

Appendix B. Detailed results for all instances

Tables B.7 to B.10 detail the results found by VNS for all VRPTR configurations over the 120 generated instances. The table contents correspond to those of Table 3, a description of which can be found in Section 5.5.2.

Table B.7: Detailed results for instances involving 20 jobs.

Instance	VRP ($P_{no\ walk}^{ W^* }$)				Park-and-Loop ($P_{walk}^{ W^* }$) d	Carpooling					
	$ W^* $	d^*	Idle Time			$(P_{no\ walk}^{ W^* -1})$		$(P_{walk}^{ W^* -1})$		$(P_{walk}^{ W^* -2})$	
			Route	Depot		d	J_{out}	d	J_{out}	d	J_{out}
20_A.1	2	37.8	0.0%	26.1%	32.4	47.2	0	40.3	0	0	6
20_A.2	2	46.2	0.0%	24.1%	41.6	59.0	0	50.0	0	0	6
20_A.3	2	43.2	0.0%	29.6%	39.4	48.8	0	45.6	0	0	6
20_A.4	2	42.0	0.0%	26.3%	39.1	48.7	0	46.6	0	0	6
20_A.5	2	41.5	0.0%	25.2%	35.3	48.4	0	49.6	0	0	7
20_A.6	2	46.0	0.0%	23.0%	43.8	64.9	0	69.0	0	0	8
20_A.7	2	44.3	0.0%	24.0%	40.1	66.1	0	66.1	0	0	7
20_A.8	2	42.3	0.0%	19.7%	39.1	55.4	0	55.4	0	0	7
20_A.9	2	33.6	0.0%	25.3%	29.9	40.0	0	38.0	0	0	6
20_A.10	2	43.8	0.0%	24.7%	41.2	49.0	0	48.2	0	0	6
20_H.1	2	49.0	16.0%	7.5%	41.4	-	1	-	1	0	7
20_H.2	2	53.6	5.0%	17.4%	52.2	-	1	-	1	0	7
20_H.3	2	52.1	14.8%	12.7%	51.4	77.8	0	66.7	0	0	8
20_H.4	2	51.1	13.5%	10.7%	49.4	-	1	-	1	0	9
20_H.5	2	52.6	8.4%	14.2%	47.6	80.1	0	80.1	0	0	7
20_H.6	2	51.1	16.4%	5.4%	50.3	-	1	-	1	0	9
20_H.7	2	59.4	11.4%	9.0%	55.3	-	2	-	2	0	8
20_H.8	2	51.7	3.5%	13.9%	46.6	-	2	-	1	0	8
20_H.9	2	44.2	13.0%	9.8%	39.8	-	1	-	1	0	7
20_H.10	2	54.6	14.6%	7.5%	52.0	-	1	-	1	0	7
20_Q.1	2	61.2	15.0%	5.5%	60.1	-	3	-	2	0	9
20_Q.2	2	59.4	6.1%	14.9%	58.0	-	3	-	3	0	7
20_Q.3	2	63.9	23.3%	1.3%	63.9	-	2	-	2	0	9
20_Q.4	2	68.6	15.9%	4.1%	67.0	-	3	-	3	0	11
20_Q.5	2	74.9	14.4%	2.9%	71.0	-	2	-	2	0	10
20_Q.6	3	72.1	40.6%	3.9%	70.5	-	1	-	1	-	1
20_Q.7	3	65.4	38.0%	8.0%	60.8	70.6	0	64.9	0	-	1
20_Q.8	2	66.4	3.5%	10.5%	63.1	-	3	-	2	-	9
20_Q.9	3	54.6	40.5%	6.4%	50.7	66.0	0	54.8	0	-	1
20_Q.10	3	60.7	37.5%	9.6%	59.8	61.6	0	60.3	0	-	0

Table B.8: Detailed results for instances involving 30 jobs.

