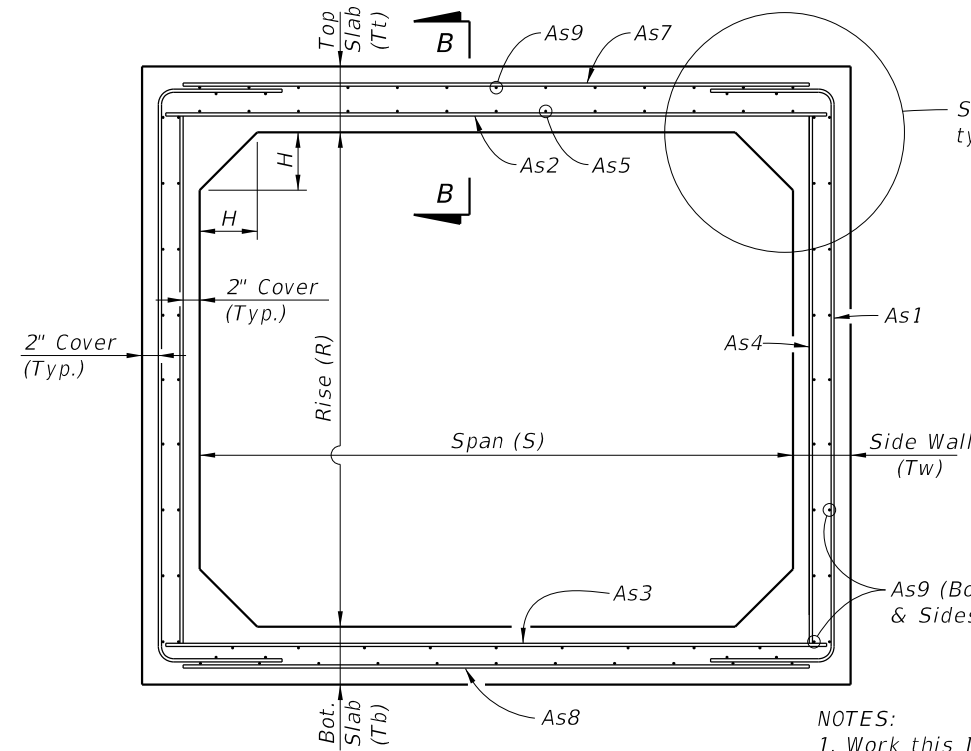
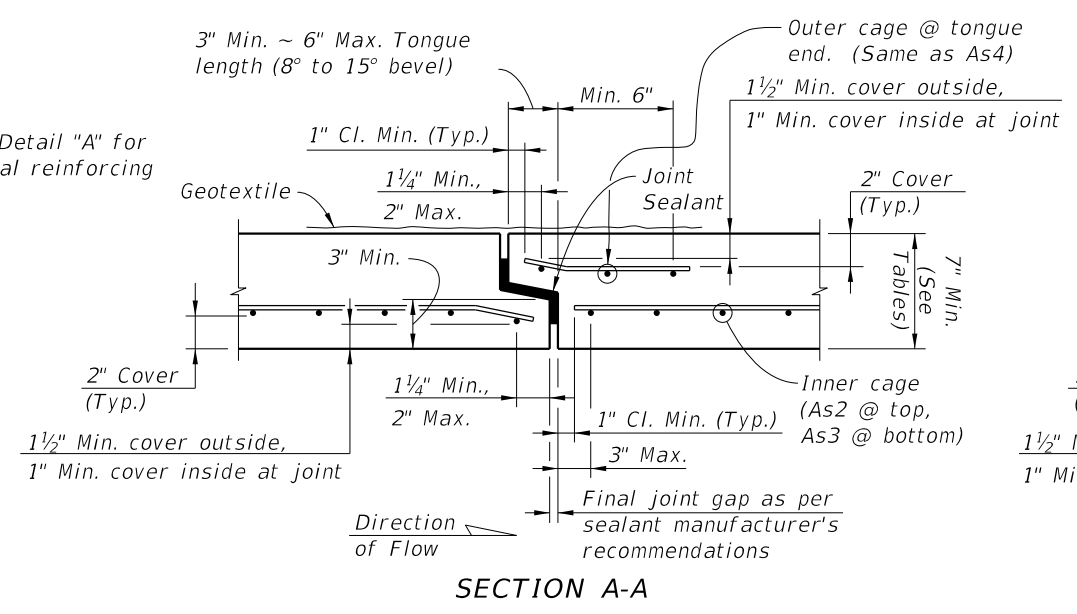


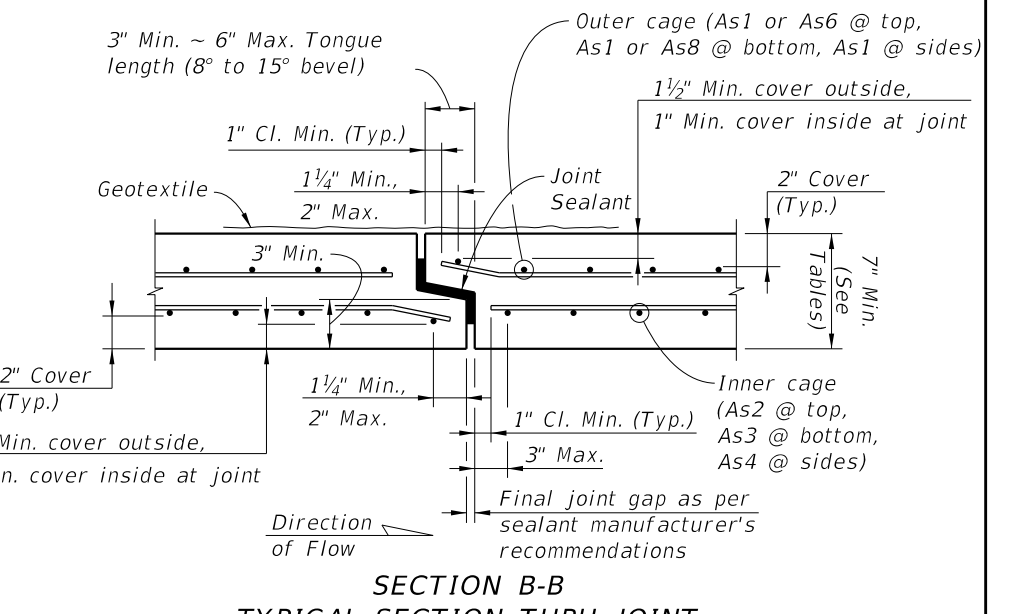
**TYPICAL BOX SECTION (TYPE 2)**  
**DESIGN EARTH COVER 2' OR GREATER**  
 (Option 1 Reinforcing Configuration Shown)



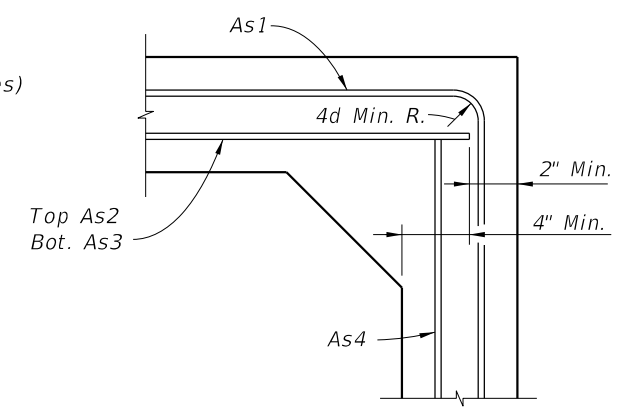
**TYPICAL BOX SECTION (TYPE 1)**  
**DESIGN EARTH COVER LESS THAN 2'**  
 (Option 1 Reinforcing Configuration Shown)



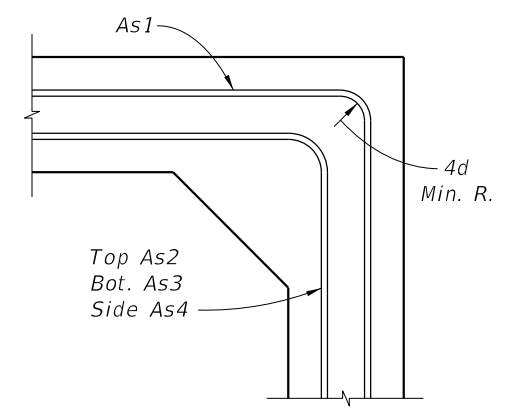
**SECTION A-A**



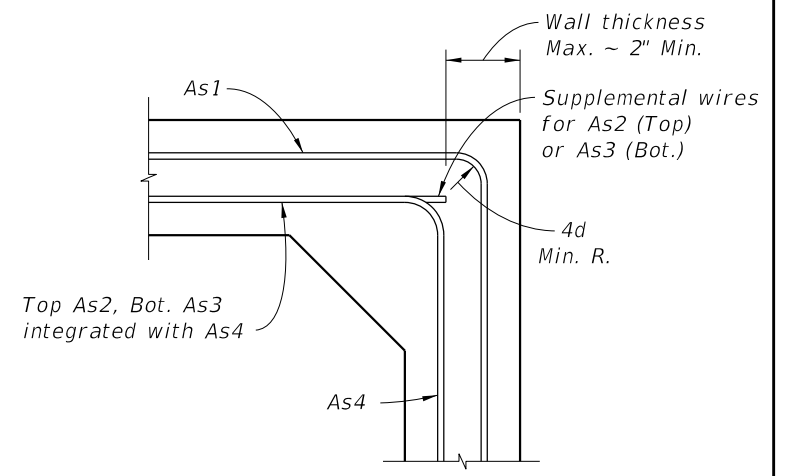
**SECTION B-B**  
**TYPICAL SECTION THRU JOINT**



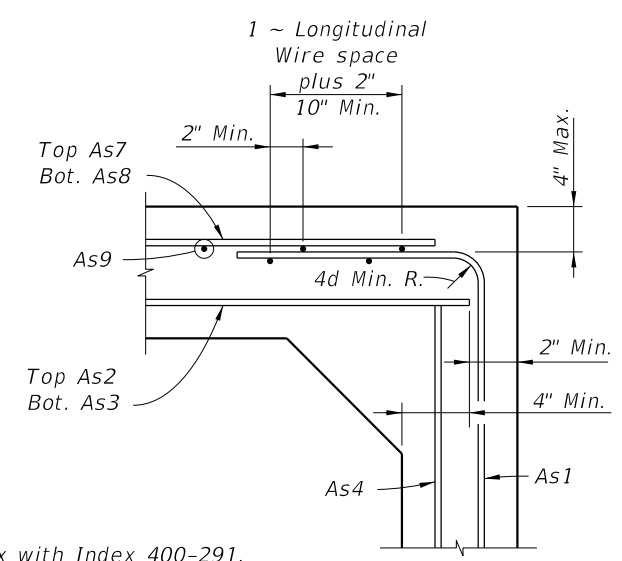
**DETAIL "A" (OPTION 1)**



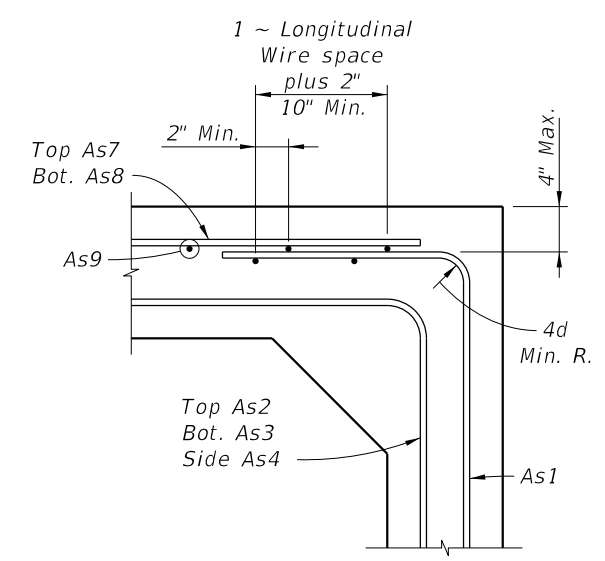
**DETAIL "A" (OPTION 2)**



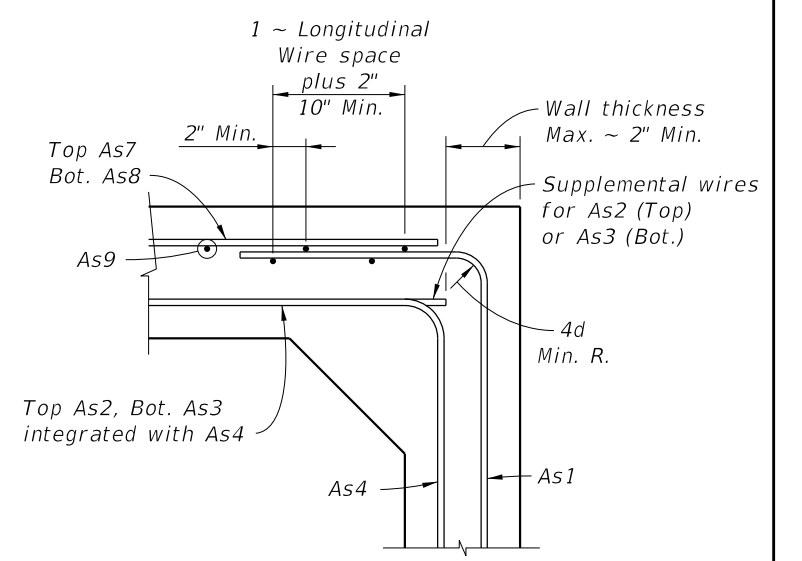
**DETAIL "A" (OPTION 3)**



**DETAIL "B" (OPTION 1)**



**DETAIL "B" (OPTION 2)**



**DETAIL "B" (OPTION 3)**

**NOTES:**  
 1. Work this Index with Index 400-291.  
 2. See sheets 2 thru 5 for dimensions and areas of reinforcement.

**STANDARD PRECAST BOX CULVERT WITH 2" CONCRETE COVER**

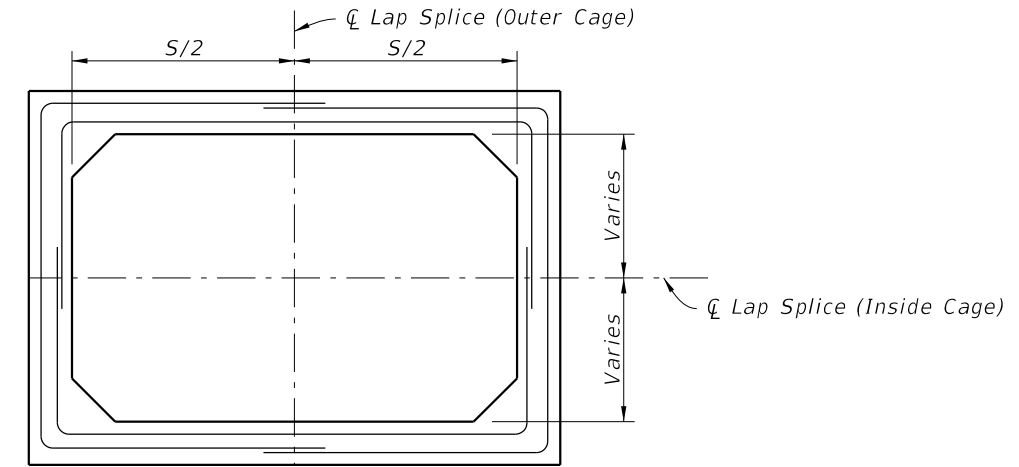
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|                           |          |              |  |                              |  |                  |                  |
|---------------------------|----------|--------------|--|------------------------------|--|------------------|------------------|
| LAST REVISION<br>11/01/23 | REVISION | DESCRIPTION: |  | FY 2026-27<br>STANDARD PLANS | STANDARD PRECAST CONCRETE BOX CULVERTS | INDEX<br>400-292 | SHEET<br>1 of 14 |
|---------------------------|----------|--------------|--|------------------------------|--|------------------|------------------|

**GENERAL NOTES:**

1. These precast designs may be substituted for cast-in-place box culverts designed to AASHTO LRFD Bridge Design Specifications, 4th Edition. Designs are based on the design criteria shown in FDOT Structures Design Guidelines.
2. Loading: HL-93 & any fill heights between the minimum & maximum shown.
3. Only one design of precast box culvert is to be used for any installation.
4. Reinforcing steel must consist of smooth or deformed welded wire reinforcement (WWR) meeting the requirements of Specification Section 931. Longitudinal reinforcement may consist of reinforcing bars meeting the requirements of Specification Section 931. Minimum cover must be 2" for slightly or moderately aggressive environments or 3" for extremely aggressive environments, unless otherwise shown. The spacing of circumferential wires must not be less than 2" nor more than 4". The spacing of longitudinal wires or bars must not be more than 8".
5. As9 longitudinal wires must have a minimum cross-sectional area of 40% of the circumferential wires, but not less than a W2.5 or D4.0 for WWR, or #3 bars for deformed bars.
6. Welding of reinforcement must be limited to the locations shown in ASTM C1577 and in accordance with ANSI/AWS D1.4 "Structural Welding Code - Reinforcing Steel".
7. For alternate reinforcing configuration Options 2 and 3 shown in Detail "A" and "B" (Sheet 1), As1 may be extended to the middle of either slab and lap spliced with As7 and As8. As4 may be lap spliced at any location or connected to As2 or As3 at corners by welding.
8. Haunch dimensions may vary between the minimum and maximum dimensions shown in the Design Tables but only one haunch dimension must be used within the full length of the box culvert installation.

9. Submittal of redesign calculations are not required for any increase to the slab and/or wall thickness when the minimum reinforcement areas shown in the Design Tables are provided.
10. For Design Earth Cover greater than 10 feet, the Contractor may interpolate the required areas of reinforcement and slab or wall thickness. Interpolated areas of reinforcement, slab or wall thickness must be approved by the Engineer.
11. Minimum length of precast box segments is 4 feet and maximum length is 16 feet.
12. See Index 400-291 for connections to wingwalls, headwalls and other general details.



**SCHEMATIC OF LAP SPLICE LOCATIONS FOR OPTION 2 & 3 REINFORCING CONFIGURATIONS**

**TABLE 1A - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 3' & 4' SPANS**

| SPAN x RISE<br>(S) (R)<br>(Ft.) | SLAB / WALL THICKNESS |                       |                       |                        | DESIGN<br>EARTH COVER<br>ABOVE<br>TOP SLAB | REINFORCEMENT AREAS<br>(sq. in./Ft.) |      |      |              |             |      |      |                    | As1 EXT.<br>LENGTH<br>(M)<br>(in.) |      |      |      |                    |                    |    |
|---------------------------------|-----------------------|-----------------------|-----------------------|------------------------|--|--------------------------------------|------|------|--------------|-------------|------|------|--------------------|------------------------------------|------|------|------|--------------------|--------------------|----|
|                                 | TOP<br>(Tt)<br>(in.)  | BOT.<br>(Tb)<br>(in.) | SIDE<br>(Tw)<br>(in.) | HAUNCH<br>(H)<br>(in.) |  | As1                                  | As2  | As3  | As4          | As5         | As7  | As8  | As9                |                                    |      |      |      |                    |                    |    |
| 3' x 3'                         | 7                     | 7                     | 7                     | 4<br>to<br>8           | 0.33' - <2'                                | 0.17                                 | 0.29 | 0.21 | 0.17         | 0.17        | 0.17 | 0.17 | See General Note 5 | -                                  |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 2' - <3'                                   | 0.13                                 | 0.28 | 0.21 | 0.09         | -           | -    | -    |                    | 31                                 |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.09                                 | 0.17 | 0.17 | 0.09         | -           | -    | -    |                    | 31                                 |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 5' - 10'                                   | 0.09                                 | 0.17 | 0.17 | 0.09         | -           | -    | -    |                    | 31                                 |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 15'  | 0.09                                 | 0.17 | 0.17 | 0.09         | -           | -    | -    |                    | 31                                 |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 20'  | 0.12                                 | 0.17 | 0.17 | 0.09         | -           | -    | -    |                    | 31                                 |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 25'  | 0.14                                 | 0.18 | 0.18 | 0.09         | -           | -    | -    |                    | 31                                 |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 30'  | 0.17                                 | 0.21 | 0.22 | 0.09         | -           | -    | -    |                    | 31                                 |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 35'  | 0.19                                 | 0.25 | 0.25 | 0.09         | -           | -    | -    |                    | 31                                 |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 4' x 3'                                    | 7                                    | 7    | 7    | 4<br>to<br>8 | 0.33' - <2' | 0.19 | 0.38 |                    | 0.26                               | 0.17 | 0.19 | 0.17 | 0.19               | See General Note 5 | -  |
| 2' - <3'                        | 0.19                  | 0.38                  | 0.26                  | 0.09                   |  |                                      |      |      |              | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
| 3' - <5'                        | 0.14                  | 0.20                  | 0.22                  | 0.09                   |  |                                      |      |      |              | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
| 5' - 10'                        | 0.11                  | 0.17                  | 0.17                  | 0.09                   |  |                                      |      |      |              | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
| 15'                             | 0.15                  | 0.17                  | 0.18                  | 0.09                   |  |                                      |      |      |              | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
| 20'                             | 0.20                  | 0.23                  | 0.23                  | 0.09                   |  |                                      |      |      |              | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
| 25'                             | 0.24                  | 0.28                  | 0.29                  | 0.09                   |  |                                      |      |      |              | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
| 30'                             | 0.29                  | 0.34                  | 0.35                  | 0.09                   |  |                                      |      |      |              | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
| 4' x 4'                         | 7                     | 7                     | 7                     | 4<br>to<br>8           |  |                                      |      |      |              | 0.33' - <2' | 0.19 | 0.41 | 0.28               | 0.17                               | 0.21 | 0.17 | 0.19 | See General Note 5 |                    | -  |
|                                 |                       |                       |                       |                        |  |                                      |      |      |              | 2' - <3'    | 0.19 | 0.41 | 0.28               | 0.09                               | -    | -    | -    |                    |                    | 38 |
|                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.14                                 | 0.21 | 0.24 | 0.09         | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 5' - 10'                                   | 0.12                                 | 0.17 | 0.17 | 0.09         | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 15'  | 0.16                                 | 0.19 | 0.20 | 0.09         | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 20'  | 0.21                                 | 0.25 | 0.25 | 0.09         | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 25'  | 0.26                                 | 0.31 | 0.32 | 0.09         | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 30'  | 0.31                                 | 0.37 | 0.38 | 0.09         | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |

**TABLE 1B - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 3' & 4' SPANS**

| SPAN x RISE<br>(S) (R)<br>(Ft.) | SLAB / WALL THICKNESS |                       |                       |                        | DESIGN<br>EARTH COVER<br>ABOVE<br>TOP SLAB | REINFORCEMENT AREAS<br>(sq. in./Ft.) |      |      |              |             |      |      |                    | As1 EXT.<br>LENGTH<br>(M)<br>(in.) |      |      |      |                    |                    |    |
|---------------------------------|-----------------------|-----------------------|-----------------------|------------------------|--|--------------------------------------|------|------|--------------|-------------|------|------|--------------------|------------------------------------|------|------|------|--------------------|--------------------|----|
|                                 | TOP<br>(Tt)<br>(in.)  | BOT.<br>(Tb)<br>(in.) | SIDE<br>(Tw)<br>(in.) | HAUNCH<br>(H)<br>(in.) |  | As1                                  | As2  | As3  | As4          | As5         | As7  | As8  | As9                |                                    |      |      |      |                    |                    |    |
| 3' x 3'                         | 8                     | 8                     | 8                     | 4<br>to<br>8           | 0.33' - <2'                                | 0.20                                 | 0.26 | 0.32 | 0.20         | 0.20        | 0.20 | 0.20 | See General Note 5 | -                                  |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 2' - <3'                                   | 0.16                                 | 0.25 | 0.31 | 0.10         | -           | -    | -    |                    | 31                                 |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.10                                 | 0.20 | 0.20 | 0.10         | -           | -    | -    |                    | 31                                 |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 5' - 10'                                   | 0.10                                 | 0.20 | 0.20 | 0.10         | -           | -    | -    |                    | 31                                 |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 15'  | 0.10                                 | 0.20 | 0.20 | 0.10         | -           | -    | -    |                    | 31                                 |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 20'  | 0.10                                 | 0.20 | 0.20 | 0.10         | -           | -    | -    |                    | 31                                 |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 25'  | 0.11                                 | 0.20 | 0.20 | 0.10         | -           | -    | -    |                    | 31                                 |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 30'  | 0.13                                 | 0.20 | 0.20 | 0.10         | -           | -    | -    |                    | 31                                 |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 35'  | 0.15                                 | 0.21 | 0.21 | 0.10         | -           | -    | -    |                    | 31                                 |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 4' x 3'                                    | 8                                    | 8    | 8    | 4<br>to<br>8 | 0.33' - <2' | 0.20 | 0.31 |                    | 0.22                               | 0.20 | 0.20 | 0.20 | 0.20               | See General Note 5 | -  |
| 2' - <3'                        | 0.12                  | 0.31                  | 0.22                  | 0.10                   |  |                                      |      |      |              | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
| 3' - <5'                        | 0.12                  | 0.20                  | 0.20                  | 0.10                   |  |                                      |      |      |              | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
| 5' - 10'                        | 0.10                  | 0.20                  | 0.20                  | 0.10                   |  |                                      |      |      |              | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
| 15'                             | 0.12                  | 0.20                  | 0.20                  | 0.10                   |  |                                      |      |      |              | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
| 20'                             | 0.16                  | 0.20                  | 0.20                  | 0.10                   |  |                                      |      |      |              | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
| 25'                             | 0.19                  | 0.24                  | 0.24                  | 0.10                   |  |                                      |      |      |              | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
| 30'                             | 0.22                  | 0.28                  | 0.29                  | 0.10                   |  |                                      |      |      |              | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
| 4' x 4'                         | 8                     | 8                     | 8                     | 4<br>to<br>8           |  |                                      |      |      |              | 0.33' - <2' | 0.20 | 0.33 | 0.24               | 0.20                               | 0.20 | 0.20 | 0.20 | See General Note 5 |                    | -  |
|                                 |                       |                       |                       |                        |  |                                      |      |      |              | 2' - <3'    | 0.17 | 0.33 | 0.24               | 0.10                               | -    | -    | -    |                    |                    | 38 |
|                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.12                                 | 0.20 | 0.20 | 0.10         | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 5' - 10'                                   | 0.10                                 | 0.20 | 0.20 | 0.10         | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 15'  | 0.13                                 | 0.20 | 0.20 | 0.10         | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 20'  | 0.16                                 | 0.21 | 0.22 | 0.10         | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 25'  | 0.20                                 | 0.26 | 0.27 | 0.10         | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |
|                                 |                       |                       |                       |                        | 30'  | 0.23                                 | 0.31 | 0.32 | 0.10         | -           | -    | -    | 38                 |                                    |      |      |      |                    |                    |    |

NOTES: 1. See Sheet 1 for Reinforcing Details and dimension locations.

