# BILL OF STEEL FOR 30'-0" CULVERT

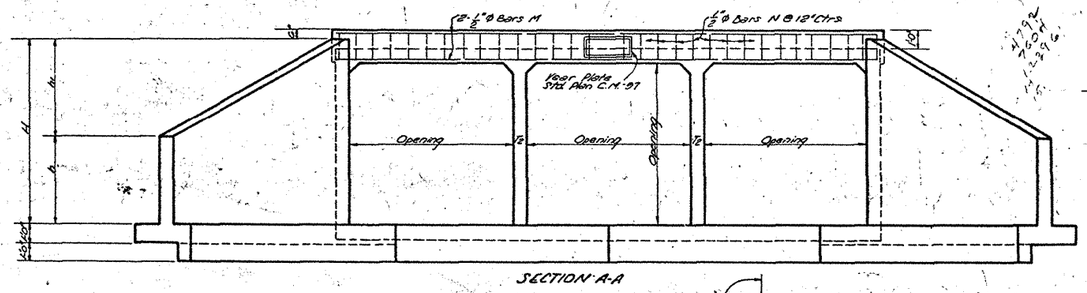
| OPENINGS SIZE (Feet) | NO. | 3/4" ϕ BARS A NO. | LGTH. (Ft. In.) | SPC. (In.) | 3/4" ϕ BARS A1 NO. | LGTH. (Ft. In.) | SPC. (In.) | 3/4" ϕ BARS B NO. | LGTH. (Ft. In.) | SPC. (In.) | 5/8" ϕ BARS C NO. | LGTH. (Ft. In.) | SPC. (In.) | BARS D SIZE | NO. | LGTH. (Ft. In.) | SPC. (In.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7×7 | 2 | 50 | 17-1 | 15 | 50 | 5-10 | 15 | 52 | 17-5 3/4 | 15 | 59 | 31-8 | 12 | 5/8 | 147 | 8-1 | 8 |
| | 3 | 50 | 24-8 | 15 | 100 | 5-10 | 15 | 52 | 25-4 | 15 | 86 | 31-8 | 12 | 5/8 | 190 | 8-1 | 8 |
| | 4 | 50 | 32-3 | 15 | 150 | 5-10 | 15 | 52 | 33-2 3/4 | 15 | 113 | 31-8 | 12 | 5/8 | 245 | 8-1 | 8 |
| | 5 | 50 | 39-10 | 15 | 200 | 5-10 | 15 | 52 | 41-1 3/4 | 15 | 140 | 31-8 | 12 | 5/8 | 294 | 8-1 | 8 |
| | 6 | 50 | *42-11 | 15 | 250 | 5-10 | 15 | 52 | 51-6 1/4 | 15 | 167 | 31-8 | 12 | 5/8 | 345 | 8-1 | 8 |
| 8×8 | 2 | 54 | 19-4 | 14 | 54 | 6-5 | 14 | 56 | 19-7 1/2 | 14 | 66 | 31-8 | 12 | 5/8 | 147 | 9-2 | 8 |
| | 3 | 54 | 28-0 | 14 | 108 | 6-5 | 14 | 56 | 28-8 | 14 | 96 | 31-8 | 12 | 5/8 | 196 | 9-2 | 8 |