Instance	VRP ($P^{ \mathcal{W}^* }$ _{no walk})				Park-and-Loop ($P^{ \mathcal{W}^* }$ _{walk}) d	Carpooling					
	$ \mathcal{W}^* $	d^*	Idle Time			$(P^{ \mathcal{W}^* -1})$ _{no walk}		$(P^{ \mathcal{W}^* -1})$ _{walk}		$(P^{ \mathcal{W}^* -2})$ _{walk}	
			Route	Depot		d	J^{out}	d	J^{out}	d	J^{out}
30_A.1	3	48.8	0.0%	25.6%	41.3	49.5	0	43.0	0	-	2
30_A.2	3	53.0	0.0%	26.5%	46.6	53.4	0	46.8	0	-	1
30_A.3	3	57.1	0.0%	27.4%	51.0	54.3	0	54.3	0	-	2
30_A.4	3	52.8	0.0%	30.5%	46.3	49.8	0	45.8	0	-	1
30_A.5	3	55.9	0.0%	24.9%	48.4	54.3	0	44.8	0	-	2
30_A.6	3	57.3	0.0%	23.8%	51.7	54.0	0	49.5	0	-	2
30_A.7	3	54.7	0.0%	29.4%	45.5	53.3	0	46.7	0	-	1
30_A.8	3	50.6	0.0%	22.5%	45.4	52.9	0	44.6	0	-	3
30_A.9	3	49.5	0.0%	26.3%	41.9	48.1	0	43.0	0	-	1
30_A.10	3	53.8	0.0%	27.6%	49.5	54.5	0	49.9	0	-	1
30_H.1	3	62.5	20.2%	3.3%	57.6	-	2	-	2	-	-
30_H.2	3	61.5	4.4%	20.8%	57.2	78.3	0	65.3	0	-	1
30_H.3	3	74.3	14.0%	10.8%	67.6	84.5	0	75.5	0	-	4
30_H.4	3	68.2	19.8%	8.3%	63.7	88.0	0	71.2	0	-	4
30_H.5	3	68.0	5.2%	17.8%	61.1	79.4	0	67.9	0	-	3
30_H.6	3	71.1	9.3%	12.3%	65.0	80.6	0	70.1	0	-	3
30_H.7	3	66.5	12.1%	15.4%	58.1	72.6	0	64.7	0	-	3
30_H.8	3	59.2	8.1%	13.1%	52.7	76.3	0	65.0	0	-	4
30_H.9	3	56.5	10.0%	15.2%	50.7	64.3	0	59.5	0	-	3
30_H.10	3	65.2	14.9%	10.8%	61.3	75.1	0	67.8	0	-	3
30_Q.1	3	88.6	18.5%	0.7%	87.9	-	3	-	3	-	-
30_Q.2	3	73.8	8.3%	14.9%	68.7	-	1	-	1	-	-
30_Q.3	3	85.4	18.1%	4.9%	81.6	115.4	0	115.4	0	-	7
30_Q.4	3	89.9	18.9%	5.8%	86.3	-	1	-	1	-	-
30_Q.5	3	94.9	14.1%	4.6%	90.6	-	2	-	1	-	-
30_Q.6	4	102.9	35.5%	2.0%	97.7	-	1	-	1	-	-
30_Q.7	3	94.3	19.8%	3.3%	94.3	-	3	-	3	-	-
30_Q.8	3	78.6	13.1%	5.0%	77.7	110.4	0	104.7	0	-	4
30_Q.9	4	74.1	32.2%	9.6%	68.6	77.1	0	67.9	0	78.5	0
30_Q.10	4	77.5	37.1%	5.8%	74.3	78.6	0	74.8	0	89.1	0

Table B.9: Detailed results for instances involving 40 jobs.

Instance	VRP ($P^{ \mathcal{W}^* }$ _{no walk})				Park-and-Loop ($P^{ \mathcal{W}^* }$ _{walk}) d	Carpooling					
	$ \mathcal{W}^* $	d^*	Idle Time			$(P^{ \mathcal{W}^* -1})$ _{no walk}		$(P^{ \mathcal{W}^* -1})$ _{walk}		$(P^{ \mathcal{W}^* -2})$ _{walk}	
			Route	Depot		d	J^{out}	d	J^{out}	d	J^{out}
40_A.1	3	60.0	0.0%	2.4%	59.2	-	4	-	4	-	-
40_A.2	3	59.9	0.0%	3.2%	58.5	-	4	-	4	-	-
40_A.3	3	63.8	0.0%	2.6%	63.2	-	3	-	3	-	-
40_A.4	3	56.9	0.0%	10.0%	50.4	-	2	-	1	-	-
40_A.5	4	63.3	0.0%	24.9%	52.8	61.0	0	53.3	0	60.3	0
40_A.6	3	62.7	0.0%	3.5%	62.7	-	4	-	3	-	-
40_A.7	3	58.6	0.0%	7.0%	57.8	-	2	-	2	-	-
40_A.8	4	66.2	0.0%	21.9%	56.4	65.0	0	53.8	0	68	0
40_A.9	3	57.5	0.0%	3.2%	56.5	-	3	-	3	-	-
40_A.10	3	59.3	0.0%	4.9%	57.7	-	3	-	3	-	-
40_H.1	4	75.5	19.6%	5.3%	68.4	90.3	0	81.1	0	-	3
40_H.2	4	73.1	0.0%	25.8%	63.9	75.1	0	62.1	0	94.6	0
40_H.3	4	82.6	14.1%	10.6%	71.5	85.3	0	76.0	0	-	1
40_H.4	3	80.2	3.1%	3.2%	78.1	-	4	-	4	-	-
40_H.5	4	75.4	8.9%	14.5%	65.9	81.0	0	72.3	0	98.7	0
40_H.6	4	73.1	13.7%	12.7%	63.6	75.4	0	63.5	0	87.9	0
40_H.7	3	76.3	2.8%	1.3%	76.3	-	4	-	4	-	-
40_H.8	4	78.3	5.2%	15.3%	69.1	85.6	0	75.2	0	-	3
40_H.9	4	71.5	11.3%	14.4%	57.9	72.0	0	64.1	0	84.1	0
40_H.10	3	79.8	0.0%	1.6%	79.8	-	5	-	5	-	-
40_Q.1	4	96.5	21.1%	1.3%	90.8	109.0	1	108.8	1	-	-
40_Q.2	4	85.6	4.0%	20.3%	80.2	98.2	1	88.6	0	101.7	3
40_Q.3	4	101.7	15.1%	7.3%	97.9	116.4	0	106.3	0	114.1	3
40_Q.4	3	117.4	0.0%	0.4%	117.4	103.6	6	98.5	5	-	-
40_Q.5	4	104.8	15.7%	4.3%	96.5	123.0	0	106.3	0	114.9	3
40_Q.6	5	100.3	33.7%	4.9%	92.0	103.9	0	94.1	0	103	0
40_Q.7	4	91.0	23.2%	3.2%	84.4	108.8	0	97.9	0	93.8	3
40_Q.8	4	98.9	14.6%	3.3%	96.9	114.8	0	104.4	0	71.9	3
40_Q.9	4	92.8	16.8%	6.4%	87.1	90.3	2	87.7	1	-	-
40_Q.10	4	97.1	19.5%	4.7%	88.6	106.5	0	98.6	0	101.3	3