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**TABLE 2A - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 5' & 6' SPANS**

| SPAN x RISE<br>(S)<br>(R)<br>(Ft.) | SLAB / WALL THICKNESS |                       |                       |                        | DESIGN<br>EARTH COVER<br>ABOVE<br>TOP SLAB | REINFORCEMENT AREAS<br>(sq. in./Ft.) |      |      |               |             |      |       |      |      | As1 EXT.<br>LENGTH<br>(M)<br>(in.) |      |      |    |
|------------------------------------|-----------------------|-----------------------|-----------------------|------------------------|--|--------------------------------------|------|------|---------------|-------------|------|-------|------|------|------------------------------------|------|------|----|
|                                    | TOP<br>(Tt)<br>(in.)  | BOT.<br>(Tb)<br>(in.) | SIDE<br>(Tw)<br>(in.) | HAUNCH<br>(H)<br>(in.) |  | As1                                  | As2  | As3  | As4           | As5         | As7  | As8   | As9  |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        |  |                                      |      |      |               |             |      |       |      |      |                                    |      |      |    |
| 5' x 3'                            | 7                     | 7                     | 7                     | 4<br>to<br>8           | 0.33' - <2'                                | 0.31                                 | 0.48 | 0.42 | 0.17          | 0.21        | 0.23 | 0.31  | -    |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 2' - <3'                                   | 0.31                                 | 0.48 | 0.42 | 0.09          | -           | -    | -     | 45   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 3' - <5'                                   | 0.20                                 | 0.27 | 0.27 | 0.09          | -           | -    | -     | 36   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 5' - 10'                                   | 0.17                                 | 0.19 | 0.21 | 0.09          | -           | -    | -     | 36   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 15'  | 0.24                                 | 0.25 | 0.25 | 0.09          | -           | -    | -     | 35   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 20'  | 0.32                                 | 0.33 | 0.33 | 0.09          | -           | -    | -     | 35   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 25'  | 0.39                                 | 0.41 | 0.42 | 0.09          | -           | -    | -     | 35   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 30'  | 0.47                                 | 0.50 | 0.50 | 0.09          | -           | -    | -     | 35   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 5' x 4'                                    | 7                                    | 7    | 7    | 4<br>to<br>8  | 0.33' - <2' | 0.30 | 0.51  | 0.45 | 0.17 | 0.23                               | 0.21 | 0.30 | -  |
|                                    |                       |                       |                       |                        |  |                                      |      |      |               | 2' - <3'    | 0.30 | 0.51  | 0.45 | 0.09 | -                                  | -    | -    | 45 |
| 3' - <5'                           | 0.18                  | 0.30                  | 0.29                  | 0.09                   |  |                                      |      |      |               | -           | -    | -     | 45   |      |                                    |      |      |    |
| 5' - 10'                           | 0.17                  | 0.21                  | 0.23                  | 0.09                   |  |                                      |      |      |               | -           | -    | -     | 36   |      |                                    |      |      |    |
| 15'                                | 0.24                  | 0.27                  | 0.28                  | 0.09                   |  |                                      |      |      |               | -           | -    | -     | 35   |      |                                    |      |      |    |
| 20'                                | 0.31                  | 0.36                  | 0.37                  | 0.09                   |  |                                      |      |      |               | -           | -    | -     | 35   |      |                                    |      |      |    |
| 25'                                | 0.39                  | 0.45                  | 0.46                  | 0.09                   |  |                                      |      |      |               | -           | -    | -     | 35   |      |                                    |      |      |    |
| 30'                                | 0.46                  | 0.55                  | 0.56                  | 0.09                   |  |                                      |      |      |               | -           | -    | -     | 35   |      |                                    |      |      |    |
| 5' x 5'                            | 7                     | 7                     | 7                     | 4<br>to<br>8           |  |                                      |      |      |               | 0.33' - <2' | 0.30 | 0.53  | 0.48 | 0.17 | 0.24                               | 0.21 | 0.30 | -  |
|                                    |                       |                       |                       |                        |  |                                      |      |      |               | 2' - <3'    | 0.29 | 0.53  | 0.48 | 0.09 | -                                  | -    | -    | 45 |
|                                    |                       |                       |                       |                        | 3' - <5'                                   | 0.19                                 | 0.31 | 0.31 | 0.09          | -           | -    | -     | 45   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 5' - 10'                                   | 0.19                                 | 0.22 | 0.25 | 0.09          | -           | -    | -     | 45   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 15'  | 0.26                                 | 0.29 | 0.31 | 0.09          | -           | -    | -     | 36   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 20'  | 0.34                                 | 0.39 | 0.40 | 0.09          | -           | -    | -     | 35   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 25'  | 0.41                                 | 0.49 | 0.50 | 0.09          | -           | -    | -     | 35   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 30'  | 0.49                                 | 0.59 | 0.61 | 0.09          | -           | -    | -     | 35   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 6' x 3'                                    | 7.5                                  | 7    | 7    | 4<br>to<br>12 | 0.33' - <2' | 0.39 | 0.54  | 0.48 | 0.17 | 0.22                               | 0.25 | 0.39 | -  |
|                                    |                       |                       |                       |                        |  | 7                                    |      |      |               | 2' - <3'    | 0.39 | 0.58  | 0.49 | 0.09 | -                                  | -    | -    | 43 |
| 8                                  | 3' - <5'              | 0.28                  | 0.36                  | 0.36                   |  |                                      |      |      |               | 0.09        | -    | -     | -    | 39   |                                    |      |      |    |
| 7                                  | 5' - 10'              | 0.25                  | 0.26                  | 0.28                   |  | 0.09                                 |      |      |               | -           | -    | -     | 39   |      |                                    |      |      |    |
|                                    | 8                     | 15'                   | 0.36                  | 0.34                   |  | 0.34                                 |      |      |               | 0.09        | -    | -     | -    | 38   |                                    |      |      |    |
| 7                                  | 20'                   | 0.47                  | 0.46                  | 0.46                   |  | 0.09                                 |      |      |               | -           | -    | -     | 38   |      |                                    |      |      |    |
|                                    | 8                     | 25'                   | 0.59                  | 0.57                   |  | 0.55                                 |      |      |               | 0.09        | -    | -     | -    | 38   |                                    |      |      |    |
| 7                                  | 30'                   | 0.60                  | 0.64                  | 0.64                   |  | 0.09                                 |      |      |               | -           | -    | -     | 38   |      |                                    |      |      |    |
|                                    | 8                     | 0.33' - <2'           | 0.37                  | 0.58                   |  | 0.52                                 |      |      |               | 0.17        | 0.24 | 0.23  | 0.37 | -    |                                    |      |      |    |
| 6' x 4'                            | 7                     | 7                     | 7                     | 4<br>to<br>12          |  | 2' - <3'                             |      |      |               | 0.37        | 0.61 | 0.53  | 0.09 | -    | -                                  | -    | 43   |    |
|                                    |                       |                       |                       |                        | 3' - <5'                                   | 0.26                                 | 0.39 | 0.39 | 0.09          | -           | -    | -     | 39   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 5' - 10'                                   | 0.24                                 | 0.28 | 0.31 | 0.09          | -           | -    | -     | 39   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 15'  | 0.35                                 | 0.37 | 0.38 | 0.09          | -           | -    | -     | 38   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 20'  | 0.46                                 | 0.50 | 0.50 | 0.09          | -           | -    | -     | 38   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 25'  | 0.56                                 | 0.63 | 0.60 | 0.09          | -           | -    | -     | 38   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 30'  | 0.58                                 | 0.69 | 0.69 | 0.09          | -           | -    | -     | 38   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 6' x 5'                                    | 7                                    | 7    | 7    | 4<br>to<br>12 | 0.33' - <2' | 0.36 | 0.60  | 0.56 | 0.17 | 0.25                               | 0.22 | 0.36 | -  |
|                                    |                       |                       |                       |                        |  |                                      |      |      |               | 2' - <3'    | 0.36 | 0.64  | 0.56 | 0.09 | -                                  | -    | -    | 43 |
|                                    |                       |                       |                       |                        |  |                                      |      |      |               | 3' - <5'    | 0.26 | 0.410 | 0.42 | 0.09 | -                                  | -    | -    | 43 |
| 5' - 10'                           | 0.25                  | 0.30                  | 0.33                  | 0.09                   |  |                                      |      |      |               | -           | -    | -     | 39   |      |                                    |      |      |    |
| 15'                                | 0.34                  | 0.40                  | 0.41                  | 0.09                   |  |                                      |      |      |               | -           | -    | -     | 38   |      |                                    |      |      |    |
| 20'                                | 0.46                  | 0.54                  | 0.54                  | 0.09                   |  |                                      |      |      |               | -           | -    | -     | 38   |      |                                    |      |      |    |
| 25'                                | 0.56                  | 0.67                  | 0.65                  | 0.09                   |  |                                      |      |      |               | -           | -    | -     | 38   |      |                                    |      |      |    |
| 30'                                | 0.60                  | 0.74                  | 0.74                  | 0.09                   |  |                                      |      |      |               | -           | -    | -     | 38   |      |                                    |      |      |    |
| 6' x 6'                            | 7                     | 7                     | 7                     | 4<br>to<br>12          |  |                                      |      |      |               | 0.33' - <2' | 0.36 | 0.63  | 0.59 | 0.17 | 0.26                               | 0.22 | 0.36 | -  |
|                                    |                       |                       |                       |                        |  |                                      |      |      |               | 2' - <3'    | 0.35 | 0.67  | 0.59 | 0.09 | -                                  | -    | -    | 52 |
|                                    |                       |                       |                       |                        | 3' - <5'                                   | 0.27                                 | 0.43 | 0.44 | 0.09          | -           | -    | -     | 52   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 5' - 10'                                   | 0.27                                 | 0.32 | 0.35 | 0.09          | -           | -    | -     | 43   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 15'  | 0.38                                 | 0.43 | 0.44 | 0.09          | -           | -    | -     | 39   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 20'  | 0.50                                 | 0.57 | 0.59 | 0.09          | -           | -    | -     | 39   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 25'  | 0.60                                 | 0.72 | 0.70 | 0.09          | -           | -    | -     | 38   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 30'  | 0.67                                 | 0.78 | 0.79 | 0.09          | -           | -    | -     | 38   |      |                                    |      |      |    |

See General Note 5

See General Note 5

**TABLE 2B - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 5' & 6' SPANS**

| SPAN x RISE<br>(S)<br>(R)<br>(Ft.) | SLAB / WALL THICKNESS |                       |                       |                        | DESIGN<br>EARTH COVER<br>ABOVE<br>TOP SLAB | REINFORCEMENT AREAS<br>(sq. in./Ft.) |      |      |               |             |      |      |      |      | As1 EXT.<br>LENGTH<br>(M)<br>(in.) |      |      |    |
|------------------------------------|-----------------------|-----------------------|-----------------------|------------------------|--|--------------------------------------|------|------|---------------|-------------|------|------|------|------|------------------------------------|------|------|----|
|                                    | TOP<br>(Tt)<br>(in.)  | BOT.<br>(Tb)<br>(in.) | SIDE<br>(Tw)<br>(in.) | HAUNCH<br>(H)<br>(in.) |  | As1                                  | As2  | As3  | As4           | As5         | As7  | As8  | As9  |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        |  |                                      |      |      |               |             |      |      |      |      |                                    |      |      |    |
| 5' x 3'                            | 8                     | 8                     | 8                     | 4<br>to<br>8           | 0.33' - <2'                                | 0.26                                 | 0.39 | 0.36 | 0.20          | 0.20        | 0.20 | 0.26 | -    |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 2' - <3'                                   | 0.26                                 | 0.39 | 0.36 | 0.10          | -           | -    | -    | 45   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 3' - <5'                                   | 0.16                                 | 0.23 | 0.24 | 0.10          | -           | -    | -    | 36   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 5' - 10'                                   | 0.13                                 | 0.20 | 0.20 | 0.10          | -           | -    | -    | 36   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 15'  | 0.19                                 | 0.21 | 0.22 | 0.10          | -           | -    | -    | 35   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 20'  | 0.24                                 | 0.28 | 0.28 | 0.10          | -           | -    | -    | 35   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 25'  | 0.30                                 | 0.34 | 0.35 | 0.10          | -           | -    | -    | 35   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 30'  | 0.36                                 | 0.41 | 0.41 | 0.10          | -           | -    | -    | 35   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 5' x 4'                                    | 8                                    | 8    | 8    | 4<br>to<br>8  | 0.33' - <2' | 0.25 | 0.42 | 0.38 | 0.20 | 0.20                               | 0.20 | 0.25 | -  |
|                                    |                       |                       |                       |                        |  |                                      |      |      |               | 2' - <3'    | 0.25 | 0.42 | 0.38 | 0.10 | -                                  | -    | -    | 45 |
| 3' - <5'                           | 0.16                  | 0.25                  | 0.25                  | 0.10                   |  |                                      |      |      |               | -           | -    | -    | 45   |      |                                    |      |      |    |
| 5' - 10'                           | 0.13                  | 0.20                  | 0.20                  | 0.10                   |  |                                      |      |      |               | -           | -    | -    | 36   |      |                                    |      |      |    |
| 15'                                | 0.19                  | 0.23                  | 0.24                  | 0.10                   |  |                                      |      |      |               | -           | -    | -    | 35   |      |                                    |      |      |    |
| 20'                                | 0.24                  | 0.30                  | 0.31                  | 0.10                   |  |                                      |      |      |               | -           | -    | -    | 35   |      |                                    |      |      |    |
| 25'                                | 0.30                  | 0.37                  | 0.38                  | 0.10                   |  |                                      |      |      |               | -           | -    | -    | 35   |      |                                    |      |      |    |
| 30'                                | 0.35                  | 0.45                  | 0.46                  | 0.10                   |  |                                      |      |      |               | -           | -    | -    | 35   |      |                                    |      |      |    |
| 5' x 5'                            | 8                     | 8                     | 8                     | 4<br>to<br>8           |  |                                      |      |      |               | 0.33' - <2' | 0.25 | 0.44 | 0.41 | 0.20 | 0.20                               | 0.20 | 0.25 | -  |
|                                    |                       |                       |                       |                        |  |                                      |      |      |               | 2' - <3'    | 0.25 | 0.44 | 0.41 | 0.10 | -                                  | -    | -    | 45 |
|                                    |                       |                       |                       |                        | 3' - <5'                                   | 0.16                                 | 0.26 | 0.27 | 0.10          | -           | -    | -    | 45   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 5' - 10'                                   | 0.15                                 | 0.20 | 0.22 | 0.10          | -           | -    | -    | 45   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 15'  | 0.20                                 | 0.25 | 0.26 | 0.10          | -           | -    | -    | 36   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 20'  | 0.26                                 | 0.32 | 0.33 | 0.10          | -           | -    | -    | 35   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 25'  | 0.32                                 | 0.40 | 0.41 | 0.10          | -           | -    | -    | 35   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 30'  | 0.37                                 | 0.48 | 0.49 | 0.10          | -           | -    | -    | 35   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 6' x 3'                                    | 8                                    | 8    | 8    | 4<br>to<br>12 | 0.33' - <2' | 0.32 | 0.47 | 0.41 | 0.20 | 0.20                               | 0.25 | 0.32 | -  |
|                                    |                       |                       |                       |                        |  |                                      |      |      |               | 2' - <3'    | 0.32 | 0.47 | 0.41 | 0.10 | -                                  | -    | -    | 43 |
| 3' - <5'                           | 0.23                  | 0.30                  | 0.31                  | 0.10                   |  |                                      |      |      |               | -           | -    | -    | 39   |      |                                    |      |      |    |
| 5' - 10'                           | 0.19                  | 0.22                  | 0.24                  | 0.10                   |  |                                      |      |      |               | -           | -    | -    | 39   |      |                                    |      |      |    |
| 15'                                | 0.28                  | 0.29                  | 0.29                  | 0.10                   |  |                                      |      |      |               | -           | -    | -    | 38   |      |                                    |      |      |    |
| 20'                                | 0.36                  | 0.38                  | 0.38                  | 0.10                   |  |                                      |      |      |               | -           | -    | -    | 38   |      |                                    |      |      |    |
| 25'                                | 0.45                  | 0.47                  | 0.47                  | 0.10                   |  |                                      |      |      |               | -           | -    | -    | 38   |      |                                    |      |      |    |
| 30'                                | 0.54                  | 0.57                  | 0.57                  | 0.10                   |  |                                      |      |      |               | -           | -    | -    | 38   |      |                                    |      |      |    |
| 6' x 4'                            | 8                     | 8                     | 8                     | 4<br>to<br>12          |  |                                      |      |      |               | 0.33' - <2' | 0.31 | 0.50 | 0.44 | 0.20 | 0.21                               | 0.23 | 0.31 | -  |
|                                    |                       |                       |                       |                        |  |                                      |      |      |               | 2' - <3'    | 0.31 | 0.50 | 0.44 | 0.10 | -                                  | -    | -    | 43 |
|                                    |                       |                       |                       |                        | 3' - <5'                                   | 0.23                                 | 0.32 | 0.34 | 0.10          | -           | -    | -    | 39   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 5' - 10'                                   | 0.19                                 | 0.24 | 0.26 | 0.10          | -           | -    | -    | 39   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 15'  | 0.27                                 | 0.31 | 0.32 | 0.10          | -           | -    | -    | 38   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 20'  | 0.35                                 | 0.41 | 0.41 | 0.10          | -           | -    | -    | 38   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 25'  | 0.43                                 | 0.51 | 0.51 | 0.10          | -           | -    | -    | 38   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 30'  | 0.52                                 | 0.62 | 0.62 | 0.10          | -           | -    | -    | 38   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 6' x 5'                                    | 8                                    | 8    | 8    | 4<br>to<br>12 | 0.33' - <2' | 0.30 | 0.52 | 0.47 | 0.20 | 0.22                               | 0.22 | 0.30 | -  |
|                                    |                       |                       |                       |                        |  |                                      |      |      |               | 2' - <3'    | 0.30 | 0.52 | 0.47 | 0.10 | -                                  | -    | -    | 43 |
| 3' - <5'                           | 0.22                  | 0.34                  | 0.36                  | 0.10                   |  |                                      |      |      |               | -           | -    | -    | 43   |      |                                    |      |      |    |
| 5' - 10'                           | 0.20                  | 0.26                  | 0.28                  | 0.10                   |  |                                      |      |      |               | -           | -    | -    | 39   |      |                                    |      |      |    |
| 15'                                | 0.27                  | 0.33                  | 0.34                  | 0.10                   |  |                                      |      |      |               | -           | -    | -    | 38   |      |                                    |      |      |    |
| 20'                                | 0.36                  | 0.44                  | 0.45                  | 0.10                   |  |                                      |      |      |               | -           | -    | -    | 38   |      |                                    |      |      |    |
| 25'                                | 0.44                  | 0.55                  | 0.55                  | 0.10                   |  |                                      |      |      |               | -           | -    | -    | 38   |      |                                    |      |      |    |
| 30'                                | 0.52                  | 0.66                  | 0.67                  | 0.10                   |  |                                      |      |      |               | -           | -    | -    | 38   |      |                                    |      |      |    |
| 6' x 6'                            | 8                     | 8                     | 8                     | 4<br>to<br>12          |  |                                      |      |      |               | 0.33' - <2' | 0.30 | 0.54 | 0.50 | 0.20 | 0.22                               | 0.22 | 0.30 | -  |
|                                    |                       |                       |                       |                        |  |                                      |      |      |               | 2' - <3'    | 0.30 | 0.54 | 0.50 | 0.10 | -                                  | -    | -    | 52 |
|                                    |                       |                       |                       |                        | 3' - <5'                                   | 0.23                                 | 0.36 | 0.38 | 0.10          | -           | -    | -    | 52   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 5' - 10'                                   | 0.21                                 | 0.27 | 0.30 | 0.10          | -           | -    | -    | 43   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 15'  | 0.29                                 | 0.35 | 0.37 | 0.10          | -           | -    | -    | 39   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 20'  | 0.38                                 | 0.47 | 0.48 | 0.10          | -           | -    | -    | 39   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 25'  | 0.47                                 | 0.59 | 0.60 | 0.10          | -           | -    | -    | 38   |      |                                    |      |      |    |
|                                    |                       |                       |                       |                        | 30'  | 0.55                                 | 0.70 | 0.71 | 0.10          | -           | -    | -    | 38   |      |                                    |      |      |    |

LAST REVISION 07/01/13

DESCRIPTION:



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**TABLE 3 - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 7' SPANS**

| SPAN x RISE<br>(S) (R)<br>(Ft.) | SLAB / WALL THICKNESS |                       |                       |                        | DESIGN<br>EARTH COVER<br>ABOVE<br>TOP SLAB | REINFORCEMENT AREAS<br>(sq. in./Ft.) |      |      |      |      |      |      |      |    | As1 EXT.<br>LENGTH<br>(M)<br>(in.) |
|---------------------------------|-----------------------|-----------------------|-----------------------|------------------------|--|--------------------------------------|------|------|------|------|------|------|------|----|------------------------------------|
|                                 | TOP<br>(Tt)<br>(in.)  | BOT.<br>(Tb)<br>(in.) | SIDE<br>(Tw)<br>(in.) | HAUNCH<br>(H)<br>(in.) |  | As1                                  | As2  | As3  | As4  | As5  | As7  | As8  | As9  |    |                                    |
|                                 |                       |                       |                       |                        |  |                                      |      |      |      |      |      |      |      |    |                                    |
| 7' x 4'                         | 8                     | 8                     | 8                     | 4<br>to<br>12          | 0.33' - <2'                                | 0.37                                 | 0.58 | 0.49 | 0.20 | 0.22 | 0.29 | 0.37 | -    |    |                                    |
|                                 |                       |                       |                       |                        | 2' - <3'                                   | 0.37                                 | 0.58 | 0.49 | 0.10 | -    | -    | -    | 43   |    |                                    |
|                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.30                                 | 0.40 | 0.42 | 0.10 | -    | -    | -    | 43   |    |                                    |
|                                 |                       |                       |                       |                        | 5' - 10'                                   | 0.26                                 | 0.30 | 0.33 | 0.10 | -    | -    | -    | 43   |    |                                    |
|                                 |                       |                       |                       |                        | 15'  | 0.37                                 | 0.40 | 0.40 | 0.10 | -    | -    | -    | 41   |    |                                    |
|                                 |                       |                       |                       |                        | 20'  | 0.49                                 | 0.53 | 0.53 | 0.10 | -    | -    | -    | 41   |    |                                    |
|                                 | 8                     | 8                     | 8                     | 7 to 12                | 25'  | 0.60                                 | 0.67 | 0.66 | 0.10 | -    | -    | -    | 41   |    |                                    |
|                                 | 8.5                   | 8.5                   | 8                     | 12                     | 30'  | 0.68                                 | 0.79 | 0.78 | 0.10 | -    | -    | -    | 41   |    |                                    |
|                                 | 7' x 5'               | 8                     | 8                     | 8                      | 4<br>to<br>12                              | 0.33' - <2'                          | 0.36 | 0.60 | 0.53 | 0.20 | 0.23 | 0.28 | 0.36 | -  |                                    |
|                                 |                       |                       |                       |                        |  | 2' - <3'                             | 0.36 | 0.60 | 0.53 | 0.10 | -    | -    | -    | 47 |                                    |
| 3' - <5'                        |                       |                       |                       |                        |  | 0.30                                 | 0.42 | 0.45 | 0.10 | -    | -    | -    | 43   |    |                                    |
| 5' - 10'                        |                       |                       |                       |                        |  | 0.26                                 | 0.32 | 0.35 | 0.10 | -    | -    | -    | 43   |    |                                    |
| 15'                             |                       |                       |                       |                        |  | 0.37                                 | 0.43 | 0.44 | 0.10 | -    | -    | -    | 41   |    |                                    |
| 20'                             |                       |                       |                       |                        |  | 0.48                                 | 0.57 | 0.57 | 0.10 | -    | -    | -    | 41   |    |                                    |
| 8                               |                       | 8                     | 8                     | 7 to 12                | 25'  | 0.60                                 | 0.72 | 0.72 | 0.10 | -    | -    | -    | 41   |    |                                    |
| 8.5                             |                       | 8.5                   | 8                     | 12                     | 30'  | 0.67                                 | 0.84 | 0.84 | 0.10 | -    | -    | -    | 41   |    |                                    |
| 7' x 6'                         |                       | 8                     | 8                     | 8                      | 4<br>to<br>12                              | 0.33' - <2'                          | 0.36 | 0.63 | 0.56 | 0.20 | 0.24 | 0.27 | 0.36 | -  |                                    |
|                                 |                       |                       |                       |                        |  | 2' - <3'                             | 0.36 | 0.63 | 0.56 | 0.10 | -    | -    | -    | 59 |                                    |
|                                 | 3' - <5'              |                       |                       |                        |  | 0.29                                 | 0.44 | 0.47 | 0.10 | -    | -    | -    | 47   |    |                                    |
|                                 | 5' - 10'              |                       |                       |                        |  | 0.27                                 | 0.34 | 0.37 | 0.10 | -    | -    | -    | 43   |    |                                    |
|                                 | 15'                   |                       |                       |                        |  | 0.38                                 | 0.46 | 0.46 | 0.10 | -    | -    | -    | 41   |    |                                    |
|                                 | 20'                   |                       |                       |                        |  | 0.49                                 | 0.60 | 0.61 | 0.10 | -    | -    | -    | 41   |    |                                    |
|                                 | 8                     | 8                     | 8                     | 7 to 12                | 25'  | 0.61                                 | 0.76 | 0.76 | 0.10 | -    | -    | -    | 41   |    |                                    |
|                                 | 8.5                   | 8.5                   | 8                     | 12                     | 30'  | 0.69                                 | 0.89 | 0.89 | 0.10 | -    | -    | -    | 41   |    |                                    |
|                                 | 7' x 7'               | 8                     | 8                     | 8                      | 4<br>to<br>12                              | 0.33' - <2'                          | 0.36 | 0.65 | 0.58 | 0.20 | 0.25 | 0.27 | 0.36 | -  |                                    |
|                                 |                       |                       |                       |                        |  | 2' - <3'                             | 0.36 | 0.65 | 0.58 | 0.10 | -    | -    | -    | 59 |                                    |
| 3' - <5'                        |                       |                       |                       |                        |  | 0.30                                 | 0.46 | 0.50 | 0.10 | -    | -    | -    | 59   |    |                                    |
| 5' - 10'                        |                       |                       |                       |                        |  | 0.30                                 | 0.35 | 0.50 | 0.10 | -    | -    | -    | 47   |    |                                    |
| 15'                             |                       |                       |                       |                        |  | 0.41                                 | 0.48 | 0.50 | 0.10 | -    | -    | -    | 43   |    |                                    |
| 20'                             |                       |                       |                       |                        |  | 0.53                                 | 0.64 | 0.65 | 0.10 | -    | -    | -    | 43   |    |                                    |
| 8                               |                       | 8                     | 8                     | 7 to 12                | 25'  | 0.65                                 | 0.80 | 0.81 | 0.10 | -    | -    | -    | 43   |    |                                    |
| 8.5                             |                       | 9                     | 8                     | 12                     | 30'  | 0.72                                 | 0.92 | 0.91 | 0.10 | -    | -    | -    | 41   |    |                                    |

