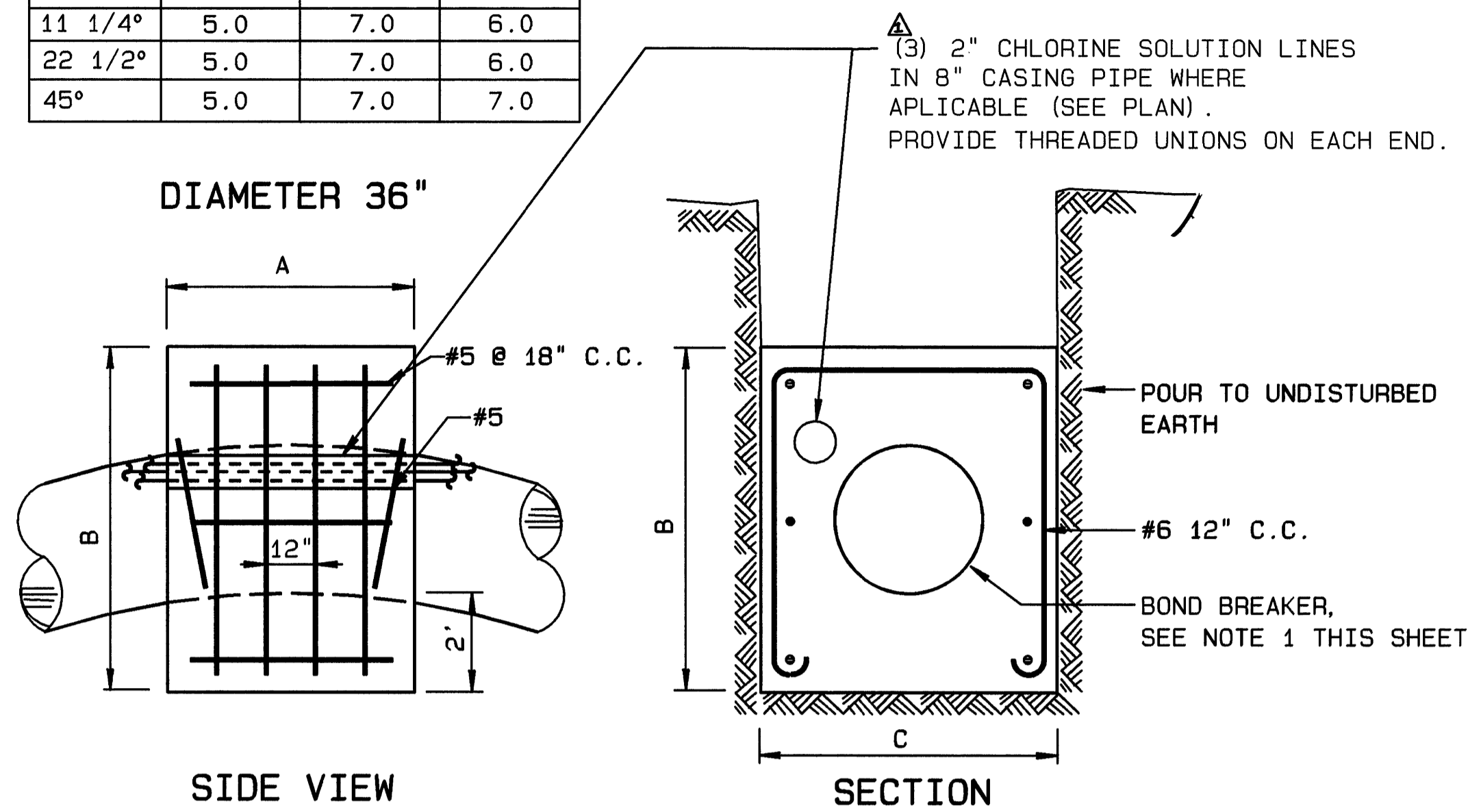


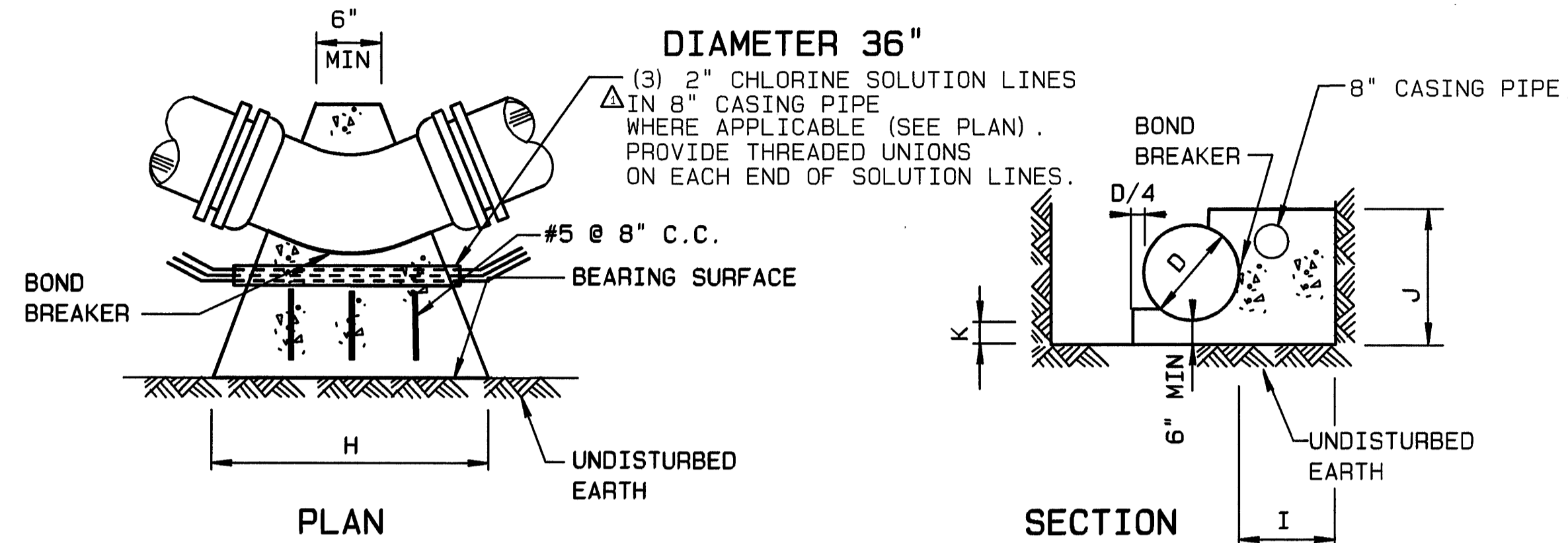
BEND	A (FEET)	B (FEET)	MINIMUM C (FEET)
5 5/8°	4.0	6.0	5.0
11 1/4°	5.0	7.0	6.0
22 1/2°	5.0	7.0	6.0
45°	5.0	7.0	7.0



