

FILE NAME: Johns-Manville (JMA)

DATE: 1964

DOC#: JMA013

DOCUMENT DESCRIPTION: Asbestos-Cement Air Duct Brochure, Product Literature

A QUALITY SYSTEM
THAT COSTS LESS.

PERIMETER AIR HEATING-COOLING

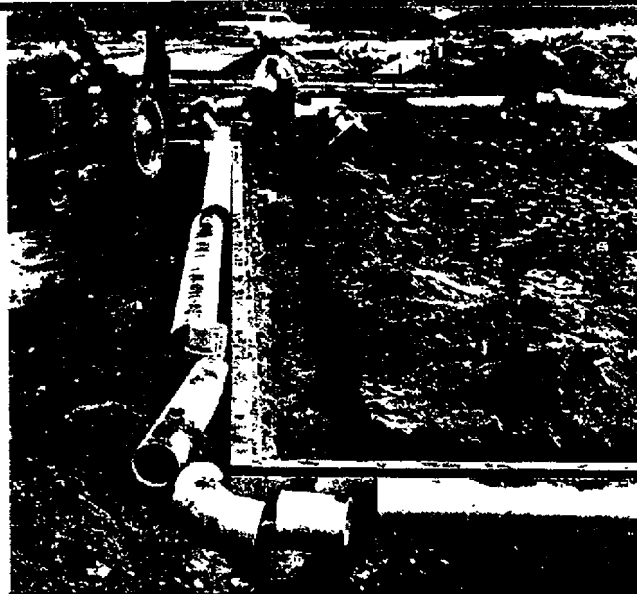
WITH
Johns-Manville

ASBESTOS-CEMENT

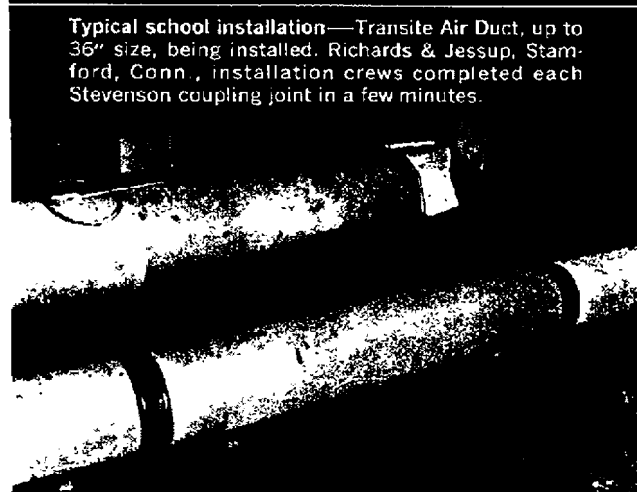
TRANSITE AIR DUCT



produced
JMI - 12



Typical home installation—Perimeter heating with Transite in-slab ducts being installed at Belair, Md. by Levitt and Sons.



Typical school installation—Transite Air Duct, up to 36" size, being installed. Richards & Jessup, Stamford, Conn., installation crews completed each Stevenson coupling joint in a few minutes.

NOW IN 3"-36" SIZES FOR
HOMES, SCHOOLS, COMMERCIAL
AND INDUSTRIAL STRUCTURES

Perimeter Air Heating-Cooling Provides

MODERN COMFORT CONDITIONS FOR

Perimeter air systems are the outgrowth of many years experience and research conducted by the National Warm Air Heating and Air Conditioning Association. They take into account the special heat loss and heat gain factors peculiar to slab-on-grade structures in which floor temperature is a vital factor. Perimeter systems are flexible . . . to meet the widely divergent needs of homes, schools, commercial and industrial buildings. Designs are easy to prepare and execute and perimeter heating and heating-cooling offer economies in equipment costs, installation costs, operation and maintenance.

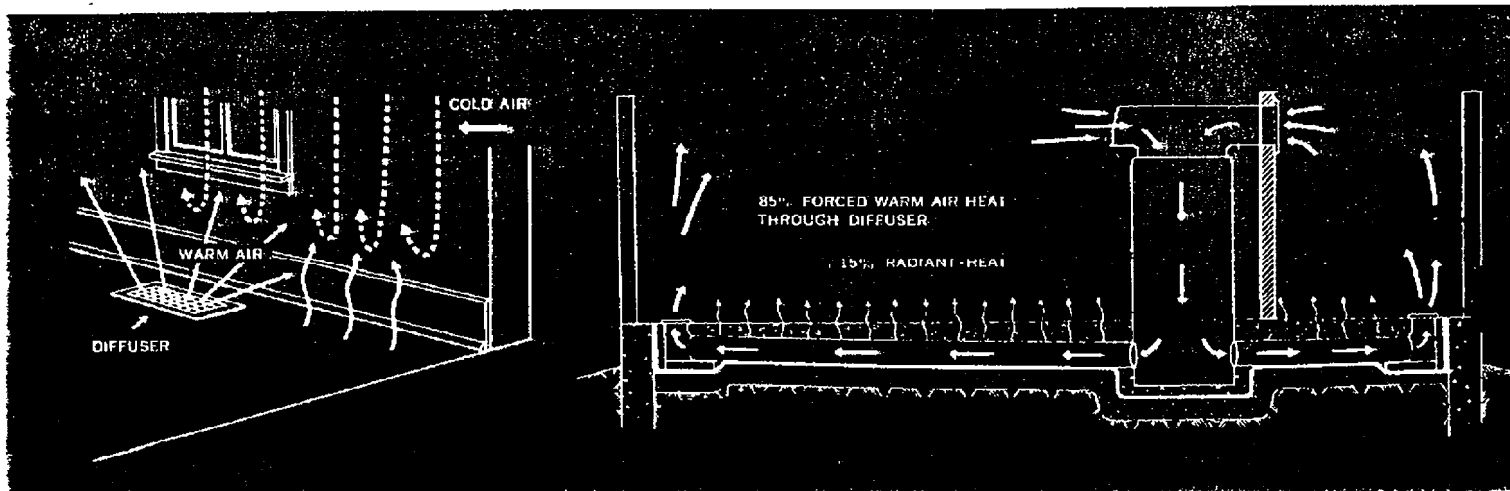


WARMS ALL CRITICAL HEAT LOSS AREAS



NWAHACA research shows that about 62% of heat loss occurs through the outside wall and glass areas, and 18% of heat loss occurs through the floor.—A perimeter system delivers warm air upward in a curtain against outside walls and windows, and warms the floor as shown in the diagrams below.

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JW - 33



MODERN SLAB-ON-GRADE STRUCTURES

IMPROVES TEMPERATURE CONTROL AND COMFORT

A NWAHACA research project at the Univ. of Illinois showed that floor temperatures can be maintained at $70^{\circ}\text{F} \pm 2^{\circ}$; temperature gradients from floor to sitting level can be maintained at less than 2° ; floor and air temperature variations from outside wall areas to center of room can be maintained at less than 3° .

PROVIDES COOLING AND CONTINUOUS AIR CIRCULATION

A perimeter system can be easily designed for heating-cooling or to permit the addition of cooling later at minimum expense. The same ducts are used to distribute warm air and cool air. The fan may be operated for continuous air circulation without operating either heating or cooling equipment.

MEETS THE HIGHEST STANDARDS OF THE INDUSTRY

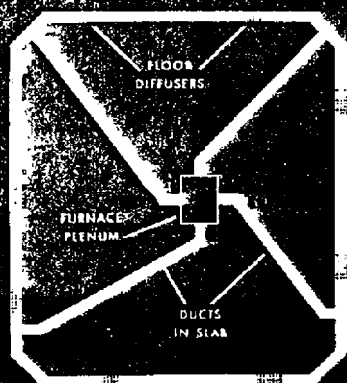
The National Warm Air Heating and Air Conditioning Association established the Silver Shield program to set up standards and identify a highest quality installation. Only perimeter heating-cooling systems qualify for NWAHACA Silver Shield designation. The comfort conditions that can be created are the finest available from any type system.

- 1 Saves in-Building Space
- 1 A Simpler Return-Air System
- 1 Use with Any Fuel
- 1 Provides for Zone Control
- 1 Lower Operating Costs—Fuel and Maintenance
- 1 Provides for Humidity Control Equipment
- 1 Provides Filtered Air
- 1 Reduces Noise—it's Quiet

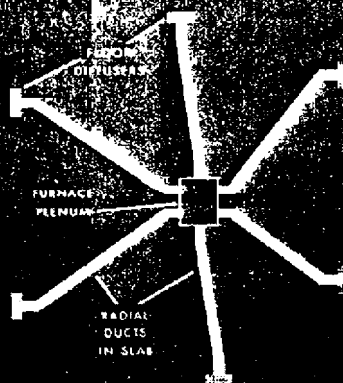


PERIMETER
SYSTEM

Perimeter Loop System



Perimeter Radial System



Perimeter Lateral System



Daily News-Miner • Portland • Dec. 11, 1963

ALL THESE ADVANTAGES IN PERIMETER

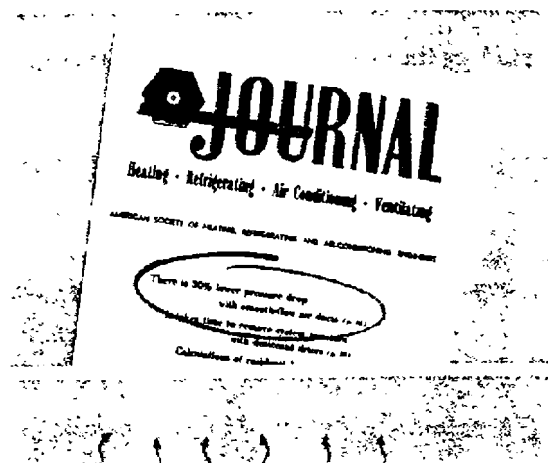
Transite Air Duct and fittings are asbestos-cement materials precision engineered to meet the exacting requirements of slab installation. They combine a smooth-flow bore for greater efficiency in air distribution with strength, durability and important savings in installed costs. As a result, Transite has become first choice with an ever-increasing number of architects, engineers, builders and contractors and, with more than 50 million feet in use, is specified for both low-cost project homes and luxury custom-built homes, and for institutions, commercial buildings and industrial plants.



