

首都圈 新國際空港 建設計劃

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I. 建設의 必要性和 立地選定

- 미래 항공산업의 변화에 능동적으로 대처
 - 경제의 Global화에 따른 대외 교역량의 증가로 항공교통수요 증대
 - 산업구조의 고도화에 따른 고부가가치 상품의 교역증대로 항공화물의 급속한 증가
 - 소득증대와 여가시간 증가에 따라 고급 교통수단인 항공기 이용 선호
- 21세기에 요구되는 공항시설의 확보
 - Global화에 부응, 소음피해가 없고 24시간 운항이 가능한 공항

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- 초대형기(800-1,000명 탑승) 및 극초음속기(마하3-5)의 취항이 가능한 장대 활주로 구비(4~5,000m)
- 거점공항(HUB) 확보를 위한 세계 각국의 공항개발 경쟁에 대응
 - 구미지역 : 독일 신뮌헨공항, 미국 신덴버공항, 프랑스 드골공항 등
 - 아태지역 : 일본 간사이신공항, 홍콩 첵랩콕신공항, 싱가포르 창이공항 등
- 수도권 항공수송 수요의 증가에 대비한 수용능력 확보
 - 항공여객 수요 증가 추세

	세	계	아태지역	우리나라	수도권
· 지난 10년간	7%	10%	12.8%	13%	
· 금후 10년간	6%	9.5%	9.4%	9.3%	

- 김포공항의 수용능력은 '90년대 중반 한계에 도달할 것으로 전망되나 입지여건상 대규모 확장 불가
(실적('93)/ 능력 운항: 164천회/195천회, 여객: 2,263만명/3,062만명)

II. 事業推進經緯

- 89. 1. 23: 수도권신공항 개발 시급성 보고('89 교통부 업무보고)
- 89. 7. 24: 신국제공항건설추진위원회 규정 공포(대통령령 제12762호)
- 90. 6. 14: 건설입지 확정(제3차 신국제공항건설추진위원회)
 - 건설입지: 인천시 중구 영종도, 용유도 일원 (1,700만평)
- 90. 6. 21: 신국제공항건설기획단 발족 (교통부)
- 90. 11. 16 - '91. 12. 24: 기본설계용역 실시
- 91. 5. 31: 수도권신공항 건설촉진법 공시(법률 제4384호)
- 91. 12. 14: 한국공항공단법 개정 공포 (법률 제4436호)
- 92. 1. 31: 신공항건설본부 설치(한국공항공단)
- 92. 6. 16: 수도권 신국제공항 예정지역지정 및 기본계획 고시
(교통부 고시 제92-16호)
- 92. 11. 10: 수도권 신공항건설 사업계획 승인
(교통부 고시 제92-31호)

○92. 11. 12 : 수도권 신국제공항(영종도) 건설 기공식

Ⅲ. 新空港의 位置

수도권 신국제공항은 한반도 중부 경기만의 인천직할시 중구 운서동 일원인 영종도, 용유도, 삼목도, 신불도 일대의 간석지상에 건설되며 서울 도심으로 부터 약 50km 떨어져 있음.

Ⅳ. 事業規模 및 開發計劃

○단계별 사업 규모

구 분		1 단 계	초 종	김포공항
공	부 지 조 성 (배후지원단지)	412만평 (80만평)	1,700만평 (264만평)	214만평 -
	활주로(m)	1 본 (3,750×60)	4본 (3,750-4,200×60)	2본 (3,600×45) (3,200×60)
	(년처리능력)	(17만회)	(53만회)	(19.5만회)
	여객터미널 (년처리능력)	290천㎡ (2,700 만명)	1,070천㎡ (1억명)	201천㎡ (3,062만명)
	화물터미널 (년처리능력)	132천㎡ (171만톤)	858천㎡ (700만톤)	79천㎡ (170만톤)
항	항공보안시설	CAT - IIIa	CAT - IIIa	CAT - II
교 통	고속철도	6-8차선, 54.5km	8차선, 54.5km 등	-
	전용철도	(용지매입)	복선 66km	-
사 업 비		3조 9,865억원 ('93년 가격)	약 10조원 ('91년 가격)	
사 업 기 간		'92 - '99	2020년까지	

○부지조성

기본방안

- 해안매립에 의한 공항 및 배후지원단지 조성

- 외해로부터 부지를 보존하기 위한 방조제 축조
- 경제적인 매립을 위해 우수지 배수방식으로 내부배제
- 공항시설물 설치에 적합한 지반조성
- 해양환경 영향 최소화와 환경보존 철저
- 장래확장 가능성 및 신축성을 고려

