

Project Manager Inc. Real Estate Development

Paul T E Cusack

BScE, DULE, 1641 Sandy Point Rd, Saint John NB E2K 5E8, Canada

ABSTRACT: Here is presented an overview of the Construction and Real Estate Development Management process. It should be of use to Owners looking to expand their real estate or to Engineering managers who want to expand into this field

Keywords: Construction, Real Estate, Development, Engineering, Management

I. INTRODUCTION

Real Estate comprises 40% of the world's assets. Construction of facilities is the largest single industry in the developed world. Projects developers deal with are mainly in the building construction industry, ICI Industrial, Commercial & Institutional and Residential. There are various ownership structures such as fee hold property and improvements, leasing, 3P (Private Public Partnership, and condominiums for example. There is new, renovation, retrofitting, and heritage construction.

II. CONCEPTUAL STUDIES & ECONOMIC FEASIBILITY INCEPTION / CONCEPT / NEED / MARKET

Business Rule #1: Every product MUST have a market. In order for a project to succeed, there must be competitive advantage for the product. There must be a gap between what is available at a market driven price, and what is needed or demanded. The supply and demand will come into balance eventually. It is the role for the Developer/ Entrepreneur to sense this gap and be there to fill it before it is filled by somebody else sooner.

The product of Real Estate Development is accommodation, space. or land use. The raw material for development is land. Increasingly this land is not virgin land but brown fields, grey fields or infill. As the ultimate entrepreneur, developers must innovate. Their product must be differentiated in the market place since less than 5% of the people will be interested in a given product. The life blood of most developers is the vacancy rate. This is a measure of the demand. When balanced against the supply, one has knowledge of the market opportunities available.

Venture Capitalist: Obtain Seed Financing

In getting started in a development project, seed financing is needed to cover indirect costs such as salaries of professionals, obtaining options on land, or covering general overhead of running a business. Often times a personal guarantee from the developer is required of the developer to ensure ultimate repayment.

In Venture financing, oftentimes, it's the family member or a close friend – called an angle – who provide the startup funds. Sometimes government s, such as municipalities will provide a sweet deal for the developer to get a start. In lending / borrowing for any type venture, remember the Golden Rule:, namely, He who has the gold makes the rules!

Class D Design Estimate & Development Schedule

A class D estimate may be off by as much as 20 to 100%. It is really only a guess without having all the necessary details that are uncovered as the project progresses and takes in more investment. Murphy's Law in Development is that everything will cost twice as much as thought and takes twice as long to produce and sell. With profit margins seldom above 8% as in a recession as low as 1.5%, for example, taking a \$2.0 million risk hooping to make \$30,000 is quite a risky business that not many can stomach nor care to. Then, there is not this kind of cushion for mistakes or the wide range allotted by the estimate. Much more work remains to be done as the project takes shape

Pre-feasibility Studies

Once the unmet need is perceived, one must seek to put incomes versus expenses to determine the potential margin. If there is a potential profit the competition must be assessed: Who and how many are beginning to fill this unmet profitable need? If there is still a potential for profit at an acceptable margin, and if the funds may be available for such a project, then the developer would form a team to begin the real work of bringing a project from a concept to a reality.

Usually a developer specializes in one type of ICI / Residential developments (Hotels, Nursing Homes, Condominiums, Business Parks etc.). Sometimes an owner will act as his own developer if he has the expertise

Develop Internal Team

In a Developers office (if he has one outside the home), a team of professionals may be assembled. It may amount to telephone calls to consultants such as Architect, Engineers, Lawyers, and Accountants. The team expands later in the life course of a project, but these are the main ones at the inception. The developer may act as his own PM Project Manager or he may hire a PM for Project Management Services. The PM is the key person in that he embodies the necessary leadership of the team. If he is not a go getter or a self-starter, the project will likely fail. The most important decision a developer can make is the selection of his team members. Therefore, hiring is of the utmost importance decision. A good project can go bad with the wrong team. The team starts at the top with the leader.

