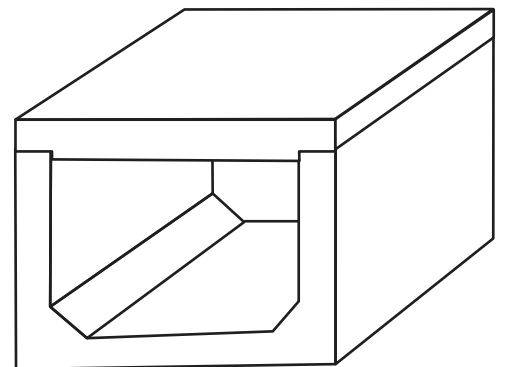




Precast RC **BOX CULVERT**



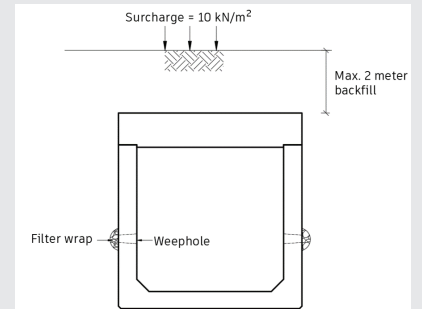
FEATURES

- LTH Precast RC Box Culvert are available in both standard small sizes (nominal width 600mm to 1800mm) and super sizes (nominal width 2100mm to 3600mm). The standard length is 1 meter.
- LTH Precast RC Box Culvert are available in both with and without Dry Weather Flow (DWF) channels.
- Weepholes are provided at invert to release hydrostatic pressure behind wall and acting as lifting hole for easier unloading an installation activity.

DESIGN CONSIDERATIONS

- LTH Precast RC Box Culverts are designed to the requirement of BS 8110: 1997, BS 5400-2: 1978, BD 31/01 (Design Manual for Roads and Bridges-The design of buried concrete box and portal frame structures)
 - LTH Precast RC Box Culverts are complied with MS 1293-1: 1992; proof load 112.5 kN and ultimate load 140 kN over an area of 320mm x 320mm at any position on the top of Precast RC Lid.
 - LTH Precast Box Culverts are designed to withstand not exceeding 2 meter depth of backfill (inclusive pavement) and 45 units of HB vehicle live load.
 - The lid of box culvert is not recommended use for direct loading due to avoid undesirable direct impact load from vehicle.
- Please inform our Engineering Department for other loading requirements.
- The concrete cover is 30 mm.

- Characteristic strength of concrete, f_{cu} is to be 40 N/mm² at 28 days and characteristic strength of steel reinforcement, f_y is to be 460 - 500 N/mm².
- Bulk density of soil is to be 19 kN/m³ with internal friction angle, Φ is 30° and active pressure coefficient factor, k_a is to be 0.333
- LTH Precast RC Box Culverts are designed for the standard load condition as shown below: -



- For other loading conditions or Box Culvert sizes, please contact Engineering Department for special design.

Jointing:

- LTH Precast Box Culvert used butt joint and if necessary, cement-sand mortar use to fill the gap between unit.

Handling:

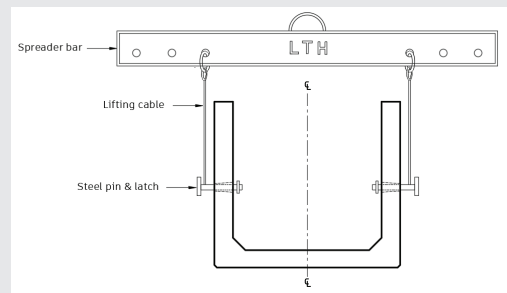
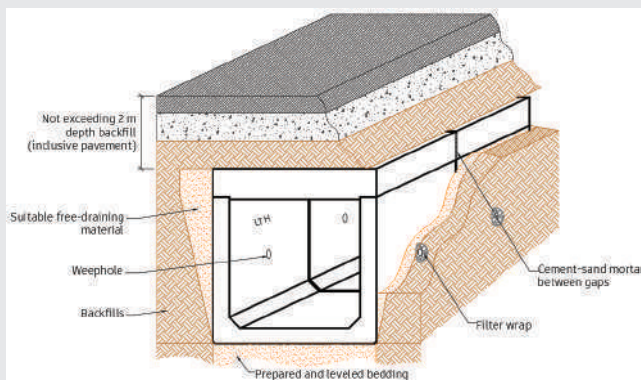
- A spreader beam with lifting cable and steel hook/pin should be used when invert unit and top lid. This lifting method will avoid crack occurs at joint between wall and base.

