

LICENCIATURA EN ARQUITECTURA

“Análisis de estructuras”

Áreas de acero

Presenta:

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Profesor:

ARQUITECTO. Pedro Alberto García López

TRABE T-3

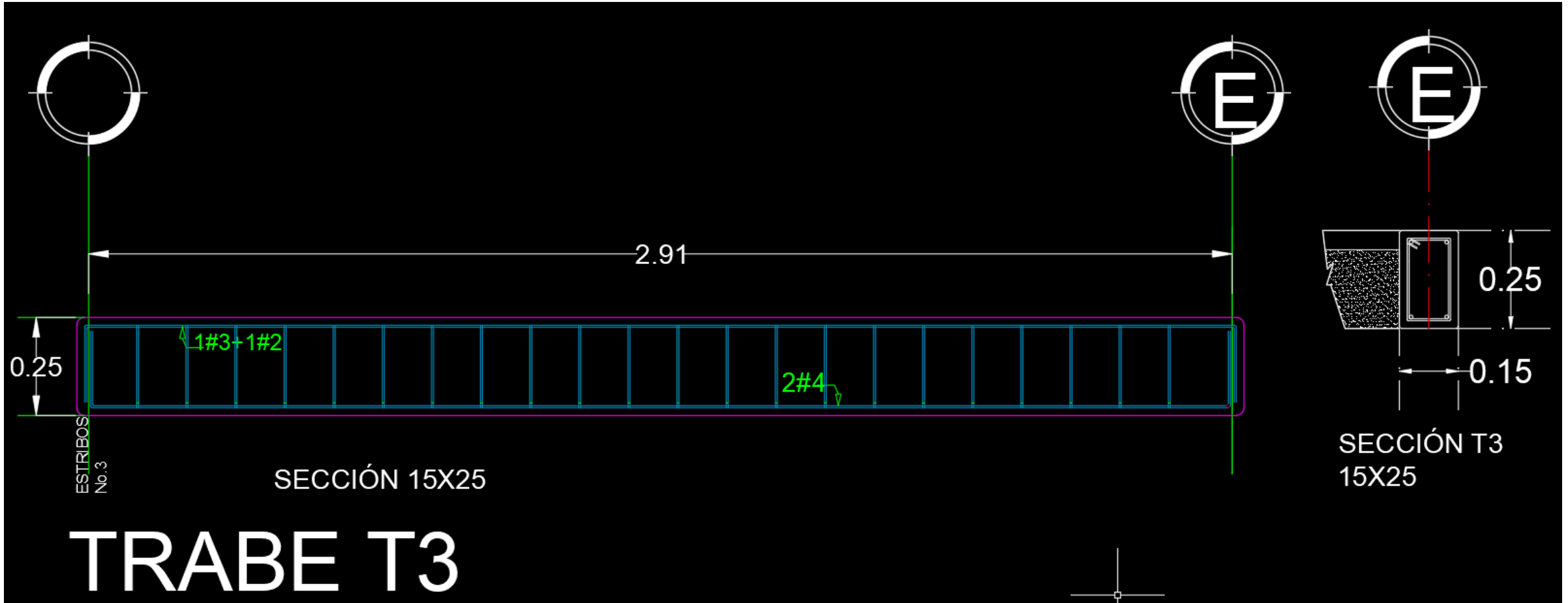
Cracked Moment of Inertia I_z at above location =0.49549E+08 mm⁴

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/ 1
242.50	68.50/	0.00	1/ 0
485.00	129.13/	0.00	1/ 0
727.50	179.85/	0.00	1/ 0
970.00	218.42/	0.00	1/ 0
1212.50	242.67/	0.00	1/ 0
1455.00	250.95/	0.00	1/ 0
1697.50	242.67/	0.00	1/ 0
1940.00	218.42/	0.00	1/ 0
2182.50	179.85/	0.00	1/ 0
2425.00	129.13/	0.00	1/ 0
2667.50	68.50/	0.00	1/ 0
2910.00	0.00/	0.00	0/ 1

