

PIPE THRUST RESTRAINTS: MECHANICAL RESTRAINERS SHALL BE INSTALLED AS REQUIRED TO PROPERLY RESTRAIN ALL PIPING SYSTEMS. AT A MINIMUM, RESTRAINERS SHALL BE PROVIDED ON ALL BELOW-GRADE VALVES AND FITTINGS AND AT THE REQUIRED NUMBER OF PIPE JOINTS IN EACH DIRECTION. REQUIRED LENGTHS OF RESTRAINED PIPE SHALL BE AS SHOWN IN PIPE RESTRAINT SCHEDULES BELOW.

BASIS OF SCHEDULES

1. TEST PRESSURE 150 PSIG
2. MINIMUM PIPE DEPTH 3 FEET
3. TYPE 3 LAYING CONDITION
4. FACTOR OF SAFETY = 2.0

A "LOW" REPRESENTS THE MINIMUM LENGTH OF PIPE (IN FEET) REQUIRED TO BE RESTRAINED ON THE LOW SIDE OF THE VERTICAL OFFSET, WHICH IS TYPICALLY DOWNSTREAM OF THE OFFSET FITTING. "HIGH" REPRESENTS THE MINIMUM LENGTH OF PIPE (IN FEET) REQUIRED TO BE RESTRAINED ON THE HIGH SIDE OF THE VERTICAL OFFSET, WHICH IS TYPICALLY UPSTREAM OF THE OFFSET FITTING. REQUIRED RESTRAINED LENGTHS ASSUME AN OFFSET ANGLE # 45E.

B DISTANCE REPRESENTS THE LINEAR FEET OF LARGE DIAMETER PIPE UPSTREAM OF THE REDUCER REQUIRED TO BE RESTRAINED. RESTRAIN SMALL DIAMETER PIPE AT REDUCER AT A MINIMUM. IF THERE IS AN UNOBSTRUCTED RUN DOWNSTREAM OF THE REDUCER (I.E. SMALL DIAMETER PIPE) OF AT LEAST 2.5 TIMES THE REQUIRED LENGTH OF LARGE DIAMETER PIPE TO BE RESTRAINED, THEN RESTRAINT IS REQUIRED ONLY AT THE REDUCER FITTING. IF SMALL END OF REDUCER IS MORE THAN THREE PIPE SIZES SMALLER THAN LARGE END, CONSULT ENGINEER FOR REQUIRED LENGTH TO BE RESTRAINED.

CITY OF GROVELAND STANDARD DETAILS: RECLAIMED WATER



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**PIPE RESTRAINT
SCHEDULE**

DATE: JULY 7, 2008
SCALE: N.T.S.

R-12C