See General Note 5

**TABLE 4 - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 8' SPANS**

| SPAN x RISE<br>(S) (R)<br>(Ft.) | SLAB / WALL THICKNESS |                       |                       |                        | DESIGN<br>EARTH COVER<br>ABOVE<br>TOP SLAB | REINFORCEMENT AREAS<br>(sq. in./Ft.) |      |      |      |      |      |      |      |    | As1 EXT.<br>LENGTH<br>(M)<br>(in.) |
|---------------------------------|-----------------------|-----------------------|-----------------------|------------------------|--|--------------------------------------|------|------|------|------|------|------|------|----|------------------------------------|
|                                 | TOP<br>(Tt)<br>(in.)  | BOT.<br>(Tb)<br>(in.) | SIDE<br>(Tw)<br>(in.) | HAUNCH<br>(H)<br>(in.) |  | As1                                  | As2  | As3  | As4  | As5  | As7  | As8  | As9  |    |                                    |
|                                 |                       |                       |                       |                        |  |                                      |      |      |      |      |      |      |      |    |                                    |
| 8' x 4'                         | 8                     | 8                     | 8                     | 4<br>to<br>12          | 0.33' - <2'                                | 0.40                                 | 0.60 | 0.52 | 0.20 | 0.22 | 0.28 | 0.39 | -    |    |                                    |
|                                 |                       |                       |                       |                        | 2' - <3'                                   | 0.45                                 | 0.66 | 0.54 | 0.10 | -    | -    | -    | 50   |    |                                    |
|                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.39                                 | 0.48 | 0.50 | 0.10 | -    | -    | -    | 50   |    |                                    |
|                                 |                       |                       |                       |                        | 5' - 10'                                   | 0.34                                 | 0.38 | 0.40 | 0.10 | -    | -    | -    | 45   |    |                                    |
|                                 |                       |                       |                       |                        | 15'  | 0.49                                 | 0.51 | 0.50 | 0.10 | -    | -    | -    | 41   |    |                                    |
|                                 |                       |                       |                       |                        | 20'  | 0.65                                 | 0.68 | 0.66 | 0.10 | -    | -    | -    | 41   |    |                                    |
|                                 | 8.5                   | 8.5                   | 8                     | 8 to 12                | 25'  | 0.76                                 | 0.83 | 0.80 | 0.10 | -    | -    | -    | 41   |    |                                    |
|                                 | 9.5                   | 9.5                   | 8                     | 12                     | 30'  | 0.79                                 | 0.94 | 0.92 | 0.10 | -    | -    | -    | 41   |    |                                    |
|                                 | 8' x 5'               | 8                     | 8                     | 8                      | 4<br>to<br>12                              | 0.33' - <2'                          | 0.38 | 0.65 | 0.59 | 0.20 | 0.22 | 0.30 | 0.37 | -  |                                    |
|                                 |                       |                       |                       |                        |  | 2' - <3'                             | 0.43 | 0.69 | 0.58 | 0.10 | -    | -    | -    | 50 |                                    |
| 3' - <5'                        |                       |                       |                       |                        |  | 0.37                                 | 0.51 | 0.53 | 0.10 | -    | -    | -    | 45   |    |                                    |
| 5' - 10'                        |                       |                       |                       |                        |  | 0.33                                 | 0.41 | 0.42 | 0.10 | -    | -    | -    | 45   |    |                                    |
| 15'                             |                       |                       |                       |                        |  | 0.48                                 | 0.54 | 0.53 | 0.10 | -    | -    | -    | 41   |    |                                    |
| 20'                             |                       |                       |                       |                        |  | 0.63                                 | 0.73 | 0.70 | 0.10 | -    | -    | -    | 41   |    |                                    |
| 8.5                             |                       | 8.5                   | 8                     | 8 to 12                | 25'  | 0.74                                 | 0.88 | 0.86 | 0.10 | -    | -    | -    | 41   |    |                                    |
| 9.5                             |                       | 9.5                   | 8                     | 12                     | 30'  | 0.77                                 | 1.00 | 0.98 | 0.10 | -    | -    | -    | 41   |    |                                    |
| 8' x 6'                         |                       | 8                     | 8                     | 8                      | 4<br>to<br>12                              | 0.33' - <2'                          | 0.32 | 0.65 | 0.58 | 0.20 | 0.23 | 0.25 | 0.31 | -  |                                    |
|                                 |                       |                       |                       |                        |  | 2' - <3'                             | 0.42 | 0.71 | 0.61 | 0.10 | -    | -    | -    | 50 |                                    |
|                                 | 3' - <5'              |                       |                       |                        |  | 0.37                                 | 0.54 | 0.56 | 0.10 | -    | -    | -    | 50   |    |                                    |
|                                 | 5' - 10'              |                       |                       |                        |  | 0.34                                 | 0.43 | 0.45 | 0.10 | -    | -    | -    | 45   |    |                                    |
|                                 | 15'                   |                       |                       |                        |  | 0.49                                 | 0.57 | 0.57 | 0.10 | -    | -    | -    | 41   |    |                                    |
|                                 | 20'                   |                       |                       |                        |  | 0.64                                 | 0.77 | 0.76 | 0.10 | -    | -    | -    | 41   |    |                                    |
|                                 | 8.5                   | 8.5                   | 8                     | 8 to 12                | 25'  | 0.74                                 | 0.94 | 0.92 | 0.10 | -    | -    | -    | 41   |    |                                    |
|                                 | 9.5                   | 9.5                   | 8                     | 12                     | 30'  | 0.78                                 | 1.05 | 1.04 | 0.10 | -    | -    | -    | 41   |    |                                    |
|                                 | 8' x 7'               | 8                     | 8                     | 8                      | 4<br>to<br>12                              | 0.33' - <2'                          | 0.31 | 0.67 | 0.60 | 0.20 | 0.24 | 0.24 | 0.31 | -  |                                    |
|                                 |                       |                       |                       |                        |  | 2' - <3'                             | 0.42 | 0.74 | 0.64 | 0.10 | -    | -    | -    | 55 |                                    |
| 3' - <5'                        |                       |                       |                       |                        |  | 0.37                                 | 0.56 | 0.59 | 0.10 | -    | -    | -    | 55   |    |                                    |
| 5' - 10'                        |                       |                       |                       |                        |  | 0.36                                 | 0.45 | 0.47 | 0.10 | -    | -    | -    | 50   |    |                                    |
| 15'                             |                       |                       |                       |                        |  | 0.51                                 | 0.61 | 0.61 | 0.10 | -    | -    | -    | 45   |    |                                    |
| 20'                             |                       |                       |                       |                        |  | 0.66                                 | 0.81 | 0.80 | 0.10 | -    | -    | -    | 41   |    |                                    |
| 8.5                             |                       | 8.5                   | 8                     | 8 to 12                | 25'  | 0.78                                 | 0.98 | 0.97 | 0.10 | -    | -    | -    | 41   |    |                                    |
| 9.5                             |                       | 9.5                   | 8                     | 12                     | 30'  | 0.84                                 | 1.10 | 1.09 | 0.10 | -    | -    | -    | 41   |    |                                    |
| 8' x 8'                         |                       | 8                     | 8                     | 8                      | 4<br>to<br>12                              | 0.33' - <2'                          | 0.32 | 0.68 | 0.62 | 0.20 | 0.24 | 0.25 | 0.32 | -  |                                    |
|                                 |                       |                       |                       |                        |  | 2' - <3'                             | 0.43 | 0.76 | 0.67 | 0.14 | -    | -    | -    | 65 |                                    |
|                                 | 3' - <5'              |                       |                       |                        |  | 0.38                                 | 0.58 | 0.61 | 0.14 | -    | -    | -    | 65   |    |                                    |
|                                 | 5' - 10'              |                       |                       |                        |  | 0.39                                 | 0.46 | 0.50 | 0.13 | -    | -    | -    | 55   |    |                                    |
|                                 | 15'                   |                       |                       |                        |  | 0.55                                 | 0.64 | 0.65 | 0.10 | -    | -    | -    | 45   |    |                                    |
|                                 | 20'                   |                       |                       |                        |  | 0.71                                 | 0.86 | 0.85 | 0.10 | -    | -    | -    | 45   |    |                                    |
|                                 | 8.5                   | 8.5                   | 8                     | 8 to 12                | 25'  | 0.84                                 | 1.03 | 1.02 | 0.10 | -    | -    | -    | 41   |    |                                    |
|                                 | 9.5                   | 9.5                   | 8                     | 12                     | 30'  | 0.93                                 | 1.15 | 1.15 | 0.10 | -    | -    | -    | 41   |    |                                    |

See General Note 5

**NOTES:**

1. See Sheet 1 for Reinforcing Details and dimension locations.
2. See Sheet 2 for General Notes.
3. See Sheet 14 for Welded Wire Reinforcement Bending Diagram.

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**TABLE 5 - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 9' SPANS**

| SPAN x RISE<br>(S) (R)<br>(Ft.) | SLAB / WALL THICKNESS |                       |                       |                        | DESIGN<br>EARTH COVER<br>ABOVE<br>TOP SLAB | REINFORCEMENT AREAS<br>(sq. in./Ft.) |      |      |               |             |      |      |      | As1 EXT.<br>LENGTH<br>(M)<br>(in.) |      |      |      |   |
|---------------------------------|-----------------------|-----------------------|-----------------------|------------------------|--|--------------------------------------|------|------|---------------|-------------|------|------|------|------------------------------------|------|------|------|---|
|                                 | TOP<br>(Tt)<br>(in.)  | BOT.<br>(Tb)<br>(in.) | SIDE<br>(Tw)<br>(in.) | HAUNCH<br>(H)<br>(in.) |  | As1                                  | As2  | As3  | As4           | As5         | As7  | As8  | As9  |                                    |      |      |      |   |
|                                 |                       |                       |                       |                        |  |                                      |      |      |               |             |      |      |      |                                    |      |      |      |   |
| 9' x 5'                         | 9.5                   | 9.5                   | 9                     | 4<br>to<br>12          | 0.33' - <2'                                | 0.41                                 | 0.62 | 0.53 | 0.22          | 0.23        | 0.34 | 0.38 | -    |                                    |      |      |      |   |
|                                 | 9                     | 9                     | 9                     |                        | 2' - <3'                                   | 0.44                                 | 0.65 | 0.54 | 0.11          | -           | -    | -    | -    | 54                                 |      |      |      |   |
|                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.39                                 | 0.53 | 0.51 | 0.11          | -           | -    | -    | 49   |                                    |      |      |      |   |
|                                 |                       |                       |                       |                        | 5' - 10'                                   | 0.35                                 | 0.42 | 0.44 | 0.11          | -           | -    | -    | 49   |                                    |      |      |      |   |
|                                 |                       |                       |                       |                        | 15'  | 0.50                                 | 0.56 | 0.55 | 0.11          | -           | -    | -    | 44   |                                    |      |      |      |   |
|                                 |                       |                       |                       | 20'                    | 0.65                                       | 0.75                                 | 0.73 | 0.11 | -             | -           | -    | 44   |      |                                    |      |      |      |   |
|                                 | 9.5                   | 9.5                   | 9                     | 8 to<br>12             | 25'  | 0.77                                 | 0.92 | 0.90 | 0.11          | -           | -    | -    | 44   |                                    |      |      |      |   |
|                                 | 10.5                  | 11                    | 9                     |                        | 30'  | 0.81                                 | 1.05 | 1.02 | 0.11          | -           | -    | -    | -    | 44                                 |      |      |      |   |
|                                 |                       |                       |                       |                        | 9' x 6'                                    | 9.5                                  | 9.5  | 9    | 4<br>to<br>12 | 0.33' - <2' | 0.38 | 0.64 | 0.56 | 0.23                               | 0.23 | 0.33 | 0.37 | - |
|                                 |                       |                       |                       |                        |  | 9                                    | 9    | 9    |               | 2' - <3'    | 0.43 | 0.67 | 0.57 | 0.11                               | -    | -    | -    | - |
| 3' - <5'                        |                       |                       |                       |                        |  |                                      |      |      |               | 0.37        | 0.55 | 0.54 | 0.11 | -                                  | -    | -    | 49   |   |
| 5' - 10'                        |                       |                       |                       | 0.35                   |  |                                      |      |      |               | 0.45        | 0.47 | 0.11 | -    | -                                  | -    | 49   |      |   |
| 15'                             | 0.49                  | 0.60                  | 0.59                  | 0.11                   |  |                                      |      |      |               | -           | -    | -    | 44   |                                    |      |      |      |   |
| 20'                             | 0.65                  | 0.80                  | 0.78                  | 0.11                   |  |                                      |      |      | -             | -           | -    | 44   |      |                                    |      |      |      |   |
| 9.5                             | 9.5                   | 9                     | 8 to<br>12            | 25'                    |  | 0.76                                 | 0.98 | 0.95 | 0.11          | -           | -    | -    | 44   |                                    |      |      |      |   |
| 10.5                            | 11                    | 9                     |                       | 30'                    |  | 0.80                                 | 1.10 | 1.08 | 0.11          | -           | -    | -    | -    | 44                                 |      |      |      |   |
|                                 |                       |                       |                       | 9' x 7'                |  | 9.5                                  | 9.5  | 9    | 4<br>to<br>12 | 0.33' - <2' | 0.37 | 0.67 | 0.59 | 0.22                               | 0.23 | 0.32 | 0.37 | - |
|                                 |                       |                       |                       |                        |  | 9                                    | 9    | 9    |               | 2' - <3'    | 0.42 | 0.69 | 0.60 | 0.11                               | -    | -    | -    | - |
|                                 |                       |                       |                       |                        | 3' - <5'                                   |                                      |      |      |               | 0.37        | 0.58 | 0.56 | 0.11 | -                                  | -    | -    | 54   |   |
|                                 |                       |                       | 5' - 10'              |                        | 0.36                                       |                                      |      |      |               | 0.47        | 0.49 | 0.11 | -    | -                                  | -    | 49   |      |   |
| 15'                             | 0.50                  | 0.63                  | 0.63                  |                        | 0.11                                       |                                      |      |      |               | -           | -    | -    | 44   |                                    |      |      |      |   |
| 20'                             | 0.66                  | 0.84                  | 0.80                  |                        | 0.11                                       |                                      |      |      | -             | -           | -    | 44   |      |                                    |      |      |      |   |
| 9.5                             | 9.5                   | 9                     | 8 to<br>12            |                        | 25'  | 0.77                                 | 1.02 | 1.00 | 0.11          | -           | -    | -    | 44   |                                    |      |      |      |   |
| 10.5                            | 11                    | 9                     |                       |                        | 30'  | 0.81                                 | 1.15 | 1.13 | 0.11          | -           | -    | -    | -    | 44                                 |      |      |      |   |
|                                 |                       |                       |                       |                        | 9' x 8'                                    | 9.5                                  | 9.5  | 9    | 4<br>to<br>12 | 0.33' - <2' | 0.37 | 0.68 | 0.61 | 0.22                               | 0.23 | 0.31 | 0.37 | - |
|                                 |                       |                       |                       |                        |  | 9                                    | 9    | 9    |               | 2' - <3'    | 0.42 | 0.71 | 0.62 | 0.11                               | -    | -    | -    | - |
|                                 |                       |                       |                       | 3' - <5'               |  |                                      |      |      |               | 0.37        | 0.60 | 0.59 | 0.11 | -                                  | -    | -    | 59   |   |
|                                 |                       |                       | 5' - 10'              | 0.38                   |  |                                      |      |      |               | 0.49        | 0.51 | 0.11 | -    | -                                  | -    | 54   |      |   |
| 15'                             | 0.53                  | 0.66                  | 0.66                  | 0.11                   |  |                                      |      |      |               | -           | -    | -    | 44   |                                    |      |      |      |   |
| 20'                             | 0.68                  | 0.88                  | 0.87                  | 0.11                   |  |                                      |      |      | -             | -           | -    | 44   |      |                                    |      |      |      |   |
| 9.5                             | 9.5                   | 9                     | 8 to<br>12            | 25'                    |  | 0.81                                 | 1.07 | 1.05 | 0.11          | -           | -    | -    | 44   |                                    |      |      |      |   |
| 10.5                            | 11                    | 9                     |                       | 30'                    |  | 0.86                                 | 1.20 | 1.18 | 0.11          | -           | -    | -    | -    | 44                                 |      |      |      |   |
|                                 |                       |                       |                       | 9' x 9'                |  | 9.5                                  | 9.5  | 9    | 4<br>to<br>12 | 0.33' - <2' | 0.38 | 0.70 | 0.63 | 0.22                               | 0.23 | 0.32 | 0.38 | - |
|                                 |                       |                       |                       |                        |  | 9                                    | 9    | 9    |               | 2' - <3'    | 0.43 | 0.73 | 0.65 | 0.15                               | -    | -    | -    | - |
|                                 |                       |                       |                       |                        | 3' - <5'                                   |                                      |      |      |               | 0.38        | 0.62 | 0.61 | 0.15 | -                                  | -    | -    | 72   |   |
|                                 |                       |                       | 5' - 10'              |                        | 0.41                                       |                                      |      |      |               | 0.50        | 0.53 | 0.14 | -    | -                                  | -    | 59   |      |   |
| 15'                             | 0.57                  | 0.69                  | 0.70                  |                        | 0.12                                       |                                      |      |      |               | -           | -    | -    | 49   |                                    |      |      |      |   |
| 20'                             | 0.73                  | 0.92                  | 0.91                  |                        | 0.11                                       |                                      |      |      | -             | -           | -    | 49   |      |                                    |      |      |      |   |
| 9.5                             | 10                    | 9                     | 8 to<br>12            |                        | 25'  | 0.83                                 | 1.11 | 1.09 | 0.11          | -           | -    | -    | 44   |                                    |      |      |      |   |
| 10.5                            | 11                    | 9                     |                       |                        | 30'  | 0.93                                 | 1.25 | 1.23 | 0.11          | -           | -    | -    | -    | 44                                 |      |      |      |   |

See General Note 5

**TABLE 6 - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 10' SPANS**

| SPAN x RISE<br>(S) (R)<br>(Ft.) | SLAB / WALL THICKNESS |                       |                       |                        | DESIGN<br>EARTH COVER<br>ABOVE<br>TOP SLAB | REINFORCEMENT AREAS<br>(sq. in./Ft.) |      |      |               |             |      |      |      | As1 EXT.<br>LENGTH<br>(M)<br>(in.) |      |      |      |    |
|---------------------------------|-----------------------|-----------------------|-----------------------|------------------------|--|--------------------------------------|------|------|---------------|-------------|------|------|------|------------------------------------|------|------|------|----|
|                                 | TOP<br>(Tt)<br>(in.)  | BOT.<br>(Tb)<br>(in.) | SIDE<br>(Tw)<br>(in.) | HAUNCH<br>(H)<br>(in.) |  | As1                                  | As2  | As3  | As4           | As5         | As7  | As8  | As9  |                                    |      |      |      |    |
|                                 |                       |                       |                       |                        |  |                                      |      |      |               |             |      |      |      |                                    |      |      |      |    |
| 10' x 5'                        | 10                    | 10                    | 10                    | 4<br>to<br>12          | 0.33' - <2'                                | 0.46                                 | 0.62 | 0.52 | 0.24          | 0.24        | 0.41 | 0.45 | -    |                                    |      |      |      |    |
|                                 |                       |                       |                       |                        | 2' - <3'                                   | 0.46                                 | 0.62 | 0.52 | 0.12          | -           | -    | -    | 58   |                                    |      |      |      |    |
|                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.42                                 | 0.54 | 0.50 | 0.12          | -           | -    | -    | 53   |                                    |      |      |      |    |
|                                 |                       |                       |                       |                        | 5' - 10'                                   | 0.38                                 | 0.46 | 0.49 | 0.12          | -           | -    | -    | 52   |                                    |      |      |      |    |
|                                 |                       |                       |                       |                        | 15'  | 0.52                                 | 0.59 | 0.58 | 0.12          | -           | -    | -    | 47   |                                    |      |      |      |    |
|                                 | 10.5                  | 10.5                  | 10                    | 8 to<br>12             | 20'  | 0.69                                 | 0.78 | 0.76 | 0.12          | -           | -    | -    | -    | 47                                 |      |      |      |    |
|                                 |                       |                       |                       |                        | 25'  | 0.81                                 | 0.97 | 0.93 | 0.12          | -           | -    | -    | 47   |                                    |      |      |      |    |
|                                 |                       |                       |                       |                        | 30'  | 0.87                                 | 1.11 | 1.11 | 0.12          | -           | -    | -    | 47   |                                    |      |      |      |    |
|                                 |                       |                       |                       |                        | 10' x 6'                                   | 10                                   | 10   | 10   | 4<br>to<br>12 | 0.33' - <2' | 0.44 | 0.64 | 0.54 | 0.24                               | 0.24 | 0.39 | 0.44 | -  |
|                                 |                       |                       |                       |                        |  |                                      |      |      |               | 2' - <3'    | 0.44 | 0.64 | 0.54 | 0.12                               | -    | -    | -    | 58 |
| 3' - <5'                        | 0.39                  | 0.57                  | 0.52                  | 0.12                   |  |                                      |      |      |               | -           | -    | -    | 52   |                                    |      |      |      |    |
| 5' - 10'                        | 0.37                  | 0.48                  | 0.52                  | 0.12                   |  |                                      |      |      |               | -           | -    | -    | 52   |                                    |      |      |      |    |
| 15'                             | 0.51                  | 0.62                  | 0.61                  | 0.12                   |  |                                      |      |      |               | -           | -    | -    | 47   |                                    |      |      |      |    |
| 10.5                            | 10.5                  | 10                    | 8 to<br>12            | 20'                    |  | 0.67                                 | 0.83 | 0.80 | 0.12          | -           | -    | -    | -    | 47                                 |      |      |      |    |
|                                 |                       |                       |                       | 25'                    |  | 0.79                                 | 1.02 | 0.99 | 0.12          | -           | -    | -    | 47   |                                    |      |      |      |    |
|                                 |                       |                       |                       | 30'                    |  | 0.85                                 | 1.17 | 1.14 | 0.12          | -           | -    | -    | 47   |                                    |      |      |      |    |
|                                 |                       |                       |                       | 10' x 7'               |  | 10                                   | 10   | 10   | 4<br>to<br>12 | 0.33' - <2' | 0.43 | 0.66 | 0.57 | 0.24                               | 0.24 | 0.38 | 0.43 | -  |
|                                 |                       |                       |                       |                        |  |                                      |      |      |               | 2' - <3'    | 0.43 | 0.66 | 0.57 | 0.12                               | -    | -    | -    | 58 |
| 3' - <5'                        | 0.38                  | 0.59                  | 0.55                  |                        | 0.12                                       |                                      |      |      |               | -           | -    | -    | 58   |                                    |      |      |      |    |
| 5' - 10'                        | 0.37                  | 0.50                  | 0.54                  |                        | 0.12                                       |                                      |      |      |               | -           | -    | -    | 52   |                                    |      |      |      |    |
| 15'                             | 0.52                  | 0.66                  | 0.65                  |                        | 0.12                                       |                                      |      |      |               | -           | -    | -    | 47   |                                    |      |      |      |    |
| 10.5                            | 10.5                  | 10                    | 8 to<br>12            |                        | 20'  | 0.67                                 | 0.87 | 0.85 | 0.12          | -           | -    | -    | -    | 47                                 |      |      |      |    |
|                                 |                       |                       |                       |                        | 25'  | 0.79                                 | 1.07 | 1.04 | 0.12          | -           | -    | -    | 47   |                                    |      |      |      |    |
|                                 |                       |                       |                       |                        | 30'  | 0.84                                 | 1.22 | 1.19 | 0.12          | -           | -    | -    | 47   |                                    |      |      |      |    |
|                                 |                       |                       |                       |                        | 10' x 8'                                   | 10                                   | 10   | 10   | 4<br>to<br>12 | 0.33' - <2' | 0.43 | 0.68 | 0.60 | 0.24                               | 0.24 | 0.38 | 0.43 | -  |
|                                 |                       |                       |                       |                        |  |                                      |      |      |               | 2' - <3'    | 0.43 | 0.68 | 0.60 | 0.12                               | -    | -    | -    | 64 |
| 3' - <5'                        | 0.38                  | 0.62                  | 0.57                  | 0.12                   |  |                                      |      |      |               | -           | -    | -    | 58   |                                    |      |      |      |    |
| 5' - 10'                        | 0.38                  | 0.52                  | 0.57                  | 0.12                   |  |                                      |      |      |               | -           | -    | -    | 52   |                                    |      |      |      |    |
| 15'                             | 0.53                  | 0.69                  | 0.68                  | 0.12                   |  |                                      |      |      |               | -           | -    | -    | 47   |                                    |      |      |      |    |
| 10.5                            | 10.5                  | 10                    | 8 to<br>12            | 20'                    |  | 0.68                                 | 0.91 | 0.89 | 0.12          | -           | -    | -    | -    | 47                                 |      |      |      |    |
|                                 |                       |                       |                       | 25'                    |  | 0.81                                 | 1.12 | 1.09 | 0.12          | -           | -    | -    | 47   |                                    |      |      |      |    |
|                                 |                       |                       |                       | 30'                    |  | 0.86                                 | 1.27 | 1.25 | 0.12          | -           | -    | -    | 47   |                                    |      |      |      |    |
|                                 |                       |                       |                       | 10' x 9'               |  | 10                                   | 10   | 10   | 4<br>to<br>12 | 0.33' - <2' | 0.43 | 0.70 | 0.62 | 0.24                               | 0.24 | 0.38 | 0.43 | -  |
|                                 |                       |                       |                       |                        |  |                                      |      |      |               | 2' - <3'    | 0.43 | 0.70 | 0.62 | 0.12                               | -    | -    | -    | 70 |
| 3' - <5'                        | 0.39                  | 0.64                  | 0.60                  |                        | 0.12                                       |                                      |      |      |               | -           | -    | -    | 64   |                                    |      |      |      |    |
| 5' - 10'                        | 0.40                  | 0.54                  | 0.59                  |                        | 0.12                                       |                                      |      |      |               | -           | -    | -    | 58   |                                    |      |      |      |    |
| 15'                             | 0.56                  | 0.72                  | 0.72                  |                        | 0.12                                       |                                      |      |      |               | -           | -    | -    | 52   |                                    |      |      |      |    |
| 10.5                            | 11                    | 10                    | 8 to<br>12            |                        | 20'  | 0.71                                 | 0.95 | 0.94 | 0.12          | -           | -    | -    | -    | 47                                 |      |      |      |    |
|                                 |                       |                       |                       |                        | 25'  | 0.82                                 | 1.15 | 1.13 | 0.12          | -           | -    | -    | 47   |                                    |      |      |      |    |
|                                 |                       |                       |                       |                        | 30'  | 0.90                                 | 1.32 | 1.30 | 0.12          | -           | -    | -    | 47   |                                    |      |      |      |    |
|                                 |                       |                       |                       |                        | 10' x 10'                                  | 10                                   | 10   | 10   | 4<br>to<br>12 | 0.33' - <2' | 0.44 | 0.71 | 0.64 | 0.24                               | 0.24 | 0.38 | 0.44 | -  |
|                                 |                       |                       |                       |                        |  |                                      |      |      |               | 2' - <3'    | 0.44 | 0.71 | 0.64 | 0.17                               | -    | -    | -    | 79 |
| 3' - <5'                        | 0.40                  | 0.65                  | 0.62                  | 0.16                   |  |                                      |      |      |               | -           | -    | -    | 70   |                                    |      |      |      |    |
| 5' - 10'                        | 0.44                  | 0.56                  | 0.61                  | 0.15                   |  |                                      |      |      |               | -           | -    | -    | 64   |                                    |      |      |      |    |
| 15'                             | 0.60                  | 0.75                  | 0.76                  | 0.12                   |  |                                      |      |      |               | -           | -    | -    | 52   |                                    |      |      |      |    |
| 10.5                            | 11                    | 10                    | 8 to<br>12            | 20'                    |  | 0.76                                 | 0.99 | 0.99 | 0.12          | -           | -    | -    | -    | 52                                 |      |      |      |    |
|                                 |                       |                       |                       | 25'                    |  | 0.86                                 | 1.20 | 1.18 | 0.12          | -           | -    | -    | 47   |                                    |      |      |      |    |
|                                 |                       |                       |                       | 30'                    |  | 0.97                                 | 1.36 | 1.35 | 0.13          | -           | -    | -    | 47   |                                    |      |      |      |    |

See General Note 5

- NOTES:  
 1. See Sheet 1 for Reinforcing Details and dimension locations.  
 2. See Sheet 2 for General Notes.  
 3. See Sheet 14 for WWR Bending Diagram.

