

Independent cost controls combat budget overruns

Substantial budget overruns of several large-scale infrastructure projects have sparked a public outcry. Comparisons of the government's building and civil engineering works indicate that the clear separation of the roles of design, site supervision, and cost control adopted by building works have helped reduce budget overruns. To enhance transparency, public accountability, and checks and balances in civil engineering projects, the HKIS advises that the government engage independent cost control consultants. Several quantity surveyors share their insights and recommendations below.

Wilson Lau

The construction site of the Hong Kong-Zhuhai-Macau bridge.
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The public should have an informed opinion of the government's infrastructure projects, believes Sr Stephen Lai of Rider Levett Bucknall and the HKIS Past President. "[Because infrastructure projects involve public money], they should be transparent to the public...budget overruns of infrastructure projects will erode public confidence in the government in the long run."

Echoing Lai's sentiment is Sr Thomas Ho of TLS & Associates and the HKIS Senior Vice-President. "[Budget overruns] will make it highly challenging and difficult for the government to manage its expenditures in the future."

The crux of the issue is that in the Government's Form of Contract for Civil Engineering Works and some forms of contract used by other organisations

for infrastructure projects, the same engineering consultant handles all the design, site supervision, contract administration, cost management, and other financial matters.

By contrast, in the Government's Form of Contract and Private Form of Contract for Building Works, there is a clear separation of the roles of design, site supervision, and cost control. The design, site supervision, and contract administration works are undertaken by the architect, while cost and financial aspects are handled by independent cost consultants.

Recent statistics from the press have shown that not only are there more budget overruns in civil engineering works compared to building works, the average percentage of overruns in civil engineering projects also doubles that of building projects .

Ho thinks the organisational structure of most infrastructure projects under the current government GCC (General Conditions of Contract) Form of Contract, with the cost control function carried out by the engineering consultant or cost consultants employed by the engineering consultant, may compromise the impartiality of the cost control function. "The engineering consultant solely assumes the conflicting roles of both 'the judge and the accused' when he is the one responsible for assessing any claim that the contractor may raise against him due to any instruction issued by him. Although we believe all engineering consultants will act impartially to carry out these two conflicting roles, he may not be seen to be neutral and impartial. It is a doctrine of law that Justice is to be seen, hence he must be seen to act impartially and independently"

To integrate a clearer and stronger checks and balances mechanism into civil engineering projects, an independent cost control function is the key. Lai says the scope of the functions performed by an independent cost control consultant in the government's building works goes beyond cost. "The work by a quantity surveyor or cost consultant starts from the initial cost estimate at [the] design stage. At the tendering stage, some things may have been altered which may affect the contract price. The cost consultant can identify any discrepancies from the initial cost estimate. Cost control and monitoring is required when construction is in progress because there will be unforeseen circumstances. Monthly progress updates are produced to report any variations and changes in the contract price. This mechanism works well."



Another advantage of independent cost management is a fair cost estimate that provides balanced and impartial cost management which is independent from the design team, says Sr Michael Yu of Currie & Brown. "Such that the client can base his cost estimates on realistic information to make better informed decisions for the benefit of the project."

Meanwhile, project managers are responsible for cost control in the NEC (New Engineering Contract) Form of Contract for infrastructure projects. "Project managers look after many areas and it is difficult for them to handle cost control as well because it is highly specialised," Lai notes. "Sometimes budget overruns have been detected early on. Because there is no independent cost control mechanism, engineers may not disclose it. An independent cost control consultant identifies causes of overruns and can recommend cost-saving measures to offset the overruns."

Ho thinks that a strong cost data centre is important for cost control of construction works. Many quantity surveying firms maintain cost data centres with updated cost information of different construction elements, activities, labour, plant and materials etc. and tender price indices. These cost data, together with material supply situation, and the number of construction projects to be implemented are important tools for cost controls and forecasts of the future costs. "The more comprehensive the data are in the centre, the better quality the cost control will be."

