```
**************************************************
*                                                *
*           STAAD.Pro V8i SELECTseries6          *
*           Version  20.07.11.90                 *
*           Proprietary Program of               *
*           Bentley Systems, Inc.                *
*           Date=    AUG 23, 2021                *
*           Time=    15:37:26                    *
*                                                *
*      USER ID:                                  *
**************************************************
```

```
     1. STAAD SPACE
INPUT FILE: D:\SEM 7\CE402 Design Project\Building 1\Building 1.STD
     2. START JOB INFORMATION
     3. ENGINEER DATE 16-AUG-21
     4. END JOB INFORMATION
     5. INPUT WIDTH 79
     6. UNIT METER KN
     7. JOINT COORDINATES
     8. 1 0 0 0; 2 3.96241 0 0; 3 7.62002 0 0; 4 10.973 0 0; 5 0 0 -4.57201
     9. 6 3.96201 0 -4.57201; 7 7.62002 0 -4.57201; 8 10.973 0 -4.57201
    10. 9 7.62002 0 -3.04801; 10 10.973 0 -3.04801; 11 0 0 -6.70561
    11. 12 3.96201 0 -6.70561; 13 7.62002 0 -6.70561; 14 10.973 0 -6.70561
    12. 15 0 0 -10.3632; 16 3.96201 0 -10.3632; 17 7.62002 0 -10.3632
    13. 18 10.973 0 -10.3632; 19 0 3.00001 0; 20 3.96241 3.00001 0
    14. 21 7.62002 3.00001 0; 22 10.973 3.00001 0; 23 0 3.00001 -4.57201
    15. 24 3.96201 3.00001 -4.57201; 25 7.62002 3.00001 -4.57201
    16. 26 10.973 3.00001 -4.57201; 27 7.62002 3.00001 -3.04801
    17. 28 10.973 3.00001 -3.04801; 29 0 3.00001 -6.70561; 30 3.96201 3.00001 -6.70561
    18. 31 7.62002 3.00001 -6.70561; 32 10.973 3.00001 -6.70561; 33 0 3.00001 -10.3632
    19. 34 3.96201 3.00001 -10.3632; 35 7.62002 3.00001 -10.3632
    20. 36 10.973 3.00001 -10.3632; 37 0 6.00001 0; 38 3.96241 6.00001 0
    21. 39 7.62002 6.00001 0; 40 10.973 6.00001 0; 41 0 6.00001 -4.57201
    22. 42 3.96201 6.00001 -4.57201; 43 7.62002 6.00001 -4.57201
    23. 44 10.973 6.00001 -4.57201; 45 7.62002 6.00001 -3.04801
    24. 46 10.973 6.00001 -3.04801; 47 0 6.00001 -6.70561; 48 3.96201 6.00001 -6.70561
    25. 49 7.62002 6.00001 -6.70561; 50 10.973 6.00001 -6.70561; 51 0 6.00001 -10.3632
    26. 52 3.96201 6.00001 -10.3632; 53 7.62002 6.00001 -10.3632
