

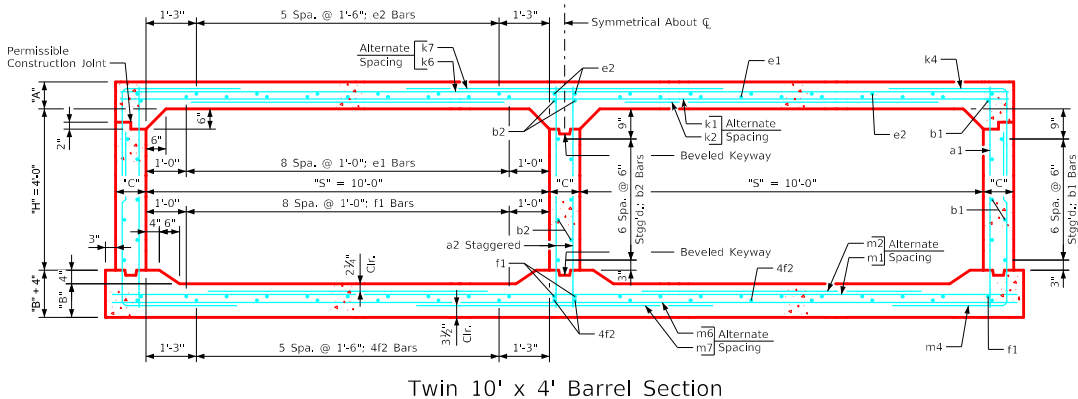
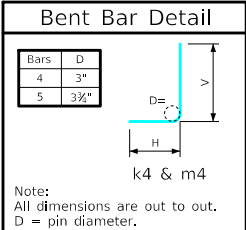
ENGLISHLRFDDESIGNEDTWINCULVERTS.DGN - TWRCB 10-4-20 - THIS SHEET ISSUED 07-2020.

### Variable Dimensions and Quantities for Twin 10' x 4' Barrel Sections

| Dimensions |    |   |      |      |   |   |   |       |       |       |       |      | Bar List |       |      |     |       |      |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |     |        |      |     |        |      |     |      |       |       |     |      |        |     |      |        |     |     |        |
|------------|----|---|------|------|---|---|---|-------|-------|-------|-------|------|----------|-------|------|-----|-------|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|--------|------|-----|--------|------|-----|------|-------|-------|-----|------|--------|-----|------|--------|-----|-----|--------|
| Fill       | S  | H | A    | B    | C | D | E | U     | W     | X     | Z     | a1   |          |       | a2   |     |       | b1   |     |     | b2   |     |     | e1   |     |     | e2   |     |     | f1   |     |     | f2   |     |     | k1   |     |        | k2   |     |        | k4   |     |      | k6    |       |     | k7   |        |     | k9   |        |     |     |        |
|            |    |   |      |      |   |   |   |       |       |       |       | Size | Sp.      | L     | Size | Sp. | L     | Size | Sp. | No. | Size | Sp. | No. | Size | Sp. | No. | Size | Sp. | No. | Size | Sp. | No. | Size | Sp. | No. | Size | Sp. | No.    | Size | Sp. | No.    | Size | Sp. | No.  | Size  | Sp.   | No. | Size | Sp.    | No. | Size | Sp.    | No. |     |        |
| 0          | 10 | 4 | 13   | 11   | 9 | 9 | 9 | 0'-0  | 6'-2  | 2'-4  | 5'-5  | 4    | 12       | 5'-11 | 6    | 9   | 5'-11 | 4    | 6   | 16  | 4    | 6   | 9   | 4    | 12  | 18  | 4    | 18  | 16  | 4    | 12  | 22  | 4    | 18  | 16  | 6    | 18  | 21'-11 | 5    | 18  | 10'-11 | 4    | 6   | 6'-4 | 3'-2  | 3'-2  | 4   | 12   | 21'-11 | 4   | 12   | 12'-4  | 4   | 4.5 | 21'-11 |
| 1          | 10 | 4 | 12.5 | 11   | 9 | 9 | 9 | 0'-8  | 6'-2  | 2'-5  | 4'-10 | 4    | 12       | 5'-10 | 6    | 9   | 5'-10 | 4    | 6   | 16  | 4    | 6   | 9   | 4    | 12  | 18  | 4    | 18  | 16  | 4    | 12  | 22  | 4    | 18  | 16  | 6    | 18  | 21'-11 | 5    | 18  | 10'-3  | 4    | 6   | 6'-2 | 3'-1  | 3'-1  | 4   | 12   | 21'-11 | 4   | 12   | 12'-4  | 4   | 4.5 | 21'-11 |
| 2          | 10 | 4 | 9    | 10   | 9 | 9 | 9 | 0'-11 | 5'-5  | 2'-2  | 4'-3  | 4    | 12       | 5'-6  | 7    | 9   | 5'-6  | 4    | 6   | 16  | 4    | 6   | 9   | 4    | 12  | 18  | 4    | 18  | 16  | 4    | 12  | 22  | 4    | 18  | 16  | 6    | 18  | 21'-11 | 6    | 18  | 9'-11  | 5    | 6   | 6'-4 | 3'-2  | 3'-2  | 5   | 18   | 21'-11 | 7   | 18   | 10'-10 | 7   | 4.5 | 21'-11 |