BEAM NO. 1 DESIGN RESULTS - SHEAR

TRABE T-3



TRABE T-5

Cracked Moment of Inertia I_z at above location =0.13657E+08 mm⁴

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/ 1
179.17	39.29/	0.00	1/ 0
358.33	52.33/	0.00	1/ 0
537.50	71.68/	0.00	1/ 0
716.67	85.88/	0.00	1/ 0
895.83	94.57/	0.00	1/ 0
1075.00	97.49/	0.00	1/ 0
1254.17	94.57/	0.00	1/ 0
1433.33	85.88/	0.00	1/ 0
1612.50	71.68/	0.00	1/ 0
1791.67	52.33/	0.00	1/ 0
1970.83	50.56/	0.00	1/ 0
2150.00	0.00/	0.00	0/ 1

BEAM NO. 1 DESIGN RESULTS - SHEAR

TRABE T-5



TRABE T-6

TRABE T-5.anl - STAAD Output Viewer

File Edit View Help

WARNING

***WARNING - INSTABILITY AT JOINT

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	1/ 0
179.17	39.29/	0.00	1/ 0
358.33	39.29/	0.00	1/ 0
537.50	39.29/	0.00	1/ 0
716.67	45.75/	0.00	1/ 0
895.83	50.16/	0.00	1/ 0
1075.00	50.56/	0.00	1/ 0
1254.17	50.56/	0.00	1/ 0
1433.33	50.56/	0.00	1/ 0
1612.50	50.56/	0.00	1/ 0
1791.67	50.56/	0.00	1/ 0
1970.83	50.56/	0.00	1/ 0
2150.00	0.00/	0.00	0/ 1

BEAM NO. 1 DESIGN RESULTS - SHEAR

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

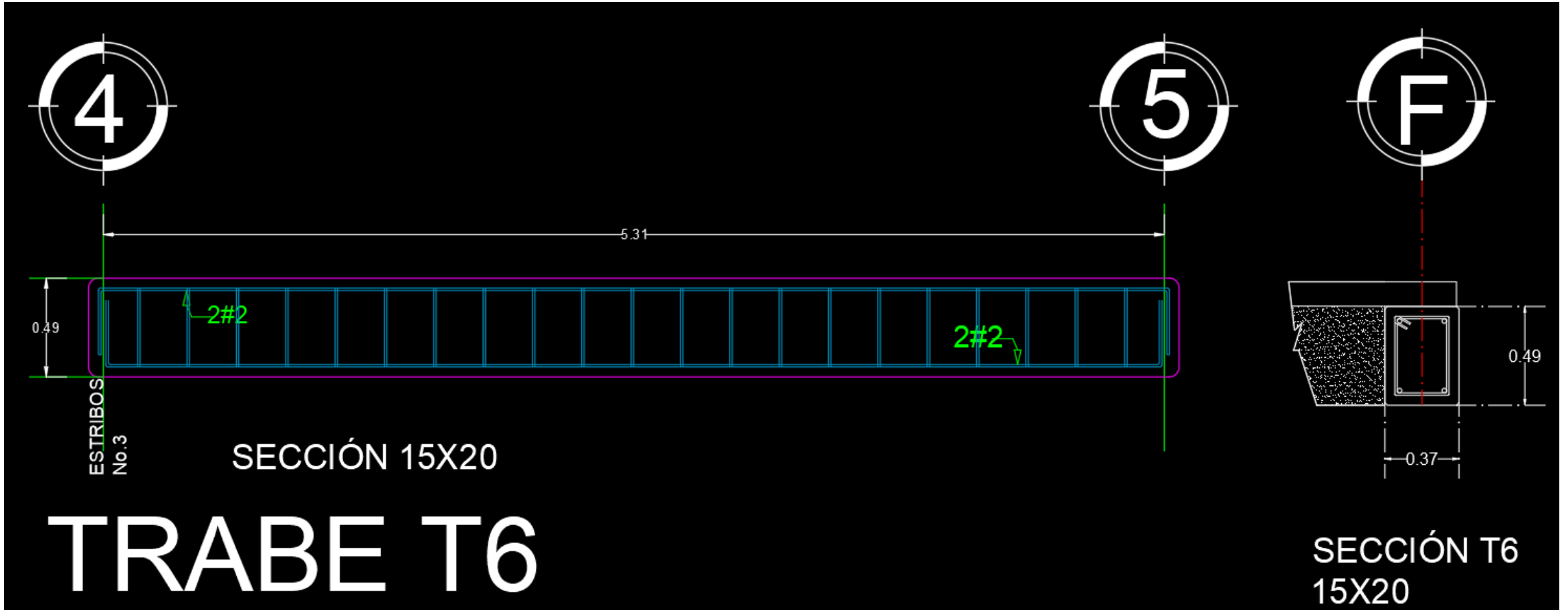
STIRRUPS ARE NOT REQUIRED.

