Shop Drawings Checklist – 3 sided and 4 sided culverts 3/8/19

4 Sided culverts – 12' span or less, no shop drawing required, covered by AASHTO
>12' spans (megabox), shop drawings required as per spec 714.04

3 Sided culverts – shop drawings required for all sizes as per spec 723.03

- ❑ On each sheet, check that the plans indicate the following:
  - Contract Number
  - Des Number
  - Route Number
  - File Number
  - County
  - Structure Description
  - PE Stamp and Signature
  - North arrow

- ❑ Plan, elevation and cross sections indicating span and rise with all members dimensions and General or Special notes in accordance with the Contract documents to be on the first sheet after the title sheet.
- ❑ Structural design criteria: Loading information, material grades.
- ❑ Check size & length of box
- ❑ Reinforcing details, including sizes, laps or development lengths, minimum concrete covers and position of reinforcing, bar cutting diagrams and bar schedules, etc.
- ❑ Minimum reinforcing requirements must be met.
- ❑ Limiting elevations and lengths, such as top, bottom, longitudinal and flow line etc.
- ❑ Headwall dimensions and details. Cut off wall and details (if any).
- ❑ Joint details and wrap over.
- ❑ Attachment of culvert to wing wall plus details.
- ❑ Geotechnical data table and any special compaction / backfill requirements.
- ❑ Footing details & design
- ❑ Backfill details
- ❑ Design calculations or program output, signed by a PE should be in accordance with the latest AASHTO,ASTM and INDOT requirements. Crack control and minimum reinforcement requirements should be checked.
- ❑ Details for top mounted guardrail.
- ❑ If Maintenance of Traffic causes any special requirements, these should be noted.

Plan Note:

Addressing both IDEM's and our own construction staff's concerns regarding section 723.01 of our specifications that allows the contractor the option of using a 4-sided box in place of a 3-sided structure. put a note on the plans similar to the note allowing or disallowing a three-sided arch structure.

A ____ Span x ____ Rise 4-sided box culvert with an upstream invert of ____ and downstream invert of ____ is allowed.

The option is now a part of the plans and that the invert elevations show that we are indeed sumping the culverts.

31-3.04(07) Culvert Sumping

Sumping, for a circular or deformed pipe, or box structure, consists of placing the invert a specified depth below the flow line, so as to be in accordance with IDEM Water Quality Section 401 permit requirements. For a three-sided structure, this consists of treating the stream bed as shown on the INDOT *Standard Drawings*. No increase in rise will be required.

For a pipe or box structure, the required sump is shown in Figure 31-3A(1).

Structure Diameter or Span, S (ft)	Sump Required for Stream Bed of Sand (in.)	Sump Required for Stream Bed of Other Soil (in.)
< 4	6	3
$4 \leq S < 12$	12	6
$12 \leq S < 20$	18	12

CULVERT SUMP REQUIREMENT

Figure 31-3A(1)

If the sump shown in Figure 31-3A(1) exceeds 3 in., the structure diameter or rise must be increased by the sump value.

Where bedrock or consolidated till is present within the sump depth, the bedrock or till will be excavated such that the invert is placed 3 in. below the surface of the bedrock or till.