Lighting Calculation

Installation : External Lighting

Project number	:	Randles Rd - New Yard - REV 4
Customer	:	Ken Sargent - Yesss Southport
Processed by	:	Rytis Sideikis
Date	:	13.10.2022

Qvis Lighting Limited

This lighting design is for general guidance only and must not be relied upon when ordering the correct quantities or types of light fittings, as this must be checked and confirmed by you/the installer.

All calculations, unless stated otherwise, have been based upon an open plan area without any obstructions above the working plane.

With regards to CIBSE LG7/BSEN12464 we have shown illuminance levels and ratios for your ultimate approval. UGR and luminance values are all available for your approval if necessary.

It may be necessary in some instances to check UGR values even if the luminance values are below the compliant threshold. Emergency scheme is to be checked and confirmed with a local building/fire control officer and ultimately approved by the owner of the building.

Any emergency calculations that have been completed have been based so far as possible on 0.5 lux for open areas and 1 lux for escape routes. Please be aware of L2 requirements and check that conformity has been met where required. In addition, ensuring that fire tents are used to conform to current building regulations is vital, a quotation for these can be obtained via the sales department.

Please be advised that this Qvis proposal is not suitable for anti-ligature applications, if areas included in this proposal are in need of this type of luminaire, then an alternative supplier will need to be sourced.

Common design parameters have been used in order to carry out all calculations. If any part of the scheme or luminaire choice within the scheme are deemed to be not suitable for the application, please contact us for re-calculations to be carried out prior to an order being placed.

All calculations have been based upon rated lumen outputs supplied by lamp manufacturers and may vary with ambient on-site temperatures.

Please ensure that this lighting scheme complies with all requirements, and if further details/ calculations are required please contact us on the above number.

Final quantities are to be confirmed prior to an order/installation and we will not be held responsible for any errors or omissions.

Qvis is not contracted or paid to supply advice of any kind and it is entirely the responsibility of you/the installer to ensure that the design ultimately meets your requirements and complies with any legal requirements or regulations. Qvis can accept no responsibility or liability if this design does not meet any such requirements.

The following values are based on precise calculations performed on calibrated lamps and luminaires, and their configurations, whereby gradual, unavoidable deviations can occur in practice. All guarantee claims are excluded for the specified data.

This exclusion of liability applies irrespective of the legal grounds for both damages and consequential damages suffered by users and third parties.

