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Canada

CONSTRUCTION MANAGEMENT



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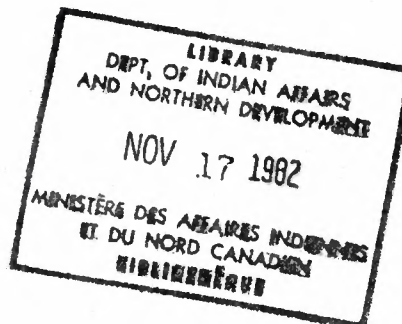


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**Technical Services
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CONSTRUCTION MANAGEMENT

CONSTRUCTION MANAGEMENT

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CONSTRUCTION MANAGEMENT

PREFACE

This guideline is issued to assist band councils in applying the construction management (CM) concept when carrying out construction projects. It deals only with the construction phase of large projects. Depending on the size of the projects, some steps indicated in this guide may not be necessary.

The construction industry is now being plagued by spiralling costs, decreasing productivity, and material shortages. To control these, it is most important that knowledgeable and experienced management guides all phases of the work. One method of ensuring this is by construction management.

Construction management is a method used in the construction industry to plan, simplify, and coordinate work in progress. The construction manager acts on behalf of the band to ensure that the project is well coordinated, that costs are kept within the budget, that schedules are adhered to, and that the quality of the work meets with the approved plans and specifications.

As an illustration throughout this guideline, we have used a three-bedroom standard house project. In practice the detail shown in this guideline would not necessarily be done for a project of this magnitude. However, the principles used do apply to large complex projects. Further, we have assumed the total cost of the house to be \$32,110, whether constructed by day labour or the contract method.

Typical participants and relationships involved in a project carried out by either the day labour or the contract method of construction are shown in Figures 1 and 2.

PARTICIPANTS IN A DAY LABOUR METHOD PROJECT

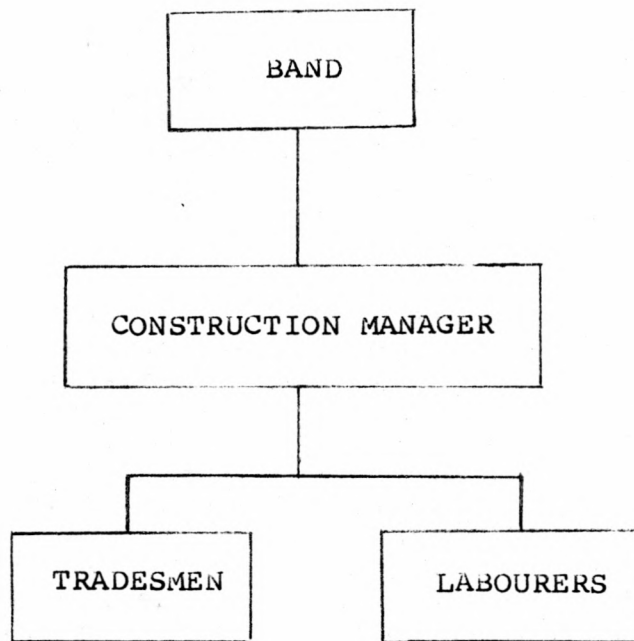


Figure 1

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PARTICIPANTS IN A CONTRACT METHOD CONSTRUCTION PROJECT

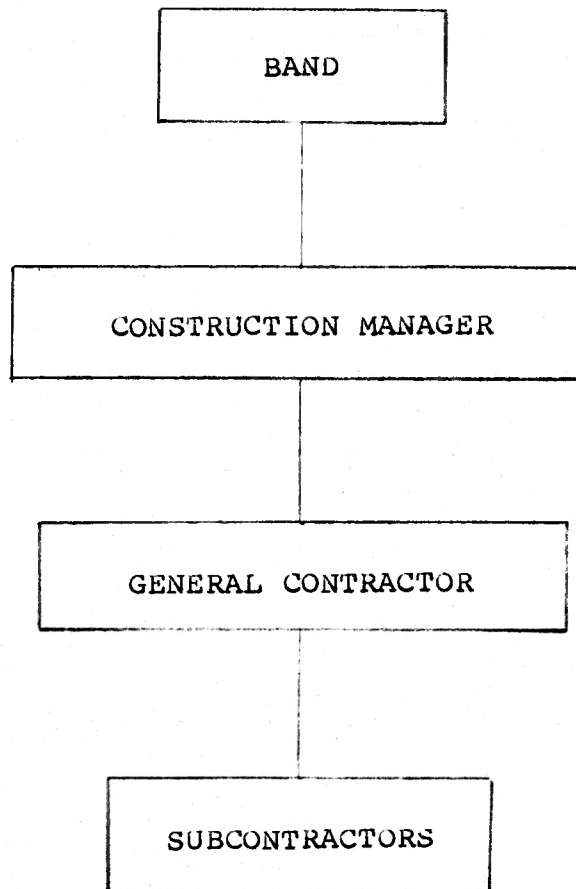


Figure 2

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1.0 PURPOSE

The purpose of this guideline is to assist bands to apply construction management in projects, and to set out the common practices followed in the construction industry. Throughout the guideline are illustrations of various forms used by industry. These forms are specimens only; the band may wish to design and use its own forms.

Construction management guidelines will assist the bands in producing a finished facility on time and within the budget. The participants work to a planned system that will ensure the effective integration of all trades.

The text describes the different methods of construction and the participation of the various parties involved. First, we deal with projects to be implemented using the day labour method; and secondly, using the contract method. In some projects, both may be used.

More details on construction planning and implementation are provided in other parts of the BTP series. It is recommended that this publication be used in conjunction with the following publications:

- BTP-CN-1 Construction Contracting Guidelines
- BTP-GT-2 Construction Inspection

(See 5.0 for information on where to obtain publications referenced herein.)

2.0 DEFINITIONS

- a. Project means a defined body of work with an established completion date and budget.
- b. Construction management is a method that has been developed and widely used to plan, simplify, and coordinate work in progress as the physical status of a project develops.
- c. Construction manager means an individual experienced in construction, and who is competent to schedule work and deal successfully with his employer, staff and/or contractors.
- d. Band means the employer and principal user of a facility.
- e. General contractor means a construction company which may enter into a contract with the band for the completion of any construction works.
- f. Subcontractor means a construction company or an individual who may enter into a contract with the general contractor for the completion of any specialty construction works.
- g. Support staff means persons who are required to provide specific support services necessary for the construction manager to complete the project and accomplish his goal.

3.0 DAY LABOUR METHOD

3.1 Introduction

In the day labour method of construction, the band acts as a contractor, hires a construction manager, tradesmen and labourers for each aspect of the work, orders or provides the equipment, orders materials, and performs the administrative duties necessary for successful completion of the work.

This method is an alternative to having the facility constructed by a general contractor for a fixed price. The day labour method is not a competitive process and requires strict and direct supervision by the construction manager, and greater participation by the band during the construction phase.

While the general contractor's profit is not a factor, there are additional administrative and equipment overheads associated with day labour. Day labour projects may be undertaken for many reasons or circumstances. A few examples are when:

- a. construction is in remote areas where no general contractors are available;
- b. bids received from general contractors are significantly higher than the detailed estimate, and the low tender received was considered unrealistic (This happens in areas where contractors are busy and work is plentiful);
- c. the method is to be used as a training program for local people, to enable them to participate in the projects by actually doing the work, learning a trade, and becoming familiar with building practices and administrative procedures; and when
- d. unemployment in an area is high.

3.2 Roles and Responsibilities

The roles of the principal participants in managing day labour projects are extremely important. They must be defined so that each person is aware of his duties. The following is a basic list of participants.

3.2.1 Construction Manager

Appointed by the band for the duration of the project, this person must be thoroughly experienced in the construction industry, competent, and able to work with and supervise others. Principal functions of his role are to:

- a. ensure that all plans and specifications, shop drawings, and similar documentation have been checked for accuracy, and are approved at the appropriate time by the band;
- b. visit the construction site, familiarize himself with the conditions, and ensure that all services are available and that the site is suitable for the proposed facility;
- c. engage a support staff--if applicable and approved by the band--to carry out the day-to-day portions of the work in progress;
- d. ensure that all materials are purchased, warehoused, and secured according to established procedures; that they are on hand; and that other required items (such as those for use in site offices, and accommodation and eating facilities) have been ordered and will be available at the site when required;
- e. ensure that all equipment required on or for the project is on hand, or that arrangements have been made for purchase as required;
- f. ensure that all changes are approved by the band, and that approved changes are made to the project work;
- g. during construction ensure that the band is informed of work progress and is aware of the costs involved and the corresponding physical status; and

- h. ensure that all of the administrative requirements are being met (e.g. payroll, payments to suppliers, reports, etc.).

Much of the administration of the reserve is carried out by the band staff. If the band has the capability of providing this support service to the construction manager, it should do so; otherwise support staff should be retained.

3.2.2 Construction Trades Supervisor (Superintendent/Foreman)

When the construction manager is hired for a large complex project, the band may approve the employment of a construction trades supervisor (superintendent/foreman) to assist him. This is not applicable to most projects.