The team leader must delegate responsibility and authority. They should go together and there should be a way to measure success. Reward can be granted on a project's success in meeting its targets of not only profit, but timeliness, quality, and client satisfaction.

Conceptual Planning

There is a saying in PM:

People who plan do better than people who don't plan even if the plan doesn't work out exactly as planned. At this stage, the designer puts pen to paper to sketch a proposed plan and a "back of the envelope" feasibility study. More detail follows this stage if the numbers warrant it. The market conditions, the general economy, the competition, the cost of money, and the prospect for success are chewed over and over. Concept Design is an iterative process. Sometime an entire design must be scrapped and a new concept developed.

Building Construction can be a harrowing business given the large sums at stake, the tight time pressures, the complexity of the organization required, and the myriad of personalities involved. The business is not for the faint of heart. The rewards are not commensurate with the stresses involved. Yet, there is no shortage of those who want to leave a permanent mark on the skyline of a city.

Location Study

The old adage is that in Real Estate there are three important things: location, location and location. At this point in the project, the developer is considering likely at least 3 possible sites. Since real estate is unique, then each site has its particular qualities, advantages, and disadvantages. The right site is, as known by most architects, the key factor in the success of a project, especially in a downturn in the economy. Not only must the developer choose between competing cities and even countries, but also between various sites within a city and neighborhood. If the wrong site is chosen, then the project will likely fail. A location study is undertaken at this point, if not by an Appraiser, then by the Developers himself.

Land Appraisal

Land appraisals are done by accredited AACI – members of the Appraisal Institute. They are trained to give an opinion of value based on four different methods:

1. The Direct Comparison
2. The Income Method
3. The "Replacement Costs New" minus Depreciation.
4. The Land Residual Method

Land is usually appraised by the direct comparison method which involves using 3 properties of similar size and location for a price per square foot. This value then must be subtracted from the demolition costs, and sometimes even environmental contamination that impairs the property.

Another popular method for land evaluation, especially a development parcel is the land residual method which involves determining the highest and best use income for a property, less development costs, and a profit of about 12 -15%. What is left is the amount that a developer can pay for a property and still make a profit.

Both methods should be used by an Appraiser to increase accuracy. Ultimately, a property assessed at a given point of time is an expert opinion of value. Then Seller might actually receive more or less in any given market. The market changes rapidly so an appraisal has a short self-life. An Appraisal will be required by a bank before any lending takes place.

Appraisals must be done by a CRA (Certified Residential Appraiser) or an AACI (Accredited Appraiser Canadian Institute) to be accepted by a bank for lending purposes. It's the AIA in the US.

Feasibility Study

A Feasibility study is an economic accounting of potential income for a development versus the costs, both direct and indirect costs involved in the development. The difference is the profit. A Pro Forma is a static analysis as shown in the Appendix.

There is also the standard NPV /IRR or the Net Present Value or the Internal Rate of Return method. This uses cash flows over the life of the project discounted back in time to the present to determine what a given cash flow is worth at today's rates of return (interest rate). Hand held financial calculator provide the 5 variables necessary for a cash flow analysis. They are:

- i = discount rate (interest rate)
- PMT = monthly payment (Negative) or income (positive)
- N = number of periods involved (12 per year or one per year)
- PV = Present Value
- FV = Future Value

In order to calculate the return "i", the other 4 variables must be known or assumed to be known. Any of the variables can be unknown so long as 4 of them are known or assumed. The IRR or internal rate of return is the rate of interest that would yield a NPV=0, or the break even interest rate. A stated IRR is referred to as the Hurdle rate. It may be as high as 20% if a project is to proceed. Yet another method is the "Pay Back Period" or "Time to recoup costs" method. This is a simple method adding up the cash flows undiscounted to equal the fund outlaid. Its simplicity is attractive.