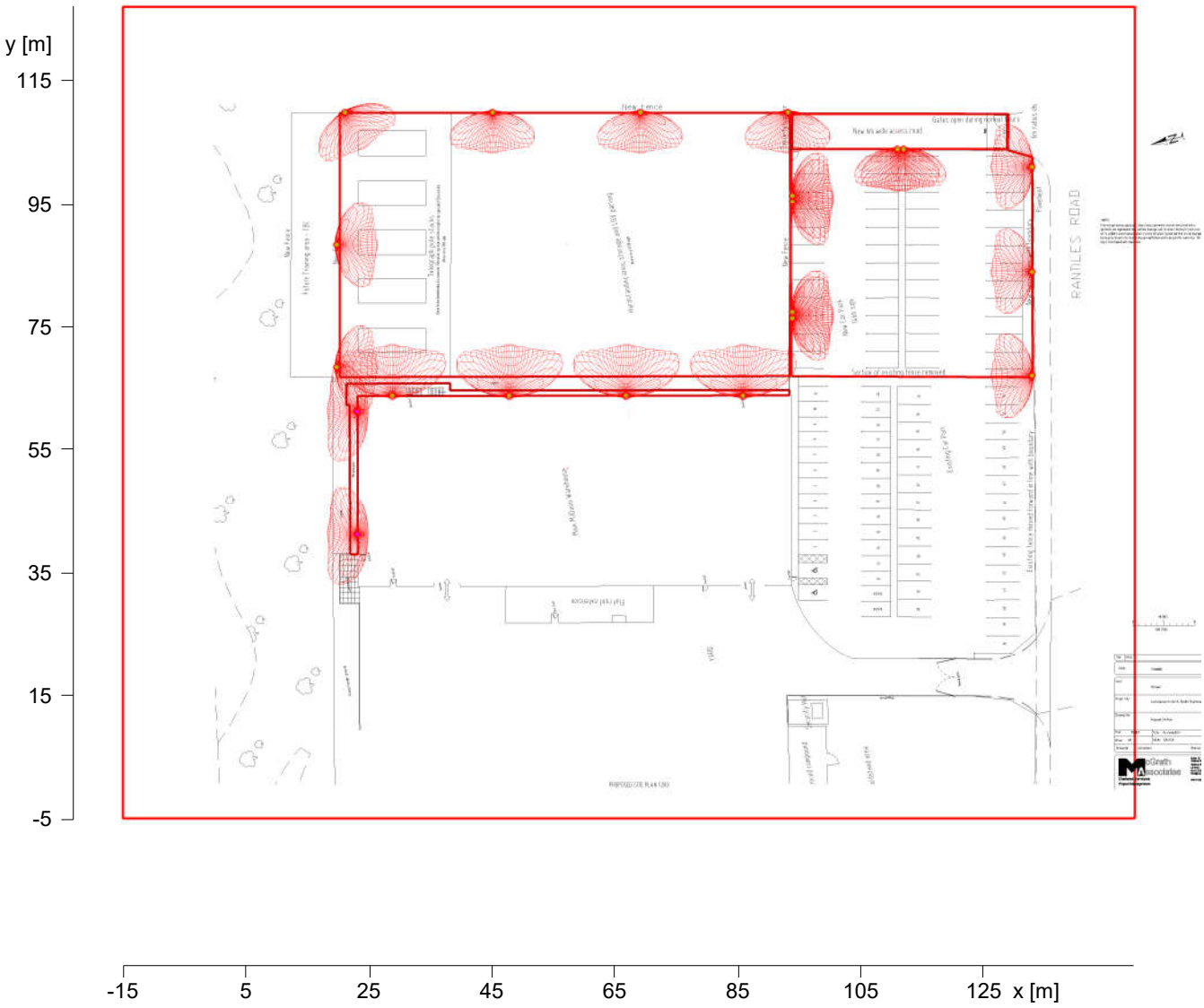
Table of contents

First Page 1
Table of contents 2
1 Exterior 1
1.1 Description, Exterior 1
1.1.1 Floor plan 3
1.2 Summary, Exterior 1
1.2.1 Result overview, New Yard 4
1.2.2 Result overview, New Car Park 5
1.2.3 Result overview, Access Road 6
1.2.4 Result overview, WalkWay 7
1.3 Calculation results, Exterior 1
1.3.1 Table, New Yard (E) 8
1.3.2 Table, New Car Park (E) 9
1.3.3 Table, Access Road (E) 10
1.3.4 Table, WalkWay (E) 12

1 Exterior 1

1.1 Description, Exterior 1

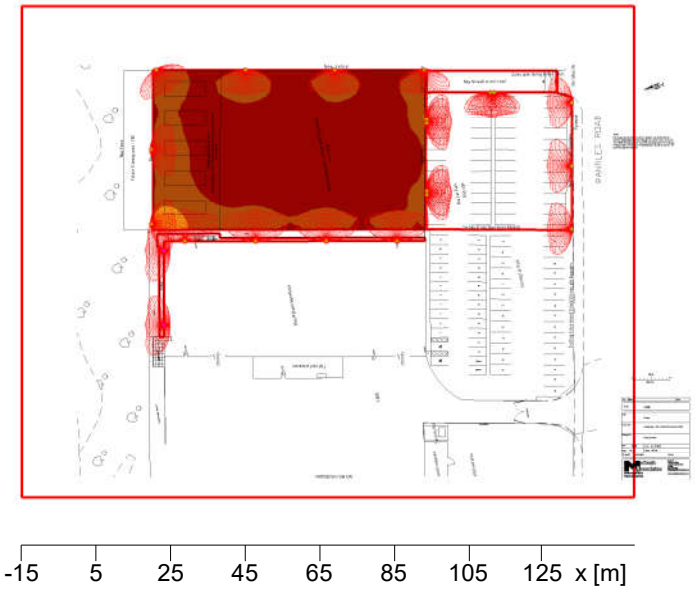
1.1.1 Floor plan



1 Exterior 1

1.2 Summary, Exterior 1

1.2.1 Result overview, New Yard



Illuminance [lx]