    27. 54 10.973 6.00001 -10.3632; 55 0 9.00002 0; 56 3.96241 9.00002 0
    28. 57 7.62002 9.00002 0; 58 10.973 9.00002 0; 59 0 9.00002 -4.57201
    29. 60 3.96201 9.00002 -4.57201; 61 7.62002 9.00002 -4.57201
    30. 62 10.973 9.00002 -4.57201; 63 7.62002 9.00002 -3.04801
    31. 64 10.973 9.00002 -3.04801; 65 0 9.00002 -6.70561; 66 3.96201 9.00002 -6.70561
    32. 67 7.62002 9.00002 -6.70561; 68 10.973 9.00002 -6.70561; 69 0 9.00002 -10.3632
    33. 70 3.96201 9.00002 -10.3632; 71 7.62002 9.00002 -10.3632
    34. 72 10.973 9.00002 -10.3632; 73 0 -2 0; 74 3.96241 -2 0; 75 7.62002 -2 0
    35. 76 10.973 -2 0; 77 0 -2 -4.57201; 78 3.96201 -2 -4.57201
    36. 79 7.62002 -2 -4.57201; 80 10.973 -2 -4.57201; 81 7.62002 -2 -3.04801
    37. 82 10.973 -2 -3.04801; 83 0 -2 -6.70561; 84 3.96201 -2 -6.70561
    38. 85 7.62002 -2 -6.70561; 86 10.973 -2 -6.70561; 87 0 -2 -10.3632
```

```
39. 88 3.96201 -2 -10.3632; 89 7.62002 -2 -10.3632; 90 10.973 -2 -10.3632
40. 91 7.62002 12 -4.57201; 92 10.973 12 -4.57201; 93 7.62002 12 -6.70561
41. 94 10.973 12 -6.70561
42. MEMBER INCIDENCES
43. 1 1 2; 2 2 3; 3 3 4; 4 4 10; 5 10 8; 6 8 7; 7 7 6; 8 6 5; 9 8 14; 10 14 13
44. 11 13 12; 12 12 11; 13 14 18; 14 18 17; 15 17 16; 16 16 15; 17 15 11; 18 16 12
45. 19 17 13; 20 11 5; 21 12 6; 22 13 7; 23 7 9; 24 9 3; 25 9 10; 26 6 2; 27 5 1
46. 42 1 19; 43 2 20; 44 3 21; 45 4 22; 46 5 23; 47 6 24; 48 7 25; 49 8 26
47. 50 9 27; 51 10 28; 52 11 29; 53 12 30; 54 13 31; 55 14 32; 56 15 33; 57 16 34
48. 58 17 35; 59 18 36; 60 19 20; 61 20 21; 62 21 22; 63 22 28; 64 28 26; 65 26 25
49. 66 25 24; 67 24 23; 68 26 32; 69 32 31; 70 31 30; 71 30 29; 72 32 36; 73 36 35
50. 74 35 34; 75 34 33; 76 33 29; 77 34 30; 78 35 31; 79 29 23; 80 30 24; 81 31 25
51. 82 25 27; 83 27 21; 84 27 28; 85 24 20; 86 23 19; 87 19 37; 88 20 38; 89 21 39
52. 90 22 40; 91 23 41; 92 24 42; 93 25 43; 94 26 44; 95 27 45; 96 28 46; 97 29 47
53. 98 30 48; 99 31 49; 100 32 50; 101 33 51; 102 34 52; 103 35 53; 104 36 54
54. 105 37 38; 106 38 39; 107 39 40; 108 40 46; 109 46 44; 110 44 43; 111 43 42
55. 112 42 41; 113 44 50; 114 50 49; 115 49 48; 116 48 47; 117 50 54; 118 54 53
56. 119 53 52; 120 52 51; 121 51 47; 122 52 48; 123 53 49; 124 47 41; 125 48 42
57. 126 49 43; 127 43 45; 128 45 39; 129 45 46; 130 42 38; 131 41 37; 132 37 55