NOTES

RESULTS

Total Page : 4 NUM

TRABE T-6



TRABE T-9

TRABE T-4.anl - STAAD Output Viewer

File Edit View Help

WARNING

***WARNING - INSTABILITY AT JOINT

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/ 1
105.00	39.29/	0.00	1/ 0
210.00	39.29/	0.00	1/ 0
315.00	39.29/	0.00	1/ 0
420.00	39.29/	0.00	1/ 0
525.00	39.29/	0.00	1/ 0
630.00	39.29/	0.00	1/ 0
735.00	39.29/	0.00	1/ 0
840.00	39.29/	0.00	1/ 0
945.00	39.29/	0.00	1/ 0
1050.00	39.29/	0.00	1/ 0
1155.00	39.29/	0.00	1/ 0
1260.00	0.00/	0.00	0/ 1

BEAM NO. 1 DESIGN RESULTS - SHEAR

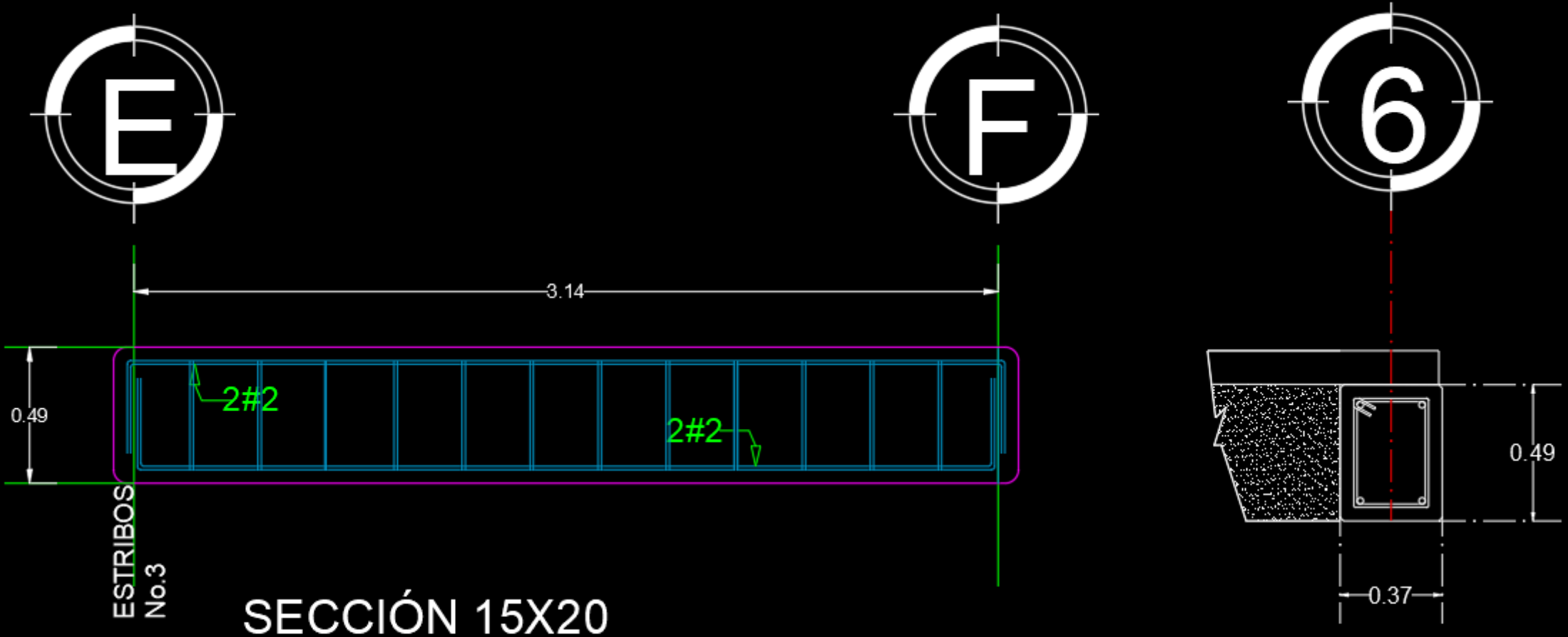
AT START SUPPORT - Vu= 0.01 KN Vc= 0.00 KN Vs= 0.00 KN
Tu= 0.00 Kn Me Tc= 0.00 Kn Me Ts= 0.00 Kn Me LOAD 1

STIRRUPS ARE NOT REQUIRED.