The construction manager, if approved by the band prior to the start of the project, may arrange for the services of a competent trades supervisor, who will be responsible to the construction manager and act on his behalf to:

- a. ensure that the quality of the work is in accordance with the approved plans and specifications;
- b. arrange for materials to be delivered to the job site at the appropriate time, stored according to approved procedures, and accounted for at all times;
- c. ensure that sub-trade materials (electrical, mechanical, heating, etc.) are on site when required by the tradesmen. Be certain that the tradesmen understand the work to be done, and that their performance meets with the approved plans and specifications;
- d. ensure that all changes are approved and implemented;

- e. keep records of all work done, prepare (or have prepared) as-built drawings, and document any changes to the work;
- f. prepare accurate reports on the progress of the work for the construction manager's use and assessment;
- g. make provisions for tools and equipment for the site, and ensure they are operated safely, and secured when not in use;
- h. ensure that the site is safe according to DRM 10-7/47.3 "Construction Safety and Site Protection - Day Labour Projects";
- i. maintain work plan schedules (physical and financial);
- j. ensure that the project is ready for inspection by the band when required; and
- k. check all time-sheets on a weekly basis, and forward these with necessary documentation, using the approved method, to where the payroll will be made up; and arrange for paycheques to be ready for distribution to the workmen on the established payday.

3.2.3 Support Services

The construction manager should provide to the band a list of support personnel required for various functions or services as the work progresses. This requirement will depend on the size of the project and on the degree of services that the band is capable of providing through existing staff. The band must approve this list. Some of these personnel are:

- a. timekeeper and/or clerks to carry out payroll functions;

- b. administrators to provide guidance and assistance in preparing contract documentation (if applicable) and interpreting any contentious items; and
- c. material expeditors to secure materials, arrange shipping, and resolve problems with suppliers.

3.2.4 Band Council

The band, as the principal user of the facility, is responsible for total project management. A construction manager should be employed prior to construction, but if possible, he should be hired in the final design stage. The construction manager should report directly to the band or its appointed representative. The band's role during construction is to:

- a. engage a construction manager to look after the construction phase;
- b. ensure that adequate funds are available for the project;
- c. be responsible for approval of all changes (changes often result in cost increases and should be carefully considered prior to approval); and
- d. conduct on-site inspections with the construction manager to ensure that the work is progressing well and that its requirements are being met.

3.3 Project Planning and Cost Control

3.3.1 Planning (Physical and Financial)

The process outlined below applies to large complex projects, but for presentation we have used a small project., i.e., a three-bedroom house.

Prior to construction, the construction manager must develop a physical and financial plan that will, by comparison of actual costs and physical accomplishment, ensure that the project is progressing within the cost and time frame. To develop the plan, a detailed cost estimate must be prepared, breaking the project into the various work packages or "elements". An illustration of this type of estimate is attached to this guideline (See Illustration 1. Refer also to Bill of Materials, Illustration 11). Other projects which are underway within the community or general area will have an effect on the availability of human resources and equipment.

From the detailed estimate a time frame and cash flow plan (See Illustration 2) can be developed by using the cost indicated for each item within the element, and then working out the time required to complete each item. Once this is done, it will establish the cash flow requirement and indicate the time allowed for each item. By accumulating the time and costs, the total cost and time necessary to complete the project will be established. As an example, let us consider the foundations, made up of element E, excavation and backfill, and element C, concrete foundation and slab (Figures have been rounded off):

The total cost of the element E--excavation and backfill--in the detailed estimate is \$601.10 and is developed as follows: Labour costs \$113. For illustration purposes we have assumed the average cost of labour to be \$6.25 per hour. Then $\$113 \div \$6.25 = 18$ hours. However within element E, E2, hand excavation, accounts for 6 hours. Therefore the remainder of the work in element E has been estimated to take 12 hours.

In order to complete the basement, the foundation walls will have to be formed. To find the hours allowed for this, refer to the detailed estimate--concrete foundation and slab item C. The labour allowed for this work is \$1,237. This again, at an average of \$6.25 per hour, equals $\$1,237 \div \$6.25 = 198$ hours,

which means a total of $18 + 198 = 216$ hours, the required time to complete the foundations and basement. To convert to days, assume a four-man crew (number of men will depend on the work plan developed by the construction manager) working 8 hours per day; $216 \text{ hours} \div 8 \text{ hours} \div 4 \text{ persons} = 7 \text{ days}$ (See Illustration 3). The physical plan shows the time span of seven days--1 day for excavation, the formwork starting the same day as the hole is excavated. Then the wall is poured, the formwork stripped, weeping tile installed, etc., using a total of six days. The backfilling uses up the final or seventh day. The cost of this work would be extracted from the detailed estimate to give the cash flow. In other words, after seven days, E and C work packages (elements) are complete, and the total cost (including labour, materials and equipment rentals) is \$4,924.

Each work package using the same buildup on a continuing basis provides the full time span and the dollars required for each package. Work packages E and C represent 10% of the total project. This is then plotted into the monthly cash and physical projection (See Illustrations 4 A and 4 B) to show the funds planned to be spent in month 1 with the percent of the work planned for completion.

3.3.2 Progress Reporting

For month 1 of the progress report, using the same construction estimate, the construction manager will report to the bank the actual accomplishments. This report should indicate whether the work was carried out in accordance with the plan or if the actual accomplishment is in variance (See Illustration 5). Note in the illustration that by the end of month 1, the actual costs of three elements upon completion exceeded the planned expenditure by a total of \$216. Once this is known one sees that column 14 of Illustration 5 shows the estimated total cost of the project to be $\$32,110 + \$216 = \$32,326$.

3.4 Hiring of Work Force

If the band has approved the recruitment of support staff to the construction manager, these positions should be filled first.

When a band acts as a general contractor, it will be necessary for the band council to determine the application of labour, Unemployment Insurance, and Workmen's Compensation rates. The labour rates and conditions applicable to the area of the project should be applied uniformly for all personnel working on the project. Labour rates and Unemployment Insurance are administered by departments of the federal Government; Workmen's Compensation is administered by the province or territory in which the project is located.

The minimum rates of pay are established by the Department of Labour for the trade in a specific area or the approved union rate if union personnel are employed. It is suggested that the following documentation be used:

a. Hiring card (See Illustration 6)

A hiring card should be completed for all employees. Non-Indian workers are subject to income tax. Documentation of non-Indian employees requires that each employee fill out a TD-1 form (See Illustration 7) for income tax purposes. All documentation is to be completed when the employee is taken on strength, and before the first pay period.

b. Construction time sheets (See Illustration 8)

A time sheet for each employee should be completed showing the daily hours worked and the total hours during the pay period. These time sheets should be signed by the trades supervisor (if applicable) or the construction manager.

c. Individual record card (See Illustration 9).

A personal record card should be kept for each employee. This should be up-to-date and should indicate deductions from pay, e.g. U.I.C., C.P.P., and income tax (if applicable) so that at termination of employment this information is available to the employee.

d. Employment termination notice (See Illustration 10)

This form should be prepared in duplicate--one copy to be kept for local records, and the original copy forwarded to the band council.

The above records are required to enable workmen to confirm hours of work when claiming unemployment insurance or workmen's compensation, or to confirm the total amount of money deducted for income tax.

3.5 Material Acquisition and Expediting

The supply and delivery dates for most of the materials should be established in accordance with the implementation plan developed before the start of construction, so as not to delay the progress of work.

A system of control should be developed to ensure that materials are used as intended at the time of purchase and are properly secured. A responsible person should be identified to control the distribution and a watchman hired to prevent theft during off-hours.

If the materials have not been purchased, the construction manager should prepare a complete list of requirements for completion of the project. The bill of materials (see Illustrations 11a and b) should be broken down into the divisions used by

the Masterformat, formerly the Uniform Construction Index (UCI) (e.g. division 1 - general requirements, division 2 - site work, division 3 - concrete, and ending with division 16, electrical), commonly used by contractors and suppliers of construction materials. This method is recommended to ease purchasing action when more than one supplier is invited to tender. Once a bill of materials has been prepared, the construction manager will have the necessary tendering documentation completed and can assist the band to undertake purchase action.

The details of shipping and crating of materials will vary depending on the destination. The bill of materials should contain crating and packaging instructions.

3.6 Accommodation and Eating Facilities

In remote areas where no accommodation is available, it may be necessary to provide lodging and eating facilities for a construction crew. Temporary housing may be used if available, or an existing building converted to provide sleeping accommodation and kitchen facilities. Kitchen and cleaning staff are usually hired locally. However it may be necessary to purchase and store provisions, cleaning products, beds and beddings. Wherever possible, every effort should be made to arrange accommodation and meals for the construction crew, at a per day rate, with local residents, co-ops, businessmen, or catering services.

3.7 Work Implemented by Contract

Skilled tradesmen or equipment may not be available to undertake certain aspects of the work and may have to be hired by contract. Individual trade works which may fall into this category are: plumbing, heating, ventilation and electrical. The construction manager should refer to BTP-CN-1 Construction Contracting Guidelines for detailed procedures concerning tender call, contract award, and administration.

3.8 Construction*

Just before construction, the construction manager will hold a meeting with the band and trades supervisor to review the work packages, clarify contentious items, receive special instructions from the band, and agree on:

- a. responsibility of each of the participants,
- b. questions relating to the plans and specifications,
- c. payroll and administration procedures,
- d. procedures for approving change orders, and
- e. a schedule for progress reports.

The construction manager ensures that the work is progressing satisfactorily, and meets with the support staff (if applicable) to clarify and resolve any problems and report to the band on the progress.