Financial mathematic gets far more complicated and will not be treated here, as this is the extent of what is required for a developer. Some developers believe that there are so many unknowns in the cash flows that only the static Pro forma Accounting Statement should be used. Anything else is misleading security crunching numbers that have only guess estimate as their base anyway and leads to a false sense of security. If a project is showing a loss based on current income and costs, then the project should be aborted at this stage unless a different project can yield better results.

Marketing Study

As stated above every product must have a market. The supply and Demand must be analyzed. There is a sample Marketing Plan in the Appendix. A Market Study must determine who the target customer is, what his or her income is, and what they want on a real estate product. This is where the Real Estate agent comes in. They are experts on the market conditions in a local area. They are usually glad to help outside of the busy season of Spring and early Summer. Real Estate Appraisers will usually put together a Marketing Study for a given project. Real Estate Appraisers keep a close eye on the local market conditions as well as the macro economy which will determine the possibility of funds being available. They usually also know the competing projects in the pike.

A Developer must wear many hats, but Real Estate Sales Agent and Appraiser are not some of them. Call in experts when necessary. This, however, doesn't absolve a developer from keeping track of market conditions and trends. This is the Developer's competitive advantage in being the first to produce a new product to a community. Remember, in business "The customer is always right"

Site Survey Analysis /Suitability/ Zoning/ "Highest & Best Use"

Urban Planners are in the business of Land Use Planning. This varies from community to community: some are highly controlled, whereas others are more relaxed permitting a more lively and spontaneous plan. Zoning maps of a city, the instrument given by the Provincial government to the Municipality dictate land use possibilities. An R1A zone may be single family lots with a minimum of 70 feet road frontage and 7,000 sq ft of lot size, and a minimum setback from the road as well as the side and back allowances (setback).

Zoning is subject to be changed but only by vote of council. A public notice must be circulated to give residence a chance to voice their concerns. Rezoning is a highly charged political process that may be the developer's toughest job: to convince neighbors that his project is an enhancement of the neighborhood. Trade-offs are normally expected. A Developer can expect to have community conflict on every project nowadays. We've all heard of the NIMBY (not in My Back Yard) or BANA (Best Alternative to a Negotiated Agreement)

The "Highest and Best Use" is the use that the property will yield the highest return that is LEGALLY permitted. It is true that the Best Use may involve a Zoning Change. The Appraiser uses his judgment to determine if the land might be rezoned.

A person doesn't actually own the land; it is all owned by the Crown. Property rights are not part of the Canadian Constitution. In fact, your bundle of rights (the right to sell, trade, keep, use or do none of the above) is all that you own. You must pay the taxes, but mineral rights may be taken from you. Riparian rights

guarantee the right to uses water abutting your land. But the Crown and over 8000 bodies in Ontario have the right to expropriate land even without compensation.

One developer joked:

“What is the difference between a developer and an environmentalist? “

“The Environmentalist already has his house in the woods.”

With the rise of Environmentalism, turning raw virgin land into housing for example is being though backward. There is enough opposition to scare off any developer. The time costs are simply too high. If you can't take heated conflict, then the development business is not for you. More about this in a section below.

Preliminary Pro forma

The first Pro Forma may be off by as much as 20% or more. A 10% contingency is usually carried to cover unforeseen costs. That gives a 30% cushion. A sample Pro Form is included in the Appendix. It is broken down into Income (Home sales less selling costs negotiated 3-6%), Less Soft Costs (or indirect costs; less Hard Costs (or direct costs). Indirect costs are things like marketing costs; whereas hard costs are things such as the concrete formwork necessary for construction of the building.

Risk / Reward analysis

Depending on the Macro Market condition, a developer as well as investors must decide if the rate of return Is feasible and acceptable. Real Estate usually retunes a rate of return about that of inflation 2% per year. It can return as high as 8% in good times. There is a lot that can go wrong in development projects. It's my experience that most fail and do not make money. Even the big names in Real-estate Development have gone bankrupt several times when Leasing Rates drop below the mortgage payment or the

Market value = Net operating Income / Capitalization Rate

(MV=NOI/CR)

Land Acquisition /Control

If the project is showing potential, the next step before wasting any more time and resources, is to gain control of the parcel under consideration from the location study recommendation. A mistake among developers is the rush to gain too much land under their control so that it is unwieldy. Some developers in a boom town have had inventories of land that would not be consumed for 1000 years at the current rate of population gain. They gain access to this land not by purchase but by an instrument legal called a real “Option”.

