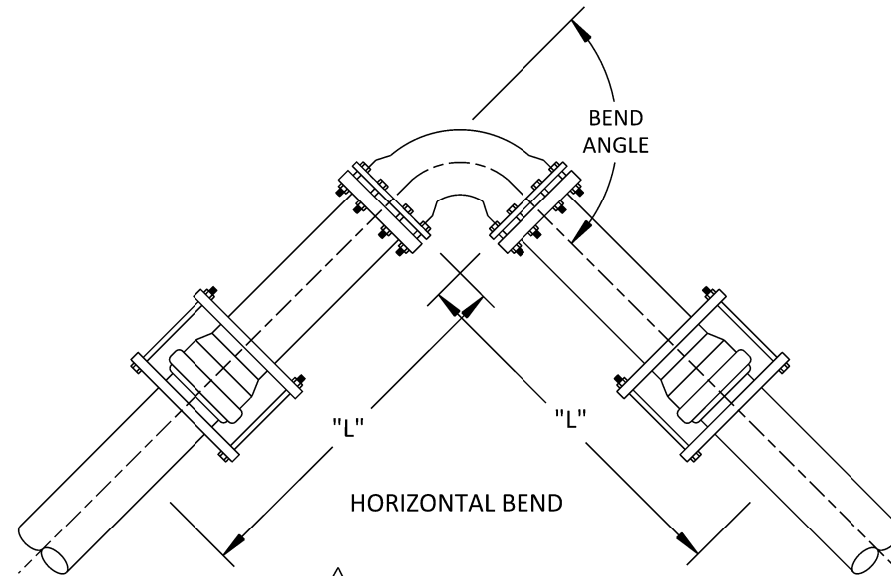


PIPE SIZE (RUN)		4	6	8	12	16	18	20	24
PIPE SIZE (BRANCH)	4	*	*	*	*	*	*	*	*
	6		*	*	*	*	*	*	*
	8			24	*	*	*	*	*
	12				68	36	19	1	*
	16					112	99	87	59
	18						133	122	98
	20							155	133
	24								195

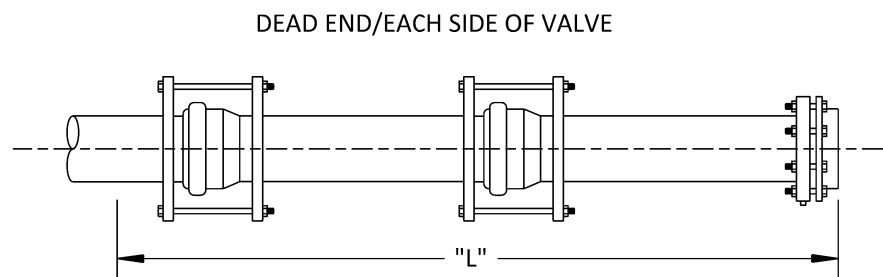
RESTRAINED LENGTHS "L" IN FEET

\*FOR THIS CONDITION NEED ONLY RESTRAIN THE BRANCH OUTLET SIDE OF THE TEE FITTING. TWENTY FOOT MIN. EA. SIDE OF TEE ON RUN IS REQUIRED AT ALL TIMES.



