2 = 7691.61815$ Nmm

Support in shorter direction , $M'_{ux} = a_{x'} * W * L_x^2 = 11939.03523$ Nmm

Support in longer direction , $M'_{uy} = a_{y'} * W * L_y^2 = 10328.74437$ Nmm

Width of the Slab , $b = 1$ mm

Limiting Moment of resistance of section

Along X-Direction , $M_{u,lim-x} = 31003.16170$ Nmm

Along Y-Direction , $M_{u,lim-y} = 26500.03248$ Nmm

Area Of steel reinf. in X-Dir. at span bottom , $A_{sx} = 0.24708$ sq. mm

Area Of steel reinf. in Y-Dir. at span bottom , $A_{sy} = 0.22843$ sq. mm

Area Of steel reinf. in X-Dir. at support top , $A'_{sx} = 0.33376$ sq. mm

Area Of steel reinf. in Y-Dir. at support top , $A'_{sy} = 0.31260$ sq. mm

Minimum Area Of steel reinf. in X-Dir. , $A_{sx-min} = 0.15000$ sq. mm

Minimum Area Of steel reinf. in Y-Dir. , $A_{sy-min} = 0.15000$ sq. mm

Cross-sectional Area Of steel in X-Dir. , $Af_x = p * f_y/4 = 50.26544$ sq. mm

Cross-sectional Area Of steel in Y-Dir. , $Af_y = p * f_y/4 = 50.26544$ sq. mm

Spacing in shorter Dir. at span , $S_x = 200.000$ mm

Spacing in longer Dir. at span , $S_y = 220.000$ mm

Maximum Spacing in shorter Dir. , $S_{x-max} = 310.000$ mm

Maximum Spacing in longer Dir. , $S_{y-max} = 290.000$ mm

Spacing in shorter direction at edge , $S'_{x'} = 150.000$ mm

Spacing in longer direction at edge , $S'_{y'} = 160.000$ mm

Calculation Of Shear

Factored shear force in shorter direction , $V_{ux} = 17.30500$ N

Factored shear force in longer direction , $V_{uy} = 16.07847$ N

Shear stress developed at shorter span , $t_{cx,dev} = V_{ux}/(b + d_x) = 0.16325$ MPa

Shear stress developed at longer span , $t_{cy,dev} = V_{uy}/(b + d_y) = 0.16407$ MPa

Percentage of steel reinf. in shorter dir. at top , $P'_{tx} = 0.31487$

Permissible shear stress at the section along Y-axis , $t_{cx} = 0.39603$ MPa

Percentage of steel reinf. in longer dir. at top , $P'_{ty} = 0.31898$

Permissible shear stress at the section along X-axis , $t_{cy} = 0.39819$ MPa

STAIR CASE DESIGN : STAIR

Type of Stair Case: Single Flight

Calculation of Stair Geometry:



Floor to Floor Height = 3.175 m
 Total Length of Stair Hall = 5.0 m
 Total Width of Stair Hall = 3.0 m
 Depth of waist slab of all flight = 0.2 m
 Height of single riser of first flight = 0.132 m
 Tread Width of first flight = 0.25 m
 Width of waist slab of first flight = 1.5 m
 Unit Weight of Concrete = 24.47 kN/m³
 Unit Weight of Floor Finish = 23.49 kN/m³
 Thickness of Floor Finish = 0.03 m
 Total Live Load Acting on StairCase = 5.00 kN/m²
 Load Combination Factor = 1.50
 Calculation of Flight Load for Flight1:
 Area of Step Section = 0.0165 m²
 Area of Inclined Slab = 0.09 m²
 Area of Floor Finish = 0.01 m²
 Total Area = 0.117 m²
 Dead Load of Step Section = 3.00 kN/m
 Dead Load per m² on plan = 11.46 kN/m²
 Total Load(DL + LL) = 16.46 kN/m²
 Load on Flight taking 1m width of slab = 24.70 kN/m
 Load on Landing = 19.57 kN/m
 Calculation of Moments and Shear for Flight1
 Maximum Sagging Moment = 91.35 kN-m
 Maximum Hogging Moment at Start Landing = 0.00 kN-m
 Maximum Hogging Moment at End Landing = 0.00 kN-m
 Design Moment for Flight1 = 91.35 kN-m
 Calculation of Reinforcement due to Design Moment for Flight1
 Effective Depth of Waist Slab = 174.00 mm
 Value of M_u/bd^2 = 0.92 N/mm²
 Limiting value of M_u/bd^2 = 2.16 N/mm²
 Reinforcement Area required in Waist Slab at bottom = 538.94 mm²
 Spacing required in Waist Slab at bottom = 213.22 mm
 Spacing provided in Waist Slab at bottom = 210.00 mm
 Reinforcement Area provided in Waist Slab at bottom = 565.16 mm²
 Steel percentage provided in Waist Slab at bottom = 0.32
 Calculation of Distribution Reinforcement
 Minimum Percentage of Distribution Reinforcement = 0.12
 Distribution Reinforcement Area required = 360.00 mm²
 Spacing of Distribution Reinforcement required = 314.16 mm
 Spacing of Distribution Reinforcement provided = 300.00 mm
 Distribution Reinforcement Area provided = 376.99 mm²
 Steel percentage provided for Distribution Reinforcement = 0.13



