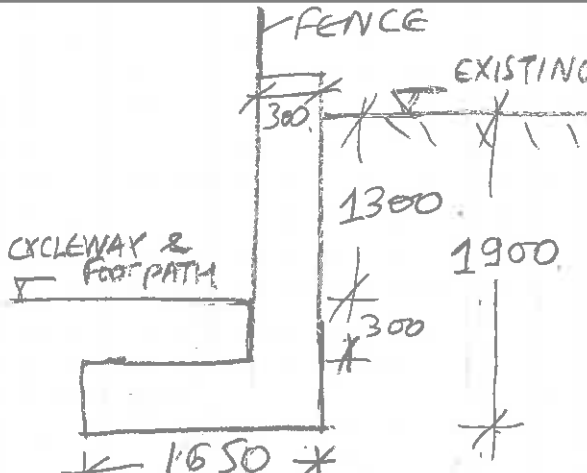


Project Title: <i>Cowbridge Road, St Athan</i>		Proj. No: <i>16156</i>
Element Title: <i>Retaining wall design</i>		Sheet No: <i>RW/01</i>
Des'd by: <i>EK</i>	Date: <i>30/1/2018</i>	Chk'd by: <i></i>
		Date: <i></i>

REF	INPUT	OUTPUT
	 <p> <u>Surcharge:</u> 2.5 kN/m² for cars. 7.5 kN/m² induce additional bending for the fence. TOTAL 10 kN/m². </p>	

Project **Cowbridge Road, St Athans**

Client **Edenstone Homes**

Location **Retaining wall 1300**

RETAINING WALL design to BS 8110:1997, BS 8002:1994. BS 8004:1986

Originated from 'RCC62.xls' v2.3

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REINFORCED CONCRETE COUNCIL

Made by

Date

Page

EK

30-Jan-2018

EW/02

Checked

Revision

Job No

-

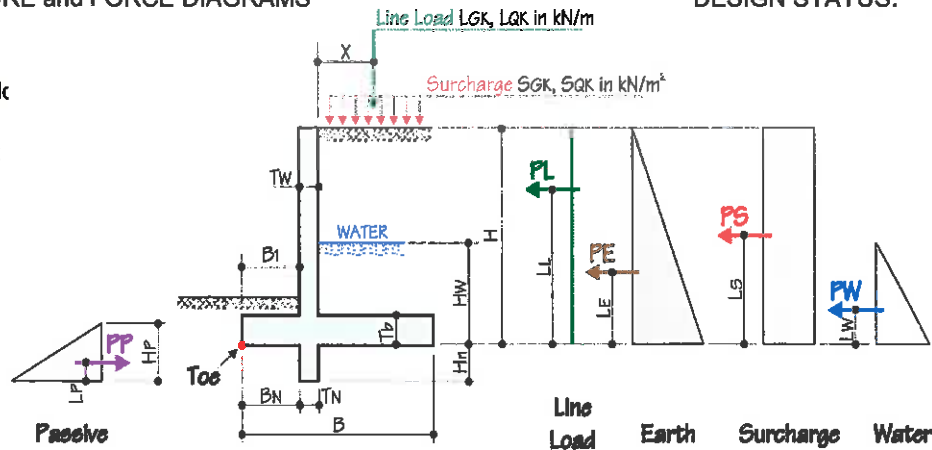
16156

IDEALISED STRUCTURE and FORCE DIAGRAMS

DESIGN STATUS: **VALID**

WARNING :

Passive pressure should only be considered if it can be guaranteed that there will be no future excavation in front of the wall.



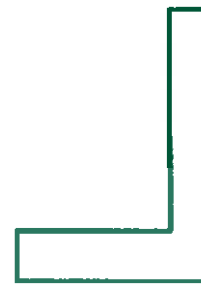
DIMENSIONS (mm)

H =	<u>1900</u>	B =	<u>1650</u>	Tw =	<u>300</u>
Hw =	<u>0</u>	B1 =	<u>1350</u>	Tb =	<u>350</u>
Hp =	<u>0</u>	BN =	<u>0</u>	TN =	<u>0</u>
Hn =	<u>0</u>				

MATERIAL PROPERTIES

fcu =	<u>35</u>	N/mm ²	γm =	<u>1.5</u>	concrete
fy =	<u>460</u>	N/mm ²	γm =	<u>1.05</u>	steel
			cover to tension steel =	<u>50</u>	mm
			Max allowable design surface crack width (W) =	<u>0.3</u>	mm
			Concrete density =	<u>24</u>	kN/m ³

(0.2 or 0.3 mm only)



Wall Geometry

SOIL PROPERTIES

Design angle of int'l friction of retained mat'l (Ø) =	<u>25</u>	degree
Design cohesion of retained mat'l (C) =	<u>0</u>	kN/m ²
Density of retained mat'l (q) =	<u>20</u>	kN/m ³
Submerged Density of retained mat'l (qs) =	<u>5.00</u>	kN/m ³
Design angle of int'l friction of base mat'l (Øb) =	<u>35</u>	degree
Design cohesion of base material (Cb) =	<u>10</u>	kN/m ²
Density of base material (qb) =	<u>10</u>	kN/m ³
Allowable gross ground bearing pressure (GBP) =	<u>50</u>	kN/m ²

(Only granular backfill considered, "C" = zero)

[default=2/3*q (only apply when t > 13.33

ASSUMPTIONS

- a) Wall friction is zero
- b) Minimum active earth pressure = 0.25qH
- c) Granular backfill
- d) Does not include check of rotational slide/slope
- e) Does not include effect of seepage of ground water beneath the wall.
- f) Does not include deflection check of wall due to lateral earth pressures
- h) Design not intended for walls over 3.0 m high
- i) Does not include check for temp. or shrinkage

LOADINGS

Surcharge load – live (SQK) =	<u>10</u>	kN/m ²
Surcharge load -- dead (SGK) =	<u>0</u>	
Line load – live (LQK) =	<u>0</u>	kN/m
Line load -- dead (LGK) =	<u>0</u>	kN/m
Distance of line load from wall (X) =	<u>0</u>	mm

LATERAL FORCES (unfactored)

Ka =	<u>0.41</u>	[default ka = (1-SIN Ø)/(1+SIN Ø) 0.41
Kp =	<u>3.69</u>	[default kp = (1+SIN Øb)/(1-SIN Øb) 3.69
Kpc =	<u>3.84</u>	[default kpc = 2kp ^{0.5}] = 3.84
Kac =	<u>1.27</u>	[2ka ^{0.5}]

	Force (kN)	Lever arm (m)	Moment about TOE (kNm)	γ _f	F _{ult} (kN)	M _{ult} (kNm)
PE =	14.65	LE = 0.633	9.28	<u>1.40</u>	20.51	12.99
PS(GK) =	0.00	LS = 0.95	0.00	<u>1.40</u>	0.00	0.00
PS(QK) =	7.71	LS = 0.95	7.33	<u>1.60</u>	12.34	11.72
PL(GK) =	0.00	LL = 1.90	0.00	<u>1.40</u>	0.00	0.00
PL(QK) =	0.00	LL = 1.90	0.00	<u>1.60</u>	0.00	0.00
PW =	0.00	LW = 0.00	0.00	<u>1.40</u>	0.00	0.00
Total	22.36		16.60		32.85	24.71
PP =	0.00	(LP-HN) = 0.00	0.00	<u>1.00</u>	0.00	0.00