***JF Engenharia Ltda.***
**CNPJ: 08.944.122/0001-48**
**www.jfengenharia.srv.br**
**Telefone: (62) 3245-1512**

# Memória de Cálculo
# Cobertura 04

Cliente: Instituto de Gestão Estratégica de Saúde do Distrito Federal

Endereço: AC 102, Conj. A/B/C – Santa Maria – Brasília – DF

Obra: Reforço Estrutural dos Galpões do IGESDF em Santa Maria

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# 1.- GEOMETRIA

## 1.1.- Nós

Referências:

$\Delta_x$, $\Delta_y$, $\Delta_z$: Deslocamentos prescritos em eixos globais.

$\theta_x$, $\theta_y$, $\theta_z$: Rotações prescritas em eixos globais.

Cada grau de liberdade marca-se com 'X' se estiver restringido e, caso contrário, com '-'.

| Nós | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Referência | Coordenadas | | | Vínculo c/ exterior | | | | | | Vinculação interna |
| | X (m) | Y (m) | Z (m) | $\Delta_x$ | $\Delta_y$ | $\Delta_z$ | $\theta_x$ | $\theta_y$ | $\theta_z$ | |
| N1 | -4.740 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N2 | -4.740 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N5 | -4.740 | 6.980 | 1.090 | - | - | - | - | - | - | Engastado |
| N6 | -4.740 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N8 | -4.740 | 10.570 | 1.090 | - | - | - | - | - | - | Engastado |
| N9 | -4.740 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N11 | -4.740 | 17.550 | 0.000 | X | X | X | X | X | X | Engastado |
| N12 | -4.740 | 6.568 | 0.649 | - | - | - | - | - | - | Engastado |
| N13 | -4.740 | 0.000 | 0.000 | X | X | X | X | X | X | Engastado |
| N15 | -9.280 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N17 | -9.280 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N20 | -9.280 | 6.980 | 1.090 | - | - | - | - | - | - | Engastado |
| N21 | -9.280 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N25 | -9.280 | 10.570 | 1.090 | - | - | - | - | - | - | Engastado |
| N31 | -9.280 | 2.189 | 0.216 | - | - | - | - | - | - | Engastado |
| N32 | -9.280 | 4.379 | 0.433 | - | - | - | - | - | - | Engastado |
| N33 | -9.280 | 6.568 | 0.649 | - | - | - | - | - | - | Engastado |
| N35 | -9.280 | 15.361 | 0.216 | - | - | - | - | - | - | Engastado |
| N36 | -9.280 | 13.171 | 0.433 | - | - | - | - | - | - | Engastado |
| N37 | -9.280 | 10.982 | 0.649 | - | - | - | - | - | - | Engastado |
| N38 | -14.240 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N39 | -14.240 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N42 | -14.240 | 6.980 | 1.090 | - | - | - | - | - | - | Engastado |
| N43 | -14.240 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N45 | -14.240 | 10.570 | 1.090 | - | - | - | - | - | - | Engastado |
| N46 | -14.240 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N48 | -14.240 | 17.550 | 0.000 | X | X | X | X | X | X | Engastado |
| N49 | -14.240 | 6.568 | 0.649 | - | - | - | - | - | - | Engastado |
| N50 | -14.240 | 0.000 | 0.000 | X | X | X | X | X | X | Engastado |
| N51 | -14.240 | 10.982 | 0.649 | - | - | - | - | - | - | Engastado |
| N53 | -18.660 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N55 | -18.660 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N58 | -18.660 | 6.980 | 1.090 | - | - | - | - | - | - | Engastado |
| N59 | -18.660 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |

| Nós | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Referência | Coordenadas | | | Vínculo c/ exterior | | | | | | Vinculação interna |
| | X (m) | Y (m) | Z (m) | $\Delta_x$ | $\Delta_y$ | $\Delta_z$ | $\theta_x$ | $\theta_y$ | $\theta_z$ | |
| N63 | -18.660 | 10.570 | 1.090 | - | - | - | - | - | - | Engastado |
| N64 | -18.660 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N71 | -18.660 | 6.568 | 0.649 | - | - | - | - | - | - | Engastado |
| N75 | -18.660 | 10.982 | 0.649 | - | - | - | - | - | - | Engastado |
| N76 | -23.100 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N77 | -23.100 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N80 | -23.100 | 6.980 | 1.090 | - | - | - | - | - | - | Engastado |
| N81 | -23.100 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N83 | -23.100 | 10.570 | 1.090 | - | - | - | - | - | - | Engastado |
| N84 | -23.100 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N86 | -23.100 | 17.550 | 0.000 | X | X | X | X | X | X | Engastado |
| N87 | -23.100 | 6.568 | 0.649 | - | - | - | - | - | - | Engastado |
| N88 | -23.100 | 0.000 | 0.000 | X | X | X | X | X | X | Engastado |
| N89 | -23.100 | 10.982 | 0.649 | - | - | - | - | - | - | Engastado |
| N91 | -28.270 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N93 | -28.270 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N96 | -28.270 | 6.980 | 1.090 | - | - | - | - | - | - | Engastado |
| N97 | -28.270 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N101 | -28.270 | 10.570 | 1.090 | - | - | - | - | - | - | Engastado |
| N102 | -28.270 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N107 | -28.270 | 2.189 | 0.216 | - | - | - | - | - | - | Engastado |
| N108 | -28.270 | 4.379 | 0.433 | - | - | - | - | - | - | Engastado |
| N109 | -28.270 | 6.568 | 0.649 | - | - | - | - | - | - | Engastado |
| N111 | -28.270 | 15.361 | 0.216 | - | - | - | - | - | - | Engastado |
| N112 | -28.270 | 13.171 | 0.433 | - | - | - | - | - | - | Engastado |
| N113 | -28.270 | 10.982 | 0.649 | - | - | - | - | - | - | Engastado |
| N114 | -33.190 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N115 | -33.190 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N118 | -33.190 | 6.980 | 1.090 | - | - | - | - | - | - | Engastado |
| N119 | -33.190 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N121 | -33.190 | 10.570 | 1.090 | - | - | - | - | - | - | Engastado |
| N122 | -33.190 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N124 | -33.190 | 17.550 | 0.000 | X | X | X | X | X | X | Engastado |
| N125 | -33.190 | 6.568 | 0.649 | - | - | - | - | - | - | Engastado |
| N126 | -33.190 | 0.000 | 0.000 | X | X | X | X | X | X | Engastado |
| N127 | -33.190 | 10.982 | 0.649 | - | - | - | - | - | - | Engastado |
| N129 | -37.880 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N131 | -37.880 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N134 | -37.880 | 6.980 | 1.090 | - | - | - | - | - | - | Engastado |
| N135 | -37.880 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N139 | -37.880 | 10.570 | 1.090 | - | - | - | - | - | - | Engastado |
| N140 | -37.880 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N147 | -37.880 | 6.568 | 0.649 | - | - | - | - | - | - | Engastado |
| N151 | -37.880 | 10.982 | 0.649 | - | - | - | - | - | - | Engastado |
| N152 | -42.690 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |

| Nós | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Referência | Coordenadas | | | Vínculo c/ exterior | | | | | | Vinculação interna |
| | X (m) | Y (m) | Z (m) | $\Delta_x$ | $\Delta_y$ | $\Delta_z$ | $\theta_x$ | $\theta_y$ | $\theta_z$ | |
| N153 | -42.690 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N156 | -42.690 | 6.980 | 1.090 | - | - | - | - | - | - | Engastado |
| N157 | -42.690 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N159 | -42.690 | 10.570 | 1.090 | - | - | - | - | - | - | Engastado |
| N160 | -42.690 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N162 | -42.690 | 17.550 | 0.000 | X | X | X | X | X | X | Engastado |
| N163 | -42.690 | 6.568 | 0.649 | - | - | - | - | - | - | Engastado |
| N164 | -42.690 | 0.000 | 0.000 | X | X | X | X | X | X | Engastado |
| N165 | -42.690 | 10.982 | 0.649 | - | - | - | - | - | - | Engastado |
| N167 | -47.490 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N169 | -47.490 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N172 | -47.490 | 6.980 | 1.090 | - | - | - | - | - | - | Engastado |
| N173 | -47.490 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N177 | -47.490 | 10.570 | 1.090 | - | - | - | - | - | - | Engastado |
| N178 | -47.490 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N185 | -47.490 | 6.568 | 0.649 | - | - | - | - | - | - | Engastado |
| N189 | -47.490 | 10.982 | 0.649 | - | - | - | - | - | - | Engastado |
| N190 | -52.430 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N191 | -52.430 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N194 | -52.430 | 6.980 | 1.090 | - | - | - | - | - | - | Engastado |
| N195 | -52.430 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N197 | -52.430 | 10.570 | 1.090 | - | - | - | - | - | - | Engastado |
| N198 | -52.430 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N200 | -52.430 | 17.550 | 0.000 | X | X | X | X | X | X | Engastado |
| N201 | -52.430 | 6.568 | 0.649 | - | - | - | - | - | - | Engastado |
| N202 | -52.430 | 0.000 | 0.000 | X | X | X | X | X | X | Engastado |
| N203 | -52.430 | 10.982 | 0.649 | - | - | - | - | - | - | Engastado |
| N204 | 0.000 | 6.980 | 0.690 | X | X | X | X | X | X | Engastado |
| N206 | -0.150 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N208 | -56.870 | 6.980 | 0.690 | X | X | X | X | X | X | Engastado |
| N211 | -0.620 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N213 | -1.090 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N215 | -1.560 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N217 | -2.030 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N219 | -2.500 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N220 | -2.970 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N223 | -3.440 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N224 | -3.910 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N227 | -4.380 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N230 | -4.665 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N231 | -4.815 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N233 | -5.285 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N234 | -5.755 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N237 | -6.225 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N238 | -6.695 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |

| Nós | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Referência | Coordenadas | | | Vínculo c/ exterior | | | | | | Vinculação interna |
| | X (m) | Y (m) | Z (m) | $\Delta_x$ | $\Delta_y$ | $\Delta_z$ | $\theta_x$ | $\theta_y$ | $\theta_z$ | |
| N241 | -7.165 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N242 | -7.635 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N245 | -8.105 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N246 | -8.575 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N249 | -9.045 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N251 | -9.355 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N253 | -9.205 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N255 | -9.825 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N256 | -10.295 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N259 | -10.765 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N260 | -11.235 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N263 | -11.705 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N264 | -12.175 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N267 | -12.645 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N268 | -13.115 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N271 | -13.585 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N273 | -14.315 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N275 | -14.165 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N277 | -18.735 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N279 | -18.585 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N281 | -23.175 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N283 | -23.025 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N285 | -28.345 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N287 | -28.195 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N289 | -33.265 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N291 | -33.115 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N293 | -37.955 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N295 | -37.805 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N297 | -42.765 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N299 | -42.615 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N301 | -47.565 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N303 | -47.415 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N305 | -52.505 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N307 | -52.355 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N309 | -14.785 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N310 | -15.255 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N313 | -15.725 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N314 | -16.195 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N317 | -16.665 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N318 | -17.135 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N321 | -17.605 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N322 | -18.075 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N325 | -19.205 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N326 | -19.675 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N329 | -20.145 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |

| Nós | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Referência | Coordenadas | | | Vínculo c/ exterior | | | | | | Vinculação interna |
| | X (m) | Y (m) | Z (m) | $\Delta_x$ | $\Delta_y$ | $\Delta_z$ | $\theta_x$ | $\theta_y$ | $\theta_z$ | |
| N330 | -20.615 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N333 | -21.085 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N334 | -21.555 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N337 | -22.025 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N338 | -22.495 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N340 | -22.965 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N342 | -23.645 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N343 | -24.115 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N346 | -24.585 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N347 | -25.055 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N350 | -25.525 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N351 | -25.995 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N354 | -26.465 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N355 | -26.935 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N358 | -27.405 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N359 | -27.875 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N362 | -28.815 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N363 | -29.285 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N366 | -29.755 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N367 | -30.225 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N370 | -30.695 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N371 | -31.165 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N374 | -31.635 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N375 | -32.105 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N378 | -32.575 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N380 | -33.735 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N381 | -34.205 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N384 | -34.675 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N385 | -35.145 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N388 | -35.615 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N389 | -36.085 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N392 | -36.555 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N393 | -37.025 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N396 | -37.495 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N398 | -38.425 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N399 | -38.895 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N402 | -39.365 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N403 | -39.835 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N406 | -40.305 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N407 | -40.775 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N410 | -41.245 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N411 | -41.715 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N414 | -42.185 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N416 | -43.235 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N417 | -43.705 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |

| Nós | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Referência | Coordenadas | | | Vínculo c/ exterior | | | | | | Vinculação interna |
| | X (m) | Y (m) | Z (m) | $\Delta_x$ | $\Delta_y$ | $\Delta_z$ | $\theta_x$ | $\theta_y$ | $\theta_z$ | |
| N420 | -44.175 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N421 | -44.645 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N424 | -45.115 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N425 | -45.585 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N428 | -46.055 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N429 | -46.525 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N432 | -46.995 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N434 | -48.035 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N435 | -48.505 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N438 | -48.975 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N439 | -49.445 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N442 | -49.915 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N443 | -50.385 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N446 | -50.855 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N447 | -51.325 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N450 | -51.795 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N452 | -52.975 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N453 | -53.445 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N456 | -53.915 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N457 | -54.385 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N460 | -54.855 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N461 | -55.325 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N464 | -55.795 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N465 | -56.265 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N468 | -56.735 | 6.980 | 0.690 | - | - | - | - | - | - | Engastado |
| N480 | -0.150 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N481 | 0.000 | 10.570 | 0.690 | X | X | X | X | X | X | Engastado |
| N482 | -4.665 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N483 | -4.380 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N484 | -3.910 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N485 | -3.440 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N486 | -2.970 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N487 | -2.500 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N488 | -2.030 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N489 | -1.560 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N490 | -1.090 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N491 | -0.620 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N494 | -52.505 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N495 | -52.975 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N496 | -53.445 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N497 | -53.915 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N498 | -54.385 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N499 | -54.855 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N500 | -55.325 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N501 | -55.795 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |

| Nós | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Referência | Coordenadas | | | Vínculo c/ exterior | | | | | | Vinculação interna |
| | X (m) | Y (m) | Z (m) | $\Delta_x$ | $\Delta_y$ | $\Delta_z$ | $\theta_x$ | $\theta_y$ | $\theta_z$ | |
| N502 | -56.265 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N503 | -56.735 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N504 | -56.870 | 10.570 | 0.690 | X | X | X | X | X | X | Engastado |
| N506 | -9.205 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N507 | -9.045 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N508 | -8.575 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N509 | -8.105 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N510 | -7.635 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N511 | -7.165 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N512 | -6.695 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N513 | -6.225 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N514 | -5.755 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N515 | -5.285 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N516 | -4.815 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N517 | -9.355 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N518 | -9.825 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N519 | -10.295 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N520 | -10.765 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N521 | -11.235 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N522 | -11.705 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N523 | -12.175 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N524 | -12.645 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N525 | -13.115 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N526 | -13.585 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N527 | -14.165 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N528 | -14.315 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N529 | -14.785 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N530 | -15.255 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N531 | -15.725 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N532 | -16.195 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N533 | -16.665 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N534 | -17.135 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N535 | -17.605 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N536 | -18.075 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N537 | -18.585 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N538 | -18.735 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N539 | -19.205 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N540 | -19.675 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N541 | -20.145 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N542 | -20.615 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N543 | -21.085 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N544 | -21.555 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N545 | -22.025 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N546 | -22.495 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N547 | -22.965 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |

| Nós | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Referência | Coordenadas | | | Vínculo c/ exterior | | | | | | Vinculação interna |
| | X (m) | Y (m) | Z (m) | $\Delta_x$ | $\Delta_y$ | $\Delta_z$ | $\theta_x$ | $\theta_y$ | $\theta_z$ | |
| N548 | -23.025 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N549 | -23.175 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N550 | -23.645 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N551 | -24.115 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N552 | -24.585 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N553 | -25.055 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N554 | -25.525 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N555 | -25.995 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N556 | -26.465 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N557 | -26.935 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N558 | -27.405 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N559 | -28.195 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N560 | -27.875 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N561 | -28.345 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N562 | -28.815 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N563 | -29.285 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N564 | -29.755 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N565 | -30.225 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N566 | -30.695 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N567 | -31.165 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N568 | -31.635 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N569 | -32.105 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N570 | -32.575 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N571 | -33.115 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N572 | -33.265 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N573 | -33.735 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N574 | -34.205 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N575 | -34.675 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N576 | -35.145 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N577 | -35.615 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N578 | -36.085 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N579 | -36.555 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N580 | -37.025 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N581 | -37.495 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N582 | -37.805 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N583 | -37.955 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N584 | -42.615 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N585 | -42.185 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N586 | -41.715 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N587 | -41.245 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N588 | -40.775 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N589 | -40.305 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N590 | -39.835 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N591 | -39.365 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N592 | -38.895 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |

| Nós | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Referência | Coordenadas | | | Vínculo c/ exterior | | | | | | Vinculação interna |
| | X (m) | Y (m) | Z (m) | $\Delta_x$ | $\Delta_y$ | $\Delta_z$ | $\theta_x$ | $\theta_y$ | $\theta_z$ | |
| N593 | -38.425 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N594 | -42.765 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N595 | -43.235 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N596 | -43.705 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N597 | -44.175 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N598 | -44.645 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N599 | -45.115 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N600 | -45.585 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N601 | -46.055 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N602 | -46.525 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N603 | -46.995 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N604 | -47.415 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N605 | -47.565 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N606 | -48.035 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N607 | -48.505 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N608 | -48.975 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N609 | -49.445 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N610 | -49.915 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N611 | -50.385 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N612 | -50.855 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N613 | -51.325 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N614 | -51.795 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N615 | -52.355 | 10.570 | 0.690 | - | - | - | - | - | - | Engastado |
| N798 | -2.370 | 0.000 | 0.400 | - | - | - | - | - | - | Engastado |
| N799 | -2.370 | 2.189 | 0.616 | - | - | - | - | - | - | Engastado |
| N800 | -2.370 | 4.379 | 0.833 | - | - | - | - | - | - | Engastado |
| N801 | -2.370 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N802 | -2.370 | 8.675 | 1.258 | - | - | - | - | - | - | Engastado |
| N803 | -2.370 | 8.875 | 1.258 | - | - | - | - | - | - | Engastado |
| N804 | -2.370 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N805 | -2.370 | 13.171 | 0.833 | - | - | - | - | - | - | Engastado |
| N806 | -2.370 | 15.361 | 0.616 | - | - | - | - | - | - | Engastado |
| N807 | -2.370 | 17.550 | 0.400 | - | - | - | - | - | - | Engastado |
| N808 | -7.010 | 0.000 | 0.400 | - | - | - | - | - | - | Engastado |
| N809 | -7.010 | 2.189 | 0.616 | - | - | - | - | - | - | Engastado |
| N810 | -7.010 | 4.379 | 0.833 | - | - | - | - | - | - | Engastado |
| N811 | -7.010 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N812 | -7.010 | 8.675 | 1.258 | - | - | - | - | - | - | Engastado |
| N813 | -7.010 | 8.875 | 1.258 | - | - | - | - | - | - | Engastado |
| N814 | -7.010 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N815 | -7.010 | 13.171 | 0.833 | - | - | - | - | - | - | Engastado |
| N816 | -7.010 | 15.361 | 0.616 | - | - | - | - | - | - | Engastado |
| N817 | -7.010 | 17.550 | 0.400 | - | - | - | - | - | - | Engastado |
| N818 | -11.760 | 0.000 | 0.400 | - | - | - | - | - | - | Engastado |
| N819 | -11.760 | 2.189 | 0.616 | - | - | - | - | - | - | Engastado |

| Nós | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Referência | Coordenadas | | | Vínculo c/ exterior | | | | | | Vinculação interna |
| | X (m) | Y (m) | Z (m) | $\Delta_x$ | $\Delta_y$ | $\Delta_z$ | $\theta_x$ | $\theta_y$ | $\theta_z$ | |
| N820 | -11.760 | 4.379 | 0.833 | - | - | - | - | - | - | Engastado |
| N821 | -11.760 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N822 | -11.760 | 8.675 | 1.258 | - | - | - | - | - | - | Engastado |
| N823 | -11.760 | 8.875 | 1.258 | - | - | - | - | - | - | Engastado |
| N824 | -11.760 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N825 | -11.760 | 13.171 | 0.833 | - | - | - | - | - | - | Engastado |
| N826 | -11.760 | 15.361 | 0.616 | - | - | - | - | - | - | Engastado |
| N827 | -11.760 | 17.550 | 0.400 | - | - | - | - | - | - | Engastado |
| N828 | -16.450 | 0.000 | 0.400 | - | - | - | - | - | - | Engastado |
| N829 | -16.450 | 2.189 | 0.616 | - | - | - | - | - | - | Engastado |
| N830 | -16.450 | 4.379 | 0.833 | - | - | - | - | - | - | Engastado |
| N831 | -16.450 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N832 | -16.450 | 8.675 | 1.258 | - | - | - | - | - | - | Engastado |
| N833 | -16.450 | 8.875 | 1.258 | - | - | - | - | - | - | Engastado |
| N834 | -16.450 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N835 | -16.450 | 13.171 | 0.833 | - | - | - | - | - | - | Engastado |
| N836 | -16.450 | 15.361 | 0.616 | - | - | - | - | - | - | Engastado |
| N837 | -16.450 | 17.550 | 0.400 | - | - | - | - | - | - | Engastado |
| N838 | -20.880 | 0.000 | 0.400 | - | - | - | - | - | - | Engastado |
| N839 | -20.880 | 2.189 | 0.616 | - | - | - | - | - | - | Engastado |
| N840 | -20.880 | 4.379 | 0.833 | - | - | - | - | - | - | Engastado |
| N841 | -20.880 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N842 | -20.880 | 8.675 | 1.258 | - | - | - | - | - | - | Engastado |
| N843 | -20.880 | 8.875 | 1.258 | - | - | - | - | - | - | Engastado |
| N844 | -20.880 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N845 | -20.880 | 13.171 | 0.833 | - | - | - | - | - | - | Engastado |
| N846 | -20.880 | 15.361 | 0.616 | - | - | - | - | - | - | Engastado |
| N847 | -20.880 | 17.550 | 0.400 | - | - | - | - | - | - | Engastado |
| N848 | -25.685 | 0.000 | 0.400 | - | - | - | - | - | - | Engastado |
| N849 | -25.685 | 2.189 | 0.616 | - | - | - | - | - | - | Engastado |
| N850 | -25.685 | 4.379 | 0.833 | - | - | - | - | - | - | Engastado |
| N851 | -25.685 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N852 | -25.685 | 8.675 | 1.258 | - | - | - | - | - | - | Engastado |
| N853 | -25.685 | 8.875 | 1.258 | - | - | - | - | - | - | Engastado |
| N854 | -25.685 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N855 | -25.685 | 13.171 | 0.833 | - | - | - | - | - | - | Engastado |
| N856 | -25.685 | 15.361 | 0.616 | - | - | - | - | - | - | Engastado |
| N857 | -25.685 | 17.550 | 0.400 | - | - | - | - | - | - | Engastado |
| N858 | -30.730 | 0.000 | 0.400 | - | - | - | - | - | - | Engastado |
| N859 | -30.730 | 2.189 | 0.616 | - | - | - | - | - | - | Engastado |
| N860 | -30.730 | 4.379 | 0.833 | - | - | - | - | - | - | Engastado |
| N861 | -30.730 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N862 | -30.730 | 8.675 | 1.258 | - | - | - | - | - | - | Engastado |
| N863 | -30.730 | 8.875 | 1.258 | - | - | - | - | - | - | Engastado |
| N864 | -30.730 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |

| Nós | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Referência | Coordenadas | | | Vínculo c/ exterior | | | | | | Vinculação interna |
| | X (m) | Y (m) | Z (m) | $\Delta_x$ | $\Delta_y$ | $\Delta_z$ | $\theta_x$ | $\theta_y$ | $\theta_z$ | |
| N865 | -30.730 | 13.171 | 0.833 | - | - | - | - | - | - | Engastado |
| N866 | -30.730 | 15.361 | 0.616 | - | - | - | - | - | - | Engastado |
| N867 | -30.730 | 17.550 | 0.400 | - | - | - | - | - | - | Engastado |
| N868 | -35.535 | 0.000 | 0.400 | - | - | - | - | - | - | Engastado |
| N869 | -35.535 | 2.189 | 0.616 | - | - | - | - | - | - | Engastado |
| N870 | -35.535 | 4.379 | 0.833 | - | - | - | - | - | - | Engastado |
| N871 | -35.535 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N872 | -35.535 | 8.675 | 1.258 | - | - | - | - | - | - | Engastado |
| N873 | -35.535 | 8.875 | 1.258 | - | - | - | - | - | - | Engastado |
| N874 | -35.535 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N875 | -35.535 | 13.171 | 0.833 | - | - | - | - | - | - | Engastado |
| N876 | -35.535 | 15.361 | 0.616 | - | - | - | - | - | - | Engastado |
| N877 | -35.535 | 17.550 | 0.400 | - | - | - | - | - | - | Engastado |
| N878 | -40.285 | 0.000 | 0.400 | - | - | - | - | - | - | Engastado |
| N879 | -40.285 | 2.189 | 0.616 | - | - | - | - | - | - | Engastado |
| N880 | -40.285 | 4.379 | 0.833 | - | - | - | - | - | - | Engastado |
| N881 | -40.285 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N882 | -40.285 | 8.675 | 1.258 | - | - | - | - | - | - | Engastado |
| N883 | -40.285 | 8.875 | 1.258 | - | - | - | - | - | - | Engastado |
| N884 | -40.285 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N885 | -40.285 | 13.171 | 0.833 | - | - | - | - | - | - | Engastado |
| N886 | -40.285 | 15.361 | 0.616 | - | - | - | - | - | - | Engastado |
| N887 | -40.285 | 17.550 | 0.400 | - | - | - | - | - | - | Engastado |
| N888 | -45.090 | 0.000 | 0.400 | - | - | - | - | - | - | Engastado |
| N889 | -45.090 | 2.189 | 0.616 | - | - | - | - | - | - | Engastado |
| N890 | -45.090 | 4.379 | 0.833 | - | - | - | - | - | - | Engastado |
| N891 | -45.090 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N892 | -45.090 | 8.675 | 1.258 | - | - | - | - | - | - | Engastado |
| N893 | -45.090 | 8.875 | 1.258 | - | - | - | - | - | - | Engastado |
| N894 | -45.090 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N895 | -45.090 | 13.171 | 0.833 | - | - | - | - | - | - | Engastado |
| N896 | -45.090 | 15.361 | 0.616 | - | - | - | - | - | - | Engastado |
| N897 | -45.090 | 17.550 | 0.400 | - | - | - | - | - | - | Engastado |
| N898 | -49.960 | 0.000 | 0.400 | - | - | - | - | - | - | Engastado |
| N899 | -49.960 | 2.189 | 0.616 | - | - | - | - | - | - | Engastado |
| N900 | -49.960 | 4.379 | 0.833 | - | - | - | - | - | - | Engastado |
| N901 | -49.960 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N902 | -49.960 | 8.675 | 1.258 | - | - | - | - | - | - | Engastado |
| N903 | -49.960 | 8.875 | 1.258 | - | - | - | - | - | - | Engastado |
| N904 | -49.960 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N905 | -49.960 | 13.171 | 0.833 | - | - | - | - | - | - | Engastado |
| N906 | -49.960 | 15.361 | 0.616 | - | - | - | - | - | - | Engastado |
| N907 | -49.960 | 17.550 | 0.400 | - | - | - | - | - | - | Engastado |
| N908 | -54.650 | 0.000 | 0.400 | - | - | - | - | - | - | Engastado |
| N909 | -54.650 | 2.189 | 0.616 | - | - | - | - | - | - | Engastado |

| Nós | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Referência | Coordenadas | | | Vínculo c/ exterior | | | | | | Vinculação interna |
| | X (m) | Y (m) | Z (m) | $\Delta_x$ | $\Delta_y$ | $\Delta_z$ | $\theta_x$ | $\theta_y$ | $\theta_z$ | |
| N910 | -54.650 | 4.379 | 0.833 | - | - | - | - | - | - | Engastado |
| N911 | -54.650 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N912 | -54.650 | 8.675 | 1.258 | - | - | - | - | - | - | Engastado |
| N913 | -54.650 | 8.875 | 1.258 | - | - | - | - | - | - | Engastado |
| N914 | -54.650 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N915 | -54.650 | 13.171 | 0.833 | - | - | - | - | - | - | Engastado |
| N916 | -54.650 | 15.361 | 0.616 | - | - | - | - | - | - | Engastado |
| N917 | -54.650 | 17.550 | 0.400 | - | - | - | - | - | - | Engastado |
| N918 | -2.370 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N919 | 0.000 | 1.095 | 0.508 | X | X | X | X | X | X | Engastado |
| N920 | -7.010 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N921 | -9.280 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N922 | -11.760 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N923 | -16.450 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N924 | -18.660 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N925 | -20.880 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N926 | -25.685 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N927 | -28.270 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N928 | -30.730 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N929 | -35.535 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N930 | -37.880 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N931 | -40.285 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N932 | -45.090 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N933 | -47.490 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N934 | -49.960 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N935 | -54.650 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N936 | -56.870 | 1.095 | 0.508 | X | X | X | X | X | X | Engastado |
| N937 | -2.370 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N938 | 0.000 | 3.284 | 0.725 | X | X | X | X | X | X | Engastado |
| N939 | -7.010 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N940 | -9.280 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N941 | -11.760 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N942 | -16.450 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N943 | -18.660 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N944 | -20.880 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N945 | -25.685 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N946 | -28.270 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N947 | -30.730 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N948 | -35.535 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N949 | -37.880 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N950 | -40.285 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N951 | -45.090 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N952 | -47.490 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N953 | -49.960 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N954 | -54.650 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |

| Nós | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Referência | Coordenadas | | | Vínculo c/ exterior | | | | | | Vinculação interna |
| | X (m) | Y (m) | Z (m) | $\Delta_x$ | $\Delta_y$ | $\Delta_z$ | $\theta_x$ | $\theta_y$ | $\theta_z$ | |
| N955 | -56.870 | 3.284 | 0.725 | X | X | X | X | X | X | Engastado |
| N956 | -2.370 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N957 | 0.000 | 5.473 | 0.941 | X | X | X | X | X | X | Engastado |
| N958 | -7.010 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N959 | -9.280 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N960 | -11.760 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N961 | -16.450 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N962 | -18.660 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N963 | -20.880 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N964 | -25.685 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N965 | -28.270 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N966 | -30.730 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N967 | -35.535 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N968 | -37.880 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N969 | -40.285 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N970 | -45.090 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N971 | -47.490 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N972 | -49.960 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N973 | -54.650 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N974 | -56.870 | 5.473 | 0.941 | X | X | X | X | X | X | Engastado |
| N975 | -2.370 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N976 | 0.000 | 7.622 | 1.153 | X | X | X | X | X | X | Engastado |
| N977 | -4.740 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N978 | -7.010 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N979 | -9.280 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N980 | -11.760 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N981 | -14.240 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N982 | -16.450 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N983 | -18.660 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N984 | -20.880 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N985 | -23.100 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N986 | -25.685 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N987 | -28.270 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N988 | -30.730 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N989 | -33.190 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N990 | -35.535 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N991 | -37.880 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N992 | -40.285 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N993 | -42.690 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N994 | -45.090 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N995 | -47.490 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N996 | -49.960 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N997 | -52.430 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N998 | -54.650 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N999 | -56.870 | 7.622 | 1.153 | X | X | X | X | X | X | Engastado |

| Nós | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Referência | Coordenadas | | | Vínculo c/ exterior | | | | | | Vinculação interna |
| | X (m) | Y (m) | Z (m) | $\Delta_x$ | $\Delta_y$ | $\Delta_z$ | $\theta_x$ | $\theta_y$ | $\theta_z$ | |
| N1000 | -54.650 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1001 | -56.870 | 16.455 | 0.508 | X | X | X | X | X | X | Engastado |
| N1002 | -54.650 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1003 | -56.870 | 14.266 | 0.725 | X | X | X | X | X | X | Engastado |
| N1004 | -54.650 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1005 | -56.870 | 12.077 | 0.941 | X | X | X | X | X | X | Engastado |
| N1006 | -52.430 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1007 | -54.650 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1008 | -56.870 | 9.928 | 1.153 | X | X | X | X | X | X | Engastado |
| N1009 | -47.490 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1010 | -49.960 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1011 | -47.490 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1012 | -49.960 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1013 | -47.490 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1014 | -49.960 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1015 | -47.490 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1016 | -49.960 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1017 | -45.090 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1018 | -45.090 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1019 | -45.090 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1020 | -42.690 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1021 | -45.090 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1022 | -37.880 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1023 | -40.285 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1024 | -37.880 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1025 | -40.285 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1026 | -37.880 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1027 | -40.285 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1028 | -37.880 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1029 | -40.285 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1030 | -35.535 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1031 | -35.535 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1032 | -35.535 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1033 | -33.190 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1034 | -35.535 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1035 | -28.270 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1036 | -30.730 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1037 | -28.270 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1038 | -30.730 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1039 | -28.270 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1040 | -30.730 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1041 | -28.270 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1042 | -30.730 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1043 | -25.685 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1044 | -25.685 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |

| Nós | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Referência | Coordenadas | | | Vínculo c/ exterior | | | | | | Vinculação interna |
| | X (m) | Y (m) | Z (m) | $\Delta_x$ | $\Delta_y$ | $\Delta_z$ | $\theta_x$ | $\theta_y$ | $\theta_z$ | |
| N1045 | -25.685 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1046 | -23.100 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1047 | -25.685 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1048 | -18.660 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1049 | -20.880 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1050 | -18.660 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1051 | -20.880 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1052 | -18.660 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1053 | -20.880 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1054 | -18.660 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1055 | -20.880 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1056 | -16.450 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1057 | -16.450 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1058 | -16.450 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1059 | -14.240 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1060 | -16.450 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1061 | -9.280 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1062 | -11.760 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1063 | -9.280 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1064 | -11.760 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1065 | -9.280 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1066 | -11.760 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1067 | -9.280 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1068 | -11.760 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1069 | -7.010 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1070 | -7.010 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1071 | -7.010 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1072 | -4.740 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1073 | -7.010 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1074 | -2.370 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1075 | 0.000 | 16.455 | 0.508 | X | X | X | X | X | X | Engastado |
| N1076 | -2.370 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1077 | 0.000 | 14.266 | 0.725 | X | X | X | X | X | X | Engastado |
| N1078 | -2.370 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1079 | 0.000 | 12.077 | 0.941 | X | X | X | X | X | X | Engastado |
| N1080 | -2.370 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1081 | 0.000 | 9.928 | 1.153 | X | X | X | X | X | X | Engastado |
| N1174 | -28.270 | 1.095 | 0.108 | - | - | - | - | - | - | Engastado |
| N1179 | -28.270 | 3.284 | 0.325 | - | - | - | - | - | - | Engastado |
| N1184 | -28.270 | 5.473 | 0.541 | - | - | - | - | - | - | Engastado |
| N1187 | -28.270 | 7.622 | 0.753 | - | - | - | - | - | - | Engastado |
| N1191 | -28.270 | 16.455 | 0.108 | - | - | - | - | - | - | Engastado |
| N1197 | -28.270 | 14.266 | 0.325 | - | - | - | - | - | - | Engastado |
| N1202 | -28.270 | 12.077 | 0.541 | - | - | - | - | - | - | Engastado |
| N1205 | -28.270 | 9.928 | 0.753 | - | - | - | - | - | - | Engastado |

| Nós | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Referência | Coordenadas | | | Vínculo c/ exterior | | | | | | Vinculação interna |
| | X (m) | Y (m) | Z (m) | $\Delta_x$ | $\Delta_y$ | $\Delta_z$ | $\theta_x$ | $\theta_y$ | $\theta_z$ | |
| N1208 | -23.100 | 7.622 | 0.753 | - | - | - | - | - | - | Engastado |
| N1211 | -23.100 | 9.928 | 0.753 | - | - | - | - | - | - | Engastado |
| N1250 | -14.240 | 7.622 | 0.753 | - | - | - | - | - | - | Engastado |
| N1253 | -14.240 | 9.928 | 0.753 | - | - | - | - | - | - | Engastado |
| N1258 | -9.280 | 1.095 | 0.108 | - | - | - | - | - | - | Engastado |
| N1263 | -9.280 | 3.284 | 0.325 | - | - | - | - | - | - | Engastado |
| N1268 | -9.280 | 5.473 | 0.541 | - | - | - | - | - | - | Engastado |
| N1271 | -9.280 | 7.622 | 0.753 | - | - | - | - | - | - | Engastado |
| N1275 | -9.280 | 16.455 | 0.108 | - | - | - | - | - | - | Engastado |
| N1281 | -9.280 | 14.266 | 0.325 | - | - | - | - | - | - | Engastado |
| N1286 | -9.280 | 12.077 | 0.541 | - | - | - | - | - | - | Engastado |
| N1289 | -9.280 | 9.928 | 0.753 | - | - | - | - | - | - | Engastado |
| N1294 | -8.880 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N1295 | -9.680 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N1296 | -8.880 | 2.189 | 0.616 | - | - | - | - | - | - | Engastado |
| N1297 | -9.680 | 2.189 | 0.616 | - | - | - | - | - | - | Engastado |
| N1298 | -8.880 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N1299 | -9.680 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N1300 | -8.880 | 4.379 | 0.833 | - | - | - | - | - | - | Engastado |
| N1301 | -9.680 | 4.379 | 0.833 | - | - | - | - | - | - | Engastado |
| N1302 | -8.880 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N1303 | -9.680 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N1304 | -8.880 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N1305 | -9.680 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N1306 | -8.880 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N1307 | -9.680 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N1308 | -8.880 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1309 | -9.680 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1310 | -9.680 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N1311 | -8.880 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N1312 | -9.680 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1313 | -8.880 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1314 | -9.680 | 13.171 | 0.833 | - | - | - | - | - | - | Engastado |
| N1315 | -8.880 | 13.171 | 0.833 | - | - | - | - | - | - | Engastado |
| N1316 | -9.680 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1317 | -8.880 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1318 | -9.680 | 15.361 | 0.616 | - | - | - | - | - | - | Engastado |
| N1319 | -8.880 | 15.361 | 0.616 | - | - | - | - | - | - | Engastado |
| N1320 | -9.680 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1321 | -8.880 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1322 | -14.640 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1323 | -13.840 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1326 | -13.840 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1327 | -14.640 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1330 | -13.840 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |

| Nós | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Referência | Coordenadas | | | Vínculo c/ exterior | | | | | | Vinculação interna |
| | X (m) | Y (m) | Z (m) | $\Delta_x$ | $\Delta_y$ | $\Delta_z$ | $\theta_x$ | $\theta_y$ | $\theta_z$ | |
| N1331 | -14.640 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1332 | -13.840 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N1333 | -14.640 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N1334 | -13.840 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1335 | -14.640 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1336 | -13.840 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N1337 | -14.640 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N1338 | -13.840 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N1339 | -14.640 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N1340 | -13.840 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N1341 | -14.640 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N1344 | -13.840 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N1345 | -14.640 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N1348 | -13.840 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N1349 | -14.640 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N1350 | -23.500 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1351 | -22.700 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1354 | -22.700 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1355 | -23.500 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1358 | -22.700 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1359 | -23.500 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1360 | -22.700 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N1361 | -23.500 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N1362 | -22.700 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1363 | -23.500 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1364 | -22.700 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N1365 | -23.500 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N1366 | -22.700 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N1367 | -23.500 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N1368 | -22.700 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N1369 | -23.500 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N1372 | -22.700 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N1373 | -23.500 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N1376 | -22.700 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N1377 | -23.500 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N1378 | -28.670 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1379 | -27.870 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1380 | -28.670 | 15.361 | 0.616 | - | - | - | - | - | - | Engastado |
| N1381 | -27.870 | 15.361 | 0.616 | - | - | - | - | - | - | Engastado |
| N1382 | -27.870 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1383 | -28.670 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1384 | -27.870 | 13.171 | 0.833 | - | - | - | - | - | - | Engastado |
| N1385 | -28.670 | 13.171 | 0.833 | - | - | - | - | - | - | Engastado |
| N1386 | -27.870 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1387 | -28.670 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |

