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*          STAAD.Pro V8i SELECTseries6          *
*          Version  20.07.11.33                 *
*          Proprietary Program of              *
*          Bentley Systems, Inc.                *
*          Date=    MAR 12, 2023                *
*          Time=    15:24:14                    *
*
*          USER ID:                             *
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1. STAAD SPACE
INPUT FILE: C:\Users\jose\Downloads\TRABE6.STD
2. START JOB INFORMATION
3. ENGINEER DATE 08-MAR-23
4. END JOB INFORMATION
5. INPUT WIDTH 79
6. UNIT METER KG
7. JOINT COORDINATES
8. 1 0 3 0; 2 2.5 3 0; 3 5 3 0
9. MEMBER INCIDENCES
10. 1 1 2; 2 2 3
11. DEFINE MATERIAL START
12. ISOTROPIC CONCRETE
13. E 2.21467E+009
14. POISSON 0.17
15. DENSITY 2402.62
16. ALPHA 1E-005
17. DAMP 0.05
18. TYPE CONCRETE
19. STRENGTH FCU 2.81228E+006
20. END DEFINE MATERIAL
21. MEMBER PROPERTY AMERICAN
22. 1 2 PRIS YD 0.45 ZD 0.2
23. CONSTANTS
24. MATERIAL CONCRETE ALL
25. SUPPORTS
26. 1 TO 3 PINNED
27. LOAD 1 LOADTYPE NONE TITLE CM+CV
28. SELFWEIGHT Y -1
29. MEMBER LOAD
30. 1 UNI GY -950
31. 2 UNI GY -1800
32. PERFORM ANALYSIS

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

NUMBER OF JOINTS	3	NUMBER OF MEMBERS	2
NUMBER OF PLATES	0	NUMBER OF SOLIDS	0
NUMBER OF SURFACES	0	NUMBER OF SUPPORTS	3

SOLVER USED IS THE OUT-OF-CORE BASIC SOLVER

ORIGINAL/FINAL BAND-WIDTH=	1/	1/	6 DOF
TOTAL PRIMARY LOAD CASES =	1,	TOTAL DEGREES OF FREEDOM =	9
TOTAL LOAD COMBINATION CASES =	0	SO FAR.	
SIZE OF STIFFNESS MATRIX =	1	DOUBLE KILO-WORDS	
REQRD/AVAIL. DISK SPACE =	12.0/	704551.6 MB	

***WARNING - INSTABILITY AT JOINT 3 DIRECTION = MX
 PROBABLE CAUSE SINGULAR-ADDING WEAK SPRING
 K-MATRIX DIAG= 2.8426029E+04 L-MATRIX DIAG= 0.0000000E+00 EQN NO 7
 ***NOTE - VERY WEAK SPRING ADDED FOR STABILITY

***NOTE** STAAD DETECTS INSTABILITIES AS EXCESSIVE LOSS OF SIGNIFICANT DIGITS
 DURING DECOMPOSITION. WHEN A DECOMPOSED DIAGONAL IS LESS THAN THE
 BUILT-IN REDUCTION FACTOR TIMES THE ORIGINAL STIFFNESS MATRIX DIAGONAL,
 STAAD PRINTS A SINGULARITY NOTICE. THE BUILT-IN REDUCTION FACTOR
 IS 1.000E-09

THE ABOVE CONDITIONS COULD ALSO BE CAUSED BY VERY STIFF OR VERY WEAK
 ELEMENTS AS WELL AS TRUE SINGULARITIES.

33. START CONCRETE DESIGN
 34. CODE MEXICAN
 35. FC 2.00014E+006 ALL
 36. FYMAIN 4.2003E+007 ALL
 37. TRACK 2 ALL
 38. DESIGN BEAM 1 2

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BEAM NO. 1 DESIGN RESULTS - FLEXURE

PER CODE NTC FOR THE DESIGN AND CONSTRUCTION OF CONCRETE STRUCTURES,DDF

LEN - 2500.00 (mm) FY - 412. FC - 20. SIZE - 200.00 X 450.00 (mm)

LEVEL	HEIGHT (mm)	BAR INFO	FROM (mm)	TO (mm)	ANCHOR STA	ANCHOR END
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1	42.	2 - 2.MM	0.	1757.	YES	NO

