CANADIAN COUNCIL OF PROFESSIONAL ENGINEERS
CONSEIL CANADIEN DES INGÉNIEURS

Brief to the Standing Committee on Finance Regarding The Federal Government's Pre-Budget Consultation Process

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Section I:
Executive Summary

Established in 1936, the Canadian Council of Professional Engineers (CCPE) represents the 12 provincial and territorial associations/ordre that regulate the practice of engineering in Canada and license Canada's 160,000 professional engineers. CCPE promotes consistency in the regulatory and licensing practices of its members, and works to streamline the national and international mobility for engineers.

Of foremost concern for CCPE and the engineering profession is the protection of the public and providing quality assurances that benefit all Canadians. As members of a self-regulated profession, engineers are legally accountable for their work. We are bound by the tenants of law to undertake work in a way that protects people, property and the environment. Our code of ethics requires us to put the public welfare above all other interests.

As such, our participation in the Pre-Budget Consultations has been consistently linked to our desire to elevate the standard of living of Canadians. The engineering profession, alongside government, has an intimate understanding and respect for the symbiotic relationship between promoting innovation and building a healthy and competitive, knowledge-based economy. In order to accomplish these mutually reinforcing objectives; building safer communities and giving Canada the economic tools to flourish in the new millennium, CCPE believes that it is imperative for the Government of Canada to accelerate their efforts to address a suite of key policy issues. Furthermore, we feel the federal government can make significant strides to improve quality of life while laying the cornerstones for economic growth through:

1. **Improving integration and settlement practices for new Canadians**. Such a goal is consistent with the Government of Canada's workforce development strategy and its newly approved *Foreign Credential Recognition* unit within HRSDC. Streamlining settlement will enable professions, trades and industry to better harness the creative talents and technical expertise of skilled immigrants for the new economy. Benefit would also be accrued directly by the skilled immigrant who would be better equipped to navigate the licensure and employment process.
2. **Embracing a long term, holistic vision for rejuvenating Canada's ailing infrastructure systems**, while soliciting expert stakeholder input on identifying investment and maintenance priorities.
3. **Embarking on a comprehensive national assessment of engineering works in Canada** to determine the vulnerability of public infrastructure to climate change.

CCPE understands that public attention may be coalescing towards other "competing" matters of policy. However, by deferring investment in the areas we've identified, Canada will surely be saddled with a nagging list of maladies, including; threats to public health and safety, negative impacts to the environment, lost innovation and

entrepreneurial potential, higher operating costs for government and businesses, lost productivity, and the prospects of higher capital costs and budgetary pressures in the future.

Furthermore, investment in one policy area, namely infrastructure, should not be viewed as being at the expense of other competing priorities, namely health care. As we will elaborate upon further in the content of this document, embedded within capital expenditure is the potential to alleviate pressure on finite health care resources and rising costs.

At this juncture, and based on our belief that addressing these three priorities will improve public safety and stimulate growth, CCPE strongly encourages the federal government to take action through the three expenditure and policy measures.

RECOMMENDATIONS:

Helping New Canadians Integrate Into the Profession and the Workforce

Recommendation #1

More, and longer term federal funding for the Foreign Credential Recognition Program (FCR) should specifically be devoted to the regulated professions such as engineering.

Tackling the Infrastructure Debt

Recommendation #2

A well-coordinated strategy for infrastructure renewal must include funding and political support for the creation of a national round table for infrastructure. NRTI membership would be selected from a large community of infrastructure stakeholders, who, once selected, would be tasked to, among other things:

- **develop a national infrastructure action plan;**
- **report on the state of infrastructure in Canada; and,**
- **advise the Government of Canada on spending priorities for capital investment and the maintenance of existing civil works.**

Adapting to Climate Change

Recommendation #3:

Provide adequate funding to conduct a thorough national assessment of the vulnerability of Canada's public infrastructure (federal, provincial and municipal) to the impacts of climate change. The national assessment will enable decision-makers to establish and justify spending priorities on strategies and actions that anticipate and adapt to climate change impacts across the broad spectrum of public infrastructure.