| | 4 | 54 | 36-8 | 14 | 162 | 6-5 | 14 | 56 | 37-8 3/4 | 14 | 126 | 31-8 | 12 | 5/8 | 245 | 9-2 | 8 |
| | 5 | 54 | *47-10 | 14 | 216 | 6-5 | 14 | 56 | *49-3 | 14 | 156 | 31-8 | 12 | 5/8 | 294 | 9-2 | 8 |
| | 6 | 54 | *56-6 | 14 | 270 | 6-5 | 14 | 56 | *58-3 3/4 | 14 | 186 | 31-8 | 12 | 5/8 | 345 | 9-2 | 8 |
| 9×9 | 2 | 54 | 21-7 | 14 | 54 | 7-0 | 14 | 56 | 22-0 | 14 | 73 | 31-8 | 12 | 5/8 | 99 | 10-4 | 12 |
| | 3 | 54 | 31-4 | 14 | 108 | 7-0 | 14 | 56 | 32-2 | 14 | 106 | 31-8 | 12 | 5/8 | 132 | 10-4 | 12 |
| | 4 | 54 | 41-7 | 14 | 162 | 7-0 | 14 | 56 | *44-10 | 14 | 159 | 31-8 | 12 | 5/8 | 165 | 10-4 | 12 |
| | 5 | 54 | 53-4 | 14 | 216 | 7-0 | 14 | 56 | *53-0 | 14 | 112 | 31-8 | 12 | 5/8 | 198 | 10-4 | 12 |
| 10×10 | 2 | 58 | 29-10 | 13 | 58 | 7-9 | 13 | 60 | 30-4 | 13 | 80 | 31-8 | 12 | 5/8 | 105 | 11-6 | 11 |
| | 3 | 58 | 38-6 | 13 | 116 | 7-9 | 13 | 60 | 39-8 | 13 | 116 | 31-8 | 12 | 5/8 | 140 | 11-6 | 11 |
| | 4 | 58 | *48-0 | 13 | 164 | 7-9 | 13 | 60 | *49-6 | 13 | 152 | 31-8 | 12 | 5/8 | 175 | 11-6 | 11 |
| | 5 | 58 | *56-4 | 13 | 232 | 7-9 | 13 | 60 | *60-10 | 13 | 188 | 31-8 | 12 | 5/8 | 210 | 11-6 | 11 |

