CHARTERED
PROFESSIONAL
ACCOUNTANTS
CANADA

CPA Common Final Examination

BOARD OF EXAMINERS' REPORT

PART B — The Day 1 Report

May 2016 and September 2016 Examinations

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THE BOARD OF EXAMINERS' REPORT ON THE COMMON FINAL EXAMINATION

OBJECTIVES OF THE REPORT

The objective of this report is to explain the Common Final Examination (CFE) process and to assist the profession in improving the performance of candidates on the CFE.

The report sets out the responsibilities of the Board of Examiners, the methods used for guide setting and marking the CFE, and the results of the marking process. The report also includes recommendations to candidates from the Board of Examiners.

The September 2016 CFE Report is presented in two parts: Part A is the Day 2 and Day 3 Report and Part B is the Day 1 report.

The appendices provide more detailed information on the design, guide setting, and marking of the CFE, as well as the board's expectations of candidates on the simulations. Readers are cautioned that the marking guides were developed for the entry-level candidate and that, therefore, all the complexities of a real-life situation may not be fully reflected in the content. The CFE report is not an authoritative source of GAAP.

RESPONSIBILITIES OF THE BOARD OF EXAMINERS

The Board of Examiners (the board) comprises a chair, a vice-chair, and sixteen members appointed by the provincial bodies.

The board's responsibilities, as set out in its terms of reference, include the following:

- Setting the CFE in accordance with the *Chartered Professional Accountant Competency Map* (the *Map*) and other directions from the Professional Education Management Committee;
- Submitting the CFE and the marking guides to the provincial bodies for review;
- Marking the candidates' responses and recommending to the provincial bodies the pass or fail standing that should be given to each candidate; and
- Reporting annually on the CFE to various CPA committees and the provincial bodies, in such form and detail and at such time as is satisfactory to them.

The chair is responsible for the supervision of the evaluation process. A CFE subcommittee is actively involved in the preparation of the CFE simulations, the preparation of marking guides, and the setting of the passing profile. The full board is responsible for determining the passing standard.

THE CFE

Preparation and Structure of the CFE

The board staff works in conjunction with authors to ensure that simulations achieve the overall intent and design objectives of the board while adhering to the competencies and the proficiency levels specified in the *Map*.

The CFE subcommittee of the board provides guidance as to the content and nature of simulations to be included on the examination. It also reviews and refines these simulations to make up the three-paper evaluation set.

Nature of the Simulations

The CFE comprises a set of simulations that are both essential and effective in evaluating the candidates with regard to their readiness to be a CPA:

Day 1 – The first paper is a four-hour examination consisting of a single simulation that is linked to the Capstone 1 group case. There are two versions of the linked cases. Version 1 is presented to first time writers and version 2 is presented to repeaters and candidates who deferred.

Day 2 – The second paper is a five-hour case, with four different roles and requirements. Additional information tailored to each role is provided in four separate appendices.

Day 3 – The third paper consists of three multi-competency area simulations.

Assessment Opportunities

The board applies competency-based marking procedures that enable it to decide which candidates demonstrate readiness to enter the profession.

Assessment Opportunities are designed to answer the question, "What would a competent CPA do in these circumstances?" To attain a pass standing, candidates must address the issues in the simulations that are considered significant.

Appendix A contains a comprehensive description of the evaluation process.

Marking Guides

Marking centre leaders and assistant leaders provide valuable input during the testing and setting of the marking guides, before live marking begins. The board chair, vice-chair, selected board member(s) and senior evaluations staff hold meetings with the leaders and their assistants during both the guide-setting and the marking processes. See **Appendices B to F** for the CHEI Day 1 simulations and related capstone case, CHEI marking guides, and CHEI sample responses. **Appendix G** contains the marking results by assessment opportunity, and **Appendix H** contains the BOE comments. A copy of the Day 1 V1 (PRI), Day 2 and Day 3 simulations can be found in **Part A** of the CFE Report. The marking guide and detailed BOE commentary for the PRI Day 1 simulation will not published until version 2 is written on the September 2017 CFE.

Day 1 – The marking guide is designed to assess the candidate on the stages of the CPA Way: 1) situational analysis; 2) analysis of the major issues; 3) conclusions and advice; and 4) communication. Based on these four summative assessments, the candidate's response is then holistically judged to be either a passing or a failing response.

Day 2 and Day 3 – Marking guides are prepared for each simulation. Besides identifying the assessment opportunities, each marking guide includes carefully defined levels of performance to assist markers in evaluating a candidate's competence relative to the expectations set out by the board when developing the passing profile for a competent CPA.

Five categories of performance are given for each assessment opportunity (AO). The candidate's performance must be ranked in one of the five categories:

- Not Addressed
- Nominal Competence
- Reaching Competence
- Competent
- Competent with Distinction

Setting the Passing Standard

The board chair and vice-chair participate in the monitoring of live marking. Near the completion of the marking process, the CFE subcommittee satisfies itself that the markers applied the marking guides as intended by the board.

In determining which candidates pass the CFE, a passing profile is developed by the CFE subcommittee of the board. A candidate is judged in relation to these pre-established expectations of an entry-level chartered professional accountant. The passing profile decisions are ratified by the full board. In setting the passing profile, the board considers the following:

- The competency area requirements described in the *Map*
- The level of difficulty of each simulation
- The level of difficulty of each assessment opportunity
- The design and application of the marking guides
- Comments from leaders and assistant leaders regarding any marking difficulties encountered or any time constraints noted
- Possible ambiguity of wording or of translation
- Input on critical decision factors from an independent board of three CPAs who review the fair pass package

The Decision Model

The purpose of the CFE is to assess whether candidates possess the competencies required of an entry-level CPA through a written evaluation that is common to all CPAs. Each day of the CFE is unique and is designed specifically to assess different skills:

- Day 1 is linked to the Capstone 1 group case work. It assesses the candidates' ability to demonstrate professional skills. It is independent from Day 2 and Day 3.

- Day 2 is the **depth** test. It assesses technical **depth** in one of four unique roles (that reflect the four CPA elective choices) and provides **depth** opportunities in the common core competency areas of Financial Reporting and/or Management Accounting. Candidates pre-select one role and respond from that role's perspective.

- Day 3 supplements the **depth** test in the common core areas of Financial Reporting and/or Management Accounting. It is also the **breadth** test for all common core competency areas.

Candidates must pass all three days in order to qualify for entry to the profession.

Day 1

Day 1 is assessed independently from Day 2 and Day 3. A pass or fail decision is made based on a holistic assessment of the candidates' performance in applying the CPA Way to demonstrate essential professional skills.

Day 2 and Day 3

The decision model used by the board is presented in Exhibit I. Four key decision points, or levels, are applied in reaching a pass or fail decision, as follows:

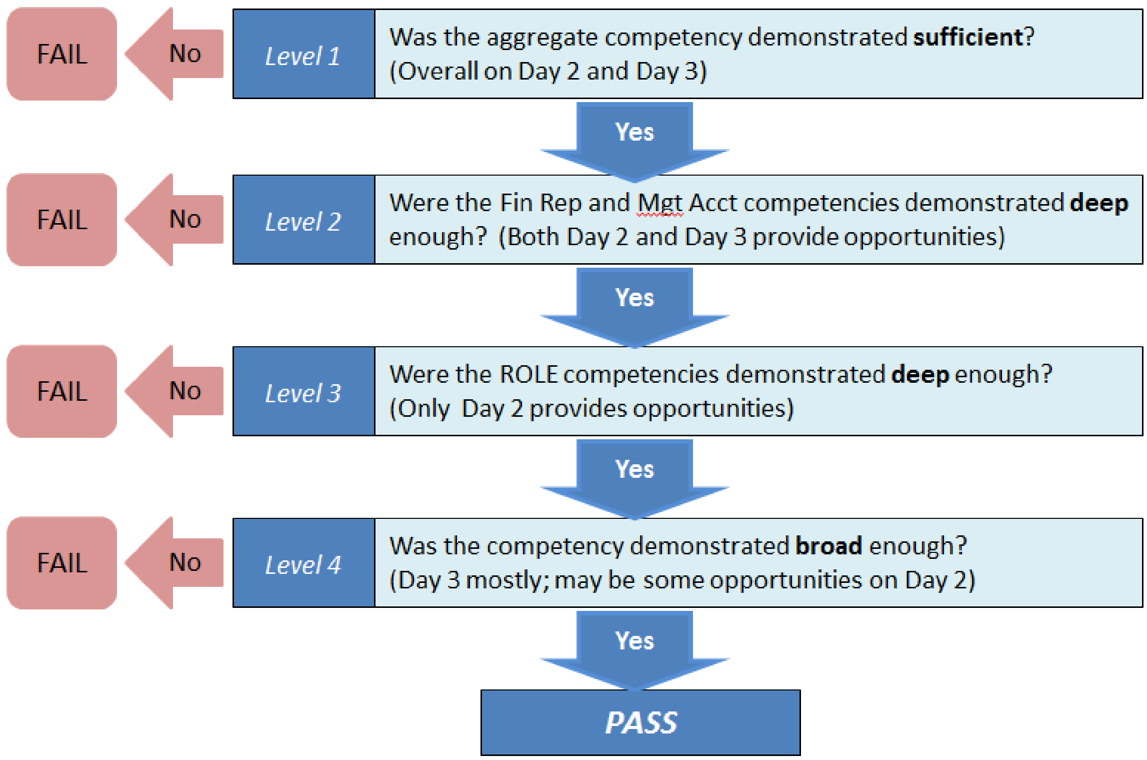
1. The response must be **sufficient**; i.e., the candidate must demonstrate competence in the Assessment Opportunities presented on Day 2 and Day 3 (Level 1).

2. The response must demonstrate **depth** in the common core area of Financial Accounting or Management Accounting (Level 2).

3. The response must demonstrate **depth** in the pre-selected elective role (Level 3).

4. The response must demonstrate **breadth** across all competency areas of the *Map*, at a core level, by not having avoided a particular technical competency area (Level 4).

EXHIBIT I
DAY 2 AND 3 PASS/FAIL ASSESSMENT MODEL



Approving the Results

The CFE subcommittee reviews and approves the marking results for each simulation. Day 1 is assessed separately from Day 2 and Day 3.

Day 1 – The CFE subcommittee discusses the profiles for both the marginally passing and marginally failing candidates to confirm that the board's pre-established passing profile has been appropriately applied by the markers.

Day 2 and Day 3 – As part of the development process, the CFE subcommittee sets preliminary requirements for the three levels (tests of depth and breadth) being assessed on the Day 2 and Day 3 simulations. After the marking is completed, the board reviews and finalizes those requirements. The board establishes the Level 1 (sufficiency) requirement for the combined Day 2 and Day 3 simulations.

During the approval process, the board continues to consider whether the results could be affected by any inconsistency in the evaluation or the board's processes.

Reporting

In reaching its decision, the board determines which candidates pass on a national basis only, without regard to provincial origin or language. Similarly, the detailed comments are based on analyses of the performance of all candidates.

The board reports the following information by candidate number:

- Overall pass/fail standing and pass/fail standing for each of Day 1 and of Day 2 and Day 3 combined.
- A pass/fail standing for Day 1.
- A pass/fail standing for Level 1, Sufficiency.
- A pass/fail standing for Level 2, Depth in Financial Reporting and/or Management Accounting.
- A pass/fail standing for Level 3, Depth in role.
- A pass/fail standing for Level 4, Breadth in all technical competency areas.

Thank You

All board members wish to express their warm and sincere appreciation for the outstanding energy, support, and commitment of the small group of Board of Examiners staff members whose dedication and talent contributed in large measure to the achievement of our objectives and the fulfilment of our responsibilities.

We also wish to acknowledge the contributions made by the provincial reviewers, markers, authors, translators, and editors. The commitment, energy, and skill demonstrated by all the markers were outstanding, resulting in the sound application of marking procedures and producing an appropriate evaluation of the candidates. Everyone's commitment to the quality and fairness of the process is appreciated.

Peter Norwood, FCPA, FCA, FCMA
Chair
Board of Examiners

A MESSAGE TO CANDIDATES

To attain a pass standing, candidates needed to achieve a "Pass" on Day 1 and, on Day 2 and Day 3 combined, demonstrate sufficient competence in all areas plus meet the two depth standards and the breadth standards.

INTRODUCTION

The September 2016 CFE Report presents detailed information on candidates' performance for all the examination cases, except for PRI, the Day 1 linked case, Version 1. Commentary on the performance of candidates on Day 1 (PRI Version 1) is provided in a summary format only in this message to candidates, since detailed commentary on PRI will only be provided after Version 2 is written in September 2017. The simulations, marking guides, marking results, and Board of Examiners' comments on Day 2 and 3 of the examination are found in Part A of the CFE Report. Similar information on Day 1 (CHEI version 1 and version 2) can be found in Part B of the CFE Report.

The intent of this message is to highlight common areas of deficiency and to offer advice from the BOE to help candidates understand how to improve their performance on the CFE.

Nature of the CFE

The design of the CFE is such that each day of the examination allows candidates to demonstrate a different skill set. Day 1 allows candidates to demonstrate their high-level professional skills, such as critical analysis, decision-making, and professional judgment, as well as communication. Day 2 allows candidates to demonstrate their technical competence in the common Financial Reporting and Management Accounting competencies and in their chosen role, which ties to one of the four elective areas. Day 2 clearly directs candidates to the work to be done and is not designed to be time constrained, allowing candidates to demonstrate depth. Day 3 allows candidates to demonstrate depth in the common core Financial Reporting and Management Accounting competencies and provides multiple opportunities to demonstrate breadth in all the technical competency areas. Day 3 is less directive and more integrative than Day 2. It is also time constrained, requiring candidates to prioritize their time per issue.

Specific Strengths and Weaknesses

Communication

A majority of candidates communicated clearly and professionally. For the most part, candidates' responses were well organized, with a logical flow. This was a notable improvement from the May 2016 CFE. However, the BOE still found that some responses were unclear, often due to the use of extreme point-form or an exceptional number of typographical errors, which made it difficult to interpret the meaning and intention of what was written.

The BOE also noted that there were candidates who merely repeated the case facts, with no further explanation as to why each fact was listed. This was typically done in point form. Other times it was the opposite issue: candidates quoted (copied and pasted) the *Handbook* or Income Tax Act and drew a conclusion without applying the criteria to the case facts at hand.

For the most part, candidates' quantitative analyses were well organized, with a logical flow. However, as was mentioned for the May 2016 and Sept 2015 examinations, some candidates still did not always explain the details of their calculations, making it hard to know what assumptions they used or how they arrived at their figures. For example, on Day 2, Performance Management role, most candidates understood the need to consider opportunity costs; however, it was not always clear what figures they included in their calculation of those costs (e.g., just steel tanks or a mix). On Day 3, the same issue was noticed with the required Management Accounting calculations on Simulation 1, where it was not always clear what costs were being treated as one-time costs versus annual costs. Candidates did not always explain their calculation, making it sometimes difficult to understand what they were attempting to do.

Candidates are reminded that they need to clearly explain their train of thought to demonstrate competence. It is not sufficient to state a correct conclusion. The Board is interested in seeing and understanding a candidate's logic and wants to see evidence of the analysis and professional judgment that has been applied.

Time Management

The Board noted time management issues on Day 3 of the September 2016 CFE. Time was better managed on the Day 1 and Day 2 simulations, which are not designed to be time constrained.

Although neither of the Day 1 simulations on the Sept 2016 CFE (CHEI Version 2 and PRI Version 1) were time constrained in their design, some time management issues were still evident. Some candidates spent an inordinate amount of time doing a full situational analysis, rather than simply addressing the changes that were relevant based on the case facts presented. Others spent too much time analyzing one of the issues presented, to the detriment of the others. On Version 2, some candidates also spent a lot of time retyping CHEI financial statements into the spreadsheet to determine year-over-year changes or to calculate ratios, rather than simply calculating the ratios.

Some candidates in the Day 2 Performance Management and Finance roles spent too much time analyzing the common financial reporting issues; however, the number of candidates who did so was far less than on previous examinations.

Some Day 2 Finance candidates spent too much time on the ratio analysis and interpretation. This may have been due to their greater comfort level with the topic. There is always a risk of spending too much time on any one required. It can hurt performance on another required. Allocating sufficient time to all of the requireds, while still ranking the importance of the issues, is essential to ensuring that overall performance on the simulation is not affected. Judgment is required in determining how much evidence to provide to demonstrate competence. Sufficient, but not excessive, depth must be demonstrated. It is likely that some of the extra time spent on these discussions by candidates would have been better spent addressing the other requireds.

The Board reminds candidates in all roles to take into account the need to cover several requireds. Day 2 in particular is designed to allow time for filtering information and planning the response. Candidates are encouraged to manage the time provided to give themselves sufficient time to plan and address all the requireds.

Day 3, which is the time-constrained day by design, saw more evidence of candidates going over the suggested times on Simulation 1 and sometimes on Simulation 2, with the result that their Simulation 3 performance suffered (a higher percentage of candidates scored Not Addressed on many assessment opportunities). Although the suggested times provided by the BOE for each simulation are guidelines, they are good estimates of how much time candidates should be spending on each simulation. Some candidates spent up to 120 minutes on the 80-minute Simulation 1, which is time that cannot be made up on later questions. The BOE saw some responses to Simulation 3 that were obviously rushed, with evidence of candidates having misread the case facts in their haste to try to make up lost time. Spending significantly more than the suggested time on any one question is a risky strategy, particularly since there are limited opportunities in the breadth tests, and more than one of the assessment opportunities could appear on the last question, depending on the examination's design. The Board encourages candidates to use the suggested times for each simulation to ensure they have the opportunity to answer all of the requireds on Day 3.

There was some evidence on Day 2 and on Day 3 of candidates skipping issues (see Not Addressed %). For example, on Day 2, there were six issues in Financial Reporting to be addressed. Some candidates appear to have randomly skipped over certain issues. The issues skipped varied from candidate to candidate, indicating to the BOE that it was not because the candidates did not see the issues (which were highly directed), but rather because they chose not to attempt the discussion. There was no evidence in these responses of time constraint. The BOE is concerned that candidates think they need to address only a specific number of issues to meet the depth test and that this was an intentional approach. Similarly, a random pattern of some issues versus others being addressed on Day 3, Q3, was evident. These candidates may simply have been time constrained (as noted above), but in some cases it appeared to be a conscious choice to address only certain requireds, perhaps in an attempt to address the breadth tests that they believed they needed to cover.

The BOE reminds candidates that not only does the CFE have depth and breadth tests, but it also has a minimum sufficiency score requirement. Skipping issues means that the sufficiency score is affected. Candidates are encouraged to attempt all the requireds, managing their time carefully in doing so.

Day 1

Points have been excerpted from the May 2016 Board of Examiners' report on Day 1, Version 1 of CHEI. Additional commentary based on candidates' performance on Version 2 has been added.

Comments Specific to Day 1 (CHEI Version 1) [excerpted from May 2016 CFE Report]

The following paragraphs elaborate on the strengths noted and draw attention to the common weaknesses identified by the Board of Examiners on May 2016 CFE, Day 1, Version 1.

Candidates generally performed an appropriate situational analysis. Most candidates identified the important factors that had changed from the Capstone case and linked them into their analysis of the issues. Most candidates appropriately analyzed the financial situation of CHEI, which was an essential component of this case's situational analysis. Weak candidates simply recapped case facts or went into too much depth in their situational analysis, redoing the entire analysis rather than focusing on the changes, which the case specifically directed them to do.

There were two major issues that candidates were expected to analyze from both a qualitative and a quantitative perspective: Hwy 507 and Homes performance. There were also two other issues candidates were expected to analyze, mainly from a qualitative perspective. Most candidates ranked the issues appropriately and spent adequate time discussing the major issues. Weak responses tended to include brief qualitative discussions (almost cryptic point-form, and often a repetition of case facts without further explanation of their importance), provided minimal quantitative analysis, or included minimal consideration and application of the situational analysis in their analysis.

Candidates are reminded that it is important on Day 1 to discuss the strategic implications, not just identify the operational issues. Often those issues are presented in the case to raise broader issues. Candidates are reminded to step back and think about the interrelationships. For example, the CDI offer could be analyzed in isolation, or it could be seen through the broader lens of Homes performance. Candidates sometimes failed to integrate the issues.

Candidates were expected to conclude on each analysis they completed, and their conclusions were expected to be consistent with the analysis they performed. Concluding that "additional information is required" was acceptable as long as it was substantiated. Weak candidates were unclear in their conclusion, or their conclusion could only be implied from their discussion.

Comments Specific to Day 1 (CHEI Version 2)

Similar to Version 1, most candidates performed an appropriate situational analysis, identifying the important factors that had changed from the Capstone case. Most candidates appropriately analyzed the financial situation of CHEI, which was an essential component of this case's situational analysis as well, since there were financial targets introduced in the case. Where candidates often fell short is in their failure to link their assessment of the situation in their analysis of the issues. For example, many candidates highlighted the share-for-share exchange and the financial targets set out by the acquirers but failed to consider how those new facts affected each decision being made by the board.

Weak candidates simply recapped case facts, typically in extremely short bullet points with no explanation of why they were important enough to be listed, or went into too much depth in their situational analysis, redoing the entire analysis rather than focusing on the changes, which the case specifically directed them to do. Integration was also a problem in the qualitative situational analysis. For example, candidates would simply state a case fact like, “Canadian and worldwide economies are steady,” but would not discuss the relevance of the point nor use it in their analysis of the issues. As another example, candidates would calculate the debt-to-equity ratio and provide a brief interpretation but would fail to use that information later, even though the ratio was very relevant to the discussion of the potential Eurobati purchase.

There were four issues that candidates were expected to analyze from both a qualitative and a quantitative perspective: the bridge design software, the district heating proposal, the Eurobati purchase, and the RC offer versus the DNC offer. Two of these issues were more operational issues that did not have a significant financial impact on CHEI, since the dollar amounts involved were not substantial in relation to CHEI’s size. The other two issues were clearly significant, with one issue being a $200 million acquisition of a European company and the other relating to advice for the owners on selling their shares in CHEI.

Most candidates identified these four issues and attempted a discussion of them. However, while many candidates treated all four issues the same, stronger candidates acknowledged the prioritization of the issues. Candidates’ performance on the proposed Eurobati acquisition was generally well done and tied in strategic implications for CHEI. However, candidates struggled to demonstrate a clear understanding of the share-for-share exchange in the RC and DNC offers. Many candidates did not understand the provisions of the share swap being proposed and did not understand that the financial performance of either RC or DNC would affect the shareholders of CHEI because there was an “earnout” provision in both share swap proposals. As a result, many candidates compared irrelevant numbers, like the share price of RC compared with the share price of DNC at a point in time. The other two issues had both operational and strategic aspects for the candidate to consider. As was the case for CHEI Version 1, some candidates got wrapped up in the operational analysis and failed to step back to consider the strategic aspects, which in this case were the link back to the financial targets and the earnout period. Many candidates failed to integrate and relate the issues.

Candidates are reminded to step back and consider the broader implications, rather than being too focused on an issue-by-issue, silo approach.

As was the case on prior Day 1 cases, some candidates surprisingly avoided the numbers provided in the case completely, focusing purely on the qualitative aspects of each decision. Avoiding the numbers is a fatal flaw for the Day 1 case. Candidates are strongly advised to perform a balanced quantitative and qualitative analysis.

Many candidates used very poor communication in their responses, which led to responses that were confusing, difficult to follow, and in some cases challenging to understand.

Additional Comments Specific to September 2016 Day 1 (PRI Version 1)

The following paragraphs elaborate on the strengths noted and draw attention to the common weaknesses identified by the Board of Examiners on the September 2016 CFE, Day 1, Version 1 of PRI.

The PRI Day 1, Version 1 case presented less opportunity for financial assessments and calculations than CHEI and RSI. It had more undirected issues, and candidates needed to be careful not to lose sight of the need to address not only the operational matters but also the high-level qualitative strategic analysis that was required for each major issue. Candidates struggled to identify the issue they were not directed to (governance and bonus). Candidates are reminded to step back and consider the broader problems, rather than taking an issue-by-issue, silo approach. It is important to integrate the case facts, particularly those important factors highlighted in the situational analysis, to identify the broader strategic issues.

Generally, candidates presented their responses in a well-structured format, beginning with the situational analysis and followed by an analysis of the issues they identified and a conclusion. The level of communication was generally good, with few exceptions.

All candidates started with a situational analysis. However, many simply restated case facts without putting those facts together to consider the implications to the situation presented. The BOE noted that many candidates appeared to go through a “checklist” that looked like a template approach, rather than logically addressing the matters that were relevant to the case being specifically presented. Candidates are reminded to think through the issues. There is no point presenting a situational analysis that is several pages long if that information is not going to be used as part of the analysis of the issues. Instead, the situational analysis should focus on the elements that have changed since Capstone 1 or those that will affect the decisions. These facts can then be linked to the later analysis.

Additional Day 2 and Day 3 Comments

The following paragraphs elaborate on the strengths noted and draw attention to the common detracting characteristics identified by the Board of Examiners on Day 2 and Day 3.

<u>Technical Knowledge</u>

Most candidates were able to demonstrate the technical knowledge required throughout the CFE. In general, candidates performed well across most of the depth and breadth tests. The following are some examples of the technical weaknesses noted on Day 2 and Day 3 simulations that contributed to the weaker results on those assessment opportunities.

Most candidates were able to provide a complete analysis of the basic accounting issues but struggled with the more difficult issues. On Day 2, Common, AO#6 (goodwill), candidates across all four roles struggled. Weak candidates zeroed in on the production equipment without recognizing the bigger issue associated with the goodwill of the division, often looking exclusively at Section 3063 of the *Handbook*. Many of these candidates did not recognize that the *Handbook* required that they look at the division as a whole rather than just at the individual assets. Many of them recommended a write-down of $156,000, which was the excess of the carrying amount of the production equipment above its liquidation value, without any further analysis.

On Day 3, Simulation 2 (Dogani), AO#1 (land exchange), many candidates quoted ASPE criteria even though the case clearly stated that Dogani Inc. reported under IFRS. A surprising number of candidates did not recognize there were specific criteria that applied to this transaction under IFRS, assuming none existed because there was not a separate *Handbook* section for non-monetary transactions in IFRS. Some candidates attempted to apply the incorrect *Handbook* sections in their analysis, such as applying *IAS 18 – Revenue.* These candidates failed to recognize that the “exchange” was not a revenue transaction, but rather a PP&E transaction.

On Day 2, Assurance, AO#13 (reports), candidates struggled to provide valid reports (they needed to be audit-level assurance), as well as to explain the reports. They seemed unfamiliar with the different types of reports and did not have a good grasp of which would meet the users’ needs. Some candidates just spoke to the level of assurance provided or the cost of the different reports, without really getting into the nature of each report itself and why it may or may not be good for the bank.

On Day 2, Finance, AO#9 and AO#10 (valuations), some candidates did not understand the difference between the capitalized cash flow method (based on normalized cash flows) and the transactional approach (based on normalized EBITDA) when valuing a business, and they blindly applied a four times multiple to the same base. As well, some candidates did not understand the valuations that they had calculated and were unable to suggest a reasoned, well-supported overall value for TankCo based on their analysis.

On Day 2, Taxation, AO#7 (calculate taxes payable), some candidates did not understand that capital cost allowance could indeed create a loss for a business, instead concluding that CCA was limited to income (confusing this with the rules for passive income from rental properties) and, therefore, could not be claimed by TankCo. Alternatively, some candidates appeared to have chosen (either without an explanation as to why or with a reason that demonstrated they did not understand the fundamental issues involved) to reduce their CCA claim to minimize the tax loss. While this *may* have been a useful planning tool (there is an argument, for example, that preserving UCC would help reduce tax on the impending sale of assets), simply not claiming CCA without a good reason is denying the company access to a loss carryback that would result in a substantial refund.

On Day 2, Taxation, a surprising number of candidates struggled throughout their responses to understand the difference between a credit and a deduction, which is a fundamental concept in tax. This showed up in various forms: claiming the SR&ED input tax credit as a deduction from income (AO#8), claiming the dividend tax credit as a deduction from the grossed-up value of the dividend (AO#12), and claiming donations and medical expenses as deductions from Lou's income (AO#14).

Candidates appeared to struggle with relevant costing assessment opportunities found on Day 3. On Simulation 1 (Play), AO#2 (outsourcing – quantitative), some candidates were not able to properly treat the one-time costs versus annual costs in their outsourcing analysis, mixing them up. On Simulation 2 (Dogani), AO#6 (make or buy), many candidates were not able to adequately consider the relevant costs for the decision to outsource, not understanding that unavoidable costs would not be relevant in decision-making.

On Day 2, Performance Management, some candidates struggled with the calculation of opportunity costs. While most candidates recognized the need to include opportunity costs in their pricing calculation (AO#10), some candidates were not clear on what inputs should have been included. Some considered only steel tank revenues or steel tank costs, or they used incorrect volume figures.

On Day 3, Simulation 3 (Culinary), AO#3 (number of customers), some responses used the selling price of $100 or the variable cost of $60 instead of the contribution margin of $40 when calculating the number of customers needed to replace Ivy's employment income. Some candidates also used Ivy's after-tax salary in their calculation, while all the other figures used were before tax. As a result, their calculation was not internally consistent, which skewed the number of customers needed to replace her employment income.

On Day 3, Simulation 1 (Play), AO#1 (pricing strategy), many candidates provided an incomplete analysis, missing crucial components of either revenue or expenses related to the alternatives, or they analyzed both options using methods that were not comparable. For example, some candidates performed a break-even analysis for one alternative and a cash flow analysis for the other alternative. Weak candidates had several errors in their calculation, and many omitted a comparison to the status quo.

On Day 3, Simulation 1 (Play), AO#4 (principal residence), most candidates were able to identify that the principal residence exemption exists and is available to taxpayers to allow them to reduce or eliminate the amount of the taxable capital gain upon the sale of a principal residence. However, candidates struggled with the application of the rules to the case. Some did not understand the technical requirements related to the principal residence exemption. They did not calculate the average annual gain or did not realize that they needed to designate either the home or the cottage as the principal residence. These candidates typically just focused on the capital gain on the home, without considering the cottage.

On Day 3, Simulation 1 (Play), AO#5 (moving costs), most candidates knew there was a rule that stated how many kilometres the taxpayer had to move. However, they were unclear on the details of the rule. Some candidates did not correctly apply or understand the 40 kilometre rule, often stating that the taxpayer simply needed to move 40 kilometres to be eligible to deduct moving expenses, without stating that the taxpayer needed to be moving closer to their work location. Some candidates also demonstrated their technical weakness in providing the client with inaccurate information on the deductibility of the individual moving costs.

On Day 3, Simulation 1 (Play), AO#6 (investments), candidates struggled to put the three investments on equal footing to compare them to each other. For example, some candidates calculated the total return for one investment option, the annual return for another, and the future value of the investment in 10 years for another. They compared each of these results in order to recommend an investment option, although these results were not comparable.

Candidates are reminded that the CFE requires a strong technical foundation of knowledge in order for candidates to clearly demonstrate their professional skills, apply their judgment, and thereby demonstrate competence.

<u>Lack of Support/Generic Discussions</u>

A common theme across all days was the fact that many candidates presented case facts without elaborating on why each fact was relevant to the discussion or the position being argued. Other candidates made generic comments or drew conclusions without integrating the case facts into their analysis, making for a very generic, superficial analysis of the issues. The following are examples drawn from the BOE's commentary on the Day 2/Day 3 simulations:

On Day 2, Common, AO#2 (warranty), some candidates were unable to support their analysis using appropriate *Handbook* criteria. Many of these candidates jumped straight to the conclusion (accrue $20,000) without first applying relevant case facts to the *Handbook* guidance.

On Day 2, Assurance, AO#8 (risk), some candidates listed risk factors without explaining how they would increase or decrease the engagement risk. Some candidates provided procedures that were too vague to determine what exactly they were proposing to do and what risk they were trying to cover. Some candidates also provided a list of generic procedures that could have applied to any audit. These procedures did not address either the specific accounting issues or other relevant risks.

On Day 2, Assurance, AO#9 (materiality and approach), some candidates did not do a good job of applying case facts to their approach discussion. There were a lot of details provided in the case that candidates could have used to discuss their audit approach. Appendix III contained a description of the control environment, including a description of entity-level controls as well as detailed descriptions of the sales and purchasing cycles. From that exhibit alone, there were numerous case facts that could have been used to discuss the approach. For example, candidates could have talked about the impact of Lou's absence, the reliance on the computer system, the strength of the sales cycle, or the weaknesses in the purchasing cycle on the approach that should be taken. Unfortunately, some candidates just made a generic statement (for example, that a combined approach would be used) without supporting it with relevant case facts.

On Day 2, Assurance, AO#11 (procedures), some candidates provided procedures that were too vague to determine what exactly they were proposing to do and what risk they were trying to cover. Weak candidates also tended to provide a list of generic procedures that could have applied to any audit. These procedures did not address either the specific accounting issues or other relevant risks described in the case and, as a result, they were of limited value. Candidates are reminded that they need to explain the specific audit risk they are addressing when providing a procedure. This will help them ensure the procedure is both specific and relevant.