General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80
Total luminous flux	480000 lm
Total power	3956.3 W
Total power per area (21728.57 m²)	0.18 W/m²

Illuminance

Average illuminance	Em	41 lx
Minimum illuminance	Emin	16 lx
Maximum illuminance	Emax	130 lx
Uniformity Uo	Emin/Em	1:2.54 (0.39)
Diversity Ud	Emin/Emax	1:7.96 (0.13)

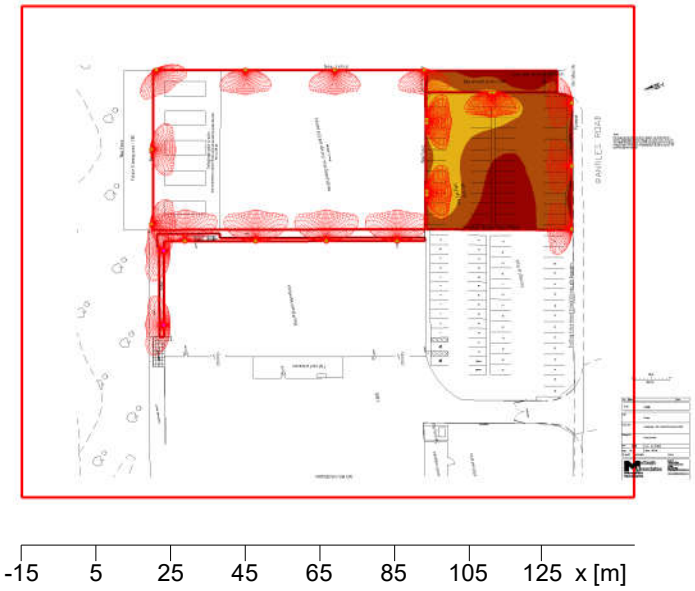
Type No.\Make

1 19 x Order No. : QFLOOD-200CW/AS
Luminaire name :
Equipment : 1 x 197.7 W / 24000 lm

2 2 x Order No. : QFLOOD-100CW/AS
Luminaire name :
Equipment : 1 x 100 W / 12000 lm

1.2 Summary, Exterior 1

1.2.2 Result overview, New Car Park



Illuminance [lx]

General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80
Total luminous flux	480000 lm
Total power	3956.3 W
Total power per area (21728.57 m²)	0.18 W/m²

Illuminance

Average illuminance	Em	80 lx
Minimum illuminance	Emin	24 lx
Maximum illuminance	Emax	197 lx
Uniformity Uo	Emin/Em	1:3.32 (0.3)
Diversity Ud	Emin/Emax	1:8.15 (0.12)

Type No.\Make

1 19 x Order No. : QFLOOD-200CW/AS
Luminaire name :
Equipment : 1 x 197.7 W / 24000 lm

2 2 x Order No. : QFLOOD-100CW/AS
Luminaire name :
Equipment : 1 x 100 W / 12000 lm

1.2 Summary, Exterior 1

1.2.3 Result overview, Access Road

-15 5 25 45 65 85 105 125 x [m]

-1 50 100

Illuminance [lx]

General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80
Total luminous flux	480000 lm
Total power	3956.3 W
Total power per area (21728.57 m²)	0.18 W/m²

Illuminance

Average illuminance	Em	59 lx
Minimum illuminance	Emin	22 lx
Maximum illuminance	Emax	118 lx
Uniformity Uo	Emin/Em	1:2.66 (0.38)
Diversity Ud	Emin/Emax	1:5.34 (0.19)

