12.6.6.1 Trench Installations

Revise the 1st Paragraph as follows:

The minimum trench width shall provide a 24-in. minimum side wall clearance ~~sufficient space~~ between the pipe and the trench wall to ensure sufficient working room to properly and safely place and compact backfill material.

C12.6.6.1

Revise as follows:

~~As a guide, the minimum trench width should not be less than the greater of the pipe diameter plus 16.0 in. or the pipe diameter times 1.5 plus 12.0 in.~~ The use of specially designed equipment may enable satisfactory installation and embedment even in narrower trenches. If the use of such equipment provides an installation meeting the requirements of this Article, narrower trench widths may be used as approved by the Engineer.

For trenches excavated in rock or high-bearing Soils, decreased trench widths may be used up to the limits required for compaction. For these conditions, the use of a flowable backfill material, as specified in Article 12.4.1.3, allows the envelope to be decreased to within 6.0 in. along each side of the pipe for pipes up to and including 42 inches in diameter or span, or 12 inches for pipes over 42 inches in diameter or span.

Table C12.6.6.2-1 Minimum Width of Soil Envelope

Revise as follows:

Diameter, S (in.)	Minimum Envelope Width (ft.)
<24	S/12
24-~~144~~108	2.0
>~~144~~108	5.0

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Table 12.6.6.3-1 Minimum Soil Cover

Revise as follows:

Type	Condition	Minimum Cover
Corrugated Metal Pipe	—	S/8 ≥ ~~12.0~~ in.24.0 in.
Spiral Rib Metal Pipe	Steel Conduit	S/4 ≥ ~~12.0~~ in. 24.0 in.
	Aluminum Conduit where S ≤ 48.0 in.	S/2 ≥ ~~12.0~~ in. 24.0 in.
	Aluminum Conduit where S > 48.0 in.	S/2.75 ≥ 24.0 in.
Structural Plate Pipe Structures	—	S/8 ≥ ~~12.0~~ in. 24.0 in.
Long-Span Structural Plate Pipe Structures	—	Refer to Table 12.8.3.1.1-1
Structural Plate Box Structures	—	1.4 ft. as specified in Article 12.9.1
Reinforced Concrete Pipe	Unpaved areas and under flexible pavement	Bc/8 or B′c/8, whichever is greater, ≥ ~~12.0~~ in. 24.0 in.
	Compacted granular fill under rigid pavement	~~9.0~~ in. 12.0 in.
Thermoplastic Pipe	—	ID/8 ≥ ~~12.0~~ in. 24.0 in.

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Table 12.10.2.1-1 Standard Embankment Installation Soils and Minimum compaction Requirements

Revise as follows:

Installation Type	Bedding Thickness	Haunch and Outer Bedding	Lower Side
Type 1	For soil foundation, use $B_c/2$ ~~ft~~ in. minimum, not less than 3.0 in. For rock foundation, use B_c ~~ft~~ in. minimum, not less than 6.0 in	95% SW	90% SW, 95% ML, or 100% CL
Type 2-Installations are available for horizontal elliptical, vertical elliptical, and arch pipe	For soil foundation, use $B_c/2$ ~~ft~~ in. minimum, not less than 3.0 in. For rock foundation, use B_c ~~ft~~ in. minimum, not less than 6.0 in	90% SW or 95% ML	85% SW, 90% ML, or 95% CL
Type 3-Installations are available for horizontal elliptical, vertical elliptical, and arch pipe	For soil foundation, use $B_c/2$ ~~ft~~ in. minimum, not less than 3.0 in. For rock foundation, use B_c ~~ft~~ in. minimum, not less than 6.0 in	85% SW, 90% ML, or 95% CL	85% SW, 90% ML, or 95% CL
~~Type 4~~	~~For soil foundation, no bedding required. For rock foundation, use Bc/2 ft in. minimum, not less than 6.0 in~~	~~No compaction required, except if CL, use 85% CL~~	~~No compaction required, except if CL, use 85% CL~~

Table 12.10.2.1-2 Standard Trench Installation Soils and Minimum compaction Requirements

Revise as follows:

Installation Type	Bedding Thickness	Haunch and Outer Bedding	Lower Side
Type 1	For soil foundation, use $B_c/2$ ~~ft~~ in. minimum, not less than 3.0 in. For rock foundation, use B_c ~~ft~~ in. minimum, not less than 6.0 in	95% SW	90% SW, 95% ML, or 100% CL, or natural soils of equal firmness
Type 2-Installations are available for horizontal elliptical, vertical elliptical, and arch pipe	For soil foundation, use $B_c/2$ ~~ft~~ in. minimum, not less than 3.0 in. For rock foundation, use B_c ~~ft~~ in. minimum, not less than 6.0 in	90% SW or 95% ML	85% SW, 90% ML, or 95% CL, or natural soils of equal firmness
Type 3-Installations are available for horizontal elliptical, vertical elliptical, and arch pipe	For soil foundation, use $B_c/4$ ~~ft~~ in. minimum, not less than 3.0 in. For rock foundation, use B_c ~~ft~~ in. minimum, not less than 6.0 in	85% SW, 90% ML, or 95% CL	85% SW, 90% ML, or 95% CL, or natural soils of equal firmness
~~Type 4~~	~~For soil foundation, no bedding required. For rock foundation, use Bc/2 ft in. minimum, not less than 6.0 in~~	~~No compaction required, except if CL, use 85% CL~~	~~No compaction required, except if CL, use 85% CL, or natural soils of equal firmness~~

Table 12.10.2.1-3 Coefficients for use with Figure 1.

Revise as follows:

	Installation Type			
	1	2	3	~~4~~
VAF	1.35	1.40	1.40	~~1.45~~
HAF	0.45	0.40	0.37	~~0.30~~
A1	0.62	0.85	1.05	~~1.45~~
A2	0.73	0.55	0.35	~~0.00~~
A3	1.35	1.40	1.40	~~1.45~~
A4	0.19	0.15	0.10	~~0.00~~
A5	0.08	0.08	0.10	~~0.11~~
A6	0.18	0.17	0.17	~~0.19~~
a	1.40	1.45	1.45	~~1.45~~
b	0.40	0.40	0.36	~~0.30~~
c	0.18	0.19	0.20	~~0.25~~
e	0.08	0.10	0.12	~~0.00~~
f	0.05	0.05	0.05	~~-~~
u	0.80	0.82	0.85	~~0.90~~
v	0.80	0.70	0.60	~~-~~

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Table 12.10.4.3.2a-1 Bedding Factors for circular Pipe.

Revise as follows:

Pipe Diameter, in.	Standard Installations			
	Type 1	Type 2	Type 3	~~Type 4~~
12	4.4	3.2	2.5	~~1.7~~
24	4.2	3.0	2.4	~~1.7~~
36	4.0	2.9	2.3	~~1.7~~
72	3.8	2.8	2.2	~~1.7~~
144	3.6	2.8	2.2	~~1.7~~

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