

<b>Part 3 - Manufacturing Tolerances</b>						
<b>PRODUCT</b>	<b>Dimensional Tolerances (H,L,W)</b>	<b>Rebar Spacing (in.)</b>	<b>Lateral Rebar Location (in.)</b>	<b>Top &amp; Bottom Slab Thickness (in.)</b>	<b>Wall Thickness (in.)</b>	<b>Concrete Cover<sub>5</sub> (in.)</b>
Round Pipe - Diameter ≤ 30"	± 1/2"	NA	NA	NA	-3/16"	1/2" min.
Round Pipe - Diameter ≥ 36"	± 1/2"	NA	NA	NA	5% <sub>4</sub>	1/2" min.
Arch Pipe - < 26 5/8" x 43 3/8"	± 1/2"	NA	NA	NA	5% <sub>4</sub>	1/2" min.
Arch Pipe - ≥ 26 5/8" x 43 3/8"	± 1/2"	NA	NA	NA	5% <sub>4</sub>	1/2" min.
Elliptical Pipe - < 29" x 45"	± 1/2"	NA	NA	NA	-3/16"	1/2" min.
Elliptical Pipe - ≥ 29" x 45"	± 1/2"	NA	NA	NA	5% <sub>4</sub>	1/2" min.
Manholes/Lid	± 1/2"	± 1 1/2"	± 1/2"	-3/8" ≤ D ≤ 1" <sub>1</sub>	-3/8" ≤ D ≤ 1" <sub>1</sub>	Design - 1/2" <sub>2</sub>
Catchbasins/Lid	± 1/2"	± 1 1/2"	± 1/2"	-3/8" ≤ D ≤ 1" <sub>1</sub>	-3/8" ≤ D ≤ 1" <sub>1</sub>	Design - 1/2" <sub>2</sub>
Junction Box/Lid	± 1/2"	± 1 1/2"	± 1/2"	-3/8" ≤ D ≤ 1" <sub>1</sub>	-3/8" ≤ D ≤ 1" <sub>1</sub>	Design - 1/2" <sub>2</sub>
Spring Box/Lid	± 1/2"	± 1 1/2"	± 1/2"	-3/8" ≤ D ≤ 1" <sub>1</sub>	-3/8" ≤ D ≤ 1" <sub>1</sub>	Design - 1/2" <sub>2</sub>
Structural Spans	± 1/2" <sub>3</sub>	± 1 1/2"	± 1/2"	-3/8" ≤ D ≤ 1" <sub>1</sub>	± 1/2"	Design - 1/2" <sub>2</sub>
Box Culverts	± 1/2"	± 1 1/2"	± 1/2"	-3/8" ≤ D ≤ 1" <sub>1</sub>	-3/8" ≤ D ≤ 1" <sub>1</sub>	Design - 1/2" <sub>2</sub>
Endwalls	± 1/2"	± 1 1/2"	± 1/2"	-3/8" ≤ D ≤ 1" <sub>1</sub>	-3/8" ≤ D ≤ 1" <sub>1</sub>	Design - 1/2" <sub>2</sub>
Noise, MSE, and Retaining wall panels	± 1/2"	± 1 1/2"	± 1/2"	NA	NA	Design - 1/2" <sub>2</sub>

1 - Shall not be less than 3/8" of design nor more than 1" greater than design

2- Minor Error : Actual concrete cover greater than or equal to the designed concrete cover minus 1".

Major Error: Actual concrete cover less than the designed concrete cover minus 1".

3 - For length of beams: Computed Elastic Shortening ± 1/2"

4 - Not more than 5% less than the specified wall thickness

5 - Concrete cover does not include the lid. Anything less than 1" of concrete cover for lids constitutes a major error.

**NOTE: All errors in excess of two times these allowable tolerances are considered major errors and qualify for rejection.**

**All errors less than two times these allowable tolerances are considered minor errors.**

**Any missing or undersized steel is considered a major error.**