Laying:

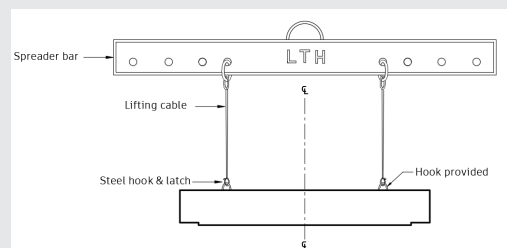
- LTH Precast Box Culvert should be laid on prepared and leveling bedding (e.g sand bedding) to ensure uniform support under invert base.

Backfilling:

- Earth backfills with selected free draining material are most suggested. Filter wrap at weepholes are recommended to release hydrostatic pressure.



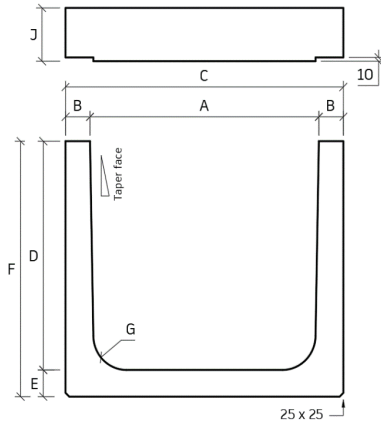
Lifting Precast RC Invert (box culvert)



Lifting Precast RC Lid (box culvert)

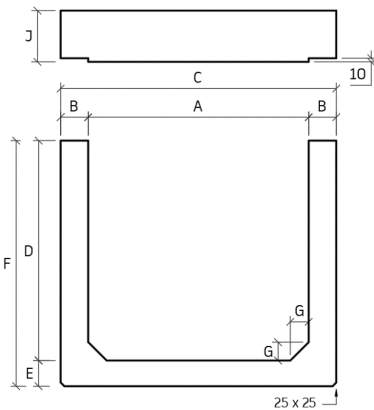
Recommendation of laying, jointing and backfilling of LTH Precast RC Box Culvert (cross-section view)

Standard Small Size LTH Precast RC Box Culvert without DWF



LTH Precast RC Box Culvert without DWF (Type 1)

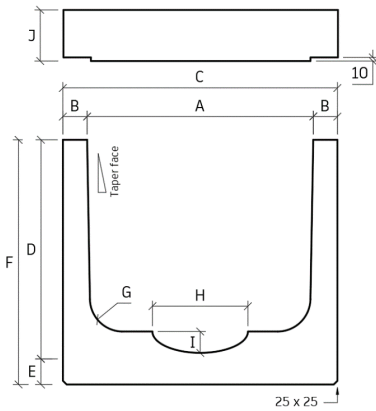
Nominal size (A x D) mm	Dimension								Invert	Lid
	A mm	B mm	C mm	D mm	E mm	F mm	G mm	J mm	Weight tonne	Weight tonne
600 x 225	586	82	750	225	70	295	45	140	0.215	0.248
600 x 300	590	80	750	300	70	370	45		0.244	
600 x 450	594	78	750	450	70	520	45		0.302	
600 x 600	600	75	750	600	70	670	45	140	0.356	0.345
900 x 300	860	90	1040	300	85	385	60		0.344	
900 x 450	870	85	1040	450	85	535	60		0.407	
900 x 600	880	80	1040	600	85	685	60		0.466	
900 x 750	890	75	1040	750	85	835	60		0.522	
900 x 900	900	70	1040	900	85	985	60	0.574		



