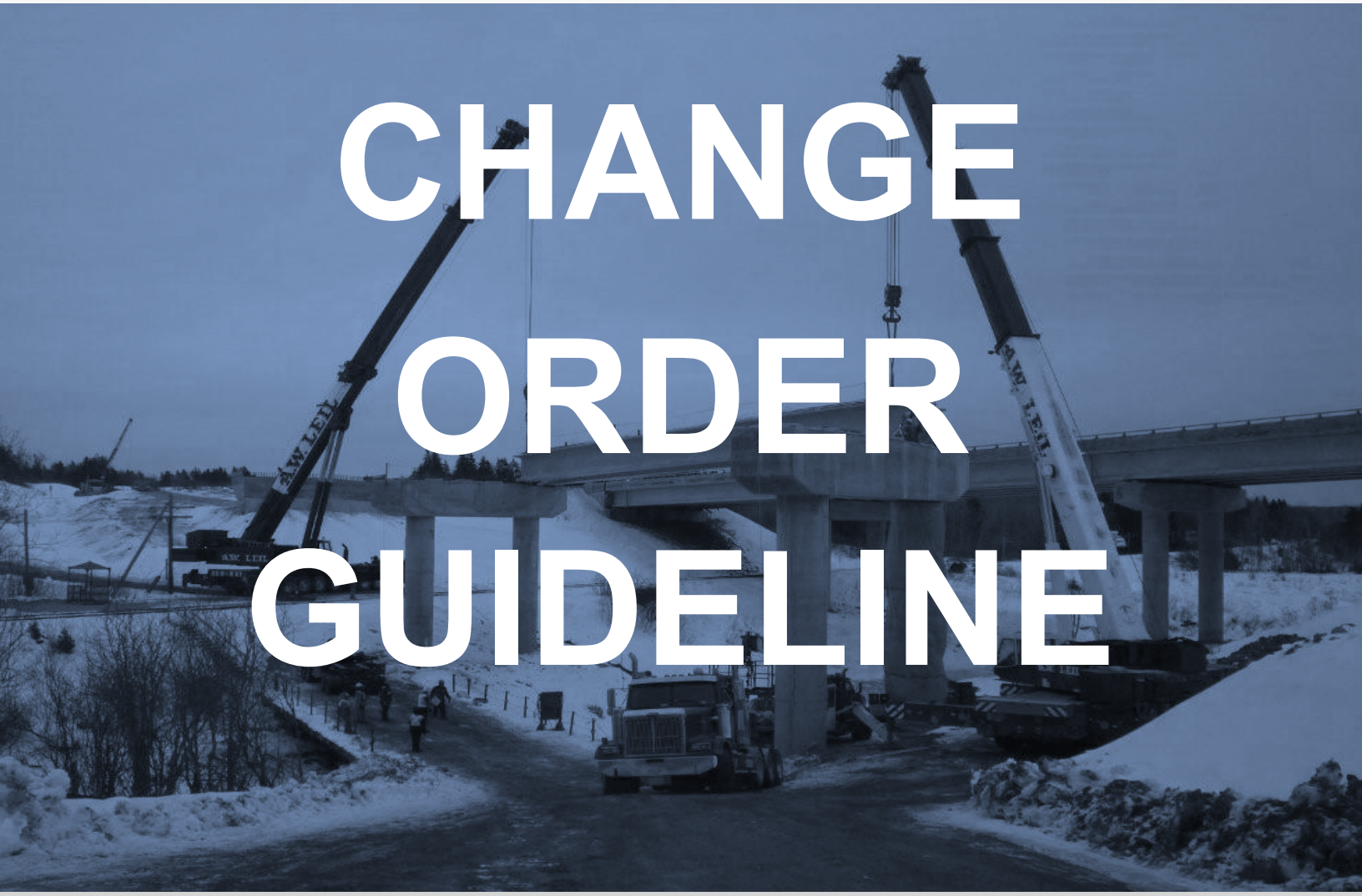

CHANGE ORDER GUIDELINE

June 2, 2015

Change Order Guideline

Introduction

This Document is to be used in the absence of a Contracting Authority's existing change order process and the intent is to provide a uniform consistent acceptable approach that is fair and equitable to both parties.