58. 133 38 56; 134 39 57; 135 40 58; 136 41 59; 137 42 60; 138 43 61; 139 44 62
59. 140 45 63; 141 46 64; 142 47 65; 143 48 66; 144 49 67; 145 50 68; 146 51 69
60. 147 52 70; 148 53 71; 149 54 72; 150 55 56; 151 56 57; 152 57 58; 153 58 64
61. 154 64 62; 155 62 61; 156 61 60; 157 60 59; 158 62 68; 159 68 67; 160 67 66
62. 161 66 65; 162 68 72; 163 72 71; 164 71 70; 165 70 69; 166 69 65; 167 70 66
63. 168 71 67; 169 65 59; 170 66 60; 171 67 61; 172 61 63; 173 63 57; 174 63 64
64. 175 60 56; 176 59 55; 177 1 73; 178 2 74; 179 3 75; 180 4 76; 181 5 77
65. 182 6 78; 183 7 79; 184 8 80; 185 9 81; 186 10 82; 187 11 83; 188 12 84
66. 189 13 85; 190 14 86; 191 15 87; 192 16 88; 193 17 89; 194 18 90; 195 61 91
67. 196 62 92; 197 67 93; 198 68 94; 199 92 91; 200 92 94; 201 94 93; 202 93 91
68. ELEMENT INCIDENCES SHELL
69. 28 15 16 12 11; 29 16 17 13 12; 30 17 18 14 13; 31 11 12 6 5; 32 12 13 7 6
70. 33 13 14 8 7; 34 5 6 2 1; 35 6 7 3 2; 36 7 8 10 9; 37 9 10 4 3; 38 15 11 12 16
71. 39 5 1 2 6; 40 2 3 7 6; 41 11 5 6 12; 203 33 34 30 29; 204 34 35 31 30
72. 205 35 36 32 31; 206 29 30 24 23; 207 30 31 25 24; 208 31 32 26 25
73. 209 23 24 20 19; 210 24 25 21 20; 211 25 26 28 27; 212 27 28 22 21
74. 213 51 52 48 47; 214 52 53 49 48; 215 53 54 50 49; 216 47 48 42 41
75. 217 48 49 43 42; 218 49 50 44 43; 219 41 42 38 37; 220 42 43 39 38
76. 221 43 44 46 45; 222 45 46 40 39; 223 69 70 66 65; 224 70 71 67 66
77. 225 71 72 68 67; 226 65 66 60 59; 227 66 67 61 60; 228 67 68 62 61
78. 229 59 60 56 55; 230 60 61 57 56; 231 61 62 64 63; 232 63 64 58 57
79. 233 93 94 92 91
80. ELEMENT PROPERTY
81. 28 TO 41 203 TO 233 THICKNESS 0.1
82. DEFINE MATERIAL START
83. ISOTROPIC CONCRETE
84. E 2.17184E+007
85. POISSON 0.17
86. DENSITY 23.6158
87. ALPHA 5E-006
88. DAMP 0.05
89. TYPE CONCRETE
90. STRENGTH FCU 27578.9
91. END DEFINE MATERIAL
92. MEMBER PROPERTY AMERICAN
93. 42 TO 59 87 TO 104 132 TO 149 177 TO 198 PRIS YD 0.4 ZD 0.4
94. 1 TO 27 60 TO 86 105 TO 131 150 TO 176 199 TO 202 PRIS YD 0.4 ZD 0.25
```

```
    95. CONSTANTS
    96. MATERIAL CONCRETE ALL
    97. SUPPORTS
    98. 73 TO 90 FIXED
    99. MEMBER OFFSET
   100. 1 TO 27 60 TO 86 105 TO 131 150 TO 176 199 TO 202 START 0 -0.15 0