On Day 2, Finance, AO#7 (financial performance) and AO#8 (financial position), and Day 2, Performance Management, AO#7 (situational analysis – quantitative), candidates were generally able to calculate appropriate ratios. However, some candidates' interpretation of the ratios was generic and superficial, limited to stating that a ratio was either higher or lower than the industry average, and few used case facts to support their analysis. These candidates did not explicitly state whether TankCo was performing well compared to the industry and did not understand the downward trend TankCo was displaying.

On Day 2, Performance Management, AO#8 (situational analysis – qualitative), some candidates provided brief bullet points that were simply case facts, with little discussion of the impact on TankCo (for example, "• distributors throughout northeastern North America"). Similarly, on AO#11, candidates also lacked depth of discussion in their analysis, using brief bullet points that were simply restated case facts and did not add value (for example, "Pro: regain distributor with 5% discount").

On Day 2, Taxation, AO#13 (tax issues associated with Lou's death), many candidates identified that the TankCo shares might be eligible for the lifetime capital gains deduction, without providing any relevant analysis. Some identified the criteria and said they were met (or not met) without giving specific case facts as evidence of this. Others did not identify the criteria at all and simply concluded the shares would or would not qualify. Still others simply suggested that someone should perform the analysis to determine if they qualified, despite the fact that all the necessary information was available to them.

On Day 3, Simulation 1 (Play), AO#3 (outsourcing – qualitative), some candidates simply restated case facts. Their response lacked analysis, did not add any value to what was already stated in the case, and was, therefore, not helpful to the clients. They also did not provide a balanced discussion about whether the outsourcing option should be chosen, focusing solely on either the risks or the benefits.

On Day 3, Simulation 2 (Dogani), AO# 2 (bank info), some candidates were not able to provide a complete discussion of each item. Many either simply stated whether the item was useful to the bank, without explaining why that would or would not be the case, or provided a way to improve the information, without explaining what the problem was with the information as currently suggested by Gale.

On Day 3, Simulation 3 (Culinary), AO#6 (debts), when addressing the mortgage interest rates, the explanation of many candidates was simply that the variable interest rate would vary while the fixed interest rate would not, which provided little value to Ivy, who needed to understand the specific risk associated with each option.

Candidates must ensure that they clearly explain the reason a point is relevant when they make any point using case facts. Candidates are reminded that all competent candidate profiles on the CFE require supported arguments and defensible positions. The BOE needs to gain an understanding of the logic used, not just see a right answer.

Irrelevant Discussions

The BOE noted that this issue was far less of a concern than on previous examinations. However, this approach only exacerbates the time management issue noted earlier and is, therefore, worth mentioning.

Some Day 2 Taxation candidates attempted a discussion of management accounting issues that did not exist, wasting valuable time. No one particular analysis stood out (there was nothing indicating that all candidates were trying to address the same issue), but instead candidates provided a variety of seemingly random (and clearly not requested) analyses that might address management accounting. It appears that candidates were searching for additional “common requireds” in the management accounting area.

On Day 3, Simulation 1, AO#1 (pricing strategy), some candidates spent time discussing qualitative factors to take into account related to the proposed pricing strategies, despite the fact that they were specifically asked to conclude on which pricing alternative maximized cash flows. These candidates used up valuable time discussing these factors, which did not provide added value to the client, since there were very few case facts to draw on to make their discussion relevant. The same issue arose on Day 3, Simulation 3, AO#2 (expansion options), where candidates attempted a qualitative analysis of the lunch tour and additional evening tour, even though the case only asked which option would be more *profitable* in AO#2. It appears that candidates were applying some sort of template as if they had been taught to “always address quantitative and qualitative.”

On Day 3, Simulation 2, AO#1 (land exchange), in addition to addressing the land exchange, some candidates treated certain issues as major issues, when in fact there was nothing in the case to suggest they were major issues. (For example, the potential impairment of accounts receivable was a minor issue. Gale stated that she had asked the professional services firm to “take a closer look at the accounts receivable processes, since collection has slowed down significantly.” This information was in the case as a hint about the audit control issues, not a valuation issue.) These discussions could only be superficial because there were few case facts for candidates to work with.

Candidates are reminded to use their judgment in deciding whether a discussion is pertinent to the issues at hand. Where there are few case facts to work with, candidates should stop and consider the appropriateness of the discussion. They should ask the question, “Is this helpful and relevant to the client or user of the report? Why?” Only if they can answer these questions should they proceed with the discussion.

APPENDIX A

EXAMINATION DESIGN, MARKING GUIDE DEVELOPMENT, AND MARKING OF THE COMMON FINAL EXAMINATION

CFE Design

Day 1 is one four-hour case that is linked to the Capstone 1 case, which candidates work on in groups for eight weeks prior to the CFE. When writing the Day 1 case, candidates are allowed access to their Capstone 1 case but not their group's answer or any sample response. The Day 1 case is designed to assess the enabling (professional) skills. Candidates are directed to *not* perform any detailed technical analysis, but rather to target a "board room and senior management" level of discussion, with high-level analytics. There are two versions of the Day 1 case. Candidates pre-select the version they will write.

Day 2 is one four-hour case on which candidates are given five hours to respond. The extra hour gives candidates time to filter and find the information that they need to answer *their* role requirements from within the common information presented. Day 2 is designed to assess the technical competencies in **depth** (Level 2 and Level 3). Candidates pre-select a role (Assurance, Finance, Taxation, or Performance Management). All candidates work with the same case — it has a common section and four sets of appendices containing additional information applicable to each of the four unique roles. The required tasks, regardless of the role, are clearly directed, unless there is an undirected/enabling issue in the case that the board expects candidates to identify on their own. Day 2 evaluates the competencies listed in the *CPA Competency Map* mostly in the elective area and in common Financial Reporting and/or Management Accounting areas in **depth**. The role **depth** test (Level 2) may also include coverage of other competency areas from the common core.

Day 3 is a four-hour examination containing a mix of small cases (60 to 90 minutes each) that evaluate the common core competencies only. The Day 3 cases provide additional opportunities for **depth** in Financial Reporting and Management Accounting and all the **breadth** opportunities for all the technical competency areas. Cases are time constrained, and they are designed to cover different competency areas within each case. A higher level of integration and judgment is required on Day 3 of the CFE than in the core modules, although the technical competencies are tested at the common core level of expectation.

The assessment opportunities on the Day 2 case are given mark values such that each of Day 2 and Day 3 are weighted equally.

The Development of Marking Guides and the Provincial Review Centre

Approximately three months prior to the Common Final Examination booklets being finalized and printed provincial reviewers meet to examine the simulations and the preliminary marking guides. The provincial reviewers' comments are considered by the board when it finalizes the examination set and again when the senior markers review the marking guides in the context of actual responses.

The September 2016 CFE Marking Centre

From the marker applications received, approximately 190 individuals were chosen to participate in the September 2016 CFE marking centre. The criteria for selection included marking experience, motivation, academic achievement, work experience, personal references, and regional representation. The marking was supervised by the CPA Canada Evaluations and International Assessment full-time board staff (8 staff).

The Day 1 PRI Version 1 linked case was marked by a team of 25 markers in Montreal from October 21 to November 5, 2016. The Day 1 CHEI Version 2 linked case was marked remotely by a team of 4 markers from October 24 to October 29th. [See the May 2016 Board of Examiners' Report for details on the Day 1 CHEI Version 1 marking centre.] Day 2 Assurance was marked by a team of 52 markers in Montreal from October 21 to November 5, 2016. The other three Day 2 roles were marked by 14 markers in Toronto over a 5-day period in early October, immediately following the preliminary evaluation centre. Two of the three Day 3 cases were marked in Montreal from October 21 to November 5, 2016. The third case was marked remotely over the same time frame. The Day 3 simulations had a total of 98 markers.

Before the marking centre, some board members, leaders, and assistant leaders attended a five-day preliminary evaluation centre (PEC). Participants reviewed the marking guides, applied them to randomly selected candidate responses, and made necessary revisions to the marking guidelines. The written comments on the marking guides received from provincial reviewers were carefully considered.

At the beginning of the marking centre, the leaders and assistant leaders presented the marking guides to their teams. The teams undertook a two-phase test-marking procedure prior to actual marking. Phase one consisted of marking guide familiarization, during which markers applied the marking guide to copies of candidates' responses and collectively reviewed their results. Phase one thus ensured that all markers understood the issues in the marking guide and the basis on which to apply each expectation level. Phase two consisted of an expanded test marking of several responses to establish marker congruence.

After the training and test-marking phases, and only when marker congruence was achieved, live marking commenced. All teams, for all days, have a leader, and anywhere from two to six assistant leaders, and both French-speaking and English-speaking markers. Each team had one or more markers who are capable of marking in both languages.

The board strives for the highest possible marking consistency and quality control. Leaders and assistant leaders therefore devoted much of their time to cross-marking and other monitoring activities. Markers' statistics were reviewed to ensure that marking remained consistent throughout the centre. Based on analysis of the statistics, leaders reviewed and, if necessary, re-marked responses to ensure that the assessment opportunities were fair for all candidates. Bilingual markers marked responses in both languages, and their results were compared to ensure that the marking was consistent in both languages.

Borderline Marking (Day 1, Version 1 and Version 2)

Each candidate's paper was marked once. All candidates' responses that were assessed as clear fail, marginal fail, and marginal pass were marked a second time by the team leader or assistant team leader. Clear pass results were also audited on a random basis to ensure accuracy of marking.

Double Marking (Day 2 and Day 3)

Each candidate's paper was marked independently by two different markers. If the two initial markings differed on any assessment opportunity, an arbitrator (the leader, the assistant leader, or a senior marker) compared the two initial markings and determined the final result.

As an added measure to ensure that markers were consistently applying the marking guide, a two-day rule exists which results in the second round of marking not beginning until two days have elapsed since the first marking. Adherence to this rule ensures that any movement in the application of the marking guides due to marker interpretations during the first two days of live marking are stabilized before the second marking and arbitration procedures begin.

Subsequent Appeal of Results and Request for Performance Analysis

Failing candidates may apply for an appeal of their examination results for either Day 1, Day 2 and Day 3, or for all three days.

Appeal Approach

Great care is exercised in the original marking and tabulating of the papers and results. The following appeal procedures are applied to all three papers constituting the Common Final Examination.

Under the supervision of the chair of the Board of Examiners, as well as CPA Canada Evaluations and International Assessment staff, the responses are reviewed by the leaders and assistant leaders who did the original marking. The leaders and assistant leaders read the responses and compare them to the marking guides used at the marking centre. In reviewing candidates' results, two aspects are considered. First, it must be determined that the basis of marking the papers has been consistent with that accorded other candidates who wrote the examination. Second, all responses reviewed are subjected to a careful check to ensure the markers have indicated that consideration has been given to all material submitted by the candidate.

The results are then tabulated and the decision made regarding whether any candidates have been treated unfairly and should be granted a pass on the examination.

The appeal results are then forwarded to the provincial bodies for notification of the candidates.

APPENDIX B

CAPSTONE 1
CHEI CASE

Canada Heavy Engineering Incorporated – Case

Capstone 1

(All dollars are Canadian dollars unless specifically stated otherwise.)

It is May 15, 2016, and it is your second week working as a CPA with Chuck Poisson Smythe (CPS) Management Consultants. You have been assigned to develop a report for the Board of Directors (board) and management of Canada Heavy Engineering Incorporated (CHEI).

CHEI has approached CPS with a request to assist them in strategic analysis and to set a new direction for the company. CHEI is concerned with their ability to meet growth and profitability targets. There are also several operational issues that they would like you to analyze and address.

You have been provided with the following information to review and analyze.

Company background

CHEI is a privately owned Canadian company. Since incorporation, CHEI has only issued common shares. CHEI's organization chart and list of shareholders is provided in Appendix I.

CHEI consists of a head office and two operating divisions: the Heavy Engineering (HE) division and the Homes division. The HE division executes heavy engineering and construction projects both internationally and within Canada. The HE division's projects include the building of bridges, dams, roads and highways. The Homes division develops residential properties of various sizes with a focus on detached homes in the starter to intermediate price range.

CHEI has a December 31 year end. Consolidated financial information is presented in Appendix II. HE's divisional income statement is presented in Appendix III. Homes divisional income statement is presented in Appendix IV. CHEI's head office does not charge costs to the divisions. The head office's 2015 financial information can be found in Appendix V.

CHEI's headquarters, including its divisional headquarters, are located in Hamilton, Ontario. Additionally, the company has local offices in Montreal, Ottawa, Vancouver, New York, Paris, Singapore, Abuja (Nigeria), Colombo (Sri Lanka) and Yangon (Burma). The head office building and the local Canadian office buildings are owned by CHEI who holds a long-term mortgage on each property. All of CHEI's offices outside of Canada are leased. Temporary offices are set up at all major job sites.

CHEI has several wholly-owned subsidiaries located in the USA, France, Sri Lanka, Nigeria, Singapore and Burma through which it carries on operations in that country, or continent as applicable. The wholly-owned subsidiaries have varying corporate tax rates, with Burma offering the lowest corporate tax rate at 15%. CHEI's head office does not charge costs to its subsidiaries.

CHEI was founded in 1952 by Howard Navire, a civil engineer. CHEI began providing consulting services, and within a decade the company was executing large-scale projects such as the design and construction of dams and bridges. CHEI has received recognition within Canada for the high quality of their work. The company had been family run since its inception until 1999 when the first non-family member CEO was hired.

CHEI's vision statement, adopted by the board in 2001, is:

Our vision is to be the best medium-sized heavy construction and mid-market residential construction and property development firm in Canada.

CHEI's mission statement, adopted by the board in 2007, is:

Canada Heavy Engineering Inc. maintains high standards in completing all customer projects on time and on budget, and in building high-quality homes for first-time buyers and other customers who want competitively priced residences.

CHEI faces several legal risks related to environmental issues, workplace injuries, property damage, project delivery and project quality but the company has never gone to court for reasons related to a contract or a project. CHEI has settled several employee dismissals in court.

CHEI has no corporate environmental policies in place. Historically, CHEI has ensured that it follows all relevant environmental laws in the jurisdiction where it is working. If any issues arise related to the breach of environmental laws, CHEI's customers are expected to deal with these issues.

CHEI's bank requires audited financial statements. Carthy and Younge, LLP (CY) has been appointed as the company's auditor since incorporation because of the close business relationship between Howard and one of CY's founding partners. CHEI has always received an unqualified audit report and the board remains satisfied with CY's service. CY is located in Toronto, Ontario, and because of the significant geographical distance between CY and several of CHEI's subsidiaries, CY's international affiliates audit the larger subsidiaries in the group. CHEI's smaller subsidiaries are generally not audited. CY prepares the corporate income tax returns for CHEI and all of its subsidiaries.

CHEI's stated objective is to earn a 16% margin on revenues and to earn pre-tax profits of 7% of revenues. CHEI's corporate tax rate is 27%.

Company structure

CHEI is primarily a family-owned business. Members of the Navire family own approximately 82% of the company's common shares. Four family friends, who purchased shares in 1990, own the balance of the company's shares. A list of CHEI's current shareholders and key terms from the unanimous shareholder's agreement are provided in Appendix I. CHEI usually pays an annual dividend at the end of April, based on funds available and the outlook for the upcoming year. Over the years, the dividends paid to CHEI's shareholders have been generous.

CHEI's board meets every second month, usually at the company's head office. The board has no committees. Under the terms of the company's Project Approval Policy, all discrete projects or contracts over $40 million must be approved by the board.

According to a recent board decision in January 2014, CHEI's standard pre-tax investment hurdle rate of 15% should be used for all project and investment decisions.

Board members who are neither employees nor stakeholders of CHEI are paid $5,000 per board meeting plus $250 per hour for any work performed for the board.

The board of each of the subsidiaries consists of one person who is the head of that subsidiary.

CHEI's board must consist of six members who meet the following criteria:

- one individual nominated by Cecilia Navire, the wife of CHEI's founder, Howard Navire
- two individuals representing the immediate offspring of Howard and Cecilia Navire
- one individual representing other Navire family shareholders
- two independent non-family members with relevant experience and expertise (These members must be unanimously approved by all of the preceding board members.)

CHEI's board is currently composed of the following individuals:

Penelope Navire is the Chair of the Board and the nominee of her mother, Cecilia. Although Penelope lacks business experience, she is very organized and keeps the board on topic. She drives board members to make decisions at meetings.

Sisi Nagy is a commercial lawyer and represents the immediate offspring of Howard and Cecilia Navire. Sisi is 48 years old and is a partner in a law firm based in Calgary.

John Higman is a retired CEO of an American company that is similar to CHEI. John is 68 years old and alongside Sisi, he represents the children of Howard and Cecilia Navire. By profession, John is a civil engineer.

Frank Cessnik is the son of Rachel Navire, Howard and Cecilia's daughter. Frank is a 38-year-old investment advisor and mutual fund salesperson for a large investment firm. Frank was selected by the other Navire family shareholders under the provisions of the shareholder's agreement.

Independent board member, Kathy Fernandez, is a west coast real estate developer who currently owns more than 70 residential and commercial rental properties through her company, Fernandez West Coast Holdings Inc.

Independent board member, Frederick Dale, is a retired provincial politician. Frederick is 64 years old. Frederick was the Minister of Infrastructure in Alberta, a province in which CHEI has done a lot of business. CHEI approached Frederick and asked him to sit on the board two years after he lost his last election.

Head office

CHEI's corporate management team is composed of the following individuals:

James Johnson is the President and CEO of CHEI. James graduated in 1975 with a degree in civil engineering from the University of Waterloo. CHEI recruited James soon after his graduation. James became the HE division's President in 2004 after assuming increasingly more responsible technical, project management and sales positions in the HE division. James became the President and CEO of CHEI in 2012 and he is the second non-family member in this role. James is supported by two executive assistants and travels extensively. James' base salary is $520,000.

Kelly Mack is the VP, Finance and Systems. Kelly is 39 years old, is based at the head office and holds an American management accounting designation, which she earned after graduating with a BSc in business management from a United States university. Kelly admits that her knowledge of Canadian accounting and tax is weak. Kelly was hired as the Controller for the HE division in 2009. Kelly became the VP, Finance and Systems in 2014. One of Kelly's roles is to lead negotiations for international project financing with the EDC. Both divisional controllers report to Kelly on a dotted line basis.

Zoe Murphy is the VP, Human Resources (HR). Zoe is a 53-year-old Bachelor of Commerce graduate with a major in HR from a Canadian University. Zoe has worked for CHEI for 30 years and began with the company as a junior HR staff person.

Two internal lawyers are based at CHEI's head office. One lawyer works exclusively on the HE division's contracts and related matters, while the other lawyer divides his time between the HE division (60%) and the Homes division (40%). Both internal lawyers are very busy, and any work that they cannot do is outsourced to two law firms located in Hamilton.

Human Resources

CHEI has a stable, well-educated and loyal group of employees. CHEI's employee group has a higher percentage of management than most businesses, since much of the work is contracted out in both the HE and the Homes divisions. Managers do not receive overtime pay but almost all of CHEI's employees are willing to work extra hours when required. CHEI has rarely laid off head office and divisional employees and when the company has, it has paid generous severance packages. The severance packages equal, on average, one month of pay per year of service to a maximum of 20 months.

None of CHEI's employees are unionized in either the HE or the Homes divisions and there has never even been an attempt by CHEI's employees or by outsiders to organize a union. CHEI generally does not hire new graduates because it needs experienced people to execute its complex projects.

The age distribution of the company's work force is as follows:

Age	Senior management	Management	Other*	Total
29 and under	–	1	42	43
30-39	1	46	88	135
40-49	4	130	262	396
50-59	5	220	246	471
60 plus	2	88	66	156
	12	485	704	1,201

* Non-management and contract employees

During the last year, 121 employees retired from the company, including 72 managers.

CHEI pays its employees salaries that are consistent with the salaries paid by industry and its competitors. CHEI's managers earn, on average, $120,000 which includes benefits. CHEI's non-managers earn, on average, $65,000 which includes benefits. CHEI's head office executives, including the CEO and the VP's, are paid a total bonus equal to 0.4% of consolidated net income from operations. The CEO's bonus is determined by the board and any money remaining is allocated by the CEO to the VP, Finance and Systems and the VP, HR based on individual performance.

In the HE and the Homes divisions, the executive team earns a bonus based on the individuals' actual achievements, versus planned targets as per the annual appraisal. The division's executives can earn up to 7% of their base salary as a bonus.

The board believes there is good buy-in to these bonus schemes and they are good motivators of the executives.

CHEI provides a benefit plan that is slightly better than the average industry benefit plan and includes health and dental coverage, accidental death and dismemberment insurance, life insurance, and disability insurance. CHEI also provides its employees a generous group Registered Retirement Savings Plan (RRSP). Under the group RRSP plan, CHEI will match its employees' contributions to a total contribution equal to 15% of the employee's salary. Many of CHEI's employees have retired by 60 years of age even though the mandatory retirement age is 65. This is primarily due to the generous RRSP plan offered by CHEI.

All of CHEI's employees in North America are paid via direct deposit using a major outside payroll service. Employees who are located outside of North America are paid by local independent payroll providers. CHEI's employees who are located in countries with emerging economies are paid via bank wire.

Over the past three years, many of CHEI's Canadian employees have complained about the uncertainty of their take-home pay when they have been posted overseas for more than a year. They have also complained about other aspects of living abroad including, but not limited to, relocation costs and international housing.

Heavy Engineering division

Industry

The Canadian construction industry is estimated to be worth approximately $168 billion per year and includes heavy, residential and general commercial construction contracts. There are more than 265,000 firms in the industry with approximately 150,000 of those being private trade contractors.[1] The Canadian heavy construction industry is worth approximately $40 billion of this total. The Canadian heavy construction industry is dominated by large domestic and international companies. The industry's key success factors include the creation and maintenance of strong government and customer relationships, accurate estimation of project costs, reliable project management, smooth project execution, and good management of risk.

In the United States (U.S.), the construction industry is much larger and is estimated to be worth $1.73 trillion in U.S. dollars. Of this total, heavy civil engineering amounts to US$260 billion.[2]

In both Canada and the U.S., the majority of the construction spending is made by governments on infrastructure. The industry is impacted by recessions and other economic crises, although, as a means of stimulating the economy, many governments increase infrastructure spending during periods of recession.

Export Development Canada (EDC) is a federally owned crown corporation whose role is to offer "financial and risk management solutions to help Canadian businesses

1 Source: http://www.careersinconstruction.ca/industry, accessed May 2, 2014.

2 Source: http://www.statisticbrain.com/construction-industry-statistics/, accessed May 2, 2014.

expand into the U.S. and other international markets."[3] The EDC provides loans, bank guarantees and other financing assistance to help Canadian companies win contracts. It also provides Canadian companies with assistance related to foreign project insurance, bonding and other guarantees. Historically, CHEI has limited its projects to $100 million in countries where there is EDC support or where there is relative stability, with a few exceptions.

Various pieces of legislation impact the construction industry in Canada including the *Corruption of Foreign Public Officials Act* and the *Workers Compensation Act.* The *Corruption of Foreign Public Officials Act* prohibits bribery of foreign public officials. When hired, all of CHEI's employees in sales outside of Canada sign a no bribery pledge as part of their employment contract. CHEI has never been charged or investigated under this Act.

The *Workers Compensation Act* protects employees from financial hardships due to work-related injuries and occupation induced diseases. HE's safety record is slightly above the industry average.

CHEI has a number of large and small competitors. Many on the international contracts are European companies. DNC Maverick Inc. (DNC) is a publicly traded Canadian company that has been in direct competition with CHEI as a rival bidder on many of its projects. DNC has grown, on average, by 14% per year over the last five years. In the 17 years since it was started, DNC's reputation has grown as they expanded around the world. It is now the biggest Canadian company in the industry.

History of the division

Until recently, the HE division's core business involved building dams, bridges, roads and highways. A breakdown of the HE division's 2015 projects is provided in Appendix VI. Since 2011, the HE division has successfully constructed several concrete-steel composite arch bridges and concrete arch dams. Since 2012, the HE division has acted as the project manager for the building of several natural gas co-generation plants. Natural gas co-generation plants generate electricity economically from natural gas with low levels of pollution. Prior to its work on the natural co-generation plants, CHEI had consulted on more than a dozen projects in this sector. This year, the HE division has also been involved in the refurbishment of a mine. This is the first time that CHEI has taken on a project of this type.

In 2014, CHEI realized significant losses on three projects. The Mylark dam project losses were due to blasting costs that were significantly over budget while the other two project's losses were due to poor cost estimation.

3 Source: http://www.edc.ca/en/Pages/default.aspx, accessed April 25, 2014.

Operations

The HE division enters into two basic types of construction contracts with its customers:

1. fixed price, where CHEI assumes most, or all, of the risk (For certain projects, risk premiums are built into the bid.)
2. cost-plus, where CHEI is paid for qualifying costs, plus a fixed mark-up

When determining the price for a fixed price construction contract, CHEI will make a number of assumptions. These assumptions include, but are not limited to, the productivity and performance of employees, the ability to obtain necessary environmental permits and approvals, and the availability of labour. All of these assumptions increase risk to CHEI as they may impact the project's cost or the project's schedule. Where an added cost is realized that was not anticipated in the original fixed price construction contract, CHEI will attempt to change the price by way of a "change order."

The majority of the HE division's projects are fixed price construction contracts. Larger projects can take years to complete and involve many small and large subcontractors who perform project tasks such as excavation, earth moving, drilling and blasting, lighting, drainage, and landscaping. Subcontractors may also be hired to install entire hydro-electric or gas-electric generation systems.

For most construction contracts, CHEI is the main contractor. All construction contracts define the project requirements and technical specifications that are written up in a master contract agreement. Where the customer does not insist on using their own standard documentation, CHEI uses a contract template.

CHEI negotiates billings with its customers and defines the billing arrangements in its construction contracts. CHEI prefers to base its billings on pre-determined dates, rather than project milestones, in case the project falls behind schedule. This is always a negotiating point with the customer.

CHEI's construction contracts usually contain a holdback amount of approximately 10% which is industry standard. The holdbacks reduce the contract billings and are released to CHEI one year after the project is completed and CHEI has confirmed that all of its subcontractors have been paid. The holdback provides assurance to CHEI's customers that there won't be any liens taken against their property by unpaid subcontractors.

Each contract details the warranty period with respect to workmanship, materials and major structural defects. At completion of each project, a maintenance bond is provided to the customer. The maintenance bond functions as an insurance policy on a construction project by ensuring that CHEI will correct any defects identified in the warranty period.

CHEI's consulting contracts typically result in lower profit margins as they bear lower risk. An example of a consulting contract is the authoring of a well-defined and accurate request for proposal (RFP) for a client. CHEI will rarely enter into consulting contracts for projects that they would like to construct since this type of involvement can result in CHEI being ineligible to bid on the project.

CHEI's maintenance contracts are typically fixed-price, multi-year contracts that require the company to meet pre-defined maintenance standards. To improve their competitive advantage and reduce future maintenance costs, CHEI has developed certain predictive algorithms for concrete and asphalt wear and ice and frost damage.

Project execution

Some of CHEI's projects are located in, or close to, urban centres while other projects, such as dams and bridges, are in remote locations. Concrete, asphalt and structural steel tend to be the largest material inputs for projects.

Larger or more complex projects have a project director who is accountable for project execution. Smaller projects have a project manager. The project director or manager is supported by a team of employees and contractors who may be on-site full-time, off-site, or back and forth from the site as needed. Typically, the design and planning employees work at the head office, while the supervisory employees are on-site.

Contractors are hired by CHEI to fill in the gaps in a project's staffing complement. Contractors are also hired by CHEI when they have specific skills that are needed for certain projects.

CHEI will often staff its international subsidiaries in developing countries with long-term Canadian employees and local employees who have experience working on large construction projects. Local employees are often paid significantly less than their Canadian counterparts which causes some resentment. Where labour is very cheap and is difficult to get equipment to a job site, a large number of manual labourers may be employed for certain tasks.

Subcontractors own and operate most of the heavy equipment needed for CHEI's projects. The HE division owns portable site offices and housing, light trucks, trailers, and various measuring and monitoring devices for construction management.

Sales, marketing and bidding

The HE division has 27 sales and customer relations employees who report to the division's VP, Sales and Customer Relations. Their objective is to ensure that CHEI wins as many profitable project bids as possible. These employees identify bidding opportunities both in Canada and internationally. Representatives from the sales team always attend key trade shows in the industry, both in Canada and the main geographic markets.

Once an opportunity to bid has been identified, the Bidding and Estimation Department becomes involved. The Bidding and Estimation Department consists of 38 employees who work closely with the project execution and design personnel to prepare accurate bids. Generally, international bids are quoted in U.S. dollars while bids in Canada are quoted in Canadian dollars. Since many of CHEI's expenses are in U.S. dollars, the company has a natural hedge to most foreign exchange exposure.

The majority of bids that CHEI enters into are highly competitive with many other companies bidding. Occasionally, when CHEI is bidding in a foreign jurisdiction, they will hire a local sales agent to advise them. CHEI's sales agent in Burma is an ex-employee who has been very helpful in securing contracts for the company. This employee has developed strong relationships with the Burmese government and while the commissions paid to him are high, he has been able to obtain construction contracts within Burma at overall high margins.

Customers often require that bidders submit a bid bond. A bid bond, usually worth 10% of the construction contract's value, is submitted for the purpose of providing a guarantee that, if selected, the successful bidder will take on the project. If the contract is awarded, CHEI would provide a performance bond to their customer. A performance bond provides assurance that CHEI will complete the contract. Some contracts also require that a maintenance bond be submitted. The HE division has a long relationship with an insurance company that provides bid, performance and maintenance bonds at a modest cost, given CHEI's history of completing projects in a timely manner to the satisfaction of the customer.

CHEI entered into a major rework of its website in early 2016. The new website, which launched in March of 2016, has increased the number of site visits and it is estimated that the new site has resulted in at least $5 million of new construction contracts.

Divisional management team

Issa Chewani is the President of the HE division. He has spent his career in heavy engineering. Issa's area of expertise is in dam construction. Issa has worked for CHEI for 28 years, where he began as a design intern. Issa has completed 17 international projects and he speaks Arabic, French and some Hindi. Issa's wife Janni works for the Homes division.

Jordan Alexander is the VP, Project Execution of the HE division. Jordan has been identified as the next President of the HE division and he is both creative and methodical. Jordan is a dedicated employee, often working more than 80 hours a week. Jordan meets with each one of the individuals who report directly to him either in person or by video conference.

Eva Jones is the VP, Sales and Customer Relations for the HE division. Eva is focused on ensuring that CHEI's customers are satisfied with the work performed by the HE division and, in case of a dispute, that the customer is in agreement with the resolution. Eva is very good at her job and has successfully negotiated resolutions to several customer disputes. She is evaluated on total revenues of the division and customer satisfaction surveys.

Manuel Pele is the VP, Bidding and Estimation of the HE division. Manuel's role is critical to the success of the projects that the HE division undertakes. If Manuel's project bids are too low and are accepted, CHEI could lose a significant amount of money. Conversely, if Manuel increases his project bids, CHEI will not be successful on the bids and lose business. He is evaluated primarily on customer margin earned. Eva and Manuel often disagree over the amount to bid. Manuel, who has final authority on the bids, consistently pushes for higher bids than Eva.

Abisher Dagger is the Controller of the HE division. Abisher maintains the HE division's financial records. Abisher is new to his role, coming to CHEI from the retail industry. Abisher is contemplating pursuing the Chartered Professional Accountant designation.

Homes division

Industry

The Canadian housing industry is large. Home building and home renovation represent approximately $128 billion of the Canadian economy.[4]

The majority of residential construction companies are small, privately held and family owned. Some of these companies build a wide range of residential housing from starter homes to large, deluxe dwellings, while other companies are involved in industrial land development and commercial real estate in addition to residential construction. There are very few residential construction companies that are owned by foreign parties.

Federal, provincial and municipal governments have an important role in the housing industry. For larger home-building projects, provincial and municipal approval must be obtained. Municipalities charge development cost charges (DCCs) and other fees for each new housing unit.

Home sales are driven by economic cycles and interest rates, which have been low for several years. In addition, a greater proportion of home sales tend to close in the spring and summer, given the seasonal nature of the housing industry. The average annual price increase of homes in Canada over the last six years has been approximately 4.4%.

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4 Source: http://www.thestar.com/business/real_estate/2014/04/16/canadian_real_estate_and_housing_boom_may_be_ending_scotiabank_warns.html, accessed May 3, 2014.

The following table represents actual and forecasted Canadian new housing starts from 2012 to 2017:

2012	*217,550*	
2013	*188,400*	
2014	*188,500*	
2015	*184,300*	
2016	*187,470*	*forecast*
2017	*188,450*	*forecast*

History of the division

The Homes division was founded in 1968 after Howard identified an opportunity to develop residential properties of various sizes with a focus on detached, starter and intermediate homes.

Historically, the Homes division's projects have been located in the Maritimes, Quebec, Ontario and British Columbia. Many of the Homes division's projects have been award winning and include the 1998 MacArthur Park development of starter detached homes in Brampton, Ontario and the Homes division's largest project, the 2008 Mountain Black development of 271 units in Montreal, Quebec. The Homes division's smallest project consisted of 11 homes.