Careful control of expenditures is critical. At the end of each week the appropriate information should be transposed into dollars and recorded in the reporting document which the construction manager assesses. The latter will then report to the band (See 3.3).

By comparing the actual work done with the detailed estimate, the construction manager will be able to identify any discrepancies and/or cost increases as they occur. He must assess these to determine whether the detailed estimate was wrong or whether the problem is at the job site. A significant variation warrants a complete analysis of the project to see where trade-offs can be made to keep within cost (e.g., change in quantity, or reduction in requirements). The construction manager shall record all field changes. The band will also be advised of any field changes before they are

*3.8 should be read in conjunction with 3.2, which outlines the duties of the construction manager and the support staff (if applicable).

implemented, and will approve them based on the recommendation of the construction manager. Should changes involve a new design or an extension of time and increased cost, the band should arrange to have the original plans and documentation altered to reflect these changes.

Once the project is substantially complete, the construction manager will conduct an inspection of the project and record all deficiencies. When all deficiencies are corrected, he will arrange for the final inspection and takeover of the project. The band will be represented at both inspections to ensure that the facility meets its requirements. Inspection procedures are described in BTP-GT-2 "Construction Inspection".

Once the project has been completed and the band is satisfied that the facility meets its requirements, the construction manager will ensure that all relevant documents, warranties, guarantees, as-built drawings and procedure manuals are handed over.

4.0 CONTRACT METHOD

4.1 Introduction

This method of construction is common because it puts the responsibility for the cost of the work on the shoulders of the contractor and provides the band with a fixed cost and time schedule rather than an estimate. If this method is used, refer to BTP-CN-1 "Construction Contracting Guidelines".

4.2 Roles and Responsibilities

The roles and responsibilities of the principal participants in a project carried out using the contract method are important and should be defined so that each is aware of his duties. The following is a basic list of participants.

4.2.1 Construction Manager

In cases when a construction project is undertaken by contract, the role of the construction manager should be to ensure that:

- a. all working drawings and specifications have been approved and are ready for inclusion in the tender package;
- b. the tender package is complete and all required securities are requested;
- c. funds are available;
- d. all permits, site services and municipal and environmental considerations have been met;
- e. tenders are well advertised and sufficient time is allowed for the preparation of the tender submission;
- f. all bids received are properly assessed. This assessment should consider the contractor's capability for performing the work according to the plans and specifications, his financial ability, and the feasibility of his physical schedule and costs. A similar assessment must be carried out for the major sub-contractors (e.g. electrical, plumbing, heating, and ventilating);
- g. a recommendation is made to the band council concerning award of the contract to the lowest acceptable bidder;
- h. the contractor's schedule and cash flow meet his approval;
- i. progress payment schedule and documentation requirements are developed; and
- j. once the contractor has been selected:

- (1) all shop drawings are prepared and approved in a timely manner;
- (2) the quality of the work meets the specifications;
- (3) the work is properly supervised and completed in accordance with the approved plans and specifications;
- (4) the band is advised of the progress of the work on a regular basis;
- (5) the band is notified of any change in cost or schedule and of its effect on the completion date, and approves these changes; and
- (6) he is available to participate in all project inspections, in particular the interim completion and take over. This procedure is explained in BTP-GT-2 "Guidelines for Construction Inspection by Indian Bands."

4.2.2 Support Services

The requirement for support services is dictated by the size and complexity of the project. On the majority of projects, which require only one or possibly two contractors, he would control the project without support staff.

4.2.3 Band Council

The band, as the principal user of the facility, has these responsibilities:

- a. to ensure that funding is available to meet commitments;
- b. to provide the construction manager with clearly defined terms of reference that will allow him to properly exercise authority during the construction period;
- c. to ensure that progress payments are made promptly;
- d. to approve any required changes in cost and/or schedule as quickly as possible;

- e. to participate with the construction manager on interim and final inspections;
- f. to ensure that any contemplated changes are channelled through the construction manager, thus avoiding direct involvement with the contractor; and
- g. to consider the recommendations of the construction manager in relation to the award of the contract.

4.3 Project Planning and Cost Control

4.3.1 Planning

The construction manager should, immediately after the contract has been awarded, request the physical and financial plan from the contractor. This must be broken down by element as set out in the specifications. One method of doing this is to show the physical plan on a bar chart from which the financial plan can be obtained by element cost (See Illustration 12). This should be approved by the band and the construction manager, and used as the basis for reporting progress and providing progress payments to the contractor.

4.3.2 Reporting and Progress Payments

For ease of presentation, we will assume that the contract value is identical to the total cost used in the day labour method for the three-bedroom house, i.e. contract \$29,972 + overhead \$2,138 = \$32,110.

As an example, let us assume that during the first month of work, the contractor completed the excavation and backfill, concrete foundations and slab, and the exterior walls, and started work on the roof and sheet metal, electrical and plumbing. From the contractor's physical and financial plan and the detailed estimate, the total cost of the work to date would be:

E	- excavation and backfill 100%	\$ 601.00
C	- concrete foundations and slab 100%	4,323.00

EXT-	exterior wall 100%	3,287.00
R	- roof and sheet metal 30% of 3,088.00	926.00
F	- interior framing 5% of 3,283.00	164.00
RL	- electrical 30% of 3,200.00	960.00
P	- plumbing 12% of 6,990.00	1,470.00
		<u>11,731.00</u>

(See Illustrations 13 and 14)

4.4 Hiring of Support Staff

The construction manager will recruit any support staff, required and approved by the band, which the band itself cannot provide.

An all-inclusive rate of pay for the support staff may be negotiated at a weekly or monthly rate (including pay, board, and room allowances, etc.). The all-inclusive rate is preferred, as it is the employee's responsibility to find his own lodging.

4.5 Material Acquisition and Expediting

When using the contract method, the responsibility for material acquisition and expediting falls on the contractor. The construction manager on occasion may have to remind the contractor to have materials on site so as to keep the project to the approved schedule.

4.6 Accommodation and Eating Facilities

In remote areas where no accommodation is available, it may be necessary to provide lodging and eating facilities (at a negotiated price or according to a statement to this effect included in the contract documents) for the contractor, the construction manager, the trades supervisor and the clerk of works. If possible every effort should be made to arrange accommodation and meals at a daily rate with local residents, the cooperative, private entrepreneurs, or catering services.

4.7 Construction

Before calling tenders, the construction manager should meet with the band to ensure that all necessary documentation has been included in the tender package. The cost estimate and time frame should also be reviewed to ensure that sufficient funds are available and that the time frame established is still realistic. They will also agree on the coverage of the tender call and the tendering period.

During the tendering period, the construction manager will ensure that all enquiries are handled quickly, and that any changes made to the documents are passed on to all tenderers by means of an addenda. Tenders will be opened only at the time/date specified.

On receipt of tenders, the construction manager will review all tenders, ensure that all addenda and security requirements have been met, select the most advantageous bid, in accordance with BTP-CN-1, and recommend contract award to the band. When the band and the construction manager agree on the selection, a contract will be awarded to the successful contractor.

The construction manager and the band will meet with the contractor to agree on:

- a. the contractor's cash flow and work schedule,
- b. the contractor's method of operation,
- c. the process for approving changes,
- d. shop drawings required,
- e. progress payment scheduling and processing,
- f. the selection of subcontractors,

- g. arrangements for accommodation and field offices,
- h. inspection procedures, and
- i. progress reports.

Regular meetings will be held between the construction manager and the contractor to discuss work in progress and resolve any contentious items.

During construction continuous comparison between the project plan and actual work must be made to ensure that the work is progressing on schedule and within the cost. If at any time the actual progress deviates from the approved plan, the construction manager must find the cause, assess the impact, and take corrective measures. This will require discussion with the contractor to determine the cause and agree on the solution. The construction manager will report to the band at agreed intervals on the progress of the work, obtain the appropriate approvals, and make certain that all progress payments are handled efficiently and quickly.

Once the project is substantially complete, the construction manager will arrange for an interim inspection to be attended by the band's representatives. During the inspection, a deficiency list will be prepared by the construction manager to pass on to the contractor. Once deficiencies have been corrected, the final inspection will be carried out, and the project, if satisfactory, will be handed over to the band. For the procedures on inspection of construction projects, refer to BTP-GT-2. Once the project is finished and accepted, the construction manager will ensure that all necessary documentation, warranties, as-built changes etc., are given to the band.

5.0 REFERENCES

References to available publications and/or authorities have been made throughout this guideline. For easy reference they are listed here.

- a. Labour rates are obtainable from the following locations depending on the area in which the project is to be carried out:
 - (1) Labour Canada, Eastern & Northern Ontario District, SBI Building 11th floor, 2323 Riverside Drive, Ottawa, Ontario K1A 0L5;
 - (2) British Columbia, Alberta, Yukon Territory and Northwest Territories, Mountain Region, Department of Labour, 750 Combie St., Vancouver B.C V6B 2P2;
 - (3) Saskatchewan, Manitoba, North Western Ontario, Central Region, Department of Labour, 400-303 Main St. Winnipeg Manitoba R3C 3G7;
 - (4) Quebec, Saint Lawrence Region, Port of Montreal Building, Wing 3, Cité du Havre, Montreal, Quebec H3C 3R5;
 - (5) New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland, Atlantic Region. Canadian Department of Labour, c/o VIC offices, 4th floor, Federal Building, 1075 Main St. Moncton. N.B. E1C 1H2.
- b. Information on unemployment insurance can be obtained from the UIC district office established to administer the program in the area of the project.
- c. Information on workmen's compensation can be obtained from the Workmen's Compensation Board for the appropriate province or territory.