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**TABLE 7 - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 11' SPANS**

| SPAN x RISE<br>(S)<br>(R)<br>(Ft.) | SLAB / WALL THICKNESS |                       |                       |                        | DESIGN<br>EARTH COVER<br>ABOVE<br>TOP SLAB | REINFORCEMENT AREAS<br>(sq. in./Ft.) |      |      |      |      |      |      |      |    | As1 EXT.<br>LENGTH<br>(M)<br>(in.) |
|------------------------------------|-----------------------|-----------------------|-----------------------|------------------------|--|--------------------------------------|------|------|------|------|------|------|------|----|------------------------------------|
|                                    | TOP<br>(Tt)<br>(in.)  | BOT.<br>(Tb)<br>(in.) | SIDE<br>(Tw)<br>(in.) | HAUNCH<br>(H)<br>(in.) |  | As1                                  | As2  | As3  | As4  | As5  | As7  | As8  | As9  |    |                                    |
|                                    |                       |                       |                       |                        |  |                                      |      |      |      |      |      |      |      |    |                                    |
| 11' x 4'                           | 11                    | 11                    | 11                    | 4                      | 0.33' - <2'                                | 0.51                                 | 0.57 | 0.47 | 0.27 | 0.27 | 0.45 | 0.48 | -    |    |                                    |
|                                    |                       |                       |                       | to                     | 2' - <3'                                   | 0.51                                 | 0.57 | 0.47 | 0.14 | -    | -    | -    | 62   |    |                                    |
|                                    |                       |                       |                       | 12                     | 3' - <5'                                   | 0.48                                 | 0.57 | 0.46 | 0.14 | -    | -    | -    | 62   |    |                                    |
|                                    |                       |                       |                       | 12                     | 5' - 10'                                   | 0.47                                 | 0.50 | 0.50 | 0.14 | -    | -    | -    | 55   |    |                                    |
|                                    |                       |                       |                       | 12                     | 15'  | 0.59                                 | 0.58 | 0.56 | 0.14 | -    | -    | -    | 55   |    |                                    |
|                                    |                       |                       |                       | 12                     | 20'  | 0.77                                 | 0.77 | 0.74 | 0.14 | -    | -    | -    | 55   |    |                                    |
|                                    | 11.5                  | 11.5                  | 11                    | 8 to                   | 25'  | 0.92                                 | 0.95 | 0.91 | 0.14 | -    | -    | -    | 55   |    |                                    |
|                                    | 13                    | 13                    | 11                    | 12                     | 30'  | 0.94                                 | 1.09 | 1.06 | 0.14 | -    | -    | -    | 55   |    |                                    |
|                                    | 11' x 6'              | 11                    | 11                    | 11                     | 4  | 0.33' - <2'                          | 0.45 | 0.62 | 0.52 | 0.27 | 0.27 | 0.41 | 0.45 | -  |                                    |
|                                    |                       |                       |                       |                        | to   | 2' - <3'                             | 0.45 | 0.62 | 0.52 | 0.14 | -    | -    | -    | 62 |                                    |
| 12                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.42                                 | 0.58 | 0.51 | 0.14 | -    | -    | -    | 55   |    |                                    |
| 12                                 |                       |                       |                       |                        | 5' - 10'                                   | 0.43                                 | 0.56 | 0.56 | 0.14 | -    | -    | -    | 55   |    |                                    |
| 12                                 |                       |                       |                       |                        | 15'  | 0.54                                 | 0.65 | 0.64 | 0.14 | -    | -    | -    | 50   |    |                                    |
| 12                                 |                       |                       |                       |                        | 20'  | 0.70                                 | 0.86 | 0.83 | 0.14 | -    | -    | -    | 50   |    |                                    |
| 11.5                               |                       | 11.5                  | 11                    | 8 to                   | 25'  | 0.83                                 | 1.07 | 1.03 | 0.14 | -    | -    | -    | 50   |    |                                    |
| 13                                 |                       | 13                    | 11                    | 12                     | 30'  | 0.85                                 | 1.22 | 1.19 | 0.14 | -    | -    | -    | 50   |    |                                    |
| 11' x 8'                           |                       | 11                    | 11                    | 11                     | 4  | 0.33' - <2'                          | 0.42 | 0.67 | 0.57 | 0.27 | 0.27 | 0.39 | 0.43 | -  |                                    |
|                                    |                       |                       |                       |                        | to   | 2' - <3'                             | 0.43 | 0.67 | 0.57 | 0.14 | -    | -    | -    | 62 |                                    |
|                                    | 12                    |                       |                       |                        | 3' - <5'                                   | 0.39                                 | 0.63 | 0.56 | 0.14 | -    | -    | -    | 62   |    |                                    |
|                                    | 12                    |                       |                       |                        | 5' - 10'                                   | 0.43                                 | 0.60 | 0.61 | 0.14 | -    | -    | -    | 55   |    |                                    |
|                                    | 12                    |                       |                       |                        | 15'  | 0.54                                 | 0.72 | 0.71 | 0.14 | -    | -    | -    | 50   |    |                                    |
|                                    | 12                    |                       |                       |                        | 20'  | 0.70                                 | 0.94 | 0.92 | 0.14 | -    | -    | -    | 50   |    |                                    |
|                                    | 11.5                  | 11.5                  | 11                    | 8 to                   | 25'  | 0.82                                 | 1.16 | 1.13 | 0.14 | -    | -    | -    | 50   |    |                                    |
|                                    | 13                    | 13                    | 11                    | 12                     | 30'  | 0.86                                 | 1.32 | 1.30 | 0.14 | -    | -    | -    | 50   |    |                                    |
|                                    | 11' x 10'             | 11                    | 11                    | 11                     | 4  | 0.33' - <2'                          | 0.44 | 0.71 | 0.62 | 0.27 | 0.27 | 0.38 | 0.44 | -  |                                    |
|                                    |                       |                       |                       |                        | to   | 2' - <3'                             | 0.44 | 0.71 | 0.62 | 0.14 | -    | -    | -    | 75 |                                    |
| 12                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.41                                 | 0.67 | 0.61 | 0.14 | -    | -    | -    | 69   |    |                                    |
| 12                                 |                       |                       |                       |                        | 5' - 10'                                   | 0.47                                 | 0.64 | 0.66 | 0.14 | -    | -    | -    | 62   |    |                                    |
| 12                                 |                       |                       |                       |                        | 15'  | 0.59                                 | 0.78 | 0.78 | 0.14 | -    | -    | -    | 55   |    |                                    |
| 12                                 |                       |                       |                       |                        | 20'  | 0.75                                 | 1.03 | 1.01 | 0.14 | -    | -    | -    | 50   |    |                                    |
| 11.5                               |                       | 12                    | 11                    | 8 to                   | 25'  | 0.85                                 | 1.24 | 1.22 | 0.14 | -    | -    | -    | 50   |    |                                    |
| 13                                 |                       | 13.5                  | 11                    | 12                     | 30'  | 0.91                                 | 1.40 | 1.39 | 0.14 | -    | -    | -    | 50   |    |                                    |
| 11' x 11'                          |                       | 11                    | 11                    | 11                     | 4  | 0.33' - <2'                          | 0.45 | 0.72 | 0.64 | 0.27 | 0.27 | 0.39 | 0.45 | -  |                                    |
|                                    |                       |                       |                       |                        | to   | 2' - <3'                             | 0.45 | 0.72 | 0.64 | 0.18 | -    | -    | -    | 86 |                                    |
|                                    | 12                    |                       |                       |                        | 3' - <5'                                   | 0.42                                 | 0.69 | 0.63 | 0.18 | -    | -    | -    | 75   |    |                                    |
|                                    | 12                    |                       |                       |                        | 5' - 10'                                   | 0.51                                 | 0.66 | 0.69 | 0.16 | -    | -    | -    | 69   |    |                                    |
|                                    | 12                    |                       |                       |                        | 15'  | 0.63                                 | 0.81 | 0.82 | 0.14 | -    | -    | -    | 55   |    |                                    |
|                                    | 12                    |                       |                       |                        | 20'  | 0.80                                 | 1.07 | 1.06 | 0.14 | -    | -    | -    | 55   |    |                                    |
|                                    | 11.5                  | 12                    | 11                    | 8 to                   | 25'  | 0.91                                 | 1.29 | 1.27 | 0.14 | -    | -    | -    | 50   |    |                                    |
|                                    | 13                    | 13.5                  | 11                    | 12                     | 30'  | 0.99                                 | 1.44 | 1.44 | 0.14 | -    | -    | -    | 50   |    |                                    |

See General Note 5

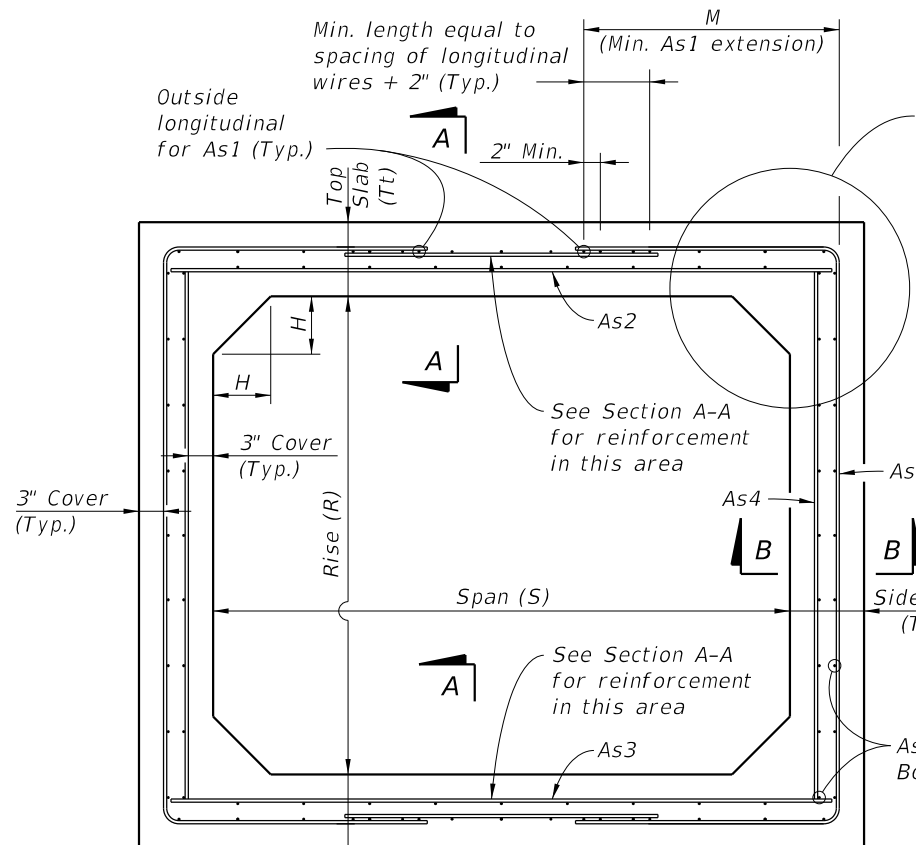
**TABLE 8 - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 12' SPANS**

| SPAN x RISE<br>(S)<br>(R)<br>(Ft.) | SLAB / WALL THICKNESS |                       |                       |                        | DESIGN<br>EARTH COVER<br>ABOVE<br>TOP SLAB | REINFORCEMENT AREAS<br>(sq. in./Ft.) |      |      |      |      |      |      |      |    | As1 EXT.<br>LENGTH<br>(M)<br>(in.) |
|------------------------------------|-----------------------|-----------------------|-----------------------|------------------------|--|--------------------------------------|------|------|------|------|------|------|------|----|------------------------------------|
|                                    | TOP<br>(Tt)<br>(in.)  | BOT.<br>(Tb)<br>(in.) | SIDE<br>(Tw)<br>(in.) | HAUNCH<br>(H)<br>(in.) |  | As1                                  | As2  | As3  | As4  | As5  | As7  | As8  | As9  |    |                                    |
|                                    |                       |                       |                       |                        |  |                                      |      |      |      |      |      |      |      |    |                                    |
| 12' x 4'                           | 12                    | 12                    | 12                    | 4                      | 0.33' - <2'                                | 0.52                                 | 0.57 | 0.45 | 0.29 | 0.29 | 0.47 | 0.49 | -    |    |                                    |
|                                    |                       |                       |                       | to                     | 2' - <3'                                   | 0.52                                 | 0.57 | 0.45 | 0.15 | -    | -    | -    | 73   |    |                                    |
|                                    |                       |                       |                       | 12                     | 3' - <5'                                   | 0.50                                 | 0.54 | 0.45 | 0.15 | -    | -    | -    | 66   |    |                                    |
|                                    |                       |                       |                       | 12                     | 5' - 10'                                   | 0.50                                 | 0.52 | 0.52 | 0.15 | -    | -    | -    | 66   |    |                                    |
|                                    |                       |                       |                       | 12                     | 15'  | 0.63                                 | 0.61 | 0.59 | 0.15 | -    | -    | -    | 59   |    |                                    |
|                                    |                       |                       |                       | 12                     | 20'  | 0.82                                 | 0.81 | 0.77 | 0.15 | -    | -    | -    | 59   |    |                                    |
|                                    | 12.5                  | 12.5                  | 12                    | 8 to                   | 25'  | 0.99                                 | 0.99 | 0.95 | 0.15 | -    | -    | -    | 59   |    |                                    |
|                                    | 14                    | 14                    | 12                    | 12                     | 30'  | 1.03                                 | 1.15 | 1.11 | 0.15 | -    | -    | -    | 59   |    |                                    |
|                                    | 12' x 6'              | 12                    | 12                    | 12                     | 4  | 0.33' - <2'                          | 0.47 | 0.62 | 0.51 | 0.29 | 0.29 | 0.42 | 0.46 | -  |                                    |
|                                    |                       |                       |                       |                        | to   | 2' - <3'                             | 0.47 | 0.62 | 0.51 | 0.15 | -    | -    | -    | 66 |                                    |
| 12                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.45                                 | 0.60 | 0.51 | 0.15 | -    | -    | -    | 59   |    |                                    |
| 12                                 |                       |                       |                       |                        | 5' - 10'                                   | 0.47                                 | 0.59 | 0.59 | 0.15 | -    | -    | -    | 59   |    |                                    |
| 12                                 |                       |                       |                       |                        | 15'  | 0.57                                 | 0.68 | 0.66 | 0.15 | -    | -    | -    | 53   |    |                                    |
| 12                                 |                       |                       |                       |                        | 20'  | 0.74                                 | 0.90 | 0.86 | 0.15 | -    | -    | -    | 53   |    |                                    |
| 12.5                               |                       | 12.5                  | 12                    | 8 to                   | 25'  | 0.88                                 | 1.11 | 1.06 | 0.15 | -    | -    | -    | 53   |    |                                    |
| 14                                 |                       | 14.5                  | 12                    | 12                     | 30'  | 0.92                                 | 1.27 | 1.24 | 0.15 | -    | -    | -    | 53   |    |                                    |
| 12' x 8'                           |                       | 12                    | 12                    | 12                     | 4  | 0.33' - <2'                          | 0.44 | 0.67 | 0.56 | 0.29 | 0.29 | 0.40 | 0.44 | -  |                                    |
|                                    |                       |                       |                       |                        | to   | 2' - <3'                             | 0.44 | 0.67 | 0.56 | 0.15 | -    | -    | -    | 66 |                                    |
|                                    | 12                    |                       |                       |                        | 3' - <5'                                   | 0.41                                 | 0.64 | 0.56 | 0.15 | -    | -    | -    | 59   |    |                                    |
|                                    | 12                    |                       |                       |                        | 5' - 10'                                   | 0.45                                 | 0.63 | 0.64 | 0.15 | -    | -    | -    | 59   |    |                                    |
|                                    | 12                    |                       |                       |                        | 15'  | 0.56                                 | 0.75 | 0.73 | 0.15 | -    | -    | -    | 53   |    |                                    |
|                                    | 12                    |                       |                       |                        | 20'  | 0.72                                 | 0.98 | 0.95 | 0.15 | -    | -    | -    | 53   |    |                                    |
|                                    | 12.5                  | 13                    | 12                    | 8 to                   | 25'  | 0.85                                 | 1.20 | 1.16 | 0.15 | -    | -    | -    | 53   |    |                                    |
|                                    | 14                    | 14.5                  | 12                    | 12                     | 30'  | 0.89                                 | 1.38 | 1.35 | 0.15 | -    | -    | -    | 53   |    |                                    |
|                                    | 12' x 10'             | 12                    | 12                    | 12                     | 4  | 0.33' - <2'                          | 0.44 | 0.71 | 0.60 | 0.29 | 0.29 | 0.39 | 0.44 | -  |                                    |
|                                    |                       |                       |                       |                        | to   | 2' - <3'                             | 0.44 | 0.71 | 0.60 | 0.15 | -    | -    | -    | 73 |                                    |
| 12                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.42                                 | 0.68 | 0.60 | 0.15 | -    | -    | -    | 66   |    |                                    |
| 12                                 |                       |                       |                       |                        | 5' - 10'                                   | 0.47                                 | 0.67 | 0.69 | 0.15 | -    | -    | -    | 59   |    |                                    |
| 12                                 |                       |                       |                       |                        | 15'  | 0.59                                 | 0.81 | 0.81 | 0.15 | -    | -    | -    | 53   |    |                                    |
| 12                                 |                       |                       |                       |                        | 20'  | 0.75                                 | 1.06 | 1.04 | 0.15 | -    | -    | -    | 53   |    |                                    |
| 12.5                               |                       | 13                    | 12                    | 8 to                   | 25'  | 0.87                                 | 1.30 | 1.26 | 0.15 | -    | -    | -    | 53   |    |                                    |
| 14                                 |                       | 14.5                  | 12                    | 12                     | 30'  | 0.92                                 | 1.47 | 1.45 | 0.15 | -    | -    | -    | 53   |    |                                    |
| 12' x 12'                          |                       | 12                    | 12                    | 12                     | 4  | 0.33' - <2'                          | 0.46 | 0.74 | 0.64 | 0.29 | 0.29 | 0.40 | 0.46 | -  |                                    |
|                                    |                       |                       |                       |                        | to   | 2' - <3'                             | 0.46 | 0.74 | 0.64 | 0.20 | -    | -    | -    | 93 |                                    |
|                                    | 12                    |                       |                       |                        | 3' - <5'                                   | 0.42                                 | 0.72 | 0.64 | 0.20 | -    | -    | -    | 80   |    |                                    |
|                                    | 12                    |                       |                       |                        | 5' - 10'                                   | 0.54                                 | 0.71 | 0.74 | 0.18 | -    | -    | -    | 73   |    |                                    |
|                                    | 12                    |                       |                       |                        | 15'  | 0.66                                 | 0.87 | 0.89 | 0.15 | -    | -    | -    | 59   |    |                                    |
|                                    | 12                    |                       |                       |                        | 20'  | 0.83                                 | 1.14 | 1.13 | 0.15 | -    | -    | -    | 59   |    |                                    |
|                                    | 12.5                  | 13                    | 12                    | 8 to                   | 25'  | 0.96                                 | 1.39 | 1.37 | 0.15 | -    | -    | -    | 53   |    |                                    |
|                                    | 14                    | 14.5                  | 12.5                  | 12                     | 30'  | 1.05                                 | 1.56 | 1.56 | 0.15 | -    | -    | -    | 53   |    |                                    |

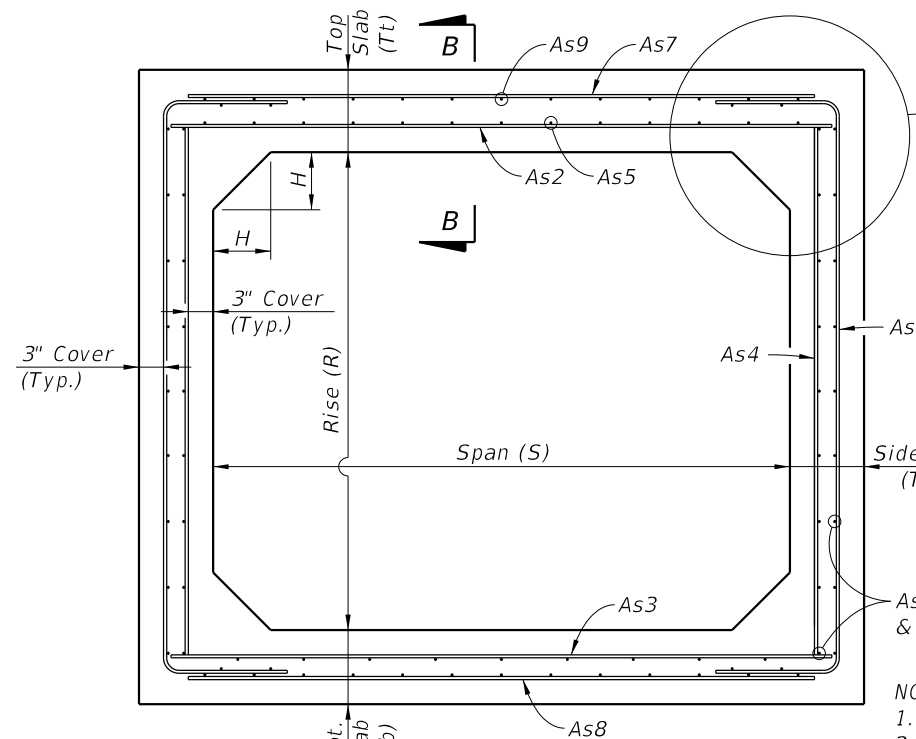
See General Note 5

**NOTES:**

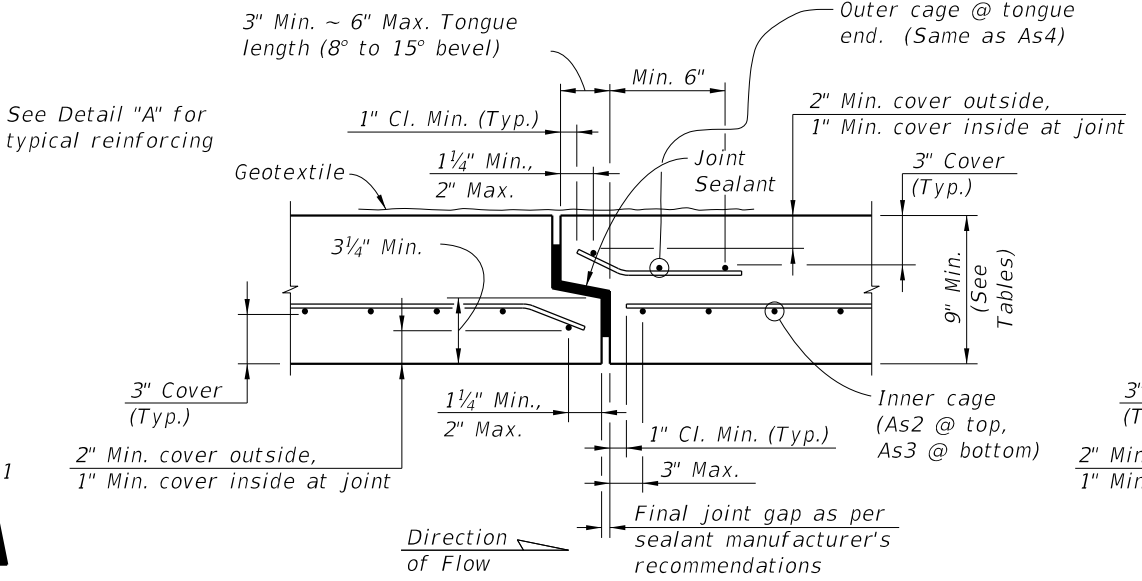
1. See Sheet 1 for Reinforcing Details and dimension locations.
2. See Sheet 2 for General Notes.
3. See Sheet 14 for Welded Wire Reinforcement Bending Diagram.



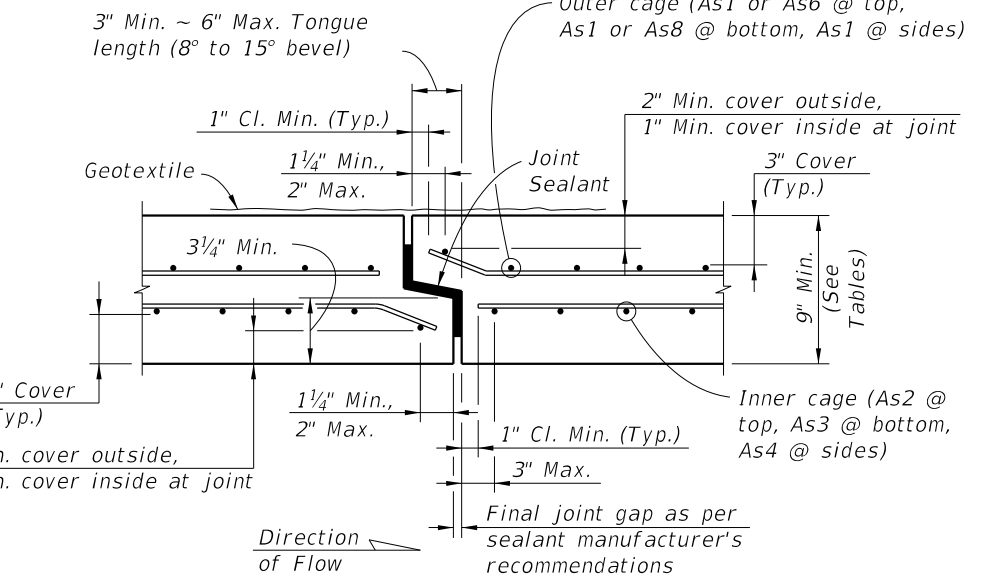
**TYPICAL BOX SECTION (TYPE 2)  
DESIGN EARTH COVER 2' OR GREATER  
(Option 1 Reinforcing Configuration Shown)**



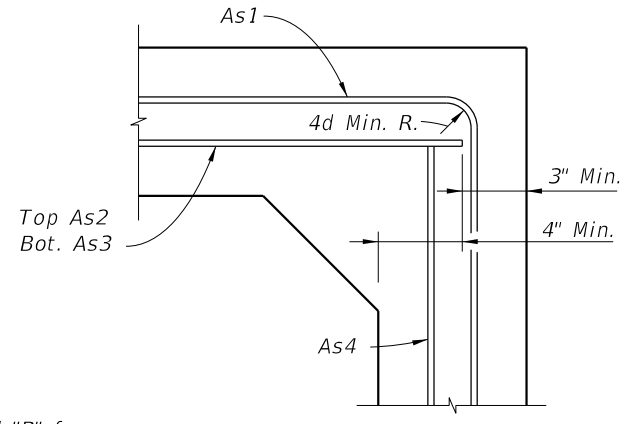
**TYPICAL BOX SECTION (TYPE 1)  
DESIGN EARTH COVER LESS THAN 2'  
(Option 1 Reinforcing Configuration Shown)**



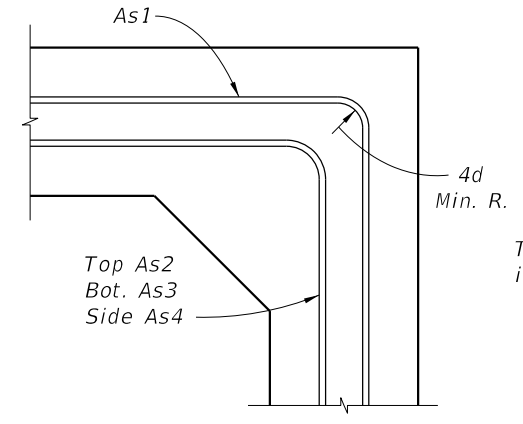
**SECTION A-A**



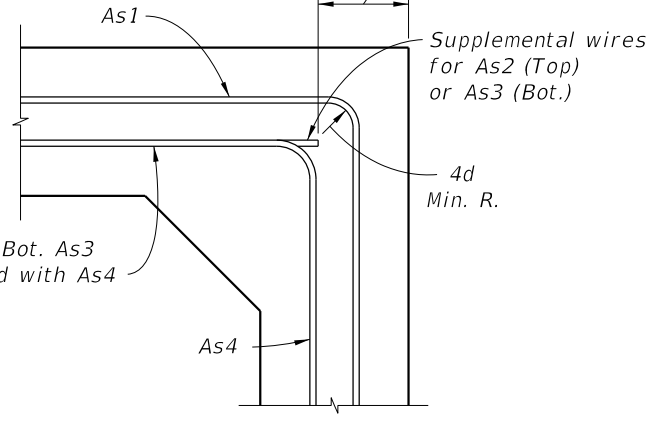
**SECTION B-B  
TYPICAL SECTION THRU JOINT**



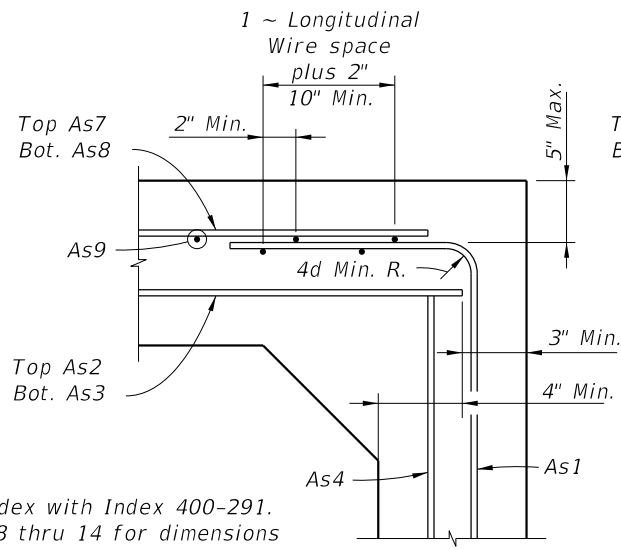
**DETAIL "A"  
(OPTION 1)**



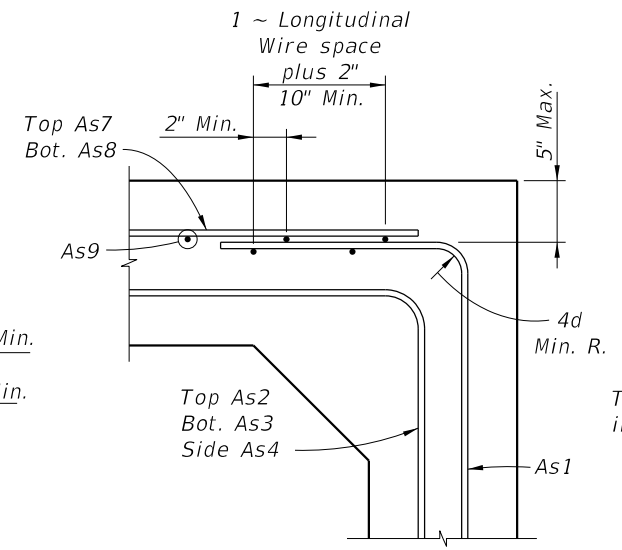
**DETAIL "A"  
(OPTION 2)**



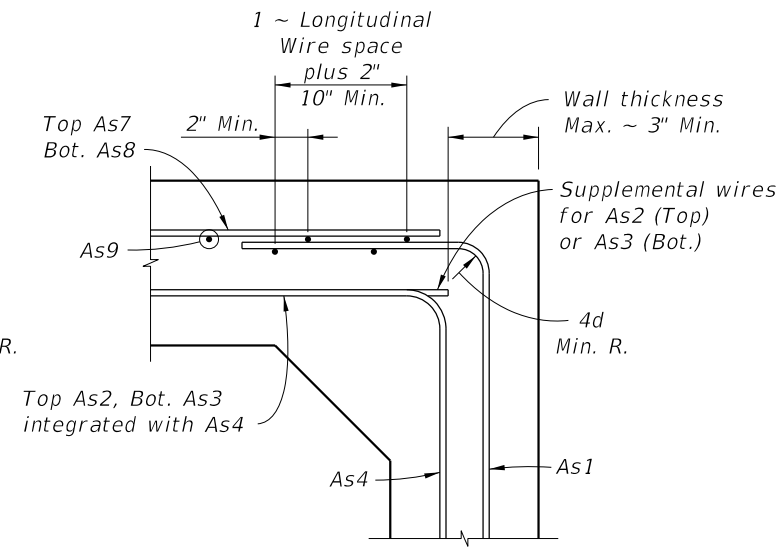
**DETAIL "A"  
(OPTION 3)**



**DETAIL "B"  
(OPTION 1)**



**DETAIL "B"  
(OPTION 2)**



**DETAIL "B"  
(OPTION 3)**

- NOTES:**  
1. Work this Index with Index 400-291.  
2. See Sheets 8 thru 14 for dimensions and areas of reinforcement.