A Real Land “Option” gives the potential buyer the first right to buy the parcel at a stipulated price. The option can be worded any way and is subject to negotiation since it is a contract. A lawyer should draft your options. If it is not exercised, then the money that purchased the option is forfeited to the present owner. This is a way developers can control land without a large outlay to purchase the land and still have control over a parcel. Now that the land is under control, what is next?

III. PLANNING, MONITORING, SCHEDULING, CONTROL

Environmental Phase I & II Reports

The next step in the development process is to define costs so as to determine if the project shows acceptable profits and there is a Go / No Go decision. To do this a more detailed design is required from which an engineering estimate can be had.

The professionals needed at this stage, which may be in house for a large developer or “farmed out” for a smaller operator, including at least:

- Architect
- Civil Engineer
- Soils or Geotechnical Engineer
- Environmental Engineer
- Energy Analyst
- Urban Planner

The architect produces the schematic floor plan and elevations (profiles). It must be in accordance with the NBC National Building Code, the Fire Code and the Energy Code. The Civil Engineer may produce the site plan in cooperation with a Landscape Architect and Traffic Engineer.

The Energy Analyst or LEED AP (Leadership in energy and environmental Design Associate Professional is a new addition to the team to ensure the project is environmental sustainable.

The Geotechnical Engineer analyses the in-situ soils and rock to determine if the site is buildable and to what extent the bearing capacity there is. The Environmental Engineer produces first a Phase I report. This is an investigation which asks, investigates, researches, and looks at the site to determine if further work is warranted. If so, then a Phase II and perhaps Phase III will be required. If there is environmental contamination, the costs of development will certainly be affected. From this data collection a schematic design drawing can be produced by the Architect and Site Engineers to be used to assess cost. Then the Cost engineer examines the proposal to see where any savings –value engineering – may be had. An estimate called a Class C Conceptual Estimate is produced.

If the project is determined by the “Bridge Consultant” at this point as a “Go” or “No Go”, then the mortgage broker is contacted to see if there are sources available for debt and equity financing.

Milestone: GO / NO GO

If the project is a “Go”, then further refinement of the project will be required where Structural, Mechanical and Electrical engineers will be employed.

IV. ENGINEERING & DESIGN

Assemble External Team

At this point the owner must give serious consideration to the contractual relationships he will enter. He could choose to contract directly with the Architects/ Engineers, and general Contractor in which case he would need the services of a Project Management Specialist; or he may choose to contract with a design- builder who takes it upon himself to contract with the Architect/ Engineer and General contractor in which case the owner would need an Owner’s Engineer.

The more points of conflict, the more conflicts resulting between the owner and contractors/consultants. If a DB Design- Builder is chosen, these points of conflict are dealt with in house by the D-B. An Owner’s Engineer is necessary to ensure for the owner that he is getting what he is paying for. The Owner’s engineer agreement is contained in the appendix. It should be read carefully and tailored to each situation as warranted. The advice of a construction lawyer is recommended.

Prepare Detailed Design (Contract docs: Plans and Specs)

The goal of the next phase is to have produced contract documents: called plans and specifications or simply “plans and specs”. These form part of the contract documents and thus must be carefully checked over. The time and effort spent in checking plans and specs results in a savings in the long run. Mistakes and omissions are costly once a contract has been formed with a D-B or a General contractor. Changes called “Change Orders” can affect the total final cost as well as the schedule for which the building can “claim” against the owner. Architect is not usually held liable for these errors and omissions although they can be. They certainly affect the future relationship between the owner and the designers. Mistakes common in the plans include errors in the details, omission of details, and duplication of details, dimensions that don’t work or are un-constructible. There is a design review check list in the appendix.

