Instructions for use
Construction Specification 41—Reinforced Concrete Pressure Pipe Conduits

1. Applicability
Construction Specification 41 is applicable to the construction of principal spillway conduits appurtenant to earth dams using bedded or cradled reinforced concrete pressure pipe. It may also be applied to the construction of any type of reinforced concrete pipe conduit that crosses under or through an earth dam or other deep earthfill.

2. Material specifications
The following material specifications complement Construction Specification 41:
535—Preformed Expansion Joint Filler
536—Sealing Compound for Joints in Concrete and Concrete Pipe
541—Reinforced Concrete Pressure Pipe

Construction Specification 31, Portland Cement Concrete for Bedding and Cradles, complements Construction Specification 41.

3. Included items
Items to be included in contract specifications and drawings follow:

a. Line and grade of the conduit. Include statement in items of work that pipe shall be laid so that there is no reversal of grade between joints unless shown on drawings.
b. Details of the pipe bedding or cradle, including joint details.
c. Excavation and backfill requirements, if applicable.
d. Pay limits or actual limits for excavation.
e. Details of wall fittings and other special pipe fittings.
f. Special requirements for foundation preparation.
g. Type of pipe.
h. Size of pipe.
i. Strength of pipe in terms of three-edge bearing load and internal pressure.
j. Statement on acceptability for project use of pipe or pipe specimens tested in three-edge bearing test within the limits specified in Material Specification 541.
k. Maximum allowable offset in alignment of interior pipe surface at joints, if tolerance is limited by cavitation hazard.
l. Method of pressure test selected. See item 4, Section 4, Pressure testing. Identify any variance from ASTM C 924 for air test criteria.
m. Minimum joint length and minimum limiting angle of the joints according to definitions in Material Specification 541. Industry recommendation is to limit joint deflections to 1.5 inches.
n. Type and class of expansion joint filler.
o. Class of concrete for bedding or cradle and support blocks.
p. Statement that metal strips covering the joints as specified in section 4 are not required, if applicable. (If the conduit rests on bedrock so no appreciable movement takes place at the joints, metal cover strips generally are not needed.)

4. Methods
Section 3, Laying the pipe

***Method 1*—**The preferred method of stating the instructions for connecting pipe sections.

***Method 2*—**Intended for use when special problems are anticipated or when the pipe to be furnished requires special methods of connection.

Section 4, Pressure testing

Method 1—Considered adequate for principal spillway conduits that operate under pressure intermittently at normal frequencies.

Method 2—May be required for principal spillway conduits that operate under pressure for extended periods or at frequent intervals.

Method 3—May be required where water is at a premium or unavailable; otherwise is not recommended because of potential size limitations and safety concerns.

Method 4—May be required for conduits that operate under pressure when large pipe diameters or other project restraints make method 2 or 3, or both, difficult, expensive or unsafe to test.

Section 6, Measurement and payment

Method 1—Must be used when it is desired to base payment on the measurement of the laid length of the conduit.

Method 2—Must be used when it is desired to base payment on the summation of the nominal laying lengths of the pipe sections used.

Sections 3, 4, and 6

When specifications are prepared using electronic procedures and all methods but one are deleted for use in a contract specification, delete from the last paragraph ***All Methods The following provisions apply to all methods of measurement and payment.*** Left justify the remaining text.

5. Items of work and construction details

Starting at the top of page 41–4, prepare and outline job specific "Items of Work and Construction Details" (IWCD) in accordance with these instructions. For ease of utilization, the use of recyclable color paper for the IWCD should be considered.