

LOCATION AND DESIGN DIVISION

INSTRUCTIONAL AND INFORMATIONAL MEMORANDUM

GENERAL SUBJECT: PIPE BEDDING AND BACKFILL REQUIREMENTS	NUMBER: IIM-LD-225.2
SPECIFIC SUBJECT: APPLICABLE TO PIPE, BOX CULVERTS AND DRAINAGE STRUCTURES	DATE: FEBRUARY 20, 2007
	SUPERSEDES: IIM-LD-225.1
DIVISION ADMINISTRATOR APPROVAL: Mohammad Mirshahi, P.E. State Location and Design Engineer Approved February 20, 2007	

Shading has been omitted.

CURRENT REVISION

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- The initial 4" of pipe bedding and pipe backfill material is no longer a separate pay item. Therefore, the bedding and backfill tables have been removed from this memorandum. (See Standard Drawing DSB-1 for the bedding under drainage structures)
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EFFECTIVE DATE

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- This memo is effective upon receipt.
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BEDDING

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- For a normal earth foundation, VDOT's Road and Bridge Standards PB-1 and DSB-1 specifies the following bedding material requirements under pipe and box culverts and drainage structures (drop inlets, manholes, junction boxes, etc.):
 - For pipe culverts, 4 inches (100 mm)
 - For box culverts, 6 inches (150 mm)

- For drainage structures, 4 inches (100 mm) or 6 inches (150 mm), depending on the height of the structure (< > 10 feet (3.05 m))
- Greater depths of bedding material are required where rock or soft, yielding or unsuitable material is encountered in the foundation area.
- For cast in place box culverts, where rock is encountered in the foundation area, bedding material is not required and the bottom slab of the box culvert is to be keyed into the existing rock.
- Section 302.03 of the Road and Bridge Specifications specifies that the bedding material shall be Aggregate No. 25 or 26 except when standing or running water is present in the foundation area. When standing or running water is present in the foundation area, the depth of the bedding material specified on the plans or the standard drawings (or as otherwise directed by the Engineer) shall be increased by 4 inches (100 mm), with the top 4 inches (100 mm) of the bedding material consisting of Aggregate No. 25 or 26 and the remaining bottom portion consisting of Aggregate No. 57.
- For certain routine entrance pipe installations (except for plastic pipe), the Bedding Material may be eliminated for normal earth foundations. See Road and Bridge Standard PB-1 for additional information.
- The top 4" (100 mm) (for pipe culverts) or 6 inches (150 mm) (for box culverts) of Bedding Material is not measured for payment and its cost is included in the contract unit price for the related pipe or box culvert.
- Where the plans specify, or field conditions dictate, bedding material depths greater than 4" (100 mm) (for pipe culverts) or 6 inches (150 mm) (for box culverts), the bedding material below the top 4" (100 mm) (for pipe culverts) or 6 inches (150 mm) (for box culverts) shall be measured and paid for at the contract unit price per ton for the type of material specified. Where No. 57 Aggregate must be used due to the presence of standing or running water in the foundation area, it will be measured and paid for at the contract unit price or, if not in the contract, in accordance with Section 109.05 of the Road and Bridge Specifications.
- The Bedding Material Aggregate No. 25 or 26 for drainage structures (regardless of the required depth) is not measured for payment and its cost is included in the contract unit price for the related drainage structure. Where No. 57 Aggregate must be used due to the presence of standing or running water in the foundation area, it will be measured and paid for at the contract unit price or, if not in the contract, in accordance with Section 109.05 of the Road and Bridge Specifications.

BACKFILL

- Standard PB-1 requires that the backfill for pipes (except plastic) consist of Class I Backfill Material extending from the top of the Bedding Material to the spring line of the pipe and Regular Backfill Material extending from the top of the Class I Backfill Material to 1 foot (300 mm) above the top of the pipe.

- For plastic pipe, the Class I Backfill Material is to extend from the top of the Bedding Material to 1 foot (300 mm) above the top of the pipe with no Regular Backfill Material required.
- Backfill for box culverts is to be only Regular Backfill Material and is to extend from the top of the Bedding Material to 1 foot (300 mm) above the top of the box culvert and is to extend a minimum of 18" (450 mm) on each side of the box culvert.
- Class 1 Backfill Material shall be either Aggregate No. 25 or 26, Aggregate Base Material Size 21A or 21B or Flowable Fill.
- Regular Backfill Material shall be regular excavation conforming to Section 303 of the Road and Bridge Specifications.
- For certain routine entrance pipe installations (except for plastic pipe), Regular Backfill Material may be used in lieu Class I Backfill Material. See Road and Bridge Standard PB-1 for additional information.
- The Class I Backfill Material is not measured for payment and its cost is included in the contract unit price for the related pipe culvert.
- Furnishing and placing Regular Backfill Material is included in the cost of Regular Excavation and is not measured for separate payment unless suitable material is not available within the construction limits. When suitable material is not available within the construction limits, the material furnished and placed by the contractor is paid for in accordance with Section 109.05 of the Road and Bridge Specifications.