

Appendix 9.7.8 Incremental Landing Charges and Parking Charges by the Project

Unit: '000 US\$

| Year | WP Case | | | WOP Case | | | Incremental Revenue | | |
|------|-----------------|----------------|-------------|-----------------|----------------|-------------|---------------------|----------------|-------------|
| | Landing Charges | Parking Charge | Total | Landing Charges | Parking Charge | Total | Landing Charges | Parking Charge | Total |
| | (1) | (2) | (3)=(1)+(2) | (4) | (5) | (6)=(4)+(5) | (7)=(1)-(4) | (8)=(5)-(2) | (9)=(7)+(8) |
| 1995 | 1,483 | 130 | 1,612 | 1,483 | 130 | 1,612 | | | |
| 1996 | 1,982 | 170 | 2,152 | 1,982 | 170 | 2,152 | | | |
| 1997 | 2,538 | 214 | 2,751 | 2,538 | 214 | 2,751 | | | |
| 1998 | 3,315 | 274 | 3,589 | 3,315 | 274 | 3,589 | | | |
| 1999 | 3,957 | 324 | 4,281 | 3,957 | 324 | 4,281 | | | |
| 2000 | 4,628 | 374 | 5,003 | 4,628 | 374 | 5,003 | | | |
| 2001 | 5,300 | 425 | 5,724 | 5,300 | 425 | 5,724 | | | |
| 2002 | 6,094 | 483 | 6,577 | 6,094 | 483 | 6,577 | | | |
| 2003 | 6,980 | 548 | 7,527 | 6,980 | 548 | 7,527 | | | |
| 2004 | 7,976 | 619 | 8,596 | 7,976 | 619 | 8,596 | | | |
| 2005 | 9,138 | 702 | 9,839 | 9,138 | 702 | 9,839 | | | |
| 2006 | 10,273 | 781 | 11,054 | 9,138 | 702 | 9,839 | 1,135 | 80 | 1,215 |
| 2007 | 11,547 | 870 | 12,416 | 9,138 | 702 | 9,839 | 2,409 | 168 | 2,577 |
| 2008 | 13,001 | 970 | 13,970 | 9,138 | 702 | 9,839 | 3,863 | 268 | 4,131 |
| 2009 | 14,643 | 1,082 | 15,725 | 9,138 | 702 | 9,839 | 5,506 | 380 | 5,886 |
| 2010 | 16,497 | 1,207 | 17,704 | 9,138 | 702 | 9,839 | 7,360 | 505 | 7,865 |
| 2011 | 18,184 | 1,320 | 19,504 | 9,138 | 702 | 9,839 | 9,046 | 619 | 9,665 |
| 2012 | 20,048 | 1,444 | 21,492 | 9,138 | 702 | 9,839 | 10,910 | 743 | 11,653 |
| 2013 | 22,111 | 1,581 | 23,692 | 9,138 | 702 | 9,839 | 12,973 | 879 | 13,853 |
| 2014 | 24,375 | 1,729 | 26,104 | 9,138 | 702 | 9,839 | 15,237 | 1,028 | 16,265 |
| 2015 | 26,860 | 1,881 | 28,751 | 9,138 | 702 | 9,839 | 17,722 | 1,190 | 18,912 |
| 2016 | 29,299 | 2,049 | 31,347 | 9,138 | 702 | 9,839 | 20,161 | 1,347 | 21,508 |
| 2017 | 31,945 | 2,218 | 34,163 | 9,138 | 702 | 9,839 | 22,807 | 1,517 | 24,324 |
| 2018 | 34,848 | 2,403 | 37,251 | 9,138 | 702 | 9,839 | 25,710 | 1,701 | 27,412 |
| 2019 | 34,848 | 2,403 | 37,251 | 9,138 | 702 | 9,839 | 25,710 | 1,701 | 27,412 |
| 2020 | 34,848 | 2,403 | 37,251 | 9,138 | 702 | 9,839 | 25,710 | 1,701 | 27,412 |
| 2021 | 34,848 | 2,403 | 37,251 | 9,138 | 702 | 9,839 | 25,710 | 1,701 | 27,412 |
| 2022 | 34,848 | 2,403 | 37,251 | 9,138 | 702 | 9,839 | 25,710 | 1,701 | 27,412 |
| 2023 | 34,848 | 2,403 | 37,251 | 9,138 | 702 | 9,839 | 25,710 | 1,701 | 27,412 |
| 2024 | 34,848 | 2,403 | 37,251 | 9,138 | 702 | 9,839 | 25,710 | 1,701 | 27,412 |
| 2025 | 34,848 | 2,403 | 37,251 | 9,138 | 702 | 9,839 | 25,710 | 1,701 | 27,412 |

Note 1: Landing charges and parking charges are calculated based on the present rates in the AIP.

Note 2: No discrimination of foreign carriers from Vietnam Airlines is assumed from 1998 based on the IATA's recommendation.

(20% discount until 1997 for Vietnam Airlines' international flights, which accounts for 50% of all international flights.)

Note 3: The rates of charges for respective class of aircraft are as follows: (Unit: US\$)

| | JJ (intl) | LJ (intl) | MJ (intl) | SU (intl) | TP (intl) | JJ (dom) | LJ (dom) | MJ (dom) | SU (dom) | TP (dom) |
|---------|-----------|-----------|-----------|-----------|-----------|----------|----------|----------|----------|----------|
| Landing | 350 ton | 200 ton | 140 ton | 60 ton | 20 ton | 350 ton | 200 ton | 140 ton | 60 ton | 20 ton |
| Parking | 2,075 | 1,225 | 425 | 210 | 65 | 1,038 | 613 | 213 | 105 | 33 |
| | 1,390 | 760 | 532 | 228 | 76 | 665 | 380 | 266 | 114 | 38 |

It is assumed that 10% of arriving aircraft park 8-12 hours, which gives the parking charges in the above table.

Appendix 9.7.9 Incremental Passenger Service Charge, Terminal Equipment Charge, Concession Fee and Car Parking Charge by the Project

Unit: '000 US\$

| Year | WP Case | | | | WOP Case | | | | Incremental Revenue | | | | | | |
|------|------------------------------|-------------------------------|--------------------|------------------------|-----------|------------------------------|-------------------------------|--------------------|------------------------|------------|-------------------------------|--------------------------------|---------------------|-------------------------|------------|
| | Passenger Service Charge (1) | Terminal Equipment Charge (2) | Concession Fee (3) | Car Parking Charge (4) | Total (5) | Passenger Service Charge (6) | Terminal Equipment Charge (7) | Concession Fee (8) | Car Parking Charge (9) | Total (10) | Passenger Service Charge (11) | Terminal Equipment Charge (12) | Concession Fee (13) | Car Parking Charge (14) | Total (15) |
| 1995 | 2,185 | | 2,443 | 259 | 2,443 | 2,185 | | | 259 | 2,443 | | | | | |
| 1996 | 2,730 | | 3,056 | 325 | 3,056 | 2,730 | | | 325 | 3,056 | | | | | |
| 1997 | 3,313 | | 3,707 | 394 | 3,707 | 3,313 | | | 394 | 3,707 | | | | | |
| 1998 | 7,039 | 1,019 | 11,022 | 926 | 11,022 | 7,039 | 1,019 | 2,038 | 926 | 11,022 | | | | | |
| 1999 | 8,146 | 1,178 | 12,752 | 1,060 | 12,752 | 8,146 | 1,178 | 2,369 | 1,060 | 12,752 | | | | | |
| 2000 | 9,258 | 1,338 | 14,491 | 1,188 | 14,491 | 9,258 | 1,338 | 2,707 | 1,188 | 14,491 | | | | | |
| 2001 | 10,335 | 1,493 | 16,175 | 1,316 | 16,175 | 10,335 | 1,493 | 3,031 | 1,316 | 16,175 | | | | | |
| 2002 | 11,542 | 1,667 | 18,062 | 1,458 | 18,062 | 11,542 | 1,667 | 3,396 | 1,458 | 18,062 | | | | | |
| 2003 | 12,891 | 1,861 | 20,172 | 1,616 | 20,172 | 12,891 | 1,861 | 3,805 | 1,616 | 20,172 | | | | | |
| 2004 | 14,399 | 2,077 | 22,530 | 1,791 | 22,530 | 14,399 | 2,077 | 4,263 | 1,791 | 22,530 | | | | | |
| 2005 | 16,087 | 2,320 | 25,167 | 1,985 | 25,167 | 16,087 | 2,320 | 4,776 | 1,985 | 25,167 | | | | | |
| 2006 | 17,670 | 2,547 | 27,642 | 2,169 | 27,642 | 16,087 | 2,320 | 4,776 | 1,985 | 25,167 | 1,533 | 228 | 480 | 185 | 2,475 |
| 2007 | 19,411 | 2,798 | 30,364 | 2,371 | 30,364 | 16,087 | 2,320 | 4,776 | 1,985 | 25,167 | 3,324 | 478 | 1,008 | 387 | 5,196 |
| 2008 | 21,326 | 3,073 | 33,358 | 2,592 | 33,358 | 16,087 | 2,320 | 4,776 | 1,985 | 25,167 | 5,239 | 753 | 1,591 | 608 | 8,190 |
| 2009 | 23,429 | 3,375 | 36,646 | 2,834 | 36,646 | 16,087 | 2,320 | 4,776 | 1,985 | 25,167 | 7,343 | 1,055 | 2,231 | 849 | 11,478 |
| 2010 | 25,735 | 3,706 | 40,250 | 3,098 | 40,250 | 16,087 | 2,320 | 4,776 | 1,985 | 25,167 | 9,649 | 1,386 | 2,934 | 1,113 | 15,083 |
| 2011 | 27,789 | 4,001 | 43,460 | 3,330 | 43,460 | 16,087 | 2,320 | 4,776 | 1,985 | 25,167 | 11,703 | 1,681 | 3,564 | 1,345 | 18,283 |
| 2012 | 30,002 | 4,319 | 46,919 | 3,579 | 46,919 | 16,087 | 2,320 | 4,776 | 1,985 | 25,167 | 13,916 | 1,969 | 4,243 | 1,594 | 21,752 |
| 2013 | 32,398 | 4,662 | 50,662 | 3,847 | 50,662 | 16,087 | 2,320 | 4,776 | 1,985 | 25,167 | 16,311 | 2,342 | 4,979 | 1,862 | 25,494 |
| 2014 | 34,984 | 5,033 | 54,703 | 4,135 | 54,703 | 16,087 | 2,320 | 4,776 | 1,985 | 25,167 | 18,897 | 2,713 | 5,775 | 2,151 | 29,536 |
| 2015 | 37,775 | 5,433 | 59,084 | 4,445 | 59,084 | 16,087 | 2,320 | 4,776 | 1,985 | 25,167 | 21,688 | 3,114 | 6,634 | 2,460 | 33,896 |
| 2016 | 40,413 | 5,812 | 63,187 | 4,745 | 63,187 | 16,087 | 2,320 | 4,776 | 1,985 | 25,167 | 24,326 | 3,492 | 7,440 | 2,761 | 38,020 |
| 2017 | 43,235 | 6,217 | 67,598 | 5,067 | 67,598 | 16,087 | 2,320 | 4,776 | 1,985 | 25,167 | 27,148 | 3,898 | 8,303 | 3,082 | 42,430 |
| 2018 | 46,258 | 6,651 | 72,322 | 5,409 | 72,322 | 16,087 | 2,320 | 4,776 | 1,985 | 25,167 | 30,171 | 4,332 | 9,228 | 3,425 | 47,155 |
| 2019 | 46,258 | 6,651 | 72,322 | 5,409 | 72,322 | 16,087 | 2,320 | 4,776 | 1,985 | 25,167 | 30,171 | 4,332 | 9,228 | 3,425 | 47,155 |
| 2020 | 46,258 | 6,651 | 72,322 | 5,409 | 72,322 | 16,087 | 2,320 | 4,776 | 1,985 | 25,167 | 30,171 | 4,332 | 9,228 | 3,425 | 47,155 |
| 2021 | 46,258 | 6,651 | 72,322 | 5,409 | 72,322 | 16,087 | 2,320 | 4,776 | 1,985 | 25,167 | 30,171 | 4,332 | 9,228 | 3,425 | 47,155 |
| 2022 | 46,258 | 6,651 | 72,322 | 5,409 | 72,322 | 16,087 | 2,320 | 4,776 | 1,985 | 25,167 | 30,171 | 4,332 | 9,228 | 3,425 | 47,155 |
| 2023 | 46,258 | 6,651 | 72,322 | 5,409 | 72,322 | 16,087 | 2,320 | 4,776 | 1,985 | 25,167 | 30,171 | 4,332 | 9,228 | 3,425 | 47,155 |
| 2024 | 46,258 | 6,651 | 72,322 | 5,409 | 72,322 | 16,087 | 2,320 | 4,776 | 1,985 | 25,167 | 30,171 | 4,332 | 9,228 | 3,425 | 47,155 |
| 2025 | 46,258 | 6,651 | 72,322 | 5,409 | 72,322 | 16,087 | 2,320 | 4,776 | 1,985 | 25,167 | 30,171 | 4,332 | 9,228 | 3,425 | 47,155 |

Note 1: Passenger service charges are calculated with US\$12 per departing international passenger and US\$2.7 per departing domestic passengers. The current rates are US\$7 and US\$1.4 respectively. The significant increases of the service level of the new terminals will justify the increases, and the levels of charges are comparable with other major airports in Southeast Asia.

Note 2: Terminal equipment charges will be collected from airline companies for the use of passenger boarding bridges, check-in tables, baggage conveyors and baggage claim equipment. The charges are assumed to be US\$0.8 per international passengers and US\$0.2 per domestic passenger.

Note 3: Concession fee will be collected from business entities for commercial rights at the airport. US\$2.0 per international passengers and US\$0.1 per domestic passengers are reasonable estimates for the terminal buildings of comparative size.

Note 4: Charge per one time of car parking is assumed to be US\$0.9, twice the present rate. Based on the traffic survey conducted by the JICA Study Team in May 1995, the parking rate of 0.4 car/passenger is used to estimate the number of cars to be parked.

Appendix 9.7.10 Incremental Passenger Terminal Rent, Cargo Terminal Rent and Advertisement Revenues by the Project

Unit: '000 US\$

| Year | WP Case | | | | WOP Case | | | | Incremental Revenue | | | |
|------|-----------------------------|-------------------------|-------------------|-----------------------|-----------------------------|-------------------------|-------------------|-----------------------|-------------------------------------|----------------------------------|----------------------------|--------------------|
| | Passenger Terminal Rent (1) | Cargo Terminal Rent (2) | Advertisement (3) | Total (4)=(1)+(2)+(3) | Passenger Terminal Rent (5) | Cargo Terminal Rent (6) | Advertisement (7) | Total (8)=(5)+(6)+(7) | Passenger Terminal Rent (9)=(1)-(5) | Cargo Terminal Rent (10)=(2)-(6) | Advertisement (11)=(3)-(7) | Total (12)=(4)-(8) |
| 1985 | 524 | | 48 | 572 | 524 | | 48 | 572 | | | | |
| 1986 | 524 | | 48 | 572 | 524 | | 48 | 572 | | | | |
| 1987 | 524 | | 48 | 572 | 524 | | 48 | 572 | | | | |
| 1988 | 524 | | 48 | 572 | 524 | | 48 | 572 | | | | |
| 1989 | 524 | | 48 | 572 | 524 | | 48 | 572 | | | | |
| 2000 | 524 | | 48 | 572 | 524 | | 48 | 572 | | | | |
| 2001 | 1,650 | 1,188 | 200 | 3,038 | 1,650 | 1,188 | 200 | 3,038 | | | | |
| 2002 | 1,650 | 1,188 | 200 | 3,038 | 1,650 | 1,188 | 200 | 3,038 | | | | |
| 2003 | 1,650 | 1,188 | 200 | 3,038 | 1,650 | 1,188 | 200 | 3,038 | | | | |
| 2004 | 1,650 | 1,188 | 200 | 3,038 | 1,650 | 1,188 | 200 | 3,038 | | | | |
| 2005 | 1,650 | 1,188 | 200 | 3,038 | 1,650 | 1,188 | 200 | 3,038 | | | | |
| 2006 | 2,549 | 2,403 | 310 | 5,262 | 1,650 | 1,188 | 200 | 3,038 | 899 | 1,215 | 110 | 2,224 |
| 2007 | 2,549 | 2,403 | 310 | 5,262 | 1,650 | 1,188 | 200 | 3,038 | 899 | 1,215 | 110 | 2,224 |
| 2008 | 2,549 | 2,403 | 310 | 5,262 | 1,650 | 1,188 | 200 | 3,038 | 899 | 1,215 | 110 | 2,224 |
| 2009 | 2,549 | 2,403 | 310 | 5,262 | 1,650 | 1,188 | 200 | 3,038 | 899 | 1,215 | 110 | 2,224 |
| 2010 | 2,549 | 2,403 | 310 | 5,262 | 1,650 | 1,188 | 200 | 3,038 | 899 | 1,215 | 110 | 2,224 |
| 2011 | 3,491 | 4,019 | 426 | 7,935 | 1,650 | 1,188 | 200 | 3,038 | 1,841 | 2,831 | 226 | 4,897 |
| 2012 | 3,491 | 4,019 | 426 | 7,935 | 1,650 | 1,188 | 200 | 3,038 | 1,841 | 2,831 | 226 | 4,897 |
| 2013 | 3,491 | 4,019 | 426 | 7,935 | 1,650 | 1,188 | 200 | 3,038 | 1,841 | 2,831 | 226 | 4,897 |
| 2014 | 3,491 | 4,019 | 426 | 7,935 | 1,650 | 1,188 | 200 | 3,038 | 1,841 | 2,831 | 226 | 4,897 |
| 2015 | 3,491 | 4,019 | 426 | 7,935 | 1,650 | 1,188 | 200 | 3,038 | 1,841 | 2,831 | 226 | 4,897 |
| 2016 | 3,491 | 4,019 | 426 | 7,935 | 1,650 | 1,188 | 200 | 3,038 | 1,841 | 2,831 | 226 | 4,897 |
| 2017 | 3,491 | 4,019 | 426 | 7,935 | 1,650 | 1,188 | 200 | 3,038 | 1,841 | 2,831 | 226 | 4,897 |
| 2018 | 3,491 | 4,019 | 426 | 7,935 | 1,650 | 1,188 | 200 | 3,038 | 1,841 | 2,831 | 226 | 4,897 |
| 2019 | 3,491 | 4,019 | 426 | 7,935 | 1,650 | 1,188 | 200 | 3,038 | 1,841 | 2,831 | 226 | 4,897 |
| 2020 | 3,491 | 4,019 | 426 | 7,935 | 1,650 | 1,188 | 200 | 3,038 | 1,841 | 2,831 | 226 | 4,897 |
| 2021 | 3,491 | 4,019 | 426 | 7,935 | 1,650 | 1,188 | 200 | 3,038 | 1,841 | 2,831 | 226 | 4,897 |
| 2022 | 3,491 | 4,019 | 426 | 7,935 | 1,650 | 1,188 | 200 | 3,038 | 1,841 | 2,831 | 226 | 4,897 |
| 2023 | 3,491 | 4,019 | 426 | 7,935 | 1,650 | 1,188 | 200 | 3,038 | 1,841 | 2,831 | 226 | 4,897 |
| 2024 | 3,491 | 4,019 | 426 | 7,935 | 1,650 | 1,188 | 200 | 3,038 | 1,841 | 2,831 | 226 | 4,897 |
| 2025 | 3,491 | 4,019 | 426 | 7,935 | 1,650 | 1,188 | 200 | 3,038 | 1,841 | 2,831 | 226 | 4,897 |

Note 1: Terminal rent is calculated based on the following conditions.

| | Percentage Rentable Area | Rent/sq.m/month |
|-------------------------|--------------------------|-----------------|
| Intl Passenger Terminal | 15% | US\$25.0 |
| Dom. Passenger Terminal | 10% | US\$12.5 |
| Intl Cargo Terminal | 80% | US\$15.0 |
| Dom. Cargo Terminal | 90% | US\$7.5 |

Note 2: Advertise revenue is estimated for US\$5 per sq.m per year for international passenger terminal building, and US\$2.5 per sq.m per year for domestic passenger terminal building.

Appendix 3.7.11 Incremental Fuel Surcharge Revenue by the Project

| Year | W/P | | W/O/P | | Incremental Revenue ('000 US\$) |
|------|--------------------|------------------------------------|--------------------|------------------------------------|---------------------------------|
| | Weekly Supply (KL) | Fuel Surcharge Revenue ('000 US\$) | Weekly Supply (KL) | Fuel Surcharge Revenue ('000 US\$) | |
| | (1) | (2) | (3) | (4) | |
| 1995 | 1,540 | | 1,540 | | |
| 1996 | 1,840 | | 1,840 | | |
| 1997 | 2,140 | | 2,140 | | |
| 1998 | 2,440 | | 2,440 | | |
| 1999 | 2,740 | | 2,740 | | |
| 2000 | 3,040 | | 3,040 | | |
| 2001 | 3,680 | | 3,680 | | |
| 2002 | 4,320 | | 4,320 | | |
| 2003 | 4,960 | | 4,960 | | |
| 2004 | 5,600 | | 5,600 | | |
| 2005 | 6,240 | | 6,240 | | |
| 2006 | 7,710 | 5,122 | 6,240 | 4,145 | 976 |
| 2007 | 9,180 | 6,098 | 6,240 | 4,145 | 1,963 |
| 2008 | 10,650 | 7,075 | 6,240 | 4,145 | 2,930 |
| 2009 | 12,120 | 8,051 | 6,240 | 4,145 | 3,906 |
| 2010 | 13,600 | 9,034 | 6,240 | 4,145 | 4,889 |
| 2011 | 14,300 | 9,499 | 6,240 | 4,145 | 5,364 |
| 2012 | 15,000 | 9,964 | 6,240 | 4,145 | 5,819 |
| 2013 | 15,700 | 10,429 | 6,240 | 4,145 | 6,284 |
| 2014 | 16,400 | 10,894 | 6,240 | 4,145 | 6,749 |
| 2015 | 17,120 | 11,373 | 6,240 | 4,145 | 7,227 |
| 2016 | 18,300 | 12,555 | 6,240 | 4,145 | 8,410 |
| 2017 | 20,690 | 13,737 | 6,240 | 4,145 | 9,592 |
| 2018 | 22,460 | 14,920 | 6,240 | 4,145 | 10,775 |
| 2019 | 22,460 | 14,920 | 6,240 | 4,145 | 10,775 |
| 2020 | 22,460 | 14,920 | 6,240 | 4,145 | 10,775 |
| 2021 | 22,460 | 14,920 | 6,240 | 4,145 | 10,775 |
| 2022 | 22,460 | 14,920 | 6,240 | 4,145 | 10,775 |
| 2023 | 22,460 | 14,920 | 6,240 | 4,145 | 10,775 |
| 2024 | 22,460 | 14,920 | 6,240 | 4,145 | 10,775 |
| 2025 | 22,460 | 14,920 | 6,240 | 4,145 | 10,775 |

Note 1: Fuel surcharge is set at US\$0.015 per liter.

Note 2: The annual supply is 310.7 of the weekly supply.

Appendix 9.8.1 Economic Cost of Construction Works - Alternative-2(a)

Unit: US\$ '000

| Year | Airport Civil Works (1) | Building Works (2) | Special Equipment (3) | Airport Utilities (4) | Fuel Supply System (5) | Fire Fighting Vehicles (6) | Airport Maintenance Equipment (7) | Air Navigation System (8) | Diversion and Relocation (9) | Land Acquisition and Compens. (10) | Consulting Services (11) | Contin-gencies (12) | Total (13)=(1)+...(12) |
|------|-------------------------|--------------------|-----------------------|-----------------------|------------------------|----------------------------|-----------------------------------|---------------------------|------------------------------|------------------------------------|--------------------------|---------------------|------------------------|
| 1995 | | | | | | | | | | | | | |
| 1996 | | | | | | | | | | | | | |
| 1997 | | | | | | | | | | 1,175 | | 117 | 1,292 |
| 1998 | | | | | | | | | | 9,396 | 1,697 | 1,109 | 12,202 |
| 1999 | | | | | | | | | | 9,396 | 10,179 | 1,958 | 21,533 |
| 2000 | | | | | | | | | | 2,349 | 2,375 | 472 | 5,197 |
| 2001 | 8,495 | | | 1,077 | | | | | 1,385 | 1,175 | 2,375 | 1,451 | 15,957 |
| 2002 | 42,476 | 9,282 | | 4,307 | 3,414 | | | | 4,155 | | 4,411 | 6,805 | 74,850 |
| 2003 | 50,972 | 27,846 | 2,507 | 5,384 | 5,122 | | | 3,434 | 1,385 | | 4,411 | 10,086 | 110,945 |
| 2004 | 50,972 | 37,128 | 5,767 | 6,460 | 5,122 | 1,019 | 194 | 8,585 | | | 5,090 | 12,033 | 132,368 |
| 2005 | 16,991 | 18,564 | 3,460 | 4,307 | 3,414 | 1,019 | 194 | 5,151 | | | 3,054 | 5,615 | 61,768 |
| 2006 | | | | | | | | | | 972 | 339 | 131 | 1,442 |
| 2007 | | | | | | | | | | 324 | 2,192 | 252 | 2,768 |
| 2008 | 5,729 | 7,609 | | | | | | | | 648 | 2,192 | 1,618 | 17,796 |
| 2009 | 5,729 | 15,217 | | 2,377 | 9,700 | | | 3,153 | | 648 | 2,192 | 3,902 | 42,918 |
| 2010 | 5,729 | 15,217 | 2,037 | 2,377 | 9,700 | | | 3,153 | | 648 | 2,192 | 4,105 | 45,158 |
| 2011 | | | | | | | | | | | | | |
| 2012 | | | | | | | | | | | | | |
| 2013 | | | | | | | | | | | | | |
| 2014 | | | | | | | | | | | | | |
| 2015 | | | | | | | | | | | | | |
| 2016 | | | | | | | | | | | | | |
| 2017 | | | | | | | | | | | | | |
| 2018 | | | | | | | | | | | | | |
| 2019 | | | | | | | | | | | | | |
| 2020 | | | | | | | | | | | | | |
| 2021 | | | | | | | | | | | | | |
| 2022 | | | | | | | | | | | | | |
| 2023 | | | | | | | | | | | | | |
| 2024 | | | | | | | | | | | | | |
| 2025 | -65,224 | -49,958 | | | | | | | | | | | -115,182 |

Note: Construction costs, excluding land acquisition and compensation, in economic prices are estimated as 97% of those in market prices by deducting 3% turnover tax.

Appendix 9.8.2 Incremental Maintenance Cost at Economic Prices - Alternative-2(a)

| Year | Airport Civil Works | Building Works | Special Equipment | Airport Utilities | Fuel Supply System | Fire Fighting Vehicles | Airport Maintenance Equipment | Air Navigation System | Total |
|------|---------------------|----------------|-------------------|-------------------|--------------------|------------------------|-------------------------------|-----------------------|-----------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9)=(1)+...+(8) |
| 1995 | | | | | | | | | |
| 1996 | | | | | | | | | |
| 1997 | | | | | | | | | |
| 1998 | | | | | | | | | |
| 1999 | | | | | | | | | |
| 2000 | | | | | | | | | |
| 2001 | | | | | | | | | |
| 2002 | | | | | | | | | |
| 2003 | | | | | | | | | |
| 2004 | | | | | | | | | |
| 2005 | | | | | | | | | |
| 2006 | 1,699 | 928 | 577 | 215 | 512 | 61 | 12 | 858 | 4,863 |
| 2007 | 1,699 | 928 | 577 | 215 | 512 | 61 | 12 | 858 | 4,863 |
| 2008 | 1,699 | 928 | 577 | 215 | 512 | 61 | 12 | 858 | 4,863 |
| 2009 | 1,699 | 928 | 577 | 215 | 512 | 61 | 12 | 858 | 4,863 |
| 2010 | 1,699 | 928 | 577 | 215 | 512 | 61 | 12 | 858 | 4,863 |
| 2011 | 1,871 | 1,309 | 679 | 263 | 1,094 | 61 | 12 | 1,174 | 6,462 |
| 2012 | 1,871 | 1,309 | 679 | 263 | 1,094 | 61 | 12 | 1,174 | 6,462 |
| 2013 | 1,871 | 1,309 | 679 | 263 | 1,094 | 61 | 12 | 1,174 | 6,462 |
| 2014 | 1,871 | 1,309 | 679 | 263 | 1,094 | 61 | 12 | 1,174 | 6,462 |
| 2015 | 1,871 | 1,309 | 679 | 263 | 1,094 | 61 | 12 | 1,174 | 6,462 |
| 2016 | 1,871 | 1,309 | 679 | 263 | 1,094 | 61 | 12 | 1,174 | 6,462 |
| 2017 | 1,871 | 1,309 | 679 | 263 | 1,094 | 61 | 12 | 1,174 | 6,462 |
| 2018 | 1,871 | 1,309 | 679 | 263 | 1,094 | 61 | 12 | 1,174 | 6,462 |
| 2019 | 1,871 | 1,309 | 679 | 263 | 1,094 | 61 | 12 | 1,174 | 6,462 |
| 2020 | 1,871 | 1,309 | 679 | 263 | 1,094 | 61 | 12 | 1,174 | 6,462 |
| 2021 | 1,871 | 1,309 | 679 | 263 | 1,094 | 61 | 12 | 1,174 | 6,462 |
| 2022 | 1,871 | 1,309 | 679 | 263 | 1,094 | 61 | 12 | 1,174 | 6,462 |
| 2023 | 1,871 | 1,309 | 679 | 263 | 1,094 | 61 | 12 | 1,174 | 6,462 |
| 2024 | 1,871 | 1,309 | 679 | 263 | 1,094 | 61 | 12 | 1,174 | 6,462 |
| 2025 | 1,871 | 1,309 | 679 | 263 | 1,094 | 61 | 12 | 1,174 | 6,462 |

Note: Maintenance costs in economic prices are estimated as 97% of those in market prices by deducting 3% turnover tax.