LTH Precast RC Box Culvert without DWF (Type 2)

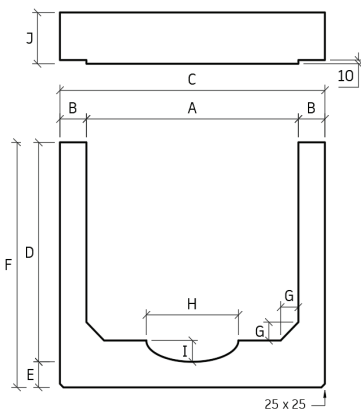
Nominal size (A x D) mm	Dimension								Invert	Lid
	A mm	B mm	C mm	D mm	E mm	F mm	G mm	J mm	Weight tonne	Weight tonne
450 x 450	450	60	570	450	60	510	40	125	0.216	0.168
750 x 300	750	80	910	300	85	385	48	140	0.305	0.302
750 x 450	750	80	910	450	85	535	48		0.362	
750 x 600	750	80	910	600	85	685	48		0.420	
750 x 750	750	80	910	750	85	835	48	140	0.478	0.459
1200 x 300	1200	90	1380	300	90	390	75		0.440	
1200 x 450	1200	90	1380	450	90	540	75		0.504	
1200 x 600	1200	90	1380	600	90	690	75		0.569	
1200 x 750	1200	90	1380	750	90	840	75		0.634	
1200 x 900	1200	90	1380	900	90	990	75		0.699	
1200 x 1050	1200	90	1380	1050	90	1140	75		0.764	
1200 x 1200	1200	90	1380	1200	90	1290	75		0.828	
1500 x 600	1500	125	1750	600	135	735	150	180	0.980	0.750
1500 x 750	1500	125	1750	750	135	885	150		1.070	
1500 x 900	1500	125	1750	900	135	1035	150		1.160	
1500 x 1050	1500	125	1750	1050	135	1185	150		1.250	
1500 x 1200	1500	125	1750	1200	135	1335	150		1.340	
1500 x 1350	1500	125	1750	1350	135	1485	150		1.430	
1500 x 1500	1500	125	1750	1500	135	1635	150	1.520	180	0.880
1800 x 750	1800	125	2050	750	135	885	150	1.167		
1800 x 900	1800	125	2050	900	135	1035	150	1.257		
1800 x 1050	1800	125	2050	1050	135	1185	150	1.347		
1800 x 1200	1800	125	2050	1200	135	1335	150	1.437		
1800 x 1350	1800	125	2050	1350	135	1485	150	1.527		
1800 x 1500	1800	125	2050	1500	135	1635	150	1.617		
1800 x 1650	1800	125	2050	1650	135	1785	150	1.707		
1800 x 1800	1800	125	2050	1800	135	1935	150	1.797		

Standard Small Size LTH Precast RC Box Culvert with DWF



LTH Precast RC Box Culvert with DWF (Type 1)

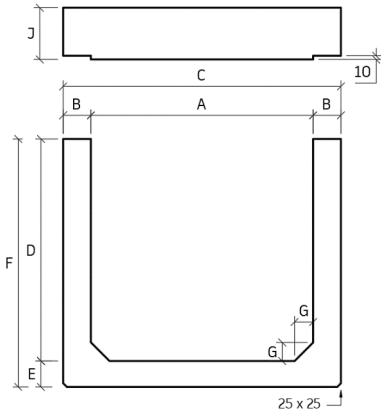
Nominal size (A x D) mm	Dimension										Invert		Lid
	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	J mm	Weight tonne	Weight tonne	
600 x 225	586	82	750	225	70	295	45	300	75	140	0.278	0.248	
600 x 300	590	80	750	300	70	370	45	300	75		0.307		
600 x 450	594	78	750	450	70	520	45	300	75		0.365		
600 x 600	600	75	750	600	70	670	45	300	75	0.420	0.345		
900 x 300	860	90	1040	300	85	385	60	600	75	140		0.414	
900 x 450	870	85	1040	450	85	535	60	600	75			0.477	
900 x 600	880	80	1040	600	85	685	60	600	75			0.536	
900 x 750	890	75	1040	750	85	835	60	600	75			0.592	
900 x 900	900	70	1040	900	85	985	60	600	75			0.644	



