



# 擘劃 Planning

因應金融風暴影響，98年度公共建設擴大執行金額達5,910億元，有效提振經濟、促進就業。

一、執行「年度公共建設」+ 97年「擴大內需」+「振興經濟擴大建設」預算，為歷年新高。

二、98年度決標金額5,748億元遠高於93~96年度合計數3,635~4,416億元。（97年度為4,829億元）

其中「振興經濟擴大建設」計畫1,104億元，僅8個月即達成86.86%的執行率（目標60%）。

*In response to the impact of the financial turmoil, the expanded budget for public construction reached NT\$591.0 in 2009, effectively revitalizing the economy and promoting employment.*

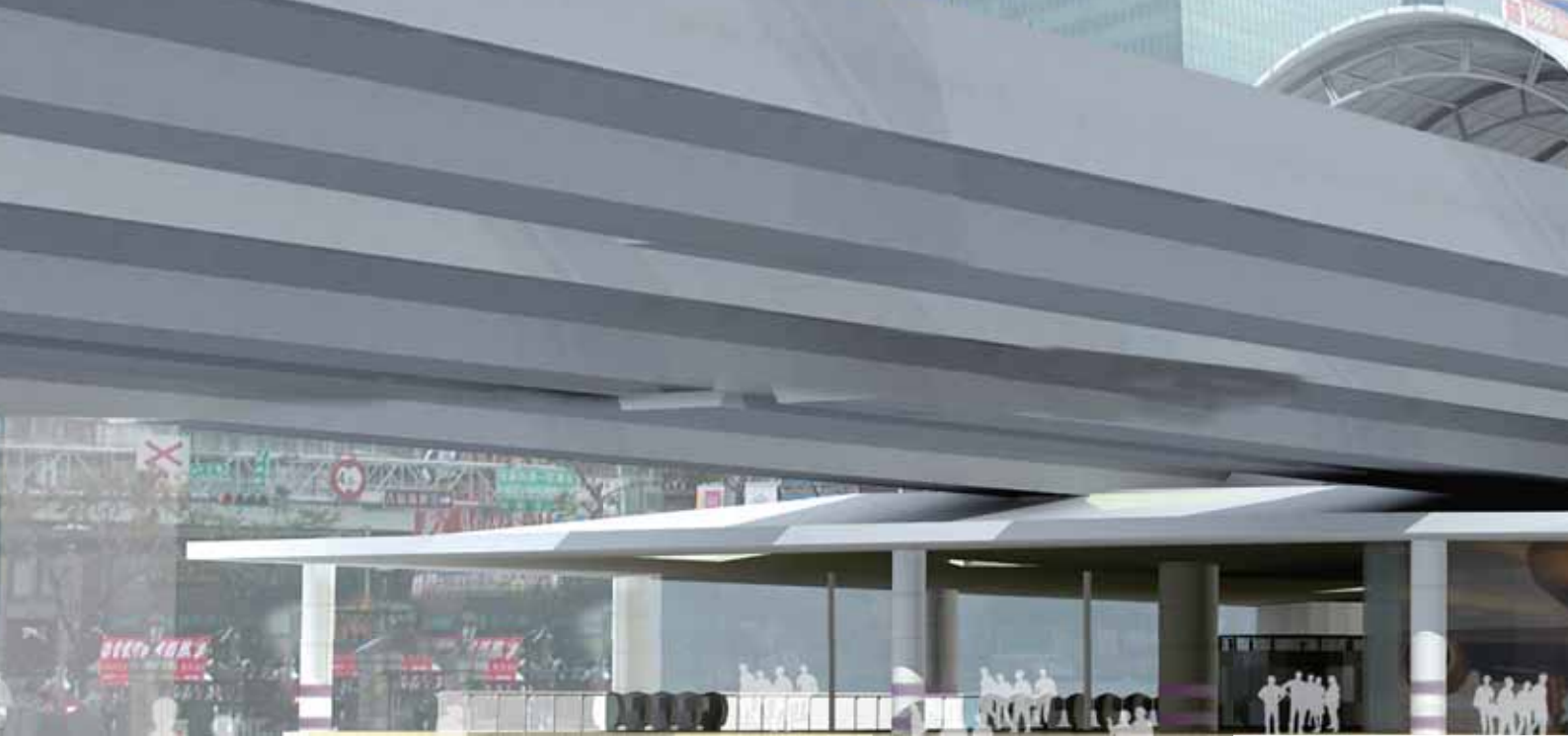
*1.Implementation of the Annual Public Construction + 2008 Expansion of Domestic Demand + Economic Revitalization through Expanded Construction budgets reached a historic high.*