SAVES 3 WAYS IN SYSTEM DESIGN

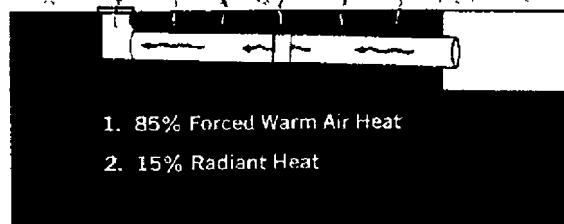
30% LOWER PRESSURE DROP ALLOWS SMALLER DUCTS OR BLOWERS

Tests reported by French and Gillen in the ASHRAE Journal showed a 30% lower pressure drop with smooth-flow Transite as compared to sheet metal. See how to select the smaller duct size on page 6.



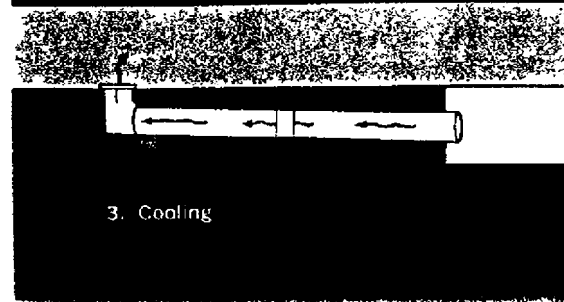
PROVIDES 3-IN-1 HEATING-COOLING

Transite delivers forced warm air through diffusers and also radiant heat to warm the floor. The forced air flow supplies 85% of the heat. Radiation supplies 15%. In the cooling cycle, cooled air is distributed through the same Transite ducts.



PROVIDES ALL MATERIALS NEEDED

Transite is available in a full range of sizes, 3" through 36". Fittings and couplings are provided to meet every design need.



AIR HEATING-COOLING SYSTEMS

SAVED 100% IN INSTALLATION

NEED NOT BE ENCASED IN CONCRETE

Transite, a type 5 duct, need not be encased in concrete. A shallower trench is dug. Transite is laid on the vapor barrier. No blocking up or tying down. Transite won't float when installed as shown.

SAVE ON CONCRETE. ONE POUR ONLY

No encasement means savings in concrete up to \$85 in pouring a 1400 sq. ft. slab. You pour the entire slab in one pour. No costly second pour.

EASY TO CUT ON-THE-JOB OR MAY BE ORDERED PRE-CUT

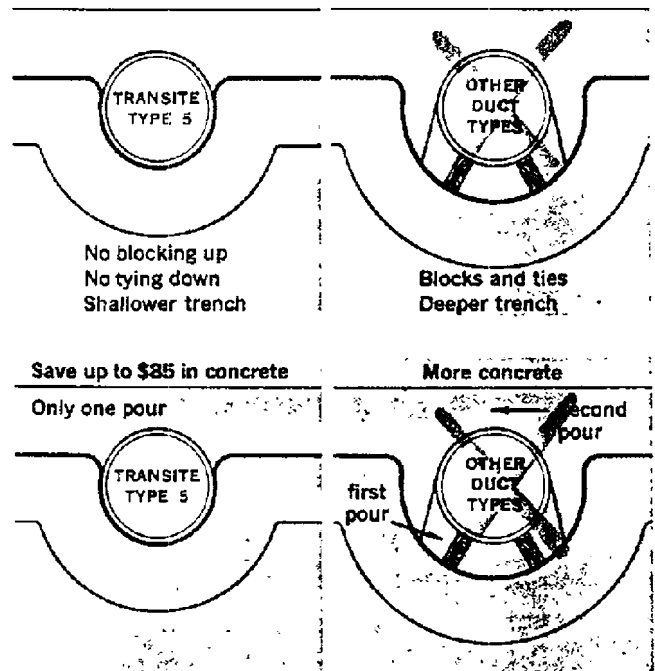
Transite may be cut on-the-job with a standard hacksaw, asbestos-cement pipe cutter or "Snap-type" cutter. If the size of the order warrants it, Transite may also be ordered pre-cut to any design plan.

EASY TO HANDLE. TOUGH. DURABLE.

Full length Transite ducts are relatively light but tough enough to walk on; possess high crushing strength and corrosion resistance. Cannot rust or rot; waterproof and fireproof. Stack them out in any weather.

MAKE JOINTS QUICKLY

The J-M Ductite Coupling is pushed on the end of one duct and the other duct is pushed into the other end of the coupling and the joint is complete. The J-M Stevenson coupling is an impermeable rubber sleeve that bridges the joint and is held in place with two V-shaped stainless steel straps. Both couplings save hours of work.



PRODUCED
J-M - 82

Figure 1

SAVINGS IN DUCT SIZE

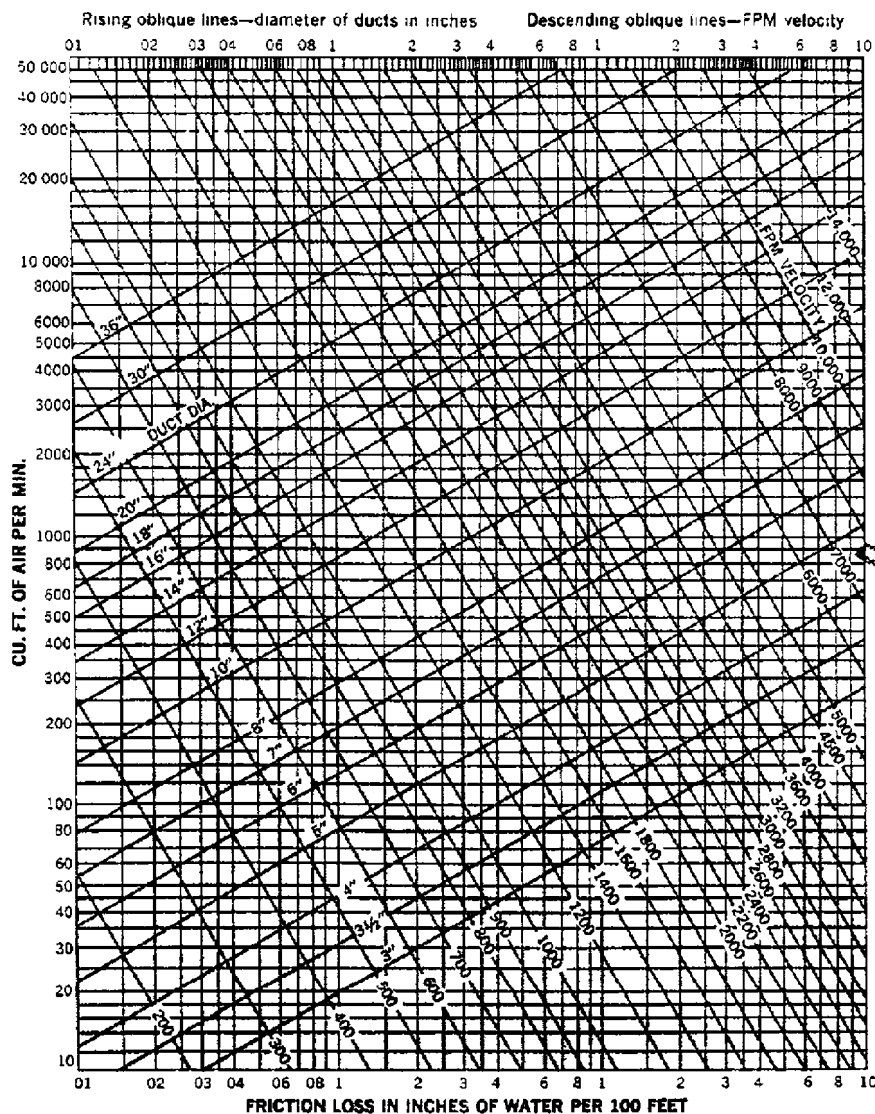
**30% LOWER
PRESSURE DROP
ALLOWSMALLER
DUCTS OR BLOWERS**

To make these calculations, obtain the number of cubic feet of air per minute the duct is to supply, the permissible air pressure drop and the length of the duct runs.

Example: The duct is to deliver 800 cu. ft. per min. with a maximum of .04" of water pressure drop. The duct run is 40 ft. long.

The pressure drop of .04" of water in 40 ft. is equivalent to .10" in 100 ft.

Find the intersection of the cfm horizontal line and the line representing .10" of water pressure. This is slightly below the 12" duct diameter line. 12" is the Transite duct size to use. With Transite ducts, use this table in lieu of any other duct size tables. (Using ASHRAE Guide, sheet metal duct in 13" diameter would be required, thus requiring in turn deeper excavation of trenches and more concrete.)