- d. the Masterformat, formerly the Uniform Construction Index, available from Construction Specifications Canada, 1027 Yonge St. Toronto Ontario;
- e. DRM 10-7 and BTP Publications can be obtained from regional offices of DIAND, Engineering and Architecture:
 - (1) BTP-CN-1 Construction Contracting Guidelines
 - (2) BTP-GT-2 Construction Inspection
 - (3) DRM 10-7/47.3 Construction Safety and Site Protection - Day Labour Projects

SPECIMEN

Detailed estimate for a

Project 3-Bedroom Residence
 Area 30' x 40'
 Location

Estimate No.
 By
 Page 1 of 5

Item Code	Element	Elem. Unit	Qty.	Unit Price		Extension			Total element
				Lab.	Mat.	Lab.	Mat.	Equip.	
E	<u>Excavation and backfill</u>							80	
E 1	Machine excavation	hrs	4						
E 2	Hand excavation	hrs	6	4.60		27.60			
E 3	Gravel/stone weepers	C.Y.	35	.50	2.00	17.50	70.00		
E 4	Gravel backfill (imp.)	C.Y.	80	.20	2.00	16.00	160.00		
E 5	Machine for backfill	hrs	2		20.00	-		40	
E 6	Weeping tile, straight 4"	L.F.	260	.20	.30	52.00	78.00		
E 7	Special weeping tile	No.	40	-	1.50	-	60.00		
	Total element E					113.10	368.00	120	601.10
C	<u>Concrete found. and slab</u>								
C 1	Conc. wall ftgs. 2500 lbs.	C.Y.	61 1/2	4.00	25.00	26.00	162.50		
C 2	Conc. walls, 2500 lbs.	C.Y.	26	4.50	25.00	117.00	650.00		
C 3	Conc. slab on grade, 2500 lbs.	C.Y.	15	4.00	25.00	60.00	375.00		
C 4	Conc. pad for furnace	C.Y.	2	4.50	25.00	9.00	50.00		
C 5	Forms for walls (rental)	S.F.	1050	.40	1.00	420.00	1050.00		
C 6	No. 4 rods, (4 rods)	L.F.	560	.10	.10	56.00	56.00		
C 7	5/8 0 x 12" A. bolts	No.	28	1.00	1.00	28.00	28.00		
C 8	Waterproof walls	Gal	5	4.50	1.00	22.50	5.00		
C 9	Finish slab	S.F.	1200	.20	.10	210.00	120.00		
C 10	Chimney foundation	C.Y.	3	5.00	15.00	15.00	45.00		
C 11	Basement windows, 4' x 3'	No.	6	9.00	45.00	54.00	270.00		
C 12	Rough bucks, 2' x 4'	L.F.	200	.10	.12	20.00	24.00		
C 13	Stairwell, and stairs	L.F.	10	20.00	25.00	200.00	250.00		
	Total element					1237.50	3085.50		4322.50

Illustration 1

Project
Area
Location

Estimate No.
By
Page 2 of 5

Item Code	Element	Elem. Unit	Qty.	Unit Price		Extension			Total element
				Lab.	Mat.	Lab.	Mat.	Equip.	
EXT	<u>Exterior walls</u>								
EXT 1	2" x 4" framing and blocking	FBM	1200	.10	.10	120.00	120.00		
EXT 2	2" x 4" framing openings	FBM	300	.10	.10	30.00	30.00		
EXT 3	2" x 6" sill	FBM	140	.08	.10	11.20	14.00		
EXT 4	2" x 6" header	FBM	320	.08	.15	25.60	33.50		
EXT 5	3" batt insulation	S.F.	900	.08	.07	72.00	63.00		
EXT 6	3/4 sheathing, 1" x 8" shiplap	FBM	1400	.10	.16	140.00	112.00		
EXT 7	Bldg. paper	Roll	4	2.00	8.00	8.00	32.00		
EXT 8	Bevel siding, 3/4" x 7/8"	FBM	1400	.10	20.00	140.00	280.00		
EXT 9	Interior gypsum board, 5/8"	SHs	35	.10	.09	3.50	3.15		
EXT 10	Windows, c/w screen	S.F.	380	.85	3.50	323.00	1330.00		
EXT 11	Exterior doors and screens, c/w hardware	No.	2	45.00	120.00	90.00	240.00		
EXT 12	Rough blocking framing	FBM	300	.10	.12	30.00	36.00		
	Total element ext					993.30	2293.65		3286.95
R	<u>Roof and sheet metal</u>								
R 1	Roof trusses, 5/12 slope	No.	21	9.00	20.00	189.00	420.00		
R 2	1" x 4" boards, shiplap	FBM	2000	.12	.16	240.00	320.00		
R 3	Asphalt shingles	Sqs.	16	40.00	20.00	640.00	320.00		
R 4	2" x 3" soffit framing	L.F.	300	.10	.12	30.00	36.00		
R 5	Gable framing, 2" x 4"	FBM	200	.10	.12	20.00	24.00		
R 6	1/2" plywood soffit and gable	Shts	12	2.00	8.00	24.00	96.00		
R 7	1" x 4" fascia	L.F.	200	.10	.20	20.00	24.00		
R 8	Favestrough	L.F.	88	.50	1.00	44.00	88.00		
R 9	Downspouts	No.	2	3.00	10.00	6.00	20.00		
R 10	Hardware	All	All	-	-	-	10.00		
R 11	Flyscreen, 2"	Roll		15.00	-	15.00	25.00		
R 12	2" x 2" blocking	L.F.	150	.10	.10	15.00	15.00		
R 13	2" x 4" blocking	FBM	150	.10	.12	15.00	18.00		
R 14	3/4" round mould	L.F.	100	.10	.20	10.00	20.00		
R 15	4" insulation	S.F.	1200	.07	.07	84.00	84.00		
R 16	Vapour barrier	Rolls	2	8.00	-	16.00	-		
R 17	Gypsum ceiling	Shts	40	2.00	3.00	80.00	120.00		
	Total element R					1448.00	1640.00		3088.00

Project
Area
Location:

Estimate No.
By
Page 3 of 5

Item Code	Element	Elem. Unit	Qty.	Unit Price		Extension			Total element
				Lab.	Mat.	Lab.	Mat.	Equip.	
F	<u>Interior framing</u>								
F 1	Interior partitions, 2" x 4"	FBM	1400	.10	.12	140.00	168.00		
F 2	Gypsum wall board 5/8"	Shts	90	2.00	3.00	180.00	270.00		
F 3	2" x 8' floor joists x 16'	FBM	1650	.14	.20	231.00	330.00		
F 4	1" x 3" strapping	L.F.	1200	.10	.10	120.00	120.00		
F 5	3/4" ply sub floor	Shts	42	4.00	11.00	168.00	462.00		
F 6	Building paper, 15 lbs.	Roll	2	4.00	20.00	8.00	40.00		
F 7	2 x 4 rough bucks, framing etc.	FBM	300	.10	.12	30.00	36.00		
F 8	Interior door frames	No.	10	15.00	20.00	150.00	200.00		
F 9	Interior doors	No.	10	8.00	40.00	80.00	400.00		
F 10	Hardware doors	No.	10	-	15.00	-	150.00		
	Total element F					1107.00	1276.00		3283.00
M	<u>Millwork - finishing</u>								
M 1	Baseboard and moulding	L.F.	900	.08	.10	72.00	90.00		
M 2	Moulding and trim doors	Set	12	8.00	8.00	96.00	96.00		
M 3	Moulding and trim windows	Set	7	4.00	7.00	28.00	49.00		
M 4	Moulding and trim attic opening	L.F.	20	.20	.15	4.00	3.00		
M 5	Cupboards, kitchen	L.F.	30	4.00	40.00	120.00	1200.00		
M 6	Cupboards, bathroom	L.F.	12	6.00	30.00	72.00	360.00		
M 7	Shelving, closets	L.F.	200	1.00	1.50	200.00	300.00		
	Total element M					592.00	2098.00		2690.00

Estimate No.
By
Page 4 of 5

[illegible]

Project
Area
Location

Estimate No.
By
Page 5 of 5

Item Code	Element	Elem. Unit	Qty.	Unit Price		Extension			Total element
				Lab.	Mat.	Lab.	Mat.	Equip.	
	<u>Optional</u>								
S	<u>Special finishes</u>								
	Basement finishing								
S 1	1/2" gypsum bd - base ceiling	Shts	40	1.50	3.00	60.00	120.00		
S 2	1/2" x 12 x 12' ceiling tile	S.F.	1200	.10	.20	120.00	240.00		
S 3	2" x 4" framing walls	FBM	1600	.10	.12	160.00	192.00		
S 4	2" insulation and vapour barrier	S.F.	1200	.07	.08	84.00	96.00		
S 5	Plywood finish walls	Shts	38	4.00	15.00	152.00	570.00		
S 6	Doors (int.)	No.	1	10.00	20.00	10.00	20.00		
S 7	Trim (int.)	Set	1	10.00	8.00	10.00	8.00		
S 8	Hardware	Set	1	-	-	-	15.00		
	<u>Total element S</u>					596.00	1261.00		1857.00