Appendix 3.8.3 Incremental Personnel Cost, Overhead and Other Labor Costs at Economic Prices

| Year | Unit Staff Cost (US\$/Year) | WP | | | | | | | | | | WOP | | | | | Incremental Cost (000 US\$) |
|------|-----------------------------|------------|-------------|---------------|---------------------|--------------------------|-------------------|-----------------|---------------------------|--------------------------|-----------------------|-----------------|---------------------------|--------------------------|-----------------------|-------|-----------------------------|
| | | Passengers | Cargo (ton) | Traffic Units | Traffic Unit Growth | Productivity Improvement | Staff Growth Rate | Number of Staff | Personnel Cost (000 US\$) | Overhead Cost (000 US\$) | Other Cost (001 US\$) | Number of Staff | Personnel Cost (000 US\$) | Overhead Cost (000 US\$) | Other Cost (001 US\$) | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | |
| 1995 | 1,350 | 1,422,000 | 22,200 | 1,644 | 26.3% | 7.5% | 19.3% | 433 | 585 | 321 | 145 | 433 | 585 | 321 | 145 | 0 | |
| 1996 | 1,449 | 1,789,000 | 29,600 | 2,085 | 22.2% | 7.5% | 14.7% | 520 | 753 | 414 | 187 | 520 | 753 | 414 | 187 | 0 | |
| 1997 | 1,557 | 2,168,000 | 36,000 | 2,548 | 18.1% | 7.5% | 10.6% | 600 | 934 | 513 | 232 | 600 | 934 | 513 | 232 | 0 | |
| 1998 | 1,674 | 2,547,000 | 46,300 | 3,010 | 15.0% | 7.5% | 7.5% | 660 | 1,105 | 607 | 274 | 660 | 1,105 | 607 | 274 | 0 | |
| 1999 | 1,800 | 2,915,000 | 54,500 | 3,460 | 12.5% | 7.5% | 5.0% | 710 | 1,278 | 702 | 317 | 710 | 1,278 | 702 | 317 | 0 | |
| 2000 | 1,935 | 3,267,000 | 62,600 | 3,893 | 11.2% | 7.2% | 4.0% | 750 | 1,451 | 798 | 360 | 750 | 1,451 | 798 | 360 | 0 | |
| 2001 | 2,070 | 3,619,000 | 71,000 | 4,329 | 11.2% | 7.2% | 4.0% | 780 | 1,615 | 887 | 400 | 780 | 1,615 | 887 | 400 | 0 | |
| 2002 | 2,223 | 4,010,000 | 80,400 | 4,814 | 11.2% | 7.2% | 4.0% | 810 | 1,801 | 990 | 446 | 810 | 1,801 | 990 | 446 | 0 | |
| 2003 | 2,385 | 4,443,000 | 91,200 | 5,355 | 11.2% | 7.2% | 4.0% | 840 | 2,003 | 1,101 | 497 | 840 | 2,003 | 1,101 | 497 | 0 | |
| 2004 | 2,556 | 4,924,000 | 103,100 | 5,955 | 11.2% | 7.2% | 4.0% | 870 | 2,224 | 1,222 | 551 | 870 | 2,224 | 1,222 | 551 | 0 | |
| 2005 | 2,736 | 5,458,000 | 116,700 | 6,625 | 9.7% | 6.3% | 3.4% | 910 | 2,490 | 1,369 | 617 | 910 | 2,490 | 1,369 | 617 | 157 | |
| 2006 | 2,907 | 5,966,000 | 130,200 | 7,268 | 9.7% | 6.3% | 3.4% | 940 | 2,730 | 1,502 | 677 | 940 | 2,730 | 1,502 | 677 | 333 | |
| 2007 | 3,087 | 6,521,000 | 145,400 | 7,975 | 9.7% | 6.3% | 3.4% | 970 | 2,994 | 1,646 | 742 | 970 | 2,994 | 1,646 | 742 | 531 | |
| 2008 | 3,285 | 7,129,000 | 162,200 | 8,751 | 9.7% | 6.3% | 3.4% | 1,000 | 3,285 | 1,806 | 814 | 1,000 | 3,285 | 1,806 | 814 | 753 | |
| 2009 | 3,492 | 7,794,000 | 181,000 | 9,604 | 9.7% | 6.3% | 3.4% | 1,030 | 3,597 | 1,977 | 892 | 1,030 | 3,597 | 1,977 | 892 | 1,066 | |
| 2010 | 3,708 | 8,520,000 | 202,400 | 10,544 | 9.9% | 6.3% | 3.5% | 1,070 | 3,968 | 2,161 | 984 | 1,070 | 3,968 | 2,161 | 984 | 1,304 | |
| 2011 | 3,906 | 9,157,000 | 222,100 | 11,378 | 7.9% | 5.4% | 2.5% | 1,100 | 4,297 | 2,362 | 1,065 | 1,100 | 4,297 | 2,362 | 1,065 | 1,627 | |
| 2012 | 4,113 | 9,842,000 | 243,700 | 12,279 | 7.9% | 5.4% | 2.5% | 1,130 | 4,648 | 2,555 | 1,152 | 1,130 | 4,648 | 2,555 | 1,152 | 1,949 | |
| 2013 | 4,338 | 10,579,000 | 267,500 | 13,254 | 7.9% | 5.4% | 2.5% | 1,160 | 5,032 | 2,766 | 1,247 | 1,160 | 5,032 | 2,766 | 1,247 | 2,301 | |
| 2014 | 4,572 | 11,372,000 | 293,500 | 14,307 | 7.9% | 5.4% | 2.5% | 1,190 | 5,441 | 2,991 | 1,349 | 1,190 | 5,441 | 2,991 | 1,349 | 2,683 | |
| 2015 | 4,815 | 12,224,000 | 322,400 | 15,448 | 8.0% | 5.4% | 2.6% | 1,220 | 5,874 | 3,229 | 1,456 | 1,220 | 5,874 | 3,229 | 1,456 | 3,091 | |
| 2016 | 5,058 | 13,050,000 | 349,400 | 16,544 | 7.1% | 5.0% | 2.1% | 1,250 | 6,323 | 3,475 | 1,567 | 1,250 | 6,323 | 3,475 | 1,567 | 3,532 | |
| 2017 | 5,310 | 13,933,000 | 378,900 | 17,722 | 7.1% | 5.0% | 2.1% | 1,280 | 6,797 | 3,736 | 1,685 | 1,280 | 6,797 | 3,736 | 1,685 | 4,012 | |
| 2018 | 5,580 | 14,876,000 | 411,000 | 18,986 | 7.1% | 5.0% | 2.1% | 1,310 | 7,310 | 4,018 | 1,812 | 1,310 | 7,310 | 4,018 | 1,812 | 4,213 | |
| 2019 | 5,859 | 14,876,000 | 411,000 | 18,986 | 5.0% | 5.0% | 5.0% | 1,310 | 7,675 | 4,219 | 1,903 | 1,310 | 7,675 | 4,219 | 1,903 | 4,426 | |
| 2020 | 6,156 | 14,876,000 | 411,000 | 18,986 | 5.0% | 5.0% | 5.0% | 1,310 | 8,064 | 4,433 | 1,999 | 1,310 | 8,064 | 4,433 | 1,999 | 4,646 | |
| 2021 | 6,462 | 14,876,000 | 411,000 | 18,986 | 5.0% | 5.0% | 5.0% | 1,310 | 8,465 | 4,653 | 2,098 | 1,310 | 8,465 | 4,653 | 2,098 | 4,879 | |
| 2022 | 6,786 | 14,876,000 | 411,000 | 18,986 | 5.0% | 5.0% | 5.0% | 1,310 | 8,890 | 4,886 | 2,204 | 1,310 | 8,890 | 4,886 | 2,204 | 5,125 | |
| 2023 | 7,128 | 14,876,000 | 411,000 | 18,986 | 5.0% | 5.0% | 5.0% | 1,310 | 9,338 | 5,133 | 2,315 | 1,310 | 9,338 | 5,133 | 2,315 | 5,384 | |
| 2024 | 7,488 | 14,876,000 | 411,000 | 18,986 | 5.0% | 5.0% | 5.0% | 1,310 | 9,809 | 5,392 | 2,432 | 1,310 | 9,809 | 5,392 | 2,432 | 5,656 | |
| 2025 | 7,866 | 14,876,000 | 411,000 | 18,986 | 5.0% | 5.0% | 5.0% | 1,310 | 10,304 | 5,664 | 2,554 | 1,310 | 10,304 | 5,664 | 2,554 | 5,935 | |

Note 1: Personnel costs in economic prices are estimated as 90% of market costs in consideration of 10% average income tax.

Note 2: Economic costs of overhead are estimated as 97% of nominal costs, by deducting turnover tax equivalent of 3%.

Note 3: Other labor costs are evaluated in economic prices as 97% of nominal costs, by deducting turnover tax equivalent of 3%.

Appendix 9.8.4 Incremental Utilities Cost at Economic Prices

| Year | WP | | | | WOP | | | | Incremental Utility Expenses ('000 US\$) |
|------|------------------------------|------------------------------|-----------------------|------------------------|------------------------------|------------------------------|-----------------------|------------------------|--|
| | Electricity Consump. (MMW/H) | Electricity Cost ('000 US\$) | Fuel Cost ('000 US\$) | Total Cost ('000 US\$) | Electricity Consump. (MMW/H) | Electricity Cost ('000 US\$) | Fuel Cost ('000 US\$) | Total Cost ('000 US\$) | |
| | (1) | (2) | (3) | (4)=(2)+(3) | (5) | (6) | (7) | (8)=(6)+(7) | |
| 1995 | 5,500 | 267 | 13 | 280 | 5,500 | 267 | 13 | 280 | |
| 1996 | 5,500 | 267 | 13 | 280 | 5,500 | 267 | 13 | 280 | |
| 1997 | 5,500 | 267 | 13 | 280 | 5,500 | 267 | 13 | 280 | |
| 1998 | 5,500 | 267 | 13 | 280 | 5,500 | 267 | 13 | 280 | |
| 1999 | 5,500 | 267 | 13 | 280 | 5,500 | 267 | 13 | 280 | |
| 2000 | 5,500 | 267 | 13 | 280 | 5,500 | 267 | 13 | 280 | |
| 2001 | 20,100 | 975 | 49 | 1,024 | 20,100 | 975 | 49 | 1,024 | |
| 2002 | 20,100 | 975 | 49 | 1,024 | 20,100 | 975 | 49 | 1,024 | |
| 2003 | 20,100 | 975 | 49 | 1,024 | 20,100 | 975 | 49 | 1,024 | |
| 2004 | 20,100 | 975 | 49 | 1,024 | 20,100 | 975 | 49 | 1,024 | |
| 2005 | 20,100 | 975 | 49 | 1,024 | 20,100 | 975 | 49 | 1,024 | |
| 2006 | 28,600 | 1,387 | 69 | 1,456 | 20,100 | 975 | 49 | 1,024 | 433 |
| 2007 | 28,600 | 1,387 | 69 | 1,456 | 20,100 | 975 | 49 | 1,024 | 433 |
| 2008 | 28,600 | 1,387 | 69 | 1,456 | 20,100 | 975 | 49 | 1,024 | 433 |
| 2009 | 28,600 | 1,387 | 69 | 1,456 | 20,100 | 975 | 49 | 1,024 | 433 |
| 2010 | 28,600 | 1,387 | 69 | 1,456 | 20,100 | 975 | 49 | 1,024 | 433 |
| 2011 | 38,500 | 1,867 | 93 | 1,961 | 20,100 | 975 | 49 | 1,024 | 937 |
| 2012 | 38,500 | 1,867 | 93 | 1,961 | 20,100 | 975 | 49 | 1,024 | 937 |
| 2013 | 38,500 | 1,867 | 93 | 1,961 | 20,100 | 975 | 49 | 1,024 | 937 |
| 2014 | 38,500 | 1,867 | 93 | 1,961 | 20,100 | 975 | 49 | 1,024 | 937 |
| 2015 | 38,500 | 1,867 | 93 | 1,961 | 20,100 | 975 | 49 | 1,024 | 937 |
| 2016 | 38,500 | 1,867 | 93 | 1,961 | 20,100 | 975 | 49 | 1,024 | 937 |
| 2017 | 38,500 | 1,867 | 93 | 1,961 | 20,100 | 975 | 49 | 1,024 | 937 |
| 2018 | 38,500 | 1,867 | 93 | 1,961 | 20,100 | 975 | 49 | 1,024 | 937 |
| 2019 | 38,500 | 1,867 | 93 | 1,961 | 20,100 | 975 | 49 | 1,024 | 937 |
| 2020 | 38,500 | 1,867 | 93 | 1,961 | 20,100 | 975 | 49 | 1,024 | 937 |
| 2021 | 38,500 | 1,867 | 93 | 1,961 | 20,100 | 975 | 49 | 1,024 | 937 |
| 2022 | 38,500 | 1,867 | 93 | 1,961 | 20,100 | 975 | 49 | 1,024 | 937 |
| 2023 | 38,500 | 1,867 | 93 | 1,961 | 20,100 | 975 | 49 | 1,024 | 937 |
| 2024 | 38,500 | 1,867 | 93 | 1,961 | 20,100 | 975 | 49 | 1,024 | 937 |
| 2025 | 38,500 | 1,867 | 93 | 1,961 | 20,100 | 975 | 49 | 1,024 | 937 |

Note: Utilities costs in economic prices are estimated as 97% of those in market prices by deducting 3% turnover tax.

Appendix 9.8.6 Time Saving Benefits to Vietnamese Business Passengers on International Routes

Table A Incremental Vietnamese Business Passengers on International Routes

| Year | Percentage Vietnamese | Percentage Business | Incremental Passengers |
|------|-----------------------|---------------------|------------------------|
| 1995 | 30% | 48% | |
| 1996 | 31% | 48% | |
| 1997 | 31% | 48% | |
| 1998 | 32% | 48% | |
| 1999 | 32% | 48% | |
| 2000 | 33% | 48% | |
| 2001 | 33% | 48% | |
| 2002 | 34% | 48% | |
| 2003 | 34% | 48% | |
| 2004 | 35% | 48% | |
| 2005 | 35% | 48% | |
| 2006 | 36% | 48% | 36,000 |
| 2007 | 36% | 48% | 76,000 |
| 2008 | 37% | 48% | 122,000 |
| 2009 | 37% | 48% | 174,000 |
| 2010 | 38% | 48% | 232,000 |
| 2011 | 38% | 48% | 296,000 |
| 2012 | 39% | 48% | 346,000 |
| 2013 | 39% | 48% | 411,000 |
| 2014 | 40% | 48% | 484,000 |
| 2015 | 40% | 48% | 563,000 |
| 2016 | 40% | 48% | 632,000 |
| 2017 | 40% | 48% | 705,000 |
| 2018 | 40% | 48% | 783,000 |
| 2019 | 40% | 48% | 783,000 |
| 2020 | 40% | 48% | 783,000 |
| 2021 | 40% | 48% | 783,000 |
| 2022 | 40% | 48% | 783,000 |
| 2023 | 40% | 48% | 783,000 |
| 2024 | 40% | 48% | 783,000 |
| 2025 | 40% | 48% | 783,000 |

Note 1: The percentage of Vietnamese is forecasted to increase from the present 30% to 40% by the year 2015 in the course of economic development as experienced in other developing countries in Asia. This rate is assumed to be maintained after the year 2015.

Note 2: The percentage of business passengers within Vietnamese passengers on international routes is assumed to remain at 48% based on the traffic survey conducted at Noi Bai Airport in May 1995 by the JICA Study Team.

Appendix 3.3.5 Time Saving Benefits to Vietnamese Business Passengers on International Routes

Table B. Time Saving Benefit to Vietnamese Business Passengers on International Routes

| Year | Time Value (US\$/hour) | Economic Cost before Boarding in the WOP Case | | | | Economic Cost before Boarding in the VP Case | | | | Benefit per Passenger (US\$) | Incremental Passengers | Total Benefit (000 US\$) |
|------|------------------------|---|-----------------------------|------------------------|--------------------------------|--|-----------------------------|---------------------------------------|-----------------------------------|------------------------------|------------------------|--------------------------|
| | | Time before Boarding via HCMC (hour) | Cost before Boarding (US\$) | Air Travel Cost (US\$) | Transfer in Vinh - HCMC (hour) | Time before Boarding at Noi Bai (hour) | Cost before Boarding (US\$) | Airport Charge and Access Cost (US\$) | Total Cost before Boarding (US\$) | | | |
| 1995 | 1.50 | 12.25 | 18.38 | 7.27 | 9.61 | 113.65 | 6.91 | 15.91 | 97.94 | 13 | 1,421,128,153 | |
| 1996 | 1.61 | 12.25 | 19.75 | 7.27 | 9.61 | 115.23 | 6.91 | 16.58 | 98.64 | 13 | 1,421,128,153 | |
| 1997 | 1.73 | 12.25 | 21.23 | 7.27 | 9.61 | 116.71 | 6.91 | 17.31 | 99.40 | 13 | 1,421,128,153 | |
| 1998 | 1.86 | 12.25 | 22.83 | 7.27 | 9.61 | 118.30 | 6.91 | 18.09 | 100.21 | 13 | 1,421,128,153 | |
| 1999 | 2.00 | 12.25 | 24.54 | 7.27 | 9.61 | 120.01 | 6.91 | 18.93 | 101.08 | 13 | 1,421,128,153 | |
| 2000 | 2.15 | 12.25 | 26.38 | 7.27 | 9.61 | 121.85 | 6.91 | 19.83 | 102.02 | 13 | 1,421,128,153 | |
| 2001 | 2.31 | 12.25 | 27.97 | 7.27 | 9.61 | 123.96 | 6.91 | 20.76 | 102.70 | 13 | 1,421,128,153 | |
| 2002 | 2.47 | 11.98 | 29.65 | 7.32 | 9.61 | 125.17 | 6.91 | 21.76 | 103.41 | 13 | 1,421,128,153 | |
| 2003 | 2.65 | 11.85 | 31.43 | 7.34 | 9.61 | 126.97 | 6.91 | 22.83 | 104.14 | 13 | 1,421,128,153 | |
| 2004 | 2.84 | 11.71 | 33.31 | 7.36 | 9.61 | 128.87 | 6.91 | 23.97 | 104.90 | 13 | 1,421,128,153 | |
| 2005 | 3.05 | 11.58 | 35.30 | 7.38 | 9.61 | 130.89 | 6.91 | 25.20 | 105.69 | 13 | 1,421,128,153 | |
| 2006 | 3.24 | 11.36 | 36.83 | 7.41 | 9.61 | 132.44 | 6.91 | 26.35 | 106.09 | 36,000 | 3,819 | |
| 2007 | 3.44 | 11.15 | 38.40 | 7.44 | 9.61 | 134.05 | 6.91 | 27.58 | 106.47 | 76,000 | 8,091 | |
| 2008 | 3.66 | 10.93 | 40.03 | 7.47 | 9.61 | 135.70 | 6.91 | 28.88 | 106.82 | 122,000 | 13,032 | |
| 2009 | 3.89 | 10.72 | 41.71 | 7.50 | 9.61 | 137.41 | 6.91 | 30.26 | 107.15 | 174,000 | 18,644 | |
| 2010 | 4.14 | 10.50 | 43.45 | 7.53 | 9.61 | 139.18 | 6.91 | 31.74 | 107.44 | 232,000 | 24,926 | |
| 2011 | 4.36 | 10.48 | 45.68 | 7.53 | 9.61 | 141.42 | 6.91 | 33.08 | 108.34 | 295,000 | 31,965 | |
| 2012 | 4.60 | 10.45 | 48.04 | 7.54 | 9.61 | 143.77 | 6.91 | 34.49 | 109.28 | 346,000 | 37,812 | |
| 2013 | 4.85 | 10.43 | 50.51 | 7.54 | 9.61 | 146.25 | 6.91 | 35.98 | 110.27 | 411,000 | 45,321 | |
| 2014 | 5.11 | 10.40 | 53.11 | 7.54 | 9.61 | 148.85 | 6.91 | 37.55 | 111.30 | 484,000 | 53,871 | |
| 2015 | 5.38 | 10.38 | 55.84 | 7.55 | 9.61 | 151.59 | 6.91 | 39.20 | 112.39 | 563,000 | 63,274 | |
| 2016 | 5.63 | 10.35 | 58.93 | 7.55 | 9.61 | 154.25 | 6.91 | 40.82 | 113.43 | 632,000 | 71,689 | |
| 2017 | 5.93 | 10.33 | 61.27 | 7.56 | 9.61 | 157.03 | 6.91 | 42.51 | 114.51 | 705,000 | 80,791 | |
| 2018 | 6.23 | 10.30 | 64.18 | 7.56 | 9.61 | 159.94 | 6.91 | 44.29 | 115.64 | 785,000 | 90,548 | |
| 2019 | 6.54 | 10.28 | 67.22 | 7.56 | 9.61 | 162.99 | 6.91 | 46.16 | 116.82 | 783,000 | 91,472 | |
| 2020 | 6.87 | 10.25 | 70.41 | 7.57 | 9.61 | 166.18 | 6.91 | 48.13 | 118.05 | 783,000 | 92,435 | |
| 2021 | 7.21 | 10.25 | 73.83 | 7.57 | 9.61 | 169.70 | 6.91 | 50.19 | 119.51 | 783,000 | 93,578 | |
| 2022 | 7.57 | 10.25 | 77.63 | 7.57 | 9.61 | 173.40 | 6.91 | 52.35 | 121.05 | 783,000 | 94,778 | |
| 2023 | 7.96 | 10.25 | 81.51 | 7.57 | 9.61 | 177.28 | 6.91 | 54.62 | 122.65 | 783,000 | 96,039 | |
| 2024 | 8.35 | 10.25 | 85.59 | 7.57 | 9.61 | 181.35 | 6.91 | 57.01 | 124.34 | 783,000 | 97,362 | |
| 2025 | 8.77 | 10.25 | 89.87 | 7.57 | 9.61 | 185.63 | 6.91 | 59.51 | 126.12 | 783,000 | 98,751 | |

Note 1: Average time value of Vietnamese business passengers in 1995 are estimated to be US\$1.5 per hour, which corresponds to US\$500 per month.

Note 2: Average time value of Vietnamese business passengers will increase at the same rate as GDP/capita growth rate as follows:

1995-2000 7.5% per annum 2005-2010 6.3% per annum 2015-2020 5.0% per annum
 2000-2005 7.2% per annum 2010-2015 5.4% per annum 2020-2025 5.0% per annum

Note 3: The break down of the required time before boarding is as follows: The shortening of rail travel time up to the year 2010 is based on the JICA Study on the Rehabilitation and Improvement of the Railway in Vietnam, Interim Report (1), May 1995. The further shortening up to the year 2025 is projected by the JICA Study Team.

| Year | WOP Case (hours) | | | | VP Case (hours) | | | |
|------|--------------------------|-------------|------------------|------------|-------------------------|--------------|--------------------------|-----------------------|
| | Waiting at Train Station | Rail Travel | Transfer in Vinh | Air Travel | Transfer at Vinh - HCMC | Tan Son Nhut | Airport Acc. and Waiting | Total before Boarding |
| 1995 | 0.50 | 6.00 | 2.00 | 1.75 | 2.00 | 12.25 | 3.00 | 3.00 |
| 2000 | 0.50 | 6.00 | 2.00 | 1.75 | 2.00 | 12.25 | 3.00 | 3.00 |
| 2005 | 0.50 | 5.33 | 2.00 | 1.75 | 2.00 | 11.58 | 3.00 | 3.00 |
| 2010 | 0.50 | 4.25 | 2.00 | 1.75 | 2.00 | 10.50 | 3.00 | 3.00 |
| 2020 | 0.50 | 4.00 | 2.00 | 1.75 | 2.00 | 10.25 | 3.00 | 3.00 |
| 2025 | 0.50 | 4.00 | 2.00 | 1.75 | 2.00 | 10.25 | 3.00 | 3.00 |

Note 4: The economic cost of rail travel is estimated as the same as the present railfare based on the 100% cost recovery rate of VNR at present. This cost is assumed to be increased at 2.02% for each one hour of travel time shortening based on the above-mentioned JICA Study.

Note 5: The economic cost of domestic air transport is estimated as 133% of the present airfare for Vietnamese in consideration of VNA's cost recovery rate of 75% with current airfare for Vietnamese.

Note 6: The economic cost of passenger service charge at the airport, is estimated as US\$12 for international departing passengers and US\$2.7 for domestic departing passengers.

Note 7: The economic cost of airport access is estimated as VND10,000 in the both WOP and VP cases.

Appendix 9.8.6 Time Saving Benefits to Foreign Business Passengers on International Routes

Table A. Incremental Foreign Business Passengers on International Routes

| Year | Percentage Foreigner | Percentage Business | Incremental Passengers |
|------|----------------------|---------------------|------------------------|
| 1995 | 70% | 47% | |
| 1996 | 70% | 47% | |
| 1997 | 69% | 47% | |
| 1998 | 69% | 47% | |
| 1999 | 68% | 47% | |
| 2000 | 68% | 47% | |
| 2001 | 67% | 47% | |
| 2002 | 67% | 47% | |
| 2003 | 66% | 47% | |
| 2004 | 66% | 47% | |
| 2005 | 65% | 47% | |
| 2006 | 65% | 47% | 64,000 |
| 2007 | 64% | 47% | 139,000 |
| 2008 | 64% | 47% | 208,000 |
| 2009 | 63% | 47% | 290,000 |
| 2010 | 63% | 47% | 379,000 |
| 2011 | 62% | 47% | 457,000 |
| 2012 | 62% | 47% | 541,000 |
| 2013 | 61% | 47% | 630,000 |
| 2014 | 61% | 47% | 725,000 |
| 2015 | 60% | 47% | 827,000 |
| 2016 | 60% | 47% | 925,000 |
| 2017 | 60% | 47% | 1,035,000 |
| 2018 | 60% | 47% | 1,151,000 |
| 2019 | 60% | 47% | 1,151,000 |
| 2020 | 60% | 47% | 1,151,000 |
| 2021 | 60% | 47% | 1,151,000 |
| 2022 | 60% | 47% | 1,151,000 |
| 2023 | 60% | 47% | 1,151,000 |
| 2024 | 60% | 47% | 1,151,000 |
| 2025 | 60% | 47% | 1,151,000 |

Note 1: The percentage of foreigner is forecasted to decrease from the present 70% to 60% by the year 2015 in the course of economic development as experienced in other developing countries in Asia. This rate is assumed to be maintained after the year 2015.

Note 2: The percentage of business passengers within foreign passengers on international routes is assumed to remain at 47% based on the traffic survey conducted at Noi Bai Airport in May 1995 by the JICA Study Team.

