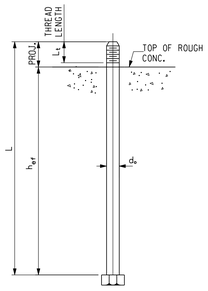
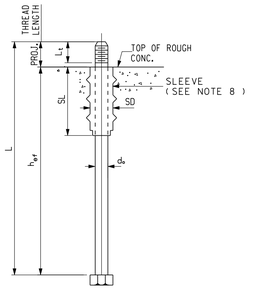
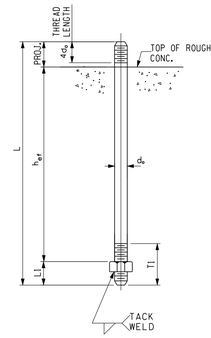
| PLANT NO. | INDEX | DRAWING NUMBER | SHT. NO. | REV. NO. |
|---|---|---|---|---|
| 990 | 0 | AA-036322 | 001 | 08 |



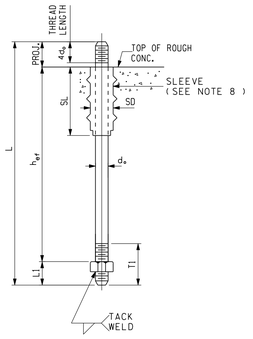

## TYPE 1
ASTM A307



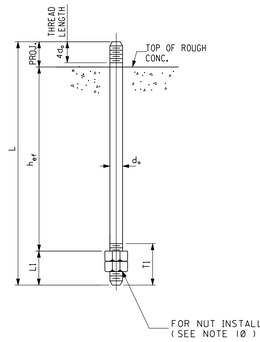

## TYPE 1S
ASTM A307



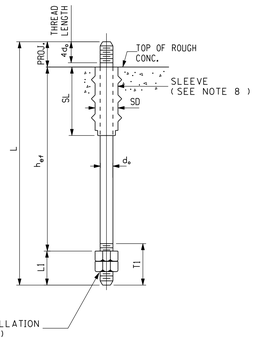

## TYPE 2
ASTM A36/A36M or
ASTM F1554, Gr. 36
( SEE NOTE 4 )



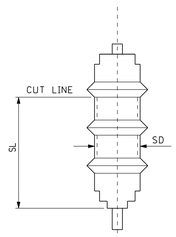

## TYPE 2S
ASTM A36/A36M or
ASTM F1554, Gr. 36
( SEE NOTE 4 )




## TYPE 3
ASTM A193/A193M or
ASTM F1554, Gr. 105
( SEE NOTE 5 )




## TYPE 3S
ASTM A193/A193M or
ASTM F1554, Gr. 105
( SEE NOTE 5 )




## DETAIL OF SLEEVE

PLASTIC ANCHOR BOLT SLEEVES SHALL BE USED WHERE REQUIRED BY DESIGN. TOP OF SLEEVE SHALL BE CUT OFF TO MAINTAIN EMBEDMENT LENGTH.

