# PROYECTO ESTRUCTURAL DEL CENTRO DE SERVICIOS INFONAVIT "CESI".
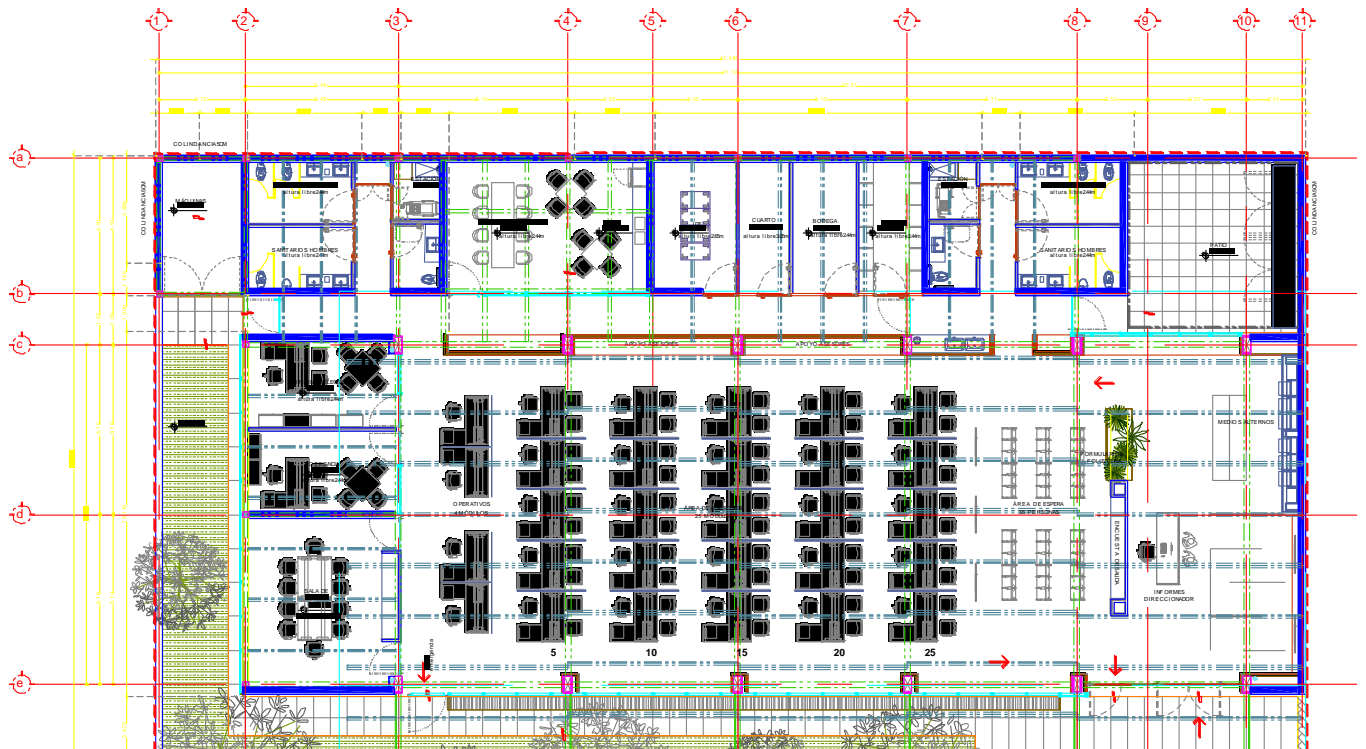
## ÍNDICE

# A. MEMORIA DESCRIPTIVA

El inmueble en cuestión es un edificio que tendrá su uso para oficinas, con una zona de altura simple y una cubierta central a doble altura. Están estructurados a base de marcos planos de acero estructural, con columnas rectangulares de 30x60 cm en la cubierta, y HSS cuadrados de 8" y columnas de concreto en muros de carga en el resto de la estructura; se tiene un sistema de piso a base de losacero y la cubierta de multypanel. La cimentación es a base de zapatas aisladas con trabes de liga para las columnas metálicas, y zapata corrida en los muros de carga. Cuenta con trabes principales y largueros de acero estructural A-36.

En la zona de cubierta está alojada toda la zona de atención al cliente y sala de espera, 32.5 metros de largo y 12.2 metros de ancho, y una altura variable de cubierta con altura máxima de 6.48 metros. En otra parte del edificio se encuentran oficinas y sala de juntas, con una longitud de 12.2 metros y un ancho de 5.49 metros; el resto de la estructura alberga los sanitarios, estación de servicio, cuarto eléctrico, bodega, archivo y estaciones de aseo, con una longitud de 34.7 metros y un ancho de 6.7 metros. La superficie total aproximada de construcción es de 750 m2.

Para efectos de dimensionamiento de las instalaciones se tomó como caso hipotético los datos correspondientes a una de las regiones solicitadas en los términos de referencia, la ciudad de Torreón en el estado de Coahuila.

De acuerdo a la zonificación sísmica de la Comisión Federal de Electricidad (1993), se establece que el inmueble se ubica en la zona A. El suelo tipo II, por lo que el coeficiente sísmico es C=0.16. Adicionalmente se identifica la clasificación de la estructura en el Grupo B.

Se presenta enseguida la información arquitectónica del proyecto nuevo, con la cual se trabajó para el análisis y diseño estructural.

**PLANTA DE PISO**

**Proyecto Estructural**
Memoria de cálculo

**CENTRO DE SERVICIOS INFONAVIT "CESI"**

JUAN JOSÉ ASTORGA

INFONAVIT
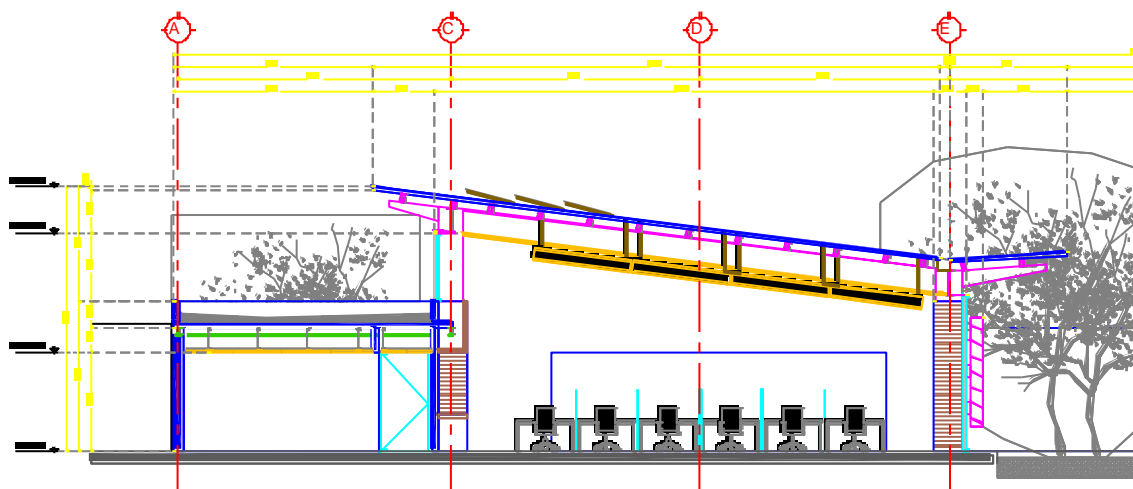
**CORTE TRANSVERSAL**



**CORTE LONGITUDINAL**

**Proyecto Estructural**
Memoria de cálculo

**CENTRO DE SERVICIOS INFONAVIT "CESI"**

JUAN JOSÉ ASTORGA

INFONAVIT
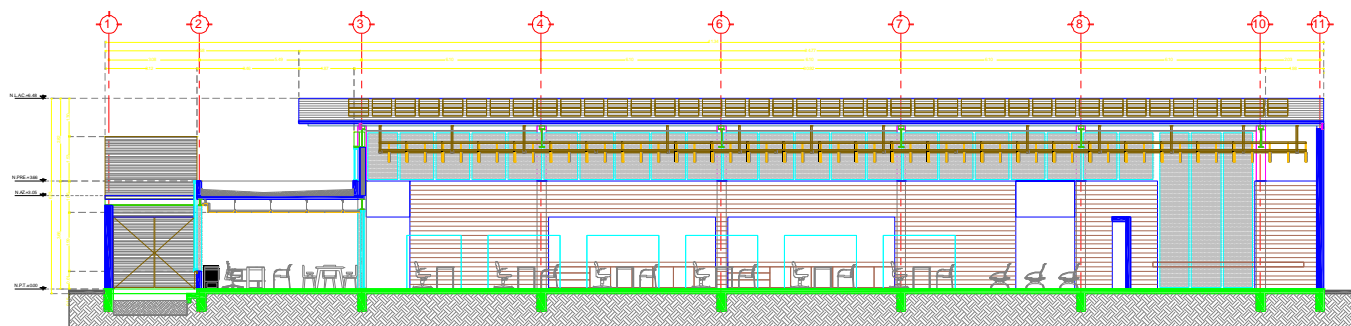
# B. CRITERIOS DE ESTRUCTURACIÓN

La estructura está resuelta de la siguiente forma:

***CIMENTACIÓN*** se compone de zapatas aisladas en columnas metálicas unidas con trabes de liga, y zapatas corridas en muros de carga.

***SISTEMA DE PISO*** El sistema de piso es a base de losacero sección 4, Cal. 22, con capa de compresión de 6cm de concreto, apoyada sobre trabes metálicas, y una cubierta ligera de multypanel..

***ESTRUCTURA RESISTENTE*** se trata de una estructura a base de marcos planos de acero estructural A-36, con columnas de acero de sección de 30x60 cm, cuadrados HSS de 20x20 cm, columnas de concreto de muros de carga. Trabes principales en cubierta de acero A-36 W 18x40, W 14x30, trabes en volado formadas con placa en "C" de sección variable.

# C. ANÁLISIS Y DISEÑO

Se realizó un modelo tridimensional del edificio para análisis y diseño del mismo, empleando para ello el programa STAAD PRO V8, para la determinación de las fuerzas de diseño considerando la combinación de acciones más desfavorable. En dicho modelo se hizo la revisión ante cargas gravitacionales y cargas debidas a sismo, mediante un análisis dinámico.

El diseño de la estructura se hizo en forma interna mediante el programa usando el ACI para diseño en concreto por el criterio de resistencia última. Se verificaron las deformaciones que establece el Reglamento de Construcciones para el D.F. (2008). Se hizo una revisión al diseño de las trabes en forma externa al programa, empleando para ello las Normas Técnicas Complementarias para Diseño de Estructuras de Concreto vigentes.
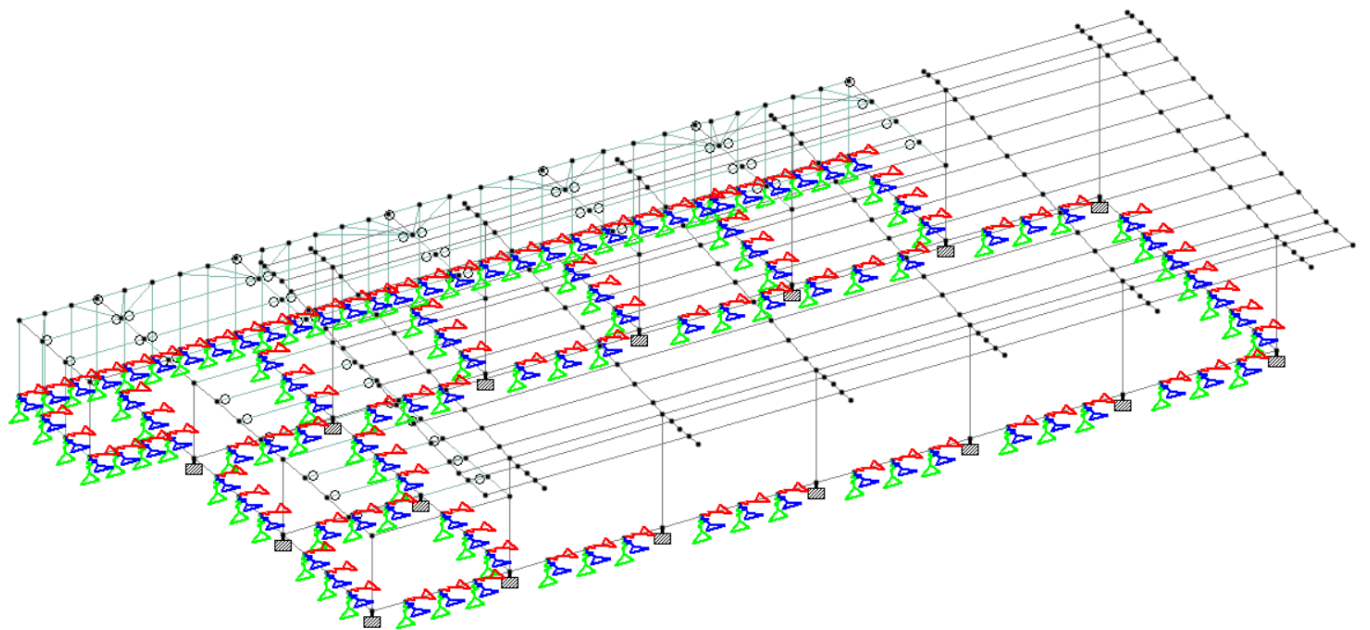
**MODELO ESPACIAL DE LA ESTRUCTURA**
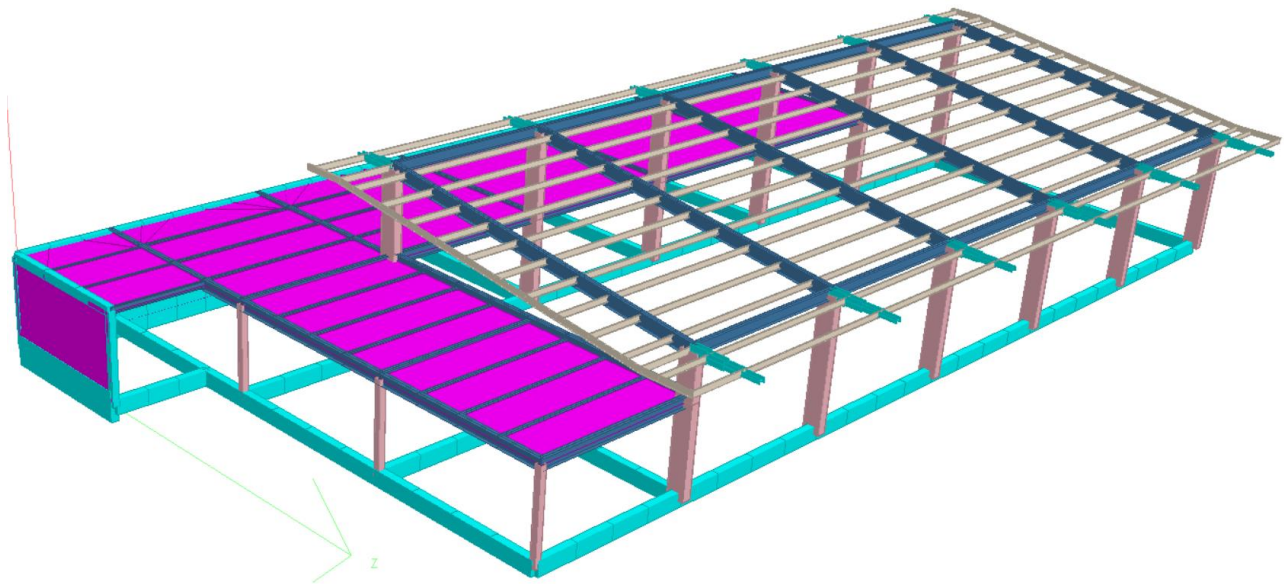
**MODELO TRIDIMENSIONAL DE LA ESTRUCTURA**

# D. ESPECIFICACIÓN DE MATERIALES

Los materiales usados en la construcción del edificio son:

*ACERO DE VARILLA CORRUGADA* con esfuerzo de fluencia de 4,200 kg/cm$^2$ para varillas de diámetro de 5/16" o mayores, para diámetros menores, el esfuerzo de fluencia será de 6,000 kg/cm$^2$.

*CONCRETO* *con resistencia a la compresión de f´c = 250 kg/cm$^2$,* peso volumétrico mayor a 2.2 ton/m$^3$. Con módulo de elasticidad E= 14000 $\sqrt{f'c}$

*CONCRETO EN CASTILLOS Y DALAS.* Con resistencia a la compresión de 150 kg/cm$^2$.

*CONCRETO EN PLANTILLAS* con resistencia a la compresión de 100 kg/cm$^2$.

*ACERO ESTRUCTURAL* A-36 en columnas formadas con placas, trabes, largueros y placas de conexión, con fy=2530 kg/cm$^2$. HSS en columnas cuadradas de 8", con fy=3500 kg/cm$^2$.

# E. CARGAS NOMINALES MUERTAS Y VIVAS

Las cargas sobre el edificio son:

## CARGAS MUERTAS

### LOSAS DE AZOTEA:

- Losacero sección 4, Cal. 22, capa de 6cm ……...   236 kg/m$^2$
- RCDF…………………………………………   40 kg/m$^2$
- Plafond …………………………………………   40  kg/m$^2$
- Instalaciones ……………………………….…..   30  kg/m$^2$
- Relleno de tezontle para dar
  pendientes (h=10cm) ……………………..………   140 kg/m$^2$
- Entortado e impermeabilizante.……………………   100 kg/m$^2$

**TOTAL   CM =  586 kg/m$^2$**

### CUBIERTA:

- Multypanel de 2", Cal. 26/26 ………………..…...   20 kg/m$^2$
- Plafond …………………………………………   40  kg/m$^2$
- Instalaciones ………………………………….…..   60  kg/m$^2$

**TOTAL   CM = 120 kg/m$^2$**

**CARGAS VIVAS (oficina):**

**AZOTEA:**

CVmax = 100 kg/m$^2$

CVacc =    70 kg/m$^2$

**CUBIERTA:**

CVmax =  40 kg/m$^2$

CVacc =    20 kg/m$^2$

Se consideran pesos de muro de pretil de 300 kg/m$^2$ para alturas de 50 cm.

# F. CLASIFICACIÓN DE LA ESTRUCTURA Y PARÁMETROS DE DISEÑO

La estructura se clasifica de acuerdo al Manual de la Comisión Federal de Electricidad:

- Estructura grupo B

- Zona sísmica A

- Tipo de suelo    II

- Coeficiente sísmico      c= 0.16

- Factor de comportamiento sísmico    Q= 2.0 en ambas direcciones

- Estructura regular

**ESPECTRO PARA DISEÑO** TORREÓN ZONA A TIPO DE SUELO II

| | | | |
|---|---|---|---|
| | | ao | 0,04 |
| GRUPO | B | Ta | 0,30 |
| SUELO | II | Tb | 1,50 |
| C = | 0,16 | r | 0,67 |
| | $C_{MODIF}$ | 0,16 | |

| T | a |
|---|---|
| 0,000 | 0,040 |
| 0,030 | 0,052 |
| 0,060 | 0,064 |
| 0,090 | 0,076 |
| 0,120 | 0,088 |
| 0,150 | 0,100 |
| 0,180 | 0,112 |
| 0,210 | 0,124 |
| 0,240 | 0,136 |
| 0,270 | 0,148 |
| 0,300 | 0,160 |
| 1,500 | 0,160 |
| 2,000 | 0,132 |
| 2,500 | 0,114 |
| 3,000 | 0,101 |
| 3,500 | 0,091 |
| 4,000 | 0,083 |
| 4,500 | 0,077 |
| 5,000 | 0,072 |
| 5,500 | 0,067 |
| 6,000 | 0,063 |
| 6,500 | 0,060 |
| 7,000 | 0,057 |

**ESPECTRO PARA DISEÑO**
TORREÓN ZONA A TIPO DE SUELO II

| Q | 2 | SUELO | II |
|---|---|---|---|
| ESTRUCTURA | REGULAR | GRUPO | B |
| FACTOR | 1,00 | C | 0,16 |

| T | a | Q´ |
|---|---|---|
| 0,000 | 0,040 | 1,000 |
| 0,030 | 0,047 | 1,100 |
| 0,060 | 0,053 | 1,200 |
| 0,090 | 0,058 | 1,300 |
| 0,120 | 0,063 | 1,400 |
| 0,150 | 0,067 | 1,500 |
| 0,180 | 0,070 | 1,600 |
| 0,210 | 0,073 | 1,700 |
| 0,240 | 0,076 | 1,800 |
| 0,270 | 0,078 | 1,900 |
| 0,300 | 0,080 | 2,000 |
| 1,500 | 0,080 | 2,000 |
| 2,000 | 0,066 | 2,000 |
| 2,500 | 0,057 | 2,000 |
| 3,000 | 0,050 | 2,000 |
| 3,500 | 0,045 | 2,000 |
| 4,000 | 0,042 | 2,000 |
| 4,500 | 0,038 | 2,000 |
| 5,000 | 0,036 | 2,000 |
| 5,500 | 0,034 | 2,000 |
| 6,000 | 0,032 | 2,000 |
| 6,500 | 0,030 | 2,000 |
| 7,000 | 0,029 | 2,000 |

Regionalización sísmica de la República Mexicana
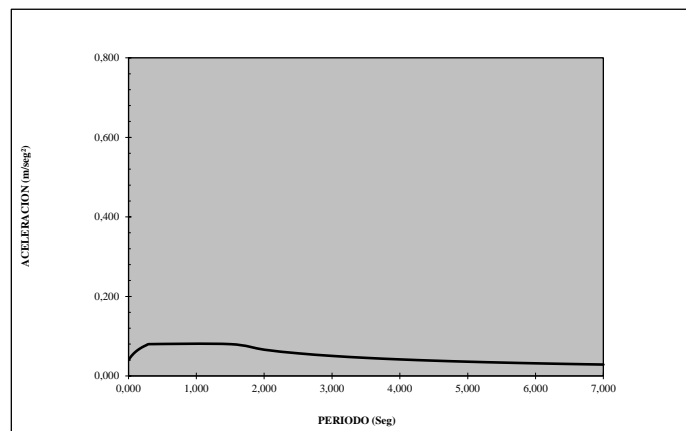
# G.   MEMORIA DE CÁLCULO

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123. 136 110 111; 137 100 110; 138 111 112; 139 101 111; 140 112 113; 141 102 112
124. 142 113 114; 143 103 113; 144 114 115; 145 104 114; 146 115 116; 147 105 115
125. 148 116 117; 149 106 116; 150 117 46; 151 107 117; 152 118 119; 153 108 118
126. 154 119 120; 155 109 119; 156 120 121; 157 110 120; 158 121 122; 159 111 121
127. 160 122 123; 161 112 122; 162 123 124; 163 113 123; 164 124 125; 165 114 124
128. 166 125 126; 167 115 125; 168 126 127; 169 116 126; 170 127 48; 171 117 127
129. 172 128 129; 173 118 128; 174 129 130; 175 119 129; 176 130 131; 177 120 130
130. 178 131 132; 179 121 131; 180 132 133; 181 122 132; 182 133 134; 183 123 133
131. 184 134 135; 185 124 134; 186 135 136; 187 125 135; 188 136 137; 189 126 136
132. 190 137 50; 191 127 137; 192 2 207; 193 4 233; 195 8 215; 196 10 211
133. 197 12 221; 198 14 227; 199 16 205; 200 18 241; 201 24 138; 202 138 28
134. 204 138 145; 205 141 32; 206 145 141; 207 141 146; 208 144 36; 209 146 144
135. 210 145 30; 211 146 34; 216 4 148; 217 147 24; 218 2 150; 219 22 147
136. 220 148 149; 221 149 147; 222 150 151; 223 151 22; 228 8 155; 229 156 138
137. 230 155 157; 231 157 156; 236 213 161; 237 162 145; 238 161 163; 239 163 162
138. 240 14 164; 241 165 141; 242 164 166; 243 166 165; 248 205 170; 249 171 146
139. 250 170 172; 251 172 171; 252 20 173; 253 174 144; 254 173 175; 255 175 174
140. 256 150 148; 257 148 155; 259 155 161; 261 161 164; 262 164 170; 264 170 173
141. 265 176 40; 266 138 184; 267 151 149; 268 149 157; 270 157 163; 272 163 166
142. 273 166 172; 275 172 175; 276 147 156; 278 156 162; 280 162 165; 281 165 171
143. 283 171 174; 284 52 177; 285 177 189; 287 56 176; 289 24 178; 290 52 187
144. 293 178 179; 294 179 180; 295 180 52; 299 184 185; 300 185 186; 301 186 177
145. 302 178 184; 304 179 185; 306 180 186; 308 187 190; 310 187 192; 311 189 192
146. 313 190 193; 315 190 192; 316 192 195; 318 193 56; 320 193 195; 321 195 176
147. 323 1 208; 324 3 234; 326 7 216; 327 9 212; 328 11 222; 329 13 228; 330 15 206
148. 331 17 242; 332 23 277; 334 27 280; 335 197 282; 336 31 284; 337 199 286
149. 338 196 29; 339 29 197; 340 198 33; 341 33 199; 342 35 288; 343 51 303
150. 344 55 306; 346 39 309; 347 41 312; 348 43 315; 349 45 318; 350 47 321
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151. 351 1 201; 352 3 251; 353 200 23; 354 21 249; 356 7 256; 357 214 259
152. 359 13 265; 360 206 268; 362 19 274; 363 23 291; 364 51 294; 365 27 297
153. 366 53 300; 380 37 324; 381 201 202; 383 202 21; 390 205 18; 391 206 17
154. 394 207 209; 395 208 210; 397 209 4; 398 210 3; 401 211 213; 402 212 214
155. 404 213 12; 405 214 11; 408 215 217; 409 216 218; 411 217 219; 412 218 220
156. 414 219 10; 415 220 9; 418 221 223; 419 222 224; 421 223 225; 422 224 226
157. 424 225 14; 425 226 13; 428 227 229; 429 228 230; 431 229 231; 432 230 232
158. 434 231 16; 435 232 15; 438 233 235; 439 234 236; 441 235 237; 442 236 238
159. 444 237 239; 445 238 240; 447 239 8; 448 240 7; 451 241 243; 452 242 244
160. 454 243 245; 455 244 246; 457 245 247; 458 246 248; 460 247 20; 461 248 19
161. 464 249 250; 465 250 200; 466 251 252; 467 252 200; 471 256 257; 472 257 258
162. 473 258 27; 474 259 260; 475 260 261; 476 261 29; 480 265 266; 481 266 267
163. 482 267 31; 483 268 269; 484 269 270; 485 270 33; 489 274 275; 490 275 276
164. 491 276 35; 492 277 278; 493 278 279; 494 279 27; 495 280 388; 496 281 196
165. 497 282 283; 498 283 31; 499 284 285; 500 285 198; 501 286 287; 502 287 35
166. 503 288 289; 504 289 290; 505 290 37; 506 291 292; 507 292 293; 508 293 51
167. 509 294 295; 510 295 296; 511 296 55; 512 297 298; 513 298 299; 514 299 53
168. 515 300 301; 516 301 302; 517 302 39; 518 303 304; 519 304 305; 520 305 53
169. 521 306 307; 522 307 308; 523 308 39; 524 309 310; 525 310 311; 526 311 41
170. 527 312 313; 528 313 314; 529 314 43; 530 315 316; 531 316 317; 532 317 45
171. 533 318 319; 534 319 320; 535 320 47; 536 321 322; 537 322 323; 538 323 49
172. 539 324 325; 540 325 326; 541 326 327; 542 327 328; 543 328 329; 544 329 330
173. 545 330 49; 621 38 331; 622 50 332; 623 64 333; 624 128 334; 625 129 335
174. 626 130 336; 627 131 337; 628 132 338; 629 133 339; 630 134 340; 631 135 341
175. 632 136 342; 633 137 343; 634 59 344; 635 60 345; 636 61 346; 637 62 347
176. 638 63 348; 639 64 349; 640 350 351; 641 351 59; 642 352 353; 643 353 60
177. 644 354 355; 645 355 61; 646 356 357; 647 357 62; 648 358 359; 649 359 63
178. 650 360 361; 651 361 64; 652 65 363; 653 363 364; 654 364 362; 655 28 365
179. 656 365 366; 657 366 367; 658 30 368; 659 368 369; 660 369 370; 661 32 371
180. 662 371 372; 663 372 373; 664 34 374; 665 374 375; 666 375 376; 667 36 377
181. 668 377 378; 669 378 379; 670 38 380; 671 380 381; 672 381 382; 673 331 334
182. 674 332 387; 675 334 335; 676 335 336; 677 336 337; 678 337 338; 679 338 339
183. 680 339 340; 681 340 341; 682 341 342; 683 342 343; 684 343 332; 685 331 383
184. 686 383 384; 687 384 385; 688 364 366; 689 366 369; 690 369 372; 691 372 375
185. 692 375 378; 693 378 381; 694 381 384; 695 386 67; 696 387 333; 697 386 350
186. 698 350 352; 699 352 354; 700 354 356; 701 356 358; 702 358 360; 703 360 387
187. 704 388 281
188. ELEMENT INCIDENCES SHELL
189. 382 1 2 150 201; 384 201 150 151 202; 385 202 151 22 21; 392 15 16 205 206
190. 393 206 205 18 17; 396 1 2 207 208; 399 208 207 209 210; 400 210 209 4 3
191. 403 9 10 211 212; 406 212 211 213 214; 407 214 213 12 11; 410 7 8 215 216
192. 413 216 215 217 218; 416 218 217 219 220; 417 220 219 10 9; 420 11 12 221 222
193. 423 222 221 223 224; 426 224 223 225 226; 427 226 225 14 13; 430 13 14 227 228
194. 433 228 227 229 230; 436 230 229 231 232; 437 232 231 16 15; 440 3 4 233 234
195. 443 234 233 235 236; 446 236 235 237 238; 449 238 237 239 240; 450 240 239 8 7
196. 453 17 18 241 242; 456 242 241 243 244; 459 244 243 245 246
197. 462 246 245 247 248; 463 248 247 20 19; 546 56 193 195 176
198. 548 193 190 192 195; 550 190 187 189 192; 552 187 52 177 189
199. 554 52 180 186 177; 556 180 179 185 186; 558 179 178 184 185
200. 560 178 24 138 184; 562 24 147 156 138; 564 22 151 149 147
201. 565 147 149 157 156; 567 151 150 149; 568 149 148 155 157
202. 570 150 207 209 148; 571 150 2 207; 572 148 209 4; 573 148 4 233
203. 574 148 233 235; 575 155 237 239; 576 155 239 8; 577 148 235 237 155
204. 580 138 156 162 145; 581 156 157 163 162; 582 157 155 161 163
205. 583 155 217 219 161; 584 155 8 215; 585 161 10 211; 586 161 211 213
206. 592 161 213 12; 593 145 162 165 141; 594 162 163 166 165; 595 163 161 164 166

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207. 596 161 221 223 164; 597 161 12 221; 598 164 223 225; 599 164 225 14
208. 600 141 165 171 146; 601 165 166 172 171; 602 166 164 170 172
209. 603 164 229 231 170; 604 164 14 227; 605 170 231 16; 606 170 16 205
210. 613 146 171 174 144; 614 171 172 175 174; 615 172 170 173 175
211. 616 170 243 245 173; 617 170 18 241; 618 170 241 243; 619 173 245 247
212. 620 173 247 20; 705 155 215 217; 706 161 219 10; 707 164 227 229
213. 708 170 205 18
214. ELEMENT PROPERTY
215. 382 384 385 392 393 396 399 400 403 406 407 410 413 416 417 420 423 426 427 -
216. 430 433 436 437 440 443 446 449 450 453 456 459 462 463 THICKNESS 0.2
217. 546 548 550 552 554 556 558 560 562 564 565 567 568 570 TO 577 580 TO 586 -
218. 592 TO 606 613 TO 620 705 TO 708 THICKNESS 0.1
219. DEFINE MATERIAL START
220. ISOTROPIC CONCRETE
221. E 2.21467E+006
222. POISSON 0.17
223. DENSITY 2.40262
224. ALPHA 1E-005
225. DAMP 0.05
226. TYPE CONCRETE
227. STRENGTH FCU 2812.28
228. ISOTROPIC STEEL
229. E 2.09042E+007
230. POISSON 0.3
231. DENSITY 7.83341
232. ALPHA 1.2E-005
233. DAMP 0.03
234. TYPE STEEL
235. STRENGTH FY 25819.2 FU 41584 RY 1.5 RT 1.2
236. ISOTROPIC LOSAS
237. E 2.21467E+006
238. POISSON 0.17
239. ALPHA 1E-005
240. DAMP 0.05
241. TYPE CONCRETE
242. STRENGTH FCU 2500
243. ISOTROPIC MUROS
244. E 120247
245. POISSON 0.25
246. DENSITY 2.2
247. ALPHA 1E-005
248. DAMP 0.05
249. END DEFINE MATERIAL
250. MEMBER PROPERTY AMERICAN
251. 14 TO 25 202 205 208 210 211 265 TABLE ST TUBE TH 0.0127 WT 0.61 DT 0.305
252. 12 26 28 TABLE ST TUB80803
253. 30 TO 35 72 TO 81 92 TO 101 112 114 116 118 120 122 124 126 128 130 132 134 -
254. 136 138 140 142 144 146 148 150 152 154 156 158 160 162 164 166 168 170 172 -
255. 174 176 178 180 182 184 186 188 190 TABLE ST W18X40
256. 266 285 299 TO 301 311 316 321 TABLE ST W24X55
257. 228 TO 231 236 TO 243 248 TO 251 TABLE ST W14X38
258. 42 TO 51 204 206 207 209 TABLE ST W14X30
259. 201 216 217 220 221 252 TO 255 284 287 289 290 293 TO 295 308 313 -
260. 318 TABLE ST W14X30
261. 257 259 261 262 264 268 270 272 273 275 276 278 280 281 283 302 304 306 310 -
262. 315 320 TABLE ST W10X22
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263. 219 256 267 TABLE ST W8X10
264. 36 TO 41 TAPERED 0.2 0.0127 0.2 0.4 0.0127 0.4 0.0127
265. 640 642 644 646 648 650 TAPERED 0.2 0.0127 0.2 0.3 0.0127 0.3 0.0127
266. 641 643 645 647 649 651 TAPERED 0.2 0.0127 0.2 0.22 0.0127 0.22 0.0127
267. 634 TO 639 657 660 663 666 669 -
268. 672 TAPERED 0.2 0.0127 0.2 0.15 0.0127 0.15 0.0127
269. 655 658 661 664 667 670 TAPERED 0.2 0.0127 0.2 0.35 0.0127 0.35 0.0127
270. 656 659 662 665 668 671 TAPERED 0.2 0.0127 0.2 0.25 0.0127 0.25 0.0127
271. MEMBER PROPERTY COLDFORMED AMERICAN
272. 52 TO 71 82 TO 91 102 TO 111 113 115 117 119 121 123 125 127 129 131 133 135 -
273. 137 139 141 143 145 147 149 151 153 155 157 159 161 163 165 167 169 171 173 -
274. 175 177 179 181 183 185 187 189 191 621 TO 633 652 TO 654 673 TO 702 -
275. 703 TABLE ST 8CS1.625X102
276. MEMBER PROPERTY AMERICAN
277. 1 2 4 5 7 8 10 11 PRIS YD 0.2 ZD 0.2
278. 192 193 195 TO 200 218 222 223 390 394 397 401 404 408 411 414 418 421 424 -
279. 428 431 434 438 441 444 447 451 454 457 460 PRIS YD 0.3 ZD 0.2
280. 323 324 326 TO 331 351 381 383 391 395 398 402 405 409 412 415 419 422 425 -
281. 429 432 435 439 442 445 448 452 455 458 461 PRIS YD 1 ZD 0.25
282. 332 334 TO 344 346 TO 350 352 TO 354 356 357 359 360 362 TO 366 380 -
283. 464 TO 467 471 TO 476 480 TO 485 489 TO 545 704 PRIS YD 0.5 ZD 0.25
284. CONSTANTS
285. BETA 90 MEMB 36 TO 41 634 TO 651 655 TO 672
286. MATERIAL CONCRETE MEMB 1 2 4 5 7 8 10 11 192 193 195 TO 200 218 222 223 323 -
287. 324 326 TO 332 334 TO 344 346 TO 354 356 357 359 360 362 TO 366 380 381 383 -
288. 390 391 394 395 397 398 401 402 404 405 408 409 411 412 414 415 418 419 421 -
289. 422 424 425 428 429 431 432 434 435 438 439 441 442 444 445 447 448 451 452 -
290. 454 455 457 458 460 461 464 TO 467 471 TO 476 480 TO 485 489 TO 545 704
291. MATERIAL STEEL MEMB 12 14 TO 26 28 30 TO 191 201 202 204 TO 211 216 217 219 -
292. 220 TO 221 228 TO 231 236 TO 243 248 TO 257 259 261 262 264 TO 268 270 272 -
293. 273 275 276 278 280 281 283 TO 285 287 289 290 293 TO 295 299 TO 302 304 -
294. 306 308 310 311 313 315 316 318 320 321 621 TO 703
295. MATERIAL MUROS MEMB 382 384 385 392 393 396 399 400 403 406 407 410 413 416 -
296. 417 420 423 426 427 430 433 436 437 440 443 446 449 450 453 456 459 462 463
297. MATERIAL LOSAS MEMB 546 548 550 552 554 556 558 560 562 564 565 567 568 570 -
298. 571 TO 577 580 TO 586 592 TO 606 613 TO 620 705 TO 708
299. SUPPORTS
300. 23 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 FIXED
301. 1 3 7 9 11 13 15 17 19 21 196 TO 202 206 208 210 212 214 216 218 220 222 224 -
302. 226 228 230 232 234 236 238 240 242 244 246 248 TO 252 256 TO 261 -
303. 265 TO 270 274 TO 330 FIXED BUT MX MY MZ KFX 10000 KFY 1000 KFZ 10000
304. MEMBER RELEASE
305. 216 219 228 236 240 248 252 256 257 259 261 262 264 267 268 270 272 273 275 -
306. 276 278 280 281 283 302 304 306 310 315 320 START MX MY MZ
307. 219 256 257 259 261 262 264 267 268 270 272 273 275 276 278 280 281 283 284 -
308. 302 304 306 310 315 320 END MX MY MZ
309. LOAD 1 CARGA MUERTA
310. SELFWEIGHT Y -1
311. FLOOR LOAD
312. YRANGE 3 3 FLOAD -0.586 GY

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**NOTE** about Floor/OneWay Loads/Weights.
  Please note that depending on the shape of the floor you may
  have to break up the FLOOR/ONEWAY LOAD into multiple commands.
  For details please refer to Technical Reference Manual
  Section 5.32.4.2 Note d and/or "5.32.4.3 Note f.