*2.The NT\$574.8 billion in total bid awards in 2009 was far higher than the NT\$363.5 billion to NT\$441.6 billion annual total during the period of 2004-2007. (The total for 2008 was NT\$482.9 billion.) The implementation rate of the Economic Revitalization through Expanded Public Construction budget of NT\$110.4 billion reached 86.86% in just eight months (compared with a target of just 60%).*





▲桃園青埔國際棒球場



## 擴大建設 振興經濟

### Expanding Construction Revitalizing the Economy

訂立清楚明確的管控要項，以期能夠確實監督各項公共工程的前期作業、工程執行及維護管理階段，是工程會必須明確掌控的目標，同時能確保提升各流程品質，並達成最佳效率。

工程全生命週期管控係以政策需求為目標，工程計畫如可行性評估、規劃、設計、發包策略、施工、管理維護以及用地取得、水土保持、都市計畫及都市設計審議、環境影響評估與請領建照等影響計畫執行之因素，均應配合政策要求期程明訂管控里程碑，有效掌握執行流程，提升效率。管考原則如下：

#### 一、檢討計畫合理期程

各部會署必須遵照政策要求期程檢討計畫各階段（先期作業、前置作業、工程發包執行）合理期程，研訂發包策略，提報工程會公共建設督導會報確認。

#### 二、強化全生命週期重要作業之管理

訂定計畫各階段重要工作項目之負責人及其「里程碑」之預定完成日期，登錄於工程會「計畫管理系統」及「工程標案管理系統」，以為管控基準：

1. 計畫先期作業階段：可行性研究、綜合／整體規劃、環境影響評估、選擇／替代方案之成本效益方案。





▲ 桃園機場捷運高架段

The establishment of clear and precise monitoring guidelines designed to provide for the assured oversight of the preliminary work, construction implementation, and maintenance management stages of public construction projects is a goal that the PCC must control without fail. Such guidelines can assure the upgrading of process quality and achieve maximum results.

The goals of public construction life cycle monitoring are based on policy needs and all factors that affect project implementation—feasibility studies, planning, design, tendering strategy, construction work, and management and maintenance, as well as land acquisition, soil and water conservation, urban planning and design review, environmental impact assessment, and building permit issuance—should all have clearly defined monitoring milestones in line with schedules mandated by government policy so as to maintain

effective control of the implementation process and enhance efficiency. The evaluation principles are as follows:

#### 1. Review of reasonable project scheduling

Ministries and commissions must review the scheduling of different stages of construction projects (initial work, preliminary work, contracting and implementation) for reasonableness in accordance with the policy-dictated schedule, formulate contracting strategies, and report to the PCC's Public Construction Supervisory Committee for affirmation.

#### 2. Reinforcement of the management of important tasks during project life-cycle

The persons in charge of the tasks at each stage of a project and the scheduled completion date for each "milestone" are registered as the monitoring criteria

▼ 澎湖生活博物館



2. 前置作業階段：用地取得、水土保持計畫審查、都市計畫審議、環境影響評估、建照申請、管線拆遷及基本設計等。
3. 工程發包階段：統包或細部設計公告、細部設計決標、細部設計完成、工程公告、工程決標、簽約。
4. 施工階段：工程開工、施工進度、分階段重要里程碑、竣工、驗收及接管等。

## 前期作業階段

### （一）計畫與經費審議

工程會依據「政府公共工程計畫與經費審議作業要點」規定，辦理各類型計畫審議。98年公共工程先期作業計畫計349件，函報經費4,667億元，建議核列3,610億元。98年公共工程計畫規劃設計階段共212件，函報總經費9,788億元，建議核列8,121億元。

### （二）預算編列

依據政府採購法第十一條設立採購資訊中心，建立「公共工程價格資料庫查詢系統」，並開發「公共工程經費電腦估價系統（PCCES）」，供機關編列預算及廠商編製標單，98年辦理26場、824人次推廣教育訓練班。





in the PCC's Master Plan and Project Management System, and the actual dates of completion will be registered online:

- a. The initial work stage includes feasibility study, general/integrated planning, environmental impact assessment, and cost-benefit of optional/alternative projects.
- b. The preliminary work stage includes land acquisition, soil and water conservation plan review, urban planning review, environmental impact assessment, construction permit application, conduit removal, and basic design.
- c. The contracting stage includes turnkey or detailed design announcement, award of bid for detailed design, completion of detailed design, announcement and award of bid for construction, and contract signing.
- d. The construction stage includes: commencement of construction, progress of construction, important stage milestones, completion of construction, acceptance inspection, and takeover.

