****THIS IS A NEW APPENDIX. – PLEASE READ CAREFULLY.****

TIE RODS FOR CONCRETE PIPES AND BOX CULVERTS

For all concrete pipes and box culverts, “Tie Rods” shall be required for all joints unless otherwise specified in the plans or in the contract documents.

For details, refer to Standard Road Plan RF-14

Tie Rods shall meet the requirements of ASTM A 615 (smooth) Grade 40 or Grade 60 and / or ASTM A 706 Grade 60 (smooth).

Unless otherwise specified, threads of the tie rods shall be the coarse thread series in accordance with the requirements of ASME B 1.1 and shall have a Class 1A or 2A tolerance.

Galvanizing and or metalizing (after fabrication):

- Galvanizing shall meet the requirements of ASTM A-153 or ASTM F 2329
- Metalizing shall meet the requirements of ASTM B 633 Class Fezn 25 (minimum thickness 25 µm) or Class Fezn 12 (minimum thickness of 12 µm)

Note: Overtapping the nuts after galvanizing amay be required.

Tie Rod Sizes

Pipe size (inches)	Rod Thread Diameter (inches)
12” - 27”	5/8”
30” – 66”	3/4”
72” – 108”	1.0”

Hole Sizes

Rod Thread Diameter (inches)	Pipe Holes – Inside Diameter
5/8”	3/4”
3/4”	1.0”
1.0”	

Tie Rod Types

1. Connected joint templates
2. One bend end with bell end spacer
3. Two sided bell end spacers

Welding – no welds shall be allowed on any type or size tie rods.

Tie Rods shall be from a domestic origin (melted and manufactured in the USA)