| OPENINGS SIZE (Feet) | NO. | 5/8" ϕ BARS E NO. | SHORT BAR (Ft. In.) | VAR. (In.) | LONG BAR (Ft. In.) | 5/8" ϕ BARS G1 NO. | SHORT BAR (Ft. In.) | VAR. (In.) | LONG BAR (Ft. In.) | 5/8" ϕ BARS G2 NO. | SHORT BAR (Ft. In.) | VAR. (In.) | LONG BAR (Ft. In.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7×7 | 2 | 60 | 5-7 | 4 1/2 | 10-6 1/2 | | | | | | | | |
| | 3 | 60 | 5-7 | 4 1/2 | 10-6 1/2 | | | | | | | | |
| | 4 | 60 | 5-7 | 4 1/2 | 10-6 1/2 | | | | | | | | |
| | 5 | 60 | 5-7 | 4 1/2 | 10-6 1/2 | | | | | | | | |
| | 6 | 60 | 5-7 | 4 1/2 | 10-6 1/2 | | | | | | | | |
| 8×8 | 2 | 44 | G-1 | 4 1/2 | 9-8 3/4 | 28 | 10-0 3/4 | 3 3/4 | 11-11 1/2 | | | | |
| | 3 | 44 | G-1 | 4 1/2 | 9-8 3/4 | 28 | 10-0 3/4 | 3 3/4 | 11-11 1/2 | | | | |
| | 4 | 44 | G-1 | 4 1/2 | 9-8 3/4 | 28 | 10-0 3/4 | 3 3/4 | 11-11 1/2 | | | | |
| | 5 | 44 | G-1 | 4 1/2 | 9-8 3/4 | 28 | 10-0 3/4 | 3 3/4 | 11-11 1/2 | | | | |
| | 6 | 44 | G-1 | 4 1/2 | 9-8 3/4 | 28 | 10-0 3/4 | 3 3/4 | 11-11 1/2 | | | | |
| 9×9 | 2 | 48 | G-9 | 4 1/2 | 10-9 | 48 | 11-0 | 2 3/4 | 13-5 | | | | |
| | 3 | 48 | G-9 | 4 1/2 | 10-9 | 48 | 11-0 | 2 3/4 | 13-5 | | | | |
| | 4 | 48 | G-9 | 4 1/2 | 10-9 | 48 | 11-0 | 2 3/4 | 13-5 | | | | |
| | 5 | 48 | G-9 | 4 1/2 | 10-9 | 48 | 11-0 | 2 3/4 | 13-5 | | | | |
| 10×10 | 2 | 40 | 7-3 1/2 | 4 1/2 | 10-8 | 44 | 10-11 1/2 | 2 3/4 | 13-1 3/4 | 40 | 13-4 | 1 3/4 | 14-8 3/4 |
| | 3 | 40 | 7-3 1/2 | 4 1/2 | 10-8 | 44 | 10-11 1/2 | 2 3/4 | 13-1 3/4 | 40 | 13-4 | 1 3/4 | 14-8 3/4 |
| | 4 | 40 | 7-3 1/2 | 4 1/2 | 10-8 | 44 | 10-11 1/2 | 2 3/4 | 13-1 3/4 | 40 | 13-4 | 1 3/4 | 14-8 3/4 |
| | 5 | 40 | 7-3 1/2 | 4 1/2 | 10-8 | 44 | 10-11 1/2 | 2 3/4 | 13-1 3/4 | 40 | 13-4 | 1 3/4 | 14-8 3/4 |