## Initial Work Stage

### 1. Project and budget review

The PCC carries out various types of project reviews in accordance with the provisions of the "Operating Directions for the Review of Government Construction Projects and Budgets." There were 349 preliminary planning stage public construction projects in 2009,

with the requested funding of NT\$466.7 billion, and, after PCC review, the suggested amount for approval was NT\$361 billion. There were 212 public construction projects in the planning and design stages in 2009, with the requested funding of NT\$978.8 billion and the total suggested approval budgets were NT\$812.1 billion.

### 2. Budget allocation

The PCC set up a Public Construction Price Database in accordance with Article 11 of the Government Procurement Act, which calls for the establishment of a procurement information center, and developed a Public Construction Cost Estimation System (PCCES) for agencies to use in allocating budgets and companies to use in compiling bids. A total of 26 extension training classes with 824 participants were held in 2009.

### 3. Preliminary work

The preliminary work stage includes land acquisition, soil and water conservation plan review, river-use permit, urban planning change, urban plan review, stake coordinate surveying, environmental protection implementation plan for the construction stage, construction permit application, acquisition of green building candidate certificate or label, conduit relocation, review of traffic control plan, dangerous workplace inspection, basic and detailed design, and contracting strategy.



▲ 上圖：機場聯外捷運興建工程；下圖：范主委訪查高雄港洲際貨櫃中心

### ► 范主委訪查連江縣媽祖宗教文化園區興建工程

Top: The construction of Taiwan Taoyuan International Airport Access MRT System ; Bottom: PCC Minister Fan inspects Kaohsiung International Container Terminal

PCC Minister Fan inspects the construction of Mazu Religion and Culture Park



### （三）前置作業

前置作業階段包括：用地取得、水土保持計畫審查、河川使用許可、都市計畫變更、都市設計審議、樁位測釘作業、環境保護執行計畫、請領建照、取得候選綠建築證書、管線拆遷、交通維持計畫審查、危險性工作場作審查，基本設計及一般工程細部設計、發包策略等。

## 工程執行階段

### （一）督導協調

98年度可支用預算（如附表1），合計5,910億元，為歷年新高。

#### 1. 加強擴大內需方案執行

97年本方案583億元分為15,636件標案執行，截至98年底完工15,573件，標案完工率99.60%；執行數575億元，執行率98.58%。

#### 2. 97年災後復建工程預算執行情形

卡玫基及鳳凰災後復建工程核定64.34億元，辛樂克及薔蜜災後復建工程核定68.42億元，合計132.76億元。

#### 3. 列管1億元以上建設執行

「推動公共建設方案」列管計畫共222項，可支用預算3,868億元，執行3,542億元，執行率91.57%，為近5年最高。

#### 4. 未達1億元建設執行

部會自行列管575項，可支用預算283億元，執行237億元，執行率83.59%。



▲ 桃園機場捷運



## Construction Stage

### 1. Supervision and coordination

The expendable budget for 2009 totaled NT\$591.0 billion (see Table 1), a historic record.

#### a. Strengthened implementation of the Domestic Demand Expansion Program

This program's spending of NT\$58.3 billion in 2008 was divided among 15,636 projects; 15,573 projects were completed by the end of 2009 for a completion ratio of 99.60%, and budget implementation was NT\$57.5 billion for an implementation ratio of 98.58%.

#### b. Implementation for the post-disaster reconstruction budget in 2008

A budget of NT\$6.434 billion was approved for post-

disaster reconstruction following typhoons Kalmaegi and Fung-wong, and NT\$6.842 billion was approved for reconstruction following typhoons Sinlaku and Jangmi, for a total budget of NT\$13.276 billion.

#### c. Implementation of monitored projects budgeted at NT\$100 million or more

A total of 222 projects were monitored under the Program for the Promotion of Public Construction. The expendable budget for these projects was NT\$386.8 billion; NT\$354.2 billion was actually used, for an implementation ratio of 91.57%, a five-year high.

#### d. Implementation of projects under NT\$100 million

Projects self-monitored by ministries and commissions numbered 575, with a total expendable

表I、98年度可支用預算為歷年新高

Table 1 A Record Expendable Budget for 2009

項次 Number	計畫名稱 Project	98年度可支用預算（億元） Expendable Budget in 2009 (NT\$ billion)
1	97年度「加強地方建設擴大內需方案」補助地方公共建設 2008 "Stimulus Program to Expand Domestic Demand by Enhancing Local Infrastructure" subsidies for local public construction	305
2	97年災後復建工程 2008 Post-Disaster Reconstruction	133
3	98年度1億元以上公共建設計畫 2009 Public Construction Projects Budgeted at NT\$100 Million or More	3,868
4	98年度未達1億元公共建設計畫 2009 Public Construction Projects Budgeted at Less than NT\$100 million	283
5	四年五千億計畫98年度公共建設投資計畫 Four-year NT\$500 Billion Project	1,104
6	莫拉克颱風災後重建工程 Post-Morakot Reconstruction	217
	合計 Total	5,910