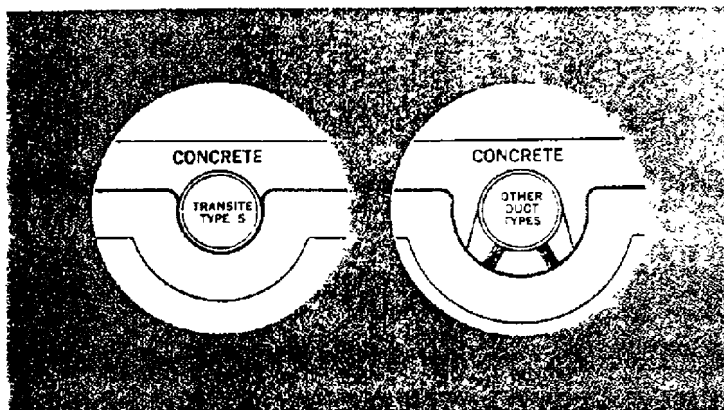


Here's How to Figure

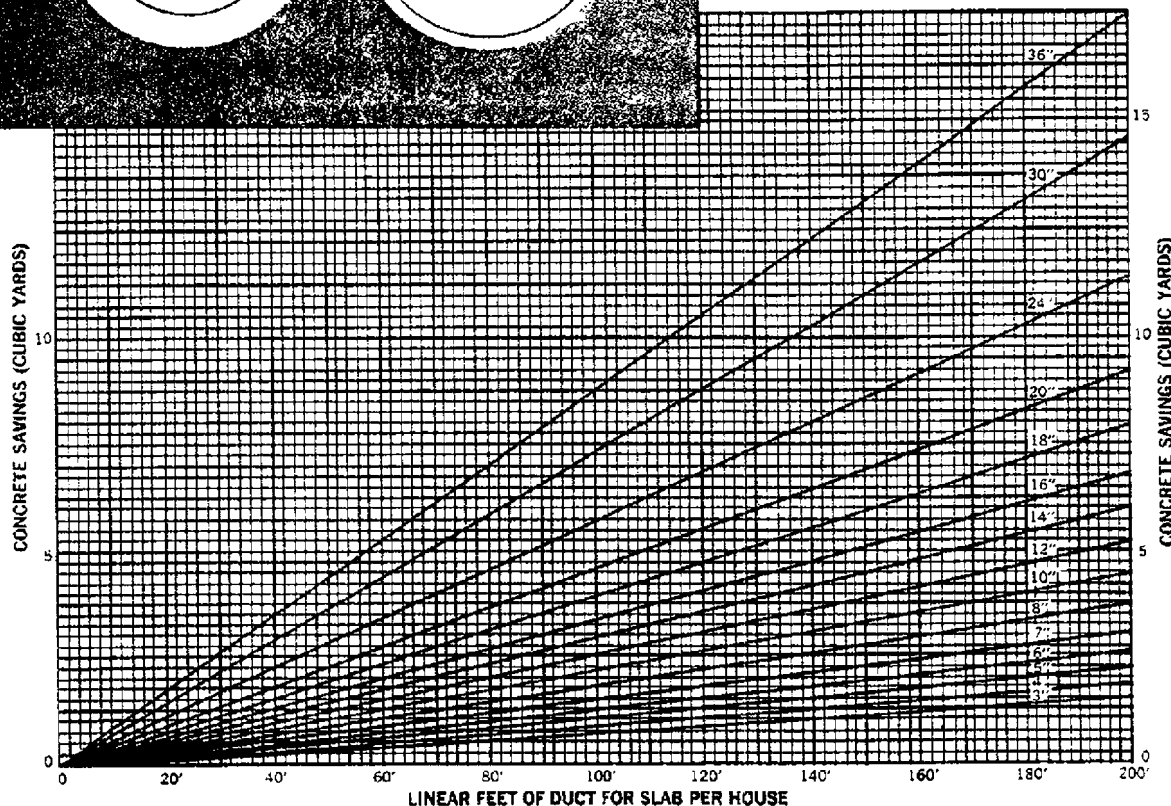
SAVINGS IN CONCRETE

Use the chart on the opposite page to determine the size of duct needed. When you have that plus the total linear feet required, find the intersection of the vertical line representing the number of feet and the diagonal representing the size of the duct. Find the savings in cubic yards on the horizontal scale. Convert that figure into dollar savings by multiplying it by your cost of concrete per cubic yard.

**SAVE UP TO \$85
PER SLAB OF
1400 SQ. FT.**



MINIMUM CONCRETE SAVINGS USING
TRANSITE AIR DUCT (TYPE 5)



TRANSITE AIR DUCT IS EASY TO

Transite ducts, couplings and fittings are designed to provide the right material for quick, permanent installation according to any plan. The size range, 3" through 36", provides the right size to meet every design need for institutional, commercial and industrial systems, as well as homes. All sizes are available in lengths that allow simple handling and, at the same time, minimize the number of pieces to be joined.

JOHNS-MANVILLE
NATIONAL
SERVICE

Johns-Manville makes available without cost the services of an installation instructor who is prepared to demonstrate correct installation procedures and to advise with regard to specific installation conditions. To avoid schedule conflicts, requests for instructor service should be made early.

SIZES
AND
WEIGHTS

inside diameters, inches															
3	3½	4	5	6	7	8	10	12	14	16	18	20	24	30	36
21	24	27	41	49	66	75	144	172	193	242	271	329	426	588	810
weights, lbs. per ft.															

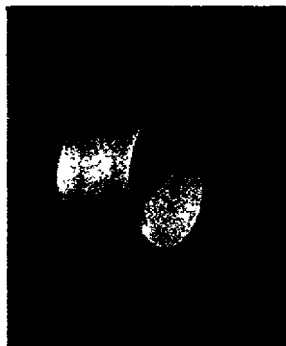
Lengths, sizes 3" — 8"
sizes 10" — 36"

10 ft. standard,
13 ft. standard,

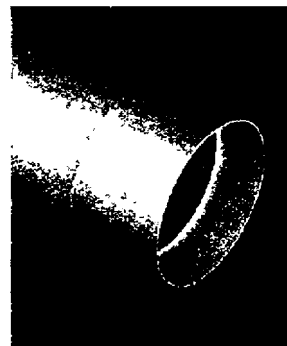
5 ft. half-lengths
6½ ft. half-lengths

DUCTITE COUPLING

—for sizes 3" through 12". Meets the requirements of FHA No. 300, Rev. #3 for below grade and above grade use. Ductite couplings are waterproof, self-sealing and are assembled in seconds. Store Ductite Couplings in a dry place until used.



Narrow in the middle,
flared at both ends.



Push coupling on first
duct until seated.



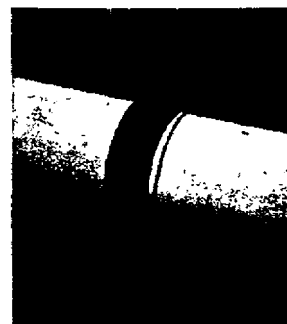
Push second duct in un-
til snug.

STEVENSON COUPLING

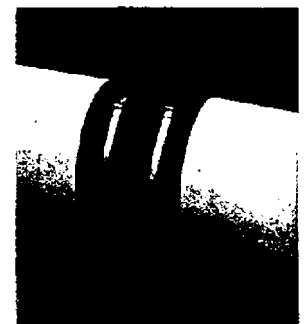
—for sizes 3" through 36". Consists of an impermeable rubber sleeve and 2 stainless steel V-shaped straps. A Stevenson joint is waterproof and is assembled in a few minutes.



Set the sleeve over the
duct end and tighten the
strap.



Roll back the sleeve and
butt in the second duct.

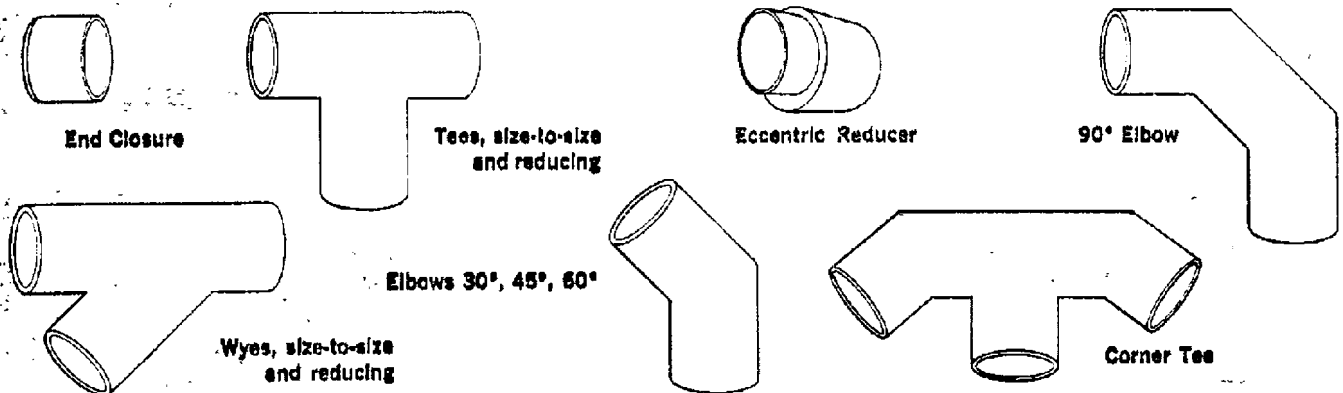


Roll the sleeve over the
second duct and tighten
the strap.

DUCTITE TAPE is available for above grade use only.

WORK WITH AND INSTALL

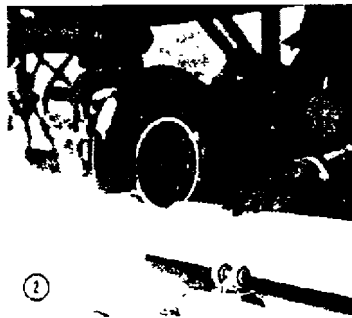
TRANSITE AIR DUCT FITTINGS



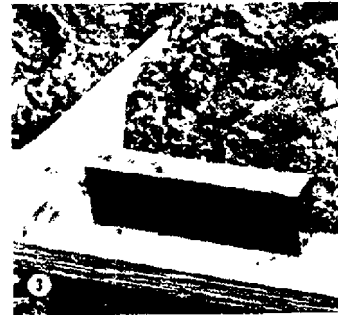
All fittings and couplings dimensions and data are contained in J-M folder TR329A.



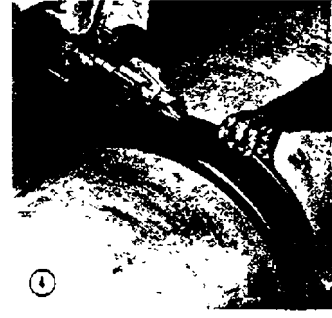
1. A snap type cutter may be used as shown, a hacksaw or other coarse-tooth saw. Also asbestos-cement pipe-cutter.