For economic and market-driven reasons, not all of the Homes division's projects have been financially successful. For example, during the 1989 slow-down of the Toronto housing market, a loss of more than $10 million was realized.

Operations

The Homes division carries on business under the brand Advantaj Homes (Advantaj) which has a good reputation and an average safety record in an industry where many builders' homes have significant construction quality issues. The Homes division is a member of several home-builder associations at the national, provincial and the local levels.

A key success factor for the Homes division is obtaining high-quality, reasonably priced land and developing it when the market is strong, using cost effective construction techniques. A key challenge for the Homes division is the decreasing supply of land available for housing development. The Homes division tries to hold onto acquired land for a short period of time to minimize carrying costs such as interest and property tax. Land transfer tax must also be paid on purchased land.

In addition to minimizing the carrying cost on acquired land, the Homes division focuses on minimizing expenses related to government DCCs. These charges are one-time fees paid by developers and collected by governments at the time of building permit acquisition. DCCs are collected to offset the costs related to roads, drainage and parkland.[5]

In some cases, the Homes division buys land that needs to be rezoned. In other cases, the Homes division acquires rezoned, and sometimes serviced, land from speculators or from other developers. Typically, 30 to 80 homes are built on parcels of land between five and 15 acres in size. Approximately five to eight homes will be built per acre, as some of the land must be used for roads and municipally mandated recreation areas. The average number of homes that are built by the Homes division is six per acre. The Homes division has never had to resell land because it could not use it.

The Homes division works with the relevant provincial new home warranty agencies, and there have been no claims against CHEI by any of the agencies.

Home design

The Homes division offers nine basic plans for homes: five plans for starter homes and four plans for intermediate homes. With the basic designs there are a number of variations that can be selected, such as enclosed versus open front entrances, sun rooms, etc. The division contracts out all architectural work, but designs do not need to be updated very often.

Customers are offered a selection of trim, flooring, carpet, cabinetry, cabinet hardware and countertops to choose from. Appliances are offered with every purchase, since most customers are first-time buyers.

Construction

For each development, CHEI must decide whether to build finished homes, partially finished homes (foundation and frame only) and close to finished homes, in which the buyer selects the final finishing options before construction is complete.

Generally, CHEI is conservative and doesn't like to pre-build finished homes as the carrying costs associated with these homes can be significant if they don't sell right away. Conversely, if CHEI has an inventory of finished homes, sales can be made to buyers immediately.

Subcontractors, also known as sub-trades, carry out most of the home building. A few of the division's subcontractors are unionized. Subcontractors are often hired to perform services such as surveying, excavation, bricklaying, paving, plumbing, landscaping, installing windows and installing heating/ventilation/air conditioning (HVAC) systems. All CHEI's subcontractors supply their own equipment. Only some subcontractors supply their own raw materials.

5 http://www.housing.gov.bc.ca/MarketHousing/dcc.htm, accessed July 29, 2015.

Generally, it takes five or six months for the Homes division to build a finished home and one of the largest single inputs are various types of wood. The time taken to build a finished home can be reduced, but at an additional cost as it is expensive to expedite the sub-trades. Normally, house foundations cannot be dug during the winter but work can be done in the enclosed spaces of the home during any season.

The Homes division offers buyers a contractual warranty period of three years for workmanship and materials and a warranty period of six years for major structural defects. Historically, 0.4% of home sales revenue has been used to estimate warranty costs and estimates have generally been accurate.

Sales and marketing

CHEI typically sells its homes to middle-income married couples in their late 20s or early 30s, purchasing homes for the first or second time, although sales are also made outside this demographic. CHEI provides initial financial advice and will refer serious buyers to financial institutions and mortgage brokers for further assistance. CHEI's home buyers pay cash for the home on day of contract completion which is also the possession date. Funds come directly from the home buyers in the form of a down payment, with the remainder of the funds being transferred from the home buyers' financial institution.

CHEI markets its homes through the use of media, print, billboard and Internet advertising. CHEI has also set up a referral program where past buyers of Advantaj homes are paid a $1,000 referral fee for every friend or relative who buys a home. The referral program has worked quite well as evidenced by the recent sale of 17 units (in a 62 unit development) through the referral program.

CHEI builds at least one model home per development that potential home buyers can tour. There are on-site sales people staffed at the model homes to answer questions as necessary. When the project is finished, the model homes are sold at a small discount.

Divisional management team

Kirk Reilly is the President of the Homes division. As a promising director of the HE division, the company decided to broaden Kirk's experience by moving him to the Homes division. Kirk is seen as a potential future CEO of CHEI. Kirk is a civil engineer with a wide variety of experience including project management, environmental consulting and defence industry infrastructure work. Kirk has been with CHEI for 11 years, is a hard worker and is known to motivate his employees to meet targets.

Jean Taylor is the VP, Construction of the Homes division. Jean ensures that CHEI's homes are built to company standards. Jean is also in charge of land acquisition for the Homes division, although with the pressure of day to day decisions, this area does not always get his full attention. Jean started his career as a carpenter, but has taken college courses in drafting, estimation and customer relations. Between four and five project directors and managers report to Jean who has final approval authority on all project expenditures, once the Homes division's President has approved the project.

Elspeth Mark is the VP, Sales and Customer Relations of the Homes division. Elspeth was a residential interior designer for nearly 30 years before moving into sales. After being pushed by the Homes division's President, Elspeth has slowly adopted new media to promote CHEI and the Homes division.

Sindi Singh is the division's controller, whose team compiles weekly and monthly project reports. The finance team works closely with the project managers and directors. Sindi is studying to be a Chartered Professional Accountant and has always worked for project companies.

Key divisional statistics:

	Fiscal years ended December 31			
	2015	**2014**	**2013**	**2012**
Active development projects at year end	6	5	8	4
Land inventory in acres at end of year	198	205	222	231
Homes started in year	561	602	572	599
Homes sold in year	580	583	590	611
Homes backlog at end of year	143	162	143	161
Revenues	131,943,620	127,769,114	132,993,080	134,899,635
Gross profit	19,659,599	16,482,216	22,874,810	18,616,150
Avg revenue/unit	227,489	219,158	225,412	220,785
Gross profit %	14.9%	12.9%	17.2%	13.8%
SG&A as % of revenue	5.8%	5.6%	5.7%	4.8%

Homes Division Employees	
Function	**Number**
Executives	4
Sales people	22
Project Directors	24
Supervisors	61
Purchasing	19
Others	58
	188

Information systems

CHEI uses the SAPPY™ web-based enterprise system (SAPPY) for all of its financial reporting, human resources, payroll and purchasing functions. SAPPY was implemented by CHEI on January 1, 2013, and has met the company's expectations.

Since SAPPY is a web-based system and has mobile applications, the system works in the foreign subsidiaries and at remote job sites. For example, a project manager, using a hand-held device at a job site, can submit a purchase requisition to the system for approval. SAPPY confirms that the employee has the authority to approve the transaction before applying a unique digital signature to the purchase requisition. Once the purchase requisition has been approved, it is sent directly to the supplier.

A clerk recently informed Abisher, the HE division's controller, that in the Singapore office, a manager was able to approve a purchase requisition using his digital signature, even though the manager did not have the appropriate authority to approve the purchase requisition. No other such cases have been identified at the Singapore office.

Over the past 18 months, Kelly has implemented a decentralized payment methodology after identifying that it costs significantly less in bank fees to process a cheque in an emerging market. Per CHEI's head office policy, amounts under $40,000 Canadian, including expense claims, can be paid from the subsidiaries' local bank by cheque. The U.S. office is an exception.

Most local office heads have credit cards with significant limits. Some local offices have developed their own accounting forms and processes.

Financial reporting and budgeting

CHEI follows Accounting Standards for Private Enterprises (ASPE) Part II of the CPA Handbook and CHEI has elected to use the taxes payable method of accounting for income taxes. For ease of consolidation, CHEI's international subsidiaries report under ASPE, and if required, CHEI uses the local accounting standards for tax return reporting.

The audit report accompanying CHEI's December 31, 2015, consolidated financial statements was signed by CY on February 27, 2016.

In addition to its annual consolidated financial statements, CHEI prepares monthly internal divisional income statements that are reviewed by the executives of head office, the HE division and the Homes division.

The finance team prepares internal divisional income statements by:

- continent
- road/highway/bridge/dam
- other project type

The CEO and the presidents of the HE and the Homes divisions also review a dashboard consisting of the following key measures:

- major project status
- highlight of very over/under projects (budget)
- billings
- total backlog – work under contract but not yet completed

The CEO and division presidents have commented that they are looking for ideas on additional key measures they could review.

CHEI's annual budget is a challenge to compile as the number and type of projects carried out by the company can vary dramatically from year to year. The annual budget is prepared in the fall and is primarily used to predict and control overhead costs. For the HE and the Homes divisions, total revenues are forecast in dollars and margins are forecast in percentages, based on the latest available estimate of the projects to be carried out in the following year.

Project budgeting is critical to both the HE and the Homes divisions and budget updates, per project, are generally prepared every two months.

For the HE division, budgeting is particularly difficult as the division focuses on current projects instead of working towards bidding and securing future projects. Since 2013, the amount of project revenue not yet recognized (equal to the difference between the value of the contracts signed and the revenue recognized to date on those contracts) has fallen. Some of CHEI's construction contracts have been cancelled, resulting, in part, to the reduction in the amount of project revenue not yet recognized.

For the Homes division, the amount of revenue not yet recognized (equal to the sales price of the homes that have been contracted to be sold but whose contracts have not yet completed) has increased.

	HE	**Homes**	**$thousands**
Year	**Revenue not yet recognized (value of construction contracts signed less revenue recognized to date on the contracts)**	**Revenue not yet recognized (sales price of homes contracted for sale but not yet completed)**	**Total**
2015	484,255	35,504	519,759
2014	508,425	32,234	540,659
2013	604,525	35,546	640,071

The 2016 budget is as follows:

		$thousands	
	HE	Homes	Total
Revenues	420,000	135,000	555,000
Margin	56,700	21,600	78,300
Pre-tax income	18,900	10,800	29,700

Banking, financing and insurance

CHEI has banked with the same major Canadian bank for 12 years and the company carries out transactions in both Canada and the U.S. CHEI's foreign subsidiaries outside of North America bank with the foreign branches of this bank.

At the time of issuance, the bank granted CHEI a $50-million operating line of credit based on 75% of good consolidated receivables and 50% of the cost of Canadian inventory, excluding land. The bank has a General Security Agreement over all the company's assets, except the buildings, which are separately mortgaged with different financial institutions.

CHEI uses the operating line of credit when there is negative cash flow during certain stages of large projects. The interest rate is prime plus 0.25%. There is a cross-default clause in the loan agreement, which triggers immediate repayment of all bank debt if there is a default on any other loan.

The bank is willing to lend an additional $80 million to CHEI to finance new projects, based on 30% of the cost of vacant land, if it has been appraised or purchased from an arm's length party in the last six months. If the land will be developed within two years, this goes up to 50%. When land has been zoned and serviced (i.e., electricity and water connected), lending can be increased to 75% of cost, which is also the percentage applied to loans for home construction cost. The bank is secured by the land and the construction in progress. Typically, interest rates vary from 5% to 6%, which are higher than normal commercial rates due to the risk. Repayments start when units start selling, or two years from the date of the loan, whichever is earlier.

The company maintains professional liability insurance with a limit of $50 million and a $2-million deductible, as well as general liability insurance with the same limit and deductible. Professional liability insurance, also known as Errors and Omissions insurance, deals with the issue of a professional error. General liability insurance covers damage to third parties. Project subcontractors are required by CHEI to carry similar insurance commensurate with the value and risk of their piece of the whole project.

Other information

CHEI works extensively with the provincial government of Saskatchewan, Canada. Saskatchewan's government has run an increasing fiscal deficit for the past seven years. The government must face the electorate in September 2017.

In 2007, a customer felt that CHEI did not deliver the exact specifications on a road-building contract and threatened to sue the company. CHEI was able to take the matter to binding arbitration and the dispute was settled to the reasonable satisfaction of both parties for less than the initial claim by the customer.

Engineers working for CHEI's Burmese subsidiary have found a way to strengthen bridge footings in special conditions. The methodology is now used on all CHEI projects where similar conditions are found.

In March 2015, CHEI won a $7.22-million bid to build a bridge over the River Nigh in northern Canada. The customer is a municipality and the project has received a great deal of media attention despite the project's comparatively small size. In early 2016, dynamite blasting shattered nearby rocks which were needed for the bridge's footings, so alternate footings had to be constructed at a significant cost to CHEI. There were also issues with the project's major subcontractors. As a result, the project is only 28.2% complete and the work in progress is worth $202,000. The client has paid all of their bills to date and the next billing will occur after another $2.2 million of costs are incurred. The total estimated loss on the project equals $4.95 million. Under the terms of the contract, at the current point in the project, if CHEI returns all funds paid to date to the client, plus forfeits the performance bond, CHEI can terminate the contract, with no further financial commitment. The penalty to forfeit the performance bond is 10% of the contract bid amount. James is frustrated with the project and wants an independent opinion on what CHEI should do in these circumstances.

The Manami office in Africa was opened in late 2014 and was set up as a sales office to seek business in the area. Two business development executives work at the Manami office. Their estimated operating costs are funded through a transfer to the sales office bank account twice a year.

On a recent visit to the Sri Lankan office, the accounting manager from head office noticed that a bill for concrete pouring of 8,201,403 rupees was split into two cheques paid on the same date. The Canada-rupee exchange rate at the time was $0.008344 to the rupee.

Board meeting dialogue

The board met on March 14, 2016. Prior to the meeting, a briefing was distributed to the board members on the four new projects recently presented to CHEI: the Awani dam project (Appendix VII and VIII), the Klang Bridge project (Appendix IX and X), the

Highway 507 project (Appendix XI, XII and XIII) and a land development opportunity called Bellman Tract (Appendix XIV).

Alongside all of CHEI's board members, James Johnson was in attendance with Kelly Mack, Zoe Murphy, Kirk Reilly and Issa Chewani. The meeting's agenda was announced as follows:

1. Approve the opening of a new Euro bank account for the Canadian company.
2. Consider the four new projects.
3. Discuss ways of making the company more profitable.
4. Any other business.

Excerpts from the discussion that took place at the meeting appear below.

Kathy: I am concerned that CHEI hasn't spent enough time planning ahead and discussing new types of projects prior to bidding on them. The company's financial results have been inconsistent and I don't see this improving any time soon. The Klang Bridge and the Highway 507 projects may help the situation. It would be beneficial to develop a good reputation for successful public-private partnerships (P3) in Canada; however, the risks from these projects should be separated from the rest of the business if one, or both, of these projects are accepted.

James: I agree that we want to consider working on some P3 projects but I have some concerns with the Highway 507 project. I recently heard of a P3 toll highway that is experiencing significant toll system collection issues. If we are considering the Highway 507 project, I would like an outside review of the toll system. A good understanding of any potential issues will be important for the successful operation of the highway.

John: Continuous bidding is the nature of this business but I agree that we should start to turn our focus towards planning ahead as best we can. If we bid competitively on projects and always meet our contractual obligations, we will develop and retain a loyal customer base. That being said, after reviewing the Klang Bridge and the Highway 507 projects, I am not very comfortable with either of them.

Sisi: I really like both of these projects, but I question whether the HE division has the ability to work on both projects at the same time.

Frederick: The Awani dam project appears to be very profitable and may offer CHEI the opportunity to generate more profit on one project than the company made in the last three fiscal years. However, given the risk I expect a target pre-tax margin of at least 32% on the Awani bid.

Issa: Yes, that is correct.

Frank: The last valuation of our shares was two years ago, and it was $16,000 per share. I am intrigued by these projects but because they are higher risk, I want to earn at least 20% return on my shares instead of the usual 15%.

Other board members: We agree.

Sisi: I am concerned that the Highway 507 project will take too long to complete.

Frederick: I don't think that we should let the length of the project stop us. We need to earn a strong return in the first 20 to 30 years of the project after which point many of the variables will change.

Penelope: That is beside the point. I am concerned with the political and social environment in Bamadia where the Awani dam project will take place. If we pursue this project, we are breaking away from our past practice of avoiding projects in unstable countries.

Sisi: I would like a discussion of the ethical issues associated with a project taking place in Bamadia. We can't put the lives of any of our people at risk working on this project.

Frederick: None of our employees would be forced to go and we must remember that there is an inherent risk to working on any project in a developing country where heavy equipment and travel is involved.

Zoe: In my view, we would take steps to reduce the risks to acceptable levels.

Frank: I would like to add a new topic to our discussion. My friend works for a large private company who manufactures automobile parts. The company has recently hired an internal auditor. My friend is not able to tell me what the internal auditor does but he says that the company is realizing significant value since hiring the internal auditor.

John: We should consider hiring an internal auditor. Before I retired, I used to work in a large public company and we benefited greatly from the presence of an internal audit group.

But back to business. We have to win the Awani dam bid. This project would be a huge benefit to CHEI.

Kelly: I have approached the EDC for some risk-sharing or financial support on the Awani dam bid, but they have declined to assist CHEI without providing a reason. I think that politics might be impacting their decision.

Kathy: I am not even sure if we should get involved with the Awani dam bid.

Sisi: I agree. Does anyone have any other topics or business to raise before we close?

Penelope: Yes, thanks Sisi. I would like to sell my shares in the next two years, but I want them to be worth more. Carpe Navire is also anxious to sell, as he wants to invest in a natural gas generation project.

Kathy: I've been thinking that we should purchase and develop that Bellman Tract land that is available north of Toronto. Land is in short supply and it is too good of an opportunity to pass up, especially given that the land around Toronto is becoming scarce.

Penelope: The cost of the land is approximately $70 million. We will need to evaluate all opportunities considering the company's board approved mission and vision statements, although maybe it is time that they are updated. I propose that we engage a team from Chuck Poisson Smythe (CPS) Management Consultants to advise us. Does anyone remember what a great job they did for us on an advisory engagement a few years ago? They are CPAs who think very broadly.

I would like to engage CPS to analyze CHEI in its current state, identifying the issues facing the company and making useful recommendations where needed. CPS can report to the board and management at the next board meeting. We can ask CPS to also give us some input on hiring an internal auditor. Is it a good idea to hire an internal auditor right now? If so, who should be hired and what should they do? Perhaps a couple of intelligent people from finance or engineering would be interested in a two-year secondment as an internal auditor.

Can I have someone second the motion to engage CPS Management Consultants?

Kelly: I would also like advice on any important financial reporting and tax implications for the Klang bridge and Highway 507. Additionally, prepare an assessment of whether CHEI should adopt International Financial Reporting Standards. I am also interested in their general thoughts regarding the proprietary nature of our and asphalt maintenance wear and ice/frost damage predictor algorithms

James: As long as they are working on analyzing our business, I would like to have them take a look at our current dashboard reporting and propose a way to update it. Additionally, I recently heard that companies our size utilize a performance measurement and management tools. I would like to see what they would recommend for CHEI.

Zoe: I would be interested in hearing CPS' thoughts on some of our tax concerns.

Frederick: Good thoughts. I second the motion. Sounds like CPS will have a lot to discuss.

Penelope: All in favour, please say yes.

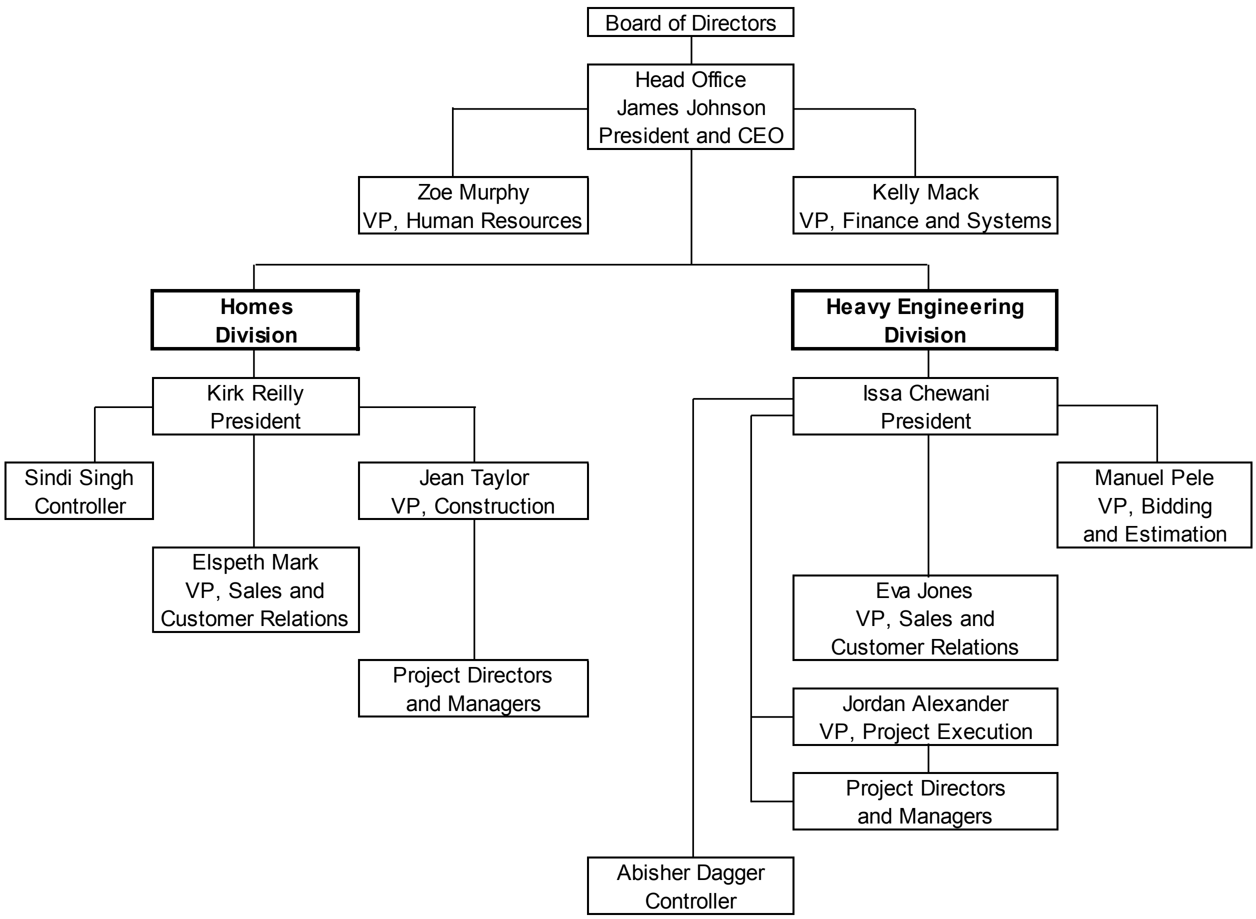
Remaining board members: Yes.

Penelope: The motion is passed and the meeting is adjourned.

Table of Appendices

Appendix I
CHEI's Organization Chart, List of Current Shareholders and Key Terms from the Shareholders' Agreement

Organizational Chart



List of Current Shareholders

Name	Common shares	% of shares
Family members		
Cecilia Navire	8,000	34.63%
Penelope Navire	2,000	8.66%
Rachel Navire	2,000	8.66%
The Len Navire Trust	2,000	8.66%
Carpe Navire	1,000	4.33%
JC Notelle	1,000	4.33%
Frank Cessnik	1,000	4.33%
Suzanne Jones	1,000	4.33%
Willard Clinton	1,000	4.33%
Family friends		
Benoit Mousse	1,025	4.44%
Agnes Arkansas	1,025	4.44%
Jude Clintchuck	1,025	4.44%
Ollie Carcillo	1,025	4.44%
	23,100	100.00%

Shareholders' Agreement (SA)

The key terms of CHEI's unanimous Shareholders' Agreement (SA), dated August 12, 1989, are as follows:

1. No shareholder can sell their shares, except to an existing shareholder.
2. Any shareholder can force the remaining shareholders to buy their shares pro rata, at a quoted price with a buy/sell clause, if they refuse to buy. *No such sales have taken place since the SA was approved.*
3. Shares from treasury can only be sold to new shareholders who agree to abide by the SA, at fair market value, and with approval of 100% of the existing shareholders.

Appendix II
Consolidated Financial Statements
Prepared by Kelly Mack, VP, Finance and Systems

Canada Heavy Engineering Incorporated
Consolidated Income Statement
For the Year Ending December 31
Audited (in '000s)

	2015	2014	2013	2012
Revenues	$ 569,569	549,355	564,248	571,097
Direct cost of activities	487,067	503,783	483,369	504,652
	82,502	45,572	80,879	66,445
Expenses				
Selling, general and administrative	47,880	46,417	40,255	44,382
Interest	1,627	1,768	1,888	2,078
Amortization	1,536	1,622	1,678	1,539
	51,043	49,807	43,821	47,999
Income before taxes	31,459	- 4,235	37,058	18,447
Income taxes	8,494	$ (1,160)	10,028	5,054
Net income	$ 22,965	$ (3,076)	$ 27,030	$ 13,392

Income statement

Revenues	569,569	549,355	564,248	571,097
Direct cost of activities	487,067	503,783	483,369	504,652
	82,502	45,572	80,879	66,445
Expenses				
Selling, general and administrative	47,880	46,417	40,255	44,382
Interest	1,627	1,768	1,888	2,078
Amortization	1,536	1,622	1,678	1,539
	51,043	49,807	43,821	47,999
Income (loss) before taxes	31,459	$ (4,235)	37,058	18,447
Income taxes	8,494	$ (1,160)	10,028	5,054
Net income (loss)	$ 22,965	$ (3,076)	$ 27,030	$ 13,392

Appendix II (cont'd)
Consolidated Financial Statements
Prepared by Kelly Mack, VP, Finance and Systems

Canada Heavy Engineering Incorporated
Consolidated Balance Sheet
At December 31
Audited (in '000s)

	2015	2014	2013	2012	
Assets					
Current assets					
Cash	$ 6,542	$ -	$ 4,921	$ 5,456	
Accounts receivable	56,617	56,057	55,866	55,446	**Note 1**
Inventory	58,319	60,306	69,133	67,688	**Note 2**
Work in progress	42,152	31,485	39,458	40,145	
Prepaid expenses	201	149	148	182	
	163,831	147,997	169,526	168,917	
Property, plant, equipment and land (net)	40,629	40,013	39,987	40,125	**Note 3**
Total assets	$ 204,460	$ 188,010	$ 209,513	$ 209,042	
Liabilities and shareholders' equity					
Current liabilities					
Operating line of credit	$ -	$ 4,011	$ -	$ 6,975	
Accounts payable and accrued liabilities	51,943	45,749	46,969	51,428	**Note 4**
Deferred revenue	13,789	17,549	13,452	11,425	
Land loans	19,632	19,049	22,539	23,339	
Current portion of mortgages	962	944	902	875	
	86,326	87,302	83,862	94,042	
Land loans	8,475	10,052	8,975	9,452	
Mortgages payable	7,207	8,169	9,113	10,015	
Total liabilities	102,008	105,523	101,950	113,509	
Shareholders' equity					
Common shares	10,105	10,105	10,105	10,105	
Retained earnings	92,347	72,382	97,458	85,428	
	102,452	82,487	107,563	95,533	
	$ 204,460	$ 188,010	$ 209,513	$ 209,042	

Appendix II (cont'd)
Consolidated Financial Statements
Prepared by Kelly Mack, VP, Finance and Systems

Canada Heavy Engineering Incorporated
Consolidated Statement of Cash Flows
For the Year Ending December 31
Audited (in '000s)

Cash provided by (used in):				
Operations				
Net income	$ 22,965	$ (3,076)	$ 27,030	$ 13,392
Amortization	1,536	1,622	1,678	1,539
Change in non-cash working capital				
Accounts receivable	(561)	(190)	(420)	(667)
Inventory	1,987	8,827	(1,445)	1,025
Work in progress	(10,667)	7,973	687	1,001
Prepaid expenses	(52)	(1)	34	(50)
Operating line of credit	(4,011)	4,011	(6,975)	-
Accounts payable and accrued liabilities	6,194	(1,220)	(4,459)	(2,152)
Deferred revenue	(3,760)	4,097	2,027	(1,245)
Land loans	583	(3,490)	(801)	(1,050)
Current portion of mortgages	18	42	27	22
	14,233	18,594	17,383	11,815
Financing				
Land loans	(1,577)	1,077	(477)	(476)
Mortgages payable	(962)	(944)	(902)	(800)
Dividends paid	(3,000)	(22,000)	(15,000)	(20,000)
	(5,539)	(21,867)	(16,379)	(21,276)
Investments				
Purchase of property, plant and equipment	(2,152)	(1,648)	(1,539)	(1,455)
Increase (decrease) in cash	6,542	(4,921)	(535)	(10,916)
Cash at beginning of year	-	4,921	5,456	16,372
Cash at end of year	$ 6,542	$ 0	$ 4,921	$ 5,456

Appendix II (cont'd)
Consolidated Financial Statements
Prepared by Kelly Mack, VP, Finance and Systems

Notes

Note 1
The outstanding 10% project holdbacks are included in accounts receivable.

Note 2
Inventory is recorded at the lower of cost and realizable value. The HE Division rarely carries inventory as most of the raw materials are purchased specifically for projects that are currently underway, and no stock is kept on hand. The Homes Division carries an inventory of land and a small inventory of finished homes awaiting sale.

Note 3
Land acquisition costs, land improvements, DCCs, interest expense and property taxes are capitalized by the Homes Division to the land account during development. When homes are sold, these costs are recorded to the "direct costs of activities."

CHEI amortizes property, plant and equipment over the estimated useful life of the asset using the straight-line method.

The Homes Division operates close to $3,000,000 of vehicles and equipment.

CHEI's Canadian real property was appraised in December 2014. The total appraised value of the properties was $28.2 million. This balance excludes the Homes Division's land and homes held for resale.

Note 4
CHEI's accounts payable were higher at the end of 2015 due to intentional payment delays.

Appendix III
Income Statement for the HE Division
Prepared by Abisher Dagger, Controller of the HE Division

Canada Heavy Engineering Incorporated
Heavy Engineering Divisional Income Statement
For the Year ending December 31
Audited (in '000s)

	2015	2014	2013	2012	
Revenues	$ 437,625	$ 421,586	$ 431,255	$ 441,645	**Note 1**
Direct cost of activities	374,783	392,497	373,251	393,064	**Note 2**
	62,842	29,089	58,004	48,581	
Expenses					
Selling, general and administrative	33,456	32,458	25,892	31,458	**Note 3**
Interest	95	88	78	101	
Amortization	712	726	724	713	
	34,263	33,272	26,694	32,272	
Income before taxes	$ 28,579	$ (4,183)	$ 31,310	$ 16,309	

Appendix III (cont'd)
Income Statement for the HE Division
Prepared by Abisher Dagger, Controller of the HE Division

Notes

Note 1: The recognition of revenue on all fixed price construction contracts is based on the percentage of job costs that have been incurred to date. This percentage is then multiplied by the project value to determine the amount of revenue to recognize at the reporting date. To the extent that revenue recognized is higher than billings made by CHEI, a work-in-progress asset is recorded. If billings made by CHEI exceed the revenue recognized, deferred revenue equal to the difference is recorded.

Revenue on cost-plus contracts is recognized as costs are incurred.

Note 2: Estimated project warranty costs are included in the direct cost of activities.

Successful bidding costs are included in the direct cost of activities. These costs include the salaries of the sales agents and project-related travel costs.

Note 3: Unsuccessful bidding costs and the cost of project employees who have no project work are included in selling, general and administrative costs.

The premiums for five insurance policies, which were due to be paid in December 2015, were financed by a third party at a cost of 7.8% per annum.

Appendix IV
Income Statement for the Homes Division
Prepared by Sindi Singh, Controller of the Homes Division

Canada Heavy Engineering Incorporated
Homes Divisional Income Statement
For the Year Ending December 31
Audited (in '000s)

	2015	2014	2013	2012	
Revenues	$ 131,944	$ 127,769	$ 132,993	$ 129,452	**Note 1**
Cost of homes sold	112,284	111,287	110,118	111,588	**Note 2**
	19,660	16,482	22,875	17,864	
Expenses					
Selling, general and administrative	7,653	7,155	7,581	6,214	
Interest	1,430	1,602	1,702	1,790	
Amortization	412	470	530	413	
	9,495	9,227	9,813	8,417	
Income before taxes	$ 10,165	$ 7,255	$ 13,062	$ 9,448	

Notes

Note 1: Revenue on the sale of homes is recognized at the point of sale, when the title of the home passes from CHEI to the buyer.

Note 2: Estimated home warranty costs are included in the cost of homes sold.