  313. MEMBER LOAD
  314. 192 193 195 TO 200 217 TO 219 222 223 252 TO 255 287 289 290 293 TO 295 308 -
  315. 313 318 390 394 397 401 404 408 411 414 418 421 424 428 431 434 438 441 444 -
  316. 447 451 454 457 460 UNI GY -0.15
  317. 204 206 207 209 266 285 299 TO 301 311 316 321 UNI GY -0.2
  318. 42 TO 53 66 TO 71 82 TO 91 102 TO 111 113 115 117 119 121 123 125 127 129 -
  319. 131 133 135 137 139 141 143 145 147 149 151 153 155 157 159 161 163 165 167 -
  320. 169 171 173 175 177 179 181 183 185 187 189 191 621 TO 633 688 TO 694 697 -
  321. 698 TO 703 UNI GY -0.132
  322. 30 TO 41 72 TO 81 92 TO 101 112 114 116 118 120 122 124 126 128 130 132 134 -
  323. 136 138 140 142 144 146 148 150 152 154 156 158 160 162 164 166 168 170 172 -
  324. 174 176 178 180 182 184 186 188 190 634 TO 651 655 TO 672 UNI GY -0.074
  325. 54 TO 65 652 TO 654 673 TO 687 695 696 UNI GY -0.037
  326. LOAD 2 CARGA VIVA MÁXIMA
  327. FLOOR LOAD
  328. YRANGE 3 3 FLOAD -0.1 GY
  329. MEMBER LOAD
  330. 42 TO 53 66 TO 71 82 TO 91 102 TO 111 113 115 117 119 121 123 125 127 129 -
  331. 131 133 135 137 139 141 143 145 147 149 151 153 155 157 159 161 163 165 167 -
  332. 169 171 173 175 177 179 181 183 185 187 189 191 621 TO 633 688 TO 694 697 -
  333. 698 TO 703 UNI GY -0.044
  334. 30 TO 41 72 TO 81 92 TO 101 112 114 116 118 120 122 124 126 128 130 132 134 -
  335. 136 138 140 142 144 146 148 150 152 154 156 158 160 162 164 166 168 170 172 -
  336. 174 176 178 180 182 184 186 188 190 634 TO 651 655 TO 672 UNI GY -0.025
  337. 54 TO 65 652 TO 654 673 TO 687 695 696 UNI GY -0.012
  338. LOAD 3 CARGA VIVA ACCIDENTAL
  339. FLOOR LOAD
  340. YRANGE 3 3 FLOAD -0.07 GY
  341. MEMBER LOAD
  342. 42 TO 53 66 TO 71 82 TO 91 102 TO 111 113 115 117 119 121 123 125 127 129 -
  343. 131 133 135 137 139 141 143 145 147 149 151 153 155 157 159 161 163 165 167 -
  344. 169 171 173 175 177 179 181 183 185 187 189 191 621 TO 633 688 TO 694 697 -
  345. 698 TO 703 UNI GY -0.023
  346. 30 TO 41 72 TO 81 92 TO 101 112 114 116 118 120 122 124 126 128 130 132 134 -
  347. 136 138 140 142 144 146 148 150 152 154 156 158 160 162 164 166 168 170 172 -
  348. 174 176 178 180 182 184 186 188 190 634 TO 651 655 TO 672 UNI GY -0.003
  349. 54 TO 65 652 TO 654 673 TO 687 695 696 UNI GY -0.003
  350. LOAD 4 MODOS DE VIBRAR
  351. SELFWEIGHT X 1
  352. SELFWEIGHT Z 1
  353. FLOOR LOAD
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354. YRANGE 3 3 FLOAD 0.686 GX
355. YRANGE 3 3 FLOAD 0.686 GZ
356. MEMBER LOAD
357. 192 193 195 TO 200 217 TO 219 222 223 252 TO 255 287 289 290 293 TO 295 308 -
358. 313 318 390 394 397 401 404 408 411 414 418 421 424 428 431 434 438 441 444 -
359. 447 451 454 457 460 UNI GX 0.15
360. 204 206 207 209 266 285 299 TO 301 311 316 321 UNI GX 0.2
361. 192 193 195 TO 200 217 TO 219 222 223 252 TO 255 287 289 290 293 TO 295 308 -
362. 313 318 390 394 397 401 404 408 411 414 418 421 424 428 431 434 438 441 444 -
363. 447 451 454 457 460 UNI GZ 0.15
364. 204 206 207 209 266 285 299 TO 301 311 316 321 UNI GZ 0.2
365. 42 TO 53 66 TO 71 82 TO 91 102 TO 111 113 115 117 119 121 123 125 127 129 -
366. 131 133 135 137 139 141 143 145 147 149 151 153 155 157 159 161 163 165 167 -
367. 169 171 173 175 177 179 181 183 185 187 189 191 621 TO 633 688 TO 694 697 -
368. 698 TO 703 UNI GX 0.155
369. 30 TO 41 72 TO 81 92 TO 101 112 114 116 118 120 122 124 126 128 130 132 134 -
370. 136 138 140 142 144 146 148 150 152 154 156 158 160 162 164 166 168 170 172 -
371. 174 176 178 180 182 184 186 188 190 634 TO 651 655 TO 672 UNI GX 0.077
372. 54 TO 65 652 TO 654 673 TO 687 695 696 UNI GX 0.04
373. 42 TO 53 66 TO 71 82 TO 91 102 TO 111 113 115 117 119 121 123 125 127 129 -
374. 131 133 135 137 139 141 143 145 147 149 151 153 155 157 159 161 163 165 167 -
375. 169 171 173 175 177 179 181 183 185 187 189 191 621 TO 633 688 TO 694 697 -
376. 698 TO 703 UNI GZ 0.155
377. 30 TO 41 72 TO 81 92 TO 101 112 114 116 118 120 122 124 126 128 130 132 134 -
378. 136 138 140 142 144 146 148 150 152 154 156 158 160 162 164 166 168 170 172 -
379. 174 176 178 180 182 184 186 188 190 634 TO 651 655 TO 672 UNI GZ 0.077
380. 54 TO 65 652 TO 654 673 TO 687 695 696 UNI GZ 0.04
381. SPECTRUM SRSS X 1 Z 1 ACC SCALE 9.8 DAMP 0.05
382. 0 0.04; 0.03 0.047; 0.09 0.058; 0.12 0.063; 0.18 0.07; 0.24 0.076; 0.27 0.078
383. 0.3 0.08; 1.5 0.08; 2.5 0.057; 3.5 0.045; 4 0.042; 5 0.036
384. LOAD 5 SISMO EN X
385. SPECTRUM SRSS X 1 ACC SCALE 9.8 DAMP 0.05
386. 0 0.04; 0.03 0.047; 0.09 0.058; 0.12 0.063; 0.18 0.07; 0.24 0.076; 0.27 0.078
387. 0.3 0.08; 1.5 0.08; 2.5 0.057; 3.5 0.045; 4 0.042; 5 0.036
388. LOAD 6 SISMO EN Z
389. SPECTRUM SRSS Z 1 ACC SCALE 9.8 DAMP 0.05
390. 0 0.04; 0.03 0.047; 0.09 0.058; 0.12 0.063; 0.18 0.07; 0.24 0.076; 0.27 0.078
391. 0.3 0.08; 1.5 0.08; 2.5 0.057; 3.5 0.045; 4 0.042; 5 0.036
392. LOAD COMB 7 (CM+CVMAX)
393. 1 1.0 2 1.0
394. LOAD COMB 8 0.75(CM+CV-SX)
395. 1 0.75 3 0.75 5 -0.75
396. LOAD COMB 9 0.75(CM+CV+SX)
397. 1 0.75 3 0.75 5 0.75
398. LOAD COMB 10 0.75(CM+CV+SX-0.3SZ)
399. 1 0.75 3 0.75 5 0.75 6 -0.225
400. LOAD COMB 11 0.75(CM+CV-SX+0.3SZ)
401. 1 0.75 3 0.75 5 -0.75 6 0.225
402. LOAD COMB 12 0.75(CM+CV-SX-0.3SZ)
403. 1 0.75 3 0.75 5 -0.75 6 -0.225
404. LOAD COMB 13 0.75(CM+CV+SX+0.3SZ)
405. 1 0.75 3 0.75 5 0.75 6 0.225
406. LOAD COMB 14 0.75(CM+CV+SZ)
407. 1 0.75 3 0.75 6 0.75
408. LOAD COMB 15 0.75(CM+CV-SZ)
409. 1 0.75 3 0.75 6 -0.75
```

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410. LOAD COMB 16 0.75(CM+CV+SZ+0.3SX)
411. 1 0.75 3 0.75 6 0.75 5 0.225
412. LOAD COMB 17 0.75(CM+CV+SZ-0.3SX)
413. 1 0.75 3 0.75 6 0.75 5 -0.225
414. LOAD COMB 18 0.75(CM+CV-SZ-0.3SX)
415. 1 0.75 3 0.75 6 -0.75 5 -0.225
416. LOAD COMB 19 0.75(CM+CV-SZ+0.3SX)
417. 1 0.75 3 0.75 6 -0.75 5 0.225
418. LOAD COMB 20 1.4(CM+CVMAX)
419. 1 1.4 2 1.4
420. LOAD COMB 21 1.1(CM+CV-SX)
421. 1 1.1 3 1.1 5 -1.1
422. LOAD COMB 22 1.1(CM+CV+SX)
423. 1 1.1 3 1.1 5 1.1
424. LOAD COMB 23 1.1(CM+CV+SX-0.3SZ)
425. 1 1.1 3 1.1 5 1.1 6 -0.33
426. LOAD COMB 24 1.1(CM+CV-SX+0.3SZ)
427. 1 1.1 3 1.1 5 -1.1 6 0.33
428. LOAD COMB 25 1.1(CM+CV-SX-0.3SZ)
429. 1 1.1 3 1.1 5 -1.1 6 -0.33
430. LOAD COMB 26 1.1(CM+CV+SX+0.3SZ)
431. 1 1.1 3 1.1 5 1.1 6 0.33
432. LOAD COMB 27 1.1(CM+CV+SZ)
433. 1 1.1 3 1.1 6 1.1
434. LOAD COMB 28 1.1(CM+CV-SZ)
435. 1 1.1 3 1.1 6 -1.1
436. LOAD COMB 29 1.1(CM+CV+SZ+0.3SX)
437. 1 1.1 3 1.1 6 1.1 5 0.33
438. LOAD COMB 30 1.1(CM+CV+SZ-0.3SX)
439. 1 1.1 3 1.1 6 1.1 5 -0.33
440. LOAD COMB 31 1.1(CM+CV-SZ-0.3SX)
441. 1 1.1 3 1.1 6 -1.1 5 -0.33
442. LOAD COMB 32 1.1(CM+CV-SZ+0.3SX)
443. 1 1.1 3 1.1 6 -1.1 5 0.33
444. PERFORM ANALYSIS

** WARNING ** A SOFT MATERIAL WITH (1.0 / 1.842E+01) TIMES THE STIFFNESS OF
             CONCRETE ENTERED. PLEASE CHECK.




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

  NUMBER OF JOINTS        351  NUMBER OF MEMBERS      515
  NUMBER OF PLATES         88  NUMBER OF SOLIDS         0
  NUMBER OF SURFACES        0  NUMBER OF SUPPORTS     128


        SOLVER USED IS THE OUT-OF-CORE BASIC SOLVER
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    STAAD SPACE                                             -- PAGE NO.   10

      ORIGINAL/FINAL BAND-WIDTH=   309/    38/    234 DOF
    TOTAL      PRIMARY LOAD CASES =      6, TOTAL DEGREES OF FREEDOM =    2010
    TOTAL LOAD COMBINATION  CASES =    26  SO FAR.
      SIZE OF STIFFNESS MATRIX =      471 DOUBLE  KILO-WORDS
      REQRD/AVAIL. DISK SPACE  =     21.1/ 425350.7 MB


      *      20 TRIVIAL MASS TERMS SET TO ZERO.
    NUMBER OF MODES REQUESTED              =     6
    NUMBER OF EXISTING MASSES IN THE MODEL =   746
    NUMBER OF MODES THAT WILL BE USED      =     6

      ***
    ─────────────────────────────EIGENSOLUTION──────────────────────────────

    : SUBSPACE METHOD ***



    STAAD SPACE                                             -- PAGE NO.   11

            CALCULATED FREQUENCIES FOR LOAD CASE       4

        MODE          FREQUENCY(CYCLES/SEC)      PERIOD(SEC)      ACCURACY


         1                  1.036                0.96545        1.678E-16
         2                  1.953                0.51205        0.000E+00
         3                  1.979                0.50526        1.654E-15
         4                  2.694                0.37124        1.984E-16
         5                  4.117                0.24287        8.386E-09
         6                  4.164                0.24013        7.426E-10
```

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

            CALCULATED FREQUENCIES FOR LOAD CASE        4

      MODE           FREQUENCY(CYCLES/SEC)          PERIOD(SEC)      ACCURACY


       7                     4.896                    0.20426       2.250E-08
       8                     5.274                    0.18961       2.551E-05
       9                     5.535                    0.18068       2.010E-07
      10                     5.914                    0.16908       2.808E-05




   C O M P O S I T E   D A M P I N G   SUMMARY

MODE   STRAIN ENERGY    DAMP*ENERGY   COMPOSITE DAMPING

   1   3.435522E+00    1.033526E-01      0.0301
   2   1.345158E+00    4.035639E-02      0.0300
   3   1.375494E+00    4.133082E-02      0.0300
   4   2.612876E+01    7.892049E-01      0.0302
   5   1.121881E+02    3.464741E+00      0.0309
   6   2.310654E+02    7.438806E+00      0.0322

────────────────────────────────────── RESPONSE SPECTRUM LOAD
4
───────────────────────────────────────────────────────────────────


   RESPONSE LOAD CASE        4




        MODAL WEIGHT  (MODAL MASS TIMES g) IN MTON         GENERALIZED
   MODE        X               Y               Z              WEIGHT

     1     5.204014E+01   2.917748E-25   1.664876E-03     2.843789E+01
     2     1.114190E-03   5.584054E-21   3.929918E+00     3.129172E+00
     3     2.291850E-02   6.100955E-21   6.377046E+00     3.119293E+00
     4     4.772151E-03   2.310685E-24   2.754669E-03     3.197567E+01
     5     3.068706E+01   5.953650E-20   1.341429E+02     5.907483E+01
     6     5.239302E+01   3.881566E-20   1.512800E+02     1.302860E+02




   SRSS          MODAL COMBINATION METHOD USED.
   DYNAMIC WEIGHT X Y Z   4.471038E+02  3.822179E-08  4.471038E+02 MTON
   MISSING WEIGHT X Y Z  -3.119548E+02 -3.822179E-08 -1.513695E+02 MTON
    MODAL WEIGHT X Y Z   1.351490E+02  1.100398E-19  2.957343E+02 MTON

---

**Proyecto Estructural**    **CENTRO DE SERVICIOS INFONAVIT "CESI"**
Memoria de cálculo

| MODE | ACCELERATION-G | DAMPING |
|------|----------------|---------|
| 1 | 0.07995 | 0.05000 |
| 2 | 0.07995 | 0.05000 |
| 3 | 0.07995 | 0.05000 |
| 4 | 0.07995 | 0.05000 |
| 5 | 0.07614 | 0.05000 |
| 6 | 0.07596 | 0.05000 |

─────────────────────────MODAL BASE

ACTIONS
──────────────────────────────────────────────────────────────────────

MODAL BASE ACTIONS        FORCES IN MTON LENGTH IN METE
------------------------------------------------------------

|      |        |       |      |       | MOMENTS ARE ABOUT THE ORIGIN | | |
| MODE | PERIOD | FX | FY | FZ | MX | MY | MZ |
|------|--------|----|----|----|----|----|----|
| 1 | 0.965 | 4.18 | 0.00 | 0.02 | 0.05 | 53.93 | -21.71 |
| 2 | 0.512 | -0.01 | 0.00 | 0.31 | 1.62 | -13.15 | 0.02 |
| 3 | 0.505 | 0.03 | 0.00 | 0.54 | 2.58 | -4.16 | -0.12 |
| 4 | 0.371 | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 | 0.00 |
| 5 | 0.243 | -2.55 | 0.00 | 5.33 | 22.66 | -160.06 | 10.23 |
| 6 | 0.240 | 10.74 | 0.00 | 18.25 | 66.51 | -75.49 | -43.05 |

─────────────────────────PARTICIPATION

FACTORS
──────────────────────────────────────────────────────────────────────

MASS  PARTICIPATION FACTORS IN PERCENT          BASE SHEAR IN MTON
--------------------------------------          ------------------

| MODE | X | Y | Z | SUMM-X | SUMM-Y | SUMM-Z | X | Y | Z |
|------|---|---|---|--------|--------|--------|---|---|---|
| 1 | 11.64 | 0.00 | 0.00 | 11.639 | 0.000 | 0.000 | 4.16 | 0.00 | 0.00 |
| 2 | 0.00 | 0.00 | 0.88 | 11.640 | 0.000 | 0.879 | 0.00 | 0.00 | 0.31 |
| 3 | 0.01 | 0.00 | 1.43 | 11.645 | 0.000 | 2.306 | 0.00 | 0.00 | 0.51 |
| 4 | 0.00 | 0.00 | 0.00 | 11.646 | 0.000 | 2.306 | 0.00 | 0.00 | 0.00 |
| 5 | 6.86 | 0.00 | 30.00 | 18.509 | 0.000 | 32.309 | 2.34 | 0.00 | 10.21 |
| 6 | 11.72 | 0.00 | 33.84 | 30.228 | 0.000 | 66.144 | 3.98 | 0.00 | 11.49 |

```
                                          --------------------------
                        TOTAL SRSS  SHEAR      6.21    0.00     15.39
                        TOTAL 10PCT SHEAR      7.56    0.00     21.72
                        TOTAL ABS   SHEAR     10.48    0.00     22.53
```

─────────────────────────── RESPONSE SPECTRUM LOAD
5
──────────────────────────────────────────────────────────────────────

    RESPONSE LOAD CASE      5

```
        MODAL WEIGHT (MODAL MASS TIMES g) IN MTON        GENERALIZED
   MODE       X               Y               Z            WEIGHT

     1      5.204014E+01   2.917748E-25   1.664876E-03    2.843789E+01
     2      1.114190E-03   5.584054E-21   3.929918E+00    3.129172E+00
     3      2.291850E-02   6.100955E-21   6.377046E+00    3.119293E+00
     4      4.772151E-03   2.310685E-24   2.754669E-03    3.197567E+01
     5      3.068706E+01   5.953650E-20   1.341429E+02    5.907483E+01
     6      5.239302E+01   3.881566E-20   1.512800E+02    1.302860E+02
```

```
   SRSS         MODAL COMBINATION METHOD USED.
   DYNAMIC WEIGHT X Y Z   4.471038E+02  3.822179E-08   4.471038E+02 MTON
   MISSING WEIGHT X Y Z  -3.119548E+02 -3.822179E-08  -1.513695E+02 MTON
    MODAL WEIGHT X Y Z   1.351490E+02  1.100398E-19   2.957343E+02 MTON
```

```
           MODE                ACCELERATION-G    DAMPING
           ----                --------------    -------

             1                    0.07995         0.05000
             2                    0.07995         0.05000
             3                    0.07995         0.05000
             4                    0.07995         0.05000
             5                    0.07614         0.05000
             6                    0.07596         0.05000
```

MODAL BASE
ACTIONS

```
   MODAL BASE ACTIONS      FORCES IN MTON LENGTH IN METE
   ----------------------------------------------------------
                                                 MOMENTS ARE ABOUT THE ORIGIN
    MODE    PERIOD      FX      FY      FZ       MX        MY        MZ

      1     0.965     4.16    0.00    0.02      0.05     53.62     -21.59
      2     0.512     0.00    0.00   -0.01     -0.03      0.23       0.00
      3     0.505     0.00    0.00    0.03      0.15     -0.24      -0.01
      4     0.371     0.00    0.00    0.00      0.00      0.15       0.01
      5     0.243     2.34    0.00   -4.89    -20.77    146.74      -9.38
      6     0.240     3.98    0.00    6.76     24.64    -27.97     -15.95
```

**Proyecto Estructural**   CENTRO DE SERVICIOS INFONAVIT "CESI"
Memoria de cálculo

──────────────────────────────────── PARTICIPATION

FACTORS
────────────────────────────────────────────────────────────

```
           MASS  PARTICIPATION FACTORS IN PERCENT        BASE SHEAR IN MTON
           ---------------------------------------       ------------------

   MODE     X      Y     Z     SUMM-X   SUMM-Y   SUMM-Z      X       Y       Z

    1     11.64   0.00  0.00   11.639    0.000    0.000    4.16    0.00    0.00
    2      0.00   0.00  0.88   11.640    0.000    0.879    0.00    0.00    0.00
    3      0.01   0.00  1.43   11.645    0.000    2.306    0.00    0.00    0.00
    4      0.00   0.00  0.00   11.646    0.000    2.306    0.00    0.00    0.00
    5      6.86   0.00 30.00   18.509    0.000   32.309    2.34    0.00    0.00
    6     11.72   0.00 33.84   30.228    0.000   66.144    3.98    0.00    0.00
                                                        ----------------------------
                                         TOTAL SRSS  SHEAR    6.21    0.00    0.00
                                         TOTAL 10PCT SHEAR    7.56    0.00    0.00
                                         TOTAL ABS   SHEAR   10.48    0.00    0.00
```

──────────────────────────────── RESPONSE SPECTRUM LOAD

6
────────────────────────────────────────────────────────────

```
       RESPONSE LOAD CASE       6



           MODAL WEIGHT (MODAL MASS TIMES g) IN MTON        GENERALIZED
       MODE        X                 Y                Z         WEIGHT

        1       5.204014E+01    2.917748E-25    1.664876E-03    2.843789E+01
        2       1.114190E-03    5.584054E-21    3.929918E+00    3.129172E+00
        3       2.291850E-02    6.100955E-21    6.377046E+00    3.119293E+00
        4       4.772151E-03    2.310685E-24    2.754669E-03    3.197567E+01
        5       3.068706E+01    5.953650E-20    1.341429E+02    5.907483E+01
        6       5.239302E+01    3.881566E-20    1.512800E+02    1.302860E+02



       SRSS         MODAL COMBINATION METHOD USED.
       DYNAMIC WEIGHT X Y Z    4.471038E+02   3.822179E-08   4.471038E+02 MTON
       MISSING WEIGHT X Y Z   -3.119548E+02  -3.822179E-08  -1.513695E+02 MTON
         MODAL WEIGHT X Y Z    1.351490E+02   1.100398E-19   2.957343E+02 MTON
```

```
        MODE                  ACCELERATION-G    DAMPING
        ----                  --------------    -------

          1                      0.07995         0.05000
          2                      0.07995         0.05000
          3                      0.07995         0.05000
          4                      0.07995         0.05000
          5                      0.07614         0.05000
          6                      0.07596         0.05000
```

──────────────────────────────MODAL BASE
ACTIONS
───────────────────────────────────────────────────────────────

```
  MODAL BASE ACTIONS       FORCES IN MTON LENGTH IN METE
  -----------------------------------------------------------
                                               MOMENTS ARE ABOUT THE ORIGIN
   MODE     PERIOD      FX        FY        FZ        MX        MY        MZ

     1      0.965      0.02      0.00      0.00      0.00      0.30     -0.12
     2      0.512     -0.01      0.00      0.31      1.64    -13.37      0.02
     3      0.505      0.03      0.00      0.51      2.43     -3.92     -0.12
     4      0.371      0.00      0.00      0.00      0.00     -0.11     -0.01
     5      0.243     -4.89      0.00     10.21     43.44   -306.80     19.60
     6      0.240      6.76      0.00     11.49     41.87    -47.52    -27.10
```

──────────────────────────────PARTICIPATION
FACTORS
───────────────────────────────────────────────────────────────

```
       MASS  PARTICIPATION FACTORS IN PERCENT       BASE SHEAR IN MTON
       -------------------------------------        ------------------

 MODE   X     Y     Z     SUMM-X  SUMM-Y  SUMM-Z      X      Y      Z

   1  11.64  0.00  0.00  11.639   0.000   0.000    0.00   0.00   0.00
   2   0.00  0.00  0.88  11.640   0.000   0.879    0.00   0.00   0.31
   3   0.01  0.00  1.43  11.645   0.000   2.306    0.00   0.00   0.51
   4   0.00  0.00  0.00  11.646   0.000   2.306    0.00   0.00   0.00
   5   6.86  0.00 30.00  18.509   0.000  32.309    0.00   0.00  10.21
   6  11.72  0.00 33.84  30.228   0.000  66.144    0.00   0.00  11.49
                                                 --------------------------
                                  TOTAL SRSS  SHEAR   0.00   0.00  15.39
                                  TOTAL 10PCT SHEAR   0.00   0.00  21.72
                                  TOTAL ABS   SHEAR   0.00   0.00  22.53
```

```
  445. PRINT JOINT DISPLACEMENTS LIST 2 4 8 10 12 14 16 18 20 22 24 28 30 32 34 36 -
```
──────────────────────── JOINT    DISPLACE LIST    2
───────────────────────────────────────────────────────────────

```
  446. 38 40 42 44 46 48 50 52 56 59 TO 138 141 144 TO 151 155 TO 157 161 TO 166 -
  447. 170 TO 180 184 TO 187 189 190 192 193 195 205 207 209 211 213 215 217 219 -
  448. 221 223 225 227 229 231 233 235 237 239 241 243 245 247 331 TO 349 362 367 -
  449. 370 373 376 379 382 385
```

JOINT DISPLACEMENT (CM   RADIANS)    STRUCTURE TYPE = SPACE
-----------------

| JOINT | LOAD | X-TRANS | Y-TRANS | Z-TRANS | X-ROTAN | Y-ROTAN | Z-ROTAN |
|---|---|---|---|---|---|---|---|
| 2 | 1 | -0.0071 | -0.4381 | -0.0777 | 0.0000 | 0.0000 | -0.0001 |
|  | 2 | -0.0005 | -0.0283 | -0.0106 | 0.0000 | 0.0000 | 0.0000 |
|  | 3 | -0.0002 | -0.0193 | -0.0065 | 0.0000 | 0.0000 | 0.0000 |
|  | 4 | 0.0165 | 0.0616 | 0.1235 | 0.0003 | 0.0000 | 0.0001 |
|  | 5 | 0.0074 | 0.0245 | 0.0477 | 0.0001 | 0.0000 | 0.0000 |
|  | 6 | 0.0105 | 0.0387 | 0.0776 | 0.0002 | 0.0000 | 0.0001 |
|  | 7 | -0.0076 | -0.4665 | -0.0883 | -0.0001 | 0.0000 | -0.0001 |
|  | 8 | -0.0110 | -0.3615 | -0.0989 | -0.0001 | 0.0000 | -0.0001 |
|  | 9 | 0.0000 | -0.3248 | -0.0274 | 0.0001 | 0.0000 | -0.0001 |
|  | 10 | -0.0023 | -0.3335 | -0.0449 | 0.0000 | 0.0000 | -0.0001 |
|  | 11 | -0.0087 | -0.3527 | -0.0814 | -0.0001 | 0.0000 | -0.0001 |
|  | 12 | -0.0134 | -0.3702 | -0.1164 | -0.0002 | 0.0000 | -0.0001 |
|  | 13 | 0.0024 | -0.3160 | -0.0100 | 0.0001 | 0.0000 | 0.0000 |
|  | 14 | 0.0024 | -0.3141 | -0.0050 | 0.0001 | 0.0000 | 0.0000 |
|  | 15 | -0.0134 | -0.3722 | -0.1214 | -0.0002 | 0.0000 | -0.0001 |
|  | 16 | 0.0041 | -0.3085 | 0.0058 | 0.0001 | 0.0001 | 0.0000 |
|  | 17 | 0.0007 | -0.3196 | -0.0157 | 0.0001 | 0.0000 | -0.0001 |
|  | 18 | -0.0151 | -0.3777 | -0.1321 | -0.0002 | 0.0000 | -0.0001 |
|  | 19 | -0.0117 | -0.3667 | -0.1106 | -0.0002 | 0.0000 | -0.0001 |
|  | 20 | -0.0107 | -0.6531 | -0.1236 | -0.0001 | 0.0001 | -0.0002 |
|  | 21 | -0.0162 | -0.5301 | -0.1451 | -0.0002 | 0.0000 | -0.0002 |
|  | 22 | 0.0000 | -0.4763 | -0.0402 | 0.0001 | 0.0001 | -0.0001 |
|  | 23 | -0.0034 | -0.4891 | -0.0658 | 0.0000 | 0.0001 | -0.0001 |
|  | 24 | -0.0127 | -0.5174 | -0.1195 | -0.0001 | 0.0000 | -0.0001 |
|  | 25 | -0.0196 | -0.5429 | -0.1707 | -0.0003 | 0.0000 | -0.0002 |
|  | 26 | 0.0035 | -0.4635 | -0.0146 | 0.0002 | 0.0001 | -0.0001 |
|  | 27 | 0.0035 | -0.4606 | -0.0073 | 0.0002 | 0.0001 | -0.0001 |
|  | 28 | -0.0197 | -0.5458 | -0.1780 | -0.0003 | 0.0000 | -0.0002 |
|  | 29 | 0.0060 | -0.4525 | 0.0085 | 0.0002 | 0.0001 | -0.0001 |
|  | 30 | 0.0011 | -0.4687 | -0.0230 | 0.0001 | 0.0001 | -0.0001 |
|  | 31 | -0.0221 | -0.5539 | -0.1937 | -0.0003 | 0.0000 | -0.0002 |
|  | 32 | -0.0172 | -0.5378 | -0.1623 | -0.0002 | 0.0000 | -0.0002 |
| 4 | 1 | -0.0068 | -0.4315 | -0.0844 | 0.0014 | 0.0000 | 0.0000 |
|  | 2 | -0.0005 | -0.0297 | -0.0123 | 0.0002 | 0.0000 | 0.0000 |
|  | 3 | -0.0002 | -0.0205 | -0.0074 | 0.0002 | 0.0000 | 0.0000 |
|  | 4 | 0.0154 | 0.0361 | 0.1163 | 0.0004 | 0.0000 | 0.0001 |
|  | 5 | 0.0070 | 0.0143 | 0.0444 | 0.0001 | 0.0000 | 0.0000 |
|  | 6 | 0.0098 | 0.0226 | 0.0729 | 0.0002 | 0.0000 | 0.0000 |
|  | 7 | -0.0073 | -0.4612 | -0.0967 | 0.0016 | 0.0000 | 0.0000 |
|  | 8 | -0.0105 | -0.3497 | -0.1021 | 0.0011 | 0.0000 | 0.0000 |
|  | 9 | 0.0000 | -0.3282 | -0.0356 | 0.0013 | 0.0000 | 0.0000 |
|  | 10 | -0.0022 | -0.3333 | -0.0520 | 0.0012 | 0.0000 | 0.0000 |
|  | 11 | -0.0082 | -0.3446 | -0.0857 | 0.0011 | 0.0000 | 0.0000 |
|  | 12 | -0.0127 | -0.3548 | -0.1185 | 0.0010 | 0.0000 | 0.0000 |
|  | 13 | 0.0022 | -0.3232 | -0.0192 | 0.0013 | 0.0001 | 0.0000 |
|  | 14 | 0.0021 | -0.3220 | -0.0142 | 0.0014 | 0.0001 | 0.0000 |

JOINT DISPLACEMENT (CM   RADIANS)    STRUCTURE TYPE = SPACE
-----------------

| JOINT | LOAD | X-TRANS | Y-TRANS | Z-TRANS | X-ROTAN | Y-ROTAN | Z-ROTAN |
|---|---|---|---|---|---|---|---|
| | 15 | -0.0126 | -0.3559 | -0.1235 | 0.0010 | 0.0000 | 0.0000 |
| | 16 | 0.0037 | -0.3188 | -0.0042 | 0.0014 | 0.0001 | 0.0000 |
| | 17 | 0.0006 | -0.3252 | -0.0241 | 0.0013 | 0.0000 | 0.0000 |
| | 18 | -0.0142 | -0.3592 | -0.1335 | 0.0010 | 0.0000 | 0.0000 |
| | 19 | -0.0110 | -0.3527 | -0.1135 | 0.0011 | 0.0000 | 0.0000 |
| | 20 | -0.0102 | -0.6457 | -0.1353 | 0.0023 | 0.0001 | 0.0000 |
| | 21 | -0.0153 | -0.5129 | -0.1498 | 0.0016 | 0.0000 | 0.0000 |
| | 22 | 0.0000 | -0.4814 | -0.0522 | 0.0019 | 0.0001 | 0.0000 |
| | 23 | -0.0033 | -0.4889 | -0.0762 | 0.0018 | 0.0001 | 0.0000 |
| | 24 | -0.0121 | -0.5054 | -0.1257 | 0.0017 | 0.0000 | 0.0000 |
| | 25 | -0.0186 | -0.5204 | -0.1739 | 0.0015 | 0.0000 | 0.0000 |
| | 26 | 0.0032 | -0.4740 | -0.0281 | 0.0020 | 0.0001 | 0.0001 |
| | 27 | 0.0031 | -0.4723 | -0.0208 | 0.0020 | 0.0001 | 0.0001 |
| | 28 | -0.0185 | -0.5220 | -0.1812 | 0.0015 | 0.0000 | 0.0000 |
| | 29 | 0.0054 | -0.4676 | -0.0061 | 0.0020 | 0.0001 | 0.0001 |
| | 30 | 0.0008 | -0.4770 | -0.0354 | 0.0019 | 0.0001 | 0.0001 |
| | 31 | -0.0208 | -0.5268 | -0.1958 | 0.0014 | 0.0000 | 0.0000 |
| | 32 | -0.0162 | -0.5173 | -0.1665 | 0.0015 | 0.0000 | 0.0000 |
| 8 | 1 | -0.0051 | -0.4337 | -0.0928 | 0.0019 | 0.0000 | 0.0000 |
| | 2 | -0.0004 | -0.0321 | -0.0148 | 0.0003 | 0.0000 | 0.0000 |
| | 3 | -0.0001 | -0.0223 | -0.0088 | 0.0002 | 0.0000 | 0.0000 |
| | 4 | 0.0128 | 0.0141 | 0.0974 | 0.0002 | 0.0000 | 0.0000 |
| | 5 | 0.0062 | 0.0056 | 0.0369 | 0.0001 | 0.0000 | 0.0000 |
| | 6 | 0.0081 | 0.0088 | 0.0622 | 0.0002 | 0.0000 | 0.0000 |
| | 7 | -0.0054 | -0.4658 | -0.1076 | 0.0022 | 0.0000 | 0.0000 |
| | 8 | -0.0085 | -0.3462 | -0.1038 | 0.0015 | 0.0000 | 0.0000 |
| | 9 | 0.0007 | -0.3378 | -0.0485 | 0.0017 | 0.0000 | 0.0000 |
| | 10 | -0.0011 | -0.3398 | -0.0625 | 0.0016 | 0.0000 | 0.0000 |
| | 11 | -0.0067 | -0.3442 | -0.0898 | 0.0016 | 0.0000 | 0.0000 |
| | 12 | -0.0104 | -0.3482 | -0.1178 | 0.0015 | 0.0000 | 0.0000 |
| | 13 | 0.0026 | -0.3358 | -0.0345 | 0.0017 | 0.0000 | 0.0000 |
| | 14 | 0.0022 | -0.3354 | -0.0295 | 0.0017 | 0.0000 | 0.0000 |
| | 15 | -0.0100 | -0.3486 | -0.1228 | 0.0015 | 0.0000 | 0.0000 |
| | 16 | 0.0036 | -0.3341 | -0.0212 | 0.0018 | 0.0000 | 0.0000 |
| | 17 | 0.0008 | -0.3367 | -0.0378 | 0.0017 | 0.0000 | 0.0000 |
| | 18 | -0.0114 | -0.3499 | -0.1311 | 0.0015 | 0.0000 | 0.0000 |
| | 19 | -0.0086 | -0.3473 | -0.1145 | 0.0015 | 0.0000 | 0.0000 |
| | 20 | -0.0076 | -0.6521 | -0.1507 | 0.0031 | 0.0000 | 0.0000 |
| | 21 | -0.0125 | -0.5078 | -0.1523 | 0.0023 | 0.0000 | 0.0000 |
| | 22 | 0.0011 | -0.4954 | -0.0711 | 0.0025 | 0.0000 | 0.0000 |
| | 23 | -0.0016 | -0.4983 | -0.0916 | 0.0024 | 0.0000 | 0.0000 |
| | 24 | -0.0099 | -0.5049 | -0.1318 | 0.0023 | 0.0000 | 0.0000 |
| | 25 | -0.0152 | -0.5107 | -0.1728 | 0.0022 | 0.0000 | 0.0000 |
| | 26 | 0.0038 | -0.4925 | -0.0506 | 0.0025 | 0.0001 | 0.0000 |
| | 27 | 0.0032 | -0.4919 | -0.0433 | 0.0025 | 0.0001 | 0.0000 |
| | 28 | -0.0147 | -0.5113 | -0.1802 | 0.0022 | 0.0000 | 0.0000 |