**THRUST BLOCKS - DOWNWARD VERTICAL BENDS**

SCALE: NONE

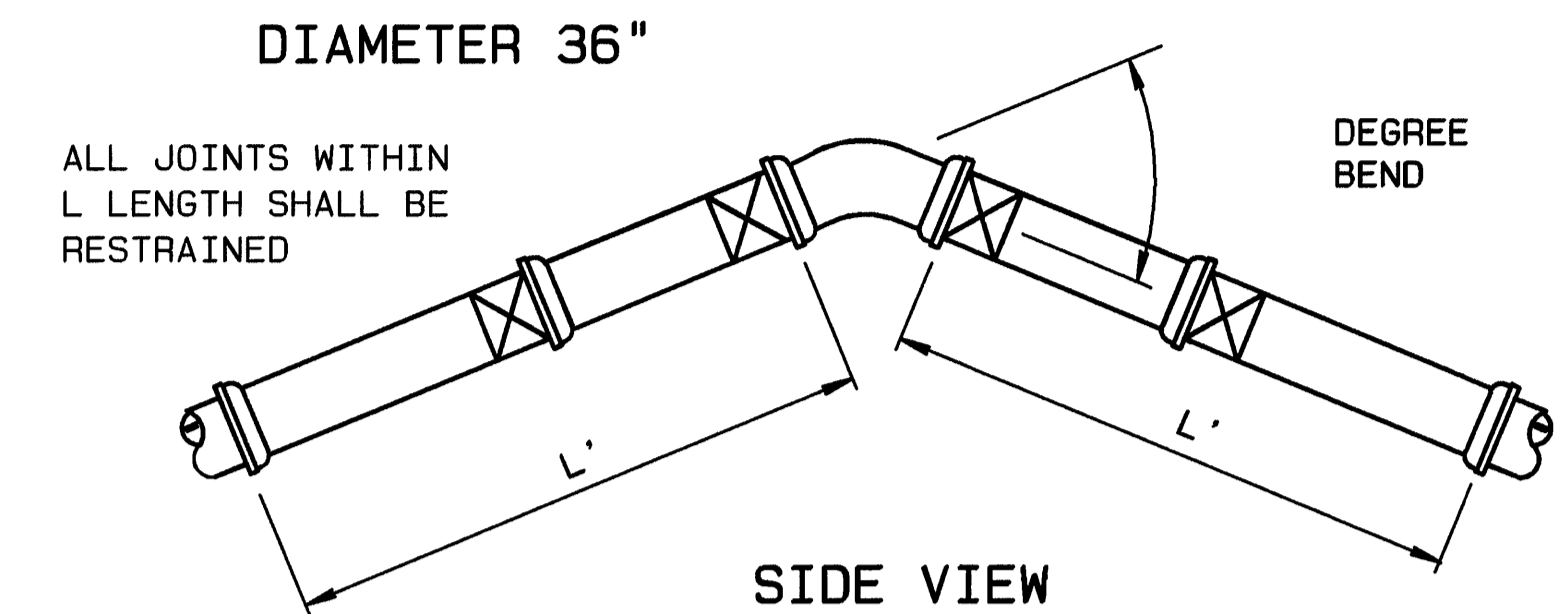
BEND	H (FEET)	MINIMUM I (FEET)	MINIMUM J (FEET)	K (FEET)
5 5/8°	3.0	1.0	4.0	0.5
11 1/4°	4.0	1.3	4.0	0.5
22 1/2°	7.0	2.0	4.0	0.5
45°	10.0	3.4	5.0	1.0
90°	16.0	5.0	6.0	1.0