SPECIMEN
Time Frame and Cash Flow
Project Plan
Project 3-Bedroom House

MONTH	1	2	3	TOTAL
PHYSICAL %	38	90	100	100
FINANCIAL \$	12,184	28,736	32,100	32,110

Submitted by _____
Construction Manager

Date

Approved by _____
Band Council

Date

Illustration 2

SPECIMEN

Physical Plan Bar Chart Schedule

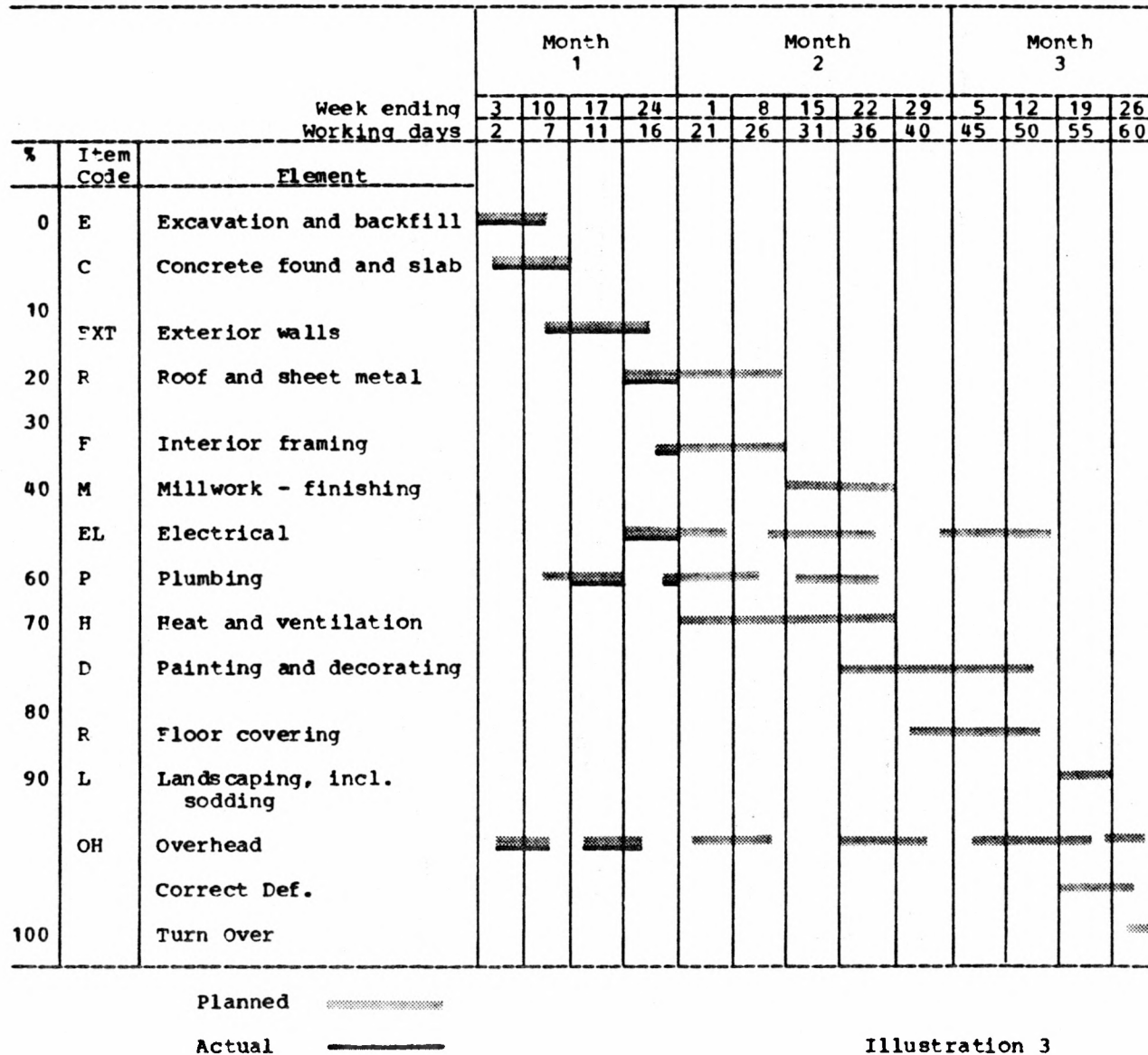
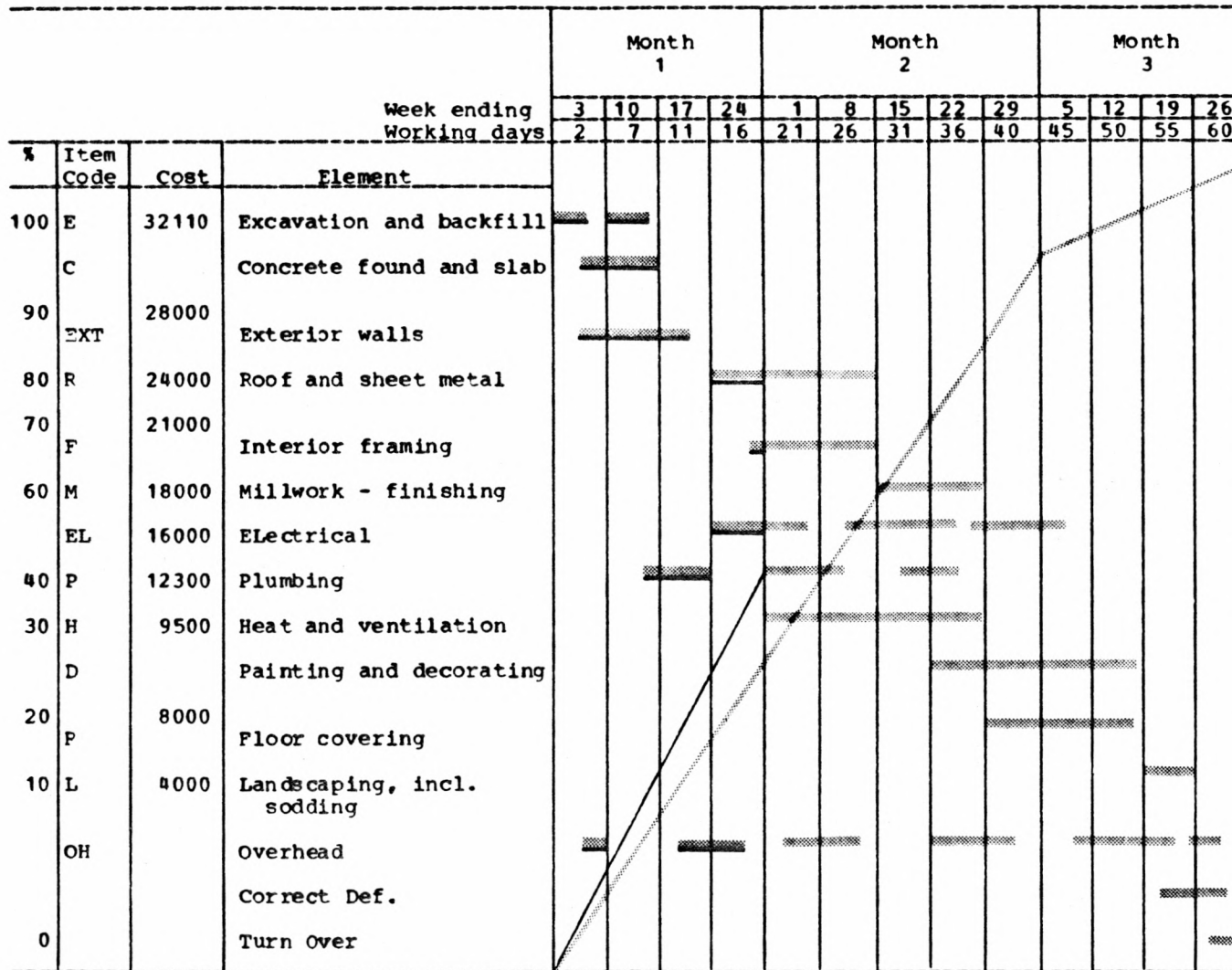


Illustration 3

SPECIMEN

Cumulative Curves of Cost (Planned and Actual)
Superimposed and Typical Bar Chart Showing Cost by Element