JOINT DISPLACEMENT (CM   RADIANS)    STRUCTURE TYPE = SPACE
-----------------

| JOINT | LOAD | X-TRANS | Y-TRANS | Z-TRANS | X-ROTAN | Y-ROTAN | Z-ROTAN |
|-------|------|---------|---------|---------|---------|---------|---------|
|    | 29 | 0.0053 | -0.4901 | -0.0311 | 0.0026 | 0.0001 | 0.0000 |
|    | 30 | 0.0012 | -0.4938 | -0.0554 | 0.0025 | 0.0000 | 0.0000 |
|    | 31 | -0.0167 | -0.5131 | -0.1923 | 0.0022 | 0.0000 | 0.0000 |
|    | 32 | -0.0126 | -0.5094 | -0.1680 | 0.0022 | 0.0000 | 0.0000 |
| 10 | 1 | -0.0041 | -0.4451 | -0.0983 | 0.0026 | 0.0000 | 0.0000 |
|    | 2 | -0.0003 | -0.0336 | -0.0168 | 0.0004 | 0.0000 | 0.0000 |
|    | 3 | -0.0001 | -0.0234 | -0.0098 | 0.0003 | 0.0000 | 0.0000 |
|    | 4 | 0.0117 | 0.0082 | 0.0814 | 0.0001 | 0.0000 | 0.0000 |
|    | 5 | 0.0061 | 0.0033 | 0.0318 | 0.0001 | 0.0000 | 0.0000 |
|    | 6 | 0.0073 | 0.0054 | 0.0553 | 0.0001 | 0.0000 | 0.0000 |
|    | 7 | -0.0044 | -0.4787 | -0.1151 | 0.0030 | 0.0000 | 0.0000 |
|    | 8 | -0.0077 | -0.3538 | -0.1049 | 0.0021 | 0.0000 | 0.0000 |
|    | 9 | 0.0014 | -0.3489 | -0.0572 | 0.0022 | 0.0000 | 0.0000 |
|    | 10 | -0.0002 | -0.3501 | -0.0697 | 0.0022 | 0.0000 | 0.0000 |
|    | 11 | -0.0061 | -0.3526 | -0.0924 | 0.0021 | 0.0000 | 0.0000 |
|    | 12 | -0.0094 | -0.3550 | -0.1173 | 0.0021 | 0.0000 | 0.0000 |
|    | 13 | 0.0030 | -0.3477 | -0.0448 | 0.0022 | 0.0000 | 0.0000 |
|    | 14 | 0.0023 | -0.3473 | -0.0396 | 0.0022 | 0.0000 | 0.0000 |
|    | 15 | -0.0086 | -0.3554 | -0.1225 | 0.0021 | 0.0000 | 0.0000 |
|    | 16 | 0.0037 | -0.3466 | -0.0324 | 0.0022 | 0.0000 | 0.0000 |
|    | 17 | 0.0010 | -0.3480 | -0.0467 | 0.0022 | 0.0000 | 0.0000 |
|    | 18 | -0.0100 | -0.3561 | -0.1296 | 0.0021 | 0.0000 | 0.0000 |
|    | 19 | -0.0073 | -0.3546 | -0.1153 | 0.0021 | 0.0000 | 0.0000 |
|    | 20 | -0.0062 | -0.6702 | -0.1611 | 0.0042 | 0.0000 | 0.0000 |
|    | 21 | -0.0113 | -0.5189 | -0.1538 | 0.0031 | 0.0000 | 0.0000 |
|    | 22 | 0.0021 | -0.5117 | -0.0839 | 0.0032 | 0.0000 | 0.0000 |
|    | 23 | -0.0003 | -0.5134 | -0.1022 | 0.0032 | 0.0000 | 0.0000 |
|    | 24 | -0.0089 | -0.5171 | -0.1356 | 0.0031 | 0.0000 | 0.0000 |
|    | 25 | -0.0137 | -0.5207 | -0.1720 | 0.0031 | 0.0000 | 0.0000 |
|    | 26 | 0.0045 | -0.5099 | -0.0657 | 0.0033 | 0.0000 | 0.0000 |
|    | 27 | 0.0034 | -0.5094 | -0.0581 | 0.0033 | 0.0000 | 0.0000 |
|    | 28 | -0.0126 | -0.5212 | -0.1797 | 0.0031 | 0.0000 | 0.0000 |
|    | 29 | 0.0054 | -0.5083 | -0.0476 | 0.0033 | 0.0001 | 0.0000 |
|    | 30 | 0.0014 | -0.5104 | -0.0685 | 0.0032 | 0.0000 | 0.0000 |
|    | 31 | -0.0147 | -0.5223 | -0.1901 | 0.0030 | 0.0000 | 0.0000 |
|    | 32 | -0.0106 | -0.5201 | -0.1692 | 0.0031 | 0.0000 | 0.0000 |
| 12 | 1 | -0.0035 | -0.4522 | -0.1015 | 0.0024 | 0.0000 | -0.0001 |
|    | 2 | -0.0002 | -0.0343 | -0.0180 | 0.0004 | 0.0000 | 0.0000 |
|    | 3 | -0.0001 | -0.0239 | -0.0104 | 0.0003 | 0.0000 | 0.0000 |
|    | 4 | 0.0110 | 0.0054 | 0.0699 | 0.0001 | 0.0000 | 0.0000 |
|    | 5 | 0.0060 | 0.0023 | 0.0289 | 0.0001 | 0.0000 | 0.0000 |
|    | 6 | 0.0068 | 0.0041 | 0.0520 | 0.0001 | 0.0000 | 0.0000 |
|    | 7 | -0.0037 | -0.4865 | -0.1195 | 0.0028 | 0.0000 | -0.0001 |
|    | 8 | -0.0072 | -0.3588 | -0.1056 | 0.0020 | 0.0000 | 0.0000 |
|    | 9 | 0.0018 | -0.3553 | -0.0623 | 0.0020 | 0.0000 | 0.0000 |
|    | 10 | 0.0003 | -0.3562 | -0.0740 | 0.0020 | 0.0000 | 0.0000 |

```
JOINT DISPLACEMENT (CM   RADIANS)    STRUCTURE TYPE = SPACE
-----------------

JOINT  LOAD   X-TRANS   Y-TRANS   Z-TRANS   X-ROTAN   Y-ROTAN   Z-ROTAN


       11    -0.0056   -0.3579   -0.0939    0.0020    0.0000    0.0000
       12    -0.0087   -0.3597   -0.1173    0.0019    0.0000    0.0000
       13     0.0034   -0.3544   -0.0506    0.0021    0.0000    0.0000
       14     0.0024   -0.3540   -0.0450    0.0021    0.0000    0.0000
       15    -0.0078   -0.3601   -0.1229    0.0019    0.0000    0.0000
       16     0.0038   -0.3534   -0.0385    0.0021    0.0000    0.0000
       17     0.0011   -0.3545   -0.0515    0.0020    0.0000    0.0000
       18    -0.0091   -0.3607   -0.1294    0.0019    0.0000    0.0000
       19    -0.0064   -0.3596   -0.1164    0.0019    0.0000    0.0000
       20    -0.0052   -0.6811   -0.1673    0.0039    0.0000   -0.0001
       21    -0.0105   -0.5262   -0.1549    0.0029    0.0000   -0.0001
       22     0.0027   -0.5211   -0.0913    0.0030    0.0000   -0.0001
       23     0.0005   -0.5225   -0.1085    0.0029    0.0000   -0.0001
       24    -0.0083   -0.5249   -0.1377    0.0029    0.0000   -0.0001
       25    -0.0128   -0.5276   -0.1721    0.0028    0.0000   -0.0001
       26     0.0049   -0.5198   -0.0742    0.0030    0.0000   -0.0001
       27     0.0036   -0.5191   -0.0659    0.0030    0.0001   -0.0001
       28    -0.0114   -0.5282   -0.1803    0.0028    0.0000   -0.0001
       29     0.0056   -0.5184   -0.0564    0.0030    0.0001   -0.0001
       30     0.0016   -0.5199   -0.0755    0.0030    0.0000   -0.0001
       31    -0.0134   -0.5290   -0.1898    0.0028    0.0000   -0.0001
       32    -0.0094   -0.5274   -0.1707    0.0028    0.0000   -0.0001
  14    1    -0.0037   -0.4570   -0.1052    0.0021    0.0000    0.0000
        2    -0.0001   -0.0349   -0.0197    0.0003    0.0000    0.0000
        3     0.0000   -0.0243   -0.0113    0.0002    0.0000    0.0000
        4     0.0101    0.0029    0.0517    0.0001    0.0000    0.0000
        5     0.0059    0.0019    0.0262    0.0001    0.0000    0.0000
        6     0.0063    0.0038    0.0504    0.0001    0.0000    0.0000
        7    -0.0039   -0.4920   -0.1249    0.0024    0.0000    0.0000
        8    -0.0073   -0.3625   -0.1070    0.0017    0.0000    0.0000
        9     0.0016   -0.3596   -0.0677    0.0018    0.0000    0.0000
       10     0.0002   -0.3604   -0.0791    0.0017    0.0000    0.0000
       11    -0.0058   -0.3616   -0.0957    0.0017    0.0000    0.0000
       12    -0.0087   -0.3633   -0.1183    0.0017    0.0000    0.0000
       13     0.0030   -0.3588   -0.0564    0.0018    0.0000    0.0000
       14     0.0019   -0.3582   -0.0496    0.0018    0.0000    0.0000
       15    -0.0075   -0.3639   -0.1251    0.0016    0.0000    0.0000
       16     0.0032   -0.3578   -0.0437    0.0018    0.0000    0.0000
       17     0.0005   -0.3586   -0.0555    0.0018    0.0000    0.0000
       18    -0.0088   -0.3643   -0.1310    0.0016    0.0000    0.0000
       19    -0.0062   -0.3634   -0.1193    0.0017    0.0000    0.0000
       20    -0.0054   -0.6888   -0.1749    0.0033    0.0000    0.0001
       21    -0.0106   -0.5316   -0.1570    0.0025    0.0000    0.0000
       22     0.0024   -0.5274   -0.0993    0.0026    0.0000    0.0000
       23     0.0003   -0.5287   -0.1160    0.0026    0.0000    0.0000
       24    -0.0086   -0.5304   -0.1403    0.0025    0.0000    0.0000
```

JOINT DISPLACEMENT (CM   RADIANS)    STRUCTURE TYPE = SPACE
------------------

| JOINT | LOAD | X-TRANS | Y-TRANS | Z-TRANS | X-ROTAN | Y-ROTAN | Z-ROTAN |
|-------|------|---------|---------|---------|---------|---------|---------|
|       | 25   | -0.0127 | -0.5328 | -0.1736 | 0.0024  | 0.0000  | 0.0000  |
|       | 26   | 0.0044  | -0.5262 | -0.0827 | 0.0026  | 0.0000  | 0.0000  |
|       | 27   | 0.0028  | -0.5254 | -0.0727 | 0.0026  | 0.0000  | 0.0000  |
|       | 28   | -0.0110 | -0.5337 | -0.1836 | 0.0024  | 0.0000  | 0.0000  |
|       | 29   | 0.0047  | -0.5247 | -0.0641 | 0.0027  | 0.0001  | 0.0000  |
|       | 30   | 0.0008  | -0.5260 | -0.0814 | 0.0026  | 0.0000  | 0.0000  |
|       | 31   | -0.0130 | -0.5343 | -0.1922 | 0.0024  | 0.0000  | 0.0000  |
|       | 32   | -0.0091 | -0.5330 | -0.1749 | 0.0024  | 0.0000  | 0.0000  |
| 16    | 1    | -0.0041 | -0.4440 | -0.1079 | 0.0025  | 0.0000  | 0.0001  |
|       | 2    | 0.0000  | -0.0340 | -0.0210 | 0.0004  | 0.0000  | 0.0000  |
|       | 3    | 0.0000  | -0.0236 | -0.0119 | 0.0003  | 0.0000  | 0.0000  |
|       | 4    | 0.0096  | 0.0032  | 0.0369  | 0.0001  | 0.0000  | 0.0000  |
|       | 5    | 0.0058  | 0.0030  | 0.0268  | 0.0000  | 0.0000  | 0.0000  |
|       | 6    | 0.0060  | 0.0051  | 0.0540  | 0.0001  | 0.0000  | 0.0000  |
|       | 7    | -0.0041 | -0.4779 | -0.1289 | 0.0030  | 0.0000  | 0.0001  |
|       | 8    | -0.0074 | -0.3529 | -0.1100 | 0.0021  | 0.0000  | 0.0001  |
|       | 9    | 0.0013  | -0.3484 | -0.0698 | 0.0022  | 0.0000  | 0.0001  |
|       | 10   | -0.0001 | -0.3496 | -0.0820 | 0.0021  | 0.0000  | 0.0001  |
|       | 11   | -0.0061 | -0.3518 | -0.0978 | 0.0021  | 0.0000  | 0.0001  |
|       | 12   | -0.0088 | -0.3541 | -0.1221 | 0.0021  | 0.0000  | 0.0001  |
|       | 13   | 0.0026  | -0.3473 | -0.0576 | 0.0022  | 0.0000  | 0.0001  |
|       | 14   | 0.0014  | -0.3468 | -0.0494 | 0.0022  | 0.0000  | 0.0001  |
|       | 15   | -0.0076 | -0.3545 | -0.1304 | 0.0021  | 0.0000  | 0.0001  |
|       | 16   | 0.0027  | -0.3462 | -0.0433 | 0.0022  | 0.0000  | 0.0001  |
|       | 17   | 0.0001  | -0.3475 | -0.0554 | 0.0022  | 0.0000  | 0.0001  |
|       | 18   | -0.0089 | -0.3552 | -0.1364 | 0.0021  | 0.0000  | 0.0001  |
|       | 19   | -0.0063 | -0.3539 | -0.1244 | 0.0021  | 0.0000  | 0.0001  |
|       | 20   | -0.0058 | -0.6691 | -0.1805 | 0.0041  | 0.0000  | 0.0002  |
|       | 21   | -0.0109 | -0.5176 | -0.1613 | 0.0031  | 0.0000  | 0.0001  |
|       | 22   | 0.0019  | -0.5111 | -0.1024 | 0.0032  | 0.0000  | 0.0001  |
|       | 23   | -0.0001 | -0.5128 | -0.1202 | 0.0031  | 0.0000  | 0.0001  |
|       | 24   | -0.0089 | -0.5159 | -0.1434 | 0.0031  | 0.0000  | 0.0001  |
|       | 25   | -0.0129 | -0.5193 | -0.1791 | 0.0031  | 0.0000  | 0.0001  |
|       | 26   | 0.0039  | -0.5094 | -0.0845 | 0.0032  | 0.0000  | 0.0001  |
|       | 27   | 0.0021  | -0.5087 | -0.0724 | 0.0032  | 0.0000  | 0.0001  |
|       | 28   | -0.0112 | -0.5200 | -0.1912 | 0.0030  | 0.0000  | 0.0001  |
|       | 29   | 0.0040  | -0.5077 | -0.0636 | 0.0032  | 0.0001  | 0.0001  |
|       | 30   | 0.0002  | -0.5097 | -0.0812 | 0.0032  | 0.0000  | 0.0001  |
|       | 31   | -0.0131 | -0.5210 | -0.2001 | 0.0030  | 0.0000  | 0.0001  |
|       | 32   | -0.0092 | -0.5190 | -0.1824 | 0.0030  | 0.0000  | 0.0001  |
| 18    | 1    | -0.0038 | -0.4295 | -0.1087 | 0.0018  | 0.0000  | 0.0000  |
|       | 2    | 0.0000  | -0.0326 | -0.0214 | 0.0003  | 0.0000  | 0.0000  |
|       | 3    | 0.0001  | -0.0226 | -0.0121 | 0.0002  | 0.0000  | 0.0000  |
|       | 4    | 0.0095  | 0.0044  | 0.0338  | 0.0001  | 0.0000  | 0.0000  |
|       | 5    | 0.0058  | 0.0037  | 0.0279  | 0.0001  | 0.0000  | 0.0000  |
|       | 6    | 0.0060  | 0.0059  | 0.0566  | 0.0001  | 0.0000  | 0.0000  |

JOINT DISPLACEMENT (CM   RADIANS)    STRUCTURE TYPE = SPACE
-----------------

| JOINT | LOAD | X-TRANS | Y-TRANS | Z-TRANS | X-ROTAN | Y-ROTAN | Z-ROTAN |
|-------|------|---------|---------|---------|---------|---------|---------|
|       | 7    | -0.0038 | -0.4621 | -0.1301 | 0.0021  | 0.0000  | 0.0000  |
|       | 8    | -0.0072 | -0.3420 | -0.1115 | 0.0014  | 0.0000  | 0.0000  |
|       | 9    | 0.0015  | -0.3363 | -0.0697 | 0.0015  | 0.0000  | 0.0000  |
|       | 10   | 0.0002  | -0.3377 | -0.0824 | 0.0015  | 0.0000  | 0.0000  |
|       | 11   | -0.0058 | -0.3406 | -0.0988 | 0.0015  | 0.0000  | 0.0000  |
|       | 12   | -0.0085 | -0.3433 | -0.1243 | 0.0014  | 0.0000  | 0.0000  |
|       | 13   | 0.0029  | -0.3350 | -0.0569 | 0.0016  | 0.0000  | 0.0000  |
|       | 14   | 0.0017  | -0.3348 | -0.0481 | 0.0016  | 0.0000  | 0.0000  |
|       | 15   | -0.0074 | -0.3435 | -0.1331 | 0.0014  | 0.0000  | 0.0000  |
|       | 16   | 0.0030  | -0.3339 | -0.0419 | 0.0016  | 0.0000  | 0.0000  |
|       | 17   | 0.0004  | -0.3356 | -0.0544 | 0.0016  | 0.0000  | 0.0000  |
|       | 18   | -0.0087 | -0.3444 | -0.1394 | 0.0014  | 0.0000  | 0.0000  |
|       | 19   | -0.0060 | -0.3427 | -0.1268 | 0.0014  | 0.0000  | 0.0000  |
|       | 20   | -0.0053 | -0.6470 | -0.1821 | 0.0029  | 0.0000  | 0.0001  |
|       | 21   | -0.0105 | -0.5015 | -0.1636 | 0.0021  | 0.0000  | 0.0000  |
|       | 22   | 0.0022  | -0.4933 | -0.1022 | 0.0023  | 0.0000  | 0.0001  |
|       | 23   | 0.0002  | -0.4952 | -0.1209 | 0.0022  | 0.0000  | 0.0001  |
|       | 24   | -0.0085 | -0.4996 | -0.1449 | 0.0022  | 0.0000  | 0.0000  |
|       | 25   | -0.0125 | -0.5035 | -0.1823 | 0.0021  | 0.0000  | 0.0000  |
|       | 26   | 0.0042  | -0.4914 | -0.0835 | 0.0023  | 0.0000  | 0.0001  |
|       | 27   | 0.0025  | -0.4910 | -0.0706 | 0.0024  | 0.0000  | 0.0001  |
|       | 28   | -0.0108 | -0.5039 | -0.1952 | 0.0020  | 0.0000  | 0.0000  |
|       | 29   | 0.0044  | -0.4897 | -0.0614 | 0.0024  | 0.0001  | 0.0001  |
|       | 30   | 0.0006  | -0.4922 | -0.0798 | 0.0023  | 0.0000  | 0.0001  |
|       | 31   | -0.0127 | -0.5051 | -0.2044 | 0.0020  | 0.0000  | 0.0000  |
|       | 32   | -0.0089 | -0.5026 | -0.1860 | 0.0021  | 0.0000  | 0.0000  |
| 20    | 1    | -0.0032 | -0.4072 | -0.1102 | 0.0016  | 0.0000  | 0.0001  |
|       | 2    | 0.0002  | -0.0316 | -0.0224 | 0.0002  | 0.0000  | 0.0000  |
|       | 3    | 0.0002  | -0.0219 | -0.0126 | 0.0002  | 0.0000  | 0.0000  |
|       | 4    | 0.0094  | 0.0125  | 0.0378  | 0.0001  | 0.0000  | 0.0000  |
|       | 5    | 0.0057  | 0.0086  | 0.0339  | 0.0001  | 0.0000  | 0.0000  |
|       | 6    | 0.0060  | 0.0111  | 0.0678  | 0.0002  | 0.0000  | 0.0000  |
|       | 7    | -0.0030 | -0.4388 | -0.1326 | 0.0018  | 0.0000  | 0.0002  |
|       | 8    | -0.0065 | -0.3283 | -0.1175 | 0.0012  | 0.0000  | 0.0001  |
|       | 9    | 0.0020  | -0.3154 | -0.0666 | 0.0014  | 0.0000  | 0.0001  |
|       | 10   | 0.0007  | -0.3179 | -0.0819 | 0.0013  | 0.0000  | 0.0001  |
|       | 11   | -0.0052 | -0.3258 | -0.1022 | 0.0013  | 0.0000  | 0.0001  |
|       | 12   | -0.0079 | -0.3308 | -0.1327 | 0.0012  | 0.0000  | 0.0001  |
|       | 13   | 0.0034  | -0.3129 | -0.0514 | 0.0014  | 0.0000  | 0.0001  |
|       | 14   | 0.0023  | -0.3135 | -0.0412 | 0.0014  | 0.0000  | 0.0001  |
|       | 15   | -0.0067 | -0.3302 | -0.1429 | 0.0012  | 0.0000  | 0.0001  |
|       | 16   | 0.0035  | -0.3116 | -0.0336 | 0.0014  | 0.0000  | 0.0001  |
|       | 17   | 0.0010  | -0.3154 | -0.0488 | 0.0014  | 0.0000  | 0.0001  |
|       | 18   | -0.0080 | -0.3321 | -0.1505 | 0.0012  | 0.0000  | 0.0001  |
|       | 19   | -0.0055 | -0.3283 | -0.1353 | 0.0012  | 0.0000  | 0.0001  |
|       | 20   | -0.0041 | -0.6143 | -0.1856 | 0.0025  | 0.0000  | 0.0002  |

JOINT DISPLACEMENT (CM   RADIANS)    STRUCTURE TYPE = SPACE
------------------

| JOINT | LOAD | X-TRANS | Y-TRANS | Z-TRANS | X-ROTAN | Y-ROTAN | Z-ROTAN |
|-------|------|---------|---------|---------|---------|---------|---------|
|       | 21 | -0.0096 | -0.4815 | -0.1723 |  0.0018 |  0.0000 |  0.0002 |
|       | 22 |  0.0030 | -0.4626 | -0.0977 |  0.0020 |  0.0000 |  0.0002 |
|       | 23 |  0.0010 | -0.4663 | -0.1201 |  0.0019 |  0.0000 |  0.0002 |
|       | 24 | -0.0076 | -0.4778 | -0.1499 |  0.0019 |  0.0000 |  0.0002 |
|       | 25 | -0.0116 | -0.4851 | -0.1947 |  0.0018 |  0.0000 |  0.0001 |
|       | 26 |  0.0050 | -0.4589 | -0.0754 |  0.0020 |  0.0000 |  0.0002 |
|       | 27 |  0.0033 | -0.4598 | -0.0605 |  0.0021 |  0.0000 |  0.0002 |
|       | 28 | -0.0099 | -0.4843 | -0.2096 |  0.0017 |  0.0000 |  0.0002 |
|       | 29 |  0.0052 | -0.4570 | -0.0493 |  0.0021 |  0.0000 |  0.0002 |
|       | 30 |  0.0014 | -0.4626 | -0.0716 |  0.0020 |  0.0000 |  0.0002 |
|       | 31 | -0.0118 | -0.4871 | -0.2208 |  0.0017 | -0.0001 |  0.0001 |
|       | 32 | -0.0080 | -0.4814 | -0.1984 |  0.0018 |  0.0000 |  0.0002 |
| 22 |  1 |  0.0023 | -0.3218 | -0.0787 | -0.0004 |  0.0000 | -0.0016 |
|    |  2 |  0.0020 | -0.0144 | -0.0107 |  0.0000 |  0.0000 | -0.0003 |
|    |  3 |  0.0011 | -0.0107 | -0.0066 |  0.0000 |  0.0000 | -0.0002 |
|    |  4 |  0.0298 |  0.0948 |  0.1236 |  0.0003 |  0.0000 |  0.0001 |
|    |  5 |  0.0148 |  0.0362 |  0.0477 |  0.0001 |  0.0000 |  0.0000 |
|    |  6 |  0.0226 |  0.0596 |  0.0777 |  0.0002 |  0.0000 |  0.0001 |
|    |  7 |  0.0044 | -0.3362 | -0.0894 | -0.0004 |  0.0000 | -0.0019 |
|    |  8 | -0.0085 | -0.2765 | -0.0998 | -0.0004 |  0.0000 | -0.0014 |
|    |  9 |  0.0137 | -0.2222 | -0.0282 | -0.0002 |  0.0000 | -0.0013 |
|    | 10 |  0.0086 | -0.2356 | -0.0457 | -0.0002 |  0.0000 | -0.0013 |
|    | 11 | -0.0034 | -0.2631 | -0.0823 | -0.0003 |  0.0000 | -0.0014 |
|    | 12 | -0.0136 | -0.2899 | -0.1172 | -0.0004 |  0.0000 | -0.0014 |
|    | 13 |  0.0188 | -0.2088 | -0.0108 | -0.0001 |  0.0000 | -0.0013 |
|    | 14 |  0.0196 | -0.2047 | -0.0057 | -0.0001 |  0.0000 | -0.0013 |
|    | 15 | -0.0143 | -0.2941 | -0.1223 | -0.0004 |  0.0000 | -0.0014 |
|    | 16 |  0.0229 | -0.1966 |  0.0050 | -0.0001 |  0.0000 | -0.0013 |
|    | 17 |  0.0162 | -0.2129 | -0.0164 | -0.0002 |  0.0000 | -0.0013 |
|    | 18 | -0.0177 | -0.3022 | -0.1330 | -0.0005 |  0.0000 | -0.0014 |
|    | 19 | -0.0110 | -0.2859 | -0.1116 | -0.0004 |  0.0000 | -0.0014 |
|    | 20 |  0.0061 | -0.4706 | -0.1252 | -0.0006 |  0.0000 | -0.0026 |
|    | 21 | -0.0124 | -0.4056 | -0.1463 | -0.0006 |  0.0000 | -0.0020 |
|    | 22 |  0.0201 | -0.3259 | -0.0414 | -0.0003 |  0.0001 | -0.0019 |
|    | 23 |  0.0126 | -0.3456 | -0.0671 | -0.0003 |  0.0000 | -0.0020 |
|    | 24 | -0.0050 | -0.3859 | -0.1207 | -0.0005 |  0.0000 | -0.0020 |
|    | 25 | -0.0199 | -0.4253 | -0.1720 | -0.0006 |  0.0000 | -0.0020 |
|    | 26 |  0.0275 | -0.3063 | -0.0158 | -0.0002 |  0.0001 | -0.0019 |
|    | 27 |  0.0287 | -0.3002 | -0.0084 | -0.0002 |  0.0000 | -0.0019 |
|    | 28 | -0.0210 | -0.4313 | -0.1793 | -0.0007 |  0.0000 | -0.0020 |
|    | 29 |  0.0336 | -0.2883 |  0.0074 | -0.0001 |  0.0000 | -0.0019 |
|    | 30 |  0.0238 | -0.3122 | -0.0241 | -0.0002 |  0.0000 | -0.0019 |
|    | 31 | -0.0259 | -0.4432 | -0.1951 | -0.0007 |  0.0000 | -0.0020 |
|    | 32 | -0.0162 | -0.4194 | -0.1636 | -0.0006 |  0.0000 | -0.0020 |
| 24 |  1 |  0.0041 | -0.0504 | -0.0859 | -0.0015 |  0.0000 | -0.0013 |
|    |  2 |  0.0025 | -0.0073 | -0.0128 | -0.0002 |  0.0000 | -0.0002 |

JOINT DISPLACEMENT (CM   RADIANS)    STRUCTURE TYPE = SPACE
-----------------

| JOINT | LOAD | X-TRANS | Y-TRANS | Z-TRANS | X-ROTAN | Y-ROTAN | Z-ROTAN |
|---|---|---|---|---|---|---|---|
|  | 3 | 0.0014 | -0.0051 | -0.0077 | -0.0001 | 0.0000 | -0.0001 |
|  | 4 | 0.0396 | 0.0002 | 0.1179 | 0.0000 | 0.0001 | 0.0000 |
|  | 5 | 0.0193 | 0.0001 | 0.0450 | 0.0000 | 0.0001 | 0.0000 |
|  | 6 | 0.0298 | 0.0002 | 0.0739 | 0.0000 | 0.0000 | 0.0000 |
|  | 7 | 0.0067 | -0.0577 | -0.0987 | -0.0017 | 0.0000 | -0.0015 |
|  | 8 | -0.0104 | -0.0417 | -0.1040 | -0.0012 | -0.0001 | -0.0011 |
|  | 9 | 0.0186 | -0.0416 | -0.0364 | -0.0012 | 0.0000 | -0.0011 |
|  | 10 | 0.0119 | -0.0416 | -0.0531 | -0.0012 | 0.0000 | -0.0011 |
|  | 11 | -0.0037 | -0.0417 | -0.0873 | -0.0012 | 0.0000 | -0.0011 |
|  | 12 | -0.0171 | -0.0418 | -0.1206 | -0.0013 | -0.0001 | -0.0011 |
|  | 13 | 0.0253 | -0.0415 | -0.0198 | -0.0012 | 0.0000 | -0.0011 |
|  | 14 | 0.0265 | -0.0415 | -0.0148 | -0.0012 | 0.0000 | -0.0011 |
|  | 15 | -0.0182 | -0.0418 | -0.1256 | -0.0013 | 0.0000 | -0.0011 |
|  | 16 | 0.0308 | -0.0415 | -0.0046 | -0.0012 | 0.0000 | -0.0011 |
|  | 17 | 0.0221 | -0.0416 | -0.0249 | -0.0012 | 0.0000 | -0.0011 |
|  | 18 | -0.0226 | -0.0418 | -0.1358 | -0.0013 | 0.0000 | -0.0011 |
|  | 19 | -0.0139 | -0.0418 | -0.1155 | -0.0013 | 0.0000 | -0.0011 |
|  | 20 | 0.0093 | -0.0808 | -0.1381 | -0.0024 | 0.0000 | -0.0021 |
|  | 21 | -0.0152 | -0.0612 | -0.1525 | -0.0018 | -0.0001 | -0.0016 |
|  | 22 | 0.0273 | -0.0610 | -0.0534 | -0.0018 | 0.0001 | -0.0016 |
|  | 23 | 0.0175 | -0.0610 | -0.0778 | -0.0018 | 0.0001 | -0.0016 |
|  | 24 | -0.0054 | -0.0612 | -0.1281 | -0.0018 | -0.0001 | -0.0016 |
|  | 25 | -0.0250 | -0.0613 | -0.1769 | -0.0018 | -0.0001 | -0.0016 |
|  | 26 | 0.0372 | -0.0609 | -0.0290 | -0.0018 | 0.0001 | -0.0016 |
|  | 27 | 0.0388 | -0.0609 | -0.0216 | -0.0018 | 0.0000 | -0.0016 |
|  | 28 | -0.0267 | -0.0613 | -0.1843 | -0.0018 | 0.0000 | -0.0016 |
|  | 29 | 0.0452 | -0.0609 | -0.0068 | -0.0018 | 0.0000 | -0.0016 |
|  | 30 | 0.0324 | -0.0609 | -0.0365 | -0.0018 | 0.0000 | -0.0016 |
|  | 31 | -0.0331 | -0.0613 | -0.1991 | -0.0018 | -0.0001 | -0.0016 |
|  | 32 | -0.0203 | -0.0612 | -0.1694 | -0.0018 | 0.0000 | -0.0016 |
| 28 | 1 | -0.0126 | -0.0263 | -0.2084 | -0.0001 | 0.0000 | 0.0000 |
|  | 2 | 0.0007 | -0.0048 | -0.0309 | 0.0000 | 0.0000 | 0.0000 |
|  | 3 | 0.0000 | -0.0029 | -0.0198 | 0.0000 | 0.0000 | 0.0000 |
|  | 4 | 0.1101 | 0.0006 | 0.1695 | 0.0002 | 0.0004 | 0.0002 |
|  | 5 | 0.0635 | 0.0003 | 0.0636 | 0.0001 | 0.0004 | 0.0001 |
|  | 6 | 0.0754 | 0.0004 | 0.1084 | 0.0001 | 0.0000 | 0.0001 |
|  | 7 | -0.0119 | -0.0312 | -0.2392 | 0.0000 | 0.0000 | 0.0000 |
|  | 8 | -0.0571 | -0.0221 | -0.2189 | -0.0001 | -0.0003 | -0.0001 |
|  | 9 | 0.0382 | -0.0217 | -0.1234 | 0.0000 | 0.0003 | 0.0001 |
|  | 10 | 0.0212 | -0.0218 | -0.1478 | 0.0000 | 0.0003 | 0.0001 |
|  | 11 | -0.0401 | -0.0220 | -0.1945 | -0.0001 | -0.0003 | -0.0001 |
|  | 12 | -0.0740 | -0.0222 | -0.2433 | -0.0001 | -0.0003 | -0.0001 |
|  | 13 | 0.0552 | -0.0216 | -0.0990 | 0.0000 | 0.0003 | 0.0001 |
|  | 14 | 0.0471 | -0.0216 | -0.0899 | 0.0001 | 0.0000 | 0.0001 |
|  | 15 | -0.0660 | -0.0222 | -0.2524 | -0.0001 | 0.0000 | -0.0001 |
|  | 16 | 0.0614 | -0.0216 | -0.0756 | 0.0001 | 0.0001 | 0.0001 |

JOINT DISPLACEMENT (CM   RADIANS)    STRUCTURE TYPE = SPACE
-----------------

| JOINT | LOAD | X-TRANS | Y-TRANS | Z-TRANS | X-ROTAN | Y-ROTAN | Z-ROTAN |
|---|---|---|---|---|---|---|---|
| | 17 | 0.0328 | -0.0217 | -0.1042 | 0.0000 | 0.0000 | 0.0001 |
| | 18 | -0.0802 | -0.0222 | -0.2668 | -0.0001 | -0.0001 | -0.0001 |
| | 19 | -0.0517 | -0.0221 | -0.2381 | -0.0001 | 0.0000 | -0.0001 |
| | 20 | -0.0166 | -0.0436 | -0.3349 | 0.0000 | 0.0000 | 0.0000 |
| | 21 | -0.0837 | -0.0324 | -0.3210 | -0.0001 | -0.0004 | -0.0001 |
| | 22 | 0.0560 | -0.0318 | -0.1810 | 0.0000 | 0.0004 | 0.0002 |
| | 23 | 0.0312 | -0.0320 | -0.2168 | 0.0000 | 0.0004 | 0.0001 |
| | 24 | -0.0588 | -0.0323 | -0.2853 | -0.0001 | -0.0004 | -0.0001 |
| | 25 | -0.1086 | -0.0325 | -0.3568 | -0.0002 | -0.0004 | -0.0002 |
| | 26 | 0.0809 | -0.0317 | -0.1453 | 0.0001 | 0.0004 | 0.0002 |
| | 27 | 0.0691 | -0.0317 | -0.1318 | 0.0001 | 0.0000 | 0.0002 |
| | 28 | -0.0967 | -0.0325 | -0.3703 | -0.0002 | 0.0000 | -0.0001 |
| | 29 | 0.0900 | -0.0316 | -0.1108 | 0.0001 | 0.0002 | 0.0002 |
| | 30 | 0.0481 | -0.0318 | -0.1528 | 0.0001 | -0.0001 | 0.0001 |
| | 31 | -0.1177 | -0.0326 | -0.3913 | -0.0002 | -0.0002 | -0.0002 |
| | 32 | -0.0758 | -0.0324 | -0.3493 | -0.0002 | 0.0001 | -0.0001 |
| 30 | 1 | -0.0127 | -0.0200 | -0.1954 | 0.0003 | 0.0000 | 0.0001 |
| | 2 | 0.0007 | -0.0041 | -0.0255 | 0.0001 | 0.0000 | 0.0000 |
| | 3 | 0.0000 | -0.0023 | -0.0183 | 0.0001 | 0.0000 | 0.0000 |
| | 4 | 0.1099 | 0.0001 | 0.1809 | 0.0003 | 0.0004 | 0.0002 |
| | 5 | 0.0633 | 0.0001 | 0.0725 | 0.0001 | 0.0004 | 0.0001 |
| | 6 | 0.0752 | 0.0001 | 0.1285 | 0.0002 | 0.0000 | 0.0001 |
| | 7 | -0.0119 | -0.0241 | -0.2210 | 0.0004 | 0.0000 | 0.0001 |
| | 8 | -0.0569 | -0.0168 | -0.2147 | 0.0001 | -0.0003 | 0.0000 |
| | 9 | 0.0380 | -0.0167 | -0.1060 | 0.0003 | 0.0003 | 0.0001 |
| | 10 | 0.0210 | -0.0167 | -0.1349 | 0.0003 | 0.0003 | 0.0001 |
| | 11 | -0.0400 | -0.0168 | -0.1858 | 0.0002 | -0.0003 | 0.0000 |
| | 12 | -0.0739 | -0.0168 | -0.2436 | 0.0001 | -0.0003 | -0.0001 |
| | 13 | 0.0549 | -0.0167 | -0.0771 | 0.0004 | 0.0003 | 0.0001 |
| | 14 | 0.0469 | -0.0167 | -0.0640 | 0.0004 | 0.0000 | 0.0001 |
| | 15 | -0.0659 | -0.0168 | -0.2567 | 0.0001 | 0.0000 | 0.0000 |
| | 16 | 0.0612 | -0.0167 | -0.0477 | 0.0004 | 0.0001 | 0.0001 |
| | 17 | 0.0327 | -0.0167 | -0.0803 | 0.0004 | 0.0000 | 0.0001 |
| | 18 | -0.0801 | -0.0168 | -0.2730 | 0.0000 | -0.0001 | -0.0001 |
| | 19 | -0.0517 | -0.0168 | -0.2404 | 0.0001 | 0.0000 | 0.0000 |
| | 20 | -0.0167 | -0.0337 | -0.3093 | 0.0005 | 0.0000 | 0.0001 |
| | 21 | -0.0835 | -0.0246 | -0.3148 | 0.0002 | -0.0004 | -0.0001 |
| | 22 | 0.0557 | -0.0245 | -0.1554 | 0.0005 | 0.0004 | 0.0002 |
| | 23 | 0.0308 | -0.0245 | -0.1978 | 0.0004 | 0.0004 | 0.0001 |
| | 24 | -0.0587 | -0.0246 | -0.2724 | 0.0003 | -0.0004 | 0.0000 |
| | 25 | -0.1083 | -0.0247 | -0.3572 | 0.0001 | -0.0004 | -0.0001 |
| | 26 | 0.0805 | -0.0245 | -0.1130 | 0.0006 | 0.0004 | 0.0002 |
| | 27 | 0.0688 | -0.0245 | -0.0938 | 0.0006 | 0.0001 | 0.0002 |
| | 28 | -0.0967 | -0.0247 | -0.3764 | 0.0001 | 0.0000 | -0.0001 |
| | 29 | 0.0897 | -0.0244 | -0.0699 | 0.0006 | 0.0002 | 0.0002 |
| | 30 | 0.0480 | -0.0245 | -0.1177 | 0.0006 | -0.0001 | 0.0001 |

JOINT DISPLACEMENT (CM   RADIANS)     STRUCTURE TYPE = SPACE
------------------

| JOINT | LOAD | X-TRANS | Y-TRANS | Z-TRANS | X-ROTAN | Y-ROTAN | Z-ROTAN |
|-------|------|---------|---------|---------|---------|---------|---------|
|       | 31   | -0.1175 | -0.0247 | -0.4003 |  0.0001 | -0.0002 | -0.0001 |
|       | 32   | -0.0758 | -0.0247 | -0.3525 |  0.0001 |  0.0001 |  0.0000 |
| 32    | 1    | -0.0137 | -0.0202 | -0.2056 |  0.0003 |  0.0000 |  0.0000 |
|       | 2    |  0.0006 | -0.0041 | -0.0291 |  0.0001 |  0.0000 |  0.0000 |
|       | 3    | -0.0001 | -0.0023 | -0.0203 |  0.0000 |  0.0000 |  0.0000 |
|       | 4    |  0.1102 |  0.0001 |  0.1262 |  0.0002 |  0.0004 |  0.0002 |
|       | 5    |  0.0634 |  0.0001 |  0.0633 |  0.0001 |  0.0004 |  0.0001 |
|       | 6    |  0.0754 |  0.0001 |  0.1216 |  0.0002 |  0.0000 |  0.0001 |
|       | 7    | -0.0131 | -0.0243 | -0.2347 |  0.0004 |  0.0000 |  0.0000 |
|       | 8    | -0.0579 | -0.0169 | -0.2170 |  0.0001 | -0.0003 |  0.0000 |
|       | 9    |  0.0372 | -0.0168 | -0.1220 |  0.0003 |  0.0003 |  0.0001 |
|       | 10   |  0.0202 | -0.0169 | -0.1494 |  0.0003 |  0.0003 |  0.0001 |
|       | 11   | -0.0410 | -0.0169 | -0.1896 |  0.0002 | -0.0003 |  0.0000 |
|       | 12   | -0.0749 | -0.0170 | -0.2443 |  0.0001 | -0.0003 | -0.0001 |
|       | 13   |  0.0542 | -0.0168 | -0.0946 |  0.0004 |  0.0003 |  0.0001 |
|       | 14   |  0.0462 | -0.0168 | -0.0783 |  0.0004 |  0.0000 |  0.0001 |
|       | 15   | -0.0669 | -0.0170 | -0.2607 |  0.0001 |  0.0000 |  0.0000 |
|       | 16   |  0.0604 | -0.0168 | -0.0640 |  0.0004 |  0.0001 |  0.0001 |
|       | 17   |  0.0319 | -0.0168 | -0.0925 |  0.0004 |  0.0000 |  0.0001 |
|       | 18   | -0.0811 | -0.0170 | -0.2750 |  0.0000 | -0.0001 | -0.0001 |
|       | 19   | -0.0526 | -0.0170 | -0.2465 |  0.0001 |  0.0001 |  0.0000 |
|       | 20   | -0.0184 | -0.0340 | -0.3286 |  0.0005 |  0.0000 |  0.0001 |
|       | 21   | -0.0849 | -0.0248 | -0.3182 |  0.0002 | -0.0004 | -0.0001 |
|       | 22   |  0.0546 | -0.0247 | -0.1789 |  0.0005 |  0.0004 |  0.0002 |
|       | 23   |  0.0297 | -0.0247 | -0.2191 |  0.0004 |  0.0004 |  0.0001 |
|       | 24   | -0.0601 | -0.0248 | -0.2781 |  0.0003 | -0.0004 |  0.0000 |
|       | 25   | -0.1098 | -0.0249 | -0.3584 |  0.0001 | -0.0004 | -0.0001 |
|       | 26   |  0.0794 | -0.0247 | -0.1388 |  0.0005 |  0.0004 |  0.0002 |
|       | 27   |  0.0677 | -0.0246 | -0.1148 |  0.0006 |  0.0001 |  0.0002 |
|       | 28   | -0.0981 | -0.0249 | -0.3824 |  0.0001 |  0.0000 | -0.0001 |
|       | 29   |  0.0886 | -0.0246 | -0.0939 |  0.0006 |  0.0002 |  0.0002 |
|       | 30   |  0.0468 | -0.0247 | -0.1357 |  0.0005 | -0.0001 |  0.0001 |
|       | 31   | -0.1190 | -0.0249 | -0.4033 |  0.0001 | -0.0002 | -0.0001 |
|       | 32   | -0.0772 | -0.0249 | -0.3615 |  0.0001 |  0.0001 |  0.0000 |
| 34    | 1    | -0.0156 | -0.0197 | -0.2030 |  0.0003 |  0.0000 |  0.0000 |
|       | 2    |  0.0003 | -0.0040 | -0.0300 |  0.0001 |  0.0000 |  0.0000 |
|       | 3    | -0.0003 | -0.0023 | -0.0205 |  0.0000 |  0.0000 |  0.0000 |
|       | 4    |  0.1108 |  0.0001 |  0.0827 |  0.0001 |  0.0004 |  0.0002 |
|       | 5    |  0.0639 |  0.0001 |  0.0650 |  0.0001 |  0.0004 |  0.0001 |
|       | 6    |  0.0756 |  0.0001 |  0.1333 |  0.0002 |  0.0000 |  0.0001 |
|       | 7    | -0.0153 | -0.0238 | -0.2329 |  0.0004 |  0.0000 |  0.0000 |
|       | 8    | -0.0599 | -0.0165 | -0.2164 |  0.0002 | -0.0003 | -0.0001 |
|       | 9    |  0.0360 | -0.0165 | -0.1189 |  0.0003 |  0.0003 |  0.0001 |
|       | 10   |  0.0190 | -0.0165 | -0.1489 |  0.0003 |  0.0003 |  0.0001 |
|       | 11   | -0.0428 | -0.0165 | -0.1864 |  0.0002 | -0.0003 |  0.0000 |
|       | 12   | -0.0769 | -0.0166 | -0.2463 |  0.0001 | -0.0003 | -0.0001 |