**STANDARD PRECAST BOX CULVERT WITH 3" CONCRETE COVER**

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|                           |          |              |  |                              |  |                  |                  |
|---------------------------|----------|--------------|--|------------------------------|--|------------------|------------------|
| LAST REVISION<br>11/01/23 | REVISION | DESCRIPTION: |  | FY 2026-27<br>STANDARD PLANS | STANDARD PRECAST CONCRETE BOX CULVERTS | INDEX<br>400-292 | SHEET<br>7 of 14 |
|---------------------------|----------|--------------|--|------------------------------|--|------------------|------------------|

**TABLE 9A - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 3' & 4' SPANS**

| SPAN x RISE<br>(S) (R)<br>(Ft.) | SLAB / WALL THICKNESS |                       |                       |                        | DESIGN<br>EARTH COVER<br>ABOVE<br>TOP SLAB | REINFORCEMENT AREAS<br>(sq. in./Ft.) |      |      |              |             |      |      |      |      | As1 EXT.<br>LENGTH<br>(M)<br>(in.) |      |      |    |
|---------------------------------|-----------------------|-----------------------|-----------------------|------------------------|--|--------------------------------------|------|------|--------------|-------------|------|------|------|------|------------------------------------|------|------|----|
|                                 | TOP<br>(Tt)<br>(in.)  | BOT.<br>(Tb)<br>(in.) | SIDE<br>(Tw)<br>(in.) | HAUNCH<br>(H)<br>(in.) |  | As1                                  | As2  | As3  | As4          | As5         | As7  | As8  | As9  |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        |  | See General Note 5                   |      |      |              |             |      |      |      |      |                                    |      |      |    |
| 3' x 3'                         | 9                     | 9                     | 9                     | 4<br>to<br>8           | 0.33' - <2'                                | 0.22                                 | 0.24 | 0.22 | 0.22         | 0.22        | 0.22 | 0.22 | -    |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 2' - <3'                                   | 0.11                                 | 0.23 | 0.22 | 0.11         | -           | -    | -    | 31   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.11                                 | 0.22 | 0.22 | 0.11         | -           | -    | -    | 31   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 5' - 10'                                   | 0.11                                 | 0.22 | 0.22 | 0.11         | -           | -    | -    | 31   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 15'  | 0.11                                 | 0.22 | 0.22 | 0.11         | -           | -    | -    | 31   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 20'  | 0.13                                 | 0.22 | 0.22 | 0.11         | -           | -    | -    | 31   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 25'  | 0.16                                 | 0.22 | 0.22 | 0.11         | -           | -    | -    | 31   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 30'  | 0.19                                 | 0.24 | 0.25 | 0.11         | -           | -    | -    | 31   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 35'  | 0.22                                 | 0.28 | 0.29 | 0.11         | -           | -    | -    | 31   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 4' x 3'                                    | 9                                    | 9    | 9    | 4<br>to<br>8 | 0.33' - <2' | 0.22 | 0.32 | 0.24 | 0.22 | 0.22                               | 0.22 | 0.22 | -  |
| 2' - <3'                        | 0.17                  | 0.31                  | 0.24                  | 0.11                   |  |                                      |      |      |              | -           | -    | -    | 38   |      |                                    |      |      |    |
| 3' - <5'                        | 0.13                  | 0.22                  | 0.22                  | 0.11                   |  |                                      |      |      |              | -           | -    | -    | 38   |      |                                    |      |      |    |
| 5' - 10'                        | 0.13                  | 0.22                  | 0.22                  | 0.11                   |  |                                      |      |      |              | -           | -    | -    | 38   |      |                                    |      |      |    |
| 15'                             | 0.17                  | 0.22                  | 0.22                  | 0.11                   |  |                                      |      |      |              | -           | -    | -    | 38   |      |                                    |      |      |    |
| 20'                             | 0.23                  | 0.26                  | 0.27                  | 0.11                   |  |                                      |      |      |              | -           | -    | -    | 38   |      |                                    |      |      |    |
| 25'                             | 0.28                  | 0.32                  | 0.34                  | 0.11                   |  |                                      |      |      |              | -           | -    | -    | 38   |      |                                    |      |      |    |
| 30'                             | 0.33                  | 0.39                  | 0.40                  | 0.11                   |  |                                      |      |      |              | -           | -    | -    | 38   |      |                                    |      |      |    |
| 4' x 4'                         | 9                     | 9                     | 9                     | 4<br>to<br>8           |  |                                      |      |      |              | 0.33' - <2' | 0.22 | 0.34 | 0.26 | 0.22 | 0.22                               | 0.22 | 0.22 | -  |
|                                 |                       |                       |                       |                        |  |                                      |      |      |              | 2' - <3'    | 0.17 | 0.33 | 0.26 | 0.11 | -                                  | -    | -    | 38 |
|                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.13                                 | 0.22 | 0.22 | 0.11         | -           | -    | -    | 38   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 5' - 10'                                   | 0.14                                 | 0.22 | 0.22 | 0.11         | -           | -    | -    | 38   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 15'  | 0.19                                 | 0.22 | 0.23 | 0.11         | -           | -    | -    | 38   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 20'  | 0.24                                 | 0.28 | 0.30 | 0.11         | -           | -    | -    | 38   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 25'  | 0.29                                 | 0.36 | 0.37 | 0.11         | -           | -    | -    | 38   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 30'  | 0.34                                 | 0.43 | 0.45 | 0.11         | -           | -    | -    | 38   |      |                                    |      |      |    |

**TABLE 9B - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 3' & 4' SPANS**

| SPAN x RISE<br>(S) (R)<br>(Ft.) | SLAB / WALL THICKNESS |                       |                       |                        | DESIGN<br>EARTH COVER<br>ABOVE<br>TOP SLAB | REINFORCEMENT AREAS<br>(sq. in./Ft.) |      |      |              |             |      |      |      |      | As1 EXT.<br>LENGTH<br>(M)<br>(in.) |      |      |    |
|---------------------------------|-----------------------|-----------------------|-----------------------|------------------------|--|--------------------------------------|------|------|--------------|-------------|------|------|------|------|------------------------------------|------|------|----|
|                                 | TOP<br>(Tt)<br>(in.)  | BOT.<br>(Tb)<br>(in.) | SIDE<br>(Tw)<br>(in.) | HAUNCH<br>(H)<br>(in.) |  | As1                                  | As2  | As3  | As4          | As5         | As7  | As8  | As9  |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        |  | See General Note 5                   |      |      |              |             |      |      |      |      |                                    |      |      |    |
| 3' x 3'                         | 10                    | 10                    | 10                    | 4<br>to<br>8           | 0.33' - <2'                                | 0.24                                 | 0.24 | 0.24 | 0.24         | 0.24        | 0.24 | 0.24 | -    |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 2' - <3'                                   | 0.12                                 | 0.24 | 0.24 | 0.24         | -           | -    | -    | 31   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.12                                 | 0.24 | 0.24 | 0.24         | -           | -    | -    | 31   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 5' - 10'                                   | 0.12                                 | 0.24 | 0.24 | 0.24         | -           | -    | -    | 31   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 15'  | 0.12                                 | 0.24 | 0.24 | 0.24         | -           | -    | -    | 31   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 20'  | 0.12                                 | 0.24 | 0.24 | 0.24         | -           | -    | -    | 31   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 25'  | 0.13                                 | 0.24 | 0.24 | 0.24         | -           | -    | -    | 31   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 30'  | 0.15                                 | 0.24 | 0.24 | 0.12         | -           | -    | -    | 31   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 35'  | 0.18                                 | 0.24 | 0.24 | 0.12         | -           | -    | -    | 31   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 4' x 3'                                    | 10                                   | 10   | 10   | 4<br>to<br>8 | 0.33' - <2' | 0.24 | 0.26 | 0.24 | 0.24 | 0.24                               | 0.24 | 0.24 | -  |
| 2' - <3'                        | 0.14                  | 0.26                  | 0.24                  | 0.12                   |  |                                      |      |      |              | -           | -    | -    | 38   |      |                                    |      |      |    |
| 3' - <5'                        | 0.12                  | 0.24                  | 0.24                  | 0.12                   |  |                                      |      |      |              | -           | -    | -    | 38   |      |                                    |      |      |    |
| 5' - 10'                        | 0.12                  | 0.24                  | 0.24                  | 0.12                   |  |                                      |      |      |              | -           | -    | -    | 38   |      |                                    |      |      |    |
| 15'                             | 0.14                  | 0.24                  | 0.24                  | 0.12                   |  |                                      |      |      |              | -           | -    | -    | 38   |      |                                    |      |      |    |
| 20'                             | 0.18                  | 0.24                  | 0.24                  | 0.12                   |  |                                      |      |      |              | -           | -    | -    | 38   |      |                                    |      |      |    |
| 25'                             | 0.22                  | 0.26                  | 0.27                  | 0.12                   |  |                                      |      |      |              | -           | -    | -    | 38   |      |                                    |      |      |    |
| 30'                             | 0.26                  | 0.31                  | 0.32                  | 0.12                   |  |                                      |      |      |              | -           | -    | -    | 38   |      |                                    |      |      |    |
| 4' x 4'                         | 10                    | 10                    | 10                    | 4<br>to<br>8           |  |                                      |      |      |              | 0.33' - <2' | 0.24 | 0.28 | 0.24 | 0.24 | 0.24                               | 0.24 | 0.24 | -  |
|                                 |                       |                       |                       |                        |  |                                      |      |      |              | 2' - <3'    | 0.14 | 0.28 | 0.24 | 0.12 | -                                  | -    | -    | 38 |
|                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.12                                 | 0.24 | 0.24 | 0.12         | -           | -    | -    | 38   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 5' - 10'                                   | 0.12                                 | 0.24 | 0.24 | 0.12         | -           | -    | -    | 38   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 15'  | 0.15                                 | 0.24 | 0.24 | 0.12         | -           | -    | -    | 38   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 20'  | 0.19                                 | 0.24 | 0.24 | 0.12         | -           | -    | -    | 38   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 25'  | 0.23                                 | 0.28 | 0.30 | 0.12         | -           | -    | -    | 38   |      |                                    |      |      |    |
|                                 |                       |                       |                       |                        | 30'  | 0.27                                 | 0.34 | 0.35 | 0.12         | -           | -    | -    | 38   |      |                                    |      |      |    |

**NOTES:**

1. See Sheet 2 for General Notes.
2. See Sheet 7 for Reinforcing Details and dimension locations.
3. See Sheet 14 for WWR Bending Diagrams.

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| TABLE 10A - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 5' & 6' SPANS |                       |                       |                       |                        |  |                                      |      |      |      |      |      |      |     |                                    |
|---|-----------------------|-----------------------|-----------------------|------------------------|--|--------------------------------------|------|------|------|------|------|------|-----|------------------------------------|
| SPAN x RISE<br>(S) (R)<br>(Ft.)   | SLAB / WALL THICKNESS |                       |                       |                        | DESIGN<br>EARTH COVER<br>ABOVE<br>TOP SLAB | REINFORCEMENT AREAS<br>(sq. in./Ft.) |      |      |      |      |      |      |     | As1 EXT.<br>LENGTH<br>(M)<br>(in.) |
|   | TOP<br>(Tt)<br>(in.)  | BOT.<br>(Tb)<br>(in.) | SIDE<br>(Tw)<br>(in.) | HAUNCH<br>(H)<br>(in.) |  | As1                                  | As2  | As3  | As4  | As5  | As7  | As8  | As9 |                                    |
| 5' x 3'   | 9                     | 9                     | 9                     | 4                      | 0.33' - <2'                                | 0.27                                 | 0.39 | 0.37 | 0.22 | 0.22 | 0.22 | 0.27 | -   |                                    |
|   |                       |                       |                       |                        | 2' - <3'                                   | 0.26                                 | 0.39 | 0.37 | 0.11 | -    | -    | -    | 45  |                                    |
|   |                       |                       |                       |                        | 3' - <5'                                   | 0.19                                 | 0.24 | 0.25 | 0.11 | -    | -    | -    | 36  |                                    |
|   |                       |                       |                       |                        | 5' - 10'                                   | 0.20                                 | 0.22 | 0.22 | 0.11 | -    | -    | -    | 36  |                                    |
|   |                       |                       |                       | 8                      | 15'  | 0.28                                 | 0.28 | 0.30 | 0.11 | -    | -    | -    | 35  |                                    |
|   |                       |                       |                       |                        | 20'  | 0.37                                 | 0.38 | 0.39 | 0.11 | -    | -    | -    | 35  |                                    |
|   |                       |                       |                       |                        | 25'  | 0.45                                 | 0.48 | 0.49 | 0.11 | -    | -    | -    | 35  |                                    |
|   |                       |                       |                       |                        | 30'  | 0.54                                 | 0.58 | 0.59 | 0.11 | -    | -    | -    | 35  |                                    |
| 5' x 4'   | 9                     | 9                     | 9                     | 4                      | 0.33' - <2'                                | 0.26                                 | 0.42 | 0.39 | 0.22 | 0.22 | 0.22 | 0.26 | -   |                                    |
|   |                       |                       |                       |                        | 2' - <3'                                   | 0.26                                 | 0.42 | 0.39 | 0.11 | -    | -    | -    | 45  |                                    |
|   |                       |                       |                       |                        | 3' - <5'                                   | 0.19                                 | 0.26 | 0.27 | 0.11 | -    | -    | -    | 45  |                                    |
|   |                       |                       |                       |                        | 5' - 10'                                   | 0.20                                 | 0.22 | 0.23 | 0.11 | -    | -    | -    | 36  |                                    |
|   |                       |                       |                       | 8                      | 15'  | 0.27                                 | 0.31 | 0.33 | 0.11 | -    | -    | -    | 35  |                                    |
|   |                       |                       |                       |                        | 20'  | 0.36                                 | 0.42 | 0.43 | 0.11 | -    | -    | -    | 35  |                                    |
|   |                       |                       |                       |                        | 25'  | 0.44                                 | 0.52 | 0.54 | 0.11 | -    | -    | -    | 35  |                                    |
|   |                       |                       |                       |                        | 30'  | 0.53                                 | 0.63 | 0.65 | 0.11 | -    | -    | -    | 35  |                                    |
| 5' x 5'   | 9                     | 9                     | 9                     | 4                      | 0.33' - <2'                                | 0.27                                 | 0.44 | 0.42 | 0.22 | 0.22 | 0.22 | 0.27 | -   |                                    |
|   |                       |                       |                       |                        | 2' - <3'                                   | 0.27                                 | 0.44 | 0.42 | 0.11 | -    | -    | -    | 45  |                                    |
|   |                       |                       |                       |                        | 3' - <5'                                   | 0.20                                 | 0.27 | 0.28 | 0.11 | -    | -    | -    | 45  |                                    |
|   |                       |                       |                       |                        | 5' - 10'                                   | 0.22                                 | 0.23 | 0.26 | 0.11 | -    | -    | -    | 45  |                                    |
|   |                       |                       |                       | 8                      | 15'  | 0.30                                 | 0.34 | 0.36 | 0.11 | -    | -    | -    | 36  |                                    |
|   |                       |                       |                       |                        | 20'  | 0.38                                 | 0.45 | 0.47 | 0.11 | -    | -    | -    | 35  |                                    |
|   |                       |                       |                       |                        | 25'  | 0.47                                 | 0.56 | 0.59 | 0.11 | -    | -    | -    | 35  |                                    |
|   |                       |                       |                       |                        | 30'  | 0.55                                 | 0.68 | 0.71 | 0.11 | -    | -    | -    | 35  |                                    |
| 6' x 3'   | 9                     | 9                     | 9                     | 4                      | 0.33' - <2'                                | 0.34                                 | 0.47 | 0.42 | 0.22 | 0.22 | 0.25 | 0.34 | -   |                                    |
|   |                       |                       |                       |                        | 2' - <3'                                   | 0.34                                 | 0.47 | 0.42 | 0.11 | -    | -    | -    | 43  |                                    |
|   |                       |                       |                       |                        | 3' - <5'                                   | 0.27                                 | 0.31 | 0.32 | 0.11 | -    | -    | -    | 39  |                                    |
|   |                       |                       |                       |                        | 5' - 10'                                   | 0.29                                 | 0.26 | 0.28 | 0.11 | -    | -    | -    | 39  |                                    |
|   |                       |                       |                       | 12                     | 15'  | 0.42                                 | 0.39 | 0.40 | 0.11 | -    | -    | -    | 38  |                                    |
|   |                       |                       |                       |                        | 20'  | 0.55                                 | 0.52 | 0.53 | 0.11 | -    | -    | -    | 38  |                                    |
|   |                       |                       |                       |                        | 25'  | 0.68                                 | 0.66 | 0.67 | 0.11 | -    | -    | -    | 38  |                                    |
|   |                       |                       |                       |                        | 30'  | 0.82                                 | 0.81 | 0.82 | 0.11 | -    | -    | -    | 38  |                                    |
| 6' x 4'   | 9                     | 9                     | 9                     | 4                      | 0.33' - <2'                                | 0.33                                 | 0.50 | 0.46 | 0.22 | 0.22 | 0.23 | 0.33 | -   |                                    |
|   |                       |                       |                       |                        | 2' - <3'                                   | 0.33                                 | 0.50 | 0.46 | 0.11 | -    | -    | -    | 43  |                                    |
|   |                       |                       |                       |                        | 3' - <5'                                   | 0.27                                 | 0.33 | 0.35 | 0.11 | -    | -    | -    | 39  |                                    |
|   |                       |                       |                       |                        | 5' - 10'                                   | 0.28                                 | 0.29 | 0.31 | 0.11 | -    | -    | -    | 39  |                                    |
|   |                       |                       |                       | 12                     | 15'  | 0.40                                 | 0.43 | 0.45 | 0.11 | -    | -    | -    | 38  |                                    |
|   |                       |                       |                       |                        | 20'  | 0.52                                 | 0.57 | 0.59 | 0.11 | -    | -    | -    | 38  |                                    |
|   |                       |                       |                       |                        | 25'  | 0.65                                 | 0.73 | 0.74 | 0.11 | -    | -    | -    | 38  |                                    |
|   |                       |                       |                       |                        | 30'  | 0.78                                 | 0.88 | 0.90 | 0.11 | -    | -    | -    | 38  |                                    |
| 6' x 5'   | 9                     | 9                     | 9                     | 4                      | 0.33' - <2'                                | 0.33                                 | 0.52 | 0.49 | 0.22 | 0.22 | 0.23 | 0.33 | -   |                                    |
|   |                       |                       |                       |                        | 2' - <3'                                   | 0.33                                 | 0.52 | 0.49 | 0.11 | -    | -    | -    | 43  |                                    |
|   |                       |                       |                       |                        | 3' - <5'                                   | 0.27                                 | 0.35 | 0.37 | 0.11 | -    | -    | -    | 43  |                                    |
|   |                       |                       |                       |                        | 5' - 10'                                   | 0.29                                 | 0.31 | 0.34 | 0.11 | -    | -    | -    | 39  |                                    |
|   |                       |                       |                       | 12                     | 15'  | 0.41                                 | 0.46 | 0.49 | 0.11 | -    | -    | -    | 38  |                                    |
|   |                       |                       |                       |                        | 20'  | 0.53                                 | 0.62 | 0.64 | 0.11 | -    | -    | -    | 38  |                                    |
|   |                       |                       |                       |                        | 25'  | 0.66                                 | 0.78 | 0.80 | 0.11 | -    | -    | -    | 38  |                                    |
|   |                       |                       |                       |                        | 30'  | 0.78                                 | 0.95 | 0.97 | 0.11 | -    | -    | -    | 38  |                                    |
| 6' x 6'   | 9                     | 9                     | 9                     | 4                      | 0.33' - <2'                                | 0.34                                 | 0.55 | 0.51 | 0.22 | 0.22 | 0.24 | 0.34 | -   |                                    |
|   |                       |                       |                       |                        | 2' - <3'                                   | 0.34                                 | 0.54 | 0.51 | 0.11 | -    | -    | -    | 52  |                                    |
|   |                       |                       |                       |                        | 3' - <5'                                   | 0.29                                 | 0.37 | 0.39 | 0.11 | -    | -    | -    | 52  |                                    |
|   |                       |                       |                       |                        | 5' - 10'                                   | 0.32                                 | 0.34 | 0.37 | 0.11 | -    | -    | -    | 43  |                                    |
|   |                       |                       |                       | 12                     | 15'  | 0.44                                 | 0.50 | 0.53 | 0.11 | -    | -    | -    | 39  |                                    |
|   |                       |                       |                       |                        | 20'  | 0.57                                 | 0.66 | 0.70 | 0.11 | -    | -    | -    | 39  |                                    |
|   |                       |                       |                       |                        | 25'  | 0.70                                 | 0.84 | 0.87 | 0.11 | -    | -    | -    | 38  |                                    |
|   |                       |                       |                       |                        | 30'  | 0.83                                 | 1.02 | 1.05 | 0.11 | -    | -    | -    | 38  |                                    |

See General Note 5

See General Note 5

| TABLE 10B - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 5' & 6' SPANS |                       |                       |                       |                        |  |                                      |      |      |      |      |      |      |     |                                    |
|---|-----------------------|-----------------------|-----------------------|------------------------|--|--------------------------------------|------|------|------|------|------|------|-----|------------------------------------|
| SPAN x RISE<br>(S) (R)<br>(Ft.)   | SLAB / WALL THICKNESS |                       |                       |                        | DESIGN<br>EARTH COVER<br>ABOVE<br>TOP SLAB | REINFORCEMENT AREAS<br>(sq. in./Ft.) |      |      |      |      |      |      |     | As1 EXT.<br>LENGTH<br>(M)<br>(in.) |
|   | TOP<br>(Tt)<br>(in.)  | BOT.<br>(Tb)<br>(in.) | SIDE<br>(Tw)<br>(in.) | HAUNCH<br>(H)<br>(in.) |  | As1                                  | As2  | As3  | As4  | As5  | As7  | As8  | As9 |                                    |
| 5' x 3'   | 10                    | 10                    | 10                    | 4                      | 0.33' - <2'                                | 0.24                                 | 0.33 | 0.32 | 0.24 | 0.24 | 0.24 | 0.24 | -   |                                    |
|   |                       |                       |                       |                        | 2' - <3'                                   | 0.22                                 | 0.33 | 0.32 | 0.12 | -    | -    | -    | 45  |                                    |
|   |                       |                       |                       |                        | 3' - <5'                                   | 0.16                                 | 0.24 | 0.24 | 0.12 | -    | -    | -    | 36  |                                    |
|   |                       |                       |                       |                        | 5' - 10'                                   | 0.16                                 | 0.24 | 0.24 | 0.12 | -    | -    | -    | 36  |                                    |
|   |                       |                       |                       | 12                     | 15'  | 0.23                                 | 0.24 | 0.24 | 0.12 | -    | -    | -    | 35  |                                    |
|   |                       |                       |                       |                        | 20'  | 0.29                                 | 0.30 | 0.31 | 0.12 | -    | -    | -    | 35  |                                    |
|   |                       |                       |                       |                        | 25'  | 0.36                                 | 0.38 | 0.39 | 0.12 | -    | -    | -    | 35  |                                    |
|   |                       |                       |                       |                        | 30'  | 0.43                                 | 0.46 | 0.47 | 0.12 | -    | -    | -    | 35  |                                    |
| 5' x 4'   | 10                    | 10                    | 10                    | 4                      | 0.33' - <2'                                | 0.24                                 | 0.35 | 0.34 | 0.24 | 0.24 | 0.24 | 0.24 | -   |                                    |
|   |                       |                       |                       |                        | 2' - <3'                                   | 0.22                                 | 0.35 | 0.34 | 0.12 | -    | -    | -    | 45  |                                    |
|   |                       |                       |                       |                        | 3' - <5'                                   | 0.15                                 | 0.24 | 0.24 | 0.12 | -    | -    | -    | 45  |                                    |
|   |                       |                       |                       |                        | 5' - 10'                                   | 0.16                                 | 0.24 | 0.24 | 0.12 | -    | -    | -    | 36  |                                    |
|   |                       |                       |                       | 12                     | 15'  | 0.22                                 | 0.25 | 0.27 | 0.12 | -    | -    | -    | 35  |                                    |
|   |                       |                       |                       |                        | 20'  | 0.29                                 | 0.33 | 0.34 | 0.12 | -    | -    | -    | 35  |                                    |
|   |                       |                       |                       |                        | 25'  | 0.36                                 | 0.41 | 0.43 | 0.12 | -    | -    | -    | 35  |                                    |
|   |                       |                       |                       |                        | 30'  | 0.42                                 | 0.50 | 0.51 | 0.12 | -    | -    | -    | 35  |                                    |
| 5' x 5'   | 10                    | 10                    | 10                    | 4                      | 0.33' - <2'                                | 0.24                                 | 0.37 | 0.36 | 0.24 | 0.24 | 0.24 | 0.24 | -   |                                    |
|   |                       |                       |                       |                        | 2' - <3'                                   | 0.21                                 | 0.37 | 0.36 | 0.12 | -    | -    | -    | 45  |                                    |
|   |                       |                       |                       |                        | 3' - <5'                                   | 0.16                                 | 0.24 | 0.25 | 0.12 | -    | -    | -    | 45  |                                    |
|   |                       |                       |                       |                        | 5' - 10'                                   | 0.17                                 | 0.24 | 0.24 | 0.12 | -    | -    | -    | 45  |                                    |
|   |                       |                       |                       | 12                     | 15'  | 0.24                                 | 0.27 | 0.29 | 0.12 | -    | -    | -    | 36  |                                    |
|   |                       |                       |                       |                        | 20'  | 0.30                                 | 0.36 | 0.38 | 0.12 | -    | -    | -    | 35  |                                    |
|   |                       |                       |                       |                        | 25'  | 0.37                                 | 0.44 | 0.47 | 0.12 | -    | -    | -    | 35  |                                    |
|   |                       |                       |                       |                        | 30'  | 0.44                                 | 0.53 | 0.56 | 0.12 | -    | -    | -    | 35  |                                    |
| 6' x 3'   | 10                    | 10                    | 10                    | 4                      | 0.33' - <2'                                | 0.28                                 | 0.40 | 0.36 | 0.24 | 0.24 | 0.24 | 0.28 | -   |                                    |
|   |                       |                       |                       |                        | 2' - <3'                                   | 0.28                                 | 0.40 | 0.36 | 0.12 | -    | -    | -    | 43  |                                    |
|   |                       |                       |                       |                        | 3' - <5'                                   | 0.22                                 | 0.26 | 0.28 | 0.12 | -    | -    | -    | 39  |                                    |
|   |                       |                       |                       |                        | 5' - 10'                                   | 0.24                                 | 0.24 | 0.24 | 0.12 | -    | -    | -    | 39  |                                    |
|   |                       |                       |                       | 12                     | 15'  | 0.34                                 | 0.31 | 0.32 | 0.12 | -    | -    | -    | 38  |                                    |
|   |                       |                       |                       |                        | 20'  | 0.44                                 | 0.41 | 0.42 | 0.12 | -    | -    | -    | 38  |                                    |
|   |                       |                       |                       |                        | 25'  | 0.54                                 | 0.52 | 0.53 | 0.12 | -    | -    | -    | 38  |                                    |
|   |                       |                       |                       |                        | 30'  | 0.64                                 | 0.63 | 0.64 | 0.12 | -    | -    | -    | 38  |                                    |
| 6' x 4'   | 10                    | 10                    | 10                    | 4                      | 0.33' - <2'                                | 0.27                                 | 0.42 | 0.39 | 0.24 | 0.24 | 0.24 | 0.27 | -   |                                    |
|   |                       |                       |                       |                        | 2' - <3'                                   | 0.27                                 | 0.42 | 0.39 | 0.12 | -    | -    | -    | 43  |                                    |
|   |                       |                       |                       |                        | 3' - <5'                                   | 0.21                                 | 0.28 | 0.30 | 0.12 | -    | -    | -    | 39  |                                    |
|   |                       |                       |                       |                        | 5' - 10'                                   | 0.23                                 | 0.24 | 0.25 | 0.12 | -    | -    | -    | 39  |                                    |
|   |                       |                       |                       | 12                     | 15'  | 0.32                                 | 0.34 | 0.35 | 0.12 | -    | -    | -    | 38  |                                    |
|   |                       |                       |                       |                        | 20'  | 0.42                                 | 0.45 | 0.47 | 0.12 | -    | -    | -    | 38  |                                    |
|   |                       |                       |                       |                        | 25'  | 0.51                                 | 0.56 | 0.58 | 0.12 | -    | -    | -    | 38  |                                    |
|   |                       |                       |                       |                        | 30'  | 0.61                                 | 0.68 | 0.70 | 0.12 | -    | -    | -    | 38  |                                    |
| 6' x 5'   | 10                    | 10                    | 10                    | 4                      | 0.33' - <2'                                | 0.26                                 | 0.44 | 0.42 | 0.24 | 0.24 | 0.24 | 0.26 | -   |                                    |
|   |                       |                       |                       |                        | 2' - <3'                                   | 0.26                                 | 0.44 | 0.42 | 0.12 | -    | -    | -    | 43  |                                    |
|   |                       |                       |                       |                        | 3' - <5'                                   | 0.22                                 | 0.30 | 0.33 | 0.12 | -    | -    | -    | 43  |                                    |
|   |                       |                       |                       |                        | 5' - 10'                                   | 0.24                                 | 0.25 | 0.27 | 0.12 | -    | -    | -    | 39  |                                    |
|   |                       |                       |                       | 12                     | 15'  | 0.33                                 | 0.36 | 0.39 | 0.12 | -    | -    | -    | 38  |                                    |
|   |                       |                       |                       |                        | 20'  | 0.42                                 | 0.48 | 0.51 | 0.12 | -    | -    | -    | 38  |                                    |
|   |                       |                       |                       |                        | 25'  | 0.52                                 | 0.61 | 0.63 | 0.12 | -    | -    | -    | 38  |                                    |
|   |                       |                       |                       |                        | 30'  | 0.61                                 | 0.74 | 0.76 | 0.12 | -    | -    | -    | 38  |                                    |
| 6' x 6'   | 10                    | 10                    | 10                    | 4                      | 0.33' - <2'                                | 0.27                                 | 0.46 | 0.44 | 0.24 | 0.24 | 0.24 | 0.27 | -   |                                    |
|   |                       |                       |                       |                        | 2' - <3'                                   | 0.27                                 | 0.46 | 0.44 | 0.12 | -    | -    | -    | 52  |                                    |
|   |                       |                       |                       |                        | 3' - <5'                                   | 0.23                                 | 0.31 | 0.34 | 0.12 | -    | -    | -    | 52  |                                    |
|   |                       |                       |                       |                        | 5' - 10'                                   | 0.25                                 | 0.27 | 0.30 | 0.12 | -    | -    | -    | 43  |                                    |
|   |                       |                       |                       | 12                     | 15'  | 0.35                                 | 0.39 | 0.42 | 0.12 | -    | -    | -    | 39  |                                    |
|   |                       |                       |                       |                        | 20'  | 0.45                                 | 0.52 | 0.55 | 0.12 | -    | -    | -    | 39  |                                    |
|   |                       |                       |                       |                        | 25'  | 0.54                                 | 0.65 | 0.68 | 0.12 | -    | -    | -    | 38  |                                    |
|   |                       |                       |                       |                        | 30'  | 0.64                                 | 0.78 | 0.81 | 0.12 | -    | -    | -    | 38  |                                    |