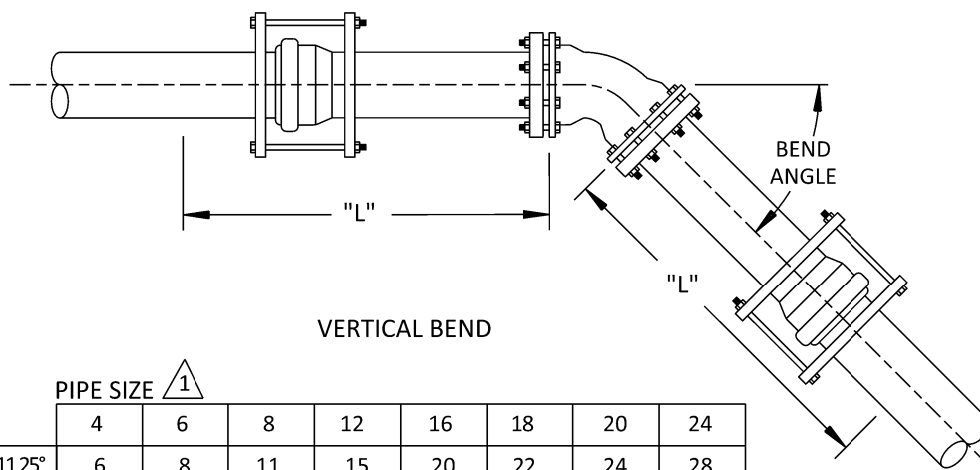
PIPE SIZE		4	6	8	12	16	18	20	24
BEND ANGLE	11.25°	2	3	4	6	8	9	10	11
	22.5°	5	7	9	13	16	18	19	23
	45°	10	14	19	26	34	37	40	47
	90°	25	34	45	63	81	89	98	113

RESTRAINED LENGTHS "L" IN FEET



PIPE SIZE		4	6	8	12	16	18	20	24
		59	84	110	156	202	223	245	287

RESTRAINED LENGTHS "L" IN FEET



PIPE SIZE		4	6	8	12	16	18	20	24
BEND ANGLE	11.25°	6	8	11	15	20	22	24	28
	22.5°	12	17	22	31	40	44	49	57
	45°	25	35	46	65	84	92	102	119

RESTRAINED LENGTHS "L" IN FEET

**RESTRAINT JOINT LENGTHS USAGE GENERAL NOTES**

- ALL JOINTS WITHIN LENGTH "L" MUST BE RESTRAINED.
- FOR TEE RESTRAIN BOTH RUN-SIDE JOINTS AND INSTALL A FULL LENGTH OF PIPE ON EACH SIDE OF BRANCH.
- FORTY-EIGHT (48) INCHES MINIMUM DEPTH OF COVER.
- A SAFETY FACTOR OF 1.5.
- SOIL TYPE ML (INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS) PER UNITED SOIL CLASSIFICATION ASTM D 2487.
  - NO BEDDING IN GRANULAR MATERIAL.
  - NO USE OF PHI = 0 PRINCIPAL.
- PIPE BEDDING PER EMWD STANDARD DRAWINGS B-286B AND B-408.
- TEST PRESSURE 225 PSI
- IF ACTUAL CONDITIONS DIFFER FROM THOSE LISTED ABOVE OR THE REQUIRED RESTRAINED LENGTH CANNOT BE MET, THE RESTRAINED LENGTH SHALL BE DETERMINED BY THE DESIGN ENGINEER AND APPROVED BY THE DISTRICT ENGINEER.

REVISIONS					APPROVALS		
NO.	DATE	INITIAL	DESCRIPTION	APP'D	DATE	INITIAL	DATE
4	5/6/19	GS	UPDATED TITLE BLOCK, FONT AND LOGO	ACA	5/6/19		
3	3/6/03	CM	REVISED NOTE RE: TEE RESTRAIN LIMITS	VJB	10/15/03		
2	5/17/00	GR	REVISED TITLE BLOCK	VJB	5/22/00		
1	10/99	RVD	REVISED RESTRAINED LENGTH FOR PVC C-905 (16"-24"), AND NOTE #7	VJB	10/6/99		

DESIGN		
CONSTRUCTION		
INSPECTION	RPK	1/15/98
OPERATIONS		
SUBMITTED	VJB	1/15/98

REFERENCES:	SCALE: NONE
FILE I.D.: \kauai\eng\std dwgs\B-663.dgn	DRAWN BY: KER



**EASTERN MUNICIPAL WATER DISTRICT  
STANDARD DRAWING**

**STANDARD RESTRAINT TEE,  
DEAD END, BEND FOR  
PVC C-900 & C-905**

APPROVED Charles J. Bachmann 1/15/98  
ASSISTANT GENERAL MANAGER DATE

**B-663**