Constructors want to deliver successful projects. Buyers of construction want the project delivered on time and on budget. Changes in the scope of work on a project have become an inevitable part of the construction process. The size and number of changes on a particular project can significantly alter the cost of the project and timeline. When changes are managed properly, disputes can be significantly reduced and litigation avoided, keeping the project on time and on budget. The purpose of this Change Order Guideline is to provide a fair and reasonable process for the costing and pricing of change orders. It is intended to be a reference that can be used by all parties to the construction process. Used early in the relationship, it can provide the fundamental shared understanding necessary for the management of changes to a project, which all parties can reference. Managing changes properly can enable owners to realize their vision of a successful project. Knowing how changes will be managed from the outset of the relationship will also permit constructors to bring their best skills, experience and knowledge to the delivery of the project.

A change order is an alteration to the scope of works in a construction contract in the form of an addition, substitution or omission from the original scope of works.

Almost all construction projects vary from the original design, scope and definition. Whether small or large, construction projects will have inevitably depart from the original tender design, specifications and drawings prepared by the design team. This can be because of technological advancement, statutory changes or enforcement, change in conditions, geological anomalies, non-availability of specified materials, or simply because of the continued development of the design after the contract has been awarded. In large civil engineering projects variations can be very significant, whereas on small building contracts they may be relatively minor.

Changes may include:

- Alterations to the design.
- Alterations to quantities.
- Alterations to quality.
- Alterations to working conditions.
- Alterations to the sequence of work

Changes may also be deemed to occur if the contract documents do not properly describe the works actually required.

Standard forms of contract generally make express provisions for the contract administrator (generally the architect or engineer) to instruct changes. Such provisions enable the continued, smooth administration of the works without the need for another contract. Change orders must be clear as to what is and is not included/

Valuation of Changes

Variations may give rise to additions or deductions from the contract sum. The valuation of changes may include not just the work which the change instruction describes, but other expenses that may result from the changes, such as the impact on other aspects of the works. Changes may also (but not necessarily) require adjustment of the completion date.

Guiding Principles

- Changes in the scope of work may be inevitable; however a greater effort to diminish the volume of contract changes on construction projects is strongly encouraged.
- When changes become necessary, change orders should have a 30 days maximum turnaround. Within 15 days, contractors should submit appropriate quotations following the guidelines below, and any other requirements stated in the contract. The Consultant and/or owner should review/reject within 15 days. Change Orders should be fairly and reasonably priced and payment of approved changes should conform to contract terms.
- Contractors are entitled to overhead and profit.
- Buyers of construction need a clear understanding of the impact the changes may have on their project budget and timeline.
- Reasonable disclosure of costs is encouraged, while excessive requests for breakdown of costs (i.e., cost of nuts, bolts screws, etc.) can be counter-productive, cause delays, and give rise to additional costs for all parties.
- If it is necessary to issue a Change Directive in advance of approval pricing and all related approvals, this formal direction to proceed should not diminish the urgency to negotiate a final change order price.
- The parties should be proactive in resolving disputes, and every effort should be made to ensure that these disputes will not impact the balance of the project.

Change Directive

According to General Condition 6.3 of the CCDC2 Standard Prime Contract when an owner requires a change in the work, and;

- the change is urgently required and it would not be expedient to reach agreement on the price, or there has been a failure of the parties to agree on a price the Owner may issue a *Change Directive*.Upon receipt of a *Change Directive*, the Contractor must proceed

promptly with the change on a cost plus basis as per CCDC2 general condition Article 6.3.

Prior to executing any work relating to a Change Directive the owner will advise as to the method of validation of man hours spent and materials and equipment used. The owner will designate his authorized representative, authorized to approve the hours shown on the Time Sheets and the related materials and equipment used to perform the work. The contractor will be able to bill for the approved labour, material, equipment and other expenses incurred under the change directive on the monthly progress bill.

Supplementary instructions such as Site Instructions, Field Orders, or Stop Work Orders, are not Change Directives.

After a Change Directive has been issued, both parties must expeditiously continue efforts to achieve agreement on the price of the change based on the Cost Plus method in keeping with CCDC-2 GC 6.3, and then record this agreement in a Change Order.

Change Order

A Change Order is issued when the Owner and Contractor agree on a price and the changes of scope and schedule.

As per CCDC-2, in part 6 of this contract which is titled, “Changes in the Work,” several pricing methods are referenced as follows:

a) By estimate and acceptance of a lump sum prior to work stating;
b) By unit prices set out in the Contract or subsequently agreed upon;
c) By cost and a fixed or percentage fee.(as used with Change Directives)

Our discussions in this section relate to method (a) or “by estimate.” Many Supplementary Conditions make it a mandatory condition that detailed estimates of material and labour be provided by the General Contractor and his subcontractors for all changes in the work.