Planned

Planned Cost

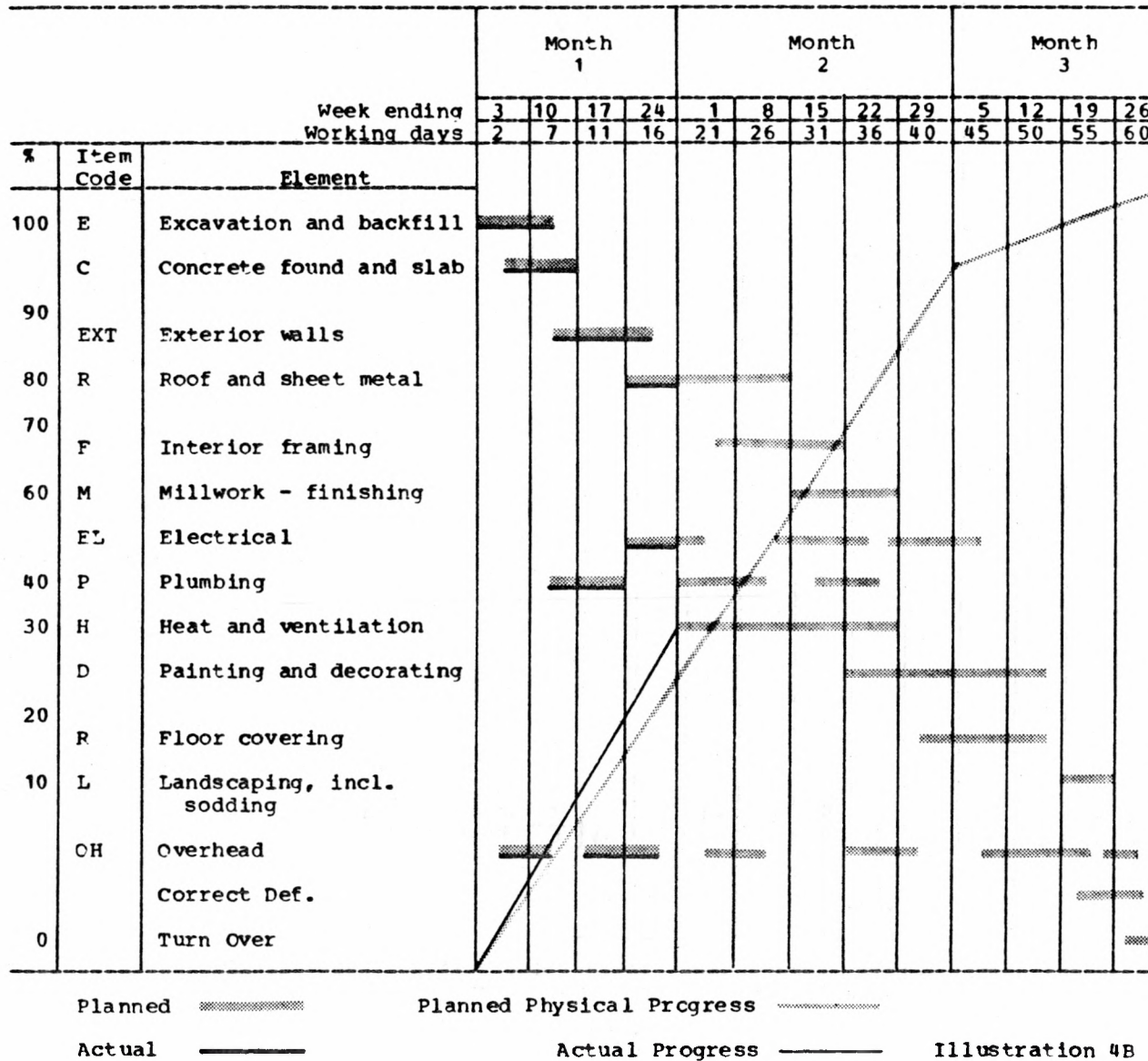
Actual

Actual Cost

Illustration 4A

SPECIMEN

Cumulative Curves of Physical Progress (Planned and Actual)
Superimposed and Typical Bar Chart Showing Progress by Element



SUMMARY

SPECIMEN

CONSTRUCTION

PHYSICAL AND FINANCIAL REPORT

1	2	Orig. Total Cost Element 3	Rev. Cost OF Element 4	Physical Status			Financial Status				Project Status						FY. REQ. 17	Prev. Yr 18	COMMENTS
				Plan	Actual	Var.	Plan. Exp.	Act. Exp.	Tot. Exp.	Var.	% of Proj. Comp.		C.Y.A.	C.Y.F.	Var.	Y.T.D.			
				Comp 5	Comp. 6	Elem. 7	To Date \$ 8	This Month	To Date	To Date 10	P. 11	A. 12	13	14	15	Comm 16			
Ex	Excavation & Backfill	601	648	4	4	0	601	648	648	(47)	4	4	601	648	(47)				
C	Conc Found & Slab	4323	4342	6	6	0	4323	4342	4342	(19)	4	4	4323	4342	(19)				
Ext.	Exterior	3287	3437	100	100	0	3287	3437	3437	(150)	6	6	3287	3437	(150)				
R.	Roof & Sheet Metal	3088	3088	30	30	0	1027	1027	1027	-	4	4	3088	3088					
F.	Interior Framing	3283	3283	2	2	0	100	100	100				3283	3283					
M.	Millwork	2690	2690										2690	2690					
E.	Electrical	3200	3200	16	16	0	500	500	500	-	12	12	3200	3200					
P.	Plumbing	4900	4900	30	30	-	1633	1633	1633	-			4900	4900					
H.	Heating & Vent.	1400	1400										1400	1400					
D.	Painting	1300	1300							-			1300	1300					
L.	Landscaping	500	500										500	500					
FL.	Floor Covering	1400	1400							-	4	4	1400	1400					
O.H.	Overhead	2138	2138	30	30	-	713	713	713	-	8	8	2138	2138					
TOTAL PROJECT		32110	32326				12184	12400	12400	(216)	38	38	32110	32326	(216)				

Col. 1 Element Code

Col. 2 Element Description (completed at Planning Phase)

Col. 3 Original Total Cost (completed at Planning Phase)

Col. 4 Revised Total Cost (revised as changes occur)

Col. 5 Plan Status at time of report (can be completed from Plan)

Col. 6 Actual Status (completed by Field)

Col. 7 Variance (completed by Field)

Col. 8 Financial Plan Status (can be completed from plan)

Col. 9 Actual Expenditure (combined field and office Lab. & mat.)

Col. 10 Variance of (narrative required)

Col. 11 Planned % total project (can be completed from plan)

Col. 12 Actual % total project (completed by field) % of time or cost

Col. 13 to 18 Project Status (completed by office) % of time or cost

(overrun)

Illustration 5

SPECIMEN

HIRING CARD

Project		Location		
Surname		Given Name		Badge No. - if applicable
Hiring		Last day worked		
Sex M <input type="radio"/> F <input type="radio"/>	Date of birth		Status M <input type="radio"/> S <input type="radio"/>	
Social Security No.		Income Tax exemption		Exemption Code
Date	Rate	Occupation	No.	Tel. No.
In case of accident notify				
Name		Address		Tel.No.
Reason for leaving				
Re-engaged yes <input type="radio"/> no <input type="radio"/>				

By - Supervisor (Foreman) (if applicable)

Approved by Construction Manager

Date _____ I, the undersigned hereby agree to enter at the employ
of _____ at the rate of pay appearing on this
card. I also authorize _____ to deduct from my wages all amounts
I owe to _____ for board, lodging, medical fees, transportations,
purchases etc..., as well as the cost of all tools and equipment taken out and not
returned.

Signature _____

Illustration 6



Revenu Canada
Taxation

Revenu Canada
Impôt

EMPLOYEE'S TAX DEDUCTION RETURN
DÉCLARATION DE L'EMPLOYÉ
POUR LA DÉDUCTION DE L'IMPÔT

TD1
Rev. 1978

- Complete and file one copy of this return with your employer
 - (a) when you commence employment, or
 - (b) within seven days of any change in your exemptions.
- If you do not file this return, as required, income tax will be deducted as though you were a single person without dependants.
- If you believe there are other exemptions that you could claim on your income tax return you may ask your District Taxation Office whether they may be taken into account in arriving at your tax deduction.
- Do not claim a child or other dependant whose net income for the year will exceed \$2,530.
- Net income of your spouse or dependants includes any pension or supplement under the Old Age Security Act or any similar Act of a province, benefits under the Canada or Quebec Pension Plan and the Unemployment Insurance Act, 1971.

- Remettez un exemplaire dûment rempli de la présente déclaration à votre employeur
 - a) au début de votre emploi, ou
 - b) dans les sept jours suivant tout changement dans vos exemptions.
- Faute de produire la présente déclaration, ainsi que vous y êtes tenu, l'impôt sur le revenu sera déduit comme si vous étiez célibataire sans personnes à charge.
- Si vous croyez avoir droit à d'autres exemptions dans votre déclaration d'impôt sur le revenu, demandez à votre bureau de district d'impôt si vous pouvez en tenir compte en calculant votre déduction de l'impôt.
- Vous ne pouvez compter un enfant ou une autre personne à charge dont le revenu net pour l'année dépassera \$2,530.
- Le revenu net de votre conjoint ou des personnes à votre charge comprend toute pension ou tout supplément en vertu de la Loi sur la sécurité de la vieillesse ou en vertu de toute loi provinciale semblable, ainsi que les prestations du Régime de pensions du Canada, du Régime de rentes du Québec ou de la Loi de 1971 sur l'assurance-chômage.

FAMILY OR LAST NAME (Print) — NOM DE FAMILLE (en caractères d'imprimerie)		USUAL FIRST NAME AND INITIALS — PRÉNOM USUEL ET INITIALES	SOCIAL INSURANCE NUMBER NUMÉRO D'ASSURANCE SOCIALE
PRESENT ADDRESS (Permanent Address) — ADRESSE ACTUELLE (adresse permanente)		DATE OF BIRTH (Day, Month, Year) DATE DE NAISSANCE (jour, mois, année)	
NAME AND ADDRESS OF SPOUSE — NOM ET ADRESSE DE VOTRE CONJOINT			

Complete the "Claim for Exemptions" area on the reverse side and enter your "Net Claim".