   101. 1 TO 27 60 TO 86 105 TO 131 150 TO 176 199 TO 202 END 0 -0.15 0
   102. 132 TO 149 195 TO 198 END 0 0.05 0
   103. CUT OFF MODE SHAPE 10
   104. DEFINE 1893 LOAD
   **WARNING- ELEMENTS      34 _     39 ARE BETWEEN THE SAME JOINTS.
   **WARNING- ELEMENTS      35 _     40 ARE BETWEEN THE SAME JOINTS.
   **WARNING- ELEMENTS      31 _     41 ARE BETWEEN THE SAME JOINTS.
   **WARNING- ELEMENTS      38 _     28 ARE BETWEEN THE SAME JOINTS.
   105. ZONE 0.36 RF 3 I 1 SS 2 ST 1 DM 0.05
   106. MEMBER WEIGHT
   107. 1 TO 5 9 13 TO 17 20 27 60 62 TO 64 68 72 TO 76 79 86 105 107 TO 109 113 117 -
   108. 118 TO 121 124 131 158 UNI 13.208
   109. 6 8 10 12 18 19 21 TO 26 65 67 69 71 77 78 80 TO 85 110 112 114 116 122 123 -
   110. 125 TO 130 155 159 171 UNI 6.604
   111. FLOOR WEIGHT
**NOTE** about Floor/OneWay Loads/Weights.
   Please note that depending on the shape of the floor you may
   have to break up the FLOOR/ONEWAY LOAD into multiple commands.
   For details please refer to Technical Reference Manual
   Section 5.32.4.2 Note d and/or "5.32.4.3 Note f.

   112. YRANGE 2 8 FLOAD 1.5
   113. LOAD 1 LOADTYPE DEAD  TITLE DL
   114. SELFWEIGHT X 1
   115. SELFWEIGHT Y 1
   116. SELFWEIGHT Z 1
   117. FLOOR LOAD
   118. YRANGE 2 10 FLOAD 3 GX
   119. YRANGE 2 10 FLOAD 3 GY
   120. YRANGE 2 10 FLOAD 3 GZ
   121. MODAL CALCULATION REQUESTED
   122. SPECTRUM CQC 1893 X 0.06 Z 0.06 ACC DAMP 0.05
   123. SOIL TYPE 2
   124. MEMBER LOAD
   125. 1 TO 5 9 13 TO 17 20 27 60 62 TO 64 68 72 TO 76 79 86 105 107 TO 109 113 117 -
   126. 118 TO 121 124 131 158 UNI GX 13.208
   127. 1 TO 5 9 13 TO 17 20 27 60 62 TO 64 68 72 TO 76 79 86 105 107 TO 109 113 117 -
   128. 118 TO 121 124 131 158 UNI GY 13.208
   129. 1 TO 5 9 13 TO 17 20 27 60 62 TO 64 68 72 TO 76 79 86 105 107 TO 109 113 117 -
   130. 118 TO 121 124 131 158 UNI GZ 13.208
   131. 6 8 10 12 18 19 21 TO 26 65 67 69 71 77 78 80 TO 85 110 112 114 116 122 123 -
   132. 125 TO 130 155 159 171 UNI GX 6.604
   133. 6 8 10 12 18 19 21 TO 26 65 67 69 71 77 78 80 TO 85 110 112 114 116 122 123 -
   134. 125 TO 130 155 159 171 UNI GY 6.604
   135. 6 8 10 12 18 19 21 TO 26 65 67 69 71 77 78 80 TO 85 110 112 114 116 122 123 -
   136. 125 TO 130 155 159 171 UNI GZ 6.604
   137. PERFORM ANALYSIS
```