Note 3: Key Divisional Statistics from 2012-2015

	Fiscal years ended December 31			
	2015	**2014**	**2013**	**2012**
Active development projects at year end	6	5	8	4
Land inventory in acres at end of year	198	205	222	231
Homes started in year	561	602	572	599
Homes sold in year	580	583	590	611
Incomplete homes at end of year	143	162	143	161

Appendix V

Head Office Financial Information
Prepared by Kelly Mack, VP, Finance and Systems

Canada Heavy Engineering Incorporated
Head Office Expenses
For the Year Ending December 31
Audited (in '000s)

Expenses				
Selling, general and administrative	$ 6,771	$ 6,804	$ 6,782	$ 6,710
Interest	102	78	108	187
Amortization	412	426	424	413
Total	$ 7,285	$ 7,308	$ 7,314	$ 7,310

Appendix VI
Breakdown of HE Division Jobs
Prepared by Abisher Dagger, Controller of the HE Division

Canada Heavy Engineering Incorporated
Project Summary
For the Year Ending December 31, 2015

Division summary:

	Totals
Contract value	$ 900,686
Revenue	437,625
Costs	
Labour	77,577
Materials	114,042
Subcontracts	165,224
Bidding	17,940
Total	374,783
Margin	$ 62,842
Margin %	14.4%

Appendix VI (cont'd)
Breakdown of HE Division Jobs
Prepared by Abisher Dagger, Controller of the HE Division

Details by project:

Project type	Bridge	Hwy	Dam	Hwy	Bridge	Hwy	Mine refurbishment
Location	Stockville	Nipawin	Perch	Cashan	Flagstaff	Echo	Gin Lake
Country	Canada	Canada	Canada	Burma	USA	Canada	Canada
Province	BC	Saskatchewan	Alberta	Not applicable	Not applicable	NB	NWT
Government or private	Gov	Private	Gov	Gov	Private	Private	Private
Special notes							
Contract value	$ 44,010	$ 48,955	$ 16,458	$ 27,858	$ 16,645	$ 26,458	$ 39,458
Revenue	$ 31,247	$ 16,425	$ 9,012	$ 7,421	$ 2,045	$ 6,452	$ 13,458
Costs							
Labour	2,001	3,012	4,512	2,001	985	564	3,452
Materials	5,001	8,402	2,012	-	602	459	7,425
Subcontracts	21,292	3,015	400	3,558	48	4,402	20
Bidding	141	32	560	452	101	316	902
Total	28,435	14,461	7,484	6,011	1,736	5,741	11,799
Margin	$ 2,812	$ 1,964	$ 1,528	$ 1,410	$ 309	$ 711	$ 1,659
Margin %	9.0%	12.0%	17.0%	19.0%	15.1%	11.0%	12.3%

Appendix VI (cont'd)
Breakdown of HE Division Jobs
Prepared by Abisher Dagger, Controller of the HE Division

Details by project:

Project type	Dam	Bridge	Bridge	Gas plant	Consult	Dam	
Location	Chikli	Solomon	Abay	Montreal	Cashan	Los Dos	
Country	Canada	Nigeria	Burma	Canada	Burma	Brazil	
Province	Saskatchewan	Not applicable	Not applicable	Quebec	Not applicable	Not applicable	
Government or private	Gov	Gov	Private	Private	Gov	Gov	
Special notes		EDC support	Sole bidder				
							Total
Contract value	$ 16,001	$ 28,425	$ 26,412	$ 68,425	$ 4,525	$ 28,458	$ 392,088
Revenue	$ 10,050	$ 28,425	$ 5,425	$ 56,428	$ 3,012	$ 11,525	$ 200,925
Costs							
Labour	1,052	11,452	1,252	5,458	1,402	1,225	38,368
Materials	3,152	7,805	720	13,499	10	6,458	55,545
Subcontracts	3,050	4,002	221	27,502	201	1,010	68,721
Bidding	55	88	1,978	1,189	645	686	7,145
Total	7,309	23,347	4,171	47,648	2,258	9,379	169,779
Margin	$ 2,741	$ 5,078	$ 1,254	$ 8,780	$ 754	$ 2,146	$ 31,146
Margin %	27.3%	17.9%	23.1%	15.6%	25.0%	18.6%	15.5%

Appendix VI (cont'd)
Breakdown of HE Division Jobs
Prepared by Abisher Dagger, Controller of the HE Division

Project type	Consult	Maintenance	Dam	Gas plant	Maintenance	Hwy	Hwy
Location	Gimlin	Various	Nevada	Pinto	St. Moo	Ushire	North
Country	Canada	USA	USA	Burma	Canada	UK	France
Province	Quebec	Not applicable	Not applicable	Not applicable	Quebec	Not applicable	Not applicable
Government or private	Gov	Gov	Gov	Gov	Gov	Gov	Gov
Special notes			EDC support				
Contract value	$ 54,777	$ 31,452	$ 26,785	$ 28,458	$ 29,455	$ 64,585	$ 13,482
Revenue	$ 46,856	$ 16,425	$ 9,452	$ 4,589	$ 18,489	$ 31,425	$ 8,845
Costs							
Labour	4,562	4,202	3,689	902	848	2,452	2,245
Materials	-	5,045	3,158	890	7,301	16,488	2,152
Subcontracts	36,202	4,895	1,568	360	7,850	6,548	3,050
Bidding	78	405	105	1,401	45	189	96
Total	40,842	14,547	8,520	3,553	16,044	25,677	7,543
Margin	$ 6,014	$ 1,878	$ 932	$ 1,036	$ 2,445	$ 5,748	$ 1,302
%	12.8%	11.4%	9.9%	22.6%	13.2%	18.3%	14.7%

Appendix VI (cont'd)
Breakdown of HE Division Jobs
Prepared by Abisher Dagger, Controller of the HE Division

Project type	Bridge	Maintenance	Bridge	Consult	Under $2M	Under $2M	
Location	Nigh	Klicka	Jipa	Nairobi	Various	Various	
Country	Canada	USA	India	Kenya	Various	Various	
Province	NWT	Not applicable	Not applicable	Not applicable			
Government or private	Gov	Gov	Gov	Private	Private	Gov	
Special notes	Cancel?		EDC support				
							Total
Contract value	$ 7,220	$ 19,458	$ 16,458	$ 6,452	$ 98,558	$ 111,458	$ 508,598
Revenue	$ 1,083	$ 19,458	$ 14,586	$ 5,642	$ 28,425	$ 31,425	$ 236,700
Costs							
Labour	220	3,154	456	3,402	4,602	8,475	39,209
Materials	401	6,458	5,020	-	2,002	9,582	58,497
Subcontracts	421	5,648	5,456	299	14,001	10,205	96,503
Bidding	15	1,245	402	1,311	5,001	502	10,795
Total	1,057	16,505	11,334	5,012	25,606	28,764	205,004
Margin	$ 26	$ 2,953	$ 3,252	$ 630	$ 2,819	$ 2,661	$ 31,696
%	2.4%	15.2%	22.3%	11.2%	9.9%	8.5%	13.4%
							(0.13)

Appendix VII
Extracts from Request for Proposal for the Awani Dam dated October 31, 2015
Prepared by the Government of Bamadia

Summary

The Government of Bamadia invites interested parties to bid on the construction of a hydro-electric power plant and a 422-metre wide concrete arch dam on the Awani River. The Government of Bamadia will define the technical specification of both the power plant and the dam.

The Awani dam will provide a reservoir for irrigation of a 410 square kilometre area below the dam and for flood protection for the area east of the dam during the May monsoon season.

Prior to construction, 44 kilometres of the Tongan Valley will be flooded. The Government of Bamadia will be responsible for removing all residents and buildings from the Tongan Valley.

Timeline

1. The bid is due on June 30, 2016, and the successful bidder will be selected by July 31, 2016, at the sole discretion of the Government of Bamadia.
2. Construction must commence by September 1, 2016, and the project must be completed by August 31, 2019.

Bid inclusions

1. A fixed price bid, with assumptions clearly stated, in Bamadian dollars or U.S. dollars.
2. A proposal on how to deal with the magnaceous rock on the east side of the river, where deep dam footings will be required.
3. A proposed payment schedule for payment in no more than six installments, with no milestone greater than 20% of the project value. The last payment of at least 10% must be due one year after completion of the project.
4. A five-year warranty against cracks in the dam.
5. A list of other clauses. Other clauses will be considered but could disqualify the bid, at the sole discretion of the Government of Bamadia.

Appendix VIII
Notes on the Awani Dam Project
Prepared by Issa Chewani

Through private discussions with the Bamadian Minister of Infrastructure and Development (Minister), the Government of Bamadia is impressed with CHEI and they have confirmed that they are willing to pay a good price for the dam.

The residents living in the Awani flood zone strongly support the dam because they are exposed to an extreme risk of a monsoon flood every May. On the other hand, there are approximately 36,000 residents of the Tongan Valley who will lose their land and their homes if the construction of the dam takes place. Bamadia's neighbouring country, Riger, is on record as opposing the Awani dam.

The Minister has confirmed that work will have to be conducted through a Bamadian corporation that will pay taxes at the rate of 24.6%.

The country of Bamadia

Because CHEI knows very little about the country of Bamadia, I engaged a business intelligence firm to perform extensive research on the country. Their findings are as follows:

Bamadia is a country of 6.2 million people. The country's main export and chief government revenue source is the mineral stockite. Stockite PBC, a company which is owned by the government of Bamadia, has sole rights to mine the stockite. Bamadia is a country that is in need of electricity and that has several rivers that are suitable for hydro-electric development.

The unemployment rate in Bamadia is approximately 11.2%. The annual GDP per capita is equal to US$540. Over the last five years, the Bamadian dollar has fluctuated by up to 60% in value per year. There is no forward exchange hedging market for the Bamadian dollar.

Bamadia has three bonds with three years to maturity. The bonds trade on the international markets and yield a return of 15.6%.

Corporal Toonia (Toonia), the self-proclaimed President of Bamadia, has been in office for five years following the overthrow of Halvador Bennie, the previous President. Toonia has abolished free elections.

There is a growing movement to bring democracy to Bamadia but for the most part, its proponents live outside the country. A group of 400,000 rebels are in armed opposition to Toonia's government and have warned the Bamadian government that they will oppose all of Toonia's infrastructure projects.

The Bamadian government is at war with the rebels. Fighting is on foot and the jungle terrain is difficult to traverse. The rebel line is 162 kilometres from the proposed dam site. Our security and intelligence advisor has confirmed that a group of mercenary soldiers may be provided by the Bamadian government to protect the dam site. A fleet of helicopters could also be kept on-site for repatriation of Canadian staff to a peaceful neighbouring country if the need arises. The Bamadian government will cover the costs of the mercenary soldiers and the helicopters.

Opposition to the Awani dam project

There has been a growing movement around the world opposing the Awani dam for both environmental and human rights reasons. The spokesperson for People of the World against the Awani Dam (PWAAD), based in the United States, says that it is the organization's belief that the residents of the Tongan Valley will not be given any kind of fair expropriation compensation. They are basing this belief on what happened to the residents of Aalani when the new port of Emboke was constructed four years ago by Toonia.

A recent press release from the environmental group Green Planet condemned the proposed dam stating that, "the dam will flood the eco-sensitive Tongan Valley and will most certainly render the rare Balai monkey extinct, a monkey whose sole habitat is in this valley." This monkey's only known habitat is in this valley, because it feeds primarily on the Bollwill grasshopper, also unique to the valley and in danger. "The monkey is exceptionally cute and friendly and should be protected…."

CHEI research

CHEI's Awani bid team has spent more than two months assessing the Awani dam project at a cost in excess of $5.2 million. With 95% certainty, the bid team has stated that with an additional expenditure of between $2.5 million and $4.5 million, they will be able to overcome the magnaceous rock footing issue. This research and development work can be done in Canada or Bamadia. The drilling costs will equal $500,000.

A firm quote of $84.21 million for the construction of the hydro-electric power plant has been obtained from a reliable United States subcontractor who has worked on many dams with CHEI. Excavation of the site will cost between $42.13 million $44.13 million. The cost of erecting a temporary dam during construction equals $3.60 million.

The bid team estimates that 152 company employees will be involved with the project for an average term of 2.5 years. The average annual payroll and benefits costs, per employee, will equal $90,000. The cost to house CHEI employees in Bamadia will equal $4.24 million per year and annual travel costs are expected to equal $4.15 million.

Local fixed price contracts are estimated to total $16.42 million but to be conservative, the bid team recommends forecasting a $1 million overage. Contracts awarded to Canadian subcontractors will range from $57 to $64 million, while the cost of the concrete for the project will be anywhere from $10 to $11 million.

The bid team believes that a $5-million contingency is appropriate for the construction of the project. Warranty costs are estimated at $5 million to $7 million.

Appendix IX
Klang Bridge Request for Tender
Prepared by the Province of Saskatchewan

Tender #: T-664-2016

Tender closing date: June 30, 2016, 2:00:00 p.m. local time. *Late bids will not be accepted.*

Executive summary

Qualified bidders are invited to submit bids on the P3 project for a four lane, concrete-steel composite arch bridge spanning the Klang River at the intersection of Damper Cross and Ford Creek. The current route between Yellow Lake and Dustman North is a distance of 162 kilometres, via Highway 606. The Klang Bridge will connect these two communities.

Bidders will submit a bid of a single annual dollar amount equal to the payment to be made by the province of Saskatchewan to the successful bidder for 30 years, commencing July 1, 2019. Payments will be made at the end of each year.

A $15-million bid bond must be posted. A $150-million performance bond, expiring on completion of the bridge, must be posted by the successful bidder. The Klang Bridge cannot be used as security for financing. Should the successful bidder become insolvent, the province of Saskatchewan has a veto right on the sale of the bridge to any party.

The bridge is to be completed, and in operation, by July 1, 2018, failing which there is a $25,000 per day charge to be paid by the successful bidder to the province of Saskatchewan.

The successful bidder will own, operate and maintain the Klang Bridge for a period of 30 years from completion, at which time the province of Saskatchewan will buy the bridge for $1. The successful bidder will sign a master agreement with the province of Saskatchewan that will define the maintenance and refurbishment standards.

The successful bidder will plant trees and flowers around the bridge to the province of Saskatchewan's satisfaction. A full refurbishment of the bridge will be required and the successful bidder will refurbish the bridge in the 25th year of ownership per the province of Saskatchewan's specifications.

Appendix X
Notes on the Klang Bridge Project
Per Discussion with Kelly Mack, VP, Finance and Systems

Preliminary project costs

The Klang Bridge bid team estimates that $3 million will need to be spent preparing the bid. The team has calculated some preliminary estimates for project costs:

Materials: $54.28 million
Site preparation: $26.42 million
CHEI labour: $6.45 million
Trees and flowers: $1.9 million

The bid team believes that a 5% contingency is appropriate for the construction of the project.

The estimated annual costs to maintain the bridge include:

Sand blasting and painting: $840,000
Maintenance and repairs: $292,000
Miscellaneous: $240,000
Accounting and administration: $117,000

The bridge must be resurfaced every three years at a cost of $1.24 million each time. It is expected that the refurbishment of the bridge in Year 25 will cost approximately $12 million, in today's dollars.

Project financing

Due to the size of the investment, we will require financing. I have discussed financing alternatives for the Klang Bridge with our bank and unfortunately, they are unwilling to extend themselves further than the current operating agreement and real estate loans that are outstanding with CHEI.

After canvassing 11 other lending institutions who are all concerned with the lack of security, I can say with confidence that the best offer is with the Project Bank of Canada (Project Bank) who is focusing on the government's cash stream. Project Bank has come up with two financing options:

Option 1

Project Bank will provide financing based on 30% of the government's cash stream, discounted at a rate of 3.8%, which approximates the provincial government's 30-year bond rate. This Option 1 4% loan will be repayable over 30 years in annual blended payments.

There are no covenants but CHEI must remain in compliance with the master agreement signed with the province of Saskatchewan. If CHEI is not in compliance with the master agreement at all times, the loan becomes due and payable immediately. CHEI may not exceed their current bank borrowings without the prior written approval of Project Bank.

Option 2

Project Bank will provide financing in a two-stage loan.

The first loan is based on 30% of the government's cash stream, discounted at a rate of 3.8%, which approximates the provincial government's 30-year bond rate. This is equivalent to the loan in Option 1. This Option 2 8% loan will not require principal or interest payments until the bridge is built and approved by the province of Saskatchewan.

Once the province of Saskatchewan approves the Klang Bridge, a second loan will be provided based on the original amount of the financing plus interest accrued on the first loan. This second loan is repayable over 20 years at a rate of 3%. The annual payments are blended. There are no covenants but CHEI must remain in compliance with the master agreement signed with the province of Saskatchewan. If CHEI is not in compliance with the master agreement at all times, the loan becomes due and payable immediately.

Appendix XI
Highway 507 Announcement of Sale
Prepared by the Province of Ontario

The province of Ontario is selling Highway 507, a six lane 110 km/hour maximum speed, 142-kilometre asphalt highway. Highway 507 was built between 1998 and 2005 and cost over $300 million to build (in today's dollars), including the cost of the interchanges and bridges and excluding the cost of the land. The highway connects Oakville, Oshawa and Toronto.

The Purchaser will own and operate the highway into perpetuity and will earn income via user tolls that it will be permitted to charge.

The key points on the P3 arrangement are:

1. For purpose of this announcement, vehicle means any motorized method of transportation.

2. Bids are solicited from interested parties bidding a definite amount. All bids must be submitted in Canadian dollars by November 30, 2016.

3. The highway includes the shoulder, pavement, signs and lights. Title will transfer on January 1, 2017.

4. The province of Ontario will own, and be responsible for, maintenance of all 32 bridges and 29 interchanges (off/on ramps).

5. The province of Ontario will pay for new interchanges, lanes and bridges that may be required in the future.

6. The Purchaser will be responsible for snow removal, maintenance and resurfacing of the highway to Ministry of Transport for the Province of Ontario standards. This responsibility cannot be contracted out.

7. The province of Ontario will lease the land under the highway to the Purchaser, for a nominal payment of $1.00 (one dollar) into perpetuity. The lease will lapse if the Purchaser defaults on any terms of the sale and is not transferable.

8. The Purchaser can charge a toll of $0.85 per highway section. Each highway section is defined as the distance between consecutive interchanges, which averages 4.9 kilometres. For example, if a vehicle enters the highway at one interchange and passes two interchanges, the owner will be charged 3 x $0.85 = $2.55. Annual toll increases are limited to inflation, projected at 2% annually.

9. The province of Ontario will send monthly toll bills to licensed vehicles that drive on Highway 507, based on data from the Purchaser’s “toll vehicle identification system.” The province of Ontario must approve the Purchaser’s “toll vehicle identification system” and the system cannot require the use of any kind of device in the vehicle. The province of Ontario will collect fees for a charge of 3.4% and will remit the net amount to the Purchaser on a monthly basis. Where a vehicle’s fees are unpaid for more than three months after the date of travel, the vehicle’s license will be suspended. No bad debts are expected.

10. To minimize the impact on commerce in the province of Ontario, large trucks and commercial vehicles will pay the same toll as non-commercial vehicles. To encourage tourism, out-of-province vehicles will travel for free.

11. At its discretion, the Purchaser can charge an annual or monthly toll fee or other volume discount arrangement to Ontario residents. It is expected that market factors will ensure that an excessive toll cannot be charged.

12. The Purchaser can resell the highway to a third party as long as the third party is majority Canadian-owned. The province of Ontario must approve the purchase.

13. The highway can be used as security for debt.

14. In order to assist bidders in developing a fair bid, the province of Ontario has provided an extract from the 2015 Highway 507 traffic data report on traffic volume (Appendix XII). The traffic study was performed by Mark Transportation Consultants Inc. who has consulting experience in highway toll implementation for 32 highways around the world.

Appendix XII
Extract from the Highway 507 Traffic Data Report
Prepared by Mark Transportation Consultants Inc.

Based on an exhaustive study conducted by Mark Transportation Consultants Inc. (Mark Transportation), the 2015 Highway 507 traffic volumes are projected to be as follows:

	Ontario	Average sections	Out-of-Ontario	Average sections
Large trucks	1,253,673	21.2	123,378	28.1
Smaller trucks and vans	1,890,785	4.2	109,670	6.7
Cars and motorcycles	17,407,553	3.9	1,290,141	6.4
	20,552,011		1,523,189	

Traffic volumes in 2016 are expected to be the same as those in 2015.

It is anticipated that Highway 507 volumes will reduce by 10 to 15% in the first year, based on the toll levels set, and that this reduction in traffic volume will reverse by the second year as motorists realize the benefits of highway travel, including both time savings and improved gas mileage.

Appendix XIII
Notes on the Highway 507 Project
Per Discussion with Kelly Mack, VP, Finance and Systems

Toll vehicle identification system

As you know, if CHEI is the successful bidder on the Highway 507 project, we will need to implement a toll vehicle identification system to capture information about the vehicles that drive on Highway 507. This information will be used to calculate the toll amounts billed to vehicle owners by the province of Ontario. James has asked me to investigate the different toll vehicle identification systems available in today's market. I have determined that we will have to use a license plate identification system, as the province of Ontario has clearly stated that the system we choose cannot require the use of any kind of identification device in the user's vehicle.

We can choose to buy an off the shelf system or create our own system. Please find my notes on both options below:

Option 1

The best off the shelf commercial license plate identification system that I could find is the TollCollector™ system (TollCollector). The TollCollector is used in six major highways around the world including a new US$3-billion highway in the southern United States.

The TollCollector photographs a vehicle's license plate three times as the vehicle both enters, and exits the highway. Vehicles do not have to slow down to be photographed. The TollCollector has a 98.9% plate recognition factor per pass.

Once the TollCollector has captured a vehicle's license plate image, the system translates the image captured into the alpha-numeric vehicle license plate number and calculates the billing amount by matching the vehicles' highway entry and exit points. Billing data is then transmitted to the province of Ontario over a dedicated line, using XBC protocol which Ontario can decode. XBC protocol is a form of encryption used by the Ontario government.

The costs associated with the TollCollector system are as follows:

Capital – still cameras and recognition system	$1,405,000
Capital – posts for cameras	696,000
Capital – installation	85,000
Dedicated line – annual fee	4,000
Other annual costs	16,000
	$2,206,000

Option 2

I believe that we can build our own in-house license plate identification system. Personally, I favour this option. The system will use closed circuit TV technology, not intended for this purpose, to capture a stream of images of both vehicles and their license plates. Images of the vehicles will be useful if they are ever needed for security reasons. The closed circuit TV technology will have a 99.7% plate recognition factor per pass.

We will incorporate third party alpha-numeric recognition software to translate the image captured into the alpha-numeric vehicle license plate number. The system will also be able to track the vehicle's highway entry and exit points and calculate the amount of the toll. This information will be sent to the government via the Internet using TNI protocol. This protocol is a form of encryption. The Ontario government does not currently use TNI protocol.

The costs associated with the in-house system are as follows:

Internal labour to integrate	$ 184,000
Contractor costs for integration	2,345,000
Capital – TV cameras	346,560
Capital – posts for cameras	696,000
Capital – installation	85,000
Recognition software license	420,000
Recognition software maintenance – annual	42,000
Web transfer – annual	5,000
	$4,123,560

Preliminary project costs

The Highway 507 bid team has calculated some preliminary estimates for project costs:

Repair costs: $10,792,000 per annum
Maintenance costs: $48,000 per kilometre per annum
Snow clearing: $3,598,848 per annum
Resurfacing: $1,621,460 million per annum
Legal transaction costs: $482,000
Accounting and administration costs: $825,000 per annum

Project financing

Two financial institutions are willing to finance the Highway 507 project. The details of each offer are below:

Infrastructure Financing Corporation (IFC)

If CHEI has equity of at least $80 million and its total debt-to-equity ratio is no more than 3:1, IFC, a United States lender, will provide financing in the amount of 90% of the highway's purchase price, to a maximum of $370 million. The loan will be secured by Highway 507.

The repayment term of the loan will be 40 years. Monthly payments are blended. The interest rate is 3.2%

Failure to maintain the covenants will result in default and the outstanding balance of the loan must be repaid immediately. Intangibles are excluded from the definition of equity.

Galt Bank

Conditional on becoming CHEI's banker, Galt will provide financing in the amount of 85% of the highway's purchase price, to a maximum of $390 million. Galt is also willing to take over CHEI's current bank loans.

The repayment of the loan will be 50 years. Monthly payments are blended. The interest rate is 3.0%

Financing is subject to approval of CHEI's cash flow projections and minimum equity of $125 million.

Appendix XIV
Notes on the Bellman Tract Land Opportunity
Per Discussion with Jean Taylor, VP, Construction of the Homes Division

I am excited to report that through a realtor, I have found a 292-acre piece of land for sale. The land is called the Bellman tract and it is located north of Toronto. The sale price is $241,100 per acre. Land transfer tax of $1.404 million would be applicable and $1.8 million of consulting fees and $1.1 million in site clearing and demolition costs will be incurred.

The plot of land is less than 55 kilometres from the CN Tower. The land has four farmhouses, three derelict buildings, a creek, a small marsh and good road access. It is also within a five minute drive of a GO Transit station, with 50 minute access to downtown Toronto. Our realtor considers the land to be an excellent deal and he worries that the land may be purchased by a competitor in the near future. Our realtor is confident that changing the municipal zoning should be an easy process.

The vendor is willing to finance 60% of the purchase price at a rate of 8% per annum if the debt is secured by the land. The vendor is willing to finance 40% of the purchase price at a rate of 10% per annum if the debt is unsecured. The loan will be repayable in full upon the earlier of the sale of the land for development or five years.

Tentative development plan

Kirk believes that the land will support a housing density of 6.5 homes per acre. The key points in his development plan are as follows:

60% of the homes will be starter homes expected to sell for $330,000. 40% of the homes will be intermediate homes, expected to sell for $390,000. The construction cost of the homes will equal 71% of the sale price. Government fees and development charges will equal $26,000 per home.

One year after the purchase of the land for rezoning, site preparation and construction, houses will begin to sell. It is expected that in Year 2, the first 520 homes will sell. In Year 3, 520 homes will sell with the balance selling in the following year. Staff costs for the project that are not included in the cost of the homes will equal $1.5 million per annum in Years 2 and 3. These costs will double in Year 4.

Site preparation will be a significant cost in Year 2 at $4.9 million, $5.1 million in Year 3, and $7.4 million in Year 4. The company's guide for development property taxes for this project is 0.48% of revenue realized in the first year of sales and in each year thereafter: 0.96% in Year 2, 1.44% in the third year and so on.

Fixed sales costs will equal $2.85 million in the first year and $1.5 million in the two years thereafter. Variable sales costs will equal 0.3% of the sale price.

APPENDIX C

THE COMMON FINAL EXAMINATION
DAY 1 CHEI VERSION 1 BOOKLET – MAY 25, 2016

Common Final Examination
May 25, 2016 – Day 1 CHEI Version 1

Case **(Suggested time 240 minutes)**

Update

It is now April 24, 2018. House prices are on the decline and the Canadian home construction market is weak with 2017 housing starts only reaching 184,000. However, Canadian condominium sales have been reasonably strong for the last four years. The trend towards condominium living is expected to continue. In addition the trend towards "green living" and "green building" is starting to gain momentum. Interest rates are forecast to remain low. The Canadian federal government, and most provincial governments, are restraining their spending more so than two years ago, due to deficit reduction policies. Thus, one of the continuing trends in government contracting is the use of public-private partnerships (P3s). This trend is spreading into the not-for-profit sector, and there is more variety in partnership projects being proposed. While road and bridge construction projects have been the most traditional applications of P3s in the past, some investors are predicting a broadening of the types of projects.

CHEI's consolidated results have gone from a net income after tax of $28.88 million in 2016, to $15.38 million in 2017 and a loss of $24.48 million in the first quarter of 2018 (Q1). CHEI has drawn about $1 million on its line of credit. Internally prepared divisional financial statements and other information is provided in Appendices I and II.

CHEI's mission and vision remain as they were and financial targets remain the same as they were in 2016. However, to reflect the possible new direction CHEI might take, the board is open to revising the mission and vision statements for the next annual meeting.

Highway 507 update

CHEI purchased Highway 507 for $300 million, financed by the Infrastructure Financing Corporation (IFC) and based on IFC's terms. The highway's financial results are reported as a separate division, and the cost of the highway is being amortized over 50 years on a straight-line basis. The highway loan repayments (principal plus interest) to IFC are $11,976,000 per year, and the current loan balance is $266,328,000.

Soon after CHEI took over the highway in January 2017, two of the largest employers at the Oshawa end of the highway shut their plants, mainly due to an economic slowdown. In early 2018, CHEI's woes continued when part of Interchange 64 collapsed, preventing traffic from entering a portion of Highway 507 for a few weeks. As interchanges are the province's responsibility, CHEI has filed a legal claim against the province for loss of income of $1.2 million. Then, in mid-February 2018, a record winter snowfall combined with sudden warm temperatures resulted in the highway being flooded, so there was no toll traffic for a 24-kilometre section for six weeks while the damage was repaired. On the positive side, toll charges are as expected based on the actual traffic volumes. Apart from the above-noted events, the highway's toll volumes have been consistent across the seasons.

It seems that the two employers are reopening their Oshawa plants very soon, which should make the original figures forecasted by the traffic consultant achievable again. However, the board is worried about sustaining the effects of another disaster and is therefore thinking of selling Highway 507, as allowed in the agreement. CHEI has received two preliminary offers, which are detailed in Appendix III.

Even though CHEI's experience with Highway 507 has not been positive thus far, CHEI's board still believes that P3s are low-risk and worth pursuing. CHEI is currently looking at bidding on several upcoming federal and provincial P3s.

Homes division (Homes) update

Two of Homes' competitors declared bankruptcy last year. In spite of a continued good reputation in the industry, Advantaj Homes is struggling. Elspeth Mark says she has never seen demand for the company's homes so low. She has tried everything she can think of in terms of marketing, promotions and pricing, with little success. She is hearing that young professionals no longer want to purchase starter homes, preferring either larger homes or condominiums. The Toronto and Vancouver condominium markets are booming.

Homes has not purchased any new land since 2015. The Belman tract of land was not purchased. Land is now available for 10-15% less than it cost two or more years ago. Management is frustrated because CHEI does not have the cash to buy up land now, while it is less expensive. The Board is particularly concerned with the financial trend of the Homes division and wants to know if it's worth saving.

There continues to be concern over CHEI's aging workforce. In the Homes division, over the last two years, 27 employees quit and 40 were laid off in cutbacks. Kirk Reilly has tried to keep most core employees on staff, saying "We need to try to keep them." The current employee breakdown is in Appendix I.

Heavy Engineering (HE) division updates

The HE division went ahead with Klang P3 project and is having continued success with Awani and its other projects.

In 2017, the HE division built and sold three self-storage facilities as a pilot project. These facilities are simple buildings comprised of many small storage units. Purchasers rent out the storage units to individuals and businesses.

Board meeting – April 25, 2018

Penelope Navire: I have asked CPA, from Chuck Poisson Smythe Management Consultants, to help us again. We need to figure out how to quickly get CHEI back on track.

I want the board to be reminded of the important decision factors we should be considering, so I've asked CPA to highlight the changes from the previous situational analysis and to provide a broad assessment of the issues facing CHEI using the information provided. CPA's assessment should identify significant factors we might not have considered and additional information that is critical to obtain before we make our decisions. Where there is sufficient information to do so, CPA should suggest a course of action.

First, do we need to sell off Highway 507? We have two very different offers on the table.

Sisi Nagy: I'm opposed to selling it. The problems we had this year were unusual — we aren't likely to have them again! If we increase the toll by 10% and find a way to reduce our operating costs, we'll be making money. Of course, that assumes that the two closed plants reopen.

Kathy Fernandez: Are you sure those were unusual events? With climate change, we need to consider the possibility of more freak events. The cost of maintaining the highway is killing us, and is more than we expected. I think we should cut our losses and sell.

Penelope Navire: I would like CPA's thoughts on whether CHEI should keep Highway 507, as well as an assessment of the two purchase offers we have received.

Kathy Fernandez: I see better opportunities for us. We agreed as a board that we wanted to increase private-sector revenues. We are in the early stages of discussions about purchasing Carter Developments Inc. (CDI) (Appendix IV). Based on an operational review our accounting staff estimates that CDI is worth between $24 and $34 million but I'm not sure if the offer is a reasonable one or if the deal even makes sense for us.

John Higman: It builds condominiums, right? Since we have done a few consulting contracts on condominium projects, the next logical step is to start building them. Buying a company like CDI makes sense.

Penelope Navire: You might be right. I would appreciate CPA's thoughts on the offer and on our findings thus far. CPA's suggestions as to any additional information about CDI that we should obtain are also being sought.

Next, the board needs to decide if we should continue to build and sell self-storage facilities. I personally am not ready to abandon this venture yet, and want to look at the options further. We could consider operating these facilities ourselves. We are still looking for that regular and consistent income stream that we had hoped Highway 507 would provide. If HE is the division that builds them, we have the capacity to build 15 to 20 facilities per year. Perhaps CPA can provide thoughts on the feasibility of pursuing this venture and the strategic fit, and help us figure out the key decision factors. Additional information on the proposal is in Appendix V.

John Higman: Many users are seniors and students, and, mostly, condominium owners who are strapped for storage space. This is a simple concept that works well. But would we stop selling self-storage facilities to others if we decide to start operating some ourselves?

Charles Monet: Maybe. Instead of always dealing with fluctuating company profits, depending on the success of our latest construction project, this could provide us with a stable source of revenue. I wonder, though, if this venture is better suited to Homes than HE.