Appendix 9.8.6 Time Saving Benefits to Foreign Business Passengers on International Routes
Table B Time Saving Benefit to Foreign Business Passengers on International Routes

| Year | Time Value (US\$/hour) | Economic Cost before Boarding in the WOP Case | | | | Economic Cost before Boarding in the WOP Case | | | | Benefit per Passenger (US\$) | Contribution to Vietnamese Economy (US\$) | Incremental Passengers | Total Benefit (000 US\$) |
|------|------------------------|---|-----------------------------|--------------------------------|-----------------------------------|---|-----------------------------|---------------------------------------|-----------------------------------|------------------------------|---|------------------------|--------------------------|
| | | Time before Boarding via HCMC (hour) | Time before Boarding (US\$) | Air travel: Vinh - HCMC (US\$) | Train travel: Hanoi - Vinh (US\$) | Time before Boarding at Noi Bai (hour) | Time before Boarding (US\$) | Airport Charge and Access Cost (US\$) | Total Cost before Boarding (US\$) | | | | |
| 1995 | 20.00 | 12.25 | 245.00 | 7.27 | 9.61 | 340.47 | 6.00 | 120.00 | 6.91 | 126.91 | 21.36 | 21.36 | (15) = (13) x (14) |
| 1996 | 20.20 | 12.25 | 247.45 | 7.27 | 9.61 | 342.92 | 6.00 | 121.20 | 6.91 | 128.11 | 21.48 | 21.48 | |
| 1997 | 20.40 | 12.25 | 249.92 | 7.27 | 9.61 | 345.40 | 6.00 | 122.41 | 6.91 | 129.32 | 21.61 | 21.61 | |
| 1998 | 20.61 | 12.25 | 252.42 | 7.27 | 9.61 | 347.90 | 6.00 | 123.64 | 6.91 | 130.55 | 21.74 | 21.74 | |
| 1999 | 20.81 | 12.25 | 254.95 | 7.27 | 9.61 | 350.42 | 6.00 | 124.87 | 6.91 | 131.78 | 21.86 | 21.86 | |
| 2000 | 21.02 | 12.25 | 257.50 | 7.27 | 9.61 | 352.97 | 6.00 | 126.12 | 6.91 | 133.03 | 21.99 | 21.99 | |
| 2001 | 21.23 | 12.12 | 257.23 | 7.29 | 9.61 | 352.72 | 6.00 | 127.39 | 6.91 | 134.29 | 21.84 | 21.84 | |
| 2002 | 21.44 | 11.96 | 256.93 | 7.32 | 9.61 | 352.44 | 6.00 | 128.66 | 6.91 | 135.57 | 21.88 | 21.88 | |
| 2003 | 21.66 | 11.86 | 256.59 | 7.34 | 9.61 | 352.13 | 6.00 | 129.94 | 6.91 | 136.85 | 21.53 | 21.53 | |
| 2004 | 21.87 | 11.71 | 256.23 | 7.36 | 9.61 | 351.79 | 6.00 | 131.24 | 6.91 | 138.15 | 21.56 | 21.56 | |
| 2005 | 22.09 | 11.58 | 255.83 | 7.38 | 9.61 | 351.41 | 6.00 | 132.55 | 6.91 | 139.46 | 21.19 | 21.19 | |
| 2006 | 22.31 | 11.36 | 255.37 | 7.41 | 9.61 | 349.18 | 6.00 | 133.88 | 6.91 | 140.79 | 20.84 | 20.84 | 64,000 |
| 2007 | 22.54 | 11.15 | 254.24 | 7.44 | 9.61 | 346.88 | 6.00 | 135.22 | 6.91 | 142.13 | 20.48 | 20.48 | 133,000 |
| 2008 | 22.76 | 10.93 | 248.83 | 7.47 | 9.61 | 344.50 | 6.00 | 136.57 | 6.91 | 143.46 | 20.10 | 20.10 | 206,000 |
| 2009 | 22.99 | 10.72 | 246.36 | 7.50 | 9.61 | 342.06 | 6.00 | 137.94 | 6.91 | 144.85 | 19.72 | 19.72 | 290,000 |
| 2010 | 23.22 | 10.50 | 243.80 | 7.53 | 9.61 | 339.53 | 6.00 | 139.32 | 6.91 | 146.23 | 19.33 | 19.33 | 379,000 |
| 2011 | 23.45 | 10.28 | 241.66 | 7.53 | 9.61 | 341.29 | 6.00 | 140.71 | 6.91 | 147.62 | 18.93 | 18.93 | 457,000 |
| 2012 | 23.69 | 10.45 | 247.52 | 7.54 | 9.61 | 343.26 | 6.00 | 142.12 | 6.91 | 149.03 | 18.42 | 18.42 | 541,000 |
| 2013 | 23.92 | 10.43 | 249.40 | 7.54 | 9.61 | 345.14 | 6.00 | 143.54 | 6.91 | 150.45 | 18.09 | 18.09 | 630,000 |
| 2014 | 24.16 | 10.40 | 251.29 | 7.54 | 9.61 | 347.03 | 6.00 | 144.97 | 6.91 | 151.88 | 18.51 | 18.51 | 725,000 |
| 2015 | 24.40 | 10.38 | 253.19 | 7.55 | 9.61 | 348.94 | 6.00 | 146.42 | 6.91 | 153.33 | 18.61 | 18.61 | 827,000 |
| 2016 | 24.65 | 10.35 | 255.11 | 7.55 | 9.61 | 350.86 | 6.00 | 147.89 | 6.91 | 154.80 | 18.61 | 18.61 | 928,000 |
| 2017 | 24.89 | 10.33 | 257.03 | 7.56 | 9.61 | 352.79 | 6.00 | 149.37 | 6.91 | 156.27 | 18.61 | 18.61 | 1,035,000 |
| 2018 | 25.14 | 10.30 | 258.96 | 7.56 | 9.61 | 354.73 | 6.00 | 150.86 | 6.91 | 157.77 | 18.61 | 18.61 | 1,151,000 |
| 2019 | 25.39 | 10.28 | 260.93 | 7.56 | 9.61 | 356.69 | 6.00 | 152.37 | 6.91 | 159.28 | 18.61 | 18.61 | 1,272,000 |
| 2020 | 25.65 | 10.25 | 262.90 | 7.57 | 9.61 | 358.67 | 6.00 | 153.89 | 6.91 | 160.80 | 18.61 | 18.61 | 1,400,000 |
| 2021 | 25.91 | 10.25 | 265.83 | 7.57 | 9.61 | 361.29 | 6.00 | 155.43 | 6.91 | 162.34 | 18.61 | 18.61 | 1,535,000 |
| 2022 | 26.16 | 10.25 | 268.18 | 7.57 | 9.61 | 363.95 | 6.00 | 156.99 | 6.91 | 163.89 | 20.06 | 20.06 | 1,677,000 |
| 2023 | 26.43 | 10.25 | 270.86 | 7.57 | 9.61 | 366.63 | 6.00 | 158.55 | 6.91 | 165.46 | 20.17 | 20.17 | 1,825,000 |
| 2024 | 26.69 | 10.25 | 273.57 | 7.57 | 9.61 | 369.34 | 6.00 | 160.14 | 6.91 | 167.05 | 20.29 | 20.29 | 1,978,000 |
| 2025 | 26.96 | 10.25 | 276.31 | 7.57 | 9.61 | 372.08 | 6.00 | 161.74 | 6.91 | 168.65 | 20.42 | 20.42 | 2,135,000 |

Note 1: Average time value of foreign business passengers in 1995 is estimated as US\$20 per hour.
 Note 2: Average time value of foreign business passengers is assumed to increase at 1% per annum.
 Note 3: The break down of the required time before boarding is as follows: The shortening of rail travel time up to the year 2010 is based on the JICA Study on the Rehabilitation and Improvement of the Railway in Vietnam, Interim Report (1), May 1995. The further shortening up to the year 2025 is projected by the JICA Study Team.

| Year | WOP Case (hours) | | | | Wp Case (hours) | | | |
|------|--------------------------|--------------------------|------------------|-------------------------|--------------------------|--------------------------|-----------------------|-----------------------|
| | Waiting at Train Station | Rail travel Hanoi - Vinh | Transfer in Vinh | Air travel: Vinh - HCMC | Transfer at Tan Son Nhat | Airport Acc. and Waiting | Total before Boarding | Total before Boarding |
| 1995 | 0.50 | 6.00 | 2.00 | 1.75 | 2.00 | 3.00 | 3.00 | 3.00 |
| 2000 | 0.50 | 6.00 | 2.00 | 1.75 | 2.00 | 3.00 | 3.00 | 3.00 |
| 2005 | 0.50 | 5.33 | 2.00 | 1.75 | 2.00 | 3.00 | 3.00 | 3.00 |
| 2010 | 0.50 | 4.25 | 2.00 | 1.75 | 2.00 | 3.00 | 3.00 | 3.00 |
| 2020 | 0.50 | 4.00 | 2.00 | 1.75 | 2.00 | 3.00 | 3.00 | 3.00 |
| 2025 | 0.50 | 4.00 | 2.00 | 1.75 | 2.00 | 3.00 | 3.00 | 3.00 |

Note 4: The economic cost of rail travel is estimated as the same as the present rail fare based on the 100% cost recovery rate of VNR at present.
 Note 5: This cost is assumed to be increased at 2.02% for each one hour of travel time shortening based on the above-mentioned JICA Study.
 Note 6: The economic cost of domestic air transport is estimated as 130% of the present airfare for Vietnamese in consideration of VNA's cost recovery rate of 75% with current airfare for Vietnamese.
 Note 7: The economic cost of passenger service charge at the airport is estimated as US\$12 for international departing passengers and US\$2.7 for domestic departing passengers.
 Note 8: The economic cost of airport access is estimated as VND10,000 in the both WOP and Wp cases.
 10% of the benefits attributing to foreign business passengers are assumed to contribute to Vietnamese economy through reduced costs of joint ventures.

Appendix 9.3.7 Time Saving Benefit to Vietnamese Business Passengers on Domestic Routes

Table A. Incremental Vietnamese Business Passengers on Domestic Routes

| Year | Percentage Vietnamese | Percentage Business | Hanoi - HCMC | Hanoi - Danang | Hanoi - Hue | Hanoi - Nha Trang | Hanoi - Others | Total |
|------|-----------------------|---------------------|--------------|----------------|-------------|-------------------|----------------|-----------|
| 1995 | 58% | 61% | | | | | | |
| 1996 | 59% | 61% | | | | | | |
| 1997 | 60% | 61% | | | | | | |
| 1998 | 61% | 61% | | | | | | |
| 1999 | 62% | 61% | | | | | | |
| 2000 | 64% | 61% | | | | | | |
| 2001 | 65% | 61% | | | | | | |
| 2002 | 66% | 61% | | | | | | |
| 2003 | 67% | 61% | | | | | | |
| 2004 | 68% | 61% | | | | | | |
| 2005 | 69% | 61% | | | | | | |
| 2006 | 70% | 61% | 91,000 | 31,000 | 3,000 | 1,000 | 1,000 | 127,000 |
| 2007 | 71% | 61% | 191,000 | 67,000 | 6,000 | 3,000 | 3,000 | 270,000 |
| 2008 | 72% | 61% | 302,000 | 110,000 | 9,000 | 4,000 | 4,000 | 429,000 |
| 2009 | 73% | 61% | 425,000 | 159,000 | 13,000 | 5,000 | 5,000 | 607,000 |
| 2010 | 75% | 61% | 560,000 | 216,000 | 16,000 | 6,000 | 7,000 | 805,000 |
| 2011 | 76% | 61% | 681,000 | 267,000 | 19,000 | 8,000 | 8,000 | 982,000 |
| 2012 | 77% | 61% | 812,000 | 324,000 | 22,000 | 9,000 | 9,000 | 1,176,000 |
| 2013 | 78% | 61% | 955,000 | 386,000 | 25,000 | 10,000 | 11,000 | 1,388,000 |
| 2014 | 79% | 61% | 1,110,000 | 456,000 | 29,000 | 12,000 | 12,000 | 1,619,000 |
| 2015 | 80% | 61% | 1,278,000 | 533,000 | 32,000 | 13,000 | 14,000 | 1,870,000 |
| 2016 | 80% | 61% | 1,435,000 | 599,000 | 36,000 | 15,000 | 15,000 | 2,099,000 |
| 2017 | 80% | 61% | 1,602,000 | 669,000 | 40,000 | 16,000 | 17,000 | 2,344,000 |
| 2018 | 80% | 61% | 1,780,000 | 743,000 | 45,000 | 18,000 | 19,000 | 2,605,000 |
| 2019 | 80% | 61% | 1,780,000 | 743,000 | 45,000 | 18,000 | 19,000 | 2,605,000 |
| 2020 | 80% | 61% | 1,780,000 | 743,000 | 45,000 | 18,000 | 19,000 | 2,605,000 |
| 2021 | 80% | 61% | 1,780,000 | 743,000 | 45,000 | 18,000 | 19,000 | 2,605,000 |
| 2022 | 80% | 61% | 1,780,000 | 743,000 | 45,000 | 18,000 | 19,000 | 2,605,000 |
| 2023 | 80% | 61% | 1,780,000 | 743,000 | 45,000 | 18,000 | 19,000 | 2,605,000 |
| 2024 | 80% | 61% | 1,780,000 | 743,000 | 45,000 | 18,000 | 19,000 | 2,605,000 |
| 2025 | 80% | 61% | 1,780,000 | 743,000 | 45,000 | 18,000 | 19,000 | 2,605,000 |

Note 1: The percentage of Vietnamese is forecasted to increase from the present 58% to 80% by the year 2015 in the course of economic development as experienced in other developing countries in Asia. This rate is assumed to be maintained after the year 2015.

Note 2: The percentage of business passengers within Vietnamese passengers on domestic routes is assumed to remain at 61% based on the traffic survey conducted at Noi Bai Airport in May 1995 by the JICA Study Team.

Appendix 9.8.7 Time Saving Benefit to Vietnamese Business Passengers on Domestic Routes
Table B Time Saving Benefit to Vietnamese Business Passengers on Hanoi - Ho Chi Minh Route

| Year | Time Value (US\$/hour) | Economic Cost of Travel in the WDP Case | | | | Economic Cost of Travel in the WP Case | | | | Benefit per Passenger (US\$) | Incremental Passengers | Total Benefit (000 US\$) |
|------|------------------------|---|-----------------------|------------------------|--------------------------|--|------------------------------|------------------------|--------------------------|------------------------------|------------------------|--------------------------|
| | | Time via Air (hour) | Time via Train (hour) | Air Travel Cost (US\$) | Train Travel Cost (US\$) | Time by Direct Air Travel (hour) | Time by Air and Train (hour) | Air Travel Cost (US\$) | Train Travel Cost (US\$) | | | |
| 1995 | 1.50 | 11.25 | 18.38 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 9.10 | (1.5) x (9.1) x (1.4) |
| 1996 | 1.61 | 11.25 | 18.14 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 9.69 | (1.5) x (9.1) x (1.4) |
| 1997 | 1.73 | 11.25 | 19.50 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 10.33 | (1.5) x (9.1) x (1.4) |
| 1998 | 1.86 | 11.25 | 20.96 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 11.01 | (1.5) x (9.1) x (1.4) |
| 1999 | 2.00 | 11.25 | 22.54 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 11.74 | (1.5) x (9.1) x (1.4) |
| 2000 | 2.15 | 11.25 | 24.23 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 12.53 | (1.5) x (9.1) x (1.4) |
| 2001 | 2.31 | 11.10 | 25.92 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 13.02 | (1.5) x (9.1) x (1.4) |
| 2002 | 2.47 | 10.95 | 27.10 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 13.52 | (1.5) x (9.1) x (1.4) |
| 2003 | 2.65 | 10.80 | 28.65 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 14.03 | (1.5) x (9.1) x (1.4) |
| 2004 | 2.84 | 10.65 | 30.29 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 14.54 | (1.5) x (9.1) x (1.4) |
| 2005 | 3.05 | 10.50 | 32.01 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 15.06 | (1.5) x (9.1) x (1.4) |
| 2006 | 3.28 | 10.30 | 33.81 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 15.30 | (1.5) x (9.1) x (1.4) |
| 2007 | 3.44 | 10.10 | 34.70 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 15.52 | (1.5) x (9.1) x (1.4) |
| 2008 | 3.66 | 9.90 | 36.25 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 15.71 | (1.5) x (9.1) x (1.4) |
| 2009 | 3.89 | 9.70 | 37.70 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 15.86 | (1.5) x (9.1) x (1.4) |
| 2010 | 4.14 | 9.50 | 39.31 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 15.97 | (1.5) x (9.1) x (1.4) |
| 2011 | 4.36 | 9.43 | 41.32 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 16.04 | (1.5) x (9.1) x (1.4) |
| 2012 | 4.60 | 9.45 | 43.44 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 16.08 | (1.5) x (9.1) x (1.4) |
| 2013 | 4.85 | 9.43 | 45.66 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 16.09 | (1.5) x (9.1) x (1.4) |
| 2014 | 5.11 | 9.40 | 48.00 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 16.06 | (1.5) x (9.1) x (1.4) |
| 2015 | 5.38 | 9.38 | 50.40 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 16.02 | (1.5) x (9.1) x (1.4) |
| 2016 | 5.65 | 9.35 | 52.84 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 16.00 | (1.5) x (9.1) x (1.4) |
| 2017 | 5.93 | 9.33 | 55.34 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 16.00 | (1.5) x (9.1) x (1.4) |
| 2018 | 6.23 | 9.30 | 57.86 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 16.00 | (1.5) x (9.1) x (1.4) |
| 2019 | 6.54 | 9.28 | 60.66 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 16.00 | (1.5) x (9.1) x (1.4) |
| 2020 | 6.87 | 9.25 | 63.54 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 16.00 | (1.5) x (9.1) x (1.4) |
| 2021 | 7.21 | 9.25 | 66.72 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 16.00 | (1.5) x (9.1) x (1.4) |
| 2022 | 7.57 | 9.25 | 70.06 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 16.00 | (1.5) x (9.1) x (1.4) |
| 2023 | 7.95 | 9.25 | 73.56 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 16.00 | (1.5) x (9.1) x (1.4) |
| 2024 | 8.35 | 9.25 | 77.24 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 16.00 | (1.5) x (9.1) x (1.4) |
| 2025 | 8.77 | 9.25 | 81.10 | 78.50 | 7.27 | 3.61 | 5.00 | 84.64 | 3.61 | 97.25 | 16.00 | (1.5) x (9.1) x (1.4) |

Note 1: Average time value of Vietnamese business passengers in 1995 are estimated to be US\$1.5 per hour, which corresponds to US\$300 per month.

Note 2: Average time value of Vietnamese business passengers will increase at the same rate as GDP/capita growth rate as follows:

1995-2000 7.5% per annum 2005-2010 6.5% per annum 2015-2020 5.0% per annum
2000-2005 7.2% per annum 2010-2015 5.4% per annum 2020-2025 5.0% per annum

Note 3: The break down of the travel time is as follows: The shortening of rail travel time up to the year 2010 is based on the JICA Study on the Rehabilitation and Improvement of the Railway in Vietnam, Interim Report (I), May 2005. The further shortening up to the year 2025 is projected by the JICA Study Team.

| Year | Waiting at Train Station (hours) | | | | WP Case (hours) | | | |
|------|----------------------------------|------------|----------------|--------------------|-----------------|------------|----------------|--------------------|
| | Rail Travel | Air Travel | Airport Access | Waiting and Egress | Rail Travel | Air Travel | Airport Access | Waiting and Egress |
| 1995 | 0.50 | 2.00 | 1.75 | 1.00 | 0.50 | 2.00 | 1.00 | 1.00 |
| 2000 | 0.50 | 2.00 | 1.75 | 1.00 | 0.50 | 2.00 | 1.00 | 1.00 |
| 2005 | 0.50 | 2.00 | 1.75 | 1.00 | 0.50 | 2.00 | 1.00 | 1.00 |
| 2010 | 0.50 | 2.00 | 1.75 | 1.00 | 0.50 | 2.00 | 1.00 | 1.00 |
| 2020 | 0.50 | 2.00 | 1.75 | 1.00 | 0.50 | 2.00 | 1.00 | 1.00 |
| 2025 | 0.50 | 2.00 | 1.75 | 1.00 | 0.50 | 2.00 | 1.00 | 1.00 |

Note 4: The economic cost of rail travel is estimated as the same as the present rail fare based on the 100% cost recovery rate of VNIR at present.

Note 5: This cost is assumed to be increased at 2.02% for each one hour of travel time shortening based on the above-mentioned JICA Study.

Note 6: The economic cost of domestic air transport is estimated as 133% of the present airfare for Vietnamese in consideration of VNA's cost recovery rate of 75%.

Note 7: The economic cost of domestic passenger service charge at the airport is estimated as US\$2.7.

Note 8: The economic cost of airport access/egress is estimated as VND10,000 in the both WDP and WP cases.

Appendix 9.B.7 Time Saving Benefit to Vietnamese Business Passengers on Domestic Routes
Table C. Time Saving Benefit to Vietnamese Business Passengers on Hanoi - Danang Route

| Year | Time Value (US\$/hour) | Economic Cost of travel in the WOP Case | | | | Economic Cost of travel in the WP Case | | | | Benefit per Passenger (US\$) | Incremental Passengers | Total Benefit (1000 US\$) | | |
|------|------------------------|---|----------------------|------------------------|-------------------------------------|--|---------------------------|------------------------|---------------------------------------|------------------------------|------------------------|---------------------------|--------------------------|------|
| | | Time via Vinh Airport (hour) | Time of Train (hour) | Air Travel Cost (US\$) | Train Charge and Access Cost (US\$) | Time by Direct Air Travel (hour) | Time of Air Travel (hour) | Air Travel Cost (US\$) | Airport Charge and Access Cost (US\$) | | | | Total Travel Cost (US\$) | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
| 1985 | 1.50 | 10.42 | 16.63 | 36.27 | 7.27 | 3.61 | 62.76 | 5.17 | 7.76 | 41.11 | 3.61 | 52.47 | 10.31 | (15) |
| 1986 | 1.61 | 10.42 | 16.80 | 36.27 | 7.27 | 3.61 | 63.06 | 5.17 | 8.34 | 41.11 | 3.61 | 53.05 | 10.90 | (16) |
| 1987 | 1.73 | 10.42 | 18.06 | 36.27 | 7.27 | 3.61 | 65.22 | 5.17 | 9.03 | 41.11 | 3.61 | 53.68 | 11.54 | (17) |
| 1988 | 1.86 | 10.42 | 19.42 | 36.27 | 7.27 | 3.61 | 68.57 | 5.17 | 9.83 | 41.11 | 3.61 | 54.35 | 12.22 | (18) |
| 1989 | 2.00 | 10.42 | 20.87 | 36.27 | 7.27 | 3.61 | 73.03 | 5.17 | 10.36 | 41.11 | 3.61 | 55.07 | 12.95 | (19) |
| 2000 | 2.15 | 10.42 | 22.44 | 36.27 | 7.27 | 3.61 | 78.99 | 5.17 | 11.13 | 41.11 | 3.61 | 56.65 | 13.74 | (20) |
| 2001 | 2.31 | 10.39 | 23.75 | 36.27 | 7.26 | 3.61 | 81.92 | 5.17 | 11.03 | 41.11 | 3.61 | 56.65 | 14.27 | (21) |
| 2002 | 2.47 | 10.15 | 25.12 | 36.27 | 7.32 | 3.61 | 82.32 | 5.17 | 12.79 | 41.11 | 3.61 | 56.43 | 14.81 | (22) |
| 2003 | 2.65 | 10.02 | 26.58 | 36.27 | 7.34 | 3.61 | 83.80 | 5.17 | 13.72 | 41.11 | 3.61 | 56.43 | 15.36 | (23) |
| 2004 | 2.84 | 9.88 | 28.11 | 36.27 | 7.38 | 3.61 | 85.35 | 5.17 | 14.70 | 41.11 | 3.61 | 56.42 | 15.83 | (24) |
| 2005 | 3.05 | 9.75 | 29.72 | 36.27 | 7.38 | 3.61 | 87.96 | 5.17 | 15.76 | 41.11 | 3.61 | 56.48 | 16.31 | (25) |
| 2006 | 3.24 | 9.53 | 30.96 | 36.27 | 7.41 | 3.61 | 91.79 | 5.17 | 16.75 | 41.11 | 3.61 | 56.47 | 16.72 | (26) |
| 2007 | 3.44 | 9.32 | 32.10 | 36.27 | 7.44 | 3.61 | 94.84 | 5.17 | 17.61 | 41.11 | 3.61 | 56.43 | 17.08 | (27) |
| 2008 | 3.66 | 9.10 | 33.33 | 36.27 | 7.47 | 3.61 | 98.06 | 5.17 | 18.03 | 41.11 | 3.61 | 56.35 | 17.03 | (28) |
| 2009 | 3.89 | 8.89 | 34.58 | 36.27 | 7.50 | 3.61 | 101.57 | 5.17 | 20.12 | 41.11 | 3.61 | 56.11 | 17.13 | (29) |
| 2010 | 4.14 | 8.67 | 35.88 | 36.27 | 7.53 | 3.61 | 105.29 | 5.17 | 21.39 | 41.11 | 3.61 | 56.11 | 17.18 | (30) |
| 2011 | 4.39 | 8.65 | 37.70 | 36.27 | 7.53 | 3.61 | 108.12 | 5.17 | 22.55 | 41.11 | 3.61 | 56.27 | 17.85 | (31) |
| 2012 | 4.60 | 8.62 | 39.62 | 36.27 | 7.54 | 3.61 | 111.22 | 5.17 | 23.77 | 41.11 | 3.61 | 56.48 | 18.56 | (32) |
| 2013 | 4.85 | 8.60 | 41.84 | 36.27 | 7.54 | 3.61 | 114.41 | 5.17 | 25.05 | 41.11 | 3.61 | 56.77 | 19.30 | (33) |
| 2014 | 5.11 | 8.57 | 43.76 | 36.27 | 7.54 | 3.61 | 117.75 | 5.17 | 26.40 | 41.11 | 3.61 | 57.12 | 20.07 | (34) |
| 2015 | 5.39 | 8.55 | 45.90 | 36.27 | 7.55 | 3.61 | 121.27 | 5.17 | 27.83 | 41.11 | 3.61 | 57.45 | 20.88 | (35) |
| 2016 | 5.68 | 8.52 | 48.15 | 36.27 | 7.55 | 3.61 | 124.97 | 5.17 | 29.32 | 41.11 | 3.61 | 57.84 | 21.76 | (36) |
| 2017 | 5.93 | 8.50 | 50.41 | 36.27 | 7.56 | 3.61 | 128.84 | 5.17 | 30.86 | 41.11 | 3.61 | 58.28 | 22.72 | (37) |
| 2018 | 6.23 | 8.47 | 52.77 | 36.27 | 7.56 | 3.61 | 132.87 | 5.17 | 32.45 | 41.11 | 3.61 | 58.76 | 23.76 | (38) |
| 2019 | 6.54 | 8.45 | 55.25 | 36.27 | 7.56 | 3.61 | 137.06 | 5.17 | 34.09 | 41.11 | 3.61 | 59.28 | 24.87 | (39) |
| 2020 | 6.87 | 8.42 | 57.84 | 36.27 | 7.57 | 3.61 | 141.41 | 5.17 | 35.82 | 41.11 | 3.61 | 59.84 | 26.06 | (40) |
| 2021 | 7.21 | 8.42 | 60.73 | 36.27 | 7.57 | 3.61 | 145.91 | 5.17 | 37.62 | 41.11 | 3.61 | 60.43 | 27.34 | (41) |
| 2022 | 7.57 | 8.42 | 63.77 | 36.27 | 7.57 | 3.61 | 150.57 | 5.17 | 39.49 | 41.11 | 3.61 | 61.05 | 28.72 | (42) |
| 2023 | 7.96 | 8.42 | 66.96 | 36.27 | 7.57 | 3.61 | 155.41 | 5.17 | 41.41 | 41.11 | 3.61 | 61.71 | 30.20 | (43) |
| 2024 | 8.35 | 8.42 | 70.31 | 36.27 | 7.57 | 3.61 | 160.41 | 5.17 | 43.33 | 41.11 | 3.61 | 62.41 | 31.78 | (44) |
| 2025 | 8.77 | 8.42 | 73.82 | 36.27 | 7.57 | 3.61 | 165.57 | 5.17 | 45.33 | 41.11 | 3.61 | 63.15 | 33.46 | (45) |

Note 1: Average time value of Vietnamese business passengers in 1985 are estimated to be US\$1.5 per hour, which corresponds to US\$300 per month.

Note 2: Average time value of Vietnamese business passengers will increase at the same rate as GDP/capita growth rate as follows:
1985-2000 7.5% per annum
2005-2010 6.5% per annum
2015-2020 5.0% per annum
2020-2025 5.4% per annum

Note 3: The break down of the travel time is as follows. The shortening of rail travel time up to the year 2010 is based on the JICA Study on the Rehabilitation and Improvement of the Railway in Vietnam, Interim Report (I), May 1995. The further shortening up to the year 2025 is projected by the JICA Study Team.

| Year | WOP Case (hours) | | | | WP Case (hours) | | | |
|------|--------------------------|------------------------|------------------|------------|--------------------------|------------|----------------------------|-------|
| | Waiting at Train Station | Rail Travel Hanoi-Vinh | Transfer in Vinh | Air Travel | Waiting at Train Station | Air Travel | Airport Access and Waiting | Total |
| 1985 | 0.50 | 8.00 | 2.00 | 0.92 | 0.50 | 8.00 | 0.92 | 1.17 |
| 2000 | 0.50 | 6.00 | 2.00 | 0.92 | 0.50 | 6.00 | 0.92 | 1.17 |
| 2005 | 0.50 | 5.33 | 2.00 | 0.92 | 0.50 | 5.33 | 0.92 | 1.17 |
| 2010 | 0.50 | 4.26 | 2.00 | 0.92 | 0.50 | 4.26 | 0.92 | 1.17 |
| 2020 | 0.50 | 4.00 | 2.00 | 0.92 | 0.50 | 4.00 | 0.92 | 1.17 |
| 2025 | 0.50 | 4.00 | 2.00 | 0.92 | 0.50 | 4.00 | 0.92 | 1.17 |

Note 4: The economic cost of rail travel is estimated as the same as the present railfare based on the 100% cost recovery rate of VNR at present.

Note 5: This cost is assumed to be increased at 2.02% for each one hour of travel time shortening based on the above-mentioned JICA Study.

Note 6: The economic cost of domestic air transport is estimated as 135% of the present airfare for Vietnamese in consideration of VNA's cost recovery rate of 75%.

Note 7: The economic cost of airport access/egress is estimated as VND10,000 in the both WOP and WP cases.

Appendix 9.8.7 Time Saving Benefit to Vietnamese Business Passengers on Domestic Routes

Table D. Time Saving Benefit to Vietnamese Business Passengers on Hanoi - Hue Route

| Year | Time Value (US\$/hour) | Economic Cost of Travel in the WOP Case | | | Economic Cost of Travel in the WOP Case | | | Economic Cost of Travel in the WOP Case | | | Benefit per Passenger (US\$) | Incremental Passengers | Total Benefit (000 US\$) |
|------|------------------------|---|-----------------------|---------------------|---|---------------------|-----------------------|---|-----------------------|---------------------|------------------------------|------------------------|--------------------------|
| | | Time via Air (hour) | Time via Train (hour) | Time via Air (hour) | Time via Train (hour) | Time via Air (hour) | Time via Train (hour) | Time via Air (hour) | Time via Train (hour) | Time via Air (hour) | | | |
| 1995 | 1.50 | 10.50 | 15.75 | 31.44 | 7.27 | 3.61 | 7.82 | 3.61 | 36.27 | 3.61 | 11.16 | 109 | |
| 1996 | 1.61 | 10.50 | 16.83 | 31.44 | 7.27 | 3.61 | 8.19 | 3.61 | 36.27 | 3.61 | 11.16 | 109 | |
| 1997 | 1.73 | 10.50 | 18.20 | 31.44 | 7.27 | 3.61 | 8.61 | 3.61 | 36.27 | 3.61 | 11.83 | 118 | |
| 1998 | 1.86 | 10.50 | 19.57 | 31.44 | 7.27 | 3.61 | 9.07 | 3.61 | 36.27 | 3.61 | 12.54 | 128 | |
| 1999 | 2.00 | 10.50 | 21.03 | 31.44 | 7.27 | 3.61 | 9.58 | 3.61 | 36.27 | 3.61 | 13.29 | 139 | |
| 2000 | 2.15 | 10.50 | 22.61 | 31.44 | 7.27 | 3.61 | 10.14 | 3.61 | 36.27 | 3.61 | 14.11 | 151 | |
| 2001 | 2.31 | 10.37 | 23.93 | 31.44 | 7.25 | 3.61 | 11.73 | 3.61 | 36.27 | 3.61 | 14.66 | 160 | |
| 2002 | 2.47 | 10.23 | 25.32 | 31.44 | 7.32 | 3.61 | 12.57 | 3.61 | 36.27 | 3.61 | 15.23 | 170 | |
| 2003 | 2.65 | 10.10 | 26.79 | 31.44 | 7.34 | 3.61 | 13.48 | 3.61 | 36.27 | 3.61 | 15.81 | 181 | |
| 2004 | 2.84 | 9.96 | 28.34 | 31.44 | 7.36 | 3.61 | 14.45 | 3.61 | 36.27 | 3.61 | 16.41 | 193 | |
| 2005 | 3.05 | 9.83 | 29.97 | 31.44 | 7.38 | 3.61 | 15.49 | 3.61 | 36.27 | 3.61 | 17.03 | 206 | |
| 2006 | 3.24 | 9.61 | 31.76 | 31.44 | 7.41 | 3.61 | 16.46 | 3.61 | 36.27 | 3.61 | 17.27 | 218 | |
| 2007 | 3.44 | 9.40 | 33.67 | 31.44 | 7.44 | 3.61 | 17.50 | 3.61 | 36.27 | 3.61 | 17.46 | 231 | |
| 2008 | 3.66 | 9.18 | 35.62 | 31.44 | 7.47 | 3.61 | 18.60 | 3.61 | 36.27 | 3.61 | 17.66 | 245 | |
| 2009 | 3.89 | 8.97 | 34.90 | 31.44 | 7.50 | 3.61 | 19.77 | 3.61 | 36.27 | 3.61 | 17.79 | 259 | |
| 2010 | 4.14 | 8.75 | 36.21 | 31.44 | 7.53 | 3.61 | 21.02 | 3.61 | 36.27 | 3.61 | 17.88 | 274 | |
| 2011 | 4.36 | 8.73 | 38.05 | 31.44 | 7.53 | 3.61 | 22.16 | 3.61 | 36.27 | 3.61 | 18.54 | 289 | |
| 2012 | 4.60 | 8.70 | 39.99 | 31.44 | 7.54 | 3.61 | 23.35 | 3.61 | 36.27 | 3.61 | 19.34 | 305 | |
| 2013 | 4.85 | 8.65 | 42.03 | 31.44 | 7.54 | 3.61 | 24.61 | 3.61 | 36.27 | 3.61 | 20.12 | 321 | |
| 2014 | 5.11 | 8.65 | 44.17 | 31.44 | 7.54 | 3.61 | 25.94 | 3.61 | 36.27 | 3.61 | 20.94 | 338 | |
| 2015 | 5.38 | 8.63 | 46.42 | 31.44 | 7.55 | 3.61 | 27.34 | 3.61 | 36.27 | 3.61 | 21.79 | 356 | |
| 2016 | 5.65 | 8.60 | 48.80 | 31.44 | 7.55 | 3.61 | 28.71 | 3.61 | 36.27 | 3.61 | 22.61 | 375 | |
| 2017 | 5.93 | 8.56 | 50.68 | 31.44 | 7.56 | 3.61 | 30.15 | 3.61 | 36.27 | 3.61 | 23.46 | 395 | |
| 2018 | 6.23 | 8.55 | 52.27 | 31.44 | 7.56 | 3.61 | 31.65 | 3.61 | 36.27 | 3.61 | 24.34 | 416 | |
| 2019 | 6.54 | 8.53 | 55.77 | 31.44 | 7.56 | 3.61 | 33.24 | 3.61 | 36.27 | 3.61 | 25.26 | 438 | |
| 2020 | 6.87 | 8.50 | 58.39 | 31.44 | 7.57 | 3.61 | 34.90 | 3.61 | 36.27 | 3.61 | 26.22 | 462 | |
| 2021 | 7.21 | 8.50 | 61.31 | 31.44 | 7.57 | 3.61 | 36.64 | 3.61 | 36.27 | 3.61 | 27.40 | 488 | |
| 2022 | 7.57 | 8.50 | 64.38 | 31.44 | 7.57 | 3.61 | 38.47 | 3.61 | 36.27 | 3.61 | 28.63 | 516 | |
| 2023 | 7.95 | 8.50 | 67.59 | 31.44 | 7.57 | 3.61 | 40.40 | 3.61 | 36.27 | 3.61 | 29.92 | 546 | |
| 2024 | 8.35 | 8.50 | 70.97 | 31.44 | 7.57 | 3.61 | 42.42 | 3.61 | 36.27 | 3.61 | 31.29 | 578 | |
| 2025 | 8.77 | 8.50 | 74.52 | 31.44 | 7.57 | 3.61 | 44.54 | 3.61 | 36.27 | 3.61 | 32.71 | 612 | |

Note 1: Average time value of Vietnamese business passengers in 1995 are estimated to be US\$1.5 per hour, which corresponds to US\$300 per month.

