

INFILTRATION SYSTEM TESTING PROCEDURES – 2 OPTIONS (CK– D.22D & D.22E)

OPTION 2: SINGLE-RING PERCOLATION TEST PROCEDURE

PREPARATION FOR TEST

A SINGLE RING MADE OF STEEL OR OTHER DURABLE MATERIAL A MINIMUM OF 3' IN DIAMETER AND A MINIMUM OF 6" HIGH AND AN ADEQUATE SUPPLY OF CLEAR WATER IS NEEDED. TESTS MUST BE PERFORMED IN UNDISTURBED NATIVE SOIL IN A SUITABLE LOCATION TO DETERMINE SOIL PERCOLATION RATES FOR THE PROPOSED INFILTRATION FACILITY. THE SURFACE OF THE SOIL WHERE THE TEST IS TO BE RUN MUST BE ACCURATELY LEVELED AND THE RING IMBEDDED AND SEALED IN THE SOIL TO PREVENT WATER FROM RUNNING UNDER THE RING AND ONTO THE SURFACE.

SOAKING PERIOD

THE RING SHALL BE CAREFULLY FILLED WITH AT LEAST 6" OF CLEAN WATER. THE DEPTH OF WATER SHOULD BE MAINTAINED FOR AT LEAST 4 HOURS AND PREFERABLY OVERNIGHT IF FINE-GRAINED SOILS ARE PRESENT. AUTOMATIC SIPHONS OR FLOAT VALVES MAY BE EMPLOYED TO AUTOMATICALLY MAINTAIN THE WATER LEVEL DURING THE SOAKING PERIOD. IT IS EXTREMELY IMPORTANT THAT THE SOIL BE ALLOWED TO SOAK FOR A SUFFICIENTLY LONG PERIOD OF TIME TO ALLOW THE SOIL TO SWELL IF ACCURATE RESULTS ARE TO BE OBTAINED.

IN SANDY SOILS WITH LITTLE OR NO CLAY, SOAKING IS NOT NECESSARY. IF, AFTER FILLING THE RING TWICE WITH 6" OF WATER, THE WATER SEEPS COMPLETELY AWAY IN LESS THAN 10 MINUTES, THE TEST CAN PROCEED IMMEDIATELY.

MEASUREMENT OF THE PERCOLATION RATE

EXCEPT FOR SANDY SOILS, PERCOLATION RATE MEASUREMENTS ARE MADE 15 HOURS BUT NO MORE THAN 30 HOURS AFTER THE SOAKING PERIOD BEGAN. THE WATER LEVEL IS ADJUSTED TO 6" ABOVE THE SOIL SURFACE AND SUCCESSIVE MEASUREMENTS ARE TAKEN TO DETERMINE THE PERCOLATION RATE. AT NO TIME DURING THE TEST IS THE WATER LEVEL ALLOWED TO RISE MORE THAN 6" ABOVE THE SOIL SURFACE.

IMMEDIATELY AFTER ADJUSTMENT, THE WATER LEVEL IS MEASURED FROM A FIXED REFERENCE POINT TO THE NEAREST 1/16 INCH AT 30 MINUTE INTERVALS. THE TEST IS CONTINUED UNTIL TWO SUCCESSIVE WATER LEVEL DROPS DO NOT VARY BY MORE THAN 1/16 INCH WITHIN A 90 MINUTE PERIOD.

AFTER EACH MEASUREMENT, THE WATER LEVEL IS READJUSTED TO THE 6" LEVEL. THE LAST WATER LEVEL DROP IS USED TO CALCULATE THE PERCOLATION RATE.

IN SANDY SOILS OR SOILS IN WHICH THE FIRST 6" OF WATER ADDED AFTER THE SOAKING PERIOD SEEPS AWAY IN LESS THAN 30 MINUTES, WATER LEVEL MEASUREMENTS ARE MADE AT 10 MINUTE INTERVALS FOR A 1 HOUR PERIOD. THE LAST WATER LEVEL DROP IS USED TO CALCULATE THE PERCOLATION RATE.

CALCULATION OF THE PERCOLATION RATE

THE PERCOLATION RATE IS CALCULATED FOR EACH TEST BY DIVIDING THE TIME INTERVAL USED BETWEEN MEASUREMENTS BY THE MAGNITUDE OF THE LAST WATER LEVEL DROP. THIS CALCULATION RESULTS IN A PERCOLATION RATE IN TERMS OF MINUTES/INCH. TO DETERMINE THE PERCOLATION RATE FOR THE AREA, THE RATES OBTAINED FROM EACH HOLE ARE AVERAGED.

EXAMPLE:

IF THE LAST MEASURED DROP IN WATER LEVEL AFTER 30 MINUTES IS 5/8 INCH,
THEN THE PERCOLATION RATE = (30 MINUTES) / (5/8 INCH) = 48 MINUTES/INCH

CITY OF KIRKLAND

PLAN NO. CK–D.22E



INFILTRATION SYSTEM
TESTING PROCEDURE
OPTION 2