Section II:
CCPE Actions to Date

CCPE's participation in the pre-budget talks is an integral part of its annual government relations lifecycle activities. Moreover, we applaud the efforts of the Government of Canada and the Finance Committee specifically, for implementing stakeholder consultations as part of the budget process. We feel that opening discussion to diverse groups augers well for Canadians at-large by building new streams of accountability and transparency into the policy process.

Last year, CCPE tabled a series of recommendations focusing on the overarching theme of infrastructure renewal. We also drew specific attention to the needs for a national drinking water code and the creation of formal structures that link scientists with engineers, thereby ensuring that design decisions for civil works incorporate the most current understanding of the potential effects of climate change at the local level.

Since our last appearance before the Finance Committee, CCPE has continued to defend public safety, as well as advocate for new solutions to enduring problems. We have also listened to the government and heard from Canadians about what the engineering profession can do to improve our country. CCPE is therefore pleased to report to the Finance Committee that we and our partners have made significant progress across several matters of public interest including:

1. streamlining the immigrant settlement process, integrating skills and improving credential recognition for skilled engineering immigrants;
2. developing new approaches to provide the Government of Canada, with expert non-partisan advice that will enhance Canada's infrastructure systems; and,
3. leading the charge to identify vulnerabilities to engineering works that are affected by climate change.

SKILLS INTEGRATION: *From Consideration To Integration (FC2I)*

In 2001, Citizenship and Immigration Canada recorded that 44 per cent of skilled workers entering Canada indicated an intention to work in a regulated occupation, and of those, 63 percent self-identified as "engineers". That translates into thousands of international engineering graduates (IEGs) arriving in Canada every year and makes "engineering" the single largest occupational group immigrating to Canada.

The leadership of the engineering profession recognized that IEGs are encountering difficulty both obtaining their professional engineering licence and obtaining employment within the field of engineering.

In December 2002, with full funding from the former HRDC, CCPE and its members, the provincial and territorial regulatory bodies, began work on a comprehensive project

examining the licensure, settlement and employment landscape called *From Consideration to Integration* (FC2I).

FC2I is a three-phase project. In Phase I, work focussed on understanding the IEG experience overseas and in Canada. It examined provincial and territorial engineering licensing procedures, and incorporated first-hand accounts from those who work with and employ IEGs. To develop the most complete and detailed understanding of the current licensing and settlement obstacles, a diverse and widely representative steering committee was created.

In Phase II, the Steering Committee analyzed the information, identified where the integration process required improvement and began to build consensus among stakeholders on possible solutions. The Phase II work revealed that there are many gaps in the processes and these are complicating the integration process for IEGs, such as:

- detailed labour market information is not available;
- many IEGs are surprised that obtaining an engineering job is difficult;
- employers reported that they did not have difficulty in assessing technical proficiency among IEGs, but that applicants' communications skills and their ability to adapt to the Canadian business culture were significant in some cases; and,
- there is little understanding of why some IEGs choose not to begin the licensing process while others opted not to complete it.

After consulting with more than 200 people and dozens of different stakeholders, 17 recommendations were presented to the CCPE Board of Directors at the Annual General Meeting in May 2004. All 17 were unanimously passed.

The recommendations fall into four categories: **research, employment, communications, and licensing**. CCPE and HRSDC continue to work closely, and both acknowledge that the issues faced by IEGs will not be solved completely by implementing the recommendations in any one category. Furthermore, additional financial resources will be required by the federal government to close information gaps that exist in the system and to track IEGs' progress through the licensure process.

Implementation of the recommendations will commence in Phase III. By November 2004, CCPE expects to have a fully detailed implementation plan. Improvements will directly affect IEGs and Canadians at-large, since we all benefit when skilled immigrants participate in society to their fullest potential.

INFRASTRUCTURE: A Roundtable for Success

Just as Canada's physicians and nurses are the "conscience" of the domestic health care system, engineers are the "social conscience" for infrastructure.

In 2003, CCPE partnered with other stakeholders including the Canadian Public Works Association, the National Research Council, and the Canadian Society of Civil Engineers to unveil the Technology Road Map (TRM) on infrastructure. CCPE invested time, money and human capital into the project, which developed consensus on key issues and concerns for the civil infrastructure systems (CIS) industry, and identified the technological needs and other components required by the CIS industry.