**Table 1- ASTM A307, Grade A Bolt Sizes-Inch Series**

| Bolt Properties | | | | | | Type 1 | | | | Type 1S | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size $d_o$ | Type | $L_t$ | TPI | Stress Area | Max. Proj. (note c) | $h_{ef}$ min. | Length (L) Proj.+$h_{ef}$ | Edge Dist. $4d_o \geq 100+d_o/2$ | Spacing $6d_o$ | $h_{ef}$ min. | Length (L) Proj.+$h_{ef}$ (note d) | Edge Dist. (note e) | Spacing SD | Sleeve SL |
| (in) | | (in) | | ($in^2$) | (mm) | $12d_o$ (mm) | | (in) | (mm) | SL+150 (mm) | | (mm) | (mm) | (mm) |
| ½ | Hex | 1.50 | 13 | 0.142 | 107 | 152 | 10 | 108 | 76 | 275 | 15 | 127 | 114 | 50 | 125 |
| ⅝ | Hex | 1.75 | 11 | 0.226 | 115 | 191 | 12 | 110 | 95 | 325 | 17 ½ | 127 | 129 | 50 | 175 |
| ¾ | Hex | 2.00 | 10 | 0.334 | 123 | 229 | 14 | 111 | 114 | 325 | 17 ½ | 127 | 145 | 50 | 175 |
| ⅞ | Hex | 2.25 | 9 | 0.462 | 131 | 267 | 15 ½ | 113 | 133 | 325 | 18 | 127 | 161 | 50 | 175 |
| 1 | Hex | 2.50 | 8 | 0.606 | 139 | 305 | 17 ½ | 114 | 152 | 400 | 21 | 139 | 202 | 75 | 250 |
| 1-1/8 | Hex | 2.75 | 7 | 0.763 | 146 | 343 | 19 ½ | 116 | 171 | 421 | 22 ½ | 139 | 218 | 75 | 250 |
| 1-1/4 | Hex | 3.00 | 7 | 0.969 | 154 | 381 | 21 | 127 | 191 | 441 | 23 ½ | 149 | 234 | 75 | 250 |
| 1-3/8 | Hex | 3.25 | 6 | 1.155 | 162 | 419 | 23 | 140 | 210 | 460 | 24 ½ | 160 | 250 | 75 | 250 |
| 1-1/2 | Hex | 3.50 | 6 | 1.405 | 170 | 457 | 24 ½ | 152 | 229 | 604 | 30 ½ | 183 | 291 | 100 | 375 |
| 1-3/4 | Heavy Hex | 4.00 | 5 | 1.899 | 186 | 533 | 28 ½ | 178 | 267 | 642 | 32 ½ | 206 | 322 | 100 | 375 |
| 2 | Heavy Hex | 4.50 | 4.5 | 2.498 | 202 | 610 | 32 | 203 | 305 | 755 | 37 ½ | 228 | 354 | 100 | 450 |
| 2-1/4 | Heavy Hex | 5.00 | 4.5 | 3.248 | 218 | 686 | 35 ½ | 229 | 343 | 793 | 40 | 250 | 386 | 100 | 450 |
| 2-1/2 | Heavy Hex | 5.50 | 4 | 3.999 | 234 | 762 | 39 | 254 | 381 | 981 | 48 | 297 | 468 | 150 | 600 |
| 2-3/4 | Heavy Hex | 6.00 | 4 | 4.934 | 250 | 838 | 43 | 279 | 419 | 1019 | 50 | 319 | 499 | 150 | 600 |
| 3 | Heavy Hex | 6.50 | 4 | 5.967 | 266 | 914 | 46 ½ | 305 | 457 | 1057 | 52 | 342 | 531 | 150 | 600 |

NOTES:

a. MINIMUM EDGE DISTANCE IS MEASURED FROM THE CENTERLINE OF THE ANCHOR BOLT TO THE EDGE OF THE CONCRETE.

b. ASTM A307 BOLT LENGTHS MAY NOT BE AVAILABLE FOR THE LARGER DIAMETER TYPE IS BOLTS.

c. IF THE REQUIRED PROJECTION EXCEED THE MAXIMUM PROJECTION IN THE TABLE ABOVE, USE A TYPE 2 ANCHOR BOLT.

d. EDGE DISTANCE FOR BOLTS WITH SLEEVES MUST BE INCREASED BY ( SD-$d_o$ ) 1/2

e. SPACING OF BOLTS WITH SLEEVES MUST BE INCREASED BY ( SD- $d_o$ )

f. TPI= THREADS PER INCH.