Remplissez la section «Exemptions réclamées», au verso, et inscrivez la «Réclamation nette».

Refer to the "Table" below and enter the applicable "Net Claim Code".

Consultez la «Table» ci-dessous et inscrivez le «Code de réclamation nette» approprié.

Table of Net Claim Codes Table des codes de réclamation nette	
Net Claim for 1978 Réclamation nette pour 1978 From — De To — À	Net Claim Code Code de réclamation nette
\$2,430 — \$2,460	1
2,461 — 2,660	2
2,661 — 2,990	3
2,991 — 3,300	4
3,301 — 3,650	5
3,651 — 4,150	6
4,151 — 4,400	7
4,401 — 4,800	8
4,801 — 5,150	9
5,151 — 5,460	10
5,461 — 5,850	11
5,851 — 6,200	12
6,201 — 6,500	13
6,501 and up — et plus	X
Exemption from Tax Deduction as claimed below Exonération de l'impôt réclamée ci-dessous	O

- Your "Net Claim Code" is used by your employer to determine the tax deduction required from your remuneration.

- Votre employeur utilise votre «Code de réclamation nette» pour déterminer l'impôt à déduire de votre rémunération.

Claim for Exemption from Tax Deduction for Casual, Seasonal or Part-time Employment — Valid for current calendar year only

This area must be completed by an employee who is receiving pay at a rate that is subject to tax deduction but who claims exemption because "Total estimated income from all sources" including free board and lodging and taxable Family Allowance payments for the whole calendar year will be less than the "Net Claim" above. No claim may be made here by a person not resident in Canada for the whole year unless his earnings in Canada will be less than his exemptions apportioned to the period of residence in Canada. If you qualify for this exemption, your "Net Claim Code" is "O".

Demande d'exonération de l'impôt pour emploi intermittent, saisonnier ou à temps partiel — Valable pour l'année civile en cours seulement.

La présente section doit être remplie par un employé dont le taux de rémunération est assujéti aux déductions d'impôt, mais qui réclame une exonération du fait que le «Total des revenus estimatifs de toutes provenances», y compris la nourriture et le logement gratuits et les versements imposables d'allocations familiales, pour toute l'année civile, sera inférieur à la «Réclamation nette» susmentionnée. Une personne qui ne réside pas au Canada toute l'année ne peut pas faire ici de réclamation à moins qu'elle n'estime que ses gains au Canada seront inférieurs à ses exemptions proportionnées à la durée de sa période de résidence au Canada. Si vous êtes admis à demander la présente exonération, votre «Code de réclamation nette» est «O».

Income to date this year from all sources — Revenu de toutes provenances jusqu'ici cette année	— — — — —	► \$
Estimated income for remainder of year from all sources — Revenu estimatif de toutes provenances d'ici la fin de l'année	— — — — —	► \$
Total estimated income from all sources — Total des revenus estimatifs de toutes provenances	— — — — —	► \$

Certification

I HEREBY CERTIFY that the information given in this return is true, correct and complete to the best of my knowledge and belief.

Attestation

JE CERTIFIE que les renseignements donnés dans la présente déclaration sont vrais, exacts et complets pour autant que je sache.

Signature _____ Date _____ 19 _____
It is a serious offence to make a false return — Quiconque fait une fausse déclaration commet une infraction grave.

Warning: An employer should refer a form TD1 containing doubtful statements to the District Taxation Office. Any person who knowingly accepts a form TD1 containing false or deceptive statements commits a serious offence. Employers must retain completed forms TD1 for inspection by officers of the Department of National Revenue, Taxation.

Avvertimento: L'employeur doit soumettre toute formule TD1 renfermant des déclarations douteuses au bureau de district d'impôt. Quiconque accepte sciemment une formule TD1 renfermant des déclarations fausses ou trompeuses commet une infraction grave. Les employeurs doivent conserver les formules TD1, une fois qu'elles ont été remplies, aux fins d'inspection par les fonctionnaires du ministère du Revenu national, Impôt.

Form authorized and prescribed by the Minister of National Revenue

Formule autorisée et prescrite par le ministre du Revenu national

SPECIMEN

CONSTRUCTION TIME SHEET

For Pay Period ending
Sunday _____ 19____

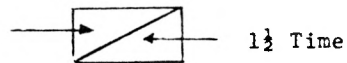
First Name	Surname	Location	Badge no. (if applicable)
Employee No.	Sin No.	Trade	Classification
		Rate	

There are (is) _____ time sheet(s) for this employee this pay period.

Item Code	Project	Sun	Mon	Tues	Wed	Thur	Fri	Sat			
	note employee may work on more than one		/	/	/	/	/	/	Sub Totals 1st week period		
			/	/	/	/	/	/			
			/	/	/	/	/	/			
			/	/	/	/	/	/			
									Normal Time	1½ Time	Double Time
	project while on strength. particularly if a tradesman		/	/	/	/	/	/	Sub Totals 2nd week period		
			/	/	/	/	/	/			
			/	/	/	/	/	/			
			/	/	/	/	/	/			
									Normal Time	1½ Time	Double Time
									Normal Time	1½ Time	Double Time

PERIOD TOTAL

Work on Saturday - 1½ time
 Work on Sunday - double time
 Normal time _____ hours
 Travel on Sat and Sun _____ time
 Waiting on Sat and Sun _____ not paid
 Working on holidays _____ time.

Normal
Time

Date _____ Approved _____ Certified _____
 Supervisor (Foreman) Construction Manager
 (if applicable)

Illustration 8

SPECIMEN

INDIVIDUAL RECORD CARD

									RATE		
Name:			Position number - casual			Normal					
Classification:			Status:			O/T at 1½					
S.I.N.:			Tax CD:			O/T at DBL					
D.O.B.:											

Location

Period		Time			Amount of Wages				Gross	Income Tax	Ret. Fund	Unemp. Ins.	Other	Other	Other	Total Deduct	NET PAY
From	To	N	1½	DBL	Normal	1½	DBL	OTH.									

SPECIMEN

EMPLOYMENT TERMINATION NOTICE

Project _____ Date _____

Location _____

Name _____ No. _____

Is leaving our employment on _____ for
the following reason: Voluntary Surplus Cause
Explanation:

Signature of Employee

Supervisor/Foreman
(if applicable) or
Construction Manager

To be completed if notice is given

I acknowledge having received an advance notice of _____
hours of my lay-off effective on _____.

Witness

Employee's Signature.

SPECIMEN
BILL OF MATERIALS
Three Bedroom Residence (30' x 40')

DIVISION: 2* SITE WORK	Unit of issue	Quantity	Unit Price	Total Cost
<u>EARTHWORK</u>				
Machine excavation	Lump sum			
Excavation by hand	Lump sum			
Backfill (gravel)	C.Y.	80		
Machine for backfilling	Lump sum			
<u>FOUNDATION DRAINAGE</u>				
Weeping tiles 4"	L.F.	260		
Special tiles	L.F.	40		
Gravel for weeping tiles	C.F.	35		
<u>LANDSCAPING including sodding</u>	Lump sum			

*Masterformat, formerly the Uniform Construction Index division, which breaks down all work by type and class.

Note: Optional special finishes - Basement shown on Illustration 11B.

Illustration 11A

SPECIMEN

BILL OF MATERIALS

Three Bedroom Residence (30' x 40')

DIVISION: 3 CONCRETE		Unit of issue	Quantity	Unit Price	Total Cost
Concrete wall footings	2500 lbs.	C.Y.	7		
Concrete walls	2500 lbs.	C.Y.	26		
Concrete slab on grade	2500 lbs.	C.Y.	15		
Concrete pad for furnace	2500 lbs.	C.Y.	2		
Concrete chimney foundation			3		
<u>FORMWORK</u>					
Forms for walls		S.F.	1050		
<u>CONCRETE REINFORCEMENT</u>					
Reinforcing steel #4 bars		L.F.	560		
Anchor bolts 5/8" x 12"		Each	28		

SPECIMEN

BILL OF MATERIALS

Three Bedroom Residence (30' x 40')

DIVISION: 6 WOOD & PLASTICS	Unit of issue	Quantity	Unit Price	Total Cost
<u>ROUGH CARPENTRY</u>				
Framing & blocking 2" x 4"	F.B.M.	4000		
Sills 2" x 6"	F.B.M.	140		
Headers 2" x 6"	F.B.M.	320		
Soffit framing 2" x 3"	L.F.	300		
Blocking 2" x 2"	L.F.	150		
Floor joists 2" x 8"	F.B.M.	1650		
Shiplap 1" x 8"	F.B.M.	1400		
Shiplap 1" x 4"	F.B.M.	2000		
Strapping 1" x 3"	L.F.	1200		
Soffit & gable 1/2" plywood	Sheets	12		
Sub-floor 1/4" plywood	Sheets	42		
Roof trusses 5/12 slope	each	21		
Rough hardware	Lump sum			
Eavestrough	L.F.	88		
Downspouts	each	2		
<u>FINISH CARPENTRY</u>				
Bevel pine siding 7/8" x 10"	F.B.M.	1400		
Pine fascia 1" x 4"	L.F.	200		
3/4" round moulding	L.F.	100		
Interior door frames	each	10		
Door steps	L.F.	170		
Baseboard	L.F.	900		
Floor moulding	L.F.	900		
Doors & windows trim moulding	L.F.	550		
Kitchen cupboards	L.F.	30		
Bathroom cupboards	L.F.	12		
Shelving (clothes closets) 1" x 12" pine	L.F.	200		
Stairs to basement	L.F.	12		