○여객터미널

- 여객터미널과 탑승동은 내측활주로 사이에 배치
- 탑승동 분리의 여객청사 중앙 집중형
 - 제1터미널 1동
 - 제2터미널 1동
 - 탑승동 4동

○국제업무지역

- 주요 국제 기술, 교육, 문화관계 행사 및 무역전시회를 유치하는 전시장 및 회의장 설치
- 무역 및 비즈니스의 동북아시아 중심지로 부상키 위한 사무실 건물 및 지원 서비스시설 설치
- 지역 시민과 외국 여행객들의 숙박, 쇼핑, 휴양을 위한 관광, 위락시설, 백화점, 식당, 영화관, 은행, 예술센터 등 설치

○공항 배후지원단지

미래상

- 중추국제공항 기능제고를 위한 임공항 도시
- 창조적 정보 및 문화의 국제교류도시
- 쾌적한 환경을 창출하는 해양도시

도입기능

- 주거기능 : 단독주택, 연립주택, 아파트 근린생활 시설
- 중심상업기능 : 상업, 업무, 국제교류 유흥위락 시설
- 유통업무기능 : 창고, 운수, 물류센터
- 공공시설 : 교통시설, 공원·녹지시설, 사회복지시설, 공용의 청사, 기타

○ 항공보안시설

• 이착륙시설

－ 목 적

· CATEGORY IIIa 로 운영

－ 정밀계기착륙장치

· 항공등화시설

· 지상감시레이다

• 항공교통 관제업무 시설

－ 목 표

· 항공교통관제업무 자동화

－ 시 설

· RADAR

┌ ASR/SSR 수송신 설비
└ 단말레이다 관제설비(TRACON)

· 관제통신

┌ VHF/UHF 송수신 설비
├ 음성제어장치 (VCCS)
└ 항공통신(ATN) 장치

○ 정보통신시설

• 목 적

－ 21세기 최첨단 통신 서비스 제공과 여객서비스의 질적 향상

－ 공항시설의 효율적 관리와 공항업무의 지능화

－ 공항지능화를 위한 종합정보통신망 구축

• 시설규모

· 공항종합정보센터 1동

· 정보처리설비 1식

· 정보통신설비 1식

· 통신시설 1식

V. 所要 事業費 및 財源調達 計劃

(단위 : 억원)

소요사업비		재원조달		
사업명	사업비	조달 방법	금액	비율(%)
-공항시설	28,755	- 자체조달	18,881	47.3
· 부지조성	8,084	· 공단투자	3,119	7.8
· 비행장시설	7,260	· 조성부지	6,768	17.0
· 건축시설	7,785	· 매각		
· 항공보안시설	1,352	· 차입금	8,994	22.5
· 보상비 등	4,274	- 민자유치	1,944	4.9
		- 국고지원	19,040	47.8
- 접근교통시설	11,110			
· 건설비	7,966			
· 보상비	3,144			
합 계	39,865		39,865	100.0

VI. 事業效果

- 24시간 운영가능한 중심공항으로서의 편리함에 따른 이용객 증가로 국내항공산업의 발전에 획기적 기여
- 임공항산업의 발달과 인적, 물적 유통량 증가로 고용기회 창출
 - 건설기간중('93-'99) : 전국 155천명, 인천지역 8.5천명
 - 운영시(2000-2010) : 전국 742천명, 인천지역 16천명
- 기술, 정보, 지식 등 무형자산의 교역 활성화로 산업고도화 촉진
- 항공화물 처리능력 제고에 의한 수송시간 단축 및 수송비용 절감으로 고부가가치 상품교역 증대
- 공항건설 기간중의 생산량 증가와 완공 후의 항공 수송량 증가에 따른 부가가치 창출로 국민소득 증대에 기여
 - 부가가치 유발액
 - 건설기간중('93-'99) : 전국 3조 1천억원, 인천지역 1,600억원
 - 운영시(200-2010) : 전국 64조 3천억원, 인천지역 1조 6,000억원
- 인천직할시가 항공 및 해운교통 중심의 활발한 국제무역 도시로 부상

New Seoul Metropolitan Airport Construction Project

Sang-Choo Lee *

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* Vice President & Head of New Airport Construction HQ
Korea Airports Authority

1. Status of New Seoul Metropolitan Airport Construction

A. Background

* Construction of a New Seoul Metropolitan Airport began to be discussed around July 1988 when noise levels near Kimpo Airport surfaced as a serious social problem. Aircraft noise had already become a major issue after the second runway was put into operation in April 1987. The question was whether to expand the existing airport or to construct a new airport to meet rapidly growing air traffic demand in the capital area and to resolve the noise problem. As discussions began on this noise impact, the need for construction of a new international airport began to be discussed in earnest. Based on the judgement that any further expansion of present Kimpo Airport facilities is impossible in view of the surrounding conditions, construction of a new airport was determined to be necessary and became a policy plan of the Ministry of Transportation in January 1989.