| Nós | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Referência | Coordenadas | | | Vínculo c/ exterior | | | | | | Vinculação interna |
| | X (m) | Y (m) | Z (m) | $\Delta_x$ | $\Delta_y$ | $\Delta_z$ | $\theta_x$ | $\theta_y$ | $\theta_z$ | |
| N1388 | -27.870 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N1389 | -28.670 | 10.982 | 1.049 | - | - | - | - | - | - | Engastado |
| N1390 | -27.870 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1391 | -28.670 | 9.928 | 1.153 | - | - | - | - | - | - | Engastado |
| N1392 | -27.870 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N1393 | -28.670 | 7.622 | 1.153 | - | - | - | - | - | - | Engastado |
| N1394 | -27.870 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N1395 | -28.670 | 6.568 | 1.049 | - | - | - | - | - | - | Engastado |
| N1396 | -27.870 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N1397 | -28.670 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N1398 | -27.870 | 4.379 | 0.833 | - | - | - | - | - | - | Engastado |
| N1399 | -28.670 | 4.379 | 0.833 | - | - | - | - | - | - | Engastado |
| N1400 | -27.870 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N1401 | -28.670 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N1402 | -27.870 | 2.189 | 0.616 | - | - | - | - | - | - | Engastado |
| N1403 | -28.670 | 2.189 | 0.616 | - | - | - | - | - | - | Engastado |
| N1404 | -27.870 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N1405 | -28.670 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N1406 | -4.740 | 0.438 | 0.043 | - | - | - | - | - | - | Engastado |
| N1408 | -4.740 | 0.876 | 0.487 | - | - | - | - | - | - | Engastado |
| N1418 | -4.740 | 6.130 | 1.006 | - | - | - | - | - | - | Engastado |
| N1422 | -4.740 | 7.429 | 0.734 | - | - | - | - | - | - | Engastado |
| N1426 | -4.740 | 17.112 | 0.043 | - | - | - | - | - | - | Engastado |
| N1427 | -4.740 | 16.674 | 0.487 | - | - | - | - | - | - | Engastado |
| N1441 | -4.740 | 11.420 | 1.006 | - | - | - | - | - | - | Engastado |
| N1442 | -4.740 | 10.982 | 0.649 | - | - | - | - | - | - | Engastado |
| N1443 | -4.740 | 10.121 | 0.734 | - | - | - | - | - | - | Engastado |
| N1446 | -14.240 | 0.438 | 0.043 | - | - | - | - | - | - | Engastado |
| N1447 | -14.240 | 0.876 | 0.487 | - | - | - | - | - | - | Engastado |
| N1448 | -14.240 | 1.314 | 0.130 | - | - | - | - | - | - | Engastado |
| N1458 | -14.240 | 6.130 | 1.006 | - | - | - | - | - | - | Engastado |
| N1462 | -14.240 | 7.429 | 0.734 | - | - | - | - | - | - | Engastado |
| N1465 | -14.240 | 17.112 | 0.043 | - | - | - | - | - | - | Engastado |
| N1466 | -14.240 | 16.674 | 0.487 | - | - | - | - | - | - | Engastado |
| N1467 | -14.240 | 16.236 | 0.130 | - | - | - | - | - | - | Engastado |
| N1480 | -14.240 | 11.420 | 1.006 | - | - | - | - | - | - | Engastado |
| N1481 | -14.240 | 10.121 | 0.734 | - | - | - | - | - | - | Engastado |
| N1484 | -23.100 | 0.438 | 0.043 | - | - | - | - | - | - | Engastado |
| N1485 | -23.100 | 0.876 | 0.487 | - | - | - | - | - | - | Engastado |
| N1486 | -23.100 | 1.314 | 0.130 | - | - | - | - | - | - | Engastado |
| N1496 | -23.100 | 6.130 | 1.006 | - | - | - | - | - | - | Engastado |
| N1503 | -23.100 | 17.112 | 0.043 | - | - | - | - | - | - | Engastado |
| N1504 | -23.100 | 16.674 | 0.487 | - | - | - | - | - | - | Engastado |
| N1505 | -23.100 | 16.236 | 0.130 | - | - | - | - | - | - | Engastado |
| N1518 | -23.100 | 11.420 | 1.006 | - | - | - | - | - | - | Engastado |

| Nós | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Referência | Coordenadas | | | Vínculo c/ exterior | | | | | | Vinculação interna |
| | X (m) | Y (m) | Z (m) | $\Delta_x$ | $\Delta_y$ | $\Delta_z$ | $\theta_x$ | $\theta_y$ | $\theta_z$ | |
| N1519 | -23.100 | 10.121 | 0.734 | - | - | - | - | - | - | Engastado |
| N1522 | -33.190 | 0.438 | 0.043 | - | - | - | - | - | - | Engastado |
| N1523 | -33.190 | 0.876 | 0.487 | - | - | - | - | - | - | Engastado |
| N1534 | -33.190 | 6.130 | 1.006 | - | - | - | - | - | - | Engastado |
| N1538 | -33.190 | 7.429 | 0.734 | - | - | - | - | - | - | Engastado |
| N1541 | -33.190 | 17.112 | 0.043 | - | - | - | - | - | - | Engastado |
| N1542 | -33.190 | 16.674 | 0.487 | - | - | - | - | - | - | Engastado |
| N1556 | -33.190 | 11.420 | 1.006 | - | - | - | - | - | - | Engastado |
| N1557 | -33.190 | 10.121 | 0.734 | - | - | - | - | - | - | Engastado |
| N1560 | -42.690 | 0.438 | 0.043 | - | - | - | - | - | - | Engastado |
| N1561 | -42.690 | 0.876 | 0.487 | - | - | - | - | - | - | Engastado |
| N1572 | -42.690 | 6.130 | 1.006 | - | - | - | - | - | - | Engastado |
| N1576 | -42.690 | 7.429 | 0.734 | - | - | - | - | - | - | Engastado |
| N1579 | -42.690 | 17.112 | 0.043 | - | - | - | - | - | - | Engastado |
| N1580 | -42.690 | 16.674 | 0.487 | - | - | - | - | - | - | Engastado |
| N1594 | -42.690 | 11.420 | 1.006 | - | - | - | - | - | - | Engastado |
| N1595 | -42.690 | 10.121 | 0.734 | - | - | - | - | - | - | Engastado |
| N1598 | -52.430 | 0.438 | 0.043 | - | - | - | - | - | - | Engastado |
| N1599 | -52.430 | 0.876 | 0.487 | - | - | - | - | - | - | Engastado |
| N1610 | -52.430 | 6.130 | 1.006 | - | - | - | - | - | - | Engastado |
| N1614 | -52.430 | 7.429 | 0.734 | - | - | - | - | - | - | Engastado |
| N1617 | -52.430 | 17.112 | 0.043 | - | - | - | - | - | - | Engastado |
| N1618 | -52.430 | 16.674 | 0.487 | - | - | - | - | - | - | Engastado |
| N1632 | -52.430 | 11.420 | 1.006 | - | - | - | - | - | - | Engastado |
| N1633 | -52.430 | 10.121 | 0.734 | - | - | - | - | - | - | Engastado |
| N1636 | -4.740 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N1637 | -4.740 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N1638 | -4.740 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N1639 | -4.740 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1640 | -4.740 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1641 | -4.740 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1642 | -14.240 | 1.095 | 0.108 | - | - | - | - | - | - | Engastado |
| N1643 | -23.100 | 1.095 | 0.108 | - | - | - | - | - | - | Engastado |
| N1644 | -14.240 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N1645 | -14.240 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N1646 | -14.240 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N1647 | -23.100 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N1648 | -23.100 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N1649 | -23.100 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N1650 | -33.190 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N1651 | -33.190 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N1652 | -33.190 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N1653 | -42.690 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N1654 | -42.690 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N1655 | -42.690 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |

| Nós | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Referência | Coordenadas | | | Vínculo c/ exterior | | | | | | Vinculação interna |
| | X (m) | Y (m) | Z (m) | $\Delta_x$ | $\Delta_y$ | $\Delta_z$ | $\theta_x$ | $\theta_y$ | $\theta_z$ | |
| N1656 | -52.430 | 1.095 | 0.508 | - | - | - | - | - | - | Engastado |
| N1657 | -52.430 | 3.284 | 0.725 | - | - | - | - | - | - | Engastado |
| N1658 | -52.430 | 5.473 | 0.941 | - | - | - | - | - | - | Engastado |
| N1659 | -52.430 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1660 | -14.240 | 16.455 | 0.108 | - | - | - | - | - | - | Engastado |
| N1661 | -14.240 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1662 | -14.240 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1663 | -14.240 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1664 | -23.100 | 16.455 | 0.108 | - | - | - | - | - | - | Engastado |
| N1665 | -23.100 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1666 | -23.100 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1667 | -23.100 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1668 | -33.190 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1669 | -33.190 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1670 | -33.190 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1671 | -42.690 | 16.455 | 0.508 | - | - | - | - | - | - | Engastado |
| N1672 | -42.690 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1673 | -42.690 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1674 | -52.430 | 14.266 | 0.725 | - | - | - | - | - | - | Engastado |
| N1675 | -52.430 | 12.077 | 0.941 | - | - | - | - | - | - | Engastado |
| N1676 | -9.280 | 0.438 | 0.043 | - | - | - | - | - | - | Engastado |
| N1682 | -9.280 | 7.429 | 0.734 | - | - | - | - | - | - | Engastado |
| N1685 | -9.280 | 10.121 | 0.734 | - | - | - | - | - | - | Engastado |
| N1687 | -9.280 | 17.112 | 0.043 | - | - | - | - | - | - | Engastado |
| N1693 | -9.280 | 16.674 | 0.487 | - | - | - | - | - | - | Engastado |
| N1698 | -9.280 | 11.420 | 1.006 | - | - | - | - | - | - | Engastado |
| N1701 | -9.280 | 0.876 | 0.487 | - | - | - | - | - | - | Engastado |
| N1706 | -9.280 | 6.130 | 1.006 | - | - | - | - | - | - | Engastado |
| N1707 | -18.660 | 17.112 | 0.043 | - | - | - | - | - | - | Engastado |
| N1708 | -18.660 | 16.674 | 0.487 | - | - | - | - | - | - | Engastado |
| N1718 | -18.660 | 11.420 | 1.006 | - | - | - | - | - | - | Engastado |
| N1719 | -18.660 | 10.121 | 0.734 | - | - | - | - | - | - | Engastado |
| N1720 | -18.660 | 7.429 | 0.734 | - | - | - | - | - | - | Engastado |
| N1725 | -18.660 | 6.130 | 1.006 | - | - | - | - | - | - | Engastado |
| N1733 | -18.660 | 0.438 | 0.043 | - | - | - | - | - | - | Engastado |
| N1734 | -18.660 | 0.876 | 0.487 | - | - | - | - | - | - | Engastado |
| N1737 | -28.270 | 17.112 | 0.043 | - | - | - | - | - | - | Engastado |
| N1738 | -28.270 | 16.674 | 0.487 | - | - | - | - | - | - | Engastado |
| N1748 | -28.270 | 11.420 | 1.006 | - | - | - | - | - | - | Engastado |
| N1749 | -28.270 | 10.121 | 0.734 | - | - | - | - | - | - | Engastado |
| N1750 | -28.270 | 7.429 | 0.734 | - | - | - | - | - | - | Engastado |
| N1755 | -28.270 | 6.130 | 1.006 | - | - | - | - | - | - | Engastado |
| N1763 | -28.270 | 0.438 | 0.043 | - | - | - | - | - | - | Engastado |
| N1764 | -28.270 | 0.876 | 0.487 | - | - | - | - | - | - | Engastado |
| N1767 | -37.880 | 17.112 | 0.043 | - | - | - | - | - | - | Engastado |

| Nós | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Referência | Coordenadas | | | Vínculo c/ exterior | | | | | | Vinculação interna |
| | X (m) | Y (m) | Z (m) | $\Delta_x$ | $\Delta_y$ | $\Delta_z$ | $\theta_x$ | $\theta_y$ | $\theta_z$ | |
| N1768 | -37.880 | 16.674 | 0.487 | - | - | - | - | - | - | Engastado |
| N1778 | -37.880 | 11.420 | 1.006 | - | - | - | - | - | - | Engastado |
| N1779 | -37.880 | 10.121 | 0.734 | - | - | - | - | - | - | Engastado |
| N1780 | -37.880 | 7.429 | 0.734 | - | - | - | - | - | - | Engastado |
| N1785 | -37.880 | 6.130 | 1.006 | - | - | - | - | - | - | Engastado |
| N1793 | -37.880 | 0.438 | 0.043 | - | - | - | - | - | - | Engastado |
| N1794 | -37.880 | 0.876 | 0.487 | - | - | - | - | - | - | Engastado |
| N1797 | -47.490 | 17.112 | 0.043 | - | - | - | - | - | - | Engastado |
| N1798 | -47.490 | 16.674 | 0.487 | - | - | - | - | - | - | Engastado |
| N1808 | -47.490 | 11.420 | 1.006 | - | - | - | - | - | - | Engastado |
| N1809 | -47.490 | 10.121 | 0.734 | - | - | - | - | - | - | Engastado |
| N1810 | -47.490 | 7.429 | 0.734 | - | - | - | - | - | - | Engastado |
| N1815 | -47.490 | 6.130 | 1.006 | - | - | - | - | - | - | Engastado |
| N1823 | -47.490 | 0.438 | 0.043 | - | - | - | - | - | - | Engastado |
| N1824 | -47.490 | 0.876 | 0.487 | - | - | - | - | - | - | Engastado |

## 1.2.- Barras

### 1.2.1.- Materiais utilizados

| Materiais utilizados | | | | | | | |
|---|---|---|---|---|---|---|---|
| Material | | E | $\nu$ | G | $f_y$ | $\alpha_{\cdot t}$ | $\gamma$ |
| Tipo | Designação | (kgf/cm²) | | (kgf/cm²) | (kgf/cm²) | (m/m°C) | (t/m³) |
| Aço laminado | A-572 345MPa | 2038736.0 | 0.300 | 784913.4 | 3516.8 | 0.000012 | 7.850 |
| Aço dobrado | CF-26 | 2038736.0 | 0.300 | 784129.2 | 2650.4 | 0.000012 | 7.850 |

*Notação:*
*E: Módulo de elasticidade*
*$\nu$: Módulo de poisson*
*G: Módulo de corte*
*$f_y$: Limite elástico*
*$\alpha_{\cdot t}$: Coeficiente de dilatação*
*$\gamma$: Peso específico*

### 1.2.2.- Características mecânicas

| Tipos de peça | |
|---|---|
| Ref. | Peças |

| Tipos de peça | |
|---|---|
| Ref. | Peças |
| 1 | N798/N918, N918/N799, N799/N937, N937/N800, N800/N956, N956/N801, N801/N975, N975/N802, N1080/N803, N804/N1080, N1078/N804, N805/N1078, N1076/N805, N806/N1076, N1074/N806, N807/N1074, N808/N920, N920/N809, N809/N939, N939/N810, N810/N958, N958/N811, N811/N978, N978/N812, N1073/N813, N1071/N814, N814/N1073, N815/N1071, N1070/N815, N816/N1070, N1069/N816, N817/N1069, N818/N922, N922/N819, N819/N941, N941/N820, N820/N960, N960/N821, N821/N980, N980/N822, N1068/N823, N1066/N824, N824/N1068, N825/N1066, N1064/N825, N826/N1064, N1062/N826, N827/N1062, N828/N923, N923/N829, N829/N942, N942/N830, N830/N961, N961/N831, N831/N982, N982/N832, N1060/N833, N1058/N834, N834/N1060, N835/N1058, N1057/N835, N836/N1057, N1056/N836, N837/N1056, N838/N925, N925/N839, N839/N944, N944/N840, N840/N963, N963/N841, N841/N984, N984/N842, N1055/N843, N1053/N844, N844/N1055, N845/N1053, N1051/N845, N846/N1051, N1049/N846, N847/N1049, N848/N926, N926/N849, N849/N945, N945/N850, N850/N964, N964/N851, N851/N986, N986/N852, N1047/N853, N1045/N854, N854/N1047, N855/N1045, N1044/N855, N856/N1044, N1043/N856, N857/N1043, N858/N928, N928/N859, N859/N947, N947/N860, N860/N966, N966/N861, N861/N988, N988/N862, N1042/N863, N1040/N864, N864/N1042, N865/N1040, N1038/N865, N866/N1038, N1036/N866, N867/N1036, N868/N929, N929/N869, N869/N948, N948/N870, N870/N967, N967/N871, N871/N990, N990/N872, N1034/N873, N1032/N874, N874/N1034, N875/N1032, N1031/N875, N876/N1031, N1030/N876, N877/N1030, N878/N931, N931/N879, N879/N950, N950/N880, N880/N969, N969/N881, N881/N992, N992/N882, N1029/N883, N1027/N884, N884/N1029, N885/N1027, N1025/N885, N886/N1025, N1023/N886, N887/N1023, N888/N932, N932/N889, N889/N951, N951/N890, N890/N970, N970/N891, N891/N994, N994/N892, N1021/N893, N1019/N894, N894/N1021, N895/N1019, N1018/N895, N896/N1018, N1017/N896, N897/N1017, N898/N934, N934/N899, N899/N953, N953/N900, N900/N972, N972/N901, N901/N996, N996/N902, N1016/N903, N1014/N904, N904/N1016, N905/N1014, N1012/N905, N906/N1012, N1010/N906, N907/N1010, N908/N935, N935/N909, N909/N954, N954/N910, N910/N973, N973/N911, N911/N998, N998/N912, N1007/N913, N1004/N914, N914/N1007, N915/N1004, N1002/N915, N916/N1002, N1000/N916, N917/N1000, N1258/N1295, N1258/N1294, N31/N1296, N31/N1297, N1263/N1298, N1263/N1299, N32/N1300, N32/N1301, N1268/N1302, N1268/N1303, N33/N1304, N33/N1305, N1271/N1306, N1271/N1307, N1289/N1308, N1289/N1309, N37/N1310, N37/N1311, N1286/N1312, N1286/N1313, N36/N1314, N36/N1315, N1281/N1316, N1281/N1317, N35/N1318, N35/N1319, N1275/N1320, N1275/N1321, N51/N1332, N51/N1333, N1253/N1334, N1253/N1335, N1250/N1336, N1250/N1337, N49/N1338, N49/N1339, N89/N1360, N89/N1361, N1211/N1362, N1211/N1363, N1208/N1364, N1208/N1365, N87/N1366, N87/N1367, N1191/N1378, N1191/N1379, N111/N1380, N111/N1381, N1197/N1382, N1197/N1383, N112/N1384, N112/N1385, N1202/N1386, N1202/N1387, N113/N1388, N113/N1389, N1205/N1390, N1205/N1391, N1187/N1392, N1187/N1393, N109/N1394, N109/N1395, N1184/N1396, N1184/N1397, N108/N1398, N108/N1399, N1179/N1400, N1179/N1401, N107/N1402, N107/N1403, N1174/N1404, N1174/N1405, N1642/N1348, N1642/N1349, N1643/N1376, N1643/N1377, N1660/N1323, N1660/N1322, N1664/N1351 e N1664/N1350 |
| 2 | N1/N204, N208/N190, N15/N1, N38/N15, N53/N38, N76/N53, N91/N76, N114/N91, N129/N114, N152/N129, N167/N152, N190/N167, N2/N481, N504/N191, N17/N2, N39/N17, N55/N39, N77/N55, N93/N77, N115/N93, N131/N115, N153/N131, N169/N153 e N191/N169 |

| Tipos de peça | |
|---|---|
| Ref. | Peças |
| 3 | N977/N976, N979/N977, N981/N979, N983/N981, N985/N983, N987/N985, N989/N987, N991/N989, N993/N991, N995/N993, N997/N995, N999/N997, N1008/N1006, N1006/N1015, N1015/N1020, N1020/N1028, N1028/N1033, N1033/N1041, N1041/N1046, N1046/N1054, N1054/N1059, N1059/N1067, N1067/N1072, N1072/N1081, N1636/N919, N1294/N1636, N921/N1294, N1637/N938, N1298/N1637, N940/N1298, N1638/N957, N1302/N1638, N959/N1302, N930/N1650, N1653/N930, N933/N1653, N1656/N933, N936/N1656, N1401/N946, N1651/N1401, N949/N1651, N1654/N949, N952/N1654, N1657/N952, N955/N1657, N1397/N965, N1652/N1397, N968/N1652, N1655/N968, N971/N1655, N1658/N971, N974/N1658, N1378/N1035, N1383/N1037, N1387/N1039, N1035/N1379, N1037/N1382, N1039/N1386, N1320/N1061, N1316/N1063, N1312/N1065, N1321/N1641, N1061/N1321, N1317/N1640, N1063/N1317, N1313/N1639, N1065/N1313, N1639/N1079, N1640/N1077, N1641/N1075, N1001/N1659, N1644/N921, N1645/N940, N1646/N959, N924/N1644, N943/N1645, N962/N1646, N1647/N924, N1648/N943, N1649/N962, N927/N1647, N946/N1648, N965/N1649, N1650/N927, N1661/N1320, N1662/N1316, N1663/N1312, N1048/N1661, N1050/N1662, N1052/N1663, N1665/N1048, N1666/N1050, N1667/N1052, N1668/N1383, N1669/N1387, N1022/N1670, N1024/N1668, N1026/N1669, N1671/N1022, N1672/N1024, N1673/N1026, N1009/N1671, N1011/N1672, N1013/N1673, N1659/N1009, N1674/N1011, N1675/N1013, N1003/N1674, N1005/N1675, N1350/N1665, N1043/N1350, N1379/N1043, N1355/N1666, N1044/N1355, N1382/N1044, N1359/N1667, N1045/N1359, N1386/N1045, N1036/N1378 e N1670/N1036 |
| 4 | N1446/N1447, N49/N1458, N49/N43, N1462/N42, N1465/N1466, N51/N1480, N51/N46, N1481/N45, N38/N42, N39/N45, N1484/N1485, N87/N1496, N87/N81, N1503/N1504, N89/N1518, N89/N84, N1519/N83, N76/N80, N1522/N1523, N125/N1534, N125/N119, N1538/N118, N1541/N1542, N127/N1556, N127/N122, N1557/N121, N1560/N1561, N163/N1572, N163/N157, N1576/N156, N1579/N1580, N165/N1594, N165/N160, N1595/N159, N152/N156, N153/N159, N1598/N1599, N201/N1610, N201/N195, N1614/N194, N1617/N1618, N203/N1632, N203/N198, N1633/N197, N190/N194, N191/N197, N1676/N1701, N33/N1706, N33/N21, N1682/N20, N1687/N1693, N37/N1698, N1685/N25, N15/N20, N17/N25, N1707/N1708, N75/N1718, N75/N64, N1719/N63, N55/N63, N71/N1725, N71/N59, N1720/N58, N53/N58, N1733/N1734, N1737/N1738, N113/N1748, N113/N102, N1749/N101, N109/N1755, N109/N97, N1750/N96, N1763/N1764, N1767/N1768, N151/N1778, N151/N140, N1779/N139, N147/N1785, N147/N135, N1780/N134, N1793/N1794, N1797/N1798, N189/N1808, N189/N178, N1809/N177, N169/N177, N185/N1815, N185/N173, N1810/N172, N167/N172, N1823/N1824, N1406/N1408, N12/N1418, N12/N6, N1422/N5, N1/N5, N1426/N1427, N1442/N1441, N1442/N9 e N1443/N8 |
| 5 | N75/N55, N48/N1465, N1465/N1660, N1660/N1467, N51/N39, N11/N1426, N1442/N2, N13/N1406, N12/N1, N33/N15, N50/N1446, N1446/N1642, N1642/N1448, N49/N38, N71/N53, N88/N1484, N1484/N1643, N1643/N1486, N87/N76, N109/N91, N126/N1522, N125/N114, N147/N129, N113/N93, N124/N1541, N127/N115, N86/N1503, N1503/N1664, N1664/N1505, N89/N77, N151/N131, N164/N1560, N163/N152, N162/N1579, N165/N153, N185/N167, N189/N169, N202/N1598, N201/N190, N200/N1617, N203/N191 e N37/N17 |

| Características mecânicas | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Material | | Ref. | Descrição | A (cm²) | Avy (cm²) | Avz (cm²) | Iyy (cm4) | Izz (cm4) | It (cm4) |
| Tipo | Designação | | | | | | | | |
| Aço laminado | A-572 345MPa | 1 | L 1 1/4 X 3/16, (L TecnoMetal) | 2.87 | 1.30 | 1.30 | 2.63 | 2.63 | 0.21 |
| Aço dobrado | CF-26 | 2 | U127X50X4.76, (U TecnoMetal) | 10.05 | 3.78 | 4.85 | 230.19 | 22.60 | 0.76 |
| | | 3 | C100X50X17X4.25, (C TecnoMetal) | 8.75 | 3.24 | 4.44 | 129.70 | 27.25 | 0.53 |
| | | 4 | U98X25X4.75, (U TecnoMetal) | 6.28 | 1.79 | 3.69 | 72.01 | 2.71 | 0.47 |
| | | 5 | U200X75X4.75, (U TecnoMetal) | 15.88 | 5.75 | 7.73 | 923.11 | 81.65 | 1.19 |

| Características mecânicas | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Material | | Ref. | Descrição | A (cm²) | Avy (cm²) | Avz (cm²) | Iyy (cm4) | Izz (cm4) | It (cm4) |
| Tipo | Designação | | | | | | | | |

*Notação:*
*Ref.: Referência*
*A: Área da seção transversal*
*Avy: Área de esforço cortante da seção segundo o eixo local 'Y'*
*Avz: Área de esforço cortante da seção segundo o eixo local 'Z'*
*Iyy: Inércia da seção em torno do eixo local 'Y'*
*Izz: Inércia da seção em torno do eixo local 'Z'*
*It: Inércia à torção*
*As características mecânicas das peças correspondem à seção no ponto médio das mesmas.*

### 1.2.3.- Tabela resumo

| Tabela resumo | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Material | | Série | Perfil | Comprimento | | | Volume | | | Peso | | |
| Tipo | Designação | | | Perfil (m) | Série (m) | Material (m) | Perfil (m³) | Série (m³) | Material (m³) | Perfil (kg) | Série (kg) | Material (kg) |
| Aço laminado | A-572 345MPa | L TecnoMetal | L 1 1/4 X 3/16 | 254.481 | 254.481 | 254.481 | 0.073 | 0.073 | 0.073 | 573.33 | 573.33 | 573.33 |
| Aço dobrado | CF-26 | U TecnoMetal | U127X50X4.76 | 113.740 | 183.818 | 638.778 | 0.114 | 0.176 | 0.573 | 897.63 | 1378.07 | 4501.80 |
| | | | U98X25X4.75 | 52.169 | | | 0.033 | | | 257.24 | | |
| | | | U200X75X4.75 | 17.908 | | | 0.028 | | | 223.19 | | |
| | | C TecnoMetal | C100X50X17X4.25 | 454.960 | 454.960 | | 0.398 | 0.398 | | 3123.73 | 3123.73 | |

### 1.2.4.- Quantitativos de superfícies

| Perfis de aço: Quantitativos das superfícies a pintar | | | | | |
|---|---|---|---|---|---|
| Tipo | Série | Perfil | Superfície unitária (m²/m) | Comprimento (m) | Superfície (m²) |
| Aço dobrado | U TecnoMetal | U127X50X4.76 | 0.432 | 113.740 | 49.129 |
| | | U98X25X4.75 | 0.274 | 52.169 | 14.294 |
| | | U200X75X4.75 | 0.678 | 17.908 | 12.142 |
| | C TecnoMetal | C100X50X17X4.25 | 0.420 | 454.960 | 191.133 |
| | | | | Subtotal | 266.698 |
| Aço laminado | L TecnoMetal | L 1 1/4 X 3/16 | 0.128 | 254.481 | 32.574 |
| | | | | Subtotal | 32.574 |
| | | | | **Total** | **299.272** |

# 2.- RESULTADOS

## 2.1.- Nós

### 2.1.1.- Reações

Referências:

Rx, Ry, Rz: Reações em nós com deslocamentos restringidos (forças).
Mx, My, Mz: Reações em nós com rotações restringidas (momentos).

#### *2.1.1.1.- Envoltórias*

| Envoltórias das reações em nós | | |
|---|---|---|
| Referência | Combinação | Reações em eixos globais |

| | Tipo | Descrição | Rx (t) | Ry (t) | Rz (t) | Mx (t·m) | My (t·m) | Mz (t·m) |
|---|---|---|---|---|---|---|---|---|
| N11 | Concreto em fundações | Valor mínimo da envoltória | 0.004 | -11.690 | 0.371 | 0.050 | 0.001 | 0.004 |
| | | Valor máximo da envoltória | 0.015 | -3.998 | 1.075 | 0.144 | 0.002 | 0.014 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | 0.004 | -8.755 | 0.371 | 0.050 | 0.001 | 0.004 |
| | | Valor máximo da envoltória | 0.011 | -3.998 | 0.805 | 0.108 | 0.001 | 0.011 |
| N13 | Concreto em fundações | Valor mínimo da envoltória | 0.002 | 2.339 | 0.221 | -0.129 | 0.000 | -0.012 |
| | | Valor máximo da envoltória | 0.014 | 10.384 | 0.958 | -0.030 | 0.001 | -0.002 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | 0.003 | 2.813 | 0.264 | -0.097 | 0.000 | -0.009 |
| | | Valor máximo da envoltória | 0.010 | 7.822 | 0.721 | -0.035 | 0.001 | -0.003 |
| N48 | Concreto em fundações | Valor mínimo da envoltória | 0.029 | -13.623 | 0.397 | 0.060 | 0.003 | 0.028 |
| | | Valor máximo da envoltória | 0.176 | -4.553 | 1.165 | 0.181 | 0.019 | 0.163 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | 0.029 | -10.204 | 0.400 | 0.061 | 0.003 | 0.028 |
| | | Valor máximo da envoltória | 0.129 | -4.589 | 0.872 | 0.136 | 0.014 | 0.119 |
| N50 | Concreto em fundações | Valor mínimo da envoltória | 0.016 | 2.787 | 0.258 | -0.146 | 0.002 | -0.165 |
| | | Valor máximo da envoltória | 0.179 | 11.029 | 0.954 | -0.037 | 0.020 | -0.015 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | 0.020 | 3.329 | 0.301 | -0.111 | 0.002 | -0.121 |
| | | Valor máximo da envoltória | 0.131 | 8.352 | 0.722 | -0.044 | 0.014 | -0.019 |
| N86 | Concreto em fundações | Valor mínimo da envoltória | -0.137 | -14.284 | 0.329 | 0.049 | -0.015 | -0.125 |
| | | Valor máximo da envoltória | -0.044 | -3.715 | 1.224 | 0.190 | -0.005 | -0.040 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | -0.103 | -10.700 | 0.357 | 0.054 | -0.011 | -0.094 |
| | | Valor máximo da envoltória | -0.044 | -4.056 | 0.917 | 0.143 | -0.005 | -0.040 |
| N88 | Concreto em fundações | Valor mínimo da envoltória | -0.114 | 2.931 | 0.272 | -0.145 | -0.013 | 0.020 |
| | | Valor máximo da envoltória | -0.022 | 10.912 | 0.948 | -0.039 | -0.002 | 0.107 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | -0.086 | 3.496 | 0.317 | -0.107 | -0.010 | 0.025 |
| | | Valor máximo da envoltória | -0.028 | 8.061 | 0.701 | -0.046 | -0.003 | 0.081 |
| N124 | Concreto em fundações | Valor mínimo da envoltória | -0.010 | -12.806 | 0.084 | 0.011 | -0.001 | -0.009 |
| | | Valor máximo da envoltória | -0.001 | -0.869 | 1.177 | 0.159 | 0.000 | 0.003 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | -0.007 | -9.592 | 0.176 | 0.023 | -0.001 | -0.006 |
| | | Valor máximo da envoltória | -0.001 | -1.870 | 0.882 | 0.119 | 0.000 | 0.002 |
| N126 | Concreto em fundações | Valor mínimo da envoltória | -0.010 | 0.870 | 0.084 | -0.116 | -0.001 | -0.002 |
| | | Valor máximo da envoltória | 0.000 | 9.283 | 0.859 | -0.011 | 0.000 | 0.009 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | -0.007 | 1.870 | 0.176 | -0.084 | -0.001 | -0.001 |
| | | Valor máximo da envoltória | 0.000 | 6.656 | 0.617 | -0.023 | 0.000 | 0.006 |
| N162 | Concreto em fundações | Valor mínimo da envoltória | 0.000 | -13.193 | 0.116 | 0.015 | 0.000 | 0.000 |
| | | Valor máximo da envoltória | 0.008 | -1.219 | 1.213 | 0.164 | 0.001 | 0.009 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | 0.001 | -9.882 | 0.202 | 0.027 | 0.000 | 0.001 |
| | | Valor máximo da envoltória | 0.006 | -2.157 | 0.908 | 0.123 | 0.001 | 0.007 |
| N164 | Concreto em fundações | Valor mínimo da envoltória | 0.000 | 1.219 | 0.116 | -0.120 | 0.000 | -0.006 |
| | | Valor máximo da envoltória | 0.005 | 9.570 | 0.885 | -0.015 | 0.001 | 0.000 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | 0.001 | 2.156 | 0.202 | -0.086 | 0.000 | -0.005 |
| | | Valor máximo da envoltória | 0.004 | 6.862 | 0.636 | -0.027 | 0.001 | -0.001 |
| N200 | Concreto em fundações | Valor mínimo da envoltória | 0.004 | -12.353 | 0.106 | 0.014 | 0.000 | 0.004 |
| | | Valor máximo da envoltória | 0.065 | -1.105 | 1.135 | 0.152 | 0.007 | 0.063 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | 0.009 | -9.253 | 0.187 | 0.025 | 0.001 | 0.009 |
| | | Valor máximo da envoltória | 0.048 | -1.991 | 0.850 | 0.114 | 0.006 | 0.047 |
| N202 | Concreto em fundações | Valor mínimo da envoltória | 0.004 | 1.105 | 0.106 | -0.111 | 0.000 | -0.044 |
| | | Valor máximo da envoltória | 0.045 | 8.936 | 0.826 | -0.014 | 0.005 | -0.004 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | 0.009 | 1.991 | 0.187 | -0.080 | 0.001 | -0.032 |
| | | Valor máximo da envoltória | 0.032 | 6.402 | 0.593 | -0.025 | 0.004 | -0.009 |
| N204 | Concreto em fundações | Valor mínimo da envoltória | -5.786 | -0.006 | 0.234 | 0.000 | 0.008 | -0.002 |

| Envoltórias das reações em nós | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Referência | Combinação | | Reações em eixos globais | | | | | |
| | Tipo | Descrição | Rx (t) | Ry (t) | Rz (t) | Mx (t·m) | My (t·m) | Mz (t·m) |
| | | Valor máximo da envoltória | -1.622 | 0.001 | 0.786 | 0.000 | 0.023 | 0.005 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | -4.344 | -0.004 | 0.261 | 0.000 | 0.009 | -0.001 |
| | | Valor máximo da envoltória | -1.826 | 0.000 | 0.589 | 0.000 | 0.017 | 0.004 |
| N208 | Concreto em fundações | Valor mínimo da envoltória | 0.871 | -0.011 | 0.123 | 0.000 | -0.002 | -0.011 |
| | | Valor máximo da envoltória | 5.480 | 0.000 | 0.683 | 0.000 | -0.001 | 0.000 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | 1.370 | -0.008 | 0.183 | 0.000 | -0.002 | -0.008 |
| | | Valor máximo da envoltória | 3.975 | -0.001 | 0.495 | 0.000 | -0.001 | -0.001 |
| N481 | Concreto em fundações | Valor mínimo da envoltória | -6.308 | 0.002 | 0.326 | 0.000 | 0.010 | -0.008 |
| | | Valor máximo da envoltória | -2.336 | 0.009 | 0.850 | 0.000 | 0.024 | -0.002 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | -4.717 | 0.002 | 0.326 | 0.000 | 0.010 | -0.006 |
| | | Valor máximo da envoltória | -2.336 | 0.007 | 0.635 | 0.000 | 0.018 | -0.002 |
| N504 | Concreto em fundações | Valor mínimo da envoltória | 0.870 | 0.001 | 0.123 | 0.000 | -0.002 | 0.001 |
| | | Valor máximo da envoltória | 7.141 | 0.019 | 0.880 | 0.000 | 0.000 | 0.019 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | 1.369 | 0.002 | 0.183 | 0.000 | -0.002 | 0.002 |
| | | Valor máximo da envoltória | 5.342 | 0.014 | 0.657 | 0.000 | -0.001 | 0.014 |
| N919 | Concreto em fundações | Valor mínimo da envoltória | -0.069 | -0.008 | 0.066 | -0.001 | 0.055 | -0.004 |
| | | Valor máximo da envoltória | -0.006 | 0.006 | 0.339 | -0.001 | 0.283 | 0.008 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | -0.051 | -0.006 | 0.083 | -0.001 | 0.070 | -0.003 |
| | | Valor máximo da envoltória | -0.007 | 0.004 | 0.256 | -0.001 | 0.214 | 0.006 |
| N936 | Concreto em fundações | Valor mínimo da envoltória | -0.013 | 0.001 | 0.022 | -0.001 | -0.189 | 0.000 |
| | | Valor máximo da envoltória | -0.002 | 0.010 | 0.247 | -0.001 | -0.018 | 0.007 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | -0.010 | 0.001 | 0.048 | -0.001 | -0.135 | 0.000 |
| | | Valor máximo da envoltória | -0.003 | 0.007 | 0.176 | -0.001 | -0.038 | 0.005 |
| N938 | Concreto em fundações | Valor mínimo da envoltória | -0.001 | -0.011 | 0.069 | -0.001 | 0.064 | -0.003 |
| | | Valor máximo da envoltória | 0.006 | 0.005 | 0.361 | -0.001 | 0.335 | 0.014 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | -0.001 | -0.008 | 0.088 | -0.001 | 0.081 | -0.001 |
| | | Valor máximo da envoltória | 0.004 | 0.003 | 0.273 | -0.001 | 0.253 | 0.010 |
| N955 | Concreto em fundações | Valor mínimo da envoltória | 0.004 | -0.001 | 0.024 | -0.001 | -0.226 | -0.004 |
| | | Valor máximo da envoltória | 0.021 | 0.009 | 0.262 | -0.001 | -0.022 | 0.006 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | 0.006 | -0.001 | 0.052 | -0.001 | -0.161 | -0.003 |
| | | Valor máximo da envoltória | 0.016 | 0.006 | 0.187 | -0.001 | -0.046 | 0.004 |
| N957 | Concreto em fundações | Valor mínimo da envoltória | -0.015 | -0.013 | 0.071 | -0.001 | 0.068 | -0.003 |
| | | Valor máximo da envoltória | 0.006 | 0.005 | 0.367 | -0.001 | 0.346 | 0.016 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | -0.010 | -0.009 | 0.090 | -0.001 | 0.086 | -0.001 |
| | | Valor máximo da envoltória | 0.004 | 0.003 | 0.277 | -0.001 | 0.261 | 0.012 |
| N974 | Concreto em fundações | Valor mínimo da envoltória | -0.007 | -0.003 | 0.025 | -0.001 | -0.239 | -0.006 |
| | | Valor máximo da envoltória | 0.016 | 0.009 | 0.270 | -0.001 | -0.025 | 0.006 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | -0.003 | -0.002 | 0.054 | -0.001 | -0.171 | -0.004 |
| | | Valor máximo da envoltória | 0.012 | 0.006 | 0.193 | -0.001 | -0.050 | 0.003 |
| N976 | Concreto em fundações | Valor mínimo da envoltória | -0.045 | -0.012 | 0.071 | -0.001 | 0.069 | -0.002 |
| | | Valor máximo da envoltória | -0.004 | 0.004 | 0.348 | -0.001 | 0.318 | 0.013 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | -0.033 | -0.009 | 0.088 | -0.001 | 0.084 | -0.001 |
| | | Valor máximo da envoltória | -0.004 | 0.003 | 0.263 | -0.001 | 0.240 | 0.010 |
| N999 | Concreto em fundações | Valor mínimo da envoltória | -0.016 | -0.003 | 0.025 | -0.001 | -0.226 | -0.005 |
| | | Valor máximo da envoltória | -0.003 | 0.008 | 0.259 | -0.001 | -0.025 | 0.006 |
| | Tensões sobre o terreno | Valor mínimo da envoltória | -0.012 | -0.002 | 0.052 | -0.001 | -0.163 | -0.004 |
| | | Valor máximo da envoltória | -0.003 | 0.006 | 0.185 | -0.001 | -0.047 | 0.003 |

| Envoltórias das reações em nós | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Referência | Combinação | | Reações em eixos globais | | | | | | | |
| | Tipo | Descrição | Rx (t) | Ry (t) | Rz (t) | Mx (t·m) | My (t·m) | Mz (t·m) | | |
| N1001 | Concreto em fundações | Valor mínimo da envoltória | -0.016 | -0.010 | 0.022 | 0.001 | -0.268 | -0.007 | | |
| | | Valor máximo da envoltória | -0.005 | 0.011 | 0.351 | 0.001 | -0.018 | 0.008 | | |
| | Tensões sobre o terreno | Valor mínimo da envoltória | -0.012 | -0.007 | 0.048 | 0.001 | -0.201 | -0.005 | | |
| | | Valor máximo da envoltória | -0.005 | 0.007 | 0.263 | 0.001 | -0.038 | 0.006 | | |
| N1003 | Concreto em fundações | Valor mínimo da envoltória | 0.006 | -0.009 | 0.024 | 0.001 | -0.322 | -0.006 | | |
| | | Valor máximo da envoltória | 0.018 | 0.013 | 0.374 | 0.001 | -0.022 | 0.014 | | |
| | Tensões sobre o terreno | Valor mínimo da envoltória | 0.006 | -0.006 | 0.052 | 0.001 | -0.242 | -0.004 | | |
| | | Valor máximo da envoltória | 0.013 | 0.010 | 0.280 | 0.001 | -0.046 | 0.010 | | |
| N1005 | Concreto em fundações | Valor mínimo da envoltória | -0.006 | -0.009 | 0.025 | 0.001 | -0.340 | -0.006 | | |
| | | Valor máximo da envoltória | 0.013 | 0.016 | 0.383 | 0.001 | -0.025 | 0.017 | | |
| | Tensões sobre o terreno | Valor mínimo da envoltória | -0.003 | -0.006 | 0.054 | 0.001 | -0.255 | -0.003 | | |
| | | Valor máximo da envoltória | 0.010 | 0.011 | 0.287 | 0.001 | -0.050 | 0.013 | | |
| N1008 | Concreto em fundações | Valor mínimo da envoltória | -0.017 | -0.008 | 0.025 | 0.001 | -0.309 | -0.006 | | |
| | | Valor máximo da envoltória | -0.004 | 0.015 | 0.362 | 0.001 | -0.025 | 0.015 | | |
| | Tensões sobre o terreno | Valor mínimo da envoltória | -0.012 | -0.006 | 0.052 | 0.001 | -0.232 | -0.003 | | |
| | | Valor máximo da envoltória | -0.004 | 0.011 | 0.272 | 0.001 | -0.047 | 0.011 | | |
| N1075 | Concreto em fundações | Valor mínimo da envoltória | -0.069 | 0.000 | 0.126 | 0.001 | 0.106 | -0.012 | | |
| | | Valor máximo da envoltória | -0.012 | 0.013 | 0.390 | 0.001 | 0.326 | -0.001 | | |
| | Tensões sobre o terreno | Valor mínimo da envoltória | -0.051 | 0.000 | 0.126 | 0.001 | 0.106 | -0.009 | | |
| | | Valor máximo da envoltória | -0.012 | 0.009 | 0.293 | 0.001 | 0.244 | -0.001 | | |
| N1077 | Concreto em fundações | Valor mínimo da envoltória | -0.008 | 0.001 | 0.134 | 0.001 | 0.124 | -0.018 | | |
| | | Valor máximo da envoltória | 0.004 | 0.016 | 0.414 | 0.001 | 0.383 | -0.003 | | |
| | Tensões sobre o terreno | Valor mínimo da envoltória | -0.006 | 0.001 | 0.134 | 0.001 | 0.124 | -0.013 | | |
| | | Valor máximo da envoltória | 0.002 | 0.012 | 0.310 | 0.001 | 0.288 | -0.003 | | |
| N1079 | Concreto em fundações | Valor mínimo da envoltória | -0.015 | 0.002 | 0.136 | 0.001 | 0.130 | -0.021 | | |
| | | Valor máximo da envoltória | 0.009 | 0.018 | 0.419 | 0.001 | 0.397 | -0.004 | | |
| | Tensões sobre o terreno | Valor mínimo da envoltória | -0.009 | 0.002 | 0.136 | 0.001 | 0.130 | -0.015 | | |
| | | Valor máximo da envoltória | 0.007 | 0.013 | 0.314 | 0.001 | 0.297 | -0.004 | | |
| N1081 | Concreto em fundações | Valor mínimo da envoltória | -0.041 | 0.002 | 0.129 | 0.001 | 0.120 | -0.018 | | |
| | | Valor máximo da envoltória | -0.005 | 0.017 | 0.394 | 0.001 | 0.360 | -0.003 | | |
| | Tensões sobre o terreno | Valor mínimo da envoltória | -0.030 | 0.002 | 0.129 | 0.001 | 0.120 | -0.013 | | |
| | | Valor máximo da envoltória | -0.005 | 0.012 | 0.295 | 0.001 | 0.270 | -0.003 | | |

Nota: As combinações de concreto indicadas são as mesmas utilizadas para verificar o estado limite de equilíbrio na fundação.