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

NUMBER OF JOINTS 94 NUMBER OF MEMBERS 188
NUMBER OF PLATES 45 NUMBER OF SOLIDS 0
NUMBER OF SURFACES 0 NUMBER OF SUPPORTS 18

SOLVER USED IS THE OUT-OF-CORE BASIC SOLVER

ORIGINAL/FINAL BAND-WIDTH= 72/ 26/ 138 DOF
TOTAL PRIMARY LOAD CASES = 1, TOTAL DEGREES OF FREEDOM = 456
TOTAL LOAD COMBINATION CASES = 0 SO FAR.
SIZE OF STIFFNESS MATRIX = 63 DOUBLE KILO-WORDS
REQRD/AVAIL. DISK SPACE = 13.6/ 94907.9 MB

***NOTE: MASSES DEFINED UNDER LOAD# 1 WILL FORM
THE FINAL MASS MATRIX FOR DYNAMIC ANALYSIS.

EIGEN METHOD : SUBSPACE

NUMBER OF MODES REQUESTED = 10
NUMBER OF EXISTING MASSES IN THE MODEL = 228
NUMBER OF MODES THAT WILL BE USED = 10

CALCULATED FREQUENCIES FOR LOAD CASE 1

MODE	FREQUENCY(CYCLES/SEC)	PERIOD(SEC)	ACCURACY
1	1.918	0.52145	9.788E-16
2	1.997	0.50070	9.024E-16
3	2.164	0.46204	0.000E+00
4	5.996	0.16678	1.486E-11
5	6.241	0.16023	9.756E-12
6	6.666	0.15002	8.898E-11
7	10.126	0.09876	5.036E-08
8	10.562	0.09468	7.136E-08
9	11.037	0.09060	9.025E-07
10	12.806	0.07809	2.916E-07

The following Frequencies are estimates that were calculated. These are for information only and will not be used. Remaining values are either above the cut off mode/freq values or are of low accuracy. To use these frequencies, rerun with a higher cutoff mode (or mode + freq) value.

CALCULATED FREQUENCIES FOR LOAD CASE 1

MODE	FREQUENCY(CYCLES/SEC)	PERIOD(SEC)	ACCURACY
11	13.532	0.07390	9.246E-05

RESPONSE LOAD CASE 1

MODE	MODAL WEIGHT (MODAL MASS TIMES g) IN KN X	Y	Z	GENERALIZED WEIGHT
1	4.669151E+03	2.244694E-03	4.727882E+01	2.240372E+03
2	1.151811E+02	6.148556E-04	3.467246E+03	1.397416E+03
3	1.970408E+01	4.735063E-03	1.307181E+03	1.346390E+03
4	6.221948E+02	1.926852E-02	4.436374E+00	8.761073E+02
5	1.034201E+01	1.377658E-02	5.393013E+02	1.337971E+03
6	5.673627E+00	5.626204E-02	9.101538E+01	6.232149E+02
7	2.348562E+02	7.790473E-02	1.208276E+00	2.450798E+02
8	3.045275E+00	8.239527E-02	2.385304E+02	5.599887E+02
9	5.997130E+00	1.781353E-01	9.401817E+00	2.264556E+02
10	6.866785E+01	4.659414E-01	1.812229E-02	9.970116E+01

CQC MODAL COMBINATION METHOD USED.

DYNAMIC WEIGHT X Y Z	6.292111E+03	6.292111E+03	6.292111E+03 KN
MISSING WEIGHT X Y Z	-5.372980E+02	-6.291209E+03	-5.864940E+02 KN
MODAL WEIGHT X Y Z	5.754813E+03	9.012785E-01	5.705617E+03 KN

*****NOTE: IT IS RECOMMENDED TO DEFINE FLOOR LEVELS USING "FLOOR HEIGHT" INPUT.**

RESPONSE LOAD CASE 1

MODE	SPECTRAL ACCELERATION	DESIGN SEISMIC COEFFICIENT		
		X	Y	Z
1	2.50000	0.1500	0.0000	0.1500
2	2.50000	0.1500	0.0000	0.1500
3	2.50000	0.1500	0.0000	0.1500
4	2.50000	0.1500	0.0000	0.1500
5	2.50000	0.1500	0.0000	0.1500
6	2.50000	0.1500	0.0000	0.1500
7	2.48138	0.1489	0.0000	0.1489
8	2.42017	0.1452	0.0000	0.1452
9	2.35904	0.1415	0.0000	0.1415
10	2.17132	0.1303	0.0000	0.1303

STORY	**LEVEL IN METE**	**PEAK STORY SHEAR IN KN**	
		X	**Z**
5	12.00	19.42	15.24
4	9.00	231.35	212.46
3	6.00	509.54	470.15
2	3.00	682.07	630.97
1	0.00	723.95	670.95
BASE	-2.00	723.95	670.95

MODE	ACCELERATION-G	DAMPING
1	2.50000	0.05000
2	2.50000	0.05000
3	2.50000	0.05000
4	2.50000	0.05000
5	2.50000	0.05000
6	2.50000	0.05000
7	2.48138	0.05000
8	2.42017	0.05000
9	2.35904	0.05000
10	2.17132	0.05000