| Anchor Material Specification | Sizes | Profile | Thread Profile | Nut Material Specification | Coating Type |
|---|---|---|---|---|---|
| ASTM A307, Grade A | ½" thru 1-1/2" | Hex Bolt | ASME B18.2.1, UNC | ASTM A563, Gr. A Heavy Hex | Galvanized to ASTM A153/A153M, Class C or ASTM B695, Class 50 |
| | over 1-1/2" | Heavy Hex Bolt | | | |
| ASTM A36/A36M | ½" thru 3" | Rod | ASME B1.1, UNC, Class 2 ASME B1.13M | ASTM A563, Gr. A Heavy Hex | Galvanized to ASTM A153/A153M, Class C or ASTM B695, Class 50 |
| | M12 thru M72 | | | | |
| ASTM F1554, Gr.36 | ½" thru 3" | Rod | ASME B1.1, UNC, Class 2 | ASTM A563, Gr. A Heavy Hex | Galvanized to ASTM A153/A153M, Class C or ASTM B695, Class 50 |
| ASTM A193/A193M, Gr. B7 | ¾" thru 3" | Bolts/Rods | ASME B1.1, 8 UN, Class 2 | ASTM A563, DH Heavy Hex or ASTM A194/A 194M | Galvanized to ASTM A153/A153M, Class C or ASTM B695, Class 50 |
| | M20 thru M72 | | ASME B1.13M | | |
| ASTM F1554 Gr. 105 | ¾" thru 3" | Rod | ASME B1.1, 8 UN, Class 2 | ASTM A563, DH Heavy Hex or ASTM A194/A 194M | Galvanized to ASTM A153/A153M, Class C or ASTM B695, Class 50 |
| | M20 thru M72 | | | | |

### FORMAT FOR ANCHOR BOLT CALL OUT ON DRAWINGS

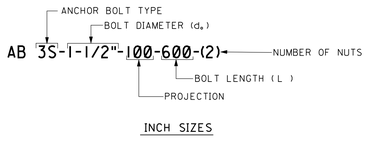



**Table 2 - ASTM A36, ASTM F1554 Grade 36 Anchor Rods-Inch Series**

| Bolt Properties | | | | | | Type 2 | | | | Type 2S | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size $d_o$ | TPI | Stress Area | L1 $d_o$+13 | T1 $2d_o$ | $h_{ef}$ min. | Edge Dist. $4d_o \geq 100+d_o/2$ | Spacing $6d_o$ | $h_{ef}$ min. | Edge Dist. | Spacing | Sleeve | |
| (in) | | ($in^2$) | (mm) | (mm) | $12d_o$ (mm) | (in) (mm) | (mm) | SL+150 (mm) | (note b) (mm) | (note c) (mm) | SD (mm) | SL (mm) |
| ½ | 13 | 0.142 | 26 | 25 | 152 | 108 | 76 | 275 | 127 | 114 | 50 | 125 |
| ⅝ | 11 | 0.226 | 29 | 32 | 191 | 110 | 95 | 325 | 127 | 129 | 50 | 175 |
| ¾ | 10 | 0.334 | 32 | 38 | 229 | 111 | 114 | 325 | 127 | 145 | 50 | 175 |
| ⅞ | 9 | 0.462 | 35 | 44 | 267 | 113 | 133 | 325 | 127 | 161 | 50 | 175 |
| 1 | 8 | 0.606 | 38 | 51 | 305 | 114 | 152 | 400 | 139 | 202 | 75 | 250 |
| 1-1/8 | 7 | 0.763 | 42 | 57 | 343 | 116 | 171 | 421 | 139 | 218 | 75 | 250 |
| 1-1/4 | 7 | 0.969 | 45 | 64 | 381 | 127 | 191 | 441 | 149 | 234 | 75 | 250 |
| 1-3/8 | 6 | 1.155 | 48 | 70 | 419 | 140 | 210 | 460 | 160 | 250 | 75 | 250 |
| 1-1/2 | 6 | 1.405 | 51 | 76 | 457 | 152 | 229 | 604 | 183 | 291 | 100 | 375 |
| 1-3/4 | 5 | 1.899 | 57 | 89 | 533 | 178 | 267 | 642 | 206 | 322 | 100 | 375 |
| 2 | 4,5 | 2.498 | 64 | 102 | 610 | 203 | 305 | 755 | 228 | 354 | 100 | 450 |
| 2-1/4 | 4,5 | 3.248 | 70 | 114 | 686 | 229 | 343 | 793 | 250 | 386 | 100 | 450 |
| 2-1/2 | 4.0 | 3.999 | 77 | 127 | 762 | 254 | 381 | 981 | 297 | 468 | 150 | 600 |
| 2-3/4 | 4.0 | 4.934 | 83 | 140 | 838 | 279 | 419 | 1019 | 319 | 499 | 150 | 600 |
| 3 | 4.0 | 5.967 | 89 | 152 | 914 | 305 | 457 | 1057 | 342 | 531 | 150 | 600 |

NOTES:

a. MINIMUM EDGE DISTANCE IS MEASURED FROM THE CENTERLINE OF THE ANCHOR BOLT TO THE EDGE OF THE CONCRETE.

b. EDGE DISTANCE FOR BOLTS WITH SLEEVES MUST BE INCREASED BY ( SD-$d_o$ )1/2

c. SPACING OF BOLTS WITH SLEEVES MUST BE INCREASED BY ( SD-$d_o$ )

d. TPI = THREADS PER INCH.