## 2.2.- Barras

### 2.2.1.- Verificações E.L.U. (Resumido)

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | λ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N1/N230 | x: 0.075 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 23.0 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 55.9 | x: 0.075 m<br>η = 20.0 | η = 0.1 | N.A.(3) | x: 0 m<br>η = 35.2 | N.A.(4) | x: 0 m<br>η = 78.9 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 78.9** |
| N230/N227 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 20.3 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.285 m<br>η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 20.3** |
| N227/N224 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 20.2 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.47 m<br>η = 7.8 | x: 0 m<br>η = 0.3 | η < 0.1 | N.A.(3) | x: 0.47 m<br>η = 0.6 | N.A.(4) | x: 0.47 m<br>η = 28.2 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 28.2** |

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | λ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N224/N223 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 11.3 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.3 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 11.3** |
| N223/N220 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 11.1 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 11.1** |
| N220/N219 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 1.9 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 1.9** |
| N219/N217 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 1.8 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 1.8** |
| N217/N215 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 14.3 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 14.3** |
| N215/N213 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 14.5 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 14.5** |
| N213/N211 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 32.5 | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 6.9 | x: 0 m η = 0.1 | η < 0.1 | N.A.(3) | x: 0 m η = 0.5 | x: 0 m η = 39.5 | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 39.5** |
| N211/N206 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 32.8 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.4 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 32.8** |
| N206/N204 | x: 0 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 42.7 | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.15 m η = 63.8 | x: 0.15 m η = 13.4 | η = 0.1 | N.A.(3) | x: 0.15 m η = 42.5 | x: 0.15 m η = 93.0 | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 93.0** |
| N208/N468 | x: 0.068 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 37.7 | x: 0 m η = 1.2 | x: 0 m η = 47.2 | x: 0 m η = 11.6 | η = 0.1 | x: 0 m η < 0.1 | x: 0 m η = 23.6 | x: 0 m η = 85.9 | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 85.9** |
| N468/N465 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 37.3 | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 9.2 | x: 0.47 m η = 0.7 | η = 0.1 | N.A.(3) | x: 0.47 m η = 0.9 | x: 0.47 m η = 46.9 | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 46.9** |
| N465/N464 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 20.8 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.3 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 20.8** |
| N464/N461 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 20.6 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.1 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 20.6** |
| N461/N460 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 4.7 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.1 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 4.7** |
| N460/N457 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 4.5 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.1 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 4.5** |
| N457/N456 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 6.3 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.1 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 6.3** |
| N456/N453 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 6.4 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.2 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 6.4** |
| N453/N452 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 15.0 | $N_{c,Sd}$ = 0.00 N.A.(1) | x: 0.47 m η = 1.2 | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.2 | η = 0.1 | x: 0.47 m η < 0.1 | N.A.(3) | N.A.(4) | x: 0.47 m η = 19.2 | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 19.2** |
| N452/N305 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 15.1 | $N_{c,Sd}$ = 0.00 N.A.(1) | x: 0.47 m η = 1.8 | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.2 | η = 0.1 | x: 0.47 m η < 0.1 | N.A.(3) | N.A.(4) | x: 0.47 m η = 18.8 | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 18.8** |
| N305/N190 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 19.3 | $N_{c,Sd}$ = 0.00 N.A.(1) | x: 0.075 m η = 2.0 | x: 0.075 m η = 54.6 | x: 0 m η = 18.6 | η = 0.1 | x: 0.075 m η < 0.1 | x: 0.075 m η = 33.3 | N.A.(4) | x: 0.075 m η = 75.7 | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 75.7** |
| N15/N253 | x: 0.075 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 39.7 | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 62.7 | x: 0 m η = 23.0 | η < 0.1 | N.A.(3) | x: 0 m η = 44.7 | x: 0 m η = 97.1 | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 97.1** |
| N253/N249 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 36.7 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.9 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 36.7** |
| N249/N246 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 36.4 | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 9.0 | x: 0.47 m η = 0.4 | η < 0.1 | N.A.(3) | x: 0.47 m η = 0.8 | x: 0.47 m η = 45.8 | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 45.8** |
| N246/N245 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 18.9 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.3 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 18.9** |
| N245/N242 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 18.6 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 18.6** |
| N242/N241 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | η = 0.1 | η = 2.1 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 2.1** |
| N241/N238 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | η = 0.1 | η = 1.9 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 1.9** |
| N238/N237 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 8.8 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 8.8** |
| N237/N234 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 8.9 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 8.9** |
| N234/N233 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 18.1 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 6.9 | x: 0.47 m η = 0.2 | η < 0.1 | N.A.(3) | x: 0 m η = 0.5 | N.A.(4) | x: 0 m η = 25.4 | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 25.4** |
| N233/N231 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 18.2 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 18.2** |

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | $\lambda$ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N231/N1 | x: 0 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 22.7 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.075 m<br>η = 56.6 | x: 0 m<br>η = 19.5 | η < 0.1 | N.A.(3) | x: 0.075 m<br>η = 35.8 | N.A.(4) | x: 0.075 m<br>η = 79.7 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 79.7** |
| N38/N275 | x: 0.075 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 21.5 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 56.2 | x: 0.075 m<br>η = 17.5 | η < 0.1 | N.A.(3) | x: 0 m<br>η = 34.6 | N.A.(4) | x: 0 m<br>η = 78.3 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 78.3** |
| N275/N271 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 16.8 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.58 m<br>η = 0.3 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 16.8** |
| N271/N268 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 16.7 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 16.7** |
| N268/N267 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 8.7 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.47 m<br>η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 8.7** |
| N267/N264 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 8.6 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 8.6** |
| N264/N263 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 0.5 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.47 m<br>η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 0.5** |
| N263/N260 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 0.4 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.47 m<br>η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 0.4** |
| N260/N259 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 15.9 | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 15.9** |
| N259/N256 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 16.2 | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.47 m<br>η = 0.3 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 16.2** |
| N256/N255 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 33.1 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 7.0 | x: 0 m<br>η = 0.2 | η < 0.1 | N.A.(3) | x: 0 m<br>η = 0.5 | x: 0 m<br>η = 40.5 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 40.5** |
| N255/N251 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 33.4 | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.47 m<br>η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 33.4** |
| N251/N15 | x: 0 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 42.0 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.075 m<br>η = 53.8 | x: 0.075 m<br>η = 18.9 | η < 0.1 | N.A.(3) | x: 0.075 m<br>η = 32.6 | x: 0.075 m<br>η = 96.4 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 96.4** |
| N53/N279 | x: 0.075 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 40.1 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 59.9 | x: 0 m<br>η = 20.9 | η = 0.1 | N.A.(3) | x: 0 m<br>η = 40.2 | x: 0 m<br>η = 99.4 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 99.4** |
| N279/N322 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 39.9 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.51 m<br>η = 9.8 | x: 0.51 m<br>η = 0.6 | η = 0.1 | N.A.(3) | x: 0.51 m<br>η = 1.0 | x: 0.51 m<br>η = 50.0 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 50.0** |
| N322/N321 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 22.3 | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.3 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 22.3** |
| N321/N318 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 22.0 | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.47 m<br>η = 0.1 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 22.0** |
| N318/N317 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 5.4 | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.1 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 5.4** |
| N317/N314 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 5.2 | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.1 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 5.2** |
| N314/N313 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 6.4 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.47 m<br>η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 6.4** |
| N313/N310 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 6.5 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.2 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 6.5** |
| N310/N309 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 15.5 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.47 m<br>η = 0.2 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 15.5** |
| N309/N273 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 15.6 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0.47 m<br>η = 1.2 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.2 | η = 0.1 | x: 0.47 m<br>η < 0.1 | N.A.(3) | N.A.(4) | x: 0.47 m<br>η = 18.2 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 18.2** |
| N273/N38 | x: 0 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 20.1 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0.075 m<br>η = 1.4 | x: 0.075 m<br>η = 55.7 | x: 0 m<br>η = 19.4 | η = 0.1 | x: 0.075 m<br>η < 0.1 | x: 0.075 m<br>η = 34.8 | N.A.(4) | x: 0.075 m<br>η = 77.0 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 77.0** |
| N76/N283 | x: 0.075 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 20.1 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 53.0 | x: 0.075 m<br>η = 18.4 | η = 0.1 | N.A.(3) | x: 0 m<br>η = 31.5 | N.A.(4) | x: 0 m<br>η = 74.1 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 74.1** |
| N283/N340 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 20.0 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.5 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 20.0** |
| N340/N338 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 20.0 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.47 m<br>η = 8.5 | x: 0 m<br>η = 0.5 | η = 0.1 | N.A.(3) | x: 0.47 m<br>η = 0.7 | N.A.(4) | x: 0.47 m<br>η = 29.1 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 29.1** |
| N338/N337 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 10.5 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.47 m<br>η = 0.2 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 10.5** |
| N337/N334 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 10.4 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 10.4** |
| N334/N333 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 1.5 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.47 m<br>η = 0.1 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 1.5** |
| N333/N330 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 1.4 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.47 m<br>η = 0.1 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 1.4** |

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | λ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N330/N329 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | η = 14.4 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.1 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 14.4** |
| N329/N326 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | η = 14.7 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m η = 0.2 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 14.7** |
| N326/N325 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | η = 31.4 | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 6.9 | x: 0 m η = 0.2 | η < 0.1 | N.A.(3) | x: 0 m η = 0.5 | x: 0 m η = 38.5 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 38.5** |
| N325/N277 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | η = 31.7 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m η = 0.1 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 31.7** |
| N277/N53 | x: 0 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | η = 40.1 | $M_{Sd} = 0.00$ N.A.(2) | x: 0.075 m η = 66.9 | x: 0.075 m η = 22.9 | η = 0.1 | N.A.(3) | x: 0.075 m η = 50.0 | x: 0.075 m η = 92.4 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 92.4** |
| N91/N287 | x: 0.075 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | η = 41.2 | x: 0 m η = 1.2 | x: 0 m η = 52.2 | x: 0 m η = 16.9 | η < 0.1 | x: 0 m η < 0.1 | x: 0 m η = 30.1 | x: 0 m η = 91.3 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 91.3** |
| N287/N359 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | η = 41.0 | x: 0 m η = 1.2 | x: 0.32 m η = 7.4 | x: 0.32 m η = 0.7 | η = 0.1 | x: 0 m η < 0.1 | x: 0.32 m η = 0.6 | x: 0.32 m η = 48.6 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 48.6** |
| N359/N358 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | η = 27.2 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.4 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 27.2** |
| N358/N355 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | η = 26.9 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 26.9** |
| N355/N354 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | η = 0.1 | η = 10.9 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 10.9** |
| N354/N351 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | η = 0.1 | η = 10.6 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 10.6** |
| N351/N350 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 4.0 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 4.0** |
| N350/N347 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 4.1 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 4.1** |
| N347/N346 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 10.8 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 10.8** |
| N346/N343 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 10.9 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 10.9** |
| N343/N342 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 17.8 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 17.8** |
| N342/N281 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 17.9 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 17.9** |
| N281/N76 | x: 0 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 21.2 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.075 m η = 49.4 | x: 0 m η = 16.5 | η < 0.1 | N.A.(3) | x: 0.075 m η = 27.1 | N.A.(4) | x: 0.075 m η = 70.3 | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 70.3** |
| N114/N291 | x: 0.038 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 20.3 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 49.4 | x: 0.075 m η = 16.2 | η < 0.1 | N.A.(3) | x: 0 m η = 27.0 | N.A.(4) | x: 0 m η = 70.0 | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 70.0** |
| N291/N378 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 16.2 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.54 m η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 16.2** |
| N378/N375 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 16.0 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 16.0** |
| N375/N374 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 8.5 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 8.5** |
| N374/N371 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 8.3 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 8.3** |
| N371/N370 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | η = 0.6 | η = 2.7 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 2.7** |
| N370/N367 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | η = 0.4 | η = 2.8 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 2.8** |
| N367/N366 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | η = 15.2 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 15.2** |
| N366/N363 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | η = 15.5 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 15.5** |
| N363/N362 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | η = 31.1 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 31.1** |
| N362/N285 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | η = 31.3 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.2 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 31.3** |
| N285/N91 | x: 0 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | η = 39.4 | x: 0.075 m η = 1.3 | x: 0.075 m η = 58.1 | x: 0.075 m η = 19.9 | η < 0.1 | x: 0.075 m η < 0.1 | x: 0.075 m η = 37.7 | x: 0.075 m η = 98.0 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 98.0** |
| N129/N295 | x: 0.038 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | η = 40.4 | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 56.6 | x: 0 m η = 20.6 | η < 0.1 | N.A.(3) | x: 0 m η = 36.3 | x: 0 m η = 97.2 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 97.2** |

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | $\lambda$ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N295/N396 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 34.8$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 34.8$** |
| N396/N393 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 34.5$ | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 7.6$ | x: 0.47 m $\eta = 0.3$ | $\eta < 0.1$ | N.A.(3) | x: 0.47 m $\eta = 0.6$ | x: 0.47 m $\eta = 42.3$ | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 42.3$** |
| N393/N392 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 18.1$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.3$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 18.1$** |
| N392/N389 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 17.8$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 17.8$** |
| N389/N388 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 1.7$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 1.7$** |
| N388/N385 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 1.5$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 1.5$** |
| N385/N384 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 7.7$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 7.7$** |
| N384/N381 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 7.9$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 7.9$** |
| N381/N380 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 16.1$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 16.1$** |
| N380/N289 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 16.2$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 16.2$** |
| N289/N114 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 20.3$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.075 m $\eta = 54.0$ | x: 0 m $\eta = 18.0$ | $\eta < 0.1$ | N.A.(3) | x: 0.075 m $\eta = 32.4$ | N.A.(4) | x: 0.075 m $\eta = 74.4$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 74.4$** |
| N152/N299 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 21.0$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 51.6$ | x: 0.075 m $\eta = 17.7$ | $\eta < 0.1$ | N.A.(3) | x: 0 m $\eta = 29.7$ | N.A.(4) | x: 0 m $\eta = 72.8$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 72.8$** |
| N299/N414 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 17.4$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.43 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 17.4$** |
| N414/N411 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 17.2$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 17.2$** |
| N411/N410 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 9.1$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 9.1$** |
| N410/N407 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 9.0$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 9.0$** |
| N407/N406 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 0.7$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 0.7$** |
| N406/N403 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 0.6$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 0.6$** |
| N403/N402 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 15.6$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 15.6$** |
| N402/N399 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 15.8$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 15.8$** |
| N399/N398 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 32.6$ | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 6.8$ | x: 0 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | x: 0 m $\eta = 0.5$ | x: 0 m $\eta = 39.5$ | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 39.5$** |
| N398/N293 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 32.9$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 32.9$** |
| N293/N129 | x: 0 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 41.4$ | $M_{Sd} = 0.00$ N.A.(2) | x: 0.075 m $\eta = 58.9$ | x: 0.075 m $\eta = 20.0$ | $\eta < 0.1$ | N.A.(3) | x: 0.075 m $\eta = 38.6$ | x: 0.075 m $\eta = 99.7$ | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 99.7$** |
| N167/N303 | x: 0.038 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 39.1$ | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 59.9$ | x: 0 m $\eta = 20.0$ | $\eta < 0.1$ | N.A.(3) | x: 0 m $\eta = 39.8$ | x: 0 m $\eta = 99.5$ | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 99.5$** |
| N303/N432 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 31.7$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 31.7$** |
| N432/N429 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 31.5$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 31.5$** |
| N429/N428 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 15.1$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 15.1$** |
| N428/N425 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 14.8$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 14.8$** |
| N425/N424 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 0.6$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 0.6$** |
| N424/N421 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 0.7$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 0.7$** |
| N421/N420 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 8.9$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 8.9$** |

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | λ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N420/N417 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 9.0 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 9.0** |
| N417/N416 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 17.0 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 17.0** |
| N416/N297 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 17.1 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 17.1** |
| N297/N152 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 21.0 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.075 m η = 51.6 | x: 0 m η = 17.2 | η < 0.1 | N.A.(3) | x: 0.075 m η = 29.5 | N.A.(4) | x: 0.075 m η = 72.6 | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 72.6** |
| N190/N307 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 19.9 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 49.9 | x: 0.075 m η = 16.1 | η = 0.1 | N.A.(3) | x: 0 m η = 27.5 | N.A.(4) | x: 0 m η = 70.9 | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 70.9** |
| N307/N450 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 15.6 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.56 m η = 0.2 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 15.6** |
| N450/N447 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 15.5 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 15.5** |
| N447/N446 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 8.0 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 8.0** |
| N446/N443 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 7.9 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 7.9** |
| N443/N442 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 0.3 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 0.3** |
| N442/N439 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | η = 0.2 | η < 0.1 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 0.2** |
| N439/N438 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 15.3 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 15.3** |
| N438/N435 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 15.6 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 15.6** |
| N435/N434 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 31.5 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 31.5** |
| N434/N301 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 31.7 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 31.7** |
| N301/N167 | x: 0 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 39.9 | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.075 m η = 51.9 | x: 0.075 m η = 18.3 | η < 0.1 | N.A.(3) | x: 0.075 m η = 30.3 | x: 0.075 m η = 91.8 | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 91.8** |
| N2/N482 | x: 0.075 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 25.0 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 60.9 | x: 0.075 m η = 21.9 | η = 0.1 | N.A.(3) | x: 0 m η = 41.8 | N.A.(4) | x: 0 m η = 86.1 | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 86.1** |
| N482/N483 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 22.1 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.285 m η = 0.2 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 22.1** |
| N483/N484 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 21.9 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 8.7 | x: 0 m η = 0.3 | η = 0.1 | N.A.(3) | x: 0.47 m η = 0.7 | N.A.(4) | x: 0.47 m η = 30.7 | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 30.7** |
| N484/N485 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 12.2 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.3 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 12.2** |
| N485/N486 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 12.0 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.1 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 12.0** |
| N486/N487 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 2.0 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.1 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 2.0** |
| N487/N488 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 1.8 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.1 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 1.8** |
| N488/N489 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 15.8 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.1 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 15.8** |
| N489/N490 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 16.1 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.2 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 16.1** |
| N490/N491 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 35.7 | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 7.5 | x: 0 m η = 0.1 | η = 0.1 | N.A.(3) | x: 0 m η = 0.6 | x: 0 m η = 43.3 | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 43.3** |
| N491/N480 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 35.9 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.4 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 35.9** |
| N480/N481 | x: 0 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 46.7 | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.15 m η = 69.2 | x: 0.15 m η = 14.6 | η = 0.1 | N.A.(3) | x: 0.15 m η = 50.1 | x: 0.15 m η = 99.9 | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 99.9** |
| N504/N503 | x: 0.068 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 49.6 | x: 0 m η = 2.1 | x: 0 m η = 61.4 | x: 0 m η = 15.1 | η = 0.2 | x: 0 m η < 0.1 | x: 0 m η = 40.0 | x: 0 m η = 98.9 | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 98.9** |
| N503/N502 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 49.0 | x: 0 m η = 1.8 | x: 0.47 m η = 12.0 | x: 0.47 m η = 0.9 | η = 0.2 | x: 0 m η < 0.1 | x: 0.47 m η = 1.5 | x: 0.47 m η = 62.0 | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 62.0** |
| N502/N501 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 27.5 | x: 0 m η = 1.5 | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.4 | η = 0.2 | x: 0 m η < 0.1 | N.A.(3) | x: 0 m η = 33.8 | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 33.8** |

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | $\lambda$ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N501/N500 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 27.2$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.2$ | $\eta = 0.2$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 27.2$ |
| N500/N499 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 6.4$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.2$ | $\eta = 0.2$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 6.4$ |
| N499/N498 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 6.1$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.1$ | $\eta = 0.2$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 6.1$ |
| N498/N497 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 8.2$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.1$ | $\eta = 0.2$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 8.2$ |
| N497/N496 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 8.3$ | $N_{c,Sd} = 0.00$ N.A.(1) | x: 0.47 m $\eta = 1.8$ | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.3$ | $\eta = 0.2$ | x: 0.47 m $\eta < 0.1$ | N.A.(3) | N.A.(4) | x: 0.47 m $\eta = 11.8$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 11.8$ |
| N496/N495 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 19.8$ | $N_{c,Sd} = 0.00$ N.A.(1) | x: 0.47 m $\eta = 2.0$ | x: 0 m $\eta = 7.9$ | x: 0.47 m $\eta = 0.2$ | $\eta = 0.2$ | x: 0.47 m $\eta < 0.1$ | x: 0 m $\eta = 0.6$ | N.A.(4) | x: 0 m $\eta = 28.9$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 28.9$ |
| N495/N494 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 19.9$ | $N_{c,Sd} = 0.00$ N.A.(1) | x: 0.47 m $\eta = 2.9$ | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.2$ | $\eta = 0.2$ | x: 0.47 m $\eta = 0.1$ | N.A.(3) | N.A.(4) | x: 0.47 m $\eta = 25.6$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 25.6$ |
| N494/N191 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 25.5$ | $N_{c,Sd} = 0.00$ N.A.(1) | x: 0.075 m $\eta = 3.2$ | x: 0.075 m $\eta = 73.1$ | x: 0 m $\eta = 24.8$ | $\eta = 0.2$ | x: 0.075 m $\eta = 0.1$ | x: 0.075 m $\eta = 59.5$ | N.A.(4) | x: 0.075 m $\eta = 91.8$ | $\eta = 4.4$ | **PASSA** $\eta = 91.8$ |
| N17/N506 | x: 0.075 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 45.8$ | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 67.2$ | x: 0 m $\eta = 25.4$ | $\eta < 0.1$ | N.A.(3) | x: 0 m $\eta = 51.7$ | x: 0 m $\eta = 93.0$ | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 93.0$ |
| N506/N507 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 42.3$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.9$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 42.3$ |
| N507/N508 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 42.1$ | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 10.2$ | x: 0.47 m $\eta = 0.5$ | $\eta < 0.1$ | N.A.(3) | x: 0.47 m $\eta = 1.0$ | x: 0.47 m $\eta = 52.3$ | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 52.3$ |
| N508/N509 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 22.6$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.3$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 22.6$ |
| N509/N510 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 22.3$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.1$ | $V_{Sd} = 0.00$ N.A.(8) | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 22.3$ |
| N510/N511 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $\eta < 0.1$ | $\eta = 3.0$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 3.0$ |
| N511/N512 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $\eta = 0.1$ | $\eta = 2.7$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 2.7$ |
| N512/N513 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 9.0$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 9.0$ |
| N513/N514 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 9.1$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.3$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 9.1$ |
| N514/N515 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 19.4$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 7.6$ | x: 0.47 m $\eta = 0.2$ | $V_{Sd} = 0.00$ N.A.(8) | N.A.(3) | x: 0 m $\eta = 0.6$ | N.A.(4) | x: 0 m $\eta = 27.7$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 27.7$ |
| N515/N516 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 19.6$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 19.6$ |
| N516/N2 | x: 0 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 24.6$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.075 m $\eta = 63.9$ | x: 0 m $\eta = 21.9$ | $\eta < 0.1$ | N.A.(3) | x: 0.075 m $\eta = 45.7$ | N.A.(4) | x: 0.075 m $\eta = 89.5$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 89.5$ |
| N39/N527 | x: 0.075 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 25.5$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 64.6$ | x: 0.075 m $\eta = 20.5$ | $\eta = 0.1$ | N.A.(3) | x: 0 m $\eta = 46.0$ | N.A.(4) | x: 0 m $\eta = 90.6$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 90.6$ |
| N527/N526 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 20.0$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.58 m $\eta = 0.3$ | $\eta = 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 20.0$ |
| N526/N525 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 19.8$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 7.2$ | x: 0 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | x: 0.47 m $\eta = 0.5$ | N.A.(4) | x: 0.47 m $\eta = 27.0$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 27.0$ |
| N525/N524 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 10.4$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.2$ | $\eta = 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 10.4$ |
| N524/N523 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 10.2$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.1$ | $\eta = 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 10.2$ |
| N523/N522 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 0.6$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.1$ | $\eta = 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 0.6$ |
| N522/N521 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 0.5$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.1$ | $\eta = 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 0.5$ |
| N521/N520 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 18.4$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 18.4$ |
| N520/N519 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 18.7$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.3$ | $\eta = 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 18.7$ |
| N519/N518 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 38.5$ | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 7.9$ | x: 0 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | x: 0 m $\eta = 0.6$ | x: 0 m $\eta = 47.0$ | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 47.0$ |
| N518/N517 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 38.8$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.2$ | $\eta = 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** $\eta = 38.8$ |

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | λ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N517/N17 | x: 0 m<br>($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 48.9 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.075 m<br>η = 64.9 | x: 0.075 m<br>η = 22.3 | η = 0.1 | N.A.(3) | x: 0.075 m<br>η = 47.1 | x: 0.075 m<br>η = 94.9 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 94.9** |
| N55/N537 | x: 0.075 m<br>($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 49.5 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 72.6 | x: 0 m<br>η = 25.4 | η = 0.1 | N.A.(3) | x: 0 m<br>η = 59.2 | x: 0 m<br>η = 99.9 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 99.9** |
| N537/N536 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 49.2 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.51 m<br>η = 12.1 | x: 0.51 m<br>η = 0.8 | η = 0.1 | N.A.(3) | x: 0.51 m<br>η = 1.5 | x: 0.51 m<br>η = 62.0 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 62.0** |
| N536/N535 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 27.7 | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.3 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 27.7** |
| N535/N534 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 27.4 | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.47 m<br>η = 0.2 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 27.4** |
| N534/N533 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 7.0 | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.2 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 7.0** |
| N533/N532 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 6.7 | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.1 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 6.7** |
| N532/N531 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 7.6 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.47 m<br>η = 0.1 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 7.6** |
| N531/N530 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 7.8 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.3 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 7.8** |
| N530/N529 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 19.0 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 7.6 | x: 0.47 m<br>η = 0.2 | η = 0.1 | N.A.(3) | x: 0 m<br>η = 0.6 | N.A.(4) | x: 0 m<br>η = 27.1 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 27.1** |
| N529/N528 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 19.1 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0.47 m<br>η = 1.2 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.2 | η = 0.1 | x: 0.47 m<br>η < 0.1 | N.A.(3) | N.A.(4) | x: 0.47 m<br>η = 22.7 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 22.7** |
| N528/N39 | x: 0 m<br>($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 24.6 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0.075 m<br>η = 1.4 | x: 0.075 m<br>η = 70.8 | x: 0 m<br>η = 24.2 | η = 0.1 | x: 0.075 m<br>η < 0.1 | x: 0.075 m<br>η = 56.0 | N.A.(4) | x: 0.075 m<br>η = 96.7 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 96.7** |
| N77/N548 | x: 0.075 m<br>($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 25.8 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0 m<br>η = 1.5 | x: 0 m<br>η = 66.6 | x: 0.075 m<br>η = 23.4 | η = 0.1 | x: 0 m<br>η < 0.1 | x: 0 m<br>η = 49.8 | N.A.(4) | x: 0 m<br>η = 93.9 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 93.9** |
| N548/N547 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 25.7 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0 m<br>η = 1.4 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.7 | η = 0.1 | x: 0 m<br>η < 0.1 | N.A.(3) | N.A.(4) | x: 0 m<br>η = 29.3 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 29.3** |
| N547/N546 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 25.7 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0 m<br>η = 1.4 | x: 0.47 m<br>η = 11.2 | x: 0 m<br>η = 0.7 | η = 0.1 | x: 0 m<br>η < 0.1 | x: 0.47 m<br>η = 1.2 | N.A.(4) | x: 0.47 m<br>η = 37.8 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 37.8** |
| N546/N545 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 13.6 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.47 m<br>η = 0.3 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 13.6** |
| N545/N544 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 13.4 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.2 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 13.4** |
| N544/N543 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 1.9 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.47 m<br>η = 0.2 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 1.9** |
| N543/N542 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 1.7 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.47 m<br>η = 0.1 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 1.7** |
| N542/N541 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 17.6 | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.1 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 17.6** |
| N541/N540 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 18.0 | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.47 m<br>η = 0.3 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 18.0** |
| N540/N539 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 38.9 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 8.5 | x: 0 m<br>η = 0.2 | η = 0.1 | N.A.(3) | x: 0 m<br>η = 0.7 | x: 0 m<br>η = 47.8 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 47.8** |
| N539/N538 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 39.3 | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.47 m<br>η = 0.1 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 39.3** |
| N538/N55 | x: 0 m<br>($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 49.8 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.075 m<br>η = 83.7 | x: 0.075 m<br>η = 28.6 | η = 0.1 | N.A.(3) | x: 0.075 m<br>η = 78.3 | x: 0.075 m<br>η = 99.8 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 99.8** |
| N93/N559 | x: 0.075 m<br>($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 53.4 | x: 0 m<br>η = 1.2 | x: 0 m<br>η = 63.5 | x: 0 m<br>η = 21.6 | η < 0.1 | x: 0 m<br>η < 0.1 | x: 0 m<br>η = 45.0 | x: 0 m<br>η = 97.7 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 97.7** |
| N559/N560 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 53.1 | x: 0 m<br>η = 1.2 | x: 0.32 m<br>η = 9.6 | x: 0.32 m<br>η = 0.9 | η = 0.1 | x: 0 m<br>η < 0.1 | x: 0.32 m<br>η = 0.9 | x: 0.32 m<br>η = 63.4 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 63.4** |
| N560/N558 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 35.4 | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.4 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 35.4** |
| N558/N557 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 35.1 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.47 m<br>η = 7.3 | x: 0.47 m<br>η = 0.2 | η < 0.1 | N.A.(3) | x: 0.47 m<br>η = 0.5 | x: 0.47 m<br>η = 42.8 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 42.8** |
| N557/N556 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | η = 0.1 | η = 14.2 | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 14.2** |
| N556/N555 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | η = 0.1 | η = 13.9 | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.47 m<br>η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 13.9** |
| N555/N554 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 3.9 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA<br>η = 3.9** |

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | $\lambda$ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N554/N553 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 4.1$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 4.1$** |
| N553/N552 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 12.9$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 12.9$** |
| N552/N551 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 13.0$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.3$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 13.0$** |
| N551/N550 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 22.4$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 8.0$ | x: 0.47 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | x: 0 m $\eta = 0.6$ | N.A.(4) | x: 0 m $\eta = 30.5$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 30.5$** |
| N550/N549 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 22.6$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 22.6$** |
| N549/N77 | x: 0 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 27.0$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.075 m $\eta = 66.1$ | x: 0 m $\eta = 22.0$ | $\eta < 0.1$ | N.A.(3) | x: 0.075 m $\eta = 48.5$ | N.A.(4) | x: 0.075 m $\eta = 93.2$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 93.2$** |
| N115/N571 | x: 0.038 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 26.7$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 65.3$ | x: 0.075 m $\eta = 21.5$ | $\eta < 0.1$ | N.A.(3) | x: 0 m $\eta = 47.2$ | N.A.(4) | x: 0 m $\eta = 92.2$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 92.2$** |
| N571/N570 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 21.2$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.54 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 21.2$** |
| N570/N569 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 21.0$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 7.8$ | x: 0 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | x: 0.47 m $\eta = 0.6$ | N.A.(4) | x: 0.47 m $\eta = 28.9$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 28.9$** |
| N569/N568 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 11.0$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.3$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 11.0$** |
| N568/N567 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 10.9$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 10.9$** |
| N567/N566 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $\eta = 0.7$ | $\eta = 2.6$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 2.6$** |
| N566/N565 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $\eta = 0.5$ | $\eta = 2.7$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 2.7$** |
| N565/N564 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 19.3$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 19.3$** |
| N564/N563 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 19.6$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.3$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 19.6$** |
| N563/N562 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 40.4$ | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 8.2$ | x: 0 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | x: 0 m $\eta = 0.7$ | x: 0 m $\eta = 48.6$ | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 48.6$** |
| N562/N561 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 40.7$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.2$ | $\eta = 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 40.7$** |
| N561/N93 | x: 0 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 51.1$ | x: 0.075 m $\eta = 1.2$ | x: 0.075 m $\eta = 74.7$ | x: 0.075 m $\eta = 25.6$ | $\eta < 0.1$ | x: 0.075 m $\eta < 0.1$ | x: 0.075 m $\eta = 62.3$ | x: 0.075 m $\eta = 95.9$ | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 95.9$** |
| N131/N582 | x: 0.038 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 52.4$ | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 72.9$ | x: 0 m $\eta = 26.5$ | $\eta < 0.1$ | N.A.(3) | x: 0 m $\eta = 60.2$ | x: 0 m $\eta = 95.6$ | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 95.6$** |
| N582/N581 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 45.2$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 45.2$** |
| N581/N580 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 44.9$ | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 9.9$ | x: 0.47 m $\eta = 0.3$ | $\eta < 0.1$ | N.A.(3) | x: 0.47 m $\eta = 1.0$ | x: 0.47 m $\eta = 54.9$ | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 54.9$** |
| N580/N579 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 23.6$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.3$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 23.6$** |
| N579/N578 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 23.3$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 23.3$** |
| N578/N577 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 2.3$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 2.3$** |
| N577/N576 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 2.0$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 2.0$** |
| N576/N575 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 10.1$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 10.1$** |
| N575/N574 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 10.2$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.3$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 10.2$** |
| N574/N573 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 21.1$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 8.1$ | x: 0.47 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | x: 0 m $\eta = 0.7$ | N.A.(4) | x: 0 m $\eta = 29.4$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 29.4$** |
| N573/N572 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 21.3$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.3$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 21.3$** |
| N572/N115 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 26.6$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.075 m $\eta = 71.7$ | x: 0 m $\eta = 23.9$ | $\eta < 0.1$ | N.A.(3) | x: 0.075 m $\eta = 57.1$ | N.A.(4) | x: 0.075 m $\eta = 98.7$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 98.7$** |
| N153/N584 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 27.6$ | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 68.3$ | x: 0.075 m $\eta = 23.5$ | $\eta < 0.1$ | N.A.(3) | x: 0 m $\eta = 52.2$ | N.A.(4) | x: 0 m $\eta = 96.3$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA $\eta = 96.3$** |

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | λ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N584/N585 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 22.8 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.43 m η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 22.8** |
| N585/N586 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 22.6 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 8.6 | x: 0 m η = 0.2 | η < 0.1 | N.A.(3) | x: 0.47 m η = 0.7 | N.A.(4) | x: 0.47 m η = 31.4 | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 31.4** |
| N586/N587 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 11.9 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.3 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 11.9** |
| N587/N588 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 11.7 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 11.7** |
| N588/N589 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 0.7 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 0.7** |
| N589/N590 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 0.6 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 0.6** |
| N590/N591 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 20.4 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 20.4** |
| N591/N592 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 20.7 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.3 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 20.7** |
| N592/N593 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 42.4 | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 8.9 | x: 0 m η = 0.2 | η < 0.1 | N.A.(3) | x: 0 m η = 0.8 | x: 0 m η = 51.7 | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 51.7** |
| N593/N583 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 42.8 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 42.8** |
| N583/N131 | x: 0 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 53.8 | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.075 m η = 75.8 | x: 0.075 m η = 25.7 | η < 0.1 | N.A.(3) | x: 0.075 m η = 64.1 | x: 0.075 m η = 99.7 | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 99.7** |
| N169/N604 | x: 0.038 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 51.0 | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 77.0 | x: 0 m η = 25.8 | η < 0.1 | N.A.(3) | x: 0 m η = 66.0 | x: 0 m η = 98.1 | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 98.1** |
| N604/N603 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 41.4 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.3 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 41.4** |
| N603/N602 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 41.1 | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 8.7 | x: 0.47 m η = 0.3 | η < 0.1 | N.A.(3) | x: 0.47 m η = 0.8 | x: 0.47 m η = 50.1 | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 50.1** |
| N602/N601 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 19.9 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.3 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 19.9** |
| N601/N600 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 19.6 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 19.6** |
| N600/N599 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 0.7 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 0.7** |
| N599/N598 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 0.9 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 0.9** |
| N598/N597 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 11.6 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 11.6** |
| N597/N596 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 11.8 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.3 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 11.8** |
| N596/N595 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 22.3 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 8.4 | x: 0.47 m η = 0.2 | η < 0.1 | N.A.(3) | x: 0 m η = 0.7 | N.A.(4) | x: 0 m η = 30.9 | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 30.9** |
| N595/N594 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 22.4 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 22.4** |
| N594/N153 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 27.5 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.075 m η = 68.6 | x: 0 m η = 22.9 | η < 0.1 | N.A.(3) | x: 0.075 m η = 52.3 | N.A.(4) | x: 0.075 m η = 96.6 | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 96.6** |
| N191/N615 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 26.4 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 66.7 | x: 0.075 m η = 21.6 | η = 0.1 | N.A.(3) | x: 0 m η = 49.2 | N.A.(4) | x: 0 m η = 94.0 | η = 4.5 | **PASSA η = 94.0** |
| N615/N614 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 20.7 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.56 m η = 0.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 20.7** |
| N614/N613 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 20.5 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 7.5 | x: 0 m η = 0.2 | η < 0.1 | N.A.(3) | x: 0.47 m η = 0.6 | N.A.(4) | x: 0.47 m η = 28.5 | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 28.5** |
| N613/N612 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 10.6 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.3 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 10.6** |
| N612/N611 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 10.4 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 10.4** |
| N611/N610 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | η = 0.3 | $N_{c,Sd}$ = 0.00 N.A.(1) | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 0.3** |
| N610/N609 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | η = 0.2 | η < 0.1 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0.47 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 0.2** |
| N609/N608 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd}$ = 0.00 N.A.(7) | η = 20.0 | $M_{Sd}$ = 0.00 N.A.(2) | $M_{Sd}$ = 0.00 N.A.(2) | x: 0 m η = 0.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00 N.A.(5) | **PASSA η = 20.0** |