Sisi Nagy: I think we should drop the whole idea — the margins are too small. I think we really need to focus on saving our Homes division. We have always survived during economic slumps, and we should be able to get through this one too. Maybe it's time to let some people go. If we let go 60% of the workforce, severance pay would average $100,000 per employee based on CHEI's severance policy and an average salary of $80,000.

Charles Monet: I am new on the board, but it appears that CHEI has been too dependent on various levels of government for revenue. I suggest expanding our Homes division into new market segments to increase sales. Since government is more financially constrained, CHEI should try to benefit from P3s in the other markets. They are becoming more and more common. Since we are developing expertise in P3s, I suggest we include the pursuit of profitable P3s in our mission, and pursue more of them. I saw one we could bid on that is a good fit with Homes, and that would help steady our income (Appendix VI). I'd appreciate CPA's thoughts on this project and if it makes sense for CHEI to pursue it further.

Penelope Navire: Since Homes is the core business, along with HE, we should do whatever we can to save it. I don't know if we can financially support pursuing CDI, the self-storage facilities and the P3 project. I suspect we cannot do them all. Let's have CPA prioritize our options, and provide us with thoughts and suggestions as to what we should be doing and why. Obviously, we need to consider the current market conditions and our current financial position.

APPENDIX I
UPDATED INFORMATION

Canada Heavy Engineering Inc.
Heavy Engineering (HE)
Divisional Income Statement
(in thousands of dollars)

	Q1 2018	2017	2016
Revenues	$ 115,425	$ 422,413	$ 439,101
Direct cost of activities	95,572	358,206	367,967
	19,853	64,207	71,134
Expenses			
Sales, general and administration	9,014	35,145	32,601
Interest	65	148	105
Amortization	160	654	698
Total expenses	9,239	35,947	33,404
Income before taxes	$ 10,614	$ 28,260	$ 37,730

Canada Heavy Engineering Inc.
Homes
Divisional Income Statement
(in thousands of dollars)

	Q1 2018	2017	2016
Revenues	$ 8,640	$ 78,425	$ 101,125
Cost of homes sold	8,502	73,798	88,383
	138	4,627	12,742
Expenses			
Sales, general and administration	3,080	10,402	8,800
Interest	490	1,504	1,702
Amortization	89	412	412
Total expenses	3,659	12,318	10,914
Income (loss) before taxes	$ (3,521)	$ (7,691)	$ 1,828

APPENDIX I (continued)
UPDATED INFORMATION

Canada Heavy Engineering Inc.
Homes Division
Additional Statistics
For the years ended December 31

	Q1 2018	2017	2016	2015
Active development projects at period end	2	4	5	6
Land inventory in acres at period end	24	99	141	198
Homes started in period	21	399	402	561
Homes sold in period	45	390	480	580
Homes backlogged at period end	50	74	65	143
Revenues (in thousands of dollars)	8,640	78,425	101,125	131,944
Gross profit (in thousands of dollars)	138	4,627	12,742	19,660
Average revenue per unit (in thousands of dollars)	192	201	211	227
Gross profit %	1.6%	5.9%	12.6%	14.9%
Sales, general & administration expenses as % of revenue	35.6%	13.3%	8.7%	5.8%

The Homes employee breakdown is as follows:

Homes division employees	Dec. 31, 2015	Q1 2018
Executives	4	4
Sales people	22	14
Project directors	24	20
Supervisors	61	43
Purchasing	19	17
Others	58	23
	188	121

APPENDIX I (continued)
UPDATED INFORMATION

Canada Heavy Engineering Inc.
Highway 507
Divisional Income Statement
(in thousands of dollars)

	Q1 2018	2017
Revenues (Note 1)	$ 9,994	$ 42,780
Provincial fee	(340)	(1,455)
Net revenue	9,654	41,325
Expenses		
Maintenance	1,644	6,446
Repairs (Note 2)	30,355	10,450
Snow clearing	2,145	3,402
Insurance	875	3,500
Resurfacing	385	1,590
Accounting and administration	200	801
Interest	2,160	8,640
Amortization	1,500	6,000
	39,264	40,829
Income (loss) before taxes	$ (29,610)	$ 496

Notes:

1. Based on initial forecasts, 2017 revenues were expected to be in the $50 million range.

2. Included in first-quarter 2018 repairs is the unexpected cost of $27.8 million due to flood damage in February.

APPENDIX II
BUDGET AND OTHER INFORMATION

Canada Heavy Engineering Inc.
2018 Comparison of Budget to Actual
(in thousands of dollars)

Quarter 1 Results								
	Homes		HE		Highway 507		Total	
	Budget	Actual	Budget	Actual	Budget	Actual	Budget*	Actual
Revenues	25,250	8,640	106,250	115,425	11,000	9,654	142,500	133,719
Direct costs	22,473	8,502	88,188	95,572	7,856	35,404	118,517	139,478
	2,777	138	18,062	19,853	3,144	(25,750)	23,983	(5,759)
Expenses								
Sales, general and admin.	2,901	3,080	8,753	9,014	200	200	11,854	12,294
Interest	288	490	31	65	1,629	2,160	1,948	2,715
Amortization	100	89	160	160	1,153	1,500	1,413	1,749
	3,289	3,659	8,944	9,239	2,982	3,860	15,215	16,758
Income (loss) before taxes	(512)	(3,521)	9,118	10,614	162	(29,610)	8,768	(22,517)
Head office costs								1,959
Total loss before taxes								(24,476)

*excludes Head office cost

CHEI’s quarterly budgets are simply one-quarter of the 2018 budget amounts.

Head office costs are on budget.

APPENDIX II (continued)
BUDGET AND OTHER INFORMATION

Canada Heavy Engineering Inc.
Consolidated Financials
Financial Analysis

	Mar. 31, 2018	Dec. 31, 2017	Dec. 31, 2016
Current ratio	1.63	2.00	2.09
Quick ratio	0.64	0.87	0.91
Long-term debt-to-equity	1.98	1.75	0.11
Total debt-to-equity	2.75	2.38	0.82
Annualized:			
Days receivable (days)	35.8	32.6	35.7
Days in Inventory (days)	32.4	38.7	41.4
Days payable (days)	34.6	40.1	43.5
Total Equity (in millions)	$100.5	$125.0	$117.9

Number of Shares issued: 23,100

APPENDIX III
PRELIMINARY OFFERS TO PURCHASE HIGHWAY 507

JJ Ventures Inc.

JJ Ventures Inc., a Canadian public company that has about 40% foreign ownership and investments in many businesses, has made a tentative offer of $265 million for Highway 507, of which 80% would be payable immediately. The remaining 20% would be repayable in five years' time with interest, at 4.1%.

The proposal requires the seller to be responsible for the following:

1. Any shortfall of calendar-year toll revenue below net $35 million, for five years post-purchase

2. Any maintenance and repairs in excess of $30 million per calendar year, for five years post-purchase

3. Any highway damage due to acts of God, for three years post-purchase

4. Any legal actions against the purchaser related to highway operations, for six months post-purchase

Parmalea Equity Group Inc.

The Parmalea Equity Group Inc., a Canadian private equity firm with significant financial backing, offers to purchase Highway 507, conditional upon a complete engineering survey and financial review.

The offer is for $250 million, either in cash or with partial debt assumption. Parmalea is willing to take over 50% of CHEI's Highway-507-related debt, subject to approval by CHEI's lender. CHEI is responsible for settling the balance.

CHEI must provide its highway maintenance algorithms, reflecting CHEI's intellectual property, free of charge.

APPENDIX IV
CONDOMINIUM BUILDER – CARTER DEVELOPMENTS INC.

While the Carter family is no longer involved in managing Carter Developments Inc. (CDI), three members of the family own all of the outstanding shares. The shareholders would prefer to receive cash, but will consider a 100% share offer if the valuation of their shares and CHEI's can be agreed upon, and they receive a minimum of $2 million in dividends each year. One seat on the board would be held by one of the Carter family members.

CDI operates in Montreal, Vancouver, Calgary and Edmonton. Its stated mission is: "*with the strong values of a family-owned enterprise, we are inspired to make the world a better place to live*." Its vision is to be "*the leader in real estate development, construction and management, with operations throughout Canada*." CDI has been a leader in "green building" for over a decade. CDI's website says the company has always completed its projects on time and that, in 2012 it won the Top Condo Builder award from the Montreal Construction Association, and in 2014, a Leadership in Energy and Environmental Design (LEED) "gold" certification for its latest Vancouver condominium project. Its condominiums are priced at starter-to-average prices. The company has consciously decided to not pursue business in the highly competitive Toronto market.

CHEI has yet to receive interim financial statements for CDI. CDI's January 31, 2018 year-end financials, with after-tax earnings of $4.6 million, will be signed off by their auditor in about three weeks' time. CDI's after-tax earnings for the year ending January 31, 2019 are estimated to increase and be in the range of $4.8 to $5.1 million on revenues of about $70 million.

CHEI met with CDI's three biggest suppliers in structural steel, foundations, and finishing. While all three spoke positively about CDI, one supplier asked if CDI would still require the "extra payments" if they were purchased by CHEI.

CDI typically completes three or four condominium construction projects annually that range in size from 50 to 200 units and are built on one-half to one acre of land. CDI has eight land units in inventory and is awaiting zoning approval from local governments for three of them. The required paperwork for these three zoning applications was submitted quite late.

CDI has a strong marketing team. In the last six months, CDI has increased its sales inducements, offering customers incentives such as season's tickets to sporting events, large-screen televisions, and even modestly-priced cars. The inducements, which CDI usually obtains at a significant discount, have proven to be quite effective in drawing customers.

APPENDIX IV (continued)
CONDOMINIUM BUILDER – CARTER DEVELOPMENTS INC.

The backlog of units sold and not yet delivered is at an all-time high, although only slightly higher than in the prior two years. Land in inventory, in contrast, is a little lower than in the prior years. There have been a few construction delays on the Connaught project, but management says they still expect it to be nearly on time and within budget. Delays were caused by a variety of problems. Some were within CDI's control, some were not but management is not concerned as most condo projects are completed after expected completion dates.

CDI's current projects are as follows:

Current projects	Construction Start date	Expected completion date	Total units	Units sold
Connaught	August 3, 2017	October 31, 2018	200	2
Haven	November 6, 2017	December 31, 2018	58	27
Pearl Towers	April 1, 2017	May 31, 2018	195	131

APPENDIX V
SELF-STORAGE FACILITY VENTURE INFORMATION

This business was started as a pilot to see if it could provide a new revenue source for CHEI. Three self-storage facilities were constructed and sold. Although the individual storage units are inexpensive to build, the margins are small. More money can be made from the rental side of the business. Issa Chewani and Eva Jones, from HE, believe that CHEI should build, and then operate, several self-storage facilities across Canada, and perhaps the U.S. Due to their simplicity, these facilities are inexpensive to maintain and operate.

The capital investment required, per self-storage facility, is $825,000 for land, building, and land preparation costs, of which 80% will be financed, at an estimated cost of $52,000 per year. Industrial land on the outskirts of town is cheap and easy to find. By not selling, and instead operating the facilities, CHEI's current customers would become its direct competitors, which could affect future facility sales.

Most facilities make additional income by selling moving supplies, and by having attendants help customers to move in or out of their residence. These services can contribute 5 to 6% of rental revenue net of costs. At this point, CHEI is not considering offering these services, as that would require additional staff to be hired at each facility.

Each facility would be 20,500 square feet, of which 18,000 is rentable (190 rentable units). This is 25% larger than most other facilities. An occupancy level of 53% is estimated as break even to cover the fixed costs and loan payments. Jones believes no advertising would be required, believing a 50% occupancy would be easily obtainable in Year 1, and 85% would be achievable thereafter.

At 85% capacity, pre-tax earnings are estimated at $152,000 a year. A positive net present value of approximately $45,000 per self-storage facility is obtainable, based on the projections provided by HE to the accounting group. The projections are based solely on HE's experience and knowledge of the three self-storage facilities built and sold, as no market studies have been done.

HE recommends building 15-20 self-storage facilities next year in each of Montreal, Vancouver, Calgary and Edmonton.

APPENDIX VI
POTENTIAL P3 PROJECT FOR HOMES

Project

Student rental housing (Housing) for university students, designed, financed, constructed, owned, and operated by private party (Developer).

Housing will be built off-campus on land owned by the university. The university will offer Developer a 40-year lease.

The land must be fully developed into Housing. Developer will build 545 units with 1,145 bedrooms.

Developer will construct the Housing with its own funds and will have sole rights to rent out to tenants the building over a period of 40 years at no additional cost. If preferred, an external, non-profit company could be the tenant of the Housing, and Developer could lease the Housing to that company rather than renting directly to the student tenants.

Commencement

January 1, 2019. The Housing must be in service by July 2020, ready for the fall semester.

Student and rents

Rents are set by the university and will be priced at 20% more than comparable rates for on campus, university-owned bedrooms. At full occupancy, the project should provide a margin between 13-17% depending on cost assumptions.

If student demand is insufficient, the university will be obligated to pay an amount equivalent to the shortfall in rent revenue so that break-even is achieved, for each of the first three years of operation.

Bids will be accepted until midnight, June 30, 2018.

APPENDIX D

DAY 1 (CHEI VERSION 1) – MAY 25, 2016
MARKING GUIDE AND SAMPLE CANDIDATE RESPONSE

MARKING GUIDE
CANADA HEAVY ENGINEERING INCORPORATED (CHEI)
VERSION 1

Summative Assessment #1 – Situational Analysis (Update)

For Summative Assessment #1, the candidate must be assessed for reasonableness of attempt:

Yes – The candidate used a reasonable situational analysis when analyzing the major issues facing CHEI.

Unsure – The candidate attempted to use a reasonable situational analysis when analyzing the major issues facing CHEI.

No – The candidate clearly did not use a reasonable situational analysis when analyzing the major issues facing CHEI.

Competencies
2.3.2 Evaluates the entity's internal and external environment and its impact on strategy development.

Enabling:
2.1.1 Defines the scope of the problem.
2.1.2 Collects and verifies relevant information.
2.1.3 Performs appropriate analyses.

Competent candidates should complete a sufficient situational analysis. The candidate should focus on describing the factors that have changed that will affect the decisions to be made (e.g., CHEI's deteriorating financial position). A recap of the mission and vision and relevant KSFs, as well relevant elements of the SWOT, is appropriate. A quantitative analysis is appropriate as part of the first stage of the CPA way (i.e., analysis of the financial results by division, interpretation of ratios, etc.). Candidates should draw upon their situational analysis when analyzing the major issues facing CHEI.

Mission and Vision Points
Candidates may have suggested changes to the mission and vision stated in the Capstone case (Cap 1) as part of their Capstone group work since it did not entirely reflect the direction the company was moving in.

CHEI's vision statement has been in place since 2001 and is as follows:
Our vision is to be the best medium-sized heavy construction and mid-market residential construction and property development firm in Canada.

The company's mission statement, adopted by the board in 2007, is as follows:

Canada Heavy Engineering Inc. maintains high standards in completing all customer projects on time and on budget, and in building high-quality homes for first-time buyers and other customers who want competitively priced residences.

Day 1 linked case (or Day 1 case) – CHEI has the same mission and vision; however, the board has stated that it is open to revising them to fit a new company direction.

Key Objectives

- Cap 1 – stabilize earnings and reduce the fluctuations and pressure to find next projects all the time
- Cap 1 – maintain targets from 2016 (from Cap 1): 16% margin on revenue, pre-tax income of 7% of revenue, and a 15% hurdle rate
- New – increase private sector revenues of CHEI, a board objective
- New – participate in more public-private partnerships (P3s) (maybe – board to decide if this should be included in the mission); one board member suggested CHEI has some expertise that should be reflected in its mission

Candidates are NOT expected to recap all the KSFs and SWOT in detail – they may draw upon these in their Day 1 case analysis to highlight important elements and changes.

Key Success Factors (KSF) for Industry (from Cap 1)
Note: The Day 1 case focuses on the Homes division; therefore, candidates should focus on the Homes division (versus the Heavy Engineering (HE) division).

Homes division:

- Obtaining high-quality land at a reasonable cost
- Developing land at the right time (to take advantage of consumer demand)
- Using cost-effective construction techniques

HE division:

- Good cost estimation and cost control

Note: The Highway 507 purchase was only being contemplated in Cap 1, so no KSF notes.

Strengths Weaknesses Opportunities Threats Analysis (SWOT)—Updated from Cap 1
Note: Again, this should focus on elements that are relevant to the Homes division and Highway 507 (versus the HE division).

Strengths

- Good reputation of Advantaj Homes brand in the industry (mentioned in Cap 1 and Day 1 case)
- Consistent toll volume and maximum tolls collected on Highway 507
- Successful building and selling of three storage facilities, providing necessary experience to build additional storage facilities
- Experience consulting on condo projects, which supports buying Carter Development Inc. (CDI)
- HE division still profitable and achieving targets in Q1 (17.2% margin and 9.2% pre-tax income) (Appendix I)

- Highway 507 division maintenance costs below projections (Cap 1 projected at $6,816,000; based on Q1 2018, maintenance will be $6,576,000) (Appendix I)

Weaknesses
- CHEI – very inconsistent financial results that fluctuate throughout and over the years (since they depend on finding new contracts); no steady stream of income to “steady” out earnings (was an issue in Cap 1; still an issue in Day 1 case)
- CHEI – continuous short-falls versus margin and profitability targets that have been set (was an issue in Cap 1; still an issue in Day 1 case)
- CHEI – cash flow is tighter than ever, with the company drawing $1 million from its line of credit
- Homes division has not purchased land since 2015 and does not have cash to buy any land at this time; low land inventory was an issue in Cap 1 and continues to be an issue
- Homes division continues to have a concern with its aging workforce; concern about large loss of staff in the last two years
- Homes division possibly over-staffed; while Homes employees have dropped by 67 people (36%), the projected sales are less than half of those in 2017
- Homes division profit rapidly declining, and the future is not bright with only two projects in development (Appendix I)
- Homes division backlog of orders is down (Appendix I); lowest demand seen in years (Day 1 case)
- Highway 507 revenue is limited to inflationary increases per agreement (contrary to Nagy’s suggested increase of 10%)
- Highway 507 debt has covenants that need to be respected (from Cap 1: debt-to-equity 3:1 and $80 million in equity); financial results will affect these ratios

Opportunities
- Interest rates are forecasted to remain low, which should stimulate consumer buying of homes and also provide low financing options for CHEI
- The condominium market, on the other hand, seems to be expanding, particularly the Toronto and Vancouver condo markets
- There is also a push by consumers to offer more “green buildings”; therefore, green builders are in demand
- Government budgets are tightening; there is a continuing trend toward using P3s, moving into the not-for-profit sector
- Two Advantaj competitors went bankrupt
- Two large Oshawa employers are reopening their plants, which should have a positive impact on Highway 507 revenue
- Land costs have dropped 10% to 15%

Threats
- House prices are declining, which will affect CHEI’s profitability since prices per unit will likely decline
- New home construction is below forecasted levels in 2017 (only 184,000 versus the forecast of 188,450)
- Young consumers want large homes or condos, not small starter homes, which is what Advantaj specializes in
- Demand for Advantaj homes is at its lowest ever

Quantitative Analysis (based on looking at new and/or comparing new financial statements to Cap 1)

Credit is awarded to candidates who provide a high-level assessment of the divisional financial results (i.e., HE generating results; Homes in difficulty; Hwy 507 not doing well.).

Financial statements are provided for CHEI's divisions' budgets and actuals.

A quantitative analysis of the business reveals the following (based on a review of the financial statements provided in the Day 1 case in Appendix I):

- The company has performed very poorly relative to budget in Quarter 1.
- The company's consolidated financial results are in decline – while 2016 profit was over $28 million, 2017 was a smaller profit ($14 million) and Q1 2018 is a big loss ($24.48 million).
- Only the HE division is reasonably healthy, and it has performed 16% better than budget in the first quarter.
- The revenue and margin in the Homes division is dramatically worse than budget.
- Highway 507 is in trouble. Combined with the Homes division's losses, the company's equity has been significantly eroded.

Ratio analysis is provided for the CHEI consolidated entity to allow candidates to identify a potential liquidity issue (quick ratio draws attention to it).

<u>Covenant:</u>
From Cap 1 – IFC loan: "If CHEI has equity of at least $80 million and total debt-to-equity is no more than 3:1…Intangibles are excluded from the definition of equity."
The financing offer states that failure to maintain the covenants means that the loan is in default and must be repaid immediately.

CHEI is very close to breaching the debt covenants, which could jeopardize the company should IFC call the loan. Management and the board should continue to monitor the status of the covenants closely in the immediate future.

Summative Assessment #2 – Analyzes the major issues

For Summative Assessment #2, the candidate must be assessed for reasonableness of attempt:

Yes – The candidate completed a reasonable assessment of the major issues facing CHEI.

Unsure – The candidate attempted to complete a reasonable assessment of the major issues facing CHEI.

No – The candidate clearly did not complete a reasonable assessment of the major issues facing CHEI.

Competencies
2.3.3 Evaluates strategic alternatives.

Enabling:
2.1.3 Performs appropriate analyses.
2.1.4 Integrates information to investigate each potentially viable solution or conclusion.

This summative assessment is based on Assessment Opportunities #2 to #5.

Assessment Opportunity #2 (Strategic Issue #1 – Whether to keep or sell Highway 507, and if sell, which offer to accept.)

Competent candidates will complete both a qualitative and a quantitative assessment of this alternative. Candidates are expected to demonstrate an understanding of the quantitative information presented in the Day 1 case (financial results for Highway 507); to explain, in a manner that board members will understand, what the qualitative decision factors are; and to draw conclusions and make recommendations based on a combination of the quantitative and qualitative analyses.

Quantitative Analysis of the Highway 507 Decision (keep or sell; assess two offers)

Quantitative analysis – *Assess the financial results to date for Highway 507, as well as the two offers.*

Key tools candidates can use:

<u>Consider "keep" option:</u>
- Forecast – normalize and annualize the Highway 507 results
- Then compare to Cap 1 info (estimates); comment on initial estimates perhaps being too optimistic

Based on the quantitative analysis, gross revenue projected for the year is $39,976,000 ($9,994,000 x 4). This is less than the original estimate (about $50 million per Day 1 case – see note 1).

<u>Consider "sell" option and compare two offers:</u>
- Determine proceeds and amount of debt left to pay by CHEI
- Note that there is never enough cash flow to pay off the loan

Qualitative Analysis of the Decision

Qualitative analysis – *Discuss the pros and cons of keeping and selling, highlighting the risks, and integrate with the situational analysis; compare the two offers' pros and cons.*

<u>Key points from Cap 1 that could be integrated:</u>

- Whether it can be sold (refer back to agreement); Parmalea is a private equity firm, while JJ Ventures is a Canadian public company. Is there any issue with selling to a private equity firm?
- Debt repayment; the highway is collateral for a loan.

Key points from Day 1 case that could be integrated:

Discuss reasons for the lower results (likely done as part of quantitative analysis).

Assess "keep" option:
- Discuss the board members' suggestions:
  1. The idea of increasing prices 10% – not possible since agreement restricts increases to inflation
  2. The potential for steady cash flow – contingent on regaining two lost employers, no further disasters
  3. The possibility of "cutting costs" – how?

Discuss general pros and cons of "sell" option (e.g., removes risks of unknowns in future, but removes the potential steady source of income).

Additional considerations candidates could discuss:

- Cash needs, and which offer generates the cash needed in the short run by CHEI (i.e., consider what is most helpful to CHEI overall)
- Giving away algorithms versus selling the intellectual property separately
- Although selling the highway is a good way of generating cash, it will not be enough cash to pay back the loan

Assessment Opportunity #3 (Strategic Issue #2 – Homes Division performance and CDI acquisition)

Candidates are expected to explore possible courses of action to save the Homes division (the board has indicated it is core to the business). Candidates should evaluate the poor performance of Homes and assess the possibility of acquiring CDI; i.e., consider taking advantage of the demand for green buildings through the acquisition of CDI, which could provide quick access to the condominium market and use their knowledge of green buildings.

Quantitative Analysis of Homes

Quantitative analysis of Homes – *assess Homes' current financial position (using the information provided in the Day 1 case and comparing it to the Cap 1 Homes results).*

Key tools candidates can use:
- Financial statement analysis
- Assessment of need to cut staff – analytics of head count

Candidates should try to gain an understanding of why Homes results are so weak (e.g., head count high, interest costs, SGA%, etc.).

Quantitative Analysis of CDI

Quantitative analysis of CDI – *evaluate value, ownership given up, CHEI's targets.*

Key tools candidates can use:
- Perform estimated valuation* (board members ask if offer is reasonable)
- Calculate the number of shares and percentage ownership that would be given up
- Assess back orders – calculate the number of units sold per day

*Quick calculation for valuation: $4.8 million to $5.1 million in after-tax profit. Using CHEI's 15% hurdle rate, an estimated value for CDI is $32 million to $34 million (therefore, in the range as estimated by the accounting board member Fernandez, who says: "Based on an operational review our accounting staff estimates that CDI is worth between $24 million and $34 million, but I'm not sure if the offer is a reasonable one or if the deal even makes sense for us.").

Qualitative Considerations of Homes

Qualitative analysis of Homes – *HR issue: pros and cons of fit; due diligence (risk areas).*

<u>Key points from Cap 1 that could be integrated:</u>

- Land inventory is low; has not purchased new land in a while (having land is a KSF)
- Employees kept on even when results are poor
- Understand nature of the housing market – has highs and lows that the company needs to ride out, and Homes has always survived the economic swings in the past

<u>Key points from Day 1 that could be integrated:</u>

- Board's discussion; i.e., Homes is core to CHEI's business and all steps should be taken to save it
- One board member raised the possibility of laying off people until the economy recovers; candidates should explore the pros and cons of this option

<u>Additional considerations candidates could discuss:</u>

- Could or should the company change the type of houses it builds? There is an indication that the starter home market is dropping. Young buyers want large homes right away, and there is a movement to buying condominiums instead of starter homes.
- Consider other trends: green building, condo market expanding.

Qualitative Considerations of CDI

Qualitative analysis of CDI – *pros and cons of fit; due diligence (risk areas). Consider the information in the situational analysis (integration) and suggest ways to improve the division's performance. Integrate some of the pros and cons of the options presented in the Day 1 case into the discussion (e.g., acquisition of CDI).*

Key points from Cap 1 that could be integrated:

- The shareholders' agreement will require modification to allow for representation on the board of directors
- Are the first outside shareholders a good fit?
- Consider fit of mission and vision (good in both cases)
- Consider fit with targets (investment target, etc.)

Key points from Day 1 that could be integrated:

- CDI shareholders wants $2 million in dividends (consider impact on cash flow)
- Consider fit with trends (green, condos)
- Consider fit with objectives (steady source of income)

Additional considerations candidates could discuss:

- Consider the pros and cons of the purchase based on information provided in the Day 1 case (risks, opportunities, etc.).
- The "extra payments" may be an ethical issue, so they should be investigated further.
- We need information about the company's backlog of orders. Based on the analysis, the Connaught project is hardly selling and Haven is selling very slowly relative to the Pearl project, so we need to ask why. (Why do they start building before they have sold 50% or more of the condos?)
- Consider operational and control issues at CDI (based on information presented in the Day 1 case, Appendix IV; number of CHEI shares outstanding is given in Appendix II).
- Suggest some due diligence procedures.

Assessment Opportunity #4 (Strategic Issue #3 – HE self-storage business)

Candidates are expected to assess the strategic fit of pursuing the storage unit business – either to continue to build, expand into storage facility rental, or get out now that the pilot project is completed.

Quantitative analysis – *interpret NPV.*

Qualitative analysis – *using information in situational analysis, consider the strategic fit; consider decision factors related to business risk.*
Recognize that this issue is likely of lower priority to CHEI relative to the other issues (due to small dollar contribution).
Make a recommendation that is consistent with analysis.

Quantitative Analysis

Interpret NPV, and consider the amount that needs to be borrowed and the cost of borrowing. Recognize that margins are small, although positive.

Qualitative Considerations

Key points from Cap 1 that could be integrated:

- Consider fit with mission and vision (not a great fit)

Key points from Day 1 that could be integrated:

- Consider fit with trends (synergies with condo market)
- Increases private sector revenues of CHEI, a board objective
- Has little experience in running facilities (versus building)
- May help create more consistent financial results for CHEI, an objective of the company

Additional considerations candidates could discuss:

- Pros and cons based on the information presented in the Day 1 case (Appendix V)
- HE will be competing with its current customers, who buy the units built by CHEI
- CHEI has little cash to invest and the timing is bad for a large expansion, with the weak economy affecting CHEI
- May question why this trial was done in HE, not Homes, when the trial began

Assessment Opportunity #5 (Strategic Issue #4 – Potential P3 (building a university residence))

Candidates are expected to assess the strategic fit of the P3 proposal. Candidates are expected to explore possible courses of action with respect to the P3. Since there is little detail provided and candidates are only asked if CHEI should pursue it further, this analysis should rank lower than the previous discussions.

Quantitative Analysis

Quantitative analysis – *assess the proposal (cannot do it without the operating costs, this essential component is missing).*

None – not enough information is provided.

Qualitative Considerations

Qualitative analysis – *fit with mission and vision, objectives, targets, etc.*

Key points from Cap 1 that could be integrated:

- Fit with mission and vision (may fit since form of construction)
- Fit with targets (not enough information to assess; recommend obtaining more info)

Key points from Day 1 that could be integrated:

- One board member suggests pursuing more P3s; CHEI has some experience (good and bad) with P3s
- P3s are becoming more common
- CHEI has little experience in this type of construction
- P3s increase private sector revenues of CHEI, a board objective
- May help create more consistent financial results for CHEI, an objective of the company

Additional considerations candidates could discuss:

- Project starts in 2019 so does not help meet immediate cash needs.
- The board member also thinks CHEI should change the mission to include "the pursuit of profitable P3s." Candidates should discuss this idea.
- There is a question of whether the company is actually good at P3s (i.e., the company did not identify all of the risks regarding Highway 507 or look at the cash flow).

Summative Assessment #3 (Conclude and Advise)

For Summative Assessment #3, the candidate must be assessed for reasonableness of attempt:

Yes – The candidate provided reasonable conclusions for each major issue.

Unsure – The candidate attempted to provide reasonable conclusions for each major issue.

No – The candidate clearly did not provide reasonable conclusions for each major issue.

Competencies
Enabling 2.1.4 Integrates information to investigate each potentially viable solution or conclusion.
Enabling 2.1.5 Recommends and justifies a solution or conclusion based on an integrative view of information for the situation.

Competent candidates will complete a logical conclusion that is consistent with their analysis.

The candidate completes a logical conclusion that integrates the analysis for all major issues (Highway 507, Homes division performance, CDI acquisition). Note: HE self-storage business and the potential P3 are considered minor issues.

Ranking of the issues is important (there are major and minor issues in this particular Day 1 case).

The recommendation should be consistent with the analysis performed.

As well, an overall conclusion should be presented to provide a sense of completion to the report (a wrapping-up and prioritization of the recommendations).

Candidates should consider key decision factors: CHEI is looking for a stable source of income; cash flows are tight, the debt covenant; fit with mission and vision, objectives, and targets.

The recommendations should consider the key concerns of the shareholders (e.g., Homes is core to the business and should be saved; the financial position and cash are deteriorating) and show an understanding of the nature of the construction business (i.e., it has peaks and valleys).

The response should display good professional judgment. Suggesting that further information is required is acceptable as long as it is justified and consistent with the analysis.

Summative Assessment #4 (Communication Hurdle)

For Summative Assessment #4, the candidate must be assessed for reasonableness of attempt:

Yes – The candidate adequately communicated his or her response.

No – The candidate clearly did not adequately communicate his or her response.

Insufficient communication in a candidate's response generally includes some of the following:

- The reader needs to re-read sections several times to gain an understanding.
- It is not clear what point the candidate is trying to make
- The quantitative analysis does not make sense because of a lack of labelling or illogical ordering.
- There is an offensive amount of spelling and grammatical errors.
- The language used is unprofessional.

Summative Assessment #5 (Overall Assessment)

For Summative Assessment #5, the candidate must be assessed in one of the following, based on their overall performance:

Clear Pass – Overall, the candidate provided an adequate response clearly meeting the minimum standards for each of the summative assessments.

Marginal Pass – Overall, the candidate provided an adequate response, with some errors or areas of omission, but including the underlying key concepts.

Marginal Fail – Overall, the candidate provided an attempt at a response, with several errors or an incomplete analysis.

Clear Fail – Overall, the candidate did not provide an adequate response because the response was deficiency in multiple areas.

To be assessed a Pass, candidates are expected to perform adequately in all the summative assessments and demonstrate that, overall, they addressed the issues presented by the Board.

Markers are asked to consider the following in making their overall assessment:

1. Did the candidate step back and see the bigger picture, and then address the broader issues identified?
2. Did the candidate prioritize the issues by discussing the major and minor issues in appropriate depth?
3. Did the candidate use both quantitative and qualitative information to support their discussions and conclusions?
4. Did the candidate use the appropriate tools to perform quantitative analysis?
5. Did the candidate use sufficient case facts (Day 1case and Capstone 1 case) about the external and internal environment to support their discussions?
6. Did the candidate communicate their ideas clearly, integrating and synthesizing the information?