▲ 國立台灣歷史博物館夕照

## 5. 四年五千億元振興經濟擴大建設98年度1,104億元工程類計畫執行情形

立法院98年4月份始三讀通過本計畫特別預算案，55項工程類計畫執行時間8個月，執行率86.86%，達成80%之目標。

## 6. 莫拉克重建執行

- (1) 98年11月10日立法院三讀通過本特別預算，11月20日總統公布、12月1日即完成「莫拉克重建工程管理系统」建置及上線。
- (2) 98年度標案件數648件，已決標件數603件，決標率93.06%。可支用預算數217億元，已執行26.15億元，執行率12.04%。

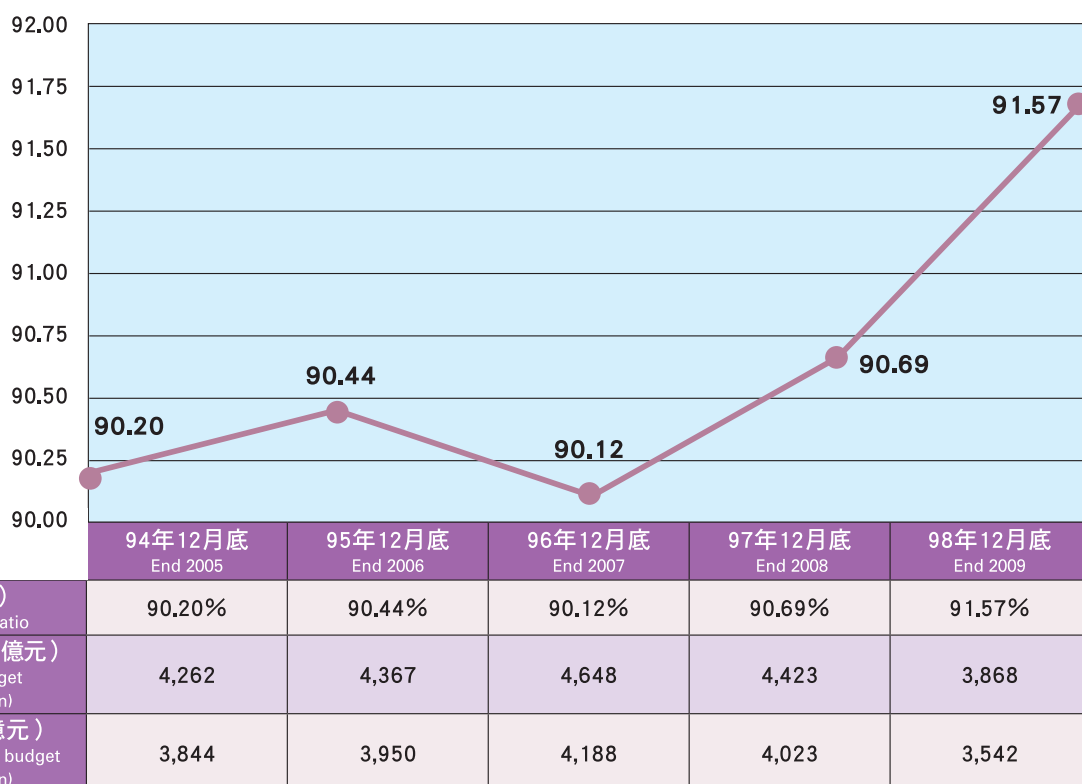


圖1、94~98年一億元以上公共建設計畫預算執行率圖

Chart1 Annual Budget Implementation Rates for Public Construction Projects of NT\$100 Million, 2005 through 2009

budget of NT\$28.3 billion; NT\$23.7 billion was actually used, for an implementation ratio of 83.59%.