Each section is reviewed in detail as follows:

Essentially there are five separate classes of change in estimating the cost of a change order:

1. Labour – Hourly Trade Labour Rate multiplied by Number of Hours of Trade Work
2. Supervision
3. Cost of all Materials and Equipment
4. Job Costs/Expenses
5. Overheads and Profit

Section 1: Labour

A. Labour Rate

The Labour Rate is the actual fully burdened cost per hour of labour consumed. The following example is typical and consists of but is not limited to the following:

1. Base Rate *	A
2. Vacation Pay	B
3. Payroll Burdens (WCB, EI, CPP, EI)	C
4. Union or Company Benefits	D
Sub Total	**E** (Sum of A-D)

Typical Percentage Calculations (example)

5. Field Supervision (if not charged separately)	15% x E
6. Small Tools	9% x E
7. Health and Safety **	10.3% x E
8. Rest Periods	4.2% of E
9. Clean Up	4.5% of E
10. Parking (when applicable)	$
11. Out of Town Allowance and Travel (when applicable)	$
12. Other Section 4 items that are not separately charged	$
TOTAL HOURLY RATE	**$ (Sum of 1-12)**

Notes:

*** Base Rate is the bare hourly rate of pay per individual.**

****Health and Safety includes safety equipment, talks, orientation, regulatory compliance, auditing, etc.**

B. Manhours Calculation

In absence of agreed to pre-authorized rates and units, it is strongly recommended that industry standard Labour Units are used in calculating labour units required to complete a change notice. Each change may have a variety of non-typical or abnormal factors that will require adjustments. Factors that should be considered include:

- Crew Size Inefficiency – Changes may require the use of larger than planned workforces.
- Abnormal Work Schedule – Deviations from a normal work schedule will have an impact on labour productivity and required supervision.

Availability of Personnel – When an adequate supply of personnel is not available, the loss of productivity must be taken into account.

- Availability of Personnel – When an adequate supply of personnel is not available, the loss of productivity must be taken into account.
- Multi Storey Factor – Labour adjustment must be made for taller buildings to reflect the rate of productivity loss.
- Garbage Sorting, Tagging, Disposing
- LEED Requirements
- Site Conditions – Inadequate lighting and Housekeeping
- Printing
- Material Handling – Unloading, Storing, Moving
- Time Keeping
- Mobilization and Demobilization
- Estimating
- Stacking of the Trades – A change order may require many trades to perform their work concurrently and in a limited work area resulting in productivity losses.
- Environment Conditions – Extreme weather conditions either heat, humidity or cold may result in productivity loss. *(Dust, restricted access, occupied premises, remote areas…..)*
- Installation Height – Installations above 10 feet require extra equipment and men.
- Interference Drawings
- Record Drawings and As Built
- Labeling
- Measuring
- Scheduling
- Labour Warranties*(if not included in labour rate)*
- Fabrication Drafting
- Clean up

Example of estimated labour units shall be derived from the NECA Manual of Labour Units*, MCAA Labour Estimating Manual*, SMACNA Manual*, MEANS and other such standardized trade units that may exist. It is understood that mitigating circumstances may exist that impact such standardized units. Labour units are based on journeyman rates and experienced productivity.

Labour Units in Estimating Manuals typically identify unit hrs per unit measure of scope. These units are also based on ideal conditions. The above items may need to be considered as extra time required over and above the Estimate Manual utilized.

FACTORS AFFECTING PRODUCTIVITY

There is a need to discuss the adverse effects on labour productivity resulting from causes beyond the direct control of the contractor. As the initial labour estimate is based on ideal productivity conditions, the existing site conditions need to be considered in the overall final labour estimate

A study of productivity factors may be helpful in preparing original estimates and change orders. The individual items and titles proposed, cover a description of conditions without necessarily including each detailed condition that may be involved. The values are a percentage to add onto labour hours of the change.

The factors listed in Appendix B are examples of productivity erosion due to various site conditions and are intended to serve as a reference only. The measure of severity of any one condition will need to be reviewed and agreed to as compared to a baseline of ideal conditions

Section 2: SUPERVISION

A) Labour Supervision

Labour Supervision is the costs of providing direction and supervision to the field labour on projects. It includes:

- Foremen
- General Foremen/Superintendent
- Any other on site Labour Supervisor

This will be provided as a separate cost at agreed to rates or percentage of the hourly rate.