A set of plans (i.e., roll of drawings) usually include at least the following drawings:

- Sit Plan
- Foundation plans
- Structural drawings
- Architectural Plans
- Mechanical Schematic
- Electrical Schematic
- EMCS (Energy Monitoring and Control System)

The specifications are a type written description of the quality of the work required. The specs are broken down into 16 divisions, mostly by sub trade. For example, Division 15 in the Mechanical Division and Electrical is Division 16. For more information, refer to the appendix under the estimating section, Projects are bid based on these 16 divisions. Errors in the specification usually involve incompatible products between division, out of date products or methods etc. One small mistake such as forgetting to specify air entrainment in concrete can render the life span of say a dock pier by decades and involve costs that are excessive to repair.

At the very beginning of the spec’s book are what are known as the General Conditions. These are the “motherhood” statements of the work quality, timeliness, and scope. They will contain statements with regard to how to deal with possible changes to the documents or delays. There is a clause for example, called “Time is of the Essence”. This means that the contract must be finished on time as per the schedule that is attached to the building contract. There is a sample of the General Conditions contained in the appendix. The getting of a

Building Permit is included in the General conditions. They are an important part of the building contract and should be studied in the estimate by all contractors.

Formulate Marketing / Leasing Plan/ Select Property Manager

The goal at this stage is to meet the banker's requirements for presold units before the funds are lent out by the bank. As high as 80% presold units can be required before the project really starts to become a reality. In order to meet this requirement and to make the sales pitch as attractive as possible, a mockup of a condo unit can be constructed at the site or even in a place such as a mall. This gives the potential client a better idea of what he or she can expect in the finished product and materials and options (one bedroom, two bedrooms, two baths etc.)

In residential homes, a full scale house is built sometimes near a highway for high visibility marketing. Office complexes are usually modeled. For smaller projects an architectural rendering is done usually in water color paint. Make sure the road is fully paved after services are installed before trying to market lots. It makes a big difference to an impressionable customer. The first meeting must be positive since it is difficult to make a good second impression after a bad first one.

With the advent of cheaper CAD software, three-dimensional graphics can render a building so that it so closely resembles the finished product, that it appears like a photograph of the building. Written agreements are entered at a presales event. Financial capacity of the buyer is checked by the seller's Real Estate agents and mortgage specialists are on hand to close a contract when the griddle is hot. Changing the actual design after the contract is signed may be legal, but is not recommended as the customers become dissatisfied. It ruins the reputation of the developer.

Tenant fit up is planned for a retail project. It must be coordinated with the shell and core construction of a retail building. For commercial office buildings, interior designers arrange for the move from the old space to the new. For office/ warehouse the timing of the move is critical to keep the client inventory moving on schedule.

It is at this stage that a Property Manager, CPM should be involved in the development. This is so that the customer feels that he or she is involved in the building and takes note of suitable Operations and Maintenance contracts. The downfall is that a person working full time on the project will note all the deficiencies. If the construction is poor quality, the reputation of the developer will suffer. A tough CPM might not be easily satisfied.

V. PROCUREMENT: GENERAL CONTRACTOR

Bidding Process

To obtain actual irrevocable quotations for the works specifically described in great detail in the plans and specs, the owner will put forward what lawyers call an "invitation to treat". This is an advertisement in the market place such as the Daily Commercial News or the Local Construction Association where General Contractors frequent, in order to gain attention for their bid closing.

A bid closing could be described as organized chaos for anyone who has been part of a tender closing from the contracts view point. But from the Developer's viewpoint, certain steps are taken because a Contract, called "Contract A" in Canada (a common law country) is found by the courts to exist upon the submission of a bid at a tender closing. There is consideration for both parties. The Contract A is the first contract entered between a person who solicits bids, and a person who responds to the bid.