JOINT DISPLACEMENT (CM   RADIANS)    STRUCTURE TYPE = SPACE
------------------

| JOINT | LOAD | X-TRANS | Y-TRANS | Z-TRANS | X-ROTAN | Y-ROTAN | Z-ROTAN |
|---|---|---|---|---|---|---|---|
| | 13 | 0.0530 | -0.0164 | -0.0889 | 0.0004 | 0.0003 | 0.0001 |
| | 14 | 0.0448 | -0.0164 | -0.0677 | 0.0004 | 0.0000 | 0.0001 |
| | 15 | -0.0687 | -0.0166 | -0.2676 | 0.0001 | 0.0000 | -0.0001 |
| | 16 | 0.0592 | -0.0164 | -0.0531 | 0.0004 | 0.0001 | 0.0001 |
| | 17 | 0.0304 | -0.0164 | -0.0823 | 0.0004 | 0.0000 | 0.0001 |
| | 18 | -0.0830 | -0.0166 | -0.2822 | 0.0000 | -0.0001 | -0.0001 |
| | 19 | -0.0543 | -0.0166 | -0.2530 | 0.0001 | 0.0001 | 0.0000 |
| | 20 | -0.0215 | -0.0333 | -0.3261 | 0.0005 | 0.0000 | 0.0001 |
| | 21 | -0.0878 | -0.0243 | -0.3173 | 0.0002 | -0.0004 | -0.0001 |
| | 22 | 0.0528 | -0.0241 | -0.1744 | 0.0005 | 0.0004 | 0.0002 |
| | 23 | 0.0278 | -0.0242 | -0.2184 | 0.0004 | 0.0004 | 0.0001 |
| | 24 | -0.0628 | -0.0242 | -0.2733 | 0.0003 | -0.0004 | 0.0000 |
| | 25 | -0.1127 | -0.0243 | -0.3613 | 0.0002 | -0.0004 | -0.0001 |
| | 26 | 0.0778 | -0.0241 | -0.1304 | 0.0006 | 0.0004 | 0.0002 |
| | 27 | 0.0657 | -0.0241 | -0.0992 | 0.0006 | 0.0001 | 0.0002 |
| | 28 | -0.1007 | -0.0243 | -0.3925 | 0.0001 | 0.0000 | -0.0001 |
| | 29 | 0.0868 | -0.0241 | -0.0778 | 0.0006 | 0.0002 | 0.0002 |
| | 30 | 0.0446 | -0.0241 | -0.1207 | 0.0006 | -0.0001 | 0.0001 |
| | 31 | -0.1218 | -0.0243 | -0.4139 | 0.0001 | -0.0002 | -0.0001 |
| | 32 | -0.0796 | -0.0243 | -0.3710 | 0.0001 | 0.0001 | 0.0000 |
| 36 | 1 | -0.0177 | -0.0157 | -0.1665 | 0.0004 | 0.0000 | 0.0000 |
| | 2 | 0.0000 | -0.0034 | -0.0248 | 0.0001 | 0.0000 | 0.0000 |
| | 3 | -0.0005 | -0.0019 | -0.0165 | 0.0001 | 0.0000 | 0.0000 |
| | 4 | 0.1118 | 0.0002 | 0.0881 | 0.0002 | 0.0004 | 0.0002 |
| | 5 | 0.0648 | 0.0001 | 0.0785 | 0.0001 | 0.0004 | 0.0001 |
| | 6 | 0.0761 | 0.0002 | 0.1615 | 0.0003 | 0.0000 | 0.0001 |
| | 7 | -0.0177 | -0.0192 | -0.1913 | 0.0005 | 0.0000 | 0.0000 |
| | 8 | -0.0622 | -0.0133 | -0.1961 | 0.0002 | -0.0003 | -0.0001 |
| | 9 | 0.0350 | -0.0131 | -0.0783 | 0.0004 | 0.0003 | 0.0001 |
| | 10 | 0.0178 | -0.0131 | -0.1147 | 0.0004 | 0.0003 | 0.0000 |
| | 11 | -0.0451 | -0.0133 | -0.1598 | 0.0003 | -0.0003 | -0.0001 |
| | 12 | -0.0793 | -0.0134 | -0.2325 | 0.0002 | -0.0003 | -0.0001 |
| | 13 | 0.0521 | -0.0130 | -0.0420 | 0.0005 | 0.0003 | 0.0001 |
| | 14 | 0.0435 | -0.0130 | -0.0161 | 0.0005 | 0.0000 | 0.0001 |
| | 15 | -0.0707 | -0.0134 | -0.2584 | 0.0001 | 0.0000 | -0.0001 |
| | 16 | 0.0580 | -0.0130 | 0.0016 | 0.0006 | 0.0001 | 0.0001 |
| | 17 | 0.0289 | -0.0131 | -0.0338 | 0.0005 | -0.0001 | 0.0000 |
| | 18 | -0.0853 | -0.0134 | -0.2760 | 0.0001 | -0.0001 | -0.0001 |
| | 19 | -0.0561 | -0.0134 | -0.2407 | 0.0001 | 0.0001 | -0.0001 |
| | 20 | -0.0247 | -0.0268 | -0.2678 | 0.0007 | 0.0000 | 0.0000 |
| | 21 | -0.0912 | -0.0195 | -0.2876 | 0.0003 | -0.0004 | -0.0001 |
| | 22 | 0.0513 | -0.0192 | -0.1149 | 0.0006 | 0.0004 | 0.0001 |
| | 23 | 0.0262 | -0.0193 | -0.1682 | 0.0005 | 0.0004 | 0.0001 |
| | 24 | -0.0661 | -0.0194 | -0.2343 | 0.0004 | -0.0004 | -0.0001 |
| | 25 | -0.1164 | -0.0196 | -0.3409 | 0.0002 | -0.0004 | -0.0002 |
| | 26 | 0.0764 | -0.0191 | -0.0616 | 0.0007 | 0.0004 | 0.0001 |

```
JOINT DISPLACEMENT (CM   RADIANS)    STRUCTURE TYPE = SPACE
------------------

JOINT  LOAD   X-TRANS   Y-TRANS   Z-TRANS   X-ROTAN   Y-ROTAN   Z-ROTAN


       27     0.0637   -0.0191   -0.0236    0.0008    0.0000    0.0001
       28    -0.1037   -0.0196   -0.3789    0.0002    0.0000   -0.0001
       29     0.0851   -0.0190    0.0023    0.0008    0.0002    0.0001
       30     0.0424   -0.0191   -0.0495    0.0007   -0.0001    0.0001
       31    -0.1251   -0.0197   -0.4049    0.0001   -0.0002   -0.0002
       32    -0.0823   -0.0196   -0.3530    0.0002    0.0001   -0.0001
  38    1    -0.0177   -0.0084   -0.0184    0.0005    0.0000    0.0001
        2     0.0000   -0.0022   -0.0051    0.0001    0.0000    0.0000
        3    -0.0005   -0.0010   -0.0023    0.0001    0.0000    0.0000
        4     0.1130    0.0002    0.0229    0.0000    0.0005    0.0002
        5     0.0660    0.0001    0.0029    0.0000    0.0005    0.0001
        6     0.0766    0.0001    0.0238    0.0000    0.0000    0.0001
        7    -0.0178   -0.0106   -0.0235    0.0006    0.0000    0.0001
        8    -0.0632   -0.0072   -0.0177    0.0004   -0.0004    0.0000
        9     0.0358   -0.0070   -0.0134    0.0004    0.0003    0.0001
       10     0.0185   -0.0070   -0.0188    0.0004    0.0003    0.0001
       11    -0.0459   -0.0071   -0.0124    0.0004   -0.0003    0.0000
       12    -0.0804   -0.0072   -0.0231    0.0004   -0.0004    0.0000
       13     0.0530   -0.0070   -0.0081    0.0004    0.0003    0.0002
       14     0.0438   -0.0070    0.0022    0.0004    0.0000    0.0002
       15    -0.0711   -0.0072   -0.0334    0.0004    0.0000    0.0000
       16     0.0586   -0.0069    0.0029    0.0004    0.0001    0.0002
       17     0.0289   -0.0070    0.0016    0.0004   -0.0001    0.0001
       18    -0.0860   -0.0072   -0.0341    0.0004   -0.0001   -0.0001
       19    -0.0563   -0.0071   -0.0328    0.0004    0.0001    0.0000
       20    -0.0249   -0.0149   -0.0329    0.0009    0.0000    0.0001
       21    -0.0926   -0.0105   -0.0260    0.0006   -0.0005    0.0000
       22     0.0525   -0.0102   -0.0197    0.0006    0.0005    0.0002
       23     0.0272   -0.0103   -0.0276    0.0006    0.0005    0.0002
       24    -0.0673   -0.0104   -0.0182    0.0006   -0.0005    0.0000
       25    -0.1179   -0.0105   -0.0338    0.0006   -0.0005   -0.0001
       26     0.0778   -0.0102   -0.0119    0.0006    0.0005    0.0002
       27     0.0642   -0.0102    0.0033    0.0006    0.0000    0.0002
       28    -0.1043   -0.0105   -0.0490    0.0005   -0.0001   -0.0001
       29     0.0860   -0.0102    0.0042    0.0007    0.0002    0.0003
       30     0.0424   -0.0103    0.0023    0.0006   -0.0001    0.0002
       31    -0.1261   -0.0105   -0.0500    0.0005   -0.0002   -0.0001
       32    -0.0826   -0.0105   -0.0481    0.0005    0.0001    0.0000
  40    1    -0.0025   -0.0151   -0.2451   -0.0011    0.0000    0.0001
        2     0.0019   -0.0031   -0.0394   -0.0002    0.0000    0.0000
        3     0.0010   -0.0017   -0.0241   -0.0001    0.0000    0.0000
        4     0.1361    0.0004    0.1634    0.0004    0.0003    0.0003
        5     0.0770    0.0002    0.0614    0.0002    0.0003    0.0002
        6     0.0951    0.0003    0.1045    0.0003    0.0001    0.0001
        7    -0.0006   -0.0181   -0.2845   -0.0014    0.0000    0.0001
        8    -0.0589   -0.0127   -0.2479   -0.0011   -0.0002   -0.0001
```

JOINT DISPLACEMENT (CM   RADIANS)    STRUCTURE TYPE = SPACE
-----------------

| JOINT | LOAD | X-TRANS | Y-TRANS | Z-TRANS | X-ROTAN | Y-ROTAN | Z-ROTAN |
|---|---|---|---|---|---|---|---|
| | 9 | 0.0567 | -0.0124 | -0.1559 | -0.0008 | 0.0002 | 0.0002 |
| | 10 | 0.0353 | -0.0125 | -0.1794 | -0.0009 | 0.0002 | 0.0002 |
| | 11 | -0.0375 | -0.0126 | -0.2244 | -0.0010 | -0.0002 | -0.0001 |
| | 12 | -0.0803 | -0.0127 | -0.2715 | -0.0011 | -0.0002 | -0.0001 |
| | 13 | 0.0781 | -0.0124 | -0.1324 | -0.0008 | 0.0002 | 0.0002 |
| | 14 | 0.0702 | -0.0123 | -0.1236 | -0.0007 | 0.0000 | 0.0002 |
| | 15 | -0.0725 | -0.0127 | -0.2803 | -0.0012 | 0.0000 | -0.0001 |
| | 16 | 0.0876 | -0.0123 | -0.1097 | -0.0007 | 0.0001 | 0.0002 |
| | 17 | 0.0529 | -0.0124 | -0.1374 | -0.0008 | 0.0000 | 0.0001 |
| | 18 | -0.0898 | -0.0128 | -0.2941 | -0.0012 | -0.0001 | -0.0001 |
| | 19 | -0.0551 | -0.0127 | -0.2665 | -0.0011 | 0.0000 | 0.0000 |
| | 20 | -0.0008 | -0.0254 | -0.3983 | -0.0019 | 0.0000 | 0.0001 |
| | 21 | -0.0864 | -0.0186 | -0.3637 | -0.0016 | -0.0003 | -0.0001 |
| | 22 | 0.0831 | -0.0182 | -0.2286 | -0.0012 | 0.0003 | 0.0003 |
| | 23 | 0.0517 | -0.0183 | -0.2631 | -0.0013 | 0.0003 | 0.0002 |
| | 24 | -0.0550 | -0.0185 | -0.3292 | -0.0015 | -0.0003 | -0.0001 |
| | 25 | -0.1178 | -0.0187 | -0.3981 | -0.0017 | -0.0003 | -0.0002 |
| | 26 | 0.1145 | -0.0181 | -0.1941 | -0.0011 | 0.0003 | 0.0003 |
| | 27 | 0.1030 | -0.0181 | -0.1812 | -0.0011 | 0.0001 | 0.0002 |
| | 28 | -0.1063 | -0.0187 | -0.4111 | -0.0017 | -0.0001 | -0.0001 |
| | 29 | 0.1284 | -0.0181 | -0.1610 | -0.0010 | 0.0001 | 0.0003 |
| | 30 | 0.0776 | -0.0182 | -0.2015 | -0.0011 | 0.0000 | 0.0002 |
| | 31 | -0.1317 | -0.0187 | -0.4313 | -0.0018 | -0.0002 | -0.0001 |
| | 32 | -0.0808 | -0.0186 | -0.3908 | -0.0017 | 0.0000 | 0.0000 |
| 42 | 1 | -0.0025 | -0.0081 | -0.1990 | -0.0010 | 0.0000 | 0.0000 |
| | 2 | 0.0017 | -0.0023 | -0.0291 | -0.0002 | 0.0000 | 0.0000 |
| | 3 | 0.0009 | -0.0011 | -0.0196 | -0.0001 | 0.0000 | 0.0000 |
| | 4 | 0.1346 | 0.0002 | 0.1774 | 0.0005 | 0.0004 | 0.0003 |
| | 5 | 0.0773 | 0.0001 | 0.0710 | 0.0002 | 0.0004 | 0.0002 |
| | 6 | 0.0933 | 0.0002 | 0.1259 | 0.0004 | 0.0001 | 0.0002 |
| | 7 | -0.0008 | -0.0104 | -0.2280 | -0.0012 | 0.0000 | 0.0000 |
| | 8 | -0.0592 | -0.0070 | -0.2172 | -0.0010 | -0.0003 | -0.0001 |
| | 9 | 0.0568 | -0.0068 | -0.1107 | -0.0007 | 0.0003 | 0.0001 |
| | 10 | 0.0358 | -0.0069 | -0.1390 | -0.0008 | 0.0003 | 0.0001 |
| | 11 | -0.0382 | -0.0069 | -0.1889 | -0.0009 | -0.0003 | -0.0001 |
| | 12 | -0.0801 | -0.0070 | -0.2455 | -0.0011 | -0.0003 | -0.0002 |
| | 13 | 0.0778 | -0.0068 | -0.0823 | -0.0006 | 0.0003 | 0.0002 |
| | 14 | 0.0688 | -0.0068 | -0.0695 | -0.0005 | 0.0000 | 0.0001 |
| | 15 | -0.0712 | -0.0070 | -0.2584 | -0.0011 | 0.0000 | -0.0001 |
| | 16 | 0.0862 | -0.0068 | -0.0535 | -0.0005 | 0.0001 | 0.0002 |
| | 17 | 0.0514 | -0.0068 | -0.0855 | -0.0006 | 0.0000 | 0.0001 |
| | 18 | -0.0885 | -0.0070 | -0.2744 | -0.0012 | -0.0001 | -0.0002 |
| | 19 | -0.0538 | -0.0070 | -0.2424 | -0.0011 | 0.0000 | -0.0001 |
| | 20 | -0.0011 | -0.0146 | -0.3193 | -0.0017 | 0.0000 | 0.0000 |
| | 21 | -0.0868 | -0.0102 | -0.3186 | -0.0014 | -0.0004 | -0.0002 |
| | 22 | 0.0833 | -0.0100 | -0.1623 | -0.0010 | 0.0004 | 0.0002 |

JOINT DISPLACEMENT (CM   RADIANS)    STRUCTURE TYPE = SPACE
-----------------

| JOINT | LOAD | X-TRANS | Y-TRANS | Z-TRANS | X-ROTAN | Y-ROTAN | Z-ROTAN |
|---|---|---|---|---|---|---|---|
|  | 23 | 0.0525 | -0.0101 | -0.2038 | -0.0011 | 0.0004 | 0.0001 |
|  | 24 | -0.0560 | -0.0102 | -0.2770 | -0.0013 | -0.0004 | -0.0001 |
|  | 25 | -0.1175 | -0.0103 | -0.3601 | -0.0016 | -0.0004 | -0.0002 |
|  | 26 | 0.1140 | -0.0100 | -0.1207 | -0.0009 | 0.0004 | 0.0002 |
|  | 27 | 0.1009 | -0.0100 | -0.1019 | -0.0008 | 0.0001 | 0.0002 |
|  | 28 | -0.1044 | -0.0103 | -0.3790 | -0.0016 | -0.0001 | -0.0002 |
|  | 29 | 0.1264 | -0.0099 | -0.0785 | -0.0007 | 0.0002 | 0.0002 |
|  | 30 | 0.0753 | -0.0100 | -0.1254 | -0.0009 | -0.0001 | 0.0002 |
|  | 31 | -0.1299 | -0.0103 | -0.4024 | -0.0017 | -0.0002 | -0.0002 |
|  | 32 | -0.0789 | -0.0103 | -0.3555 | -0.0016 | 0.0000 | -0.0001 |
| 44 | 1 | -0.0025 | -0.0080 | -0.2082 | -0.0010 | 0.0000 | 0.0000 |
|  | 2 | 0.0015 | -0.0023 | -0.0323 | -0.0002 | 0.0000 | 0.0000 |
|  | 3 | 0.0008 | -0.0011 | -0.0214 | -0.0001 | 0.0000 | 0.0000 |
|  | 4 | 0.1335 | 0.0002 | 0.1237 | 0.0004 | 0.0004 | 0.0003 |
|  | 5 | 0.0775 | 0.0001 | 0.0621 | 0.0002 | 0.0004 | 0.0002 |
|  | 6 | 0.0920 | 0.0001 | 0.1192 | 0.0004 | 0.0001 | 0.0002 |
|  | 7 | -0.0010 | -0.0103 | -0.2405 | -0.0012 | 0.0000 | 0.0000 |
|  | 8 | -0.0594 | -0.0069 | -0.2187 | -0.0010 | -0.0003 | -0.0001 |
|  | 9 | 0.0568 | -0.0068 | -0.1256 | -0.0007 | 0.0003 | 0.0001 |
|  | 10 | 0.0361 | -0.0068 | -0.1525 | -0.0008 | 0.0003 | 0.0001 |
|  | 11 | -0.0387 | -0.0068 | -0.1919 | -0.0009 | -0.0003 | -0.0001 |
|  | 12 | -0.0801 | -0.0069 | -0.2455 | -0.0011 | -0.0003 | -0.0002 |
|  | 13 | 0.0775 | -0.0067 | -0.0988 | -0.0006 | 0.0003 | 0.0002 |
|  | 14 | 0.0677 | -0.0067 | -0.0828 | -0.0006 | 0.0000 | 0.0001 |
|  | 15 | -0.0703 | -0.0069 | -0.2616 | -0.0011 | -0.0001 | -0.0001 |
|  | 16 | 0.0851 | -0.0067 | -0.0688 | -0.0005 | 0.0001 | 0.0002 |
|  | 17 | 0.0502 | -0.0067 | -0.0968 | -0.0006 | 0.0000 | 0.0001 |
|  | 18 | -0.0877 | -0.0069 | -0.2755 | -0.0012 | -0.0001 | -0.0002 |
|  | 19 | -0.0529 | -0.0069 | -0.2476 | -0.0011 | 0.0000 | -0.0001 |
|  | 20 | -0.0014 | -0.0144 | -0.3367 | -0.0017 | 0.0000 | 0.0000 |
|  | 21 | -0.0871 | -0.0101 | -0.3208 | -0.0014 | -0.0004 | -0.0002 |
|  | 22 | 0.0833 | -0.0099 | -0.1843 | -0.0010 | 0.0004 | 0.0002 |
|  | 23 | 0.0530 | -0.0100 | -0.2236 | -0.0012 | 0.0004 | 0.0001 |
|  | 24 | -0.0568 | -0.0100 | -0.2815 | -0.0013 | -0.0004 | -0.0001 |
|  | 25 | -0.1175 | -0.0101 | -0.3601 | -0.0016 | -0.0004 | -0.0002 |
|  | 26 | 0.1137 | -0.0099 | -0.1449 | -0.0009 | 0.0004 | 0.0002 |
|  | 27 | 0.0993 | -0.0098 | -0.1214 | -0.0009 | 0.0001 | 0.0002 |
|  | 28 | -0.1031 | -0.0101 | -0.3836 | -0.0016 | -0.0001 | -0.0002 |
|  | 29 | 0.1248 | -0.0098 | -0.1009 | -0.0008 | 0.0002 | 0.0002 |
|  | 30 | 0.0737 | -0.0099 | -0.1419 | -0.0009 | -0.0001 | 0.0001 |
|  | 31 | -0.1287 | -0.0102 | -0.4041 | -0.0017 | -0.0002 | -0.0002 |
|  | 32 | -0.0775 | -0.0101 | -0.3632 | -0.0016 | 0.0000 | -0.0001 |
| 46 | 1 | -0.0026 | -0.0080 | -0.2058 | -0.0010 | 0.0000 | 0.0000 |
|  | 2 | 0.0014 | -0.0023 | -0.0331 | -0.0002 | 0.0000 | 0.0000 |
|  | 3 | 0.0007 | -0.0011 | -0.0216 | -0.0001 | 0.0000 | 0.0000 |
|  | 4 | 0.1329 | 0.0001 | 0.0810 | 0.0002 | 0.0004 | 0.0003 |

JOINT DISPLACEMENT (CM   RADIANS)    STRUCTURE TYPE = SPACE
------------------

| JOINT | LOAD | X-TRANS | Y-TRANS | Z-TRANS | X-ROTAN | Y-ROTAN | Z-ROTAN |
|-------|------|---------|---------|---------|---------|---------|---------|
|       | 5    | 0.0777  | 0.0001  | 0.0636  | 0.0002  | 0.0004  | 0.0002  |
|       | 6    | 0.0911  | 0.0002  | 0.1306  | 0.0004  | 0.0001  | 0.0002  |
|       | 7    | -0.0012 | -0.0103 | -0.2389 | -0.0012 | 0.0000  | 0.0000  |
|       | 8    | -0.0597 | -0.0069 | -0.2182 | -0.0010 | -0.0003 | -0.0001 |
|       | 9    | 0.0569  | -0.0068 | -0.1228 | -0.0007 | 0.0003  | 0.0001  |
|       | 10   | 0.0364  | -0.0068 | -0.1522 | -0.0008 | 0.0003  | 0.0001  |
|       | 11   | -0.0392 | -0.0068 | -0.1888 | -0.0009 | -0.0003 | -0.0001 |
|       | 12   | -0.0802 | -0.0069 | -0.2476 | -0.0011 | -0.0003 | -0.0002 |
|       | 13   | 0.0774  | -0.0067 | -0.0934 | -0.0006 | 0.0003  | 0.0002  |
|       | 14   | 0.0669  | -0.0067 | -0.0726 | -0.0006 | 0.0000  | 0.0001  |
|       | 15   | -0.0698 | -0.0069 | -0.2685 | -0.0011 | -0.0001 | -0.0001 |
|       | 16   | 0.0844  | -0.0067 | -0.0583 | -0.0005 | 0.0001  | 0.0002  |
|       | 17   | 0.0494  | -0.0067 | -0.0869 | -0.0006 | 0.0000  | 0.0001  |
|       | 18   | -0.0873 | -0.0070 | -0.2828 | -0.0012 | -0.0001 | -0.0002 |
|       | 19   | -0.0523 | -0.0069 | -0.2542 | -0.0011 | 0.0000  | -0.0001 |
|       | 20   | -0.0017 | -0.0144 | -0.3344 | -0.0017 | 0.0000  | 0.0000  |
|       | 21   | -0.0876 | -0.0101 | -0.3201 | -0.0014 | -0.0004 | -0.0002 |
|       | 22   | 0.0834  | -0.0099 | -0.1801 | -0.0010 | 0.0004  | 0.0002  |
|       | 23   | 0.0533  | -0.0100 | -0.2232 | -0.0012 | 0.0004  | 0.0001  |
|       | 24   | -0.0575 | -0.0100 | -0.2770 | -0.0013 | -0.0004 | -0.0001 |
|       | 25   | -0.1177 | -0.0101 | -0.3632 | -0.0016 | -0.0005 | -0.0002 |
|       | 26   | 0.1135  | -0.0099 | -0.1370 | -0.0009 | 0.0004  | 0.0002  |
|       | 27   | 0.0982  | -0.0098 | -0.1064 | -0.0008 | 0.0001  | 0.0002  |
|       | 28   | -0.1023 | -0.0102 | -0.3937 | -0.0017 | -0.0001 | -0.0002 |
|       | 29   | 0.1238  | -0.0098 | -0.0854 | -0.0008 | 0.0002  | 0.0002  |
|       | 30   | 0.0725  | -0.0098 | -0.1274 | -0.0009 | -0.0001 | 0.0001  |
|       | 31   | -0.1280 | -0.0102 | -0.4147 | -0.0017 | -0.0002 | -0.0002 |
|       | 32   | -0.0767 | -0.0101 | -0.3728 | -0.0016 | 0.0000  | -0.0001 |
| 48    | 1    | -0.0027 | -0.0082 | -0.1725 | -0.0009 | 0.0000  | 0.0000  |
|       | 2    | 0.0013  | -0.0023 | -0.0285 | -0.0002 | 0.0000  | 0.0000  |
|       | 3    | 0.0007  | -0.0011 | -0.0180 | -0.0001 | 0.0000  | 0.0000  |
|       | 4    | 0.1327  | 0.0001  | 0.0861  | 0.0003  | 0.0004  | 0.0003  |
|       | 5    | 0.0780  | 0.0001  | 0.0767  | 0.0002  | 0.0004  | 0.0002  |
|       | 6    | 0.0907  | 0.0002  | 0.1581  | 0.0005  | 0.0001  | 0.0002  |
|       | 7    | -0.0014 | -0.0105 | -0.2010 | -0.0011 | 0.0000  | 0.0000  |
|       | 8    | -0.0601 | -0.0071 | -0.2004 | -0.0009 | -0.0003 | -0.0001 |
|       | 9    | 0.0570  | -0.0069 | -0.0853 | -0.0006 | 0.0003  | 0.0001  |
|       | 10   | 0.0366  | -0.0070 | -0.1208 | -0.0007 | 0.0003  | 0.0001  |
|       | 11   | -0.0397 | -0.0070 | -0.1648 | -0.0008 | -0.0003 | -0.0001 |
|       | 12   | -0.0805 | -0.0071 | -0.2360 | -0.0010 | -0.0003 | -0.0002 |
|       | 13   | 0.0774  | -0.0069 | -0.0497 | -0.0005 | 0.0003  | 0.0002  |
|       | 14   | 0.0665  | -0.0068 | -0.0243 | -0.0004 | 0.0000  | 0.0001  |
|       | 15   | -0.0696 | -0.0071 | -0.2614 | -0.0011 | -0.0001 | -0.0001 |
|       | 16   | 0.0841  | -0.0068 | -0.0070 | -0.0004 | 0.0001  | 0.0002  |
|       | 17   | 0.0489  | -0.0069 | -0.0416 | -0.0005 | -0.0001 | 0.0001  |
|       | 18   | -0.0872 | -0.0072 | -0.2786 | -0.0012 | -0.0001 | -0.0002 |

JOINT DISPLACEMENT (CM   RADIANS)    STRUCTURE TYPE = SPACE
------------------

| JOINT | LOAD | X-TRANS | Y-TRANS | Z-TRANS | X-ROTAN | Y-ROTAN | Z-ROTAN |
|-------|------|---------|---------|---------|---------|---------|---------|
|       | 19   | -0.0520 | -0.0071 | -0.2441 | -0.0011 |  0.0000 | -0.0001 |
|       | 20   | -0.0020 | -0.0147 | -0.2814 | -0.0016 |  0.0000 |  0.0000 |
|       | 21   | -0.0881 | -0.0104 | -0.2939 | -0.0014 | -0.0004 | -0.0002 |
|       | 22   |  0.0836 | -0.0101 | -0.1251 | -0.0009 |  0.0004 |  0.0002 |
|       | 23   |  0.0536 | -0.0102 | -0.1772 | -0.0010 |  0.0004 |  0.0001 |
|       | 24   | -0.0582 | -0.0103 | -0.2417 | -0.0012 | -0.0004 | -0.0001 |
|       | 25   | -0.1181 | -0.0104 | -0.3461 | -0.0015 | -0.0005 | -0.0002 |
|       | 26   |  0.1135 | -0.0101 | -0.0729 | -0.0007 |  0.0004 |  0.0002 |
|       | 27   |  0.0975 | -0.0100 | -0.0356 | -0.0006 |  0.0000 |  0.0002 |
|       | 28   | -0.1021 | -0.0105 | -0.3834 | -0.0016 | -0.0001 | -0.0002 |
|       | 29   |  0.1233 | -0.0100 | -0.0103 | -0.0005 |  0.0002 |  0.0002 |
|       | 30   |  0.0718 | -0.0100 | -0.0610 | -0.0007 | -0.0001 |  0.0001 |
|       | 31   | -0.1279 | -0.0105 | -0.4087 | -0.0017 | -0.0002 | -0.0002 |
|       | 32   | -0.0763 | -0.0104 | -0.3580 | -0.0016 |  0.0000 | -0.0001 |
| 50    | 1    | -0.0030 | -0.0074 | -0.0337 | -0.0005 |  0.0000 |  0.0000 |
|       | 2    |  0.0012 | -0.0020 | -0.0096 | -0.0001 |  0.0000 |  0.0000 |
|       | 3    |  0.0006 | -0.0009 | -0.0044 | -0.0001 |  0.0000 |  0.0000 |
|       | 4    |  0.1330 |  0.0002 |  0.0226 |  0.0001 |  0.0004 |  0.0003 |
|       | 5    |  0.0785 |  0.0001 |  0.0028 |  0.0000 |  0.0004 |  0.0002 |
|       | 6    |  0.0907 |  0.0001 |  0.0234 |  0.0001 |  0.0001 |  0.0002 |
|       | 7    | -0.0018 | -0.0094 | -0.0433 | -0.0006 |  0.0000 |  0.0000 |
|       | 8    | -0.0607 | -0.0063 | -0.0307 | -0.0004 | -0.0003 | -0.0001 |
|       | 9    |  0.0571 | -0.0061 | -0.0264 | -0.0004 |  0.0003 |  0.0002 |
|       | 10   |  0.0367 | -0.0062 | -0.0317 | -0.0004 |  0.0003 |  0.0001 |
|       | 11   | -0.0403 | -0.0063 | -0.0254 | -0.0004 | -0.0003 | -0.0001 |
|       | 12   | -0.0811 | -0.0063 | -0.0360 | -0.0004 | -0.0003 | -0.0002 |
|       | 13   |  0.0775 | -0.0061 | -0.0212 | -0.0004 |  0.0003 |  0.0002 |
|       | 14   |  0.0663 | -0.0061 | -0.0110 | -0.0003 |  0.0000 |  0.0002 |
|       | 15   | -0.0698 | -0.0063 | -0.0461 | -0.0004 | -0.0001 | -0.0001 |
|       | 16   |  0.0839 | -0.0061 | -0.0103 | -0.0003 |  0.0001 |  0.0002 |
|       | 17   |  0.0486 | -0.0061 | -0.0116 | -0.0003 | -0.0001 |  0.0002 |
|       | 18   | -0.0875 | -0.0064 | -0.0468 | -0.0004 | -0.0001 | -0.0002 |
|       | 19   | -0.0522 | -0.0063 | -0.0455 | -0.0004 |  0.0000 | -0.0001 |
|       | 20   | -0.0025 | -0.0131 | -0.0606 | -0.0008 |  0.0000 |  0.0001 |
|       | 21   | -0.0890 | -0.0093 | -0.0450 | -0.0006 | -0.0005 | -0.0002 |
|       | 22   |  0.0837 | -0.0090 | -0.0388 | -0.0006 |  0.0004 |  0.0003 |
|       | 23   |  0.0538 | -0.0090 | -0.0465 | -0.0006 |  0.0004 |  0.0002 |
|       | 24   | -0.0590 | -0.0092 | -0.0373 | -0.0006 | -0.0004 | -0.0001 |
|       | 25   | -0.1189 | -0.0093 | -0.0527 | -0.0006 | -0.0005 | -0.0002 |
|       | 26   |  0.1137 | -0.0089 | -0.0311 | -0.0005 |  0.0004 |  0.0003 |
|       | 27   |  0.0972 | -0.0090 | -0.0161 | -0.0005 |  0.0000 |  0.0003 |
|       | 28   | -0.1024 | -0.0093 | -0.0677 | -0.0007 | -0.0001 | -0.0002 |
|       | 29   |  0.1231 | -0.0089 | -0.0152 | -0.0005 |  0.0002 |  0.0004 |
|       | 30   |  0.0713 | -0.0090 | -0.0170 | -0.0005 | -0.0001 |  0.0002 |
|       | 31   | -0.1283 | -0.0093 | -0.0686 | -0.0007 | -0.0002 | -0.0003 |
|       | 32   | -0.0765 | -0.0092 | -0.0668 | -0.0007 |  0.0001 | -0.0001 |

```
JOINT DISPLACEMENT (CM   RADIANS)    STRUCTURE TYPE = SPACE
-----------------

JOINT  LOAD   X-TRANS   Y-TRANS   Z-TRANS   X-ROTAN   Y-ROTAN   Z-ROTAN


        25    -0.0886   -0.0530   -0.3410   -0.0004   -0.0005   -0.0005
        26     0.0526    0.0189   -0.0615    0.0000    0.0004   -0.0004
        27     0.0637    0.0291   -0.0235    0.0001    0.0000   -0.0004
        28    -0.0997   -0.0631   -0.3790   -0.0005    0.0000   -0.0005
        29     0.0775    0.0357    0.0024    0.0002    0.0001   -0.0004
        30     0.0499    0.0225   -0.0495    0.0001   -0.0001   -0.0004
        31    -0.1135   -0.0697   -0.4049   -0.0005   -0.0002   -0.0005
        32    -0.0859   -0.0565   -0.3531   -0.0005    0.0001   -0.0005
  382    1    -0.0158    0.0169   -0.0184    0.0000    0.0000    0.0014
         2     0.0000    0.0048   -0.0051    0.0000    0.0000    0.0004
         3    -0.0004    0.0017   -0.0023    0.0000    0.0000    0.0003
         4     0.0979    0.0068    0.0229    0.0000    0.0004    0.0001
         5     0.0433    0.0010    0.0029    0.0000    0.0004    0.0000
         6     0.0751    0.0071    0.0238    0.0000    0.0000    0.0000
         7    -0.0158    0.0217   -0.0235    0.0000    0.0000    0.0018
         8    -0.0446    0.0132   -0.0177    0.0000   -0.0003    0.0012
         9     0.0203    0.0147   -0.0134    0.0000    0.0003    0.0013
        10     0.0034    0.0131   -0.0188    0.0000    0.0003    0.0013
        11    -0.0277    0.0148   -0.0124    0.0000   -0.0003    0.0012
        12    -0.0615    0.0116   -0.0231    0.0000   -0.0003    0.0012
        13     0.0372    0.0163   -0.0081    0.0000    0.0003    0.0013
        14     0.0442    0.0192    0.0023    0.0001    0.0000    0.0013
        15    -0.0685    0.0087   -0.0334    0.0000    0.0000    0.0012
        16     0.0540    0.0195    0.0029    0.0001    0.0001    0.0013
        17     0.0345    0.0190    0.0016    0.0001   -0.0001    0.0013
        18    -0.0782    0.0084   -0.0341    0.0000   -0.0001    0.0012
        19    -0.0588    0.0089   -0.0328    0.0000    0.0001    0.0012
        20    -0.0221    0.0303   -0.0329    0.0000    0.0000    0.0025
        21    -0.0654    0.0194   -0.0260    0.0000   -0.0005    0.0018
        22     0.0298    0.0216   -0.0197    0.0000    0.0004    0.0019
        23     0.0050    0.0192   -0.0276    0.0000    0.0004    0.0018
        24    -0.0406    0.0217   -0.0182    0.0000   -0.0005    0.0018
        25    -0.0902    0.0170   -0.0339    0.0000   -0.0005    0.0017
        26     0.0546    0.0239   -0.0119    0.0001    0.0005    0.0019
        27     0.0648    0.0282    0.0033    0.0001    0.0000    0.0019
        28    -0.1005    0.0127   -0.0490    0.0000   -0.0001    0.0018
        29     0.0791    0.0286    0.0042    0.0001    0.0002    0.0019
        30     0.0506    0.0279    0.0024    0.0001   -0.0001    0.0018
        31    -0.1148    0.0124   -0.0500    0.0000   -0.0002    0.0017
        32    -0.0862    0.0130   -0.0481    0.0000    0.0001    0.0018
  385    1    -0.0165   -0.1304   -0.0465    0.0017    0.0000   -0.0018
         2    -0.0001   -0.0430   -0.0129    0.0005    0.0000   -0.0006
         3    -0.0004   -0.0135   -0.0046    0.0002    0.0000   -0.0002
         4     0.1090    0.0250    0.5705    0.0001    0.0014    0.0001
         5     0.0419    0.0138    0.0099    0.0000    0.0001    0.0001
         6     0.0900    0.0156    0.5802    0.0001    0.0015    0.0001
```