**THRUST BLOCKS - HORIZONTAL BENDS**

SCALE: NONE

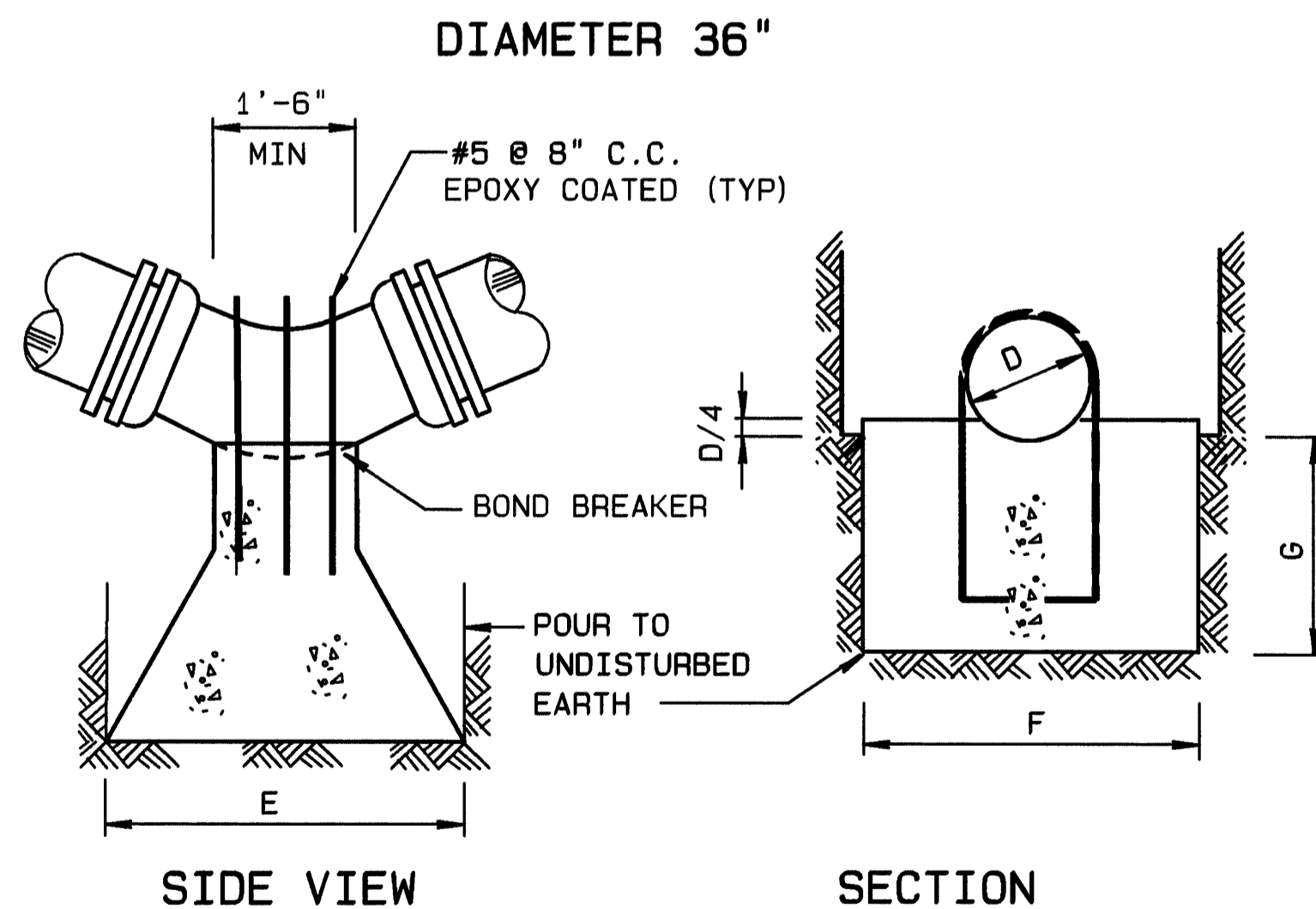
DEGREE BEND	MINIMUM LENGTH (L)
45°	198.0'
22 1/2°	108.0'
11 1/4°	54.0'
5 5/8°	18.0'