2. A power-driven saw with an abrasive cutting wheel is recommended for field cutting of larger sizes of Transite.



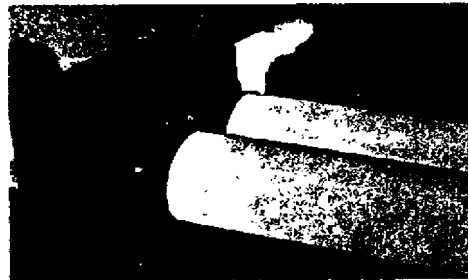
3. Diffuser-Connector for perimeter loop system is easily attached by sheet metal screws. After poured slab has set, opening in duct is easily knocked out. 4. Stevenson coupling straps are quickly and easily tightened and secured using this strap tool.



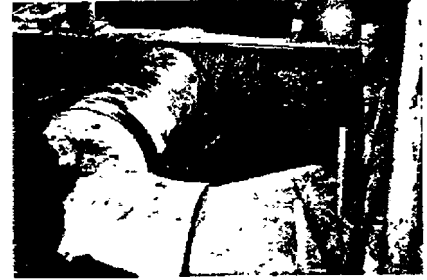
TRANSITE CONNECTIONS



Transite 16" 45° Elbow joined to a sheet metal diffuser-connector.



8" ducts joined to the furnace plenum.



36" Transite 90° Elbow joined to a sheet metal fitting.

PRODUCED
1983

TRANSITE AIR DUCT HAS

MEETS ALL
REQUIREMENTS OF

National Warm Air Heating and Air Conditioning Assoc. established standards for ducts. Type 5 standards are as follows:

- A. Material which is not subject to moisture transmission
- B. Material which is not subject to corrosion by concrete
- C. Ducts which will not float when concrete is being poured.
- D. Material which is non-combustible

MEETS ALL
REQUIREMENTS OF

NWAHACA, Manual 4 . . . FHA Material Release No. 44b . . . FHA Minimum Property Standards, No. 300, Rev. #3 (Acceptable to VA) . . . Corps of Engineers Guide Spec. CE FH-29, 30 & 32 dated Dec. 12, 1960 (for Army, Navy and Air Force Housing) . . . Top UL Fire Hazard Rating: "0" flame spread, "0" fuel contributed, "0" smoke density . . . American Society of Heating, Refrigerating and Air Conditioning Engineers Guide.

SOME TYPICAL TRANSITE AIR DUCT USERS

NORTH

Bonazzoli Fuel and Heating Co., Inc.,
Framingham, Mass.
Brett Homes, New Market, N. J.
Capitol Engineering, Cambridge, Mass.
Charles P. Blouin, Inc., Cambridge, Mass.
Cotti-Laurence Co., Inc., Weymouth, Mass.
D'Annolfo Associates, Stoneman, Mass.
D. Dixon Donovan, Inc., Newport, R. I.
Gas Heat Headquarters, Melrose, Mass.
J. & A. Realty, Inc., Div. Crestwood Homes,
Plainville, Mass.
James E. McCusker Co., Cambridge, Mass.
K. V. Homes, Inc., Springfield, Mass.
Levitt & Sons, Levittown, N. J.
Levitt & Sons, Belair, Md.
Neild & Sullivan, Lowell, Mass.
Rutledge Court Homes, No. Plainfield, N. J.

SOUTH

Arten Construction Company, Tulsa, Okla.
Blytheville Air Force Base, Blytheville, Ark.
(Ben Mattas & Co., Dallas, Texas, Contractor)
Bob Wilson Homes, Oklahoma City, Okla.
Carr & Rothschild, Fort Rucker, Ala.
Earl DeVilbiss Homes, Oklahoma City, Okla.
Forrest Winston, Tulsa, Okla.
Hulbert Associates, Ft. Lauderdale, Fla.
Kenneth Witten Home Builders,
Oklahoma City, Okla.
National Aniline, Div. of Allied Chemical Corp.,
Columbia, S. C. (Daniels Construction Co.,
Greenville, S. C. Contractor)
Navv Capehart Housing, Beaufort, S. C.
Services & Equipment, Inc., Fort Lauderdale, Fla.
Shahan Construction Company,
Oklahoma City, Okla.

Southern Construction Company,
Ft. McClellan, Ala.

Star Builders, Tulsa, Okla.

CENTRAL

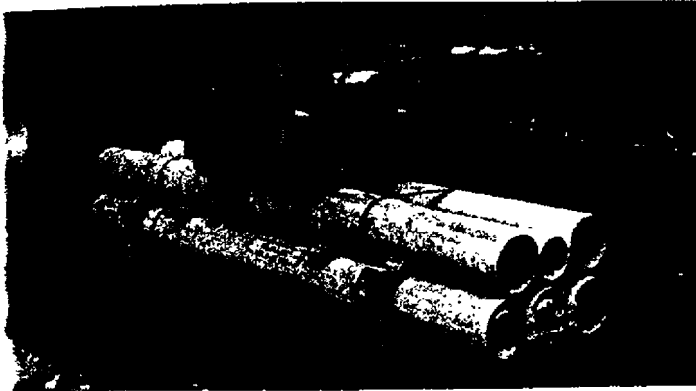
Avalon Trails, Chicago, Ill. (McGrath Heating)
Charles R. Beltz, Detroit, Mich.
Colonial Village, Lemont, Ill. (Woodview
Construction Co.) (Scarlet Glow Engineering)
Country Club Hills, Ill. (J. C. Merriam, Owner)
(McGrath Heating)
Cranford Homes, Columbus, Ohio
H. C. Huber Construction Co., Dayton, Ohio
Hoffman Estates, Roselle, Ill. (F & S Construction
Co.) (Crest Heating)
Indoor Comfort Co., Ypsilanti, Mich.
Landmark Homes, Griffith, Ind. (Clapman Heating)
Lea Woods Garden, Columbus, Ohio
Parlane Manor, Cahokia, Ill.
(Tedland Development Corp.)
Place Homes, Inc., South Bend, Ind.
President Homes, Inc., Camden, Ohio
Weathersfield, Schaumburg, Ill. (Campanelli
Construction Co.) (Weichert Heating)
Westview Heights Estates, Topeka, Kans.
(Sargents Inc.)
Woodland Heights, Streamwood, Ill. (Alexander
Construction Co.) (Don Esch Heating)

WEST

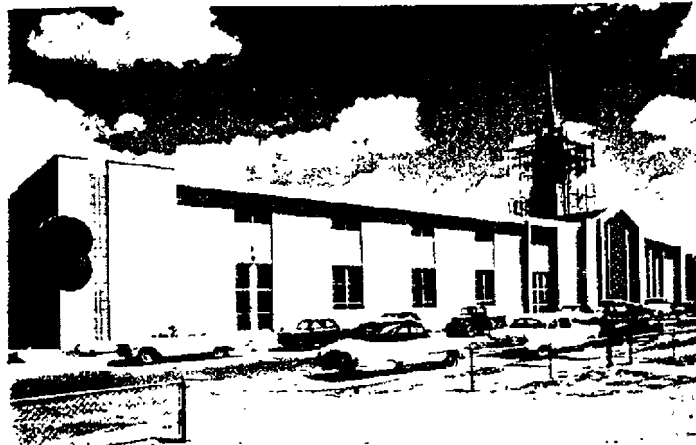
Alexander Homes, Colorado Springs, Colo.
Fort Ord, Monterey, Calif. (Wilder & Jones,
Seaside, Calif., Heating Contractor)
Laguna Niguel, Laguna Beach, Calif.
(A "Record Home of 1962")
Louie Schmetzer, Tustin, Calif., Heating &
Air Conditioning Contractors
Roberson Homes, Albuquerque, N. M.
Sheet Metal Engineering, Anaheim, Calif.

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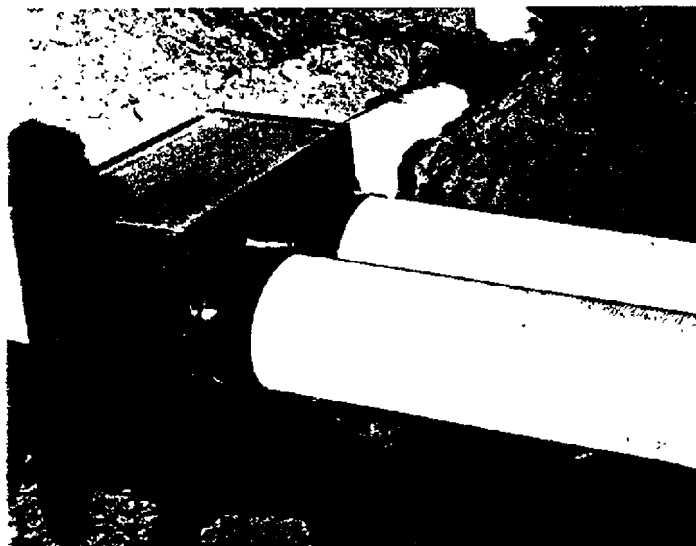
WIDE ACCEPTANCE



Transite "Unit" for Levitt & Sons



Midland, Texas Church



Capehart Housing, Fort Ord, Calif.

SELECTED TRANSCITE DUCTS AND SOLUTIONS

Levitt & Sons

Levitt & Sons specified Transite for construction amounting to 100-125 slabs per week. A "unit", as shown, was delivered to each site and installation is completed quickly. By having Transite duct pre-cut to plan and fittings pre-packaged at the Johns-Manville plant Levitt increased output 30%. Special "packages" available on request.

Midland, Texas Church

Consulting Engineer Major Martin E. Staley of San Antonio specified Transite to obtain resistance to corrosive soils and avoid the concrete encasement which is necessary with other duct materials. With 12" to 24" Transite ducts installed the air conditioner handles a larger volume of air at lower power cost.

Capehart Housing, Fort Ord, Calif.

65,000 ft. of Transite was selected for installation involving duplex units by Wilder & Jones of Seaside, Calif. While specifications permitted use of four types of duct, Wilder & Jones selected Transite and found it enabled them to cut completion time by 20%.