**Table 2M - ASTM A36 Anchor Rods - Metric**

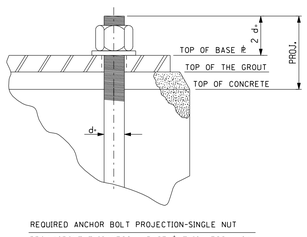
| Bolt Properties | | | | Type 2 | | | Type 2S | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nominal Dia. ($d_o$) & thread pitch | Stress Area | L1 $d_o$+13 | T1 $2d_o$ | $h_{ef}$ min. $12d_o$ | Edge Dist. $4d_o \geq 100+d_o/2$ | Spacing $6d_o$ | $h_{ef}$ min. SL+150 | Edge Dist. (note b) | Spacing (note c) | Sleeve SD | Sleeve SL |
| (mm) | ($mm^2$) | (mm) | (mm) | (mm) | (mm) | (mm) | (mm) | (mm) | (mm) | (mm) | (mm) |
| M12x1.75 | 84.3 | 25 | 24 | 144 | 106 | 72 | 275 | 125 | 110 | 50 | 125 |
| M16x2 | 157 | 29 | 32 | 192 | 108 | 96 | 275 | 125 | 130 | 50 | 125 |
| M20x2.5 | 245 | 33 | 40 | 240 | 110 | 120 | 325 | 125 | 150 | 50 | 175 |
| M24x3 | 353 | 37 | 48 | 288 | 112 | 144 | 400 | 138 | 195 | 75 | 250 |
| M27x3 | 459 | 40 | 54 | 324 | 114 | 162 | 400 | 138 | 210 | 75 | 250 |
| M30x3.5 | 561 | 43 | 60 | 360 | 120 | 180 | 400 | 143 | 225 | 75 | 250 |
| M36x4 | 817 | 49 | 72 | 432 | 144 | 216 | 525 | 176 | 280 | 100 | 375 |
| M42x4.5 | 1120 | 55 | 84 | 504 | 168 | 252 | 525 | 197 | 310 | 100 | 375 |
| M48x5 | 1470 | 61 | 96 | 576 | 192 | 288 | 600 | 218 | 340 | 100 | 450 |
| M56x5.5 | 2030 | 69 | 112 | 672 | 224 | 336 | 672 | 246 | 380 | 100 | 450 |
| M64x6 | 2680 | 77 | 128 | 768 | 256 | 384 | 768 | 299 | 470 | 150 | 600 |
| M72x6 | 3460 | 85 | 144 | 864 | 288 | 432 | 864 | 327 | 510 | 150 | 600 |

NOTES:

a. MINIMUM EDGE DISTANCE IS MEASURED FROM THE CENTERLINE OF THE ANCHOR BOLT TO THE EDGE OF THE CONCRETE.

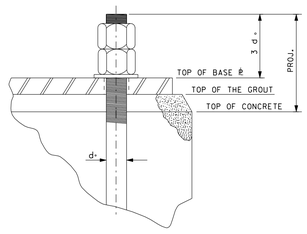
b. EDGE DISTANCE FOR BOLTS WITH SLEEVES MUST BE INCREASED BY ( SD-$d_o$ )1/2

c. SPACING OF BOLTS WITH SLEEVES MUST BE INCREASED BY ( SD-$d_o$ )