**RESTRAINED JOINTS - DOWNWARD VERTICAL BENDS**

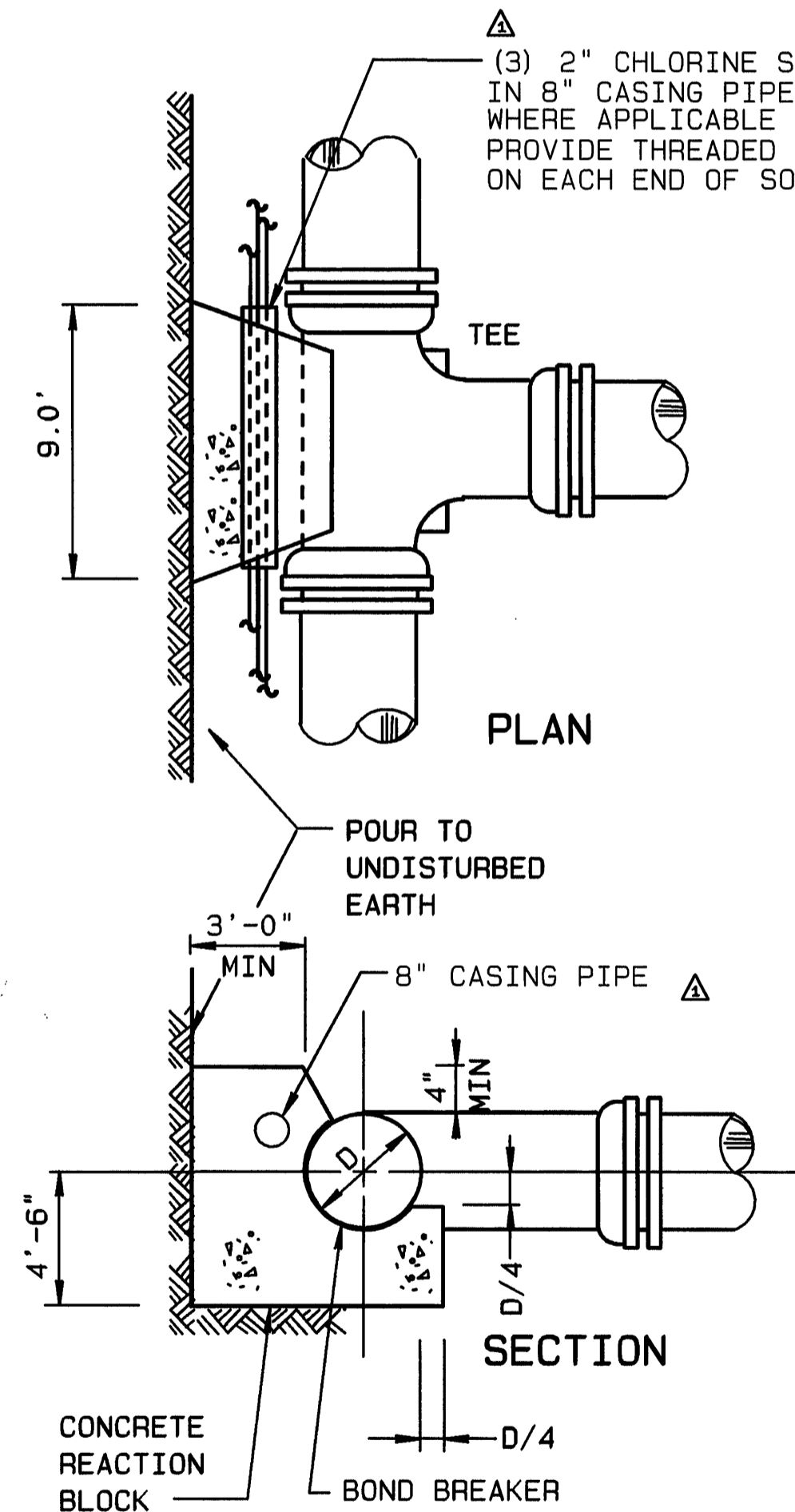
SCALE: NONE

BEND	E (FEET)	F (FEET)	MINIMUM G (FEET)
5 5/8°	3.0	4.0	1.2
11 1/4°	3.0	4.0	1.2