LTH Precast RC Box Culvert with DWF (Type 2)

Nominal size (A x D) mm	Dimension										Invert		Lid
	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	J mm	Weight tonne	Weight tonne	
450 x 450	450	60	570	450	60	510	40	300	75	125	0.254	0.168	
750 x 300	750	80	910	300	85	385	48	450	75	140	0.376	0.302	
750 x 450	750	80	910	450	85	535	48	450	75		0.434		
750 x 600	750	80	910	600	85	685	48	450	75		0.491		
750 x 750	750	80	910	750	85	835	48	450	75	0.549	0.459		
1200 x 300	1200	90	1380	300	90	395	75	600	75	140		0.571	
1200 x 450	1200	90	1380	450	90	545	75	600	75			0.636	
1200 x 600	1200	90	1380	600	90	695	75	600	75			0.7	
1200 x 750	1200	90	1380	750	90	845	75	600	75			0.765	
1200 x 900	1200	90	1380	900	90	995	75	600	75			0.83	
1200 x 1050	1200	90	1380	1050	90	1145	75	600	75		0.895		
1200 x 1200	1200	90	1380	1200	90	1295	75	600	75	0.96	0.75		
1500 x 600	1500	125	1750	600	135	735	150	900	180	180		1.322	
1500 x 750	1500	125	1750	750	135	885	150	900	180			1.412	
1500 x 900	1500	125	1750	900	135	1035	150	900	180			1.502	
1500 x 1050	1500	125	1750	1050	135	1185	150	900	180			1.592	
1500 x 1200	1500	125	1750	1200	135	1335	150	900	180			1.682	
1500 x 1350	1500	125	1750	1350	135	1485	150	900	180		1.772		
1500 x 1500	1500	125	1750	1500	135	1635	150	900	180	1.862	0.88		
1800 x 750	1800	125	2050	750	135	885	150	900	180	180		1.639	
1800 x 900	1800	125	2050	900	135	1035	150	900	180			1.729	
1800 x 1050	1800	125	2050	1050	135	1185	150	900	180			1.819	
1800 x 1200	1800	125	2050	1200	135	1335	150	900	180			1.909	
1800 x 1350	1800	125	2050	1350	135	1485	150	900	180			1.999	
1800 x 1500	1800	125	2050	1500	135	1635	150	900	180			2.089	
1800 x 1650	1800	125	2050	1650	135	1785	150	900	180			2.179	
1800 x 1800	1800	125	2050	1800	135	1935	150	900	180		2.269		