Note 2: Average time value of Vietnamese business passengers will increase at the same rate as GDP/capita growth rate as follows.

1995-2000 7.5% per annum 2005-2010 6.3% per annum 2015-2020 5.0% per annum
 2000-2005 7.2% per annum 2010-2015 5.4% per annum 2020-2025 5.0% per annum

Note 3: The break down of the travel time is as follows: The shortening of all travel time up to the year 2010 is based on the JICA Study on the Rehabilitation and Improvement of the Railway in Vietnam, Interim Report (I), May 1995. The further shortening up to the year 2025 is projected by the JICA Study Team.

| Year | WOP Case (hours) | | | WOP Case (hours) | | | Total |
|------|--------------------------|------------------------|------------------|------------------|--------------------------|-----------------|-------|
| | Waiting at Train Station | Rail Travel Hanoi-Vinh | Transfer in Vinh | Air Travel | Airport Acc. and Waiting | Airport Express | |
| 1995 | 0.50 | 6.00 | 2.00 | 1.00 | 1.00 | 1.00 | 5.00 |
| 2000 | 0.50 | 6.00 | 2.00 | 1.00 | 1.00 | 1.00 | 5.00 |
| 2005 | 0.50 | 5.33 | 2.00 | 1.00 | 1.00 | 1.00 | 5.00 |
| 2010 | 0.50 | 4.25 | 2.00 | 1.00 | 1.00 | 1.00 | 5.00 |
| 2020 | 0.50 | 4.00 | 2.00 | 1.00 | 1.00 | 1.00 | 5.00 |
| 2025 | 0.50 | 4.00 | 2.00 | 1.00 | 1.00 | 1.00 | 5.00 |

Note 4: The economic cost of rail travel is estimated as the same as the present railfare based on the 100% cost recovery rate of VNR at present.

Note 5: This cost is assumed to be increased at 2.00% for each one hour of travel time shortening based on the above-mentioned JICA Study.

Note 6: The economic cost of domestic air transport is estimated as 133% of the present airfare for Vietnamese in consideration of VNA's cost recovery rate of 75%.

Note 7: The economic cost of domestic passenger service charge at the airport is estimated as US\$2.7.

Note 8: The economic cost of airport access/egress is estimated as VND10,000 in the both WOP and WP cases.

Appendix 9.8.7 Time Saving Benefit to Vietnamese Business Passengers on Domestic Routes
Table E: Time Saving Benefit to Vietnamese Business Passengers on Hanoi - Nha Trang Route

| Year | Time Value (US\$/hour) | Economic Cost of Travel in the WOP Case | | | Economic Cost of Travel in the WIP Case | | | Benefit per Passenger (US\$) | Total Benefit (000 US\$) |
|------|------------------------|---|------------------------|--------------------------|---|-----------------------|------------------------|------------------------------|--------------------------|
| | | Time via Vinh (hour) | Air Travel Cost (US\$) | Train Travel Cost (US\$) | Time by Direct Air Travel (hour) | Cost of Travel (US\$) | Air Travel Cost (US\$) | | |
| 1995 | 1.50 | 10.75 | 18.73 | 59.25 | 7.27 | 3.61 | 64.08 | 10.31 | 117 |
| 1996 | 1.61 | 10.75 | 17.53 | 59.25 | 7.27 | 3.61 | 64.08 | 10.31 | 117 |
| 1997 | 1.73 | 10.75 | 16.63 | 59.25 | 7.27 | 3.61 | 64.08 | 10.31 | 117 |
| 1998 | 1.86 | 10.75 | 20.03 | 59.25 | 7.27 | 3.61 | 64.08 | 10.31 | 117 |
| 1999 | 2.00 | 10.75 | 21.53 | 59.25 | 7.27 | 3.61 | 64.08 | 10.31 | 117 |
| 2000 | 2.15 | 10.75 | 23.15 | 59.25 | 7.27 | 3.61 | 64.08 | 10.31 | 117 |
| 2001 | 2.31 | 10.62 | 24.51 | 59.25 | 7.27 | 3.61 | 64.08 | 10.31 | 117 |
| 2002 | 2.47 | 10.48 | 25.94 | 59.25 | 7.32 | 3.61 | 64.08 | 10.31 | 117 |
| 2003 | 2.65 | 10.35 | 27.45 | 59.25 | 7.34 | 3.61 | 64.08 | 10.31 | 117 |
| 2004 | 2.84 | 10.21 | 30.05 | 59.25 | 7.36 | 3.61 | 64.08 | 10.31 | 117 |
| 2005 | 3.05 | 10.08 | 30.73 | 59.25 | 7.38 | 3.61 | 64.08 | 10.31 | 117 |
| 2006 | 3.24 | 8.88 | 31.97 | 59.25 | 7.41 | 3.61 | 64.08 | 10.31 | 117 |
| 2007 | 3.44 | 8.66 | 33.24 | 59.25 | 7.44 | 3.61 | 64.08 | 10.31 | 117 |
| 2008 | 3.66 | 8.43 | 34.54 | 59.25 | 7.47 | 3.61 | 64.08 | 10.31 | 117 |
| 2009 | 3.89 | 8.22 | 35.87 | 59.25 | 7.50 | 3.61 | 64.08 | 10.31 | 117 |
| 2010 | 4.14 | 8.00 | 37.24 | 59.25 | 7.53 | 3.61 | 64.08 | 10.31 | 117 |
| 2011 | 4.36 | 8.08 | 38.14 | 59.25 | 7.53 | 3.61 | 64.08 | 10.31 | 117 |
| 2012 | 4.60 | 8.85 | 40.03 | 59.25 | 7.56 | 3.61 | 64.08 | 10.31 | 117 |
| 2013 | 4.85 | 8.93 | 43.24 | 59.25 | 7.54 | 3.61 | 64.08 | 10.31 | 117 |
| 2014 | 5.11 | 8.00 | 45.45 | 59.25 | 7.54 | 3.61 | 64.08 | 10.31 | 117 |
| 2015 | 5.38 | 8.88 | 47.77 | 59.25 | 7.56 | 3.61 | 64.08 | 10.31 | 117 |
| 2016 | 5.65 | 8.85 | 50.03 | 59.25 | 7.58 | 3.61 | 64.08 | 10.31 | 117 |
| 2017 | 5.93 | 8.63 | 52.37 | 59.25 | 7.56 | 3.61 | 64.08 | 10.31 | 117 |
| 2018 | 6.23 | 8.80 | 54.83 | 59.25 | 7.56 | 3.61 | 64.08 | 10.31 | 117 |
| 2019 | 6.54 | 8.78 | 57.41 | 59.25 | 7.56 | 3.61 | 64.08 | 10.31 | 117 |
| 2020 | 6.87 | 8.75 | 60.11 | 59.25 | 7.57 | 3.61 | 64.08 | 10.31 | 117 |
| 2021 | 7.21 | 8.75 | 63.11 | 59.25 | 7.57 | 3.61 | 64.08 | 10.31 | 117 |
| 2022 | 7.57 | 8.75 | 66.27 | 59.25 | 7.57 | 3.61 | 64.08 | 10.31 | 117 |
| 2023 | 7.96 | 8.75 | 69.58 | 59.25 | 7.57 | 3.61 | 64.08 | 10.31 | 117 |
| 2024 | 8.35 | 8.75 | 73.06 | 59.25 | 7.57 | 3.61 | 64.08 | 10.31 | 117 |
| 2025 | 8.77 | 8.75 | 76.71 | 59.25 | 7.57 | 3.61 | 64.08 | 10.31 | 117 |

Note 1: Average time value of Vietnamese business passengers in 1995 are estimated to be US\$1.5 per hour, which corresponds to US\$300 per month.
 Note 2: Average time value of Vietnamese business passengers will increase at the same rate as GDP/capita growth rate as follows:
 1995-2000 7.5% per annum 2005-2010 8.3% per annum 2015-2020 5.0% per annum
 2000-2005 7.2% per annum 2010-2015 5.4% per annum 2020-2025 5.0% per annum
 Note 3: The break down of the travel time is as follows: The shortening of rail travel time up to the year 2010 is based on the JICA Study on the Rehabilitation and Improvement of the Railway in Vietnam, Interim Report (1), May 1995. The further shortening up to the year 2025 is projected by the JICA Study Team.
 Note 4: The economic cost of rail travel is estimated as the same as the present railfare based on the 100% cost recovery rate of VNR at present.
 Note 5: This cost is assumed to be increased at 2.02% for each one hour of travel time shortening based on the above-mentioned JICA Study.
 Note 6: The economic cost of domestic air transport is estimated as 133% of the present airfare for Vietnamese in consideration of VNA's cost recovery rate of 75%.
 Note 7: The economic cost of domestic passenger service charge at the airport is estimated as US\$2.7.
 Note 8: The economic cost of airport access/egress is estimated as VND10,000 in the both WOP and WIP cases.

| Year | WOP Case (hours) | | | WIP Case (hours) | | |
|------|--------------------------|--------------------------|------------------|------------------------|-------------------|-------|
| | Waiting at Train Station | Rail Travel Hanoi - Vinh | Transfer in Vinh | Air Travel and Waiting | Air Travel Egress | Total |
| 1995 | 0.50 | 6.00 | 2.00 | 1.25 | 1.00 | 10.75 |
| 2000 | 0.50 | 6.00 | 2.00 | 1.25 | 1.00 | 10.75 |
| 2005 | 0.50 | 5.33 | 2.00 | 1.25 | 1.00 | 10.08 |
| 2010 | 0.50 | 4.25 | 2.00 | 1.25 | 1.00 | 9.00 |
| 2020 | 0.50 | 4.00 | 2.00 | 1.25 | 1.00 | 8.75 |
| 2025 | 0.50 | 4.00 | 2.00 | 1.25 | 1.00 | 8.75 |

Table F Summary: Time Saving Benefit to Vietnamese Business Passengers on Domestic Routes

Unit: '000 US\$

| Year | Hanoi - HCMC | Hanoi - Da nang | Hanoi - Hue | Hanoi - Nha Trang | Total |
|------|--------------|-----------------|-------------|-------------------|--------|
| 1995 | | | | | |
| 1996 | | | | | |
| 1997 | | | | | |
| 1998 | | | | | |
| 1999 | | | | | |
| 2000 | | | | | |
| 2001 | | | | | |
| 2002 | | | | | |
| 2003 | | | | | |
| 2004 | | | | | |
| 2005 | | | | | |
| 2006 | 1,392 | 1,274 | 109 | 39 | 2,815 |
| 2007 | 2,964 | 2,754 | 218 | 117 | 6,054 |
| 2008 | 4,744 | 4,522 | 326 | 156 | 9,748 |
| 2009 | 6,739 | 6,536 | 472 | 195 | 13,943 |
| 2010 | 8,941 | 8,890 | 580 | 235 | 18,636 |
| 2011 | 11,334 | 10,976 | 689 | 313 | 23,312 |
| 2012 | 14,089 | 13,319 | 798 | 352 | 28,558 |
| 2013 | 17,276 | 15,868 | 907 | 391 | 34,441 |
| 2014 | 20,936 | 18,746 | 1,052 | 469 | 41,203 |
| 2015 | 25,136 | 21,911 | 1,161 | 508 | 48,716 |
| 2016 | 29,330 | 24,624 | 1,306 | 586 | 55,847 |
| 2017 | 34,028 | 27,502 | 1,451 | 625 | 63,606 |
| 2018 | 39,294 | 30,544 | 1,632 | 704 | 72,174 |
| 2019 | 40,840 | 30,544 | 1,632 | 704 | 73,720 |
| 2020 | 42,447 | 30,544 | 1,632 | 704 | 75,327 |
| 2021 | 44,434 | 30,544 | 1,632 | 704 | 77,314 |
| 2022 | 46,521 | 30,544 | 1,632 | 704 | 79,401 |
| 2023 | 48,711 | 30,544 | 1,632 | 704 | 81,591 |
| 2024 | 51,012 | 30,544 | 1,632 | 704 | 83,892 |
| 2025 | 53,427 | 30,544 | 1,632 | 704 | 86,307 |

Appendix 9.8.8 Time Saving Benefit to Foreign Business Passengers on Domestic Routes

Table A Incremental Foreign Business Passengers on Domestic Routes

| Year | Percentage Foreigners | Percentage Business | Hanoi - HCMC | Hanoi - Danang | Hanoi - Hue | Hanoi - Nha Trang | Hanoi - Others | Total |
|------|-----------------------|---------------------|--------------|----------------|-------------|-------------------|----------------|---------|
| 1995 | 42% | 59% | | | | | | |
| 1996 | 41% | 59% | | | | | | |
| 1997 | 40% | 59% | | | | | | |
| 1998 | 39% | 59% | | | | | | |
| 1999 | 38% | 59% | | | | | | |
| 2000 | 37% | 59% | | | | | | |
| 2001 | 35% | 59% | | | | | | |
| 2002 | 34% | 59% | | | | | | |
| 2003 | 33% | 59% | | | | | | |
| 2004 | 32% | 59% | | | | | | |
| 2005 | 31% | 59% | | | | | | |
| 2006 | 30% | 59% | 37,000 | 13,000 | 1,000 | 1,000 | 1,000 | 53,000 |
| 2007 | 29% | 59% | 75,000 | 26,000 | 2,000 | 1,000 | 1,000 | 106,000 |
| 2008 | 28% | 59% | 112,000 | 41,000 | 3,000 | 1,000 | 1,000 | 159,000 |
| 2009 | 27% | 59% | 149,000 | 56,000 | 4,000 | 2,000 | 2,000 | 213,000 |
| 2010 | 26% | 59% | 185,000 | 72,000 | 5,000 | 2,000 | 2,000 | 267,000 |
| 2011 | 24% | 59% | 213,000 | 83,000 | 6,000 | 2,000 | 3,000 | 307,000 |
| 2012 | 23% | 59% | 239,000 | 95,000 | 6,000 | 3,000 | 3,000 | 346,000 |
| 2013 | 22% | 59% | 264,000 | 107,000 | 7,000 | 3,000 | 3,000 | 383,000 |
| 2014 | 21% | 59% | 287,000 | 118,000 | 7,000 | 3,000 | 3,000 | 419,000 |
| 2015 | 20% | 59% | 309,000 | 129,000 | 8,000 | 3,000 | 3,000 | 452,000 |
| 2016 | 20% | 59% | 347,000 | 145,000 | 9,000 | 4,000 | 4,000 | 508,000 |
| 2017 | 20% | 59% | 387,000 | 162,000 | 10,000 | 4,000 | 4,000 | 567,000 |
| 2018 | 20% | 59% | 430,000 | 180,000 | 11,000 | 4,000 | 5,000 | 630,000 |
| 2019 | 20% | 59% | 430,000 | 180,000 | 11,000 | 4,000 | 5,000 | 630,000 |
| 2020 | 20% | 59% | 430,000 | 180,000 | 11,000 | 4,000 | 5,000 | 630,000 |
| 2021 | 20% | 59% | 430,000 | 190,000 | 11,000 | 4,000 | 5,000 | 630,000 |
| 2022 | 20% | 59% | 430,000 | 180,000 | 11,000 | 4,000 | 5,000 | 630,000 |
| 2023 | 20% | 59% | 430,000 | 180,000 | 11,000 | 4,000 | 5,000 | 630,000 |
| 2024 | 20% | 59% | 430,000 | 180,000 | 11,000 | 4,000 | 5,000 | 630,000 |
| 2025 | 20% | 59% | 430,000 | 180,000 | 11,000 | 4,000 | 5,000 | 630,000 |

Note 1: The percentage of foreigner is forecasted to decrease from the present 42% to 20% by the year 2015 in the course of economic development as experienced in other developing countries in Asia. This rate is assumed to be maintained after the year 2015.

Note 2: The percentage of business passengers within foreign passengers on domestic routes is assumed to remain at 59% based on the traffic survey conducted at Noi Bai Airport in May 1995 by the JICA Study Team.

Table B Time Saving Benefit to Foreign Business Passengers on Hanoi - Ho Chi Minh Route

| Year | Time Value (US\$/hour) | Economic Cost of Travel in the WOP Case | | | | Economic Cost of Travel in the WIP Case | | | | Benefit per Passenger (US\$) | Contribution to Vietnamese Economy (US\$) | Incremental Passengers | Total Benefit (1000 US\$) |
|------|------------------------|---|----------------------------|------------------------|----------------------------------|---|----------------------------|------------------------|----------------------------------|------------------------------|---|------------------------|---------------------------|
| | | Time via Vinh Airport (hour) | Time via Hanoi-Vinh (hour) | Air Travel Cost (US\$) | Time by Direct Air Travel (hour) | Time via Vinh Airport (hour) | Time via Hanoi-Vinh (hour) | Air Travel Cost (US\$) | Time by Direct Air Travel (hour) | | | | |
| 1995 | 20.00 | 11.25 | 225.00 | 78.59 | 7.27 | 314.47 | 3.61 | 120.00 | 6.00 | 208.25 | 108.25 | 10.02 | 1000 |
| 1998 | 20.20 | 11.25 | 227.25 | 78.59 | 7.27 | 316.72 | 3.61 | 121.20 | 6.00 | 209.45 | 107.26 | 10.73 | 1073 |
| 1997 | 20.40 | 11.25 | 229.52 | 78.59 | 7.27 | 319.00 | 3.61 | 122.41 | 6.00 | 210.66 | 106.34 | 10.83 | 1083 |
| 1998 | 20.61 | 11.25 | 231.82 | 78.59 | 7.27 | 321.29 | 3.61 | 123.64 | 6.00 | 211.88 | 105.41 | 10.94 | 1094 |
| 1999 | 20.81 | 11.25 | 234.14 | 78.59 | 7.27 | 323.61 | 3.61 | 124.87 | 6.00 | 213.12 | 104.49 | 11.06 | 1106 |
| 2000 | 21.02 | 11.25 | 236.49 | 78.59 | 7.27 | 325.95 | 3.61 | 126.12 | 6.00 | 214.37 | 103.56 | 11.19 | 1119 |
| 2001 | 21.23 | 11.10 | 235.66 | 78.59 | 7.20 | 325.15 | 3.61 | 127.39 | 6.00 | 215.63 | 102.63 | 10.95 | 1095 |
| 2002 | 21.44 | 10.95 | 234.80 | 78.59 | 7.32 | 324.31 | 3.61 | 128.66 | 6.00 | 216.90 | 101.71 | 10.74 | 1074 |
| 2003 | 21.66 | 10.80 | 233.90 | 78.59 | 7.34 | 323.44 | 3.61 | 129.94 | 6.00 | 218.19 | 100.79 | 10.52 | 1052 |
| 2004 | 21.87 | 10.65 | 232.95 | 78.59 | 7.36 | 322.55 | 3.61 | 131.24 | 6.00 | 219.49 | 99.87 | 10.30 | 1030 |
| 2005 | 22.09 | 10.50 | 231.97 | 78.59 | 7.38 | 321.65 | 3.61 | 132.55 | 6.00 | 220.80 | 98.95 | 10.08 | 1008 |
| 2006 | 22.31 | 10.35 | 230.93 | 78.59 | 7.41 | 320.73 | 3.61 | 133.88 | 6.00 | 222.13 | 98.03 | 9.87 | 987 |
| 2007 | 22.54 | 10.10 | 229.62 | 78.59 | 7.44 | 319.79 | 3.61 | 135.22 | 6.00 | 223.48 | 97.11 | 9.66 | 966 |
| 2008 | 22.76 | 9.90 | 228.34 | 78.59 | 7.47 | 318.84 | 3.61 | 136.57 | 6.00 | 224.82 | 96.20 | 9.45 | 945 |
| 2009 | 22.99 | 9.70 | 227.00 | 78.59 | 7.50 | 317.87 | 3.61 | 137.94 | 6.00 | 226.16 | 95.29 | 9.24 | 924 |
| 2010 | 23.22 | 9.50 | 225.58 | 78.59 | 7.53 | 316.89 | 3.61 | 139.32 | 6.00 | 227.50 | 94.38 | 9.03 | 903 |
| 2011 | 23.45 | 9.45 | 224.20 | 78.59 | 7.55 | 315.94 | 3.61 | 140.71 | 6.00 | 228.85 | 93.47 | 8.82 | 882 |
| 2012 | 23.68 | 9.45 | 223.83 | 78.59 | 7.54 | 315.01 | 3.61 | 142.12 | 6.00 | 230.20 | 92.56 | 8.61 | 861 |
| 2013 | 23.92 | 9.43 | 223.47 | 78.59 | 7.54 | 314.11 | 3.61 | 143.54 | 6.00 | 231.56 | 91.65 | 8.40 | 840 |
| 2014 | 24.16 | 9.40 | 223.12 | 78.59 | 7.54 | 313.22 | 3.61 | 144.97 | 6.00 | 232.92 | 90.74 | 8.19 | 819 |
| 2015 | 24.40 | 9.38 | 222.79 | 78.59 | 7.55 | 312.33 | 3.61 | 146.42 | 6.00 | 234.27 | 89.83 | 7.98 | 798 |
| 2016 | 24.65 | 9.35 | 222.46 | 78.59 | 7.55 | 311.44 | 3.61 | 147.89 | 6.00 | 235.63 | 88.92 | 7.77 | 777 |
| 2017 | 24.90 | 9.33 | 222.14 | 78.59 | 7.56 | 310.55 | 3.61 | 149.37 | 6.00 | 237.00 | 88.01 | 7.56 | 756 |
| 2018 | 25.14 | 9.30 | 221.83 | 78.59 | 7.56 | 309.66 | 3.61 | 150.86 | 6.00 | 238.37 | 87.10 | 7.35 | 735 |
| 2019 | 25.39 | 9.28 | 221.54 | 78.59 | 7.56 | 308.77 | 3.61 | 152.37 | 6.00 | 239.74 | 86.19 | 7.14 | 714 |
| 2020 | 25.65 | 9.25 | 221.25 | 78.59 | 7.57 | 307.87 | 3.61 | 153.89 | 6.00 | 241.12 | 85.28 | 6.93 | 693 |
| 2021 | 25.91 | 9.25 | 220.92 | 78.59 | 7.57 | 307.00 | 3.61 | 155.43 | 6.00 | 242.50 | 84.37 | 6.72 | 672 |
| 2022 | 26.16 | 9.25 | 220.62 | 78.59 | 7.57 | 306.13 | 3.61 | 156.99 | 6.00 | 243.88 | 83.46 | 6.51 | 651 |
| 2023 | 26.43 | 9.25 | 220.34 | 78.59 | 7.57 | 305.26 | 3.61 | 158.56 | 6.00 | 245.26 | 82.55 | 6.30 | 630 |
| 2024 | 26.69 | 9.25 | 220.08 | 78.59 | 7.57 | 304.41 | 3.61 | 160.14 | 6.00 | 246.64 | 81.64 | 6.09 | 609 |
| 2025 | 26.96 | 9.25 | 219.83 | 78.59 | 7.57 | 303.56 | 3.61 | 161.74 | 6.00 | 248.02 | 80.73 | 5.88 | 588 |

Note 1: Average time value of foreign business passengers in 1995 is estimated as US\$20 per hour.

Note 2: Average time value of foreign business passengers is assumed to increase at 1% per annum.

Note 3: The break down of the travel time is as follows. The shortening of rail travel time up to the year 2020 is based on the JICA Study on the Rehabilitation and Improvement of the Railway in Vietnam, Interim Report (I), May 1995. The further shortening up to the year 2025 is projected by the JICA Study Team.

| Year | WOP Case (hours) | | | | WIP Case (hours) | | | |
|------|--------------------------|------------------------|------------------|------------|--------------------------|------------|------------------|------------|
| | Waiting at Train Station | Rail Travel Hanoi-Vinh | Transfer in Vinh | Air Travel | Waiting at Train Station | Air Travel | Transfer in Vinh | Air Travel |
| 1995 | 0.50 | 6.00 | 2.00 | 1.75 | 0.50 | 3.00 | 1.00 | 2.00 |
| 2000 | 0.50 | 6.00 | 2.00 | 1.75 | 0.50 | 3.00 | 1.00 | 2.00 |
| 2005 | 0.50 | 5.33 | 2.00 | 1.75 | 0.50 | 3.00 | 1.00 | 2.00 |
| 2010 | 0.50 | 4.25 | 2.00 | 1.75 | 0.50 | 3.00 | 1.00 | 2.00 |
| 2020 | 0.50 | 4.00 | 2.00 | 1.75 | 0.50 | 3.00 | 1.00 | 2.00 |
| 2025 | 0.50 | 4.00 | 2.00 | 1.75 | 0.50 | 3.00 | 1.00 | 2.00 |

Note 4: The economic cost of rail travel is estimated as the same as the present railfare based on the 100% cost recovery rate of VNR at present.

Note 5: This cost is assumed to be increased at 2.05% for each one hour of travel time shortening based on the above-mentioned JICA Study.

Note 6: The economic cost of domestic air transport is estimated as 133% of the present airfare for Vietnamese in consideration of VNA's cost recovery rate of 75%.

Note 7: The economic cost of airport access/egress is estimated as VND10,000 in the both WOP and WIP cases.

Note 8: 10% of the benefits attributing to foreign business passengers are assumed to contribute to Vietnamese economy through reduced costs of joint ventures.