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | $\lambda$ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N608/N607 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 20.3$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.3$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 20.3$** |
| N607/N606 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 41.0$ | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 8.4$ | x: 0 m $\eta = 0.2$ | $\eta < 0.1$ | N.A.(3) | x: 0 m $\eta = 0.7$ | x: 0 m $\eta = 49.9$ | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 49.9$** |
| N606/N605 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 41.4$ | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.47 m $\eta = 0.1$ | $\eta < 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 41.4$** |
| N605/N169 | x: 0 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 51.9$ | $M_{Sd} = 0.00$ N.A.(2) | x: 0.075 m $\eta = 67.3$ | x: 0.075 m $\eta = 23.6$ | $\eta < 0.1$ | N.A.(3) | x: 0.075 m $\eta = 50.9$ | x: 0.075 m $\eta = 99.8$ | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 99.8$** |
| N977/N975 | $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 0.6$ | x: 0 m $\eta = 26.3$ | x: 0 m $\eta = 8.3$ | x: 0 m $\eta = 0.5$ | x: 0 m $\eta = 5.3$ | x: 0 m $\eta = 7.2$ | x: 0 m $\eta = 0.7$ | x: 0 m $\eta = 33.9$ | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 33.9$** |
| N975/N976 | $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 0.6$ | x: 2.37 m $\eta = 49.2$ | x: 2.37 m $\eta = 9.2$ | x: 2.37 m $\eta = 0.6$ | x: 2.37 m $\eta = 6.6$ | x: 2.37 m $\eta = 24.6$ | x: 2.37 m $\eta = 0.9$ | x: 2.37 m $\eta = 58.3$ | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 58.3$** |
| N979/N1306 | $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 1.4$ | $N_{c,Sd} = 0.00$ N.A.(1) | x: 0 m $\eta = 26.3$ | $M_{Sd} = 0.00$ N.A.(2) | x: 0.4 m $\eta = 0.3$ | x: 0 m $\eta = 0.8$ | x: 0 m $\eta = 6.9$ | N.A.(3) | N.A.(4) | x: 0.4 m $\eta = 30.2$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 30.2$** |
| N1306/N978 | $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $\eta = 0.1$ | $\eta = 0.3$ | x: 0 m $\eta = 31.9$ | x: 0 m $\eta = 5.0$ | x: 0 m $\eta = 0.5$ | x: 0 m $\eta = 5.2$ | x: 0 m $\eta = 8.8$ | x: 0 m $\eta = 0.2$ | x: 0 m $\eta = 36.6$ | x: 0 m $\eta = 31.4$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 36.6$** |
| N978/N977 | $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $\eta = 0.1$ | $\eta = 0.4$ | x: 2.27 m $\eta = 30.6$ | x: 2.27 m $\eta = 6.7$ | x: 2.27 m $\eta = 0.5$ | x: 2.27 m $\eta = 5.1$ | x: 2.27 m $\eta = 7.1$ | x: 2.27 m $\eta = 0.4$ | x: 2.27 m $\eta = 36.0$ | x: 2.27 m $\eta = 30.6$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 36.0$** |
| N981/N1336 | $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 0.8$ | $N_{c,Sd} = 0.00$ N.A.(1) | x: 0 m $\eta = 13.9$ | x: 0 m $\eta = 6.1$ | x: 0 m $\eta = 0.2$ | x: 0 m $\eta = 0.9$ | x: 0 m $\eta = 1.9$ | x: 0 m $\eta = 0.4$ | N.A.(4) | x: 0 m $\eta = 19.4$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 19.4$** |
| N1336/N980 | $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 1.1$ | x: 1.872 m $\eta = 19.8$ | x: 0 m $\eta = 5.8$ | x: 0 m $\eta = 0.5$ | x: 0 m $\eta = 4.7$ | x: 1.664 m $\eta = 3.7$ | x: 0 m $\eta = 0.3$ | x: 0 m $\eta = 24.8$ | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 24.8$** |
| N980/N1307 | $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 1.2$ | x: 2.08 m $\eta = 37.9$ | x: 2.08 m $\eta = 6.8$ | x: 2.08 m $\eta = 0.5$ | x: 2.08 m $\eta = 5.7$ | x: 2.08 m $\eta = 11.5$ | x: 2.08 m $\eta = 0.5$ | x: 2.08 m $\eta = 45.5$ | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 45.5$** |
| N1307/N979 | $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 1.4$ | $N_{c,Sd} = 0.00$ N.A.(1) | x: 0 m $\eta = 29.4$ | x: 0 m $\eta = 5.9$ | x: 0 m $\eta = 0.4$ | x: 0 m $\eta = 1.4$ | x: 0 m $\eta = 8.7$ | x: 0 m $\eta = 0.4$ | N.A.(4) | x: 0 m $\eta = 36.3$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 36.3$** |
| N983/N982 | x: 0 m $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 0.2$ | $N_{c,Sd} = 0.00$ N.A.(1) | x: 0 m $\eta = 40.4$ | x: 0 m $\eta = 7.4$ | x: 0 m $\eta = 0.5$ | x: 0 m $\eta = 5.0$ | x: 0 m $\eta = 12.4$ | x: 0 m $\eta = 0.6$ | N.A.(4) | x: 0 m $\eta = 47.7$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 47.7$** |
| N982/N1337 | x: 0 m $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 0.2$ | $N_{c,Sd} = 0.00$ N.A.(1) | x: 0.181 m $\eta = 13.0$ | $M_{Sd} = 0.00$ N.A.(2) | x: 1.81 m $\eta = 0.4$ | x: 1.81 m $\eta = 3.5$ | x: 0.181 m $\eta = 1.7$ | N.A.(3) | N.A.(4) | x: 0.181 m $\eta = 16.0$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 16.0$** |
| N1337/N981 | $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 0.8$ | $N_{c,Sd} = 0.00$ N.A.(1) | x: 0.4 m $\eta = 14.0$ | $M_{Sd} = 0.00$ N.A.(2) | x: 0.4 m $\eta = 0.2$ | x: 0.4 m $\eta = 1.9$ | x: 0.4 m $\eta = 2.0$ | N.A.(3) | N.A.(4) | x: 0.4 m $\eta = 18.4$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 18.4$** |
| N985/N1364 | $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 0.8$ | $N_{c,Sd} = 0.00$ N.A.(1) | x: 0 m $\eta = 13.5$ | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.3$ | x: 0 m $\eta = 1.9$ | x: 0 m $\eta = 1.9$ | N.A.(3) | N.A.(4) | x: 0 m $\eta = 17.9$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 17.9$** |
| N1364/N984 | x: 0 m $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 0.2$ | $N_{c,Sd} = 0.00$ N.A.(1) | x: 1.638 m $\eta = 13.5$ | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m $\eta = 0.4$ | x: 0 m $\eta = 3.5$ | x: 1.638 m $\eta = 1.8$ | N.A.(3) | N.A.(4) | x: 1.638 m $\eta = 16.4$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 16.4$** |
| N984/N983 | x: 0 m $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 0.1$ | $N_{c,Sd} = 0.00$ N.A.(1) | x: 2.22 m $\eta = 40.5$ | x: 2.22 m $\eta = 7.4$ | x: 2.22 m $\eta = 0.5$ | x: 2.22 m $\eta = 5.0$ | x: 2.22 m $\eta = 12.4$ | x: 2.22 m $\eta = 0.6$ | N.A.(4) | x: 2.22 m $\eta = 48.0$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 48.0$** |
| N987/N1392 | $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 1.3$ | $N_{c,Sd} = 0.00$ N.A.(1) | x: 0.4 m $\eta = 26.3$ | x: 0.4 m $\eta = 6.3$ | x: 0.4 m $\eta = 0.2$ | x: 0.4 m $\eta = 1.5$ | x: 0.4 m $\eta = 6.9$ | x: 0.4 m $\eta = 0.4$ | N.A.(4) | x: 0.4 m $\eta = 33.7$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 33.7$** |
| N1392/N986 | $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 1.1$ | x: 0 m $\eta = 35.0$ | x: 0 m $\eta = 7.5$ | x: 0 m $\eta = 0.6$ | x: 0 m $\eta = 5.0$ | x: 0 m $\eta = 9.4$ | x: 0 m $\eta = 0.6$ | x: 0 m $\eta = 43.5$ | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 43.5$** |
| N986/N1365 | $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | $\eta = 1.1$ | x: 2.185 m $\eta = 18.2$ | x: 2.185 m $\eta = 6.5$ | x: 2.185 m $\eta = 0.5$ | x: 2.185 m $\eta = 4.2$ | x: 0.219 m $\eta = 3.3$ | x: 2.185 m $\eta = 0.4$ | x: 2.185 m $\eta = 25.7$ | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 25.7$** |
| N1365/N985 | $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 0.8$ | $N_{c,Sd} = 0.00$ N.A.(1) | x: 0.4 m $\eta = 13.5$ | x: 0.4 m $\eta = 6.6$ | x: 0.4 m $\eta = 0.2$ | x: 0.4 m $\eta = 0.6$ | x: 0.4 m $\eta = 1.8$ | x: 0.4 m $\eta = 0.4$ | N.A.(4) | x: 0 m $\eta = 20.1$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 20.1$** |
| N989/N988 | $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $\eta = 0.2$ | $\eta = 0.4$ | x: 0 m $\eta = 27.5$ | x: 0 m $\eta = 8.4$ | x: 0 m $\eta = 0.6$ | x: 0 m $\eta = 4.4$ | x: 0 m $\eta = 5.3$ | x: 0 m $\eta = 0.7$ | x: 0 m $\eta = 35.9$ | x: 0 m $\eta = 32.7$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 35.9$** |
| N988/N1393 | $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $\eta = 0.2$ | $\eta = 0.3$ | x: 2.06 m $\eta = 32.6$ | x: 2.06 m $\eta = 6.3$ | x: 2.06 m $\eta = 0.5$ | x: 2.06 m $\eta = 4.7$ | x: 2.06 m $\eta = 8.6$ | x: 2.06 m $\eta = 0.4$ | x: 2.06 m $\eta = 39.2$ | x: 2.06 m $\eta = 35.5$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 39.2$** |
| N1393/N987 | $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | $\eta = 1.3$ | $N_{c,Sd} = 0.00$ N.A.(1) | x: 0 m $\eta = 25.6$ | x: 0.4 m $\eta = 6.0$ | x: 0.4 m $\eta = 0.3$ | x: 0 m $\eta = 0.8$ | x: 0 m $\eta = 6.6$ | x: 0.4 m $\eta = 0.4$ | N.A.(4) | x: 0 m $\eta = 32.5$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 32.5$** |
| N991/N990 | $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $\eta = 0.1$ | $\eta = 0.2$ | x: 0 m $\eta = 46.9$ | x: 0 m $\eta = 8.6$ | x: 0 m $\eta = 0.6$ | x: 0 m $\eta = 5.2$ | x: 0 m $\eta = 15.8$ | x: 0 m $\eta = 0.7$ | x: 0 m $\eta = 55.6$ | x: 0 m $\eta = 50.0$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 55.6$** |
| N990/N989 | $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $\eta = 0.1$ | $\eta = 0.2$ | x: 2.345 m $\eta = 26.8$ | x: 2.345 m $\eta = 8.0$ | x: 2.345 m $\eta = 0.5$ | x: 2.345 m $\eta = 4.3$ | x: 2.345 m $\eta = 5.3$ | x: 2.345 m $\eta = 0.6$ | x: 2.345 m $\eta = 34.6$ | x: 2.345 m $\eta = 31.9$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 34.6$** |
| N993/N992 | $(b_w/t) \leq 500$ $(b_f/t) \leq 60$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $\eta = 0.1$ | $\eta = 0.3$ | x: 0 m $\eta = 28.6$ | x: 0 m $\eta = 8.4$ | x: 0 m $\eta = 0.6$ | x: 0 m $\eta = 4.5$ | x: 0 m $\eta = 5.9$ | x: 0 m $\eta = 0.7$ | x: 0 m $\eta = 37.0$ | x: 0 m $\eta = 28.8$ | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA** **$\eta = 37.0$** |

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | λ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N992/N991 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η = 0.1 | η = 0.3 | x: 2.405 m<br>η = 47.5 | x: 2.405 m<br>η = 9.2 | x: 2.405 m<br>η = 0.6 | x: 2.405 m<br>η = 5.3 | x: 2.405 m<br>η = 15.9 | x: 2.405 m<br>η = 0.9 | x: 2.405 m<br>η = 56.9 | x: 2.405 m<br>η = 43.7 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 56.9** |
| N995/N994 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η = 0.1 | η = 0.2 | x: 0 m<br>η = 49.3 | x: 0 m<br>η = 9.1 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 5.3 | x: 0 m<br>η = 17.1 | x: 0 m<br>η = 0.8 | x: 0 m<br>η = 58.4 | x: 0 m<br>η = 45.0 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 58.4** |
| N994/N993 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η = 0.1 | η = 0.2 | x: 2.4 m<br>η = 28.5 | x: 2.4 m<br>η = 8.4 | x: 2.4 m<br>η = 0.6 | x: 2.4 m<br>η = 4.4 | x: 2.4 m<br>η = 5.8 | x: 2.4 m<br>η = 0.7 | x: 2.4 m<br>η = 36.8 | x: 2.4 m<br>η = 28.7 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 36.8** |
| N997/N996 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η < 0.1 | η = 0.5 | x: 0 m<br>η = 28.5 | x: 0 m<br>η = 9.2 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 4.5 | x: 0 m<br>η = 5.7 | x: 0 m<br>η = 0.9 | x: 0 m<br>η = 38.0 | x: 0 m<br>η = 11.2 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 38.0** |
| N996/N995 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η < 0.1 | η = 0.6 | x: 2.47 m<br>η = 50.2 | x: 2.47 m<br>η = 9.8 | x: 2.47 m<br>η = 0.6 | x: 2.47 m<br>η = 5.4 | x: 2.47 m<br>η = 17.3 | x: 2.47 m<br>η = 1.0 | x: 2.47 m<br>η = 60.4 | x: 2.47 m<br>η = 17.4 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 60.4** |
| N999/N998 | x: 0 m<br>$(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | η = 0.1 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0 m<br>η = 39.9 | x: 0 m<br>η = 8.1 | x: 0 m<br>η = 0.5 | x: 0 m<br>η = 4.8 | x: 0 m<br>η = 12.0 | x: 0 m<br>η = 0.7 | N.A.(4) | x: 0 m<br>η = 48.0 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 48.0** |
| N998/N997 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | η = 0.1 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 2.22 m<br>η = 26.7 | x: 2.22 m<br>η = 6.9 | x: 2.22 m<br>η = 0.5 | x: 2.22 m<br>η = 4.2 | x: 2.22 m<br>η = 5.5 | x: 2.22 m<br>η = 0.5 | N.A.(4) | x: 2.22 m<br>η = 33.3 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 33.3** |
| N1008/N1007 | x: 0 m<br>$(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | η = 0.1 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0 m<br>η = 47.6 | x: 0 m<br>η = 8.1 | x: 0 m<br>η = 0.5 | x: 0 m<br>η = 6.8 | x: 0 m<br>η = 23.1 | x: 0 m<br>η = 0.7 | N.A.(4) | x: 0 m<br>η = 54.8 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 54.8** |
| N1007/N1006 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | η = 0.1 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 2.22 m<br>η = 34.1 | x: 2.22 m<br>η = 6.9 | x: 2.22 m<br>η = 0.5 | x: 2.22 m<br>η = 6.1 | x: 2.22 m<br>η = 12.0 | x: 2.22 m<br>η = 0.5 | N.A.(4) | x: 2.22 m<br>η = 39.2 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 39.2** |
| N1006/N1016 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η < 0.1 | η = 0.8 | x: 0 m<br>η = 34.7 | x: 0 m<br>η = 9.2 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 6.6 | x: 0 m<br>η = 12.5 | x: 0 m<br>η = 0.9 | x: 0 m<br>η = 43.2 | x: 0 m<br>η = 10.3 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 43.2** |
| N1016/N1015 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η < 0.1 | η = 0.8 | x: 2.47 m<br>η = 57.5 | x: 2.47 m<br>η = 9.8 | x: 2.47 m<br>η = 0.6 | x: 2.47 m<br>η = 7.7 | x: 2.47 m<br>η = 33.7 | x: 2.47 m<br>η = 1.0 | x: 2.47 m<br>η = 66.9 | x: 2.47 m<br>η = 15.4 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 66.9** |
| N1015/N1021 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η = 0.1 | η = 0.4 | x: 0 m<br>η = 57.2 | x: 0 m<br>η = 9.1 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 7.5 | x: 0 m<br>η = 33.3 | x: 0 m<br>η = 0.8 | x: 0 m<br>η = 65.3 | x: 0 m<br>η = 38.8 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 65.3** |
| N1021/N1020 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η = 0.1 | η = 0.4 | x: 2.4 m<br>η = 35.3 | x: 2.4 m<br>η = 8.4 | x: 2.4 m<br>η = 0.6 | x: 2.4 m<br>η = 6.4 | x: 2.4 m<br>η = 12.8 | x: 2.4 m<br>η = 0.7 | x: 2.4 m<br>η = 42.1 | x: 2.4 m<br>η = 25.2 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 42.1** |
| N1020/N1029 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η = 0.1 | η = 0.5 | x: 0 m<br>η = 35.3 | x: 0 m<br>η = 8.4 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 6.5 | x: 0 m<br>η = 12.9 | x: 0 m<br>η = 0.7 | x: 0 m<br>η = 42.4 | x: 0 m<br>η = 25.2 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 42.4** |
| N1029/N1028 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η = 0.1 | η = 0.5 | x: 2.405 m<br>η = 54.9 | x: 2.405 m<br>η = 9.2 | x: 2.405 m<br>η = 0.6 | x: 2.405 m<br>η = 7.5 | x: 2.405 m<br>η = 30.7 | x: 2.405 m<br>η = 0.9 | x: 2.405 m<br>η = 63.4 | x: 2.405 m<br>η = 37.8 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 63.4** |
| N1028/N1034 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η = 0.1 | η = 0.4 | x: 0 m<br>η = 54.8 | x: 0 m<br>η = 8.6 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 7.4 | x: 0 m<br>η = 30.6 | x: 0 m<br>η = 0.7 | x: 0 m<br>η = 62.6 | x: 0 m<br>η = 42.4 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 62.6** |
| N1034/N1033 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η = 0.1 | η = 0.4 | x: 2.345 m<br>η = 33.6 | x: 2.345 m<br>η = 8.0 | x: 2.345 m<br>η = 0.5 | x: 2.345 m<br>η = 6.3 | x: 2.345 m<br>η = 11.7 | x: 2.345 m<br>η = 0.6 | x: 2.345 m<br>η = 40.0 | x: 2.345 m<br>η = 28.0 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 40.0** |
| N1033/N1042 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η = 0.2 | η = 0.6 | x: 0 m<br>η = 33.7 | x: 0 m<br>η = 8.4 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 6.4 | x: 0 m<br>η = 11.8 | x: 0 m<br>η = 0.7 | x: 0 m<br>η = 40.6 | x: 0 m<br>η = 28.4 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 40.6** |
| N1042/N1391 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η = 0.2 | η = 0.4 | x: 2.06 m<br>η = 39.8 | x: 2.06 m<br>η = 6.5 | x: 2.06 m<br>η = 0.5 | x: 2.06 m<br>η = 6.7 | x: 2.06 m<br>η = 16.3 | x: 2.06 m<br>η = 0.4 | x: 2.06 m<br>η = 46.4 | x: 2.06 m<br>η = 32.2 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 46.4** |
| N1391/N1041 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | η = 1.8 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0 m<br>η = 34.7 | x: 0.4 m<br>η = 5.9 | x: 0 m<br>η = 0.5 | x: 0.4 m<br>η = 0.7 | x: 0 m<br>η = 12.0 | x: 0.4 m<br>η = 0.3 | N.A.(4) | x: 0 m<br>η = 41.1 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 41.1** |
| N1041/N1390 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | η = 1.8 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0.4 m<br>η = 37.0 | x: 0.4 m<br>η = 6.6 | x: 0.4 m<br>η = 0.6 | x: 0.4 m<br>η = 1.6 | x: 0.4 m<br>η = 13.7 | x: 0.4 m<br>η = 0.4 | N.A.(4) | x: 0.4 m<br>η = 44.7 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 44.7** |
| N1390/N1047 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 1.1 | x: 0 m<br>η = 41.8 | x: 0 m<br>η = 7.5 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 6.9 | x: 0 m<br>η = 18.0 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 49.6 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 49.6** |
| N1047/N1363 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 1.1 | x: 0.219 m<br>η = 28.5 | x: 2.185 m<br>η = 6.5 | x: 2.185 m<br>η = 0.5 | x: 2.185 m<br>η = 5.8 | x: 0.219 m<br>η = 6.1 | x: 2.185 m<br>η = 0.4 | x: 0.219 m<br>η = 33.1 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 33.1** |
| N1363/N1046 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | η = 1.3 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0.4 m<br>η = 19.3 | x: 0.4 m<br>η = 6.4 | x: 0 m<br>η = 0.3 | x: 0.4 m<br>η = 0.8 | x: 0.4 m<br>η = 3.7 | x: 0.4 m<br>η = 0.4 | N.A.(4) | x: 0 m<br>η = 24.4 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 24.4** |
| N1046/N1362 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | η = 1.2 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0 m<br>η = 19.5 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.2 | x: 0 m<br>η = 2.3 | x: 0 m<br>η = 3.8 | N.A.(3) | N.A.(4) | x: 0 m<br>η = 22.0 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 22.0** |
| N1362/N1055 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | η = 0.2 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 1.638 m<br>η = 19.9 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.4 | x: 0 m<br>η = 4.9 | x: 1.638 m<br>η = 3.4 | N.A.(3) | N.A.(4) | x: 1.638 m<br>η = 22.1 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 22.1** |
| N1055/N1054 | x: 0 m<br>$(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | η = 0.2 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 2.22 m<br>η = 46.5 | x: 2.22 m<br>η = 7.4 | x: 2.22 m<br>η = 0.5 | x: 2.22 m<br>η = 6.8 | x: 2.22 m<br>η = 22.1 | x: 2.22 m<br>η = 0.6 | N.A.(4) | x: 2.22 m<br>η = 52.9 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 52.9** |
| N1054/N1060 | x: 0 m<br>$(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | η = 0.2 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0 m<br>η = 46.6 | x: 0 m<br>η = 7.3 | x: 0 m<br>η = 0.5 | x: 0 m<br>η = 6.7 | x: 0 m<br>η = 22.2 | x: 0 m<br>η = 0.5 | N.A.(4) | x: 0 m<br>η = 53.0 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 53.0** |
| N1060/N1335 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | η = 0.2 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0.181 m<br>η = 19.7 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 1.81 m<br>η = 0.4 | x: 1.81 m<br>η = 4.9 | x: 0.181 m<br>η = 3.3 | N.A.(3) | N.A.(4) | x: 0.181 m<br>η = 22.0 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 22.0** |

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | $\lambda$ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N1335/N1059 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 1.2$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0.4 m<br>$\eta = 18.2$ | $M_{Sd} = 0.00$<br>N.A.(2) | x: 0.4 m<br>$\eta = 0.2$ | x: 0.4 m<br>$\eta = 2.3$ | x: 0.4 m<br>$\eta = 3.4$ | N.A.(3) | N.A.(4) | x: 0.4 m<br>$\eta = 20.8$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 20.8$** |
| N1059/N1334 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 1.2$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0 m<br>$\eta = 18.2$ | x: 0 m<br>$\eta = 5.3$ | x: 0.4 m<br>$\eta = 0.3$ | x: 0 m<br>$\eta = 1.0$ | x: 0 m<br>$\eta = 3.3$ | x: 0 m<br>$\eta = 0.3$ | N.A.(4) | x: 0.4 m<br>$\eta = 22.4$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 22.4$** |
| N1334/N1068 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 1.2$ | x: 1.872 m<br>$\eta = 25.4$ | x: 0 m<br>$\eta = 5.8$ | x: 0 m<br>$\eta = 0.5$ | x: 0 m<br>$\eta = 5.5$ | x: 1.872 m<br>$\eta = 5.0$ | x: 0 m<br>$\eta = 0.3$ | x: 1.872 m<br>$\eta = 29.3$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 29.3$** |
| N1068/N1309 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 1.1$ | x: 2.08 m<br>$\eta = 37.5$ | x: 2.08 m<br>$\eta = 6.8$ | x: 2.08 m<br>$\eta = 0.5$ | x: 2.08 m<br>$\eta = 6.5$ | x: 2.08 m<br>$\eta = 14.4$ | x: 2.08 m<br>$\eta = 0.5$ | x: 2.08 m<br>$\eta = 44.5$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 44.5$** |
| N1309/N1067 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 1.8$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0 m<br>$\eta = 32.3$ | x: 0 m<br>$\eta = 5.5$ | x: 0 m<br>$\eta = 0.5$ | x: 0 m<br>$\eta = 1.3$ | x: 0 m<br>$\eta = 10.4$ | x: 0 m<br>$\eta = 0.3$ | N.A.(4) | x: 0 m<br>$\eta = 39.1$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 39.1$** |
| N1067/N1308 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 1.8$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0 m<br>$\eta = 29.9$ | $M_{Sd} = 0.00$<br>N.A.(2) | x: 0.4 m<br>$\eta = 0.4$ | x: 0 m<br>$\eta = 0.8$ | x: 0 m<br>$\eta = 9.0$ | N.A.(3) | N.A.(4) | x: 0.4 m<br>$\eta = 34.8$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 34.8$** |
| N1308/N1073 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta = 0.1$ | $\eta = 0.3$ | x: 0 m<br>$\eta = 33.0$ | x: 0 m<br>$\eta = 4.9$ | x: 0 m<br>$\eta = 0.4$ | x: 0 m<br>$\eta = 6.0$ | x: 0 m<br>$\eta = 11.2$ | x: 0 m<br>$\eta = 0.2$ | x: 0 m<br>$\eta = 33.7$ | x: 0 m<br>$\eta = 37.7$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 37.7$** |
| N1073/N1072 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta = 0.1$ | $\eta = 0.4$ | x: 2.27 m<br>$\eta = 30.8$ | x: 2.27 m<br>$\eta = 6.4$ | x: 2.27 m<br>$\eta = 0.5$ | x: 2.27 m<br>$\eta = 5.9$ | x: 2.27 m<br>$\eta = 9.8$ | x: 2.27 m<br>$\eta = 0.4$ | x: 2.27 m<br>$\eta = 31.4$ | x: 2.27 m<br>$\eta = 35.6$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 35.6$** |
| N1072/N1080 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.6$ | x: 0 m<br>$\eta = 31.1$ | x: 0 m<br>$\eta = 8.1$ | x: 0 m<br>$\eta = 0.5$ | x: 0 m<br>$\eta = 6.2$ | x: 0 m<br>$\eta = 10.1$ | x: 0 m<br>$\eta = 0.7$ | x: 0 m<br>$\eta = 38.1$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 38.1$** |
| N1080/N1081 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.6$ | x: 2.37 m<br>$\eta = 55.6$ | x: 2.37 m<br>$\eta = 9.2$ | x: 2.37 m<br>$\eta = 0.6$ | x: 2.37 m<br>$\eta = 7.4$ | x: 2.37 m<br>$\eta = 31.4$ | x: 2.37 m<br>$\eta = 0.8$ | x: 2.37 m<br>$\eta = 64.0$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 64.0$** |
| N1636/N918 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 1.0$ | x: 0 m<br>$\eta = 34.9$ | x: 0 m<br>$\eta = 11.3$ | x: 0 m<br>$\eta = 0.7$ | x: 0 m<br>$\eta = 6.0$ | x: 0 m<br>$\eta = 12.5$ | x: 0 m<br>$\eta = 1.3$ | x: 0 m<br>$\eta = 46.5$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 46.5$** |
| N918/N919 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 1.0$ | x: 2.37 m<br>$\eta = 44.0$ | x: 2.37 m<br>$\eta = 10.1$ | x: 2.37 m<br>$\eta = 0.6$ | x: 2.37 m<br>$\eta = 6.4$ | x: 2.37 m<br>$\eta = 19.7$ | x: 2.37 m<br>$\eta = 1.0$ | x: 2.37 m<br>$\eta = 54.3$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 54.3$** |
| N1294/N920 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.6$ | x: 0 m<br>$\eta = 26.8$ | x: 0 m<br>$\eta = 6.4$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 5.1$ | x: 0 m<br>$\eta = 6.2$ | x: 0 m<br>$\eta = 0.4$ | x: 0 m<br>$\eta = 33.5$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 33.5$** |
| N920/N1636 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.8$ | x: 2.27 m<br>$\eta = 40.8$ | x: 2.27 m<br>$\eta = 10.3$ | x: 2.27 m<br>$\eta = 0.6$ | x: 2.27 m<br>$\eta = 5.7$ | x: 2.27 m<br>$\eta = 12.4$ | x: 2.27 m<br>$\eta = 1.1$ | x: 2.27 m<br>$\eta = 51.2$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 51.2$** |
| N921/N1294 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 1.3$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0.4 m<br>$\eta = 20.9$ | x: 0 m<br>$\eta = 7.0$ | x: 0 m<br>$\eta = 0.3$ | x: 0.4 m<br>$\eta = 0.9$ | x: 0.4 m<br>$\eta = 4.4$ | x: 0 m<br>$\eta = 0.5$ | N.A.(4) | x: 0.4 m<br>$\eta = 27.4$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 27.4$** |
| N1637/N937 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta < 0.1$ | x: 0 m<br>$\eta = 29.3$ | x: 0 m<br>$\eta = 10.0$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 5.7$ | x: 0 m<br>$\eta = 8.9$ | x: 0 m<br>$\eta = 1.0$ | x: 0 m<br>$\eta = 33.6$ | x: 0 m<br>$\eta = 38.6$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 38.6$** |
| N937/N938 | x: 0 m<br>$(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 2.37 m<br>$\eta = 51.5$ | x: 2.37 m<br>$\eta = 9.8$ | x: 2.37 m<br>$\eta = 0.6$ | x: 2.37 m<br>$\eta = 6.8$ | x: 2.37 m<br>$\eta = 27.0$ | x: 2.37 m<br>$\eta = 1.0$ | N.A.(4) | x: 2.37 m<br>$\eta = 60.5$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 60.5$** |
| N1298/N939 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.1$ | x: 0 m<br>$\eta = 32.0$ | x: 0 m<br>$\eta = 6.1$ | x: 0 m<br>$\eta = 0.5$ | x: 0 m<br>$\eta = 5.4$ | x: 0 m<br>$\eta = 8.8$ | x: 0 m<br>$\eta = 0.4$ | x: 0 m<br>$\eta = 37.8$ | x: 0 m<br>$\eta = 29.1$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 37.8$** |
| N939/N1637 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.1$ | x: 2.27 m<br>$\eta = 34.4$ | x: 2.27 m<br>$\eta = 8.8$ | x: 2.27 m<br>$\eta = 0.6$ | x: 2.27 m<br>$\eta = 5.3$ | x: 2.27 m<br>$\eta = 8.9$ | x: 2.27 m<br>$\eta = 0.8$ | x: 2.27 m<br>$\eta = 42.6$ | x: 2.27 m<br>$\eta = 24.8$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 42.6$** |
| N940/N1298 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 1.6$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0.4 m<br>$\eta = 25.2$ | x: 0 m<br>$\eta = 5.3$ | x: 0.4 m<br>$\eta = 0.2$ | x: 0.4 m<br>$\eta = 0.5$ | x: 0.4 m<br>$\eta = 6.4$ | x: 0 m<br>$\eta = 0.3$ | N.A.(4) | x: 0.4 m<br>$\eta = 31.5$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 31.5$** |
| N1638/N956 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.2$ | x: 0 m<br>$\eta = 26.7$ | x: 0 m<br>$\eta = 8.6$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 5.5$ | x: 0 m<br>$\eta = 7.4$ | x: 0 m<br>$\eta = 0.7$ | x: 0 m<br>$\eta = 34.5$ | x: 0 m<br>$\eta = 30.0$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 34.5$** |
| N956/N957 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.2$ | x: 2.37 m<br>$\eta = 53.3$ | x: 2.37 m<br>$\eta = 9.4$ | x: 2.37 m<br>$\eta = 0.6$ | x: 2.37 m<br>$\eta = 6.9$ | x: 2.37 m<br>$\eta = 28.9$ | x: 2.37 m<br>$\eta = 0.9$ | x: 2.37 m<br>$\eta = 62.1$ | x: 2.37 m<br>$\eta = 52.0$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 62.1$** |
| N1302/N958 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.2$ | x: 0 m<br>$\eta = 34.3$ | $M_{Sd} = 0.00$<br>N.A.(2) | x: 0 m<br>$\eta = 0.4$ | x: 0 m<br>$\eta = 5.5$ | x: 0 m<br>$\eta = 10.1$ | N.A.(3) | x: 0 m<br>$\eta = 38.4$ | x: 0 m<br>$\eta = 31.6$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 38.4$** |
| N958/N1638 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.2$ | x: 2.27 m<br>$\eta = 31.3$ | x: 2.27 m<br>$\eta = 7.1$ | x: 2.27 m<br>$\eta = 0.5$ | x: 2.27 m<br>$\eta = 5.2$ | x: 2.27 m<br>$\eta = 7.4$ | x: 2.27 m<br>$\eta = 0.5$ | x: 2.27 m<br>$\eta = 37.4$ | x: 2.27 m<br>$\eta = 32.0$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 37.4$** |
| N959/N1302 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 1.5$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0 m<br>$\eta = 28.1$ | $M_{Sd} = 0.00$<br>N.A.(2) | x: 0 m<br>$\eta = 0.2$ | x: 0 m<br>$\eta = 0.7$ | x: 0 m<br>$\eta = 7.9$ | N.A.(3) | N.A.(4) | x: 0.4 m<br>$\eta = 32.0$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 32.0$** |
| N930/N929 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.4$ | x: 0 m<br>$\eta = 38.3$ | x: 0 m<br>$\eta = 11.3$ | x: 0 m<br>$\eta = 0.7$ | x: 0 m<br>$\eta = 4.9$ | x: 0 m<br>$\eta = 10.6$ | x: 0 m<br>$\eta = 1.3$ | x: 0 m<br>$\eta = 50.0$ | x: 0 m<br>$\eta = 18.0$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 50.0$** |
| N929/N1650 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.4$ | x: 2.345 m<br>$\eta = 37.4$ | x: 2.345 m<br>$\eta = 11.4$ | x: 2.345 m<br>$\eta = 0.7$ | x: 2.345 m<br>$\eta = 4.9$ | x: 2.345 m<br>$\eta = 10.1$ | x: 2.345 m<br>$\eta = 1.3$ | x: 2.345 m<br>$\eta = 49.1$ | x: 2.345 m<br>$\eta = 16.7$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 49.1$** |
| N1653/N931 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.4$ | x: 0 m<br>$\eta = 39.4$ | x: 0 m<br>$\eta = 11.9$ | x: 0 m<br>$\eta = 0.7$ | x: 0 m<br>$\eta = 5.0$ | x: 0 m<br>$\eta = 11.0$ | x: 0 m<br>$\eta = 1.4$ | x: 0 m<br>$\eta = 51.8$ | x: 0 m<br>$\eta = 14.7$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 51.8$** |
| N931/N930 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.4$ | x: 2.405 m<br>$\eta = 38.8$ | x: 2.405 m<br>$\eta = 11.7$ | x: 2.405 m<br>$\eta = 0.7$ | x: 2.405 m<br>$\eta = 5.0$ | x: 2.405 m<br>$\eta = 10.7$ | x: 2.405 m<br>$\eta = 1.4$ | x: 2.405 m<br>$\eta = 50.9$ | x: 2.405 m<br>$\eta = 14.8$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 50.9$** |
| N933/N932 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.3$ | x: 0 m<br>$\eta = 41.6$ | x: 0 m<br>$\eta = 11.6$ | x: 0 m<br>$\eta = 0.7$ | x: 0 m<br>$\eta = 5.1$ | x: 0 m<br>$\eta = 12.3$ | x: 0 m<br>$\eta = 1.4$ | x: 0 m<br>$\eta = 53.5$ | x: 0 m<br>$\eta = 15.2$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 53.5$** |

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | λ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N932/N1653 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.3$ | x: 2.4 m<br>$\eta = 39.3$ | x: 2.4 m<br>$\eta = 11.8$ | x: 2.4 m<br>$\eta = 0.7$ | x: 2.4 m<br>$\eta = 5.0$ | x: 2.4 m<br>$\eta = 10.9$ | x: 2.4 m<br>$\eta = 1.4$ | x: 2.4 m<br>$\eta = 51.3$ | x: 2.4 m<br>$\eta = 14.7$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 51.3$** |
| N1656/N934 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.5$ | x: 0 m<br>$\eta = 37.8$ | x: 0 m<br>$\eta = 12.5$ | x: 0 m<br>$\eta = 0.7$ | x: 0 m<br>$\eta = 5.1$ | x: 0 m<br>$\eta = 9.9$ | x: 0 m<br>$\eta = 1.6$ | x: 0 m<br>$\eta = 50.8$ | x: 0 m<br>$\eta = 9.5$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 50.8$** |
| N934/N933 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.5$ | x: 2.47 m<br>$\eta = 42.3$ | x: 2.47 m<br>$\eta = 12.2$ | x: 2.47 m<br>$\eta = 0.7$ | x: 2.47 m<br>$\eta = 5.2$ | x: 2.47 m<br>$\eta = 12.4$ | x: 2.47 m<br>$\eta = 1.5$ | x: 2.47 m<br>$\eta = 55.0$ | x: 2.47 m<br>$\eta = 10.1$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 55.0$** |
| N936/N935 | x: 0 m<br>$(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 0.1$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0 m<br>$\eta = 33.3$ | x: 0 m<br>$\eta = 9.0$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 4.6$ | x: 0 m<br>$\eta = 8.4$ | x: 0 m<br>$\eta = 0.8$ | N.A.(4) | x: 0 m<br>$\eta = 42.3$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 42.3$** |
| N935/N1656 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 0.1$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 2.22 m<br>$\eta = 35.6$ | x: 2.22 m<br>$\eta = 9.9$ | x: 2.22 m<br>$\eta = 0.6$ | x: 2.22 m<br>$\eta = 4.7$ | x: 2.22 m<br>$\eta = 9.6$ | x: 2.22 m<br>$\eta = 1.0$ | N.A.(4) | x: 2.22 m<br>$\eta = 45.6$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 45.6$** |
| N1401/N946 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 1.4$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0 m<br>$\eta = 23.7$ | x: 0.4 m<br>$\eta = 6.4$ | x: 0.4 m<br>$\eta = 0.2$ | x: 0 m<br>$\eta = 1.0$ | x: 0 m<br>$\eta = 5.6$ | x: 0.4 m<br>$\eta = 0.4$ | N.A.(4) | x: 0 m<br>$\eta = 31.3$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 31.3$** |
| N1651/N947 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.2$ | x: 0 m<br>$\eta = 35.3$ | x: 0 m<br>$\eta = 10.3$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 4.8$ | x: 0 m<br>$\eta = 8.7$ | x: 0 m<br>$\eta = 1.1$ | x: 0 m<br>$\eta = 45.5$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 45.5$** |
| N947/N1401 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.1$ | x: 2.06 m<br>$\eta = 30.2$ | x: 2.06 m<br>$\eta = 7.0$ | x: 2.06 m<br>$\eta = 0.6$ | x: 2.06 m<br>$\eta = 4.6$ | x: 2.06 m<br>$\eta = 7.3$ | x: 2.06 m<br>$\eta = 0.5$ | x: 2.06 m<br>$\eta = 37.3$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 37.3$** |
| N949/N948 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.1$ | x: 0 m<br>$\eta = 41.8$ | x: 0 m<br>$\eta = 9.7$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 5.1$ | x: 0 m<br>$\eta = 12.6$ | x: 0 m<br>$\eta = 0.9$ | x: 0 m<br>$\eta = 51.6$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 51.6$** |
| N948/N1651 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.1$ | x: 2.345 m<br>$\eta = 34.5$ | x: 2.345 m<br>$\eta = 10.0$ | x: 2.345 m<br>$\eta = 0.6$ | x: 2.345 m<br>$\eta = 4.8$ | x: 2.345 m<br>$\eta = 8.7$ | x: 2.345 m<br>$\eta = 1.0$ | x: 2.345 m<br>$\eta = 44.5$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 44.5$** |
| N1654/N950 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.2$ | x: 0 m<br>$\eta = 36.6$ | x: 0 m<br>$\eta = 10.5$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 4.9$ | x: 0 m<br>$\eta = 9.5$ | x: 0 m<br>$\eta = 1.1$ | x: 0 m<br>$\eta = 47.2$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 47.2$** |
| N950/N949 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.2$ | x: 2.405 m<br>$\eta = 42.2$ | x: 2.405 m<br>$\eta = 10.2$ | x: 2.405 m<br>$\eta = 0.6$ | x: 2.405 m<br>$\eta = 5.2$ | x: 2.405 m<br>$\eta = 12.6$ | x: 2.405 m<br>$\eta = 1.0$ | x: 2.405 m<br>$\eta = 52.5$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 52.5$** |
| N952/N951 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.2$ | x: 0 m<br>$\eta = 45.4$ | x: 0 m<br>$\eta = 10.2$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 5.2$ | x: 0 m<br>$\eta = 14.6$ | x: 0 m<br>$\eta = 1.0$ | x: 0 m<br>$\eta = 55.8$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 55.8$** |
| N951/N1654 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.2$ | x: 2.4 m<br>$\eta = 36.6$ | x: 2.4 m<br>$\eta = 10.4$ | x: 2.4 m<br>$\eta = 0.6$ | x: 2.4 m<br>$\eta = 4.9$ | x: 2.4 m<br>$\eta = 9.5$ | x: 2.4 m<br>$\eta = 1.1$ | x: 2.4 m<br>$\eta = 47.1$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 47.1$** |
| N1657/N953 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.2$ | x: 0 m<br>$\eta = 32.8$ | x: 0 m<br>$\eta = 10.9$ | x: 0 m<br>$\eta = 0.7$ | x: 0 m<br>$\eta = 4.9$ | x: 0 m<br>$\eta = 7.5$ | x: 0 m<br>$\eta = 1.2$ | x: 0 m<br>$\eta = 43.8$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 43.8$** |
| N953/N952 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.2$ | x: 2.47 m<br>$\eta = 46.0$ | x: 2.47 m<br>$\eta = 10.6$ | x: 2.47 m<br>$\eta = 0.6$ | x: 2.47 m<br>$\eta = 5.5$ | x: 2.47 m<br>$\eta = 14.6$ | x: 2.47 m<br>$\eta = 1.1$ | x: 2.47 m<br>$\eta = 56.8$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 56.8$** |
| N955/N954 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.3$ | x: 0 m<br>$\eta = 40.2$ | x: 0 m<br>$\eta = 8.7$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 4.9$ | x: 0 m<br>$\eta = 12.2$ | x: 0 m<br>$\eta = 0.8$ | x: 0 m<br>$\eta = 49.1$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 49.1$** |
| N954/N1657 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.2$ | x: 2.22 m<br>$\eta = 31.4$ | x: 2.22 m<br>$\eta = 9.1$ | x: 2.22 m<br>$\eta = 0.6$ | x: 2.22 m<br>$\eta = 4.5$ | x: 2.22 m<br>$\eta = 7.5$ | x: 2.22 m<br>$\eta = 0.8$ | x: 2.22 m<br>$\eta = 40.6$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 40.6$** |
| N1397/N965 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 1.4$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0 m<br>$\eta = 25.4$ | x: 0.4 m<br>$\eta = 6.5$ | x: 0.4 m<br>$\eta = 0.2$ | x: 0 m<br>$\eta = 0.5$ | x: 0 m<br>$\eta = 6.4$ | x: 0.4 m<br>$\eta = 0.4$ | N.A.(4) | x: 0.4 m<br>$\eta = 31.7$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 31.7$** |
| N1652/N966 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta = 0.1$ | $\eta = 0.1$ | x: 0 m<br>$\eta = 30.8$ | x: 0 m<br>$\eta = 8.9$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 4.6$ | x: 0 m<br>$\eta = 6.6$ | x: 0 m<br>$\eta = 0.8$ | x: 0 m<br>$\eta = 39.3$ | x: 0 m<br>$\eta = 35.6$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 39.3$** |
| N966/N1397 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta = 0.1$ | $\eta = 0.1$ | x: 2.06 m<br>$\eta = 32.6$ | x: 2.06 m<br>$\eta = 5.7$ | x: 2.06 m<br>$\eta = 0.5$ | x: 2.06 m<br>$\eta = 4.8$ | x: 2.06 m<br>$\eta = 8.5$ | x: 2.06 m<br>$\eta = 0.3$ | x: 2.06 m<br>$\eta = 38.1$ | x: 2.06 m<br>$\eta = 37.7$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 38.1$** |
| N968/N967 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta = 0.1$ | $\eta = 0.1$ | x: 0 m<br>$\eta = 46.2$ | x: 0 m<br>$\eta = 8.6$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 5.3$ | x: 0 m<br>$\eta = 15.4$ | x: 0 m<br>$\eta = 0.7$ | x: 0 m<br>$\eta = 54.7$ | x: 0 m<br>$\eta = 44.4$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 54.7$** |
| N967/N1652 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta = 0.1$ | $\eta = 0.1$ | x: 2.345 m<br>$\eta = 30.2$ | x: 2.345 m<br>$\eta = 8.5$ | x: 2.345 m<br>$\eta = 0.6$ | x: 2.345 m<br>$\eta = 4.6$ | x: 2.345 m<br>$\eta = 6.7$ | x: 2.345 m<br>$\eta = 0.7$ | x: 2.345 m<br>$\eta = 38.4$ | x: 2.345 m<br>$\eta = 34.6$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 38.4$** |
| N1655/N969 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.2$ | x: 0 m<br>$\eta = 32.1$ | x: 0 m<br>$\eta = 9.0$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 4.7$ | x: 0 m<br>$\eta = 7.4$ | x: 0 m<br>$\eta = 0.8$ | x: 0 m<br>$\eta = 41.0$ | x: 0 m<br>$\eta = 31.8$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 41.0$** |
| N969/N968 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.2$ | x: 2.405 m<br>$\eta = 46.7$ | x: 2.405 m<br>$\eta = 9.0$ | x: 2.405 m<br>$\eta = 0.6$ | x: 2.405 m<br>$\eta = 5.4$ | x: 2.405 m<br>$\eta = 15.4$ | x: 2.405 m<br>$\eta = 0.8$ | x: 2.405 m<br>$\eta = 55.7$ | x: 2.405 m<br>$\eta = 43.4$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 55.7$** |
| N971/N970 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.2$ | x: 0 m<br>$\eta = 49.3$ | x: 0 m<br>$\eta = 9.1$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 5.4$ | x: 0 m<br>$\eta = 17.2$ | x: 0 m<br>$\eta = 0.8$ | x: 0 m<br>$\eta = 58.5$ | x: 0 m<br>$\eta = 35.0$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 58.5$** |
| N970/N1655 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.2$ | x: 2.4 m<br>$\eta = 32.1$ | x: 2.4 m<br>$\eta = 8.9$ | x: 2.4 m<br>$\eta = 0.6$ | x: 2.4 m<br>$\eta = 4.7$ | x: 2.4 m<br>$\eta = 7.4$ | x: 2.4 m<br>$\eta = 0.8$ | x: 2.4 m<br>$\eta = 41.0$ | x: 2.4 m<br>$\eta = 27.6$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 41.0$** |
| N1658/N972 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.3$ | x: 0 m<br>$\eta = 29.7$ | x: 0 m<br>$\eta = 9.3$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 4.8$ | x: 0 m<br>$\eta = 6.2$ | x: 0 m<br>$\eta = 0.9$ | x: 0 m<br>$\eta = 39.0$ | x: 0 m<br>$\eta = 20.1$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 39.0$** |
| N972/N971 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.3$ | x: 2.47 m<br>$\eta = 50.0$ | x: 2.47 m<br>$\eta = 9.5$ | x: 2.47 m<br>$\eta = 0.6$ | x: 2.47 m<br>$\eta = 5.6$ | x: 2.47 m<br>$\eta = 17.2$ | x: 2.47 m<br>$\eta = 0.9$ | x: 2.47 m<br>$\eta = 59.6$ | x: 2.47 m<br>$\eta = 29.8$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 59.6$** |
| N974/N973 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.2$ | x: 0 m<br>$\eta = 42.5$ | x: 0 m<br>$\eta = 8.3$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 5.0$ | x: 0 m<br>$\eta = 13.6$ | x: 0 m<br>$\eta = 0.7$ | x: 0 m<br>$\eta = 51.0$ | x: 0 m<br>$\eta = 30.6$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 51.0$** |

