Clause 6.2.4 Modified Hazen-Williams Formula

The Modified Hazen Williams formula has been derived from Darcy-Weisbach and Colebrook-White equations and obviates the limitations of Hazen-Williams formula.

$$V = 3.83 C_R d^{0.6575} (gs)^{0.5525} / v^{0.105}$$

Where,

C_R	=	coefficient of roughness
d	=	pipe diameter
g	=	acceleration due to gravity
s	=	friction slope
v	=	viscosity of liquid

For circular conduits, $v_{20^0_c}$ for water $=10^{-6} m^2 / s$ and $g = 9.81 m / s^2$
The Modified Hazen Williams formula derived as

$$V = 143.534\ C_R\ r^{0.6575} S^{0.5525}$$
$$h = [L(Q / C_R)^{1.81}]/994.62 D^{4.81}$$

in which,

V	=	velocity of flow in m/s.
C_R	=	pipe roughness coefficient, (1 for smooth pipes; < 1 for rough pipes);
r	=	hydraulic radius in m;
s	=	friction slope;
D	=	internal diameter of pipe in m;
h	=	friction head loss in m;
L	=	length of pipe in m; and
Q	=	flow in pipe in m^3 / s