The second Contract if entered is called "Contract B" is actually the construction contract with the person of contract A. So there are two stages to contract formation in the Canadian construction industry. This is different than the case in the USA, also a common law country. The Invitation to Treat is one that describes the contract generally, and the location of pick up or viewing plans and specs, and the time and place of a bid deposit. There are a variety of circumstances on this theme, but that is generally it. Sometimes, for example, a pre bid will be opened for larger portions of a particular contract such as M& E (Mechanical and Electrical). But commonly, the bids are submitted to the local Construction Association and are opened shortly after submission for public tender. Private tender may never be disclosed after opening. If they are opened, the bids are checked for completeness including bonds submission, signed bids, tender amounts recorded, and any other requirements the owner may request. The bids are read out loud so that the lowest bidder knows his position and the amount left on the table. The GC (General Contractor) wants to leave as little as possible "on the table" obviously but at the same as being the low bidder. The lowest bid or any bid is not usually accepted necessarily as is advertised, by the Owner.

It is common practice even with the governments that contractors are prequalified. They gain qualification by experience in doing particular work satisfactorily. In this way, there should be fewer disputers between owner and contractor and higher quality. Some believe that the successful bidder is the one who made the biggest mistake in the tender close. That lost amount must be made up by cutting corners. Its an adversarial

situation and one that is being rectified by the trend toward Design -Build where the design and construction are done by the same firm. The owner would need an Owner's Engineer to protect his investment by ensuring as far as possible that the owner is getting what he bargained for.

From the GC's point of view, a few weeks are committed by one or more estimators to doing quantity survey take offs in the division they plan to construct themselves, such as rough carpentry, or concrete formwork.

Subcontractors are contacted to make them aware of the upcoming bid. The contractor hopes for as many competitive bids that he collects and totals on tender closing minutes before the bid is due. Then the total amount including the contractor's profit margin (determined by head office) plus General and Administrative, plus bonding in a insistence are all totaled to produce a final tally. This tally is inputted to the bid amount by telephone and is submitted seconds prior to tender close. This may now be done on line in some cases. Also, the microcomputer allows for easy tallying and changes in a stressful environment. The bid MUST be on time. If it is incomplete or there is an obvious mistake on the face of it, the bid is disqualified. There have been many legal battles fought over perceived mistakes in the tender.

Analyze Bids

When it comes time to further analyze the bids, the Owner may or may not disclose what is found in the tenders opening. The government contracts are obligated to make their findings public for transparency sake.

Two prominent problems in the legality of bid acceptance is bid shopping which is not illegal but is unethical. The second problem lies with the contractors in collusion whereby contractors agree to split the project between themselves at higher than normal profits.

Kickbacks to government officials have been found in the construction industry in Quebec. As well, there is collusion among international suppliers of materials for example. It's not a playground! Since there is great profit to be had, crime is sure to be found even within Canada. Some huge Construction companies will not operate overseas or outside North America due to the corruption.

Negotiations /Value Engineering

A private owner is free to negotiate with any of the GC's who submit bids, or even ones that didn't. The work may progress or it may not. Sometimes the bids come in way over what was projected and the project must be scaled down. This leaves the door open for negotiation with the GC, usually the lowest bidder.

In a private project, the GC (or subcontractors) may submit a new design element such as a concrete slab alteration which may save money and / or provide a better product in the end. Sometimes negotiations break down if one party is weary of the others intentions. For example, asking for a guarantee of payment by a church may turn the owner off to that bidder. It is a fine tight rope that the parties walk. In the end, a successful project will leave parties, owner and builder satisfied, despite the often conflicting situations. A repeat customer is essential since references are often asked for by new potential clients. One bad reference, fair or not, may quash a potential bidding.

VI. RISK MANAGEMENT

Form of Ownership

By this time, the ownership must have been contemplated. There are various forms that this can take on including:

- Build/ Own/ Sell
- Build/ Own /Lease
- Build/ Transfer
- 3P (Public/ Private Partnership)

The deal structure will be affected by the ownership structure.