The TRM is a comprehensive report that contains ten objectives and ten recommendations aimed at charting new and innovative ways to improve the maintenance and rehabilitation of our road and water systems.

The results of the TRM were based on a broad national consultation process involving steering committees, expert panels, studies on Canada's infrastructure, and five town hall meetings. Unlike previous studies, the final report is a national vision resulting from a process that succeeded in bringing together numerous stakeholders in the fragmented infrastructure industry.

The results of the project will enable governments and stakeholder organizations to develop science and harmonize technology action plans for the construction, rehabilitation, and management of the national infrastructure system. It will also provide a knowledge base to guide new policies that would shape and define action for the next decade. The recommendations, if implemented by the federal government, will improve public safety and ensure a strong economic future for Canadians.

Since the TRM report was released, its partner organizations have begun work to fulfill its core recommendations. CCPE specifically, has marshalled its resources and initiated meaningful dialogue with policy makers that is aimed at creating a National Round Table for Infrastructure (NRTI).

In cooperation with its TRM partners, and an even broader constituency of organizations and special interest groups who have come on board to support the realization of the TRM recommendations, CCPE has begun consulting with experts to develop the governance structure for the NRTI. The consultations have included examining other roundtable frameworks in Canada, such as the National Roundtable on the Environment and the Economy (NRTEE) to determine the best process for the NRTI for membership selection, constituting sub-committees, and identifying how the NRTI would report to the Government of Canada and/or Parliament.

CLIMATE CHANGE ADAPTATION: Identifying Vulnerabilities to Save Lives and Ensure Economic Security

Changes to regional climates are negatively affecting the longevity and serviceable life span of public works.

In response to these challenges, which threaten to become more pronounced in future years, CCPE has laid the groundwork and begun exploratory dialogue with the Government of Canada to create a committee which would asses the vulnerability of Canada's infrastructure works to climate change. Branded the *Engineering Vulnerability Committee* (EVC), the aim of the project is to provide a regional assessment of the vulnerability of Canada's existing and future infrastructure to the impacts of climate change. Using input from engineers from across Canada, it will provide a national and regional picture of the vulnerability of different types of buildings and infrastructure such as dams, water and wastewater systems, pipelines, roads, bridges and other engineering works and will encompass urban and rural areas in all regions of Canada.

Thus far, dialogue has been initiated with several federal stakeholders whose responsibilities intersect with the project's mandate, including: Natural Resources Canada, Infrastructure Canada, the National Research Council, and Environment Canada.

Section III:
Recommendations to Government

FOREIGN CREDENTIAL RECOGNITION

The Issue: Improve settlement and licensing practices so skilled immigrants can better contribute to the growth of the Canadian economy.

The Government of Canada has long maintained that skilled immigrants are important to the economic well-being of this country. Indeed, CCPE and its member associations share the Government of Canada's belief that well-coordinated and innovative approaches to credential recognition will provide value to skilled immigrants, whose active participation in society enriches all Canadians.

Each year, thousands of immigrants arrive in Canada, and of those, many identify themselves as engineers. In 2001, of the 44 per cent of skilled workers who identified an intention to work in a regulated occupation at the time of immigration, 63 percent indicated "engineering". IEGs are well represented in Canada's professional engineering community. According to CCPE's 2002 National Survey, 12 percent or 19,000 of Canada's 160,000 professional engineers received their education in other countries.

Nevertheless, while the engineering profession in Canada has been licensing international engineering graduates IEGs for decades, not all of the IEGs who come to Canada are able to find work in engineering and fewer still obtain their professional engineering license.

Once in Canada, IEGs face additional challenges, such as adapting to a different culture and, in some cases, learning a new language, all of which can make it difficult to obtain the information they need.

The Need: Implementing frameworks that assist skilled immigrants to more quickly attain licensure and find meaningful employment in their field of practice.

As previously highlighted in "Section II: CCPE Actions-to-Date," CCPE, through the *From Consideration to Integration* (FC2I) project, has been at the leading edge among professions to respond to the issue of foreign credential recognition.