SAMPLE RESPONSE- CHEI VERSION 1

Below is an actual passing candidate response.

Memo
From: CPA
To: Board of CHEI
Re: Issues

Situational analysis

CHEI's profitability has been decreasing over the recent years and the company is looking for options to bounce back. CHEI's Highway 507 project has been having various issues causing the profitability to be weaker than expected. We need to assess whether the company should continue to operate the highway or sell it to a third party. CHEI has received 2 preliminary offers for the highway so the offers also need to be assessed to make a recommendation on which offer the company should accept if it decides to sell the highway.

CHEI has currently has an opportunity to purchase Carter Development Inc which is a company that builds condominiums. I will provide my thoughts on the offer and make a recommendation whether the company should purchase CDI.

Also, the board is wondering whether the company should continue to build and sell self storage facilities. Alternatively the company can operate these facilities so the 2 options need to be analyzed to determine the appropriate course of action.

There is also a new P3 project available for CHEI. This option should be analyzed to determine whether it's worth to pursue.

As CHEI cannot take on CDI, the self-storage facilities and the P3 project at the same time, I will prioritize the options for CHEI after my assessment of each option.

The Board is also concerned with the financial trend of the Homes division and wants to know if it's worth saving. The division's recent financial performance and other key statistics will need to be closely reviewed to determine the appropriate course of action for the division

Due to the recent financial performance, CHEI is considering reducing its workforce. This situation along with the potential impact of reduced workforce on CHEI should be analyzed.

Finally, the company's current mission and vision need to be reviewed and updated if a change is necessary to reflect the new strategies.

Financial Analysis

-The revenues for both divisions have decreased over the year. This is primarily due to the unexpected external issues faced by the Highway 507 project, the weak Canadian home construction market and the declining house prices.

-The gross margins for both divisions have been also decreasing. This signals that the divisions are having a problem managing the costs.
-Sales, general and administration expenses have reduced significantly for both divisions. This is due to the aging workforce and the layoffs.
-The company's debt to equity has been increasing over the years. This is due to the commencement of the Highway 507 project in 2017 and the line of credit that CHEI has drawn recently.
-While the Days payable has decreased over the year, its Days receivable has increased notably over the year, implying that CHEI is having collectibility issues.
-CHEI's current ratio has also decreased over the year as the company experiences the liquidity problem during this difficult time.

Highway 507
<u>Sell or keep?</u>

Pros for "Sell"
-The loan and the related loan payments pertaining to the Highway 507 projects appear to be significant. Selling the highway will free CHEI from the loan burden and allow the company to pursue other options with the available liquidity.
-There have been several environmental disasters, incurring unexpected costs. This may happen again in near future.
-The recent economic slowdown caused plants around the highway to close, reducing the toll fee revenues for CHEI.

Pros for "Keep"
-The toll charges are as expected based on the actual traffic volumes. This will help the company to budget effectively as the company has reliable toll charge projections.
-Apart from the noted events, the highway's volumes have been consistent across the seasons and the Oshawa plant is reopening soon, expecting to increase the traffic volumes.
-This is still a P3 project which is a low-risk for CHEI.
-The company can possibly increase the toll fees a bit. This will however require a further sensitivity analysis as the impact could be negative.

Recommendation
Based on my analysis, I recommend CHEI to sell the highway and utilize the funding to pursue other opportunities.

2 Offers

Quantitative analysis

JJ Ventures Inc.
- $265 million, of which 80% would be payable immediately. The remaining balance would be repayable in five years with interest of 4.1%. The offer amount will almost cover the company's principal loan balance associated with the highway. The five year time frame for the remaining portion does not appear to be bad. This will indeed help CHEI mitigating its current liquidity issue but there is still a risk of the company failing to make payments. A further analysis should be undertaken to assess their profitability and prior history. Also, the company should analyze whether the 4.1% interest is a reasonable rate in this case.

Parmalea Equity Group Inc.
-The offer is for $250 million, and Parmalea is willing to take over 50% of CHEI's Highway 507 related debt. There is no specified timeline for the repayment from Parmalea. CHEI should ask for more specific timeline of the repayment plan so that a more accurate analysis can be performed. It would be ideal to receive the $250 million right away considering the time value of money.

Qualitative analysis

JJ Ventures Inc.
There are several requirements for CHEI to be responsible.
1. First of all, CHEI has to cover any shortfall of calendar-year toll revenue below net $35 million for five years post purchase. CHEI can meet this requirement as the Q1 sales from the Highway 507 project was about $10 million. For the whole year, it is expected exceed the $35 million threshold.
2. CHEI should cover any maintenance and repairs in excess of $30 million per calendar year, for five years post- purchase. This is not expected to happen based on the 2018 Q1 results.
3. CHEI should cover any highway damage due to acts of God, for 3 year post-purchase. Based on what has happened with the highway in recent years, the highway damage risk is moderate.
4. CHEI will be responsible for any legal actions related to highway operations, for 6 months post-purchase. There has never been a legal claim filed against CHEI so far, therefore this condition does not appear to be detrimental.

In addition to above requirements, JJ Ventures Inc is a public company with investments in may businesses so there is a low risk of the company defaulting on its loan repayments.

Parmaela Equity Group Inc.
1. The offer is conditional upon a complete engineering survey and financial review. Therefore, there is a risk of CHEI failing the review. A further analysis should be undertaken to quantify the possibility of CHEI failing the review.
2. CHEI must provide its highway maintenance algorithms free of charge. This significant increases the risk for CHEI as Parmalea can further sell or use the algorithms, impacting CHEI's future cash flows.
3. Parmalea has a significant financial backing, giving a reliable of assurance to CHEI regarding the collectibility of the offer amount.

Recommendation
Based on my analysis, I recommend CHEI to sell the highway, as there is still a risk of economic downturn and environmental risk in near future and the company is in dire need of cash at this point. As for which offer to accept, I recommend CHEI to take the JJ Ventures Inc.'s offer. Although there are several requirements in their offer, these conditions are only valid for 5 years max post purchase, and the likelihood of some of the events happening is not high.

Carter Development Inc

Quantitative analysis
While CDI prefers to receive cash, it will also consider a 100% share offer. They are expecting a minimum of $2 million in dividends each year. CDI's expected after-tax earnings for the year are $4.6 million, and they are projected to grow at a steady pace. Since the expected after tax earnings exceed the minimum annual dividends requested by CDI's shareholders, this appears to be a profitable option for CHEI. However, as their 2018 after-tax earnings are based on un-audited statements, I recommend the company to wait until they receive the audited statements to verify the after-tax earnings. Also, CHEI should ask for an exact cash offer amount from CDI such that it can evaluate whether share offer would be less costly for the company.

Furthermore, there is are risks associated with the share valuation As CHEI is not a publicly-traded company, its share valuation will involve a lot of judgments. I expect the discounted future cash flow approach would be undertaken in valuating CHEI's shares. This may not be favorable for CHEI given that CHEI is experiencing difficulties generating profits. I recommend CHEI to come up with a reasonable valuation method that will best represent CHEI's upcoming plans and the expected profitability from those projects.

Qualitative analysis

Pros:

1. CDI has been a leader in "green building" for over a decade. Since the recent trend towards green living and green building is starting to gain momentum, this appears to be a great opportunity for CHEI to expand in the green building market
2. CDI has won several awards for its condominium projects, demonstrating their reliability and quality work.
3. CDI has a strong marketing team that offers various inducements to attract customers. This strategy has been proven to be quite effective so it is expected that the expertise of the marketing team will help growing their sales.
4. As the interest rate is expected to remain low, there is an optimism with regards to the growth of the housing and condo market.
5. This option is aligned with the company's vision and mission for building high quality residential properties.

Cons:

1. CDI's condos are priced at start-to-average prices, but it appears that young professionals no longer want to purchase start homes. The larger homes or condo are being preferred in Toronto and Vancouver, so it is questionable whether CDI's profitability will sustain over the years.
2. There were issues within CDI's control that caused some construction delays on the Connaught project. A weak control in their operation means that CDI is not operating efficiently and effectively, which could further impact the company's future profitability.
3. It is known that CDI sometimes require extra payments from its suppliers Although no details are available, this could mean that CDI has issues with its business ethics. Requiring an unjustified payment from suppliers could later damage CHEI's reputation if it acquires CDI.
4. 3 of the zoning applications were submitted quite late. This questions CDI's efficiency as late submission will delay its construction projects and incur unnecessary carrying costs on the lands.
5. CHEI's ownership will be diluted if CDI wants to proceed with the share offer option. Also, CHEI will have to offer a seat on the board to be held by one of the Carter family members. Having been a family owned business for a long time, CHEI may find this detrimental as they the family will lose some power in giving direction to the company.

Recommendation

While this option appears to be aligned with the company's current vision and mission, there are a number of risks that can have a significant impact on the company's going concern status. Also, the share offer is expected to greatly dilute the CHEI's ownership. Given the difficulty in acquiring further financing and its current cash position, the share offer would be the most realistic option for CHEI if it decides to pursue this opportunity.

Self-storage facility

Quantitative analysis

The projected NPV is $45,000 per facility, and $2.28 million for 15 facilities. A positive NPV of $2.28 million means that this project (building 15 self-storages facilities next year) is favorable. Considering the initial capital investment required is $825,000 for land, building and land preparation costs, this project is expected to be profitable for CHEI.

However, there are several risks in the assumptions being undertaken for this calculation. The occupancy and earnings projections are based solely on HE's experience and knowledge and no market studies have been done. If the actual occupancy turn out to be lower, than CHEI's earning will take a direct hit. I recommend the company to perform a market study to find out the reasonable estimates that the company can incorporate in its analysis. Also, the additional revenue expected to be generated from additional services should be analyzed as well. A further sensitivity analysis should be performed to determine whether the additional 5-6% net revenue is achievable.

Financing

80% of the initial capital investment will be financed at an estimated cost of $52,000 per year. The interest does not appear to be significant. The remaining $1.65M would have to be financed through the company's line of credit. Based on the assumptions, the company is expected to recover its full initial investment soon so drawing more line of credit would not be a big issue

Qualitative analysis

Pros:

1. Due to their simplicity, the self-storage facilities are inexpensive to maintain and operate, which would be ideal for CHEI as the company is having issues with its profitability.
2. Industrial land on the outskirts of town is cheap and easy to find, eliminating the company's need to find the ideal land.
3. There is a potential opportunity for CHEI to offer other services such as selling moving supplies and helping customers move in or out of their residence. These services are expected to contribute 5% to 6% of rental revenue net of costs. As CHEI establishes itself in the market, the company can further offer these services which will improve the company's profitability.

Cons:

1. If CHEI purses this option, the company's current customers would become its direct competitors. This will likely impact CHEI's future facility sales.
2. CHEI has no experience in operating the self-storage which significantly increases the risk associated with the future operation.
3. This option is not aligned with CHEI's current vision and mission as this option involves a

continuous operation rather than a construction.

Recommendation
This opportunity is expected to provide a new revenue stream for CHEI but there are some risks CHEI would face as the company has never been in this business. Based on my analysis, I expect this option to be profitable for CHEI.

Potential P3 Project for Homes

Quantitative analysis
The project is expected to provide a margin between 13-17% depending on cost assumptions. Based solely on this margin projection, this opportunity is favorable for CHEI. As this projection is based on cost assumptions, the company will need to perform a sensitivity analysis to further identify risks and better quantify reliable cost estimates.

There is no information available on the expected construction costs of the housing. Even if the margin is favorable, CHEI need to ensure that the operating margin for the 40 year term is sufficient to recover the initial investment cost. As CHEI has the discretion in designing and constructing the housing, the company should first assess how much it is willing to spend for this project. Once that is determined, CHEI can find out whether it can recover its initial investment and if it can, CHEI should further calculate how long it would take to recover the initial investment.

Financing
There is no financing available for this option. CHEI will have to construct the housing with its own funds. Considering CHEI's current situation, the company does not have much options when it comes to financing. Selling the Highway 507 would provide sufficient liquidity to take on this opportunity. Alternatively, CHEI could try to acquire financing from its current banks or other banks.

Qualitative analysis
Pros:
1. In cases of insufficient student demand, the university will be obligated to pay an amount equivalent to the shortfall in rent revenue allowing the company to break even at the very least. This eliminated the risk of the company incurring loss on its rental business.

2. As it is a P3 project, a successful result will improve the company's reputation with regards to P3 projects, which will further help the company win more P3 projects in the future.

3. There is an option to lease the housing to an external non-profit company that would rent directly to the student tenants. This will reduce the risk of low margins arising from a potential

insufficient student demand.

Cons:
1. CHEI can only own and operate the housing for 40 years as this is when the lease ends. There will still likely be a remaining salvage value on this housing and CHEI will not be entitled to it.

2. The housing must be in service by July 2020, which gives less than 2 year for CHEI to finish this project. There is a risk of failing to complete the project by the specified deadline as the company's workforce has been reducing and the management's time also need to be spent in other projects and areas.

3. This option is not aligned with the company's current vision and mission as CHEI would also have to be operating the housing after the construction.

Recommendation

While the on-going risks are low for this option, we do not have enough information to confidently evaluate whether this option would be profitable or not. CHEI should assess how much it can spend on constructing the housing and whether it can meet the required completion deadline before proceeding this option.

Prioritization of the 3 options

The first option I recommend to CHEI is the self-storage facility opportunity. CHEI would not have difficulty in financing this option as the projection is expected to be quite favorable for CHEI. The fact that CHEI has never been in this business and that the company would be operating in multiple locations are potential risks, but these can be mitigated by performing extensive market research in advance.

The next option I recommend is the CDI option. CHEI can offer its shares for the purchases of CDI as CHEI is experiencing cash issue. While this will dilute the company's ownership, this projected earning from acquisition of CDI appear to be quite profitable. Given the interest rates are forecast to remain low, I expect there will be an increasing demand for condos.

The university housing project is the last option I would recommend. Even though it appears to be a very stable P3 project, there are big uncertainties with regards to the initial cost and financing of this project. I recommend the company to further perform research to quantify how much it is willing to spend for its construction. Once that information is available, we can calculate whether this option would be favorable for CHEI.

Financial performance of Homes and the division's workforce

The board is concerned with the financial trend of the Homes division and the company appears to believe letting even more employees go would improve the situation.

Based on the Homes division's statistics, the primarily reason for the division's deteriorating financial performance does not appears to be due to the number of employees, but rather the significant decline in revenues. The division's sales expenses have been reducing significantly over the year as the company hopes to mitigate this situation. However, the division's gross profit has also been declining steadily over the years.

If CHEI decides to let more people go, it will be required to pay severance for these people, and the average expected severance pay is expected to be $100,000 per employee based on CHEI's severance policy. If the company does lay off 60% of the division's workforce as Sisi suggested, that means that about 73 people will be laid off (121*60%). The severance would amount to $7.3 million which is significant to CHEI especially considering the company's financial situation.

Furthermore, laying off employee will put a negative morale on the remaining employees as they would be worried about being laid off in near future as well. The company's reputation will also be damaged as they keep lay off its employees, which could further impact the company's going concern status.

Therefore I recommend CHEI to allow the Homes division to manage the storage facility opportunity and not lay off any of the division's employees as they have expertise which can be utilized to increase the future profits of the company. Once the Homes division is back on track, the division can pursue other opportunities to keep up the profits.

Updated Vision and Mission

The company's current vision of being the best medium-sized heavy construction and mid-market residential construction and property development firm and its mission of maintaining high standards do not appear to best reflect the current external environment and the company's current situation anymore. CHEI is not only considering heavy engineering and residential property development opportunity, but it is also considering other opportunities where it can utilize its resources and maximize profits

If CHEI decides to follow my advice with regards to the 3 potential opportunities, CHEI should consider revising its vision and mission to better represent what the company strives to be and how it will meet its goals.

I recommend the board to revise the company's vision to: To become the best mid-market construction and facility management firm in Canada.

As for the company's mission, I recommend it to be revised to: "Offering environmentally friendly and affordable housing and storage spaces to Canadians"

Having the company's vision and mission updated will allow the company to better market itself to its potential customers and it will also improve the interdepartmental relationships across the company through a well-defined and shared goal.

EXCEL spreadsheet:

Self storage facilities

Initial investment	-825000	
NPV per facility	152000	Assuming 85% occupancy
# of facilities	15	
Total NPV	2280000	

APPENDIX E

THE COMMON FINAL EXAMINATION
Day 1 CHEI VERSION 2 BOOKLET – SEPTEMBER 21, 2016

Common Final Examination
September 21, 2016 – Day 1 CHEI Version 2

Case **(Suggested time 240 minutes)**

It is now April 23, 2018. There have been no changes in the Board of Directors or shareholdings of CHEI since 2016. CHEI's most recent financial information is provided in Appendix I. Head office costs have been constant since 2015. The company's results, by geography, have been consistent with 2015. The Awani Dam project is progressing on time and on budget. Of the other major opportunities from a year ago, the following occurred: the company did not bid on the Klang Bridge project; it bid low and did not get Highway 507; and it did not buy any major pieces of land in the greater Toronto area. The Heavy Engineering (HE) division has just been awarded its first significant tunnel contract in Alberta.

Canadian and worldwide economies are steady even though the oil and gas sector has been hurt by lower oil prices. Most economic forecasts point to all economies possibly looking stronger in the next one to three years. At the end of the first quarter, the company is on track to meet its consolidated 2018 budget of $615 million in revenues, and pre-tax income of $43 million.

In the heavy engineering industry, companies are under pressure to use staff more efficiently in order to reduce costs, and to use more technology, including engineering tools and software. Two smaller engineering consulting competitors have entered the engineering software market. One of them actually sold off their consulting business in order to focus on software that they had developed. Another industry development is that the fifth- and sixth-largest Canadian heavy engineering companies have recently made purchases of similar European and Asian companies. Acquisitions seem to be a new trend in the industry.

Board meeting – April 23, 2018

Penelope Navire: Since we will be discussing several new initiatives in this meeting, I have invited CPA, from our team of external consultants, to join us.

As you know, all the shareholders want to realize the value of their shares, and most believe that now might be the right time to sell. Others think we should wait a bit longer. I want us to consider the possibility of selling. Sisi Nagy and I have had preliminary discussions with two potential acquirers (Appendix II). We have not had any serious pricing discussions, although both want to pay only with their company shares. That means the shareholders of CHEI will exchange their shares for X number of shares of the acquiring company. As part of the agreement, CHEI shareholders would not be permitted to sell their shares in the acquiring company until one year after the acquisition. Both of the acquiring companies have indicated that they would provide an additional incentive through a cash earnout clause, which means the selling shareholders would get extra proceeds, based on the future financial results of CHEI. The clause might work something like this: the sellers receive 5% of CHEI's net income for at least one year after the acquisition. Both potential acquiring companies have acquisition criteria that require CHEI to have reached $650 million in revenues, and $50 million in pre-tax profits, in order for the acquisition to happen. We may be required to present our first-quarter 2018 financials to them soon.

We are not yet at the point of needing a detailed valuation of CHEI for sale purposes. CPA, can you help us determine which of the acquiring companies is presenting the best offer? Because of the way the deal may be structured, we want a deal that allows our shares to maintain or increase in value in the year post-acquisition. Are there any other decision factors we should be considering?

Okay, on to other business, all of which will have an important bearing on finalizing the sale of the company.

Sisi Nagy: What is the status of HE's bridge design software that was mentioned at the last board meeting?

James Johnson: We have gathered further information (Appendix III). CPA, your opinion on the strategic fit of the options presented would be helpful. We will have to decide which of these options is most financially beneficial. CPA, can you help us assess the options using the preliminary analysis we received?

Frank Cessnick: We are a construction company, not a software company. I don't think we should touch this project.

John Higman: On the contrary, if we can make money and help build consistency into our income levels, we should pursue it. I think the entire board would agree that achieving a steady income is critical.

Penelope Navire: Agreed. Let's see what CPA says and then revisit the matter. I wouldn't want to give up a competitive advantage by sharing something we can use ourselves!

Kathy Fernandez: We need to deal with the performance of the Homes division (Homes), particularly if we want to sell.

James Johnson: I think we all agree that Homes has not been performing well. Maybe the Homes district heating proposal will help (Appendix IV). CPA, can you help us assess the risks and opportunities related to the proposal to help us make a decision?

Another key decision facing the board is whether to expand our position in Europe through the purchase of the heavy engineering business, EuroBati (EB) (Appendix V).

Zoe Murphy: I'm not sure if that is a good idea. The European economies are generally stagnant and our French subsidiary has had issues.

Frederick Dale: The question is whether EB is a good prospect and fit with CHEI.

James Johnson: We will be doing a business valuation as part of the next steps, but based on our preliminary review, our offer would likely be around $200 million cash. If this year's dividend is not paid by CHEI, half of our current cash could be used for the purchase. We would have to finance the rest.

Frederick Dale: Ideally, we want to see synergies in the options that we choose to go forward with. CPA, can you look at the financial statements of EB and discuss what might be the specific business risks related to the purchase? Can you advise us as to which areas should be looked at more closely within EB before we proceed further? Please focus on the risks specific to our business.

Frank Cessnik: CPA, please also comment on our financing plans for the acquisition.

Penelope Navire: Thank you all for your valuable comments. CPA will review the information we have gathered and provide a high-level assessment of all the issues. We need to know if there are any significant factors we have failed to consider, and identify any additional information that is critical for us to obtain before making our decisions. I expect CPA to consider the strategic and operational elements related to each decision, and where there is sufficient information, to suggest a course of action.

CPA, please highlight the changes since our last situational analysis. Regardless of whether we sell, the decisions facing us are interrelated, and we want our financial results to be strong. For now, use the financial projections and other financial information that our staff have prepared. A more detailed analysis will be completed later.

Let's meet again in 10 days' time to review CPA's analyses and recommendations, and make some decisions.

INDEX TO APPENDICES

APPENDIX I
FINANCIAL INFORMATION

Canada Heavy Engineering Inc.
Consolidated Income Statement
(in thousands of dollars)

	Q1 2018 (unaudited)	2017 (audited)	2016 (audited)
Revenues	$ 150,901	$ 596,871	$ 574,611
Direct cost of activities	128,101	503,782	493,354
	22,800	93,089	81,257
Expenses			
Sales, general and administration	12,503	49,270	48,773
Interest	589	1,824	1,812
Amortization	351	1,447	1,471
	13,443	52,541	52,056
Income before taxes	9,357	40,548	29,201
Income taxes	(2,526)	(11,102)	(7,902)
Net income	$ 6,831	$ 29,446	$ 21,299

APPENDIX I (continued)
FINANCIAL INFORMATION

Canada Heavy Engineering Inc.
Consolidated Balance Sheet
(in thousands of dollars)

	Mar. 31, 2018 (unaudited)	Dec. 31, 2017 (audited)	Dec. 31, 2016 (audited)
Assets			
Current assets:			
Cash	$ 39,639	$ 30,473	$ 21,546
Accounts receivable	58,039	57,949	56,892
Inventory	46,789	49,758	51,425
Work in progress	29,786	32,458	33,172
Prepaid expenses	397	407	302
	174,650	171,045	163,337
Property, plant, equipment and land (net)	43,234	42,538	41,431
	$ 217,884	$ 213,583	$ 204,768
Liabilities			
Current liabilities:			
Accounts payable and accrued liabilities	$ 50,142	$ 56,458	$ 54,849
Deferred revenue	7,978	8,002	8,759
Land loans	15,746	16,789	17,898
Current portion of mortgages	1,946	902	844
	75,812	82,151	82,350
Land loans	8,705	9,805	8,002
Mortgages payable	11,458	6,549	6,784
	95,975	98,505	97,136
Shareholders' equity			
Common shares	10,105	10,105	10,105
Retained earnings	111,804	104,973	97,527
	121,909	115,078	107,632
	$ 217,884	$ 213,583	$ 204,768

APPENDIX I (continued)
FINANCIAL INFORMATION

Canada Heavy Engineering Inc.
Financial Analysis

	Mar. 31, 2018	Dec. 31, 2017	Dec. 31, 2016
Current ratio	2.30	2.08	1.98
Quick ratio	1.29	1.08	0.95
Long-term debt-to-equity	0.17	0.17	0.14
Total debt-to-equity	0.79	0.86	0.90
Annualized:			
Days receivable (days)	35.10	35.44	36.14
Inventory turnover (days)	28.29	30.43	32.67
Days payable (days)	35.72	40.90	40.58
Net margin	4.53%	4.93%	3.71%
Gross profit margin	15.11%	15.60%	14.14%
Pre-tax margin	6.20%	6.79%	5.08%

APPENDIX I (continued)
FINANCIAL INFORMATION

Canada Heavy Engineering Inc.
Heavy Engineering (HE)
Divisional Income Statement
(in thousands of dollars)

	Q1 2018	2017	2016
Revenues	$ 116,425	$ 462,413	$ 442,489
Direct cost of activities	97,797	385,190	376,558
	18,628	77,223	65,931
Expenses			
Sales, general and administration	8,902	34,999	34,601
Interest	88	147	101
Amortization	161	622	646
	9,151	35,768	35,348
Income before taxes	$ 9,477	$ 41,455	$ 30,583

APPENDIX I (continued)
FINANCIAL INFORMATION

Canada Heavy Engineering Inc.
Homes
Divisional Income Statement
(in thousands of dollars)

	Q1 2018	2017	2016
Revenues	$ 34,476	$ 134,458	$ 132,122
Cost of homes sold	30,305	118,592	116,796
	4,171	15,866	15,326
Expenses			
Sales, general and administration	1,854	7,602	7,402
Interest	477	1,578	1,604
Amortization	89	399	401
	2,420	9,579	9,407
Income before taxes	$ 1,751	$ 6,287	$ 5,919

APPENDIX II
INFORMATION ABOUT POTENTIAL ACQUIRERS

RC Corporation

RC Corporation (RC) is a Canadian company comprised of a conglomerate of industrial companies. These include businesses in chemical, farm, oil-refining, natural-gas cogeneration plant, IT services, and road-building equipment. RC's mission statement is:

> *Drawing on our vast experience, our mission is to acquire and increase the profitability of strong industrial businesses that respond well to the changing needs of their clients and markets, and to sustain those businesses with supportive administrative capabilities.*

Each separate business has its own mission and vision statements.

In the last ten years, RC has completed six major acquisitions. With an objective of creating additional profits, RC is known to aggressively cut costs after acquiring a company. The company prefers short earnout periods, and to have a lower percentage of the total price paid in the earnout.

On April 16, 2018, the Toronto Stock Exchange announced an investigation into "certain accounting irregularities" allegedly committed by RC. The company's press release stated that it is cooperating with the investigation. Trading of the shares was not suspended. Share prices dropped from $45.40 to $40.30 after the announcement. Two of the three market analysts covering the stock are still bullish on it and expect the price to rise in the medium- to long-term, despite the investigation.

DNC Maverick Inc.

DNC Maverick Inc. (DNC) is a direct competitor to CHEI. Over 70% of its revenues are derived in international markets. DNC's mission statement is:

> *DNC Maverick Inc. is Canada's largest and best heavy engineering firm, serving satisfied clients in Canada and abroad, in order to maximize returns to its shareholders.*

The main analyst who covers DNC's stock, although not bullish on its future prospects, was impressed that all the company's growth is internal. The analyst had concerns that over 35% of the company's projects would be bad for the environment. However, DNC is known for its ethical conduct with respect to business practices, has a very strong code of conduct, and has never been accused of offering bribes in any jurisdiction. DNC's CEO, Arthur Smith, clashed in the media with James Johnson on certain business issues when DNC won a contract for which CHEI was also competing.

APPENDIX II (continued)
INFORMATION ABOUT POTENTIAL ACQUIRERS

Information collected

	RC	DNC
Year end	Dec. 31, 2017	Jan. 31, 2018
Share price at year end	$31.50	$31.20
Tax rate	24%	27%
Last fiscal year revenues	$1,402 million	$745 million
Last fiscal year net income	$242 million	$84 million
Last fiscal year earnings per share	$0.62	$0.57
Analyst consensus forecast, earnings per share	$0.64	$0.56
Market capitalization	$12,295 million	$4,598 million
Average daily trading volume	175,424	71,482

APPENDIX III
INFORMATION ABOUT BRIDGE DESIGN SOFTWARE DEVELOPMENT

The HE division has developed sophisticated software to help with certain aspects of bridge design for its own use. However, if it can be perfected, it will have wide applicability in the industry. The very latest programming technology is used for the software coding. A patent application is currently in process. According to the patent lawyer, obtaining a patent is by no means certain.

The software is not operational yet. It is missing some essential features and capabilities for the user interface. Adding those features should make it a viable commercial product. The user interface needs to be completed, at an estimated cost of $696,000.

A recently conducted market survey suggests there are about 4,000 bridge design firms, or departments within engineering companies, that would be interested in using the software. The firm conducting the survey estimated that a 30-35% market penetration is possible over three years. HE's management believe that the lower end of the range is more realistic. Sales would be promoted by the expenditure, late in the first year, of $6.5 million in marketing. Each bridge design firm or engineering department would be charged a one-time licence fee of $16,000, and an annual maintenance fee. The HE division expects to have $2.99 million of annual costs (software maintenance and administration).

Internal staff prepared the following pre-tax net present value analysis, based on the company's 15% project hurdle rate.

Option 1: Operate a new business

In this option, CHEI will fully develop the software and operate the licensing of the software as a separate business.

	Cash flow	PV factor (rounded)	PV	
Remaining development	$ (696,000)	1.00	$ (696,000)	
Marketing costs	(6,500,000)	0.87	(5,652,174)	
Licence sales	6,400,000	2.28	14,592,000	(equal per year)
Annual maintenance	2,304,000	6.67	15,360,000	
Annual costs	(2,990,000)	6.67	(19,933,333)	
NPV			$ 3,670,493	

The staff assumed that the maintenance revenue will be received into perpetuity.

APPENDIX III (continued)
INFORMATION ABOUT BRIDGE DESIGN SOFTWARE DEVELOPMENT

Option 2: Jones Engineering Software Solutions USA Inc.

The product manager has also considered using a third-party: after the remaining development is complete, Jones Engineering Software Solutions USA Inc. would be granted the right to license the intellectual property, and CHEI (HE division) would earn, in return, either:

1. $3.2 million lump sum,
2. $2.0 million up front and an 8% royalty on licence sales, nothing on maintenance, or
3. An 18% royalty on licence sales, nothing on maintenance

Option 2a)	Cash flow	PV factor (rounded)	PV
Remaining development	$ (696,000)	1.00	$ (696,000)
Sell after remaining development	3,200,000	0.87	2,782,609
NPV			$ 2,086,609

Option 2b)	Cash flow	PV factor (rounded)	PV
Remaining development	$ (696,000)	1.00	$ (696,000)
Upfront payment	2,000,000	1.00	2,000,000
Royalty on licence sales — 8%	512,000	2.28	1,167,360
NPV			$ 2,471,360

Option 2c)	Cash flow	PV factor (rounded)	PV
Remaining development	$ (696,000)	1.00	$ (696,000)
Royalty on licence sales — 18%	1,152,000	2.28	2,626,560
NPV			$ 1,930,560

Option 3: Sell the software as is

In this option, there will be no further development and the software will be sold, as is, to an interested party for a present value of $1.5 million.

APPENDIX IV
INFORMATION ABOUT DISTRICT HEAT PROPOSAL

The Valois, a 320 single-home construction project, is being planned in the Homes division. It will be about one-third complete at year end. Francois Valve, a technician, has come up with the idea of building a “district heat” plant to go with this and every future development project.

The HE division would actually do the construction of the heating plant.

Residential district heating is found in Europe, but rarely in North America. District heating works as follows: a small, natural-gas-powered central heating plant, owned and operated by CHEI, would deliver hot water and heat (via hot water) through underground pipes to every home in the project. This process is more energy-efficient than each home having its own heat source.

In order to be successful in Canada, we will need to increase the efficiency of the central heating plant and find ways to further reduce heat loss during delivery of the hot water heating to the homes.

The VP Sales believes that having this heating system in place will make the company’s homes unique and more attractive to buyers. Currently, all homes built by Homes use natural gas for heat and hot water, and their average annual natural gas bills are in the range of $1,600.

The preliminary plan would be to charge each homeowner a fixed amount of $1,100 per year plus the average cost of the water purchased from the city, which is $125. Another pricing option would be to charge based on consumption, which would vary month to month, and charge our actual cost of supply plus a markup of 20% to 25%.

The costs of the project have been estimated. They include $45,000 for land and $398,000 for other property, plant and equipment, as well as $186,000 for annual operating costs. Revenues are estimated to be $1,225 per home. Internal accounting staff prepared the following projections:

Total revenue	$392,000	(320 homes x $1,225)
Operating costs	186,000	
Cash flow	206,000	
Less amortization (over 25 years, excludes land)	15,920	
Net income	190,080	
Average cost per home, including amortization	$631	

APPENDIX V
INFORMATION ABOUT EUROBATI ACQUISITION

EuroBati (EB) is a division of a French diversified industrial conglomerate, Thaneuf SA (TS). TS has total sales of over $2 billion, and follows international financial reporting standards (IFRS). EB builds roads, bridges and some complex tunnels, primarily in the European Union countries.