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | $\lambda$ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N973/N1658 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.2$ | x: 2.22 m<br>$\eta = 28.3$ | x: 2.22 m<br>$\eta = 7.9$ | x: 2.22 m<br>$\eta = 0.5$ | x: 2.22 m<br>$\eta = 4.4$ | x: 2.22 m<br>$\eta = 6.1$ | x: 2.22 m<br>$\eta = 0.6$ | x: 2.22 m<br>$\eta = 36.1$ | x: 2.22 m<br>$\eta = 24.3$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 36.1$** |
| N1378/N1035 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 1.8$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0 m<br>$\eta = 29.0$ | x: 0.4 m<br>$\eta = 7.9$ | x: 0.4 m<br>$\eta = 0.3$ | x: 0 m<br>$\eta = 1.5$ | x: 0 m<br>$\eta = 8.4$ | x: 0.4 m<br>$\eta = 0.6$ | N.A.(4) | x: 0 m<br>$\eta = 37.2$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 37.2$** |
| N1383/N1037 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 1.9$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0 m<br>$\eta = 33.0$ | x: 0.4 m<br>$\eta = 6.4$ | x: 0 m<br>$\eta = 0.4$ | x: 0 m<br>$\eta = 0.9$ | x: 0 m<br>$\eta = 10.9$ | x: 0.4 m<br>$\eta = 0.4$ | N.A.(4) | x: 0 m<br>$\eta = 40.6$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 40.6$** |
| N1387/N1039 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 2.0$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0 m<br>$\eta = 36.7$ | x: 0.4 m<br>$\eta = 6.4$ | x: 0.4 m<br>$\eta = 0.3$ | x: 0 m<br>$\eta = 0.7$ | x: 0 m<br>$\eta = 13.4$ | x: 0.4 m<br>$\eta = 0.4$ | N.A.(4) | x: 0 m<br>$\eta = 42.2$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 42.2$** |
| N1035/N1379 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 1.7$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0.4 m<br>$\eta = 28.6$ | x: 0 m<br>$\eta = 8.7$ | x: 0 m<br>$\eta = 0.2$ | x: 0.4 m<br>$\eta = 1.3$ | x: 0.4 m<br>$\eta = 8.2$ | x: 0 m<br>$\eta = 0.8$ | N.A.(4) | x: 0.4 m<br>$\eta = 37.7$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 37.7$** |
| N1037/N1382 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 2.0$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0.4 m<br>$\eta = 33.1$ | x: 0 m<br>$\eta = 6.9$ | x: 0.4 m<br>$\eta = 0.4$ | x: 0.4 m<br>$\eta = 0.7$ | x: 0.4 m<br>$\eta = 11.0$ | x: 0 m<br>$\eta = 0.5$ | N.A.(4) | x: 0.4 m<br>$\eta = 41.5$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 41.5$** |
| N1039/N1386 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 2.0$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0.4 m<br>$\eta = 37.1$ | x: 0 m<br>$\eta = 6.1$ | x: 0.4 m<br>$\eta = 0.3$ | x: 0.4 m<br>$\eta = 0.8$ | x: 0.4 m<br>$\eta = 13.8$ | x: 0 m<br>$\eta = 0.4$ | N.A.(4) | x: 0.4 m<br>$\eta = 43.3$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 43.3$** |
| N1320/N1061 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 1.6$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0 m<br>$\eta = 24.1$ | x: 0.4 m<br>$\eta = 7.8$ | x: 0.4 m<br>$\eta = 0.2$ | x: 0 m<br>$\eta = 1.1$ | x: 0 m<br>$\eta = 5.8$ | x: 0.4 m<br>$\eta = 0.6$ | N.A.(4) | x: 0 m<br>$\eta = 32.3$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 32.3$** |
| N1316/N1063 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 1.8$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0.4 m<br>$\eta = 28.6$ | x: 0 m<br>$\eta = 5.8$ | x: 0 m<br>$\eta = 0.3$ | x: 0.4 m<br>$\eta = 1.0$ | x: 0.4 m<br>$\eta = 8.2$ | x: 0 m<br>$\eta = 0.3$ | N.A.(4) | x: 0 m<br>$\eta = 34.5$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 34.5$** |
| N1312/N1065 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 1.9$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0 m<br>$\eta = 32.3$ | x: 0.4 m<br>$\eta = 4.9$ | x: 0 m<br>$\eta = 0.2$ | x: 0 m<br>$\eta = 0.7$ | x: 0 m<br>$\eta = 10.4$ | x: 0.4 m<br>$\eta = 0.2$ | N.A.(4) | x: 0 m<br>$\eta = 37.5$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 37.5$** |
| N1321/N1069 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.6$ | x: 0 m<br>$\eta = 27.8$ | x: 0 m<br>$\eta = 6.6$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 5.8$ | x: 0 m<br>$\eta = 8.1$ | x: 0 m<br>$\eta = 0.4$ | x: 0 m<br>$\eta = 34.4$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 34.4$** |
| N1069/N1641 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.8$ | x: 2.27 m<br>$\eta = 40.0$ | x: 2.27 m<br>$\eta = 10.4$ | x: 2.27 m<br>$\eta = 0.7$ | x: 2.27 m<br>$\eta = 6.6$ | x: 2.27 m<br>$\eta = 16.4$ | x: 2.27 m<br>$\eta = 1.1$ | x: 2.27 m<br>$\eta = 50.2$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 50.2$** |
| N1061/N1321 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 1.7$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0.4 m<br>$\eta = 23.9$ | x: 0 m<br>$\eta = 6.7$ | x: 0 m<br>$\eta = 0.2$ | x: 0.4 m<br>$\eta = 1.1$ | x: 0.4 m<br>$\eta = 5.7$ | x: 0 m<br>$\eta = 0.4$ | N.A.(4) | x: 0.4 m<br>$\eta = 31.1$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 31.1$** |
| N1317/N1070 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.1$ | x: 0 m<br>$\eta = 33.2$ | x: 0 m<br>$\eta = 6.2$ | x: 0 m<br>$\eta = 0.5$ | x: 0 m<br>$\eta = 6.1$ | x: 0 m<br>$\eta = 11.4$ | x: 0 m<br>$\eta = 0.4$ | x: 0 m<br>$\eta = 39.3$ | x: 0 m<br>$\eta = 17.9$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 39.3$** |
| N1070/N1640 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.1$ | x: 2.27 m<br>$\eta = 33.7$ | x: 2.27 m<br>$\eta = 9.0$ | x: 2.27 m<br>$\eta = 0.6$ | x: 2.27 m<br>$\eta = 6.2$ | x: 2.27 m<br>$\eta = 11.7$ | x: 2.27 m<br>$\eta = 0.8$ | x: 2.27 m<br>$\eta = 42.2$ | x: 2.27 m<br>$\eta = 29.0$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 42.2$** |
| N1063/N1317 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 1.7$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0.4 m<br>$\eta = 29.3$ | x: 0.4 m<br>$\eta = 5.4$ | x: 0.4 m<br>$\eta = 0.4$ | x: 0.4 m<br>$\eta = 0.8$ | x: 0.4 m<br>$\eta = 8.6$ | x: 0.4 m<br>$\eta = 0.3$ | N.A.(4) | x: 0.4 m<br>$\eta = 36.1$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 36.1$** |
| N1313/N1071 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.1$ | x: 0 m<br>$\eta = 35.8$ | $M_{Sd} = 0.00$<br>N.A.(2) | x: 0 m<br>$\eta = 0.4$ | x: 0 m<br>$\eta = 6.3$ | x: 0 m<br>$\eta = 13.2$ | N.A.(3) | x: 0 m<br>$\eta = 35.3$ | x: 0 m<br>$\eta = 39.7$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 39.7$** |
| N1071/N1639 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.2$ | x: 2.27 m<br>$\eta = 30.7$ | x: 2.27 m<br>$\eta = 7.0$ | x: 2.27 m<br>$\eta = 0.5$ | x: 2.27 m<br>$\eta = 6.0$ | x: 2.27 m<br>$\eta = 9.8$ | x: 2.27 m<br>$\eta = 0.5$ | x: 2.27 m<br>$\eta = 32.7$ | x: 2.27 m<br>$\eta = 36.5$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 36.5$** |
| N1065/N1313 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 1.8$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0 m<br>$\eta = 32.2$ | $M_{Sd} = 0.00$<br>N.A.(2) | x: 0.4 m<br>$\eta = 0.2$ | x: 0 m<br>$\eta = 0.8$ | x: 0 m<br>$\eta = 10.4$ | N.A.(3) | N.A.(4) | x: 0.4 m<br>$\eta = 36.2$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 36.2$** |
| N1639/N1078 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta = 0.1$ | $\eta = 0.2$ | x: 0 m<br>$\eta = 30.7$ | x: 0 m<br>$\eta = 8.6$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 6.4$ | x: 0 m<br>$\eta = 9.8$ | x: 0 m<br>$\eta = 0.7$ | x: 0 m<br>$\eta = 34.4$ | x: 0 m<br>$\eta = 38.4$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 38.4$** |
| N1078/N1079 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.2$ | x: 2.37 m<br>$\eta = 61.2$ | x: 2.37 m<br>$\eta = 9.4$ | x: 2.37 m<br>$\eta = 0.6$ | x: 2.37 m<br>$\eta = 7.9$ | x: 2.37 m<br>$\eta = 38.1$ | x: 2.37 m<br>$\eta = 0.9$ | x: 2.37 m<br>$\eta = 62.1$ | x: 2.37 m<br>$\eta = 69.9$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 69.9$** |
| N1640/N1076 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta < 0.1$ | x: 0 m<br>$\eta = 33.6$ | x: 0 m<br>$\eta = 10.2$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 6.5$ | x: 0 m<br>$\eta = 11.7$ | x: 0 m<br>$\eta = 1.0$ | x: 0 m<br>$\eta = 43.2$ | x: 0 m<br>$\eta = 38.6$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 43.2$** |
| N1076/N1077 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.1$ | x: 2.37 m<br>$\eta = 59.3$ | x: 2.37 m<br>$\eta = 9.8$ | x: 2.37 m<br>$\eta = 0.6$ | x: 2.37 m<br>$\eta = 7.8$ | x: 2.37 m<br>$\eta = 35.8$ | x: 2.37 m<br>$\eta = 1.0$ | x: 2.37 m<br>$\eta = 68.5$ | x: 2.37 m<br>$\eta = 60.5$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 68.5$** |
| N1641/N1074 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 1.0$ | x: 0 m<br>$\eta = 40.1$ | x: 0 m<br>$\eta = 11.5$ | x: 0 m<br>$\eta = 0.7$ | x: 0 m<br>$\eta = 6.8$ | x: 0 m<br>$\eta = 16.6$ | x: 0 m<br>$\eta = 1.3$ | x: 0 m<br>$\eta = 51.6$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 51.6$** |
| N1074/N1075 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 1.0$ | x: 2.37 m<br>$\eta = 50.6$ | x: 2.37 m<br>$\eta = 10.2$ | x: 2.37 m<br>$\eta = 0.6$ | x: 2.37 m<br>$\eta = 7.4$ | x: 2.37 m<br>$\eta = 26.1$ | x: 2.37 m<br>$\eta = 1.0$ | x: 2.37 m<br>$\eta = 60.5$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 60.5$** |
| N1001/N1000 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 0.1$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0 m<br>$\eta = 41.2$ | x: 0 m<br>$\eta = 9.1$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 6.6$ | x: 0 m<br>$\eta = 17.4$ | x: 0 m<br>$\eta = 0.8$ | N.A.(4) | x: 0 m<br>$\eta = 49.8$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 49.8$** |
| N1000/N1659 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 0.1$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 2.22 m<br>$\eta = 44.0$ | x: 2.22 m<br>$\eta = 10.4$ | x: 2.22 m<br>$\eta = 0.7$ | x: 2.22 m<br>$\eta = 6.8$ | x: 2.22 m<br>$\eta = 19.8$ | x: 2.22 m<br>$\eta = 1.1$ | N.A.(4) | x: 2.22 m<br>$\eta = 53.9$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 53.9$** |
| N1644/N1348 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 1.9$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0.4 m<br>$\eta = 22.0$ | x: 0.4 m<br>$\eta = 7.3$ | x: 0.4 m<br>$\eta = 0.4$ | x: 0.4 m<br>$\eta = 3.5$ | x: 0.4 m<br>$\eta = 4.9$ | x: 0.4 m<br>$\eta = 0.5$ | N.A.(4) | x: 0.4 m<br>$\eta = 30.8$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 30.8$** |
| N1348/N922 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 1.0$ | x: 0 m<br>$\eta = 30.4$ | x: 0 m<br>$\eta = 8.6$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 5.5$ | x: 0 m<br>$\eta = 7.5$ | x: 0 m<br>$\eta = 0.7$ | x: 0 m<br>$\eta = 39.7$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 39.7$** |
| N922/N1295 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 1.0$ | x: 2.08 m<br>$\eta = 28.2$ | x: 2.08 m<br>$\eta = 7.7$ | x: 2.08 m<br>$\eta = 0.6$ | x: 2.08 m<br>$\eta = 5.4$ | x: 2.08 m<br>$\eta = 6.5$ | x: 2.08 m<br>$\eta = 0.6$ | x: 2.08 m<br>$\eta = 36.5$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 36.5$** |
| N1295/N921 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 1.3$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0 m<br>$\eta = 21.2$ | x: 0.4 m<br>$\eta = 8.1$ | x: 0.4 m<br>$\eta = 0.3$ | x: 0 m<br>$\eta = 1.0$ | x: 0 m<br>$\eta = 4.5$ | x: 0.4 m<br>$\eta = 0.7$ | N.A.(4) | x: 0 m<br>$\eta = 29.1$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 29.1$** |

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | λ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N1645/N1344 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 200.0$<br>$\lambda_{yy} \le 200.0$<br>Passa | η < 0.1 | η < 0.1 | x: 0 m<br>η = 33.7 | x: 0 m<br>η = 10.2 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 6.0 | x: 0 m<br>η = 11.7 | x: 0 m<br>η = 1.0 | x: 0 m<br>η = 39.9 | x: 0 m<br>η = 42.9 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 42.9** |
| N1344/N941 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 200.0$<br>$\lambda_{yy} \le 200.0$<br>Passa | η < 0.1 | η < 0.1 | x: 1.872 m<br>η = 24.4 | x: 0 m<br>η = 5.6 | x: 0 m<br>η = 0.5 | x: 0 m<br>η = 5.1 | x: 1.872 m<br>η = 6.0 | x: 0 m<br>η = 0.3 | x: 2.08 m<br>η = 23.4 | x: 1.872 m<br>η = 28.9 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 28.9** |
| N941/N1299 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 200.0$<br>$\lambda_{yy} \le 200.0$<br>Passa | η < 0.1 | η < 0.1 | x: 2.08 m<br>η = 31.8 | x: 2.08 m<br>η = 6.8 | x: 2.08 m<br>η = 0.6 | x: 2.08 m<br>η = 5.8 | x: 2.08 m<br>η = 8.2 | x: 2.08 m<br>η = 0.5 | x: 2.08 m<br>η = 31.8 | x: 2.08 m<br>η = 38.2 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 38.2** |
| N1299/N940 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 300.0$<br>$\lambda_{yy} \le 300.0$<br>Passa | η = 1.6 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0.4 m<br>η = 25.1 | x: 0.4 m<br>η = 6.4 | x: 0 m<br>η = 0.3 | x: 0.4 m<br>η = 0.7 | x: 0.4 m<br>η = 6.3 | x: 0.4 m<br>η = 0.4 | N.A.(4) | x: 0 m<br>η = 31.8 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 31.8** |
| N1646/N1340 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 200.0$<br>$\lambda_{yy} \le 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.2 | x: 0 m<br>η = 28.7 | x: 0 m<br>η = 8.5 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 5.7 | x: 0 m<br>η = 8.6 | x: 0 m<br>η = 0.7 | x: 0 m<br>η = 36.5 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 36.5** |
| N1340/N960 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 200.0$<br>$\lambda_{yy} \le 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.3 | x: 1.872 m<br>η = 23.4 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.5 | x: 0 m<br>η = 4.7 | x: 1.872 m<br>η = 5.5 | N.A.(3) | x: 1.872 m<br>η = 26.4 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 26.4** |
| N960/N1303 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 200.0$<br>$\lambda_{yy} \le 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.4 | x: 2.08 m<br>η = 36.6 | x: 2.08 m<br>η = 5.3 | x: 2.08 m<br>η = 0.5 | x: 2.08 m<br>η = 5.9 | x: 2.08 m<br>η = 10.8 | x: 2.08 m<br>η = 0.3 | x: 2.08 m<br>η = 41.6 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 41.6** |
| N1303/N959 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 300.0$<br>$\lambda_{yy} \le 300.0$<br>Passa | η = 1.6 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0 m<br>η = 28.1 | x: 0.4 m<br>η = 5.7 | x: 0.4 m<br>η = 0.2 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 7.9 | x: 0.4 m<br>η = 0.3 | N.A.(4) | x: 0 m<br>η = 33.5 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 33.5** |
| N924/N923 | x: 0 m<br>$(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 300.0$<br>$\lambda_{yy} \le 300.0$<br>Passa | η = 0.2 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0 m<br>η = 29.4 | x: 0 m<br>η = 10.2 | x: 0 m<br>η = 0.7 | x: 0 m<br>η = 4.5 | x: 0 m<br>η = 6.6 | x: 0 m<br>η = 1.0 | N.A.(4) | x: 0 m<br>η = 39.8 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 39.8** |
| N923/N1349 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 300.0$<br>$\lambda_{yy} \le 300.0$<br>Passa | η = 0.2 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 1.81 m<br>η = 23.8 | x: 1.81 m<br>η = 6.7 | x: 1.81 m<br>η = 0.6 | x: 1.81 m<br>η = 4.3 | x: 1.81 m<br>η = 5.0 | x: 1.81 m<br>η = 0.5 | N.A.(4) | x: 1.81 m<br>η = 30.7 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 30.7** |
| N1349/N1644 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 300.0$<br>$\lambda_{yy} \le 300.0$<br>Passa | η = 1.9 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0 m<br>η = 18.6 | x: 0 m<br>η = 6.0 | x: 0.4 m<br>η = 0.1 | x: 0 m<br>η = 2.5 | x: 0 m<br>η = 3.5 | x: 0 m<br>η = 0.4 | N.A.(4) | x: 0 m<br>η = 26.5 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 26.5** |
| N943/N942 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 200.0$<br>$\lambda_{yy} \le 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.1 | x: 0 m<br>η = 34.0 | x: 0 m<br>η = 8.5 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 4.7 | x: 0 m<br>η = 8.8 | x: 0 m<br>η = 0.7 | x: 0 m<br>η = 42.6 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 42.6** |
| N942/N1345 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 200.0$<br>$\lambda_{yy} \le 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.1 | x: 1.81 m<br>η = 21.2 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 1.81 m<br>η = 0.5 | x: 1.81 m<br>η = 4.1 | x: 1.81 m<br>η = 4.0 | N.A.(3) | x: 1.81 m<br>η = 25.6 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 25.6** |
| N1345/N1645 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 200.0$<br>$\lambda_{yy} \le 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η < 0.1 | x: 0.4 m<br>η = 33.8 | x: 0.4 m<br>η = 9.1 | x: 0.4 m<br>η = 0.6 | x: 0.4 m<br>η = 5.0 | x: 0.4 m<br>η = 11.7 | x: 0.4 m<br>η = 0.8 | x: 0.4 m<br>η = 42.7 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 42.7** |
| N962/N961 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 200.0$<br>$\lambda_{yy} \le 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.2 | x: 0 m<br>η = 39.1 | x: 0 m<br>η = 7.2 | x: 0 m<br>η = 0.5 | x: 0 m<br>η = 5.0 | x: 0 m<br>η = 11.6 | x: 0 m<br>η = 0.5 | x: 0 m<br>η = 46.3 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 46.3** |
| N961/N1341 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 200.0$<br>$\lambda_{yy} \le 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.1 | x: 1.81 m<br>η = 16.5 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 1.81 m<br>η = 0.4 | x: 1.81 m<br>η = 3.8 | x: 1.81 m<br>η = 2.5 | N.A.(3) | x: 1.81 m<br>η = 20.0 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 20.0** |
| N1341/N1646 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 200.0$<br>$\lambda_{yy} \le 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.1 | x: 0.4 m<br>η = 28.6 | x: 0.4 m<br>η = 7.5 | x: 0.4 m<br>η = 0.5 | x: 0.4 m<br>η = 4.7 | x: 0.4 m<br>η = 8.4 | x: 0.4 m<br>η = 0.6 | x: 0.4 m<br>η = 35.8 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 35.8** |
| N1647/N1376 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 300.0$<br>$\lambda_{yy} \le 300.0$<br>Passa | η = 1.9 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0.4 m<br>η = 18.3 | x: 0.4 m<br>η = 6.0 | x: 0 m<br>η = 0.1 | x: 0.4 m<br>η = 2.4 | x: 0.4 m<br>η = 3.4 | x: 0.4 m<br>η = 0.4 | N.A.(4) | x: 0.4 m<br>η = 26.1 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 26.1** |
| N1376/N925 | x: 0 m<br>$(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 300.0$<br>$\lambda_{yy} \le 300.0$<br>Passa | η = 0.2 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0 m<br>η = 23.8 | x: 0 m<br>η = 7.0 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 4.3 | x: 0 m<br>η = 5.0 | x: 0 m<br>η = 0.5 | N.A.(4) | x: 0 m<br>η = 30.9 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 30.9** |
| N925/N924 | x: 0 m<br>$(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 300.0$<br>$\lambda_{yy} \le 300.0$<br>Passa | η = 0.2 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 2.22 m<br>η = 29.4 | x: 2.22 m<br>η = 10.3 | x: 2.22 m<br>η = 0.7 | x: 2.22 m<br>η = 4.5 | x: 2.22 m<br>η = 6.6 | x: 2.22 m<br>η = 1.1 | N.A.(4) | x: 2.22 m<br>η = 39.9 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 39.9** |
| N1648/N1372 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 200.0$<br>$\lambda_{yy} \le 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.1 | x: 0 m<br>η = 33.3 | x: 0 m<br>η = 9.1 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 5.0 | x: 0 m<br>η = 11.3 | x: 0 m<br>η = 0.8 | x: 0 m<br>η = 42.5 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 42.5** |
| N1372/N944 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 200.0$<br>$\lambda_{yy} \le 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.1 | x: 0 m<br>η = 20.0 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.5 | x: 0 m<br>η = 4.1 | x: 0 m<br>η = 3.6 | N.A.(3) | x: 0 m<br>η = 24.8 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 24.8** |
| N944/N943 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 200.0$<br>$\lambda_{yy} \le 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.1 | x: 2.22 m<br>η = 34.0 | x: 2.22 m<br>η = 8.5 | x: 2.22 m<br>η = 0.6 | x: 2.22 m<br>η = 4.8 | x: 2.22 m<br>η = 8.8 | x: 2.22 m<br>η = 0.7 | x: 2.22 m<br>η = 42.6 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 42.6** |
| N1649/N1368 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 200.0$<br>$\lambda_{yy} \le 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.1 | x: 0 m<br>η = 28.1 | x: 0 m<br>η = 7.5 | x: 0 m<br>η = 0.5 | x: 0 m<br>η = 4.7 | x: 0 m<br>η = 8.1 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 35.5 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 35.5** |
| N1368/N963 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 200.0$<br>$\lambda_{yy} \le 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.1 | x: 0 m<br>η = 15.4 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.4 | x: 0 m<br>η = 3.8 | x: 0 m<br>η = 2.2 | N.A.(3) | x: 0 m<br>η = 19.1 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 19.1** |
| N963/N962 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 200.0$<br>$\lambda_{yy} \le 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.2 | x: 2.22 m<br>η = 39.2 | x: 2.22 m<br>η = 7.3 | x: 2.22 m<br>η = 0.5 | x: 2.22 m<br>η = 5.0 | x: 2.22 m<br>η = 11.6 | x: 2.22 m<br>η = 0.5 | x: 2.22 m<br>η = 46.4 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 46.4** |
| N927/N1404 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 300.0$<br>$\lambda_{yy} \le 300.0$<br>Passa | η = 1.2 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0.4 m<br>η = 19.9 | x: 0 m<br>η = 8.7 | x: 0 m<br>η = 0.3 | x: 0.4 m<br>η = 0.9 | x: 0.4 m<br>η = 4.0 | x: 0 m<br>η = 0.8 | N.A.(4) | x: 0.4 m<br>η = 28.3 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 28.3** |
| N1404/N926 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 200.0$<br>$\lambda_{yy} \le 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.6 | x: 0 m<br>η = 26.8 | x: 0 m<br>η = 8.4 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 4.7 | x: 0 m<br>η = 5.6 | x: 0 m<br>η = 0.7 | x: 0 m<br>η = 35.5 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 35.5** |
| N926/N1377 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 200.0$<br>$\lambda_{yy} \le 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.6 | x: 2.185 m<br>η = 29.9 | x: 2.185 m<br>η = 8.9 | x: 2.185 m<br>η = 0.6 | x: 2.185 m<br>η = 4.9 | x: 2.185 m<br>η = 7.0 | x: 2.185 m<br>η = 0.8 | x: 2.185 m<br>η = 39.5 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 39.5** |
| N1377/N1647 | $(b_w/t) \le 500$<br>$(b_f/t) \le 60$<br>Passa | $\lambda_{xx} \le 300.0$<br>$\lambda_{yy} \le 300.0$<br>Passa | η = 1.9 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0 m<br>η = 21.8 | x: 0 m<br>η = 8.0 | x: 0 m<br>η = 0.3 | x: 0 m<br>η = 3.5 | x: 0 m<br>η = 4.9 | x: 0 m<br>η = 0.6 | N.A.(4) | x: 0 m<br>η = 31.7 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 31.7** |

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | $\lambda$ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N946/N1400 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 1.4 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0 m<br>η = 22.4 | x: 0 m<br>η = 6.9 | x: 0 m<br>η = 0.2 | x: 0 m<br>η = 0.9 | x: 0 m<br>η = 5.0 | x: 0 m<br>η = 0.5 | N.A.(4) | x: 0.4 m<br>η = 30.2 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 30.2** |
| N1400/N945 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.1 | x: 0 m<br>η = 30.0 | x: 0 m<br>η = 7.6 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 5.0 | x: 0 m<br>η = 7.0 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 37.6 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 37.6** |
| N945/N1373 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.1 | x: 0 m<br>η = 22.2 | x: 2.185 m<br>η = 6.2 | x: 2.185 m<br>η = 0.5 | x: 2.185 m<br>η = 4.6 | x: 0 m<br>η = 4.9 | x: 2.185 m<br>η = 0.4 | x: 0 m<br>η = 27.7 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 27.7** |
| N1373/N1648 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η < 0.1 | x: 0.4 m<br>η = 33.2 | x: 0.4 m<br>η = 11.0 | x: 0.4 m<br>η = 0.7 | x: 0.4 m<br>η = 5.4 | x: 0.4 m<br>η = 11.3 | x: 0.4 m<br>η = 1.2 | x: 0.4 m<br>η = 44.2 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 44.2** |
| N965/N1396 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 1.5 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0.4 m<br>η = 25.8 | x: 0 m<br>η = 6.4 | x: 0 m<br>η = 0.2 | x: 0.4 m<br>η = 0.6 | x: 0.4 m<br>η = 6.7 | x: 0 m<br>η = 0.4 | N.A.(4) | x: 0.4 m<br>η = 32.3 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 32.3** |
| N1396/N964 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.3 | x: 0 m<br>η = 34.1 | x: 0 m<br>η = 6.1 | x: 0 m<br>η = 0.5 | x: 0 m<br>η = 5.1 | x: 0 m<br>η = 8.9 | x: 0 m<br>η = 0.4 | x: 0 m<br>η = 40.2 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 40.2** |
| N964/N1369 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.3 | x: 0.219 m<br>η = 21.3 | x: 2.185 m<br>η = 5.1 | x: 2.185 m<br>η = 0.5 | x: 2.185 m<br>η = 4.3 | x: 0.437 m<br>η = 4.4 | x: 2.185 m<br>η = 0.3 | x: 0.219 m<br>η = 25.4 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 25.4** |
| N1369/N1649 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.1 | x: 0.4 m<br>η = 28.2 | x: 0.4 m<br>η = 9.4 | x: 0.4 m<br>η = 0.6 | x: 0.4 m<br>η = 5.1 | x: 0.4 m<br>η = 8.2 | x: 0.4 m<br>η = 0.9 | x: 0.4 m<br>η = 37.4 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 37.4** |
| N1650/N928 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | η = 0.1 | η = 0.5 | x: 0 m<br>η = 38.3 | x: 0 m<br>η = 11.5 | x: 0 m<br>η = 0.7 | x: 0 m<br>η = 4.9 | x: 0 m<br>η = 10.2 | x: 0 m<br>η = 1.3 | x: 0 m<br>η = 50.3 | x: 0 m<br>η = 29.3 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 50.3** |
| N928/N1405 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | η = 0.1 | η = 0.4 | x: 2.06 m<br>η = 26.4 | x: 2.06 m<br>η = 7.3 | x: 2.06 m<br>η = 0.6 | x: 2.06 m<br>η = 4.5 | x: 2.06 m<br>η = 5.7 | x: 2.06 m<br>η = 0.5 | x: 2.06 m<br>η = 34.1 | x: 2.06 m<br>η = 23.0 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 34.1** |
| N1405/N927 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 1.3 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0 m<br>η = 20.1 | x: 0.4 m<br>η = 7.9 | x: 0.4 m<br>η = 0.3 | x: 0 m<br>η = 1.0 | x: 0 m<br>η = 4.1 | x: 0.4 m<br>η = 0.6 | N.A.(4) | x: 0 m<br>η = 28.0 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 28.0** |
| N1661/N1323 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 2.4 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0.4 m<br>η = 27.1 | x: 0.4 m<br>η = 7.6 | x: 0.4 m<br>η = 0.6 | x: 0.4 m<br>η = 4.2 | x: 0.4 m<br>η = 7.5 | x: 0.4 m<br>η = 0.6 | N.A.(4) | x: 0.4 m<br>η = 37.0 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 37.0** |
| N1323/N1062 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 1.0 | x: 0 m<br>η = 32.3 | x: 0 m<br>η = 8.7 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 6.4 | x: 0 m<br>η = 10.8 | x: 0 m<br>η = 0.8 | x: 0 m<br>η = 41.3 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 41.3** |
| N1062/N1320 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 1.0 | x: 2.08 m<br>η = 28.3 | x: 2.08 m<br>η = 7.9 | x: 2.08 m<br>η = 0.6 | x: 2.08 m<br>η = 6.2 | x: 2.08 m<br>η = 8.4 | x: 2.08 m<br>η = 0.6 | x: 2.08 m<br>η = 36.5 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 36.5** |
| N1662/N1326 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | η < 0.1 | η < 0.1 | x: 0 m<br>η = 42.3 | x: 0 m<br>η = 10.2 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 7.0 | x: 0 m<br>η = 18.4 | x: 0 m<br>η = 1.0 | x: 0 m<br>η = 51.6 | x: 0 m<br>η = 42.9 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 51.6** |
| N1326/N1064 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | η < 0.1 | η = 0.1 | x: 1.872 m<br>η = 29.9 | x: 0 m<br>η = 5.6 | x: 0 m<br>η = 0.5 | x: 0 m<br>η = 5.9 | x: 1.872 m<br>η = 7.0 | x: 0 m<br>η = 0.3 | x: 2.08 m<br>η = 34.6 | x: 1.872 m<br>η = 29.6 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 34.6** |
| N1064/N1316 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | η < 0.1 | η = 0.1 | x: 2.08 m<br>η = 31.9 | x: 2.08 m<br>η = 7.0 | x: 2.08 m<br>η = 0.6 | x: 2.08 m<br>η = 6.6 | x: 2.08 m<br>η = 10.6 | x: 2.08 m<br>η = 0.5 | x: 2.08 m<br>η = 38.7 | x: 2.08 m<br>η = 34.5 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 38.7** |
| N1663/N1330 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.2 | x: 0 m<br>η = 36.1 | x: 0 m<br>η = 8.3 | x: 0 m<br>η = 0.5 | x: 0 m<br>η = 6.7 | x: 0 m<br>η = 13.5 | x: 0 m<br>η = 0.7 | x: 0 m<br>η = 43.0 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 43.0** |
| N1330/N1066 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.3 | x: 1.872 m<br>η = 29.1 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.5 | x: 0 m<br>η = 5.5 | x: 1.872 m<br>η = 6.6 | N.A.(3) | x: 1.872 m<br>η = 31.7 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 31.7** |
| N1066/N1312 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.3 | x: 2.08 m<br>η = 37.0 | x: 2.08 m<br>η = 5.2 | x: 2.08 m<br>η = 0.5 | x: 2.08 m<br>η = 6.8 | x: 2.08 m<br>η = 14.1 | x: 2.08 m<br>η = 0.3 | x: 2.08 m<br>η = 41.6 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 41.6** |
| N1048/N1056 | x: 0 m<br>($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 0.2 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0 m<br>η = 35.4 | x: 0 m<br>η = 10.7 | x: 0 m<br>η = 0.7 | x: 0 m<br>η = 6.3 | x: 0 m<br>η = 12.9 | x: 0 m<br>η = 1.1 | N.A.(4) | x: 0 m<br>η = 45.8 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 45.8** |
| N1056/N1322 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 0.2 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 1.81 m<br>η = 28.8 | x: 1.81 m<br>η = 7.5 | x: 1.81 m<br>η = 0.6 | x: 1.81 m<br>η = 5.9 | x: 1.81 m<br>η = 8.7 | x: 1.81 m<br>η = 0.6 | N.A.(4) | x: 1.81 m<br>η = 36.5 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 36.5** |
| N1322/N1661 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 2.5 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0 m<br>η = 23.9 | x: 0 m<br>η = 6.3 | x: 0 m<br>η = 0.4 | x: 0 m<br>η = 3.3 | x: 0 m<br>η = 5.8 | x: 0 m<br>η = 0.4 | N.A.(4) | x: 0 m<br>η = 32.6 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 32.6** |
| N1050/N1057 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.1 | x: 0 m<br>η = 41.4 | x: 0 m<br>η = 8.5 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 6.6 | x: 0 m<br>η = 17.6 | x: 0 m<br>η = 0.7 | x: 0 m<br>η = 49.3 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 49.3** |
| N1057/N1327 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.1 | x: 1.81 m<br>η = 22.4 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 1.81 m<br>η = 0.5 | x: 1.81 m<br>η = 5.5 | x: 1.81 m<br>η = 5.3 | N.A.(3) | x: 1.81 m<br>η = 27.1 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 27.1** |
| N1327/N1662 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.1 | x: 0.4 m<br>η = 42.3 | x: 0.4 m<br>η = 9.2 | x: 0.4 m<br>η = 0.6 | x: 0.4 m<br>η = 6.7 | x: 0.4 m<br>η = 18.4 | x: 0.4 m<br>η = 0.8 | x: 0.4 m<br>η = 51.1 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 51.1** |
| N1052/N1058 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.2 | x: 0 m<br>η = 47.0 | x: 0 m<br>η = 7.1 | x: 0 m<br>η = 0.5 | x: 0 m<br>η = 6.9 | x: 0 m<br>η = 22.6 | x: 0 m<br>η = 0.5 | x: 0 m<br>η = 52.9 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 52.9** |
| N1058/N1331 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.2 | x: 0.181 m<br>η = 20.4 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 1.81 m<br>η = 0.4 | x: 1.81 m<br>η = 5.2 | x: 0.181 m<br>η = 3.5 | N.A.(3) | x: 0.181 m<br>η = 22.7 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 22.7** |
| N1331/N1663 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.1 | x: 0.4 m<br>η = 36.0 | x: 0.4 m<br>η = 7.5 | x: 0.4 m<br>η = 0.5 | x: 0.4 m<br>η = 6.3 | x: 0.4 m<br>η = 13.3 | x: 0.4 m<br>η = 0.6 | x: 0.4 m<br>η = 42.2 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 42.2** |
| N1665/N1351 | ($b_w/t$) ≤ 500<br>($b_f/t$) ≤ 60<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | η = 2.5 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0.4 m<br>η = 25.3 | x: 0.4 m<br>η = 6.6 | x: 0.4 m<br>η = 0.4 | x: 0.4 m<br>η = 3.4 | x: 0.4 m<br>η = 6.5 | x: 0.4 m<br>η = 0.4 | N.A.(4) | x: 0.4 m<br>η = 34.3 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 34.3** |