* Under this policy plan, a feasibility study was conducted to determine the site of a New Seoul Metropolitan Airport. This survey, involving Korean and foreign consulting firms, was conducted with U\$ one million of the Ministry's budget during the period from June 1989 to April 1990. Preliminary surveys were made on 22 candidate sites located within 100 kilometers from the heart of Seoul. Seven candidate sites were selected for close surveys, and then the prospective candidate sites were reduced to Young - Jong Island, Sihwa I and Sihwa II districts. On June 14, 1990, Young - Jong Island was finally determined as the most suitable site for the New Seoul Metropolitan Airport, following the overall screening and consultations with related government ministries. Comparative studies were made in such various areas as air space, obstacles, weather conditions, noise, present land utilizations, accessibility, and future expansion, as advised by International Civil Aviation Organization(ICA0) guidelines.

- * During the period of November 1990 to December 1991, basic design work was undertaken to form a master plan of construction addressing site preparation, airport facilities, access transportation, a land utilization plan for areas surrounding the airport. For the airport design, which is the central concern of the basic design work, the Korean engineering firm, due to a lack of engineering expertise in large scale airport design, formed a consortium with an experienced foreign engineering and design company and jointly carried out the design work.
- * For efficient promotion of this project, the "New Seoul Metropolitan Airport Construction Promotion Law" was enacted on May 31, 1991. A revision of the "Korea Airport Authority Law" was promulgated on Dec. 14, 1991 to entrust the new airport construction project to the Korea Airport Authority.
- * Regarding various necessary administrative procedures, the license for reclamation of the publicly - owned tideland was obtained on May 4, 1992; consultations on evaluation of the environmental effect made on May 22, 1992, and the evaluation of traffic impact completed on June 12, 1992. The Ministry requested consultations with related government ministries on a draft announcement on designation of the scheduled area of construction and a draft announcement on designation of the master plan in February 1992; and the finalized plans were announced on June 16, 1992. In August, consultations with related ministries on evaluation and deliberation on the population effect of the project have been completed.

B. Status of Project Progress

- * In December 1992, the detailed design for site preparation was completed, which began in late 1991, around the time when the basic design work on the airport was completed, including reclamantion of tidelands, earth cutting of obstructing hills, and stabillization of weak seabed areas. The detailed design for the bridge linking Young - Jong

Island with the mainland was completed in December 1993, which began in December 1991, by a domestic design competition.

The basic design for passenger terminal was completed in November 1993, which began in late 1992, by the first winner in the international design competition to obtain creative design proposals incorporating the most advanced technology based on the master plan.

- * In connection with the implementation of the project, land purchases began on September, 1991, in consultation with the populace of affected areas, completed about 40% of total land area to be acquired.

The first survey of fishing rights scattered around the site was completed by the Korea Oceanological Research Institute which became the basis of compensation for damage to fishing rights.

The first payment of compensation was completed, in accordance with the results of the survey. The second survey is currently under way for the compensation of damage to fishing rights.

- * The creation of resettlement areas for the removed inhabitants are planned to pose in the area of support community, in consultation with Incheon City, the local municipality, and the populace of the affected areas, together with the construction of support community.

- * For the site preparation, Dyke of 13.4km in northern and southern part and reclamation work began in civil work section No. 1 through No. 3 in November, 1992. Work section No. 4 & 5 started in December, 1993, and section No. 6~9 will start in May, 1994.

- * The detailed designs are now underway for Airport infrastructures, Access Highway and Air Navigation Facilities. And the other various detailed designs and consulting services will be awarded for contracts in the future, for passenger terminal, project management, Electric power system, infrastructure of Support community and International business center, inter - airport transit system, Baggage handling system, Airport integrated communication center, and so on.

C. Development Plan

- * The New Seoul Metropolitan Airport Construction Project consists of largescale manifold engineering and construction works such as creation of site and construction of airport facilities, support community, highways and bridges. Construction work plans will be implemented on a phased basis according to priority rather than simultaneity. In view of this project's characteristic of creating site by reclaiming tideland, the most urgently required work now is to prepare land. Therefore, the ground breaking ceremony was held on November 12, 1992, as soon as finishing the relevant administrative and legal procedures, such as institution of relevant laws, establishment of construction of construction organizations, purchase of the land and evaluation of the environment, transport, and populative effects etc.
- * KAA prepared work schedule so as to implement other project works on a year - to - year basis according to the optimum design and work schedule determined in line with the total project work schedule. The entire project is scheduled to be completed by the end of 1999.

