Solution:

Problem 1:

Lane/unit-load width	x	3.3333333	ft
Unit-load depth	y	3	ft
Unit-load height	z	4	ft
No. different items	N	4,800	
Down aisle width	A	8	ft
No. levels for stacking	H	6	
Avg max inv per item	M_i	250	
Est. max no. total units	M	600,000	= FLOOR(N*(M_i/2)+0.5,1)
Optimal lane depth	D^*	7	
Number of lanes	L	16,629	
Total area (2-D)	TA	1,385,750	ft^2
Cross aisle percentage		15%	
Total WH area (2-D)	TA'	1,593,613	ft^2
sqrt(2)*TA'	d_{SC}	1,785.28	ft

Problem 2:

Lane/unit-load width	x	3	ft	
Unit-load depth	y	3	ft	
Unit-load height	z	3	ft	
No. different items	N	3,000		
Down aisle width	A	8	ft	
No. levels for stacking	H	6		
Est. max no. total units	M	50,000		
Optimal lane depth	D^*	3		
Number of lanes	L	4,195		
Total area (2-D)	TA	163,605	ft^2	
Item area (2-D)		75,006	ft^2	
Cube utilization (2-D)		46%		
Cross aisle percentage		15%		
Total WH area (2-D)		188,146	ft^2	(a)
	d_{SC}	613.43	ft	
	t_{LU}	0.50	min	
	t_e	2.00	min/mov	(b)
		0.03	hr/mov	
Annual demand		500,000	SC mov/yr	
Labor rate		12	$/hr	
Labor cost		199,582	$/yr	(c)
Peak demand	r_a^{peak}	375	mov/hr	
No. trucks	m	13		
Cost of Capital	(r)	10%		
Economic Life	(N, yr)	10		
Investment Cost	(IV, $)	25,000		
Salvage Percentage		25%		
Salvage Value	(SV, $)	6,250		
Eff. Investment Cost	(IV^{eff}, $)	22,590		
Cost Cap Recovery	(K_{tr}, $/yr)	3,676.48		
Total Vehicle Cost	(mK_{tr}, $/yr)	47,794.19		(d)