Appendix 3.8.6 Time Saving Benefit to Foreign Business Passengers on Domestic Routes
Table C. Time Saving Benefit to Foreign Business Passengers on Hanoi - Danang Route

| Year | Time Value (US\$/hour) | Economic Cost of Travel in the WOP Case | | | Economic Cost of Travel in the WP Case | | | Benefit per Passenger (US\$) | Contribution to Vietnamese Economy (US\$) | Incremental Passengers | Total Benefit (000 US\$) | |
|------|------------------------|---|------------------------|---------------------------------------|--|--------------------------|---------------------------------------|------------------------------|---|------------------------|--------------------------|---------------------|
| | | Time via Air (hour) | Air Travel Cost (US\$) | Airport Charge and Access Cost (US\$) | Time via Train (hour) | Train Travel Cost (US\$) | Airport Charge and Access Cost (US\$) | | | | | Time via Air (hour) |
| 1995 | 20.00 | 10.42 | 36.27 | 7.27 | 3.61 | 255.55 | 10.42 | 41.11 | 3.61 | 148.12 | 107.44 | 10.74 |
| 1996 | 20.20 | 10.42 | 36.27 | 7.27 | 3.61 | 257.84 | 10.43 | 41.11 | 3.61 | 149.15 | 108.49 | 10.85 |
| 1997 | 20.40 | 10.42 | 36.27 | 7.27 | 3.61 | 259.74 | 10.43 | 41.11 | 3.61 | 150.20 | 109.55 | 10.95 |
| 1998 | 20.61 | 10.42 | 36.27 | 7.27 | 3.61 | 261.87 | 10.43 | 41.11 | 3.61 | 151.25 | 110.62 | 11.08 |
| 1999 | 20.81 | 10.42 | 36.27 | 7.27 | 3.61 | 264.02 | 10.43 | 41.11 | 3.61 | 152.32 | 111.70 | 11.17 |
| 2000 | 21.02 | 10.42 | 36.27 | 7.27 | 3.61 | 266.19 | 10.43 | 41.11 | 3.61 | 153.39 | 112.79 | 11.26 |
| 2001 | 21.23 | 10.29 | 36.27 | 7.29 | 3.61 | 268.35 | 10.29 | 41.11 | 3.61 | 154.43 | 113.07 | 11.11 |
| 2002 | 21.44 | 10.15 | 36.27 | 7.32 | 3.61 | 270.68 | 10.15 | 41.11 | 3.61 | 155.56 | 109.31 | 10.93 |
| 2003 | 21.65 | 10.02 | 36.27 | 7.34 | 3.61 | 273.18 | 10.02 | 41.11 | 3.61 | 156.69 | 107.50 | 10.75 |
| 2004 | 21.87 | 9.88 | 36.27 | 7.36 | 3.61 | 275.44 | 9.88 | 41.11 | 3.61 | 157.81 | 105.64 | 10.56 |
| 2005 | 22.09 | 9.75 | 36.27 | 7.36 | 3.61 | 282.07 | 9.75 | 41.11 | 3.61 | 158.94 | 103.73 | 10.37 |
| 2006 | 22.31 | 9.63 | 36.27 | 7.41 | 3.61 | 288.03 | 9.63 | 41.11 | 3.61 | 160.08 | 101.80 | 10.19 |
| 2007 | 22.54 | 9.52 | 36.27 | 7.44 | 3.61 | 293.32 | 9.52 | 41.11 | 3.61 | 161.23 | 99.90 | 9.91 |
| 2008 | 22.78 | 9.40 | 36.27 | 7.47 | 3.61 | 298.53 | 9.40 | 41.11 | 3.61 | 162.40 | 97.13 | 9.71 |
| 2009 | 22.99 | 9.29 | 36.27 | 7.50 | 3.61 | 303.67 | 9.29 | 41.11 | 3.61 | 163.57 | 94.50 | 9.49 |
| 2010 | 23.22 | 9.17 | 36.27 | 7.53 | 3.61 | 308.72 | 9.17 | 41.11 | 3.61 | 164.76 | 91.98 | 9.26 |
| 2011 | 23.45 | 9.06 | 36.27 | 7.53 | 3.61 | 313.75 | 9.06 | 41.11 | 3.61 | 165.96 | 89.59 | 9.03 |
| 2012 | 23.69 | 8.92 | 36.27 | 7.54 | 3.61 | 318.76 | 8.92 | 41.11 | 3.61 | 167.16 | 87.32 | 8.78 |
| 2013 | 23.92 | 8.80 | 36.27 | 7.54 | 3.61 | 323.04 | 8.80 | 41.11 | 3.61 | 168.34 | 85.16 | 8.54 |
| 2014 | 24.16 | 8.67 | 36.27 | 7.54 | 3.61 | 327.50 | 8.67 | 41.11 | 3.61 | 169.54 | 83.10 | 8.30 |
| 2015 | 24.40 | 8.55 | 36.27 | 7.55 | 3.61 | 332.06 | 8.55 | 41.11 | 3.61 | 170.76 | 81.13 | 8.09 |
| 2016 | 24.65 | 8.42 | 36.27 | 7.55 | 3.61 | 336.57 | 8.42 | 41.11 | 3.61 | 172.00 | 79.34 | 7.89 |
| 2017 | 24.90 | 8.30 | 36.27 | 7.56 | 3.61 | 341.03 | 8.30 | 41.11 | 3.61 | 173.25 | 77.71 | 7.70 |
| 2018 | 25.14 | 8.17 | 36.27 | 7.56 | 3.61 | 345.44 | 8.17 | 41.11 | 3.61 | 174.51 | 76.23 | 7.53 |
| 2019 | 25.39 | 8.05 | 36.27 | 7.56 | 3.61 | 349.80 | 8.05 | 41.11 | 3.61 | 175.77 | 74.89 | 7.38 |
| 2020 | 25.65 | 7.92 | 36.27 | 7.57 | 3.61 | 354.11 | 7.92 | 41.11 | 3.61 | 177.04 | 73.68 | 7.24 |
| 2021 | 25.91 | 7.80 | 36.27 | 7.57 | 3.61 | 358.37 | 7.80 | 41.11 | 3.61 | 178.32 | 72.58 | 7.11 |
| 2022 | 26.16 | 7.68 | 36.27 | 7.57 | 3.61 | 362.57 | 7.68 | 41.11 | 3.61 | 179.61 | 71.58 | 7.00 |
| 2023 | 26.43 | 7.56 | 36.27 | 7.57 | 3.61 | 366.72 | 7.56 | 41.11 | 3.61 | 180.91 | 70.67 | 6.90 |
| 2024 | 26.69 | 7.44 | 36.27 | 7.57 | 3.61 | 370.82 | 7.44 | 41.11 | 3.61 | 182.21 | 69.84 | 6.81 |
| 2025 | 26.95 | 7.32 | 36.27 | 7.57 | 3.61 | 374.83 | 7.32 | 41.11 | 3.61 | 183.51 | 69.09 | 6.73 |

Note 1: Average time value of foreign business passengers in 1995 is estimated as US\$30 per hour.
Note 2: Average time value of foreign business passengers is assumed to increase at 1% per annum.
Note 3: The break down of the travel time is as follows. The shortening of rail travel time up to the year 2020 is based on the JICA Study on the Rehabilitation and Improvement of the Railway in Vietnam, Interim Report (I), May 1995. The further shortening up to the year 2025 is projected by the JICA Study Team.

| Year | WOP Case (hours) | | | | WP Case (hours) | | | |
|------|--------------------------|------------------------|------------------|------------|--------------------------|------------|----------------|-------|
| | Waiting at Train Station | Rail Travel Hanoi-Vinh | Transfer in Vinh | Air Travel | Airport Acc. and Waiting | Air Travel | Airport Egress | Total |
| 1995 | 0.50 | 6.00 | 2.00 | 0.92 | 3.00 | 1.17 | 1.00 | 5.17 |
| 2000 | 0.50 | 6.00 | 2.00 | 0.92 | 3.00 | 1.17 | 1.00 | 5.17 |
| 2005 | 0.50 | 5.33 | 2.00 | 0.92 | 3.00 | 1.17 | 1.00 | 5.17 |
| 2010 | 0.50 | 4.25 | 2.00 | 0.92 | 3.00 | 1.17 | 1.00 | 5.17 |
| 2020 | 0.50 | 4.00 | 2.00 | 0.92 | 3.00 | 1.17 | 1.00 | 5.17 |
| 2025 | 0.50 | 4.00 | 2.00 | 0.92 | 3.00 | 1.17 | 1.00 | 5.17 |

Note 4: The economic cost of rail travel is estimated as the same as the present railfare based on the 100% cost recovery rate of VNR at present.
This cost is assumed to be increased at 2.0% for each one hour of travel time shortening based on the above-mentioned JICA Study.

Note 5: The economic cost of domestic air transport is estimated as 133% of the present airfare for Vietnamese in consideration of VNA's cost recovery rate of 75%.

Note 6: The economic cost of domestic passenger service charge at the airport is estimated as VND10,000 in the both WOP and WP cases.

Note 7: The economic cost of airport access/egress is estimated as VND10,000 in the both WOP and WP cases.

Note 8: 10% of the benefits attributing to foreign business passengers are assumed to contribute to Vietnamese economy through reduced costs of joint ventures.

Table D Time Saving Benefit to Foreign Business Passengers on Hanoi - Hue Route

| Year | Time Value (US\$/hour) | Economic Cost of Travel in the WCP Case | | | | Economic Cost of Travel in the VCP Case | | | | Benefit per Passenger (US\$) | Contribution to Vietnamese Economy (US\$) | Incremental Passengers | Total Benefit (1000 US\$) |
|------|------------------------|---|-------------------------------|------------------------|--------------------------|---|---------------------------|------------------------|--------------------------|------------------------------|---|------------------------|---------------------------|
| | | Time via Vinh Airport (hour) | Time via Hanoi Airport (hour) | Air Travel Cost (US\$) | Train Travel Cost (US\$) | Time by Direct Air Travel (hour) | Time by Air Travel (hour) | Air Travel Cost (US\$) | Train Travel Cost (US\$) | | | | |
| 1995 | 20.30 | 10.50 | 10.50 | 31.44 | 7.27 | 252.32 | 3.61 | 36.27 | 141.48 | 110.84 | 11.08 | 15 | (18) = (14) x (15) |
| 1996 | 20.30 | 10.50 | 10.50 | 31.44 | 7.27 | 254.42 | 3.61 | 36.27 | 142.50 | 111.92 | 11.10 | 15 | |
| 1997 | 20.40 | 10.50 | 10.50 | 31.44 | 7.27 | 256.54 | 3.61 | 36.27 | 143.52 | 113.02 | 11.30 | 15 | |
| 1998 | 20.61 | 10.50 | 10.50 | 31.44 | 7.27 | 258.65 | 3.61 | 36.27 | 144.56 | 114.12 | 11.41 | 15 | |
| 1999 | 20.81 | 10.50 | 10.50 | 31.44 | 7.27 | 260.85 | 3.61 | 36.27 | 145.73 | 115.24 | 11.52 | 15 | |
| 2000 | 21.02 | 10.50 | 10.50 | 31.44 | 7.27 | 263.03 | 3.61 | 36.27 | 146.95 | 116.37 | 11.64 | 15 | |
| 2001 | 21.23 | 10.37 | 10.37 | 31.44 | 7.26 | 262.41 | 3.61 | 36.27 | 147.73 | 114.58 | 11.47 | 15 | |
| 2002 | 21.44 | 10.23 | 10.23 | 31.44 | 7.32 | 261.76 | 3.61 | 36.27 | 148.81 | 112.95 | 11.30 | 15 | |
| 2003 | 21.66 | 10.10 | 10.10 | 31.44 | 7.34 | 261.08 | 3.61 | 36.27 | 149.90 | 111.78 | 11.12 | 15 | |
| 2004 | 21.87 | 9.96 | 9.96 | 31.44 | 7.36 | 260.36 | 3.61 | 36.27 | 151.00 | 109.36 | 10.94 | 15 | |
| 2005 | 22.09 | 9.83 | 9.83 | 31.44 | 7.35 | 259.60 | 3.61 | 36.27 | 152.11 | 107.49 | 10.75 | 15 | |
| 2006 | 22.31 | 9.61 | 9.61 | 31.44 | 7.41 | 258.08 | 3.61 | 36.27 | 153.23 | 103.74 | 10.37 | 15 | |
| 2007 | 22.54 | 9.40 | 9.40 | 31.44 | 7.44 | 256.79 | 3.61 | 36.27 | 154.37 | 99.92 | 9.99 | 15 | |
| 2008 | 22.76 | 9.18 | 9.18 | 31.44 | 7.47 | 255.52 | 3.61 | 36.27 | 155.51 | 96.00 | 9.60 | 15 | |
| 2009 | 22.99 | 8.97 | 8.97 | 31.44 | 7.50 | 254.27 | 3.61 | 36.27 | 156.67 | 92.00 | 9.20 | 15 | |
| 2010 | 23.22 | 8.75 | 8.75 | 31.44 | 7.53 | 253.04 | 3.61 | 36.27 | 157.84 | 87.91 | 8.79 | 15 | |
| 2011 | 23.45 | 8.73 | 8.73 | 31.44 | 7.53 | 247.19 | 3.61 | 36.27 | 159.02 | 83.18 | 8.32 | 15 | |
| 2012 | 23.69 | 8.70 | 8.70 | 31.44 | 7.54 | 246.65 | 3.61 | 36.27 | 160.21 | 78.44 | 7.84 | 15 | |
| 2013 | 23.92 | 8.68 | 8.68 | 31.44 | 7.54 | 250.12 | 3.61 | 36.27 | 161.41 | 73.71 | 7.37 | 15 | |
| 2014 | 24.16 | 8.65 | 8.65 | 31.44 | 7.54 | 251.59 | 3.61 | 36.27 | 162.63 | 68.97 | 6.89 | 15 | |
| 2015 | 24.40 | 8.63 | 8.63 | 31.44 | 7.55 | 253.03 | 3.61 | 36.27 | 163.85 | 64.22 | 6.42 | 15 | |
| 2016 | 24.65 | 8.60 | 8.60 | 31.44 | 7.55 | 254.57 | 3.61 | 36.27 | 165.09 | 59.48 | 5.95 | 15 | |
| 2017 | 24.89 | 8.58 | 8.58 | 31.44 | 7.56 | 256.07 | 3.61 | 36.27 | 166.34 | 54.72 | 5.47 | 15 | |
| 2018 | 25.14 | 8.55 | 8.55 | 31.44 | 7.56 | 257.56 | 3.61 | 36.27 | 167.61 | 49.97 | 4.97 | 15 | |
| 2019 | 25.39 | 8.53 | 8.53 | 31.44 | 7.56 | 259.01 | 3.61 | 36.27 | 168.89 | 45.21 | 4.52 | 15 | |
| 2020 | 25.65 | 8.50 | 8.50 | 31.44 | 7.57 | 260.43 | 3.61 | 36.27 | 170.18 | 40.45 | 4.04 | 15 | |
| 2021 | 25.91 | 8.50 | 8.50 | 31.44 | 7.57 | 262.81 | 3.61 | 36.27 | 171.48 | 35.69 | 3.56 | 15 | |
| 2022 | 26.16 | 8.50 | 8.50 | 31.44 | 7.57 | 265.01 | 3.61 | 36.27 | 172.80 | 30.92 | 3.09 | 15 | |
| 2023 | 26.43 | 8.50 | 8.50 | 31.44 | 7.57 | 267.23 | 3.61 | 36.27 | 174.12 | 26.15 | 2.61 | 15 | |
| 2024 | 26.69 | 8.50 | 8.50 | 31.44 | 7.57 | 269.46 | 3.61 | 36.27 | 175.47 | 21.38 | 2.13 | 15 | |
| 2025 | 26.96 | 8.50 | 8.50 | 31.44 | 7.57 | 271.75 | 3.61 | 36.27 | 176.82 | 16.61 | 1.66 | 15 | |

Note 1: Average time value of foreign business passengers in 1995 is estimated as US\$20 per hour.

Note 2: This cost is assumed to be increased at 2.02% for each one hour of travel time shortening based on the above-mentioned JICA Study.

Note 3: The break down of the travel time is as follows. The shortening of rail travel time up to the year 2020 is based on the JICA Study on the Rehabilitation and Improvement of the Railway in Vietnam, Interim Report (1), May 1995. The further shortening up to the year 2025 is projected by the JICA Study Team.

| Year | WCP Cases (hours) | | | | VCP Cases (hours) | | | |
|------|--------------------------|--------------------------|------------------|------------|----------------------------|------------|-----------------|-------|
| | Waiting at Train Station | Rail Travel Hanoi - Vinh | Transfer in Vinh | Air Travel | Airport Access and Waiting | Air Travel | Airport Express | Total |
| 1995 | 0.50 | 6.00 | 2.00 | 1.00 | 3.00 | 1.08 | 1.00 | 5.08 |
| 2000 | 0.50 | 6.00 | 2.00 | 1.00 | 3.00 | 1.08 | 1.00 | 5.08 |
| 2005 | 0.50 | 5.33 | 2.00 | 1.00 | 3.00 | 0.85 | 1.00 | 5.08 |
| 2010 | 0.50 | 4.25 | 2.00 | 1.00 | 3.00 | 0.75 | 1.00 | 5.08 |
| 2020 | 0.50 | 4.00 | 2.00 | 1.00 | 3.00 | 0.50 | 1.00 | 5.08 |
| 2025 | 0.50 | 4.00 | 2.00 | 1.00 | 3.00 | 0.50 | 1.00 | 5.08 |

Note 4: The economic cost of rail travel is estimated as the same as the present railfare based on the 100% cost recovery rate of VNR at present.

Note 5: This cost is assumed to be increased at 2.02% for each one hour of travel time shortening based on the above-mentioned JICA Study.

Note 6: The economic cost of domestic air transport is estimated as 133% of the present airfare for Vietnamese in consideration of VNA's cost recovery rate of 75%.

Note 7: The economic cost of domestic passenger service charge at the airport is estimated as US\$2.7.

Note 8: The economic cost of airport access/express is estimated as VND10,000 in the both WCP and VCP cases.

Note 9: 10% of the benefits accruing to foreign business passengers are assumed to contribute to Vietnamese economy through reduced costs of joint ventures.

Appendix 9.8.8 Time Saving Benefit to Foreign Business Passengers on Domestic Routes

Table E. Time Saving Benefit to Foreign Business Passengers on Hanoi - Nha Trang Route

| Year | Economic Cost of Travel in the WOP Case | | | | Economic Cost of Travel in the WOP Case | | | | Economic Cost of Travel in the WOP Case | | | | Benefit per Passenger (US\$) | Contribution to Vietnamese Economy (US\$) | Incremental Passengers | Total Benefit (000 US\$) |
|------|---|-------------------------|----------------------|-----------------------|---|---------------------------------------|--------------------------|----------------------------------|---|------------------------|---------------------------------------|--------------------------|------------------------------|---|------------------------|--------------------------|
| | Time Value (US\$/hour) | Time via Airport (hour) | Time via Vinh (hour) | Time via Train (hour) | Air Travel Cost (US\$) | Airport Charge and Access Cost (US\$) | Total Travel Cost (US\$) | Time by Direct Air Travel (hour) | Time by Direct Air Travel (hour) | Air Travel Cost (US\$) | Airport Charge and Access Cost (US\$) | Total Travel Cost (US\$) | | | | |
| 1995 | 20.00 | 10.75 | 215.00 | 59.25 | 7.27 | 3.61 | 285.13 | 5.50 | 5.50 | 110.00 | 3.61 | 117.89 | 107.44 | 10.74 | 590 | (16) = (14) x (15) |
| 1996 | 20.30 | 10.75 | 217.15 | 59.25 | 7.27 | 3.61 | 287.28 | 5.50 | 5.50 | 111.10 | 3.61 | 118.79 | 108.49 | 10.85 | 590 | |
| 1997 | 20.40 | 10.75 | 219.32 | 59.25 | 7.27 | 3.61 | 289.45 | 5.50 | 5.50 | 112.21 | 3.61 | 119.90 | 109.55 | 10.95 | 590 | |
| 1998 | 20.61 | 10.75 | 221.51 | 59.25 | 7.27 | 3.61 | 291.64 | 5.50 | 5.50 | 113.33 | 3.61 | 121.02 | 110.62 | 11.06 | 590 | |
| 1999 | 20.81 | 10.75 | 223.75 | 59.25 | 7.27 | 3.61 | 293.86 | 5.50 | 5.50 | 114.47 | 3.61 | 122.16 | 111.70 | 11.17 | 590 | |
| 2000 | 21.02 | 10.75 | 225.97 | 59.25 | 7.27 | 3.61 | 296.09 | 5.50 | 5.50 | 115.61 | 3.61 | 123.30 | 112.79 | 11.28 | 590 | |
| 2001 | 21.23 | 10.82 | 228.38 | 59.25 | 7.26 | 3.61 | 298.53 | 5.50 | 5.50 | 116.77 | 3.61 | 124.48 | 113.87 | 11.39 | 590 | |
| 2002 | 21.44 | 10.48 | 224.76 | 59.25 | 7.32 | 3.61 | 294.90 | 5.50 | 5.50 | 117.93 | 3.61 | 125.63 | 114.95 | 11.50 | 590 | |
| 2003 | 21.66 | 10.35 | 224.11 | 59.25 | 7.34 | 3.61 | 294.30 | 5.50 | 5.50 | 119.11 | 3.61 | 126.81 | 116.03 | 11.61 | 590 | |
| 2004 | 21.87 | 10.21 | 223.42 | 59.25 | 7.36 | 3.61 | 293.63 | 5.50 | 5.50 | 120.31 | 3.61 | 128.00 | 117.11 | 11.72 | 590 | |
| 2005 | 22.08 | 10.08 | 222.69 | 59.25 | 7.38 | 3.61 | 292.93 | 5.50 | 5.50 | 121.51 | 3.61 | 129.20 | 118.20 | 11.83 | 590 | |
| 2006 | 22.31 | 9.93 | 220.70 | 59.25 | 7.41 | 3.61 | 290.37 | 5.50 | 5.50 | 122.72 | 3.61 | 130.41 | 119.29 | 11.94 | 590 | |
| 2007 | 22.54 | 9.85 | 217.43 | 59.25 | 7.44 | 3.61 | 287.73 | 5.50 | 5.50 | 123.95 | 3.61 | 131.64 | 120.38 | 12.05 | 590 | |
| 2008 | 22.78 | 9.43 | 214.86 | 59.25 | 7.47 | 3.61 | 285.02 | 5.50 | 5.50 | 125.19 | 3.61 | 132.89 | 121.47 | 12.16 | 590 | |
| 2009 | 22.99 | 9.22 | 211.87 | 59.25 | 7.50 | 3.61 | 282.23 | 5.50 | 5.50 | 126.44 | 3.61 | 134.22 | 122.56 | 12.27 | 590 | |
| 2010 | 23.22 | 9.00 | 208.97 | 59.25 | 7.53 | 3.61 | 279.36 | 5.50 | 5.50 | 127.71 | 3.61 | 135.56 | 123.65 | 12.38 | 590 | |
| 2011 | 23.45 | 8.83 | 210.43 | 59.25 | 7.53 | 3.61 | 280.87 | 5.50 | 5.50 | 128.98 | 3.61 | 136.87 | 124.74 | 12.49 | 590 | |
| 2012 | 23.69 | 8.95 | 211.98 | 59.25 | 7.54 | 3.61 | 282.38 | 5.50 | 5.50 | 130.27 | 3.61 | 138.20 | 125.83 | 12.60 | 590 | |
| 2013 | 23.92 | 8.93 | 213.51 | 59.25 | 7.54 | 3.61 | 283.91 | 5.50 | 5.50 | 131.58 | 3.61 | 139.56 | 126.92 | 12.71 | 590 | |
| 2014 | 24.16 | 8.90 | 215.04 | 59.25 | 7.54 | 3.61 | 285.44 | 5.50 | 5.50 | 132.89 | 3.61 | 140.94 | 128.01 | 12.82 | 590 | |
| 2015 | 24.40 | 8.88 | 216.56 | 59.25 | 7.55 | 3.61 | 286.96 | 5.50 | 5.50 | 134.22 | 3.61 | 142.33 | 129.10 | 12.93 | 590 | |
| 2016 | 24.65 | 8.85 | 218.13 | 59.25 | 7.55 | 3.61 | 288.54 | 5.50 | 5.50 | 135.56 | 3.61 | 143.74 | 130.19 | 13.04 | 590 | |
| 2017 | 24.89 | 8.83 | 219.69 | 59.25 | 7.56 | 3.61 | 290.10 | 5.50 | 5.50 | 136.92 | 3.61 | 145.17 | 131.28 | 13.15 | 590 | |
| 2018 | 25.14 | 8.80 | 221.26 | 59.25 | 7.56 | 3.61 | 291.67 | 5.50 | 5.50 | 138.20 | 3.61 | 146.62 | 132.37 | 13.26 | 590 | |
| 2019 | 25.39 | 8.78 | 222.84 | 59.25 | 7.56 | 3.61 | 293.28 | 5.50 | 5.50 | 139.57 | 3.61 | 148.09 | 133.46 | 13.37 | 590 | |
| 2020 | 25.65 | 8.75 | 224.43 | 59.25 | 7.57 | 3.61 | 294.85 | 5.50 | 5.50 | 141.07 | 3.61 | 149.58 | 134.55 | 13.48 | 590 | |
| 2021 | 25.91 | 8.75 | 226.07 | 59.25 | 7.57 | 3.61 | 297.09 | 5.50 | 5.50 | 142.48 | 3.61 | 151.09 | 135.64 | 13.59 | 590 | |
| 2022 | 26.18 | 8.75 | 228.04 | 59.25 | 7.57 | 3.61 | 299.36 | 5.50 | 5.50 | 143.90 | 3.61 | 152.61 | 136.73 | 13.70 | 590 | |
| 2023 | 26.43 | 8.75 | 231.23 | 59.25 | 7.57 | 3.61 | 301.65 | 5.50 | 5.50 | 145.34 | 3.61 | 154.16 | 137.82 | 13.81 | 590 | |
| 2024 | 26.69 | 8.75 | 233.54 | 59.25 | 7.57 | 3.61 | 303.96 | 5.50 | 5.50 | 146.90 | 3.61 | 155.73 | 138.91 | 13.92 | 590 | |
| 2025 | 26.96 | 8.75 | 235.87 | 59.25 | 7.57 | 3.61 | 306.29 | 5.50 | 5.50 | 148.26 | 3.61 | 157.32 | 140.00 | 14.03 | 590 | |

Note 1: Average time value of foreign business passengers in 1995 is estimated as US\$30 per hour.

Note 2: Average time value of foreign business passengers is assumed to increase at 1% per annum.

Note 3: The break down of the travel time is as follows: The shortening of rail travel time up to the year 2020 is based on the JICA Study on the Rehabilitation and Improvement of the Railway in Vietnam, Interim Report (I), May 1995. The further shortening up to the year 2025 is projected by the JICA Study Team.

| Year | WOP Case (hours) | | | | WOP Case (hours) | | | | Total |
|------|--------------------------|--------------------------|------------------|------------|------------------|------------|----------------------------|------------|-------|
| | Waiting at Train Station | Rail Travel Hanoi - Vinh | Transfer in Vinh | Air Travel | Airport Egress | Air Travel | Airport Access and Waiting | Air Egress | |
| 1995 | 0.50 | 0.50 | 0.00 | 1.25 | 1.00 | 10.75 | 3.00 | 1.00 | 5.50 |
| 2000 | 0.50 | 0.50 | 0.00 | 1.25 | 1.00 | 10.75 | 3.00 | 1.00 | 5.50 |
| 2005 | 0.50 | 0.50 | 0.00 | 1.25 | 1.00 | 10.08 | 3.00 | 1.00 | 5.50 |
| 2010 | 0.50 | 0.50 | 0.00 | 1.25 | 1.00 | 9.00 | 3.00 | 1.00 | 5.50 |
| 2020 | 0.50 | 0.50 | 0.00 | 1.25 | 1.00 | 6.75 | 3.00 | 1.00 | 5.50 |
| 2025 | 0.50 | 0.50 | 0.00 | 1.25 | 1.00 | 6.75 | 3.00 | 1.00 | 5.50 |

Note 4: The economic cost of rail travel is estimated as the same as the present railfare based on the 100% cost recovery rate of VNR at present.

Note 5: This cost is assumed to be increased at 2.02% for each one hour of travel time shortening based on the above-mentioned JICA Study.

Note 6: The economic cost of domestic air transport is estimated as 133% of the present airfare for Vietnamese in consideration of VNA's cost recovery rate of 75%.

Note 7: The economic cost of domestic passenger service charge at the airport is estimated as US\$2.7.

Note 8: The economic cost of airport access/egress is estimated as VND10,000 in the both WOP and WP cases.

Note 9: 10% of the benefits attributing to foreign business passengers are assumed to contribute to Vietnamese economy through reduced costs of joint ventures.

Appendix 9.8.8 Time Saving Benefit to Foreign Business Passengers on Domestic Routes

Table F. Summary: Time Saving Benefit to Foreign Business Passengers on Domestic Routes

Unit: '000 US\$

| Year | Hanoi - HCMC | Hanoi - DaNang | Hanoi - Hue | Hanoi - Nha Trang | Total |
|------|--------------|----------------|-------------|-------------------|-------|
| 1995 | | | | | |
| 1996 | | | | | |
| 1997 | | | | | |
| 1998 | | | | | |
| 1999 | | | | | |
| 2000 | | | | | |
| 2001 | | | | | |
| 2002 | | | | | |
| 2003 | | | | | |
| 2004 | | | | | |
| 2005 | | | | | |
| 2006 | 360 | 130 | 10 | 6 | 506 |
| 2007 | 703 | 250 | 20 | 6 | 979 |
| 2008 | 1,010 | 378 | 29 | 5 | 1,422 |
| 2009 | 1,289 | 493 | 37 | 10 | 1,830 |
| 2010 | 1,531 | 605 | 44 | 10 | 2,189 |
| 2011 | 1,768 | 699 | 53 | 10 | 2,529 |
| 2012 | 1,989 | 802 | 53 | 15 | 2,859 |
| 2013 | 2,203 | 906 | 62 | 15 | 3,185 |
| 2014 | 2,401 | 1,001 | 62 | 15 | 3,479 |
| 2015 | 2,591 | 1,097 | 71 | 15 | 3,775 |
| 2016 | 2,917 | 1,237 | 81 | 20 | 4,255 |
| 2017 | 3,262 | 1,385 | 90 | 20 | 4,757 |
| 2018 | 3,633 | 1,543 | 99 | 20 | 5,295 |
| 2019 | 3,641 | 1,546 | 99 | 20 | 5,307 |
| 2020 | 3,650 | 1,550 | 99 | 20 | 5,319 |
| 2021 | 3,686 | 1,565 | 100 | 21 | 5,371 |
| 2022 | 3,722 | 1,580 | 101 | 21 | 5,424 |
| 2023 | 3,758 | 1,595 | 102 | 21 | 5,477 |
| 2024 | 3,795 | 1,611 | 103 | 21 | 5,530 |
| 2025 | 3,833 | 1,626 | 104 | 21 | 5,585 |

Appendix 9.8.9 Increased Surplus to Vietnamese Tourist Passengers on International Routes

Table A. Incremental Vietnamese Tourist Passengers on International Routes

| Year | Percentage Vietnamese Tourists | Percentage Tourists | Incremental Passengers |
|------|--------------------------------|---------------------|------------------------|
| 1995 | 30% | 52% | |
| 1996 | 31% | 52% | |
| 1997 | 31% | 52% | |
| 1998 | 32% | 52% | |
| 1999 | 32% | 52% | |
| 2000 | 33% | 52% | |
| 2001 | 33% | 52% | |
| 2002 | 34% | 52% | |
| 2003 | 34% | 52% | |
| 2004 | 35% | 52% | |
| 2005 | 35% | 52% | |
| 2006 | 36% | 52% | 39,000 |
| 2007 | 36% | 52% | 83,000 |
| 2008 | 37% | 52% | 132,000 |
| 2009 | 37% | 52% | 189,000 |
| 2010 | 38% | 52% | 252,000 |
| 2011 | 38% | 52% | 310,000 |
| 2012 | 39% | 52% | 374,000 |
| 2013 | 39% | 52% | 446,000 |
| 2014 | 40% | 52% | 524,000 |
| 2015 | 40% | 52% | 610,000 |
| 2016 | 40% | 52% | 764,000 |
| 2017 | 40% | 52% | 849,000 |
| 2018 | 40% | 52% | 849,000 |
| 2019 | 40% | 52% | 849,000 |
| 2020 | 40% | 52% | 849,000 |
| 2021 | 40% | 52% | 849,000 |
| 2022 | 40% | 52% | 849,000 |
| 2023 | 40% | 52% | 849,000 |
| 2024 | 40% | 52% | 849,000 |
| 2025 | 40% | 52% | 849,000 |

Note 1: The percentage of Vietnamese is forecasted to increase from the present 30% to 40% by the year 2015 in the course of economic development as experienced in other developing countries in Asia. This rate is assumed to be maintained after the year 2015.