| 3          | 10 | 4 | 8    | 10   | 9 | 6 | 9 | 1'-6  | 4'-2  | 2'-9  | 3'-11 | 4    | 6        | 5'-5  | 6    | 9   | 5'-5  | 4    | 6   | 16  | 4    | 6   | 9   | 4    | 12  | 18  | 4    | 18  | 16  | 4    | 12  | 22  | 4    | 18  | 16  | 6    | 18  | 21'-11 | 6    | 18  | 8'-6   | 5    | 6   | 6'-2 | 3'-1  | 3'-1  | 5   | 12   | 21'-11 | 5   | 12   | 8'-4   | 5   | 4.5 | 21'-11 |
| 4          | 10 | 4 | 8    | 10   | 9 | 6 | 9 | 2'-2  | 3'-10 | 2'-9  | 3'-9  | 4    | 6        | 5'-5  | 6    | 9   | 5'-5  | 4    | 6   | 16  | 4    | 6   | 9   | 4    | 12  | 18  | 4    | 18  | 16  | 4    | 12  | 22  | 4    | 18  | 16  | 5    | 12  | 21'-11 | 4    | 12  | 6'-11  | 5    | 6   | 6'-2 | 3'-1  | 3'-1  | 5   | 12   | 21'-11 | 5   | 12   | 7'-8   | 5   | 4.5 | 21'-11 |
| 5-7        | 10 | 4 | 8    | 10   | 9 | 6 | 9 | 2'-6  | 3'-9  | 2'-6  | 3'-10 | 4    | 6        | 5'-5  | 6    | 9   | 5'-5  | 4    | 6   | 16  | 4    | 6   | 9   | 4    | 12  | 18  | 4    | 18  | 16  | 4    | 12  | 22  | 4    | 18  | 16  | 5    | 12  | 21'-11 | 4    | 12  | 6'-8   | 4    | 6   | 5'-8 | 2'-10 | 2'-10 | 5   | 12   | 21'-11 | 6   | 12   | 7'-6   | 6   | 4.5 | 21'-11 |
| 8-10       | 10 | 4 | 9    | 11   | 9 | 6 | 9 | 2'-1  | 3'-8  | 2'-2  | 3'-8  | 4    | 6        | 5'-7  | 6    | 9   | 5'-7  | 4    | 6   | 16  | 4    | 6   | 9   | 4    | 12  | 18  | 4    | 18  | 16  | 4    | 12  | 22  | 4    | 18  | 16  | 4    | 9   | 21'-11 | 4    | 9   | 7'-8   | 4    | 6   | 5'-8 | 2'-10 | 2'-10 | 4   | 12   | 21'-11 | 7   | 12   | 7'-4   | 7   | 4.5 | 21'-11 |
| 11-13      | 10 | 4 | 11   | 12.5 | 9 | 9 | 9 | 1'-11 | 3'-6  | 2'-1  | 3'-6  | 5    | 12       | 5'-10 | 6    | 9   | 5'-10 | 4    | 6   | 16  | 4    | 6   | 9   | 4    | 12  | 18  | 4    | 18  | 16  | 4    | 12  | 22  | 4    | 18  | 16  | 4    | 9   | 21'-11 | 4    | 9   | 8'-5   | 4    | 6   | 5'-1 | 2'-2  | 2'-11 | 5   | 9    | 21'-11 | 5   | 9    | 7'-0   | 5   | 4.5 | 21'-11 |
| 14-16      | 10 | 4 | 12.5 | 14.5 | 9 | 9 | 9 | 1'-9  | 3'-8  | 1'-10 | 3'-8  | 4    | 12       | 6'-2  | 6    | 9   | 6'-2  | 4    | 6   | 16  | 4    | 6   | 9   | 4    | 12  | 18  | 4    | 18  | 16  | 4    | 12  | 22  | 4    | 18  | 16  | 6    | 18  | 21'-11 | 6    | 18  | 9'-1   | 4    | 6   | 5'-3 | 2'-2  | 3'-1  | 5   | 12   | 21'-11 | 7   | 12   | 7'-4   | 7   | 4.5 | 21'-11 |
| 17-19      | 10 | 4 | 13.5 | 15.5 | 9 | 9 | 9 | 1'-6  | 3'-9  | 2'-3  | 3'-9  | 4    | 12       | 6'-4  | 6    | 9   | 6'-4  | 4    | 6   | 16  | 4    | 6   | 9   | 4    | 12  | 18  | 4    | 18  | 16  | 4    | 12  | 22  | 4    | 18  | 16  | 5    | 12  | 21'-11 | 5    | 12  | 9'-5   | 4    | 6   | 5'-4 | 2'-2  | 3'-2  | 5   | 9    | 21'-11 | 6   | 9    | 7'-6   | 6   | 4.5 | 21'-11 |