**e. Implementation of NT\$110.4 billion in construction projects for 2009 under the “Four-Year, NT\$500 Billion Plan” to revitalize the economy through expanded construction.**

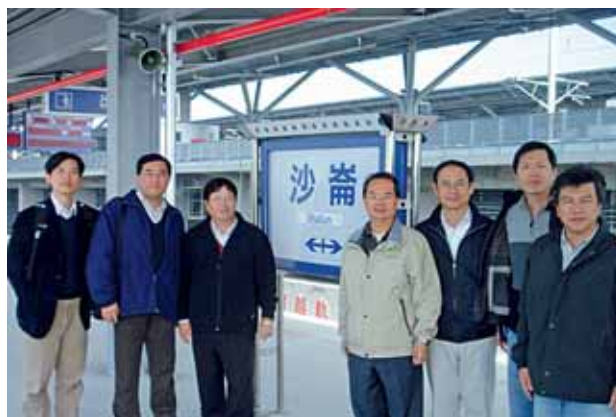
Not until April of 2009 the Legislative Yuan passed a special budget for 55 projects to be carried out over an eight-month period. The implementation ratio was 86.86% and achieved the target ratio of 80%.

**f. Implementation of Typhoon Morakot Reconstruction**

(1) On Nov. 10, 2009, the Legislative Yuan approved a special budget, which was promulgated by the President on Nov. 20, and the “Typhoon Morakot Reconstruction Management System” was put on line on Dec. 1, 2009.

(2) Bid projects in 2009 totaled 648; 603 have already been awarded, for an award ratio of 93.06%. The

expendable budget for these projects was NT\$21.7 billion, of which NT\$2.615 billion has been executed for an implementation ratio of 12.04%.



