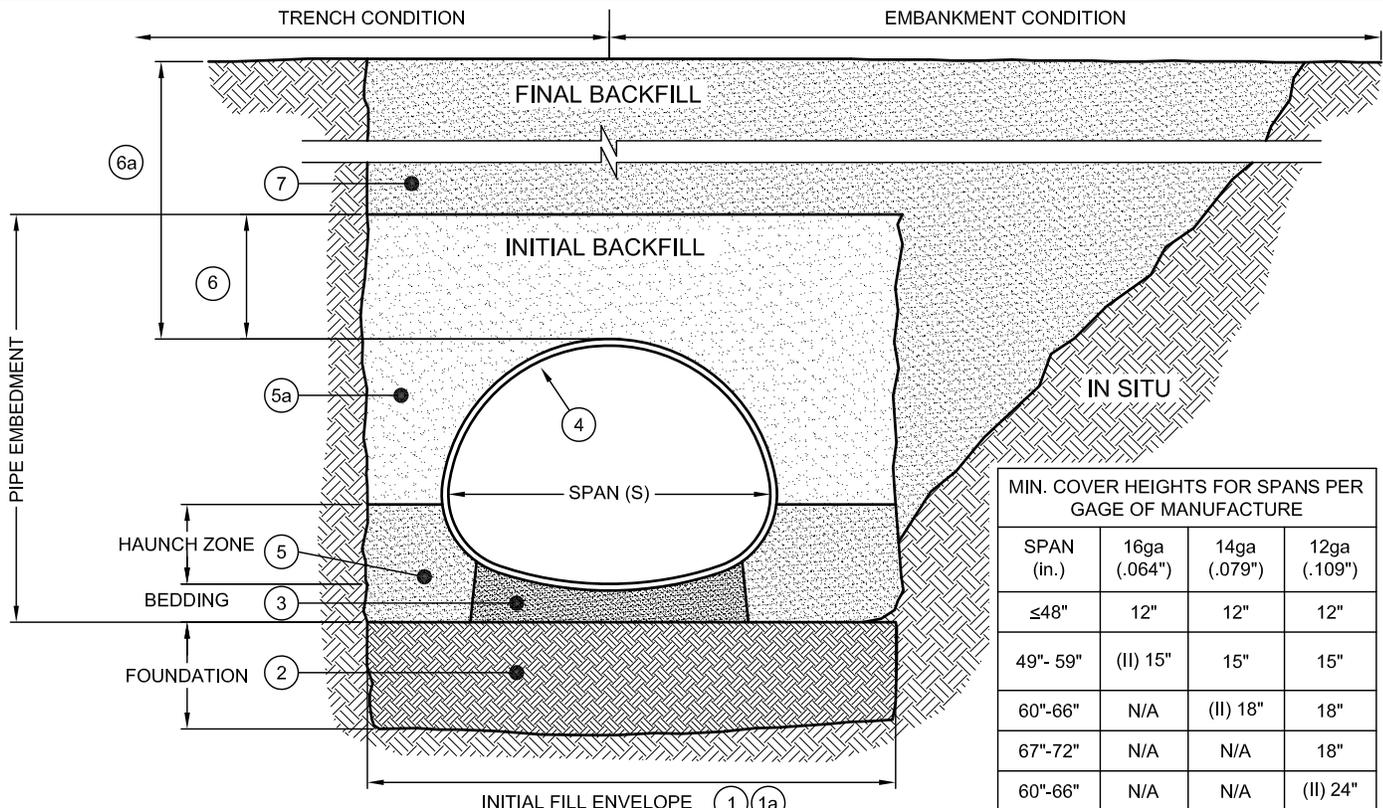


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• **BACKFILL REQUIREMENTS FOLLOW THE GUIDELINES OF ASTM A 798.**

ALL INSTALLATIONS ARE TYPE (I) UNLESS OTHERWISE NOTED. SEE NOTE 5a FOR ALL INSTALLATION REQUIREMENTS.