TS will soon be publishing an asking price. It does not appear to have any other interested purchasers at this time. TS has offered to finance 30% of the purchase price with a three-year, interest-free vendor take-back loan, and an introduction to a French government-owned bank for the remaining cash.

CHEI's own bank is also willing to finance the acquisition, with a 3% loan, on the condition that a total debt-to-equity ratio of 2:1 is not exceeded.

The key findings noted on a visit to EB by Issa Chewani and three colleagues include the following:

- EB is winning contracts in Africa and is seeking to obtain more there. The division has world-class expertise in tunnelling.

- All non-management EB employees are unionized, and are represented by 17 different unions. EB has not had any strikes in the last 15 years. As is common in France, employees average six weeks of vacation per year. Morale appears to be good.

- EB has a very strong business development group, which sometimes generates more work than the division can handle. However, projects are generally on schedule and on budget.

- According to the unaudited internal financial statements, prepared under IFRS, the profits of EB have been flat for the last four years. Financial statements are presented below. The Canadian dollar-to-euro exchange rates for calendar 2017 and for the year end were close to 1.42 dollars Canadian for one euro.

APPENDIX V (continued)
INFORMATION ABOUT EUROBATI ACQUISITION

EuroBati Division
Statement of Profit or Loss
For the years ended December 31
(in thousands of CDN dollars)

	2017		2016	
Revenues	$ 133,455	100.0%	$ 134,222	100.0%
Cost of sales	105,696	79.2%	106,049	79.0%
	27,759	20.8%	28,173	21.0%
Expenses				
Administrative and selling	7,456	5.6%	7,551	5.6%
Amortization	1,455	1.1%	1,447	1.1%
	8,911	6.7%	8,998	6.7%
Profit (or loss) before taxes	$ 18,848	14.1%	$ 19,175	14.3%

APPENDIX V (continued)
INFORMATION ABOUT EUROBATI ACQUISITION

EuroBati Division
Statement of Financial Position
As at December 31
(in thousands of CDN dollars)

	2017		2016	
Assets				
Current assets:				
Trade receivables	$ 18,796	12.9%	$ 19,175	17.0%
Unbilled revenue	24,518	16.8%	17,458	15.5%
Work in progress	19,789	13.5%	19,425	17.2%
Investment in equity	397	0.3%	347	0.3%
	63,500	43.5%	56,405	50.0%
Due from affiliate	75,668	51.8%	48,434	43.0%
Property, plant and equipment (net)	6,916	4.7%	7,889	7.0%
	$ 146,084	100.0%	$ 112,728	100.0%
Liabilities				
Current liabilities:				
Accounts payable	$ 16,953	11.6%	$ 15,485	13.7%
Provisions	16,478	11.3%	8,009	7.1%
Advance billings	21,458	14.7%	16,789	14.9%
Pension indemnities	804	0.5%	902	0.8%
	55,693	38.1%	41,185	36.5%
Net assets of the division	90,391	61.9%	71,543	63.5%
	$ 146,084	100.0%	$ 112,728	100.0%

APPENDIX V (continued)
INFORMATION ABOUT EUROBATI ACQUISITION

	Dec. 31, 2017	Dec. 31, 2016
Current ratio	1.1	1.4
Quick ratio	0.3	0.5
Total debt-to-equity	0.6	0.6
Total debt-to-assets	0.4	0.4
Asset turnover	7.1	7.0
Days receivable (in days)	51.4	52.1
Days payable (in days)	58.6	53.3

APPENDIX F

DAY 1 (VERSION 2) – September 21, 2016
MARKING GUIDE AND SAMPLE CANDIDATE RESPONSE

MARKING GUIDE
CANADA HEAVY ENGINEERING INCORPORATED (CHEI)
VERSION 2

Summative Assessment #1 – Situational Analysis (Update)

For Summative Assessment #1, the candidate must be assessed for reasonableness of attempt:

Yes – The candidate used a reasonable situational analysis when analyzing the major issues facing CHEI.

Unsure – The candidate attempted to use a reasonable situational analysis when analyzing the major issues facing CHEI.

No – The candidate clearly did not use a reasonable situational analysis when analyzing the major issues facing CHEI.

Competencies
2.3.2 Evaluates the entity's internal and external environment and its impact on strategy development.

Enabling:
2.1.1 Defines the scope of the problem.
2.1.2 Collects and verifies relevant information.
2.1.3 Performs appropriate analyses.

Competent candidates should complete a sufficient situational analysis. The candidate should focus on describing the factors that have changed that will affect the decisions to be made. A recap of the mission and vision and relevant KSFs, as well relevant elements of the SWOT, is appropriate. Candidates need to clearly define the "problem" – CHEI is looking at selling the company to a competitor, and it will be a share-for-share exchange. Candidates need to consider that the circular impact on the earnings will affect what the CHEI shareholders obtain. A quantitative analysis is appropriate as part of the first stage of the CPA Way; i.e., analysis of the financial results by division, interpretation of ratios, etc. Candidates should draw upon their situational analysis when analyzing the major issues facing CHEI.

Mission and Vision Points

CHEI's vision statement has been in place since 2001 and is as follows:
Our vision is to be the best medium-sized heavy construction and mid-market residential construction and property development firm in Canada.

The company's mission statement, adopted by the board in 2007, is as follows:
Canada Heavy Engineering Inc. maintains high standards in completing all customer projects on time and on budget, and in building high-quality homes for first-time buyers and other customers who want competitively priced residences.

Key Objectives

From Capstone 1:

- Stabilize earnings and reduce the fluctuations and pressure to find the next big project all the time.
- Maintain targets from 2016 (from Cap 1): 16% margin on revenue, pre-tax income of 7% of revenue, and a 15% hurdle rate.

From Day 1:

- Consider selling shares in CHEI. Regardless of which acquirer is recommended, there is incentive to maintain or increase CHEI share value post-acquisition. Whether CHEI is sold or not, CHEI wants its financial results to be strong.
- Both potential acquirers have acquisition criteria that require CHEI to have reached $650 million in revenues and $50 million in pre-tax profits for a deal to happen.

Candidates are NOT expected to recap all the KSFs and SWOT in detail – they may draw upon these in their Day 1 case analysis to highlight important elements and changes.

KSFs for Industry (from Cap 1)

Homes division:

- Obtaining high-quality land at a reasonable cost
- Developing land at the right time (to take advantage of consumer demand)
- Using cost-effective construction techniques
- Having lower development costs than competition
- Minimizing carrying costs of land and properties under development

HE division:

- Strong government and customer relations
- Invitations to bid on many projects
- Areas of expertise (i.e., concrete-steel composite arch bridges)
- Accurate estimation and bidding
- Strong project execution
- Adherence to project schedule
- Efficient use of materials in construction
- Deployment of right personnel to jobs
- Key expatriate employees working overseas jobs
- Well-thought-out engineering analyses
- Ability to keep winning new projects as old projects are completed

New Information from Day 1

Strengths

- Large Awani dam project is progressing on time and on budget.
- HE division has just been awarded its first significant tunnel contract in Alberta.
- Company is on track to meet budget at the end of the first quarter.
- Liquidity is improved (improved current and quick ratio).
- Debt-to-equity is improved, increasing borrowing capacity.

Weaknesses
- Very inconsistent financial results that fluctuate throughout and over the years (since it depends on finding new contracts). There is still no steady stream of income to "steady" out earnings, which was an issue in Cap 1 and continues to be an issue.
- Continuous short-falls versus margin and profitability targets, which was an issue in Cap 1 and is still an issue.
- Homes division profit is flat.
- French subsidiary has had issues.
- There is a significant increase in debt, with mortgages payable increasing 75%.

Opportunities
- In the industry, engineering companies are under pressure to reduce costs through more efficient use of staff via engineering tools and software. CHEI has a product to meet these needs.
- Canadian and world-wide economies are steady and possibly looking stronger in the next one to three years, according to most economic forecasts.
- Acquisitions are a new trend in the industry.

Threats
- In the industry, engineering companies are under pressure to reduce costs through more efficient use of staff via engineering tools and software.
- Reduced demand for energy-related projects (natural gas) due to lower oil prices.
- Canadian competitors have purchased European and Asian companies.
- European economies are stagnant.

Quantitative Analysis (based on looking at new financial statements)

Divisional financial statements and ratios are provided. Credit is awarded to candidates who provide a high-level assessment of the divisional financial results and use it when discussing the major issues facing CHEI (e.g., HE division is generating the majority of results; Homes division is flat; CHEI not meeting financial targets; balance sheet is strong in general).

Summative Assessment #2 – Analyzes the major issues

For Summative Assessment #2, the candidate must be assessed for reasonableness of attempt:

Yes – The candidate completed a reasonable assessment of the major issues facing CHEI.

Unsure – The candidate attempted to complete a reasonable assessment of the major issues facing CHEI.

No – The candidate clearly did not complete a reasonable assessment of the major issues facing CHEI.

Competencies
2.3.3 Evaluates strategic alternatives.

Enabling:
2.1.3 Performs appropriate analyses.
2.1.4 Integrates information to investigate each potentially viable solution or conclusion.

This summative assessment is based on Assessment Opportunities #2 to #5.

Assessment Opportunity #2 (Strategic Issue #1 – Bridge design software proposal)

Candidates are provided with bridge design software options by the board (Appendix III) and have been asked to give their opinion on the strategic fit and financial feasibility. Competent candidates are expected to complete both a qualitative and quantitative assessment of this issue. The issue includes the options of selling the technology as is, using a third-party royalty model, or completing development and operating the licensing of the software as a separate business.

Candidates are expected to demonstrate an understanding of the information presented in the case (Appendix III), to explain, in a manner that board members will understand, what the qualitative decision factors are, and to draw conclusions and make recommendations based on a combination of the quantitative and qualitative analyses.

Quantitative Analysis

Quantitative analysis – *Candidates should compare and comment on the NPV analyses presented.*

Candidates should compare the NPVs provided in Appendix III. The results indicate high positive NPVs, particularly for the operating option. A simple interpretation is expected.

Since CHEI has no experience in the software business, candidates can also question and critique some of the numbers presented. For example, Option 1 says maintenance revenue would be received in perpetuity, which is not a realistic assumption.

Qualitative Analysis of the Decision

Qualitative analysis – *Discuss the pros and cons of pursuing each option, highlighting the risks and benefits, including some integration back to the situational analysis (mission, vision, etc.).*

Key points from Cap 1 that could be integrated:

- This strategic option (developing and selling software) does not fit with the current mission and vision.
- It may help stabilize the company's earnings (which was an issue in Cap 1) if it can provide a steady source of revenue.

Key points from Day 1 case that could be integrated:

- The software can meet the needs of companies in the industry that are trying to cut costs by becoming more efficient.
- If successful, this would help meet the target earnings (650/50 criteria) for the offers to purchase CHEI.
- Frank Cessnick is not in favour of the project.

Additional considerations candidates could discuss:

- It might be more of a strategic advantage to keep the software for CHEI's own use than to "share" or sell to its competitors.
- CHEI has no experience in developing software or running a software company.
- The software is still not ready, and a patent is not guaranteed, so many things may still be required to complete the development.

Candidates should discuss the specific pros/benefits and cons/risks of each option:

Option 1 – Operate business

Points of discussion could include: patent risk; returns are long-term (compared with selling now); more risk of other competitors meeting the market need; no expertise in running a software business; rapid industry changes.

Option 2 – Jones' offer

Points of discussion could include: keeps intellectual property with CHEI; avoids going into a business where CHEI does not have expertise; may be more upside in ongoing royalty revenue since Jones is in the software business; CHEI does not have to worry about ongoing maintenance or software upgrades.

Option 3 – Sell technology as is

Points of discussion could include: minimal risk; CHEI can stay focused on core business; this is more consistent with the current mission and vision; does not help current business results to increase in the long run; lowest NPV; immediate cash inflow and no more cash outflow.

Assessment Opportunity #3 (Strategic Issue #2 – District Heating proposal)

Candidates are asked to assess the risks and opportunities of this proposal and to determine how it may improve the Homes division's performance. Candidates are provided with a description of the proposed project, along with projected income, in Appendix IV. Candidates should consider both the quantitative and qualitative information presented.

Quantitative Analysis

Quantitative analysis – *Discuss the pricing models; use a capital budgeting tool; discuss the proposal in relation to CHEI's targets.*

Candidates can use a variety of numbers to support their analysis:

- Projections provided in the case: pre-tax income of $190,080 on revenue of $392,000 gives a pre-tax return on sales of 48%, well above the company's target of 7%.
- Similarly, the return on investment is 43% ($190,080 ÷ $443,000), much higher than the company's 15% hurdle rate, precluding the need to do a NPV calculation for the project.
- Candidates can perform a quick calculation to estimate the payback period ($443,000 ÷ $190,080 = 2.3 years).
- A comparison of the pricing models ($1,100 fixed-price versus cost-plus model) could be discussed. The fixed-price model generates more cash flow (52.5% margin) versus the cost-plus model, which only generates 25% margin, but the fixed-price model has greater risk.

Qualitative Considerations

Qualitative analysis – *Consider the information in the situational analysis (integration) and discuss whether this could improve the division's performance. Integrate some of the pros and cons of the options presented in the case into the discussion.*

<u>Key points from Cap 1 that could be integrated:</u>

- The District Heating fits with the current mission and vision of building high-quality homes, even though the underlying nature of the business is different.

<u>Key points from Day 1 that could be integrated:</u>

- Discuss fit of European product in Canada and possibly link to the potential Eurobati acquisition.
- The District Heating would help the Homes division become more profitable and get closer to reaching CHEI's margin targets.

<u>Additional considerations candidates could discuss:</u>

- This would help improve Homes' results, which the board wants.
- Would provide a steady source of income to address the desire for stable revenues.
- Technology concerns still need to be addressed, as well as how to make this model work in Canada.

- This would be a product that is unfamiliar to CHEI, which could lead to construction and on-going maintenance problems.
- CHEI currently has enough cash to finance the project.

Assessment Opportunity #4 (Strategic Issue #3 – Eurobati (EB) acquisition)

Candidates are asked to consider if the acquisition of a French road, bridge, and tunnel construction business (a division) would be a good fit with CHEI and improve consistency of CHEI results. Candidates are also asked to discuss the specific business risks related to the purchase and to provide advice on which areas should be looked into more closely before going further. Candidates are not required to provide a valuation of EB and are told the offer would likely be $200 million. They are provided with two sources of financing and are asked to comment on financing the potential purchase.

Quantitative Analysis

Quantitative analysis – *Analyze and comment on EB's financials; note areas requiring further information; calculate the financing required, the debt-to-equity ratio, and the most appropriate method to finance the purchase.*

Candidates can complete a variety of quantitative analyses:
- Analyze the EB financial statements and ratios provided in Appendix V. Candidates should perform an analytical review of the financial statements year over year and compared to CHEI.
- Areas of concern or requiring more information should be identified (e.g., due from affiliate).
- Compare EB results with CHEI's results and CHEI's targets.
- Determine the amount of financing required and calculate a debt-to-equity ratio (to then compare to the 2:1 ratio CHEI's bank would require as part of financing the deal).
- While not required, candidates could do a quick multiple-based valuation on CHEI using the 15% hurdle rate to see if the $200 million is reasonable.

Qualitative Considerations

Qualitative analysis – *Assess the pros and cons and strategic fit with CHEI.*

<u>Key points from Cap 1 that could be integrated:</u>

- Mission and vision – consider whether EB is a good fit.
- CHEI has existing business in France, so EB would be a good fit in terms of expanding into this market.

<u>Key points from Day 1 that could be integrated:</u>

- There appears to be an industry trend toward acquisitions. The fifth- and sixth-largest Canadian heavy engineering companies have recently made purchases of European and Asian companies, respectively.
- It would help to meet the revenue and pre-tax amounts that are required for the share-for-share exchange (650/50 criteria).

- There are existing problems with the French subsidiary, showing CHEI may have issues handling French values and culture.
- The stagnant economy in Europe may indicate now is not the best time for an acquisition.
- EB has experience with tunnel construction, which could help with CHEI's tunnel project in Alberta.
- EB's margins exceed CHEI's targets, which could help CHEI finally achieve its financial goal.

Additional considerations candidates could discuss:

- Employee morale.
- CHEI would have to deal with 17 different unions, which could present challenges CHEI is not equipped to handle.
- There are no other potential buyers, which could be a red flag signalling unseen issues.
- Financial statements are unaudited, which makes them not entirely reliable.

Assessment Opportunity #5 (Strategic Issue #4 – Share swap)

Candidates are provided with information about the two companies (Appendix II) and have to evaluate the acquiring companies with a view to maximizing the sale value to CHEI shareholders from an improvement in the share price of the acquiring company. They have to consider which company would be better in improving CHEI's earnings, such that the earn-out is maximized. Candidates are expected to assess the strategic fit of both potential acquirers.

Quantitative Analysis

Quantitative analysis – *Comparison of the financial information presented for both companies.*

- Both potential acquirers can be compared quantitatively; discuss the comparative financial information on stock price and stock potential.
- Compare the $650 million revenue and $50 million pre-tax profit targets with CHEI projections.

Qualitative Considerations

Qualitative analysis – *Considers the strategic fit; consider decision factors related to business risk of each business; consider pros and cons of each acquirer.*

Compare RC to DNC using the information in Appendix II. Candidates should be classifying the case facts presented for each company as a pro or con and adding further valuable insights where possible.

Key points from Cap 1 that could be integrated:

- Assess the mission of RC and DNC that is provided and determine how they fit with CHEI's mission and vision.
- Assess whether the current performance of RC and DNC would improve CHEI's performance and achieve performance targets.

Key points from Day 1 that could be integrated:

- Current CHEI business (like the Awani dam and tunnel project in Alberta) integration with RC's and DNC's core businesses
- Comparison of margins with CHEI targets and CHEI performance to provide an indication of relative performance
- Fact that not all shareholders are convinced that this is the right time to sell
- Trend toward acquisitions in the industry, which may show that the industry is consolidating

Additional considerations candidates could discuss:

- The ethical practices of each company should be considered, since one is under investigation.
- Consider which company CHEI would be a better fit with, given the overall business that RC and DNC are in.
- The earn-out potential for shareholders is a key consideration for the decision.
- Experience with acquisitions may influence the success of the acquisition and the ultimate earn-out.

Summative Assessment #3 (Conclude and Advise)

For Summative Assessment #3, the candidate must be assessed for reasonableness of attempt:

Yes – The candidate provided reasonable conclusions for each major issue.

Unsure – The candidate attempted to provide reasonable conclusions for each major issue.

No – The candidate clearly did not provide reasonable conclusions for each major issue.

Competencies
Enabling 2.1.4 Integrates information to investigate each potentially viable solution or

Enabling 2.1.5 Recommends and justifies a solution or conclusion based on an integrative view of information for the situation.

Competent candidates will form a logical conclusion that is consistent with their analysis.

The candidate forms a logical conclusion for each major issue that integrates the analysis for all major issues (software development proposal, Homes-District Heating proposal, EB acquisition, potential acquirer).

The recommendation should be consistent with the analysis performed.

As well, an overall conclusion should be presented to provide a sense of completion to the report (a wrapping-up and prioritization of the recommendations). The conclusion should be focused on the relationship between the choices of each decision and the potential share-for-share exchange.

Candidates should consider key decision factors: CHEI is looking for a stable source of income; fit with the mission and vision, objectives, and targets, including the targets required by the potential acquirers.

Candidates should realize that, of the options presented, the one with the most impact is EB. Strong candidates will realize that the share-for-share exchange targets cannot be reached in 2018.

The recommendations should consider the key concerns of the shareholders (most are ready to sell) and show an understanding of the nature of the construction business (i.e., it has peaks and valleys; there is a trend toward acquisitions right now).

The response should display good professional judgment. Suggesting that further information is required is acceptable as long as it is justified and consistent with the analysis.

Summative Assessment #4 (Communication Hurdle)

For Summative Assessment #4, the candidate must be assessed for reasonableness of attempt:

Yes – The candidate adequately communicated his or her response.

No – The candidate clearly did not adequately communicate his or her response.

Insufficient communication in a candidate's response generally includes some of the following:
- The reader needs to re-read sections several times to gain an understanding.
- It is not clear what point the candidate is trying to make.
- The quantitative analysis does not make sense because of a lack of labelling or illogical ordering.
- There is an offensive amount of spelling and grammatical errors.
- The language used is unprofessional.

Summative Assessment #5 (Overall Assessment)

For Summative Assessment #5, the candidate must be assessed in one of the following, based on their overall performance:

Clear Pass – Overall, the candidate provided an adequate response clearly meeting the minimum standards for each of the summative assessments.

Marginal Pass – Overall, the candidate provided an adequate response, with some errors or areas of omission, but including the underlying key concepts.

Marginal Fail – Overall, the candidate provided an attempt at a response, with several errors or an incomplete analysis.

Clear Fail – Overall, the candidate did not provide an adequate response because the response was deficient in multiple areas.

To be assessed a Pass, candidates are expected to perform adequately in all the summative assessments and demonstrate that, overall, they addressed the issues presented by the Board.

Markers were asked to consider the following in making their overall assessment:

1. Did the candidate step back and see the bigger picture, and then address the broader issues identified?
2. Did the candidate prioritize the issues by discussing the major and minor issues in appropriate depth?
3. Did the candidate use both quantitative and qualitative information to support their discussions and conclusions?
4. Did the candidate use the appropriate tools to perform quantitative analysis?
5. Did the candidate use sufficient case facts (current case and Capstone 1 case) about the external and internal environment to support their discussions?
6. Did the candidate communicate their ideas clearly, integrating and synthesizing the information?

SAMPLE RESPONSE- CHEI VERSION 2

Below is an actual passing candidate response.

Memorandum
To: Penelope Navire
Re: CHEI

As requested, please find my analysis of CHEI's issues below.

Situational Analysis

Before any issues can be examined, a better understanding of CHEI's current situation is required.

Financial Analysis
Based on CHEI's provided financial ratios:

Liquidity - CHEI is maintaining a strong current ratio which has been steadily improving for the last two years. The quick ratio is also strong, ending at 1.29 in 2018. This implies that CHEI should have no issues in the future meeting the cash demands for its operations and short term debt. The improved liquidity is likely due to the fact that cash has been increasing at a rate of approximately 30-41% over the last two years (see appendix I).

Debt - CHEI has a fairly low debt to equity ratio but we would require industry benchmarks to confirm this. Regardless, a long term ratio of 0.17 and a total ratio of 0.79 in 2018 is fairly low and implies that CHEI can afford to take on more debt. In fact, it could be argued that CHEI is under leveraged and failing to take advantage of long term debt to better grow the company and finance profitable projects.

Activity - CHEI's activity ratios have been holding steady for the past two years. The AR turnover has not seen much change while inventory turnover and days payable has been decreasing. The inventory on hand should be mostly from the homes department and a lower turnover implies that either sales are going well or that inventory has been decreasing. Based on the revenue from the homes department, it does appear that sales have been going up for the past two years and that sales will continue to increase in 2018. The lower days payable ratio is troubling as it implies that CHEI is paying off its payables sooner. Unless a discount is offered for paying early, CHEI should consider waiting long to pay its payables. However, CHEI does not currently appear to have any cash flow issues and liquidity is in good health so this is only a minor issue.

Profitability - CHEI's gross/net margin and its pre-tax margins have been holding steady since 2016. This implies that CHEI is efficiently managing its costs on all levels. Revenue has been growing steadily since 2016 with a 3.87% increase in 2015. However, it does appear that growth in 2018 will drop off (please see appendix I).

Overall, the company is in good health and appears to be on track to meet its budgeted 2018 goals.

SWOT

I have avoided reconstructing CHEI's entire SWOT but have instead provided updated notes for any changes I have noticed in CHEI's current situation:

Strengths
- CHEI is on track to meet its revenue and income goals for 2018, indicating that the company is currently well managed and in good financial health.
- CHEI has strong liquidity and strong debt ratios. The company could likely afford to take on more debt.

Weaknesses
- The homes department is currently struggling according to board meeting minutes. This could affect profitability, shareholder value, as well as any potential sales.

Opportunities
- the Canadian and worldwide economies are steady, indicating that both private and government spending on engineering projects should still be strong. In addition, economic outlooks for the next three years are expected to be strong. CHEI should have a steady market for its services for the foreseeable future.
- New industry trends towards improving efficiency by using staff more efficiently, applying new technology, and engineering tools have emerged. CHEI can take advantage of these developments to reduce their costs.

Threats
- There are two new engineering consulting firms that deal in software development. This could be a threat to CHEI's market share despite the fact that one of them has sold off their own consulting business.
- The larger engineering competitors are starting to make acquisitions of other engineering companies in Europe and Asia. This trend of acquisitions are expected to continue. This will give CHEI's competitors an international advantage overseas compared to CHEI.

Issues - Strategic

I have summarized and ranked the strategic issues at hand below:

Potential Acquirer - Some of CHEI's shareholders are considering selling the company to two potential acquirers. While a valuation is not required at the moment, the shareholders do need to know which of the two potential offers are in their best interests. This is the most important issue at hand as pursuing a future sale of CHEI will greatly affect its direction and other decisions.

Bridge Design Software - CHEI will need to decide whether the HE bridge design software is appropriate for the company from both a strategic and a financial standpoint. This could have an impact on the future sale as well as CHEI's future direction.

EuroBati - CHEI is currently considering acquiring an European company called EuroBati. Doing so could affect CHEI's future strategic direction as well as the potential sale. EB will also affect the heat proposal.

District Heat Proposal - The homes division has not been performing well but there is a district heating proposal that may assist with its issues. This could have an impact on the struggling homes division which will be vital for the potential sale if it is considered.

Please note that I did not discover any operational issues to be discussed.

Key Success / Decision Factors and Management Objectives

Revenue and pre-tax income - CHEI is on track to meet its budgeted 2018 revenue and pre-tax income goals. However, any future decisions should keep in mind profitability of the company as this will affect any potential sales as well as shareholder value.

Efficiency - New industry trends towards improving efficiency by using staff more efficiently, applying new technology, and engineering tools have emerged. If CHEI hopes to remain competitive and keep its costs down compared to the rest of the industry, its decisions will need to keep in mind the need to improve efficiency and innovation.

Share value - Shareholders are interested in realizing the value of their shares. Any future decisions should keep in mind how returns to the shareholders can be improved.

Competitors/industry trends - There has been a large degree of change within the industry and competitors are adapting. Some of them have taken on more software work while others have started making overseas acquisitions. CHEI must keep in mind its changing industry trends as well as the actions of its competitors if it hopes to remain competitive.

Debt - CHEI's strong liquidity and debt situation should be taken advantage of for future projects. Any decisions should keep in mind CHEI's financing capabilities.

Potential Acquirers

Some of CHEI's shareholders are considering selling the company to two potential acquirers. While a valuation is not required at the moment, the shareholders do need to know which of the two potential offers are in their best interests.

Quantitative Analysis

The value from CHEI's shares will realized through the earn out payment and the value of the exchanged shares. In that regard, both companies have similar share prices but that is likely a small factor as the number of shares issued may vary. RC has a lower tax rate than DNC, indicating that they would have more left over income to reinvest or payout dividends, giving RC a boost to its share prices. RC also has higher revenues and net income. RC has a net margin of 0.17 while DNC has a net margin of .11, indicating that RC is also more efficient in managing its costs (see appendix II). This is reinforced by the fact that RC has superior earnings per shares. DNC also has higher market capitalization and trading volume, which would make it easier for CHEI shareholders to sell their new shares after acquisition.

Based solely on the quantitative factors, DNC will likely be a superior choice.

Qualitative Analysis

RC Corporation

Pros
- RC is a conglomerate of companies within different industries. They are well diversified and should not be affected by too many economic changes. This reduces the risk of its share value decreasing during the one year waiting period.
- RC's shares are sold on the public stock exchange, which will make selling its shares after the one year waiting period much easier for CHEI's shareholders.
- RC is well experienced with acquisitions which should reduce the chance of any unforeseen issues from this acquisition.

Cons
- RC deals in oil-refining and natural gas. The global economy is currently facing lower oil prices which may affect the profitability of the company and decrease the value of shares held by CHEI shareholders if the exchange goes through.

- RC is known for making acquisitions and aggressively cutting costs. This may result in former CHEI employees being cut after the acquisition. CHEI should consider its responsibility to its employees as they are stakeholders in the company. CHEI could consider asking RC to retain its employees for a certain amount of time after the acquisition.
- RC is known for preferring to have lower total prices paid out in the earn outs. This could result in less returns for CHEI's shareholders.
- RC is currently being investigated for accounting irregularities. This may indicate poor controls and misstatements in the financial statements. Since the share value and earn out bonus will likely be based on financial statements they prepare, this increases the risk of their share value dropping. However, share trading was not suspended and most market analysts are bullish about the stock.
- RC's mission statement does not match CHEI's current mission and they appear to have a focus on simply acquisitions rather than operations.

DNC

Pros:
- DNC is a direct competitor within the same industry as CHEI. This should mean that they are experienced in the industry and would have little issue maintaining operations and profitability during the one year waiting period, reducing the risk of share prices decreasing for CHEI's shareholder.
- 70% of its revenues are internationally, indicating that there could be some synergy between their international operations. It was mentioned that the French subsidiary had been having issues. Acquisition by DNC could help smooth out issues and improve profitability of international subsidiaries, improving shareholder value.
- DNC has a good ethical reputation which matches CHEI's goals.

Cons:
- Market analysts are not bullish regarding DNC's stock. This could indicate that selling DNC's stock in the future may be more difficult after the one year waiting period.
- 35% of DNC's projects are bad for the environment. CHEI has had issues with environmental issues in the past such as the dam project. Environmentally bad projects may not adhere to CHEI's current ethical standards.
- DNC has clashed with CHEI before in media so there may not be good working relations between employees at the two companies. Lack of cooperation and synergy could lead to decreased profit and shareholder value.

Other Factors to Consider
There is a risk of the new company's shares fluctuating within the one year waiting period. CHEI should consider which company is likely to have the more stable share price and earnings.

Both acquirers are only offering to pay with their own company's shares. This means that CHEI's shareholders will not be paid in cash. Furthermore, they must wait one year after the acquisition before they are allowed to sell the exchanged shares. This does not meet the goal of CHEI's shareholders to realize the value on their current shares as they would simply be exchanging their CHEI shares for another company's and would be forced to wait a year to sell.

Pricing and valuation of CHEI has not yet been performed but both acquirers will likely pay out 5% of CHEI's net income in the year after the acquisition. However, CHEI must reach $650M in revenue and $50M in pre-tax profits. The 2018 budget was $615M in revenue and $43m in pre-tax profit. This is a 6% growth in revenue and a 16% growth in pre-tax profit (assuming the 2018 goals are met). Considering that revenue has only grown by 3.87% in 2017 and 1.13% in 2018, it is highly unlikely that CHEI will reach these goals.

There will likely be a loss of control in CHEI after the acquisition. CHEI's shareholders should be ready to accept the possibility that they will likely not have a say in the new company's direction or operations. This may make it difficult to issue dividends and most of CHEI's shareholders depend on steady dividends for income.

There will likely be taxes payable on any shares sold from the new company after acquisition. CHEI's shareholders should be aware of this and side aside money to pay for the capital gains from the shares. However, it should be noted that capital gains are only taxed at a 50% inclusion rate.

<u>Conclusion</u>

CHEI's shareholders want a deal that allows their shares to maintain or increase in value in the year post-acquisition. They should also consider whether the acquiring company's attitudes/mission match their values as well as any potential synergies that could affect the share value of the acquiring company. To this extent, it is recommended that DNC will likely be the superior acquirer overall. While RC will likely have a higher share price, their attitude towards acquisitions and cutting costs would likely harm employees and reduce the earnings payout in the first year. DNC on the other hand has a mission which fits CHEI's values and there is likely to be synergy in engineer operations internationally which should improve the share value beyond what it is currently. This will maximize the shareholder value one year from acquisition which is the goal of most CHEI's shareholders. Finally, while DNC has not always seen eye to eye with CHEI, employees at both companies should be professionals and know well enough to work with each other after the acquisition. This decision should meet the objectives of increasing shareholder value as well as responding to competitor actions (the international operations synergy will help adapt to the increased trend towards international acquisitions).

Bridge Design Software

The HE division has developed software to help with bridge design and is currently considering the following options:

- Operating a new business
- Using a third party
- Selling the software as is

Quantitative Analysis

Of the three options presented, operating a new business would produce the highest NPV based on CHEI's internal projections.

The licence sales assume that there will be 400 sales but there is expected to be a 30-35% penetration rate on a customer base of 4,000. Sales of 1,200 customers are most likely but internal projections estimate that there will only be 400 sales (see appendix III). Having adjusted for the increased sales, it is estimated that operating a new business will still be the superior option. However, it should be noted that there are other factors and risks.

Qualitative Analysis

Pros - overall:

- There are 4,000 bridge design firms that could make use of the software. This indicates a strong customer base for the product and approximately 30-35% of them are expected to make purchases.
- Software projects could diversify CHEI's operations and cash flows, evening out cash flows throughout the year and providing additional revenue for dividends or reinvestment.
- Software projects are currently trending in the industry and competitors appear to be doing well with the new product line.
- All options offer a positive NPV and indicate that they should be accepted.

