PLAINTIFF'S EXHIBIT

CAP-1070

Johns-Manville
Sales Corporation

Pipe Division

Greenwood Plaza
Denver, Colorado 80217
(303) 770-1000

January 5, 1976

Mr. A. I. Leff
Certain-Teed Products Corporation
P.O. Box 860
Valley Forge, PA 19482

RE: AACPP - AD HOC COMMITTEE ON SEWER PIPE REDESIGN
HEIGHT OF COVER DESIGN LIMITS FOR CONCRETE PIPE
PER ASTM C-76 and C-14

Dear Al:

In response to my assignment, I am attaching the design heights of cover for concrete pipe per ASTM C-76 and C-14 as recommended by the American Concrete Pipe Association. Table 1 lists values for ASTM C-76 pipe while Table 2 lists the same results for ASTM C-14 pipe. On each Table there are two (2) height of cover values listed. One represents a soil unit weight of 100 lb/ft^3 and the other in parenthesis represents a unit weight of 120 lb/ft^3.

Note the dependence of the C-14 pipe depths on size while those for C-76 pipes are independent of size. It is also noted that the Concrete Pipe Design Manual uses an $r_{sdp} = -0.5$ to calculate the transition width load while our J-M sewer pipe manual uses $r_{sdp} = +0.7$.

Sincerely,

E. W. Spinzig, Jr.

E. W. Spinzig, Jr.
Product Manager - TRANSITE
Attachments
cc: Frank T. Duffy - Flintkote
H. Fraser - Johns-Manville-Canada
W. R. Perrell - CAPCO
J. Jackson - A/CPPA
File (2)

TABLE 1. HEIGHT OF COVER LIMITS FOR C-76 REINFORCED CONCRETE PIPE*

Soil Unit Weight (lb/ft^3)	Height of Cover Design Limit (Ft)			
	Class II	Class III	Class IV	Class V
100	7-8	10-11	15-16	22-24
120	5-6	8-9	12-13	17-19

* Assumes 0.01 crack three-edge bearing loads with a safety factor of 1.0 and Class C bedding, $L_f = 1.5$.

Based on transition width loads contained in the Concrete Pipe Design Manual calculated from $K\mu' = 0.19$ $r_{sd}p = -0.5$ and $\gamma' = 100$ lb/ft^3 and $\gamma' = 120$ lb/ft^3.

TABLE 2. HEIGHT OF COVER LIMITS FOR C-14 CONCRETE SEWER PIPE*

Size	Height of Cover Limits for $w = 100\ lb/ft^3$ ($120\ lb.ft^3$) in Feet		
	Class I	Class II	Class III
6	15 (12)	21 (17)	25 (20)
8	12 (9)	16 (13)	19 (15)
10	10 (8)	13 (11)	16 (13)
12	9 (8)	11 (10)	13 (11)
15	8 (7)	10 (9)	11 (10)
18	7 (6)	10 (9)	11 (10)
21	7 (5)	10 (8)	11 (9)
24	7 (5)	9 (7)	11 (9)
27	6 (5)	9 (7)	11 (9)
30	6 (5)	8 (6)	10 (8)
33	6 (5)	8 (6)	9 (8)
36	6 (5)	8 (6)	8 (7)

* Assumes Class C bedding $L_f = 1.5$ and safety factor SF = 1.5.

Based on Concrete Pipe Design Manual transition width loads, calculated from $K\mu' = 0.19$ $r_{sdp} = -0.5$ $\gamma = 100\ lb/ft^3$ and ($120\ lb/ft^3$).