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | λ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N1351/N1049 | x: 0 m<br>$(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | η = 0.2 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 0 m<br>η = 29.8 | x: 0 m<br>η = 7.5 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 6.0 | x: 0 m<br>η = 9.2 | x: 0 m<br>η = 0.6 | N.A.(4) | x: 0 m<br>η = 37.5 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 37.5** |
| N1049/N1048 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | η = 0.2 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | x: 2.22 m<br>η = 35.4 | x: 2.22 m<br>η = 10.7 | x: 2.22 m<br>η = 0.7 | x: 2.22 m<br>η = 6.3 | x: 2.22 m<br>η = 12.9 | x: 2.22 m<br>η = 1.1 | N.A.(4) | x: 2.22 m<br>η = 45.7 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 45.7** |
| N1666/N1354 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.1 | x: 0 m<br>η = 44.5 | x: 0 m<br>η = 9.4 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 6.8 | x: 0 m<br>η = 20.3 | x: 0 m<br>η = 0.9 | x: 0 m<br>η = 53.4 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 53.4** |
| N1354/N1051 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.1 | x: 0 m<br>η = 24.2 | x: 0 m<br>η = 4.9 | x: 0 m<br>η = 0.5 | x: 0 m<br>η = 5.6 | x: 0 m<br>η = 6.2 | x: 0 m<br>η = 0.2 | x: 0 m<br>η = 29.0 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 29.0** |
| N1051/N1050 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.2 | x: 2.22 m<br>η = 41.5 | x: 2.22 m<br>η = 8.6 | x: 2.22 m<br>η = 0.6 | x: 2.22 m<br>η = 6.6 | x: 2.22 m<br>η = 17.6 | x: 2.22 m<br>η = 0.7 | x: 2.22 m<br>η = 49.6 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 49.6** |
| N1667/N1358 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.1 | x: 0 m<br>η = 38.1 | x: 0 m<br>η = 7.5 | x: 0 m<br>η = 0.5 | x: 0 m<br>η = 6.4 | x: 0 m<br>η = 14.9 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 44.5 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 44.5** |
| N1358/N1053 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.1 | x: 1.82 m<br>η = 20.1 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.4 | x: 0 m<br>η = 5.2 | x: 0 m<br>η = 3.9 | N.A.(3) | x: 1.638 m<br>η = 22.4 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 22.4** |
| N1053/N1052 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.2 | x: 2.22 m<br>η = 47.0 | x: 2.22 m<br>η = 7.3 | x: 2.22 m<br>η = 0.5 | x: 2.22 m<br>η = 6.9 | x: 2.22 m<br>η = 22.6 | x: 2.22 m<br>η = 0.5 | x: 2.22 m<br>η = 53.0 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 53.0** |
| N1668/N1038 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.2 | x: 0 m<br>η = 41.3 | x: 0 m<br>η = 10.3 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 6.9 | x: 0 m<br>η = 17.5 | x: 0 m<br>η = 1.1 | x: 0 m<br>η = 51.1 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 51.1** |
| N1038/N1383 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.1 | x: 2.06 m<br>η = 38.1 | x: 2.06 m<br>η = 7.4 | x: 2.06 m<br>η = 0.6 | x: 2.06 m<br>η = 6.7 | x: 2.06 m<br>η = 15.0 | x: 2.06 m<br>η = 0.6 | x: 2.06 m<br>η = 45.3 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 45.3** |
| N1669/N1040 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η = 0.1 | η = 0.2 | x: 0 m<br>η = 36.3 | x: 0 m<br>η = 8.9 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 6.6 | x: 0 m<br>η = 13.6 | x: 0 m<br>η = 0.8 | x: 0 m<br>η = 43.6 | x: 0 m<br>η = 26.0 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 43.6** |
| N1040/N1387 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η = 0.1 | η = 0.1 | x: 2.06 m<br>η = 41.6 | x: 2.06 m<br>η = 5.7 | x: 2.06 m<br>η = 0.5 | x: 2.06 m<br>η = 6.9 | x: 2.06 m<br>η = 17.8 | x: 2.06 m<br>η = 0.3 | x: 2.06 m<br>η = 46.7 | x: 2.06 m<br>η = 33.4 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 46.7** |
| N1022/N1030 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η < 0.1 | η = 0.5 | x: 0 m<br>η = 46.4 | x: 0 m<br>η = 11.9 | x: 0 m<br>η = 0.7 | x: 0 m<br>η = 7.1 | x: 0 m<br>η = 22.1 | x: 0 m<br>η = 1.4 | x: 0 m<br>η = 58.3 | x: 0 m<br>η = 16.0 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 58.3** |
| N1030/N1670 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η < 0.1 | η = 0.5 | x: 2.345 m<br>η = 45.0 | x: 2.345 m<br>η = 12.0 | x: 2.345 m<br>η = 0.7 | x: 2.345 m<br>η = 7.0 | x: 2.345 m<br>η = 20.8 | x: 2.345 m<br>η = 1.4 | x: 2.345 m<br>η = 57.1 | x: 2.345 m<br>η = 14.9 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 57.1** |
| N1024/N1031 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.1 | x: 0 m<br>η = 50.8 | x: 0 m<br>η = 9.8 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 7.3 | x: 0 m<br>η = 26.3 | x: 0 m<br>η = 1.0 | x: 0 m<br>η = 60.0 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 60.0** |
| N1031/N1668 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.2 | x: 2.345 m<br>η = 41.3 | x: 2.345 m<br>η = 10.3 | x: 2.345 m<br>η = 0.6 | x: 2.345 m<br>η = 6.9 | x: 2.345 m<br>η = 17.6 | x: 2.345 m<br>η = 1.1 | x: 2.345 m<br>η = 51.2 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 51.2** |
| N1026/N1032 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η < 0.1 | η = 0.2 | x: 0 m<br>η = 55.8 | x: 0 m<br>η = 8.6 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 7.6 | x: 0 m<br>η = 31.7 | x: 0 m<br>η = 0.7 | x: 0 m<br>η = 63.4 | x: 0 m<br>η = 37.0 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 63.4** |
| N1032/N1669 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η = 0.1 | η = 0.3 | x: 2.345 m<br>η = 36.3 | x: 2.345 m<br>η = 8.5 | x: 2.345 m<br>η = 0.6 | x: 2.345 m<br>η = 6.6 | x: 2.345 m<br>η = 13.6 | x: 2.345 m<br>η = 0.7 | x: 2.345 m<br>η = 43.7 | x: 2.345 m<br>η = 25.7 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 43.7** |
| N1671/N1023 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η < 0.1 | η = 0.6 | x: 0 m<br>η = 47.0 | x: 0 m<br>η = 12.6 | x: 0 m<br>η = 0.7 | x: 0 m<br>η = 7.2 | x: 0 m<br>η = 22.6 | x: 0 m<br>η = 1.6 | x: 0 m<br>η = 59.7 | x: 0 m<br>η = 13.3 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 59.7** |
| N1023/N1022 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η < 0.1 | η = 0.6 | x: 2.405 m<br>η = 46.5 | x: 2.405 m<br>η = 12.2 | x: 2.405 m<br>η = 0.7 | x: 2.405 m<br>η = 7.2 | x: 2.405 m<br>η = 22.1 | x: 2.405 m<br>η = 1.5 | x: 2.405 m<br>η = 58.8 | x: 2.405 m<br>η = 13.4 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 58.8** |
| N1672/N1025 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.2 | x: 0 m<br>η = 43.4 | x: 0 m<br>η = 10.7 | x: 0 m<br>η = 0.7 | x: 0 m<br>η = 7.1 | x: 0 m<br>η = 19.3 | x: 0 m<br>η = 1.2 | x: 0 m<br>η = 53.7 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 53.7** |
| N1025/N1024 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.2 | x: 2.405 m<br>η = 50.8 | x: 2.405 m<br>η = 10.3 | x: 2.405 m<br>η = 0.6 | x: 2.405 m<br>η = 7.5 | x: 2.405 m<br>η = 26.4 | x: 2.405 m<br>η = 1.1 | x: 2.405 m<br>η = 60.5 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 60.5** |
| N1673/N1027 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η < 0.1 | η = 0.3 | x: 0 m<br>η = 38.3 | x: 0 m<br>η = 9.0 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 6.8 | x: 0 m<br>η = 15.1 | x: 0 m<br>η = 0.8 | x: 0 m<br>η = 46.3 | x: 0 m<br>η = 24.2 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 46.3** |
| N1027/N1026 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η < 0.1 | η = 0.3 | x: 2.405 m<br>η = 55.9 | x: 2.405 m<br>η = 9.0 | x: 2.405 m<br>η = 0.6 | x: 2.405 m<br>η = 7.7 | x: 2.405 m<br>η = 31.9 | x: 2.405 m<br>η = 0.8 | x: 2.405 m<br>η = 63.9 | x: 2.405 m<br>η = 32.7 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 63.9** |
| N1009/N1017 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η < 0.1 | η = 0.4 | x: 0 m<br>η = 49.9 | x: 0 m<br>η = 12.2 | x: 0 m<br>η = 0.7 | x: 0 m<br>η = 7.3 | x: 0 m<br>η = 25.4 | x: 0 m<br>η = 1.5 | x: 0 m<br>η = 61.9 | x: 0 m<br>η = 13.7 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 61.9** |
| N1017/N1671 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η < 0.1 | η = 0.4 | x: 2.4 m<br>η = 46.9 | x: 2.4 m<br>η = 12.4 | x: 2.4 m<br>η = 0.7 | x: 2.4 m<br>η = 7.2 | x: 2.4 m<br>η = 22.5 | x: 2.4 m<br>η = 1.5 | x: 2.4 m<br>η = 59.2 | x: 2.4 m<br>η = 13.3 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 59.2** |
| N1011/N1018 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.2 | x: 0 m<br>η = 54.7 | x: 0 m<br>η = 10.3 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 7.6 | x: 0 m<br>η = 30.5 | x: 0 m<br>η = 1.1 | x: 0 m<br>η = 64.4 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 64.4** |
| N1018/N1672 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | η = 0.2 | x: 2.4 m<br>η = 43.4 | x: 2.4 m<br>η = 10.7 | x: 2.4 m<br>η = 0.7 | x: 2.4 m<br>η = 7.0 | x: 2.4 m<br>η = 19.4 | x: 2.4 m<br>η = 1.2 | x: 2.4 m<br>η = 53.7 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 53.7** |
| N1013/N1019 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η < 0.1 | η = 0.3 | x: 0 m<br>η = 59.1 | x: 0 m<br>η = 9.1 | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 7.8 | x: 0 m<br>η = 35.6 | x: 0 m<br>η = 0.8 | x: 0 m<br>η = 67.2 | x: 0 m<br>η = 30.6 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 67.2** |
| N1019/N1673 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | η < 0.1 | η = 0.4 | x: 2.4 m<br>η = 38.3 | x: 2.4 m<br>η = 9.0 | x: 2.4 m<br>η = 0.6 | x: 2.4 m<br>η = 6.7 | x: 2.4 m<br>η = 15.2 | x: 2.4 m<br>η = 0.8 | x: 2.4 m<br>η = 46.3 | x: 2.4 m<br>η = 21.7 | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 46.3** |

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | $\lambda$ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N1659/N1010 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.7$ | x: 0 m<br>$\eta = 44.6$ | x: 0 m<br>$\eta = 13.2$ | x: 0 m<br>$\eta = 0.7$ | x: 0 m<br>$\eta = 7.3$ | x: 0 m<br>$\eta = 20.4$ | x: 0 m<br>$\eta = 1.7$ | x: 0 m<br>$\eta = 58.0$ | x: 0 m<br>$\eta = 8.8$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 58.0$** |
| N1010/N1009 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.7$ | x: 2.47 m<br>$\eta = 50.1$ | x: 2.47 m<br>$\eta = 12.8$ | x: 2.47 m<br>$\eta = 0.7$ | x: 2.47 m<br>$\eta = 7.5$ | x: 2.47 m<br>$\eta = 25.6$ | x: 2.47 m<br>$\eta = 1.6$ | x: 2.47 m<br>$\eta = 63.0$ | x: 2.47 m<br>$\eta = 9.3$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 63.0$** |
| N1674/N1012 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.2$ | x: 0 m<br>$\eta = 38.4$ | x: 0 m<br>$\eta = 11.1$ | x: 0 m<br>$\eta = 0.7$ | x: 0 m<br>$\eta = 7.1$ | x: 0 m<br>$\eta = 15.2$ | x: 0 m<br>$\eta = 1.2$ | x: 0 m<br>$\eta = 49.0$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 49.0$** |
| N1012/N1011 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.2$ | x: 2.47 m<br>$\eta = 54.7$ | x: 2.47 m<br>$\eta = 10.7$ | x: 2.47 m<br>$\eta = 0.7$ | x: 2.47 m<br>$\eta = 7.9$ | x: 2.47 m<br>$\eta = 30.5$ | x: 2.47 m<br>$\eta = 1.2$ | x: 2.47 m<br>$\eta = 64.8$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 64.8$** |
| N1675/N1014 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.4$ | x: 0 m<br>$\eta = 35.0$ | x: 0 m<br>$\eta = 9.3$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 6.8$ | x: 0 m<br>$\eta = 12.7$ | x: 0 m<br>$\eta = 0.9$ | x: 0 m<br>$\eta = 43.2$ | x: 0 m<br>$\eta = 17.9$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 43.2$** |
| N1014/N1013 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.4$ | x: 2.47 m<br>$\eta = 59.2$ | x: 2.47 m<br>$\eta = 9.5$ | x: 2.47 m<br>$\eta = 0.6$ | x: 2.47 m<br>$\eta = 8.0$ | x: 2.47 m<br>$\eta = 35.6$ | x: 2.47 m<br>$\eta = 0.9$ | x: 2.47 m<br>$\eta = 67.6$ | x: 2.47 m<br>$\eta = 25.9$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 67.6$** |
| N1003/N1002 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.2$ | x: 0 m<br>$\eta = 49.9$ | x: 0 m<br>$\eta = 8.8$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 7.1$ | x: 0 m<br>$\eta = 25.4$ | x: 0 m<br>$\eta = 0.8$ | x: 0 m<br>$\eta = 58.2$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 58.2$** |
| N1002/N1674 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.3$ | x: 2.22 m<br>$\eta = 38.5$ | x: 2.22 m<br>$\eta = 9.3$ | x: 2.22 m<br>$\eta = 0.6$ | x: 2.22 m<br>$\eta = 6.4$ | x: 2.22 m<br>$\eta = 15.2$ | x: 2.22 m<br>$\eta = 0.9$ | x: 2.22 m<br>$\eta = 47.5$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 47.5$** |
| N1005/N1004 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.2$ | x: 0 m<br>$\eta = 52.5$ | x: 0 m<br>$\eta = 8.3$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 7.2$ | x: 0 m<br>$\eta = 28.1$ | x: 0 m<br>$\eta = 0.7$ | x: 0 m<br>$\eta = 60.3$ | x: 0 m<br>$\eta = 35.1$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 60.3$** |
| N1004/N1675 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta < 0.1$ | $\eta = 0.2$ | x: 2.22 m<br>$\eta = 34.9$ | x: 2.22 m<br>$\eta = 7.9$ | x: 2.22 m<br>$\eta = 0.5$ | x: 2.22 m<br>$\eta = 6.3$ | x: 2.22 m<br>$\eta = 12.6$ | x: 2.22 m<br>$\eta = 0.6$ | x: 2.22 m<br>$\eta = 42.0$ | x: 2.22 m<br>$\eta = 21.8$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 42.0$** |
| N1350/N1665 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | $\eta = 2.5$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0 m<br>$\eta = 28.9$ | x: 0 m<br>$\eta = 8.0$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 4.5$ | x: 0 m<br>$\eta = 8.6$ | x: 0 m<br>$\eta = 0.6$ | N.A.(4) | x: 0 m<br>$\eta = 39.2$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 39.2$** |
| N1043/N1350 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.8$ | x: 2.185 m<br>$\eta = 34.9$ | x: 2.185 m<br>$\eta = 9.5$ | x: 2.185 m<br>$\eta = 0.7$ | x: 2.185 m<br>$\eta = 6.7$ | x: 2.185 m<br>$\eta = 12.7$ | x: 2.185 m<br>$\eta = 0.9$ | x: 2.185 m<br>$\eta = 45.1$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 45.1$** |
| N1379/N1043 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.8$ | x: 0 m<br>$\eta = 33.2$ | x: 0 m<br>$\eta = 8.6$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 6.6$ | x: 0 m<br>$\eta = 11.4$ | x: 0 m<br>$\eta = 0.7$ | x: 0 m<br>$\eta = 42.2$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 42.2$** |
| N1355/N1666 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta < 0.1$ | x: 0.4 m<br>$\eta = 44.5$ | x: 0.4 m<br>$\eta = 11.1$ | x: 0.4 m<br>$\eta = 0.7$ | x: 0.4 m<br>$\eta = 7.3$ | x: 0.4 m<br>$\eta = 20.3$ | x: 0.4 m<br>$\eta = 1.2$ | x: 0.4 m<br>$\eta = 54.7$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 54.7$** |
| N1044/N1355 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.1$ | x: 0.219 m<br>$\eta = 33.6$ | x: 2.185 m<br>$\eta = 6.2$ | x: 2.185 m<br>$\eta = 0.6$ | x: 2.185 m<br>$\eta = 6.2$ | x: 0.219 m<br>$\eta = 8.5$ | x: 2.185 m<br>$\eta = 0.4$ | x: 0.219 m<br>$\eta = 38.6$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 38.6$** |
| N1382/N1044 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.1$ | x: 0 m<br>$\eta = 37.6$ | x: 0 m<br>$\eta = 7.8$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 7.0$ | x: 0 m<br>$\eta = 14.6$ | x: 0 m<br>$\eta = 0.6$ | x: 0 m<br>$\eta = 45.0$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 45.0$** |
| N1359/N1667 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.1$ | x: 0.4 m<br>$\eta = 38.2$ | x: 0.4 m<br>$\eta = 9.4$ | x: 0.4 m<br>$\eta = 0.6$ | x: 0.4 m<br>$\eta = 7.0$ | x: 0.4 m<br>$\eta = 15.1$ | x: 0.4 m<br>$\eta = 0.9$ | x: 0.4 m<br>$\eta = 45.8$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 45.8$** |
| N1045/N1359 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.3$ | x: 0.219 m<br>$\eta = 32.7$ | x: 2.185 m<br>$\eta = 5.1$ | x: 2.185 m<br>$\eta = 0.5$ | x: 2.185 m<br>$\eta = 5.8$ | x: 0.219 m<br>$\eta = 8.0$ | x: 2.185 m<br>$\eta = 0.3$ | x: 0.219 m<br>$\eta = 35.8$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 35.8$** |
| N1386/N1045 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | $\eta = 0.3$ | x: 0 m<br>$\eta = 42.3$ | x: 0 m<br>$\eta = 6.0$ | x: 0 m<br>$\eta = 0.5$ | x: 0 m<br>$\eta = 7.2$ | x: 0 m<br>$\eta = 18.4$ | x: 0 m<br>$\eta = 0.4$ | x: 0 m<br>$\eta = 47.8$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 47.8$** |
| N1036/N1378 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta = 0.1$ | $\eta = 0.6$ | x: 2.06 m<br>$\eta = 33.7$ | x: 2.06 m<br>$\eta = 7.8$ | x: 2.06 m<br>$\eta = 0.6$ | x: 2.06 m<br>$\eta = 6.5$ | x: 2.06 m<br>$\eta = 11.8$ | x: 2.06 m<br>$\eta = 0.6$ | x: 2.06 m<br>$\eta = 41.8$ | x: 2.06 m<br>$\eta = 21.1$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 41.8$** |
| N1670/N1036 | $(b_w/t) \leq 500$<br>$(b_f/t) \leq 60$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $\eta = 0.1$ | $\eta = 0.8$ | x: 0 m<br>$\eta = 45.2$ | x: 0 m<br>$\eta = 11.9$ | x: 0 m<br>$\eta = 0.7$ | x: 0 m<br>$\eta = 7.1$ | x: 0 m<br>$\eta = 20.9$ | x: 0 m<br>$\eta = 1.4$ | x: 0 m<br>$\eta = 57.2$ | x: 0 m<br>$\eta = 25.9$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 57.2$** |
| N1446/N1447 | $(b_w/t) \leq 90$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | x: 0 m<br>$\eta = 33.1$ | x: 0 m<br>$\eta = 3.5$ | $M_{Sd} = 0.00$<br>N.A.(2) | x: 0.623 m<br>$\eta = 0.6$ | $\eta < 0.1$ | x: 0 m<br>$\eta = 0.1$ | N.A.(3) | x: 0.623 m<br>$\eta = 49.0$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 49.0$** |
| N49/N1458 | $(b_w/t) \leq 90$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | x: 0 m<br>$\eta = 15.4$ | $M_{Sd} = 0.00$<br>N.A.(2) | $M_{Sd} = 0.00$<br>N.A.(2) | x: 0.565 m<br>$\eta = 1.0$ | $\eta = 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 15.4$** |
| N49/N43 | $(b_w/t) \leq 90$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | x: 0.4 m<br>$\eta = 3.3$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | $M_{Sd} = 0.00$<br>N.A.(2) | $M_{Sd} = 0.00$<br>N.A.(2) | $\eta = 1.2$ | $\eta = 0.2$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 3.3$** |
| N1462/N42 | $(b_w/t) \leq 90$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | x: 0.573 m<br>$\eta = 5.3$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0 m<br>$\eta = 3.4$ | $M_{Sd} = 0.00$<br>N.A.(2) | x: 0 m<br>$\eta = 0.4$ | $\eta = 0.2$ | x: 0 m<br>$\eta = 0.1$ | N.A.(3) | N.A.(4) | x: 0 m<br>$\eta = 21.4$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 21.4$** |
| N1465/N1466 | $(b_w/t) \leq 90$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | x: 0 m<br>$\eta = 42.3$ | x: 0 m<br>$\eta = 3.5$ | $M_{Sd} = 0.00$<br>N.A.(2) | x: 0.623 m<br>$\eta = 0.7$ | $\eta < 0.1$ | x: 0 m<br>$\eta = 0.1$ | N.A.(3) | x: 0.623 m<br>$\eta = 48.7$ | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 48.7$** |
| N51/N1480 | $(b_w/t) \leq 90$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | x: 0 m<br>$\eta = 18.9$ | $M_{Sd} = 0.00$<br>N.A.(2) | $M_{Sd} = 0.00$<br>N.A.(2) | x: 0.565 m<br>$\eta = 1.2$ | $\eta = 0.2$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 18.9$** |
| N51/N46 | $(b_w/t) \leq 90$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | x: 0.4 m<br>$\eta = 4.1$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | $M_{Sd} = 0.00$<br>N.A.(2) | $M_{Sd} = 0.00$<br>N.A.(2) | $\eta = 1.5$ | $\eta = 0.1$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 4.1$** |
| N1481/N45 | $(b_w/t) \leq 90$<br>Passa | $\lambda_{xx} \leq 300.0$<br>$\lambda_{yy} \leq 300.0$<br>Passa | x: 0.573 m<br>$\eta = 6.3$ | $N_{c,Sd} = 0.00$<br>N.A.(1) | x: 0 m<br>$\eta = 3.4$ | $M_{Sd} = 0.00$<br>N.A.(2) | x: 0 m<br>$\eta = 0.5$ | $\eta = 0.2$ | x: 0 m<br>$\eta = 0.1$ | N.A.(3) | N.A.(4) | x: 0 m<br>$\eta = 21.3$ | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 21.3$** |
| N38/N42 | $(b_w/t) \leq 90$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | x: 0 m<br>$\eta = 17.8$ | $M_{Sd} = 0.00$<br>N.A.(2) | $M_{Sd} = 0.00$<br>N.A.(2) | $\eta = 0.6$ | $\eta = 0.6$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 17.8$** |
| N39/N45 | $(b_w/t) \leq 90$<br>Passa | $\lambda_{xx} \leq 200.0$<br>$\lambda_{yy} \leq 200.0$<br>Passa | $N_{t,Sd} = 0.00$<br>N.A.(7) | x: 0 m<br>$\eta = 21.9$ | $M_{Sd} = 0.00$<br>N.A.(2) | $M_{Sd} = 0.00$<br>N.A.(2) | $\eta = 0.8$ | $\eta = 0.8$ | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$<br>N.A.(5) | **PASSA**<br>**$\eta = 21.9$** |

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | λ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N1484/N1485 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 32.1 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.623 m η = 0.6 | $V_{Sd} = 0.00$ N.A.(8) | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 32.1** |
| N87/N1496 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 14.6 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.565 m η = 1.0 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 14.6** |
| N87/N81 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | x: 0.4 m η = 3.3 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | η = 1.2 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 3.3** |
| N1503/N1504 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 43.8 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.623 m η = 0.7 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 43.8** |
| N89/N1518 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 19.2 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.565 m η = 1.3 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 19.2** |
| N89/N84 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | x: 0.4 m η = 4.5 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | η = 1.6 | η = 0.3 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 4.5** |
| N1519/N83 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | x: 0.573 m η = 6.3 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.6 | η = 0.2 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 6.3** |
| N76/N80 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 16.6 | x: 0 m η = 3.5 | $M_{Sd} = 0.00$ N.A.(2) | η = 0.6 | η = 1.0 | x: 0 m η = 0.1 | N.A.(3) | x: 0 m η = 26.5 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 26.5** |
| N1522/N1523 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 32.5 | $M_{Sd} = 0.00$ N.A.(2) | x: 0.623 m η = 32.0 | x: 0.623 m η = 1.3 | η = 0.1 | N.A.(3) | x: 0.623 m η = 10.2 | x: 0.623 m η = 64.7 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 64.7** |
| N125/N1534 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 14.9 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.565 m η = 0.9 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 14.9** |
| N125/N119 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 2.6 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | η = 1.0 | η = 0.3 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 2.6** |
| N1538/N118 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | x: 0.573 m η = 4.0 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.3 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 4.0** |
| N1541/N1542 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 46.9 | $M_{Sd} = 0.00$ N.A.(2) | x: 0.623 m η = 45.2 | x: 0.623 m η = 1.8 | η = 0.1 | N.A.(3) | x: 0.623 m η = 20.5 | x: 0.623 m η = 92.3 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 92.3** |
| N127/N1556 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 20.1 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.565 m η = 1.3 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 20.1** |
| N127/N122 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 3.6 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | η = 1.6 | η = 0.3 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 3.6** |
| N1557/N121 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | x: 0.573 m η = 4.5 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.4 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 4.5** |
| N1560/N1561 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 33.4 | $M_{Sd} = 0.00$ N.A.(2) | x: 0.623 m η = 32.8 | x: 0.623 m η = 1.4 | η < 0.1 | N.A.(3) | x: 0.623 m η = 10.8 | x: 0.623 m η = 66.3 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 66.3** |
| N163/N1572 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 15.3 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.565 m η = 1.0 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 15.3** |
| N163/N157 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 2.7 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | η = 1.1 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 2.7** |
| N1576/N156 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | x: 0.573 m η = 4.0 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.3 | $V_{Sd} = 0.00$ N.A.(8) | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 4.0** |
| N1579/N1580 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 48.1 | $M_{Sd} = 0.00$ N.A.(2) | x: 0.623 m η = 46.3 | x: 0.623 m η = 1.9 | η = 0.1 | N.A.(3) | x: 0.623 m η = 21.5 | x: 0.623 m η = 94.7 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 94.7** |
| N165/N1594 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 20.5 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.565 m η = 1.3 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 20.5** |
| N165/N160 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 3.9 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | η = 1.4 | η = 0.2 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 3.9** |
| N1595/N159 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | x: 0.573 m η = 4.6 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.4 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 4.6** |
| N152/N156 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 16.6 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | η = 0.2 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 16.6** |
| N153/N159 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 22.1 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | η = 0.2 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 22.1** |
| N1598/N1599 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 32.0 | $M_{Sd} = 0.00$ N.A.(2) | x: 0.623 m η = 31.4 | x: 0.623 m η = 1.3 | η = 0.3 | N.A.(3) | x: 0.623 m η = 9.9 | x: 0.623 m η = 66.0 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 66.0** |
| N201/N1610 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 15.0 | x: 0 m η = 3.0 | $M_{Sd} = 0.00$ N.A.(2) | x: 0.565 m η = 0.9 | η = 0.1 | x: 0 m η = 0.1 | N.A.(3) | x: 0 m η = 31.5 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 31.5** |
| N201/N195 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 2.6 | x: 0.4 m η = 8.6 | $M_{Sd} = 0.00$ N.A.(2) | η = 1.0 | η = 1.6 | x: 0.4 m η = 0.8 | N.A.(3) | x: 0.4 m η = 20.9 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 20.9** |
| N1614/N194 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | x: 0.573 m η = 4.2 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.3 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 4.2** |
| N1617/N1618 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 46.1 | x: 0.623 m η = 3.7 | x: 0.623 m η = 44.4 | x: 0.623 m η = 1.8 | η = 0.5 | x: 0.623 m η = 0.1 | x: 0.623 m η = 19.8 | x: 0.623 m η = 94.2 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 94.2** |

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | $\lambda$ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N203/N1632 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 20.2 | x: 0 m η = 4.2 | $M_{Sd} = 0.00$ N.A.(2) | x: 0.565 m η = 1.2 | η = 0.1 | x: 0 m η = 0.2 | N.A.(3) | x: 0.565 m η = 44.3 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 44.3** |
| N203/N198 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 3.8 | x: 0.4 m η = 12.5 | $M_{Sd} = 0.00$ N.A.(2) | η = 1.4 | η = 2.4 | x: 0.4 m η = 1.6 | N.A.(3) | x: 0.4 m η = 29.4 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 29.4** |
| N1633/N197 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | x: 0.573 m η = 5.0 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.4 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 5.0** |
| N190/N194 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 16.5 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | η = 0.1 | η = 0.6 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 16.5** |
| N191/N197 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 22.2 | x: 0 m η = 3.6 | $M_{Sd} = 0.00$ N.A.(2) | η = 0.2 | η = 0.8 | x: 0 m η = 0.1 | N.A.(3) | x: 0 m η = 30.9 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 30.9** |
| N1676/N1701 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 35.3 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.623 m η = 1.4 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 35.3** |
| N33/N1706 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 24.6 | x: 0.565 m η = 3.1 | $M_{Sd} = 0.00$ N.A.(2) | x: 0.565 m η = 1.1 | η = 0.3 | x: 0.565 m η = 0.1 | N.A.(3) | x: 0.565 m η = 46.0 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 46.0** |
| N33/N21 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | x: 0.4 m η = 6.3 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | η = 2.0 | η = 0.2 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 6.3** |
| N1682/N20 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | x: 0.573 m η = 12.8 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.9 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 12.8** |
| N1687/N1693 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 40.1 | $M_{Sd} = 0.00$ N.A.(2) | x: 0.623 m η = 30.5 | x: 0.623 m η = 1.6 | η < 0.1 | N.A.(3) | x: 0.623 m η = 9.3 | x: 0.623 m η = 73.1 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 73.1** |
| N37/N1698 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 27.8 | x: 0.565 m η = 3.1 | $M_{Sd} = 0.00$ N.A.(2) | x: 0.565 m η = 1.1 | η = 0.2 | x: 0.565 m η = 0.1 | N.A.(3) | x: 0.565 m η = 51.1 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 51.1** |
| N1685/N25 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | x: 0.573 m η = 15.0 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 1.0 | η = 0.2 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 15.0** |
| N15/N20 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 23.0 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | η = 0.7 | η = 0.4 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 23.0** |
| N17/N25 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 26.2 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | η = 0.7 | η = 0.5 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 26.2** |
| N1707/N1708 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 38.0 | $M_{Sd} = 0.00$ N.A.(2) | x: 0.623 m η = 39.6 | x: 0.623 m η = 1.7 | $V_{Sd} = 0.00$ N.A.(8) | N.A.(3) | x: 0.623 m η = 15.7 | x: 0.623 m η = 77.6 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 77.6** |
| N75/N1718 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 25.8 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.565 m η = 1.4 | $V_{Sd} = 0.00$ N.A.(8) | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 25.8** |
| N75/N64 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 4.1 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | η = 1.7 | η = 0.3 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 4.1** |
| N1719/N63 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | x: 0.573 m η = 10.9 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.7 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 10.9** |
| N55/N63 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 23.4 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | η = 1.4 | η = 0.5 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 23.4** |
| N71/N1725 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 18.6 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.565 m η = 1.1 | $V_{Sd} = 0.00$ N.A.(8) | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 18.6** |
| N71/N59 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 3.0 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | η = 1.3 | η = 0.3 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 3.0** |
| N1720/N58 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | x: 0.573 m η = 7.7 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.5 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 7.7** |
| N53/N58 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 16.8 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | η = 1.0 | η = 0.6 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 16.8** |
| N1733/N1734 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 27.7 | $M_{Sd} = 0.00$ N.A.(2) | x: 0.623 m η = 28.9 | x: 0.623 m η = 1.3 | $V_{Sd} = 0.00$ N.A.(8) | N.A.(3) | x: 0.623 m η = 8.4 | x: 0.623 m η = 56.6 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 56.6** |
| N1737/N1738 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 43.0 | x: 0.623 m η = 4.4 | x: 0.623 m η = 32.2 | x: 0.623 m η = 1.7 | η = 0.1 | x: 0.623 m η = 0.2 | x: 0.623 m η = 10.4 | x: 0.623 m η = 76.3 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 76.3** |
| N113/N1748 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 30.1 | x: 0.565 m η = 4.4 | $M_{Sd} = 0.00$ N.A.(2) | x: 0.565 m η = 1.3 | η = 0.3 | x: 0.565 m η = 0.2 | N.A.(3) | x: 0.565 m η = 38.9 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 38.9** |
| N113/N102 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | x: 0.4 m η = 8.2 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.032 m η = 35.0 | η = 2.4 | η = 0.3 | N.A.(3) | x: 0.032 m η = 12.3 | N.A.(4) | x: 0.032 m η = 45.1 | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 45.1** |
| N1749/N101 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | x: 0.573 m η = 16.1 | $N_{c,Sd} = 0.00$ N.A.(1) | x: 0 m η = 3.0 | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 1.1 | η = 0.4 | x: 0 m η = 0.1 | N.A.(3) | N.A.(4) | x: 0 m η = 29.7 | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 29.7** |
| N109/N1755 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 21.1 | x: 0.565 m η = 4.5 | $M_{Sd} = 0.00$ N.A.(2) | x: 0.565 m η = 0.9 | η = 0.2 | x: 0.565 m η = 0.2 | N.A.(3) | x: 0.565 m η = 39.0 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 39.0** |
| N109/N97 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | x: 0.4 m η = 5.8 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | η = 1.7 | η = 0.3 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 5.8** |
| N1750/N96 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | x: 0.573 m η = 11.1 | $N_{c,Sd} = 0.00$ N.A.(1) | x: 0 m η = 3.1 | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.8 | η = 0.4 | x: 0 m η = 0.1 | N.A.(3) | N.A.(4) | x: 0 m η = 29.9 | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 29.9** |

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | λ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N1763/N1764 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 30.3 | x: 0.623 m η = 4.5 | $M_{Sd} = 0.00$ N.A.(2) | x: 0.623 m η = 1.2 | η = 0.1 | x: 0.623 m η = 0.2 | N.A.(3) | x: 0.623 m η = 54.7 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 54.7** |
| N1767/N1768 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 42.3 | $M_{Sd} = 0.00$ N.A.(2) | x: 0.623 m η = 44.6 | x: 0.623 m η = 2.0 | $V_{Sd} = 0.00$ N.A.(8) | N.A.(3) | x: 0.623 m η = 19.9 | x: 0.623 m η = 87.5 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 87.5** |
| N151/N1778 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 28.5 | $M_{Sd} = 0.00$ N.A.(2) | x: 0.565 m η = 30.4 | x: 0.565 m η = 1.7 | η < 0.1 | N.A.(3) | x: 0.565 m η = 9.2 | x: 0.565 m η = 59.1 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 59.1** |
| N151/N140 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 4.6 | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 33.6 | η = 2.2 | η = 0.4 | N.A.(3) | x: 0 m η = 11.3 | x: 0 m η = 38.4 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 38.4** |
| N1779/N139 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | x: 0.573 m η = 11.7 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.7 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 11.7** |
| N147/N1785 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 19.9 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.565 m η = 1.1 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 19.9** |
| N147/N135 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 3.3 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | η = 1.3 | η = 0.4 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 3.3** |
| N1780/N134 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | x: 0.573 m η = 8.1 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.5 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 8.1** |
| N1793/N1794 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 29.8 | $M_{Sd} = 0.00$ N.A.(2) | x: 0.623 m η = 31.3 | x: 0.623 m η = 1.4 | $V_{Sd} = 0.00$ N.A.(8) | N.A.(3) | x: 0.623 m η = 9.8 | x: 0.623 m η = 61.5 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 61.5** |
| N1797/N1798 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 43.9 | $M_{Sd} = 0.00$ N.A.(2) | x: 0.623 m η = 46.2 | x: 0.623 m η = 2.0 | η < 0.1 | N.A.(3) | x: 0.623 m η = 21.4 | x: 0.623 m η = 91.3 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 91.3** |
| N189/N1808 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 29.4 | $M_{Sd} = 0.00$ N.A.(2) | x: 0.565 m η = 30.0 | x: 0.565 m η = 1.6 | η < 0.1 | N.A.(3) | x: 0.565 m η = 9.0 | x: 0.565 m η = 60.5 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 60.5** |
| N189/N178 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 4.6 | x: 0.4 m η = 3.4 | x: 0 m η = 30.3 | η = 2.0 | η = 0.7 | x: 0.4 m η = 0.1 | x: 0 m η = 9.2 | x: 0 m η = 35.6 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 35.6** |
| N1809/N177 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | x: 0.573 m η = 12.3 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.8 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 12.3** |
| N169/N177 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 26.5 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | η = 1.6 | η = 0.4 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 26.5** |
| N185/N1815 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 20.5 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0.565 m η = 1.2 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 20.5** |
| N185/N173 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 3.2 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | η = 1.4 | η = 0.4 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 3.2** |
| N1810/N172 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 300.0$ $\lambda_{yy} \leq 300.0$ Passa | x: 0.573 m η = 8.4 | $N_{c,Sd} = 0.00$ N.A.(1) | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | x: 0 m η = 0.5 | η < 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 8.4** |
| N167/N172 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 18.3 | $M_{Sd} = 0.00$ N.A.(2) | $M_{Sd} = 0.00$ N.A.(2) | η = 1.1 | η = 0.3 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 18.3** |
| N1823/N1824 | $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 30.9 | $M_{Sd} = 0.00$ N.A.(2) | x: 0.623 m η = 32.5 | x: 0.623 m η = 1.4 | η < 0.1 | N.A.(3) | x: 0.623 m η = 10.6 | x: 0.623 m η = 64.2 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 64.2** |
| N75/N55 | x: 0 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 26.0 | $M_{Sd} = 0.00$ N.A.(2) | x: 0.313 m η = 85.8 | x: 0.313 m η = 10.0 | η = 0.1 | N.A.(3) | x: 0.313 m η = 74.5 | x: 0.313 m η = 98.8 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 98.8** |
| N48/N1465 | $(b_w/t) \leq 200$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 40.4 | x: 0 m η = 7.6 | x: 0.44 m η = 41.8 | x: 0.44 m η = 2.0 | η = 1.4 | x: 0 m η = 0.6 | x: 0.44 m η = 17.5 | x: 0.44 m η = 84.4 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 84.4** |
| N1465/N1660 | x: 0.33 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 24.0 | x: 0 m η = 4.9 | x: 0.66 m η = 20.7 | x: 0 m η = 2.4 | η = 1.3 | x: 0 m η = 0.3 | x: 0.66 m η = 4.4 | x: 0 m η = 46.1 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 46.1** |
| N1660/N1467 | x: 0.11 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 23.0 | x: 0.22 m η = 0.6 | x: 0.22 m η = 30.0 | x: 0.22 m η = 9.0 | η = 0.2 | x: 0.22 m η < 0.1 | x: 0.22 m η = 9.8 | x: 0.22 m η = 53.3 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 53.3** |
| N51/N39 | x: 0 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 20.5 | x: 0.414 m η = 3.7 | x: 0.414 m η = 9.7 | x: 0.414 m η = 0.5 | η = 1.5 | x: 0.414 m η = 0.2 | x: 0.414 m η = 0.9 | x: 0.414 m η = 32.2 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 32.2** |
| N11/N1426 | $(b_w/t) \leq 200$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 34.7 | x: 0 m η = 0.7 | x: 0.44 m η = 29.9 | x: 0.44 m η = 1.0 | η = 0.1 | x: 0 m η < 0.1 | x: 0.44 m η = 8.9 | x: 0.44 m η = 64.9 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 64.9** |
| N1442/N2 | x: 0 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 10.3 | x: 0.414 m η = 0.7 | x: 0.414 m η = 12.6 | x: 0.414 m η = 0.5 | η = 0.5 | x: 0.414 m η < 0.1 | x: 0.414 m η = 1.6 | x: 0.414 m η = 23.0 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 23.0** |
| N13/N1406 | $(b_w/t) \leq 200$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 30.7 | x: 0 m η = 0.6 | x: 0.44 m η = 25.9 | x: 0.44 m η = 0.8 | η = 0.1 | x: 0 m η < 0.1 | x: 0.44 m η = 6.7 | x: 0.44 m η = 56.8 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 56.8** |
| N12/N1 | x: 0 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 20.2 | x: 0.414 m η = 0.5 | x: 0.414 m η = 10.7 | x: 0.414 m η = 0.3 | η = 0.4 | x: 0.414 m η < 0.1 | x: 0.414 m η = 1.2 | x: 0.414 m η = 31.5 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 31.5** |
| N33/N15 | x: 0 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 25.6 | x: 0.313 m η = 1.8 | x: 0.313 m η = 85.2 | x: 0.313 m η = 10.6 | η = 0.7 | x: 0.313 m η < 0.1 | x: 0.313 m η = 73.7 | x: 0.313 m η = 92.5 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 92.5** |
| N50/N1446 | $(b_w/t) \leq 200$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 32.4 | x: 0 m η = 7.7 | x: 0.44 m η = 32.3 | x: 0.44 m η = 1.5 | η = 1.4 | x: 0 m η = 0.6 | x: 0.44 m η = 10.4 | x: 0.44 m η = 68.7 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 68.7** |
| N1446/N1642 | x: 0 m $(b_w/t) \leq 90$ Passa | $\lambda_{xx} \leq 200.0$ $\lambda_{yy} \leq 200.0$ Passa | $N_{t,Sd} = 0.00$ N.A.(7) | x: 0 m η = 19.6 | x: 0 m η = 4.9 | x: 0.66 m η = 16.3 | x: 0 m η = 1.9 | η = 1.4 | x: 0 m η = 0.3 | x: 0.66 m η = 2.7 | x: 0 m η = 39.4 | N.A.(6) | $M_{t,Sd} = 0.00$ N.A.(5) | **PASSA η = 39.4** |