SPECIMEN

BILL OF MATERIALS

Three Bedroom Residence (30' x 40')

DIVISION: 7 THERMAL & MOISTURE PROTECTION	Unit of issue	Quantity	Unit Price	Total Cost
Batt insulation 3"	S.F.	900		
Batt insulation 4"	S.F.	1200		
Vapour barrier	Rolls	2		
Building paper 15# asphalt felt	Rolls	6		
Asphalt shingles	Squares	16		
Waterproofing (concrete walls)	gal.	5		

SPECIMEN

BILL OF MATERIALS

Three Bedroom Residence (30' x 40')

DIVISION: 8 DOORS & WINDOWS		Unit of issue	Quantity	Unit Price	Total Cost
Exterior doors		each	2		
Interior doors		each	10		
Basement windows 4' x 3'		each	6		
All other windows complete with glazed sashes and screen		S.F.	380		

SPECIMEN

BILL OF MATERIALS

Three Bedroom Residence (30' x 40')

DIVISION: 9 FINISHES	Unit of issue	Quantity	Unit Price	Total Cost
Gypsum board for ceiling 1/2"	Sheets	40		
Gypsum wall board 5/8"	Sheets	125		
<u>HARDWARE</u>				
Exterior door locksets	each	2		
Butts 4" x 4"	pairs	3		
Interior door locksets	each	10		
Butts 3" x 3"	pairs	10		
PAINTING complete with tape and fill gypsum	Lump sum			
CARPETING	S.Y.	100		
FLOOR TILE	S.F.	300		

SPECIMEN

BILL OF MATERIALS

Three Bedroom Residence (30' x 40')

DIVISION: 15	Unit of		Unit	Total
MECHANICAL	issue	Quantity	Price	Cost
PLUMBING	Lump sum			
HEATING & VENTILATION	Lump sum			

SPECIMEN

BILL OF MATERIALS

Three Bedroom Residence (30' x 40')

DIVISION: 16 ELECTRICAL	Unit of issue	Quantity	Unit Price	Total Cost
Electrical wiring c/w fixtures	Lump sum			

SPECIMEN

BILL OF MATERIALS

Three Bedroom Residence (30' x 40')

Optional - Special Finishes - Basement

DIVISION	Unit of issue	Quantity	Unit Price	Total Cost
<u>1. Wood & Plastics</u>				
Rough Carpentry Framing & Blocking 2" x 4"	F.B.M.	1600		
Finish Carpentry Interior door frames	each	1		
Plywood (Wall finish)	sheets	38		
<u>2. Thermal & Moisture Protection</u>				
Batt insulation 2"	S.F.	1200		
<u>3. Doors & Windows</u>				
Interior door	each	1		
Interior trim	set	1		
<u>4. Finishes</u>				
Gypsum board for ceiling 1/2"	sheets	40		
Ceiling tile 1/2" x 12" x 12"	S.F.	1200		
Interior door lockset	each	1		
Batt 3" x 3"	pair	1		

Illustration 11B

SPECIMEN

Contractor's Planning
Bar Chart

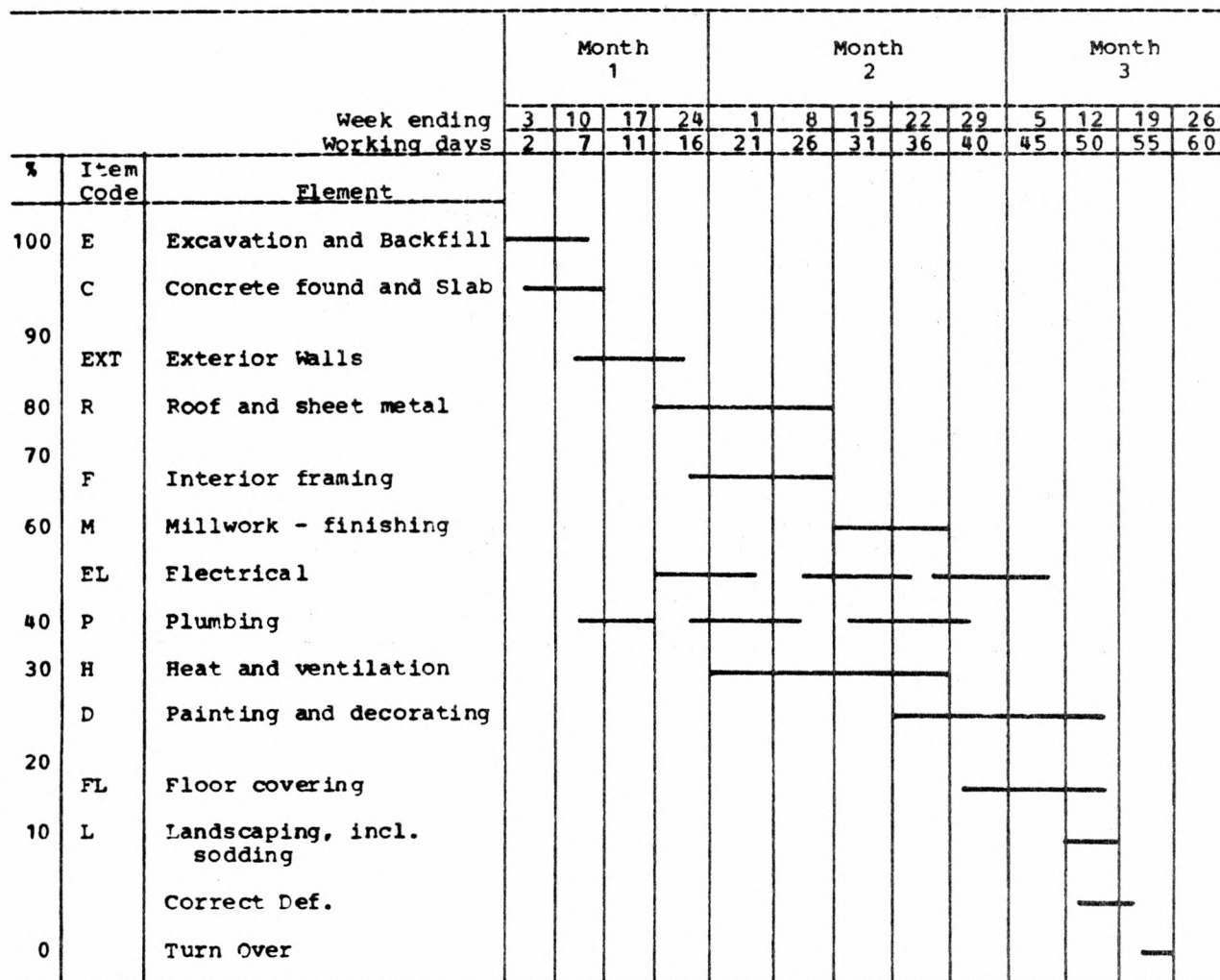
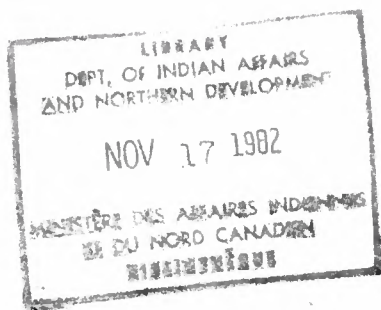


Illustration 12

SPECIMEN

Progress Report							
Contractor _____				Date - Month No. 1			
Project - <u>3-bedroom house</u>				Report No. 1			
File No. _____							
Element	Value	% Completed	Project Payment	Left to be paid	% of Project Planned and Actual		
					P	A	Variance
Excavation and backfill	601	100	601	NIL	4	4	
Concrete found and slab	4,323	100	4,323	NIL	4	4	
Exterior wall	3,287	100	3,287	NIL	6	6	
Roof and sheet metal	3,088	30	926	2,162	2	2	
Interior framing	3,283	5	164	3,119	1	1	
Millwork - finishing	2,690	-	-	2,690			
Electrical	3,200	5	960	2,240	8	8	
Plumbing	4,900	12	1,470	3,430	8	8	
Heating	1,400	-	-	1,400			
Painting and decorating	1,300	-	-	1,300			
Floor covering	1,400	-	-	1,400			
Landscaping	500	-	-	500			
Sub-total			11,731	18,241	33	33	
Total Value of contract	29,972						
Total value of work complete			11,731				
Less previous paid			NIL				
Total this month			11,731				

Illustration 13



SPECIMEN

Progress Claim

Contractor _____ Progress Claim No. _____
Project _____ Date _____
File No. _____
Band Contract No. _____

	<u>Original Contract</u>	<u>Change orders</u>	<u>Total</u>
Total Contract Value	29,972	NIL	29,972

To date:			
Value of Work Completed	\$11,731	N/A	\$11,731
Less holdback* at - %	N/A	N/A	N/A
Less previous progress claims	N/A	N/A	N/A
Amount of this claim	<u>\$11,731</u>	<u>N/A</u>	<u>\$11,731</u>

*The band may request that a percentage of the amount be held back until the contractor completes the project. This applies only if stipulated in the tender documents. (Refer to BTP-CN-1 "Contracting Guidelines for Band Councils").

Illustration 14