Note 2: The percentage of tourist passengers within Vietnamese passengers on international routes is assumed to remain at 52% based on the traffic survey conducted at Noi Bai Airport in May 1995 by the JICA Study Team.

Table B. Increased Surplus to Vietnamese Tourist Passengers on International Routes

| Year | Weighted Average Airfare (US\$) | Benefit per Passenger (US\$) | Incremental Passengers | Total Benefit (000 US\$) |
|------|---------------------------------|------------------------------|------------------------|--------------------------|
| | (1) | (2) | | |
| 1995 | 269.04 | 134.52 | | |
| 1996 | 269.04 | 134.52 | | |
| 1997 | 269.04 | 134.52 | | |
| 1998 | 269.04 | 134.52 | | |
| 1999 | 269.04 | 134.52 | | |
| 2000 | 269.04 | 134.52 | | |
| 2001 | 269.04 | 134.52 | | |
| 2002 | 269.04 | 134.52 | | |
| 2003 | 269.04 | 134.52 | | |
| 2004 | 269.04 | 134.52 | | |
| 2005 | 269.04 | 134.52 | | |
| 2006 | 269.04 | 134.52 | 39,000 | 5,246 |
| 2007 | 269.04 | 134.52 | 83,000 | 11,165 |
| 2008 | 269.04 | 134.52 | 132,000 | 17,757 |
| 2009 | 269.04 | 134.52 | 189,000 | 25,425 |
| 2010 | 269.04 | 134.52 | 252,000 | 33,899 |
| 2011 | 269.04 | 134.52 | 310,000 | 41,702 |
| 2012 | 269.04 | 134.52 | 374,000 | 50,311 |
| 2013 | 269.04 | 134.52 | 446,000 | 59,997 |
| 2014 | 269.04 | 134.52 | 524,000 | 70,489 |
| 2015 | 269.04 | 134.52 | 610,000 | 82,058 |
| 2016 | 269.04 | 134.52 | 684,000 | 92,013 |
| 2017 | 269.04 | 134.52 | 764,000 | 102,774 |
| 2018 | 269.04 | 134.52 | 849,000 | 114,209 |
| 2019 | 269.04 | 134.52 | 849,000 | 114,209 |
| 2020 | 269.04 | 134.52 | 849,000 | 114,209 |
| 2021 | 269.04 | 134.52 | 849,000 | 114,209 |
| 2022 | 269.04 | 134.52 | 849,000 | 114,209 |
| 2023 | 269.04 | 134.52 | 849,000 | 114,209 |
| 2024 | 269.04 | 134.52 | 849,000 | 114,209 |
| 2025 | 269.04 | 134.52 | 849,000 | 114,209 |

Note 1: Average airfare is estimated based on the present airfare on each route weighted by the number of passengers in 1994. Passenger service charge at the airport of US\$6 and access/egress cost of VND10,000 are added to the average airfare.

These represents minimum willingness to pay, thus have to be evaluated at financial prices, but not at economic prices.

Note 2: The consumer surplus is calculated by assuming a straight demand curve with a price axis intercept (demand=0) being the twice the current airfare. Therefore, benefit per passenger is 50% of the weighted airfare.

Table A. Incremental Foreign Tourist Passengers on International Routes

| Year | Percentage Foreigner | Percentage Tourists | Incremental Passengers |
|------|----------------------|---------------------|------------------------|
| 1995 | 70% | 53% | |
| 1996 | 70% | 53% | |
| 1997 | 69% | 53% | |
| 1998 | 69% | 53% | |
| 1999 | 68% | 53% | |
| 2000 | 68% | 53% | |
| 2001 | 67% | 53% | |
| 2002 | 67% | 53% | |
| 2003 | 66% | 53% | |
| 2004 | 66% | 53% | |
| 2005 | 65% | 53% | |
| 2006 | 65% | 53% | 72,000 |
| 2007 | 64% | 53% | 150,000 |
| 2008 | 64% | 53% | 235,000 |
| 2009 | 63% | 53% | 327,000 |
| 2010 | 63% | 53% | 427,000 |
| 2011 | 62% | 53% | 516,000 |
| 2012 | 62% | 53% | 610,000 |
| 2013 | 61% | 53% | 710,000 |
| 2014 | 61% | 53% | 818,000 |
| 2015 | 60% | 53% | 933,000 |
| 2016 | 60% | 53% | 1,046,000 |
| 2017 | 60% | 53% | 1,167,000 |
| 2018 | 60% | 53% | 1,297,000 |
| 2019 | 60% | 53% | 1,297,000 |
| 2020 | 60% | 53% | 1,297,000 |
| 2021 | 60% | 53% | 1,297,000 |
| 2022 | 60% | 53% | 1,297,000 |
| 2023 | 60% | 53% | 1,297,000 |
| 2024 | 60% | 53% | 1,297,000 |
| 2025 | 60% | 53% | 1,297,000 |

Note 1: The percentage of foreigner is forecasted to decrease from the present 70% to 60% by the year 2015 in the course of economic development as experienced in other developing countries in Asia. This rate is assumed to be maintained after the year 2015.

Note 2: The percentage of tourists passengers within foreign passengers on international routes is assumed to remain at 53% based on the traffic survey conducted at Noi Bai Airport in May 1995 by the JICA Study Team.

Table B. Increased Receipts from Foreign Tourist Passengers on International Routes

| Year | Incremental Receipt per Passengers (US\$) | Benefit per Passenger (US\$) | Contribution of Airport (US\$) | Incremental Passengers | Total Benefit (000 US\$) |
|------|---|------------------------------|--------------------------------|------------------------|--------------------------|
| | (1) | (2) | (3) | (4) | (5)=(3)X(4) |
| 1995 | 140.00 | 28.00 | 14.00 | | |
| 1996 | 145.50 | 29.10 | 14.55 | | |
| 1997 | 151.00 | 30.20 | 15.10 | | |
| 1998 | 156.50 | 31.30 | 15.65 | | |
| 1999 | 162.00 | 32.40 | 16.20 | | |
| 2000 | 167.50 | 33.50 | 16.75 | | |
| 2001 | 173.00 | 34.60 | 17.30 | | |
| 2002 | 178.50 | 35.70 | 17.85 | | |
| 2003 | 184.00 | 36.80 | 18.40 | | |
| 2004 | 189.50 | 37.90 | 18.95 | | |
| 2005 | 195.00 | 39.00 | 19.50 | | |
| 2006 | 200.50 | 40.10 | 20.05 | 72,000 | 1,444 |
| 2007 | 206.00 | 41.20 | 20.60 | 150,000 | 3,090 |
| 2008 | 211.50 | 42.30 | 21.15 | 235,000 | 4,970 |
| 2009 | 217.00 | 43.40 | 21.70 | 327,000 | 7,096 |
| 2010 | 222.50 | 44.50 | 22.25 | 427,000 | 9,501 |
| 2011 | 228.00 | 45.60 | 22.80 | 516,000 | 11,765 |
| 2012 | 233.50 | 46.70 | 23.35 | 610,000 | 14,244 |
| 2013 | 239.00 | 47.80 | 23.90 | 710,000 | 16,969 |
| 2014 | 244.50 | 48.90 | 24.45 | 818,000 | 20,000 |
| 2015 | 250.00 | 50.00 | 25.00 | 933,000 | 23,325 |
| 2016 | 250.00 | 50.00 | 25.00 | 1,046,000 | 26,150 |
| 2017 | 250.00 | 50.00 | 25.00 | 1,167,000 | 29,175 |
| 2018 | 250.00 | 50.00 | 25.00 | 1,297,000 | 32,425 |
| 2019 | 250.00 | 50.00 | 25.00 | 1,297,000 | 32,425 |
| 2020 | 250.00 | 50.00 | 25.00 | 1,297,000 | 32,425 |
| 2021 | 250.00 | 50.00 | 25.00 | 1,297,000 | 32,425 |
| 2022 | 250.00 | 50.00 | 25.00 | 1,297,000 | 32,425 |
| 2023 | 250.00 | 50.00 | 25.00 | 1,297,000 | 32,425 |
| 2024 | 250.00 | 50.00 | 25.00 | 1,297,000 | 32,425 |
| 2025 | 250.00 | 50.00 | 25.00 | 1,297,000 | 32,425 |

Note 1: Tourism receipt per visitor of \$280 (according to VINA Tourism) is assumed to increase to US\$500 in 2015, similar levels of Thailand and Indonesia at present. It is then assumed to remain at the same level after the year 2015. Tourism receipt per passenger is 50% of that per visitor, since airport statistics count both departing and arriving passengers.

Note 2: The benefit per passenger is 20% of the incremental receipts based on the rate of operating surplus of the tourism industries in Southeast Asia. Of which, 50% is assumed to be contributed by the airport capacity expansion.

Appendix 9.8.11 Increased Surplus to Vietnamese Tourist Passengers on Domestic Routes

Table A Incremental Vietnamese Tourist Passengers on Domestic Routes

| Year | Percentage Vietnamese | Percentage Tourists | Hanoi - HCMC | Hanoi - Danang | Hanoi - Hue | Hanoi - Nha Trang | Hanoi - Others | Total |
|------|-----------------------|---------------------|--------------|----------------|-------------|-------------------|----------------|-----------|
| 1995 | 58% | 39% | | | | | | |
| 1996 | 59% | 39% | | | | | | |
| 1997 | 60% | 39% | | | | | | |
| 1998 | 61% | 39% | | | | | | |
| 1999 | 62% | 39% | | | | | | |
| 2000 | 64% | 39% | | | | | | |
| 2001 | 65% | 39% | | | | | | |
| 2002 | 66% | 39% | | | | | | |
| 2003 | 67% | 39% | | | | | | |
| 2004 | 68% | 39% | | | | | | |
| 2005 | 69% | 39% | | | | | | |
| 2006 | 70% | 39% | 58,000 | 20,000 | 2,000 | 1,000 | 1,000 | 81,000 |
| 2007 | 71% | 39% | 122,000 | 43,000 | 4,000 | 2,000 | 2,000 | 172,000 |
| 2008 | 72% | 39% | 193,000 | 70,000 | 6,000 | 2,000 | 3,000 | 274,000 |
| 2009 | 73% | 39% | 272,000 | 102,000 | 8,000 | 3,000 | 3,000 | 388,000 |
| 2010 | 75% | 39% | 353,000 | 138,000 | 10,000 | 4,000 | 4,000 | 515,000 |
| 2011 | 76% | 39% | 435,000 | 171,000 | 12,000 | 5,000 | 5,000 | 628,000 |
| 2012 | 77% | 39% | 519,000 | 207,000 | 14,000 | 6,000 | 6,000 | 752,000 |
| 2013 | 78% | 39% | 611,000 | 247,000 | 16,000 | 7,000 | 7,000 | 887,000 |
| 2014 | 79% | 39% | 710,000 | 292,000 | 18,000 | 7,000 | 8,000 | 1,035,000 |
| 2015 | 80% | 39% | 817,000 | 341,000 | 20,000 | 8,000 | 9,000 | 1,196,000 |
| 2016 | 80% | 39% | 917,000 | 383,000 | 23,000 | 9,000 | 10,000 | 1,342,000 |
| 2017 | 80% | 39% | 1,024,000 | 428,000 | 26,000 | 10,000 | 11,000 | 1,499,000 |
| 2018 | 80% | 39% | 1,138,000 | 475,000 | 28,000 | 12,000 | 12,000 | 1,665,000 |
| 2019 | 80% | 39% | 1,138,000 | 475,000 | 28,000 | 12,000 | 12,000 | 1,665,000 |
| 2020 | 80% | 39% | 1,138,000 | 475,000 | 28,000 | 12,000 | 12,000 | 1,665,000 |
| 2021 | 80% | 39% | 1,138,000 | 475,000 | 28,000 | 12,000 | 12,000 | 1,665,000 |
| 2022 | 80% | 39% | 1,138,000 | 475,000 | 28,000 | 12,000 | 12,000 | 1,665,000 |
| 2023 | 80% | 39% | 1,138,000 | 475,000 | 28,000 | 12,000 | 12,000 | 1,665,000 |
| 2024 | 80% | 39% | 1,138,000 | 475,000 | 28,000 | 12,000 | 12,000 | 1,665,000 |
| 2025 | 80% | 39% | 1,138,000 | 475,000 | 28,000 | 12,000 | 12,000 | 1,665,000 |

Note 1: The percentage of Vietnamese is forecasted to increase from the present 58% to 80% by the year 2015 in the course of economic development as experienced in other developing countries in Asia. This rate is assumed to be maintained after the year 2015.

Note 2: The percentage of tourist passengers within Vietnamese passengers on domestic routes is assumed to remain at 39% based on the traffic survey conducted at Noi Bai Airport in May 1995 by the JICA Study Team.

Appendix 9.8.11 Increased Surplus to Vietnamese Tourist Passengers on Domestic Routes

Table B. Benefit to Vietnamese Tourist Passengers on Hanoi - Ho Chi Minh Route

| Year | Air Travel Cost (US\$) | Benefit per Passenger (US\$) | Incremental Passengers | Total Benefit ('000 US\$) |
|------|------------------------|------------------------------|------------------------|---------------------------|
| | (1) | (2) | (3) | (4)=(2)x(3) |
| 1996 | 65.91 | 32.95 | | |
| 1996 | 65.91 | 32.95 | | |
| 1997 | 65.91 | 32.95 | | |
| 1998 | 65.91 | 32.95 | | |
| 1999 | 65.91 | 32.95 | | |
| 2000 | 65.91 | 32.95 | | |
| 2001 | 65.91 | 32.95 | | |
| 2002 | 65.91 | 32.95 | | |
| 2003 | 65.91 | 32.95 | | |
| 2004 | 65.91 | 32.95 | | |
| 2005 | 65.91 | 32.95 | | |
| 2006 | 65.91 | 32.95 | 58,000 | 1,911 |
| 2007 | 65.91 | 32.95 | 122,000 | 4,020 |
| 2008 | 65.91 | 32.95 | 193,000 | 6,360 |
| 2009 | 65.91 | 32.95 | 272,000 | 8,964 |
| 2010 | 65.91 | 32.95 | 358,000 | 11,788 |
| 2011 | 65.91 | 32.95 | 435,000 | 14,335 |
| 2012 | 65.91 | 32.95 | 519,000 | 17,103 |
| 2013 | 65.91 | 32.95 | 611,000 | 20,135 |
| 2014 | 65.91 | 32.95 | 710,000 | 23,398 |
| 2015 | 65.91 | 32.95 | 817,000 | 26,924 |
| 2016 | 65.91 | 32.95 | 917,000 | 30,219 |
| 2017 | 65.91 | 32.95 | 1,024,000 | 33,745 |
| 2018 | 65.91 | 32.95 | 1,138,000 | 37,502 |
| 2019 | 65.91 | 32.95 | 1,138,000 | 37,502 |
| 2020 | 65.91 | 32.95 | 1,138,000 | 37,502 |
| 2021 | 65.91 | 32.95 | 1,138,000 | 37,502 |
| 2022 | 65.91 | 32.95 | 1,138,000 | 37,502 |
| 2023 | 65.91 | 32.95 | 1,138,000 | 37,502 |
| 2024 | 65.91 | 32.95 | 1,138,000 | 37,502 |
| 2025 | 65.91 | 32.95 | 1,138,000 | 37,502 |

Note: Air travel cost includes airfare (VND700,000), airport PSC (VND15,000) and access/egress cost (VND10,000). These represent minimum willingness to pay, thus have to be evaluated at financial prices, but not at economic prices.

Table C. Benefit to Vietnamese Tourist Passengers on Hanoi - Danang Route

| Year | Air Travel Cost (US\$) | Benefit per Passenger (US\$) | Incremental Passengers | Total Benefit ('000 US\$) |
|------|------------------------|------------------------------|------------------------|---------------------------|
| | (1) | (2) | (3) | (4)=(2)x(3) |
| 1996 | 33.18 | 16.59 | | |
| 1996 | 33.18 | 16.59 | | |
| 1997 | 33.18 | 16.59 | | |
| 1998 | 33.18 | 16.59 | | |
| 1999 | 33.18 | 16.59 | | |
| 2000 | 33.18 | 16.59 | | |
| 2001 | 33.18 | 16.59 | | |
| 2002 | 33.18 | 16.59 | | |
| 2003 | 33.18 | 16.59 | | |
| 2004 | 33.18 | 16.59 | | |
| 2005 | 33.18 | 16.59 | | |
| 2006 | 33.18 | 16.59 | 20,000 | 332 |
| 2007 | 33.18 | 16.59 | 43,000 | 713 |
| 2008 | 33.18 | 16.59 | 70,000 | 1,161 |
| 2009 | 33.18 | 16.59 | 102,000 | 1,692 |
| 2010 | 33.18 | 16.59 | 138,000 | 2,290 |
| 2011 | 33.18 | 16.59 | 171,000 | 2,837 |
| 2012 | 33.18 | 16.59 | 207,000 | 3,434 |
| 2013 | 33.18 | 16.59 | 247,000 | 4,098 |
| 2014 | 33.18 | 16.59 | 292,000 | 4,845 |
| 2015 | 33.18 | 16.59 | 341,000 | 5,658 |
| 2016 | 33.18 | 16.59 | 393,000 | 6,354 |
| 2017 | 33.18 | 16.59 | 428,000 | 7,101 |
| 2018 | 33.18 | 16.59 | 475,000 | 7,881 |
| 2019 | 33.18 | 16.59 | 475,000 | 7,881 |
| 2020 | 33.18 | 16.59 | 475,000 | 7,881 |
| 2021 | 33.18 | 16.59 | 475,000 | 7,881 |
| 2022 | 33.18 | 16.59 | 475,000 | 7,881 |
| 2023 | 33.18 | 16.59 | 475,000 | 7,881 |
| 2024 | 33.18 | 16.59 | 475,000 | 7,881 |
| 2025 | 33.18 | 16.59 | 475,000 | 7,881 |

Note: Air travel cost includes airfare (VND340,000), airport PSC (VND15,000) and access/egress cost (VND10,000). These represent minimum willingness to pay, thus have to be evaluated at financial prices, but not at economic prices.

Appendix 9.8.11 Increased Surplus to Vietnamese Tourist Passengers on Domestic Routes

Table D Benefit to Vietnamese Tourist Passengers on Hanoi - Hue Route

| Year | Air Travel Cost (US\$) (1) | Benefit per Passenger (US\$) (2) | Incremental Passengers (3) | Total Benefit ('000 US\$) (4)=(2)x(3) |
|------|----------------------------|----------------------------------|----------------------------|---------------------------------------|
| 1995 | 29.55 | 14.77 | | |
| 1996 | 29.55 | 14.77 | | |
| 1997 | 29.55 | 14.77 | | |
| 1998 | 29.55 | 14.77 | | |
| 1999 | 29.55 | 14.77 | | |
| 2000 | 29.55 | 14.77 | | |
| 2001 | 29.55 | 14.77 | | |
| 2002 | 29.55 | 14.77 | | |
| 2003 | 29.55 | 14.77 | | |
| 2004 | 29.55 | 14.77 | | |
| 2005 | 29.55 | 14.77 | | |
| 2006 | 29.55 | 14.77 | 2,000 | 30 |
| 2007 | 29.55 | 14.77 | 4,000 | 59 |
| 2008 | 29.55 | 14.77 | 6,000 | 89 |
| 2009 | 29.55 | 14.77 | 8,000 | 118 |
| 2010 | 29.55 | 14.77 | 10,000 | 148 |
| 2011 | 29.55 | 14.77 | 12,000 | 177 |
| 2012 | 29.55 | 14.77 | 14,000 | 207 |
| 2013 | 29.55 | 14.77 | 16,000 | 236 |
| 2014 | 29.55 | 14.77 | 18,000 | 266 |
| 2015 | 29.55 | 14.77 | 20,000 | 296 |
| 2016 | 29.55 | 14.77 | 23,000 | 340 |
| 2017 | 29.55 | 14.77 | 26,000 | 384 |
| 2018 | 29.55 | 14.77 | 28,000 | 414 |
| 2019 | 29.55 | 14.77 | 28,000 | 414 |
| 2020 | 29.55 | 14.77 | 28,000 | 414 |
| 2021 | 29.55 | 14.77 | 28,000 | 414 |
| 2022 | 29.55 | 14.77 | 28,000 | 414 |
| 2023 | 29.55 | 14.77 | 28,000 | 414 |
| 2024 | 29.55 | 14.77 | 28,000 | 414 |
| 2025 | 29.55 | 14.77 | 28,000 | 414 |

Note: Air travel cost includes airfare (VND300,000), airport PSC (VND15,000) and access/egress cost (VND10,000). These represent minimum willingness to pay, thus have to be evaluated at financial prices, but not at economic prices.

Table E Benefit to Vietnamese Tourist Passengers on Hanoi - Nha Trang Route

| Year | Air Travel Cost (US\$) (1) | Benefit per Passenger (US\$) (2) | Incremental Passengers (3) | Total Benefit ('000 US\$) (4)=(2)x(3) |
|------|----------------------------|----------------------------------|----------------------------|---------------------------------------|
| 1995 | 50.45 | 25.23 | | |
| 1996 | 50.45 | 25.23 | | |
| 1997 | 50.45 | 25.23 | | |
| 1998 | 50.45 | 25.23 | | |
| 1999 | 50.45 | 25.23 | | |
| 2000 | 50.45 | 25.23 | | |
| 2001 | 50.45 | 25.23 | | |
| 2002 | 50.45 | 25.23 | | |
| 2003 | 50.45 | 25.23 | | |
| 2004 | 50.45 | 25.23 | | |
| 2005 | 50.45 | 25.23 | | |
| 2006 | 50.45 | 25.23 | 1,000 | 25 |
| 2007 | 50.45 | 25.23 | 2,000 | 50 |
| 2008 | 50.45 | 25.23 | 3,000 | 76 |
| 2009 | 50.45 | 25.23 | 4,000 | 101 |
| 2010 | 50.45 | 25.23 | 5,000 | 126 |
| 2011 | 50.45 | 25.23 | 6,000 | 151 |
| 2012 | 50.45 | 25.23 | 7,000 | 177 |
| 2013 | 50.45 | 25.23 | 7,000 | 177 |
| 2014 | 50.45 | 25.23 | 8,000 | 202 |
| 2015 | 50.45 | 25.23 | 9,000 | 227 |
| 2016 | 50.45 | 25.23 | 10,000 | 252 |
| 2017 | 50.45 | 25.23 | 12,000 | 303 |
| 2018 | 50.45 | 25.23 | 12,000 | 303 |
| 2019 | 50.45 | 25.23 | 12,000 | 303 |
| 2020 | 50.45 | 25.23 | 12,000 | 303 |
| 2021 | 50.45 | 25.23 | 12,000 | 303 |
| 2022 | 50.45 | 25.23 | 12,000 | 303 |
| 2023 | 50.45 | 25.23 | 12,000 | 303 |
| 2024 | 50.45 | 25.23 | 12,000 | 303 |
| 2025 | 50.45 | 25.23 | 12,000 | 303 |

Note: Air travel cost includes airfare (VND530,000), airport PSC (VND15,000) and access/egress cost (VND10,000). These represent minimum willingness to pay, thus have to be evaluated at financial prices, but not at economic prices.

Appendix 9.3.11 Increased Surplus to Vietnamese Tourist Passengers on Domestic Routes

Table F Summary: Benefit to Increased Vietnamese Tourist Passengers on Domestic Routes

| Year | Unit: '000 U.S.\$ | | | | | |
|------|-------------------|----------------|-------------|-------------------|--------|--------|
| | Hanoi - HCMC | Hanoi - Danang | Hanoi - Hue | Hanoi - Nha Trang | Total | Total |
| 1995 | | | | | | |
| 1996 | | | | | | |
| 1997 | | | | | | |
| 1998 | | | | | | |
| 1999 | | | | | | |
| 2000 | | | | | | |
| 2001 | | | | | | |
| 2002 | | | | | | |
| 2003 | | | | | | |
| 2004 | | | | | | |
| 2005 | | | | | | |
| 2006 | 1,911 | 392 | 30 | 25 | 2,298 | 2,298 |
| 2007 | 4,020 | 713 | 59 | 50 | 4,843 | 4,843 |
| 2008 | 6,360 | 1,161 | 89 | 50 | 7,661 | 7,661 |
| 2009 | 8,964 | 1,692 | 118 | 76 | 10,850 | 10,850 |
| 2010 | 11,758 | 2,290 | 148 | 101 | 14,336 | 14,336 |
| 2011 | 14,335 | 2,837 | 177 | 126 | 17,476 | 17,476 |
| 2012 | 17,103 | 3,434 | 207 | 151 | 20,896 | 20,896 |
| 2013 | 20,135 | 4,098 | 236 | 177 | 24,646 | 24,646 |
| 2014 | 23,398 | 4,845 | 266 | 177 | 28,685 | 28,685 |
| 2015 | 26,924 | 5,658 | 296 | 202 | 33,079 | 33,079 |
| 2016 | 30,219 | 6,354 | 340 | 227 | 37,140 | 37,140 |
| 2017 | 33,745 | 7,101 | 384 | 252 | 41,483 | 41,483 |
| 2018 | 37,502 | 7,881 | 414 | 303 | 46,099 | 46,099 |
| 2019 | 37,502 | 7,881 | 414 | 303 | 46,099 | 46,099 |
| 2020 | 37,502 | 7,881 | 414 | 303 | 46,099 | 46,099 |
| 2021 | 37,502 | 7,881 | 414 | 303 | 46,099 | 46,099 |
| 2022 | 37,502 | 7,881 | 414 | 303 | 46,099 | 46,099 |
| 2023 | 37,502 | 7,881 | 414 | 303 | 46,099 | 46,099 |
| 2024 | 37,502 | 7,881 | 414 | 303 | 46,099 | 46,099 |
| 2025 | 37,502 | 7,881 | 414 | 303 | 46,099 | 46,099 |

Appendix 9.8.12 Increased Receipts from Foreign Tourist Passengers on Domestic Routes

Table A. Incremental Foreign Tourist Passengers on Domestic Routes

| Year | Percentage Foreigner | Percentage Tourists | Incremental Passengers |
|------|----------------------|---------------------|------------------------|
| 1996 | 42% | 41% | |
| 1996 | 41% | 41% | |
| 1997 | 40% | 41% | |
| 1998 | 39% | 41% | |
| 1999 | 38% | 41% | |
| 2000 | 37% | 41% | |
| 2001 | 35% | 41% | |
| 2002 | 34% | 41% | |
| 2003 | 33% | 41% | |
| 2004 | 32% | 41% | |
| 2005 | 31% | 41% | |
| 2006 | 30% | 41% | 37,000 |
| 2007 | 29% | 41% | 73,000 |
| 2008 | 28% | 41% | 111,000 |
| 2009 | 27% | 41% | 148,000 |
| 2010 | 26% | 41% | 185,000 |
| 2011 | 24% | 41% | 213,000 |
| 2012 | 23% | 41% | 240,000 |
| 2013 | 22% | 41% | 266,000 |
| 2014 | 21% | 41% | 291,000 |
| 2015 | 20% | 41% | 314,000 |
| 2016 | 20% | 41% | 353,000 |
| 2017 | 20% | 41% | 394,000 |
| 2018 | 20% | 41% | 438,000 |
| 2019 | 20% | 41% | 438,000 |
| 2020 | 20% | 41% | 438,000 |
| 2021 | 20% | 41% | 438,000 |
| 2022 | 20% | 41% | 438,000 |
| 2023 | 20% | 41% | 438,000 |
| 2024 | 20% | 41% | 438,000 |
| 2025 | 20% | 41% | 438,000 |

Note 1: The percentage of foreigner is forecasted to decrease from the present 42% to 20% by the year 2015 in the course of economic development as experienced in other developing countries in Asia. This rate is assumed to be maintained after the year 2015.

Note 2: The percentage of tourists passengers within foreign passengers on domestic routes is assumed to remain at 41% based on the traffic survey conducted at Noi Bai Airport in May 1996 by the JICA Study Team.

Table B. Increased Receipts from Foreign Tourist Passengers on Domestic Routes

| Year | Incremental Receipt per Passenger (US\$) | Benefit per Passenger (US\$) | Contribution of Airport (US\$) | Incremental Passengers | Total Benefit (000 US\$) |
|------|--|------------------------------|--------------------------------|------------------------|--------------------------|
| 1995 | 35.00 | 7.00 | 3.50 | | |
| 1996 | 36.38 | 7.28 | 3.64 | | |
| 1997 | 37.75 | 7.55 | 3.78 | | |
| 1998 | 39.13 | 7.83 | 3.91 | | |
| 1999 | 40.50 | 8.10 | 4.05 | | |
| 2000 | 41.88 | 8.38 | 4.19 | | |
| 2001 | 43.25 | 8.65 | 4.33 | | |
| 2002 | 44.63 | 8.93 | 4.46 | | |
| 2003 | 46.00 | 9.20 | 4.60 | | |
| 2004 | 47.38 | 9.48 | 4.74 | | |
| 2005 | 48.75 | 9.75 | 4.88 | | |
| 2006 | 50.13 | 10.03 | 5.01 | 37,000 | 185 |
| 2007 | 51.50 | 10.30 | 5.15 | 73,000 | 376 |
| 2008 | 52.88 | 10.58 | 5.29 | 111,000 | 587 |
| 2009 | 54.25 | 10.85 | 5.43 | 148,000 | 803 |
| 2010 | 55.63 | 11.13 | 5.56 | 185,000 | 1,029 |
| 2011 | 57.00 | 11.40 | 5.70 | 213,000 | 1,214 |
| 2012 | 58.38 | 11.68 | 5.84 | 240,000 | 1,401 |
| 2013 | 59.75 | 11.95 | 5.98 | 266,000 | 1,589 |
| 2014 | 61.13 | 12.23 | 6.11 | 291,000 | 1,779 |
| 2015 | 62.50 | 12.50 | 6.25 | 314,000 | 1,963 |
| 2016 | 62.50 | 12.50 | 6.25 | 353,000 | 2,206 |
| 2017 | 62.50 | 12.50 | 6.25 | 394,000 | 2,463 |
| 2018 | 62.50 | 12.50 | 6.25 | 438,000 | 2,738 |
| 2019 | 62.50 | 12.50 | 6.25 | 438,000 | 2,738 |
| 2020 | 62.50 | 12.50 | 6.25 | 438,000 | 2,738 |
| 2021 | 62.50 | 12.50 | 6.25 | 438,000 | 2,738 |
| 2022 | 62.50 | 12.50 | 6.25 | 438,000 | 2,738 |
| 2023 | 62.50 | 12.50 | 6.25 | 438,000 | 2,738 |
| 2024 | 62.50 | 12.50 | 6.25 | 438,000 | 2,738 |
| 2025 | 62.50 | 12.50 | 6.25 | 438,000 | 2,738 |

Note 1: Tourism receipt per visitor of \$280 (according to VINA Tourism) is assumed to increase to US\$500 in 2015, similar levels of Thailand and Indonesia at present. It is then assumed to remain at the same level after the year 2015. Tourism receipt per passenger is 50% of that per visitor, since airport statistics count both departing and arriving passengers. In the WCP case, it is assumed that the average length of stay of the visitor will be shortened to 3 days from the present 4 days. Therefore, tourism receipt per passenger will increase from \$US35 in 1995 to \$62.5 in 2015. The benefit per passenger is 20% of the incremental receipt based on the rate of operating surplus of the tourism industries in Southeast Asia. Of which, 50% is assumed to be contributed by the airport capacity expansion.