B) Project Supervision

Project Supervision is the cost arising from the coordination and management of a project. It includes:

- Project Coordinators
- Project Manager
- Any other applicable required site Administration staff

Project Supervision is defined as Overhead and included in the fees as noted in Section 5

Section 3: Cost of Materials and Equipment

A) Materials

Material cost should be fair to both parties and mutually agreed upon.

The price will include possible factors such as price escalation, waste, damage, vandalism, theft plus all applicable freight and taxes.

Where possible, the price of materials should be based on Trade published prices like Allpri$er, Trade Service and other agreed to published pricing and adjusted for the specific project conditions.

B) Equipment

Equipment costs are to be actual quoted costs from suppliers.

C) Shop Expenses

Shop expenses are those expenses associated with the operations and maintenance of fabrication facilities. Shop expenses for fabricating materials are to be charged at agreed to hourly shop rates plus materials or at a pre-determined agreed to unit rates.

Section 4: Job Cost/Expenses

A) Job Costs/Expenses

Job Costs/Expenses are all costs necessary for the performance of a contract that cannot be tied directly to the material, labour or subcontractors costs. (Some items could be incorporated into a percentage of the hourly rate in Section 1 or charged as a separate item)

- Equipment Rental
- Site Facilities
- Freight Rates
- Storage
- Permits
- Inspection
- Direct Room and Board (if not in labour rate)
- Travel Allowance (if not in labour rate)
- Interference Drawings
- As Built Drawings
- Parking (if not in labour rate)
- Bonding
- Site Clerical
- Security
- Consumables (if not in labour rate)
- Insurance
- Other…….

B) Impact Costs

Impact Costs refer to the individual and accumulative effect that Change Orders have on the rest of the project. Change Orders should identify the singular impact of the change and related schedule impact.

C) Liquidated Damages or Penalty Clauses

Liquidated damages or Penalty Clauses are a pre-determined sum agreed to in a contract that is recoverable if specific conditions, such as schedule, of that contract are not met. Change Orders may effect the Contracted Substantial Performance date and may even nullify liquidated damages clauses contained in contracts if the Change Order impact is large enough.

Section 5: Overhead and Profit

A) Overhead:

Overhead expenses are administrative expenses of a business which cannot be allocated to any specific project, but are necessary for the business to operate.

- Home office rental, maintenance, utilities, and expenses
- Home office equipment, furniture, and supplies
- Property taxes, business licenses, and auto insurance
- Dues, fees and subscriptions
- Postage and courier (non-job related)
- Advertising and telephone
- Legal and accounting fees
- Sales and marketing
- President's salary and benefits
- Sales force salary and benefits
- Dispatcher's salary and benefits
- Purchaser's salary and benefits (Estimating only)
- Clerical staff salary and benefits
- Estimators' salary and benefits (except for Change Orders if charged directly)

  Project Supervision (as per section 2B)

B) Profit:

Profit is to compensate for risk, effort and return on investment.

The Overhead and Profit on many projects is predefined in the General Conditions or negotiated at the being of the Project or Change Order process. Typical minimum percentage markups as recommended by PWGSC (GC 6.4.1) and CANS are 15% for Subcontracted work and 20% for Work carried out by Own Forces. These agreed to %'s for Overhead and Profit are applicable to the aggregate of sections 1 to 4.

Final pricing of Lump Sum Arrangement (Change Order or Change Directive converted to a Change Order) is the aggregate of sections 1 to 5

Appendix A

Definitions – In addition to Contract definitions, the following is a guide to understand the terminology

1. **Change Directive** is a written instruction prepared by the *Consultant* and signed by the *Owner* directing the *Contractor* to proceed with a change in the *Work* within the general scope of the *Contract Documents* prior to the *Owner* and the *Contractor* agreeing upon adjustments in the *Contract Price* and the *Contract Time*.

   They are used when:

   - Changes are needed, but the parties don't have the time to prepare the change order proposal and complete the review process;
   - Changes are necessary, but the value can't be determined until a later date;
   - The owner gives permission for the contractor to proceed and determine cost/schedule impacts at a later time.

   Changes may be a result of:

   - RFIs;
   - Owner's request;
   - Value engineering;
   - Recognition of error/omission;
   - Reviewing agency request;
   - Changed conditions;
   - Request for substitution.

2. **Change Order** is a written amendment to the *Contract* prepared by the *Consultant* and signed by the *Owner* and the *Contractor* stating their agreement upon:

   - a change in the *Work*;
   - the method of adjustment or the amount of the adjustment in the *Contract Price*, if any; and
   - the extent of the adjustment in the *Contract Time*, if any.