▲ 范主委訪查台鐵台南沙崙支線

PCC Minister Fan inspects Taiwan railroad’s Tainan-Shalun Branch Line

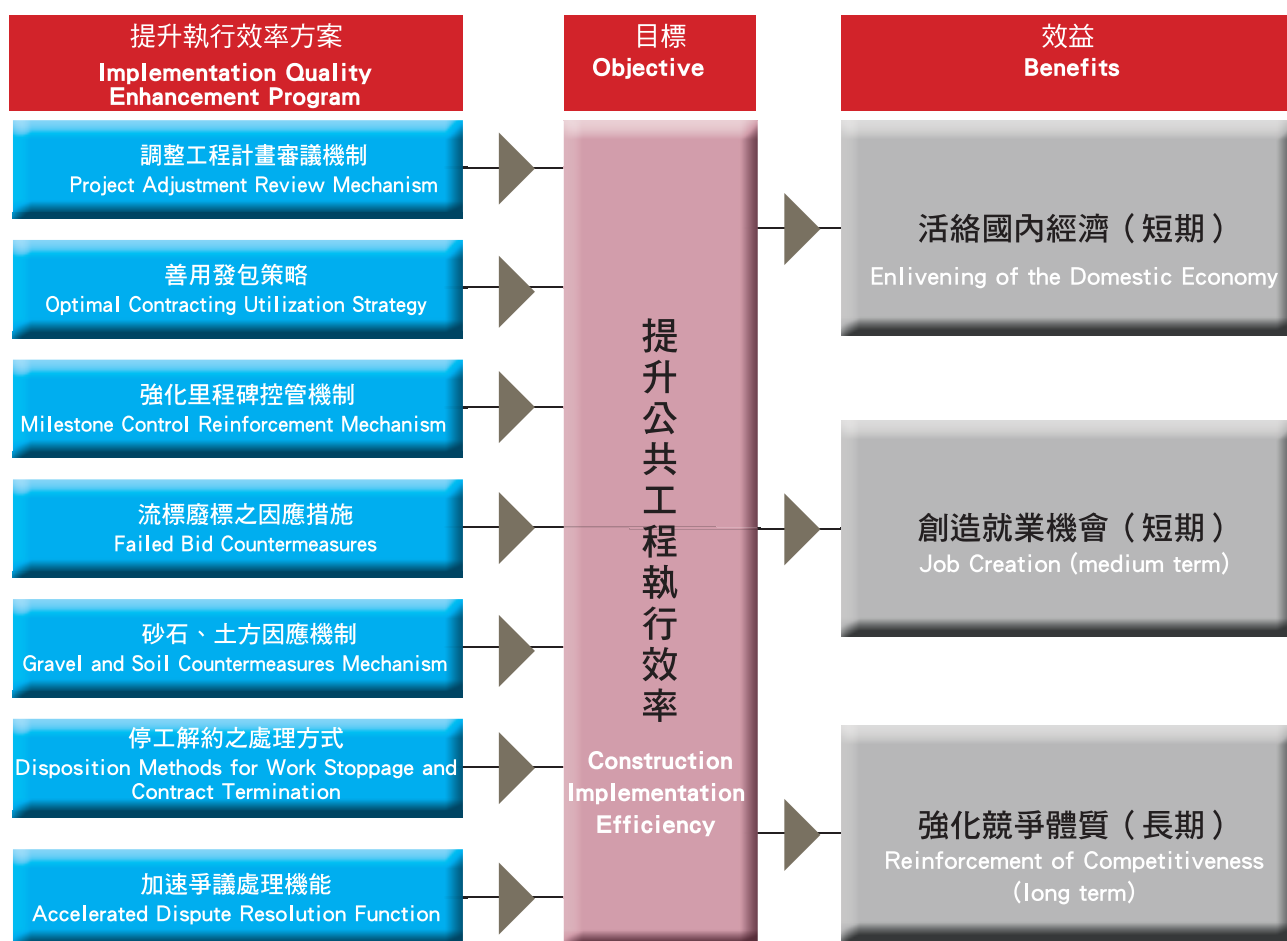


圖2、提升公共工程執行效率及品質方案

Chart2 Enhancement of Implementation Ratio and Quality of Public Construction Project





▲ 大鵬灣環灣道路興建工程（齊伯林攝）

## （二）提升效率—七方案

工程會訂定「提升公共工程執行效率及品質方案」，針對計畫審議、發包策略、里程碑控管、流廢標之因應措施、土方、砂石、停工解約、爭議處理均有重要之指導原則，並於98年3月13日函送各部會及縣市政府參照。

## （三）品質管理—全生命週期品管

### 1. 加強品質查核

根據中央政府「一億元以上列管計畫」98年度品質查核結果，代表品質優良的「甲等」比例由14.63%增至51.42%，顯示公共工程品質已有提升。另自98年10月起全部改採不預警查核，以督促施工單位平時即落實工程品質。

### 2. 加強獎懲：

就查核結果缺失嚴重者，要求主辦機關辦理懲處，計170件。

### 3. 加強原住民族地區工程品質及效率：

原住民族地區公共工程特殊，地處偏遠、基層工程專業及人力不足，為確保工程品質及執行效率，特於原住民族地區，北、南及東部召開3場座談會。

### 4. 教育訓練

辦理品管、回訓班共391期及工程觀摩5場，並完成清廉度講習及專案管理訓練18期及與原民會合辦2期訓練，受惠人數計19,239人，詳圖4。

### 5. 路平

工程會自97年10月20日實施「推動道路平整方案」後，日顯成效，98年2月並訂

## 2. Programs to enhance efficiency—Seven approaches

The PCC established the “Public Construction Implementation Efficiency and Quality Enhancement Program” to provide important guidelines for dealing with project review, contracting strategy, milestone control, failed bids, soil and gravel supply, work stoppage and contract termination, and dispute resolution; and sent it to all ministries and commissions as well as county and city governments for reference on March 13, 2007.

## 3. Quality management – Life-cycle quality control

### a. Strengthening of quality auditing

According to the results of quality auditing carried out under the Central Government’s “Monitored Projects Budgeted at NT\$100 Million or More” program in 2009, the ratio of auditing given “grade A,” indicating superior quality, rose from 14.63% to 51.42%, showing that the quality of public construction has improved. A general switch to unannounced auditing in October of 2009 will encourage construction units to emphasize quality at all times.

### b. Strengthening of rewards and punishments:

There were 170 cases with serious deficiencies and the agencies in charge were asked to impose

respective punishments on contractors.

Rewards and Punishments Resulting from PCC Construction Inspections in 2009

### c. Strengthening of construction quality and efficiency in indigenous tribal areas:

Public construction work in indigenous tribal areas involves special conditions such as remote location and insufficient basic-level engineering professionals and other manpower. Three seminars were held, one each in northern, southern, and eastern Taiwan, to ensure construction quality and implementation efficiency in indigenous tribal areas.

### d. Training:

A total of 391 quality control and retraining classes as well as five construction observation classes were held, 18 anti-corruption lectures and project management training classes were organized, and two training programs were offered in cooperation with the Council of Indigenous Peoples, with a total participation of 19,239 trainees (see Chart 4).

### e. Smooth Road Project:

The Smooth Roads Project has shown increasingly good results since it was inaugurated on Oct. 20, 2008,