2. Change in Future Aviation Industry and Airport Development Trends in Foreign Countries

A. Changes in Future Aviation Industry

- * In the early 21st Century, air traffic demand is expected to grow at a pace with Pacific rim development and the rapid globalization of the economy. With increasing trade in high value - added commodities and services, resulting from the rapid development of the industrial sector, aviation will be utilized as a major means of transport. With increasing income and leisure time, people will prefer to use aircraft, the premier means of conveyance for overseas travel, which will further boost the demand for air transport.

As the aircraft industry develops, super large - size aircraft with a capacity of 800 to 1,000 passengers will appear to meet the changing aviation market structure brought about by global economic and social changes. Supersonic aircraft flying at Mach 3 - 5 will usher in the age of large scale high - speed transport. Global distribution of airports is expected to be dominated by the hub and spoke concept.

Apart from the present inter - airport linkage method, this airport layout is designed to build a hub airport along a corridor running between major areas of aviation demand, and link each hub airport with other airports located a short distance away, in a radial fashion.

B. Airport Requirements in the 21st Century

*In Order to become a competitive airport in the 21st Century, a new airport should actively cope with changes in future economic and social conditions as well as foreseeable changes in the world aviation industry. For instance, it should be capable of being operated around the clock and equipped with runway 4 to 5 kilometers in length thereby servicing large - size, supersonic aircraft.

Site selection should be carefully made to minimize aircraft noise impact. At the same time, it should be conveniently linked with downtown areas and highspeed transport facilities so as to reduce access time. Airports of the future must supply not only their traditional functions but must also serve as strategic point for information, communications and international services.

It should function as a self contained unit and include an airport industrial complex as the center of airport facilities' economic activities. This is the trend in airport construction worldwide.

3. Need for New Seoul Metropolitan Airport Construction

A. Upward Trend in Aviation Demand

* World air passenger demand has grown at an annual rate of 7% during the past decade, and is projected to continue to increase by 6% annually for the next 10 years.

During the same period, air passengers in the Asia-Pacific region have increased by 10% each year, and are projected to increase by an annual rate of 9.5% in the coming years. Air traffic demand in Korea's metropolitan areas has grown rapidly due to an increase in national income, growing international transactions and liberalization of overseas travel.

* The number of countries with aviation agreements signed with Korea reached 45 in 1990. It increased by thirteen to 58 countries in 1993. Foreign airlines providing service to Korea numbered 22 airline companies from 13 countries, operation 63 routes in 1990. In 1993, their number increased to 27 airline companies from 18 countries, operation 62 routes. Korean airlines companies' service routes have increased from 51 service routes to 32 cities of 21 countries in 1990 to 69 service routes to 49 cities of 22 countries.

* Airline passenger demand in Seoul metropolitan areas has registered an average annual increase of 12.9% during the past 10 years. During the period from 1993 to 2000, the annual average growth rate of the passenger demand is projected at 9.3%.

B. Need for New Airport

* With such growth in air traffic demand, the capacity of Kimpo Airport 195,000 A/C movements per year will be saturated by the mid-1990's. In fact, aircraft movements of Kimpo Airport were recorded at 164,518 in the last year. Large-scale expansion of Kimpo Airport is not practi-

cable because of the severe noise impact in the densely - populated residential areas nearby and airspace limitations. In such circumstances, should construction of the new airport be delayed, it will cause delay in the aircraft departure/arrival times, rendering it impossible to increase flight services. This will result in various passenger inconveniences at Kimpo and make foreign tourists and buyers avoid visiting Korea. This would be a severe blow to Korea's international trade and economic activities, eventually hampering national development.

* Thus, we are compelled to establish long - term plans to cope with the changing world aviation market structure and to meet growing air traffic demands of the next century. An integral part of these plans is to construct an airport capable of meeting the aviation challenges of the 21st Century. Failure to do so will mean the loss of aviation business opportunities and the decline of the nation's aviation status. Korea will be relegated to the minor role of a feeder line.

The government, therefore, has decided to promote construction of an advanced facility, setting the pace for the next century; free of noise impact problems and capable of operating around - the - clock the New Seoul Metropolitan Airport(NSMA).

4. Master Plan for the Project

A. Project Period and Project Cost

* First Phase: 1992 to 1999

* Second Phase and Thereafter:

The construction work period may be flexibly adjusted(for the Second, Third, and Fourth Phases) according to increases in air traffic demand.