Even design consultants have cost data centres, government departments should still engage independent cost consultants for more accurate cost estimates, Ho adds and quotes the example in building works. "I do not think it will cost more because the architect will only handle design and provide relevant information to the independent cost consultant. If the information provided are insufficient, the cost consultant will ask the architect for the missing information. This may not happen when the designers handle the cost control themselves."

Yu agrees with Ho. "[The] cost management fee, on average, only accounts for an insignificant percent of the capital cost of the project. [An] independent cost consultant provides not only [a] bill of quantities, but also more advanced cost control approaches that meet the needs of current large-scale civil engineering projects, including design development

cost control mechanism, variation cost control mechanism, value engineering, lifecycle costing, and project risk analysis."

Ho points out that after contracts are awarded, the contract price should be fairly accurate and should not have much deviation. In order to obtain an accurate contract price, the design should be completed, the method of construction should be confirmed, the ground conditions and environmental and site restrictions should be known. These require more relevant data gathered through site investigations and environmental studies. "Civil engineering projects currently adopt re-measurement[s]. It roughly means measurements will take place after works are completed because the works involve many uncertainties especially of the ground conditions. Even with re-measurement[s], the tendered document should contain more accurate estimates so that there will not be substantial variations when projects are completed. This helps improve cost control."

Yu emphasises that for example, cost controller appreciate time and money spent on ground investigation works is essential at the design stage and save money later on "When the engineers and the contractors have a better grasp of the volume of work, they can produce better designs and programmes which help to avoid the situation in which the contractors has to accelerate work or re-sequence work to accommodate additional unforeseen work which leads to variation orders (VO) and potential claims for extensions of time and additional money. Good cost planning definitely helps reduce unexpected cost overruns."

Lai and Ho recommend that the government initiate some pilot schemes of independent cost management for certain infrastructure projects.

There have been successful examples of independent cost management helping to keep public project expenses within budget. Rider Levett Bucknall's office in the UK has provided independent cost management services for several government projects in the country, including a highway project for the Somerset County Council, Lai notes.

The article is published courtesy of Classified Post.

獨立控制成本改善超支

本港多個大型基建項目嚴重超支引發公眾強烈不滿。從比較政府的樓宇及土木工程項目可知，在樓宇工程中將設計、現場監督及成本控制的角色分立有助減少超支。為加強土木工程的透明度、公眾問責制及分權制衡，香港測量師學會建議政府聘請獨立成本控制顧問。以下工料測量師分享了他們的觀點及建議。

Wilson Lau

利比董事總經理及香港測量師學會前會長賴旭輝測量師認為，公眾應在知情下對政府基建項目提出見解。「[由於基建項目涉及公帑]，政府須建立透明度機制及向公眾交代……長遠來看，基建項目超支會損害公眾對政府的信心。」

對於賴旭輝的憂慮，達置行建築工料測量師事務所董事總經理及香港測量師學會高級副會長何國鈞測量師亦深表同感。「[超支]會令政府日後管理開支面臨更大考驗和困難。」

問題關鍵在於根據政府土木工程合約及其他機構採用的一些基建項目合約，所有設計、現場監督、合約管理、成本管理及其他財務事宜均由同一位工程顧問負責。

相反，根據政府樓宇工程合約及私人樓宇工程合約，設計、現場監督及成本控制的角色分立。設計、現場監督及合約管理工作由建築師負責，而成本及財務相關事宜則由獨立成本顧問處理。

近期傳媒的數據顯示，與樓宇工程相比，土木工程超支的數目較多，而超支的平均比例亦是樓宇工程的兩倍。

何國鈞認為，根據現行政府一般合約條款下大部分基建項目的組織架構，由工程顧問或工程顧問僱用的成本顧問履行成本控制職能，可能會影響成本控制的公正性。「當承建商向工程顧問作出有關工程顧問指令的任何索償，而工程顧問是唯一負責評估索償的人士時，工程顧問便同時擔任「裁判及被告」這兩個矛盾角色。儘管我們相信所有工程顧問在履行這兩個矛盾角色時會公正行事，工程顧問仍可能被視為不中立及偏頗。法律的原則是正義必須為世人所見。因此，他須讓人看到他行事獨立、不偏不倚。」