**TABLE 11A - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 7' SPANS**

| SPAN x RISE<br>(S) (R)<br>(Ft.) | SLAB / WALL THICKNESS |                       |                       |                        | DESIGN<br>EARTH COVER<br>ABOVE<br>TOP SLAB | REINFORCEMENT AREAS<br>(sq. in./Ft.) |      |      |      |      |      |      |     | As1 EXT.<br>LENGTH<br>(M)<br>(in.) |
|---------------------------------|-----------------------|-----------------------|-----------------------|------------------------|--|--------------------------------------|------|------|------|------|------|------|-----|------------------------------------|
|                                 | TOP<br>(Tt)<br>(in.)  | BOT.<br>(Tb)<br>(in.) | SIDE<br>(Tw)<br>(in.) | HAUNCH<br>(H)<br>(in.) |  | As1                                  | As2  | As3  | As4  | As5  | As7  | As8  | As9 |                                    |
|                                 |                       |                       |                       |                        |  | See General Note 5                   |      |      |      |      |      |      |     |                                    |
| 7' x 4'                         | 9                     | 9                     | 9                     | 4<br>to<br>12          | 0.33' - <2'                                | 0.42                                 | 0.58 | 0.52 | 0.22 | 0.22 | 0.31 | 0.42 | -   |                                    |
|                                 |                       |                       |                       |                        | 2' - <3'                                   | 0.42                                 | 0.58 | 0.51 | 0.11 | -    | -    | -    | 43  |                                    |
|                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.36                                 | 0.41 | 0.44 | 0.11 | -    | -    | -    | 43  |                                    |
|                                 |                       |                       |                       |                        | 5' - 10'                                   | 0.39                                 | 0.40 | 0.39 | 0.11 | -    | -    | -    | 43  |                                    |
|                                 |                       |                       |                       |                        | 15'  | 0.56                                 | 0.56 | 0.58 | 0.11 | -    | -    | -    | 41  |                                    |
|                                 | 9                     | 9.5                   | 9                     | 7 to 12                | 20'  | 0.74                                 | 0.76 | 0.77 | 0.11 | -    | -    | -    | 41  |                                    |
|                                 |                       |                       |                       |                        | 25'  | 0.92                                 | 0.97 | 0.97 | 0.11 | -    | -    | -    | 41  |                                    |
|                                 |                       |                       |                       |                        | 30'  | 1.09                                 | 1.18 | 1.10 | 0.11 | -    | -    | -    | 41  |                                    |
|                                 |                       |                       |                       |                        | 0.33' - <2'                                | 0.41                                 | 0.61 | 0.55 | 0.22 | 0.23 | 0.30 | 0.41 | -   |                                    |
|                                 |                       |                       |                       |                        | 2' - <3'                                   | 0.41                                 | 0.61 | 0.55 | 0.11 | -    | -    | -    | 47  |                                    |
| 7' x 5'                         | 9                     | 9                     | 9                     | 4<br>to<br>12          | 3' - <5'                                   | 0.37                                 | 0.43 | 0.47 | 0.11 | -    | -    | -    | 43  |                                    |
|                                 |                       |                       |                       |                        | 5' - 10'                                   | 0.39                                 | 0.41 | 0.43 | 0.11 | -    | -    | -    | 43  |                                    |
|                                 |                       |                       |                       |                        | 15'  | 0.56                                 | 0.61 | 0.63 | 0.11 | -    | -    | -    | 41  |                                    |
|                                 |                       |                       |                       |                        | 20'  | 0.73                                 | 0.82 | 0.83 | 0.11 | -    | -    | -    | 41  |                                    |
|                                 |                       |                       |                       |                        | 25'  | 0.90                                 | 1.04 | 1.06 | 0.11 | -    | -    | -    | 41  |                                    |
|                                 | 9                     | 9.5                   | 9                     | 7 to 12                | 30'  | 1.06                                 | 1.26 | 1.19 | 0.11 | -    | -    | -    | 41  |                                    |
|                                 |                       |                       |                       |                        | 0.33' - <2'                                | 0.42                                 | 0.63 | 0.58 | 0.22 | 0.24 | 0.30 | 0.42 | -   |                                    |
|                                 |                       |                       |                       |                        | 2' - <3'                                   | 0.42                                 | 0.63 | 0.58 | 0.11 | -    | -    | -    | 59  |                                    |
|                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.38                                 | 0.45 | 0.50 | 0.11 | -    | -    | -    | 47  |                                    |
|                                 |                       |                       |                       |                        | 5' - 10'                                   | 0.41                                 | 0.44 | 0.47 | 0.11 | -    | -    | -    | 43  |                                    |
| 7' x 6'                         | 9                     | 9                     | 9                     | 4<br>to<br>12          | 15'  | 0.57                                 | 0.65 | 0.68 | 0.11 | -    | -    | -    | 41  |                                    |
|                                 |                       |                       |                       |                        | 20'  | 0.75                                 | 0.87 | 0.90 | 0.11 | -    | -    | -    | 41  |                                    |
|                                 |                       |                       |                       |                        | 25'  | 0.93                                 | 1.11 | 1.13 | 0.11 | -    | -    | -    | 41  |                                    |
|                                 |                       |                       |                       |                        | 30'  | 1.07                                 | 1.35 | 1.27 | 0.11 | -    | -    | -    | 41  |                                    |
|                                 |                       |                       |                       |                        | 0.33' - <2'                                | 0.44                                 | 0.66 | 0.61 | 0.22 | 0.25 | 0.31 | 0.44 | -   |                                    |
|                                 | 7' x 7'               | 9                     | 9                     | 9                      | 4<br>to<br>12                              | 2' - <3'                             | 0.44 | 0.65 | 0.61 | 0.11 | -    | -    | -   | 59                                 |
|                                 |                       |                       |                       |                        |  | 3' - <5'                             | 0.41 | 0.47 | 0.52 | 0.11 | -    | -    | -   | 59                                 |
|                                 |                       |                       |                       |                        |  | 5' - 10'                             | 0.44 | 0.47 | 0.52 | 0.11 | -    | -    | -   | 47                                 |
|                                 |                       |                       |                       |                        |  | 15'                                  | 0.62 | 0.69 | 0.74 | 0.11 | -    | -    | -   | 43                                 |
|                                 |                       |                       |                       |                        |  | 20'                                  | 0.80 | 0.93 | 0.97 | 0.11 | -    | -    | -   | 43                                 |
| 9                               |                       | 9.5                   | 9                     | 7 to 12                | 25'  | 0.99                                 | 1.18 | 1.22 | 0.11 | -    | -    | -    | 43  |                                    |
|                                 |                       |                       |                       |                        | 30'  | 1.12                                 | 1.43 | 1.36 | 0.11 | -    | -    | -    | 41  |                                    |

**TABLE 11B - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 7' SPANS**

| SPAN x RISE<br>(S) (R)<br>(Ft.) | SLAB / WALL THICKNESS |                       |                       |                        | DESIGN<br>EARTH COVER<br>ABOVE<br>TOP SLAB | REINFORCEMENT AREAS<br>(sq. in./Ft.) |      |      |      |      |      |      |     | As1 EXT.<br>LENGTH<br>(M)<br>(in.) |
|---------------------------------|-----------------------|-----------------------|-----------------------|------------------------|--|--------------------------------------|------|------|------|------|------|------|-----|------------------------------------|
|                                 | TOP<br>(Tt)<br>(in.)  | BOT.<br>(Tb)<br>(in.) | SIDE<br>(Tw)<br>(in.) | HAUNCH<br>(H)<br>(in.) |  | As1                                  | As2  | As3  | As4  | As5  | As7  | As8  | As9 |                                    |
|                                 |                       |                       |                       |                        |  | See General Note 5                   |      |      |      |      |      |      |     |                                    |
| 7' x 4'                         | 10                    | 10                    | 10                    | 4<br>to<br>12          | 0.33' - <2'                                | 0.33                                 | 0.49 | 0.44 | 0.24 | 0.24 | 0.24 | 0.33 | -   |                                    |
|                                 |                       |                       |                       |                        | 2' - <3'                                   | 0.33                                 | 0.49 | 0.44 | 0.12 | -    | -    | -    | 43  |                                    |
|                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.29                                 | 0.35 | 0.38 | 0.12 | -    | -    | -    | 43  |                                    |
|                                 |                       |                       |                       |                        | 5' - 10'                                   | 0.31                                 | 0.30 | 0.31 | 0.12 | -    | -    | -    | 43  |                                    |
|                                 |                       |                       |                       |                        | 15'  | 0.44                                 | 0.44 | 0.45 | 0.12 | -    | -    | -    | 41  |                                    |
|                                 | 10                    | 10                    | 10                    | 7 to 12                | 20'  | 0.58                                 | 0.59 | 0.60 | 0.12 | -    | -    | -    | 41  |                                    |
|                                 |                       |                       |                       |                        | 25'  | 0.71                                 | 0.74 | 0.75 | 0.12 | -    | -    | -    | 41  |                                    |
|                                 |                       |                       |                       |                        | 30'  | 0.85                                 | 0.91 | 0.91 | 0.12 | -    | -    | -    | 41  |                                    |
|                                 |                       |                       |                       |                        | 0.33' - <2'                                | 0.32                                 | 0.51 | 0.47 | 0.24 | 0.24 | 0.24 | 0.32 | -   |                                    |
|                                 |                       |                       |                       |                        | 2' - <3'                                   | 0.32                                 | 0.51 | 0.47 | 0.12 | -    | -    | -    | 47  |                                    |
| 7' x 5'                         | 10                    | 10                    | 10                    | 4<br>to<br>12          | 3' - <5'                                   | 0.29                                 | 0.37 | 0.41 | 0.12 | -    | -    | -    | 43  |                                    |
|                                 |                       |                       |                       |                        | 5' - 10'                                   | 0.31                                 | 0.32 | 0.35 | 0.12 | -    | -    | -    | 43  |                                    |
|                                 |                       |                       |                       |                        | 15'  | 0.44                                 | 0.47 | 0.50 | 0.12 | -    | -    | -    | 41  |                                    |
|                                 |                       |                       |                       |                        | 20'  | 0.57                                 | 0.63 | 0.65 | 0.12 | -    | -    | -    | 41  |                                    |
|                                 |                       |                       |                       |                        | 25'  | 0.70                                 | 0.80 | 0.82 | 0.12 | -    | -    | -    | 41  |                                    |
|                                 | 10                    | 10                    | 10                    | 7 to 12                | 30'  | 0.84                                 | 0.97 | 0.99 | 0.12 | -    | -    | -    | 41  |                                    |
|                                 |                       |                       |                       |                        | 0.33' - <2'                                | 0.33                                 | 0.53 | 0.50 | 0.24 | 0.24 | 0.24 | 0.33 | -   |                                    |
|                                 |                       |                       |                       |                        | 2' - <3'                                   | 0.33                                 | 0.53 | 0.50 | 0.12 | -    | -    | -    | 59  |                                    |
|                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.30                                 | 0.38 | 0.43 | 0.12 | -    | -    | -    | 47  |                                    |
|                                 |                       |                       |                       |                        | 5' - 10'                                   | 0.33                                 | 0.35 | 0.38 | 0.12 | -    | -    | -    | 43  |                                    |
| 7' x 6'                         | 10                    | 10                    | 10                    | 4<br>to<br>12          | 15'  | 0.45                                 | 0.51 | 0.54 | 0.12 | -    | -    | -    | 41  |                                    |
|                                 |                       |                       |                       |                        | 20'  | 0.58                                 | 0.68 | 0.70 | 0.12 | -    | -    | -    | 41  |                                    |
|                                 |                       |                       |                       |                        | 25'  | 0.72                                 | 0.85 | 0.88 | 0.12 | -    | -    | -    | 41  |                                    |
|                                 |                       |                       |                       |                        | 30'  | 0.85                                 | 1.04 | 1.06 | 0.12 | -    | -    | -    | 41  |                                    |
|                                 |                       |                       |                       |                        | 0.33' - <2'                                | 0.35                                 | 0.55 | 0.52 | 0.24 | 0.24 | 0.24 | 0.35 | -   |                                    |
|                                 | 7' x 7'               | 10                    | 10                    | 10                     | 4<br>to<br>12                              | 2' - <3'                             | 0.35 | 0.55 | 0.52 | 0.12 | -    | -    | -   | 59                                 |
|                                 |                       |                       |                       |                        |  | 3' - <5'                             | 0.32 | 0.40 | 0.46 | 0.12 | -    | -    | -   | 59                                 |
|                                 |                       |                       |                       |                        |  | 5' - 10'                             | 0.35 | 0.37 | 0.41 | 0.12 | -    | -    | -   | 47                                 |
|                                 |                       |                       |                       |                        |  | 15'                                  | 0.48 | 0.54 | 0.58 | 0.12 | -    | -    | -   | 43                                 |
|                                 |                       |                       |                       |                        |  | 20'                                  | 0.62 | 0.72 | 0.76 | 0.12 | -    | -    | -   | 43                                 |
| 10                              |                       | 10                    | 10                    | 7 to 12                | 25'  | 0.76                                 | 0.90 | 0.94 | 0.12 | -    | -    | -    | 43  |                                    |
|                                 |                       |                       |                       |                        | 30'  | 0.90                                 | 1.10 | 1.13 | 0.12 | -    | -    | -    | 41  |                                    |

**NOTES:**

1. See Sheet 2 for General Notes.
2. See Sheet 7 for Reinforcing Details and dimension locations.
3. See Sheet 14 for WWR Bending Diagrams.

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**TABLE 12A - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 8' SPANS**

| SPAN x RISE<br>(S)<br>(R)<br>(Ft.) | SLAB / WALL THICKNESS |                       |                       |                        | DESIGN<br>EARTH COVER<br>ABOVE<br>TOP SLAB | REINFORCEMENT AREAS<br>(sq. in./Ft.) |      |             |             |      |      |      |      |      | As1 EXT.<br>LENGTH<br>(M)<br>(in.) |      |   |
|------------------------------------|-----------------------|-----------------------|-----------------------|------------------------|--|--------------------------------------|------|-------------|-------------|------|------|------|------|------|------------------------------------|------|---|
|                                    | TOP<br>(Tt)<br>(in.)  | BOT.<br>(Tb)<br>(in.) | SIDE<br>(Tw)<br>(in.) | HAUNCH<br>(H)<br>(in.) |  | As1                                  | As2  | As3         | As4         | As5  | As7  | As8  | As9  |      |                                    |      |   |
|                                    |                       |                       |                       |                        |  |                                      |      |             |             |      |      |      |      |      |                                    |      |   |
| 8' x 4'                            | 9                     | 9                     | 9                     | 4                      | 0.33' - <2'                                | 0.52                                 | 0.66 | 0.57        | 0.22        | 0.24 | 0.42 | 0.52 | -    |      |                                    |      |   |
|                                    |                       |                       |                       | to                     | 2' - <3'                                   | 0.52                                 | 0.66 | 0.57        | 0.11        | -    | -    | -    | 50   |      |                                    |      |   |
|                                    |                       |                       |                       | 12                     | 3' - <5'                                   | 0.48                                 | 0.49 | 0.52        | 0.11        | -    | -    | -    | 50   |      |                                    |      |   |
|                                    |                       |                       |                       | 12                     | 5' - 10'                                   | 0.52                                 | 0.48 | 0.49        | 0.11        | -    | -    | -    | 45   |      |                                    |      |   |
|                                    |                       |                       |                       | 12                     | 15'  | 0.75                                 | 0.72 | 0.72        | 0.11        | -    | -    | -    | 41   |      |                                    |      |   |
|                                    | 9                     | 9.5                   | 9                     | 8 to 12                | 20'  | 1.00                                 | 0.98 | 0.97        | 0.11        | -    | -    | -    | 41   |      |                                    |      |   |
|                                    |                       |                       |                       |                        | 25'  | 1.25                                 | 1.24 | 1.14        | 0.11        | -    | -    | -    | 41   |      |                                    |      |   |
|                                    |                       |                       |                       |                        | 30'  | 1.31                                 | 1.29 | 1.21        | 0.11        | -    | -    | -    | 41   |      |                                    |      |   |
|                                    |                       |                       |                       |                        | 10   | 10.5                                 | 9    | 12          | 0.33' - <2' | 0.51 | 0.69 | 0.60 | 0.22 | 0.25 | 0.40                               | 0.51 | - |
|                                    |                       |                       |                       |                        | 12   | 2' - <3'                             | 0.51 | 0.69        | 0.60        | 0.11 | -    | -    | -    | 50   |                                    |      |   |
| 8' x 5'                            | 9                     | 9                     | 9                     | 4                      | 3' - <5'                                   | 0.46                                 | 0.52 | 0.56        | 0.11        | -    | -    | -    | 45   |      |                                    |      |   |
|                                    |                       |                       |                       | to                     | 5' - 10'                                   | 0.51                                 | 0.51 | 0.53        | 0.11        | -    | -    | -    | 45   |      |                                    |      |   |
|                                    |                       |                       |                       | 12                     | 15'  | 0.74                                 | 0.77 | 0.78        | 0.11        | -    | -    | -    | 41   |      |                                    |      |   |
|                                    |                       |                       |                       | 12                     | 20'  | 0.97                                 | 1.05 | 1.05        | 0.11        | -    | -    | -    | 41   |      |                                    |      |   |
|                                    |                       |                       |                       | 12                     | 25'  | 1.20                                 | 1.33 | 1.23        | 0.11        | -    | -    | -    | 41   |      |                                    |      |   |
|                                    | 9                     | 9.5                   | 9                     | 8 to 12                | 30'  | 1.26                                 | 1.38 | 1.30        | 0.11        | -    | -    | -    | 41   |      |                                    |      |   |
|                                    |                       |                       |                       |                        | 10   | 10.5                                 | 9    | 12          | 0.33' - <2' | 0.51 | 0.72 | 0.64 | 0.22 | 0.26 | 0.39                               | 0.51 | - |
|                                    |                       |                       |                       |                        | 12   | 2' - <3'                             | 0.51 | 0.72        | 0.64        | 0.11 | -    | -    | -    | 50   |                                    |      |   |
|                                    |                       |                       |                       |                        | 12   | 3' - <5'                             | 0.47 | 0.55        | 0.59        | 0.11 | -    | -    | -    | 50   |                                    |      |   |
|                                    |                       |                       |                       |                        | 12   | 5' - 10'                             | 0.52 | 0.55        | 0.58        | 0.11 | -    | -    | -    | 45   |                                    |      |   |
| 8' x 6'                            | 9                     | 9                     | 9                     | 4                      | 15'  | 0.74                                 | 0.83 | 0.85        | 0.11        | -    | -    | -    | 41   |      |                                    |      |   |
|                                    |                       |                       |                       | to                     | 20'  | 0.97                                 | 1.12 | 1.13        | 0.11        | -    | -    | -    | 41   |      |                                    |      |   |
|                                    |                       |                       |                       | 12                     | 25'  | 1.18                                 | 1.42 | 1.32        | 0.11        | -    | -    | -    | 41   |      |                                    |      |   |
|                                    |                       |                       |                       | 12                     | 30'  | 1.26                                 | 1.46 | 1.39        | 0.11        | -    | -    | -    | 41   |      |                                    |      |   |
|                                    |                       |                       |                       | 12                     | 0.33' - <2'                                | 0.52                                 | 0.74 | 0.67        | 0.22        | 0.26 | 0.40 | 0.52 | -    |      |                                    |      |   |
|                                    | 9                     | 9.5                   | 9                     | 8 to 12                | 2' - <3'                                   | 0.52                                 | 0.74 | 0.67        | 0.11        | -    | -    | -    | 55   |      |                                    |      |   |
|                                    |                       |                       |                       |                        | 3' - <5'                                   | 0.49                                 | 0.57 | 0.62        | 0.11        | -    | -    | -    | 55   |      |                                    |      |   |
|                                    |                       |                       |                       |                        | 5' - 10'                                   | 0.55                                 | 0.59 | 0.63        | 0.11        | -    | -    | -    | 50   |      |                                    |      |   |
|                                    |                       |                       |                       |                        | 15'  | 0.77                                 | 0.88 | 0.91        | 0.11        | -    | -    | -    | 41   |      |                                    |      |   |
|                                    |                       |                       |                       |                        | 20'  | 1.01                                 | 1.19 | 1.21        | 0.11        | -    | -    | -    | 41   |      |                                    |      |   |
| 8' x 7'                            | 9                     | 9                     | 9                     | 25'                    | 1.21                                       | 1.51                                 | 1.41 | 0.11        | -           | -    | -    | 41   |      |      |                                    |      |   |
|                                    |                       |                       |                       | 30'                    | 1.31                                       | 1.53                                 | 1.47 | 0.11        | -           | -    | -    | 41   |      |      |                                    |      |   |
|                                    |                       |                       |                       | 10                     | 10.5                                       | 9                                    | 12   | 0.33' - <2' | 0.55        | 0.77 | 0.70 | 0.22 | 0.27 | 0.41 | 0.55                               | -    |   |
|                                    |                       |                       |                       | 12                     | 2' - <3'                                   | 0.55                                 | 0.77 | 0.70        | 0.13        | -    | -    | -    | 65   |      |                                    |      |   |
|                                    |                       |                       |                       | 12                     | 3' - <5'                                   | 0.53                                 | 0.59 | 0.64        | 0.12        | -    | -    | -    | 65   |      |                                    |      |   |
|                                    | 8' x 8'               | 9                     | 9                     | 9                      | 4  | 5' - 10'                             | 0.60 | 0.63        | 0.68        | 0.11 | -    | -    | -    | 55   |                                    |      |   |
|                                    |                       |                       |                       |                        | to   | 15'                                  | 0.83 | 0.93        | 0.98        | 0.11 | -    | -    | -    | 45   |                                    |      |   |
|                                    |                       |                       |                       |                        | 12   | 20'                                  | 1.08 | 1.26        | 1.29        | 0.11 | -    | -    | -    | 45   |                                    |      |   |
|                                    |                       |                       |                       |                        | 12   | 25'                                  | 1.28 | 1.59        | 1.50        | 0.11 | -    | -    | -    | 41   |                                    |      |   |
|                                    |                       |                       |                       |                        | 12   | 30'                                  | 1.41 | 1.61        | 1.55        | 0.11 | -    | -    | -    | 41   |                                    |      |   |
| 9                                  |                       | 9.5                   | 9                     | 8 to 12                | 0.33' - <2'                                | 0.55                                 | 0.77 | 0.70        | 0.22        | 0.27 | 0.41 | 0.55 | -    |      |                                    |      |   |
|                                    |                       |                       |                       |                        | 2' - <3'                                   | 0.55                                 | 0.77 | 0.70        | 0.13        | -    | -    | -    | 65   |      |                                    |      |   |
|                                    |                       |                       |                       |                        | 3' - <5'                                   | 0.53                                 | 0.59 | 0.64        | 0.12        | -    | -    | -    | 65   |      |                                    |      |   |
|                                    |                       |                       |                       |                        | 5' - 10'                                   | 0.60                                 | 0.63 | 0.68        | 0.11        | -    | -    | -    | 55   |      |                                    |      |   |
|                                    |                       |                       |                       |                        | 15'  | 0.83                                 | 0.93 | 0.98        | 0.11        | -    | -    | -    | 45   |      |                                    |      |   |