Cons - overall:

- The project is not yet complete and is missing essential features. There is a risk that these features may not be completed on time, as expected, or under budget. The features will also require an outflow of $696,000 and marketing costs on top of that which will reduce cash available for dividends and reinvestment.
- CHEI doe not have experience developing or marketing bridge design software. There may be issues, maintenance may be higher than expected or sales may be lower than expected as CHEI does not have a strong grasp of what these other firms may require in terms of features.
- CHEI may be providing software to competitors. Reducing the operating costs of competitors will remove the competitive advantage of having the bridge design software solely for internal

operations.

Operate a new business

Operating a new business would provide the highest return and provide the greatest degree of control over how the software is developed and sold. However, operating a new business would require additional management increasing complexity in managing the company. It would also require additional cash investment in marketing costs, putting strain on CHEI's cash reserves.

Jones Engineering

Jones Engineering would provide its expertise and complete the development for CHEI. This is an advantage as CHEI would no longer be required to develop the software and can focus on other projects that they are more familiar with. Furthermore, CHEI would no longer be required to focus on selling the software, something that the company likely has little experience marketing. However, this also means that CHEI will have reduced control over the project's software as its features. The finished product may not fit the original goal of improving CHEI's bridge designs if another company handles development. Out of the three options, A provides a risk free return while B and C offer varying degrees of returns based on sales. Since sales are expected to do well with a 30-35% penetration rate and there is a strong customer base, it is likely that option B or C will do better than option A (see appendix III). However, it should be noted that the up-front payments from options A and B offer immediate cash inflows for CHEI. As CHEI doe not currently have any liquidity problems, it is recommended that option C be pursued if Jones Engineering is chosen.

Selling the software as is

Selling the software as is will provide an immediate cash inflow and would require no further involvement from management. This will provide cash for reinvestment and free up management attention for other, more profitable projects. However, CHEI does give up the possibility for longer term returns and this option does have lower NPV compared to the rest.

Other:

Frank believes that CHEI is a construction company and not a software company. However, it should be noted that there are currently two engineering competitors that are focusing heavily on software development. In fact, one of them has given up their consulting department to focus more on software. It is likely that this trend toward engineering software will continue. Future clients could very well come to expect some degree of software expertise from CHEI. Failure to provide it could result in the loss of a competitive advantage.

John believes that if money can be made to increase income, it should be pursued. Software development would certainly assist with the company's goal towards steady cash flow and income. Doing so would also ensure that steady dividends can be made towards shareholders as well. However, it should be considered that software development is not currently something CHEI is experienced with and they may have difficulties realizing expected revenue/income from these projects. Furthermore, they will add to the complexity of managing CHEI and could very well divert financing and labour away from more profitable projects CHEI is more experienced towards.

Conclusion:

Regardless of what happens to the software after it is completed, it is recommended that CHEI proceed with development. There is a current pressure in the industry to reduce costs using new technology and CHEI cannot afford to give up the competitive advantage.

In regards to which option to choose, it is recommended that CHEI pursue operation of a new business. This new business has the highest NPV and will provide steady cash flow. This meets CHEI's goals of providing shareholder value as well as responding to industry trends/competitor actions. It also meets the goal of reducing operational costs for CHEI which will be vital for any potential future sales and meeting the earnings payout after the first year of acquisition. While operating a new line of business does not currently meet CHEI's mission and vision of engineering developments, CHEI should consider external market factors. Other competitors are moving towards software development and if CHEI does not follow suit, they may lose a competitive advantage. In fact, future clients may come to expect this type of software from CHEI. As such, CHEI should consider revising its mission statement to include engineering software. This option will require the highest cash outflow due to the extra marketing costs but CHEI currently has$39,639,000 in cash reserves and is in good shape in terms of liquidity. Finally, there are risks with being unable to obtain the patent. Development should continue as planned but passing development and rights of the software to Jones Engineering should be kept on hand as an option in case a patent cannot be obtained.

Europe - EuroBati

EuroBati is a French conglomerate which builds roads, bridges, and complex tunnels. CHEI is currently considering acquiring the company but is concerned with whether expansion in Europe will be a good fit, the risks involved, and financing issues.

Financing:

Please see Appendix V.

James feels that an offer of $200M could be made and that if dividends are not paid out by

CHEI, half of their current cash could be used for the purchase. Financing would be required for the rest.

TS is offering a 3 year interest free loan and an introduction to a French government backed bank for the rest of the financing. This indicates that financing should not be an issue for acquisition. On the other hand, CHEI's bank is offering a loan but at 3% interest with a covenant requiring debt to equity to remain under 2:1.

Interest would be lower for the first three years under the TS loan and the French government backed bank seems reliable enough. There are also no covenants demanded for either of these loans. However, the TS loan is listed as "vendor take back" implying that TS can call their debt at any time. The $60,000,000 loan could be very difficult to repay but the loan is expected to be cut in half if CHEI withholds dividends. Therefore, it is likely that CHEI will have approximately $100m on hand after a year which would cover the loan if it were called.

The interest on CHEI's bank would be higher but CHEI is used to dealing with them and should have fewer issues obtaining financing and communicating with this lender. However, if CHEI attempted to finance all of the $200m through its bank, they would be in violation of the debt covenant. Therefore, CHEI should either defer payment of its dividends this year or request an amendment with the bank's debt covenants.

It is recommended that CHEI pursue the TS loan for financing if it decides to go through with acquisition. TS is offering three years of interest free financing on 30% of the loan and the French government backed bank appears reliable. Even if the French bank proposal did not work out, CHEI could always pursue financing through its own bank for the rest. Either way, it is recommended that CHEI defer payment of its dividends this year. Doing so will set aside funds for paying back the TS loan if it is called within three years and reduce the D-E ratio in case CHEI's bank is required to fill in for the other 70% of the financing required.

Quantitative Analysis

EB is not as liquid as CHEI with a lower quick ratio that implies it cannot cover its short term debts with its current assets. It appears to have a steady debt to equity ratio that is slightly lower than CHEI's. EB's receivable turnover appears to be somewhat higher than CHEI's implying that it may not be as successful in collecting payments despite all of the contracts they are able to generate.

EB also has net income of $18,848,000 in 2017, which should cover the interest on the $4,200,000 interest on the loan within the first three years under the TS financing option. However, it does appear that income has been stagnate and has not been growing.

Qualitative Analysis

Pros:

- EuroBati's projects somewhat match what CHEI is familiar with so there will likely be some synergy and efficiency improvements after acquisition.
- EuroBati is experienced in European markets, an area where CHEI has some issues with, particularly in France. Acquisition could improve CHEI's presence internationally in Europe.
- EuroBati appears to be successful in obtaining contracts in Africa, acquisition could open up opportunities for additional projects and an increased market for CHEI.
- EuroBati has experience with tunneling projects which would add to CHEI's available projects and improve their portfolio of expertise.
- Employee morale is good and EB has not had any strikes in the last 15 years. Indicating that there should be no issues taking over and managing the labour force. There should also be no interruptions in work flow due to the lack of strikes.
- The company appears to generate more work than it can handle. This work can be passed on to the rest of the HE division, providing steady projects for the division and cash flows for shareholders.

Cons:

- EuroBati does not have any other purchasers at this moment. This could indicate that there are additional issues with the company CHEI is not aware of.
- CHEI's managerial complexity will increase with an additional international subsidiary. However, CHEI does already have other international subsidiaries and has experience with managing them.
- There are over 17 unions representing workers at EB, increasing the complexity of managing the labour force there. The vacation days also appear excessive at 6 weeks per year. The current CHEI employees may begin to demand similar benefits and vacation terms if EB is acquired.
- The company appears to generate more work than it can handle, given CHEI's own aging labour force, there may not be enough workers to take on the extra work.
- Profits have been flat for the last four years. A lack of growth may indicate a lack of sales but it appears there are no issues with generating contracts so the issue may be with a lack of workers or poor management.

Conclusion

Zoe feels that the acquisition is not a good idea as European economies are generally stagnant and the French subsidiary has had issues in the past. However, global economic forecasts for the next three years are very strong. On the other hand, that means that local economies should also be strong and the forecasts don't consider the long term implications. Either way, the economic outlook should be steady regardless of whether the option is pursued.

It is recommended that CHEI consider pursuing acquisition of EB as the company has strong synergy with CHEI and would fit well with its HE division mission for development. There is also the availability of additional work contracts in Europe and Africa which should greatly improve CHEI's income, improving shareholder value and acquisition prices for the future. This option also meets the requirement to meet market expectations as other competitors are making acquisitions in Europe and failure to increase CHEI's presence overseas could cost CHEI a competitive advantage. Finally, EB can potentially assist with the French subsidiary's operational issues as well as the heating proposal. There are several risks however which I have addressed below.

<u>Risks</u>

- Foreign currency exchange - CHEI would expose itself to fluctuations in foreign currency exchange rates if the acquisition went through. This is somewhat mitigated by the fact that they would also have debt and operating accounts payables in the foreign currency as well however.
- Extra management complexity - CHEI would need to manage a foreign subsidiary in a different time zone that speaks a different language. However, CHEI does have experience managing foreign subsidiaries and could potentially
- Work force management - CHEI would be required to . CHEI could compare its current employee morale and benefits to that of EB before acquiring it.
- EB's expertise and management structure - EB's operations may not be as competent or compatible with CHEI as initially though. Failure to integrate EB into CHEI could result in lost profit and shareholder value.

It is recommended that CHEI request a due diligence engagement from our firm. A due diligence engagement will examine EB's financial, business, and tax operations to determine if there are any issues. A due diligence engagement does not usually have a set or regulated process but it does generally focus on areas of interest. Based on the risks described above, EB's due diligence engagement would likely involve examination of the following areas:

Financials - The statements are prepared under IFRS but we should check to ensure that they are in compliance regardless. As EB is an active business with profitable operations, the valuation will likely be based on net income or cash flow. As such, we should examine their revenue and expenses for completeness and cut off.

Business - CHEI is primarily relying on the expertise of EB for synergy benefits. As such, we should examine the experience and expertise of their work force as well as the their management structure. It would not hurt to also examine their project management, strategic direction, and risk attitude to ensure that they align with that of CHEI's.

Tax - We should examine their tax returns, ensure that they are in compliance, and check to ensure that there are no outstanding liabilities CHEI is unaware of. Outstanding tax liabilities could affect cash flows and the valuation of EB

District Heat Proposal

The homes department has the option to begin a 320 single home construction project. There is also a heating plant that will be constructed. CHEI will need to decide whether the heating plant is a good fit for the company as well as its risks and opportunities.

Quantitative Analysis

Based on the projected cash flows, it will take approximately 2.15 years to recover the initial cash outflow from this heating project. It should be noted that only one third of the homes are expected to be complete by the end of the first year so there may only be one third of the expected revenue for the first year. A break even length of approximately 3.4 years is more likely (see appendix IV).

I also compared the variable rate with the fixed rate revenue model and determined that the fixed rate would likely produce more revenue based on projections (see appendix IV).

Qualitative Analysis

Pros
- Heating via hot water is more efficient and environmentally friendly. This would potentially improve CHEI's reputation for green projects.
- This heating system will likely be more attractive to buyers, improving home sales and turnaround time for recouping development costs.
- The cost per home will likely be approximately $1,225 per home, much lower than the average cost of $1,600 per home with natural gas. This will further increase the attractiveness of the homes for future buyers.
- The plant could be the start of future templates for heating districts, offering more business in Canada and strengthening CHEI's ability to provide heating plants internationally in Europe where this system is popular.
- The homes division is struggling and could use the income from this project.

Cons
- The heating process is common to Europe but not in Canada. The process would require improvements to efficiency for water transmission. CHEI has little experience with this type of heating process and furthermore, will likely be unable to perform the required improvements to efficiency due to their limited understanding of the systems.
- The homes development is for 320 homes. This is more homes to be developed than the

housing division is usually used to. They may encounter management issues and be unable to complete the project on time and on budget. There is also the issue with CHEI's aging work force and difficulty in retaining skilled labourers that has not been addressed in the last two years. CHEI's resources may be lacking in regards to completing this project.
- Only one third of the homes are expected to be complete by the end of the first year. This indicates that there will likely be operating costs for the heating plant but only one third of the revenue to cover it.

<u>Risks</u>

There is a risk of CHEI's homes division being unable to complete the project on time or under budget given their lack of experience. This is a high probability due to the division's lack of experience and also high impact as delays could affect returns from the project. It is recommended that CHEI review its forecasts or consider asking the HE division for assistance. This is also a positive argument for acquiring the European subsidiary as they are likely to have experience with these heating systems.

There is the risk of more heat being required in the colder Canadian climate which means that costs could potentially be higher than expected and if the fixed cost option is used, there may not be enough revenue to cover expenses. There is a high probability of this occurring as Canadian climate is known to be colder and CHEI has limited experience forecasting expenses for heating systems. There is a high impact as under a fixed cost model, variable costs must be carefully management to remain profitable. It is recommended that CHEI consider a mixed model of both fixed monthly costs in addition to a variable cost based on consumption.

<u>Conclusion</u>

It is recommended that the homes division reject this proposal. While the break even period is relatively short, there are too many risks involved in the development of the project and the forecasts. CHEI has no experience with heating systems and housing projects of this scale. Management and budgeting would be difficult for this project. Furthermore, the heating systems do not match CHEI's home division mission. It also responds poorly to market trends as oil and natural gas prices are very inexpensive at the moment. The risk of having this project do poorly would negatively impact shareholder value and the acquisition price of CHEI as well.

However, if the EuroBati proposal is accepted and is copmleted without issues, CHEI should reconsider this option but and accept the contract. EB will cover the homes division lack of expertise and experience.

Appendix I - Financial Analysis

	2018	2017		2016
Revenue	603604	596871		574611
% change	1.13%	3.87%	N/A	
Cash	39639	30473		21546
% change	30.08%	41.43%	N/A	

Please note that Q1 2018 results are multiplied by four to estimate the overall 2018 figures

Appendix II - RC vs DNC

	RC	DNC
Revenue	1402	745
Net income	242	84
	0.1726105	0.11275
Net margin	56	1678

Appendix III - Bridge Design

Operate a new business:

Adjustments:		
Licence sales	6400000	
Licence price	16000	
projected sales	400	
Bridge design firms	4000	
Penetration rate	30.00%	Lower range used per management estimates
Expected customers	1200	
Adjustment required:	800	More custom ers
price	16000	
Adjustment to sales	1280000 0	
PV factor	2.28	
	2918400	
Actual adjustment	0	

% of customers increased	2	- it is assumed that maintenance income will be increased by an equal percentage to the customers adjusted for
Maintenance income (NPV)	15360000	
increased maintenance income	30720000	
Initial projection:		3670493
Less adjustment for sales		29184000
Less: adjustment for maintenance		30720000
Actual NPV		**63574493**

Jones Engineering Option 2b

Royalty on licence sales	512000
8%	0.08
full sales	6400000
expected sales	400
Actual sales	1200
Additional sales	800
Price	16000
Revenue	12800000
8%	1024000
PV factor	2.28
increase to NPV	2334720
original NPV	2471360
Adjusted NPV	**4806080**

Option 2C

Additional revenue	12800000

18%	2304000
PV factor	2.28
Increase to NPV	5253120
original NPV	1930560
adjusted NPV	**7183680**

Please note that the analysis was prepared pre-tax
Please note that the sunk costs put into the project development to date are not included in the analysis.

Appendix IV - Heat Proposal

	Initial
cost of project	
Land	-45000
Other	-398000
Total	-443000
Cash flow:	206000
Breakeven	-2.150485 44

	Initial	First year	Ongoing		
cost of project					
Land	-45000				
Other	-398000				
Annual costs		-186000		-186000	- annual costs are not adjusted for the one third homes completed in the first year as it is assumed that operating the heating plant is a fixed cost
Total costs	-443000	-186000		-186000	
Revenue - Fixed cost		129850		392000	

Net income		-443000	-56150	206000

- fixed cost is used as it will bring the most revenue

Breakeven:	negative cash flow	-499150
	p o s i t i v e	206000
		- 2.423058
	Breakeven	25

Breakeven in 2.4 years after the first year, total of 3.4 years for breakeven.

Revenue:

Fixed cost option	129850	392000	- 1225 per home; 106 homes (one third) in first year, 320 ongoing
Variable consumption option:	75950	227850	- mark up of 22.5% (average) used - Note: one third of annual costs used in the first year used for mark up under the assumption that only one third of the homes will be available

Conclusion: The fixed cost option is likely to provide higher income for both the first year and onwards. It is recommended that the fixed cost option be used.

it is assumed that only one third of the homes will be complete after the first year per CHEI's notes
- revenue has been adjusted in the first year to reflect this. it is assumed that all homes will be complete afterwards.

Appendix V - EuroBati

Financing:

Required:	$200,000,000	Per Jason

TS:

30% financing	60000000		
French bank	140000000		
Interest - first three years		4200000	- assumed to be 3% per CHEI's own bank

CHEI's bank

Loan	200000000	
Interest		6000000

CHEI's current D-E ratio:

Debt	95975000
Equity	121909000
Ratio	0.787267552

Adjusted D-E ratio under CHEI's bank loan

Debt	295975000
Equity	121909000
Ratio	2.427835517

Adjusted D-E ratio assuming dividends are withheld

Debt	195975000
Equity	121909000
Ratio	1.607551534

Conclusion: CHEI would be in violation of its covenant if they accept their bank's loan without defering dividend payment

APPENDIX G

RESULTS BY SUMMATIVE ASSESSMENT OPPORTUNITY FOR DAY 1 VERSION 1 AND VERSION 2

Results by Summative Assessment Opportunity

Marking Results – CHEI Version 1

Indicator	Papers	Did not meet standard[1]	Marginal[1]	Yes, met standard
Situational Analysis	1001	1.8	4.80	93.41
Analysis	1001	4.00	26.07	69.93
Conclude and Advise	1001	0.70	4.60	94.71
Communication	1001	0.60		99.40

Marking Results – CHEI Version 2

Indicator	Papers	Did not meet standard[1]	Marginal[1]	Yes, met standard
Situational Analysis	202	5.94	12.38	81.68
Analysis	202	23.76	25.74	50.50
Conclude and Advise	202	13.37	17.33	69.31
Communication	202	7.43		92.57

[1]Clearly failing were marked twice. All marginally failing or passing papers were marked a second time to determine if they met the passing standard. Only the clear passes were marked once, however the results were audited.

APPENDIX H

BOARD OF EXAMINERS' COMMENTS ON DAY 1 SIMULATION VERSION 1 AND VERSION 2

BOARD OF EXAMINERS' COMMENTS
(CHEI VERSION 1 AND CHEI VERSION 2)

Paper/Simulation: **Day 1 – Linked Simulation, CHEI Version 1 (on May 2016 CFE)**

Estimated time to complete: 240 minutes

Simulation difficulty: Average

Competency Map coverage: N/A; Enabling Skills

Evaluators' comments by Summative Assessment Opportunity (AO)

SO#1 (Situational Analysis)

Candidates were expected to highlight internal factors (such as mission, vision, and key success factors) and external factors (such as economy and trends) that would influence the decisions being contemplated by CHEI. Candidates were also expected to perform a financial assessment of CHEI using the updated information in the case, since the company was in financial trouble. The board provided specific direction that the current financial condition needed to be considered. It was essential that candidates highlight the changes in the situation from Capstone 1 that would affect the analysis of the issues and be constraints or overriding decision factors, and that candidates then incorporate these changes in their later work in SO#2 and SO#3. Evidence that candidates understood the current situation facing CHEI (as opposed to the situation from Capstone 1) and the impact on the decisions was critical.

Most candidates analyzed the financial situation of CHEI, identified two or three of the situational factors that were important to the decisions CHEI was facing and used the information in their later analysis of the issues in SO#2. For example, candidates typically presented a situation analysis overview section at the beginning of their report which included a financials analysis (ratios and some interpretation), and discussed the similarity of the mission and vision of CHEI and CDI, the trend of home buyers towards buying condos and away from starter home to support the purchase of CDI, and discussed the strategic fit of the P3 proposal with the university in terms of the desire by CHEI to pursue P3s as a way of increasing private sector revenue.

Strong candidates presented a concise assessment of many of the internal and external factors that would be important in the areas that Chuck Poisson Smythe Management Consultants was asked for advice on. These candidates had breadth in their analysis as they used a variety of factors such as mission, vision, key success factors and trends in the environment, and presented an analysis of the financial situation. They focused on the new environment that CHEI was facing as presented in the Day 1 case. They also made use of the analysis in most areas of issues in SO#2.

Weak candidates spent time simply restating case facts or went into too much depth in their situational analysis, redoing the entire SWOT analysis rather than focusing on the changes. Many did not use the information in their later analysis of the issues in SO#2.

SO#2 (Analysis of the Issues)

There were two major issues that candidates were expected to analyze from both a qualitative and a quantitative perspective. There were also two other issues candidates could analyze, primarily from a qualitative perspective. Candidates were expected to address several of the issues and provide depth of analysis for the issues they addressed.

Most candidates provided a reasonable analysis of all issues, attempting both quantitative and qualitative analyses. A majority of candidates identified the need to discuss the two Hwy 507 purchase offers. Some candidates did not discuss the option of CHEI continuing to operate Highway 507 focusing solely on the two offers to purchase it. Generally, candidates' qualitative analyses of both the Homes Division and of CDI were well done. Some candidates did not address the issue of saving the Homes Division separate from the ways to save it (purchase of CDI, P3 and self-storage venture). Most candidates did well on the other issues (self-storage venture and the P3 opportunity), prioritizing them appropriately and provided a sufficient degree of analysis, recognizing more time should be spent discussing the major issues.

Strong candidates attempted to normalize the Highway 507 results to use in the decision to keep or sell, provided a more detailed comparison of the financial results of the two offers, and discussed the risks and benefits of each course of action. Strong candidates also included a more detailed quantitative analysis of the Homes financial situation and recognized that the question of whether Homes "should be saved" was a bigger issue than that of acquiring CDI.

Weak candidates tended to provide brief qualitative points repeating case facts without explaining the potential impact on the decisions to be made, provided minimal quantitative analysis, or both. In some cases, they did not appear to differentiate the major issues from the other issues and consequently did not provide sufficient depth in the analysis of the major issues.

Major issue #1: Whether to sell Highway 507 or continue to operate it, and which offer should be accepted if a sell decision was reached. Chuck Poisson Smythe Management Consultants was asked for advice on whether or not the highway should be kept and for an assessment of the two offers.

Candidates typically did a quantitative comparison of the two offers and considered the risks of the offer from JJ Ventures and the requirement to provide the maintenance algorithm to the Parmalea Group.

Strong candidate presented a quantitative analysis normalizing the results from Q1 2018 and incorporated some of the board members' suggestions e.g. raising toll rates.

Major issue #2: Whether Homes division should be saved and whether CDI should be purchased.

Candidates typically included some financial analysis of the Homes Division in their analysis of the overall financial condition of CHEI. With respect to CDI, most candidates recognized the need for a valuation of CDI prior to a purchase decision. Candidates should have been able to then use the information to assess whether the price range suggested was reasonable. An estimated value was provided and the earnings and hurdle rate could have been used to make this assessment.

Strong candidates treated the Homes Division issue as a separate matter and provided a more detailed analysis of the financial condition of Homes and specifically discussed the question of whether it should be saved. They also performed a valuation of CDI and commented on the reasonableness of the price.

Other issue #3: Whether CHEI should pursue the self-storage business — either to continue to build and sell, or to operate the business itself — or get out of this line of business. Some quantitative analysis could have been included on this issue.

Generally, candidates addressed both the quantitative and the qualitative aspects of this issue. However, they did not always distinguish between the options of building and selling versus building and operating it.

Strong candidates clearly made the distinction between the two alternatives.

Other issue #4: Whether CHEI should pursue the P3 proposal. Candidates did not have enough information to perform a meaningful quantitative analysis of this issue.

Candidates typically provided pros and cons of this decision in sufficient depth.

SO#3 (Conclusion)

Candidates were expected to conclude on each major issues and at least one of the other issues. Conclusions were expected to be consistent with the analysis performed. Concluding that "additional information is required" was acceptable as long as it was substantiated. Candidates were also expected to demonstrate some sense of ranking of the issues.

Most candidates concluded on the issues.

Strong candidates provided thorough conclusions for all the issues and explicitly addressed the need for CHEI to prioritize.

Weak candidates provided unclear conclusions or their conclusions could only be implied from their discussions. In some cases they did not conclude on the issues at all.

SO#4 (Communication)

The large majority of candidates communicated clearly in a professional manner.

SO#5 (Overall Assessment)

Overall, candidates were expected to meet minimum acceptable standards in each of the four summative assessment opportunities in order to obtain a "Pass" on the Day 1 linked case. For each major issue (Highway 507, and Homes and CDI), the Board expected a high-level analysis that incorporated both qualitative and quantitative factors and a supported consistent conclusion. The Board also sought evidence of candidates having incorporated information from Capstone 1 and the changes identified in their situational analysis.

BOARD OF EXAMINERS' COMMENTS (CONT'D)

Paper/Simulation: **Day 1 – Linked Simulation, CHEI Version 2 (on Sept 2016 CFE)**

Estimated time to complete: 240 minutes

Simulation difficulty: Average

Competency Map coverage: N/A; Enabling Skills

Evaluators' comments by Summative Assessment Opportunity (AO)

SO#1 (Situational Analysis)

Candidates were expected to highlight internal factors (e.g., mission, key success factors, strengths and weaknesses) and external factors (e.g., economy and trends) that would influence the decisions CHEI was contemplating. It was essential that candidates highlight the changes in the situation from Capstone 1 that would affect the analysis of the issues and be constraints or overriding decision factors, and that candidates then incorporate these changes in their later work in AO#2 and AO#3.

Generally, candidates identified the important factors, such as CHEI's financial performance and the fact that it was still not achieving its financial targets, the state of the economy, and the trends in the industry (consolidation and greater use of technology), and they did well in linking their situational analysis to the analysis of the issues in AO#2. Most candidates completed a quantitative analysis to assess CHEI's financial position. Many provided a lengthy situational analysis, essentially recreating the work they did in Capstone 1. It added little value to the decisions facing CHEI. The important part of the situational analysis was to outline the internal and external factors facing CHEI in its environment that had changed since Capstone 1, and then to use these factors when discussing the major issues facing CHEI. A complete SWOT and financial analysis of CHEI was *not* required.

Strong candidates focused on the areas of change from Capstone 1. Their analysis of CHEI's financial state was clearly laid out and used to emphasize areas in which CHEI needed to pay attention as its management made decisions. Strong candidates clearly understood the case facts presented, in particular the transactions being contemplated. They understood that the sale of the company through a share-for-share exchange, where shares had to be held for a year before CHEI's shareholders could dispose of them, as well as the financial targets set with the purchase offers, greatly affected the decisions to be made.

Weak candidates simply recapped case facts without discussing their relevance to the new issues facing CHEI. Weak candidates generally did not understand how the share-for-share exchange affected CHEI, even with the explanation provided in the simulation.

SO#2 (Analysis of the Issues)

There were four issues that candidates were expected to analyze from both a qualitative perspective and a quantitative perspective. The issues had different priorities when considering the big picture, with major issues #3 and #4 being the most important to address.

Major issue #1: How to proceed with the new bridge design software

Candidates were provided with options by the board (Appendix III) and were asked to give their opinion on the strategic fit and financial feasibility. Competent candidates were expected to complete both a qualitative and a quantitative assessment of the options of selling the technology as it was or selling after development, using a third-party royalty model or full exploitation of the software by licencing after development. Candidates were expected to explain, in a manner that board members would understand, what the qualitative decision factors were and to draw conclusions and make recommendations based on a combination of the quantitative and qualitative analyses. Their quantitative analysis should have included a comparison of the NPV analyses. Their qualitative analysis should have included a discussion of the pros and cons of pursuing each option, highlighting the risks and benefits based on their situational analysis (mission, vision, etc.).

Major issue #2: Whether to move ahead with a new district heating concept for the Valois project

Candidates were asked to assess the risks and opportunities of this proposal and to determine whether it could improve the Homes division performance. Candidates were expected to explore possible courses of action to help the Homes division. Candidates should have considered both the quantitative and qualitative information presented. Their quantitative analysis should have included interpreting the financial information presented. Their qualitative analysis should have included a discussion of whether the district heating project could improve the division's performance. Candidates were expected to integrate some of the pros and cons of the pricing options presented in the simulation into the discussion.

Major issue #3: Whether to purchase the European company Eurobati for $200 million

Candidates were asked to consider the acquisition of a French road, bridge, and tunnel construction business (a division) and determine whether it would be a good fit with CHEI. Candidates needed to consider whether acquiring EB would improve the consistency of CHEI results. Candidates were also asked to discuss the specific business risks related to the purchase and to provide advice on which areas should be looked into more closely before going further. They were also asked to comment on CHEI's financing plans. Candidates were told not to provide a valuation of EB, but its value needed to be considered with respect to the potential acquirers'(i.e. RC and DNC) requirements of revenue and profits. Candidates' quantitative analysis should have included an analysis and commentary on EB's financials, identifying areas requiring further information. They should have calculated the financing required and the impact on the debt-to-equity ratio. Their qualitative analysis should have included an assessment of the pros and cons and a discussion of the strategic fit.

Major issue #4: Recommending which company CHEI's shareholders should sell to (RC or DNC)

Candidates were provided with information about the two companies (Appendix II) and were expected to evaluate the likely post-acquisition share price performance of the acquiring companies with a view to maximizing the sale value to CHEI shareholders (from an improvement in the share price of the acquiring company). Candidates should have considered which company would be better in improving CHEI's earnings, such that the earn-out was maximized for CHEI's shareholders. Their quantitative analysis should have included a comparison of the financial information presented for both companies. Their qualitative analysis should have considered the pros and cons of each acquirer, while weighing the strategic fit and the business risk of each business that CHEI could end up acquiring a portion of.

Almost all candidates identified the four issues in the simulation and attempted an analysis of all four. Generally, candidates provided a reasonable analysis of the issues, attempting both quantitative and qualitative analyses. However, a surprising number of candidates provided analysis that lacked depth in qualitative discussion for more than one of the issues. Some of these candidates struggled with prioritizing their discussions and spent too much time on the less important issues (i.e., software and heating district) and not enough time on the major issues (i.e., share exchange and EB). Also surprising were the number of candidates who did little to no quantitative analysis for several of the issues.

Strong candidates not only included a deeper, more detailed analysis of each issue than other candidates, but they also linked back to their situational analysis and saw the need to prioritize certain issues to meet the board's needs. For example, these candidates recognized that CHEI needed to take on additional projects like the Eurobati purchase in order to reach the required $650 million revenue and $50 million pre-tax profit required to sell the company shares.

Weak candidates tended to provide brief qualitative points that were simply restated case facts. For example, for the heating district, they listed short bullet points beneath the heading "Pros," such as, "HE division would actually do the construction of the heating plant," or "Make the company's homes unique." While these were valid case facts, they lacked explanation of why they were relevant. Weak candidates also provided minimal quantitative analysis by just identifying analysis that could be done. For example, for the potential EB purchase, these candidates simply identified financial statement accounts that needed further investigation, or, for the software analysis, they simply stated that the projections could not be relied upon because it was a new venture. A few candidates appeared to have mismanaged their time, since their analysis of the last issue was much shorter than those of the other issues or they neglected to provide recommendations on the issues they analyzed last. Some candidates also spent a lot of time retyping CHEI financial statements into Excel to determine year-over-year changes or calculate ratios.

SO#3 (Conclusion)

Candidates were expected to conclude on each analysis they completed. Conclusions were expected to be consistent with the analysis performed. Concluding that "additional information is required" was acceptable as long as it was substantiated.

Strong candidates provided thorough conclusions for all the issues analyzed. Weaker candidates were unclear in their conclusions, or their conclusions could only be implied from their discussions. Many strong candidates commented on the interrelationship between the issues and how one decision affected another, particularly with the acquirer's requirement for CHEI to reach $650 million in revenue and $50 million in pre-tax profit. Strong candidates recognized that this was unattainable maintaining the status quo and that CHEI would need to take on EB in order to reach the requirements. Some candidates also linked their recommendation to purchase EB to how EB could help with the development of the heating district, since EB is a European company.

SO#4 (Communication)

Several candidates struggled with effective communication. While the approach most candidates took was well structured, the language they used tended to be unclear, leading to a response that was confusing and difficult to understand.

SO#5 (Overall Assessment)

Overall, candidates were expected to meet minimum acceptable standards in each of the four assessment opportunities listed above in order to obtain a “Pass” on the Day 1 linked simulation. For each major issue, the Board expected a high-level analysis, incorporating both qualitative and quantitative factors, before proceeding to a reasonable conclusion. The Board also sought evidence of candidates having incorporated information from Capstone 1 and the changes identified in their situational analysis. Since the issues could be ranked for this particular simulation, weaker performance on the analysis and conclusion of one of the minor issues (i.e., software and heating) could be made up with a stronger analysis and conclusion on one of the major issues (i.e., share exchange and EB).

The CPA certification program prepares future CPAs to meet the challenges that await them For more information on the qualification process, the common final examination (CFE), and the specific education requirements for your jurisdiction, contact your provincial/regional CPA body.

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