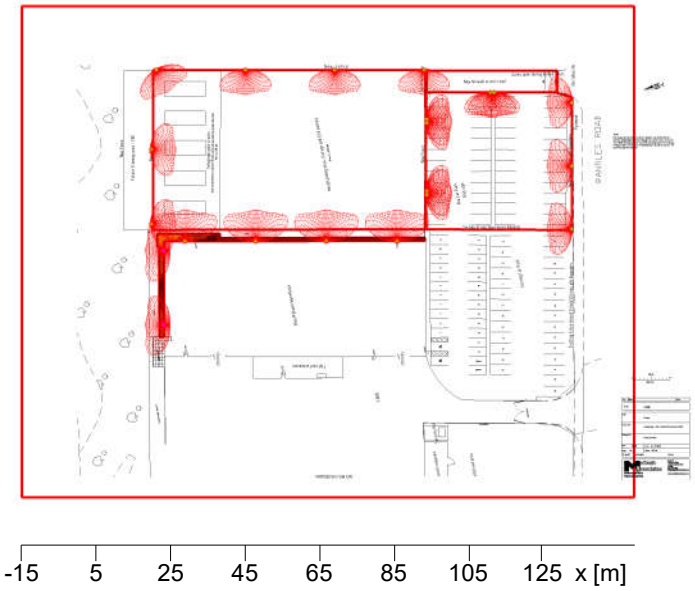
Type No.\Make

1 19 x Order No. : QFLOOD-200CW/AS
Luminaire name :
Equipment : 1 x 197.7 W / 24000 lm

2 2 x Order No. : QFLOOD-100CW/AS
Luminaire name :
Equipment : 1 x 100 W / 12000 lm

1.2 Summary, Exterior 1

1.2.4 Result overview, WalkWay



Illuminance [lx]

General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80
Total luminous flux	480000 lm
Total power	3956.3 W
Total power per area (21728.57 m²)	0.18 W/m²

Illuminance

Average illuminance	Em	55 lx
Minimum illuminance	Emin	25 lx
Maximum illuminance	Emax	134 lx
Uniformity Uo	Emin/Em	1:2.22 (0.45)
Diversity Ud	Emin/Emax	1:5.39 (0.19)

Type No.\Make

1 19 x Order No. : QFLOOD-200CW/AS
Luminaire name :
Equipment : 1 x 197.7 W / 24000 lm

2 2 x Order No. : QFLOOD-100CW/AS
Luminaire name :
Equipment : 1 x 100 W / 12000 lm

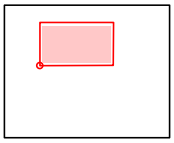
1 Exterior 1

1.3 Calculation results, Exterior 1

1.3.1 Table, New Yard (E)

[m]														
40	83	59	42	48	77	78	46	32	43	75	72	42	30	45	80
35	52	48	38	37	43	43	36	33	35	42	40	34	32	38	62
30	60	50	33	25	23	22	21	20	20	21	21	21	21	27	64
25	92	62	35	23	19	18	17	**(16)**	**(16)**	17	17	**(16)**	17	20	30
20	64	58	39	28	24	23	22	21	21	22	21	20	20	22	35
15	71	70	52	40	37	37	35	34	34	36	34	32	31	35	64
10	**[130]**	104	74	56	55	60	54	48	52	59	52	47	50	54	49
5															
		10	20	30	40	50	60	70 [m]							

Illuminance [lx]



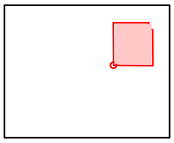
Height reference plane		: 0.00 m
Average illuminance	Em	: 41 lx
Minimum illuminance	Emin	: 16 lx
Maximum illuminance	Emax	: 130 lx
Uniformity Uo	Emin/Em	: 1 : 2.54 (0.39)
Diversity Ud	Emin/Emax	: 1 : 7.96 (0.13)