In the Phase II report of the FC2I Project, 17 recommendations were tabled. Some of the recommendations that require federal funding for Phase III implementation include:

- establishing a database of recognized engineering institutions/degrees;
- tracking all applicants, including IEGs, throughout the licensing process;
- undertaking an engineering labour market study that will develop models to provide current and ongoing labour market information, including maintenance and dissemination to IEG clients; and,
- creating a "Working in Canada" seminar for IEGs.

With work on Phase II now completed, our energies will be turning to the implementation phase. Federal funding, which thus far has been directed to completing the two previous phases, is being directed to put the recommendations into action thereby, making a meaningful impact towards integrating the skills of new Canadians into the workforce, and the engineering community specifically.

Nevertheless, beyond the scope of FC2I, funding and federal resources are required on a continual basis until the issue is resolved.

Recommendation #1
More, and longer term federal funding for the Foreign Credential Recognition Program (FCR) should specifically be devoted to the regulated professions such as engineering.

INFRASTRUCTURE

The Issue: Why it is important. The current state of infrastructure in Canada, and what the future holds.

"A society that neglects its infrastructure loses the ability to transport people and food, provide clean air and water, control disease and conduct commerce."
--US National Science Foundation

Our domestic infrastructure system represents a $1.6 trillion asset. Canadians have prospered and enjoyed high standards of living, thanks largely to the benefits accrued by a large and reliable inventory of safe and essential public assets, such as water and sewer systems, hospitals, schools and roads. Nevertheless, the health and viability of our infrastructure systems depend on sustained investment for lifecycle maintenance. Public funding is also required for new capital outlays to meet the demands of Canadians as well as support economic growth and environmental stewardship.

At present estimates, our national infrastructure debt now totals $60 billion dollars. Moreover, 50 percent of Canada's infrastructure system will have reached the end of its serviceable lifespan by 2027. In the absence of an enormous investment of public dollars, deferrals in maintenance and delays on the expansion of essential public works, at current levels of funding by all three levels of government, Canada's infrastructure debt could climb to $110 billion by 2028.

What is even more disconcerting is that these figures may in fact be modest. A 2004 report entitled "No Time To Be Timid," authored by the Canada West Foundation, painted a far bleaker picture. Using research and analysis conducted at McGill University, the Canada West Foundation reported, "If corrective action is not taken… the

required funds for the entire country's public infrastructure could reach as high as $400 billion by 2015-2020."

Regardless of which figures the reader chooses to accept, the consensus, based on a broad review of the evidence reported by organizations such as the Federation of Canadian Municipalities, the Canadian Mortgage and Housing Corporation, the Canadian Water and Wastewater Association, the Public Policy Forum, the Conference Board of Canada, and countless others stakeholders and experts, is that the infrastructure gap is massive and growing. Furthermore, there is widespread agreement that the potential risks from failing to properly and adequately address the issue includes threats to public health and safety, increased operating costs for the public and private sectors, negative impacts on the environment, lost economic productivity, and higher capital costs in the future.

The Need: Rethinking the way government makes investments decisions for infrastructure, thinking strategically and getting the most for the taxpayer's dollar.

The increased federal outlays for capital spending in the past several budgets are a welcome development. However, overall, they have achieved little more than a temporary arrest in the rate of growth of the infrastructure deficit. Furthermore, investment in public works by the Government of Canada, per capita, falls well behind the United States and the European Union.[1] Put simply, more sustained and predictable funding is required.

While CCPE strongly encourages the federal government, along with its provincial and municipal counterparts to direct more revenue towards infrastructure, we also realistically grasp that funding to the level required is not likely to be supported by a political and business culture in Canada that is galvanized towards fighting fiscal deficits.

Therefore, with a multitude of competing priorities confronting all three levels of government, combined with political declarations to maintain balanced budgets, new ways of thinking and new policy tools that achieve greater efficiencies, value and benefit to the taxpayer will have to be explored and implemented. It stands to reason that addressing Canada's infrastructure debt, which is one of the most daunting financial challenges facing the various levels of government, needs to be at the forefront of this new wave of thinking.