CRITICAL POS MOMENT= 3.97 kNm AT 833.33 (mm) LOAD 1						
REQD STEEL= 97.53 (mm2) ROW=0.0012 ROWMX=0.0152 ROWMN=0.0012						
REQD COMP STEEL= 0.00 (mm2)						
MAX/MIN/ACTUAL BAR SPACING= 116.23/ 37.90/116.23 (mm)						
COMP MAX/MIN/ACTUAL BAR SPACING= 0.00/ 0.00/ 0.00 (mm)						
BASIC/REQD. DEVELOPMENT LENGTH = 199.09/ 298.56 (mm)						

Cracked Moment of Inertia Iz at above location =0.12411E+09 mm^4

2	407.	2 - 3MM	1311.	2500.	NO	YES

CRITICAL NEG MOMENT= 11.93 kNm AT 2500.00 (mm) LOAD 1						
REQD STEEL= 106.66 (mm2) ROW=0.0013 ROWMX=0.0152 ROWMN=0.0012						
REQD COMP STEEL= 0.00 (mm2)						
MAX/MIN/ACTUAL BAR SPACING= 114.63/ 39.50/114.63 (mm)						
COMP MAX/MIN/ACTUAL BAR SPACING= 0.00/ 0.00/ 0.00 (mm)						
BASIC/REQD. DEVELOPMENT LENGTH = 239.42/ 251.78 (mm)						

Cracked Moment of Inertia Iz at above location =0.17248E+09 mm^4

REQUIRED REINF. STEEL SUMMARY :

SECTION (MM)	REINF STEEL (+VE/-VE) (SQ. MM)	MOMENTS (+VE/-VE) (KNS-MET)	LOAD (+VE/-VE)
0.00	0.00/ 0.00	0./ 0.00	0/ 1
208.33	97.53/ 0.00	2./ 0.00	1/ 0
416.67	97.53/ 0.00	3./ 0.00	1/ 0
625.00	97.53/ 0.00	4./ 0.00	1/ 0
833.33	97.53/ 0.00	4./ 0.00	1/ 0
1041.67	97.53/ 0.00	4./ 0.00	1/ 0
1250.00	97.53/ 0.00	3./ 0.00	1/ 0
1458.33	97.53/ 0.00	2./ 0.00	1/ 0
1666.67	0.00/ 97.53	0./ 0.01	0/ 1
1875.00	0.00/ 97.53	0./ 2.24	0/ 1
2083.33	0.00/ 97.53	0./ 4.97	0/ 1
2291.67	0.00/ 97.53	0./ 8.20	0/ 1
2500.00	0.00/ 110.67	0./ 11.93	0/ 1

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

AT START SUPPORT - Vu= 0.01 KN Vc= 0.00 KN Vs= 0.00 KN
 Tu= 0.00 Kn Me Tc= 0.00 Kn Me Ts= 0.00 Kn Me LOAD 1
 STIRRUPS ARE NOT REQUIRED.
 AT END SUPPORT - Vu= 0.03 KN Vc= 0.00 KN Vs= 0.00 KN
 Tu= 0.00 Kn Me Tc= 0.00 Kn Me Ts= 0.00 Kn Me LOAD 1
 STIRRUPS ARE NOT REQUIRED.

B E A M N O . 2 D E S I G N R E S U L T S - F L E X U R E

PER CODE NTC FOR THE DESIGN AND CONSTRUCTION OF CONCRETE STRUCTURES,DDF

LEN - 2500.00 (mm) FY - 412. FC - 20. SIZE - 200.00 X 450.00 (mm)

LEVEL	HEIGHT (mm)	BAR INFO	FROM (mm)	TO (mm)	ANCHOR	
					STA	END

1	42.	2 - 2.MM	222.	2500.	NO	YES
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| CRITICAL POS MOMENT= 10.05 kNm AT 1458.33 (mm) LOAD 1|
| REQD STEEL= 97.53 (mm2) ROW=0.0012 ROWMX=0.0152 ROWMN=0.0012 |
| REQD COMP STEEL= 0.00 (mm2) |
| MAX/MIN/ACTUAL BAR SPACING= 116.23/ 37.90/116.23 (mm) |
| COMP MAX/MIN/ACTUAL BAR SPACING= 0.00/ 0.00/ 0.00 (mm) |
| BASIC/REQD. DEVELOPMENT LENGTH = 199.09/ 298.56 (mm) |
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Cracked Moment of Inertia Iz at above location =0.12411E+09 mm^4