1.3 Calculation results, Exterior 1

1.3.2 Table, New Car Park (E)

[m]														
40	83	77	64	50	43	46	44	34	25	25	30	37	40	
	104	107	93	76	69	75	76	58	43	38	41	52	61	
35	114	134	126	119	127	149	157	127	94	71	64	73	86	68
	133	168	155	144	151	173	177	149	114	91	80	85	94	74
30	155	**[197]**	170	144	136	139	136	117	98	85	80	83	85	63
	144	188	160	128	110	102	95	84	76	72	73	78	77	55
25	110	150	136	110	91	79	71	63	60	61	67	75	76	54
	86	122	119	98	78	64	56	50	50	54	63	75	84	63
20	80	117	113	91	71	56	47	43	44	50	60	78	95	77
	94	130	117	90	67	52	42	38	40	46	57	75	92	74
15	119	158	129	92	66	49	39	35	36	42	53	67	76	59
	138	177	136	93	64	47	37	33	34	39	49	61	67	49
10	121	154	122	84	58	42	33	30	31	37	47	60	65	48
	90	113	95	69	49	37	29	27	29	35	46	62	74	58
5	64	78	70	54	41	31	26	**(24)**	27	34	45	64	83	71
	5	10	15	20	25	30	35 [m]							

Illuminance [lx]



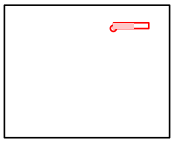
Height reference plane		: 0.00 m
Average illuminance	Em	: 80 lx
Minimum illuminance	Emin	: 24 lx
Maximum illuminance	Emax	: 197 lx
Uniformity Uo	Emin/Em	: 1 : 3.32 (0.30)
Diversity Ud	Emin/Emax	: 1 : 8.15 (0.12)

1.3 Calculation results, Exterior 1

1.3.3 Table, Access Road (E)

[m]																															
5.0	64	65	65	65	64	63	61	59	57	54	52	49	47	44	42	40	38	37	36	36	36	37	37	36	36	35	35	34	32	31	29
4.5	79	80	80	79	77	75	72	70	66	63	60	57	54	51	48	45	43	42	42	42	42	43	44	44	44	43	42	41	39	37	34
4.0	91	92	92	91	88	86	83	79	75	72	69	65	61	57	54	51	49	47	47	47	47	48	49	50	50	50	49	47	45	42	39
3.5	96	98	98	98	95	93	90	87	83	79	75	71	67	63	59	56	54	52	52	52	52	54	55	56	57	56	55	53	50	47	43
3.0	98	101	102	102	101	99	97	93	90	85	81	77	73	68	64	61	59	58	57	57	58	59	61	63	64	64	62	60	56	52	48
2.5	100	104	106	107	107	106	104	101	97	92	88	84	80	76	72	69	67	66	65	65	66	68	70	72	73	73	72	69	65	61	56
2.0	100	106	110	112	113	112	111	108	104	100	96	93	89	85	82	80	78	78	78	78	79	81	83	85	87	87	85	83	79	74	69
1.5	100	107	113	117	**[118]**	**[118]**	117	115	111	107	104	101	98	95	93	91	90	90	90	91	93	94	97	99	100	100	98	96	92	87	82
1.0																															
0.5																															
								5							10								15								20

Illuminance [lx]



Part1

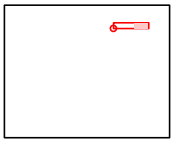
Height reference plane		: 0.00 m
Average illuminance	Em	: 59 lx
Minimum illuminance	Emin	: 22 lx
Maximum illuminance	Emax	: 118 lx
Uniformity Uo	Emin/Em	: 1 : 2.66 (0.38)
Diversity Ud	Emin/Emax	: 1 : 5.34 (0.19)

1.3 Calculation results, Exterior 1

1.3.3 Table, Access Road (E)

27	25	24	23	**(22)**	**(22)**	**(22)**	23	23	24	25	26	27	28	30	31	32	33	34	35	35
31	29	27	25	24	24	24	24	25	25	26	27	29	30	32	34	35	36	37	38	39
35	32	29	28	27	26	26	26	26	27	28	29	31	32	34	36	38	40	41	42	43
39	35	33	31	30	29	28	28	28	29	30	31	33	35	37	39	41	43	45	47	47
43	39	36	34	32	31	31	30	30	31	32	33	35	37	40	42	44	47	49	51	52
51	47	44	41	39	37	36	35	35	35	36	37	39	41	43	46	49	51	54	56	58
64	60	56	52	49	47	45	43	42	42	42	43	44	46	48	51	53	56	59	62	64
77	73	68	64	60	57	54	52	50	49	48	48	49	51	53	56	58	61	65	68	71