MODAL BASE ACTIONS FORCES IN KN LENGTH IN METE

MODE	PERIOD	FX	FY	FZ	MOMENTS ARE ABOUT THE ORIGIN MX	MY	MZ
1	0.521	629.90	0.44	-63.38	-361.62	-3426.55	-3750.26
2	0.501	112.07	0.26	614.88	3595.96	-2171.31	-663.09
3	0.462	-21.12	0.33	172.00	1071.94	-2358.01	129.41
4	0.167	85.45	-0.48	-7.22	15.96	-459.69	249.17
5	0.160	12.75	-0.47	92.10	-271.08	-373.69	30.68
6	0.150	-2.56	-0.25	10.24	-39.85	-174.55	-8.31
7	0.099	32.46	0.59	-2.33	2.26	-178.87	-23.40
8	0.095	4.36	0.72	38.55	33.81	-181.61	3.74
9	0.091	-0.21	0.04	0.27	0.95	-7.42	0.40
10	0.078	8.80	-0.72	-0.14	-4.22	-42.81	10.13

	MASS PARTICIPATION FACTORS IN PERCENT						BASE SHEAR IN KN		
MODE	X	Y	Z	SUMM-X	SUMM-Y	SUMM-Z	X	Y	Z
1	74.21	0.00	0.75	74.206	0.000	0.751	700.37	0.00	7.09
2	1.83	0.00	55.10	76.037	0.000	55.856	17.28	0.00	520.09
3	0.31	0.00	20.77	76.350	0.000	76.631	2.96	0.00	196.08
4	9.89	0.00	0.07	86.239	0.000	76.701	93.33	0.00	0.67
5	0.16	0.00	8.57	86.403	0.001	85.272	1.55	0.00	80.90
6	0.09	0.00	1.45	86.493	0.002	86.719	0.85	0.00	13.65
7	3.73	0.00	0.02	90.226	0.003	86.738	34.97	0.00	0.18
8	0.05	0.00	3.79	90.274	0.004	90.529	0.44	0.00	34.64
9	0.10	0.00	0.15	90.369	0.007	90.679	0.85	0.00	1.33
10	1.09	0.01	0.00	91.461	0.014	90.679	8.95	0.00	0.00
					TOTAL SRSS SHEAR		707.70	0.00	562.96
					TOTAL 10PCT SHEAR		724.94	0.00	728.47
					TOTAL ABS SHEAR		861.54	0.00	854.62
					TOTAL CSM SHEAR		852.64	0.00	854.62
					TOTAL CQC SHEAR		723.95	0.00	670.95

```
*********************************************************
* UNITS - KN    METE                                    *
* TIME PERIOD FOR X 1893 LOADING =    0.54282 SEC       *
* SA/G PER 1893=    2.500, LOAD FACTOR= 1.000           *
*      FACTOR V  PER 1893=    0.1500 X   2788.85        *
*                                                       *
*********************************************************
```

```
*********************************************************
* UNITS - KN    METE                                    *
* TIME PERIOD FOR Z 1893 LOADING =    0.54282 SEC       *
* SA/G PER 1893=    2.500, LOAD FACTOR= 1.000           *
*      FACTOR V  PER 1893=    0.1500 X   2788.85        *
*                                                       *
*********************************************************
```

138. PERFORM ANALYSIS

**WARNING- CONSECUTIVE ANALYSIS COMMANDS. ONLY FIRST USED.

139. PERFORM ANALYSIS

**WARNING- CONSECUTIVE ANALYSIS COMMANDS. ONLY FIRST USED.

140. PERFORM ANALYSIS

**WARNING- CONSECUTIVE ANALYSIS COMMANDS. ONLY FIRST USED.

141. FINISH

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

**** DATE= AUG 23,2021 TIME= 15:37:28 ****