Lincoln Park Zoo, Chicago, Ill.

To heat an all glass animal exhibition hall, Lincoln Park engineers used Transite air duct in the solution of a difficult problem. Despite radical changes in heat losses and gains, temperature and air flow are held to close tolerances.

Laguna Niguel, Calif.

Perimeter heating with Transite air ducts installed by Louie Schmetzer, Tustin, Calif. were specified for this colony of homes with huge glass areas. Mains are 12" and 14". Branch runs are 6", 7" and 8" Transite. A Laguna Niguel home was selected as a "Record House of 1962", by Architectural Record.

PRODUCED
1962 - 63

Johns-Manville

ASBESTOS-CEMENT

* TRANSITE® AIR DUCT

for perimeter air heating and heating-cooling systems—slab construction

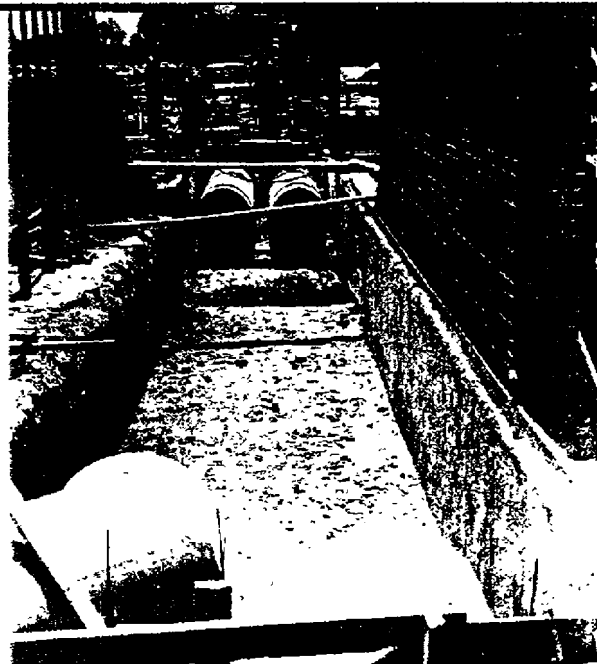
Saves 3 Ways in System Design

Saves 5 Ways in Installation

Material Specification—short form

Asbestos cement air duct: All asbestos cement air duct for in or under slab installation shall be Johns-Manville "Transite" Air Duct. All duct, elbows, wyes, tees and other standard fittings shall be joined in accordance with the manufacturer's recommendations.

*TRANSITE is Johns-Manville's registered trademark for its brand of asbestos-cement products.



Strength Specification—when tested according to "Material Specification, Asbestos-Cement Air Duct"

Corrosion resistance of acid soluble matter	not exceed 5% loss by weight
Non-disintegration	not exceed 5% loss by weight
Fire resistance	not exceed 10% loss by weight
Crushing strength	
Sizes 3"—8"	550 lbs/linear ft. minimum
Sizes 10"—36"	1000 lbs/linear ft. minimum



JOHNS-MANVILLE 22 East 40th Street, New York 16, New York

Manufacturer of Transite Air Duct, Plumbing Vent, Gas Vent and Building Sewer Pipe

ATLANTA 3, GEORGIA
101 Marietta Street
525-2021 Area Code 404

BOSTON 14, MASSACHUSETTS
150 Causeway Street
227-0400 Area Code 617

CHICAGO, ILLINOIS
P O Box 46, Waukegan, Ill
623-2900 Area Code 312

CLEVELAND 15, OHIO
3101 Euclid Avenue
UTah 1-6700 Area Code 216

DENVER 2, COLORADO
1755 Glenarm Place
KEystone 4-6378 Area Code 303

HOUSTON 1, TEXAS
P O Box 255
JACkson 6-1751 Area Code 713

LOS ANGELES, CALIFORNIA
P O. Box 0, Long Beach 10
SPruce 5-3451 or
TErminAl 4-6471 Area Code 213

NEW YORK, N. Y.
Manville, N. J.
725-5000 Area Code 201
From NY 227-4991

PHILADELPHIA 6, PENNSYLVANIA
Chestnut Street at 4th
WAlnut 2-5000 Area Code 215

ST. LOUIS 3, MISSOURI
7912 Bonhomme Ave., Clayton
Parkview 1-4000 Area Code 314

SAN FRANCISCO, CALIFORNIA
P O Box 1587, Stockton, Cal.
HOward 4-7341 Area Code 209
From SF DOuglas 2-4353
From Oakland OLYmpia 8-1262

SEATTLE 3, WASHINGTON
4304 Stone Way
MEIrose 3-4300 Area Code 206

CANADIAN JOHNS-MANVILLE COMPANY, LIMITED
Montreal • Ottawa • Toronto • Winnipeg • Vancouver

JOHNS-MANVILLE INTERNATIONAL CORP.

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San Juan • Sao Paulo • Wiesbaden

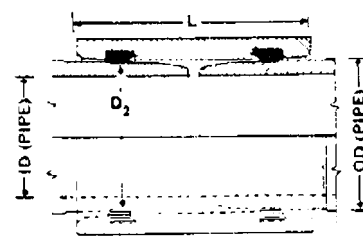
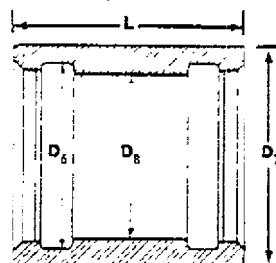
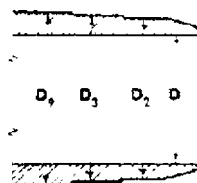
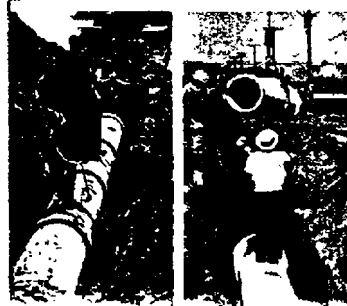
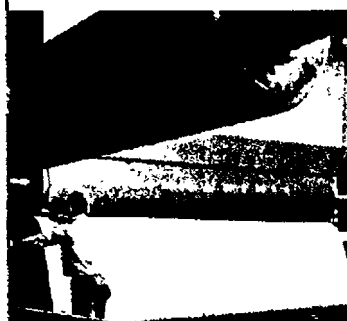
PROD 323
JM - 33

TRANSITE[®] RING-TITE[®] WATER PIPE

Disinfection System: Chlorine Water Under Pressure

RESEARCH, MATERIALS & MANUFACTURE

Constant research in one of the world's largest laboratories — controlled blending of basic raw materials (asbestos fibers, cement and silica) — modern manufacturing techniques and autoclave-curing — produce a uniformly finished, homogeneous pipe which combines (1) inherent strength (2) density (3) maximum corrosion resistance and (4) long life expectancy. Meets the standard requirements of water service pipe.



STANDARD LENGTHS (NOMINAL)

PIPE SIZES	STANDARD LENGTHS
3"	6'-6" and 10'
4" & 6"	10' and 13'
8" thru 36"	13'

PIPE AND COUPLING DIMENSIONS (INCHES)

Class 100

Pipe Size in.	D	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	L
3	3.00	3.74	3.90	4.48	5.48	3.86	4.02	7.00
4	4.00	4.64	4.80	5.38	6.38	4.76	4.92	7.00
6	6.00	6.91	7.07	7.65	8.85	7.03	7.19	7.00
8	8.00	9.11	9.27	9.85	11.05	9.23	9.39	7.00
10	9.85	10.89	11.05	11.63	12.83	11.01	11.37	7.00
12	11.70	12.99	13.15	13.73	15.13	13.11	13.49	8.00
14	13.59	15.07	15.23	15.95	17.59	15.20	15.51	9.00
16	15.50	17.15	17.31	18.03	19.86	17.28	17.65	9.00
18	18.00	19.90	20.06	20.78	23.01	20.03	20.44	10.00
20	20.30	22.12	22.28	23.00	25.32	22.25	22.68	10.00
24	24.00	26.48	26.64	27.36	30.10	26.61	27.12	10.00
30	30.00	33.12	33.28	34.02	37.63	33.27	33.80	11.00
36	36.00	39.78	39.94	40.68	44.92	39.93	40.46	11.00

Class 150

Pipe Size in.	D	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	L
3	3.00	3.84	4.00	4.58	5.59	3.96	4.10	7.00
4	4.00	4.81	4.97	5.55	6.58	4.93	5.07	7.00
6	6.00	6.91	7.07	7.65	8.85	7.03	7.19	7.00
8	7.85	9.11	9.27	9.85	11.52	9.23	9.37	7.00
10	10.00	11.66	11.82	12.40	14.51	11.78	11.92	7.00
12	12.00	13.92	14.08	14.66	17.15	14.04	14.18	8.00
14	14.00	16.22	16.38	17.10	20.00	16.35	16.48	9.00
16	16.00	18.46	18.62	19.34	22.64	18.59	18.72	9.00
18	18.00	20.94	21.10	21.82	25.12	21.07	21.30	10.00
20	20.00	23.28	23.44	24.16	27.65	23.41	23.64	10.00
24	24.00	27.96	28.12	28.84	32.92	28.09	28.32	10.00
30	30.00	35.00	35.16	35.90	41.20	35.15	35.42	11.00
36	36.00	42.04	42.20	42.94	49.28	42.19	42.46	11.00

Class 200

Pipe Size in.	D	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	L
3	3.00	3.84	4.00	4.58	5.59	3.96	4.23	7.00
4	4.00	4.81	4.97	5.55	6.67	4.93	5.33	7.00
6	6.00	6.91	7.07	7.65	9.10	7.03	7.32	7.00
8	7.60	9.11	9.27	9.85	11.66	9.23	9.50	7.00
10	9.63	11.66	11.82	12.40	14.69	11.78	11.92	7.00
12	11.56	13.92	14.08	14.66	17.48	14.04	14.18	8.00
14	13.59	16.22	16.38	17.10	20.42	16.35	16.59	9.00
16	15.50	18.46	18.62	19.34	23.11	18.59	18.90	9.00
18	18.00	22.18	22.34	23.06	27.73	22.31	22.54	10.00
20	20.00	24.66	24.82	25.54	30.71	24.79	25.02	10.00
24	24.00	29.62	29.78	30.50	36.71	29.75	29.98	10.00
30	30.00	37.06	37.22	37.96	45.92	37.21	37.48	11.00
36	36.00	44.52	44.68	45.42	54.94	44.67	44.94	11.00

*Subject to manufacturing tolerances

FIG. 4. SIDE VIEWS OF JOINT ASSEMBLY. FACTORY-APPLIED COUPLING ON ONE END OF ALUM.