* Project Cost: U\$ 4.98 billion(for First Phase).

B. Project Scale and Capacity

Description	Phase 1	Ultimate Development
○ Airport:		
– Site Area(ha)	1,095	4,747
– Runway(m)	3,750×60(1)	3,750–4,200×60(4)
– Passenger Terminal (1,000m)	290	1,070
– Airport Navigation Facilities(NAVAID)	CAT - III a	CAT - III a
○ Transportation:		
– Access Freeway	6 - 8 lanes, 54.5km	8 lanes, 54.5km
– Airport dedicated Railway	(Site Aquisition)	Double Trancks 66km
○ Community(ha)	264	872

*When the First - Phase project has been completed, the airport will be capable of handling 27 million passengers on 170,000 flights annually. When the Fourth Phase project is completed, handling capacity will be increased to 100 million passengers on 530,000 flights per year.

C. Basic Plan of NSMA Construction

c - 1. Site Preparation Plan

The shore dyke for the protection work and dike will be constructed between Young - Jong Island and Yong Yu Island. The shallow tidal flat will be reclaimed with earth and stones made available by earth cutting of the surrounding hilly areas as well as with sea and generated from dredging. In order to reduce the necessary earth work volume, the site for the airport area will be careated by the low reclamation method, utilizing a retention pond and lock gates. Locally acquired fill material for the site is estimated at 259 million cubic meters. Of those, 83 million cubic meters

will be made available by earth cutting of the surrounding hills. The volume of fill material needed for the First Phases work is estimated at 71 million cubic meters, of which 26 million cubic meters will be reclaimed by the earth cutting work.

In the land preparation plan, the most noteworthy point is that the airport site of 46 million square meters will be created by the low reclamation method. A dike will be built along the perimeter of the airport site at a height of plus 8.3 - 9.4 meters from mean sea water level. The highest part of the runways inside the site will be set at a height of plus 7 meters. The overall height of the airport site is designed to be lower than the high tide level of the outer sea. Because of this, the reclaimed earth volume requirements will be reduced to 5.3 cubic meters per square meter of work, far smaller than 36 cubic meters for Kansai Airport and 15 cubic meters for Hong Kong Airport.

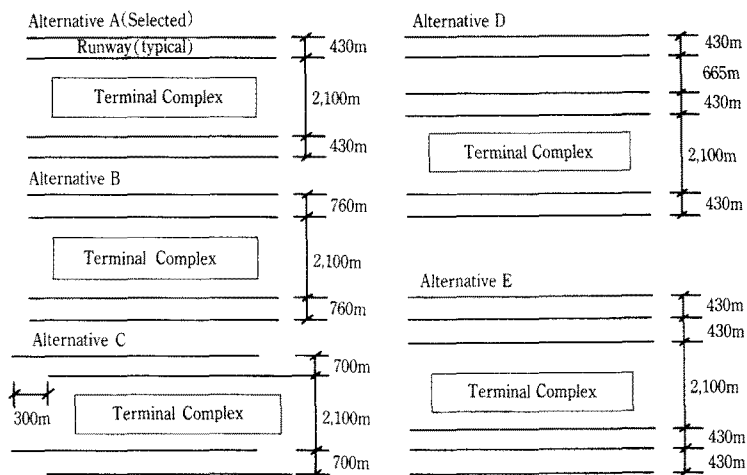
c - 2. Airport Facility Layout plan

c - 2 - 1. Runway Layout Plan

* The number and configuration of runways have been determined according to the frequency of aircraft landings and take - offs and the ICAO's design standards, among other various alternatives. The runways will consist of 4 - kilometer runways and high - speed taxiways. They are arranged in two strips of parallel runways on the left and right of the terminal complex, with 2,100m separation between the inner runways.

Thus, each is capable of simultaneous and independent operation under the Instrument Flight Rules(IFR); and the Visual Flight Rules(VFR). Alternative A was selected for the NSMA Construction Project because it provides the capability of handling 530,000 flights a year, and reduces the necessary land area of a minimum 325 - 700 Hectares smaller than under other alternative plans.