2	407.	2 - 3MM	0.	668.	YES	NO
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|-----|
| CRITICAL NEG MOMENT= 11.93 kNm AT 0.00 (mm) LOAD 1|
| REQD STEEL= 106.66 (mm2) ROW=0.0013 ROWMX=0.0152 ROWMN=0.0012 |
| REQD COMP STEEL= 0.00 (mm2) |
| MAX/MIN/ACTUAL BAR SPACING= 114.63/ 39.50/114.63 (mm) |
| COMP MAX/MIN/ACTUAL BAR SPACING= 0.00/ 0.00/ 0.00 (mm) |
| BASIC/REQD. DEVELOPMENT LENGTH = 239.42/ 251.78 (mm) |
|-----|
    
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Cracked Moment of Inertia Iz at above location =0.17248E+09 mm^4

REQUIRED REINF. STEEL SUMMARY :

SECTION (MM)	REINF STEEL (+VE/-VE) (SQ. MM)	MOMENTS (+VE/-VE) (KNS-MET)	LOAD (+VE/-VE)
0.00	0.00/ 110.67	0./ 11.93	0/ 1
208.33	0.00/ 110.67	0./ 6.21	0/ 1
416.67	0.00/ 110.67	0./ 1.36	0/ 1
625.00	110.67/ 0.00	3./ 0.00	1/ 0
833.33	110.67/ 0.00	6./ 0.00	1/ 0
1041.67	110.67/ 0.00	8./ 0.00	1/ 0
1250.00	110.67/ 0.00	9./ 0.00	1/ 0
1458.33	110.67/ 0.00	10./ 0.00	1/ 0
1666.67	110.67/ 0.00	10./ 0.00	1/ 0
1875.00	110.67/ 0.00	9./ 0.00	1/ 0
2083.33	110.67/ 0.00	7./ 0.00	1/ 0
2291.67	110.67/ 0.00	4./ 0.00	1/ 0
2500.00	0.00/ 0.00	0./ 0.00	0/ 1

BEAM NO. 2 DESIGN RESULTS - SHEAR

AT START SUPPORT - Vu= 0.05 KN Vc= 0.00 KN Vs= 0.00 KN
 Tu= 0.00 Kn Me Tc= 0.00 Kn Me Ts= 0.00 Kn Me LOAD 1
 STIRRUPS ARE NOT REQUIRED.

AT END SUPPORT - Vu= 0.03 KN Vc= 0.00 KN Vs= 0.00 KN
 Tu= 0.00 Kn Me Tc= 0.00 Kn Me Ts= 0.00 Kn Me LOAD 1
 STIRRUPS ARE NOT REQUIRED.

- 39. END CONCRETE DESIGN
- 40. PERFORM ANALYSIS

***WARNING - INSTABILITY AT JOINT 3 DIRECTION = MX
 PROBABLE CAUSE SINGULAR-ADDING WEAK SPRING
 K-MATRIX DIAG= 2.8426029E+04 L-MATRIX DIAG= 0.0000000E+00 EQN NO 7
 ***NOTE - VERY WEAK SPRING ADDED FOR STABILITY

***NOTE** STAAD DETECTS INSTABILITIES AS EXCESSIVE LOSS OF SIGNIFICANT DIGITS
 DURING DECOMPOSITION. WHEN A DECOMPOSED DIAGONAL IS LESS THAN THE
 BUILT-IN REDUCTION FACTOR TIMES THE ORIGINAL STIFFNESS MATRIX DIAGONAL,
 STAAD PRINTS A SINGULARITY NOTICE. THE BUILT-IN REDUCTION FACTOR
 IS 1.000E-09

THE ABOVE CONDITIONS COULD ALSO BE CAUSED BY VERY STIFF OR VERY WEAK
 ELEMENTS AS WELL AS TRUE SINGULARITIES.

- 41. FINISH

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

**** DATE= MAR 12,2023 TIME= 15:24:20 ****

* For technical assistance on STAAD.Pro, please visit *
* <http://selectservices.bentley.com/en-US/> *
* * * * *
* Details about additional assistance from *
* Bentley and Partners can be found at program menu *
* Help->Technical Support *
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