JOINT DISPLACEMENT (CM   RADIANS)    STRUCTURE TYPE = SPACE
------------------

| JOINT | LOAD | X-TRANS | Y-TRANS | Z-TRANS | X-ROTAN | Y-ROTAN | Z-ROTAN |
|-------|------|---------|---------|---------|---------|---------|---------|
| | 7 | -0.0166 | -0.1735 | -0.0594 | 0.0022 | 0.0000 | -0.0024 |
| | 8 | -0.0441 | -0.1183 | -0.0458 | 0.0014 | 0.0000 | -0.0016 |
| | 9 | 0.0187 | -0.0976 | -0.0309 | 0.0014 | 0.0000 | -0.0015 |
| | 10 | -0.0015 | -0.1011 | -0.1614 | 0.0014 | -0.0003 | -0.0015 |
| | 11 | -0.0238 | -0.1148 | 0.0848 | 0.0014 | 0.0003 | -0.0016 |
| | 12 | -0.0643 | -0.1218 | -0.1763 | 0.0014 | -0.0004 | -0.0016 |
| | 13 | 0.0390 | -0.0941 | 0.0997 | 0.0015 | 0.0004 | -0.0015 |
| | 14 | 0.0548 | -0.0962 | 0.3968 | 0.0015 | 0.0011 | -0.0015 |
| | 15 | -0.0802 | -0.1196 | -0.4735 | 0.0014 | -0.0011 | -0.0016 |
| | 16 | 0.0642 | -0.0931 | 0.3991 | 0.0015 | 0.0011 | -0.0015 |
| | 17 | 0.0454 | -0.0993 | 0.3946 | 0.0015 | 0.0011 | -0.0015 |
| | 18 | -0.0896 | -0.1227 | -0.4757 | 0.0014 | -0.0011 | -0.0016 |
| | 19 | -0.0707 | -0.1165 | -0.4712 | 0.0014 | -0.0011 | -0.0016 |
| | 20 | -0.0232 | -0.2429 | -0.0832 | 0.0031 | 0.0000 | -0.0034 |
| | 21 | -0.0646 | -0.1735 | -0.0671 | 0.0021 | 0.0000 | -0.0024 |
| | 22 | 0.0275 | -0.1432 | -0.0453 | 0.0021 | 0.0001 | -0.0022 |
| | 23 | -0.0022 | -0.1483 | -0.2367 | 0.0021 | -0.0004 | -0.0022 |
| | 24 | -0.0349 | -0.1683 | 0.1243 | 0.0021 | 0.0004 | -0.0023 |
| | 25 | -0.0943 | -0.1786 | -0.2586 | 0.0021 | -0.0005 | -0.0024 |
| | 26 | 0.0572 | -0.1380 | 0.1462 | 0.0021 | 0.0005 | -0.0022 |
| | 27 | 0.0804 | -0.1411 | 0.5820 | 0.0022 | 0.0016 | -0.0022 |
| | 28 | -0.1176 | -0.1755 | -0.6944 | 0.0020 | -0.0016 | -0.0024 |
| | 29 | 0.0942 | -0.1366 | 0.5853 | 0.0022 | 0.0016 | -0.0021 |
| | 30 | 0.0666 | -0.1457 | 0.5787 | 0.0022 | 0.0016 | -0.0022 |
| | 31 | -0.1314 | -0.1800 | -0.6977 | 0.0020 | -0.0016 | -0.0024 |
| | 32 | -0.1038 | -0.1709 | -0.6911 | 0.0020 | -0.0016 | -0.0023 |

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


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450. LOAD LIST 7 TO 19
451. PARAMETER 1
452. CODE AISC
453. FYLD 35000 MEMB 12 26 28
454. MAIN 1 MEMB 201 216 217 219 TO 221 228 TO 231 236 TO 243 248 TO 257 259 261 -
455. 262 264 267 268 270 272 273 275 276 278 280 281 283 287 302 304 306 310 315 -
456. 320
457. UNT 0.1 MEMB 201 204 206 207 209 216 217 219 TO 221 228 TO 231 236 TO 243 -
458. 248 TO 257 259 261 262 264 266 TO 268 270 272 273 275 276 278 280 281 283 -
459. 284 TO 285 287 289 290 293 TO 295 299 TO 302 304 306 308 310 311 313 315 316 -
460. 318 320 321
461. CHECK CODE MEMB 12 14 TO 26 28 30 TO 191 201 202 204 TO 211 216 217 -

462. 219 TO 221 228 TO 231 236 TO 243 248 TO 257 259 261 262 264 TO 268 270 272 -
463. 273 275 276 278 280 281 283 TO 285 287 289 290 293 TO 295 299 TO 302 304 -
464. 306 308 310 311 313 315 316 318 320 321 621 TO 703
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──────────────────────────────STEEL DESIGN

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                      STAAD.Pro CODE CHECKING - (AISC 9TH EDITION)   v1.0
                      ************************


     ALL UNITS ARE - MTON METE (UNLESS OTHERWISE Noted)

     MEMBER       TABLE       RESULT/    CRITICAL COND/    RATIO/     LOADING/
                              FX             MY            MZ         LOCATION
     =====================================================================


       12  ST   TUB80803                 (AISC SECTIONS)
                              PASS     AISC- H1-2         0.544         7
                      14.93 C          -0.81              0.96        3.00
       14  ST   TUB E                    (AISC SECTIONS)
                              PASS     AISC- H1-3         0.300         7
                      41.34 C          -9.36              0.71        0.00
       15  ST   TUB E                    (AISC SECTIONS)
                              PASS     AISC- H1-3         0.276         7
                      27.98 C          -10.91            -0.11        3.00
       16  ST   TUB E                    (AISC SECTIONS)
                              PASS     AISC- H1-3         0.283         7
                      28.38 C          -11.07            -0.21        3.00
       17  ST   TUB E                    (AISC SECTIONS)
                              PASS     AISC- H1-3         0.275         7
                      27.58 C          -9.85             -0.66        3.00
       18  ST   TUB E                    (AISC SECTIONS)
                              PASS     AISC- H1-3         0.235         7
                      20.83 C          -7.96              1.02        0.00
       19  ST   TUB E                    (AISC SECTIONS)
                              PASS     AISC- H1-3         0.197         7
                      7.83 C           10.07             -0.21        6.00
       20  ST   TUB E                    (AISC SECTIONS)
                              PASS     AISC- H1-3         0.441         7
                      23.39 C          -18.93            -2.19        3.00
       21  ST   TUB E                    (AISC SECTIONS)
                              PASS     AISC- H1-3         0.186        18
                      7.42 C           -6.87             -1.39        0.00
       22  ST   TUB E                    (AISC SECTIONS)
                              PASS     AISC- H1-3         0.187        18
                      7.31 C           -6.96             -1.38        0.00
       23  ST   TUB E                    (AISC SECTIONS)
                              PASS     AISC- H1-3         0.178        18
                      7.31 C           -7.21             -1.37        0.00
       24  ST   TUB E                    (AISC SECTIONS)
                              PASS     AISC- H1-3         0.188        18
                      7.44 C           -7.01             -1.39        0.00
       25  ST   TUB E                    (AISC SECTIONS)
                              PASS     AISC- H1-3         0.181         7
                      9.44 C           -8.78             -0.26        4.50
       26  ST   TUB80803                 (AISC SECTIONS)
                              PASS     AISC- H1-2         0.738         7
                      14.01 C          0.88               1.92        3.00
       28  ST   TUB80803                 (AISC SECTIONS)
                              PASS     AISC- H1-3         0.491         7
                      5.65 C           -1.65              0.40        3.00
```

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ALL UNITS ARE - MTON METE (UNLESS OTHERWISE Noted)

MEMBER       TABLE        RESULT/   CRITICAL COND/     RATIO/     LOADING/
                         FX           MY               MZ        LOCATION
==========================================================================


   30 ST  W18X40                    (AISC SECTIONS)
                         PASS      AISC- H1-3         0.826         13
                        3.78 C        0.60            9.09          0.00
   31 ST  W18X40                    (AISC SECTIONS)
                         PASS      AISC- H1-3         0.833         13
                        0.21 C        0.61            9.79          0.00
   32 ST  W18X40                    (AISC SECTIONS)
                         PASS      AISC- H1-3         0.822         13
                        0.08 C        0.61            9.63          0.00
   33 ST  W18X40                    (AISC SECTIONS)
                         PASS      AISC- H1-3         0.819         13
                        0.12 C        0.60            9.63          0.00
   34 ST  W18X40                    (AISC SECTIONS)
                         PASS      AISC- H1-3         0.816         13
                        0.43 C        0.58            9.67          0.00
   35 ST  W18X40                    (AISC SECTIONS)
                         PASS      AISC- H1-3         0.699         12
                        1.18 C       -0.57            7.45          0.00
   36     TAP ERED                  (AISC SECTIONS)
                         PASS      AISC- H2-1         0.262          7
                        0.00 T        2.69           -0.02          0.00
   37     TAP ERED                  (AISC SECTIONS)
                         PASS      AISC- H1-3         0.306          7
                        0.00 C        3.15            0.00          0.00
   38     TAP ERED                  (AISC SECTIONS)
                         PASS      AISC- H1-3         0.299          7
                        0.00 T        3.08           -0.01          0.00
   39     TAP ERED                  (AISC SECTIONS)
                         PASS      AISC- H2-1         0.298          7
                        0.00 T        3.08           -0.01          0.00
   40     TAP ERED                  (AISC SECTIONS)
                         PASS      AISC- H2-1         0.307          7
                        0.00 T        3.16            0.02          0.00
   41     TAP ERED                  (AISC SECTIONS)
                         PASS      AISC- H1-3         0.260          7
                        0.00 C        2.67            0.02          0.00
   42 ST  W14X30                    (AISC SECTIONS)
                         PASS      AISC- H1-3         0.201         13
                        0.06 C        0.05            0.78          0.00
   43 ST  W14X30                    (AISC SECTIONS)
                         PASS      AISC- H1-3         0.213         13
                        0.20 C        0.04            0.82          0.00
   44 ST  W14X30                    (AISC SECTIONS)
                         PASS      AISC- H1-3         0.219         13
                        0.40 C        0.05            0.79          0.00
```

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ALL UNITS ARE - MTON METE (UNLESS OTHERWISE Noted)

MEMBER        TABLE       RESULT/   CRITICAL COND/    RATIO/      LOADING/
                          FX            MY             MZ         LOCATION
===========================================================================


   205  ST   TUB E                   (AISC SECTIONS)
                          PASS     AISC- H1-3         0.235          7
                          9.31 C       12.24           0.22       3.00
   206  ST   W14X30                  (AISC SECTIONS)
                          PASS     AISC- H1-3         0.594          7
                          0.38 C        0.00           2.62       0.00
   207  ST   W14X30                  (AISC SECTIONS)
                          PASS     AISC- H1-3         0.608          7
                          0.30 C        0.00           2.69       0.00
   208  ST   TUB E                   (AISC SECTIONS)
                          PASS     AISC- H1-3         0.228          7
                          9.35 C       12.10          -0.03       3.00
   209  ST   W14X30                  (AISC SECTIONS)
                          PASS     AISC- H1-3         0.653          7
                          0.22 C        0.00           2.91       0.00
   210  ST   TUB E                   (AISC SECTIONS)
                          PASS     AISC- H1-3         0.237          7
                          9.43 C       12.34           0.21       3.00
   211  ST   TUB E                   (AISC SECTIONS)
                          PASS     AISC- H1-3         0.232          7
                          9.28 C       12.21           0.11       3.00
   216  ST   W14X30                  (AISC SECTIONS)
                          PASS     AISC- H1-3         0.237          7
                          0.14 C        0.00          -2.70       1.63
   217  ST   W14X30                  (AISC SECTIONS)
                          PASS     AISC- H1-3         0.698          7
                          0.67 C        0.01           7.87       1.83
   219  ST   W8X10                   (AISC SECTIONS)
                          PASS     AISC- H1-3         0.392          7
                          0.09 C        0.00          -0.82       1.56
   220  ST   W14X30                  (AISC SECTIONS)
                          PASS     AISC- H1-3         0.471          7
                          0.24 C        0.00          -5.39       1.63
   221  ST   W14X30                  (AISC SECTIONS)
                          PASS     AISC- H1-3         0.478          7
                          0.32 C        0.00          -5.44       0.00
   228  ST   W14X38                  (AISC SECTIONS)
                          PASS     AISC- H1-3         0.321          7
                          0.12 C        0.00          -4.76       1.63
*  229  ST   W14X38                  (AISC SECTIONS)
                          FAIL     AISC- H1-3         1.026          7
                          0.09 C        0.01          15.26       1.83
   230  ST   W14X38                  (AISC SECTIONS)
                          PASS     AISC- H1-3         0.564          7
                          0.22 C        0.00          -8.40       1.63
```

**Proyecto Estructural**   CENTRO DE SERVICIOS INFONAVIT "CESI"
Memoria de cálculo

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ALL UNITS ARE - MTON METE (UNLESS OTHERWISE Noted)

MEMBER      TABLE      RESULT/   CRITICAL COND/    RATIO/    LOADING/
                       FX            MY             MZ       LOCATION
=========================================================================


  231  ST  W14X38                 (AISC SECTIONS)
                       PASS      AISC- H1-3        0.536         7
                       0.05 C       0.00          -7.99         0.00
  236  ST  W14X38                 (AISC SECTIONS)
                       PASS      AISC- H1-3        0.304         7
                       0.17 C       0.00          -4.50         1.63
  237  ST  W14X38                 (AISC SECTIONS)
                       PASS      AISC- H1-3        0.932         7
                       0.66 C       0.01          13.79         1.83
  238  ST  W14X38                 (AISC SECTIONS)
                       PASS      AISC- H1-3        0.597         7
                       0.35 C       0.00          -8.87         1.63
  239  ST  W14X38                 (AISC SECTIONS)
                       PASS      AISC- H1-3        0.561         7
                       0.39 C       0.00          -8.31         0.00
  240  ST  W14X38                 (AISC SECTIONS)
                       PASS      AISC- H1-3        0.334         7
                       0.16 C       0.00          -4.97         1.63
  241  ST  W14X38                 (AISC SECTIONS)
                       PASS      AISC- H1-3        0.945         7
                       0.68 C       0.00          14.01         1.83
  242  ST  W14X38                 (AISC SECTIONS)
                       PASS      AISC- H1-3        0.610         7
                       0.35 C       0.00          -9.07         1.63
  243  ST  W14X38                 (AISC SECTIONS)
                       PASS      AISC- H1-3        0.582         7
                       0.41 C       0.00          -8.63         0.00
  248  ST  W14X38                 (AISC SECTIONS)
                       PASS      AISC- H1-3        0.322         7
                       0.18 C       0.00          -4.78         1.63
  249  ST  W14X38                 (AISC SECTIONS)
                       PASS      AISC- H1-3        0.920         7
                       0.52 C      -0.01          13.61         1.83
  250  ST  W14X38                 (AISC SECTIONS)
                       PASS      AISC- H1-3        0.572         7
                       0.25 C       0.00          -8.51         1.63
  251  ST  W14X38                 (AISC SECTIONS)
                       PASS      AISC- H1-3        0.559         7
                       0.29 C       0.00          -8.30         0.00
  252  ST  W14X30                 (AISC SECTIONS)
                       PASS      AISC- H1-3        0.363         7
                       0.15 C       0.00          -4.15         1.63
  253  ST  W14X30                 (AISC SECTIONS)
                       PASS      AISC- H2-1        0.872         7
                       0.00 T      -0.01           9.98         1.83
```

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ALL UNITS ARE - MTON METE (UNLESS OTHERWISE Noted)

MEMBER      TABLE       RESULT/   CRITICAL COND/    RATIO/    LOADING/
                        FX            MY             MZ       LOCATION
=======================================================================


   254  ST  W14X30                  (AISC SECTIONS)
                        PASS      AISC- H1-3        0.514        7
                        0.09 C        0.00         -5.90       1.63
   255  ST  W14X30                  (AISC SECTIONS)
                        PASS      AISC- H2-1        0.514        7
                        0.02 T        0.00         -5.91       0.00
   256  ST  W8X10                   (AISC SECTIONS)
                        PASS      AISC- H2-1        0.587        7
                        0.02 T        0.00         -1.25       1.56
   257  ST  W10X22                  (AISC SECTIONS)
                        PASS      AISC- H2-1        0.664        7
                        0.11 T        0.00         -4.20       2.74
   259  ST  W10X22                  (AISC SECTIONS)
                        PASS      AISC- H2-1        0.823        7
                        0.08 T        0.00         -5.22       3.05
   261  ST  W10X22                  (AISC SECTIONS)
                        PASS      AISC- H1-3        0.823        7
                        0.02 C        0.00         -5.22       3.05
   262  ST  W10X22                  (AISC SECTIONS)
                        PASS      AISC- H1-3        0.824        7
                        0.03 C        0.00         -5.22       3.05
   264  ST  W10X22                  (AISC SECTIONS)
                        PASS      AISC- H2-1        0.823        7
                        0.05 T        0.00         -5.22       3.05
   265  ST  TUB E                   (AISC SECTIONS)
                        PASS      AISC- H1-3        0.153        7
                        9.61 C       -6.91          0.43       1.50
   266  ST  W24X55                  (AISC SECTIONS)
                        PASS      AISC- H2-1        0.949        7
                        0.79 T       -0.02         29.37       0.00
   267  ST  W8X10                   (AISC SECTIONS)
                        PASS      AISC- H1-3        0.589        7
                        0.02 C        0.00         -1.25       1.56
   268  ST  W10X22                  (AISC SECTIONS)
                        PASS      AISC- H1-3        0.664        7
                        0.04 C        0.00         -4.20       2.74
   270  ST  W10X22                  (AISC SECTIONS)
                        PASS      AISC- H1-3        0.824        7
                        0.04 C        0.00         -5.22       3.05
   272  ST  W10X22                  (AISC SECTIONS)
                        PASS      AISC- H1-3        0.827        7
                        0.07 C        0.00         -5.22       3.05
   273  ST  W10X22                  (AISC SECTIONS)
                        PASS      AISC- H1-3        0.827        7
                        0.07 C        0.00         -5.22       3.05
```

**Proyecto Estructural**  **CENTRO DE SERVICIOS INFONAVIT "CESI"**
Memoria de cálculo

```
ALL UNITS ARE - MTON METE (UNLESS OTHERWISE Noted)

MEMBER       TABLE        RESULT/   CRITICAL COND/    RATIO/     LOADING/
                          FX            MY              MZ        LOCATION
==========================================================================


   275  ST   W10X22                     (AISC SECTIONS)
                          PASS      AISC- H1-3         0.823         7
                          0.01 C        0.00          -5.22        3.05
   276  ST   W10X22                     (AISC SECTIONS)
                          PASS      AISC- H1-3         0.708         7
                          0.15 C        0.00          -4.44        2.74
   278  ST   W10X22                     (AISC SECTIONS)
                          PASS      AISC- H1-3         0.878         7
                          0.13 C        0.00          -5.52        3.05
   280  ST   W10X22                     (AISC SECTIONS)
                          PASS      AISC- H1-3         0.880         7
                          0.16 C        0.00          -5.52        3.05
   281  ST   W10X22                     (AISC SECTIONS)
                          PASS      AISC- H1-3         0.879         7
                          0.14 C        0.00          -5.52        3.05
   283  ST   W10X22                     (AISC SECTIONS)
                          PASS      AISC- H1-3         0.873         7
                          0.06 C        0.00          -5.52        3.05
   284  ST   W14X30                     (AISC SECTIONS)
                          PASS      AISC- H1-3         0.524         7
                          0.09 C        0.00           2.77        0.00
   285  ST   W24X55                     (AISC SECTIONS)
                          PASS      AISC- H2-1         0.436         7
                          0.45 T        0.00         -13.56        0.38
   287  ST   W14X30                     (AISC SECTIONS)
                          PASS      AISC- H1-3         0.405         7
                          0.20 C        0.00           2.11        5.49
   289  ST   W14X30                     (AISC SECTIONS)
                          PASS      AISC- H1-3         0.693         7
                          0.38 C       -0.01           7.84        0.00
   290  ST   W14X30                     (AISC SECTIONS)
                          PASS      AISC- H1-3         0.591         7
                          0.60 C        0.00           6.70        0.00
   293  ST   W14X30                     (AISC SECTIONS)
                          PASS      AISC- H1-3         0.193         7
                          0.40 C        0.01          -2.12        1.52
   294  ST   W14X30                     (AISC SECTIONS)
                          PASS      AISC- H1-3         0.201         7
                          0.42 C        0.00          -2.22        0.00
   295  ST   W14X30                     (AISC SECTIONS)
                          PASS      AISC- H1-3         0.519         7
                          0.42 C        0.00           5.89        1.52
   299  ST   W24X55                     (AISC SECTIONS)
                          PASS      AISC- H2-1         0.364         7
                          0.72 T       -0.01          11.17        0.00
```

```
ALL UNITS ARE - MTON METE (UNLESS OTHERWISE Noted)

MEMBER       TABLE        RESULT/   CRITICAL COND/    RATIO/      LOADING/
                          FX            MY             MZ        LOCATION
=======================================================================


   300  ST  W24X55                    (AISC SECTIONS)
                          PASS     AISC- H2-1         0.331          7
                          0.66 T        0.01         -10.17       1.52
   301  ST  W24X55                    (AISC SECTIONS)
                          PASS     AISC- H2-1         0.435          7
                          0.62 T        0.00         -13.49       1.52
   302  ST  W10X22                    (AISC SECTIONS)
                          PASS     AISC- H2-1         0.624          7
                          0.00 T        0.00          -3.96       2.74
   304  ST  W10X22                    (AISC SECTIONS)
                          PASS     AISC- H2-1         0.624          7
                          0.02 T        0.00          -3.96       2.74
   306  ST  W10X22                    (AISC SECTIONS)
                          PASS     AISC- H2-1         0.624          7
                          0.00 T        0.00          -3.96       2.74
   308  ST  W14X30                    (AISC SECTIONS)
                          PASS     AISC- H1-3         0.429          7
                          0.40 C        0.00          -4.87       1.52
   310  ST  W10X22                    (AISC SECTIONS)
                          PASS     AISC- H1-3         0.624          7
                          0.01 C        0.00          -3.96       2.74
   311  ST  W24X55                    (AISC SECTIONS)
                          PASS     AISC- H2-1         0.400          7
                          0.43 T        0.00         -12.46       0.00
   313  ST  W14X30                    (AISC SECTIONS)
                          PASS     AISC- H1-3         0.413          7
                          0.29 C        0.00          -4.71       0.00
   315  ST  W10X22                    (AISC SECTIONS)
                          PASS     AISC- H2-1         0.624          7
                          0.01 T        0.00          -3.96       2.74
   316  ST  W24X55                    (AISC SECTIONS)
                          PASS     AISC- H2-1         0.214          7
                          0.27 T        0.00          -6.66       0.00
   318  ST  W14X30                    (AISC SECTIONS)
                          PASS     AISC- H1-3         0.359          7
                          0.35 C        0.00          -4.07       0.00
   320  ST  W10X22                    (AISC SECTIONS)
                          PASS     AISC- H1-3         0.625          7
                          0.03 C        0.00          -3.96       2.74
   321  ST  W24X55                    (AISC SECTIONS)
                          PASS     AISC- H1-3         0.659          7
                          0.11 C        0.00          20.62       1.52
```

ALL UNITS ARE - MTON METE (UNLESS OTHERWISE Noted)

| MEMBER | TABLE | RESULT/ FX | CRITICAL COND/ MY | RATIO/ MZ | LOADING/ LOCATION |
|--------|-------|-----------|-------------------|-----------|-------------------|
| 640 | TAP ERED | | (AISC SECTIONS) | | |
| | | PASS | AISC- H2-1 | 0.196 | 7 |
| | | 0.00 T | 1.36 | -0.01 | 0.00 |
| 641 | TAP ERED | | (AISC SECTIONS) | | |
| | | PASS | AISC- H2-1 | 0.171 | 7 |
| | | 0.00 T | 0.66 | 0.00 | 0.00 |
| 642 | TAP ERED | | (AISC SECTIONS) | | |
| | | PASS | AISC- H1-3 | 0.231 | 7 |
| | | 0.00 C | 1.60 | 0.00 | 0.00 |
| 643 | TAP ERED | | (AISC SECTIONS) | | |
| | | PASS | AISC- H1-3 | 0.202 | 7 |
| | | 0.00 C | 0.79 | 0.00 | 0.00 |
| 644 | TAP ERED | | (AISC SECTIONS) | | |
| | | PASS | AISC- H1-3 | 0.225 | 7 |
| | | 0.00 T | 1.56 | -0.01 | 0.00 |
| 645 | TAP ERED | | (AISC SECTIONS) | | |
| | | PASS | AISC- H1-3 | 0.197 | 7 |
| | | 0.00 T | 0.77 | 0.00 | 0.00 |
| 646 | TAP ERED | | (AISC SECTIONS) | | |
| | | PASS | AISC- H1-3 | 0.224 | 7 |
| | | 0.00 T | 1.56 | 0.00 | 0.00 |
| 647 | TAP ERED | | (AISC SECTIONS) | | |
| | | PASS | AISC- H1-3 | 0.196 | 7 |
| | | 0.00 T | 0.76 | 0.00 | 0.00 |
| 648 | TAP ERED | | (AISC SECTIONS) | | |
| | | PASS | AISC- H2-1 | 0.232 | 7 |
| | | 0.00 T | 1.61 | 0.01 | 0.00 |
| 649 | TAP ERED | | (AISC SECTIONS) | | |
| | | PASS | AISC- H2-1 | 0.203 | 7 |
| | | 0.00 T | 0.79 | 0.00 | 0.00 |
| 650 | TAP ERED | | (AISC SECTIONS) | | |
| | | PASS | AISC- H1-3 | 0.194 | 7 |
| | | 0.00 C | 1.35 | 0.01 | 0.00 |
| 651 | TAP ERED | | (AISC SECTIONS) | | |
| | | PASS | AISC- H1-3 | 0.169 | 7 |
| | | 0.00 C | 0.66 | 0.00 | 0.00 |

```
ALL UNITS ARE - MTON METE (UNLESS OTHERWISE Noted)

MEMBER      TABLE        RESULT/   CRITICAL COND/    RATIO/     LOADING/
                         FX            MY             MZ        LOCATION
=======================================================================


  655      TAP ERED                (AISC SECTIONS)
                         PASS      AISC- H2-1        0.153         7
                         0.00 T       1.32           0.01        0.00
  656      TAP ERED                (AISC SECTIONS)
                         PASS      AISC- H2-1        0.126         7
                         0.00 T       0.63           0.01        0.00
  657      TAP ERED                (AISC SECTIONS)
                         PASS      AISC- H1-3        0.004         7
                         0.00 T       0.01           0.00        0.00
  658      TAP ERED                (AISC SECTIONS)
                         PASS      AISC- H1-3        0.179         7
                         0.00 T       1.54           0.02        0.00
  659      TAP ERED                (AISC SECTIONS)
                         PASS      AISC- H1-3        0.149         7
                         0.00 T       0.74           0.01        0.00
  660      TAP ERED                (AISC SECTIONS)
                         PASS      AISC- H1-3        0.004         7
                         0.00 T       0.01           0.00        0.00
  661      TAP ERED                (AISC SECTIONS)
                         PASS      AISC- H1-3        0.174         7
                         0.00 T       1.51           0.00        0.00
  662      TAP ERED                (AISC SECTIONS)
                         PASS      AISC- H1-3        0.144         7
                         0.00 T       0.73           0.00        0.00
  663      TAP ERED                (AISC SECTIONS)
                         PASS      AISC- H1-3        0.004         7
                         0.00 T       0.01           0.00        0.00
  664      TAP ERED                (AISC SECTIONS)
                         PASS      AISC- H1-3        0.175         7
                         0.00 T       1.51          -0.02        0.00
  665      TAP ERED                (AISC SECTIONS)
                         PASS      AISC- H1-3        0.145         7
                         0.00 T       0.73          -0.01        0.00
  666      TAP ERED                (AISC SECTIONS)
                         PASS      AISC- H1-3        0.004         7
                         0.00 T       0.01           0.00        0.00
  667      TAP ERED                (AISC SECTIONS)
                         PASS      AISC- H1-3        0.180         7
                         0.00 C       1.54          -0.03        0.00
  668      TAP ERED                (AISC SECTIONS)
                         PASS      AISC- H1-3        0.149         7
                         0.00 C       0.74          -0.02        0.00
  669      TAP ERED                (AISC SECTIONS)
                         PASS      AISC- H1-3        0.004         7
                         0.00 T       0.01           0.00        0.00
```

─────────────────────────────STEEL TAKE OFF

```
STEEL TAKE-OFF
--------------

    PROFILE                 LENGTH(METE)     WEIGHT(MTON)

466. 220 TO 221 228 TO 231 236 TO 243 248 TO 257 259 261 262 264 TO 268 270 272 -
467. 273 275 276 278 280 281 283 TO 285 287 289 290 293 TO 295 299 TO 302 304 -
468. 306 308 310 311 313 315 316 318 320 321 621 TO 703
ST  TUB80803                    9.00             0.262
ST  TUBE                       63.00            11.151
ST  W18X40                     73.75             4.398
ISECT: TAPERED      36          3.56             0.345
ST  W14X30                    127.49             5.702
ST  8CS1.625X102             487.64             2.871
ST  W8X10                       9.36             0.140
ST  W14X38                     26.84             1.519
ST  W10X22                    122.61             4.022
ST  W24X55                     12.20             0.999
ISECT: TAPERED     634          5.52             0.261
ISECT: TAPERED     640          3.56             0.274
ISECT: TAPERED     641          3.56             0.218
ISECT: TAPERED     655          3.60             0.313
ISECT: TAPERED     656          3.60             0.242
                                       ----------------
                              TOTAL =            32.717


************* END OF DATA FROM INTERNAL STORAGE *************


469. LOAD LIST 20 TO 32
470. START CONCRETE DESIGN
```

```
                                    CONCRETE
DESIGN
```

```
  471. CODE ACI
  472. FC 2500 MEMB 1 2 4 5 7 8 10 11 192 193 195 TO 200 218 222 223 323 324 326 -
  473. 327 TO 332 334 TO 344 346 TO 354 356 357 359 360 362 TO 366 380 381 383 390 -
  474. 391 394 395 397 398 401 402 404 405 408 409 411 412 414 415 418 419 421 422 -
  475. 424 425 428 429 431 432 434 435 438 439 441 442 444 445 447 448 451 452 454 -
  476. 455 457 458 460 461 464 TO 467 471 TO 476 480 TO 485 489 TO 545 704
  477. DESIGN BEAM 323 324 326 TO 332 334 TO 344 346 TO 354 356 357 359 360 -
  478. 362 TO 366 380 381 383 391 395 398 402 405 409 412 415 419 422 425 429 432 -
  479. 435 439 442 445 448 452 455 458 461 464 TO 467 471 TO 476 480 TO 485 489 -
  480. 490 TO 545 704
```

```
      ==================================================================

          BEAM  NO.   323 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

      LEN - 1040. MM  FY -  414.  FC -  25.  MPA, SIZE -  250. X 1000. MMS

      LEVEL      HEIGHT      BAR INFO      FROM          TO          ANCHOR
                 (MM)                      (MM)         (MM)        STA   END
      _____


        1        943.     2 - 12MM        0.         1040.        YES  YES



           B E A M  N O.   323 D E S I G N  R E S U L T S - SHEAR


      ** LOCATION FOR DESIGN FOR SHEAR AT START OF MEMBER   323 IS BEYOND
         THE MIDPOINT OF MEMBER. DESIGN FOR SHEAR AND TORSION NOT PERFORMED.


      ** LOCATION FOR DESIGN FOR SHEAR AT END OF MEMBER   323 IS BEYOND
         THE MIDPOINT OF MEMBER. DESIGN FOR SHEAR AND TORSION NOT PERFORMED.


   ___   1J_____ 1040X 250X 1000_____ 208J____
   ||===========================================================================||
   | 2No12 H 943.   0.TO 1040                                                    |
   |                                                                            |
   |                                                                            |
   |                                                                            |
   |                                                                            |
   |                                                                            |
   |_____|

    ___   ___   ___   ___   ___   ___   ___   ___   ___   ___   ___          ___
   |oo |  |oo |  |oo |  |oo |  |oo |  |oo |  |oo |  |oo |  |oo |  |oo |  |oo |    |oo |
   | 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12        | 2#1
  2| | |  | |   | |   | |   | |   | |   | |   | |   | |   | |   |             | |
   | | |  | |   | |   | |   | |   | |   | |   | |   | |   | |   |             | |
   | | |  | |   | |   | |   | |   | |   | |   | |   | |   | |   |             | |
   | | |  | |   | |   | |   | |   | |   | |   | |   | |   | |   |             | |
   | | |  | |   | |   | |   | |   | |   | |   | |   | |   | |   |             | |
   |___|  |___|  |___|  |___|  |___|  |___|  |___|  |___|  |___|  |___|          |___|
```

```
  ========================================================================

         BEAM   NO.   324 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

 LEN -  1098. MM  FY -  414.  FC -  25.  MPA, SIZE -  250. X 1000. MMS

 LEVEL      HEIGHT       BAR INFO        FROM          TO         ANCHOR
             (MM)                        (MM)         (MM)       STA  END
 _____


    1        57.      2 - 12MM        0.          479.       YES  NO
    2       943.      2 - 12MM        0.         1098.       YES  YES


         B E A M  N O.   324 D E S I G N  R E S U L T S - SHEAR



 ** LOCATION FOR DESIGN FOR SHEAR AT START OF MEMBER   324 IS BEYOND
    THE MIDPOINT OF MEMBER. DESIGN FOR SHEAR AND TORSION NOT PERFORMED.


 ** LOCATION FOR DESIGN FOR SHEAR AT END OF MEMBER   324 IS BEYOND
    THE MIDPOINT OF MEMBER. DESIGN FOR SHEAR AND TORSION NOT PERFORMED.


 ___    3J_____  1097X 250X 1000_____  234J____
||===========================================================================||
| 2No12 H 943.   0.TO 1098                                                   |
|                                                                           |
|                                                                           |
|                                                                           |
| 2No12 H  57.   0.TO  479                                                  |
||===============================                                           |
|_____|

 ___   ___   ___   ___   ___   ___   ___   ___   ___   ___   ___            ___
|oo |  |oo | |oo | |oo | |oo | |oo | |oo | |oo | |oo | |oo | |oo |         |oo |
| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12         | 2#1
2| | |  | |   | |   | |   | |   | |   | |   | |   | |   | |   |  |          | | |
|  | |  | |   | |   | |   | |   | |   | |   | |   | |   | |   |  |          | | |
|  | |  | |   | |   | |   | |   | |   | |   | |   | |   | |   |  |          | | |
| 2#12| 2#12| 2#12| 2#12| 2#12|  | |   | |   | |   | |   | |   |  |          | | |
|oo |  |oo | |oo | |oo | |oo | | |   | |   | |   | |   | |   |  |          | | |
|___|  |___| |___| |___| |___| |___| |___| |___| |___| |___| |___|         |___|
```

```
========================================================================

        BEAM  NO.   326 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN -  1067. MM FY -  414.  FC -  25.  MPA, SIZE -  250. X 1000. MMS

LEVEL      HEIGHT      BAR INFO       FROM          TO        ANCHOR
            (MM)                      (MM)          (MM)      STA  END
_____


   1        57.      2 - 12MM        0.          1031.       YES  NO
   2       943.      2 - 12MM      374.          1068.       NO   YES


        B E A M  N O.   326 D E S I G N  R E S U L T S - SHEAR


 ** LOCATION FOR DESIGN FOR SHEAR AT START OF MEMBER   326 IS BEYOND
    THE MIDPOINT OF MEMBER. DESIGN FOR SHEAR AND TORSION NOT PERFORMED.


 ** LOCATION FOR DESIGN FOR SHEAR AT END OF MEMBER   326 IS BEYOND
    THE MIDPOINT OF MEMBER. DESIGN FOR SHEAR AND TORSION NOT PERFORMED.


___    7J_____ 1067X 250X 1000_____ 216J____
|                            ====================================================||
|                             2No12 H 943. 374.TO 1068                        |
|                                                                             |
|                                                                             |
|                                                                             |
| 2No12 H  57.   0.TO 1031                                                    |
||===========================================================================  |
|_____|

   ___   ___  ___   ___   ___           ___    ___    ___    ___    ___    ___    ___                  ___
  | | |  | |  | |   | |  |oo |  |oo |  |oo |  |oo |  |oo |  |oo |  |oo |                 |oo |
  | | |  | |  | |   | |  | 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12                | 2#1
2 | | |  | |  | |   | |  | | |  | | |  | | |  | | |  | | |  | | |  |   |                 |   |
  | | |  | |  | |   | |  | | |  | | |  | | |  | | |  | | |  | | |  |   |                 |   |
  | | |  | |  | |   | |  | | |  | | |  | | |  | | |  | | |  | | |  |   |                 |   |
  | 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12                |   |
  |oo |  |oo |  |oo |  |oo |  |oo |  |oo |  |oo |  |oo |  |oo |  |oo |  |oo |                |   |
  |___|  |___|  |___|  |___|  |___|  |___|  |___|  |___|  |___|  |___|  |___|                |___|
```

```
========================================================================
        BEAM  NO.   327 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN -  1017. MM  FY -  414.  FC -  25.  MPA, SIZE -  250. X 1000. MMS

LEVEL      HEIGHT      BAR INFO      FROM          TO          ANCHOR
            (MM)                     (MM)         (MM)        STA  END
_____


   1       943.      2 - 12MM        0.         1017.         YES  YES



        B E A M  N O.   327 D E S I G N  R E S U L T S - SHEAR



** LOCATION FOR DESIGN FOR SHEAR AT START OF MEMBER   327 IS BEYOND
   THE MIDPOINT OF MEMBER. DESIGN FOR SHEAR AND TORSION NOT PERFORMED.


** LOCATION FOR DESIGN FOR SHEAR AT END OF MEMBER   327 IS BEYOND
   THE MIDPOINT OF MEMBER. DESIGN FOR SHEAR AND TORSION NOT PERFORMED.


___   9J_____ 1016X 250X 1000_____ 212J____
||======================================================================||
| 2No12 H 943.   0.TO 1017                                               |
|                                                                       |
|                                                                       |
|                                                                       |
|                                                                       |
|                                                                       |
|_____|

 ___   ___   ___   ___   ___   ___   ___   ___   ___   ___   ___        ___
|oo | |oo | |oo | |oo | |oo | |oo | |oo | |oo | |oo | |oo | |oo |      |oo |
| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12      | 2#1
2| | | | | | | | | | | | | | | | | | | | | |      | | |
| | | | | | | | | | | | | | | | | | | | | |      | | |
| | | | | | | | | | | | | | | | | | | | | |      | | |
| | | | | | | | | | | | | | | | | | | | | |      | | |
| | | | | | | | | | | | | | | | | | | | | |      | | |
|___| |___| |___| |___| |___| |___| |___| |___| |___| |___| |___|      |___|
```

```
========================================================================
        BEAM  NO.   328 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN -  1220. MM  FY -  414.  FC -  25.  MPA, SIZE -  250. X 1000. MMS

LEVEL     HEIGHT       BAR INFO        FROM           TO         ANCHOR
           (MM)                        (MM)          (MM)       STA  END
_____


   1        57.     2 - 12MM         0.          627.       YES  NO
   2       943.     2 - 12MM        88.         1220.       NO   YES
```

```
         B E A M  N O.   328 D E S I G N  R E S U L T S - SHEAR
```

** LOCATION FOR DESIGN FOR SHEAR AT START OF MEMBER   328 IS BEYOND
   THE MIDPOINT OF MEMBER. DESIGN FOR SHEAR AND TORSION NOT PERFORMED.

** LOCATION FOR DESIGN FOR SHEAR AT END OF MEMBER   328 IS BEYOND
   THE MIDPOINT OF MEMBER. DESIGN FOR SHEAR AND TORSION NOT PERFORMED.