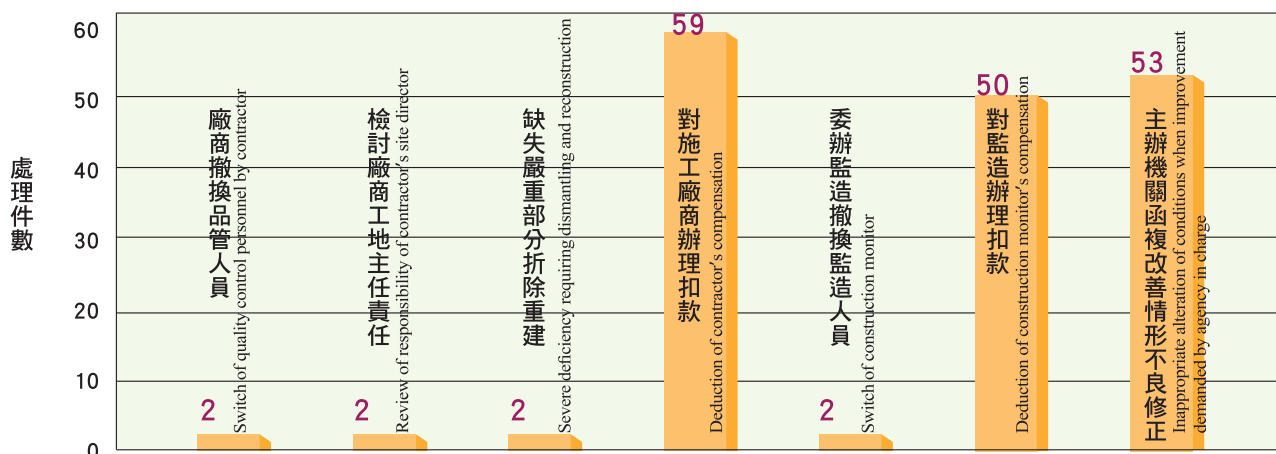


圖3、98年度工程會查核施工品質懲處情形

Chart3 Rewards and Punishments Resulting from PCC Construction Inspections in 2009



圖4、98年度工程會辦理品質教育訓練成果

Chart4 Training Classes Offered by the PCC in 2009



頒道路養護施工及巡查修補作業程序，促使機關主動巡查發現道路問題比例由4月59.8%提升至12月76.9%；4小時內完成修補案件比例亦由同時期之24.7%提升至45.8%。

道路工程查核路面平整度之不合格率由97年2月的87%降至98年12月的26.7%。

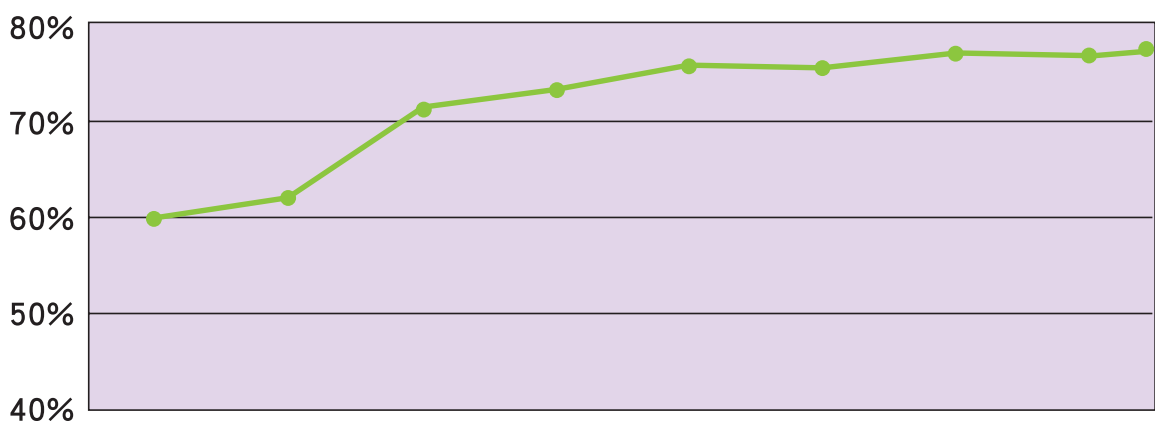
#### (四)重賞重罰

98年7月13日報院頒行「98年度公共建設計畫執行成效重賞重罰獎懲原則」。對於人員獎勵部分最高記大功1次並公開表揚、懲處部分最高記過2次以上處分，為歷年獎懲額度最高的一次。藉由本機制激勵人員士氣，以提升公共建設執行成效，短期內可迅速發揮活絡國內經濟、創造就業機會之效益，長期更可強化台灣未來競爭潛力之體質。

### 維護管理階段

各設施管理機關於平時即應定期對於關鍵基礎公共設施進行適當之維護及管理，以避免臨時崩毀並延長壽命，降低重大意外所帶來之災害損失，且能強化節能減碳及永續發展。

同時接管單位應於工程接近完工或通車半年前至一年前，即應進場瞭解設施及機電系統設備之操作，並參加廠商辦理之系統操作及定期保養及故障維修訓練，完工正式營運時，應要求廠商提供完整之標準作業手冊（包括操作、維護保養等）供參照，使接管設施發揮應有之服務功能。