22 1/2°	5.5	4.0	1.2
45°	7.5	5.0	2.7



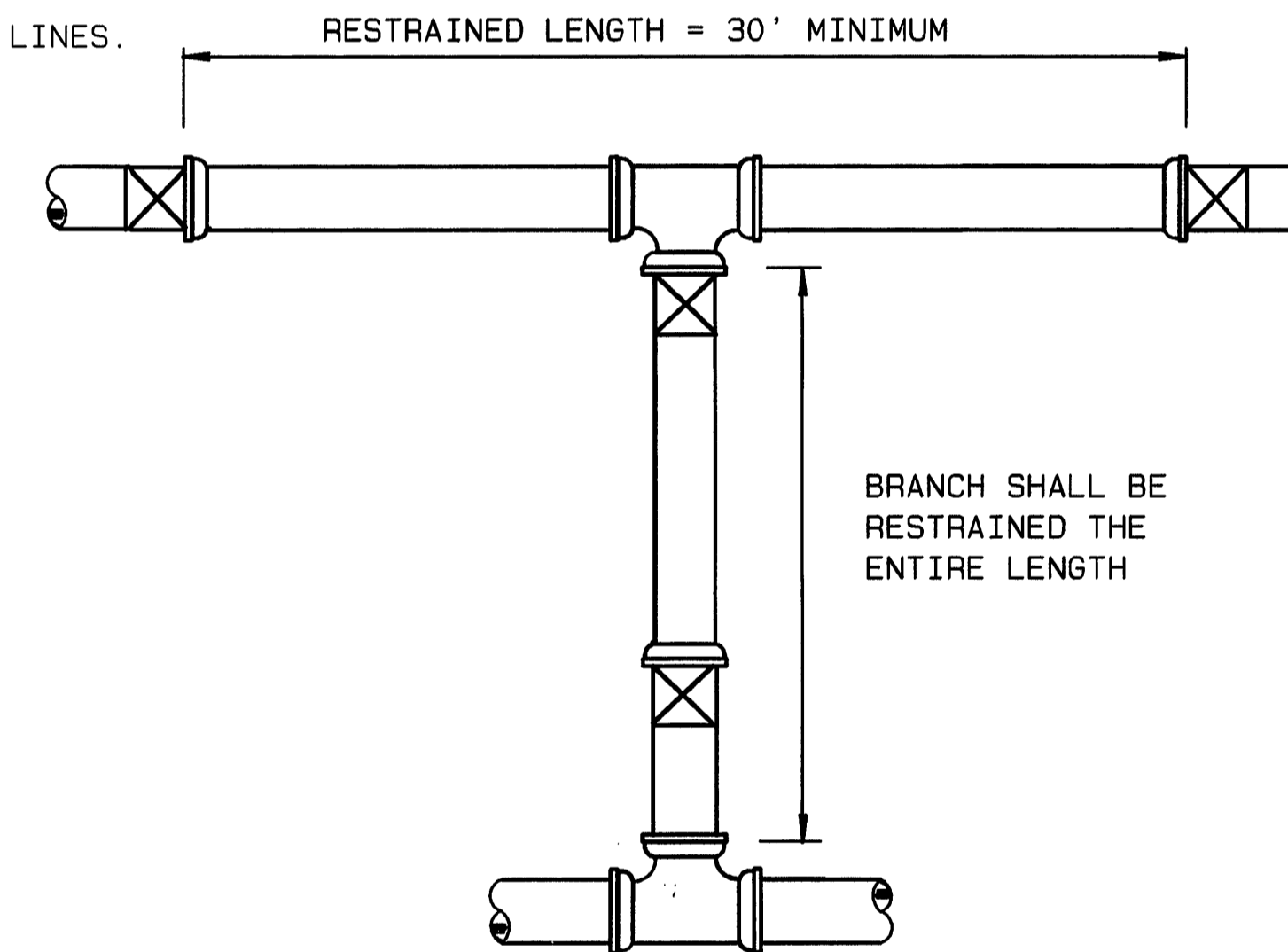
**THRUST BLOCKS - UPWARD VERTICAL BENDS**

SCALE: NONE



**THRUST BLOCK @ TEE**

SCALE: NONE DIAMETER 36"