3. **Construction Equipment** means all machinery and equipment, either operated or not operated, that is required for preparing, fabricating, conveying, erecting, or otherwise performing the *Work* but is not incorporated into the *Work*.
4. **Consultant** is the person or entity engaged by the *Owner* and identified as such in the Agreement. The *Consultant* is the Architect, the Engineer or entity licensed to practise in the province or territory of the *Place of the Work*. The term *Consultant* means the *Consultant* or the *Consultant*'s authorized representative.

5. **Contract** is the undertaking by the parties to perform their respective duties, responsibilities and obligations as prescribed in the *Contract Documents* and represents the entire agreement between the parties.

6. **Contract Documents** consist of those documents listed in Article A-3 of the Agreement - CONTRACT DOCUMENTS and amendments agreed upon between the parties.

7. **Contract Price** is the amount stipulated in Article A-4 of the Agreement - CONTRACT PRICE.

8. **Contract Time** is the time stipulated in paragraph 1.3 of Article A-1 of the Agreement - THE WORK from commencement of the *Work* to *Substantial Performance of the Work.*

9. **Contractor** is the person or entity identified as such in the Agreement. The term *Contractor* means the *Contractor* or the *Contractor*'s authorized representative as designated to the *Owner* in writing.

10. **Drawings** are the graphic and pictorial portions of the *Contract Documents*, wherever located and whenever issued, showing the design, location and dimensions of the *Work*, generally including plans, elevations, sections, details, and diagrams.

11. **Notice in Writing** where identified in the *Contract Documents*, is a written communication between the parties or between them and the *Consultant* that is transmitted in accordance with the provisions of Article A-6 of the Agreement – RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING.

12. **Owner** is the person or entity identified as such in the Agreement. The term *Owner* means the *Owner* or the *Owner*'s authorized agent or representative as designated to the *Contractor* in writing, but does not include the *Consultant*.

13. **Place of the Work** is the designated site or location of the *Work* identified in the *Contract Documents*.

14. **Product** *or Products* means material, machinery, equipment, and fixtures forming the *Work*, but does not include *Construction Equipment.*

15. **Project** means the total construction contemplated of which the *Work* may be the whole or a part.

16. **Provide** means to supply and install.

17. **Shop Drawings** are drawings, diagrams, illustrations, schedules, performance charts, brochures, *Product* data, and other data which the *Contractor* provides to illustrate details of portions of the *Work*.
18. **Site Instruction** is an order given by the Engineer (Consultant) or his representatives delegated to the Contractor for the execution of works, purchase of goods, testing materials, design issues etc. The Engineer may issue to the Contractor (at any time) instructions and additional or modified Drawings which may be necessary for the execution of the Works and the remedying of any defects, all in accordance with the Contract. The Contractor shall only take instructions from the Engineer, or from an assistant to whom the appropriate authority has been delegated. The Contractor shall comply with the instructions given by the Engineer or delegated assistant, on any matter related to the Contract. Whenever practicable, their instructions shall be given in writing.

If the Engineer or a delegated assistant:

gives an oral instruction,

- receives a written confirmation of the instruction, from (or on behalf of) the Contractor, within the time specified in the contract, after giving the instruction,
- does not reply by issuing a written rejection and/or instruction within two working days after receiving the confirmation, then the confirmation shall constitute the written instruction of the Engineer or delegated assistant.

19. **Specifications** are that portion of the *Contract Documents*, wherever located and whenever issued, consisting of the written requirements and standards for *Products*, systems, workmanship, quality, and the services necessary for the performance of the *Work*.

20. **Stop Work Order** is an order issued by the owner's representative to stop work on a project. Reasons for the order include failure to conform to specifications, unsatisfied liens, labor disputes, and inclement weather.

21. **Subcontractor** is a person or entity having a direct contract with the *Contractor* to perform a part or parts of the *Work* at the *Place of the Work*.

22. **Substantial Performance of the Work** is as defined in the lien legislation applicable to the *Place of the Work*. If such legislation is not in force or does not contain such definition, or if the *Work* is governed by the Civil Code of Quebec, *Substantial Performance of the Work* shall have been reached when the *Work* is ready for use or is being used for the purpose intended and is so certified by the *Consultant*.