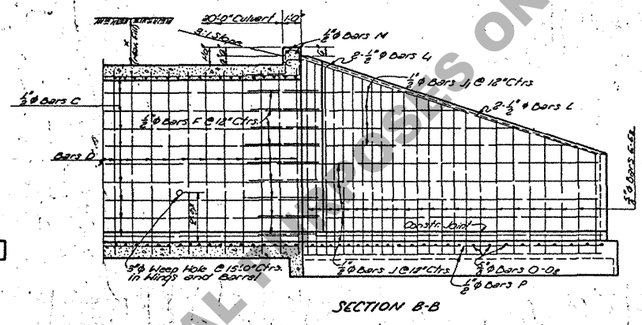
| OPENINGS SIZE (Feet) | NO. | 1/2" ϕ BARS F NO. | LGTH. (Ft. In.) | SPC. (In.) | 1/2" ϕ BARS J NO. | LGTH. (Ft. In.) | SPC. (In.) | 5/8" ϕ BARS L NO. | SHORT BAR (Ft. In.) | VAR. (In.) | LONG BAR (Ft. In.) | NO. | LGTH. (Ft. In.) | 5/8" ϕ BARS L1 NO. | LGTH. (Ft. In.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7×7 | 2 | 28 | 3-8 | 12 | 16 | 13-5 | 12 | 12 | 4-10 | 3 1/4 | 11-6 1/2 | 8 | 14-0 | 8 | 2-1 |
| | 3 | 28 | 3-8 | 12 | 16 | 13-5 | 12 | 12 | 4-10 | 3 1/4 | 11-6 1/2 | 8 | 14-0 | 8 | 2-1 |
| | 4 | 28 | 3-8 | 12 | 16 | 13-5 | 12 | 12 | 4-10 | 3 1/4 | 11-6 1/2 | 8 | 14-0 | 8 | 2-1 |
| | 5 | 28 | 3-8 | 12 | 16 | 13-5 | 12 | 12 | 4-10 | 3 1/4 | 11-6 1/2 | 8 | 14-0 | 8 | 2-1 |
| | 6 | 28 | 3-8 | 12 | 16 | 13-5 | 12 | 12 | 4-10 | 3 1/4 | 11-6 1/2 | 8 | 14-0 | 8 | 2-1 |
| 8×8 | 2 | 32 | 3-8 | 12 | 20 | 15-4 | 12 | 12 | 5-1 | 3 1/4 | 11-9 3/4 | 8 | 16-0 1/2 | 8 | 2-1 |
| | 3 | 32 | 3-8 | 12 | 20 | 15-4 | 12 | 12 | 5-1 | 3 1/4 | 11-9 3/4 | 8 | 16-0 1/2 | 8 | 2-1 |
| | 4 | 32 | 3-8 | 12 | 20 | 15-4 | 12 | 12 | 5-1 | 3 1/4 | 11-9 3/4 | 8 | 16-0 1/2 | 8 | 2-1 |
| | 5 | 32 | 3-8 | 12 | 20 | 15-4 | 12 | 12 | 5-1 | 3 1/4 | 11-9 3/4 | 8 | 16-0 1/2 | 8 | 2-1 |
| | 6 | 32 | 3-8 | 12 | 20 | 15-4 | 12 | 12 | 5-1 | 3 1/4 | 11-9 3/4 | 8 | 16-0 1/2 | 8 | 2-1 |
| 9×9 | 2 | 36 | 3-8 | 12 | 20 | 17-4 | 12 | 16 | 5-3 | 3 1/4 | 15-4 | 8 | 18-2 | 8 | 2-1 |
| | 3 | 36 | 3-8 | 12 | 20 | 17-4 | 12 | 16 | 5-3 | 3 1/4 | 15-4 | 8 | 18-2 | 8 | 2-1 |
| | 4 | 36 | 3-8 | 12 | 20 | 17-4 | 12 | 16 | 5-3 | 3 1/4 | 15-4 | 8 | 18-2 | 8 | 2-1 |
| | 5 | 36 | 3-8 | 12 | 20 | 17-4 | 12 | 16 | 5-3 | 3 1/4 | 15-4 | 8 | 18-2 | 8 | 2-1 |
| 10×10 | 2 | 40 | 3-0 | 12 | 24 | 19-5 | 12 | 16 | 5-3 1/2 | 3 1/4 | 15-11 | 8 | 20-3 | 8 | 2-1 |
| | 3 | 40 | 3-0 | 12 | 24 | 19-5 | 12 | 16 | 5-3 1/2 | 3 1/4 | 15-11 | 8 | 20-3 | 8 | 2-1 |
| | 4 | 40 | 3-8 | 12 | 24 | 19-5 | 12 | 16 | 5-3 1/2 | 3 1/4 | 15-11 | 8 | 20-3 | 8 | 2-1 |
| | 5 | 40 | 3-8 | 12 | 24 | 19-5 | 12 | 16 | 5-3 1/2 | 3 1/4 | 15-11 | 8 | 20-3 | 8 | 2-1 |