Note 2:

Note 3:

Appendix 9.8.13 Benefit from Increased International Cargo

| Year | Incremental Cargo (ton) | Weighted Cargo Airfare (US\$/kg) | Benefit per Ton (US\$/kg) | Contribution to VN Economy (US\$/kg) | Total Benefit (000 US\$) |
|------|-------------------------|----------------------------------|---------------------------|--------------------------------------|--------------------------|
| | (1) | (2) | (3) | (4) | (5)=(3)x(4) |
| 1996 | | 2.84 | 1.42 | 0.71 | |
| 1996 | | 2.84 | 1.42 | 0.71 | |
| 1997 | | 2.84 | 1.42 | 0.71 | |
| 1998 | | 2.84 | 1.42 | 0.71 | |
| 1999 | | 2.84 | 1.42 | 0.71 | |
| 2000 | | 2.84 | 1.42 | 0.71 | |
| 2001 | | 2.84 | 1.42 | 0.71 | |
| 2002 | | 2.84 | 1.42 | 0.71 | |
| 2003 | | 2.84 | 1.42 | 0.71 | |
| 2004 | | 2.84 | 1.42 | 0.71 | |
| 2005 | | 2.84 | 1.42 | 0.71 | |
| 2006 | 6,400 | 2.84 | 1.42 | 0.71 | 4,545 |
| 2007 | 13,700 | 2.84 | 1.42 | 0.71 | 9,729 |
| 2008 | 21,900 | 2.84 | 1.42 | 0.71 | 15,561 |
| 2009 | 31,300 | 2.84 | 1.42 | 0.71 | 22,226 |
| 2010 | 42,200 | 2.84 | 1.42 | 0.71 | 29,967 |
| 2011 | 52,500 | 2.84 | 1.42 | 0.71 | 37,281 |
| 2012 | 63,900 | 2.84 | 1.42 | 0.71 | 45,376 |
| 2013 | 76,800 | 2.84 | 1.42 | 0.71 | 54,536 |
| 2014 | 91,100 | 2.84 | 1.42 | 0.71 | 64,691 |
| 2015 | 107,200 | 2.84 | 1.42 | 0.71 | 76,124 |
| 2016 | 120,900 | 2.84 | 1.42 | 0.71 | 85,852 |
| 2017 | 135,900 | 2.84 | 1.42 | 0.71 | 96,504 |
| 2018 | 152,200 | 2.84 | 1.42 | 0.71 | 108,079 |
| 2019 | 152,200 | 2.84 | 1.42 | 0.71 | 108,079 |
| 2020 | 152,200 | 2.84 | 1.42 | 0.71 | 108,079 |
| 2021 | 152,200 | 2.84 | 1.42 | 0.71 | 108,079 |
| 2022 | 152,200 | 2.84 | 1.42 | 0.71 | 108,079 |
| 2023 | 152,200 | 2.84 | 1.42 | 0.71 | 108,079 |
| 2024 | 152,200 | 2.84 | 1.42 | 0.71 | 108,079 |
| 2025 | 152,200 | 2.84 | 1.42 | 0.71 | 108,079 |

Note 1: Average airfare is estimated based on the present airfare on each route weighted by the volume of cargo in 1994.

The cargo airfare can be approximated as 0.5% of one-way economy passenger airfare per ton of cargo.

Note 2: The benefit is calculated, in the similar manner to the estimation of consumer's surplus, by assuming a straight demand curve with a price axis intercept (demand=0) being the twice the current airfare. Therefore, benefit per ton of cargo is 50% of the weighted airfare.

Note 3: The benefit of international trade is assumed to be equally shared with the trade partner. The contribution of generated benefits to Vietnamese economy is therefore 50%.

Appendix 9.8.14 Benefit from Increased Domestic Cargo

| Year | Incremental Cargo (ton) (1) | Weighted Cargo Airfare (\$US/kg) (2) | Benefit per Ton (\$US/kg) (3) | Total Benefit ('000 \$US) (4)=(2)x(3) |
|------|-----------------------------|--------------------------------------|-------------------------------|---------------------------------------|
| 1995 | | 0.31 | 0.15 | |
| 1996 | | 0.31 | 0.15 | |
| 1997 | | 0.31 | 0.15 | |
| 1998 | | 0.31 | 0.15 | |
| 1999 | | 0.31 | 0.15 | |
| 2000 | | 0.31 | 0.15 | |
| 2001 | | 0.31 | 0.15 | |
| 2002 | | 0.31 | 0.15 | |
| 2003 | | 0.31 | 0.15 | |
| 2004 | | 0.31 | 0.15 | |
| 2005 | | 0.31 | 0.15 | |
| 2006 | 7,100 | 0.31 | 0.15 | 1,092 |
| 2007 | 15,000 | 0.31 | 0.15 | 2,307 |
| 2008 | 23,600 | 0.31 | 0.15 | 3,629 |
| 2009 | 33,000 | 0.31 | 0.15 | 5,075 |
| 2010 | 43,500 | 0.31 | 0.15 | 6,690 |
| 2011 | 52,900 | 0.31 | 0.15 | 8,135 |
| 2012 | 63,100 | 0.31 | 0.15 | 9,704 |
| 2013 | 74,000 | 0.31 | 0.15 | 11,380 |
| 2014 | 85,700 | 0.31 | 0.15 | 13,180 |
| 2015 | 98,500 | 0.31 | 0.15 | 15,148 |
| 2016 | 111,800 | 0.31 | 0.15 | 17,194 |
| 2017 | 126,300 | 0.31 | 0.15 | 19,424 |
| 2018 | 142,100 | 0.31 | 0.15 | 21,854 |
| 2019 | 142,100 | 0.31 | 0.15 | 21,854 |
| 2020 | 142,100 | 0.31 | 0.15 | 21,854 |
| 2021 | 142,100 | 0.31 | 0.15 | 21,854 |
| 2022 | 142,100 | 0.31 | 0.15 | 21,854 |
| 2023 | 142,100 | 0.31 | 0.15 | 21,854 |
| 2024 | 142,100 | 0.31 | 0.15 | 21,854 |
| 2025 | 142,100 | 0.31 | 0.15 | 21,854 |

Note 1: Average airfare is estimated based on the present airfare on each route weighted by the volume of cargo in 1994.

The cargo airfare can be approximated as 0.5% of one-way economy passenger airfare per ton of cargo.

Note 2: The benefit is calculated, in the similar manner to the estimation of consumer's surplus, by assuming a straight demand curve with a price axis intercept (demand=0) being the twice the current airfare. Therefore, benefit per ton of cargo is 50% of the weighted airfare.

1. Calculation of Equivalent Annual Departures

Equivalent annual departures were calculated from the international aircraft movement forecast for the year 2010 as follows:

| Aircraft | Annual Departures | Conversion Factor | Dual Gear Departures | Wheel Load (kg) | Equivalent Annual Departure |
|----------|-------------------|-------------------|----------------------|-----------------|-----------------------------|
| B747-200 | 4,065 | 1.0 | 4,065 | 16,160 | 4,065 |
| DC-10-40 | 3,900 | 1.0 | 3,900 | 16,160 | 3,900 |
| B767-200 | 1,950 | 1.0 | 1,950 | 18,905 | 3,618 |
| A320 | 5,100 | 0.6 | 3,060 | 17,456 | 4,196 |
| ATR72 | 785 | 0.6 | 471 | 2,375 | 11 |
| Total | | | | | 15,790 |

Note: (Dual Gear Departures) = (Annual Departure) x (Conversion Factor)

$$\log (\text{Equivalent Annual Departures}) = \log (\text{Dual Gear Departures}) \times (W_2/W_1)^{0.5}$$

where, W_1 : wheel load of the design aircraft, W_2 : wheel load of the aircraft in question

2. Design CBR and K-value of Subgrade

Since subgrade was not constructed, design CBR of the subgrade was calculated from the results of seven (7) laboratory CBR tests as follows:

$$\begin{aligned} \text{CBR}_{\text{design}} &= \text{CBR}_{\text{ave}} - (\text{CBR}_{\text{max}} - \text{CBR}_{\text{min}}) / d \\ &= 2.94 - (4.04 - 2.00) / 4.059 \\ &= 2.43 \% \end{aligned}$$

Design K-value was estimated from the above design CBR and relation between CBR and K-value as shown in Figure-1.

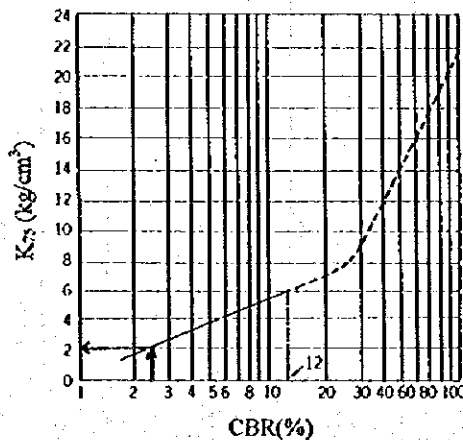


Figure-1 Relation between CBR and K_{75}

3. Design of Rigid Pavement

Design Conditions:

| | |
|-------------------------------|-----------------------------------|
| Design Aircraft: | B747-200 (350 ton or 780,000 lb.) |
| Equivalent Annual Departures: | 16,000 |
| Subgrade Strength: | 2 kg/cm ³ (72 pci) |
| Concrete Flexural Strength: | 41 kg/cm ² (580 psi) |

Assume a cement stabilized subbase of 28 cm (11 inches) thick. Using Figure-2, K-value on top of subbase is expected to be about 7 kg/cm³ (250 pci). Using Figure-3, with the assumed design data, yields a concrete pavement thickness of about 43 cm (17 inches).

4. Pavements for Non-Critical Areas

Concrete pavement thickness of the runway edge can be reduced to 70% of the above ($43\text{cm} \times 0.7 = 30\text{cm}$). A 90% thickness ($43\text{cm} \times 0.9 = 39\text{cm}$) is applied for the rapid exit taxiways.

5. Pavement for Shoulder, Overrun and Apron Service Road

As the Advisory Circular AC150/5320-6C Airport Pavement Design and Evaluation by FAA does not include the design method for shoulder, overrun and apron service road, the Japanese practice is used in this preliminary design.

The Japanese practice specifies a 60% thickness for the shoulder and overrun. Therefore, a concrete pavement thickness of 26 cm ($= 43\text{cm} \times 0.6$) is applied for the shoulders and overruns.

With regard to the apron service road, coverage of the load is assumed to be Class N, since Class N gives the same concrete pavement thickness of the runway as the above. Therefore, a concrete pavement thickness of 23 cm is applied for the apron service road.

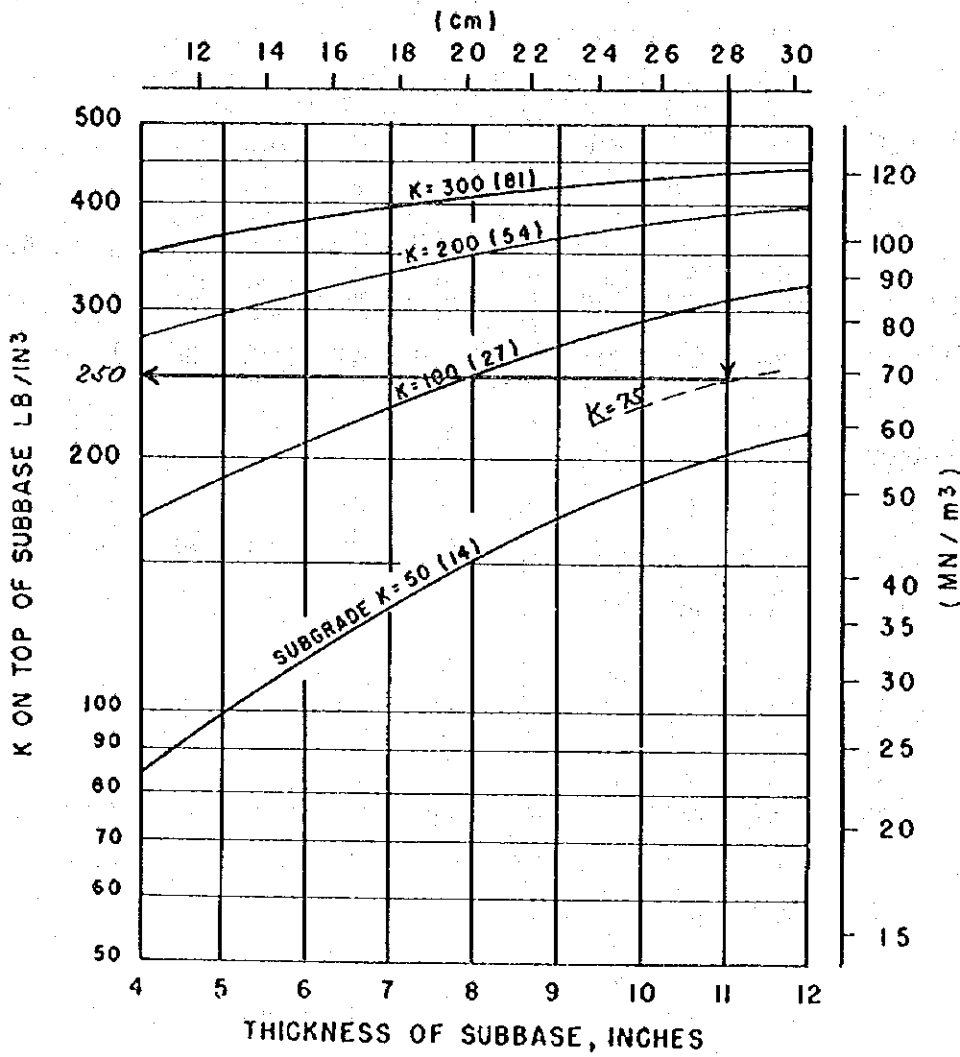


Figure-2 Effect of Stabilized Subbase on Subgrade Modulus

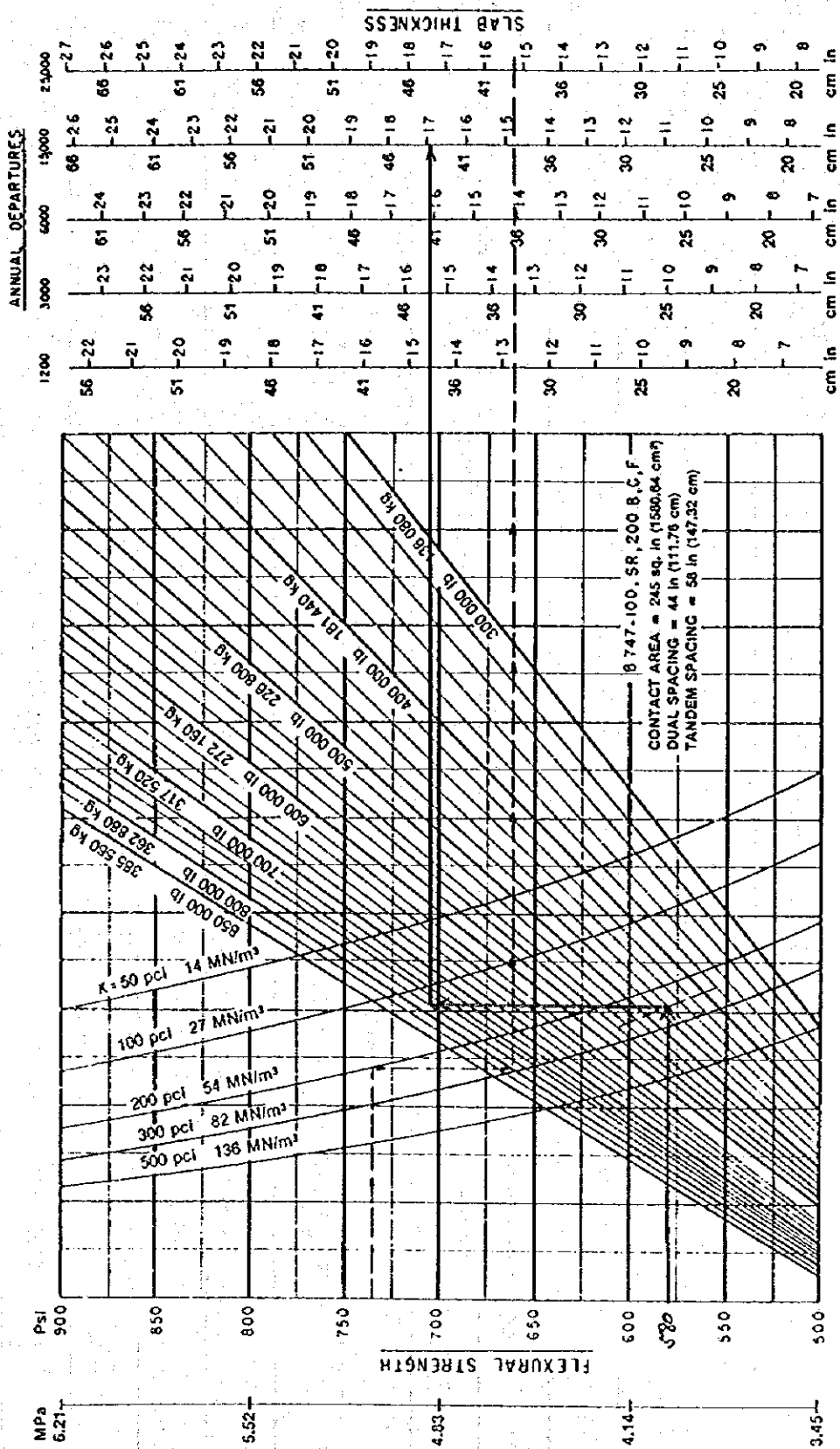


Figure-3 Rigid Pavement Design Curve - B747-200

Hydraulic Calculation for Storm Water Drainage Facilities

Upper: Pav. area 0.95
 Middle: Bldg. area 0.90
 Lower: Turf area 0.50

| Zone No. | # | Facility I.L. | Sur. Flow | | Slope % | Time | | Conduit | | Rainfall Intensity mm/hr. | Catch. Area ha. | Runoff Coefficient C | Runoff Q cum./sec. | Accum. Runoff ΣQ cum./sec. | Facility Dimensions | Invert Incline % | Roughness Factor n | Velocity V m/sec. | Facility Capacity Q0 cum./sec. | Design Flow Q2 cum./sec. | Checks |
|----------|------|---------------|-----------|------------|---------|---------|---------|-----------|-----------------|---------------------------|-----------------|----------------------|--------------------|----------------------------|---------------------------|------------------|--------------------|-------------------|--------------------------------|--------------------------|----------|
| | | | Length m | Distance m | | t1 min. | t2 min. | -run min. | Accum -run min. | | | | | | | | | | | | |
| A1 | a-1 | 8.40 | 600 | 120 | 1.0 | 18.42 | 13.839 | 32.26 | 30 | 35 | 98.8385 | 0.00 | 0.584375 | 1.5402 | Trapezoidal B=1.40 H=1.00 | 0.1 | 0.03 | 0.7226 | 1.5608 | 1.5402 | Velo. Ok |
| | | 7.80 | | | | | | | 102 | 95 | | 7.80 | | | | | | | | | Capa. Ok |
| AZ | a-2 | 7.80 | 600 | | | | 11.899 | 44.16 | 35 | 45 | 84.0112 | 0.00 | 0.584375 | 1.3092 | Trapezoidal B=2.00 H=1.20 | 0.1 | 0.03 | 0.8404 | 2.9044 | 2.8494 | Velo. Ok |
| | | 7.20 | | | | | | | 95 | 83 | | 7.80 | | | | | | | | | Capa. Ok |
| | a-3 | 7.20 | 550 | | | | 9.6809 | 53.84 | 45 | 60 | 75.3402 | 0.00 | 1.6002 | 0 | Trapezoidal B=2.10 H=1.50 | 0.1 | 0.03 | 0.9469 | 4.6018 | 4.4496 | Velo. Ok |
| | | 6.65 | | | | | | | 83 | 70 | | 7.80 | 1.6002 | | | | | | | | Capa. Ok |
| | a-0 | 6.65 | 550 | | | | 8.0293 | 61.87 | 60 | 75 | 68.8795 | 0.00 | 10.761 | 0 | Trapezoidal B=5.30 H=2.00 | 0.08 | 0.03 | 1.1417 | 15.001 | 15.211 | Velo. Ok |
| | | 6.21 | | | | | | | 70 | 61 | | 7.80 | 10.761 | | | | | | | | Capa. No |
| A11 | a-11 | 8.20 | 500 | 210 | 1.0 | 25.98 | 8.9088 | 34.88 | 30 | 35 | 95.1613 | 0.00 | 0.550318 | 1.6002 | Trapezoidal B=1.60 H=0.80 | 0.2 | 0.03 | 0.9354 | 1.6164 | 1.6002 | Velo. Ok |
| | | 7.20 | | | | | | | 102 | 95 | | 9.77 | | | | | | | | | Capa. Ok |
| AZ1 | a-21 | 9.60 | 200 | 230 | 0.5 | 19.11 | 4.1417 | 23.25 | 20 | 25 | 114.844 | 0.00 | 0.793295 | 2.4345 | Trapezoidal B=2.00 H=1.10 | 0.1 | 0.03 | 0.8048 | 2.47 | 2.4345 | Velo. Ok |
| | | 9.40 | | | | | | | 122 | 111 | | 3.35 | | | | | | | | | Capa. Ok |
| | a-22 | 9.40 | 140 | | | | 2.4656 | 25.72 | 25 | 30 | 109.707 | 0.00 | 2.4345 | 0 | Trapezoidal B=3.20 H=1.30 | 0.1 | 0.03 | 0.9464 | 4.9825 | 4.8691 | Velo. Ok |
| | | 9.26 | | | | | | | 111 | 102 | | 6.27 | 2.4345 | | | | | | | | Capa. Ok |
| | a-23 | 9.26 | 80 | | | | 0.8649 | 26.58 | 25 | 30 | 108.151 | 0.00 | 4.8691 | 0 | 3@Pipe ø1.20 | 0.2 | 0.013 | 1.5417 | 5.2307 | 4.8691 | Velo. Ok |
| | | 9.10 | | | | | | | 111 | 102 | | 6.27 | 4.8691 | | | | | | | | Capa. Ok |
| AZ2 | a-24 | 9.10 | 170 | | | | 3.0285 | 29.61 | 25 | 30 | 102.699 | 0.00 | 0.661278 | 0.7527 | Trapezoidal B=3.80 H=1.50 | 0.08 | 0.03 | 0.9356 | 6.6939 | 6.5755 | Velo. Ok |
| | | 8.96 | | | | | | | 111 | 102 | | 2.56 | 0.7527 | | | | | | | | Capa. Ok |
| | a-25 | 8.96 | 170 | | | | 1.8379 | 31.45 | 30 | 35 | 99.9709 | 0.00 | 6.5755 | 0 | 4@Pipe ø1.20 | 0.2 | 0.013 | 1.5417 | 6.9743 | 6.5755 | Velo. Ok |
| | | 8.62 | | | | | | | 102 | 95 | | 3.79 | 6.5755 | | | | | | | | Capa. Ok |
| AZ3 | a-26 | 8.62 | 340 | | | | 5.6882 | 37.14 | 35 | 45 | 92.4349 | 0.00 | 0.679526 | 1.6575 | Trapezoidal B=3.60 H=1.70 | 0.08 | 0.03 | 0.9962 | 8.3831 | 8.2331 | Velo. Ok |
| | | 8.35 | | | | | | | 95 | 83 | | 5.71 | 1.6575 | | | | | | | | Capa. Ok |
| | a-27 | 8.35 | 170 | | | | 1.5006 | 38.64 | 35 | 45 | 90.6342 | 0.00 | 8.2331 | 0 | 4@Pipe ø1.20 | 0.3 | 0.013 | 1.8881 | 8.5417 | 8.2331 | Velo. Ok |
| | | 7.84 | | | | | | | 95 | 83 | | 5.59 | 8.2331 | | | | | | | | Capa. Ok |
| AZ4 | a-28 | 7.84 | 630 | | | | 9.885 | 48.52 | 45 | 60 | 79.9465 | 0.00 | 0.66125 | 2.2908 | Trapezoidal B=4.00 H=1.90 | 0.08 | 0.03 | 1.0622 | 10.717 | 10.524 | Velo. Ok |
| | | 7.34 | | | | | | | 33 | 70 | | 10.01 | 2.2908 | | | | | | | | Capa. Ok |
| | a-29 | 7.34 | 120 | | | | 0.8805 | 49.4 | 45 | 60 | 79.1834 | 0.00 | 10.524 | 0 | 2@Box B=1.80 H=1.50 | 0.25 | 0.015 | 2.2714 | 11.039 | 10.524 | Velo. Ok |
| | | 7.04 | | | | | | | 83 | 70 | | 10.01 | 10.524 | | | | | | | | Capa. Ok |

Upper: Pav. area 0.95
 Middle: Bldg. area 0.90
 Lower: Turf area 0.50

| Zone No. | # | Facility I.L. | Sur. Flow | | Conduit Accum | | Rainfall Intensity | Catch. Area | Runoff Coefficient | Runoff Q | Accum. Runoff ΣQ | Facility Dimensions | | Invert Incline | Roughnet Flow Factor | Velocity V | Facility Capacity Q0 | Design Flow Q2 | Checks | |
|----------|------|---------------|-----------|---|---------------|-------|--------------------|-------------|--------------------|----------|-----------------------------|---------------------|--------|---------------------------|----------------------|------------|----------------------|----------------|--------|----------------------|
| | | | D | S | ti | t | | | | | | ti | t | | | | | | | m |
| A25 | a-30 | 7.04 | 480 | | 7.3412 | 56.74 | 45 | 60 | 72.821 | 0.00 | 0.593182 | 0.2376 | 10.761 | Trapezoidal B=4.00 H=2.00 | 0.08 | 0.03 | 1.0897 | 11.769 | 10.761 | Velo. Ok Capa. Ok |
| A31 | a-31 | 9.60 | 200 | | 4.1417 | 23.25 | 20 | 25 | 114.844 | 0.00 | 0.799295 | 2.4345 | 2.4345 | Trapezoidal B=2.00 H=1.10 | 0.1 | 0.03 | 0.8048 | 2.47 | 2.4345 | Velo. Ok Capa. Ok |
| A32 | a-32 | 9.40 | 170 | | 4.4368 | 16.87 | 15 | 20 | 130.131 | 0.00 | 0.661278 | 0.9538 | 0.9538 | Trapezoidal B=1.30 H=0.80 | 0.1 | 0.03 | 0.6386 | 0.9656 | 0.9538 | Velo. Ok Capa. Ok |
| B1 | b-1 | 7.80 | 800 | | 18.04 | 32.67 | 30 | 35 | 98.2658 | 0.00 | 0.610463 | 1.6563 | 1.6563 | Trapezoidal B=1.60 H=1.00 | 0.1 | 0.03 | 0.7391 | 1.7295 | 1.6563 | Velo. Ok Capa. Ok |
| B2 | b-2 | 7.00 | 240 | | 3.5037 | 36.3 | 35 | 45 | 93.4384 | 0.00 | from b-27 join -> 0.5 | 0.8046 | 14.97 | Trapezoidal B=5.30 H=2.00 | 0.08 | 0.03 | 1.1417 | 15.001 | 14.97 | Velo. Ok Capa. Ok |
| B3 | b-3 | 6.80 | 970 | | 13.848 | 50.15 | 45 | 60 | 78.5374 | 0.00 | 0.579258 | 1.9587 | 16.929 | Trapezoidal B=6.10 H=2.00 | 0.08 | 0.03 | 1.1675 | 17.021 | 16.929 | Velo. Ok Capa. Ok |
| b-0 | b-0 | 6.03 | 370 | | 5.1504 | 55.3 | 45 | 60 | 74.0737 | 0.00 | from b-12 join -> 3.0803 | 20.009 | 20.009 | Trapezoidal B=7.20 H=2.00 | 0.08 | 0.03 | 1.1973 | 19.828 | 20.009 | Velo. Ok Capa. NO |
| B11 | b-11 | 8.43 | 600 | | 9.7855 | 28.2 | 25 | 30 | 105.231 | 1.80 | 0.584375 | 1.6399 | 1.6399 | Trapezoidal B=1.40 H=1.00 | 0.2 | 0.03 | 1.0219 | 2.2073 | 1.6399 | Velo. Ok Capa. Ok |
| B12 | b-12 | 7.23 | 600 | | 8.9325 | 37.14 | 35 | 45 | 92.435 | 0.00 | 0.584375 | 1.4404 | 3.0803 | Trapezoidal B=1.40 H=1.20 | 0.2 | 0.03 | 1.1195 | 3.1436 | 3.0803 | Velo. Ok Capa. Ok |
| B21 | b-21 | 9.60 | 100 | | 1.2208 | 5.68 | 5 | 10 | 171.975 | 0.00 | 0.89 | 0.8928 | 0.8928 | 1@Pipe ø1.00 | 0.2 | 0.013 | 1.3652 | 1.0722 | 0.8928 | Velo. Ok Capa. Ok |
| B22 | b-22 | 9.40 | 330 | | 6.5445 | 12.2 | 10 | 15 | 144.513 | 0.00 | 0.664797 | 1.9748 | 2.8676 | Trapezoidal B=2.00 H=1.20 | 0.1 | 0.03 | 0.8404 | 2.9044 | 2.8676 | Velo. Ok Capa. Ok |
| b-23 | b-23 | 8.56 | 170 | | 1.5006 | 13.7 | 10 | 15 | 139.411 | 0.28 | from b-32 join -> 3.1535 | 0 | 6.0211 | 3@Pipe ø1.20 | 0.3 | 0.013 | 1.8881 | 6.4063 | 6.0211 | Velo. Ok Capa. Ok |
| B23 | b-23 | 8.56 | 340 | | 5.9271 | 19.63 | 15 | 20 | 122.962 | 0.00 | 0.679526 | 2.205 | 8.2261 | Trapezoidal B=5.50 H=1.40 | 0.08 | 0.03 | 0.9561 | 8.312 | 8.2261 | Velo. Ok Capa. Ok |
| B25 | b-25 | 7.86 | 170 | | 1.2778 | 20.91 | 20 | 25 | 120.003 | 0.28 | from b-34 join -> 1.4386 | 0 | 9.6649 | 2@Box B=1.70 H=1.50 | 0.25 | 0.015 | 2.2174 | 10.178 | 9.6649 | Velo. Ok Capa. Ok |