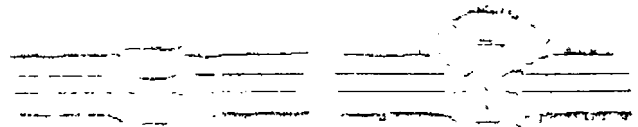
COEFFICIENT OF FLOW 2 1-2

1. The first of the following is a description of the first of the two
 2. The second of the following is a description of the second of the two
 3. The third of the following is a description of the third of the two
 4. The fourth of the following is a description of the fourth of the two
 5. The fifth of the following is a description of the fifth of the two
 6. The sixth of the following is a description of the sixth of the two
 7. The seventh of the following is a description of the seventh of the two
 8. The eighth of the following is a description of the eighth of the two
 9. The ninth of the following is a description of the ninth of the two
 10. The tenth of the following is a description of the tenth of the two

THRUST LOADS

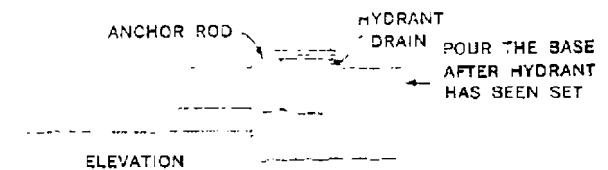
Thrust at fittings in pounds at 100 pounds per square inch of water pressure.

TRANSITE PIPE SIZE	PIPE CLASS	TEES	90° BEND	45° BEND	22½° BEND
3"	100	1,190	1,690	315	160
	150	1,260	1,790	370	185
	200	1,260	1,790	370	185
4"	100	1,720	2,140	1,320	560
	150	1,850	2,610	1,420	720
	200	1,850	2,610	1,420	720
6"	100	3,800	5,370	2,910	1,470
	150	3,800	5,370	2,910	1,470
	200	3,800	5,370	2,910	1,470
8"	100	6,580	9,300	5,040	2,550
	150	6,580	9,300	5,040	2,550
	200	6,580	9,300	5,040	2,550
10"	100	9,380	13,270	7,150	3,640
	150	10,750	15,200	8,240	4,170
	200	10,750	15,200	8,240	4,170
12"	100	13,230	18,860	10,240	5,170
	150	15,310	21,640	11,720	5,940
	200	15,310	21,640	11,720	5,940
14"	100	17,930	23,360	13,740	6,960
	150	20,770	29,360	15,910	8,060
	200	20,770	29,360	15,910	8,060
16"	100	23,210	32,820	17,380	9,000
	150	26,880	38,010	20,590	10,430
	200	26,880	38,010	20,590	10,430
18"	100	31,000	44,200	23,650	11,950
	150	34,400	48,500	26,400	13,400
	200	38,600	54,400	29,650	14,900
20"	100	38,400	54,200	29,500	14,700
	150	42,600	60,000	32,600	16,500
	200	47,800	67,400	36,700	18,600
24"	100	55,000	78,000	42,200	21,100
	150	61,500	86,700	47,200	23,900
	200	69,000	97,200	52,900	26,800
30"	100	86,300	122,500	66,300	33,100
	150	96,300	135,800	74,000	37,500
	200	108,000	152,500	82,000	42,000
36"	100	124,500	176,800	95,500	47,700
	150	139,000	196,000	116,500	54,000
	200	156,000	220,000	119,600	60,700



If thrusts, due to high pressure are expected, anchor valves as above

At vertical bends, anchor to resist outward thrusts



This type of hydrant foundation acts as a thrust block as an anchor against frost heave and eliminates wash outs from waste-water drain

SAFE BEARING LOADS

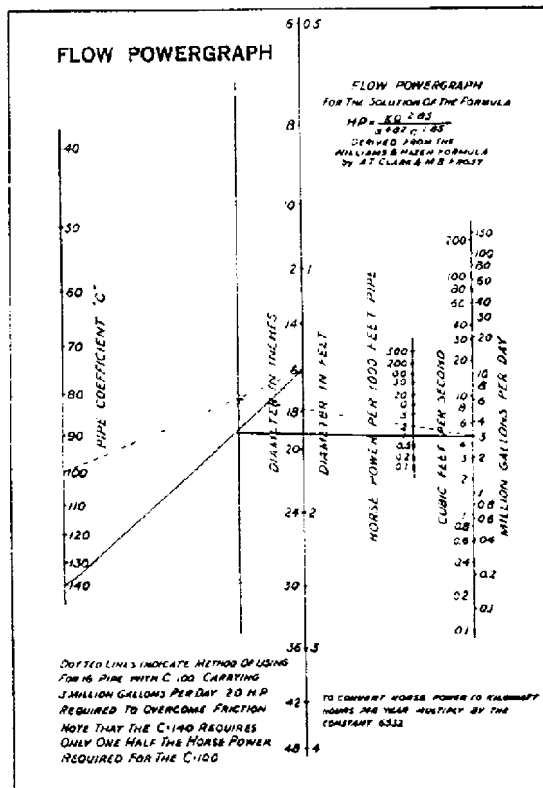
The safe bearing loads given in the following table are for horizontal thrusts when the depth of cover over the pipe exceeds 2 feet.

SOIL	SAFE BEARING LOAD LB PER SQ FT
Muck, peat, etc	0
Soft clay	1,000
Sand	2,000
Sand and gravel	3,000
Sand and gravel cemented with clay	4,000
Hard shale	10,000

In muck or peat all thrusts are resisted by piles or tie rods to solid foundations or by removal of muck or peat and replacement with ballast of sufficient stability to resist thrusts

ADAPTABILITY

Adaptability is an important advantage with Transite, as fittings and valves are available with Ring-Tite joining design. The flexible connections made this way allow full pipe lengths to be used at fittings. Deflection can be taken at couplings which permits making changes in direction up to 5° whether horizontal or vertical. This flexibility helps by-pass trench obstructions. Short lengths are available to assist in accurately locating fittings. If exact location of fittings is necessary, Transite MOA (machined over-all) pieces are furnished to eliminate additional labor costs of machining in the field.

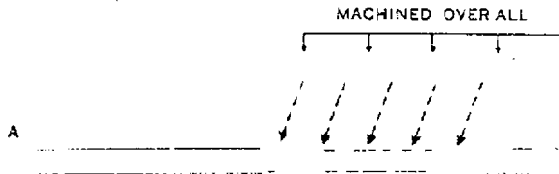


B A PIPELINE TO CURVE FROM POINT A TO B	MINIMUM RADIUS OF CURVE (FEET)			DEFLECTION PER COUPLING (DEGREES)	OFFSET PER 13' LENGTH (INCHES)
	LENGTH OF PIPE (FEET)				
	1	8½	13		
	57.4	373.5	747	1°	2.7"
	28.5	185.5	371	2°	5.4"
	19.1	124.0	249	3°	8.1"
	14.3	93.1	186	4°	10.9"
	11.4	74.3	149	5°	13.6"

Pipe in sizes 3"–12" may be deflected up to 5°, pipes 14" and 16" up to 4°, 18" thru 24" up to 3 1/2°, and 30"–36" up to 3°.

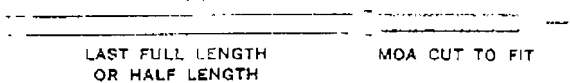
Available Transite Machined Overall Pipe (MOA pipe)

- MOA pipe available in 3'3" lengths for 3", 4" and 6" sizes and 6'6" lengths in sizes 8" and above. Used for making closures and to locate fittings minimizing the need for machining field cut pipe.
- Specify "8" Class 150 MOA pipe" or other size and class as required.

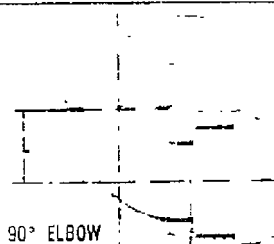


Closure made by installing a half (or random) length at A. Then cut a machined-over-all section to correct length for closing gap.

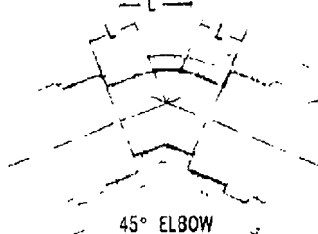
To locate fittings exactly various combinations of machined-over-all or machined each-end pipe can be used.



Cast iron fittings and valves with Ring-Tite profile available in pipe sizes 3" through 16". For information about larger fittings and valves, please contact your J-M Representative. Data shown conforms to ASA Standard A21.10-1952 (Short Body Fittings Sizes 3"-12") and ASA Standard B16.1 (Laying Lengths 14" & 16"). Other fittings are available with shorter laying lengths but have wall thicknesses conforming with ASA Specifications.