Agency Discovery Ratio	98年4月 Apr.	98年5月 May.	98年6月 June.	98年7月 July.	98年8月 Aug.	98年9月 Sep.	98年10月 Oct.	98年11月 Nov.	98年12月 Dec.
● 自行巡查比例	59.8%	61.9%	71.2%	73.2%	75.6%	75.2%	76.8%	76.6%	76.9%

圖5、各機關自行巡查發現路面不平整比例圖

Chart 5 Ratio of Road Problems Discovered by Agency Patrols, 2009

and “Road Maintenance Work and Road Patrol and Repair Operating Procedures” was issued in February of 2009. The ratio of road problems discovered by agencies carrying out proactive patrols rose from 59.8% in April to 76.6% in December, and the ratio of repairs completed within four hours increased from 24.7% to 46.7% over the same period.

The rejection ratio of road surface smoothness inspections fell from 87% in February of 2008 to 26.7% in December of 2009.

#### 4. Heavy incentives and punishments

The Principles of Heavy Incentives and punishments in the Implementation of Public Construction Projects in 2009 were issued on July 13, 2009 by the Executive Yuan . The highest personnel incentive award was one major merit and public citation, while the heaviest penalty was up to two demerits. This was the heaviest punishment in history. This mechanism is designed to stimulate morale and upgrade the performance of public construction implementation, which in the short term can enliven the domestic economy and create jobs, and in the long term can strengthen Taiwan’s competitive potential.

#### Maintenance and Management Stage

Each facilities management agency should normally carry out appropriate maintenance and management of critical infrastructure facilities on a scheduled basis so as to avoid failure, extend facility life, and reduce the damage caused by major accidents while reinforcing energy conservation, carbon reduction, and sustainable development.

Agencies that are taking over facilities should, when construction nears completion or six months to a year before opening to traffic, go to the site and gain an understanding of the operation of the facilities and their electromechanical systems, and should participate in training provided by the contractor in system operation,

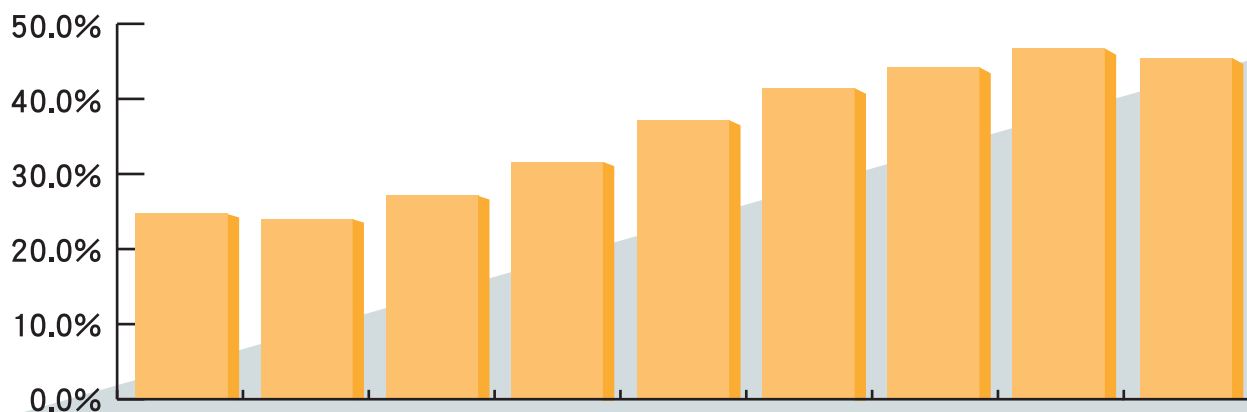


▲ 上圖：台北市辦理路平專案觀摩  
下圖：台3線汶水橋改建工程

Top: Road Flatness Project Workshop, Taipei City

Bottom: Provincial Highway No. 3 Wenshuei Bridge Reconstruction

scheduled maintenance, and malfunction repair. When construction is completed and the facilities begin operating, the receiving agency should request that the contractor provide complete standard operating manuals (including operation, maintenance, etc.) so that the facilities can fulfill their proper service function.



Ratio Completed within 4 Hours	98年4月 Apr.	98年5月 May.	98年6月 June.	98年7月 July.	98年8月 Aug.	98年9月 Sep.	98年10月 Oct.	98年11月 Nov.	98年12月 Dec.
● 4小時內比例	24.7%	24%	27.1%	31.6%	37.2%	41.4%	44.2%	46.7%	45.8%

圖6、路面不平整案件於四小時內自行修補完成比例圖

Chart 6 Ratio of Road Repairs Completed Within 4 Hours, 2009