Standard Super-Size LTH Precast RC Box Culvert without DWF

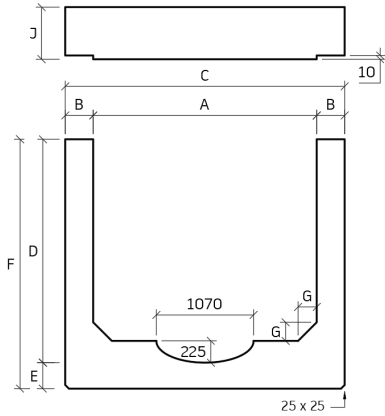


Nominal size mm	Dimension								Invert	Lid
	A mm	B mm	C mm	D mm	E mm	F mm	G mm	J mm	Weight tonne	Weight tonne
2100 x 900	2100	205	2510	900	205	1105	150	215	2.173	1.285
2100 x 1050	2100	205	2510	1050	205	1255	150		2.321	
2100 x 1200	2100	205	2510	1200	205	1405	150		2.468	
2100 x 1350	2100	205	2510	1350	205	1555	150		2.616	
2100 x 1500	2100	205	2510	1500	205	1705	150		2.763	
2100 x 1650	2100	205	2510	1650	205	1855	150		2.911	
2100 x 1800	2100	205	2510	1800	205	2005	150		3.059	
2100 x 1950	2100	205	2510	1950	205	2155	150		3.206	
2100 x 2100	2100	205	2510	2100	205	2305	150	3.354		
2400 x 1050	2400	205	2810	1050	205	1255	150	215	2.468	1.44
2400 x 1200	2400	205	2810	1200	205	1405	150		2.616	
2400 x 1350	2400	205	2810	1350	205	1555	150		2.763	
2400 x 1500	2400	205	2810	1500	205	1705	150		2.911	
2400 x 1650	2400	205	2810	1650	205	1855	150		3.059	
2400 x 1800	2400	205	2810	1800	205	2005	150		3.206	
2400 x 1950	2400	205	2810	1950	205	2155	150		3.354	
2400 x 2100	2400	205	2810	2100	205	2305	150		3.501	
2400 X 2250	2400	205	2810	2250	205	2455	150	3.649		
2400 X 2400	2400	205	2810	2400	205	2605	150	3.797		
2700 x 1050	2700	205	3110	1050	205	1255	150	215	2.616	1.595
2700 x 1200	2700	205	3110	1200	205	1405	150		2.763	
2700 x 1350	2700	205	3110	1350	205	1555	150		2.911	
2700 x 1500	2700	205	3110	1500	205	1705	150		3.059	
2700 x 1650	2700	205	3110	1650	205	1855	150		3.206	
2700 x 1800	2700	205	3110	1800	205	2005	150		3.354	
2700 x 1950	2700	205	3110	1950	205	2155	150		3.501	
2700 x 2100	2700	205	3110	2100	205	2305	150		3.649	
2700 x 2250	2700	205	3110	2250	205	2455	150		3.797	
2700 x 2400	2700	205	3110	2400	205	2605	150		3.944	
2700 x 2550	2700	205	3110	2550	205	2755	150		4.092	
2700 x 2700	2700	205	3110	2700	205	2905	150		4.239	
3000 x 1200	3000	205	3410	1200	205	1405	150	265	2.911	2.159
3000 x 1350	3000	205	3410	1350	205	1555	150		3.059	
3000 x 1500	3000	205	3410	1500	205	1705	150		3.206	