Runway Configuration Alternatives

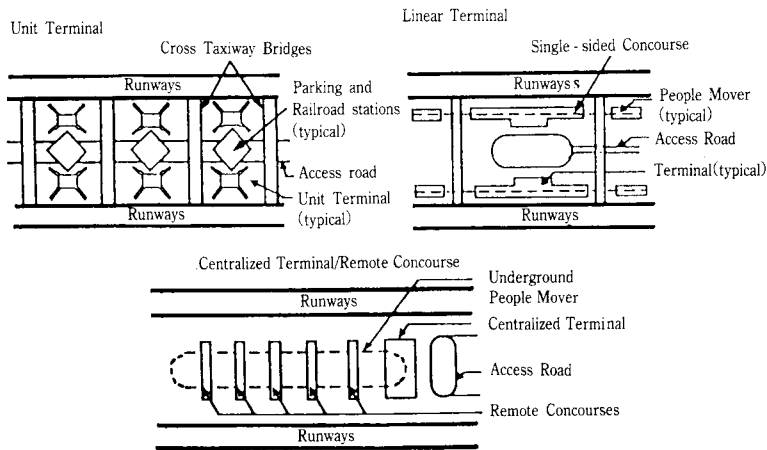


c - 2 - 2. Passenger Terminal Plan

c - 2 - 2 - 1. comparison of Passenger Terminal Concept.

The passenger terminal plan has been studied according to the three basic layout concepts, the Linear Terminal, Unit Terminal, and Centralized Terminal with Remote Concourses. The Linear Terminal Concept was dismissed since the single - sided concourse does not suit the centralized use planned in this project. The remaining two alternatives - the Unit Terminal and Centralized Terminal with Remote Concourses - were reviewed. As a results, the Centralized Terminal with Remote Concourses has been adopted as the most suitable passenger terminal layout for the NSMA, in view of its flexibility for expansion by phase, relationship with the International Business Center, convenience to passengers, and the least area of airport site needed. Under this layout plan, the terminal will consist of the first terminal building, the secon terminal building and four remote concourses between the two sets of parallel runways.

Layout Concept of Passenger System



c - 2 - 2 - 2. Passenger Terminal Layout Plan

Concerned with people moving system, and automatic passenger transport system (AGTS) and an automatic baggage handling system (DCV) will be built underground among two terminal buildings and remote concourses, for the convenience of passengers. The two terminals all allow for boarding and arrival procedures, such as check - in, immigration, customs clearance and security check.

c - 2 - 2 - 3. Size of Passenger Terminal

The size of the passenger terminal is set at 1,070,000 square meters to be capable of handling 100 million passengers annually in the Ultimate Development, suiting the runway capacity. The original size in the First Phase (2005) is set at 290,000 square meters, sufficient to handle 27 million passengers a year. Table 4 - 1 shows sizes and handling capacities for each phases:

Table 4 - 1. Size and No. of Passenger at each phase

Description	Phase I	Phase II	Phase III	Ultimate Development
Size(m ²)	290,000	428,000	731,000	1,070,000
No. of Passenger (1,000pax)	27,000	44,000	78,000	100,000

Note : Above figures are provisional, except for phase I.

c - 2 - 3. Navigation Facilities Plan(NAVAID)

- * At large airports, navigation instruments enable aircraft to land safely and maneuver around taxiways and parking stations even in the event of adverse weather conditions such as thick fog and clouds. Such facilities are the yardstick by which an airport's capability and quality are assessed.
- * The NSMA plans to install the CAT - III a super precision landing facilities, which will enable aircraft to land with only 200 meters of visibility. This state - of - the - art, future - oriented navigation system will ensure the safe and on - time operation of airliners at the scheduled time.

c - 2 - 4. Support Facilities Layout Plan

- * Between the two sets of parallel runways, the apron and passenger terminal buildings will be laid out; and the passenger terminal will be expanded phase after phase to make possible the speedy and massive handling of passengers. On the south side of the passenger terminal, the International Business Center will be located, containing passenger convenience facilities, such as hotels, restaurants, exhibition halls, amusements, office and shopping centers.

On the north side, support facilities will be established such as the cargo terminal buildings, catering facilities, postal facilities, and ground service facilities.

Meanwhile, a plan to link the passenger terminal and air cargo ter-

minal through underground tunnels, is now being deliberated.

- * Additionally, there is also a plan to establish support facilities in the outer area of the runways; namely, air cargo terminals, ground service facilities, traffic center area, aviation fuel storage facilities, facility control unit, and radar facilities. To ensure smooth linkage among airport facilities, a road network will be constructed both in the inner and outer areas of the airport.

c - 2 - 5. Communication Center

- * With the aim of providing high quality Communication services for passengers and securing effective management and operation of airport, intelligent integrated communication systems will be established in the airport communication center building. The communication systems consist of information processing system, information communicating system, and communication networks.
- * The centralized system of all related information and communication services will be functioned by the method of voice, data, video, radio, satellites and others, and will be very contributive to safe operation of aircraft, improvement of passenger services and efficient management of the airport.