| OPENINGS SIZE (Feet) | NO. | 1/2" ϕ BARS M NO. | LGTH. (Ft. In.) | 1/2" ϕ BARS N NO. | LGTH. (Ft. In.) | 3/4" ϕ BARS O NO. | SHORT BAR (Ft. In.) | VAR. (In.) | LONG BAR (Ft. In.) | 3/4" ϕ BARS O1 NO. | SHORT BAR (Ft. In.) | VAR. (In.) | LONG BAR (Ft. In.) | 3/4" ϕ BARS O2 NO. | SHORT BAR (Ft. In.) | VAR. (In.) | LONG BAR (Ft. In.) | 1/2" ϕ BARS P NO. | LGTH. (Ft. In.) | OPENINGS NO. | SIZE (Feet) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7×7 | 2 | 4 | 16-2 | 34 | 5-1 | 60 | 3-3 | 1 1/2 | 5-3 3/4 | | | | | | | | | 20 | 15-3 3/4 | 2 | 7×7 |
| | 3 | 4 | 23-9 | 50 | 5-1 | 60 | 3-3 | 1 1/2 | 5-3 3/4 | | | | | | | | | 20 | 15-3 3/4 | 3 | |
| | 4 | 4 | 31-4 | 64 | 5-1 | 60 | 3-3 | 1 1/2 | 5-3 3/4 | | | | | | | | | 20 | 15-3 3/4 | 4 | |
| | 5 | 4 | 38-11 | 80 | 5-1 | 60 | 3-3 | 1 1/2 | 5-3 3/4 | | | | | | | | | 20 | 15-3 3/4 | 5 | |
| | 6 | 4 | *48-2 | 96 | 5-1 | 60 | 3-3 | 1 1/2 | 5-3 3/4 | | | | | | | | | 20 | 15-3 3/4 | 6 | |
| 8×8 | 2 | 4 | 18-3 | 56 | 5-2 | 48 | 3-6 | 1 1/2 | 5-2 3/4 | 24 | 5-4 3/4 | 1 1/2 | 5-11 3/4 | | | | | 20 | 17-4 3/4 | 2 | 8×8 |
| | 3 | 4 | 26-11 | 56 | 5-2 | 48 | 3-6 | 1 1/2 | 5-2 3/4 | 24 | 5-4 3/4 | 1 1/2 | 5-11 3/4 | | | | | 20 | 17-4 3/4 | 3 | |
| | 4 | 4 | 35-7 | 72 | 5-2 | 48 | 3-6 | 1 1/2 | 5-2 3/4 | 24 | 5-4 3/4 | 1 1/2 | 5-11 3/4 | | | | | 20 | 17-4 3/4 | 4 | |
| | 5 | 4 | *45-11 | 90 | 5-2 | 48 | 3-6 | 1 1/2 | 5-2 3/4 | 24 | 5-4 3/4 | 1 1/2 | 5-11 3/4 | | | | | 20 | 17-4 3/4 | 5 | |
| | 6 | 4 | *54-7 | 108 | 5-2 | 48 | 3-6 | 1 1/2 | 5-2 3/4 | 24 | 5-4 3/4 | 1 1/2 | 5-11 3/4 | | | | | 20 | 17-4 3/4 | 6 | |
| 9×9 | 2 | 4 | 20-4 | 42 | 5-4 | 48 | 3-10 | 1 1/2 | 5-6 | 48 | 5-8 | 1 1/2 | 6-8 | | | | | 20 | 19-7 | 2 | 9×9 |
| | 3 | 4 | 30-1 | 62 | 5-4 | 48 | 3-10 | 1 1/2 | 5-6 | 48 | 5-8 | 1 1/2 | 6-8 | | | | | 20 | 19-7 | 3 | |
| | 4 | 4 | 39-10 | 82 | 5-4 | 48 | 3-10 | 1 1/2 | 5-6 | 48 | 5-8 | 1 1/2 | 6-8 | | | | | 20 | 19-7 | 4 | |
| | 5 | 4 | *51-3 | 100 | 5-4 | 48 | 3-10 | 1 1/2 | 5-6 | 48 | 5-8 | 1 1/2 | 6-8 | | | | | 20 | 19-7 | 5 | |
| 10×10 | 2 | 4 | 22-5 | 44 | 5-6 | 40 | 4-0 1/2 | 1 1/2 | 5-7 3/4 | 44 | 5-9 | 1 1/2 | 6-9 1/2 | 40 | 6-9 | 3/4 | 7-3 3/4 | 20 | 21-9 | 2 | 10×10 |
| | 3 | 4 | 33-9 | 68 | 5-6 | 40 | 4-0 1/2 | 1 1/2 | 5-7 3/4 | 44 | 5-9 | 1 1/2 | 6-9 1/2 | 40 | 6-9 | 3/4 | 7-3 3/4 | 20 | 21-9 | 3 | |
| | 4 | 4 | *45-9 | 90 | 5-6 | 40 | 4-2 1/2 | 1 1/2 | 5-7 3/4 | 44 | 5-9 | 1 1/2 | 6-9 1/2 | 40 | 6-9 | 3/4 | 7-3 3/4 | 20 | 21-9 | 4 | |
| | 5 | 4 | *56-7 | 112 | 5-6 | 40 | 4-2 1/2 | 1 1/2 | 5-7 3/4 | 44 | 5-9 | 1 1/2 | 6-9 1/2 | 40 | 6-9 | 3/4 | 7-3 3/4 | 20 | 21-9 | 5 | |