23. **Supplemental Instruction** is an instruction, not involving adjustment in the *Contract Price* or *Contract Time*, in the form of *Specifications*, *Drawings*, schedules, samples, models or written instructions, consistent with the intent of the *Contract Documents*. It is to be issued by the *Consultant* to supplement the *Contract Documents* as required for the performance of the *Work*.

24. **Supplier** is a person or entity having a direct contract with the *Contractor* to supply *Products*.

25. **Temporary Work** means temporary supports, structures, facilities, services, and other temporary items, excluding *Construction Equipment*, required for the execution of the *Work* but not incorporated into the *Work*.

26. **Value Added Taxes** means such sum as shall be levied upon the *Contract Price* by the Federal or any Provincial or Territorial Government and is computed as a percentage of the *Contract Price* and includes the Goods and Services Tax, the Quebec Sales Tax, the

Harmonized Sales Tax, and any similar tax, the collection and payment of which have been imposed on the *Contractor* by the tax legislation.

27. **Work** means the total construction and related services required by the *Contract Documents*.

28. **Working Day** means a day other than a Saturday, Sunday, statutory holiday, or statutory vacation day that is observed by the construction industry in the area of the *Place of the Work*.

Appendix B

	PERCENTAGE OF LOSS IF CONDITION: Minor	Average	Severe
1. **STACKING OF TRADES**: Operations take place within physically limited space with other contractors. Results in congestion of personnel, inability to locate tools conveniently, increased loss of tools, additional safety hazards and increased visitors. Optimum crew size cannot be utilized.	10%	20%	30%
2. **MORALE AND ATTITUDE**: Excessive hazard, competition for overtime, over-inspection, multiple contract changes and rework, disruption of labour rhythm and scheduling, poor site conditions, etc.	5%	10%	15%
3. **REASSIGNMENT OF MANPOWER**: Loss occurs with move-on, move-off men because of unexpected changes, excessive changes, or demand made to expedite or reschedule completion of certain work phases. Preparation not possible for orderly change.	5%	10%	15%
4. **CREW SIZE INEFFICIENCY**: Additional men to existing crews "breaks up" original team effort, affect labour rhythm. Applies to basic contract hours also.	10%	20%	30%
5. **CONCURRENT OPERATIONS**: Stacking of this contractor's own force. Effect of adding operation to already planned sequence of operations. Unless gradual and controlled implementation of additional operations made, factor will apply to all remaining and proposed contract hours.	5%	15%	25%
6. **DILUTION OF SUPERVISION**: Applies to both basic contract and proposed change. Supervision must be diverted to (a) analyze and plan change, (b) stop and replan affected work, (c) take off, order and expedite material and equipment, (d) incorporate change into schedule, (e) instruct foreman and journeyman, (f) supervise work in progress, and (g) revise punch lists, testing and start-up requirements.	10%	15%	25%
7. **LEARNING CURVE**: Period of orientation in order to become familiar with changed condition. If new men are added to project, effects more severe as they learn tool locations, work procedures, etc. Turnover of crew.	5%	15%	30%
8. **ERRORS AND OMISSIONS**: Increases in errors and omissions because changes usually performed on crash basis, out of sequence or cause dilution of supervision or any other negative factors.	1%	3%	6%
9. **BENEFICIAL OCCUPANCY**: Working over, around or in close proximity to owner's personnel or production equipment. Also badging, noise limitations, dust and special safety requirements and access restrictions because of owner. Using premises by owner prior to contract completion.	15%	25%	40%
10. **JOINT OCCUPANCY**: Change causes work to be performed while facility occupies by other trades and not anticipated under original bid.	5%	12%	20%
11. **SITE ACCESS**: Interferences with convenient access to work areas, door man-lift management or large and congested worksites.	5%	12%	30%
12. **LOGISTICS:** Owner furnished materials and problems of dealing with his storehouse people, no control over material flow to work areas. Also contract changes causing problems of procurement and delivery of	10%	25%	50%

materials and rehandling of substituted materials at site.			
13. **FATIGUE**: Unusual physical exertion. If on change order work and men return to base contract work, effects also affect performance on base contract.	8%	10%	12%
14. **RIPPLE:** Changes in other trades' work affecting our work such as alteration of our schedule. A solution is to request, at first job meeting, that all change notices/bulletins be sent to our Contract Manager.	10%	15%	20%
15. **OVERTIME**: Lowers work output and efficiency through physical fatigue and poor mental attitude.	10%	15%	20%
16. **SEASON AND WEATHER CHANGE**: Either very hot or very cold weather.	10%	20%	30%