90° ELBOW



45° ELBOW

PIPE DIAM.	L (in.)	WT (lbs.)
3"	5.5	55
4"	6.5	70
6"	8.0	110
8"	9.0	165
10"	11.0	230
12"	12.0	305
14"	14.0	380
16"	15.0	465

PIPE DIAM.	L (in.)	WT (lbs.)
3"	3.0	50
4"	4.0	65
6"	5.0	100
8"	6.5	145
10"	7.5	200
12"	7.5	270
14"	7.5	290
16"	8.0	375

PIPE DIAM.	L (in.)	WT (lbs.)	PIPE DIAM.	L (in.)	WT (lbs.)
3"	5.5	80	12x6"	12.0	285
4x3"	6.5	100	12x8"	12.0	405
1"	6.5	105	12x10"	12.0	460
6x3"	8.0	140	12"	12.0	485
6x4"	8.0	150	14x8"	14.0	485
8"	9.0	160	14x10"	14.0	505
8x4"	9.0	210	14x12"	14.0	500
8x6"	9.0	220	14"	14.0	640
8"	9.0	240			
10x4"	11.0	290	16x8"	16.0	505
10x6"	11.0	300	16x10"	16.0	525
10x8"	11.0	320	16x12"	16.0	550
10"	11.0	370	16x14"	16.0	590
12x4"	12.0	375	15"	15.0	935

PIPE DIAM.	L (in.)	WT (lbs.)	PIPE DIAM.	L (in.)	WT (lbs.)
4x3"	7.0	55	12x8"	14.0	210
6x3"	9.0	75	12x10"	14.0	235
6x4"	9.0	30			
8x4"	11.0	110	14x8"	15.0	225
8x6"	11.0	125	14x10"	15.0	250
10x4"	12.0	135	14x12"	15.0	290
10x6"	12.0	150			
10x8"	12.0	170	16x8"	18.0	285
			16x10"	18.0	320
12x4"	14.0	165	16x12"	18.0	345
12x6"	14.0	185	16x14"	18.0	360

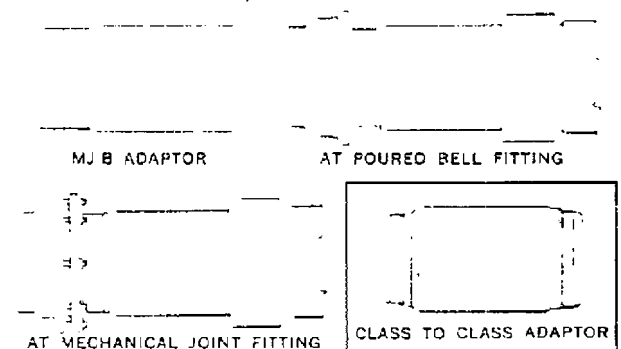
REDUCERS

PIPE DIAM.	L (in.)	WT (lbs.)
3"	8.0	55
4"	8.0	50
6"	8.0	70
8"	8.0	105
10"	8.0	135
12"	8.0	180
14"	8.0	210
16"	8.0	300

RING-TITE TO FLANGE ADAPTER

- Cast iron fittings (including elbows, tees, crosses, reducers, valves and hydrants) are available with Ring-Tite bells in Classes 100, 150 and 200 for pipe sizes 3" through 16". Specify—"Cast Iron Fitting or Valve, with Ring-Tite Bells."
- Standard Cast Iron Fittings with standard bells are used by employing Transite Adaptors. Cast Iron Fittings conform to ASA A21.10-1952 and AWWA C100-55 standard specifications. "Cast Iron Fittings with Standard Bell."

Available Transite Adaptors



Specify—"MJ-B Adaptor" or Transite MOA—or MEE (Machined Each End) pipe—as indicated in following tables.

a. From Transite to Mechanical Joint C.I.

Size	Class	Specify
3"	all classes	MJ-B Adaptor
4"	Class 100	MJ-B Adaptor
4"	Class 150 & 200	3'3" MOA pipe
6"	all classes	3'3" MOA pipe
8" thru 36"	all classes	MJ-B Adaptor

b From Transite to Poured Bell C I

Size	Class	Specify
3", 4" and 6"	all classes	3'3" MCA pipe
8"	all classes	6'6" MEE* pipe
10" thru 36"	all classes	MJ B Adaptor

*For Class 200 specify MOA if necessary to cut pipe to locate fitting exactly because 3' 200 requires machined surface in bell (unmachined barrel will fit bells in class 100 & 150)

c From Transite to Steel Pipe Specify—Transite Adap for Steel To Ring-Tite—10" Class 150" or other size and class as required

NOTE: A Ring-Tite to Flange Adaptor which permits use of full lengths is available for Transite pipe sizes 3" thru 12" in classes 150 and 200 and for 6" and 8" in class 100. Flange Sealing Ring is supplied with the Adaptor

Service connections vary in size from small services supplying individual homes to large outlets for industrial and other users

Transite Pipe can be tapped wet or dry, using standard water works equipment, for the insertion of corporation stops. The largest size corporation stop which can be tapped directly into the pipe is given below. Larger outlet size can be secured by using service clamps or bossed sleeves. Corporation stops should be located at least one foot from pipe ends. If two insertions are made, one on each side of the main, they should be separated (measured along the pipe length) by at least one foot

Pipe Size	Corporation Stop
3" thru 6" Classes 100 & 150 — 3" & 4" Class 200	3 1/2"
6" Class 200	4"
8" thru 16" Classes 100, 150 & 200	4"

PIPE TAPPED FOR CORP STOP THREAD

PIPE TAPPED FOR IRON PIPE THREAD

Transite has a thick wall and will therefore engage more threads of the corporation stop—so the boring-bar must travel farther down in order to thread the corporation stop in properly.

ONE TO THREE THREADS SHOWING

A properly installed corporation stop—showing gooseneck in service pipe and detail of correct number of threads exposed after tightening

Maximum Size of Outlet Recommended with Service Clamps Inches

Pipe Size	OUTLET SIZE Classes 100 150 200	
	Single Strap	Double Strap
3"	2"	2"
4"	2"	2"
6"	2"	2"
8"	2"	2"
10"	2"	2"
12"	2"	2"
14"	2"	2"
16"	2"	2"

These are made available to satisfy either of two needs:

1. To supply a pre-threaded coupling-outlet for customer convenience.
2. To provide greater outlet capacity than can be obtained by drilling and tapping pipe

Available with either AWWA or iron pipe thread outlet. For AWWA threads it may be ordered direct-threaded or with brass bushings. For I.P. threads, bushings only are used and may be either brass or galvanized iron. Order should show outlet size, type of thread and type of bushing as outlined below

AWWA THREAD		IRON PIPE THREAD	
DIRECT-THREADED	BRASS BUSHING	BUSHING ONLY	Specify either brass or galvanized iron

All bushings are threaded into coupling wall and securely bonded with Epoxy cement

OUTLET SIZES AVAILABLE

3" & 4" Pipe	1/4" — 1" — 1 1/4"
6" thru 16" Pipe	3/4" — 2" — 1 1/4" — 1 1/2"

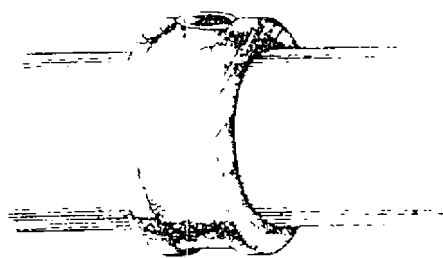
Lubricate threads of pipe, steps or iron pipe nipples before inserting. Use a thin paste of powdered graphite and lubricating oil.

Connection for House Service

Always put a bend or "gooseneck" in the tubing to provide for flexibility and "give" in the event of a load due to settlement or expansion and contraction.

BOSSED SLEEVES

Bossed sleeves may also be used to obtain larger outlet capacity than is obtainable with ordinary tapping. Sleeves may be either solid or split.



Solid Bossed Sleeve

TAPPING SLEEVES AND VALVES

Tapping sleeves with either caulked lead or mechanical joints can be used for making large taps in Transite Pipe under pressure.



Tapping sleeve and valve

INSTALLATION

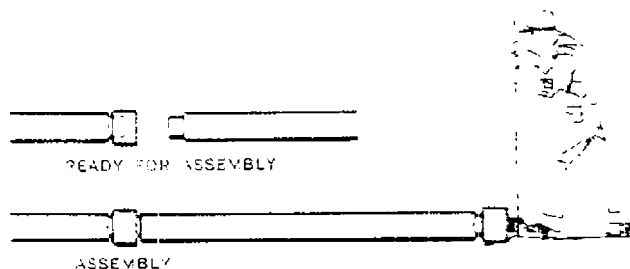
The standard, accepted practices for installing water pipe apply. They include such operations as trenching, assembly, bedding and testing the line. Yet in every way, Transite's special qualities simplify and speed up present techniques, cutting installation costs in handling, assembly and at fittings.



SAVINGS IN HANDLING

Two men can easily handle 3', 4', 6' and 8' pipe manually. It's that light. They can handle 10' and 12' with ropes, and require mechanical equipment only with larger sizes. The light weight of Transite reduces cost of on job hauling, storing, stringing out, lowering and assembly.

SAVINGS IN ASSEMBLY



Transite Pressure Pipe is joined with Ring-Tite couplings and is factory-bellied. A push or a pull is all that's needed to assemble. For smaller sizes only a bar and a block of wood is needed. For larger sizes efficient coupling pullers are used. Either way, assembly is fast, simple, sure. Experienced pipe laying crews can assemble Transite by stabbing, thus further reducing assembly costs.