3000 x 1650	3000	205	3410	1650	205	1855	150		3.354	
3000 x 1800	3000	205	3410	1800	205	2005	150		3.501	
3000 x 1950	3000	205	3410	1950	205	2155	150		3.649	
3000 x 2100	3000	205	3410	2100	205	2305	150		3.797	
3000 x 2250	3000	205	3410	2250	205	2455	150		3.944	
3000 x 2400	3000	205	3410	2400	205	2605	150		4.092	
3000 x 2550	3000	205	3410	2550	205	2755	150		4.239	
3000 x 2700	3000	205	3410	2700	205	2905	150		4.387	
3000 x 2850	3000	205	3410	2850	205	3055	150		4.535	
3000 x 3000	3000	205	3410	3000	205	3205	150	4.682		
3300 x 1500	3300	205	3710	1500	205	1705	150	265	3.354	2.35
3300 x 1650	3300	205	3710	1650	205	1855	150		3.501	
3300 x 1800	3300	205	3710	1800	205	2005	150		3.649	
3300 x 1950	3300	205	3710	1950	205	2155	150		3.797	
3300 x 2100	3300	205	3710	2100	205	2305	150		3.944	
3300 x 2250	3300	205	3710	2250	205	2455	150		4.092	
3300 x 2400	3300	205	3710	2400	205	2605	150		4.239	
3300 x 2550	3300	205	3710	2550	205	2755	150		4.387	
3300 x 2700	3300	205	3710	2700	205	2905	150		4.535	
3300 x 2850	3300	205	3710	2850	205	3055	150		4.682	
3300 x 3000	3300	205	3710	3000	205	3205	150		4.83	
3300 x 3150	3300	205	3710	3150	205	3355	150		4.977	
3300 x 3300	3300	205	3710	3300	205	3505	150	5.125		
3600 x 1500	3600	205	4010	1500	205	1705	150	265	3.501	2.541
3600 x 1650	3600	205	4010	1650	205	1855	150		3.649	
3600 x 1800	3600	205	4010	1800	205	2005	150		3.797	
3600 x 1950	3600	205	4010	1950	205	2155	150		3.944	
3600 x 2100	3600	205	4010	2100	205	2305	150		4.092	
3600 x 2250	3600	205	4010	2250	205	2455	150		4.239	
3600 x 2400	3600	205	4010	2400	205	2605	150		4.387	
3600 x 2550	3600	205	4010	2550	205	2755	150		4.535	
3600 x 2700	3600	205	4010	2700	205	2905	150		4.682	
3600 x 2850	3600	205	4010	2850	205	3055	150		4.83	
3600 x 3000	3600	205	4010	3000	205	3205	150		4.977	
3600 x 3150	3600	205	4010	3150	205	3355	150		5.125	
3600 x 3300	3600	205	4010	3300	205	3505	150	5.273		
3600 x 3450	3600	205	4010	3450	205	3655	150	5.42		
3600 x 3600	3600	205	4010	3600	205	3805	150	5.568		