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | $\lambda$ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N1642/N1448 | x: 0.11 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 18.8 | x: 0.22 m<br>η = 0.6 | x: 0.22 m<br>η = 23.7 | x: 0.22 m<br>η = 7.1 | η = 0.2 | x: 0.22 m<br>η < 0.1 | x: 0.22 m<br>η = 6.1 | x: 0.22 m<br>η = 43.2 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 43.2** |
| N49/N38 | x: 0 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 20.9 | x: 0.414 m<br>η = 3.7 | x: 0.414 m<br>η = 8.8 | x: 0.414 m<br>η = 0.4 | η = 1.5 | x: 0.414 m<br>η = 0.2 | x: 0.414 m<br>η = 0.8 | x: 0.414 m<br>η = 32.2 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 32.2** |
| N71/N53 | x: 0 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 18.7 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.313 m<br>η = 62.4 | x: 0.313 m<br>η = 7.3 | η = 0.1 | N.A.(3) | x: 0.313 m<br>η = 39.5 | x: 0.313 m<br>η = 81.2 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 81.2** |
| N88/N1484 | ($b_w$/t) ≤ 200<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 32.1 | x: 0 m<br>η = 4.9 | x: 0.44 m<br>η = 31.4 | x: 0.44 m<br>η = 1.5 | η = 0.9 | x: 0 m<br>η = 0.2 | x: 0.44 m<br>η = 9.9 | x: 0.44 m<br>η = 66.0 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 66.0** |
| N1484/N1643 | x: 0.165 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 19.7 | x: 0 m<br>η = 3.1 | x: 0.66 m<br>η = 15.8 | x: 0 m<br>η = 1.8 | η = 0.9 | x: 0 m<br>η = 0.1 | x: 0.66 m<br>η = 2.5 | x: 0 m<br>η = 37.2 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 37.2** |
| N1643/N1486 | x: 0.11 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 18.9 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.22 m<br>η = 23.3 | x: 0.22 m<br>η = 6.9 | η = 0.2 | N.A.(3) | x: 0.22 m<br>η = 5.9 | x: 0.22 m<br>η = 42.6 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 42.6** |
| N87/N76 | x: 0 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 21.6 | x: 0.414 m<br>η = 2.6 | x: 0.414 m<br>η = 9.4 | x: 0.414 m<br>η = 0.5 | η = 1.0 | x: 0.414 m<br>η = 0.1 | x: 0.414 m<br>η = 0.9 | x: 0.414 m<br>η = 32.8 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 32.8** |
| N109/N91 | x: 0 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 22.0 | x: 0.313 m<br>η = 3.3 | x: 0.313 m<br>η = 73.4 | x: 0.313 m<br>η = 9.2 | η = 1.6 | x: 0.313 m<br>η = 0.1 | x: 0.313 m<br>η = 54.7 | x: 0.313 m<br>η = 95.9 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 95.9** |
| N126/N1522 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 27.3 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.44 m<br>η = 22.6 | x: 0.44 m<br>η = 0.7 | η = 0.1 | N.A.(3) | x: 0.44 m<br>η = 5.1 | x: 0.44 m<br>η = 49.9 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 49.9** |
| N125/N114 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 20.6 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.414 m<br>η = 10.9 | x: 0.414 m<br>η = 0.4 | η = 0.1 | N.A.(3) | x: 0.414 m<br>η = 1.2 | x: 0.414 m<br>η = 31.3 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 31.3** |
| N147/N129 | x: 0 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 20.1 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.313 m<br>η = 67.2 | x: 0.313 m<br>η = 7.9 | η = 0.1 | N.A.(3) | x: 0.313 m<br>η = 45.8 | x: 0.313 m<br>η = 87.3 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 87.3** |
| N113/N93 | x: 0 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 31.7 | x: 0.313 m<br>η = 3.2 | x: 0.313 m<br>η = 93.7 | x: 0.313 m<br>η = 13.0 | η = 1.6 | x: 0.313 m<br>η = 0.1 | x: 0.313 m<br>η = 99.1 | x: 0.313 m<br>η = 99.9 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 99.9** |
| N124/N1541 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 38.0 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.44 m<br>η = 32.4 | x: 0.44 m<br>η = 1.0 | η = 0.1 | N.A.(3) | x: 0.44 m<br>η = 10.5 | x: 0.44 m<br>η = 70.6 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 70.6** |
| N127/N115 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 19.6 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.414 m<br>η = 14.3 | x: 0.414 m<br>η = 0.6 | η = 0.1 | N.A.(3) | x: 0.414 m<br>η = 2.0 | x: 0.414 m<br>η = 34.0 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 34.0** |
| N86/N1503 | ($b_w$/t) ≤ 200<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 42.3 | x: 0 m<br>η = 5.8 | x: 0.44 m<br>η = 43.4 | x: 0.44 m<br>η = 2.1 | η = 1.1 | x: 0 m<br>η = 0.3 | x: 0.44 m<br>η = 18.8 | x: 0.44 m<br>η = 88.7 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 88.7** |
| N1503/N1664 | x: 0.495 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 25.4 | x: 0 m<br>η = 3.7 | x: 0.66 m<br>η = 21.3 | x: 0 m<br>η = 2.5 | η = 1.0 | x: 0 m<br>η = 0.1 | x: 0.66 m<br>η = 4.6 | x: 0 m<br>η = 49.4 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 49.4** |
| N1664/N1505 | x: 0.11 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 24.3 | x: 0.22 m<br>η = 0.5 | x: 0.22 m<br>η = 31.4 | x: 0.22 m<br>η = 9.4 | η = 0.2 | x: 0.22 m<br>η < 0.1 | x: 0.22 m<br>η = 10.7 | x: 0.22 m<br>η = 56.2 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 56.2** |
| N89/N77 | x: 0 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 20.6 | x: 0.414 m<br>η = 3.0 | x: 0.414 m<br>η = 12.0 | x: 0.414 m<br>η = 0.7 | η = 1.2 | x: 0.414 m<br>η = 0.1 | x: 0.414 m<br>η = 1.4 | x: 0.414 m<br>η = 35.5 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 35.5** |
| N151/N131 | x: 0 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 28.7 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.313 m<br>η = 98.4 | x: 0.313 m<br>η = 11.2 | η = 0.2 | N.A.(3) | x: 0.313 m<br>η = 98.2 | x: 0.313 m<br>η = 97.4 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 97.4** |
| N164/N1560 | x: 0 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 28.1 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.44 m<br>η = 23.3 | x: 0.44 m<br>η = 0.7 | η < 0.1 | N.A.(3) | x: 0.44 m<br>η = 5.4 | x: 0.44 m<br>η = 51.4 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 51.4** |
| N163/N152 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 21.2 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.414 m<br>η = 10.1 | x: 0.414 m<br>η = 0.3 | η = 0.1 | N.A.(3) | x: 0.414 m<br>η = 1.0 | x: 0.414 m<br>η = 31.2 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 31.2** |
| N162/N1579 | x: 0 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 39.1 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.44 m<br>η = 33.3 | x: 0.44 m<br>η = 1.1 | η = 0.1 | N.A.(3) | x: 0.44 m<br>η = 11.1 | x: 0.44 m<br>η = 72.7 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 72.7** |
| N165/N153 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 20.3 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.414 m<br>η = 11.8 | x: 0.414 m<br>η = 0.4 | η = 0.1 | N.A.(3) | x: 0.414 m<br>η = 1.4 | x: 0.414 m<br>η = 32.3 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 32.3** |
| N185/N167 | x: 0 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 20.5 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.313 m<br>η = 69.4 | x: 0.313 m<br>η = 8.1 | η = 0.2 | N.A.(3) | x: 0.313 m<br>η = 48.9 | x: 0.313 m<br>η = 90.1 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 90.1** |
| N189/N169 | x: 0 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 29.6 | x: 0.313 m<br>η = 0.5 | x: 0.313 m<br>η = 98.1 | x: 0.313 m<br>η = 11.4 | η = 0.3 | x: 0.312 m<br>η < 0.1 | x: 0.313 m<br>η = 97.6 | x: 0.313 m<br>η = 98.2 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 98.2** |
| N202/N1598 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 26.3 | x: 0 m<br>η = 2.0 | x: 0.44 m<br>η = 22.1 | x: 0.44 m<br>η = 0.7 | η = 0.3 | x: 0 m<br>η < 0.1 | x: 0.44 m<br>η = 4.9 | x: 0.44 m<br>η = 49.3 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 49.3** |
| N201/N190 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 20.3 | x: 0.414 m<br>η = 1.7 | x: 0.414 m<br>η = 9.9 | x: 0.414 m<br>η = 0.3 | η = 0.8 | x: 0.414 m<br>η < 0.1 | x: 0.414 m<br>η = 1.0 | x: 0.414 m<br>η = 31.6 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 31.6** |
| N200/N1617 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 36.7 | x: 0 m<br>η = 2.9 | x: 0.44 m<br>η = 31.6 | x: 0.44 m<br>η = 1.0 | η = 0.5 | x: 0 m<br>η = 0.1 | x: 0.44 m<br>η = 10.0 | x: 0.44 m<br>η = 69.8 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 69.8** |
| N203/N191 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 20.2 | x: 0.414 m<br>η = 2.5 | x: 0.414 m<br>η = 11.9 | x: 0.414 m<br>η = 0.4 | η = 1.1 | x: 0.414 m<br>η = 0.1 | x: 0.414 m<br>η = 1.4 | x: 0.414 m<br>η = 34.6 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 34.6** |
| N37/N17 | x: 0 m<br>($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 29.4 | x: 0.313 m<br>η = 1.9 | x: 0.313 m<br>η = 95.7 | x: 0.313 m<br>η = 12.7 | η = 0.8 | x: 0.313 m<br>η < 0.1 | x: 0.313 m<br>η = 93.3 | x: 0.313 m<br>η = 97.0 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 97.0** |
| N1406/N1408 | ($b_w$/t) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 37.5 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.623 m<br>η = 37.0 | x: 0.623 m<br>η = 1.5 | η = 0.1 | N.A.(3) | x: 0.623 m<br>η = 13.7 | x: 0.623 m<br>η = 75.3 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 75.3** |

| Barras | VERIFICAÇÕES (ABNT NBR 14762:2010) | | | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b/t | λ | $N_t$ | $N_c$ | $M_x$ | $M_y$ | $V_x$ | $V_y$ | $M_xV_y$ | $M_yV_x$ | $N_cM_xM_y$ | $N_tM_xM_y$ | $M_t$ | |
| N12/N1418 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 17.0 | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.565 m<br>η = 1.0 | η = 0.2 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 17.0** |
| N12/N6 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 3.1 | x: 0.4 m<br>η = 6.7 | $M_{Sd}$ = 0.00<br>N.A.(2) | η = 1.2 | η = 1.3 | x: 0.4 m<br>η = 0.5 | N.A.(3) | x: 0.4 m<br>η = 20.9 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 20.9** |
| N1422/N5 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | x: 0.573 m<br>η = 4.5 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.3 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 4.5** |
| N1/N5 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 18.8 | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | η = 0.2 | η = 0.2 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 18.8** |
| N1426/N1427 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 43.5 | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.623 m<br>η = 42.1 | x: 0.623 m<br>η = 1.7 | η = 0.1 | N.A.(3) | x: 0.623 m<br>η = 17.8 | x: 0.623 m<br>η = 86.4 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 86.4** |
| N1442/N1441 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 18.9 | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0.565 m<br>η = 1.2 | η = 0.3 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 18.9** |
| N1442/N9 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 200.0<br>$\lambda_{yy}$ ≤ 200.0<br>Passa | $N_{t,Sd}$ = 0.00<br>N.A.(7) | x: 0 m<br>η = 3.6 | x: 0.4 m<br>η = 8.1 | $M_{Sd}$ = 0.00<br>N.A.(2) | η = 1.3 | η = 1.6 | x: 0.4 m<br>η = 0.7 | N.A.(3) | x: 0.4 m<br>η = 24.3 | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 24.3** |
| N1443/N8 | ($b_w/t$) ≤ 90<br>Passa | $\lambda_{xx}$ ≤ 300.0<br>$\lambda_{yy}$ ≤ 300.0<br>Passa | x: 0.573 m<br>η = 4.7 | $N_{c,Sd}$ = 0.00<br>N.A.(1) | $M_{Sd}$ = 0.00<br>N.A.(2) | $M_{Sd}$ = 0.00<br>N.A.(2) | x: 0 m<br>η = 0.4 | η = 0.1 | N.A.(3) | N.A.(3) | N.A.(4) | N.A.(6) | $M_{t,Sd}$ = 0.00<br>N.A.(5) | **PASSA**<br>**η = 4.7** |

*Notação:*
*b/t: Valores máximos da relação comprimento-espessura*
*λ: Limitação de esbeltez*
*$N_t$: Resistência à tração*
*$N_c$: Resistência à compressão*
*$M_x$: Resistência à flexão eixo X*
*$M_y$: Resistência à flexão eixo Y*
*$V_x$: Resistência ao esforço cortante X*
*$V_y$: Resistência ao esforço cortante Y*
*$M_xV_y$: Resistência ao momento fletor X e esforço cortante Y combinados*
*$M_yV_x$: Resistência ao momento fletor Y e esforço cortante X combinados*
*$N_cM_xM_y$: Resistência à flexo-compressão*
*$N_tM_xM_y$: Resistência à flexo-tração*
*$M_t$: Resistência à torção*
*x: Distância à origem da barra*
*η: Coeficiente de aproveitamento (%)*
*N.A.: Não aplicável*

*Verificações desnecessárias para o tipo de perfil (N.A.):*
*(1) A verificação não será executada, já que não existe esforço axial de compressão.*
*(2) A verificação não será executada, já que não existe momento fletor.*
*(3) Não há interação entre o momento fletor e o esforço cortante para nenhuma combinação. Assim a verificação não será executada.*
*(4) Não há interação entre o esforço axial de compressão e o momento fletor para nenhuma combinação. Assim a verificação não será executada.*
*(5) A verificação não é necessária, já que não existe momento torsor.*
*(6) Não há interação entre o esforço axial de tração e o momento fletor para nenhuma combinação. Assim a verificação não será executada.*
*(7) A verificação não será executada, já que não existe esforço axial de tração.*
*(8) A verificação não será executada, já que não existe esforço cortante.*

| Barras | VERIFICAÇÕES (ABNT NBR 8800:2008) | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | λ | $N_t$ | $N_c$ | $M_u$ | $M_v$ | $V_u$ | $V_v$ | $NM_uM_v$ | T | NMVT | σ τ f | |
| N798/N918 | λ ≤ 200.0<br>Passa | N.A.(1) | x: 0 m<br>η = 0.6 | x: 1.1 m<br>η = 0.9 | x: 0.55 m<br>η = 0.8 | x: 1.1 m<br>η < 0.1 | x: 0 m<br>η = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m<br>η = 11.9 | **PASSA**<br>**η = 11.9** |
| N918/N799 | λ ≤ 200.0<br>Passa | N.A.(1) | x: 0 m<br>η = 0.9 | x: 1.1 m<br>η = 2.3 | x: 0.183 m<br>η = 1.4 | x: 1.1 m<br>η < 0.1 | x: 0 m<br>η = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.917 m<br>η = 24.6 | **PASSA**<br>**η = 24.6** |
| N799/N937 | λ ≤ 200.0<br>Passa | N.A.(1) | x: 0 m<br>η = 0.9 | x: 1.1 m<br>η = 2.4 | x: 1.1 m<br>η = 2.0 | x: 1.1 m<br>η = 0.1 | x: 1.1 m<br>η = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m<br>η = 39.3 | **PASSA**<br>**η = 39.3** |
| N937/N800 | λ ≤ 200.0<br>Passa | N.A.(1) | x: 0 m<br>η = 0.9 | x: 1.1 m<br>η = 3.1 | x: 0 m<br>η = 1.7 | x: 0 m<br>η = 0.1 | x: 0 m<br>η = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m<br>η = 38.6 | **PASSA**<br>**η = 38.6** |
| N800/N956 | λ ≤ 200.0<br>Passa | N.A.(1) | x: 0 m<br>η = 0.7 | x: 0 m<br>η = 3.2 | x: 1.1 m<br>η = 1.2 | x: 1.1 m<br>η = 0.1 | x: 1.1 m<br>η = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m<br>η = 38.2 | **PASSA**<br>**η = 38.2** |
| N956/N801 | λ ≤ 200.0<br>Passa | N.A.(1) | x: 0 m<br>η = 0.5 | x: 0 m<br>η = 1.9 | x: 0 m<br>η = 2.0 | x: 0 m<br>η = 0.1 | x: 0 m<br>η = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m<br>η = 34.6 | **PASSA**<br>**η = 34.6** |
| N801/N975 | λ ≤ 200.0<br>Passa | x: 1.059 m<br>η < 0.1 | x: 0 m<br>η = 0.1 | x: 0 m<br>η = 1.6 | x: 0.706 m<br>η = 1.1 | x: 0 m<br>η < 0.1 | x: 1.059 m<br>η = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m<br>η = 16.2 | **PASSA**<br>**η = 16.2** |
| N975/N802 | N.A.(5) | x: 0.882 m<br>η = 0.1 | N.A.(6) | x: 0 m<br>η = 0.5 | x: 0 m<br>η = 1.2 | x: 0 m<br>η < 0.1 | x: 1.059 m<br>η < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m<br>η = 2.3 | **PASSA**<br>**η = 2.3** |
| N1080/N803 | N.A.(5) | x: 0.882 m<br>η = 0.1 | N.A.(6) | x: 1.059 m<br>η = 0.5 | x: 1.059 m<br>η = 0.9 | x: 1.059 m<br>η < 0.1 | x: 0 m<br>η < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.059 m<br>η = 1.9 | **PASSA**<br>**η = 1.9** |
| N804/N1080 | λ ≤ 200.0<br>Passa | x: 1.059 m<br>η < 0.1 | x: 0 m<br>η = 0.2 | x: 0.176 m<br>η = 1.3 | x: 0 m<br>η = 1.6 | x: 1.059 m<br>η < 0.1 | x: 1.059 m<br>η < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.176 m<br>η = 22.5 | **PASSA**<br>**η = 22.5** |
| N1078/N804 | λ ≤ 200.0<br>Passa | N.A.(1) | x: 0 m<br>η = 0.6 | x: 0 m<br>η = 2.6 | x: 0 m<br>η = 1.1 | x: 0 m<br>η < 0.1 | x: 0 m<br>η = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m<br>η = 32.7 | **PASSA**<br>**η = 32.7** |
| N805/N1078 | λ ≤ 200.0<br>Passa | N.A.(1) | x: 0 m<br>η = 0.8 | x: 0 m<br>η = 3.5 | x: 1.1 m<br>η = 2.0 | x: 1.1 m<br>η = 0.1 | x: 1.1 m<br>η = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m<br>η = 45.9 | **PASSA**<br>**η = 45.9** |
| N1076/N805 | λ ≤ 200.0<br>Passa | N.A.(1) | x: 0 m<br>η = 1.0 | x: 1.1 m<br>η = 3.6 | x: 0 m<br>η = 2.1 | x: 0 m<br>η = 0.1 | x: 0 m<br>η = 0.2 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m<br>η = 45.3 | **PASSA**<br>**η = 45.3** |
| N806/N1076 | λ ≤ 200.0<br>Passa | N.A.(1) | x: 0 m<br>η = 0.9 | x: 1.1 m<br>η = 3.1 | x: 1.1 m<br>η = 1.5 | x: 1.1 m<br>η < 0.1 | x: 1.1 m<br>η = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m<br>η = 40.4 | **PASSA**<br>**η = 40.4** |
| N1074/N806 | λ ≤ 200.0<br>Passa | N.A.(1) | x: 0 m<br>η = 0.9 | x: 0.917 m<br>η = 2.1 | x: 0.917 m<br>η = 1.7 | x: 0 m<br>η = 0.1 | x: 0 m<br>η = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.917 m<br>η = 31.6 | **PASSA**<br>**η = 31.6** |

| Barras | VERIFICAÇÕES (ABNT NBR 8800:2008) | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda$ | $N_t$ | $N_c$ | $M_u$ | $M_v$ | $V_u$ | $V_v$ | $NM_uM_v$ | T | NMVT | $\sigma$ $\tau$ f | |
| N807/N1074 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.6 | x: 0.917 m $\eta$ = 0.5 | x: 0.917 m $\eta$ = 1.1 | x: 0 m $\eta$ < 0.1 | x: 1.1 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.917 m $\eta$ = 13.8 | **PASSA $\eta$ = 13.8** |
| N808/N920 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.5 | x: 1.1 m $\eta$ = 0.3 | x: 1.1 m $\eta$ = 0.6 | x: 0 m $\eta$ < 0.1 | x: 1.1 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 6.9 | **PASSA $\eta$ = 6.9** |
| N920/N809 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.9 | x: 1.1 m $\eta$ = 0.7 | x: 1.1 m $\eta$ = 1.4 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 19.3 | **PASSA $\eta$ = 19.3** |
| N809/N939 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.3 | x: 1.1 m $\eta$ = 2.6 | x: 0.55 m $\eta$ = 1.2 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 26.4 | **PASSA $\eta$ = 26.4** |
| N939/N810 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.5 | x: 0 m $\eta$ = 2.2 | x: 0.183 m $\eta$ = 1.5 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.183 m $\eta$ = 28.3 | **PASSA $\eta$ = 28.3** |
| N810/N958 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.4 | x: 1.1 m $\eta$ = 1.5 | x: 0.733 m $\eta$ = 1.2 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.733 m $\eta$ = 17.0 | **PASSA $\eta$ = 17.0** |
| N958/N811 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.9 | x: 1.1 m $\eta$ = 1.2 | x: 1.1 m $\eta$ = 2.5 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 34.2 | **PASSA $\eta$ = 34.2** |
| N811/N978 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.4 | x: 0 m $\eta$ = 2.3 | x: 1.059 m $\eta$ = 1.0 | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 22.3 | **PASSA $\eta$ = 22.3** |
| N978/N812 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | x: 0.882 m $\eta$ = 0.4 | x: 0.353 m $\eta$ = 0.9 | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.353 m $\eta$ = 11.3 | **PASSA $\eta$ = 11.3** |
| N1073/N813 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 1.1 | x: 0 m $\eta$ = 1.0 | x: 0 m $\eta$ < 0.1 | x: 1.059 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 16.0 | **PASSA $\eta$ = 16.0** |
| N1071/N814 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.0 | x: 1.1 m $\eta$ = 2.2 | x: 0.367 m $\eta$ = 0.9 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 26.5 | **PASSA $\eta$ = 26.5** |
| N814/N1073 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.5 | x: 0 m $\eta$ = 1.3 | x: 0 m $\eta$ = 2.6 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 32.8 | **PASSA $\eta$ = 32.8** |
| N815/N1071 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.5 | x: 1.1 m $\eta$ = 1.2 | x: 0.917 m $\eta$ = 1.3 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.917 m $\eta$ = 20.0 | **PASSA $\eta$ = 20.0** |
| N1070/N815 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.7 | x: 0 m $\eta$ = 2.7 | x: 0.367 m $\eta$ = 1.3 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 29.0 | **PASSA $\eta$ = 29.0** |
| N816/N1070 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.5 | x: 1.1 m $\eta$ = 2.5 | x: 0.917 m $\eta$ = 1.6 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 33.2 | **PASSA $\eta$ = 33.2** |
| N1069/N816 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.9 | x: 1.1 m $\eta$ = 1.1 | x: 1.1 m $\eta$ = 0.7 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 15.7 | **PASSA $\eta$ = 15.7** |
| N817/N1069 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.4 | x: 1.1 m $\eta$ = 0.6 | x: 0.917 m $\eta$ = 0.9 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.917 m $\eta$ = 11.7 | **PASSA $\eta$ = 11.7** |
| N818/N922 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.5 | x: 1.1 m $\eta$ = 1.7 | x: 1.1 m $\eta$ = 1.6 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 29.1 | **PASSA $\eta$ = 29.1** |
| N922/N819 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.9 | x: 1.1 m $\eta$ = 2.1 | x: 0 m $\eta$ = 1.6 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 31.7 | **PASSA $\eta$ = 31.7** |
| N819/N941 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.1 | x: 0 m $\eta$ = 2.4 | x: 0.733 m $\eta$ = 1.5 | x: 0 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.55 m $\eta$ = 29.2 | **PASSA $\eta$ = 29.2** |
| N941/N820 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.1 | x: 0 m $\eta$ = 1.4 | x: 0.55 m $\eta$ = 1.4 | x: 0 m $\eta$ < 0.1 | x: 1.1 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.55 m $\eta$ = 20.2 | **PASSA $\eta$ = 20.2** |
| N820/N960 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.9 | x: 1.1 m $\eta$ = 3.6 | x: 0.733 m $\eta$ = 2.1 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 46.5 | **PASSA $\eta$ = 46.5** |
| N960/N821 | $\lambda \leq 200.0$ Passa | x: 1.1 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.3 | x: 1.1 m $\eta$ = 5.5 | x: 1.1 m $\eta$ = 2.9 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.2 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 72.0 | **PASSA $\eta$ = 72.0** |
| N821/N980 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 5.1 | x: 0 m $\eta$ = 3.7 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 69.9 | **PASSA $\eta$ = 69.9** |
| N980/N822 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.5 | x: 0 m $\eta$ = 1.2 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 13.5 | **PASSA $\eta$ = 13.5** |
| N1068/N823 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.2 | x: 0 m $\eta$ = 0.6 | x: 1.059 m $\eta$ = 0.9 | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.059 m $\eta$ = 11.7 | **PASSA $\eta$ = 11.7** |
| N1066/N824 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.5 | x: 1.1 m $\eta$ = 5.1 | x: 1.1 m $\eta$ = 3.7 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.2 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 76.7 | **PASSA $\eta$ = 76.7** |
| N824/N1068 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.2 | x: 0 m $\eta$ = 5.6 | x: 0 m $\eta$ = 2.7 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 65.8 | **PASSA $\eta$ = 65.8** |
| N825/N1066 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.1 | x: 1.1 m $\eta$ = 3.9 | x: 0.733 m $\eta$ = 2.0 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 45.3 | **PASSA $\eta$ = 45.3** |
| N1064/N825 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.3 | x: 0.367 m $\eta$ = 1.5 | x: 0.183 m $\eta$ = 1.5 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.367 m $\eta$ = 22.1 | **PASSA $\eta$ = 22.1** |
| N826/N1064 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.3 | x: 0.367 m $\eta$ = 2.1 | x: 0.367 m $\eta$ = 1.7 | x: 1.1 m $\eta$ < 0.1 | x: 0 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.367 m $\eta$ = 31.5 | **PASSA $\eta$ = 31.5** |
| N1062/N826 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.0 | x: 1.1 m $\eta$ = 2.3 | x: 0 m $\eta$ = 1.9 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 34.1 | **PASSA $\eta$ = 34.1** |

| Barras | VERIFICAÇÕES (ABNT NBR 8800:2008) | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda$ | $N_t$ | $N_c$ | $M_u$ | $M_v$ | $V_u$ | $V_v$ | $NM_uM_v$ | T | NMVT | $\sigma$ $\tau$ f | |
| N827/N1062 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.4 | x: 1.1 m $\eta$ = 1.9 | x: 1.1 m $\eta$ = 1.6 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 29.8 | **PASSA $\eta$ = 29.8** |
| N828/N923 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.6 | x: 1.1 m $\eta$ = 1.4 | x: 1.1 m $\eta$ = 1.2 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 23.6 | **PASSA $\eta$ = 23.6** |
| N923/N829 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.2 | x: 1.1 m $\eta$ = 1.6 | x: 0 m $\eta$ = 1.8 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 28.4 | **PASSA $\eta$ = 28.4** |
| N829/N942 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.3 | x: 0 m $\eta$ = 1.8 | x: 0.55 m $\eta$ = 1.1 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 19.6 | **PASSA $\eta$ = 19.6** |
| N942/N830 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.4 | x: 1.1 m $\eta$ = 1.8 | x: 0.917 m $\eta$ = 1.2 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 23.1 | **PASSA $\eta$ = 23.1** |
| N830/N961 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.0 | x: 0 m $\eta$ = 2.0 | x: 0.183 m $\eta$ = 1.0 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 22.7 | **PASSA $\eta$ = 22.7** |
| N961/N831 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.6 | x: 1.1 m $\eta$ = 1.4 | x: 1.1 m $\eta$ = 1.2 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 22.8 | **PASSA $\eta$ = 22.8** |
| N831/N982 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.2 | x: 0 m $\eta$ = 1.3 | x: 0 m $\eta$ = 1.4 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 21.8 | **PASSA $\eta$ = 21.8** |
| N982/N832 | N.A.(5) | x: 1.059 m $\eta$ < 0.1 | N.A.(6) | x: 0.353 m $\eta$ = 0.5 | x: 0.353 m $\eta$ = 1.0 | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.353 m $\eta$ = 2.3 | **PASSA $\eta$ = 2.3** |
| N1060/N833 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 1.1 | x: 0.529 m $\eta$ = 1.5 | x: 0 m $\eta$ = 0.1 | x: 1.059 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.529 m $\eta$ = 13.9 | **PASSA $\eta$ = 13.9** |
| N1058/N834 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.8 | x: 1.1 m $\eta$ = 1.5 | x: 1.1 m $\eta$ = 2.3 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 34.9 | **PASSA $\eta$ = 34.9** |
| N834/N1060 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.3 | x: 0 m $\eta$ = 1.8 | x: 0 m $\eta$ = 1.6 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 28.2 | **PASSA $\eta$ = 28.2** |
| N835/N1058 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.3 | x: 0 m $\eta$ = 2.3 | x: 0.367 m $\eta$ = 1.5 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.183 m $\eta$ = 29.9 | **PASSA $\eta$ = 29.9** |
| N1057/N835 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.7 | x: 1.1 m $\eta$ = 2.6 | x: 0.55 m $\eta$ = 1.4 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 27.3 | **PASSA $\eta$ = 27.3** |
| N836/N1057 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.6 | x: 0 m $\eta$ = 2.3 | x: 0.367 m $\eta$ = 1.5 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 29.2 | **PASSA $\eta$ = 29.2** |
| N1056/N836 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.4 | x: 1.1 m $\eta$ = 2.7 | x: 0 m $\eta$ = 1.6 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 34.2 | **PASSA $\eta$ = 34.2** |
| N837/N1056 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.6 | x: 1.1 m $\eta$ = 1.8 | x: 1.1 m $\eta$ = 2.3 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 37.3 | **PASSA $\eta$ = 37.3** |
| N838/N925 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.6 | x: 1.1 m $\eta$ = 1.2 | x: 1.1 m $\eta$ = 1.9 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 28.1 | **PASSA $\eta$ = 28.1** |
| N925/N839 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.2 | x: 1.1 m $\eta$ = 1.9 | x: 0 m $\eta$ = 1.2 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 25.1 | **PASSA $\eta$ = 25.1** |
| N839/N944 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.3 | x: 0 m $\eta$ = 1.6 | x: 0.55 m $\eta$ = 1.0 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 20.7 | **PASSA $\eta$ = 20.7** |
| N944/N840 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.4 | x: 1.1 m $\eta$ = 2.0 | x: 0.55 m $\eta$ = 1.1 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 21.3 | **PASSA $\eta$ = 21.3** |
| N840/N963 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.0 | x: 0 m $\eta$ = 1.8 | x: 0.367 m $\eta$ = 1.1 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 22.4 | **PASSA $\eta$ = 22.4** |
| N963/N841 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.6 | x: 1.1 m $\eta$ = 0.8 | x: 1.1 m $\eta$ = 1.7 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 23.2 | **PASSA $\eta$ = 23.2** |
| N841/N984 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.2 | x: 0 m $\eta$ = 1.0 | x: 0 m $\eta$ = 1.4 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 19.5 | **PASSA $\eta$ = 19.5** |
| N984/N842 | N.A.(5) | x: 1.059 m $\eta$ < 0.1 | N.A.(6) | x: 0 m $\eta$ = 1.2 | x: 0.529 m $\eta$ = 0.9 | x: 0 m $\eta$ < 0.1 | x: 1.059 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.353 m $\eta$ = 2.2 | **PASSA $\eta$ = 2.2** |
| N1055/N843 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | x: 0.353 m $\eta$ = 0.8 | x: 0.353 m $\eta$ = 1.6 | x: 1.059 m $\eta$ = 0.1 | x: 1.059 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.353 m $\eta$ = 16.0 | **PASSA $\eta$ = 16.0** |
| N1053/N844 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.9 | x: 1.1 m $\eta$ = 1.5 | x: 1.1 m $\eta$ = 1.3 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 24.9 | **PASSA $\eta$ = 24.9** |
| N844/N1055 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.4 | x: 0 m $\eta$ = 1.2 | x: 0 m $\eta$ = 1.9 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 25.9 | **PASSA $\eta$ = 25.9** |
| N845/N1053 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.4 | x: 0 m $\eta$ = 2.8 | x: 0.367 m $\eta$ = 1.3 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 30.5 | **PASSA $\eta$ = 30.5** |
| N1051/N845 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.8 | x: 1.1 m $\eta$ = 2.5 | x: 0.917 m $\eta$ = 1.5 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 31.7 | **PASSA $\eta$ = 31.7** |
| N846/N1051 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.6 | x: 0 m $\eta$ = 2.6 | x: 0.55 m $\eta$ = 1.4 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 26.9 | **PASSA $\eta$ = 26.9** |
| N1049/N846 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.4 | x: 1.1 m $\eta$ = 2.3 | x: 0 m $\eta$ = 2.5 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 39.5 | **PASSA $\eta$ = 39.5** |

| Barras | VERIFICAÇÕES (ABNT NBR 8800:2008) | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda$ | $N_t$ | $N_c$ | $M_u$ | $M_v$ | $V_u$ | $V_v$ | $NM_uM_v$ | T | NMVT | $\sigma$ $\tau$ f | |
| N847/N1049 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.6 | x: 1.1 m $\eta$ = 2.2 | x: 1.1 m $\eta$ = 1.5 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 32.4 | **PASSA $\eta$ = 32.4** |
| N848/N926 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.5 | x: 1.1 m $\eta$ = 1.5 | x: 1.1 m $\eta$ = 1.4 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 25.6 | **PASSA $\eta$ = 25.6** |
| N926/N849 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.9 | x: 1.1 m $\eta$ = 2.3 | x: 0 m $\eta$ = 1.7 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 30.2 | **PASSA $\eta$ = 30.2** |
| N849/N945 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.0 | x: 0 m $\eta$ = 1.9 | x: 0.55 m $\eta$ = 1.6 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.367 m $\eta$ = 28.1 | **PASSA $\eta$ = 28.1** |
| N945/N850 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.0 | x: 0.55 m $\eta$ = 1.2 | x: 0.183 m $\eta$ = 1.2 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.183 m $\eta$ = 18.2 | **PASSA $\eta$ = 18.2** |
| N850/N964 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.7 | x: 1.1 m $\eta$ = 3.3 | x: 0.733 m $\eta$ = 1.9 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.917 m $\eta$ = 39.1 | **PASSA $\eta$ = 39.1** |
| N964/N851 | $\lambda \leq 200.0$ Passa | x: 1.1 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.2 | x: 1.1 m $\eta$ = 4.5 | x: 1.1 m $\eta$ = 3.4 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.2 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 68.5 | **PASSA $\eta$ = 68.5** |
| N851/N986 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 5.0 | x: 0 m $\eta$ = 2.4 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 37.6 | **PASSA $\eta$ = 37.6** |
| N986/N852 | x: 0 m $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 1.0 | x: 0 m $\eta$ = 0.9 | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 14.7 | **PASSA $\eta$ = 14.7** |
| N1047/N853 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.2 | x: 0 m $\eta$ = 0.8 | x: 0 m $\eta$ = 1.4 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 16.8 | **PASSA $\eta$ = 16.8** |
| N1045/N854 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.4 | x: 1.1 m $\eta$ = 6.1 | x: 1.1 m $\eta$ = 3.3 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.2 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 80.1 | **PASSA $\eta$ = 80.1** |
| N854/N1047 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.2 | x: 0 m $\eta$ = 5.6 | x: 0 m $\eta$ = 4.2 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 78.6 | **PASSA $\eta$ = 78.6** |
| N855/N1045 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.0 | x: 1.1 m $\eta$ = 3.9 | x: 0.733 m $\eta$ = 2.4 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.917 m $\eta$ = 50.6 | **PASSA $\eta$ = 50.6** |
| N1044/N855 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.3 | x: 0.183 m $\eta$ = 1.7 | x: 0.55 m $\eta$ = 1.6 | x: 0 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.55 m $\eta$ = 24.7 | **PASSA $\eta$ = 24.7** |
| N856/N1044 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.2 | x: 0.183 m $\eta$ = 2.7 | x: 0.55 m $\eta$ = 1.7 | x: 0 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.55 m $\eta$ = 34.5 | **PASSA $\eta$ = 34.5** |
| N1043/N856 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.0 | x: 0 m $\eta$ = 2.4 | x: 0 m $\eta$ = 2.0 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 39.3 | **PASSA $\eta$ = 39.3** |
| N857/N1043 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.5 | x: 1.1 m $\eta$ = 2.1 | x: 1.1 m $\eta$ = 2.1 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 36.8 | **PASSA $\eta$ = 36.8** |
| N858/N928 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.5 | x: 1.1 m $\eta$ = 1.1 | x: 0.55 m $\eta$ = 1.0 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.733 m $\eta$ = 15.9 | **PASSA $\eta$ = 15.9** |
| N928/N859 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.8 | x: 0 m $\eta$ = 1.2 | x: 1.1 m $\eta$ = 1.0 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 16.0 | **PASSA $\eta$ = 16.0** |
| N859/N947 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.0 | x: 1.1 m $\eta$ = 1.3 | x: 0.917 m $\eta$ = 1.4 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.917 m $\eta$ = 20.2 | **PASSA $\eta$ = 20.2** |
| N947/N860 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.1 | x: 0 m $\eta$ = 1.6 | x: 0.55 m $\eta$ = 1.0 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.367 m $\eta$ = 18.4 | **PASSA $\eta$ = 18.4** |
| N860/N966 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.9 | x: 0.55 m $\eta$ = 1.0 | x: 0.733 m $\eta$ = 1.2 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.733 m $\eta$ = 18.5 | **PASSA $\eta$ = 18.5** |
| N966/N861 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.5 | x: 1.1 m $\eta$ = 2.2 | x: 1.1 m $\eta$ = 0.9 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 27.1 | **PASSA $\eta$ = 27.1** |
| N861/N988 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 1.3 | x: 0 m $\eta$ = 2.7 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 33.5 | **PASSA $\eta$ = 33.5** |
| N988/N862 | N.A.(5) | x: 1.059 m $\eta$ < 0.1 | N.A.(6) | x: 0 m $\eta$ = 1.3 | x: 0.529 m $\eta$ = 1.1 | x: 0 m $\eta$ < 0.1 | x: 1.059 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.353 m $\eta$ = 2.4 | **PASSA $\eta$ = 2.4** |
| N1042/N863 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.9 | x: 0.353 m $\eta$ = 1.6 | x: 1.059 m $\eta$ = 0.1 | x: 1.059 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.353 m $\eta$ = 19.7 | **PASSA $\eta$ = 19.7** |
| N1040/N864 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.8 | x: 1.1 m $\eta$ = 1.9 | x: 1.1 m $\eta$ = 2.9 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 43.1 | **PASSA $\eta$ = 43.1** |
| N864/N1042 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.4 | x: 0 m $\eta$ = 3.1 | x: 1.059 m $\eta$ = 0.9 | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 30.0 | **PASSA $\eta$ = 30.0** |
| N865/N1040 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.3 | x: 1.1 m $\eta$ = 1.8 | x: 0.55 m $\eta$ = 1.4 | x: 1.1 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.733 m $\eta$ = 21.4 | **PASSA $\eta$ = 21.4** |
| N1038/N865 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.4 | x: 0 m $\eta$ = 1.9 | x: 0.183 m $\eta$ = 1.5 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.183 m $\eta$ = 26.9 | **PASSA $\eta$ = 26.9** |
| N866/N1038 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.3 | x: 1.1 m $\eta$ = 2.4 | x: 0.55 m $\eta$ = 1.5 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 22.7 | **PASSA $\eta$ = 22.7** |
| N1036/N866 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.9 | x: 0 m $\eta$ = 1.4 | x: 0.183 m $\eta$ = 1.1 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.183 m $\eta$ = 19.2 | **PASSA $\eta$ = 19.2** |