See General Note 5

**TABLE 12B - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 8' SPANS**

| SPAN x RISE<br>(S)<br>(R)<br>(Ft.) | SLAB / WALL THICKNESS |                       |                       |                        | DESIGN<br>EARTH COVER<br>ABOVE<br>TOP SLAB | REINFORCEMENT AREAS<br>(sq. in./Ft.) |         |             |             |      |      |      |      |       | As1 EXT.<br>LENGTH<br>(M)<br>(in.) |      |   |
|------------------------------------|-----------------------|-----------------------|-----------------------|------------------------|--|--------------------------------------|---------|-------------|-------------|------|------|------|------|-------|------------------------------------|------|---|
|                                    | TOP<br>(Tt)<br>(in.)  | BOT.<br>(Tb)<br>(in.) | SIDE<br>(Tw)<br>(in.) | HAUNCH<br>(H)<br>(in.) |  | As1                                  | As2     | As3         | As4         | As5  | As7  | As8  | As9  |       |                                    |      |   |
|                                    |                       |                       |                       |                        |  |                                      |         |             |             |      |      |      |      |       |                                    |      |   |
| 8' x 4'                            | 10                    | 10                    | 10                    | 4                      | 0.33' - <2'                                | 0.42                                 | 0.56    | 0.49        | 0.24        | 0.24 | 0.32 | 0.41 | -    |       |                                    |      |   |
|                                    |                       |                       |                       | to                     | 2' - <3'                                   | 0.42                                 | 0.56    | 0.49        | 0.12        | -    | -    | -    | 50   |       |                                    |      |   |
|                                    |                       |                       |                       | 12                     | 3' - <5'                                   | 0.38                                 | 0.42    | 0.46        | 0.12        | -    | -    | -    | 50   |       |                                    |      |   |
|                                    |                       |                       |                       | 12                     | 5' - 10'                                   | 0.41                                 | 0.38    | 0.39        | 0.12        | -    | -    | -    | 45   |       |                                    |      |   |
|                                    |                       |                       |                       | 12                     | 15'  | 0.59                                 | 0.56    | 0.57        | 0.12        | -    | -    | -    | 41   |       |                                    |      |   |
|                                    | 10                    | 10.5                  | 10                    | 8 to 12                | 20'  | 0.78                                 | 0.75    | 0.76        | 0.12        | -    | -    | -    | 41   |       |                                    |      |   |
|                                    |                       |                       |                       |                        | 25'  | 0.97                                 | 0.96    | 0.96        | 0.12        | -    | -    | -    | 41   |       |                                    |      |   |
|                                    |                       |                       |                       |                        | 30'  | 1.15                                 | 1.16    | 1.10        | 0.12        | -    | -    | -    | 41   |       |                                    |      |   |
|                                    |                       |                       |                       |                        | 10   | 10.5                                 | 10      | 8 to 12     | 0.33' - <2' | 0.40 | 0.58 | 0.52 | 0.24 | 0.034 | 0.31                               | 0.40 | - |
|                                    |                       |                       |                       |                        | 12   | 2' - <3'                             | 0.40    | 0.58        | 0.52        | 0.12 | -    | -    | -    | 50    |                                    |      |   |
| 8' x 5'                            | 10                    | 10                    | 10                    | 4                      | 3' - <5'                                   | 0.37                                 | 0.45    | 0.48        | 0.12        | -    | -    | -    | 45   |       |                                    |      |   |
|                                    |                       |                       |                       | to                     | 5' - 10'                                   | 0.41                                 | 0.41    | 0.43        | 0.12        | -    | -    | -    | 45   |       |                                    |      |   |
|                                    |                       |                       |                       | 12                     | 15'  | 0.58                                 | 0.60    | 0.62        | 0.12        | -    | -    | -    | 41   |       |                                    |      |   |
|                                    |                       |                       |                       | 12                     | 20'  | 0.76                                 | 0.81    | 0.81        | 0.12        | -    | -    | -    | 41   |       |                                    |      |   |
|                                    |                       |                       |                       | 12                     | 25'  | 0.94                                 | 1.03    | 1.03        | 0.12        | -    | -    | -    | 41   |       |                                    |      |   |
|                                    | 10                    | 10.5                  | 10                    | 8 to 12                | 30'  | 1.10                                 | 1.24    | 1.24        | 0.12        | -    | -    | -    | 41   |       |                                    |      |   |
|                                    |                       |                       |                       |                        | 10   | 10.5                                 | 10      | 8 to 12     | 0.33' - <2' | 0.40 | 0.60 | 0.55 | 0.24 | 0.24  | 0.30                               | 0.40 | - |
|                                    |                       |                       |                       |                        | 12   | 2' - <3'                             | 0.40    | 0.60        | 0.55        | 0.12 | -    | -    | -    | 50    |                                    |      |   |
|                                    |                       |                       |                       |                        | 12   | 3' - <5'                             | 0.37    | 0.47        | 0.51        | 0.12 | -    | -    | -    | 50    |                                    |      |   |
|                                    |                       |                       |                       |                        | 12   | 5' - 10'                             | 0.42    | 0.43        | 0.46        | 0.12 | -    | -    | -    | 45    |                                    |      |   |
| 8' x 6'                            | 10                    | 10                    | 10                    | 4                      | 15'  | 0.58                                 | 0.64    | 0.67        | 0.12        | -    | -    | -    | 41   |       |                                    |      |   |
|                                    |                       |                       |                       | to                     | 20'  | 0.76                                 | 0.86    | 0.88        | 0.12        | -    | -    | -    | 41   |       |                                    |      |   |
|                                    |                       |                       |                       | 12                     | 25'  | 0.94                                 | 1.09    | 1.11        | 0.12        | -    | -    | -    | 41   |       |                                    |      |   |
|                                    |                       |                       |                       | 12                     | 30'  | 1.09                                 | 1.32    | 1.26        | 0.12        | -    | -    | -    | 41   |       |                                    |      |   |
|                                    |                       |                       |                       | 12                     | 0.33' - <2'                                | 0.41                                 | 0.63    | 0.58        | 0.24        | 0.24 | 0.30 | 0.41 | -    |       |                                    |      |   |
|                                    | 10                    | 10.5                  | 10                    | 8 to 12                | 2' - <3'                                   | 0.41                                 | 0.63    | 0.58        | 0.12        | -    | -    | -    | 55   |       |                                    |      |   |
|                                    |                       |                       |                       |                        | 3' - <5'                                   | 0.39                                 | 0.49    | 0.53        | 0.12        | -    | -    | -    | 55   |       |                                    |      |   |
|                                    |                       |                       |                       |                        | 5' - 10'                                   | 0.44                                 | 0.46    | 0.50        | 0.12        | -    | -    | -    | 50   |       |                                    |      |   |
|                                    |                       |                       |                       |                        | 15'  | 0.61                                 | 0.68    | 0.72        | 0.12        | -    | -    | -    | 45   |       |                                    |      |   |
|                                    |                       |                       |                       |                        | 20'  | 0.78                                 | 0.91    | 0.94        | 0.12        | -    | -    | -    | 41   |       |                                    |      |   |
| 8' x 7'                            | 10                    | 10                    | 10                    | 25'                    | 0.97                                       | 1.16                                 | 1.18    | 0.12        | -           | -    | -    | 41   |      |       |                                    |      |   |
|                                    |                       |                       |                       | 30'                    | 1.11                                       | 1.40                                 | 1.34    | 0.12        | -           | -    | -    | 41   |      |       |                                    |      |   |
|                                    |                       |                       |                       | 10                     | 10.5                                       | 10                                   | 8 to 12 | 0.33' - <2' | 0.44        | 0.64 | 0.60 | 0.24 | 0.24 | 0.31  | 0.44                               | -    |   |
|                                    |                       |                       |                       | 12                     | 2' - <3'                                   | 0.44                                 | 0.64    | 0.60        | 0.12        | -    | -    | -    | 65   |       |                                    |      |   |
|                                    |                       |                       |                       | 12                     | 3' - <5'                                   | 0.42                                 | 0.51    | 0.56        | 0.12        | -    | -    | -    | 65   |       |                                    |      |   |
|                                    | 8' x 8'               | 10                    | 10                    | 10                     | 4  | 5' - 10'                             | 0.47    | 0.50        | 0.55        | 0.12 | -    | -    | -    | 55    |                                    |      |   |
|                                    |                       |                       |                       |                        | to   | 15'                                  | 0.65    | 0.72        | 0.77        | 0.12 | -    | -    | -    | 45    |                                    |      |   |
|                                    |                       |                       |                       |                        | 12   | 20'                                  | 0.84    | 0.96        | 1.01        | 0.12 | -    | -    | -    | 45    |                                    |      |   |
|                                    |                       |                       |                       |                        | 12   | 25'                                  | 1.03    | 1.22        | 1.26        | 0.12 | -    | -    | -    | 41    |                                    |      |   |
|                                    |                       |                       |                       |                        | 12   | 30'                                  | 1.16    | 1.47        | 1.42        | 0.12 | -    | -    | -    | 41    |                                    |      |   |
| 10                                 |                       | 10.5                  | 10                    | 8 to 12                | 0.33' - <2'                                | 0.44                                 | 0.64    | 0.60        | 0.24        | 0.24 | 0.31 | 0.44 | -    |       |                                    |      |   |
|                                    |                       |                       |                       |                        | 2' - <3'                                   | 0.44                                 | 0.64    | 0.60        | 0.12        | -    | -    | -    | 65   |       |                                    |      |   |
|                                    |                       |                       |                       |                        | 3' - <5'                                   | 0.42                                 | 0.51    | 0.56        | 0.12        | -    | -    | -    | 65   |       |                                    |      |   |
|                                    |                       |                       |                       |                        | 5' - 10'                                   | 0.47                                 | 0.50    | 0.55        | 0.12        | -    | -    | -    | 55   |       |                                    |      |   |
|                                    |                       |                       |                       |                        | 15'  | 0.65                                 | 0.72    | 0.77        | 0.12        | -    | -    | -    | 45   |       |                                    |      |   |

See General Note 5

**NOTES:**

1. See Sheet 2 for General Notes.
2. See Sheet 7 for Reinforcing Details and dimension locations.
3. See Sheet 14 for WWR Bending Diagrams.

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**TABLE 13A - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 9' SPANS**

| SPAN x RISE<br>(S)<br>(R)<br>(Ft.) | SLAB / WALL THICKNESS |                       |                       |                        | DESIGN<br>EARTH COVER<br>ABOVE<br>TOP SLAB | REINFORCEMENT AREAS<br>(sq. in./Ft.) |      |      |      |      |      |      |     | As1 EXT.<br>LENGTH<br>(M)<br>(in.) |
|------------------------------------|-----------------------|-----------------------|-----------------------|------------------------|--|--------------------------------------|------|------|------|------|------|------|-----|------------------------------------|
|                                    | TOP<br>(Tt)<br>(in.)  | BOT.<br>(Tb)<br>(in.) | SIDE<br>(Tw)<br>(in.) | HAUNCH<br>(H)<br>(in.) |  | As1                                  | As2  | As3  | As4  | As5  | As7  | As8  | As9 |                                    |
|                                    |                       |                       |                       |                        |  | As1                                  | As2  | As3  | As4  | As5  | As7  | As8  | As9 |                                    |
| 9' x 5'                            | 9                     | 9                     | 9                     | 4                      | 0.33' - <2'                                | 0.62                                 | 0.78 | 0.65 | 0.22 | 0.26 | 0.52 | 0.61 | -   |                                    |
|                                    |                       |                       |                       | to                     | 2' - <3'                                   | 0.62                                 | 0.78 | 0.65 | 0.11 | -    | -    | -    | 54  |                                    |
|                                    |                       |                       |                       | 12                     | 3' - <5'                                   | 0.58                                 | 0.63 | 0.61 | 0.11 | -    | -    | -    | 49  |                                    |
|                                    |                       |                       |                       | 15'                    | 0.65                                       | 0.63                                 | 0.64 | 0.11 | -    | -    | -    | 49   |     |                                    |
|                                    |                       |                       |                       | 20'                    | 0.95                                       | 0.96                                 | 0.95 | 0.11 | -    | -    | -    | 44   |     |                                    |
|                                    |                       |                       |                       | 25'                    | 1.26                                       | 1.32                                 | 1.28 | 0.11 | -    | -    | -    | 44   |     |                                    |
|                                    | 10                    | 10.5                  | 9                     | 8                      | 25'  | 1.39                                 | 1.41 | 1.32 | 0.11 | -    | -    | -    | 44  |                                    |
|                                    |                       |                       |                       | to                     | 30'  | 1.46                                 | 1.50 | 1.42 | 0.11 | -    | -    | -    | 44  |                                    |
|                                    |                       |                       |                       | 12                     | 0.33' - <2'                                | 0.60                                 | 0.81 | 0.69 | 0.22 | 0.27 | 0.51 | 0.60 | -   |                                    |
|                                    |                       |                       |                       | 4                      | 2' - <3'                                   | 0.60                                 | 0.81 | 0.69 | 0.11 | -    | -    | -    | 54  |                                    |
|                                    |                       |                       |                       | to                     | 3' - <5'                                   | 0.56                                 | 0.66 | 0.65 | 0.11 | -    | -    | -    | 49  |                                    |
|                                    |                       |                       |                       | 12                     | 5' - 10'                                   | 0.65                                 | 0.68 | 0.69 | 0.11 | -    | -    | -    | 49  |                                    |
| 9                                  | 9                     | 9                     | 8                     | 15'                    | 0.94                                       | 1.03                                 | 1.02 | 0.11 | -    | -    | -    | 44   |     |                                    |
|                                    |                       |                       | to                    | 20'                    | 1.25                                       | 1.40                                 | 1.38 | 0.11 | -    | -    | -    | 44   |     |                                    |
|                                    |                       |                       | 12                    | 25'                    | 1.37                                       | 1.49                                 | 1.40 | 0.11 | -    | -    | -    | 44   |     |                                    |
|                                    |                       |                       | 10                    | 10.5                   | 9  | 25'                                  | 1.37 | 1.49 | 1.40 | 0.11 | -    | -    | -   | 44                                 |
|                                    |                       |                       | to                    | 30'                    | 1.44                                       | 1.58                                 | 1.50 | 0.11 | -    | -    | -    | 44   |     |                                    |
|                                    |                       |                       | 12                    | 0.33' - <2'            | 0.61                                       | 0.84                                 | 0.72 | 0.22 | 0.28 | 0.51 | 0.61 | -    |     |                                    |
| 9' x 7'                            | 9                     | 9                     | 9                     | 4                      | 2' - <3'                                   | 0.61                                 | 0.83 | 0.72 | 0.11 | -    | -    | -    | 59  |                                    |
|                                    |                       |                       |                       | to                     | 3' - <5'                                   | 0.58                                 | 0.69 | 0.68 | 0.11 | -    | -    | -    | 54  |                                    |
|                                    |                       |                       |                       | 12                     | 5' - 10'                                   | 0.67                                 | 0.73 | 0.75 | 0.11 | -    | -    | -    | 49  |                                    |
|                                    |                       |                       |                       | 15'                    | 0.96                                       | 1.09                                 | 1.10 | 0.11 | -    | -    | -    | 44   |     |                                    |
|                                    |                       |                       |                       | 20'                    | 1.27                                       | 1.49                                 | 1.47 | 0.11 | -    | -    | -    | 44   |     |                                    |
|                                    |                       |                       |                       | 25'                    | 1.38                                       | 1.57                                 | 1.48 | 0.11 | -    | -    | -    | 44   |     |                                    |
|                                    | 10                    | 10.5                  | 9                     | 8                      | 30'  | 1.49                                 | 1.70 | 1.58 | 0.11 | -    | -    | -    | 44  |                                    |
|                                    |                       |                       |                       | to                     | 0.33' - <2'                                | 0.60                                 | 0.85 | 0.73 | 0.22 | 0.29 | 0.52 | 0.53 | -   |                                    |
|                                    |                       |                       |                       | 12                     | 2' - <3'                                   | 0.64                                 | 0.86 | 0.76 | 0.12 | -    | -    | -    | 59  |                                    |
|                                    |                       |                       |                       | 4                      | 3' - <5'                                   | 0.62                                 | 0.72 | 0.72 | 0.11 | -    | -    | -    | 59  |                                    |
|                                    |                       |                       |                       | to                     | 5' - 10'                                   | 0.71                                 | 0.77 | 0.81 | 0.11 | -    | -    | -    | 54  |                                    |
|                                    |                       |                       |                       | 12                     | 15'  | 1.01                                 | 1.16 | 1.17 | 0.11 | -    | -    | -    | 44  |                                    |
| 9                                  | 9.5                   | 9                     | 8                     | 20'                    | 1.27                                       | 1.56                                 | 1.45 | 0.11 | -    | -    | -    | 44   |     |                                    |
|                                    |                       |                       | to                    | 25'                    | 1.45                                       | 1.65                                 | 1.57 | 0.11 | -    | -    | -    | 44   |     |                                    |
|                                    |                       |                       | 12                    | 30'                    | 1.59                                       | 1.72                                 | 1.66 | 0.11 | -    | -    | -    | 44   |     |                                    |
|                                    |                       |                       | 4                     | 0.33' - <2'            | 0.68                                       | 0.88                                 | 0.76 | 0.22 | 0.29 | 0.55 | 0.57 | -    |     |                                    |
|                                    |                       |                       | to                    | 2' - <3'               | 0.68                                       | 0.88                                 | 0.78 | 0.18 | -    | -    | -    | 72   |     |                                    |
|                                    |                       |                       | 12                    | 3' - <5'               | 0.68                                       | 0.75                                 | 0.78 | 0.18 | -    | -    | -    | 72   |     |                                    |
| 9' x 9'                            | 9                     | 9                     | 9                     | 4                      | 5' - 10'                                   | 0.79                                 | 0.82 | 0.88 | 0.17 | -    | -    | -    | 59  |                                    |
|                                    |                       |                       |                       | to                     | 15'  | 1.11                                 | 1.22 | 1.26 | 0.13 | -    | -    | -    | 49  |                                    |
|                                    |                       |                       |                       | 12                     | 20'  | 1.37                                 | 1.64 | 1.54 | 0.13 | -    | -    | -    | 49  |                                    |
|                                    |                       |                       |                       | 8                      | 25'  | 1.56                                 | 1.73 | 1.65 | 0.13 | -    | -    | -    | 44  |                                    |
|                                    |                       |                       |                       | to                     | 30'  | 1.56                                 | 1.73 | 1.68 | 0.12 | -    | -    | -    | 44  |                                    |
|                                    |                       |                       |                       | 12                     | 9  | 9.5                                  | 9    | 30'  | 1.56 | 1.73 | 1.68 | 0.12 | -   | -                                  |

See General Note 5

**TABLE 13B - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 9' SPANS**

| SPAN x RISE<br>(S)<br>(R)<br>(Ft.) | SLAB / WALL THICKNESS |                       |                       |                        | DESIGN<br>EARTH COVER<br>ABOVE<br>TOP SLAB | REINFORCEMENT AREAS<br>(sq. in./Ft.) |      |      |      |      |      |      |     | As1 EXT.<br>LENGTH<br>(M)<br>(in.) |
|------------------------------------|-----------------------|-----------------------|-----------------------|------------------------|--|--------------------------------------|------|------|------|------|------|------|-----|------------------------------------|
|                                    | TOP<br>(Tt)<br>(in.)  | BOT.<br>(Tb)<br>(in.) | SIDE<br>(Tw)<br>(in.) | HAUNCH<br>(H)<br>(in.) |  | As1                                  | As2  | As3  | As4  | As5  | As7  | As8  | As9 |                                    |
|                                    |                       |                       |                       |                        |  | As1                                  | As2  | As3  | As4  | As5  | As7  | As8  | As9 |                                    |
| 9' x 5'                            | 10                    | 10                    | 10                    | 4                      | 0.33' - <2'                                | 0.49                                 | 0.65 | 0.57 | 0.24 | 0.24 | 0.40 | 0.48 | -   |                                    |
|                                    |                       |                       |                       | to                     | 2' - <3'                                   | 0.49                                 | 0.65 | 0.57 | 0.12 | -    | -    | -    | 54  |                                    |
|                                    |                       |                       |                       | 12                     | 3' - <5'                                   | 0.46                                 | 0.54 | 0.53 | 0.12 | -    | -    | -    | 49  |                                    |
|                                    |                       |                       |                       | 15'                    | 0.52                                       | 0.50                                 | 0.51 | 0.12 | -    | -    | -    | 49   |     |                                    |
|                                    |                       |                       |                       | 20'                    | 0.75                                       | 0.74                                 | 0.75 | 0.12 | -    | -    | -    | 44   |     |                                    |
|                                    |                       |                       |                       | 25'                    | 0.98                                       | 1.01                                 | 1.00 | 0.12 | -    | -    | -    | 44   |     |                                    |
|                                    | 10                    | 10.5                  | 10                    | 8 to                   | 25'  | 1.21                                 | 1.27 | 1.19 | 0.12 | -    | -    | -    | 44  |                                    |
|                                    |                       |                       |                       | to                     | 30'  | 1.30                                 | 1.36 | 1.30 | 0.12 | -    | -    | -    | 44  |                                    |
|                                    |                       |                       |                       | 12                     | 0.33' - <2'                                | 0.48                                 | 0.68 | 0.60 | 0.24 | 0.24 | 0.39 | 0.48 | -   |                                    |
|                                    |                       |                       |                       | 4                      | 2' - <3'                                   | 0.48                                 | 0.68 | 0.60 | 0.12 | -    | -    | -    | 54  |                                    |
|                                    |                       |                       |                       | to                     | 3' - <5'                                   | 0.45                                 | 0.57 | 0.56 | 0.12 | -    | -    | -    | 49  |                                    |
|                                    |                       |                       |                       | 12                     | 5' - 10'                                   | 0.52                                 | 0.53 | 0.56 | 0.12 | -    | -    | -    | 49  |                                    |
| 9                                  | 9                     | 9                     | 8                     | 15'                    | 0.74                                       | 0.79                                 | 0.81 | 0.12 | -    | -    | -    | 44   |     |                                    |
|                                    |                       |                       | to                    | 20'                    | 0.97                                       | 1.07                                 | 1.07 | 0.12 | -    | -    | -    | 44   |     |                                    |
|                                    |                       |                       | 12                    | 25'                    | 1.18                                       | 1.35                                 | 1.28 | 0.12 | -    | -    | -    | 44   |     |                                    |
|                                    |                       |                       | 10                    | 10.5                   | 10   | 25'                                  | 1.18 | 1.35 | 1.28 | 0.12 | -    | -    | -   | 44                                 |
|                                    |                       |                       | to                    | 30'                    | 1.27                                       | 1.44                                 | 1.38 | 0.12 | -    | -    | -    | 44   |     |                                    |
|                                    |                       |                       | 12                    | 0.33' - <2'            | 0.49                                       | 0.70                                 | 0.63 | 0.24 | 0.24 | 0.39 | 0.49 | -    |     |                                    |
| 9' x 7'                            | 10                    | 10                    | 10                    | 4                      | 2' - <3'                                   | 0.49                                 | 0.70 | 0.63 | 0.12 | -    | -    | -    | 59  |                                    |
|                                    |                       |                       |                       | to                     | 3' - <5'                                   | 0.46                                 | 0.59 | 0.59 | 0.12 | -    | -    | -    | 54  |                                    |
|                                    |                       |                       |                       | 12                     | 5' - 10'                                   | 0.54                                 | 0.57 | 0.60 | 0.12 | -    | -    | -    | 49  |                                    |
|                                    |                       |                       |                       | 15'                    | 0.75                                       | 0.84                                 | 0.86 | 0.12 | -    | -    | -    | 44   |     |                                    |
|                                    |                       |                       |                       | 20'                    | 0.98                                       | 1.13                                 | 1.14 | 0.12 | -    | -    | -    | 44   |     |                                    |
|                                    |                       |                       |                       | 25'                    | 1.18                                       | 1.43                                 | 1.36 | 0.12 | -    | -    | -    | 44   |     |                                    |
|                                    | 10                    | 10.5                  | 10                    | 8 to                   | 30'  | 1.28                                 | 1.52 | 1.46 | 0.12 | -    | -    | -    | 44  |                                    |
|                                    |                       |                       |                       | to                     | 0.33' - <2'                                | 0.51                                 | 0.72 | 0.65 | 0.24 | 0.24 | 0.39 | 0.51 | -   |                                    |
|                                    |                       |                       |                       | 12                     | 2' - <3'                                   | 0.51                                 | 0.72 | 0.65 | 0.12 | -    | -    | -    | 59  |                                    |
|                                    |                       |                       |                       | 4                      | 3' - <5'                                   | 0.49                                 | 0.61 | 0.62 | 0.12 | -    | -    | -    | 59  |                                    |
|                                    |                       |                       |                       | to                     | 5' - 10'                                   | 0.57                                 | 0.60 | 0.65 | 0.12 | -    | -    | -    | 54  |                                    |
|                                    |                       |                       |                       | 12                     | 15'  | 0.79                                 | 0.89 | 0.92 | 0.12 | -    | -    | -    | 44  |                                    |
| 9                                  | 9.5                   | 9                     | 8                     | 20'                    | 1.02                                       | 1.20                                 | 1.22 | 0.12 | -    | -    | -    | 44   |     |                                    |
|                                    |                       |                       | to                    | 25'                    | 1.21                                       | 1.50                                 | 1.44 | 0.12 | -    | -    | -    | 44   |     |                                    |
|                                    |                       |                       | 12                    | 30'                    | 1.33                                       | 1.59                                 | 1.54 | 0.12 | -    | -    | -    | 44   |     |                                    |
|                                    |                       |                       | 4                     | 0.33' - <2'            | 0.54                                       | 0.74                                 | 0.68 | 0.24 | 0.24 | 0.41 | 0.54 | -    |     |                                    |
|                                    |                       |                       | to                    | 2' - <3'               | 0.54                                       | 0.74                                 | 0.68 | 0.15 | -    | -    | -    | 72   |     |                                    |
|                                    |                       |                       | 12                    | 3' - <5'               | 0.53                                       | 0.63                                 | 0.64 | 0.13 | -    | -    | -    | 72   |     |                                    |
| 9' x 9'                            | 10                    | 10                    | 10                    | 4                      | 5' - 10'                                   | 0.62                                 | 0.64 | 0.70 | 0.12 | -    | -    | -    | 59  |                                    |
|                                    |                       |                       |                       | to                     | 15'  | 0.85                                 | 0.94 | 0.99 | 0.12 | -    | -    | -    | 49  |                                    |
|                                    |                       |                       |                       | 12                     | 20'  | 1.09                                 | 1.26 | 1.29 | 0.12 | -    | -    | -    | 49  |                                    |
|                                    |                       |                       |                       | 8                      | 25'  | 1.28                                 | 1.56 | 1.52 | 0.12 | -    | -    | -    | 44  |                                    |
|                                    |                       |                       |                       | to                     | 30'  | 1.42                                 | 1.66 | 1.66 | 0.12 | -    | -    | -    | 44  |                                    |
|                                    |                       |                       |                       | 12                     | 9  | 10.5                                 | 10   | 30'  | 1.42 | 1.66 | 1.66 | 0.12 | -   | -                                  |

See General Note 5

**NOTES:**

1. See Sheet 2 for General Notes.
2. See Sheet 7 for Reinforcing Details and dimension locations.
3. See Sheet 14 for WWR Bending Diagrams.