Upper: Pav. area 0.95
 Middle: Bldg. area 0.90
 Lower: Turf area 0.50

| Zone No. | # | M | Facility I.L. | Sur. Flow | | Conduit | | Rainfall Intensity | Catchment Area | Runoff Coefficient | Runoff Q | Accum. Runoff | Facility Dimensions | | Invert Incline | Roughness Factor | Flow Velocity | Facility Capacity | Design Flow | Checks | | | | |
|----------|------|------|---------------|-----------|-------|---------|--------|--------------------|----------------|--------------------|-----------|---------------|---------------------|--------|----------------|------------------|---------------|-------------------|-------------|--------|----------|----------|--------|----------|
| | | | | D | S | t1 | t2 | | | | | | A | C | | | | | | | B | H | n | V |
| | | | m | m | % | min. | min. | mm/hr. | ha. | | cu.m/sec. | cu.m/sec. | m | | % | | m/sec. | cu.m/sec. | cu.m/sec. | | | | | |
| 824 | b-26 | 7.86 | 710 | 710 | 30 | 35 | 35 | 99.2641 | 0.00 | 0.66125 | 2.8443 | 12.509 | Trapezoidal | B=6.00 | H=1.70 | 0.08 | 0.03 | 1.0712 | 12.62 | 12.509 | Velo. Ok | | | |
| | | 7.30 | | | 102 | 95 | 102 | 95 | 10.01 | | | | | | | | | | | | Capa. Ok | | | |
| | b-27 | 7.00 | 120 | 120 | 30 | 35 | 35 | 98.0833 | | | 0 | 12.509 | 2@Box | B=2.00 | H=1.50 | 0.25 | 0.015 | 2.3713 | 12.805 | 12.509 | Velo. Ok | | | |
| | | 9.62 | | | 102 | 95 | 102 | 95 | 6.99 | | | | | | | | | | | | Capa. Ok | | | |
| 831 | b-31 | 9.31 | 310 | 310 | 1.3 | 5.398 | 6.0041 | 11.4 | 10 | 15 | 147.234 | 0.00 | 0.844524 | 3.1535 | 3.1535 | Trapezoidal | B=2.30 | H=1.20 | 0.1 | 0.03 | 0.8605 | 3.2528 | 3.1535 | Velo. Ok |
| | | 9.31 | | | 152 | 135 | 152 | 135 | 2.14 | | | | | | | | | | | | | Capa. Ok | | |
| | b-32 | 9.07 | 120 | 120 | 12.7 | 10 | 15 | 142.823 | | | 0 | 3.1535 | 2@Pipe | ø1.20 | | 0.2 | 0.013 | 1.5417 | 3.4871 | 3.1535 | Velo. Ok | | | |
| | | 9.90 | | | 152 | 135 | 152 | 135 | 2.86 | | | | | | | | | | | | | Capa. Ok | | |
| 832 | b-33 | 8.59 | 310 | 310 | 1.3 | 7.238 | 7.2394 | 14.48 | 10 | 15 | 136.775 | 0.00 | 0.7574 | 1.4388 | 1.4388 | Trapezoidal | B=1.30 | H=1.00 | 0.1 | 0.03 | 0.7137 | 1.4773 | 1.4388 | Velo. Ok |
| | | 8.59 | | | 152 | 135 | 152 | 135 | 2.14 | | | | | | | | | | | | | Capa. Ok | | |
| | b-34 | 8.29 | 120 | 120 | 1.604 | 15.64 | 15 | 20 | 133.341 | | 0 | 1.4388 | 1@Pipe | ø1.20 | | 0.25 | 0.013 | 1.7236 | 1.9494 | 1.4388 | Velo. Ok | | | |
| | | 8.86 | | | 135 | 122 | 135 | 122 | 0.97 | | | | | | | | | | | | | Capa. Ok | | |
| 833 | b-35 | 8.56 | 120 | 120 | 1.0 | 3.77 | 1.1604 | 4.93 | ## | ## | ## | ## | N/A | 1@Pipe | ø1.20 | 0.25 | 0.013 | 1.7236 | 1.9494 | ## | N/A | Velo. Ok | | |
| | | 9.10 | | | 111 | 102 | 111 | 102 | 2.82 | | | | | | | | | | | | | Capa. ## | | |
| C1 | c-1 | 8.50 | 600 | 600 | 1.0 | 14.79 | 10.822 | 25.41 | 25 | 30 | 110.265 | 0.00 | 0.68607 | 1.4331 | 1.4331 | U-channel | B=1.70 | H=1.00 | 0.1 | 0.02 | 0.9415 | 1.4404 | 1.4331 | Velo. Ok |
| | | 9.16 | | | 152 | 135 | 152 | 135 | 4.00 | | | | | | | | | | | | | Capa. Ok | | |
| C2 | c-2 | 8.50 | 330 | 330 | 1.3 | 8.504 | 4.9075 | 13.41 | 10 | 15 | 140.401 | 0.00 | 0.6975 | 0.9793 | 0.9793 | U-channel | B=1.10 | H=1.00 | 0.2 | 0.02 | 1.1207 | 1.1095 | 0.9793 | Velo. Ok |
| | | 9.16 | | | 152 | 135 | 152 | 135 | 2.02 | | | | | | | | | | | | | Capa. Ok | | |
| C3 | c-3 | 8.50 | 330 | 330 | 1.3 | 9.199 | 5.6701 | 14.87 | 10 | 15 | 135.447 | 0.00 | 0.641071 | 0.6078 | 0.6078 | U-channel | B=0.80 | H=1.00 | 0.2 | 0.02 | 0.97 | 0.6984 | 0.6078 | Velo. Ok |
| | | 9.16 | | | 152 | 135 | 152 | 135 | 0.76 | | | | | | | | | | | | | Capa. Ok | | |
| C4 | c-4 | 8.50 | 330 | 330 | 1.3 | 9.097 | 5.64 | 14.74 | 10 | 15 | 135.895 | 0.00 | 0.646154 | 0.5708 | 0.5708 | U-channel | B=0.90 | H=0.80 | 0.2 | 0.02 | 0.9752 | 0.6319 | 0.5708 | Velo. Ok |
| | | 9.00 | | | 152 | 135 | 152 | 135 | 1.58 | | | | | | | | | | | | | Capa. Ok | | |
| C5 | c-5 | 8.50 | 250 | 250 | 1.3 | 7.692 | 3.7178 | 11.41 | 10 | 15 | 147.205 | 0.00 | 0.735909 | 0.993 | 0.993 | U-channel | B=1.10 | H=1.00 | 0.2 | 0.02 | 1.1207 | 1.1095 | 0.993 | Velo. Ok |
| | | 8.76 | | | 152 | 135 | 152 | 135 | 1.57 | | | | | | | | | | | | | Capa. Ok | | |
| C6 | c-6 | 8.50 | 130 | 130 | 1.3 | 7.597 | 2.509 | 10.11 | 10 | 15 | 151.64 | 0.00 | 0.720982 | 0.3401 | 0.3401 | U-channel | B=0.80 | H=0.60 | 0.2 | 0.02 | 0.8636 | 0.3731 | 0.3401 | Velo. Ok |
| | | 9.00 | | | 152 | 135 | 152 | 135 | 0.55 | | | | | | | | | | | | | Capa. Ok | | |
| C7 | c-7 | 8.50 | 500 | 500 | 2.5 | 10.47 | 10.272 | 20.75 | 20 | 25 | 120.358 | 0.00 | 0.684365 | 2.7365 | 2.7365 | Trapezoidal | B=2.80 | H=1.00 | 0.1 | 0.03 | 0.8112 | 2.7744 | 2.7365 | Velo. Ok |
| | | 8.50 | | | 122 | 111 | 122 | 111 | 7.06 | | | | | | | | | | | | | Capa. Ok | | |

Upper: Pav. area 0.95
 Middle: Bldg. area 0.90
 Lower: Turf area 0.50

| Zone No. | # | Facility I.L. | Sur. Flow Length | Distance D | Slope S | Time t1 | Conduit Accum -run t2 | Rainfall Intensity | Catchment Area A | Runoff Coefficient C | Runoff Q | Accum. Runoff Q | Facility Dimensions | Invert Incline % | Roughness Factor n | Velocity V | Facility Capacity | Design Flow Q2 | Checks | |
|----------|------|---------------|------------------|------------|---------|---------|-----------------------|--------------------|------------------|----------------------|----------|-----------------|---------------------|------------------|--------------------|------------|-------------------|----------------|--------|----------------------|
| | | | | | | | | | | | | | | | | | | | | mm/hr. |
| C8 | Not | Not | 100 | 10 | 15 | 135 | 14.99 | 135.022 | 1.25 | 0.640214 | 1.6808 | 1.6808 | | | | | | | | |
| | | | | | | | 152 | 135 | 4.68 | | | | | | | | | | | |
| C9 | c-9 | | 300 | 110 | 2.5 | 12.24 | 6.127 | 18.37 | 0.96 | 0.614286 | 0.8143 | 0.8143 | Trapezoidal B=0.70 | 0.80 | 0.2 | 0.03 | 0.8161 | 0.8813 | 0.8143 | Velo. Ok Capa. Ok |
| | | | | | | | 135 | 122 | 2.82 | | | | | | | | | | | |
| C10 | Not | Not | 250 | 10 | 28.93 | 28.93 | 25 | 103.923 | 0.00 | 0.538807 | 4.1924 | 4.1924 | | | | | | | | |
| | | | | | | | 111 | 102 | 24.33 | | | | | | | | | | | |
| C11 | c-11 | | 130 | 120 | 1.3 | 13.42 | 3.0359 | 16.46 | 2.43 | 0.689844 | 1.4481 | 1.4481 | Trapezoidal B=1.30 | 1.00 | 0.1 | 0.03 | 0.7137 | 1.4773 | 1.4481 | Velo. Ok Capa. Ok |
| | | | | | | | 135 | 122 | 3.33 | | | | | | | | | | | |
| C12 | c-12 | | 600 | 250 | 8.78 | 12.489 | 28.95 | 25 | 1.92 | 0.705714 | 0.8554 | 2.3035 | Trapezoidal B=1.50 | 1.20 | 0.1 | 0.03 | 0.8007 | 2.3348 | 2.3035 | Velo. Ok Capa. Ok |
| | | | | | | | 111 | 102 | 2.28 | | | | | | | | | | | |
| C13 | c-13 | | 180 | 180 | 8.18 | 3.4613 | 32.41 | 30 | 1.54 | 0.616471 | 1.0049 | 3.3084 | Trapezoidal B=2.40 | 1.20 | 0.1 | 0.03 | 0.8667 | 3.3698 | 3.3084 | Velo. Ok Capa. Ok |
| | | | | | | | 102 | 95 | 4.41 | | | | | | | | | | | |
| D1 | d-1 | | 340 | 210 | 1.0 | 11.63 | 6.5381 | 18.16 | 7.10 | 0.853978 | 3.326 | 3.326 | Trapezoidal B=2.40 | 1.20 | 0.1 | 0.03 | 0.8667 | 3.3698 | 3.326 | Velo. Ok Capa. Ok |
| | | | | | | | 135 | 122 | 2.16 | | | | | | | | | | | |
| D2 | d-2 | | 120 | 120 | 9.48 | 1.2357 | 19.4 | 15 | 0.97 | 0.9365 | 0.3214 | 3.6475 | 2@80x B=1.20 | 1.20 | 0.2 | 0.015 | 1.6186 | 4.1953 | 3.6475 | Velo. Ok Capa. Ok |
| | | | | | | | 135 | 122 | 0.03 | | | | | | | | | | | |
| D3 | d-3 | | 120 | 120 | 9.24 | 1.1559 | 20.56 | 20 | 1.85 | | | | | | 0.2 | 0.015 | 1.7302 | 5.2323 | 4.6732 | Velo. Ok Capa. Ok |
| | | | | | | | 122 | 111 | | | | | | | | | | | | |
| D11 | d-11 | | 220 | 50 | 1.3 | 7.503 | 4.3175 | 11.82 | 1.85 | 0.744853 | 1.0257 | 1.0257 | Trapezoidal B=0.90 | 0.80 | 0.2 | 0.03 | 0.8493 | 1.0395 | 1.0257 | Velo. Ok Capa. Ok |
| | | | | | | | 152 | 135 | 1.55 | | | | | | | | | | | |
| D12 | d-12 | | 340 | 45 | 1.3 | 8.102 | 7.1063 | 15.21 | 1.34 | 0.695779 | 0.8004 | 0.8004 | Trapezoidal B=0.60 | 0.80 | 0.2 | 0.03 | 0.7974 | 0.8038 | 0.8004 | Velo. Ok Capa. Ok |
| | | | | | | | 135 | 122 | 1.74 | | | | | | | | | | | |

Appendix 11.3.1

Facility Requirement in the Passenger Terminal Building

The following IATA formulating are used for calculating international passenger processing facility requirements.

1. Departure Curb:

$$L=(0.095ap)1.1$$

where a: Number of peak hour originating passengers ;estimated=1,230

p: Proportion of Passengers using car/taxi - Originating Passengers ;estimated=80%

Therefore,

$$L=(0.095 \times 1230 \times 0.80)1.1=103$$

2. Departure Concourse:

$$A=0.75[a(1+o)+b]$$

where a: Number of peak hour originating passengers ;estimated =1,230

b: Number of peak hour landside transfer passengers ;estimated=0

o: Number of visitors - Originating passengers ;estimated=1

Therefore,

$$A=0.75[1230(1+1)+0]=1845$$

3. Departure Customs:

$$N=[(a+b)t_0/60]1.1$$

where a: Number of peak hour originating passengers ;estimated=1,230

b: Number of peak hour landside transfer passengers ;estimated=0

t₀: Average processing time per passenger at departure customs (mins.);estimated=0.33

4. Check-in Queuing Area:

$$A=[0.25(a+b)]1.1$$

where a: Number of peak hour originating passengers ;estimated=1,230

b: Number of peak hour landside transfer passengers ;estimated=0

Therefore,

$$A=[0.25(1230+0)]1.1=338$$

5. Check-in Desks:

$$N=[(a+b)t_1/60]1.1$$

where a: Number of peak hour originating passengers ;estimated=1,230

b: Number of peak hour landside transfer passengers ;estimated=0

t₁: Average processing time per passenger at check-in desk (mins.) ;estimated=1.5

Therefore,

$$N=[(1230+0)1.5/60]1.1=33.8$$

6. Departure Passport Control:

$$N = [(a+b)t_2/60]1.1$$

where a: Number of peak hour originating passengers ;estimated=1,230

b: Number of peak hour landside transfer passengers ;estimated=0

t₂: Average processing time per passenger at departure passport control (mins.)
;estimated=2.5

Therefore,

$$N = [(1230+0)2.5/60]1.1 = 56.4$$

7. Security Check - Centralized:

$$N = (a+b)/300$$

where a: Number of peak hour originating passengers ;estimated=1,230

b: Number of peak hour landside transfer passengers ;estimated=0

Therefore,

$$N = (1230+0)/300 = 4.1$$

8. Departure Lounge:

$$A = [c(ui+vk)/30]1.1$$

where c: Number of peak hour departing passengers ;estimated=1,230

i: Proportion of long haul departing passengers during peak hour ;estimated=100%

k: Proportion of short haul departing passengers during peak hour ;estimated=0%

u: Average occupancy time of departure lounge per departing long-haul passengers
(mins.) ;estimated=60

v: Average occupancy time of departing lounge per departing short-haul passengers
(mins.) ;estimated=40

Therefore,

$$A = [1230(60 \times 1 + 40 \times 0)/30]1.1 = 2706$$

9. Security Check - Gate Lounge:

$$N = 0.2m/(g-5)$$

where m: Maximum number of seats on largest aircraft handled at gate in question

;estimated=500

g: Time of first passenger at gate lounge (mins. before STD) ;estimated=50

Therefore,

$$N = 0.2 \times 500 / (50 - 5) = 2.2$$

10. Gate Lounge:

$$A = m$$

where m: Maximum number of seats on largest aircraft handled at gate in question

,estimated=500

Therefore,

$$A=500$$

11. Arrival Health Check:

N=3 position

12. Arrival Passport Control:

$$N=\{(d+b)t/60\}1.1$$

where b: Number of peak hour landside transfer passengers ;estimated=0

d: Number of peak hour terminating passengers;estimated=1,230

t: Average processing time per passenger at arrival passport control (mins.)

;estimated=3.0

Therefore,

$$N=\{(1230+0)3.0/60\}1.1=67.7$$

13. Arrival Passport Control Queuing Area:

$$A=0.25(d+b)$$

where b: Number of peak hour landside transfer passengers ;estimated=0

d: Number of peak hour terminating passengers ;estimated=1,230

Therefore,

$$A=0.25(1230+0)=308$$

14. Baggage Claim Area:

$$A=(0.9e)1.1$$

where e: Number of peak hour terminating and Int'l/Dom. transfer passengers

;estimated=1,230

Therefore,

$$A=(0.9 \times 1230)1.1=1218$$

15. Number of Baggage Claim Devices - Wide Body:

$$N=e/q/425$$

where e: Number of peak hour terminating and Int'l/Dom. transfer passengers

;estimated=1,230

q: Proportion of passengers arriving by wide-body aircraft during peak hour

;estimated=70%

Therefore,

$$N=1230 \times 0.70 / 425 = 2.0$$

16. Number of Baggage Claim devices - Narrow Body:

$$N = er/300$$

where e: Number of peak hour terminating and Int'l/Dom. transfer passengers

$$e; \text{estimated} = 1,230$$

r: Proportion of passengers arriving by narrow-body aircraft during peak hour

$$r; \text{estimated} = 30\%$$

Therefore,

$$N = 1230 \times 0.30 / 300 = 1.2$$

17. Arrival Customs Queuing Area:

$$A = (0.25ef)l.1$$

where e: Number of peak hour terminating and Int'l/Dom. transfer passengers

$$e; \text{estimated} = 1,230$$

f: Proportion of passengers to be customs checked

$$f; \text{estimated} = 100\%$$

Therefore,

$$A = (0.25 \times 1230 \times 1.0) 1.1 = 338$$

18. Arrival Customs:

$$N = e\tau/60$$

where e: Number of peak hour terminating and Int'l/Dom. transfer passengers

$$e; \text{estimated} = 1,230$$

f: Proportion of passengers to be customs checked

$$f; \text{estimated} = 100\%$$

t4: Average processing time per passenger at arrival customs (mins.) ; estimated = 0.25

Therefore,

$$N = 1230 \times 1.0 \times 0.25 / 60 = 5.1$$

19. Arrival Concourse Waiting Area:

$$A = [0.375(d+b+2do)]l.1$$

where b: Number of peak hour landside transfer passengers

$$b; \text{estimated} = 0$$

d: Number of peak hour terminating passengers

$$d; \text{estimated} = 1,230$$

o: Number of visitors - Terminating passengers

$$o; \text{estimated} = 1$$

Therefore,

$$A = [0.375(1230 + 0 + 2 \times 1230 \times 1)] 1.1 = 1522$$

20. Arrival Curb:

$$L = (0.095dp)l.1$$

where d: Number of peak hour terminating passengers

$$d; \text{estimated} = 1,230$$

p: Proportion of passengers using car/taxi - Terminating passengers; estimated = 70%

Therefore,

$$L = (0.095 \times 1230 \times 0.70) 1.1 = 103$$

**TERMS OF REFERENCE
FOR
ENVIRONMENTAL SURVEY**

I. OBJECTIVES

Objectives of this environmental survey of Hanoi International Airport and its surrounding area are to obtain data on social environment, natural environment and pollution for the fundamental information for establishing Environmental Impact Assessment (EIA) for Feasibility Study on New Development Plan of Hanoi International Airport.

II. EXECUTION OF THE SERVICES

The Second Party shall perform the environmental survey with the following manner:

1. Items

The items are as follows;

- Social environment
 - Resettlement
 - Water rights & rights of common
 - Waste
 - Cultural property
- Natural environment
 - Flora and fauna
- Pollution
 - Air quality
 - Water quality
 - Noise

(1) Resettlement

a. Survey items

- Distribution of houses
- Constitution of households
- Occupation of constituents
- Distribution of graves
- Existing condition of land use
- Regulation of resettlement

- Regulation of compensation
- Regulation of transfer of graves
- Related development plan

b. Survey area

- 200 households in the proposed expansion area

c. Survey times

- 1 time

d. Survey methods

- Interview survey
- Data collection
- Data analysis and reporting

(2) Water rights and fishery

a. Survey items

- Existing condition of water use
- Population of fishermen
- Existing condition of fishing zone/kinds of fish/number and sum of fishery
- Regulation of water rights and rights of common
- Regulation of fishery
- Related development plan

b. Survey area

- rivers and ponds in the surrounding area of the existing Airport

c. Survey times

- 1 time

d. Survey methods

- Interview
- Data collection
- Data analysis and reporting

(3) Waste

a. Survey items

- Existing waste treatment system of Airport
- Volume and physical and chemical characteristics of waste

- Collection points/ability/methods and frequency
- Location, scale and capacity of final disposal sites and incineration plants
- Location, scale and capacity of treatment for effluent
- Habitation and propagation of small mammals (e.g., rats), and insects (e.g., flies)
- Regulation of waste
- Related development plan

b. Survey area

- Existing Hanoi Airport

c. Survey times

- 1 time

d. Survey methods

- Field survey
- Interview
- Data collection
- Data analysis and reporting

(4) Cultural property

a. Survey items

- Kinds of cultural property
- Location of cultural property
- Value of cultural property
- Possibility of relocation of cultural property
- Regulation of protection of cultural property
- Related development plan

b. Survey area

- Surrounding area of the existing Airport,

c. Survey times

- 1 time

d. Survey methods

- Interview
- Data collection
- Data analysis and reporting

(5) Flora and fauna

- a. **Survey items**
 - **Location of flora and fauna**
 - **Existing condition vegetation**
 - **Ecological condition of plants and animals**
 - **Endangered and rare species listed in the Red Data Books**
 - **Possibility of relocation of endangered and rare species**
 - **Bilateral and multilateral conventions on wildlife**
 - **Regulation of protection for natural environment**
 - b. **Survey area**
 - **Surrounding area of the existing Airport,**
 - c. **Survey times**
 - **1 time**
 - d. **Survey methods**
 - **Field survey**
 - **Interview**
 - **Data collection**
 - **Data analysis and reporting**
- (6) Air pollution**
- a. **Survey items**
 - **Existing condition of air quality (SO_x, CO, SPM, NO_x, O_x)**
 - **Volume of vehicles**
 - **Regulation of protection on air quality**
 - b. **Survey area**
 - **8 points in the surrounding area of the existing Airport**
 - c. **Survey times**
 - **1 time: 7 days, 24 hours continuously**
 - d. **Survey methods**
 - **Field survey**
 - **Data collection**
 - **Data analysis and reporting**
 - e. **Survey man-day for field survey**
 - 336 man-day (working hours: 8 hours /day)**
 - for 1 day -1 point**

2 persons /party /point X 3 parties /day = 6 persons /day /point
for 1 day -8 points

6 persons /day /point X 8 points = 48 persons /day
for 7 days -8 points

48 persons /day X 7 days = 336 persons

(7) Water pollution

a. Survey items

- Existing condition of water quality (pH, Colon Bacillus, SS, DO, BOD)
- Existing condition of well (Depth, Water level, Volume of pumping up)
- Flow volume of rivers /channels
- Survey condition (Weather at the sampling time, Air temperature, Water temperature, Colour of water, Smell of water, photograph of survey condition and sampling points)
- Regulation of protection on water quality

b. Survey area

- 6 points at rivers /ponds, where waste water will expose, in the surrounding area of the existing Airport (for water quality)
- 6 points at wells in the existing Airport (for well)
- 6 points at rivers /channels in the surrounding area of the existing Airport (for volume of rivers /channels)

c. Survey times

- 2 times: dry season /rainy season

d. Survey methods

- Field survey
- Data collection
- Data analysis and reporting

(8) Noise

a. Survey items

- Existing condition of noise level (dB(A))
- Survey condition (photograph of survey condition and sampling points)
- Regulation of protection on noise

b. Survey area

- 8 points in the surrounding area of the existing Airport

c. Survey times

- 1 time: 7 days, 24 hours continuously

d. Survey methods

- Field survey
- Data collection
- Data analysis and reporting

e. Survey man-day for field survey

336 man-day (working hours: 8 hours /day)

for 1 day -1 point

2 persons /party /point X 3 parties /day = 6 persons /day /point

for 1 day -8 points

6 persons /day /point X 8 points = 48 persons /day

for 7 days -8 points

48 persons /day X 7 days = 336 persons

2. Duration of Survey

The CONTRACTOR shall report to the CONSULTANT the survey schedule prior to carrying out the survey.

3. Survey Organization

The field survey requires specialists as listed below;

| | |
|-------------------------------------|-------------------|
| 1. Overall co-ordinator | 1 person |
| 2. Specialist on social environment | 1 person |
| 3. Specialist on flora | 1 person |
| 4. Specialist on fauna | 1 person |
| 5. Specialist on air quality | 1 person |
| 6. Specialist on water quality | 1 person |
| 7. Specialist on noise | 1 person |
| 8. Field surveyor | 48 persons |
| TOTAL | 55 persons |

III. ANALYSIS AND REPORT SUBMISSION

The CONTRACTOR must submit the following reports in English to the CONSULTANT the following manner:

| Kinds of Report | Submission | Numbers of Copies | Major Contents |
|--------------------|---|-------------------|--|
| Draft Final Report | Mid of July, 1995 | 3 | Results of the field survey and analysis |
| Final Report | Within 1 weeks after receiving comments on the Draft Final Report from the CONSULTANT | 5 | Results of the field survey and analysis |

VI. GENERAL

1. The Second Party shall carefully follow the instruction given by the First Party and get close contact with the First Party during the survey. The Second Party shall be always ready to report to the First Party whenever required.
2. The Second Party shall acquire any kind of formal permits, if necessary and arrange surveyors, equipment and vehicles etc. for carrying out the survey satisfactory at the Second Party's expense.
3. The Second Party shall execute great care during the progress of the survey to avoid any accidents in the site, and shall be responsible for any accidents during the survey. Accordingly, no clime can be accepted by the First Party.
4. English language shall be used in all kinds of communications between the First Party and the Second Party.
5. Delay of report submission is the subject of reduction of payment of the First Party to the Second Party. Penalty amount shall be fixed in the Contract document.
6. Any other issues besides the items described above shall be decided after due consideration between the First Party and the Second Party.

Survey Item, Area, Time and Method

Table 1 Item, Area, Time and Method of Survey on Resettlement

| Item | Description | | | | | | | | | | | | | | | | |
|-----------------|--|-----------------|---------------------|-----------|----|-------------|----|------------|----|-----------|----|------------|----|-------------|----|--------|-----|
| Survey Item | <ul style="list-style-type: none"> - Constitution of households - Occupation of constituents - Distribution of graves - Existing condition of land use | | | | | | | | | | | | | | | | |
| Survey Area | <p>Interview Survey: 221 households, which were selected at random at proposed new airport site and its surrounding area, are shown as follows;</p> <table style="margin-left: 40px;"> <thead> <tr> <th>Community Name,</th> <th>Selected Households</th> </tr> </thead> <tbody> <tr> <td>Mai Dinh:</td> <td>30</td> </tr> <tr> <td>Quang Tien:</td> <td>30</td> </tr> <tr> <td>Phu Cuong:</td> <td>38</td> </tr> <tr> <td>Phu Minh:</td> <td>31</td> </tr> <tr> <td>Hien Ninh:</td> <td>46</td> </tr> <tr> <td>Thanh Xuan:</td> <td>46</td> </tr> <tr> <td>Total:</td> <td>221</td> </tr> </tbody> </table> <p>Data Collection: 6 Communities; Mai Dinh, Quang Tien, Phu Cuong, Phu Minh, Hien Ninh, Thanh Xuan</p> | Community Name, | Selected Households | Mai Dinh: | 30 | Quang Tien: | 30 | Phu Cuong: | 38 | Phu Minh: | 31 | Hien Ninh: | 46 | Thanh Xuan: | 46 | Total: | 221 |
| Community Name, | Selected Households | | | | | | | | | | | | | | | | |
| Mai Dinh: | 30 | | | | | | | | | | | | | | | | |
| Quang Tien: | 30 | | | | | | | | | | | | | | | | |
| Phu Cuong: | 38 | | | | | | | | | | | | | | | | |
| Phu Minh: | 31 | | | | | | | | | | | | | | | | |
| Hien Ninh: | 46 | | | | | | | | | | | | | | | | |
| Thanh Xuan: | 46 | | | | | | | | | | | | | | | | |
| Total: | 221 | | | | | | | | | | | | | | | | |
| Survey Time | 20th May, 1995 ~ 30th June, 1995 | | | | | | | | | | | | | | | | |
| Survey Method | Interview survey was carried out by using interview sheet in Table 2. | | | | | | | | | | | | | | | | |