25 30 [m]



Part2

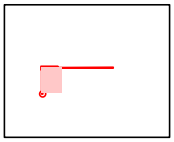
1.3 Calculation results, Exterior 1

1.3.4 Table, WalkWay (E)

[m]																														
	127	132	**[134]**	132	128	123	116	109	102	96	90	85	80	75	71	66	62	59	55	52	49	47	45	44	43					
	122	127	128	126	122	117	109	101	94	88	82	77	72	68	63	59	56	52	49	46	44	42	40	39	38					
	117	121	122	120	116	109	101	93	85	78	73	68	63	59	55	52	48	45	43	40	38	36	35	33	32	32	31	31	31	31	32
	113	117	118																											
25.0	109	112	113																											
		107	107																											
		101	101																											
		95	96																											
22.5		90	90																											
		84	84																											
		77	78																											
20.0		70	71																											
		64	64																											
		59	58																											
		54	53																											
17.5		49	48																											
		45	44																											
		41	41																											
		39	38																											
15.0		36	35																											
		34	33																											
		33	32																											
12.5		33	31																											
		33	32																											
		34	32																											
		35	34																											
10.0		36	35																											
		38	37																											
		41	39																											
		43	42																											
7.5		46	45																											
		50	48																											
		53	52																											
5.0		57	55																											
		59	57																											
		60	58																											
		60	58																											
2.5		59	57																											
		56	55																											

Part1

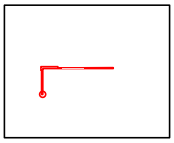
Height reference plane		: 0.00 m
Average illuminance	Em	: 55 lx
Minimum illuminance	Emin	: 25 lx
Maximum illuminance	Emax	: 134 lx
Uniformity Uo	Emin/Em	: 1 : 2.22 (0.45)
Diversity Ud	Emin/Emax	: 1 : 5.39 (0.19)



1.3 Calculation results, Exterior 1

1.3.4 Table, WalkWay (E)

32 32 33 34 35 35 36 36 36 35 35 34 33 31 30 29 28 27 27 26 26 26 26 26 26 27 27 28 29 30 31 32 33

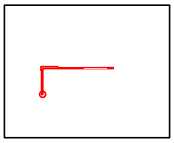


Part2

1.3 Calculation results, Exterior 1

1.3.4 Table, WalkWay (E)

33	34	34	35	34	34	33	32	30	29	28	27	27	26	26	**(25)**	**(25)**	**(25)**	**(25)**	26	26	27	28	28	29	30	31	32	33	33	34	33	33

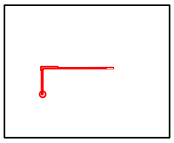


Part3

1.3 Calculation results, Exterior 1

1.3.4 Table, WalkWay (E)

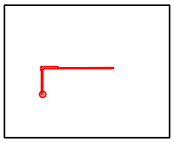
32 31 30 29 27 26 **(25)** **(25)** 26



Part4

1.3 Calculation results, Exterior 1

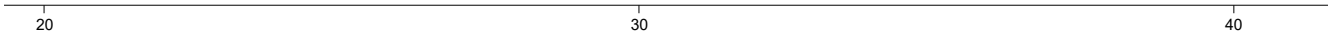
1.3.4 Table, WalkWay (E)

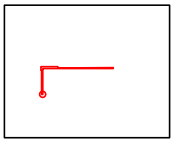


Part5

1.3 Calculation results, Exterior 1

1.3.4 Table, WalkWay (E)

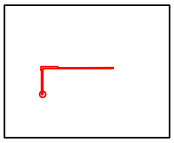




Part6

1.3 Calculation results, Exterior 1

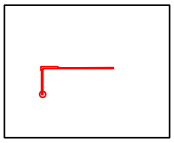
1.3.4 Table, WalkWay (E)



Part7

1.3 Calculation results, Exterior 1

1.3.4 Table, WalkWay (E)



Part8