要對土木工程項目實施更明確、更完善的分權制衡機制，關鍵在於獨立的成本控制。賴旭輝表示，在政府的樓宇工程中，獨立成本控制顧問履行的職責範圍並不限於成本方面。「工料測量師或成本顧問的工作從設計階段的初期成本估算已經開始。在投標階段，部分事項可能已經更改從而影響承建價格。成本顧問能分辨出任何與初期成本估算不相符之處。由於存在不可預測的因素，項目在建築期間更需要進行成本控制及監察。如承建價格出現任何變動，則須在每月進度報告中更新。這個機制十分有效。」

偉歷信香港區董事總經理余德森測量師指出，獨立成本管理的另一優點在於公平的成本估算，讓成本管理維持平衡公正，並獨立於設計團隊。「如此一來客戶可根據實際資料估算成本，為項目作出最佳的知情決策。」

另一方面，根據基建項目的新工程合約，成本控制由項目經理負責。賴旭輝稱：「項目經理負責多項工作，難以同時控制成本，因為有關工作十分專業。有時超支可在早期發現，但由於缺乏獨立成本控制機制，工程師可能不會開誠佈公。獨立成本控制顧問卻能找出超支原因並提出節約成本的建議以抵銷超支。」

何國鈞認為，強大的成本數據資料庫對建造工程的成本控制至關重要。許多工料測量公司設有成本數據資料庫，儲存各項工程元素、活動、勞工、機械及材料等最新成本資訊及競標價格指數。這些成本數據連同材料供應情況及即將展開的建造項目數量都是成本控制及未來成本預測的重要工具。「資料庫的數據越全面，成本控制得越好。」

何國鈞以樓宇工程為例補充說，即使設計顧問設有成本數據資料庫，政府部門仍應聘用獨立成本顧問，以取得更精確的成本估算。「我不認為這樣做會增加成本，因為建築師只需負責設計及向獨立成本顧問提供相關資料。如果提供的資料不足，成本顧問會向建築師索取缺失的資料。若由設計師自行控制成本，則情況不會如此。」

余德森贊同何國鈞的意見。「平均而言，成本管理費用佔項目建設成本的比例微不足道。獨立成本顧問不僅提供工程量清單，亦提供先進成本控制方法，滿足目前大型土木工程項目的需要，其中包括設計開發成本控制機制、工程變更成本控制機制、價值工程、週期成本及項目風險分析等。」

何國鈞表示，簽訂合約後，承建價格應該相當準確，不應出現太大偏差。為取得準確的承建價格，設計工作應已完成，建造方法應已確定，地質情況及環境和工地限制亦應已知悉。這些需要通過土地勘察及環境研究收集更多相關數據。「目前土木工程採用重新量度法，即工程完成後重新計算數量，因為工程牽涉多個不明確因素，尤其在地質情況方面。即使是重新量度，中標文件上的數量估算亦應準確，那麼項目完成時便不會出現太大偏差。這有助加強控制成本。」

余德森強調，例如成本控制人員都認同在設計階段所投放於土地勘察的時間和金錢是十分重要的，可以節省後期成本。「當工程師和承建商可更準確掌握工作量時，可改善設計和計劃，有助承建商避免加快工作或重新編排工作程序以完成未能預見的額外工作的情况。這個情況會引致工程變更，亦可能引發延期及金錢的申索。良好的成本計劃絕對有助減少預計不到的超支情況。」

賴旭輝和何國鈞建議政府可將一些基建項目試行獨立管理成本。

獨立管理成本有助控制公共工程開支的成功例子並不罕見。賴旭輝表示，利比的英國辦事處已為多個英國政府項目提供獨立成本管理服務，其中包括薩默塞特郡委員會（Somerset County Council）的一個高速公路項目。

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