**RESTRAINED JOINTS @ TEE**

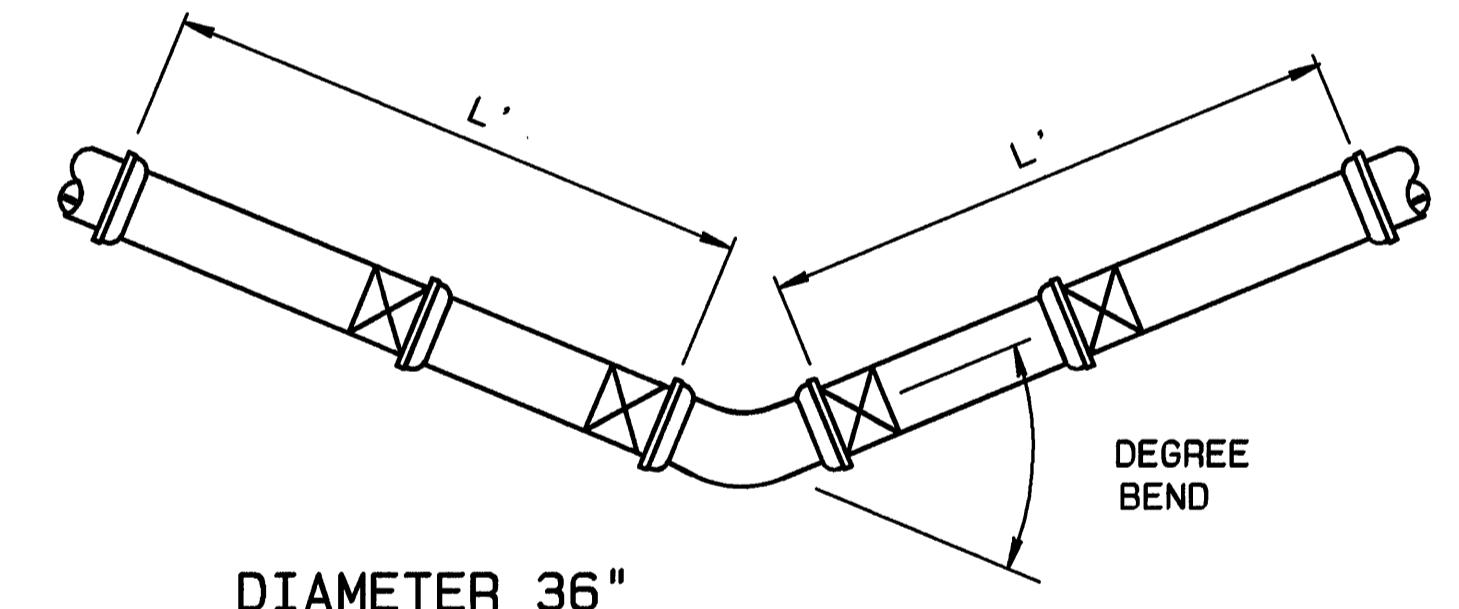
SCALE: NONE

DIAMETER 36"

**NOTE:**

- BOND BREAKER SHALL CONSIST OF TWO LAYERS OF 15 LB. FELT OR 2 LAYERS OF 6 MIL POLYETHYLENE.

DEGREE BEND	MINIMUM LENGTH (L)
90°	234.0'
45°	108.0'
22 1/2°	36.0'
11 1/4°	36.0'
5 5/8°	18.0'



**RESTRAINED JOINTS - HORIZONTAL BENDS & UPWARD VERTICAL BENDS**

SCALE: NONE

SCALE: AS NOTED

**RECORD DRAWING**

<b>MATTERN &amp; CRAIG</b> CONSULTING ENGINEERS • SURVEYORS ROANOKE VIRGINIA	DESIGNED: RFP		REV 1	DATE 5/93	DESCRIPTION C.O. #3	BY CLD	APP. RWB	<b>CARVINS COVE FILTER PLANT IMPROVEMENTS - PHASE I</b> ROANOKE, VIRGINIA	DATE MARCH 1992
	DRAWN: FMP		CHECKED: SWH						
<b>ALVORD, BURDICK &amp; HOWSON</b> ENGINEERS CHICAGO								<b>RAW WATER LINE</b> <b>THRUST RESTRAINT DETAILS</b>	SHEET RW5A