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**TABLE 14 - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 10' SPANS**

| SPAN x RISE<br>(S)<br>(R)<br>(Ft.) | SLAB / WALL THICKNESS |                       |                       |                        | DESIGN<br>EARTH COVER<br>ABOVE<br>TOP SLAB | REINFORCEMENT AREAS<br>(sq. in./Ft.) |      |      |      |      |      |      |      |    | As1 EXT.<br>LENGTH<br>(M)<br>(in.) |
|------------------------------------|-----------------------|-----------------------|-----------------------|------------------------|--|--------------------------------------|------|------|------|------|------|------|------|----|------------------------------------|
|                                    | TOP<br>(Tt)<br>(in.)  | BOT.<br>(Tb)<br>(in.) | SIDE<br>(Tw)<br>(in.) | HAUNCH<br>(H)<br>(in.) |  | As1                                  | As2  | As3  | As4  | As5  | As7  | As8  | As9  |    |                                    |
|                                    |                       |                       |                       |                        |  |                                      |      |      |      |      |      |      |      |    |                                    |
| 10' x 5'                           | 10                    | 10                    | 10                    | 4                      | 0.33' - <2'                                | 0.60                                 | 0.73 | 0.61 | 0.24 | 0.24 | 0.50 | 0.57 | -    |    |                                    |
|                                    |                       |                       |                       | to                     | 2' - <3'                                   | 0.60                                 | 0.73 | 0.61 | 0.12 | -    | -    | -    | 58   |    |                                    |
|                                    |                       |                       |                       | 12                     | 3' - <5'                                   | 0.57                                 | 0.64 | 0.58 | 0.12 | -    | -    | -    | 53   |    |                                    |
|                                    |                       |                       |                       |                        | 5' - 10'                                   | 0.65                                 | 0.60 | 0.60 | 0.12 | -    | -    | -    | 52   |    |                                    |
|                                    |                       |                       |                       |                        | 15'  | 0.94                                 | 0.90 | 0.89 | 0.12 | -    | -    | -    | 47   |    |                                    |
|                                    | 10                    | 10                    | 10                    | 8                      | 20'  | 1.24                                 | 1.23 | 1.19 | 0.12 | -    | -    | -    | 47   |    |                                    |
|                                    | 11                    | 11.5                  | 10                    | to                     | 25'  | 1.39                                 | 1.37 | 1.28 | 0.12 | -    | -    | -    | 47   |    |                                    |
|                                    | 12.5                  | 12.5                  | 10                    | 12                     | 30'  | 1.38                                 | 1.43 | 1.41 | 0.12 | -    | -    | -    | 47   |    |                                    |
|                                    | 10' x 6'              | 10                    | 10                    | 10                     | 4  | 0.33' - <2'                          | 0.58 | 0.75 | 0.64 | 0.24 | 0.24 | 0.48 | 0.56 | -  |                                    |
|                                    |                       |                       |                       |                        | to   | 2' - <3'                             | 0.58 | 0.75 | 0.64 | 0.12 | -    | -    | -    | 58 |                                    |
| 12                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.56                                 | 0.67 | 0.62 | 0.12 | -    | -    | -    | 52   |    |                                    |
|                                    |                       |                       |                       |                        | 5' - 10'                                   | 0.64                                 | 0.64 | 0.65 | 0.12 | -    | -    | -    | 52   |    |                                    |
|                                    |                       |                       |                       |                        | 15'  | 0.92                                 | 0.96 | 0.95 | 0.12 | -    | -    | -    | 47   |    |                                    |
| 10                                 |                       | 10                    | 10                    | 8                      | 20'  | 1.21                                 | 1.31 | 1.27 | 0.12 | -    | -    | -    | 47   |    |                                    |
| 11                                 |                       | 11.5                  | 10                    | to                     | 25'  | 1.35                                 | 1.44 | 1.36 | 0.12 | -    | -    | -    | 47   |    |                                    |
| 12.5                               |                       | 12.5                  | 10                    | 12                     | 30'  | 1.35                                 | 1.51 | 1.49 | 0.12 | -    | -    | -    | 47   |    |                                    |
| 10' x 7'                           |                       | 10                    | 10                    | 10                     | 4  | 0.33' - <2'                          | 0.57 | 0.78 | 0.67 | 0.24 | 0.24 | 0.48 | 0.57 | -  |                                    |
|                                    |                       |                       |                       |                        | to   | 2' - <3'                             | 0.57 | 0.78 | 0.67 | 0.12 | -    | -    | -    | 58 |                                    |
|                                    | 12                    |                       |                       |                        | 3' - <5'                                   | 0.58                                 | 0.70 | 0.65 | 0.12 | -    | -    | -    | 58   |    |                                    |
|                                    |                       |                       |                       |                        | 5' - 10'                                   | 0.65                                 | 0.68 | 0.70 | 0.12 | -    | -    | -    | 52   |    |                                    |
|                                    |                       |                       |                       |                        | 15'  | 0.92                                 | 1.02 | 1.02 | 0.12 | -    | -    | -    | 47   |    |                                    |
|                                    | 10                    | 10                    | 10                    | 8                      | 20'  | 1.21                                 | 1.38 | 1.35 | 0.12 | -    | -    | -    | 47   |    |                                    |
|                                    | 11                    | 11.5                  | 10                    | to                     | 25'  | 1.33                                 | 1.52 | 1.44 | 0.12 | -    | -    | -    | 47   |    |                                    |
|                                    | 12.5                  | 12.5                  | 10                    | 12                     | 30'  | 1.38                                 | 1.58 | 1.57 | 0.12 | -    | -    | -    | 47   |    |                                    |
|                                    | 10' x 8'              | 10                    | 10                    | 10                     | 4  | 0.33' - <2'                          | 0.58 | 0.80 | 0.70 | 0.24 | 0.26 | 0.48 | 0.58 | -  |                                    |
|                                    |                       |                       |                       |                        | to   | 2' - <3'                             | 0.58 | 0.80 | 0.70 | 0.12 | -    | -    | -    | 64 |                                    |
| 12                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.60                                 | 0.72 | 0.68 | 0.12 | -    | -    | -    | 58   |    |                                    |
|                                    |                       |                       |                       |                        | 5' - 10'                                   | 0.67                                 | 0.72 | 0.75 | 0.12 | -    | -    | -    | 52   |    |                                    |
|                                    |                       |                       |                       |                        | 15'  | 0.95                                 | 1.08 | 1.08 | 0.12 | -    | -    | -    | 47   |    |                                    |
| 10                                 |                       | 10                    | 10                    | 8                      | 20'  | 1.24                                 | 1.45 | 1.44 | 0.12 | -    | -    | -    | 47   |    |                                    |
| 11                                 |                       | 11.5                  | 10                    | to                     | 25'  | 1.36                                 | 1.59 | 1.52 | 0.12 | -    | -    | -    | 47   |    |                                    |
| 12.5                               |                       | 12.5                  | 10                    | 12                     | 30'  | 1.45                                 | 1.64 | 1.64 | 0.12 | -    | -    | -    | 47   |    |                                    |
| 10' x 9'                           |                       | 10                    | 10                    | 10                     | 4  | 0.33' - <2'                          | 0.61 | 0.82 | 0.73 | 0.24 | 0.26 | 0.50 | 0.61 | -  |                                    |
|                                    |                       |                       |                       |                        | to   | 2' - <3'                             | 0.61 | 0.82 | 0.73 | 0.14 | -    | -    | -    | 70 |                                    |
|                                    | 12                    |                       |                       |                        | 3' - <5'                                   | 0.64                                 | 0.75 | 0.73 | 0.13 | -    | -    | -    | 64   |    |                                    |
|                                    |                       |                       |                       |                        | 5' - 10'                                   | 0.72                                 | 0.77 | 0.80 | 0.12 | -    | -    | -    | 58   |    |                                    |
|                                    |                       |                       |                       |                        | 15'  | 1.00                                 | 1.13 | 1.15 | 0.12 | -    | -    | -    | 52   |    |                                    |
|                                    | 10                    | 10                    | 10                    | 8                      | 20'  | 1.30                                 | 1.53 | 1.52 | 0.12 | -    | -    | -    | 47   |    |                                    |
|                                    | 11                    | 11.5                  | 10                    | to                     | 25'  | 1.42                                 | 1.66 | 1.60 | 0.12 | -    | -    | -    | 47   |    |                                    |
|                                    | 12.5                  | 12.5                  | 10                    | 12                     | 30'  | 1.57                                 | 1.70 | 1.72 | 0.12 | -    | -    | -    | 47   |    |                                    |
|                                    | 10' x 10'             | 10                    | 10                    | 10                     | 4  | 0.33' - <2'                          | 0.66 | 0.84 | 0.75 | 0.24 | 0.27 | 0.52 | 0.65 | -  |                                    |
|                                    |                       |                       |                       |                        | to   | 2' - <3'                             | 0.66 | 0.84 | 0.75 | 0.20 | -    | -    | -    | 79 |                                    |
| 12                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.70                                 | 0.77 | 0.79 | 0.19 | -    | -    | -    | 70   |    |                                    |
|                                    |                       |                       |                       |                        | 5' - 10'                                   | 0.79                                 | 0.81 | 0.87 | 0.18 | -    | -    | -    | 64   |    |                                    |
|                                    |                       |                       |                       |                        | 15'  | 1.09                                 | 1.19 | 1.23 | 0.15 | -    | -    | -    | 52   |    |                                    |
| 10                                 |                       | 10                    | 10                    | 8                      | 20'  | 1.40                                 | 1.61 | 1.61 | 0.14 | -    | -    | -    | 52   |    |                                    |
| 11                                 |                       | 11.5                  | 10                    | to                     | 25'  | 1.53                                 | 1.74 | 1.68 | 0.14 | -    | -    | -    | 47   |    |                                    |
| 12.5                               |                       | 12.5                  | 10.5                  | 12                     | 30'  | 1.60                                 | 1.71 | 1.74 | 0.14 | -    | -    | -    | 47   |    |                                    |

See General Note 5

**TABLE 15 - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 11' SPANS**

| SPAN x RISE<br>(S)<br>(R)<br>(Ft.) | SLAB / WALL THICKNESS |                       |                       |                        | DESIGN<br>EARTH COVER<br>ABOVE<br>TOP SLAB | REINFORCEMENT AREAS<br>(sq. in./Ft.) |      |      |      |      |      |      |      |    | As1 EXT.<br>LENGTH<br>(M)<br>(in.) |
|------------------------------------|-----------------------|-----------------------|-----------------------|------------------------|--|--------------------------------------|------|------|------|------|------|------|------|----|------------------------------------|
|                                    | TOP<br>(Tt)<br>(in.)  | BOT.<br>(Tb)<br>(in.) | SIDE<br>(Tw)<br>(in.) | HAUNCH<br>(H)<br>(in.) |  | As1                                  | As2  | As3  | As4  | As5  | As7  | As8  | As9  |    |                                    |
|                                    |                       |                       |                       |                        |  |                                      |      |      |      |      |      |      |      |    |                                    |
| 11' x 4'                           | 11                    | 11                    | 11                    | 4                      | 0.33' - <2'                                | 0.60                                 | 0.66 | 0.54 | 0.27 | 0.27 | 0.52 | 0.56 | -    |    |                                    |
|                                    |                       |                       |                       | to                     | 2' - <3'                                   | 0.60                                 | 0.66 | 0.54 | 0.14 | -    | -    | -    | 62   |    |                                    |
|                                    |                       |                       |                       | 12                     | 3' - <5'                                   | 0.60                                 | 0.61 | 0.53 | 0.14 | -    | -    | -    | 62   |    |                                    |
|                                    |                       |                       |                       |                        | 5' - 10'                                   | 0.79                                 | 0.63 | 0.62 | 0.14 | -    | -    | -    | 55   |    |                                    |
|                                    |                       |                       |                       |                        | 15'  | 1.01                                 | 0.82 | 0.79 | 0.14 | -    | -    | -    | 55   |    |                                    |
|                                    | 12                    | 12                    | 11                    | 8 to                   | 20'  | 1.34                                 | 1.11 | 1.06 | 0.14 | -    | -    | -    | 55   |    |                                    |
|                                    | 13.5                  | 13.5                  | 11                    | 12                     | 25'  | 1.52                                 | 1.27 | 1.23 | 0.14 | -    | -    | -    | 55   |    |                                    |
|                                    |                       |                       |                       |                        | 30'  | 1.54                                 | 1.37 | 1.34 | 0.14 | -    | -    | -    | 50   |    |                                    |
|                                    | 11' x 6'              | 11                    | 11                    | 11                     | 4  | 0.33' - <2'                          | 0.57 | 0.71 | 0.60 | 0.27 | 0.27 | 0.47 | 0.53 | -  |                                    |
|                                    |                       |                       |                       |                        | to   | 2' - <3'                             | 0.56 | 0.71 | 0.60 | 0.14 | -    | -    | -    | 62 |                                    |
| 12                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.56                                 | 0.67 | 0.59 | 0.14 | -    | -    | -    | 55   |    |                                    |
|                                    |                       |                       |                       |                        | 5' - 10'                                   | 0.73                                 | 0.71 | 0.72 | 0.14 | -    | -    | -    | 55   |    |                                    |
|                                    |                       |                       |                       |                        | 15'  | 0.92                                 | 0.92 | 0.91 | 0.14 | -    | -    | -    | 50   |    |                                    |
| 11                                 |                       | 11                    | 11                    | 8                      | 20'  | 1.21                                 | 1.25 | 1.21 | 0.14 | -    | -    | -    | 50   |    |                                    |
| 12                                 |                       | 12                    | 11                    | to                     | 25'  | 1.37                                 | 1.43 | 1.39 | 0.14 | -    | -    | -    | 50   |    |                                    |
| 13.5                               |                       | 13.5                  | 11                    | 12                     | 30'  | 1.39                                 | 1.53 | 1.50 | 0.14 | -    | -    | -    | 50   |    |                                    |
| 11' x 8'                           |                       | 11                    | 11                    | 11                     | 4  | 0.33' - <2'                          | 0.55 | 0.76 | 0.66 | 0.27 | 0.27 | 0.46 | 0.55 | -  |                                    |
|                                    |                       |                       |                       |                        | to   | 2' - <3'                             | 0.55 | 0.76 | 0.66 | 0.14 | -    | -    | -    | 62 |                                    |
|                                    | 12                    |                       |                       |                        | 3' - <5'                                   | 0.54                                 | 0.72 | 0.65 | 0.14 | -    | -    | -    | 62   |    |                                    |
|                                    |                       |                       |                       |                        | 5' - 10'                                   | 0.73                                 | 0.79 | 0.82 | 0.14 | -    | -    | -    | 55   |    |                                    |
|                                    |                       |                       |                       |                        | 15'  | 0.93                                 | 1.03 | 1.03 | 0.14 | -    | -    | -    | 50   |    |                                    |
|                                    | 11                    | 11                    | 11                    | 8                      | 20'  | 1.21                                 | 1.39 | 1.36 | 0.14 | -    | -    | -    | 50   |    |                                    |
|                                    | 12                    | 12.5                  | 11                    | to                     | 25'  | 1.34                                 | 1.56 | 1.50 | 0.14 | -    | -    | -    | 50   |    |                                    |
|                                    | 13.5                  | 13.5                  | 11                    | 12                     | 30'  | 1.41                                 | 1.66 | 1.65 | 0.14 | -    | -    | -    | 50   |    |                                    |
|                                    | 11' x 10'             | 11                    | 11                    | 11                     | 4  | 0.33' - <2'                          | 0.60 | 0.81 | 0.71 | 0.27 | 0.27 | 0.48 | 0.60 | -  |                                    |
|                                    |                       |                       |                       |                        | to   | 2' - <3'                             | 0.60 | 0.81 | 0.71 | 0.15 | -    | -    | -    | 75 |                                    |
| 12                                 |                       |                       |                       |                        | 3' - <5'                                   | 0.61                                 | 0.77 | 0.70 | 0.14 | -    | -    | -    | 69   |    |                                    |
|                                    |                       |                       |                       |                        | 5' - 10'                                   | 0.80                                 | 0.88 | 0.93 | 0.14 | -    | -    | -    | 62   |    |                                    |
|                                    |                       |                       |                       |                        | 15'  | 1.01                                 | 1.13 | 1.15 | 0.14 | -    | -    | -    | 55   |    |                                    |
| 11                                 |                       | 11                    | 11                    | 8                      | 20'  | 1.30                                 | 1.52 | 1.52 | 0.14 | -    | -    | -    | 50   |    |                                    |
| 12                                 |                       | 12.5                  | 11                    | to                     | 25'  | 1.42                                 | 1.70 | 1.65 | 0.14 | -    | -    | -    | 50   |    |                                    |
| 13.5                               |                       | 14                    | 11                    | 12                     | 30'  | 1.53                                 | 1.77 | 1.74 | 0.14 | -    | -    | -    | 50   |    |                                    |
| 11' x 11'                          |                       | 11                    | 11                    | 11                     | 4  | 0.33' - <2'                          | 0.64 | 0.83 | 0.74 | 0.27 | 0.27 | 0.51 | 0.64 | -  |                                    |
|                                    |                       |                       |                       |                        | to   | 2' - <3'                             | 0.64 | 0.83 | 0.74 | 0.21 | -    | -    | -    | 86 |                                    |
|                                    | 12                    |                       |                       |                        | 3' - <5'                                   | 0.67                                 | 0.79 | 0.75 | 0.21 | -    | -    | -    | 75   |    |                                    |
|                                    |                       |                       |                       |                        | 5' - 10'                                   | 0.88                                 | 0.93 | 0.99 | 0.19 | -    | -    | -    | 69   |    |                                    |
|                                    |                       |                       |                       |                        | 15'  | 1.09                                 | 1.19 | 1.23 | 0.16 | -    | -    | -    | 55   |    |                                    |
|                                    | 11                    | 11                    | 11                    | 8                      | 20'  | 1.40                                 | 1.59 | 1.60 | 0.15 | -    | -    | -    | 55   |    |                                    |
|                                    | 12                    | 12.5                  | 11                    | to                     | 25'  | 1.54                                 | 1.77 | 1.73 | 0.15 | -    | -    | -    | 50   |    |                                    |
|                                    | 13.5                  | 14                    | 11.5                  | 12                     | 30'  | 1.57                                 | 1.77 | 1.76 | 0.14 | -    | -    | -    | 50   |    |                                    |

See General Note 5

**NOTES:**

1. See Sheet 2 for General Notes.
2. See Sheet 7 for Reinforcing Details and dimension locations.
3. See Sheet 14 for WWR Bending Diagrams.

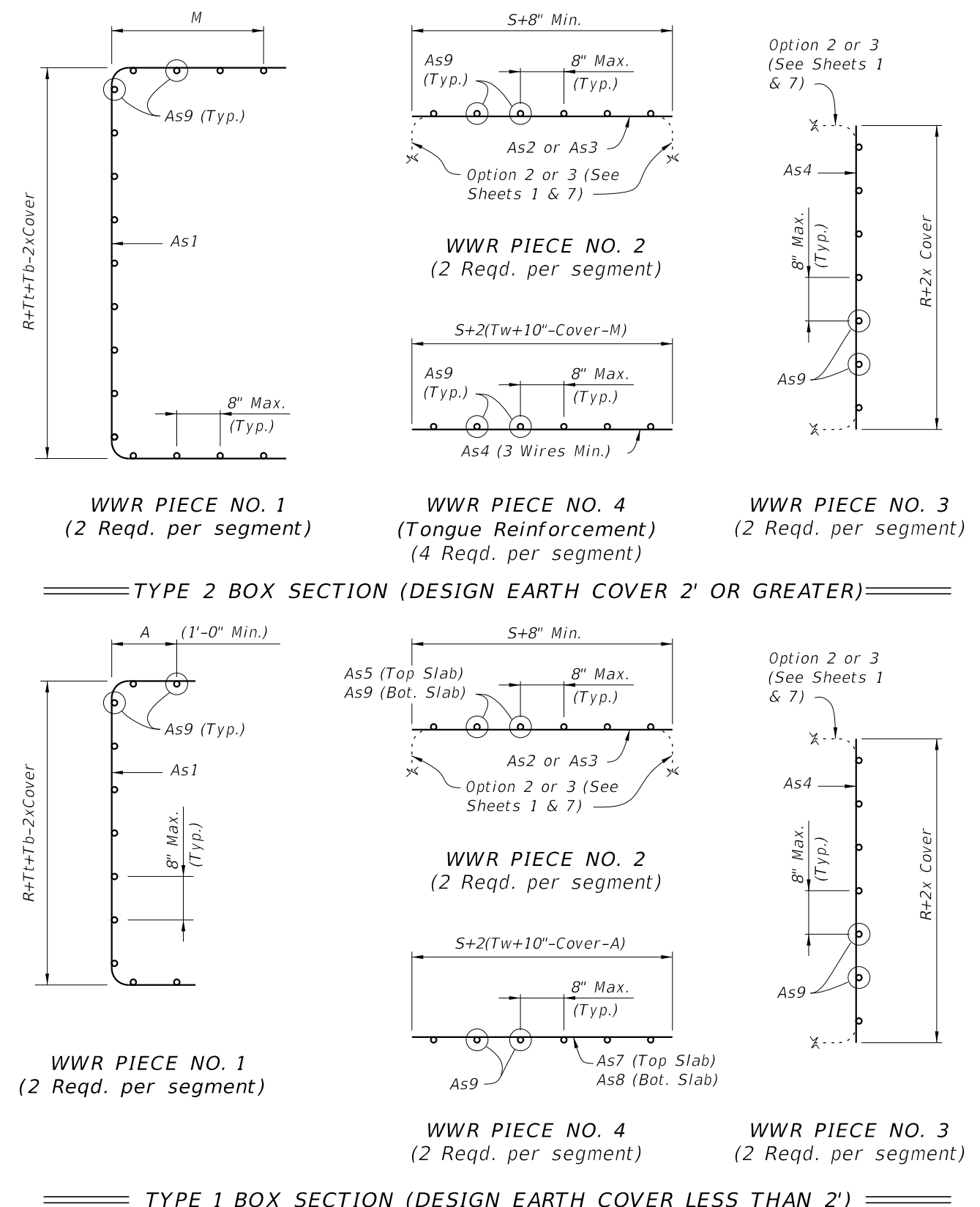
WELDED WIRE REINFORCEMENT BENDING DIAGRAM

| TABLE 16 - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 12' SPANS |                       |                       |                       |                        |  |                                      |      |          |      |      |      |      |      |                                    |      |      |      |   |   |    |
|--|-----------------------|-----------------------|-----------------------|------------------------|--|--------------------------------------|------|----------|------|------|------|------|------|------------------------------------|------|------|------|---|---|----|
| SPAN x RISE<br>(S)<br>(R)<br>(Ft.)                                     | SLAB / WALL THICKNESS |                       |                       |                        | DESIGN<br>EARTH COVER<br>ABOVE<br>TOP SLAB | REINFORCEMENT AREAS<br>(sq. in./Ft.) |      |          |      |      |      |      |      | As1 EXT.<br>LENGTH<br>(M)<br>(in.) |      |      |      |   |   |    |
|  | TOP<br>(Tt)<br>(in.)  | BOT.<br>(Tb)<br>(in.) | SIDE<br>(Tw)<br>(in.) | HAUNCH<br>(H)<br>(in.) |  | As1                                  | As2  | As3      | As4  | As5  | As7  | As8  | As9  |                                    |      |      |      |   |   |    |
| 12' x 4'   | 12                    | 12                    | 12                    | 4                      | 0.33' - <2'                                | 0.59                                 | 0.64 | 0.51     | 0.29 | 0.29 | 0.52 | 0.55 | -    |                                    |      |      |      |   |   |    |
|  |                       |                       |                       | to                     | 2' - <3'                                   | 0.60                                 | 0.64 | 0.51     | 0.15 | -    | -    | -    | 73   |                                    |      |      |      |   |   |    |
|  |                       |                       |                       |                        | 3' - <5'                                   | 0.60                                 | 0.61 | 0.51     | 0.15 | -    | -    | -    | 66   |                                    |      |      |      |   |   |    |
|  |                       |                       |                       |                        | 5' - 10'                                   | 0.81                                 | 0.61 | 0.61     | 0.15 | -    | -    | -    | 66   |                                    |      |      |      |   |   |    |
|  |                       |                       |                       |                        | 15'  | 1.04                                 | 0.80 | 0.77     | 0.15 | -    | -    | -    | 59   |                                    |      |      |      |   |   |    |
|  |                       |                       |                       |                        | 20'  | 1.37                                 | 1.08 | 1.03     | 0.15 | -    | -    | -    | 59   |                                    |      |      |      |   |   |    |
| 12' x 6'   | 12                    | 12                    | 12                    | 4                      | 0.33' - <2'                                | 0.56                                 | 0.70 | 0.57     | 0.29 | 0.29 | 0.47 | 0.52 | -    |                                    |      |      |      |   |   |    |
|  |                       |                       |                       | to                     | 2' - <3'                                   | 0.56                                 | 0.70 | 0.57     | 0.15 | -    | -    | -    | 66   |                                    |      |      |      |   |   |    |
|  |                       |                       |                       |                        | 3' - <5'                                   | 0.56                                 | 0.67 | 0.57     | 0.15 | -    | -    | -    | 59   |                                    |      |      |      |   |   |    |
|  |                       |                       |                       |                        | 5' - 10'                                   | 0.74                                 | 0.69 | 0.70     | 0.15 | -    | -    | -    | 59   |                                    |      |      |      |   |   |    |
|  |                       |                       |                       |                        | 15'  | 0.94                                 | 0.90 | 0.88     | 0.15 | -    | -    | -    | 53   |                                    |      |      |      |   |   |    |
|  |                       |                       |                       |                        | 20'  | 1.23                                 | 1.22 | 1.17     | 0.15 | -    | -    | -    | 53   |                                    |      |      |      |   |   |    |
| 12' x 8'   | 12                    | 12                    | 12                    | 4                      | 0.33' - <2'                                | 0.55                                 | 0.75 | 0.63     | 0.29 | 0.29 | 0.45 | 0.53 | -    |                                    |      |      |      |   |   |    |
|  |                       |                       |                       | to                     | 2' - <3'                                   | 0.55                                 | 0.75 | 0.63     | 0.15 | -    | -    | -    | 66   |                                    |      |      |      |   |   |    |
|  |                       |                       |                       |                        | 3' - <5'                                   | 0.55                                 | 0.73 | 0.63     | 0.15 | -    | -    | -    | 59   |                                    |      |      |      |   |   |    |
|  |                       |                       |                       |                        | 5' - 10'                                   | 0.73                                 | 0.77 | 0.79     | 0.15 | -    | -    | -    | 59   |                                    |      |      |      |   |   |    |
|  |                       |                       |                       |                        | 15'  | 0.93                                 | 1.00 | 0.99     | 0.15 | -    | -    | -    | 53   |                                    |      |      |      |   |   |    |
|  |                       |                       |                       |                        | 20'  | 1.21                                 | 1.35 | 1.31     | 0.15 | -    | -    | -    | 53   |                                    |      |      |      |   |   |    |
| 12' x 10'  | 12                    | 12                    | 12                    | 4                      | 0.33' - <2'                                | 0.57                                 | 0.80 | 0.68     | 0.29 | 0.29 | 0.46 | 0.57 | -    |                                    |      |      |      |   |   |    |
|  |                       |                       |                       | to                     | 2' - <3'                                   | 0.57                                 | 0.80 | 0.68     | 0.15 | -    | -    | -    | 73   |                                    |      |      |      |   |   |    |
|  |                       |                       |                       |                        | 3' - <5'                                   | 0.59                                 | 0.77 | 0.68     | 0.15 | -    | -    | -    | 66   |                                    |      |      |      |   |   |    |
|  |                       |                       |                       |                        | 5' - 10'                                   | 0.78                                 | 0.85 | 0.89     | 0.15 | -    | -    | -    | 59   |                                    |      |      |      |   |   |    |
|  |                       |                       |                       |                        | 15'  | 0.98                                 | 1.10 | 1.11     | 0.15 | -    | -    | -    | 53   |                                    |      |      |      |   |   |    |
|  |                       |                       |                       |                        | 20'  | 1.26                                 | 1.47 | 1.45     | 0.15 | -    | -    | -    | 53   |                                    |      |      |      |   |   |    |
| 12' x 12'  | 12                    | 12                    | 12                    | 4                      | 0.33' - <2'                                | 0.65                                 | 0.84 | 0.73     | 0.29 | 0.29 | 0.50 | 0.65 | -    |                                    |      |      |      |   |   |    |
|  |                       |                       |                       | to                     | 2' - <3'                                   | 0.65                                 | 0.84 | 0.73     | 0.23 | -    | -    | -    | 93   |                                    |      |      |      |   |   |    |
|  |                       |                       |                       |                        | 3' - <5'                                   | 0.68                                 | 0.81 | 0.75     | 0.22 | -    | -    | -    | 80   |                                    |      |      |      |   |   |    |
|  |                       |                       |                       |                        | 5' - 10'                                   | 0.90                                 | 0.94 | 1.01     | 0.21 | -    | -    | -    | 73   |                                    |      |      |      |   |   |    |
|  |                       |                       |                       |                        | 15'  | 1.12                                 | 1.20 | 1.24     | 0.18 | -    | -    | -    | 59   |                                    |      |      |      |   |   |    |
|  |                       |                       |                       |                        | 20'  | 1.42                                 | 1.60 | 1.61     | 0.16 | -    | -    | -    | 59   |                                    |      |      |      |   |   |    |
| 12' x 4'   | 14.5                  | 14.5                  | 12                    | 8 to                   | 25'  | 1.58                                 | 1.26 | 1.21     | 0.15 | -    | -    | -    | 59   |                                    |      |      |      |   |   |    |
|  |                       |                       |                       | 12                     | 30'  | 1.63                                 | 1.38 | 1.34     | 0.15 | -    | -    | -    | 53   |                                    |      |      |      |   |   |    |
|  |                       |                       |                       | 12' x 6'               | 14.5                                       | 15                                   | 12   | 8 to     | 25'  | 1.40 | 1.42 | 1.37 | 0.15 | -                                  | -    | 53   |      |   |   |    |
|  |                       |                       |                       |                        |  |                                      |      | 12       | 30'  | 1.44 | 1.54 | 1.48 | 0.15 | -                                  | -    | 53   |      |   |   |    |
|  |                       |                       |                       |                        |  |                                      |      | 12' x 8' | 14.5 | 15   | 12   | 8    | 20'  | 1.21                               | 1.35 | 1.31 | 0.15 | - | - | 53 |
|  |                       |                       |                       |                        |  |                                      |      |          |      |      |      | to   | 25'  | 1.35                               | 1.55 | 1.48 | 0.15 | - | - | 53 |
| 12   | 30'                   | 1.40                  | 1.67                  |                        |  |                                      |      |          |      |      |      | 1.62 | 0.15 | -                                  | -    | 53   |      |   |   |    |
| 12' x 10'  | 14.5                  | 15                    | 12                    |                        |  |                                      |      |          |      |      |      | 8    | 20'  | 1.26                               | 1.47 | 1.45 | 0.15 | - | - | 53 |
|  |                       |                       |                       | to                     | 25'  | 1.39                                 | 1.68 |          |      |      |      | 1.63 | 0.15 | -                                  | -    | 53   |      |   |   |    |
|  |                       |                       |                       | 12                     | 30'  | 1.48                                 | 1.79 |          |      |      |      | 1.76 | 0.15 | -                                  | -    | 53   |      |   |   |    |
|  |                       |                       |                       | 12' x 12'              | 14.5                                       | 15                                   | 12.5 | 8        | 20'  | 1.42 | 1.60 | 1.61 | 0.16 | -                                  | -    | 59   |      |   |   |    |
|  |                       |                       |                       |                        |  |                                      |      | to       | 25'  | 1.57 | 1.81 | 1.78 | 0.16 | -                                  | -    | 53   |      |   |   |    |
|  |                       |                       |                       |                        |  |                                      |      | 12       | 30'  | 1.63 | 1.86 | 1.85 | 0.15 | -                                  | -    | 53   |      |   |   |    |

See General Note 5

NOTES:

1. See Sheet 2 of 14 for General Notes.
2. See Sheet 7 of 14 for Reinforcing Details and dimension locations.



REINFORCEMENT NOTES:

1. Reinforcement bending dimensions are out-to-out.
2. See General Notes 4, 5 and 6 on Sheet 2.
3. See Tables 1 thru 16 for dimensions M, R, S, Tb, Tt and Tw.
4. Dimension "A" is determined by the Manufacturer in accordance with the requirements of Detail "B" on Sheets 1 and 7.

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