| 20-22      | 10 | 4 | 14.5 | 16.5 | 9 | 9 | 9 | 1'-5  | 3'-9  | 1'-11 | 3'-10 | 4    | 12       | 6'-6  | 6    | 9   | 6'-6  | 4    | 6   | 16  | 4    | 6   | 9   | 4    | 12  | 18  | 4    | 18  | 16  | 4    | 12  | 22  | 4    | 18  | 16  | 5    | 12  | 21'-11 | 5    | 12  | 9'-6   | 4    | 6   | 5'-6 | 2'-3  | 3'-3  | 5   | 9    | 21'-11 | 6   | 9    | 7'-6   | 6   | 4.5 | 21'-11 |
| 23-25      | 10 | 4 | 16   | 18   | 9 | 9 | 9 | 1'-8  | 3'-11 | 1'-9  | 4'-0  | 4    | 9        | 6'-9  | 6    | 9   | 6'-9  | 4    | 6   | 16  | 4    | 6   | 9   | 4    | 12  | 18  | 4    | 18  | 16  | 4    | 12  | 22  | 4    | 18  | 16  | 5    | 9   | 21'-11 | 4    | 9   | 9'-3   | 5    | 12  | 8'-4 | 2'-7  | 3'-9  | 5   | 9    | 21'-11 | 6   | 9    | 7'-10  | 6   | 4.5 | 21'-11 |

| Fill  | Bar List |    |       |     |    |       |     |    |                  |       |       |               |     |       |      |     |        |      |     |       |       |       |       |       |        |  |  |  |  |  |  |  |  |  |  |  | Quantities |  |  |  |
|-------|----------|----|-------|-----|----|-------|-----|----|------------------|-------|-------|---------------|-----|-------|------|-----|--------|------|-----|-------|-------|-------|-------|-------|--------|--|--|--|--|--|--|--|--|--|--|--|------------|--|--|--|
|       | m1       | m2 | m4    | H   | V  | m6    | m7  | m9 | Concrete (CY/FT) |       |       | Steel (LB/FT) |     |       |      |     |        |      |     |       |       |       |       |       |        |  |  |  |  |  |  |  |  |  |  |  |            |  |  |  |
| Size  | Sp.      | L  | Size  | Sp. | L  | Size  | Sp. | L  | Size             | Sp.   | L     | Size          | Sp. | L     | Size | Sp. | L      | Size | Sp. | L     | Slab  | Floor | Walls | Total |        |  |  |  |  |  |  |  |  |  |  |  |            |  |  |  |
| 0     | 5        | 12 | 22'-5 | 4   | 12 | 7'-2  | 5   | 6  | 10'-5            | 6'-1  | 4'-4  | 4             | 9   | 22'-5 | 4    | 9   | 10'-10 | 4    | 4.5 | 22'-5 | 0.950 | 0.831 | 0.299 | 2.080 | 272.97 |  |  |  |  |  |  |  |  |  |  |  |            |  |  |  |
| 1     | 5        | 12 | 22'-5 | 4   | 12 | 7'-0  | 5   | 6  | 8'-2             | 3'-10 | 4'-4  | 5             | 18  | 22'-5 | 6    | 18  | 9'-8   | 6    | 4.5 | 22'-5 | 0.915 | 0.831 | 0.299 | 2.045 | 259.71 |  |  |  |  |  |  |  |  |  |  |  |            |  |  |  |
| 2     | 5        | 12 | 22'-5 | 5   | 12 | 7'-5  | 5   | 6  | 7'-2             | 2'-11 | 4'-3  | 5             | 18  | 22'-5 | 7    | 18  | 8'-6   | 7    | 4.5 | 22'-5 | 0.675 | 0.761 | 0.299 | 1.735 | 292.68 |  |  |  |  |  |  |  |  |  |  |  |            |  |  |  |
| 3     | 5        | 12 | 22'-5 | 4   | 12 | 6'-3  | 4   | 6  | 7'-1             | 2'-10 | 4'-3  | 5             | 18  | 22'-5 | 7    | 18  | 7'-10  | 7    | 4.5 | 22'-5 | 0.606 | 0.761 | 0.299 | 1.666 | 272.55 |  |  |  |  |  |  |  |  |  |  |  |            |  |  |  |