INSTALLATION GUIDE

A one hundred and twenty-eight page Johns-Manville Installation Guide (TR-52A) for Transite Pressure Pipe is available—at no cost—to Engineers, Superintendents, Contractors, Foremen and laying crews for guidance in following specifications. Content of Guide as follows:

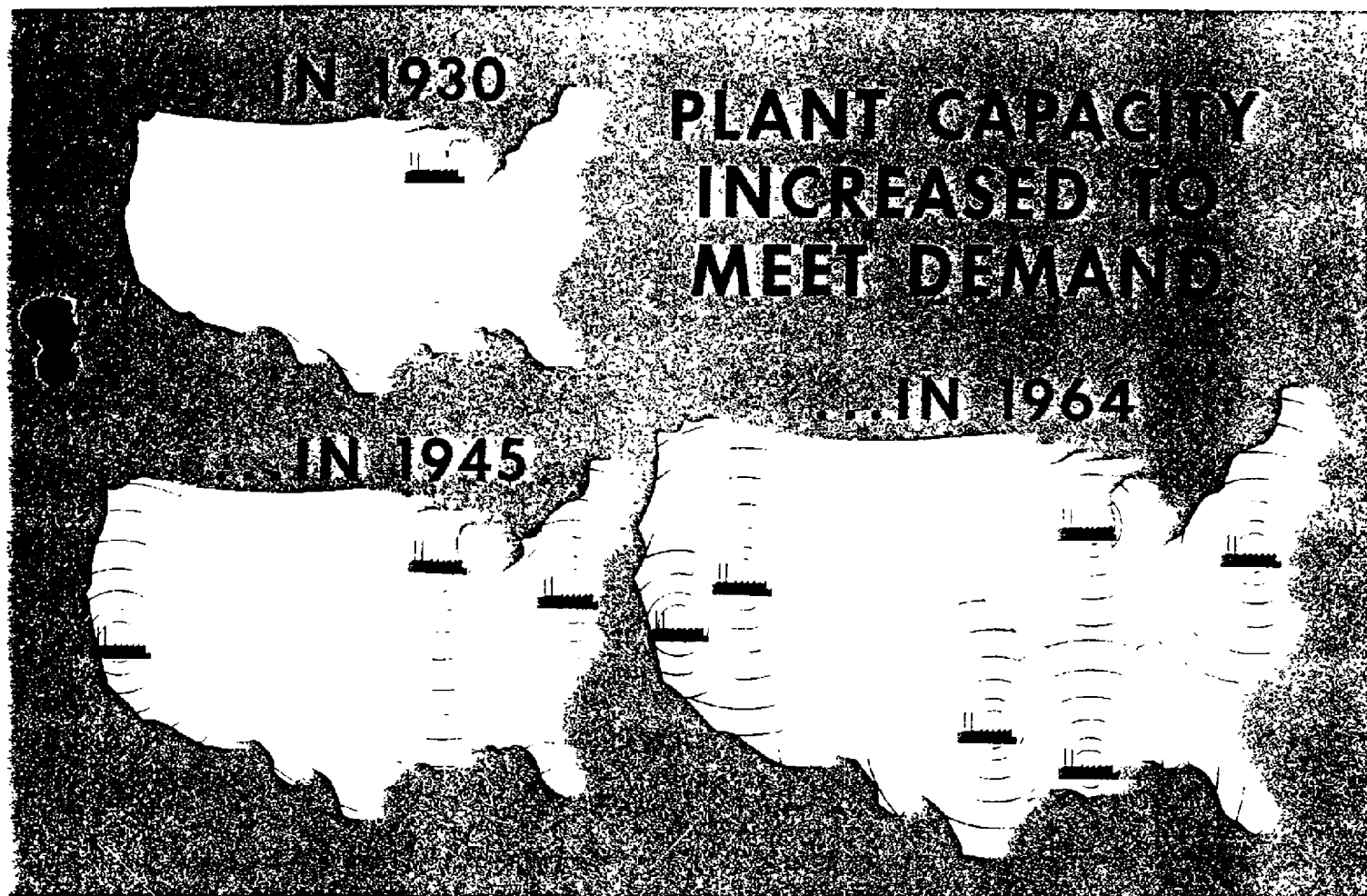
- Receiving and Handling
- Excavating Trench
- Supporting Pipe
- Lowering into Trench
- Assembly of Pipe and Coupling
- Use of Short Lengths
- Cutting and Machining Pipe
- Assembly at Fittings
- Thrust Blocks at Fittings
- Installation at Hydrants
- Service Connections
- Backfilling and Tamping
- Pressure Tests — Leakage Tests
- Repairs To Damaged Pipe
- Pulling Pipe Through Casings
- Bridge Crossings

INSTALLATION INSTRUCTIONS

As an added service, if a request is made with adequate advance notice (such as at the time of placing the pipe order), an installation instructor will be provided, without charge, for such a period of time as Johns-Manville will consider necessary to furnish preliminary instructions. This service is offered, however, on the condition that by rendering it, Johns-Manville shall not be deemed to have approved or in any manner to have assumed responsibility for the engineering design or the job, supervision, inspection or quality of workmanship employed in the installation of materials.



APPROXIMATELY 50,000 MILES OF TRANSITE WATER PIPE HAS BEEN PUT IN SERVICE SINCE IT WAS FIRST INTRODUCED TO THE WATER WORKS INDUSTRY.



ASSOCIATIONS AND AGENCIES THAT APPROVE OR ACCEPT TRANSITE PIPE FOR WATER SERVICE

American Water Works Association C 400-64T
American Society for Testing Materials C296-63T
Corps of Engineers-Army-Air Force Guide Specification
Federal Government SS-P-351a

Underwriters' Laboratories, Inc. Equipment List No. 2100-1 16.7
National Board of Fire Underwriters Pamphlet No. 24
Associated Factory Mutual Fire Insurance Companies Handbook - 1959
Bureau of Docks: Navdocks DM-5 and Navy Design Criteria

Pictured below are pipe samples taken from in-service lines—many years old—where aggressive waters and soils have been the best indices of Transite's resistance to corrosion inside, outside, all the way through. Transite is immune to rust, electrolysis, galvanic and electrochemical types of corrosion. Numerous installations for mine drainage, in cinder fills and for salt water disposal lines are further evidence of Transite's high stability, maintained hydraulic efficiency and long, economical performance. They document why Transite is considered

the most corrosion-resistant water pipe in general use by the water works industry.

Following data available for reference:

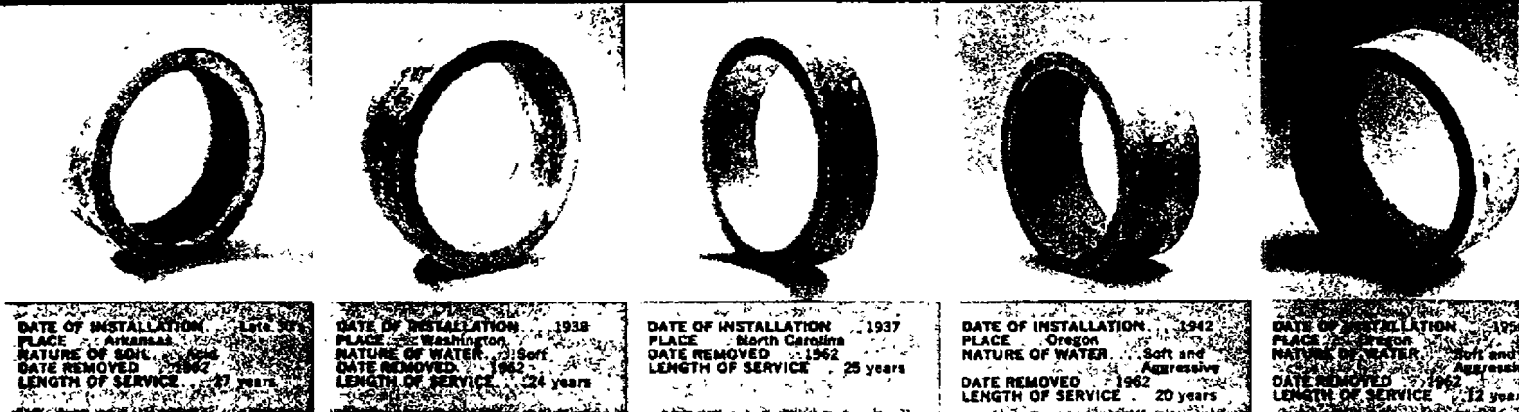
J-M TR-51A MINE DRAINAGE

LOSS IN CAPACITY OF WATER
MAINS-JRL AWWA OCT. 1962

MANSON-BLAIR REPORT

UNRETOUCHED PHOTOS OF PIPE SECTIONS REMOVED FROM OLD, IN-SERVICE TRANSITE WATER LINES.*

*RESULTS OF EXAMINATION AND RETESTS AVAILABLE



REFERENCE MATERIAL AVAILABLE

- J-M MATERIAL SPECIFICATION-DS-335
- J-M FRICION LOSS OF HEAD CHART AND FLOW POWERGRAPH TR-15A
- J-M-TR-222A ENGINEERS' TESTIMONIALS
- J-M-TR 160A GENERAL DATA
- J-M INSTALLATION SPECIFICATION—DS-348
- J-M PRESSURE PIPE—ECONOMIC ADVANTAGES—DS-328

CUSTOMER SERVICE ORGANIZATION

Johns-Manville maintains a large, nation-wide field organization to serve customers directly from six plants in the U.S. This service organization includes also a large staff of installation instructors who will, on request, demonstrate to pipe laying crews, the handling and assembly of Transite Water Pipe. J-M offers direct support, as well, to water utility management in guides to system evaluation and public relations programs for water system improvements.

WHERE TO CONTACT THE NEAREST JOHN'S-MANVILLE DISTRICT OFFICE

DISTRICT OFFICES

Atlanta 3, Georgia
101 Marietta Street
525-2021 Area Code 404

Boston 14, Massachusetts
150 Causeway Street
227-0400 Area Code 617

Chicago, Illinois
P.O. Box 46, Waukegan, Ill
623 2900 Area Code 312

Cleveland 15, Ohio
3101 Euclid Avenue
UTah 1-6700 Area Code 216

Denver 2, Colorado
1755 Glenarm Place
292-3380
Area Code 303

Houston 1, Texas
P.O. Box 1355
JAckson 6-1751 Area Code 713

Los Angeles, California
P.O. Box D, Long Beach 10
SPruce 5-3451 or
TErminat 4-6471 Area Code 213

New York, N. Y.
Manville, N. J.
725 5000 Area Code 201
From NY 227 4991

Philadelphia 6, Pennsylvania
Chestnut Street at 4th
WAInut 2 5000 Area Code 215

St. Louis 5, Missouri
7912 Bonhomme Ave., Clayton
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