```
___  11J_____  1219X 250X 1000_____ 222J____
|  =====================================================================||
|   2No12 H 943.  88.TO 1220                                             |
|                                                                       |
|                                                                       |
|                                                                       |
| 2No12 H  57.   0.TO  627                                              |
||===================================                                   |
|_____|

 ___   ___   ___   ___   ___   ___   ___   ___   ___   ___          ___
|   | |oo | |oo | |oo | |oo | |oo | |oo | |oo | |oo | |oo |        |oo |
|   | | 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12       | 2#1
2|  | | || | || | || | || | || | || | || | || | || |      | | |
|   | | || | || | || | || | || | || | || | || | || |      | | |
|   | | || | || | || | || | || | || | || | || | || |      | | |
| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12|   | | || | || | |      | | |
|oo | |oo | |oo | |oo | |oo | |oo | | |   | | || | || | |      | | |
|___| |___| |___| |___| |___| |___| |___| |___| |___| |___|        |___|
```

```
========================================================================
        BEAM  NO.   329 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN -  1220. MM FY -  414.  FC -  25.  MPA, SIZE -  250. X 1000. MMS

LEVEL     HEIGHT     BAR INFO        FROM          TO          ANCHOR
           (MM)                      (MM)         (MM)        STA  END
_____


   1       57.    2 - 12MM          0.         1220.         YES  YES



        B E A M  N O.   329 D E S I G N   R E S U L T S - SHEAR



** LOCATION FOR DESIGN FOR SHEAR AT START OF MEMBER   329 IS BEYOND
   THE MIDPOINT OF MEMBER. DESIGN FOR SHEAR AND TORSION NOT PERFORMED.


** LOCATION FOR DESIGN FOR SHEAR AT END OF MEMBER   329 IS BEYOND
   THE MIDPOINT OF MEMBER. DESIGN FOR SHEAR AND TORSION NOT PERFORMED.


 ___  13J_____ 1219X 250X 1000_____ 228J____
|                                                                         |
|                                                                         |
|                                                                         |
|                                                                         |
|                                                                         |
| 2No12 H  57.   0.TO 1220                                                 |
||=======================================================================||
|_____|
  ___  ___  ___  ___   ___   ___   ___   ___   ___   ___   ___         ___
 |   ||   ||   ||   | |   | |   | |   | |   | |   | |   | |   |       |   |
 |   ||   ||   ||   | |   | |   | |   | |   | |   | |   | |   |       |   |
 |   ||   ||   ||   | |   | |   | |   | |   | |   | |   | |   |       |   |
 |   ||   ||   ||   | |   | |   | |   | |   | |   | |   | |   |       |   |
 |   ||   ||   ||   | |   | |   | |   | |   | |   | |   | |   |       |   |
 | 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12    | 2#1
2|oo | |oo | |oo | |oo | |oo | |oo | |oo | |oo | |oo | |oo | |oo |       |oo |
 |___| |___| |___| |___| |___| |___| |___| |___| |___| |___| |___|       |___|
```

```
========================================================================

        BEAM  NO.   330 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN -  1220. MM FY -  414.  FC -  25.  MPA, SIZE -  250. X 1000. MMS

LEVEL      HEIGHT      BAR INFO       FROM          TO         ANCHOR
            (MM)                      (MM)          (MM)       STA  END
_____


    1         57.    2 - 12MM        0.         1220.        YES  YES
    2        943.    2 - 12MM        0.          471.        YES  NO
```

```
        B E A M  N O.   330 D E S I G N  R E S U L T S - SHEAR
```

```
 ** LOCATION FOR DESIGN FOR SHEAR AT START OF MEMBER   330 IS BEYOND
    THE MIDPOINT OF MEMBER. DESIGN FOR SHEAR AND TORSION NOT PERFORMED.


 ** LOCATION FOR DESIGN FOR SHEAR AT END OF MEMBER   330 IS BEYOND
    THE MIDPOINT OF MEMBER. DESIGN FOR SHEAR AND TORSION NOT PERFORMED.
```

```
___   15J_____  1219X 250X 1000_____ 206J____
||===========================                                             |
| 2No12 H 943.   0.TO  471                                                |
|                                                                         |
|                                                                         |
|                                                                         |
| 2No12 H  57.   0.TO 1220                                                |
||========================================================================||
|_____|

___   ___   ___   ___   ___   ___   ___   ___   ___   ___   ___        ___
|oo | |oo | |oo | |oo | |oo | |   | |   | |   | |   | |   | |   |      |   |
| 2#12| 2#12| 2#12| 2#12| 2#12| |   | |   | |   | |   | |   | |   |      |   |
|   | |   | |   | |   | |   | |   | |   | |   | |   | |   | |   |      |   |
|   | |   | |   | |   | |   | |   | |   | |   | |   | |   | |   |      |   |
|   | |   | |   | |   | |   | |   | |   | |   | |   | |   | |   |      |   |
| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12      | 2#1
2|oo | |oo | |oo | |oo | |oo | |oo | |oo | |oo | |oo | |oo | |oo |      |oo |
|___| |___| |___| |___| |___| |___| |___| |___| |___| |___| |___|      |___|
```

```
=====================================================================
         BEAM  NO.   331 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN -  1098. MM FY -  414.  FC -   25.  MPA, SIZE -  250. X 1000. MMS

LEVEL     HEIGHT     BAR INFO      FROM          TO        ANCHOR
          (MM)                     (MM)         (MM)      STA  END
_____


    1        57.    2 - 12MM       0.           98.       YES  NO
    2       943.    2 - 12MM       0.         1098.       YES  YES
```

```
         B E A M  N O.   331 D E S I G N  R E S U L T S - SHEAR
```

```
** LOCATION FOR DESIGN FOR SHEAR AT START OF MEMBER   331 IS BEYOND
   THE MIDPOINT OF MEMBER. DESIGN FOR SHEAR AND TORSION NOT PERFORMED.

** LOCATION FOR DESIGN FOR SHEAR AT END OF MEMBER   331 IS BEYOND
   THE MIDPOINT OF MEMBER. DESIGN FOR SHEAR AND TORSION NOT PERFORMED.
```

```
___   17J_____  1097X 250X 1000_____ 242J____
||===================================================================||
| 2No12 H 943.   0.TO 1098                                            |
|                                                                     |
|                                                                     |
|                                                                     |
| 2No12 H  57.   0.TO   98                                            |
||=====                                                               |
|_____|

 ___   ___   ___   ___   ___   ___   ___   ___   ___   ___   ___          ___
|oo |  |oo |  |oo |  |oo |  |oo |  |oo |  |oo |  |oo |  |oo |  |oo |  |oo |    |oo |
| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12| 2#12       | 2#1
2| | |   | |   | |   | |   | |   | |   | |   | |   | |   | |   |    |        | | |
| | |   | |   | |   | |   | |   | |   | |   | |   | |   | |   |    |        | | |
| | |   | |   | |   | |   | |   | |   | |   | |   | |   | |   |    |        | | |
| 2#12| | |   | |   | |   | |   | |   | |   | |   | |   | |   |    |        | | |
|oo | | |   | |   | |   | |   | |   | |   | |   | |   | |   |    |        | | |
|___| |___| |___| |___| |___| |___| |___| |___| |___| |___| |___|          |___|
```

```
========================================================================
        BEAM  NO.   332 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN -  1372. MM  FY -  414.  FC -   25.  MPA, SIZE -  250. X  500. MMS

LEVEL    HEIGHT      BAR INFO       FROM          TO          ANCHOR
          (MM)                      (MM)         (MM)        STA   END
_____


   1        57.     2 - 12MM      1188.        1373.         NO    YES
   2       443.     2 - 12MM         0.        1373.         YES   YES


          B E A M  N O.   332 D E S I G N  R E S U L T S - SHEAR


  AT START SUPPORT - Vu=    7.93 KNS  Vc=   86.80 KNS  Vs=    0.00 KNS
  Tu=    0.00 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                 STIRRUPS ARE NOT REQUIRED.
  AT END   SUPPORT - Vu=    5.87 KNS  Vc=   86.83 KNS  Vs=    0.00 KNS
  Tu=    0.00 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                 STIRRUPS ARE NOT REQUIRED.
___  23J_____  1372X 250X  500_____  277J____
|                                                                            |
||==========================================================================||
| 2No12 H 443.   0.TO 1373                                                   |
|                                                                            |
|                                            2No12 H  57.1188.TO 1373 |
|                                                     =========||
|                                                                            |
|_____|

 _____    _____    _____    _____    _____    _____       _____
|       |  |       |  |       |  |       |  |       |  |       |    |       |
|  oo   |  |  oo   |  |  oo   |  |  oo   |  |  oo   |  |  oo   |    |  oo   |
| 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |    | 2#12  |
|       |  |       |  |       |  |       |  |       |  |       |    |       |
|       |  |       |  |       |  |       |  |       |  |       |    | 2#12  |
|       |  |       |  |       |  |       |  |       |  |       |    |  oo   |
|       |  |       |  |       |  |       |  |       |  |       |    |       |
|_____|  |_____|  |_____|  |_____|  |_____|  |_____|    |_____|
```

```
========================================================================
          BEAM  NO.   334 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN -  1423. MM  FY -  414.  FC -  25.  MPA, SIZE -  250. X  500. MMS

LEVEL       HEIGHT      BAR INFO       FROM          TO          ANCHOR
             (MM)                      (MM)         (MM)        STA  END
_____


    1        57.     2 - 12MM     1237.        1423.         NO   YES
    2       443.     2 - 12MM        0.        1423.         YES  YES


          B E A M  N O.   334 D E S I G N  R E S U L T S - SHEAR


  AT START SUPPORT - Vu=    8.43 KNS  Vc=   86.75 KNS  Vs=    0.00 KNS
  Tu=    0.00 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                 STIRRUPS ARE NOT REQUIRED.
  AT END   SUPPORT - Vu=    6.16 KNS  Vc=   86.78 KNS  Vs=    0.00 KNS
  Tu=    0.00 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                 STIRRUPS ARE NOT REQUIRED.
___  27J_____  1423X 250X  500_____  280J____
|                                                                          |
||========================================================================||
| 2No12 H 443.   0.TO 1423                                                  |
|                                                                          |
|                                          2No12 H  57.1237.TO 1423 |
|                                                   ========||
|                                                                          |
|_____|


 _____    _____    _____    _____    _____    _____        _____
|       |  |       |  |       |  |       |  |       |  |       |      |       |
| oo    |  | oo    |  | oo    |  | oo    |  | oo    |  | oo    |      | oo    |
| 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |      | 2#12  |
|       |  |       |  |       |  |       |  |       |  |       |      |       |
|       |  |       |  |       |  |       |  |       |  |       |      | 2#12  |
|       |  |       |  |       |  |       |  |       |  |       |      | oo    |
|       |  |       |  |       |  |       |  |       |  |       |      |       |
|_____|  |_____|  |_____|  |_____|  |_____|  |_____|      |_____|
```
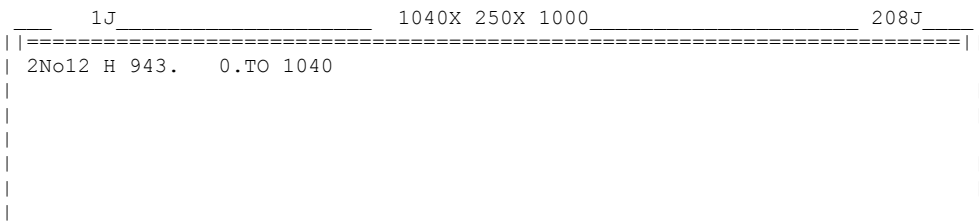
```
========================================================================

        BEAM   NO.   335 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN -  1627. MM  FY -  414.  FC -  25.  MPA, SIZE -  250. X  500. MMS

LEVEL     HEIGHT      BAR INFO      FROM          TO           ANCHOR
          (MM)                      (MM)          (MM)         STA  END
_____


   1        57.     2 - 12MM        11.         1627.          NO   YES
   2       443.     2 - 12MM         0.          471.          YES  NO


          B E A M  N O.   335 D E S I G N  R E S U L T S - SHEAR


   AT START SUPPORT - Vu=    4.47 KNS  Vc=  87.30 KNS  Vs=    0.00 KNS
   Tu=   0.00 KN-MET  Tc=    3.2 KN-MET Ts=    0.0 KN-MET  LOAD    20
                   STIRRUPS ARE NOT REQUIRED.
   AT END   SUPPORT - Vu=    1.36 KNS  Vc=  86.78 KNS  Vs=    0.00 KNS
   Tu=   0.00 KN-MET  Tc=    3.2 KN-MET Ts=    0.0 KN-MET  LOAD    20
                   STIRRUPS ARE NOT REQUIRED.

___ 197J_____ 1626X 250X  500_____ 282J____
|                                                                       |
||==================                                                    |
| 2No12 H 443.   0.TO  471                                              |
|                                                                       |
| 2No12 H  57.  11.TO 1627                                              |
|=====================================================================||
|                                                                       |
|_____|


_____    _____    _____    _____    _____    _____    _____
|       |  |       |  |       |  |       |  |       |  |       |  |       |
|  oo   |  |  oo   |  |       |  |       |  |       |  |       |  |       |
| 2#12  |  | 2#12  |  |       |  |       |  |       |  |       |  |       |
|       |  |       |  |       |  |       |  |       |  |       |  |       |
|       |  | 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |
|       |  |  oo   |  |  oo   |  |  oo   |  |  oo   |  |  oo   |  |  oo   |
|       |  |       |  |       |  |       |  |       |  |       |  |       |
|_____|  |_____|  |_____|  |_____|  |_____|  |_____|  |_____|
```

```
========================================================================
          BEAM  NO.   336 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN -  1627. MM  FY -  414.  FC -  25.  MPA, SIZE -  250. X  500. MMS

LEVEL     HEIGHT      BAR INFO      FROM          TO          ANCHOR
          (MM)                      (MM)          (MM)        STA  END
_____


    1        57.    2 - 12MM     1267.         1627.         NO   YES
    2       443.    2 - 12MM        0.         1627.         YES  YES


         B E A M  N O.   336 D E S I G N  R E S U L T S - SHEAR


   AT START SUPPORT - Vu=    8.67 KNS  Vc=   86.83 KNS  Vs=    0.00 KNS
   Tu=    0.00 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                 STIRRUPS ARE NOT REQUIRED.
   AT END   SUPPORT - Vu=    5.56 KNS  Vc=   86.91 KNS  Vs=    0.00 KNS
   Tu=    0.00 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                 STIRRUPS ARE NOT REQUIRED.
 ___  31J_____ 1626X 250X  500_____ 284J____
|                                                                         |
||========================================================================||
| 2No12 H 443.   0.TO 1627                                                 |
|                                                                         |
|                                            2No12 H  57.1267.TO 1627 |
|                                            ===============||
|                                                                         |
|_____|


 _____   _____   _____   _____   _____   _____   _____
|       | |       | |       | |       | |       | |       | |       |
| oo    | | oo    | | oo    | | oo    | | oo    | | oo    | | oo    |
| 2#12  | | 2#12  | | 2#12  | | 2#12  | | 2#12  | | 2#12  | | 2#12  |
|       | |       | |       | |       | |       | |       | |       |
|       | |       | |       | |       | |       | | 2#12  | | 2#12  |
|       | |       | |       | |       | |       | | oo    | | oo    |
|       | |       | |       | |       | |       | |       | |       |
|_____| |_____| |_____| |_____| |_____| |_____| |_____|
```
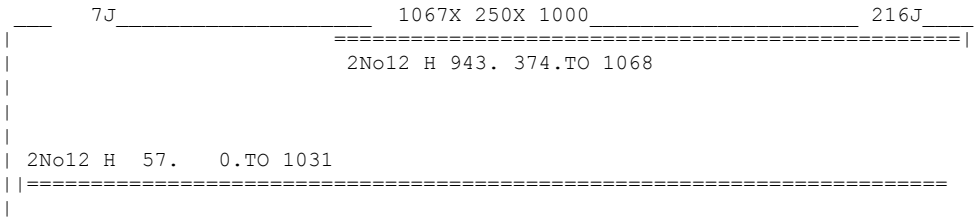
```
=======================================================================
        BEAM  NO.   337 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN -  1830. MM FY -  414. FC -  25.  MPA, SIZE -  250. X  500. MMS

LEVEL      HEIGHT      BAR INFO      FROM         TO          ANCHOR
            (MM)                     (MM)         (MM)       STA  END
_____


   1        57.      2 - 12MM      635.        1830.        NO   YES
   2       443.      2 - 12MM        0.        1081.        YES  NO


         B E A M  N O.   337 D E S I G N  R E S U L T S - SHEAR


   AT START SUPPORT - Vu=    6.65 KNS  Vc=   87.25 KNS  Vs=    0.00 KNS
   Tu=    0.00 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                  STIRRUPS ARE NOT REQUIRED.
   AT END   SUPPORT - Vu=    2.71 KNS  Vc=   86.90 KNS  Vs=    0.00 KNS
   Tu=    0.00 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                  STIRRUPS ARE NOT REQUIRED.

 ___ 199J_____ 1829X 250X  500_____ 286J____
|                                                                         |
||========================================                                |
| 2No12 H 443.   0.TO 1081                                                 |
|                                                                         |
|                        2No12 H  57. 635.TO 1830                          |
|                        ========================================||
|                                                                         |
|_____|

 _____    _____    _____    _____    _____   _____   _____
|       |  |       |  |       |  |       |  |       | |       | |       |
| oo    |  | oo    |  | oo    |  | oo    |  |       | |       | |       |
| 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |  |       | |       | |       |
|       |  |       |  |       |  |       |  |       | |       | |       |
|       |  |       |  |       |  | 2#12  |  | 2#12  | | 2#12  | | 2#12  |
|       |  |       |  |       |  | oo    |  | oo    | | oo    | | oo    |
|       |  |       |  |       |  |       |  |       | |       | |       |
|_____|  |_____|  |_____|  |_____|  |_____| |_____| |_____|
```

```
========================================================================
        BEAM  NO.   338 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN -  1830. MM  FY -  414.  FC -  25.  MPA, SIZE -  250. X  500. MMS

LEVEL     HEIGHT      BAR INFO      FROM           TO          ANCHOR
           (MM)                     (MM)          (MM)        STA  END
_____


   1        57.      2 - 12MM        0.           487.        YES  NO
   2       443.      2 - 12MM       63.          1830.        NO   YES


        B E A M   N O.   338 D E S I G N   R E S U L T S - SHEAR


   AT START SUPPORT - Vu=    4.64 KNS  Vc=   87.01 KNS  Vs=    0.00 KNS
   Tu=    0.00 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                   STIRRUPS ARE NOT REQUIRED.
   AT END   SUPPORT - Vu=    8.58 KNS  Vc=   86.91 KNS  Vs=    0.00 KNS
   Tu=    0.00 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                   STIRRUPS ARE NOT REQUIRED.

 ___ 196J_____ 1829X 250X  500_____ 29J____
|                                                                        |
| ======================================================================||
| 2No12 H 443.  63.TO 1830                                               |
|                                                                        |
| 2No12 H  57.   0.TO  487                                               |
||==================                                                     |
|                                                                        |
|_____|


 _____    _____    _____    _____    _____    _____    _____
|       |  |       |  |       |  |       |  |       |  |       |  |       |
|       |  | oo    |  | oo    |  | oo    |  | oo    |  | oo    |  | oo    |
|       |  | 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |
|       |  |       |  |       |  |       |  |       |  |       |  |       |
| 2#12  |  | 2#12  |  |       |  |       |  |       |  |       |  |       |
|  oo   |  |  oo   |  |       |  |       |  |       |  |       |  |       |
|       |  |       |  |       |  |       |  |       |  |       |  |       |
|_____|  |_____|  |_____|  |_____|  |_____|  |_____|  |_____|
```

```
======================================================================
        BEAM  NO.   339 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN -  1220. MM  FY -  414.  FC -  25.  MPA, SIZE -  250. X  500. MMS

LEVEL     HEIGHT      BAR INFO       FROM          TO         ANCHOR
           (MM)                      (MM)         (MM)       STA   END
_____


  1       443.     2 - 12MM        0.          1220.        YES   YES


        B E A M  N O.   339 D E S I G N  R E S U L T S - SHEAR


 AT START SUPPORT - Vu=    8.60 KNS  Vc=   86.69 KNS  Vs=    0.00 KNS
 Tu=    0.00 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                STIRRUPS ARE NOT REQUIRED.
 AT END   SUPPORT - Vu=    7.17 KNS  Vc=   86.69 KNS  Vs=    0.00 KNS
 Tu=    0.00 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                STIRRUPS ARE NOT REQUIRED.
___  29J_____ 1219X 250X  500_____ 197J____
|                                                                       |
||=====================================================================||
| 2No12 H 443.   0.TO 1220                                               |
|                                                                       |
|                                                                       |
|                                                                       |
|                                                                       |
|_____|

 _____    _____    _____    _____    _____    _____    _____
|       |  |       |  |       |  |       |  |       |  |       |  |       |
|  oo   |  |  oo   |  |  oo   |  |  oo   |  |  oo   |  |  oo   |  |  oo   |
| 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |
|       |  |       |  |       |  |       |  |       |  |       |  |       |
|       |  |       |  |       |  |       |  |       |  |       |  |       |
|       |  |       |  |       |  |       |  |       |  |       |  |       |
|_____|  |_____|  |_____|  |_____|  |_____|  |_____|  |_____|
```
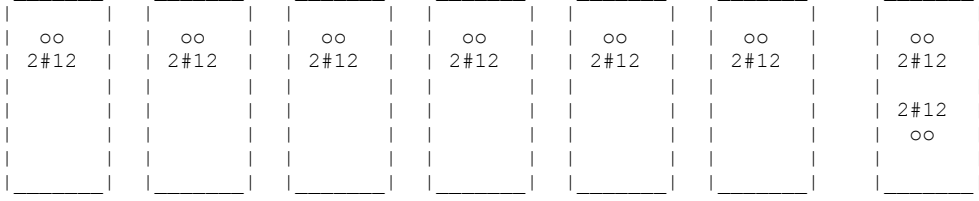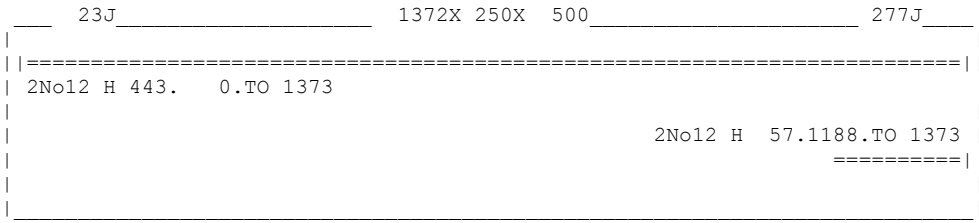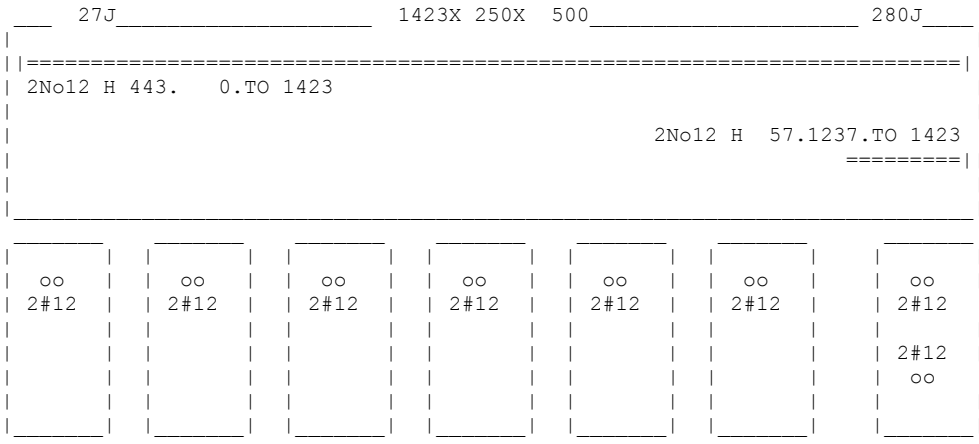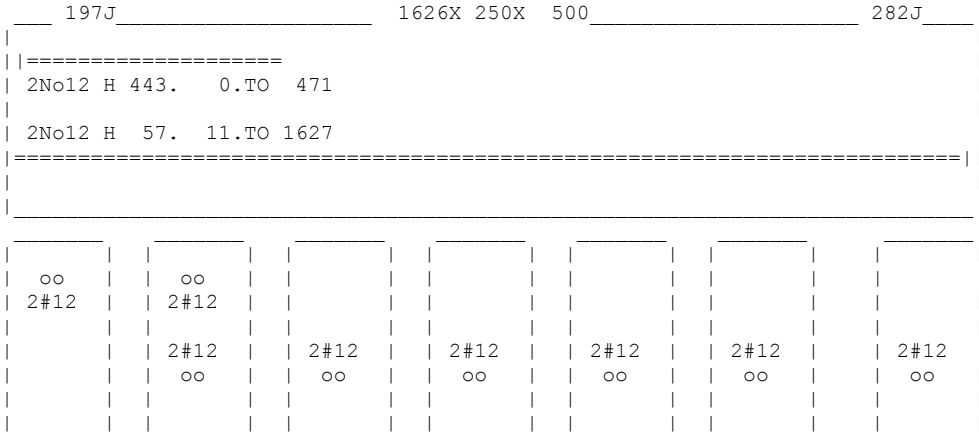
```
  ======================================================================
          BEAM  NO.   340 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

  LEN -  1220. MM  FY -  414.  FC -  25.  MPA, SIZE -  250. X  500. MMS

  LEVEL      HEIGHT      BAR INFO       FROM          TO          ANCHOR
             (MM)                       (MM)         (MM)        STA  END
  _____


     1      443.     2 - 12MM         0.         1220.         YES  YES


           B E A M  N O.   340 D E S I G N  R E S U L T S - SHEAR


   AT START SUPPORT - Vu=    7.17 KNS  Vc=   86.69 KNS  Vs=    0.00 KNS
   Tu=    0.00 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                   STIRRUPS ARE NOT REQUIRED.
   AT END   SUPPORT - Vu=    8.60 KNS  Vc=   86.69 KNS  Vs=    0.00 KNS
   Tu=    0.00 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                   STIRRUPS ARE NOT REQUIRED.
  ___ 198J_____  1219X 250X  500_____  33J____
  |                                                                          |
  ||==========================================================================||
  | 2No12 H 443.   0.TO 1220                                                  |
  |                                                                          |
  |                                                                          |
  |                                                                          |
  |                                                                          |
  |_____|

  _____   _____   _____   _____   _____   _____   _____
  |       | |       | |       | |       | |       | |       | |       |
  |  oo   | |  oo   | |  oo   | |  oo   | |  oo   | |  oo   | |  oo   |
  | 2#12  | | 2#12  | | 2#12  | | 2#12  | | 2#12  | | 2#12  | | 2#12  |
  |       | |       | |       | |       | |       | |       | |       |
  |       | |       | |       | |       | |       | |       | |       |
  |       | |       | |       | |       | |       | |       | |       |
  |       | |       | |       | |       | |       | |       | |       |
  |_____| |_____| |_____| |_____| |_____| |_____| |_____|
```
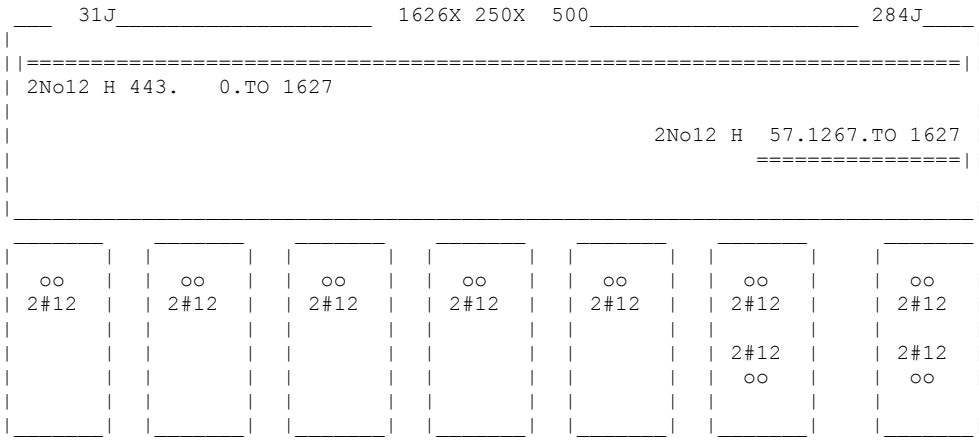
```
========================================================================

        BEAM  NO.   341 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN -   610. MM FY -  414.  FC -  25.  MPA, SIZE -  250. X  500. MMS

LEVEL      HEIGHT      BAR INFO      FROM          TO          ANCHOR
           (MM)                      (MM)         (MM)        STA  END
_____


   1       443.     2 - 12MM        0.          610.          YES  YES



        B E A M  N O.   341 D E S I G N  R E S U L T S - SHEAR



** LOCATION FOR DESIGN FOR SHEAR AT START OF MEMBER   341 IS BEYOND
   THE MIDPOINT OF MEMBER. DESIGN FOR SHEAR AND TORSION NOT PERFORMED.


** LOCATION FOR DESIGN FOR SHEAR AT END OF MEMBER   341 IS BEYOND
   THE MIDPOINT OF MEMBER. DESIGN FOR SHEAR AND TORSION NOT PERFORMED.


___  33J_____      609X 250X  500_____    199J____
|                                                                        |
||========================================================================||
| 2No12 H 443.   0.TO  610                                                |
|                                                                        |
|                                                                        |
|                                                                        |
|_____|

 _____    _____    _____    _____    _____    _____    _____
|        |  |        |  |        |  |        |  |        |  |        |  |        |
|  oo    |  |  oo    |  |  oo    |  |  oo    |  |  oo    |  |  oo    |  |  oo    |
| 2#12   |  | 2#12   |  | 2#12   |  | 2#12   |  | 2#12   |  | 2#12   |  | 2#12   |
|        |  |        |  |        |  |        |  |        |  |        |  |        |
|        |  |        |  |        |  |        |  |        |  |        |  |        |
|        |  |        |  |        |  |        |  |        |  |        |  |        |
|        |  |        |  |        |  |        |  |        |  |        |  |        |
|_____|  |_____|  |_____|  |_____|  |_____|  |_____|  |_____|
```
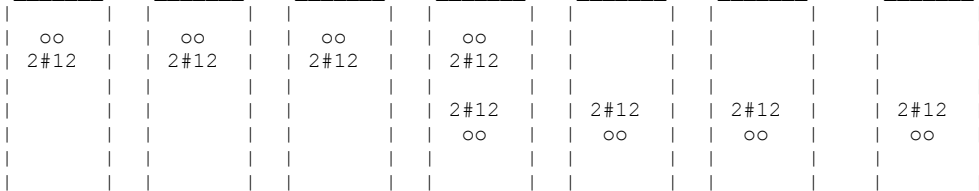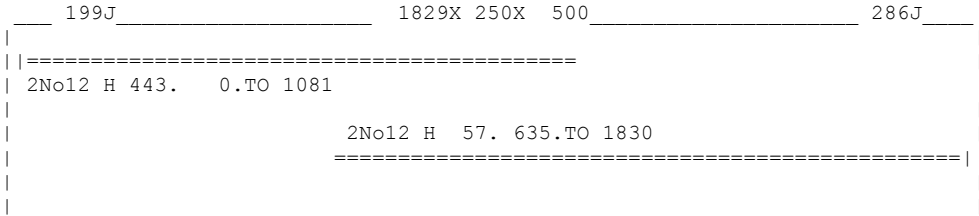
```
========================================================================
        BEAM  NO.   342 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN - 1525. MM  FY - 414.  FC - 25.  MPA, SIZE - 250. X  500. MMS

LEVEL     HEIGHT      BAR INFO      FROM         TO         ANCHOR
           (MM)                     (MM)        (MM)       STA  END
_____


   1        57.     2 - 12MM     1320.        1525.         NO   YES
   2       443.     2 - 12MM        0.        1525.        YES   YES


          B E A M  N O.   342 D E S I G N  R E S U L T S - SHEAR


   AT START SUPPORT - Vu=    8.55 KNS  Vc=  86.80 KNS  Vs=    0.00 KNS
   Tu=    0.00 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                    STIRRUPS ARE NOT REQUIRED.
   AT END   SUPPORT - Vu=    5.87 KNS  Vc=  86.85 KNS  Vs=    0.00 KNS
   Tu=    0.00 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                    STIRRUPS ARE NOT REQUIRED.
___   35J_____    1524X 250X  500_____    288J____
|                                                                              |
||===========================================================================||
| 2No12 H 443.   0.TO 1525                                                     |
|                                                                             |
|                                              2No12 H  57.1320.TO 1525 |
|                                                        =========||
|                                                                             |
|_____|


_____    _____    _____    _____    _____    _____         _____
|      |    |      |    |      |    |      |    |      |    |      |         |      |
| oo   |    | oo   |    | oo   |    | oo   |    | oo   |    | oo   |         | oo   |
| 2#12 |    | 2#12 |    | 2#12 |    | 2#12 |    | 2#12 |    | 2#12 |         | 2#12 |
|      |    |      |    |      |    |      |    |      |    |      |         |      |
|      |    |      |    |      |    |      |    |      |    |      |         | 2#12 |
|      |    |      |    |      |    |      |    |      |    |      |         | oo   |
|      |    |      |    |      |    |      |    |      |    |      |         |      |
|_____|    |_____|    |_____|    |_____|    |_____|    |_____|         |_____|
```
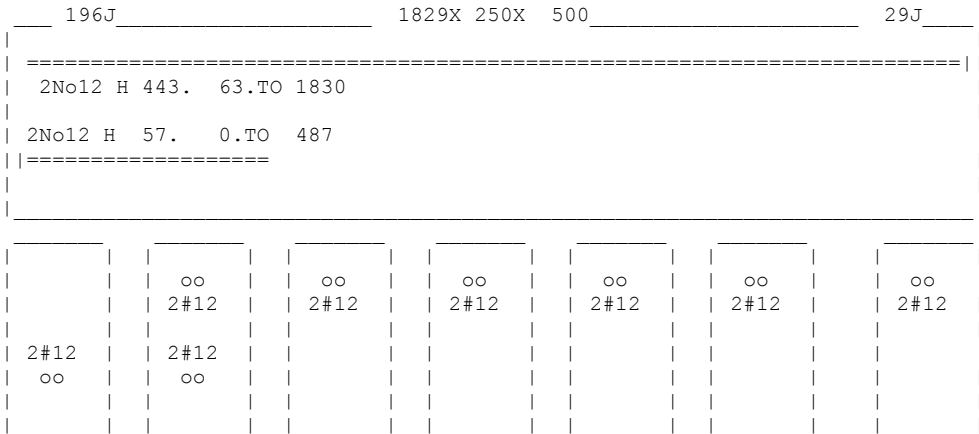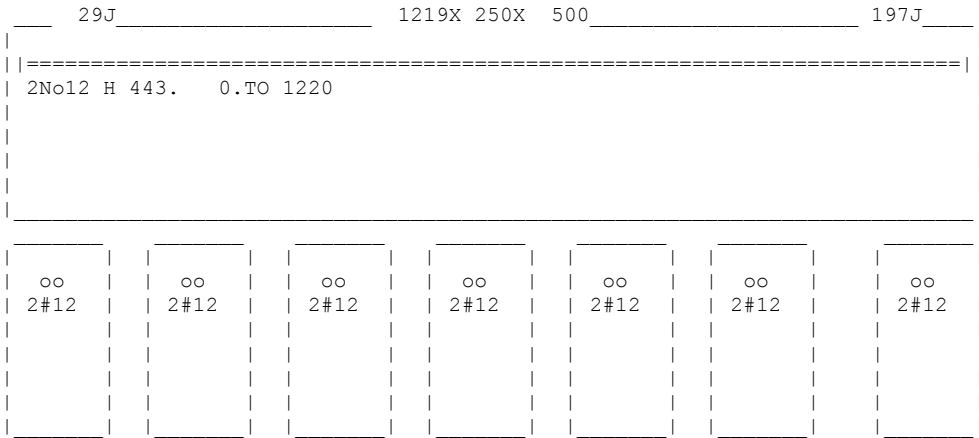
```
========================================================================
        BEAM  NO.   354 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN -  1040. MM  FY -  414.  FC -  25.  MPA, SIZE -  250. X  500. MMS

LEVEL      HEIGHT     BAR INFO      FROM           TO           ANCHOR
            (MM)                    (MM)          (MM)        STA  END
_____


    1        57.    2 - 12MM        0.           697.         YES   NO
    2       443.    2 - 12MM        0.          1040.         YES  YES


            B E A M  N O.   354 D E S I G N  R E S U L T S - SHEAR


   AT START SUPPORT - Vu=   25.82 KNS  Vc=   90.65 KNS  Vs=    0.00 KNS
   Tu=    0.56 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                    STIRRUPS ARE NOT REQUIRED.
   AT END   SUPPORT - Vu=   26.51 KNS  Vc=   90.65 KNS  Vs=    0.00 KNS
   Tu=    0.56 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                    STIRRUPS ARE NOT REQUIRED.