- ① MINIMUM TRENCH WIDTH MUST ALLOW ROOM FOR PROPER COMPACTION OF HAUNCH MATERIALS UNDER THE PIPE ARCH. THE TRENCH WIDTH IS THE MINIMUM AMOUNT REQUIRED FOR PROPER INSTALLATION (5.1) AND TO SUPPORT HORIZONTAL PRESSURE FROM THE PIPE ARCH (TABLE #1 & FIG 5). THE MANUFACTURER'S SUGGESTED MINIMUM VALUE IS: $1.5S + 12"$.
- ①a MINIMUM EMBANKMENT WIDTH (in feet) FOR INITIAL FILL ENVELOPE SHALL BE: $3.0S$ BUT NO LESS THAN $S + 4'0"$ (TABLE #1 & FIG 2).
- ② THE FOUNDATION UNDER THE PIPE ARCH AND SIDE BACKFILL SHALL BE ADEQUATE TO SUPPORT THE LOADS ACTING UPON IT (6.1).
- ③ BEDDING MATERIAL SHALL BE A RELATIVELY LOOSE MATERIAL THAT IS ROUGHLY SHAPED TO FIT THE BOTTOM OF THE PIPE ARCH, AND A DEPTH OF $\frac{1}{2}"$ PER FOOT OF FILL HEIGHT (6a), 24" MAX (FIG. #3). THE MAXIMUM PARTICLE SIZE IS NOT TO EXCEED 3" IN DIAMETER (7.1). WIDTH OF BEDDING TO BE EXTENTS OF THE INVERT OF THE PIPE ARCH.
- ④ 0.75" X 0.75" X 7.5" SPIRAL RIB STEEL PIPE ARCH (ULTRA FLO).
- ⑤ HAUNCH ZONE MATERIAL SHALL BE HAND SHOVELED OR SHOVEL SLICED INTO PLACE TO ALLOW FOR PROPER COMPACTION (10.3).
- ⑤a INITIAL BACKFILL FOR PIPE EMBEDMENT TO MEET GW, GP, GM, GC, SW OR SP UNIFIED SOIL CLASSIFICATION SYSTEM PER ASTM D2487, OR APPROVED EQUAL. ML AND CL MATERIALS ARE TYPICALLY NOT RECOMMENDED (9.2). BACKFILL COMPACTED TO 90% STANDARD PROCTOR PER ASTM D698. MAXIMUM PARTICLE SIZE NOT TO EXCEED 3" (9.2). ALL LIFTS SHALL BE PLACED IN A CONTROLLED MANNER, 6" TO 12" IN DEPTH AND COMPACTED BEFORE ADDING THE NEXT LIFT, AND NO MORE THAN ONE LIFT SIDE-TO-SIDE DIFFERENCE SHALL BE PERMITTED (10.1 & 10.2).

THE FOLLOWING INSTALLATION TYPES ARE PER INDUSTRY STANDARDS & ASTM A796:
TYPE I INSTALLATION - EMBANKMENT OR FILL CONDITION MEETING THE ABOVE MATERIAL AND COMPACTION REQUIREMENTS (10.6).
TYPE II INSTALLATION - TRENCH CONDITION: SAME BACKFILL REQUIREMENTS AS TYPE I (10.5).
- ⑥ INITIAL BACKFILL ABOVE PIPE ARCH MAY INCLUDE ROAD BASE MATERIAL (AND RIGID PAVEMENT IF APPLICABLE).
- ⑥a TOTAL HEIGHT OF COMPACTED COVER FOR CONVENTIONAL HIGHWAY LOADS IS MEASURED FROM TOP OF PIPE ARCH TO BOTTOM OF FLEXIBLE PAVEMENT OR TOP OF RIGID PAVEMENT (ASTM A796, 11.1).
- ⑦ FINAL BACKFILL MATERIAL SELECTION AND COMPACTION REQUIREMENTS SHALL FOLLOW THE PROJECT PLANS AND SPECIFICATIONS PER THE ENGINEER OF RECORD (11.1, 11.2).

NOTES:

- GEOTEXTILE SHOULD BE CONSIDERED FOR USE TO PREVENT SOIL MIGRATION INTO VARYING SOIL TYPES (PROJECT ENGINEER).
- FOR MULTIPLE BARREL INSTALLATIONS THE RECOMMENDED MINIMUM STANDARD SPACING BETWEEN PARALLEL PIPE ARCH RUNS SHALL BE NO LESS THAN 24" FOR SPANS UP TO 48". FOR SPANS > 48", THE MINIMUM SPACING IS $SPAN/2$ OR 36", WHICHEVER IS LESS (ASTM A796, 19.1)
- CONTACT YOUR CONTECH REPRESENTATIVE FOR NONSTANDARD SPACING.

248-CSP-STANDARD BACKFILL-ULTRA FLO-PIPE ARCH-ASTM

 www.ContechES.com 9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069 800-338-1122 513-645-7000 513-645-7993 FAX		248 - CSP ULTRA FLO PIPE ARCH STANDARD BACKFILL DETAIL ASTM		
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