Total Page: 4 NUM

Load 1

TRABE T-9



SECCIÓN 15X20

TRABE T9

SECCIÓN T9
15X20

TRABE T-11

trabe t-11.anl - STAAD Output Viewer

File Edit View Help



WARNING

WARNING: IN UNIFORM MEMBER LOA
***WARNING - INSTABILITY AT JOINT

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
166.67	45.34/ 0.00	2./ 0.00	1/ 0
333.33	68.07/ 0.00	3./ 0.00	1/ 0
500.00	99.43/ 0.00	5./ 0.00	1/ 0
666.67	122.44/ 0.00	6./ 0.00	1/ 0
833.33	137.12/ 0.00	7./ 0.00	1/ 0
1000.00	142.81/ 0.00	7./ 0.00	1/ 0
1166.67	139.22/ 0.00	7./ 0.00	1/ 0
1333.33	126.54/ 0.00	6./ 0.00	1/ 0
1500.00	105.34/ 0.00	5./ 0.00	1/ 0
1666.67	76.52/ 0.00	4./ 0.00	1/ 0
1833.33	50.56/ 0.00	2./ 0.00	1/ 0
2000.00	0.00/ 0.00	0./ 0.00	0/ 1

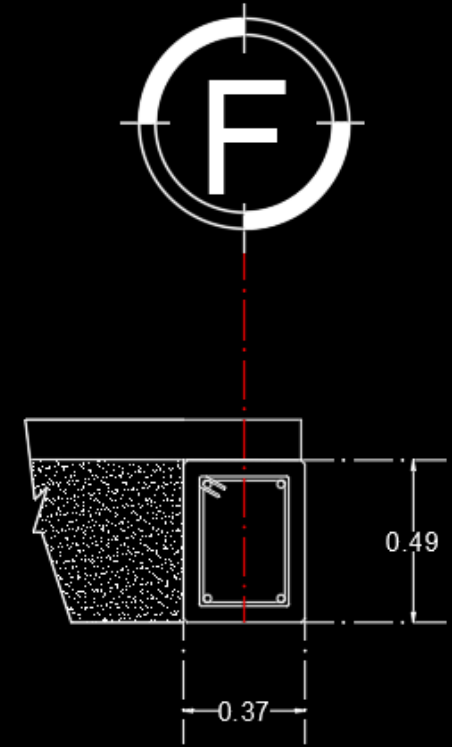
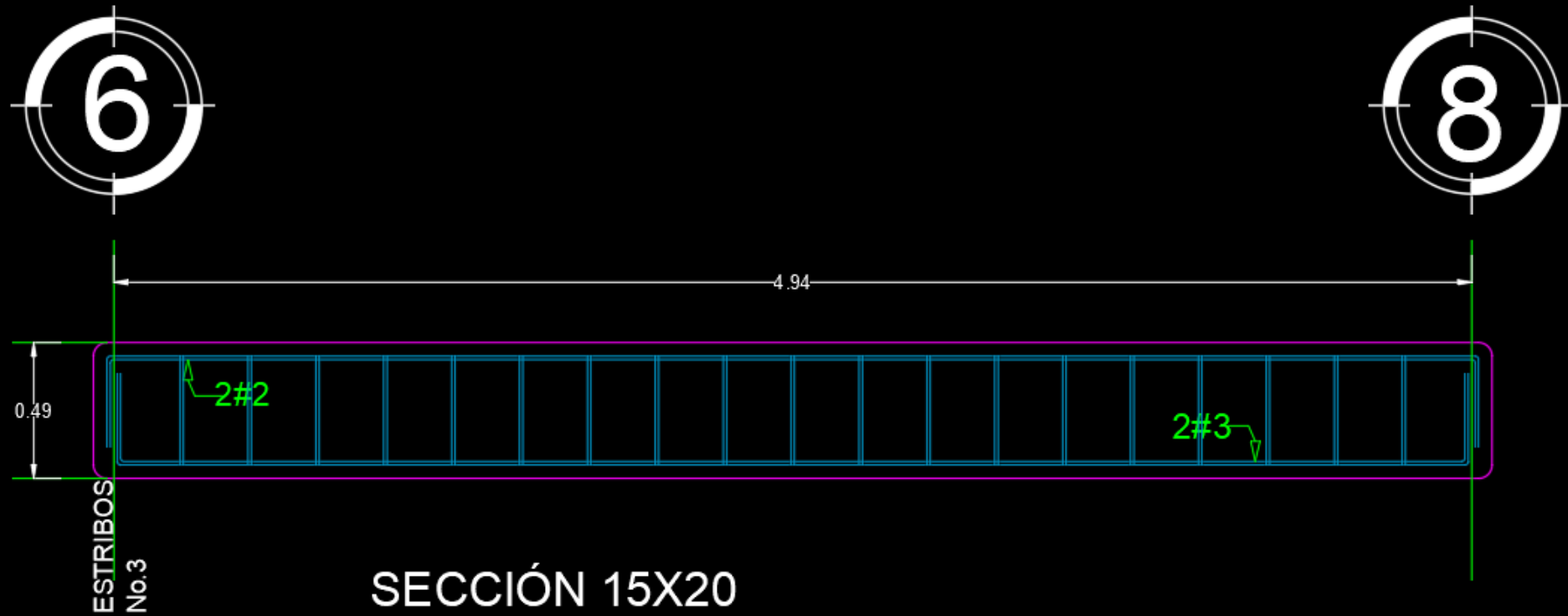
BEAM NO. 1 DESIGN RESULTS - SHEAR