___   21J_____   1040X 250X  500_____   249J____
|                                                                               |
||===========================================================================||
| 2No12 H 443.   0.TO 1040                                                      |
|                                                                               |
| 2No12 H  57.   0.TO  697                                                      |
||=============================================                                 |
|                                                                               |
|_____|


_____    _____    _____    _____    _____    _____    _____
|       |  |       |  |       |  |       |  |       |  |       |  |       |
| oo    |  | oo    |  | oo    |  | oo    |  | oo    |  | oo    |  | oo    |
| 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |
|       |  |       |  |       |  |       |  |       |  |       |  |       |
| 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |  |       |  |       |
| oo    |  | oo    |  | oo    |  | oo    |  | oo    |  |       |  |       |
|       |  |       |  |       |  |       |  |       |  |       |  |       |
|_____|  |_____|  |_____|  |_____|  |_____|  |_____|  |_____|
```

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======================================================================
        BEAM  NO.   356 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN -  1677. MM  FY -  414.  FC -  25.  MPA, SIZE -  250. X  500. MMS

LEVEL      HEIGHT      BAR INFO      FROM           TO         ANCHOR
           (MM)                      (MM)          (MM)       STA  END
_____


   1       443.     3 - 12MM        0.           1677.       YES  YES



          B E A M  N O.   356 D E S I G N  R E S U L T S - SHEAR


  AT START SUPPORT - Vu=    9.14 KNS  Vc=   89.40 KNS  Vs=    0.00 KNS
  Tu=    0.02 KN-MET  Tc=    3.1 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                  STIRRUPS ARE NOT REQUIRED.
  AT END   SUPPORT - Vu=   12.46 KNS  Vc=   89.40 KNS  Vs=    0.00 KNS
  Tu=    0.02 KN-MET  Tc=    3.1 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                  STIRRUPS ARE NOT REQUIRED.
____   7J_____    1677X 250X  500_____   256J____
|                                                                             |
||=========================================================================||
| 3No12 H 443.   0.TO 1677                                                     |
|                                                                             |
|                                                                             |
|                                                                             |
|                                                                             |
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_____   _____   _____   _____   _____   _____   _____
|       | |       | |       | |       | |       | |       | |       |
| ooo   | | ooo   | | ooo   | | ooo   | | ooo   | | ooo   | | ooo   |
| 3#12  | | 3#12  | | 3#12  | | 3#12  | | 3#12  | | 3#12  | | 3#12  |
|       | |       | |       | |       | |       | |       | |       |
|       | |       | |       | |       | |       | |       | |       |
|       | |       | |       | |       | |       | |       | |       |
|       | |       | |       | |       | |       | |       | |       |
|_____| |_____| |_____| |_____| |_____| |_____| |_____|
```
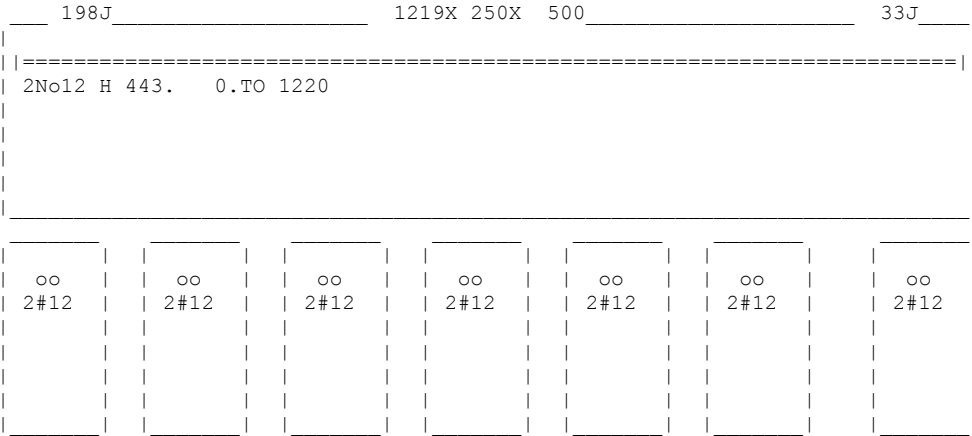
```
======================================================================
          BEAM  NO.   357 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN -  1677. MM  FY -  414.  FC -  25.  MPA, SIZE -  250. X  500. MMS

LEVEL     HEIGHT     BAR INFO      FROM         TO          ANCHOR
          (MM)                     (MM)        (MM)        STA  END
_____


  1       441.     2 - 16MM        0.         1677.         YES  YES


        B E A M  N O.   357 D E S I G N  R E S U L T S - SHEAR


  AT START SUPPORT - Vu=    8.16 KNS  Vc=   89.24 KNS  Vs=    0.00 KNS
  Tu=    0.16 KN-MET  Tc=    3.1 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                STIRRUPS ARE NOT REQUIRED.
  AT END   SUPPORT - Vu=   11.47 KNS  Vc=   89.24 KNS  Vs=    0.00 KNS
  Tu=    0.16 KN-MET  Tc=    3.1 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                STIRRUPS ARE NOT REQUIRED.

___ 214J_____ 1677X 250X  500_____ 259J____
|                                                                        |
||========================================================================||
| 2No16 H 441.   0.TO 1677                                                |
|                                                                        |
|                                                                        |
|                                                                        |
|                                                                        |
|_____|

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|       | |       | |       | |       | |       | |       |   |       |
|  oo   | |  oo   | |  oo   | |  oo   | |  oo   | |  oo   |   |  oo   |
| 2#16  | | 2#16  | | 2#16  | | 2#16  | | 2#16  | | 2#16  |   | 2#16  |
|       | |       | |       | |       | |       | |       |   |       |
|       | |       | |       | |       | |       | |       |   |       |
|       | |       | |       | |       | |       | |       |   |       |
|       | |       | |       | |       | |       | |       |   |       |
|_____| |_____| |_____| |_____| |_____| |_____|   |_____|
```

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======================================================================

        BEAM  NO.   359 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN -  1677. MM  FY -  414.  FC -  25.  MPA, SIZE -  250. X  500. MMS

LEVEL     HEIGHT      BAR INFO      FROM        TO          ANCHOR
           (MM)                     (MM)        (MM)        STA  END
_____


   1      441.     2 - 16MM       0.        1677.       YES  YES


         B E A M  N O.   359 D E S I G N  R E S U L T S - SHEAR


  AT START SUPPORT - Vu=    9.83 KNS  Vc=   89.29 KNS  Vs=    0.00 KNS
  Tu=    0.03 KN-MET  Tc=    3.1 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                  STIRRUPS ARE NOT REQUIRED.
  AT END   SUPPORT - Vu=   13.15 KNS  Vc=   89.29 KNS  Vs=    0.00 KNS
  Tu=    0.03 KN-MET  Tc=    3.1 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                  STIRRUPS ARE NOT REQUIRED.
___   13J_____ 1677X 250X  500_____ 265J_____
|                                                                         |
||=======================================================================||
| 2No16 H 441.   0.TO 1677                                                 |
|                                                                         |
|                                                                         |
|                                                                         |
|                                                                         |
|_____|

 _____    _____    _____    _____    _____    _____    _____
|       |  |       |  |       |  |       |  |       |  |       |  |       |
|  oo   |  |  oo   |  |  oo   |  |  oo   |  |  oo   |  |  oo   |  |  oo   |
| 2#16  |  | 2#16  |  | 2#16  |  | 2#16  |  | 2#16  |  | 2#16  |  | 2#16  |
|       |  |       |  |       |  |       |  |       |  |       |  |       |
|       |  |       |  |       |  |       |  |       |  |       |  |       |
|       |  |       |  |       |  |       |  |       |  |       |  |       |
|_____|  |_____|  |_____|  |_____|  |_____|  |_____|  |_____|
```
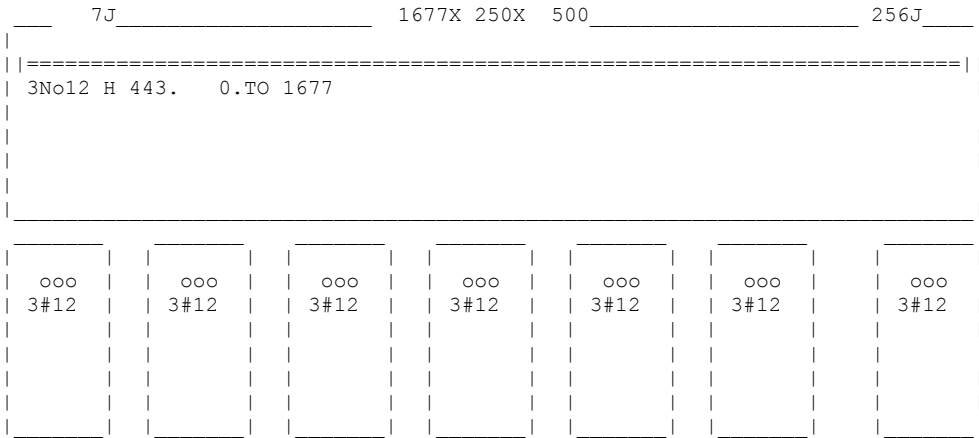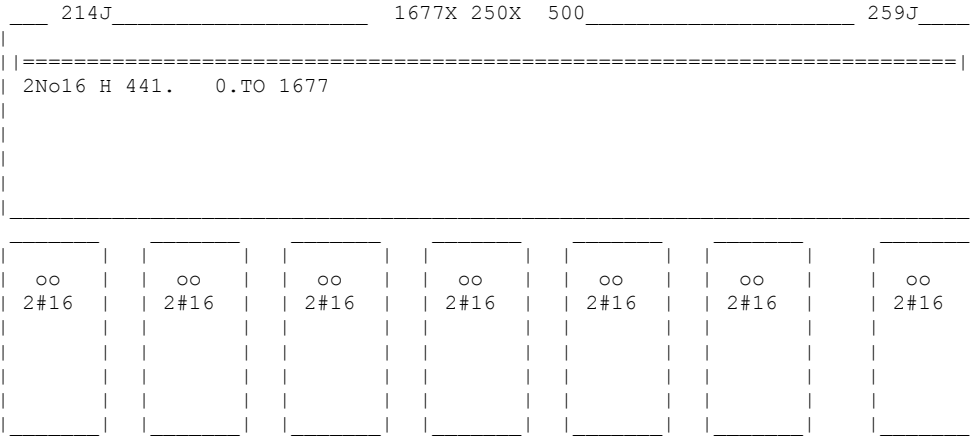
**Proyecto Estructural**  **CENTRO DE SERVICIOS INFONAVIT "CESI"**
Memoria de cálculo

```
=====================================================================
        BEAM  NO.   472 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN -  1678. MM  FY -  414.  FC -  25.  MPA, SIZE -  250. X  500. MMS

LEVEL     HEIGHT      BAR INFO       FROM         TO         ANCHOR
          (MM)                       (MM)        (MM)       STA   END
_____


   1      443.     2 - 12MM         0.         1678.        YES   YES


         B E A M  N O.   472 D E S I G N  R E S U L T S - SHEAR


  AT START SUPPORT - Vu=   10.94 KNS  Vc=   89.83 KNS  Vs=    0.00 KNS
  Tu=    0.02 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                  STIRRUPS ARE NOT REQUIRED.
  AT END   SUPPORT - Vu=    7.62 KNS  Vc=   89.83 KNS  Vs=    0.00 KNS
  Tu=    0.02 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                  STIRRUPS ARE NOT REQUIRED.
___ 257J_____  1677X 250X  500_____ 258J____
|                                                                        |
||========================================================================||
| 2No12 H 443.   0.TO 1678                                                |
|                                                                        |
|                                                                        |
|                                                                        |
|                                                                        |
|_____|

_____    _____    _____    _____    _____    _____    _____
|       |  |       |  |       |  |       |  |       |  |       |  |       |
|  oo   |  |  oo   |  |  oo   |  |  oo   |  |  oo   |  |  oo   |  |  oo   |
| 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |
|       |  |       |  |       |  |       |  |       |  |       |  |       |
|       |  |       |  |       |  |       |  |       |  |       |  |       |
|       |  |       |  |       |  |       |  |       |  |       |  |       |
|_____|  |_____|  |_____|  |_____|  |_____|  |_____|  |_____|
```
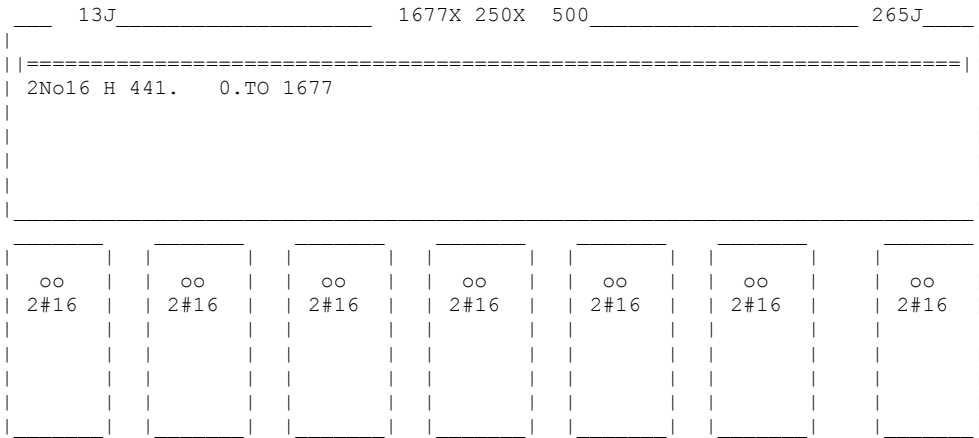
```
======================================================================
        BEAM  NO.   473 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN -  1677. MM  FY -  414.  FC -  25.  MPA, SIZE -  250. X  500. MMS

LEVEL     HEIGHT      BAR INFO        FROM         TO         ANCHOR
           (MM)                       (MM)        (MM)       STA   END
_____


   1      443.      2 - 12MM         0.         1677.        YES   YES


          B E A M  N O.   473 D E S I G N  R E S U L T S - SHEAR


 AT START SUPPORT - Vu=    5.25 KNS  Vc=   89.91 KNS  Vs=    0.00 KNS
 Tu=    0.02 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                 STIRRUPS ARE NOT REQUIRED.
 AT END   SUPPORT - Vu=    1.94 KNS  Vc=   89.91 KNS  Vs=    0.00 KNS
 Tu=    0.02 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD    20
                 STIRRUPS ARE NOT REQUIRED.

___ 258J_____     1677X 250X  500_____ 27J____
|                                                                          |
||==========================================================================||
| 2No12 H 443.   0.TO 1677                                                  |
|                                                                          |
|                                                                          |
|                                                                          |
|                                                                          |
|_____|

 _____    _____    _____    _____    _____    _____    _____
|       |  |       |  |       |  |       |  |       |  |       |  |       |
|  oo   |  |  oo   |  |  oo   |  |  oo   |  |  oo   |  |  oo   |  |  oo   |
| 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |  | 2#12  |
|       |  |       |  |       |  |       |  |       |  |       |  |       |
|       |  |       |  |       |  |       |  |       |  |       |  |       |
|       |  |       |  |       |  |       |  |       |  |       |  |       |
|_____|  |_____|  |_____|  |_____|  |_____|  |_____|  |_____|
```
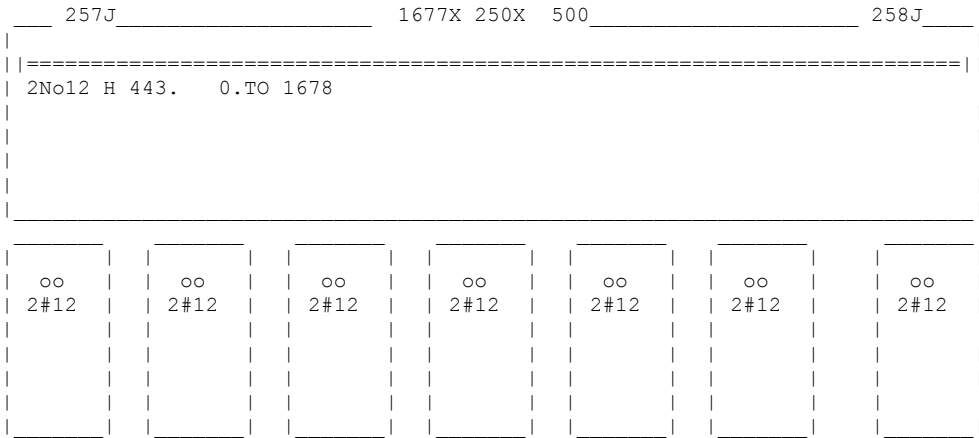
```
========================================================================
         BEAM  NO.   474 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN - 1677. MM  FY - 414.  FC - 25.  MPA, SIZE - 250. X  500. MMS

LEVEL     HEIGHT      BAR INFO       FROM        TO         ANCHOR
           (MM)                      (MM)       (MM)       STA   END
_____


   1      441.     2 - 16MM         0.        1677.        YES   YES


        B E A M  N O.   474 D E S I G N  R E S U L T S - SHEAR


 AT START SUPPORT - Vu=   11.14 KNS  Vc=   89.53 KNS  Vs=   0.00 KNS
 Tu=    0.16 KN-MET  Tc=    3.1 KN-MET  Ts=    0.0 KN-MET  LOAD   20
                STIRRUPS ARE NOT REQUIRED.
 AT END   SUPPORT - Vu=    7.83 KNS  Vc=   89.53 KNS  Vs=   0.00 KNS
 Tu=    0.16 KN-MET  Tc=    3.1 KN-MET  Ts=    0.0 KN-MET  LOAD   20
                STIRRUPS ARE NOT REQUIRED.
____ 259J_____    1677X 250X  500_____  260J_____
|                                                                              |
||===========================================================================||
| 2No16 H 441.   0.TO 1677                                                     |
|                                                                              |
|                                                                              |
|                                                                              |
|                                                                              |
|_____|

 _____    _____    _____    _____    _____    _____    _____
|        |  |        |  |        |  |        |  |        |  |        |  |        |
|  oo    |  |  oo    |  |  oo    |  |  oo    |  |  oo    |  |  oo    |  |  oo    |
| 2#16   |  | 2#16   |  | 2#16   |  | 2#16   |  | 2#16   |  | 2#16   |  | 2#16   |
|        |  |        |  |        |  |        |  |        |  |        |  |        |
|        |  |        |  |        |  |        |  |        |  |        |  |        |
|        |  |        |  |        |  |        |  |        |  |        |  |        |
|        |  |        |  |        |  |        |  |        |  |        |  |        |
|_____|  |_____|  |_____|  |_____|  |_____|  |_____|  |_____|
```
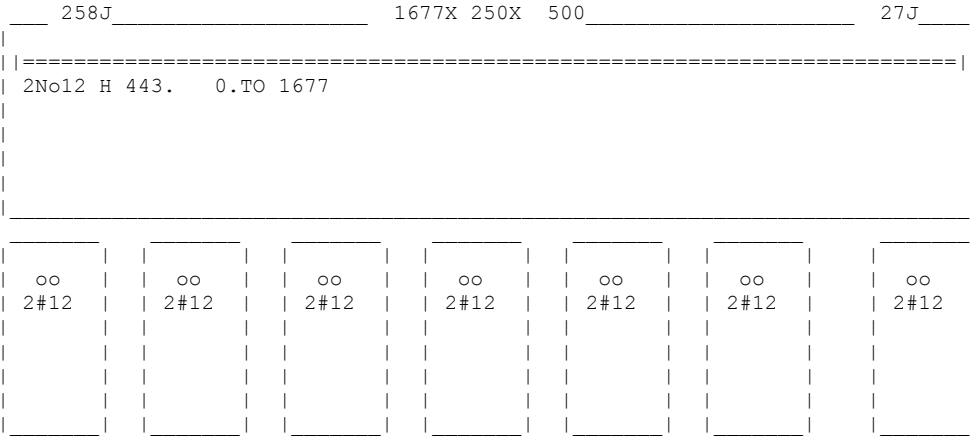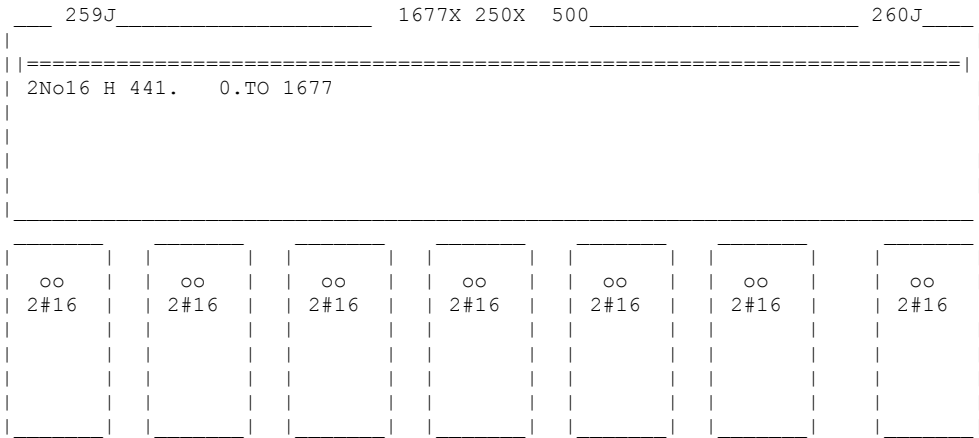
```
=====================================================================
        BEAM  NO.   475 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN -  1678. MM  FY -  414.  FC -  25.  MPA, SIZE -  250. X  500. MMS

LEVEL      HEIGHT      BAR INFO       FROM          TO          ANCHOR
            (MM)                      (MM)         (MM)        STA  END
_____


   1       443.     2 - 12MM         0.         1678.         YES  YES


         B E A M  N O.   475 D E S I G N  R E S U L T S - SHEAR


  AT START SUPPORT - Vu=   11.58 KNS  Vc=   89.71 KNS  Vs=    0.00 KNS
  Tu=    0.16 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD   20
                 STIRRUPS ARE NOT REQUIRED.
  AT END   SUPPORT - Vu=    8.27 KNS  Vc=   89.71 KNS  Vs=    0.00 KNS
  Tu=    0.16 KN-MET  Tc=    3.2 KN-MET  Ts=    0.0 KN-MET  LOAD   20
                 STIRRUPS ARE NOT REQUIRED.
 ___ 260J_____ 1677X 250X  500_____ 261J____
|                                                                          |
||==========================================================================||
| 2No12 H 443.   0.TO 1678                                                  |
|                                                                          |
|                                                                          |
|                                                                          |
|                                                                          |
|_____|

 _____   _____   _____   _____   _____   _____    _____
|       | |       | |       | |       | |       | |       |  |       |
|  oo   | |  oo   | |  oo   | |  oo   | |  oo   | |  oo   |  |  oo   |
| 2#12  | | 2#12  | | 2#12  | | 2#12  | | 2#12  | | 2#12  |  | 2#12  |
|       | |       | |       | |       | |       | |       |  |       |
|       | |       | |       | |       | |       | |       |  |       |
|       | |       | |       | |       | |       | |       |  |       |
|_____| |_____| |_____| |_____| |_____| |_____|  |_____|
```
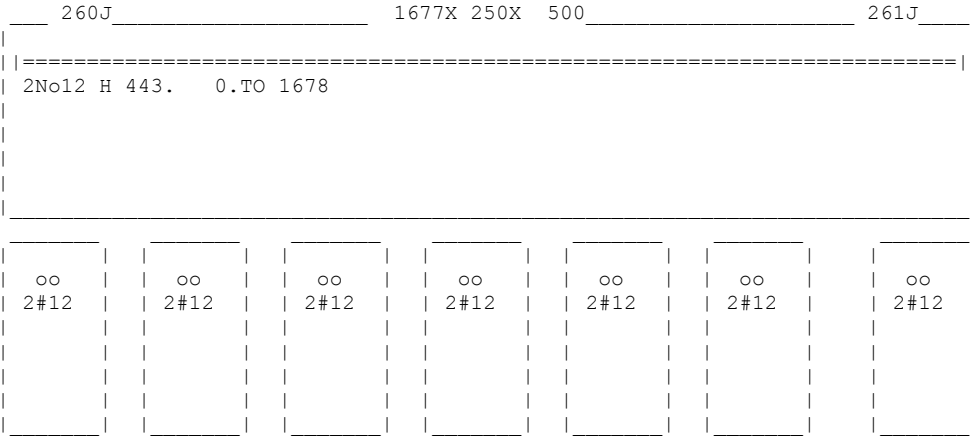
**Proyecto Estructural**  **CENTRO DE SERVICIOS INFONAVIT "CESI"**
Memoria de cálculo

```
========================================================================
        BEAM  NO.   704 DESIGN RESULTS - FLEXURE PER CODE ACI 318-08

LEN -  712. MM FY -  414.  FC -  25.  MPA, SIZE -  250. X  500. MMS

LEVEL     HEIGHT      BAR INFO        FROM          TO          ANCHOR
           (MM)                       (MM)         (MM)        STA   END
_____


   1       57.    2 - 12MM          0.           712.         YES  YES



        B E A M  N O.   704 D E S I G N  R E S U L T S - SHEAR



** LOCATION FOR DESIGN FOR SHEAR AT START OF MEMBER   704 IS BEYOND
   THE MIDPOINT OF MEMBER. DESIGN FOR SHEAR AND TORSION NOT PERFORMED.


** LOCATION FOR DESIGN FOR SHEAR AT END OF MEMBER   704 IS BEYOND
   THE MIDPOINT OF MEMBER. DESIGN FOR SHEAR AND TORSION NOT PERFORMED.


___ 388J_____  711X 250X  500_____  281J____
|                                                                        |
|                                                                        |
|                                                                        |
| 2No12 H  57.   0.TO  712                                                |
||======================================================================||
|                                                                        |
|_____|


 _____     _____     _____     _____     _____     _____     _____
|       |   |       |   |       |   |       |   |       |   |       |   |       |
|       |   |       |   |       |   |       |   |       |   |       |   |       |
|       |   |       |   |       |   |       |   |       |   |       |   |       |
|       |   |       |   |       |   |       |   |       |   |       |   |       |
| 2#12  |   | 2#12  |   | 2#12  |   | 2#12  |   | 2#12  |   | 2#12  |   | 2#12  |
|  oo   |   |  oo   |   |  oo   |   |  oo   |   |  oo   |   |  oo   |   |  oo   |
|       |   |       |   |       |   |       |   |       |   |       |   |       |
|_____|   |_____|   |_____|   |_____|   |_____|   |_____|   |_____|


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

481. DESIGN COLUMN 1 2 4 5 7 8 10 11
```

```
=====================================================================
      COLUMN  NO.    1  DESIGN PER ACI 318-08 - AXIAL + BENDING


FY - 413.7  FC -  24.5 MPA,  SQRE SIZE - 200.0 X 200.0 MMS, TIED
       ONLY MINIMUM STEEL IS REQUIRED.
       AREA OF STEEL REQUIRED =   400.0  SQ. MM

BAR CONFIGURATION      REINF PCT.   LOAD   LOCATION   PHI
----------------------------------------------------------

  4 - 12 MM              1.131      20     END    0.650
(PROVIDE EQUAL NUMBER OF BARS ON EACH FACE)
TIE BAR NUMBER   12 SPACING 192.00 MM


=====================================================================
      COLUMN  NO.    2  DESIGN PER ACI 318-08 - AXIAL + BENDING


FY - 413.7  FC -  24.5 MPA,  SQRE SIZE - 200.0 X 200.0 MMS, TIED
       ONLY MINIMUM STEEL IS REQUIRED.
       AREA OF STEEL REQUIRED =   400.0  SQ. MM

BAR CONFIGURATION      REINF PCT.   LOAD   LOCATION   PHI
----------------------------------------------------------

  4 - 12 MM              1.131      20     END    0.650
(PROVIDE EQUAL NUMBER OF BARS ON EACH FACE)
TIE BAR NUMBER   12 SPACING 192.00 MM


=====================================================================
      COLUMN  NO.    4  DESIGN PER ACI 318-08 - AXIAL + BENDING


FY - 413.7  FC -  24.5 MPA,  SQRE SIZE - 200.0 X 200.0 MMS, TIED
       ONLY MINIMUM STEEL IS REQUIRED.
       AREA OF STEEL REQUIRED =   400.0  SQ. MM
```

```
BAR CONFIGURATION       REINF PCT.   LOAD   LOCATION   PHI
----------------------------------------------------------

  4 - 12 MM              1.131       20     END     0.650
(PROVIDE EQUAL NUMBER OF BARS ON EACH FACE)
TIE BAR NUMBER   12 SPACING 192.00 MM


====================================================================
      COLUMN  NO.    5  DESIGN PER ACI 318-08 - AXIAL + BENDING


FY - 413.7  FC -  24.5 MPA,  SQRE SIZE - 200.0 X 200.0 MMS, TIED
        ONLY MINIMUM STEEL IS REQUIRED.
          AREA OF STEEL REQUIRED =   400.0  SQ. MM

BAR CONFIGURATION       REINF PCT.   LOAD   LOCATION   PHI
----------------------------------------------------------

  4 - 12 MM              1.131       20     END     0.650
(PROVIDE EQUAL NUMBER OF BARS ON EACH FACE)
TIE BAR NUMBER   12 SPACING 192.00 MM


====================================================================
      COLUMN  NO.    7  DESIGN PER ACI 318-08 - AXIAL + BENDING


FY - 413.7  FC -  24.5 MPA,  SQRE SIZE - 200.0 X 200.0 MMS, TIED
        ONLY MINIMUM STEEL IS REQUIRED.
          AREA OF STEEL REQUIRED =   400.0  SQ. MM

BAR CONFIGURATION       REINF PCT.   LOAD   LOCATION   PHI
----------------------------------------------------------

  4 - 12 MM              1.131       20     END     0.650
(PROVIDE EQUAL NUMBER OF BARS ON EACH FACE)
TIE BAR NUMBER   12 SPACING 192.00 MM


====================================================================
      COLUMN  NO.    8  DESIGN PER ACI 318-08 - AXIAL + BENDING
```

```
FY - 413.7  FC -  24.5 MPA,  SQRE SIZE - 200.0 X 200.0 MMS, TIED
        ONLY MINIMUM STEEL IS REQUIRED.
        AREA OF STEEL REQUIRED =   400.0  SQ. MM

BAR CONFIGURATION       REINF PCT.   LOAD   LOCATION   PHI
----------------------------------------------------------

  4 - 12 MM                1.131      20     END    0.650
(PROVIDE EQUAL NUMBER OF BARS ON EACH FACE)
TIE BAR NUMBER   12 SPACING 192.00 MM


==================================================================

     COLUMN  NO.   10  DESIGN PER ACI 318-08 - AXIAL + BENDING


FY - 413.7  FC -  24.5 MPA,  SQRE SIZE - 200.0 X 200.0 MMS, TIED
        ONLY MINIMUM STEEL IS REQUIRED.
        AREA OF STEEL REQUIRED =   400.0  SQ. MM

BAR CONFIGURATION       REINF PCT.   LOAD   LOCATION   PHI
----------------------------------------------------------

  4 - 12 MM                1.131      20     END    0.650
(PROVIDE EQUAL NUMBER OF BARS ON EACH FACE)
TIE BAR NUMBER   12 SPACING 192.00 MM


==================================================================

     COLUMN  NO.   11  DESIGN PER ACI 318-08 - AXIAL + BENDING


FY - 413.7  FC -  24.5 MPA,  SQRE SIZE - 200.0 X 200.0 MMS, TIED
        ONLY MINIMUM STEEL IS REQUIRED.
        AREA OF STEEL REQUIRED =   400.0  SQ. MM

BAR CONFIGURATION       REINF PCT.   LOAD   LOCATION   PHI
----------------------------------------------------------

  4 - 12 MM                1.131      20     END    0.650
(PROVIDE EQUAL NUMBER OF BARS ON EACH FACE)
TIE BAR NUMBER   12 SPACING 192.00 MM


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

       482. CONCRETE TAKE
       483. END CONCRETE DESIGN

```
        **************  CONCRETE  TAKE OFF  **************
             (FOR BEAMS, COLUMNS AND PLATES DESIGNED ABOVE)
     NOTE: CONCRETE QUANTITY REPRESENTS VOLUME OF CONCRETE IN BEAMS, COLUMNS, AND PLATES DESIGNED
ABOVE.
           REINFORCING STEEL QUANTITY REPRESENTS REINFORCING STEEL IN BEAMS AND COLUMNS DESIGNED
ABOVE.
           REINFORCING STEEL IN PLATES IS NOT INCLUDED IN THE REPORTED QUANTITY.

           TOTAL VOLUME OF CONCRETE =        30.1 CU.METER

            BAR SIZE        WEIGHT
             NUMBER        (in lbs)
            --------       --------
               12            1126
               16              47
                          ------------
             *** TOTAL=       1172

    484. PRINT SUPPORT REACTION LIST 1 3 7 9 11 13 15 17 19 21 23 27 29 31 33 35 39 -
                              --------- SUPPORT  REACTION LIST     1

    485. 41 43 45 47 49 51 53 55 288
```

```
   SUPPORT REACTIONS -UNIT MTON METE    STRUCTURE TYPE = SPACE
   ----------------
```

| JOINT | LOAD | FORCE-X | FORCE-Y | FORCE-Z | MOM-X | MOM-Y | MOM Z |
|---|---|---|---|---|---|---|---|
| 1 | 20 | 0.21 | 6.48 | 0.35 | 0.00 | 0.00 | 0.00 |
|  | 21 | 0.10 | 4.73 | -0.06 | 0.00 | 0.00 | 0.00 |
|  | 22 | 0.20 | 5.25 | 0.57 | 0.00 | 0.00 | 0.00 |
|  | 23 | 0.19 | 5.13 | 0.41 | 0.00 | 0.00 | 0.00 |
|  | 24 | 0.11 | 4.85 | 0.09 | 0.00 | 0.00 | 0.00 |
|  | 25 | 0.09 | 4.60 | -0.21 | 0.00 | 0.00 | 0.00 |
|  | 26 | 0.22 | 5.38 | 0.72 | 0.00 | 0.00 | 0.00 |
|  | 27 | 0.19 | 5.41 | 0.77 | 0.00 | 0.00 | 0.00 |
|  | 28 | 0.11 | 4.58 | -0.26 | 0.00 | 0.00 | 0.00 |
|  | 29 | 0.21 | 5.49 | 0.86 | 0.00 | 0.00 | 0.00 |
|  | 30 | 0.17 | 5.33 | 0.67 | 0.00 | 0.00 | 0.00 |
|  | 31 | 0.10 | 4.50 | -0.36 | 0.00 | 0.00 | 0.00 |
|  | 32 | 0.13 | 4.65 | -0.17 | 0.00 | 0.00 | 0.00 |
| 3 | 20 | 0.24 | 6.22 | 0.13 | 0.00 | 0.00 | 0.00 |
|  | 21 | 0.12 | 4.64 | 0.09 | 0.00 | 0.00 | 0.00 |
|  | 22 | 0.24 | 4.95 | 0.10 | 0.00 | 0.00 | 0.00 |
|  | 23 | 0.23 | 4.87 | 0.10 | 0.00 | 0.00 | 0.00 |
|  | 24 | 0.13 | 4.71 | 0.09 | 0.00 | 0.00 | 0.00 |
|  | 25 | 0.11 | 4.56 | 0.09 | 0.00 | 0.00 | 0.00 |
|  | 26 | 0.25 | 5.02 | 0.10 | 0.00 | 0.00 | 0.00 |
|  | 27 | 0.21 | 5.04 | 0.10 | 0.00 | 0.00 | 0.00 |
|  | 28 | 0.14 | 4.55 | 0.09 | 0.00 | 0.00 | 0.00 |
|  | 29 | 0.23 | 5.09 | 0.10 | 0.00 | 0.00 | 0.00 |
|  | 30 | 0.20 | 4.99 | 0.10 | 0.00 | 0.00 | 0.00 |
|  | 31 | 0.13 | 4.50 | 0.09 | 0.00 | 0.00 | 0.00 |
|  | 32 | 0.16 | 4.59 | 0.09 | 0.00 | 0.00 | 0.00 |
| 7 | 20 | 0.26 | 6.27 | 0.18 | 0.00 | 0.00 | 0.00 |
|  | 21 | 0.10 | 4.77 | 0.12 | 0.00 | 0.00 | 0.00 |
|  | 22 | 0.28 | 4.89 | 0.14 | 0.00 | 0.00 | 0.00 |
|  | 23 | 0.26 | 4.86 | 0.14 | 0.00 | 0.00 | 0.00 |
|  | 24 | 0.13 | 4.79 | 0.13 | 0.00 | 0.00 | 0.00 |
|  | 25 | 0.08 | 4.74 | 0.12 | 0.00 | 0.00 | 0.00 |
|  | 26 | 0.30 | 4.92 | 0.15 | 0.00 | 0.00 | 0.00 |
|  | 27 | 0.26 | 4.92 | 0.15 | 0.00 | 0.00 | 0.00 |
|  | 28 | 0.12 | 4.73 | 0.12 | 0.00 | 0.00 | 0.00 |
|  | 29 | 0.29 | 4.94 | 0.15 | 0.00 | 0.00 | 0.00 |
|  | 30 | 0.24 | 4.90 | 0.15 | 0.00 | 0.00 | 0.00 |
|  | 31 | 0.09 | 4.71 | 0.11 | 0.00 | 0.00 | 0.00 |
|  | 32 | 0.15 | 4.75 | 0.12 | 0.00 | 0.00 | 0.00 |
| 9 | 20 | 0.26 | 6.29 | 0.44 | 0.00 | 0.00 | 0.00 |
|  | 21 | 0.09 | 4.80 | 0.31 | 0.00 | 0.00 | 0.00 |
|  | 22 | 0.30 | 4.87 | 0.35 | 0.00 | 0.00 | 0.00 |
|  | 23 | 0.27 | 4.85 | 0.34 | 0.00 | 0.00 | 0.00 |
|  | 24 | 0.12 | 4.82 | 0.32 | 0.00 | 0.00 | 0.00 |
|  | 25 | 0.06 | 4.79 | 0.30 | 0.00 | 0.00 | 0.00 |
|  | 26 | 0.34 | 4.89 | 0.36 | 0.00 | 0.00 | 0.00 |

SUPPORT REACTIONS -UNIT MTON METE    STRUCTURE TYPE = SPACE
-----------------

| JOINT | LOAD | FORCE-X | FORCE-Y | FORCE-Z | MOM-X | MOM-Y | MOM Z |
|-------|------|---------|---------|---------|-------|-------|-------|
|       | 27   | 0.30    | 4.89    | 0.36    | 0.00  | 0.00  | 0.00  |
|       | 28   | 0.09    | 4.78    | 0.29    | 0.00  | 0.00  | 0.00  |
|       | 29   | 0.33    | 4.90    | 0.37    | 0.00  | 0.00  | 0.00  |
|       | 30   | 0.27    | 4.88    | 0.35    | 0.00  | 0.00  | 0.00  |
|       | 31   | 0.06    | 4.77    | 0.29    | 0.00  | 0.00  | 0.00  |
|       | 32   | 0.13    | 4.79    | 0.30    | 0.00  | 0.00  | 0.00  |
| 11    | 20   | 0.19    | 6.48    | 0.34    | 0.00  | 0.00  | 0.00  |
|       | 21   | 0.03    | 4.96    | 0.24    | 0.00  | 0.00  | 0.00  |
|       | 22   | 0.26    | 5.01    | 0.27    | 0.00  | 0.00  | 0.00  |
|       | 23   | 0.23    | 5.00    | 0.26    | 0.00  | 0.00  | 0.00  |
|       | 24   | 0.06    | 4.97    | 0.25    | 0.00  | 0.00  | 0.00  |
|       | 25   | -0.01   | 4.95    | 0.23    | 0.00  | 0.00  | 0.00  |
|       | 26   | 0.30    | 5.02    | 0.28    | 0.00  | 0.00  | 0.00  |
|       | 27   | 0.26    | 5.03    | 0.28    | 0.00  | 0.00  | 0.00  |
|       | 28   | 0.03    | 4.94    | 0.23    | 0.00  | 0.00  | 0.00  |
|       | 29   | 0.30    | 5.04    | 0.29    | 0.00  | 0.00  | 0.00  |
|       | 30   | 0.23    | 5.02    | 0.28    | 0.00  | 0.00  | 0.00  |
|       | 31   | -0.01   | 4.94    | 0.22    | 0.00  | 0.00  | 0.00  |
|       | 32   | 0.06    | 4.95    | 0.23    | 0.00  | 0.00  | 0.00  |
| 13    | 20   | 0.01    | 6.65    | 0.19    | 0.00  | 0.00  | 0.00  |
|       | 21   | -0.12   | 5.09    | 0.13    | 0.00  | 0.00  | 0.00  |
|       | 22   | 0.13    | 5.13    | 0.15    | 0.00  | 0.00  | 0.00  |
|       | 23   | 0.09    | 5.12    | 0.14    | 0.00  | 0.00  | 0.00  |
|       | 24   | -0.08   | 5.10    | 0.14    | 0.00  | 0.00  | 0.00  |
|       | 25   | -0.16   | 5.08    | 0.13    | 0.00  | 0.00  | 0.00  |
|       | 26   | 0.16    | 5.15    | 0.15    | 0.00  | 0.00  | 0.00  |
|       | 27   | 0.13    | 5.15    | 0.16    | 0.00  | 0.00  | 0.00  |
|       | 28   | -0.12   | 5.07    | 0.13    | 0.00  | 0.00  | 0.00  |
|       | 29   | 0.16    | 5.16    | 0.16    | 0.00  | 0.00  | 0.00  |
|       | 30   | 0.09    | 5.15    | 0.15    | 0.00  | 0.00  | 0.00  |
|       | 31   | -0.16   | 5.06    | 0.12    | 0.00  | 0.00  | 0.00  |
|       | 32   | -0.08   | 5.08    | 0.13    | 0.00  | 0.00  | 0.00  |
| 15    | 20   | -0.20   | 6.33    | 0.36    | 0.00  | 0.00  | 0.00  |
|       | 21   | -0.27   | 4.84    | 0.26    | 0.00  | 0.00  | 0.00  |
|       | 22   | -0.04   | 4.90    | 0.28    | 0.00  | 0.00  | 0.00  |
|       | 23   | -0.07   | 4.88    | 0.27    | 0.00  | 0.00  | 0.00  |
|       | 24   | -0.23   | 4.85    | 0.26    | 0.00  | 0.00  | 0.00  |
|       | 25   | -0.30   | 4.82    | 0.25    | 0.00  | 0.00  | 0.00  |
|       | 26   | 0.00    | 4.91    | 0.29    | 0.00  | 0.00  | 0.00  |
|       | 27   | -0.04   | 4.92    | 0.30    | 0.00  | 0.00  | 0.00  |
|       | 28   | -0.27   | 4.81    | 0.24    | 0.00  | 0.00  | 0.00  |
|       | 29   | -0.01   | 4.93    | 0.30    | 0.00  | 0.00  | 0.00  |
|       | 30   | -0.07   | 4.91    | 0.29    | 0.00  | 0.00  | 0.00  |
|       | 31   | -0.30   | 4.81    | 0.24    | 0.00  | 0.00  | 0.00  |
|       | 32   | -0.23   | 4.82    | 0.25    | 0.00  | 0.00  | 0.00  |
| 17    | 20   | -0.26   | 6.17    | 0.20    | 0.00  | 0.00  | 0.00  |

