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job: Hawthornes, Manchester Rd, Thurlston
 client: Lindrick Construction
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Design of Retaining Wall to Drive

Data

soil density = **19** kN/sq.m
 angle of repose = **35** degrees
 K1 = 0.271
 K2 = 0.800 (max 3.0)
 active pressure, AP1 = 19.179 kN/sq.m
 passive pressure, PP1 = 9.120 kN/sq.m
 retained height, H1 = **3.125** m max
 depth of base, H2 = **0.600** m
 base thickness, D = **0.300** m
 base width, W = **3.200** m
 o/a wall thickness, T = **0.540** m
 length of toe, LT = **1.000** m
 density of wall = **23.5** kN/cu.m
 wall height, Hc = **1.100** m
 surcharge, ws = **10.000** kN/sq.m
 heel length = 1.660 m

Stability Calculations - unfactored

sw of wall = 61.229 kN
 sw of base = 22.560 kN
 sw of soil, S1 = 108.025 kN
 sw of soil, S2 = 5.700 kN
 sw of surcharge = 16.600 kN
 total weight, WT = 214.114 kN
 horizontal thrust, H1 = 35.721 kN
 horizontal thrust, H2 = 2.736 kN
 surcharge thrust, H3 = 10.094 kN
 OTM = 101.246 kN.m
 RM = 412.067 kN.m
 xbar from toe = 1.452 m
 first third = 1.067 m, over limit, OK
 second third = 2.133 m, below limit, OK
 FOS, overturning = 4.070 > 1.4 OK

Base Pressures - unfactored

eccentricity, e = 0.148 m
 OK within mid 1/3
 axial pressure = 66.911 kN/sq.m
 bending pressure = 18.610 kN/sq.m
 max pressure(toe) = 85.521 kN/sq.m
 max pressure(heel) = 48.301 kN/sq.m
 M press @ rear of wall = 67.608 kN/sq.m
 M press @ front of wall = 73.889 kN/sq.m

Assumed SBP = **100** kN/sq.m