3. Community Plan

- * The community with a total area of 871ha will accommodate a city of some 110,000 persons. In the first Phase, an area of 264ha will first be developed. The Phased development program will be established and implemented gradually to cope with future changes in surrounding conditions.
- * The community will include dwelling facilities for airport - related workers, amenities for people making use of the airport, housing facilities for people displaced by airport construction, and other facilities to support and supplement airport functions, directly and indirectly.

- * The airport related industries will be created to enhance functions of the future airport. To this end, some 231ha of the site will be set aside for free trade zone, which will support the future development of the airport.

D. Access Transportation Facilities Plan.

- * Airport access transportation facilities have been planned with the goal to reach the airport from downtown Seoul within 45 minutes. The facilities will be integrated into the existing and future major traffic networks planned in the capital area, so that the NSMA may maintain its function as a hub airport in the Asia - Pacific region to the maximum possible extent.
- * The access road will be a 6 to 8 lane expressway allowing a speed of 120 kilometers per hour, in the First Phase.
The plan calls for construction of an expressway linking the New Airport, via connecting bridge, to north Incheon, Kimpo Airport, and Riverside Roads running along both the northern and southern banks of the Han River.
- * The airport railway is scheduled to begin service in 2005. With the shape of large scale electric subway, the system is designed to run 10-coach trains at an interval of 2.5 minutes, at a speed of 110 kilometers per hours, along a double track railway 66 kilometers long.
- * The connecting bridge will be double-decked, with a total span of 4.4 kilometers, linking Young - Jong Island to the northwestern part of Incheon. A suspension bridge, with a six lane road on the upper deck and a four-lane road and a double track railway on the lower deck, will be designed to harmonize with the area's natural surroundings.

5. Financial Plan for NSMA Construction

- * NSMA's First Phase construction costs are estimated at about U\$ 4.98 billion. That amount breaks down to U\$ 3.59 billion for construction of airport facilities and U\$ 1.39 billion for construction of the access road and other access transportation facilities.
- * In securing the funds for financing the project, the past practice of depending only on the government financing will be abandoned. The policy now will be to maximize the self - financing of the Korea Airport Authority(KAA). The KAA plans to secure necessary funds by gradually raising the airport facility charges, partial sale of created land, issuance of airport bonds, attracting private capital, and financial support by the Nation Treasury.
- * According to the financial plan now under formulation by the government, U\$ 1.91 billion or about 53.2% of the airport construction cost for the First Phase will be secured by the Authority through the floating of airport bonds, loans from outside, and its own funds. U\$ 0.25 billion or 6.8% will be covered by private capital for construction of cargo terminals. And for the remaining U\$ 1.43 billion, the government plans to provide financial support from the National Treasury to finance the basic projects such as payment of compensation and creation of the site, and additionally access transportation facilities construction costs.

6. Benefits of the NSMA Project

- * The new airport construction project is in accord with the efficient utilization of the nation's land since its site will be created on reclaiming tideland. It may be operated around the clock as it resolves the noise impact problem, which is a knotty issue for an inland airport. These merits build the standing of NSMA as a hub Airport in Northeast Asia. With its opening, the number of customers using NSMA will

increase because of its convenience as a central international airport. This will contribute remarkably to development of the domestic aviation industry, creating massive employment opportunities through large - scale circulation of material and manpower. It is also expected to help accelerate industrial development by reinvigorating trade in intangible assets such as technologies, information, and know - how.

- * Economically, about U\$ 3.9 billion value - added inducement will be brought forth to our nation(inclusive of U\$ 0.2 billion to Inchon Region) by this new airport construction during the period of construction from 1993 to 1999, and furthermore by the operation of this new airport, about U\$ 80.4 billion value - added inducement to the nation(inclusive of U\$ 2 billion to Inchon Region) will be generated during the period of Phase I operation from 2000 to 2010 years.
- * In the aspect of cration employment opporunition, new airport will generate the employments of 155,000 Persons in the nation(inclusive of 8,500 persons) during the period of construction from 1993 to 1999, and 742,000 persons in the nation(inclusive of 16,000 persons in Inchon Region) during the period of the first phase operation from 2000 to 2010 years, by the development of airport - related business and the increase of passengers and freight transportation.