SUPPORT REACTIONS -UNIT MTON METE   STRUCTURE TYPE = SPACE
-----------------

| JOINT | LOAD | FORCE-X | FORCE-Y | FORCE-Z | MOM-X | MOM-Y | MOM Z |
|-------|------|---------|---------|---------|-------|-------|-------|
|       | 21   | -0.31   | 4.70    | 0.14    | 0.00  | 0.00  | 0.00  |
|       | 22   | -0.09   | 4.78    | 0.16    | 0.00  | 0.00  | 0.00  |
|       | 23   | -0.12   | 4.76    | 0.15    | 0.00  | 0.00  | 0.00  |
|       | 24   | -0.28   | 4.72    | 0.14    | 0.00  | 0.00  | 0.00  |
|       | 25   | -0.34   | 4.69    | 0.13    | 0.00  | 0.00  | 0.00  |
|       | 26   | -0.06   | 4.80    | 0.17    | 0.00  | 0.00  | 0.00  |
|       | 27   | -0.09   | 4.81    | 0.17    | 0.00  | 0.00  | 0.00  |
|       | 28   | -0.31   | 4.68    | 0.13    | 0.00  | 0.00  | 0.00  |
|       | 29   | -0.06   | 4.82    | 0.17    | 0.00  | 0.00  | 0.00  |
|       | 30   | -0.12   | 4.79    | 0.17    | 0.00  | 0.00  | 0.00  |
|       | 31   | -0.34   | 4.67    | 0.12    | 0.00  | 0.00  | 0.00  |
|       | 32   | -0.27   | 4.69    | 0.13    | 0.00  | 0.00  | 0.00  |
| 19    | 20   | -0.27   | 5.94    | 0.09    | 0.00  | 0.00  | 0.00  |
|       | 21   | -0.31   | 4.48    | 0.06    | 0.00  | 0.00  | 0.00  |
|       | 22   | -0.11   | 4.66    | 0.08    | 0.00  | 0.00  | 0.00  |
|       | 23   | -0.14   | 4.63    | 0.07    | 0.00  | 0.00  | 0.00  |
|       | 24   | -0.28   | 4.51    | 0.07    | 0.00  | 0.00  | 0.00  |
|       | 25   | -0.33   | 4.44    | 0.06    | 0.00  | 0.00  | 0.00  |
|       | 26   | -0.09   | 4.70    | 0.08    | 0.00  | 0.00  | 0.00  |
|       | 27   | -0.12   | 4.69    | 0.08    | 0.00  | 0.00  | 0.00  |
|       | 28   | -0.30   | 4.45    | 0.06    | 0.00  | 0.00  | 0.00  |
|       | 29   | -0.09   | 4.72    | 0.08    | 0.00  | 0.00  | 0.00  |
|       | 30   | -0.14   | 4.66    | 0.08    | 0.00  | 0.00  | 0.00  |
|       | 31   | -0.33   | 4.42    | 0.06    | 0.00  | 0.00  | 0.00  |
|       | 32   | -0.28   | 4.48    | 0.06    | 0.00  | 0.00  | 0.00  |
| 21    | 20   | 0.10    | 4.60    | 0.27    | 0.00  | 0.00  | 0.00  |
|       | 21   | 0.05    | 3.19    | -0.12   | 0.00  | 0.00  | 0.00  |
|       | 22   | 0.10    | 3.96    | 0.51    | 0.00  | 0.00  | 0.00  |
|       | 23   | 0.09    | 3.77    | 0.35    | 0.00  | 0.00  | 0.00  |
|       | 24   | 0.06    | 3.38    | 0.03    | 0.00  | 0.00  | 0.00  |
|       | 25   | 0.04    | 3.00    | -0.27   | 0.00  | 0.00  | 0.00  |
|       | 26   | 0.11    | 4.15    | 0.66    | 0.00  | 0.00  | 0.00  |
|       | 27   | 0.11    | 4.21    | 0.71    | 0.00  | 0.00  | 0.00  |
|       | 28   | 0.04    | 2.94    | -0.32   | 0.00  | 0.00  | 0.00  |
|       | 29   | 0.12    | 4.33    | 0.80    | 0.00  | 0.00  | 0.00  |
|       | 30   | 0.10    | 4.10    | 0.61    | 0.00  | 0.00  | 0.00  |
|       | 31   | 0.03    | 2.82    | -0.42   | 0.00  | 0.00  | 0.00  |
|       | 32   | 0.05    | 3.05    | -0.23   | 0.00  | 0.00  | 0.00  |
| 23    | 20   | 0.68    | 22.85   | -0.04   | -0.84 | -0.02 | -0.69 |
|       | 21   | 0.46    | 17.30   | -0.14   | -0.77 | -0.02 | -0.56 |
|       | 22   | 0.56    | 17.41   | 0.07    | -0.49 | -0.01 | -0.47 |
|       | 23   | 0.54    | 17.38   | 0.01    | -0.56 | -0.01 | -0.49 |
|       | 24   | 0.48    | 17.33   | -0.09   | -0.70 | -0.02 | -0.54 |
|       | 25   | 0.44    | 17.28   | -0.20   | -0.84 | -0.02 | -0.58 |
|       | 26   | 0.58    | 17.44   | 0.12    | -0.43 | 0.00  | -0.45 |
|       | 27   | 0.59    | 17.45   | 0.14    | -0.40 | -0.01 | -0.44 |

SUPPORT REACTIONS -UNIT MTON METE   STRUCTURE TYPE = SPACE
-----------------

| JOINT | LOAD | FORCE-X | FORCE-Y | FORCE-Z | MOM-X | MOM-Y | MOM Z |
|-------|------|---------|---------|---------|-------|-------|-------|
|    | 28 |  0.43 | 17.27 | -0.21 | -0.86 | -0.02 | -0.59 |
|    | 29 |  0.60 | 17.46 |  0.17 | -0.36 | -0.01 | -0.42 |
|    | 30 |  0.57 | 17.43 |  0.10 | -0.44 | -0.01 | -0.45 |
|    | 31 |  0.42 | 17.25 | -0.24 | -0.90 | -0.02 | -0.60 |
|    | 32 |  0.45 | 17.28 | -0.18 | -0.82 | -0.01 | -0.58 |
| 27 | 20 | -0.92 | 60.96 |  6.66 | 12.53 |  0.01 |  1.12 |
|    | 21 | -0.89 | 45.27 |  3.25 |  5.84 | -0.17 |  0.26 |
|    | 22 | -0.45 | 45.77 |  6.76 | 12.87 |  0.18 |  1.36 |
|    | 23 | -0.57 | 45.66 |  5.87 | 11.09 |  0.16 |  1.07 |
|    | 24 | -0.77 | 45.37 |  4.14 |  7.62 | -0.14 |  0.54 |
|    | 25 | -1.01 | 45.16 |  2.37 |  4.06 | -0.19 | -0.03 |
|    | 26 | -0.33 | 45.87 |  7.64 | 14.66 |  0.20 |  1.64 |
|    | 27 | -0.27 | 45.87 |  7.96 | 15.30 |  0.08 |  1.76 |
|    | 28 | -1.08 | 45.17 |  2.05 |  3.42 | -0.06 | -0.14 |
|    | 29 | -0.20 | 45.94 |  8.48 | 16.35 |  0.13 |  1.92 |
|    | 30 | -0.33 | 45.79 |  7.43 | 14.24 |  0.03 |  1.59 |
|    | 31 | -1.14 | 45.09 |  1.53 |  2.36 | -0.11 | -0.31 |
|    | 32 | -1.01 | 45.24 |  2.58 |  4.47 | -0.01 |  0.02 |
| 29 | 20 | -0.12 | 41.97 | -2.41 |  6.29 | -0.01 |  0.26 |
|    | 21 | -0.30 | 31.09 | -2.84 |  2.12 | -0.20 | -0.39 |
|    | 22 |  0.15 | 31.13 | -1.11 |  6.89 |  0.19 |  0.71 |
|    | 23 |  0.03 | 31.12 | -1.57 |  5.62 |  0.17 |  0.42 |
|    | 24 | -0.18 | 31.09 | -2.38 |  3.39 | -0.17 | -0.10 |
|    | 25 | -0.43 | 31.08 | -3.30 |  0.85 | -0.22 | -0.68 |
|    | 26 |  0.28 | 31.13 | -0.64 |  8.16 |  0.22 |  1.00 |
|    | 27 |  0.34 | 31.13 | -0.44 |  8.74 |  0.08 |  1.13 |
|    | 28 | -0.49 | 31.08 | -3.51 |  0.28 | -0.08 | -0.81 |
|    | 29 |  0.41 | 31.14 | -0.18 |  9.46 |  0.14 |  1.29 |
|    | 30 |  0.27 | 31.12 | -0.70 |  8.02 |  0.02 |  0.96 |
|    | 31 | -0.55 | 31.08 | -3.77 | -0.44 | -0.14 | -0.97 |
|    | 32 | -0.42 | 31.09 | -3.25 |  0.99 | -0.03 | -0.64 |
| 31 | 20 | -0.17 | 42.52 | -2.29 |  6.95 | -0.04 |  0.21 |
|    | 21 | -0.35 | 31.52 | -2.68 |  2.84 | -0.24 | -0.43 |
|    | 22 |  0.12 | 31.52 | -1.16 |  7.02 |  0.18 |  0.69 |
|    | 23 |  0.00 | 31.52 | -1.60 |  5.82 |  0.15 |  0.39 |
|    | 24 | -0.22 | 31.52 | -2.25 |  4.04 | -0.21 | -0.13 |
|    | 25 | -0.47 | 31.52 | -3.12 |  1.63 | -0.26 | -0.72 |
|    | 26 |  0.25 | 31.52 | -0.73 |  8.23 |  0.20 |  0.98 |
|    | 27 |  0.31 | 31.52 | -0.47 |  8.95 |  0.06 |  1.11 |
|    | 28 | -0.53 | 31.52 | -3.38 |  0.91 | -0.12 | -0.85 |
|    | 29 |  0.38 | 31.53 | -0.24 |  9.57 |  0.12 |  1.28 |
|    | 30 |  0.24 | 31.52 | -0.69 |  8.32 | -0.01 |  0.94 |
|    | 31 | -0.60 | 31.52 | -3.61 |  0.29 | -0.18 | -1.02 |
|    | 32 | -0.46 | 31.52 | -3.16 |  1.54 | -0.05 | -0.68 |
| 33 | 20 | -0.46 | 41.48 | -1.33 |  8.13 | -0.08 |  0.45 |
|    | 21 | -0.57 | 30.72 | -2.07 |  3.54 | -0.27 | -0.26 |

SUPPORT REACTIONS -UNIT MTON METE    STRUCTURE TYPE = SPACE
-----------------

| JOINT | LOAD | FORCE-X | FORCE-Y | FORCE-Z | MOM-X | MOM-Y | MOM Z |
|-------|------|---------|---------|---------|-------|-------|-------|
|    | 22 | -0.09 | 30.76 | -0.40 | 7.98 | 0.16 | 0.88 |
|    | 23 | -0.22 | 30.75 | -0.89 | 6.64 | 0.14 | 0.58 |
|    | 24 | -0.44 | 30.73 | -1.58 | 4.88 | -0.25 | 0.04 |
|    | 25 | -0.70 | 30.72 | -2.56 | 2.21 | -0.30 | -0.56 |
|    | 26 | 0.04 | 30.76 | 0.09 | 9.32 | 0.18 | 1.18 |
|    | 27 | 0.10 | 30.77 | 0.40 | 10.21 | 0.03 | 1.30 |
|    | 28 | -0.76 | 30.71 | -2.87 | 1.31 | -0.14 | -0.68 |
|    | 29 | 0.17 | 30.77 | 0.65 | 10.88 | 0.09 | 1.47 |
|    | 30 | 0.03 | 30.76 | 0.15 | 9.55 | -0.04 | 1.13 |
|    | 31 | -0.83 | 30.71 | -3.12 | 0.64 | -0.20 | -0.85 |
|    | 32 | -0.69 | 30.72 | -2.62 | 1.97 | -0.07 | -0.51 |
| 35 | 20 | -1.57 | 31.38 | 2.08 | 11.76 | -0.09 | 1.40 |
|    | 21 | -1.37 | 22.98 | 0.33 | 5.74 | -0.28 | 0.53 |
|    | 22 | -0.98 | 23.26 | 2.30 | 11.14 | 0.15 | 1.54 |
|    | 23 | -1.07 | 23.20 | 1.75 | 9.55 | 0.13 | 1.27 |
|    | 24 | -1.28 | 23.04 | 0.88 | 7.33 | -0.26 | 0.79 |
|    | 25 | -1.47 | 22.93 | -0.22 | 4.15 | -0.30 | 0.26 |
|    | 26 | -0.89 | 23.32 | 2.85 | 12.73 | 0.18 | 1.80 |
|    | 27 | -0.86 | 23.31 | 3.14 | 13.74 | 0.01 | 1.92 |
|    | 28 | -1.49 | 22.93 | -0.52 | 3.14 | -0.13 | 0.15 |
|    | 29 | -0.80 | 23.36 | 3.44 | 14.55 | 0.07 | 2.07 |
|    | 30 | -0.92 | 23.27 | 2.85 | 12.93 | -0.06 | 1.77 |
|    | 31 | -1.55 | 22.89 | -0.82 | 2.33 | -0.20 | 0.00 |
|    | 32 | -1.43 | 22.97 | -0.22 | 3.95 | -0.07 | 0.30 |
| 39 | 20 | -1.67 | 36.60 | -8.88 | 0.88 | -0.01 | 2.09 |
|    | 21 | -1.90 | 26.72 | -7.81 | -2.38 | -0.25 | 0.08 |
|    | 22 | -0.60 | 27.22 | -5.50 | 3.74 | 0.23 | 3.02 |
|    | 23 | -0.94 | 27.09 | -6.09 | 2.18 | 0.21 | 2.31 |
|    | 24 | -1.55 | 26.85 | -7.22 | -0.83 | -0.23 | 0.78 |
|    | 25 | -2.24 | 26.60 | -8.39 | -3.94 | -0.28 | -0.63 |
|    | 26 | -0.25 | 27.34 | -4.92 | 5.29 | 0.26 | 3.73 |
|    | 27 | -0.10 | 27.39 | -4.71 | 5.86 | 0.07 | 3.91 |
|    | 28 | -2.39 | 26.55 | -8.60 | -4.50 | -0.09 | -0.81 |
|    | 29 | 0.10 | 27.47 | -4.37 | 6.78 | 0.14 | 4.35 |
|    | 30 | -0.29 | 27.32 | -5.06 | 4.94 | 0.00 | 3.47 |
|    | 31 | -2.59 | 26.47 | -8.94 | -5.42 | -0.16 | -1.26 |
|    | 32 | -2.20 | 26.62 | -8.25 | -3.59 | -0.02 | -0.37 |
| 41 | 20 | 0.01 | 17.96 | -1.58 | 5.10 | 0.01 | -0.03 |
|    | 21 | -0.45 | 12.64 | -1.64 | 1.41 | -0.62 | -1.36 |
|    | 22 | 0.48 | 12.85 | -0.19 | 7.05 | 0.64 | 1.29 |
|    | 23 | 0.31 | 12.79 | -0.58 | 5.55 | 0.60 | 0.81 |
|    | 24 | -0.28 | 12.69 | -1.25 | 2.91 | -0.58 | -0.88 |
|    | 25 | -0.61 | 12.59 | -2.02 | -0.09 | -0.65 | -1.85 |
|    | 26 | 0.64 | 12.90 | 0.19 | 8.55 | 0.67 | 1.77 |
|    | 27 | 0.57 | 12.92 | 0.36 | 9.23 | 0.11 | 1.57 |
|    | 28 | -0.54 | 12.57 | -2.20 | -0.77 | -0.09 | -1.64 |

SUPPORT REACTIONS -UNIT MTON METE    STRUCTURE TYPE = SPACE
-----------------

| JOINT | LOAD | FORCE-X | FORCE-Y | FORCE-Z | MOM-X | MOM-Y | MOM Z |
|-------|------|---------|---------|---------|-------|-------|-------|
|       | 29   | 0.71    | 12.95   | 0.58    | 10.08 | 0.30  | 1.97  |
|       | 30   | 0.43    | 12.89   | 0.15    | 8.38  | -0.07 | 1.17  |
|       | 31   | -0.68   | 12.54   | -2.41   | -1.62 | -0.28 | -2.04 |
|       | 32   | -0.40   | 12.60   | -1.98   | 0.08  | 0.09  | -1.24 |
| 43    | 20   | 0.01    | 17.74   | -1.36   | 5.81  | 0.01  | -0.02 |
|       | 21   | -0.45   | 12.49   | -1.39   | 2.27  | -0.64 | -1.35 |
|       | 22   | 0.47    | 12.67   | -0.13   | 7.20  | 0.65  | 1.29  |
|       | 23   | 0.30    | 12.62   | -0.49   | 5.78  | 0.62  | 0.81  |
|       | 24   | -0.28   | 12.54   | -1.03   | 3.69  | -0.60 | -0.87 |
|       | 25   | -0.61   | 12.44   | -1.75   | 0.85  | -0.67 | -1.83 |
|       | 26   | 0.63    | 12.72   | 0.24    | 8.62  | 0.68  | 1.77  |
|       | 27   | 0.57    | 12.75   | 0.45    | 9.47  | 0.12  | 1.56  |
|       | 28   | -0.55   | 12.41   | -1.97   | 0.00  | -0.10 | -1.62 |
|       | 29   | 0.70    | 12.78   | 0.64    | 10.21 | 0.31  | 1.96  |
|       | 30   | 0.43    | 12.72   | 0.27    | 8.73  | -0.08 | 1.17  |
|       | 31   | -0.68   | 12.38   | -2.16   | -0.74 | -0.30 | -2.02 |
|       | 32   | -0.41   | 12.44   | -1.78   | 0.74  | 0.09  | -1.23 |
| 45    | 20   | 0.01    | 17.75   | -1.39   | 5.72  | 0.02  | -0.03 |
|       | 21   | -0.45   | 12.50   | -1.43   | 2.11  | -0.64 | -1.36 |
|       | 22   | 0.47    | 12.68   | -0.14   | 7.16  | 0.67  | 1.29  |
|       | 23   | 0.30    | 12.62   | -0.54   | 5.61  | 0.64  | 0.82  |
|       | 24   | -0.28   | 12.55   | -1.04   | 3.67  | -0.61 | -0.88 |
|       | 25   | -0.61   | 12.44   | -1.83   | 0.56  | -0.68 | -1.83 |
|       | 26   | 0.63    | 12.73   | 0.26    | 8.72  | 0.70  | 1.77  |
|       | 27   | 0.56    | 12.77   | 0.54    | 9.82  | 0.12  | 1.55  |
|       | 28   | -0.54   | 12.40   | -2.11   | -0.55 | -0.10 | -1.61 |
|       | 29   | 0.70    | 12.80   | 0.73    | 10.58 | 0.32  | 1.94  |
|       | 30   | 0.43    | 12.74   | 0.34    | 9.06  | -0.07 | 1.15  |
|       | 31   | -0.68   | 12.38   | -2.31   | -1.31 | -0.29 | -2.01 |
|       | 32   | -0.40   | 12.43   | -1.92   | 0.21  | 0.10  | -1.21 |
| 47    | 20   | 0.02    | 18.11   | -1.95   | 3.70  | 0.04  | -0.05 |
|       | 21   | -0.45   | 12.73   | -2.00   | 0.04  | -0.64 | -1.39 |
|       | 22   | 0.49    | 12.98   | -0.44   | 6.14  | 0.69  | 1.30  |
|       | 23   | 0.32    | 12.91   | -0.92   | 4.26  | 0.66  | 0.82  |
|       | 24   | -0.28   | 12.80   | -1.52   | 1.93  | -0.61 | -0.92 |
|       | 25   | -0.62   | 12.65   | -2.49   | -1.84 | -0.67 | -1.87 |
|       | 26   | 0.66    | 13.06   | 0.05    | 8.02  | 0.72  | 1.77  |
|       | 27   | 0.58    | 13.10   | 0.39    | 9.37  | 0.13  | 1.54  |
|       | 28   | -0.54   | 12.61   | -2.83   | -3.19 | -0.07 | -1.63 |
|       | 29   | 0.72    | 13.14   | 0.63    | 10.29 | 0.33  | 1.94  |
|       | 30   | 0.44    | 13.06   | 0.16    | 8.46  | -0.07 | 1.13  |
|       | 31   | -0.68   | 12.57   | -3.07   | -4.11 | -0.27 | -2.03 |
|       | 32   | -0.40   | 12.65   | -2.60   | -2.28 | 0.13  | -1.23 |
| 49    | 20   | -0.11   | 16.40   | -3.53   | -2.36 | 0.03  | -0.86 |
|       | 21   | -0.44   | 11.49   | -2.46   | -1.61 | -0.67 | -1.88 |
|       | 22   | 0.28    | 11.79   | -2.40   | -1.39 | 0.72  | 0.50  |

**Proyecto Estructural**   CENTRO DE SERVICIOS INFONAVIT "CESI"
Memoria de cálculo

SUPPORT REACTIONS -UNIT MTON METE    STRUCTURE TYPE = SPACE
-----------------

| JOINT | LOAD | FORCE-X | FORCE-Y | FORCE-Z | MOM-X | MOM-Y | MOM Z |
|-------|------|---------|---------|---------|-------|-------|-------|
|    | 23 | 0.15 | 11.74 | -2.48 | -1.67 | 0.69 | 0.08 |
|    | 24 | -0.31 | 11.54 | -2.39 | -1.33 | -0.64 | -1.46 |
|    | 25 | -0.57 | 11.44 | -2.53 | -1.89 | -0.70 | -2.30 |
|    | 26 | 0.41 | 11.84 | -2.33 | -1.11 | 0.75 | 0.92 |
|    | 27 | 0.35 | 11.81 | -2.20 | -0.57 | 0.12 | 0.71 |
|    | 28 | -0.51 | 11.47 | -2.67 | -2.43 | -0.07 | -2.09 |
|    | 29 | 0.46 | 11.85 | -2.19 | -0.54 | 0.33 | 1.07 |
|    | 30 | 0.24 | 11.76 | -2.20 | -0.60 | -0.08 | 0.35 |
|    | 31 | -0.62 | 11.42 | -2.68 | -2.46 | -0.28 | -2.45 |
|    | 32 | -0.41 | 11.51 | -2.66 | -2.39 | 0.14 | -1.74 |
| 51 | 20 | 1.32 | 22.85 | 0.69 | 0.83 | 0.00 | -0.40 |
|    | 21 | 0.92 | 17.31 | 0.41 | 0.47 | 0.00 | -0.39 |
|    | 22 | 1.07 | 17.40 | 0.62 | 0.78 | 0.00 | -0.17 |
|    | 23 | 1.04 | 17.38 | 0.57 | 0.70 | 0.00 | -0.22 |
|    | 24 | 0.96 | 17.33 | 0.46 | 0.54 | 0.00 | -0.34 |
|    | 25 | 0.89 | 17.29 | 0.36 | 0.39 | 0.00 | -0.45 |
|    | 26 | 1.10 | 17.42 | 0.67 | 0.85 | 0.00 | -0.12 |
|    | 27 | 1.11 | 17.42 | 0.68 | 0.88 | 0.00 | -0.11 |
|    | 28 | 0.89 | 17.29 | 0.35 | 0.37 | 0.00 | -0.45 |
|    | 29 | 1.13 | 17.44 | 0.71 | 0.92 | 0.00 | -0.08 |
|    | 30 | 1.08 | 17.41 | 0.65 | 0.83 | 0.00 | -0.15 |
|    | 31 | 0.87 | 17.27 | 0.32 | 0.32 | 0.00 | -0.48 |
|    | 32 | 0.91 | 17.30 | 0.38 | 0.41 | 0.00 | -0.42 |
| 53 | 20 | 0.00 | 3.10 | 0.00 | 0.00 | 0.00 | -0.86 |
|    | 21 | 0.00 | 2.44 | 0.00 | 0.00 | 0.00 | -0.68 |
|    | 22 | 0.00 | 2.44 | 0.00 | 0.00 | 0.00 | -0.68 |
|    | 23 | 0.00 | 2.44 | 0.00 | 0.00 | 0.00 | -0.68 |
|    | 24 | 0.00 | 2.44 | 0.00 | 0.00 | 0.00 | -0.68 |
|    | 25 | 0.00 | 2.44 | 0.00 | 0.00 | 0.00 | -0.68 |
|    | 26 | 0.00 | 2.44 | 0.00 | 0.00 | 0.00 | -0.68 |
|    | 27 | 0.00 | 2.44 | 0.00 | 0.00 | 0.00 | -0.68 |
|    | 28 | 0.00 | 2.44 | 0.00 | 0.00 | 0.00 | -0.68 |
|    | 29 | 0.00 | 2.44 | 0.00 | 0.00 | 0.00 | -0.68 |
|    | 30 | 0.00 | 2.44 | 0.00 | 0.00 | 0.00 | -0.68 |
|    | 31 | 0.00 | 2.44 | 0.00 | 0.00 | 0.00 | -0.68 |
|    | 32 | 0.00 | 2.44 | 0.00 | 0.00 | 0.00 | -0.68 |
| 55 | 20 | 0.26 | 10.08 | -1.06 | 0.13 | 0.00 | 0.64 |
|    | 21 | 0.09 | 7.61 | -0.89 | -0.02 | -0.01 | 0.33 |
|    | 22 | 0.32 | 7.79 | -0.71 | 0.27 | 0.01 | 0.67 |
|    | 23 | 0.27 | 7.76 | -0.76 | 0.20 | 0.01 | 0.60 |
|    | 24 | 0.14 | 7.64 | -0.85 | 0.05 | -0.01 | 0.40 |
|    | 25 | 0.04 | 7.58 | -0.94 | -0.09 | -0.01 | 0.26 |
|    | 26 | 0.36 | 7.82 | -0.67 | 0.34 | 0.01 | 0.74 |
|    | 27 | 0.36 | 7.80 | -0.66 | 0.36 | 0.00 | 0.74 |
|    | 28 | 0.04 | 7.60 | -0.95 | -0.11 | 0.00 | 0.26 |
|    | 29 | 0.39 | 7.83 | -0.63 | 0.40 | 0.01 | 0.79 |

SUPPORT REACTIONS -UNIT MTON METE    STRUCTURE TYPE = SPACE
-----------------

| JOINT | LOAD | FORCE-X | FORCE-Y | FORCE-Z | MOM-X | MOM-Y | MOM Z |
|-------|------|---------|---------|---------|-------|-------|-------|
|       | 30   | 0.33    | 7.78    | -0.68   | 0.32  | 0.00  | 0.69  |
|       | 31   | 0.01    | 7.57    | -0.98   | -0.16 | -0.01 | 0.21  |
|       | 32   | 0.08    | 7.62    | -0.92   | -0.07 | 0.00  | 0.31  |
| 288   | 20   | 0.00    | 0.12    | 0.00    | 0.00  | 0.00  | 0.00  |
|       | 21   | 0.00    | 0.10    | 0.00    | 0.00  | 0.00  | 0.00  |
|       | 22   | 0.00    | 0.10    | 0.00    | 0.00  | 0.00  | 0.00  |
|       | 23   | 0.00    | 0.10    | 0.00    | 0.00  | 0.00  | 0.00  |
|       | 24   | 0.00    | 0.10    | 0.00    | 0.00  | 0.00  | 0.00  |
|       | 25   | 0.00    | 0.10    | 0.00    | 0.00  | 0.00  | 0.00  |
|       | 26   | 0.00    | 0.10    | 0.00    | 0.00  | 0.00  | 0.00  |
|       | 27   | 0.00    | 0.10    | 0.00    | 0.00  | 0.00  | 0.00  |
|       | 28   | 0.00    | 0.10    | 0.00    | 0.00  | 0.00  | 0.00  |
|       | 29   | 0.00    | 0.10    | 0.00    | 0.00  | 0.00  | 0.00  |
|       | 30   | 0.00    | 0.10    | 0.00    | 0.00  | 0.00  | 0.00  |
|       | 31   | 0.00    | 0.10    | 0.00    | 0.00  | 0.00  | 0.00  |
|       | 32   | 0.00    | 0.10    | 0.00    | 0.00  | 0.00  | 0.00  |

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

486. FINISH

# H. REVISIÓN

## 1) ESTADOS LÍMITE DE FALLA:

De los resultados originados por la corrida del programa, se observan las relaciones de falla siguientes para los distintos tipos de elementos metálicos. Relaciones de falla de 1.0 significan que el elemento está trabajando al 100 % de su capacidad de diseño. Se aceptan relaciones de falla hasta de 1.05.
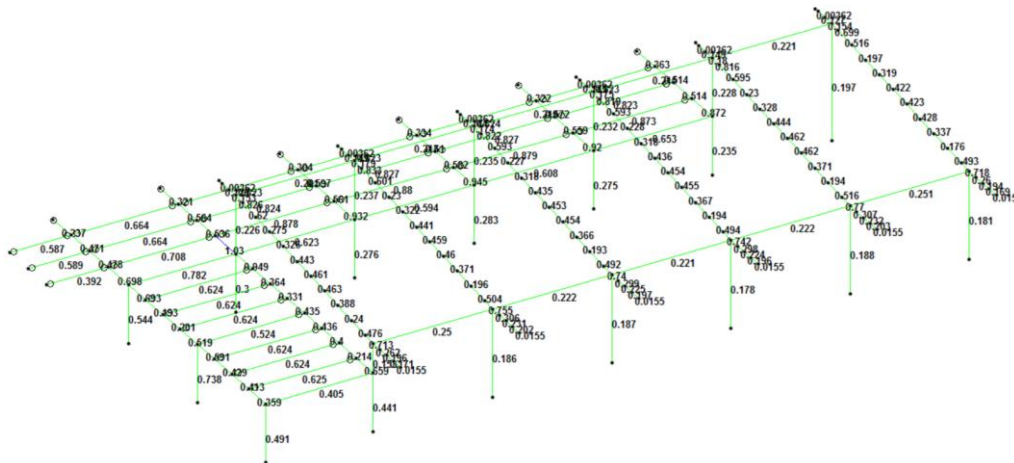


El elemento más esforzado está trabajando al 1.03, por lo que se considera que la estructura **CUMPLE CON LO DISPUESTO EN EL REGLAMENTO DE CONSTRUCCIONES DEL DISTRITO FEDERAL VIGENTE, EN LO RELATIVO A ESTADOS LÍMITE DE FALLA.**

## ESTADOS LÍMITE DE SERVICIO:

### a) FLECHAS VERTICALES

La deformación vertical admisible máxima por reglamento es de:

Dadm = (L/240) + 0.5 cm

L= claro máximo = 12.2 metros para las trabes metálicas

Dadm = (1220/240) + 0.5 = 5.58 cm
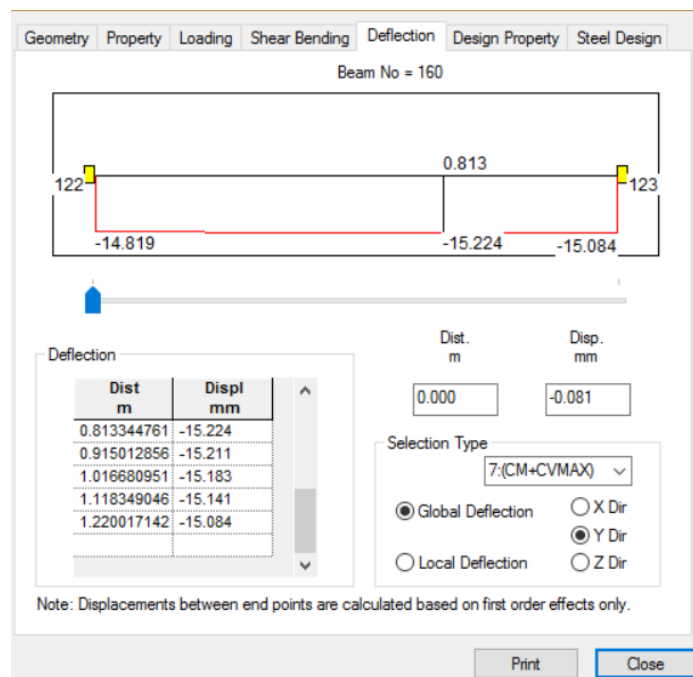


Para trabes principales portantes, la flecha máxima es de:

Dmáx = 1.5 cm < 5.58cm   La deformación máxima está por debajo de la admisible, por lo tanto **CUMPLE.**

## 2) *REVISIÓN DE DESPLAZAMIENTOS LATERALES:*

Los desplazamientos laterales máximos deben ser menores a 0.006 (0.6 %) conforme a lo establecido en la Normatividad vigente.

Dadm = 0.006 H

H= 6.0 metros

Dadm = 0.006 x 6.0 x 100 = **3.6 cm**

## RESUMEN DE DESPLAZAMIENTOS

| | Node | L/C | Horizontal X mm | Vertical Y mm | Horizontal Z mm | Resultant mm | Rotational rX rad | rY rad | rZ rad |
|---|---|---|---|---|---|---|---|---|---|
| Max X | 103 | 13 0.75(CM+ | **18.919** | -9.645 | -2.125 | 21.342 | -0.000 | 0.001 | -0.000 |
| Min X | 103 | 12 0.75(CM+ | **-19.022** | -10.137 | -3.678 | 21.866 | -0.000 | -0.001 | -0.000 |
| Max Y | 344 | 16 0.75(CM+ | 1.049 | **1.310** | -1.097 | 2.005 | 0.000 | 0.000 | -0.002 |
| Min Y | 123 | 7 (CM+CVMA | -0.060 | **-15.084** | -3.787 | 15.552 | -0.001 | 0.000 | -0.000 |
| Max Z | 333 | 16 0.75(CM+ | 0.948 | 0.055 | **4.020** | 4.131 | -0.001 | 0.001 | -0.000 |
| Min Z | 73 | 18 0.75(CM+ | -6.305 | -10.069 | **-8.350** | 14.521 | -0.000 | -0.001 | 0.001 |
| Max rX | 120 | 7 (CM+CVMA | -0.117 | -8.795 | -2.986 | 9.288 | **0.003** | 0.000 | -0.000 |
| Min rX | 165 | 7 (CM+CVMA | 0.008 | -7.047 | -1.259 | 7.158 | **-0.004** | 0.000 | -0.000 |
| Max rY | 80 | 13 0.75(CM+ | 10.742 | -4.786 | -1.629 | 11.872 | 0.002 | **0.005** | -0.001 |
| Min rY | 130 | 12 0.75(CM+ | -10.929 | -5.110 | -0.874 | 12.096 | 0.002 | **-0.005** | 0.001 |
| Max rZ | 68 | 7 (CM+CVMA | -0.120 | -6.404 | -3.014 | 7.079 | 0.002 | -0.001 | **0.004** |
| Min rZ | 334 | 7 (CM+CVMA | -0.172 | -6.279 | -0.749 | 6.326 | 0.002 | 0.001 | **-0.004** |
| Max Rs | 73 | 12 0.75(CM+ | -19.009 | -9.879 | -4.791 | **21.953** | -0.000 | -0.001 | 0.001 |

Se tienen desplazamientos laterales máximos de:

Dmax (x) = 1.9 cm        Nudo No. 103

Dmax (z) = 0.835 cm        Nudo No. 103

Debido a que la deformación máxima ocurre con una combinación de carga que involucra sismo, es necesario multiplicar este valor por el factor de ductilidad empleado.

Q= 2.0

Dmáx real = 1.9 x 2.0 = **3.8 cm ≈ 3.6 cm**.        Por lo tanto **CUMPLE**

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## 3) *REVISIÓN DE PERIODOS DE LA ESTRUCTURA:*

Los periodos de la estructura son:

Tx = 0.965 seg

Tz= 0.512 seg

Los periodos de la estructura son altos, esto se debe a que la zona de la cubierta no es muy rígida, sin embargo cumplen adecuadamente con los desplazamientos que marca el Reglamento.
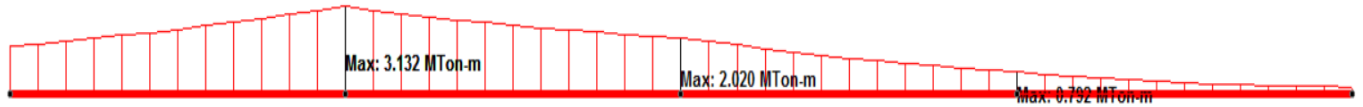
### 4) REVISIÓN Y DISEÑO DE COLUMNAS:

Alguna de las columnas más esforzadas requiere 4.0 cm$^2$ de área de acero para una sección de 20x20 cm
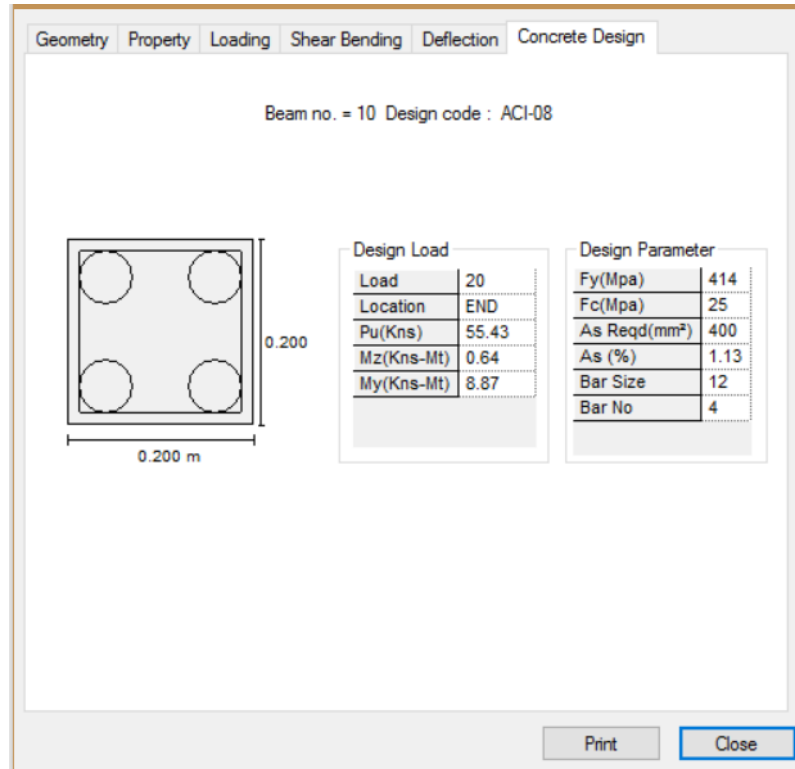


Pueden emplearse 4 varillas # 4

## 5) **REVISIÓN DE TRABES DE LIGA:**

### TRABES EN UNIDAD FAMILIAR



**ENVOLVENTES DE MOMENTO FLEXIONANTE EN TRABES EJE 6**

**a)** Los elementos mecánicos máximos de diseño para las trabes son:

Mu (-) = 3.132 ton-m

Usando ayudas de diseño, se tiene que para el momento negativo máximo:

$Mu/bd^2 = 3.132x10^5 / (25x45^2) = 6.18 \text{ kg/cm}^2$

Para un concreto con f'c=250 kg/cm$^2$ y para un acero con fy=4,200 kg/cm$^2$

Lo anterior corresponde a usar una cuantía mínima de:

Preq= 0.002635

As(req) = 0.002635x 25 x 45 = 2.96 cm$^2$

Usando varillas #4 (as=1.27 cm$^2$)

No. Varillas requerido = 2.96/1.27= 2.3 varillas

**Por lo tanto se usarán 3 vars. #4 (corridas) tanto en lecho superior como inferior.**

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