REQUIRED ANCHOR BOLT PROJECTION-SINGLE NUT

PROJ.=GROUT THICKNESS + BASE ℄ THICKNESS + $2d_o$




REQUIRED ANCHOR BOLT PROJECTION-DOUBLE NUT

PROJ.=GROUT THICKNESS + BASE ℄ THICKNESS + $3d_o$

**Table 3 - ASTM A193, ASTM F1554 Grade 105 Anchor Rods-Inch Series**

| Bolt Properties | | | | | | Type 3 | | | | Type 3S | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size $d_o$ | TPI | Stress Area | L1 $2d_o$+13 | T1 $3d_o$ | $h_{ef}$ min. | Edge Dist. $6d_o \geq 100+d_o/2$ | Spacing $6d_o$ | $h_{ef}$ min. | Edge Dist. | Spacing | Sleeve | |
| (in) | | ($in^2$) | (mm) | (mm) | $12d_o$ (mm) | (in) (mm) | (mm) | SL+150 (mm) | (note b) (mm) | (note c) (mm) | SD (mm) | SL (mm) |
| ¾ | 10 | 0.334 | 51 | 57 | 229 | 114 | 114 | 325 | 130 | 145 | 50 | 175 |
| ⅞ | 9 | 0.462 | 57 | 67 | 267 | 133 | 133 | 325 | 147 | 161 | 50 | 175 |
| 1 | 8 | 0.606 | 64 | 76 | 305 | 152 | 152 | 400 | 177 | 202 | 75 | 250 |
| 1-1/8 | 8 | 0.790 | 70 | 86 | 343 | 171 | 171 | 421 | 195 | 218 | 75 | 250 |
| 1-1/4 | 8 | 1.000 | 77 | 95 | 381 | 191 | 191 | 441 | 212 | 234 | 75 | 250 |
| 1-3/8 | 8 | 1.234 | 83 | 105 | 419 | 210 | 210 | 460 | 230 | 250 | 75 | 250 |
| 1-1/2 | 8 | 1.492 | 89 | 114 | 457 | 229 | 229 | 604 | 260 | 291 | 100 | 375 |
| 1-3/4 | 8 | 2.082 | 102 | 133 | 533 | 267 | 267 | 642 | 294 | 322 | 100 | 375 |
| 2-1/4 | 8 | 3.557 | 127 | 171 | 686 | 343 | 343 | 793 | 364 | 386 | 100 | 450 |
| 2-1/2 | 8 | 4.442 | 140 | 191 | 762 | 381 | 381 | 981 | 424 | 468 | 150 | 600 |
| 2-3/4 | 8 | 5.425 | 153 | 210 | 838 | 419 | 419 | 1019 | 459 | 499 | 150 | 600 |
| 3 | 8 | 6.506 | 165 | 229 | 914 | 457 | 457 | 1057 | 494 | 531 | 150 | 600 |

NOTES:

a. MINIMUM EDGE DISTANCE IS MEASURED FROM THE CENTERLINE OF THE ANCHOR BOLT TO THE EDGE OF THE CONCRETE.

b. EDGE DISTANCE FOR BOLTS WITH SLEEVES MUST BE INCREASED BY ( SD-$d_o$ )1/2

c. SPACING OF BOLTS WITH SLEEVES MUST BE INCREASED BY ( SD-$d_o$ )

d. TPI = THREADS PER INCH.