7. Implementation Organizations for NSMA Construction

- * The New Seoul metropolitan airport Construction Project is a large - scale construction and engineering undertaking, unparalleled in our construction history. Various difficulties are foreseen in promoting this construction project. Total project costs required through the Fourth Phases are estimated at far more than U\$ 12.5 billion; and fill requirements will exceed 260 million cubic meters.
- * The government concluded that it would be difficult for a single ministry to implement the project alone, in view of its importance and huge scale. Based on this consideration, the New Metropolitan Airport

Construction Promotion committee, has been organized with being headed concurrently by the Deputy Prime Minister and the Minister of the Economic Planning Board, and having the Ministers of 17 central government ministries as its members. This committee will coordinate matters regarding the NSMA construction plan. It is also entrusted to deliberate and decide major policy matters regarding construction of the New Airport to ensure the smooth promotion of the new airport construction project.

Supporting this Promotion Committee, is the Working - level Promotion Committee, consisting of officials from concerned ministries at the level of Bureau Directors General.

- * On the other hand, the Corps of the New International Airport Construction Project is operated under the direct supervision of the Minister of Transportation. Main functions of the Corps are to assist the Minister of Transportation, who is in charge of implementing the new airport construction project, formulate, finalize and announce the new airport construction Master Plan, evaluate the environmental, transportation, and population effects of the construction projects.

The Corps will perform the work of approving the implementation plans for the construction project. The Korea Airport Authority Law has been revised so that the Authority may take charge of carrying out the new airport construction work. The New Airport construction Headquarters has been established under the Authority to take charge of design for the construction works, compensation for land fishing rights, and execution of construction and work implementation.

- * In Incheon City, where the New Airport is to be built, the New Airport Construction Supporting Office has been separately established to provide various compensation paying services needed in promoting this project. On behalf of the Korea Airports Authority, it has been dealing with compensation affairs related to land purchases.
- * In view of the diversity of work related to construction of the New Airport, the Korea Airports Authority will take direct charge of creating Airport building lots and airport construction. Construction of the air-

port access roads and the access railway have been entrusted to the Korean Highway Corporation and the Korean Railroad Administration, respectively, so that these projects may be effectively promoted with their respective expertise. The Minister of Transportation will take charge of the budget and process of the entire project.

- * In the course of working on various designs related to the new airport construction, the government will encourage domestic engineering groups to participate. In order to prevent any shortcomings resulting from insufficient review of engineering matters in this New airport construction project—a great future plan of the nation—the New Airport Construction Engineering Advisory Committee has been established separately and is now in operation. The committee consists of scholars and experts from academic, research, and experts from academic research, and business circles as well as from the relevant government ministries.

8. Conclusion

- * As stated above, the NSMA construction project is unparalleled in the history of Korean construction both in terms of its scale and engineering diversity. An enormous sum of approximately \$ 4.98 billion is needed to finance the First Phase construction work alone.
- * The greatest stumbling block to successfully promoting this new airport construction project is how to tide us over various difficult engineering problems during the course of project implementation; and also
- * How to secure the enormous sum over U\$ 4 billion on time, during the short project period of some six years of the First Phase.
- * No less a concern is how to minimize the adverse effects of this huge construction project on the environment. To this end, we must all take special interest in and keep a constant watch on this project.
- * With the gradual process of political and social democratization, the smooth compensation for land acquisition and damage to fishing rights

emerges as a very difficult problem. This is an important matter which engineers are often apt to overlook. In the course of actual implementation of a largescale public works project, this is a very serious matter upon which successful progress in project implementation largely depends.

- * Particularly in the case of compensation for land and fishing rights, claimants are bound to consider it a matter related to their own right to live. Therefore, disputes occur in most cases of government/public projects. We believe that this problem can be settled by means of mutual confidence. Ultimately this problem can be amicably settled only by fairness in the appraisal and evaluation of compensation amounts and with the devoted service rendered by the officials concerned.
- * In the New Airport construction project, various administrative procedures and matters requiring government approval/license for implementation of construction work have to go through several government agencies. Therefore, cooperation among the administrative agencies concerned is most urgently necessary.
- * In the past, almost all large - scale construction projects were financed by the National Treasury. In the case of the NSMA, it is largely dependent on the Korea Airports Authority's own efforts to secure funds, due to limits on the government's ability to meet the social overhead capital investment requirements.

The Authority plans to secure funds to meet construction project costs by selling reclaimed site, borrowing funds from outside, and attraction private capital. Such a plan is formulated under the premise of applying the benefiter' cost bearing principle, such as airline companies and customers who make use of the new airport, and raising charges on aviation facilities. Any abrupt raise in such cost sharing and charges is bound to be restricted under the government's price policy. As such, we have not yet been able to find a clear - cut answer to this problem, the most important one in carrying out the project. For successful implementation of the project, it will be necessary to thoroughly investigate

a wide variety of methods for securing the necessary fund. Our Ministry of Transportation expects many airport experts reading this paper to have great interest in these matters and to provide advice and suggestion.