| Barras | VERIFICAÇÕES (ABNT NBR 8800:2008) | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda$ | $N_t$ | $N_c$ | $M_u$ | $M_v$ | $V_u$ | $V_v$ | $NM_uM_v$ | T | NMVT | $\sigma$ $\tau$ f | |
| N867/N1036 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.5 | x: 1.1 m $\eta$ = 1.4 | x: 0.55 m $\eta$ = 1.2 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.733 m $\eta$ = 18.9 | **PASSA $\eta$ = 18.9** |
| N868/N929 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.7 | x: 0.367 m $\eta$ = 0.2 | x: 0.367 m $\eta$ = 0.5 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 7.1 | **PASSA $\eta$ = 7.1** |
| N929/N869 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.1 | x: 0.917 m $\eta$ = 1.3 | x: 0.917 m $\eta$ = 0.8 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.917 m $\eta$ = 16.8 | **PASSA $\eta$ = 16.8** |
| N869/N948 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.2 | x: 0 m $\eta$ = 1.4 | x: 0.55 m $\eta$ = 1.1 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.183 m $\eta$ = 14.2 | **PASSA $\eta$ = 14.2** |
| N948/N870 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.3 | x: 1.1 m $\eta$ = 2.3 | x: 0.733 m $\eta$ = 1.2 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 28.5 | **PASSA $\eta$ = 28.5** |
| N870/N967 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.9 | x: 0 m $\eta$ = 2.4 | x: 0.55 m $\eta$ = 1.0 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 28.5 | **PASSA $\eta$ = 28.5** |
| N967/N871 | $\lambda \leq 200.0$ Passa | x: 1.1 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.6 | x: 0 m $\eta$ = 1.2 | x: 1.1 m $\eta$ = 1.0 | x: 1.1 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 16.6 | **PASSA $\eta$ = 16.6** |
| N871/N990 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.5 | x: 0 m $\eta$ = 0.9 | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.353 m $\eta$ = 8.0 | **PASSA $\eta$ = 8.0** |
| N990/N872 | N.A.(5) | x: 1.059 m $\eta$ = 0.1 | N.A.(6) | x: 0 m $\eta$ = 0.4 | x: 0 m $\eta$ = 0.8 | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 1.7 | **PASSA $\eta$ = 1.7** |
| N1034/N873 | N.A.(5) | x: 1.059 m $\eta$ = 0.1 | N.A.(6) | x: 0 m $\eta$ = 0.4 | x: 0 m $\eta$ = 1.4 | x: 0 m $\eta$ < 0.1 | x: 1.059 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 2.4 | **PASSA $\eta$ = 2.4** |
| N1032/N874 | $\lambda \leq 200.0$ Passa | x: 1.1 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.9 | x: 0 m $\eta$ = 1.2 | x: 0 m $\eta$ = 1.3 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 23.3 | **PASSA $\eta$ = 23.3** |
| N874/N1034 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.3 | x: 0 m $\eta$ = 0.9 | x: 0 m $\eta$ = 0.8 | x: 0 m $\eta$ < 0.1 | x: 1.059 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 10.9 | **PASSA $\eta$ = 10.9** |
| N875/N1032 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.4 | x: 0 m $\eta$ = 3.4 | x: 0 m $\eta$ = 1.8 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 42.8 | **PASSA $\eta$ = 42.8** |
| N1031/N875 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.7 | x: 1.1 m $\eta$ = 3.5 | x: 1.1 m $\eta$ = 1.5 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 41.8 | **PASSA $\eta$ = 41.8** |
| N876/N1031 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.6 | x: 0 m $\eta$ = 1.8 | x: 0.55 m $\eta$ = 1.4 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 23.1 | **PASSA $\eta$ = 23.1** |
| N1030/N876 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.3 | x: 1.1 m $\eta$ = 2.0 | x: 0.183 m $\eta$ = 1.1 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.917 m $\eta$ = 23.1 | **PASSA $\eta$ = 23.1** |
| N877/N1030 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.7 | x: 1.1 m $\eta$ = 0.2 | x: 1.1 m $\eta$ = 0.5 | x: 0 m $\eta$ < 0.1 | x: 1.1 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 7.2 | **PASSA $\eta$ = 7.2** |
| N878/N931 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.7 | x: 1.1 m $\eta$ = 0.9 | x: 0.55 m $\eta$ = 0.9 | x: 1.1 m $\eta$ < 0.1 | x: 0 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.733 m $\eta$ = 13.4 | **PASSA $\eta$ = 13.4** |
| N931/N879 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.1 | x: 0.917 m $\eta$ = 1.3 | x: 1.1 m $\eta$ = 0.7 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.917 m $\eta$ = 15.2 | **PASSA $\eta$ = 15.2** |
| N879/N950 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.2 | x: 0 m $\eta$ = 1.0 | x: 0.55 m $\eta$ = 1.0 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.183 m $\eta$ = 12.9 | **PASSA $\eta$ = 12.9** |
| N950/N880 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.3 | x: 1.1 m $\eta$ = 2.3 | x: 0.367 m $\eta$ = 1.1 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 26.1 | **PASSA $\eta$ = 26.1** |
| N880/N969 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.9 | x: 0 m $\eta$ = 2.2 | x: 0.367 m $\eta$ = 1.1 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 26.8 | **PASSA $\eta$ = 26.8** |
| N969/N881 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.6 | x: 0 m $\eta$ = 0.5 | x: 0 m $\eta$ = 1.0 | x: 0 m $\eta$ < 0.1 | x: 1.1 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 13.4 | **PASSA $\eta$ = 13.4** |
| N881/N992 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.4 | x: 0 m $\eta$ = 0.8 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 10.5 | **PASSA $\eta$ = 10.5** |
| N992/N882 | N.A.(5) | x: 1.059 m $\eta$ = 0.1 | N.A.(6) | x: 0 m $\eta$ = 0.7 | x: 0 m $\eta$ = 0.7 | x: 0 m $\eta$ < 0.1 | x: 1.059 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 1.8 | **PASSA $\eta$ = 1.8** |
| N1029/N883 | N.A.(5) | x: 1.059 m $\eta$ = 0.1 | N.A.(6) | x: 0.882 m $\eta$ = 0.6 | x: 0.176 m $\eta$ = 1.1 | x: 1.059 m $\eta$ = 0.1 | x: 0 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.176 m $\eta$ = 2.3 | **PASSA $\eta$ = 2.3** |
| N1027/N884 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.9 | x: 0 m $\eta$ = 0.7 | x: 0 m $\eta$ = 0.8 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 14.6 | **PASSA $\eta$ = 14.6** |
| N884/N1029 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.2 | x: 1.059 m $\eta$ = 1.1 | x: 0 m $\eta$ = 0.6 | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.059 m $\eta$ = 12.8 | **PASSA $\eta$ = 12.8** |
| N885/N1027 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.3 | x: 0 m $\eta$ = 3.3 | x: 0 m $\eta$ = 1.4 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 40.0 | **PASSA $\eta$ = 40.0** |
| N1025/N885 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.7 | x: 1.1 m $\eta$ = 3.2 | x: 1.1 m $\eta$ = 1.8 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 40.6 | **PASSA $\eta$ = 40.6** |
| N886/N1025 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.5 | x: 0 m $\eta$ = 1.7 | x: 0.55 m $\eta$ = 1.3 | x: 0 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.183 m $\eta$ = 17.4 | **PASSA $\eta$ = 17.4** |
| N1023/N886 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.3 | x: 0.917 m $\eta$ = 1.7 | x: 0.917 m $\eta$ = 1.1 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.917 m $\eta$ = 23.0 | **PASSA $\eta$ = 23.0** |

| Barras | VERIFICAÇÕES (ABNT NBR 8800:2008) | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda$ | $N_t$ | $N_c$ | $M_u$ | $M_v$ | $V_u$ | $V_v$ | $NM_uM_v$ | T | NMVT | $\sigma$ $\tau$ f | |
| N887/N1023 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.7 | x: 1.1 m $\eta$ = 1.2 | x: 0.733 m $\eta$ = 1.3 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.733 m $\eta$ = 18.5 | **PASSA $\eta$ = 18.5** |
| N888/N932 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.7 | x: 1.1 m $\eta$ = 0.3 | x: 1.1 m $\eta$ = 0.5 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 7.6 | **PASSA $\eta$ = 7.6** |
| N932/N889 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.1 | x: 1.1 m $\eta$ = 1.4 | x: 0.917 m $\eta$ = 0.8 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.917 m $\eta$ = 17.8 | **PASSA $\eta$ = 17.8** |
| N889/N951 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.2 | x: 0 m $\eta$ = 1.5 | x: 0.55 m $\eta$ = 1.0 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 15.3 | **PASSA $\eta$ = 15.3** |
| N951/N890 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.3 | x: 1.1 m $\eta$ = 2.4 | x: 1.1 m $\eta$ = 1.2 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 30.2 | **PASSA $\eta$ = 30.2** |
| N890/N970 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.9 | x: 0 m $\eta$ = 2.5 | x: 0 m $\eta$ = 1.1 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 30.3 | **PASSA $\eta$ = 30.3** |
| N970/N891 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.6 | x: 0 m $\eta$ = 1.3 | x: 1.1 m $\eta$ = 1.0 | x: 1.1 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 19.1 | **PASSA $\eta$ = 19.1** |
| N891/N994 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ < 0.1 | x: 0.353 m $\eta$ = 0.5 | x: 1.059 m $\eta$ = 0.8 | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.353 m $\eta$ = 9.2 | **PASSA $\eta$ = 9.2** |
| N994/N892 | N.A.(5) | x: 1.059 m $\eta$ = 0.1 | N.A.(6) | x: 1.059 m $\eta$ = 0.3 | x: 1.059 m $\eta$ = 0.7 | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.059 m $\eta$ = 1.4 | **PASSA $\eta$ = 1.4** |
| N1021/N893 | N.A.(5) | x: 1.059 m $\eta$ = 0.1 | N.A.(6) | x: 1.059 m $\eta$ = 0.3 | x: 0 m $\eta$ = 1.2 | x: 0 m $\eta$ = 0.1 | x: 1.059 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 2.0 | **PASSA $\eta$ = 2.0** |
| N1019/N894 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.9 | x: 0 m $\eta$ = 1.6 | x: 0 m $\eta$ = 1.3 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 26.2 | **PASSA $\eta$ = 26.2** |
| N894/N1021 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.3 | x: 0 m $\eta$ = 1.3 | x: 0.529 m $\eta$ = 1.1 | x: 0 m $\eta$ < 0.1 | x: 1.059 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 13.2 | **PASSA $\eta$ = 13.2** |
| N895/N1019 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.3 | x: 0 m $\eta$ = 3.6 | x: 0 m $\eta$ = 1.9 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 45.8 | **PASSA $\eta$ = 45.8** |
| N1018/N895 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.7 | x: 1.1 m $\eta$ = 3.8 | x: 1.1 m $\eta$ = 1.6 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 44.8 | **PASSA $\eta$ = 44.8** |
| N896/N1018 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.5 | x: 0 m $\eta$ = 2.0 | x: 1.1 m $\eta$ = 1.4 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 25.0 | **PASSA $\eta$ = 25.0** |
| N1017/N896 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.3 | x: 1.1 m $\eta$ = 2.2 | x: 0.183 m $\eta$ = 1.1 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.917 m $\eta$ = 24.8 | **PASSA $\eta$ = 24.8** |
| N897/N1017 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.7 | x: 1.1 m $\eta$ = 0.3 | x: 1.1 m $\eta$ = 0.5 | x: 0 m $\eta$ < 0.1 | x: 1.1 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 7.6 | **PASSA $\eta$ = 7.6** |
| N898/N934 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.7 | x: 1.1 m $\eta$ = 1.7 | x: 0.367 m $\eta$ = 1.2 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.733 m $\eta$ = 19.7 | **PASSA $\eta$ = 19.7** |
| N934/N899 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.1 | x: 0.183 m $\eta$ = 1.6 | x: 0.183 m $\eta$ = 1.0 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.183 m $\eta$ = 21.2 | **PASSA $\eta$ = 21.2** |
| N899/N953 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.1 | x: 0.183 m $\eta$ = 1.0 | x: 0.55 m $\eta$ = 0.9 | x: 1.1 m $\eta$ < 0.1 | x: 0 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.55 m $\eta$ = 13.6 | **PASSA $\eta$ = 13.6** |
| N953/N900 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.2 | x: 1.1 m $\eta$ = 2.1 | x: 0.367 m $\eta$ = 1.1 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 24.4 | **PASSA $\eta$ = 24.4** |
| N900/N972 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.8 | x: 0 m $\eta$ = 2.1 | x: 0.367 m $\eta$ = 1.1 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 25.1 | **PASSA $\eta$ = 25.1** |
| N972/N901 | $\lambda \leq 200.0$ Passa | x: 1.1 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.4 | x: 1.1 m $\eta$ = 1.7 | x: 1.1 m $\eta$ = 1.1 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 23.8 | **PASSA $\eta$ = 23.8** |
| N901/N996 | N.A.(5) | x: 1.059 m $\eta$ < 0.1 | N.A.(6) | x: 0 m $\eta$ = 1.2 | x: 0 m $\eta$ = 1.9 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 4.5 | **PASSA $\eta$ = 4.5** |
| N996/N902 | N.A.(5) | x: 0.706 m $\eta$ = 0.1 | N.A.(6) | x: 0 m $\eta$ = 1.3 | x: 0.529 m $\eta$ = 1.1 | x: 0 m $\eta$ < 0.1 | x: 1.059 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.529 m $\eta$ = 2.6 | **PASSA $\eta$ = 2.6** |
| N1016/N903 | N.A.(5) | x: 0.706 m $\eta$ = 0.1 | N.A.(6) | x: 0 m $\eta$ = 1.4 | x: 0 m $\eta$ = 1.5 | x: 1.059 m $\eta$ = 0.1 | x: 1.059 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 4.0 | **PASSA $\eta$ = 4.0** |
| N1014/N904 | $\lambda \leq 200.0$ Passa | x: 1.1 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.7 | x: 1.1 m $\eta$ = 1.6 | x: 1.1 m $\eta$ = 2.1 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 33.4 | **PASSA $\eta$ = 33.4** |
| N904/N1016 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.2 | x: 0 m $\eta$ = 2.1 | x: 0 m $\eta$ = 1.2 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 25.2 | **PASSA $\eta$ = 25.2** |
| N905/N1014 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.2 | x: 0 m $\eta$ = 3.2 | x: 0.367 m $\eta$ = 1.4 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 38.0 | **PASSA $\eta$ = 38.0** |
| N1012/N905 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.6 | x: 1.1 m $\eta$ = 3.0 | x: 0.917 m $\eta$ = 1.6 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 38.2 | **PASSA $\eta$ = 38.2** |
| N906/N1012 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.5 | x: 0 m $\eta$ = 1.5 | x: 0.55 m $\eta$ = 1.1 | x: 0 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.183 m $\eta$ = 16.7 | **PASSA $\eta$ = 16.7** |
| N1010/N906 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.3 | x: 0 m $\eta$ = 2.5 | x: 0.183 m $\eta$ = 1.2 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.183 m $\eta$ = 30.0 | **PASSA $\eta$ = 30.0** |

| Barras | VERIFICAÇÕES (ABNT NBR 8800:2008) | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda$ | $N_t$ | $N_c$ | $M_u$ | $M_v$ | $V_u$ | $V_v$ | $NM_uM_v$ | T | NMVT | $\sigma$ $\tau$ f | |
| N907/N1010 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.7 | x: 1.1 m $\eta$ = 2.4 | x: 0.367 m $\eta$ = 1.5 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 29.6 | **PASSA $\eta$ = 29.6** |
| N908/N935 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.6 | x: 1.1 m $\eta$ = 0.5 | x: 1.1 m $\eta$ = 0.6 | x: 0 m $\eta$ < 0.1 | x: 1.1 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 9.7 | **PASSA $\eta$ = 9.7** |
| N935/N909 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.9 | x: 1.1 m $\eta$ = 1.1 | x: 0.917 m $\eta$ = 1.0 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.917 m $\eta$ = 17.4 | **PASSA $\eta$ = 17.4** |
| N909/N954 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.9 | x: 1.1 m $\eta$ = 1.9 | x: 1.1 m $\eta$ = 1.1 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 26.0 | **PASSA $\eta$ = 26.0** |
| N954/N910 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.9 | x: 1.1 m $\eta$ = 2.1 | x: 0 m $\eta$ = 1.4 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 28.3 | **PASSA $\eta$ = 28.3** |
| N910/N973 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.7 | x: 0 m $\eta$ = 2.0 | x: 1.1 m $\eta$ = 1.8 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 33.3 | **PASSA $\eta$ = 33.3** |
| N973/N911 | $\lambda \leq 200.0$ Passa | x: 1.1 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.5 | x: 0 m $\eta$ = 2.3 | x: 0 m $\eta$ = 1.1 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 29.6 | **PASSA $\eta$ = 29.6** |
| N911/N998 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 1.5 | x: 0 m $\eta$ = 1.4 | x: 1.059 m $\eta$ = 0.1 | x: 1.059 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 23.0 | **PASSA $\eta$ = 23.0** |
| N998/N912 | N.A.(5) | x: 1.059 m $\eta$ < 0.1 | N.A.(6) | x: 0 m $\eta$ = 0.8 | x: 0 m $\eta$ = 0.8 | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 1.7 | **PASSA $\eta$ = 1.7** |
| N1007/N913 | x: 0 m $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.4 | x: 0 m $\eta$ = 0.9 | x: 0 m $\eta$ < 0.1 | x: 1.059 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 9.7 | **PASSA $\eta$ = 9.7** |
| N1004/N914 | $\lambda \leq 200.0$ Passa | x: 1.1 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.8 | x: 0 m $\eta$ = 2.5 | x: 0 m $\eta$ = 2.4 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 44.2 | **PASSA $\eta$ = 44.2** |
| N914/N1007 | $\lambda \leq 200.0$ Passa | x: 1.059 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.3 | x: 0 m $\eta$ = 3.1 | x: 0.529 m $\eta$ = 1.0 | x: 0 m $\eta$ < 0.1 | x: 1.059 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 29.8 | **PASSA $\eta$ = 29.8** |
| N915/N1004 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.0 | x: 0 m $\eta$ = 3.3 | x: 1.1 m $\eta$ = 1.6 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.2 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 40.3 | **PASSA $\eta$ = 40.3** |
| N1002/N915 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.2 | x: 1.1 m $\eta$ = 3.2 | x: 0 m $\eta$ = 1.5 | x: 0 m $\eta$ = 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 38.9 | **PASSA $\eta$ = 38.9** |
| N916/N1002 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.1 | x: 1.1 m $\eta$ = 2.2 | x: 1.1 m $\eta$ = 2.1 | x: 1.1 m $\eta$ = 0.1 | x: 1.1 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 38.2 | **PASSA $\eta$ = 38.2** |
| N1000/N916 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 1.0 | x: 1.1 m $\eta$ = 2.4 | x: 0.55 m $\eta$ = 0.7 | x: 1.1 m $\eta$ < 0.1 | x: 0 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 23.1 | **PASSA $\eta$ = 23.1** |
| N917/N1000 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 0.6 | x: 1.1 m $\eta$ = 0.4 | x: 1.1 m $\eta$ = 0.8 | x: 1.1 m $\eta$ < 0.1 | x: 1.1 m $\eta$ < 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 1.1 m $\eta$ = 10.8 | **PASSA $\eta$ = 10.8** |
| N1258/N1295 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 10.5 | x: 0.566 m $\eta$ = 3.5 | x: 0.566 m $\eta$ = 11.9 | x: 0.566 m $\eta$ = 0.4 | x: 0.566 m $\eta$ = 0.2 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 44.2 | **PASSA $\eta$ = 44.2** |
| N1258/N1294 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 9.9 | x: 0.566 m $\eta$ = 6.7 | x: 0.566 m $\eta$ = 7.2 | x: 0.566 m $\eta$ = 0.2 | x: 0.566 m $\eta$ = 0.5 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 31.2 | **PASSA $\eta$ = 31.2** |
| N31/N1296 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 21.9 | x: 0.566 m $\eta$ = 8.6 | x: 0.566 m $\eta$ = 3.1 | x: 0.566 m $\eta$ = 0.1 | x: 0.566 m $\eta$ = 0.5 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 39.5 | **PASSA $\eta$ = 39.5** |
| N31/N1297 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 22.5 | x: 0.566 m $\eta$ = 2.5 | x: 0.566 m $\eta$ = 9.3 | x: 0.566 m $\eta$ = 0.3 | x: 0.07 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 48.9 | **PASSA $\eta$ = 48.9** |
| N1263/N1298 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 9.9 | x: 0.566 m $\eta$ = 9.4 | x: 0.566 m $\eta$ = 11.5 | x: 0.566 m $\eta$ = 0.4 | x: 0.566 m $\eta$ = 0.4 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 44.2 | **PASSA $\eta$ = 44.2** |
| N1263/N1299 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 10.1 | x: 0 m $\eta$ = 5.3 | x: 0.566 m $\eta$ = 11.9 | x: 0.566 m $\eta$ = 0.3 | x: 0.566 m $\eta$ = 0.3 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 43.6 | **PASSA $\eta$ = 43.6** |
| N32/N1300 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 23.4 | x: 0.566 m $\eta$ = 9.3 | x: 0.566 m $\eta$ = 3.9 | x: 0.566 m $\eta$ = 0.1 | x: 0.566 m $\eta$ = 0.6 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 41.5 | **PASSA $\eta$ = 41.5** |
| N32/N1301 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 23.7 | x: 0.566 m $\eta$ = 1.9 | x: 0.566 m $\eta$ = 10.6 | x: 0.566 m $\eta$ = 0.4 | x: 0.07 m $\eta$ = 0.2 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 53.4 | **PASSA $\eta$ = 53.4** |
| N1268/N1302 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 9.7 | x: 0.566 m $\eta$ = 8.2 | x: 0.566 m $\eta$ = 10.0 | x: 0.566 m $\eta$ = 0.2 | x: 0.566 m $\eta$ = 0.5 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 38.9 | **PASSA $\eta$ = 38.9** |
| N1268/N1303 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 10.8 | x: 0.566 m $\eta$ = 5.7 | x: 0.566 m $\eta$ = 16.3 | x: 0.566 m $\eta$ = 0.6 | x: 0.566 m $\eta$ = 0.2 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 57.0 | **PASSA $\eta$ = 57.0** |
| N33/N1304 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 23.8 | x: 0.566 m $\eta$ = 8.7 | x: 0.566 m $\eta$ = 3.4 | x: 0.566 m $\eta$ = 0.1 | x: 0.566 m $\eta$ = 0.8 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.07 m $\eta$ = 44.9 | **PASSA $\eta$ = 44.9** |
| N33/N1305 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 25.1 | x: 0.07 m $\eta$ = 7.2 | x: 0.566 m $\eta$ = 10.9 | x: 0.566 m $\eta$ = 0.4 | x: 0.07 m $\eta$ = 0.4 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.07 m $\eta$ = 66.5 | **PASSA $\eta$ = 66.5** |
| N1271/N1306 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 9.2 | x: 0.566 m $\eta$ = 9.4 | x: 0.566 m $\eta$ = 11.8 | x: 0.566 m $\eta$ = 0.4 | x: 0.566 m $\eta$ = 0.4 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 45.6 | **PASSA $\eta$ = 45.6** |
| N1271/N1307 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 11.8 | x: 0 m $\eta$ = 6.4 | x: 0.566 m $\eta$ = 13.8 | x: 0.566 m $\eta$ = 0.3 | x: 0.566 m $\eta$ = 0.4 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 50.7 | **PASSA $\eta$ = 50.7** |
| N1289/N1308 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 10.5 | x: 0 m $\eta$ = 5.1 | x: 0.566 m $\eta$ = 13.3 | x: 0.566 m $\eta$ = 0.3 | x: 0.566 m $\eta$ = 0.3 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 48.2 | **PASSA $\eta$ = 48.2** |

| Barras | VERIFICAÇÕES (ABNT NBR 8800:2008) | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda$ | $N_t$ | $N_c$ | $M_u$ | $M_v$ | $V_u$ | $V_v$ | $NM_uM_v$ | T | NMVT | $\sigma$ $\tau$ f | |
| N1289/N1309 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 13.0 | x: 0.566 m $\eta$ = 11.8 | x: 0.566 m $\eta$ = 14.2 | x: 0.566 m $\eta$ = 0.5 | x: 0.566 m $\eta$ = 0.5 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 54.6 | **PASSA $\eta$ = 54.6** |
| N37/N1310 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 28.5 | x: 0.07 m $\eta$ = 10.8 | x: 0.566 m $\eta$ = 4.5 | x: 0.566 m $\eta$ = 0.1 | x: 0.566 m $\eta$ = 0.9 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.07 m $\eta$ = 55.5 | **PASSA $\eta$ = 55.5** |
| N37/N1311 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 26.6 | x: 0.07 m $\eta$ = 7.1 | x: 0.566 m $\eta$ = 11.4 | x: 0.566 m $\eta$ = 0.4 | x: 0.07 m $\eta$ = 0.4 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.07 m $\eta$ = 67.8 | **PASSA $\eta$ = 67.8** |
| N1286/N1312 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 12.3 | x: 0.566 m $\eta$ = 9.7 | x: 0.566 m $\eta$ = 11.5 | x: 0.566 m $\eta$ = 0.2 | x: 0.566 m $\eta$ = 0.7 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 46.1 | **PASSA $\eta$ = 46.1** |
| N1286/N1313 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 11.0 | x: 0.566 m $\eta$ = 6.5 | x: 0.566 m $\eta$ = 17.7 | x: 0.566 m $\eta$ = 0.6 | x: 0.566 m $\eta$ = 0.3 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 61.2 | **PASSA $\eta$ = 61.2** |
| N36/N1314 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 26.7 | x: 0.566 m $\eta$ = 10.5 | x: 0.566 m $\eta$ = 4.3 | x: 0.566 m $\eta$ = 0.1 | x: 0.566 m $\eta$ = 0.7 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 47.3 | **PASSA $\eta$ = 47.3** |
| N36/N1315 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 26.5 | x: 0.07 m $\eta$ = 2.2 | x: 0.566 m $\eta$ = 12.0 | x: 0.566 m $\eta$ = 0.4 | x: 0.07 m $\eta$ = 0.2 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 60.1 | **PASSA $\eta$ = 60.1** |
| N1281/N1316 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 11.2 | x: 0.566 m $\eta$ = 10.6 | x: 0.566 m $\eta$ = 12.7 | x: 0.566 m $\eta$ = 0.5 | x: 0.566 m $\eta$ = 0.4 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 48.8 | **PASSA $\eta$ = 48.8** |
| N1281/N1317 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 11.3 | x: 0 m $\eta$ = 5.5 | x: 0.566 m $\eta$ = 13.5 | x: 0.566 m $\eta$ = 0.3 | x: 0.566 m $\eta$ = 0.4 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 49.4 | **PASSA $\eta$ = 49.4** |
| N35/N1318 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 25.2 | x: 0.566 m $\eta$ = 9.9 | x: 0.566 m $\eta$ = 3.4 | x: 0.566 m $\eta$ = 0.1 | x: 0.566 m $\eta$ = 0.5 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 45.8 | **PASSA $\eta$ = 45.8** |
| N35/N1319 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 24.7 | x: 0.566 m $\eta$ = 2.4 | x: 0.566 m $\eta$ = 10.6 | x: 0.566 m $\eta$ = 0.3 | x: 0.07 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 54.6 | **PASSA $\eta$ = 54.6** |
| N1275/N1320 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 11.8 | x: 0.566 m $\eta$ = 7.8 | x: 0.566 m $\eta$ = 8.1 | x: 0.566 m $\eta$ = 0.2 | x: 0.566 m $\eta$ = 0.5 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 35.9 | **PASSA $\eta$ = 35.9** |
| N1275/N1321 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 11.2 | x: 0.566 m $\eta$ = 4.1 | x: 0.566 m $\eta$ = 13.1 | x: 0.566 m $\eta$ = 0.5 | x: 0.566 m $\eta$ = 0.2 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 48.3 | **PASSA $\eta$ = 48.3** |
| N51/N1332 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 18.6 | x: 0.07 m $\eta$ = 5.1 | x: 0.566 m $\eta$ = 7.0 | x: 0.566 m $\eta$ = 0.3 | x: 0.07 m $\eta$ = 0.3 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.07 m $\eta$ = 47.0 | **PASSA $\eta$ = 47.0** |
| N51/N1333 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 16.2 | x: 0.07 m $\eta$ = 5.5 | x: 0.07 m $\eta$ = 1.6 | x: 0.566 m $\eta$ < 0.1 | x: 0.566 m $\eta$ = 0.5 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 28.2 | **PASSA $\eta$ = 28.2** |
| N1253/N1334 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 9.1 | x: 0 m $\eta$ = 4.6 | x: 0.566 m $\eta$ = 8.5 | x: 0.566 m $\eta$ = 0.2 | x: 0.566 m $\eta$ = 0.2 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 32.8 | **PASSA $\eta$ = 32.8** |
| N1253/N1335 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 6.1 | x: 0.566 m $\eta$ = 5.8 | x: 0.566 m $\eta$ = 7.0 | x: 0.566 m $\eta$ = 0.3 | x: 0.566 m $\eta$ = 0.2 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 26.7 | **PASSA $\eta$ = 26.7** |
| N1250/N1336 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 8.1 | x: 0.566 m $\eta$ = 6.2 | x: 0 m $\eta$ = 7.5 | x: 0.566 m $\eta$ = 0.3 | x: 0.566 m $\eta$ = 0.3 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 30.1 | **PASSA $\eta$ = 30.1** |
| N1250/N1337 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 4.4 | x: 0 m $\eta$ = 1.9 | x: 0.566 m $\eta$ = 4.7 | x: 0.566 m $\eta$ = 0.1 | x: 0.566 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 17.3 | **PASSA $\eta$ = 17.3** |
| N49/N1338 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 16.4 | x: 0.07 m $\eta$ = 5.8 | x: 0.566 m $\eta$ = 2.1 | x: 0.566 m $\eta$ < 0.1 | x: 0.566 m $\eta$ = 0.5 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.07 m $\eta$ = 29.6 | **PASSA $\eta$ = 29.6** |
| N49/N1339 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 12.0 | x: 0.07 m $\eta$ = 3.1 | x: 0.566 m $\eta$ = 4.2 | x: 0.566 m $\eta$ = 0.2 | x: 0.07 m $\eta$ = 0.2 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.07 m $\eta$ = 28.5 | **PASSA $\eta$ = 28.5** |
| N89/N1360 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 16.4 | x: 0.07 m $\eta$ = 4.8 | x: 0.566 m $\eta$ = 6.0 | x: 0.566 m $\eta$ = 0.2 | x: 0.07 m $\eta$ = 0.3 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.07 m $\eta$ = 41.3 | **PASSA $\eta$ = 41.3** |
| N89/N1361 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 20.6 | x: 0.07 m $\eta$ = 7.4 | x: 0.566 m $\eta$ = 2.5 | x: 0.566 m $\eta$ < 0.1 | x: 0.566 m $\eta$ = 0.6 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.07 m $\eta$ = 38.4 | **PASSA $\eta$ = 38.4** |
| N1211/N1362 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 6.1 | x: 0 m $\eta$ = 2.3 | x: 0.566 m $\eta$ = 6.7 | x: 0.566 m $\eta$ = 0.1 | x: 0.566 m $\eta$ = 0.2 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 24.8 | **PASSA $\eta$ = 24.8** |
| N1211/N1363 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 10.0 | x: 0.566 m $\eta$ = 7.9 | x: 0 m $\eta$ = 9.3 | x: 0.566 m $\eta$ = 0.3 | x: 0.566 m $\eta$ = 0.3 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 37.2 | **PASSA $\eta$ = 37.2** |
| N1208/N1364 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 4.2 | x: 0.566 m $\eta$ = 4.3 | x: 0.566 m $\eta$ = 5.3 | x: 0.566 m $\eta$ = 0.2 | x: 0.566 m $\eta$ = 0.2 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 20.5 | **PASSA $\eta$ = 20.5** |
| N1208/N1365 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 7.6 | x: 0 m $\eta$ = 4.3 | x: 0.566 m $\eta$ = 6.8 | x: 0.566 m $\eta$ = 0.2 | x: 0.566 m $\eta$ = 0.2 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 26.7 | **PASSA $\eta$ = 26.7** |
| N87/N1366 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 12.2 | x: 0.566 m $\eta$ = 4.0 | x: 0.566 m $\eta$ = 1.0 | x: 0.566 m $\eta$ < 0.1 | x: 0.566 m $\eta$ = 0.3 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 21.0 | **PASSA $\eta$ = 21.0** |
| N87/N1367 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 15.4 | x: 0.07 m $\eta$ = 3.5 | x: 0.566 m $\eta$ = 5.9 | x: 0.566 m $\eta$ = 0.2 | x: 0.07 m $\eta$ = 0.2 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.07 m $\eta$ = 36.7 | **PASSA $\eta$ = 36.7** |
| N1191/N1378 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 13.0 | x: 0.566 m $\eta$ = 8.9 | x: 0.566 m $\eta$ = 9.8 | x: 0.566 m $\eta$ = 0.2 | x: 0.566 m $\eta$ = 0.6 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 42.0 | **PASSA $\eta$ = 42.0** |
| N1191/N1379 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 12.8 | x: 0.566 m $\eta$ = 4.9 | x: 0.566 m $\eta$ = 15.6 | x: 0.566 m $\eta$ = 0.5 | x: 0.566 m $\eta$ = 0.2 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 57.0 | **PASSA $\eta$ = 57.0** |
| N111/N1380 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 28.1 | x: 0.566 m $\eta$ = 11.1 | x: 0.566 m $\eta$ = 4.1 | x: 0.566 m $\eta$ = 0.2 | x: 0.566 m $\eta$ = 0.6 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 50.5 | **PASSA $\eta$ = 50.5** |

| Barras | VERIFICAÇÕES (ABNT NBR 8800:2008) | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda$ | $N_t$ | $N_c$ | $M_u$ | $M_v$ | $V_u$ | $V_v$ | $NM_uM_v$ | T | NMVT | $\sigma$ $\tau$ f | |
| N111/N1381 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 28.6 | x: 0.566 m $\eta$ = 2.8 | x: 0.566 m $\eta$ = 12.4 | x: 0.566 m $\eta$ = 0.4 | x: 0.07 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 63.5 | **PASSA $\eta$ = 63.5** |
| N1197/N1382 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 12.7 | x: 0 m $\eta$ = 6.6 | x: 0.566 m $\eta$ = 15.8 | x: 0.566 m $\eta$ = 0.4 | x: 0.566 m $\eta$ = 0.4 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 57.3 | **PASSA $\eta$ = 57.3** |
| N1197/N1383 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 12.3 | x: 0.566 m $\eta$ = 12.0 | x: 0.566 m $\eta$ = 14.8 | x: 0.566 m $\eta$ = 0.5 | x: 0.566 m $\eta$ = 0.5 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 57.0 | **PASSA $\eta$ = 57.0** |
| N112/N1384 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 30.0 | x: 0.07 m $\eta$ = 2.6 | x: 0.566 m $\eta$ = 13.7 | x: 0.566 m $\eta$ = 0.5 | x: 0.07 m $\eta$ = 0.2 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 68.4 | **PASSA $\eta$ = 68.4** |
| N112/N1385 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 29.8 | x: 0.566 m $\eta$ = 11.9 | x: 0.566 m $\eta$ = 5.0 | x: 0.566 m $\eta$ = 0.2 | x: 0.566 m $\eta$ = 0.8 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 52.7 | **PASSA $\eta$ = 52.7** |
| N1202/N1386 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 13.3 | x: 0.566 m $\eta$ = 7.4 | x: 0.566 m $\eta$ = 20.8 | x: 0.566 m $\eta$ = 0.7 | x: 0.566 m $\eta$ = 0.3 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 72.3 | **PASSA $\eta$ = 72.3** |
| N1202/N1387 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 12.6 | x: 0.566 m $\eta$ = 10.6 | x: 0.566 m $\eta$ = 13.1 | x: 0.566 m $\eta$ = 0.3 | x: 0.566 m $\eta$ = 0.7 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 50.9 | **PASSA $\eta$ = 50.9** |
| N113/N1388 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 31.1 | x: 0.07 m $\eta$ = 8.9 | x: 0.566 m $\eta$ = 13.5 | x: 0.566 m $\eta$ = 0.5 | x: 0.07 m $\eta$ = 0.5 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.07 m $\eta$ = 82.5 | **PASSA $\eta$ = 82.5** |
| N113/N1389 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 31.0 | x: 0.07 m $\eta$ = 11.5 | x: 0.566 m $\eta$ = 4.7 | x: 0.566 m $\eta$ = 0.1 | x: 0.566 m $\eta$ = 1.0 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.07 m $\eta$ = 59.4 | **PASSA $\eta$ = 59.4** |
| N1205/N1390 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 13.6 | x: 0 m $\eta$ = 7.4 | x: 0.566 m $\eta$ = 17.1 | x: 0.566 m $\eta$ = 0.4 | x: 0.566 m $\eta$ = 0.5 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 61.8 | **PASSA $\eta$ = 61.8** |
| N1205/N1391 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 12.4 | x: 0.566 m $\eta$ = 12.4 | x: 0.566 m $\eta$ = 15.7 | x: 0.566 m $\eta$ = 0.6 | x: 0.566 m $\eta$ = 0.5 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 60.1 | **PASSA $\eta$ = 60.1** |
| N1187/N1392 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 10.7 | x: 0.566 m $\eta$ = 10.0 | x: 0.566 m $\eta$ = 12.2 | x: 0.566 m $\eta$ = 0.5 | x: 0.566 m $\eta$ = 0.4 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 47.0 | **PASSA $\eta$ = 47.0** |
| N1187/N1393 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 9.4 | x: 0 m $\eta$ = 5.0 | x: 0.566 m $\eta$ = 12.0 | x: 0.566 m $\eta$ = 0.3 | x: 0.566 m $\eta$ = 0.3 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 43.4 | **PASSA $\eta$ = 43.4** |
| N109/N1394 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 23.3 | x: 0.566 m $\eta$ = 8.6 | x: 0.566 m $\eta$ = 3.6 | x: 0.566 m $\eta$ = 0.1 | x: 0.566 m $\eta$ = 0.7 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.07 m $\eta$ = 44.8 | **PASSA $\eta$ = 44.8** |
| N109/N1395 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 22.3 | x: 0.07 m $\eta$ = 5.5 | x: 0.566 m $\eta$ = 9.7 | x: 0.566 m $\eta$ = 0.4 | x: 0.07 m $\eta$ = 0.3 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.07 m $\eta$ = 55.2 | **PASSA $\eta$ = 55.2** |
| N1184/N1396 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 9.8 | x: 0.566 m $\eta$ = 8.1 | x: 0.566 m $\eta$ = 9.9 | x: 0.566 m $\eta$ = 0.2 | x: 0.566 m $\eta$ = 0.6 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 38.6 | **PASSA $\eta$ = 38.6** |
| N1184/N1397 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 9.0 | x: 0.566 m $\eta$ = 5.3 | x: 0.566 m $\eta$ = 14.6 | x: 0.566 m $\eta$ = 0.5 | x: 0.566 m $\eta$ = 0.3 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 50.5 | **PASSA $\eta$ = 50.5** |
| N108/N1398 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 21.7 | x: 0.566 m $\eta$ = 8.7 | x: 0.566 m $\eta$ = 3.6 | x: 0.566 m $\eta$ = 0.1 | x: 0.566 m $\eta$ = 0.5 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 38.6 | **PASSA $\eta$ = 38.6** |
| N108/N1399 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 21.5 | x: 0.566 m $\eta$ = 1.7 | x: 0.566 m $\eta$ = 9.9 | x: 0.566 m $\eta$ = 0.3 | x: 0.07 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 49.3 | **PASSA $\eta$ = 49.3** |
| N1179/N1400 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 9.1 | x: 0.566 m $\eta$ = 8.9 | x: 0.566 m $\eta$ = 10.8 | x: 0.566 m $\eta$ = 0.4 | x: 0.566 m $\eta$ = 0.4 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 41.9 | **PASSA $\eta$ = 41.9** |
| N1179/N1401 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 9.0 | x: 0 m $\eta$ = 4.8 | x: 0.566 m $\eta$ = 11.3 | x: 0.566 m $\eta$ = 0.3 | x: 0.566 m $\eta$ = 0.3 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 40.9 | **PASSA $\eta$ = 40.9** |
| N107/N1402 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 20.6 | x: 0.566 m $\eta$ = 8.3 | x: 0.566 m $\eta$ = 2.9 | x: 0.566 m $\eta$ = 0.1 | x: 0.566 m $\eta$ = 0.4 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 37.6 | **PASSA $\eta$ = 37.6** |
| N107/N1403 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0.07 m $\eta$ = 20.3 | x: 0.566 m $\eta$ = 2.0 | x: 0.566 m $\eta$ = 8.9 | x: 0.566 m $\eta$ = 0.3 | x: 0.07 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 45.4 | **PASSA $\eta$ = 45.4** |
| N1174/N1404 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 9.4 | x: 0.566 m $\eta$ = 6.7 | x: 0.566 m $\eta$ = 7.3 | x: 0.566 m $\eta$ = 0.2 | x: 0.566 m $\eta$ = 0.4 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 30.9 | **PASSA $\eta$ = 30.9** |
| N1174/N1405 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 9.3 | x: 0.566 m $\eta$ = 3.5 | x: 0.566 m $\eta$ = 11.3 | x: 0.566 m $\eta$ = 0.4 | x: 0.566 m $\eta$ = 0.2 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 41.2 | **PASSA $\eta$ = 41.2** |
| N1642/N1348 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 14.8 | x: 0.566 m $\eta$ = 8.1 | x: 0.566 m $\eta$ = 6.3 | x: 0.566 m $\eta$ = 0.2 | x: 0.566 m $\eta$ = 0.4 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0 m $\eta$ = 34.9 | **PASSA $\eta$ = 34.9** |
| N1642/N1349 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 11.2 | x: 0.566 m $\eta$ = 1.0 | x: 0.566 m $\eta$ = 8.2 | x: 0.566 m $\eta$ = 0.2 | x: 0.566 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 34.1 | **PASSA $\eta$ = 34.1** |
| N1643/N1376 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 11.2 | x: 0.566 m $\eta$ = 6.4 | x: 0.566 m $\eta$ = 5.1 | x: 0.566 m $\eta$ = 0.2 | x: 0.566 m $\eta$ = 0.3 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 26.6 | **PASSA $\eta$ = 26.6** |
| N1643/N1377 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 13.8 | x: 0 m $\eta$ = 2.8 | x: 0.566 m $\eta$ = 10.3 | x: 0.566 m $\eta$ = 0.3 | x: 0.566 m $\eta$ = 0.2 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 42.6 | **PASSA $\eta$ = 42.6** |
| N1660/N1323 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 17.0 | x: 0 m $\eta$ = 3.3 | x: 0.566 m $\eta$ = 12.4 | x: 0.566 m $\eta$ = 0.4 | x: 0.566 m $\eta$ = 0.2 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 53.9 | **PASSA $\eta$ = 53.9** |
| N1660/N1322 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 14.8 | x: 0.566 m $\eta$ = 8.0 | x: 0.566 m $\eta$ = 6.1 | x: 0.566 m $\eta$ = 0.2 | x: 0.566 m $\eta$ = 0.4 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 50.6 | **PASSA $\eta$ = 50.6** |
| N1664/N1351 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 15.0 | x: 0.566 m $\eta$ = 1.3 | x: 0.566 m $\eta$ = 11.1 | x: 0.566 m $\eta$ = 0.3 | x: 0.566 m $\eta$ = 0.1 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 48.8 | **PASSA $\eta$ = 48.8** |

| Barras | VERIFICAÇÕES (ABNT NBR 8800:2008) | | | | | | | | | | | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda$ | $N_t$ | $N_c$ | $M_u$ | $M_v$ | $V_u$ | $V_v$ | $NM_uM_v$ | T | NMVT | $\sigma\ \tau$ f | |
| N1664/N1350 | $\lambda \leq 200.0$ Passa | N.A.(1) | x: 0 m $\eta$ = 18.1 | x: 0.566 m $\eta$ = 9.9 | x: 0.566 m $\eta$ = 7.7 | x: 0.566 m $\eta$ = 0.3 | x: 0.566 m $\eta$ = 0.5 | N.A.(2) | N.A.(3) | N.A.(4) | x: 0.566 m $\eta$ = 62.8 | **PASSA $\eta$ = 62.8** |

*Notação:*
- *$\lambda$: Limitação do índice de esbeltez*
- *$N_t$: Resistência à tração*
- *$N_c$: Resistência à compressão*
- *$M_u$: Resistência à flexão eixo U*
- *$M_v$: Resistência à flexão eixo V*
- *$V_u$: Resistência ao esforço cortante U*
- *$V_v$: Resistência ao esforço cortante V*
- *$NM_uM_v$: Resistência ao esforço axial e flexão combinados*
- *T: Resistência à torção*
- *NMVT: Resistência ao momento de torção, força axial, momento fletor e cortante*
- *$\sigma\ \tau$ f: Resistência a interações de esforços e momento de torção*
- *x: Distância à origem da barra*
- *$\eta$: Coeficiente de aproveitamento (%)*
- *N.A.: Não aplicável*

*Verificações desnecessárias para o tipo de perfil (N.A.):*
- *(1) A verificação não será executada, já que não existe esforço axial de tração.*
- *(2) Este caso não está contemplado pela norma e, portanto, não é possível realizar a verificação.*
- *(3) A verificação não é necessária, já que não existe momento torsor.*
- *(4) Não há interação entre a esforço axial, momento fletor, esforço cortante e momento torsor. Portanto, a verificação não é necessária.*
- *(5) A verificação não procede, já que não há força axial de compressão.*
- *(6) A verificação não será executada, já que não existe esforço axial de compressão.*