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TECHNICAL BULLETIN

JANUARY 2009

BURIAL-DEPTH CHARTS FOR PVC STORMDRAIN PIPE SERIES 14 AND 28

These burial-depth charts were developed using standard industry practices for predicting diametric deflection. The burial depths provided are based on the industry recommendation for the maximum deflection of gravity-flow PVC sewer pipe of 7½%. These charts do not apply for other values of deflection. The burial depths in these charts assume proper installation procedures.

Further information on this topic can be found in the following resources:

- JM Eagle Technical Bulletin "Depth of Burial for PVC Pipe"
- JM Eagle Technical Bulletin "PVC Pipe Trench Construction"
- JM Eagle "Installation Guide: PVC Sewer Pipe"
- Uni-Bell® "Handbook of PVC Pipe"

APPLICABILITY PVC SERIES 14 AND 28 STORMDRAIN PIPES				
SERIES 14 PIPE IS SDR 51 PIP PIPE				SERIES 28 PIPE IS SDR 41 PIP PIPE
SERIES 14				
SOIL CLASS1:	COMPACTION (% PROCTOR):	E' VALUE (PSI)2:	MAXIMUM BURIAL (FT)3:	MINIMUM BURIAL (FT)4:
I	> 95%	3,000	50 + 5	1
	85% - 95%	3,000	50 + 5	1
	< 85%	3,000	50 + 5	1
	Loose	1,000	50 + 5	1
II	> 95%	3,000	50 + 5	1
	85% - 95%	2,000	50 + 5	1
	< 85%	1,000	50+5	1
	Loose	200	13	2
III	> 95%	2,000	50 + 5	1
	85% - 95%	1,000	50 + 5	1
	< 85%	400	24	1
	Loose	100	7	3
IV	> 95%	1,000	50 + 5	1
	85% - 95%	400	24	1
	< 85%	200	13	2
	Loose	50	NOT RECOMMENDED	
V	NOT RECOMMENDED			
SERIES 28				
SOIL CLASS1:	COMPACTION (% PROCTOR):	E' VALUE (PSI)2:	MAXIMUM BURIAL (FT)3:	MINIMUM BURIAL (FT)4:
I	> 95%	3,000	50+5	1
	85% - 95%	3,000	50+5	1
	< 85%	3,000	50+5	1
	Loose	1,000	50+5	1
II	> 95%	3,000	50+5	1
	85% - 95%	2,000	50+5	1
	< 85%	1,000	50+5	1
	Loose	200	15	2
III	> 95%	2,000	50+5	1
	85% - 95%	1,000	50+5	1
	< 85%	400	26	1
	Loose	100	9	2
IV	> 95%	1,000	50+5	1
	85% - 95%	400	26	1
	< 85%	200	15	2

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[1] and [2]: Soil Classifications and E' Values are from the following Table:

AVERAGE VALUES OF MODULUS OF SOIL REACTION, E' (FOR INITIAL FLEXIBLE PIPE DEFLECTION)					
	PIPE BEDDING MATERIALS	E' FOR DEGREE OF COMPACTION OF PIPE ZONE BACKFILL (PSI)			
SOIL CLASS	SOIL TYPE (Unified Classification System[a])	Loose	Slight < 85% Proctor, < 40% relative density	Moderate 85%-95% Proctor, 40%-70% relative density	High > 95% Proctor, > 70% relative density
Class V	Fine-grained Soils (LL > 50)[b] Soils with medium to high plasticity CH, MH, CH-MH	No data available; consult a competent soils engineer; Otherwise use E' = 0			
Class IV	Fine-grained Soils (LL < 50) Soils with medium to no plasticity CL, ML, ML-CL, with less than 25% coarse-grained particles	50	200	400	1,000
Class III	Fine-grained Soils (LL < 50) Soils with medium to no plasticity CL, ML, ML - CL, with less than 25% coarse-grained particles Coarse-grained soils with Fines GM, GC, SM SC[c] contains more than 12% fines	100	400	1,000	2,000
Class II	Coarse-grained Soils with Little or No Fines GW, GP, SW, SP[C] contains less than 12% fines	200	1,000	2,000	3,000
Class I	Crushed Rock	1,000	3,000	3,000	3,000
	Accuracy in Terms of Percentage Deflection[d]	± 2	± 2	± 1	± 0.5

[a] ASTM Designation D2487, USBR Designation E-3
[b] LL = Liquid limit
[c] Or any borderline soil beginning with one of these symbols (i.e. GM-GC, GC-SC)
[d] For ± 1% accuracy and predicted deflection of 3%, actual deflection would be between 2% and 4%.

Note: Values applicable only for fills less than 50ft (15m). Table does not include any safety factor. For use in predicting initial deflections only; appropriate Deflection Lag Factor must be applied for long-term deflections. If bedding falls on the borderline between two compaction categories, select lower E' value or average the two values. Percentage Proctor based on laboratory maximum dry density from test standards using about 12,500 ft-lb/cu ft (598,000 J/m^3) (ASTM D698, AASHTO T-99, USBR Designation E-11). 1 psi = 6.9kN/m^2.

SOURCE: "Soil Reaction for Buried Flexible Pipe" by Amster K. Howard, U.S. Bureau of Reclamation, Denver Colorado. Reprinted with permission from American Society of Civil Engineers Journal of Geotechnical Engineering Division, January 1977, pp. 33-43.