Table B.10: Detailed results for instances involving 50 jobs.

Instance	VRP ($P_{no\ walk}^{ W^* }$)				Park-and-Loop ($P_{walk}^{ W^* }$) d	Carpooling					
	$ W^* $	d^*	Idle Time			$(P_{no\ walk}^{ W^* -1})$		$(P_{walk}^{ W^* -1})$		$(P_{walk}^{ W^* -2})$	
			Route	Depot		d	$ J^{out} $	d	$ J^{out} $	d	$ J^{out} $
50_A.1	4	65.4	0.0%	10.4%	60.5	74.4	0	74.4	0	-	-
50_A.2	4	69.0	0.0%	11.7%	62.5	87.9	0	72.1	0	-	4
50_A.3	4	71.4	0.0%	9.7%	65.9	-	1	-	1	-	-
50_A.4	4	68.1	0.0%	13.3%	58.2	85.8	0	68.0	0	-	4
50_A.5	4	68.3	0.0%	6.2%	64.2	-	1	-	1	-	-
50_A.6	4	71.8	0.0%	11.7%	66.1	-	0	70.9	0	-	4
50_A.7	4	71.9	0.0%	12.6%	63.7	78.5	0	74.7	0	-	3
50_A.8	4	71.7	0.0%	5.7%	70.9	-	2	-	2	-	-
50_A.9	4	67.4	0.0%	11.6%	58.2	76.4	0	70.4	0	-	4
50_A.10	4	68.3	0.0%	12.4%	60.8	76.3	0	66.1	0	-	5
50_H.1	4	92.5	6.4%	0.8%	92.5	-	3	-	3	-	-
50_H.2	4	81.1	0.0%	10.3%	75.4	-	2	-	1	-	-
50_H.3	4	89.4	2.0%	5.5%	84.8	-	2	-	1	-	-
50_H.4	4	86.9	2.4%	8.7%	82.3	106.8	0	106.8	0	-	5
50_H.5	4	88.4	0.0%	3.7%	87.9	-	3	-	3	-	-
50_H.6	4	90.9	8.2%	1.2%	88.4	-	2	-	2	-	-
50_H.7	4	88.5	4.5%	6.1%	82.6	-	1	97.5	0	-	6
50_H.8	4	88.8	1.7%	2.0%	85.9	-	4	-	4	-	-
50_H.9	4	82.4	3.2%	6.7%	74.2	-	1	-	1	-	-
50_H.10	4	89.3	7.8%	2.1%	84.8	-	2	-	2	-	-
50_Q.1	5	104.1	19.6%	5.0%	95.5	117.5	0	107.4	0	109.7	1
50_Q.2	4	110.2	1.3%	5.5%	110.2	-	4	-	3	-	-
50_Q.3	4	124.9	1.0%	2.3%	124.9	-	5	-	4	-	-
50_Q.4	4	121.7	3.2%	3.7%	121.7	-	4	-	2	-	-
50_Q.5	5	113.2	17.9%	2.7%	104.4	130.7	0	117.0	0	116.4	2
50_Q.6	5	110.7	23.1%	2.5%	106.4	-	1	-	1	-	-
50_Q.7	5	104.3	22.1%	4.9%	96.1	111.0	0	101.4	0	106.5	2
50_Q.8	5	113.5	18.7%	1.9%	111.5	132.0	0	117.3	0	147.1	1
50_Q.9	4	113.9	3.3%	2.8%	111.6	-	3	-	3	-	-
50_Q.10	5	107.6	21.3%	4.9%	97.5	112.3	0	103.3	0	126.2	1