Recommendation #2

A well-coordinated strategy for infrastructure renewal must include funding and political support for the creation of a national round table for infrastructure. NRTI membership would be selected from a large community of infrastructure stakeholders, who, once selected, would be tasked to, among other things:

[1] For the years 1994-2003, the Government of Canada dedicated roughly $12 billion CDN for program spending on infrastructure. Over the same interval the US federal government directed US$217 billion for its transportation infrastructure program alone.

- **develop a national infrastructure action plan;**
- **report on the state of infrastructure in Canada; and,**
- **advise the Government of Canada on spending priorities for capital investment and the maintenance of existing public works.**

CLIMATE CHANGE

The Issue: What are the threats to infrastructure and public welfare by climate change?

There is broad consensus that climate change is occurring and is, in turn, affecting the serviceable life spans of public works. As the effects of climate change become more pronounced in the years ahead, public works will be exposed to new environmental conditions and new extremes which they were not designed to withstand, thereby calling into question current standards of design.

The Need: Responding proactively to climate change, assessing and identifying risks to public works.

The International Panel on Climate Change defines vulnerability as the degree to which a system is susceptible to, or unable to cope with adverse effects of climate, including climate variability and extremes.

Because infrastructure will be profoundly affected by changes in climate, it is imperative that governments begin now to assess and identify the vulnerabilities of public works to the realities of climate change. Identifying weaknesses in the system is an essential task, given the need to ensure continuity of service, economic growth, and most vitally protection of the public, as the effects of climate change become more widespread and acute.

As noted in "Section II: CCPE Actions-to-Date," CCPE has begun work on a project that will provide a regional assessment of the vulnerability of Canada's existing and future engineering infrastructure to the impacts of climate change. While funding for the first phase of this project is currently in negotiation with several federal departments, the funding required to do the assessment itself is not yet secured.

The challenges and financial costs of completing the assessment study will be extensive and will therefore require funds from the Government of Canada to support its completion.

Recommendation #3:

Provide adequate funding to conduct a thorough national assessment of the vulnerability of Canada's public infrastructure (federal, provincial and municipal) to the impacts of climate change. The national assessment will enable decision-makers to establish and justify spending priorities on strategies and actions that anticipate and adapt to climate change impacts across the broad spectrum of public infrastructure.

This national assessment will provide decision-makers with an important tool to plan and prioritize adaptation measures within a risk assessment framework. The degree to which government and the general public is willing to recognize risk associated with the impact of climate change on infrastructure will require the results of a detailed assessment. Once the degrees of acceptable risk are established for each type of infrastructure in each region, it will be our job as engineers to develop and implement the adaptive measures.

CCPE and its constituent members firmly believe this project will provide a much clearer picture of the vulnerability of Canada’s buildings and infrastructure to climate change. Furthermore, it will allow decision-makers to make informed choices on what needs to be done in the interest of protecting the public and ensuring that Canada’s economy is better equipped to handle new climatic extremes.

Section IV: Conclusion

Since Canada's first university engineering program was inaugurated 150 years ago, engineers have worked shoulder-to-shoulder with Canada's policy makers to see our country mature into one of the most respected and liveable nations worldwide.

CCPE and its constituent members, the 12 provincial and territorial associations and ordre that regulate the practice of engineering in Canada and license Canada's 160,000 professional engineers, are pleased to renew our participation in the pre-budget consultations because 150 years later the engineering community remains guided by an enormous sense of duty to champion public well-being.

The calling of the engineer is an unwavering obligation to follow the highest standards of ethics, integrity and professional practice. Part of this calling is to search for innovative solutions to challenges that affect the lives of Canadians. For us, that set of principles has been one of the reasons CCPE and its constituent members have made it their duty to lead the charge on:

- **integrating the talents of skilled immigrants into the engineering community through FC2I;**
- **rethinking the way we invest in infrastructure by promoting the creation of a national roundtable for infrastructure; and,**
- **identifying vulnerabilities to infrastructure, and concurrently, public safety that are impacted by climate change.**

We are proud of our actions-to-date, and firmly believe that a federal commitment, matched by dollars to support the recommendations we have highlighted in this document, will to help to make Canada a better country for this and future generations.