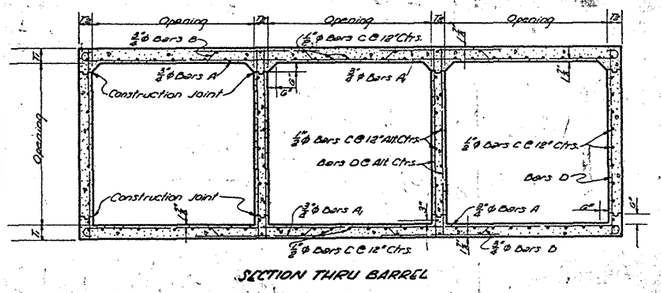
*Splice 40 diameters




SECTION A-A




SECTION B-B




SECTION THRU BARREL

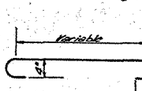
| SIZE | BAR | VARIATIONS SIDE | VERT. | TOTAL |
|---|---|---|---|---|
| 7×7 | L | 2" | 3 1/2" | 4 1/2" |
| | F | 3/4" | 3 1/2" | 4 1/2" |
| 8×8 | L | 2" | 3" | 3 1/2" |
| | G | 3/4" | 2 1/2" | 2 1/2" |
| 9×9 | L | 3/4" | 3 1/2" | 4 1/2" |
| | G | 3/4" | 2 1/2" | 2 1/2" |
| 10×10 | L | 1" | 3 1/2" | 4 1/2" |
| | G | 3/4" | 2 1/2" | 2 1/2" |
| | G2 | 3/4" | 1 1/2" | 1 1/2" |

SHORT BAR X

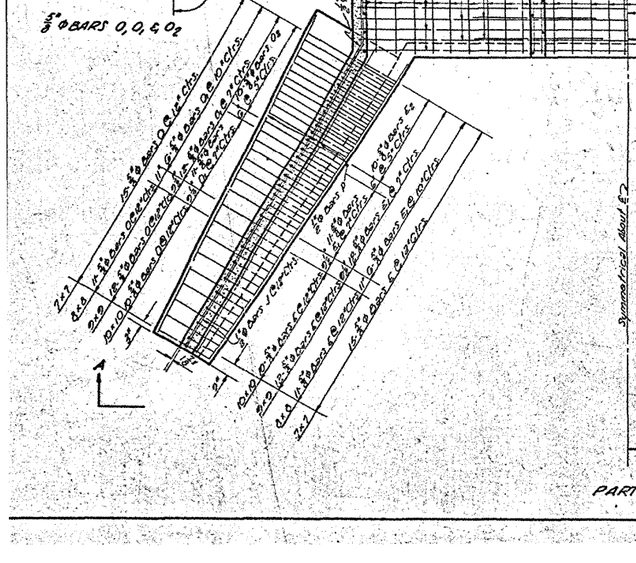
| SIZE | X |
|---|---|
| 7×7 | 1'-2 1/2" |
| 8×8 | 1'-2 1/2" |
| 9×9 | 1'-3 1/2" |
| 10×10 | 1'-4 1/2" |
| | 2'-1 1/2" |
| | 2'-2 1/2" |
| | 2'-0 1/2" |

Variable

5/8" ϕ BARS G, G1 & G2




5/8" ϕ BARS O, O1 & O2


Symmetrical about ℄
Bars O
Bars C
Bars F
Bars D
Bars P
Bars O1
Bars O2
Bars J
Bars L
Bars L1
Bars L2
Bars G
Bars G1
Bars G2
Bars E
Bars B
Bars A
Bars A1
Bars M
Bars N
Bars C
Bars D
Bars B
Bars A
Bars A1
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Bars O1
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Bars L2
Bars G
Bars G1
Bars G2
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Bars F
Bars J