**Table 3M - ASTM A193M Anchor Rods - Metric**

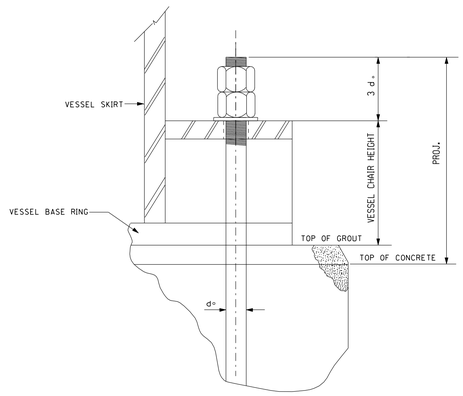
| Bolt Properties | | | | Type 3 | | | Type 3S | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nominal Dia. ($d_o$) & thread pitch | Stress Area | L1 $2d_o$+13 | T1 $3d_o$ | $h_{ef}$ min. $12d_o$ | Edge Dist. $6d_o \geq 100+d_o/2$ | Spacing $6d_o$ | $h_{ef}$ min. SL+150 | Edge Dist. (note b) | Spacing (note c) | Sleeve SD | Sleeve SL |
| (mm) | ($mm^2$) | (mm) | (mm) | (mm) | (mm) | (mm) | (mm) | (mm) | (mm) | (mm) | (mm) |
| M20x2.5 | 245 | 53 | 60 | 240 | 120 | 120 | 325 | 135 | 150 | 50 | 175 |
| M24x3 | 353 | 61 | 72 | 288 | 144 | 144 | 400 | 170 | 195 | 75 | 250 |
| M27x3 | 459 | 67 | 81 | 324 | 162 | 162 | 400 | 186 | 210 | 75 | 250 |
| M30x3.5 | 561 | 73 | 90 | 360 | 180 | 180 | 400 | 203 | 225 | 75 | 250 |
| M36x4 | 817 | 85 | 108 | 432 | 216 | 216 | 525 | 248 | 280 | 100 | 375 |
| M42x4.5 | 1120 | 97 | 126 | 504 | 252 | 252 | 525 | 281 | 310 | 100 | 375 |
| M48x5 | 1470 | 109 | 144 | 576 | 288 | 288 | 600 | 314 | 340 | 100 | 450 |
| M56x5.5 | 2030 | 125 | 168 | 672 | 336 | 336 | 672 | 358 | 380 | 100 | 450 |
| M64x6 | 2680 | 141 | 192 | 768 | 384 | 384 | 768 | 427 | 470 | 150 | 600 |
| M72x6 | 3460 | 157 | 216 | 864 | 432 | 432 | 864 | 471 | 510 | 150 | 600 |

NOTES:

a. MINIMUM EDGE DISTANCE IS MEASURED FROM THE CENTERLINE OF THE ANCHOR BOLT TO THE EDGE OF THE CONCRETE.

b. EDGE DISTANCE FOR BOLTS WITH SLEEVES MUST BE INCREASED BY ( SD-$d_o$ )1/2

c. SPACING OF BOLTS WITH SLEEVES MUST BE INCREASED BY ( SD-$d_o$ )




REQUIRED ANCHOR BOLT PROJECTION FOR VERTICAL VESSELS (WITH CHAIRS)

PROJ.=GROUT THICKNESS + CHAIR HEIGHT + 3 $d_o$

## NOTES:

1. ANCHOR BOLTS SHALL BE SET ACCURATELY AND HELD IN PLACE BY A TEMPLATE.
2. PLASTIC ANCHOR BOLT SLEEVES SHALL BE USED WHERE SPECIFIED IN CONSTRUCTION DRAWINGS. CENTER SLEEVES AROUND BOLTS.
3. THE BOTTOM OF ANCHOR BOLTS SHALL BE SECURED TO PREVENT MOVEMENT OR TILTING OF THE BOLTS DURING CONCRETE PLACEMENT.
4. FULLY THREADED ASTM A36/A36M RODS MAY BE USED TO FABRICATE TYPE 2 OR TYPE 2S ANCHOR BOLTS.
5. FULLY THREADED ASTM A193/A193M RODS MAY BE USED TO FABRICATE TYPE 3 OR TYPE 3S ANCHOR BOLTS.
6. ANCHOR BOLT DESIGN SHALL COMPLY WITH SAES-Q-005 AND ACI 318-02, APPENDIX D.
7. THE FINAL TIGHTENING OF ANCHOR BOLTS SHALL BE AS FOLLOWS; AFTER GROUTING OF THE BASE PLATE THE ANCHOR BOLTS SHALL BE BROUGHT TO A SNUG TIGHT CONDITION. THIS IS DEFINED AS THE TIGHTNESS THAT EXISTS AFTER A FEW IMPACTS FROM AN IMPACT WRENCH OR THE FULL EFFORT OF A MAN USING A SPUD WRENCH. AT THIS POINT ALL SURFACES SHOULD BE IN FULL CONTACT.
8. ANCHOR BOLT SLEEVES SHALL BE FULLY GROUTED IN ACCORDANCE WITH SAES-Q-010 AFTER THE BASE PLATE HAS BEEN POSITIONED.
9. THE SPACING, EMBEDMENT AND EDGE DISTANCE DIMENSIONS SHOWN ON THIS DRAWING ARE MINIMUM VALUES. EVERY ANCHOR BOLT MUST BE DESIGN PER ACI 318-02 AND MINIMUM DIMENSIONS MAY NEED TO BE INCREASED AS REQUIRED BY DESIGN.
10. TIGHTEN NUTS TO LOCK. APPLY TORQUE TO BOTTOM NUT. LOCK BOTH NUTS IN POSITION BY COUNTER PUNCHING THE THREADS AT JUNCTURE OF NUTS AND BOLT.
11. INSTALLATION TOLERANCES FOR ANCHOR BOLTS:

ANCHOR BOLTS AND FOUNDATION BOLTS ARE TO BE SET IN ACCORDANCE WITH AN APPROVED DRAWING. THEY MUST NOT VARY FROM THE DIMENSIONS SHOWN ON THE DRAWINGS BY MORE THAN THE FOLLOWING:

( a ) 1/2-INCH CENTER TO CENTER OF ANY TWO BOLTS WITHIN AN ANCHOR BOLT GROUP, WHERE AN ANCHOR BOLT GROUP IS DEFINED AS THE SET OF ANCHOR BOLTS WHICH RECEIVE A SINGLE FABRICATED STEEL SHIPPING PIECE .

( b ) 1/4-INCH CENTER TO CENTER OF ADJACENT ANCHOR BOLT GROUP .

( c ) ELEVATION OF THE TOP OF ANCHOR BOLTS ± 1/2-INCH.

( d ) MAXIMUM ACCUMULATION OF 1/4-INCH PER HUNDRED FEET ALONG THE ESTABLISHED COLUMN LINE OF MULTIPLE ANCHOR BOLT GROUPS, BUT NOT TO EXCEED A TOTAL OF 1 IN ., WHERE THE ESTABLISHED COLUMN LINE IS THE ACTUAL FIELD LINE MOST REPRESENTATIVE OF THE CENTERS OF THE AS-BUILT ANCHOR BOLT GROUPS ALONG A LINE OF COLUMNS .

( e ) 1/4-INCH FROM THE CENTER OF ANY ANCHOR BOLT GROUP TO THE ESTABLISHED COLUMN LINE THROUGH THAT GROUP .

( f ) THE TOLERANCE OF PARAGRAPHS b, c AND d APPLY TO OFFSET DIMENSIONS SHOWN ON THE PLAN, MEASURED PARALLEL AND PERPENDICULAR TO THE NEARST ESTABLISHED COLUMN LINE FOR INDIVIDUAL COLUMN SHOWN ON THE PLANS TO BE OFFSET FROM ESTABLISHED COLUMN LINES .

( g ) UNLESS SHOWN OTHERWISE, ANCHOR BOLTS ARE SET PERPENDICULAR TO THE THEORETICAL BEARING SURFACE MISALIGNMENT FROM VERTICAL MAY NOT EXCEED 1:40 .

DWG. RESPONSIBILITY:
ONSHORE STRUCTURES STANDARDS COMMITTEE

| REV. NO. | DATE | BY | JO/EWO | DESCRIPTION | CHKD. | CERT. | APPD. |
|---|---|---|---|---|---|---|---|
| 08 | DEC.20 | MSM | | REVISED AS MARKED-UP PRINT | CCB | | |
| 07 | AUG02 | MNL | | COMPLETELY REDRAWN. CHANGED DWG. SIZE FROM 'B' TO 'A'. | | | |

SAUDI ARABIAN OIL COMPANY

DRAWN BY _____ CHECKED BY _____ SCALE: _____

DATE STARTED _____ DATE COMPLETED _____

OPR'G. DEPT. _____ ENG. DEPT. _____

APP'D. FOR CONST. _____

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION OR FOR ORDERING MATERIAL UNTIL CERTIFIED AND DATED

CERTIFIED BY _____ DATE _____

# ANCHOR BOLT DETAILS INCH AND METRIC SIZES

STD. DWG.

| PLANT NO. | INDEX | DRAWING NUMBER | SHT. NO. | REV. NO. |
|---|---|---|---|---|
| 990 | 0 | AA-036322 | 001 | 08 |

Saudi Aramco 2615 ENG. (3/91)

CADD-02