LTH reserved the rights to alter the dimension without prior notice.

Standard Super-Size LTH Precast RC Box Culvert with DWF



Nominal size (A x D) mm	Dimension								Invert	Lid
	A mm	B mm	C mm	D mm	E mm	F mm	G mm	J mm	Weight tonne	Weight tonne
2100 x 900	2100	205	2510	900	205	1105	150		2.853	
2100 x 1050	2100	205	2510	1050	205	1255	150		3.001	
2100 x 1200	2100	205	2510	1200	205	1405	150		3.148	
2100 x 1350	2100	205	2510	1350	205	1555	150		3.296	
2100 x 1500	2100	205	2510	1500	205	1705	150	215	3.444	1.285
2100 x 1650	2100	205	2510	1650	205	1855	150		3.591	
2100 x 1800	2100	205	2510	1800	205	2005	150		3.739	
2100 x 1950	2100	205	2510	1950	205	2155	150		3.886	
2100 x 2100	2100	205	2510	2100	205	2305	150		4.034	
2400 x 1050	2400	205	2810	1050	205	1255	150		3.310	
2400 x 1200	2400	205	2810	1200	205	1405	150		3.458	
2400 x 1350	2400	205	2810	1350	205	1555	150		3.606	
2400 x 1500	2400	205	2810	1500	205	1705	150		3.753	
2400 x 1650	2400	205	2810	1650	205	1855	150	215	3.901	1.440
2400 x 1800	2400	205	2810	1800	205	2005	150		4.048	
2400 x 1950	2400	205	2810	1950	205	2155	150		4.196	
2400 x 2100	2400	205	2810	2100	205	2305	150		4.344	
2400 x 2250	2400	205	2810	2250	205	2455	150		4.491	
2400 x 2400	2400	205	2810	2400	205	2605	150		4.639	
2700 x 1050	2700	205	3110	1050	205	1255	150		3.620	
2700 x 1200	2700	205	3110	1200	205	1405	150		3.768	
2700 x 1350	2700	205	3110	1350	205	1555	150		3.915	
2700 x 1500	2700	205	3110	1500	205	1705	150		4.063	
2700 x 1650	2700	205	3110	1650	205	1855	150		4.210	
2700 x 1800	2700	205	3110	1800	205	2005	150	215	4.358	1.595
2700 x 1950	2700	205	3110	1950	205	2155	150		4.506	
2700 x 2100	2700	205	3110	2100	205	2305	150		4.653	
2700 x 2250	2700	205	3110	2250	205	2455	150		4.801	
2700 x 2400	2700	205	3110	2400	205	2605	150		4.948	
2700 x 2550	2700	205	3110	2550	205	2755	150		5.096	
2700 x 2700	2700	205	3110	2700	205	2905	150		5.244	
3000 x 1500	3000	205	3410	1500	205	1705	150		4.372	
3000 x 1650	3000	205	3410	1650	205	1855	150		4.520	
3000 x 1800	3000	205	3410	1800	205	2005	150		4.668	
3000 x 1950	3000	205	3410	1950	205	2155	150		4.815	
3000 x 2100	3000	205	3410	2100	205	2305	150	265	4.963	2.159
3000 x 2250	3000	205	3410	2250	205	2455	150		5.110	
3000 x 2400	3000	205	3410	2400	205	2605	150		5.258	
3000 x 2550	3000	205	3410	2550	205	2755	150		5.406	
3000 x 2700	3000	205	3410	2700	205	2905	150		5.553	
3000 x 2850	3000	205	3410	2850	205	3055	150		5.701	
3000 x 3000	3000	205	3410	3000	205	3205	150		5.848	
3300 x 1500	3300	205	3710	1500	205	1705	150		4.682	
3300 x 1650	3300	205	3710	1650	205	1855	150		4.830	
3300 x 1800	3300	205	3710	1800	205	2005	150		4.977	
3300 x 1950	3300	205	3710	1950	205	2155	150		5.125	
3300 x 2100	3300	205	3710	2100	205	2305	150	265	5.272	2.350
3300 x 2250	3300	205	3710	2250	205	2455	150		5.420	
3300 x 2400	3300	205	3710	2400	205	2605	150		5.568	
3300 x 2550	3300	205	3710	2550	205	2755	150		5.715	
3300 x 2700	3300	205	3710	2700	205	2905	150		5.863	
3300 x 2850	3300	205	3710	2850	205	3055	150		6.010	
3300 x 3000	3300	205	3710	3000	205	3205	150		6.158	
3300 x 3150	3300	205	3710	3150	205	3355	150		6.306	
3300 x 3300	3300	205	3710	3300	205	3505	150		6.453	
3600 x 1500	3600	205	4010	1500	205	1705	150		4.992	
3600 x 1650	3600	205	4010	1650	205	1855	150		5.139	
3600 x 1800	3600	205	4010	1800	205	2005	150		5.287	
3600 x 1950	3600	205	4010	1950	205	2155	150		5.434	
3600 x 2100	3600	205	4010	2100	205	2305	150	265	5.582	2.541
3600 x 2250	3600	205	4010	2250	205	2455	150		5.730	
3600 x 2400	3600	205	4010	2400	205	2605	150		5.877	
3600 x 2550	3600	205	4010	2550	205	2755	150		6.025	
3600 x 2700	3600	205	4010	2700	205	2905	150		6.172	
3600 x 2850	3600	205	4010	2850	205	3055	150		6.320	
3600 x 3000	3600	205	4010	3000	205	3205	150		6.468	
3600 x 3150	3600	205	4010	3150	205	3355	150		6.615	
3600 x 3300	3600	205	4010	3300	205	3505	150		6.763	
3600 x 3450	3600	205	4010	3450	205	3655	150		6.910	
3600 x 3600	3600	205	4010	3600	205	3805	150		7.058	



LTH reserved the rights to alter the dimension without prior notice.