AT START SUPPORT - Vu= 0.02 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

NOTES

RESULTS

TRABE T-3



TRABE T11

SECCIÓN T11
15X20

Cálculos

Trabe T6
50.56 → 0.5056

$A_{n \text{ max}} = P_{\text{max}} P_b \rightarrow 0.01143 \times 15 \times 16 = 2.7432$

$A_{n \text{ min}} = P_{\text{min}} P_b \rightarrow 0.002357 \times 15 \times 16 = 0.56568$

2 Varillas del numero 2 → 0.63
2 Varillas del numero 2 → 0.63

Trabe T1
142.81 → 1.4281

$A_{n \text{ max}} = P_{\text{max}} P_b \rightarrow 0.01143 \times 15 \times 16 = 2.7432$

$A_{n \text{ min}} = P_{\text{min}} P_b \rightarrow 0.002357 \times 15 \times 16 = 0.56568$

2 Varillas del numero 3 → 1.43
2 Varillas del numero 2 → 0.63

Trabe T5
97.49 → 0.9749

$A_{n \text{ max}} = P_{\text{max}} P_b \rightarrow 0.01143 \times 15 \times 16 = 2.7432$

$A_{n \text{ min}} = P_{\text{min}} P_b \rightarrow 0.002357 \times 15 \times 16 = 0.56568$

2 Varillas del numero 3 → 1.43
2 Varillas del numero 2 → 0.63

Trabe T9
39.29 → 0.3929

$A_{n \text{ max}} = P_{\text{max}} P_b \rightarrow 0.01143 \times 15 \times 16 = 2.7432$

$A_{n \text{ min}} = P_{\text{min}} P_b \rightarrow 0.002357 \times 15 \times 16 = 0.56568$

2 Varillas del numero 2 → 0.63
2 Varillas del numero 2 → 0.63

TEMA

FECHA

Trabe T3

250.95 \rightarrow 2.50

$$AA_{\text{max}} = P_{\text{max}} P_b \rightarrow 0.01143 \times 15 \times 21 = 3.60045$$

$$AA_{\text{min}} = P_{\text{min}} P_b \rightarrow 0.002357 \times 15 \times 21 = 0.742455$$

2 varillas del numero 4 \rightarrow 2.53

1 varilla del numero 3 y 1 del numero 2 \rightarrow 1.03