| 4     | 5        | 12 | 22'-5 | 4   | 12 | 6'-2  | 4   | 6  | 7'-0             | 2'-9  | 4'-3  | 5             | 18  | 22'-5 | 7    | 18  | 7'-6   | 7    | 4.5 | 22'-5 | 0.606 | 0.761 | 0.299 | 1.666 | 263.29 |  |  |  |  |  |  |  |  |  |  |  |            |  |  |  |
| 5-7   | 5        | 12 | 22'-5 | 5   | 12 | 6'-9  | 4   | 6  | 7'-0             | 2'-9  | 4'-3  | 5             | 18  | 22'-5 | 8    | 18  | 7'-8   | 8    | 4.5 | 22'-5 | 0.606 | 0.761 | 0.299 | 1.666 | 266.66 |  |  |  |  |  |  |  |  |  |  |  |            |  |  |  |
| 8-10  | 5        | 12 | 22'-5 | 5   | 12 | 7'-7  | 4   | 6  | 6'-10            | 2'-6  | 4'-4  | 4             | 12  | 22'-5 | 7    | 12  | 7'-4   | 7    | 4.5 | 22'-5 | 0.675 | 0.831 | 0.299 | 1.805 | 264.66 |  |  |  |  |  |  |  |  |  |  |  |            |  |  |  |
| 11-13 | 5        | 12 | 22'-5 | 5   | 12 | 8'-1  | 4   | 6  | 6'-9             | 2'-3  | 4'-6  | 4             | 9   | 22'-5 | 6    | 9   | 7'-0   | 6    | 4.5 | 22'-5 | 0.812 | 0.937 | 0.299 | 2.048 | 273.63 |  |  |  |  |  |  |  |  |  |  |  |            |  |  |  |
| 14-16 | 5        | 12 | 22'-5 | 5   | 12 | 8'-11 | 4   | 6  | 6'-10            | 2'-2  | 4'-8  | 4             | 9   | 22'-5 | 6    | 9   | 7'-4   | 6    | 4.5 | 22'-5 | 0.915 | 1.077 | 0.299 | 2.291 | 281.05 |  |  |  |  |  |  |  |  |  |  |  |            |  |  |  |
| 17-19 | 5        | 9  | 22'-5 | 4   | 9  | 8'-3  | 4   | 6  | 6'-11            | 2'-2  | 4'-9  | 5             | 12  | 22'-5 | 7    | 12  | 7'-6   | 7    | 4.5 | 22'-5 | 0.984 | 1.147 | 0.299 | 2.430 | 297.97 |  |  |  |  |  |  |  |  |  |  |  |            |  |  |  |
| 20-22 | 5        | 9  | 22'-5 | 4   | 9  | 9'-1  | 4   | 6  | 7'-1             | 2'-3  | 4'-10 | 5             | 9   | 22'-5 | 6    | 9   | 7'-8   | 6    | 4.5 | 22'-5 | 1.053 | 1.218 | 0.299 | 2.570 | 307.16 |  |  |  |  |  |  |  |  |  |  |  |            |  |  |  |
| 23-25 | 5        | 9  | 22'-5 | 4   | 9  | 9'-3  | 5   | 12 | 7'-2             | 2'-3  | 4'-11 | 5             | 9   | 22'-5 | 6    | 9   | 8'-0   | 6    | 4.5 | 22'-5 | 1.156 | 1.323 | 0.299 | 2.778 | 312.79 |  |  |  |  |  |  |  |  |  |  |  |            |  |  |  |



- Notes:**
- Dimensions listed on this sheet to be used in conjunction with Sheet TWRCB G3-20.
  - Fill, dimensions "S" and "H" are in feet.
  - Dimensions "A", "B", "C", "D", and "Sp." listed in the bar list are in inches.
  - Dimensions "L", "H", "V" are in feet and inches.

|                      |                             |   |
|----------------------|-----------------------------|---|
| LATEST REVISION DATE | APPROVED BY BRIDGE ENGINEER |   |
|                      |                             | Standard Design<br><b>Twin Reinforced Concrete<br/>Box Culverts</b><br>July, 2020 |
|                      |                             | Culvert Barrel<br>Details<br>10' x 4' Barrel Sections                             |
|                      |                             | <b>TWRCB<br/>10-4-20</b>  |