Deal Structure: Debt & Equity

For investments in general, there are two components that form the capital need to invest in a given project. These two general aspects are called debt and the other equity. Usually, the proportion of Debt and Equity are 20% for the debt and 80% for equity. This of course can vary depending on the track record of the developer and the history of the relationship between the equity partners and the developer.

Debt is the capital that the developer brings to the table. It may be all his own money; From the view of the Equity partner it is. Some investors will lend both debt and equity for the same project. That means they are in it for 100%. The Venture Capitalist will advise an 8% return on a real estate development for use in the NPV (Net Present Value) method as a "hurdle rate". (A hurdle rate is a required rate of return called the IRR or internal rate of return) This is the return the Equity partner expects and thus is used in the financial modeling.

The debt capital may be the developers own money, or it may be borrowed. It depend on the resources commanded by the developer. Keep in mind that the principal of leverage is at work here. The less the developer puts in of his own money, the more leverage he using. This has a double wham-o affect: leverage is good if the project turns a profit, but can be equally bad if the project is unsuccessful. . The leverage, like a lever, tends to magnify gains and losses.

This is the catch: the developer must have 20% of the investment or know people who have the 20% and are willing to risk it with the developer and his project. Since even a small development can be \$2 million, then \$400,000 of is needed by the developer.

If the developer is able to raise the debt, then the equity is raised as well from either a bank or a venture capitalist

Term Sheet and Commitment Letter

The project documents as listed in the appendix must be prepared for the bank to consider whether it will lend the money for the developer's project. An interest rate is negotiated at this point. It will be above the risk free rate (the US Treasury Bills rate plus a premium for risk). Proven developers are less risky than greenhorns, and therefore get more competitive rates. The net result of this stage is the Commitment Letter Term Sheet which specifies the terms of the deal. It is an offer by the bank or equity partner. Keep in mind that most of the profit is retained by the developer, so that he must take the most risk. That is why a personal guarantee and collateral are usually required by the bank. If the project goes south, then it's the developer who is the first to suffer financially.

Construction Loan

It is wise of the developer to negotiate the take-out mortgage at this point. This ensures that there will be funds available at the close of construction. Note that there are mortgage broker initiation fees that are paid at the beginning of the equity loan. This is to compensate the mortgage broker for the energy and time expended in the project. They are an upfront cost and must be included in the indirect costs.

Once a deal is solidified, a formal commitment is had by the developer. The next phase is to close on the construction loan but only after a formal review is done by the developer.

Review Pro Forma

The pro forma is the income / costs / profit accounting type statement that allows the developer to project whether the project is projected to be a success financially. Now that the estimate is quite tight, and the indirect costs are established including the borrowing terms, the developer can reassess for a final time before commitment whether the project is worthwhile. This is the point of no turning back. Once the construction loan is signed, and the land option is closed, then the project will be underway. The next thing is the expense of the building permit which can be \$30,000 for a small \$2 million project.

If the project is a Go, then the land acquisition is closed. The construction loan is issued in phases: Foundation / Shell/ and finally Interior. Each of these phases are approved by an Architect or Engineer. This is an important work of the Architect / Engineer since there is liability on his or her part for accuracy of the constructed works. The bank is relying on his professional advice here.

The Lawyer must draft an Offer to Purchase for the land. It includes many legal clauses. For details on what types of things are included in the "Offer to Purchase", see the appendix. Since land purchase contract must be in writing, it is advised that a lawyer is involved.

Once the Construction Loan is closed, then the "interest clock" starts ticking. "Time is money" in the construction business is more so than in any other business.

Milestones:

- **Enter Construction Contract w/ Schedule**
- **Close Land Option**
- **Obtain Building Permit**

VII. CONSTRUCTION MANAGEMENT

Milestone: Notice of Commencement/ Ground Breaking

With the closing of the land, loans, and the purchase of the building permit, the next phase of construction begins. The General Contract is closed and construction begins as set out in the schedule. When the GC mobilizes, a Ground Breaking Ceremony should initiate construction with various officials, Owner and politicians to announce the beginning of the project. Media attention will involve the public in the success of the project.

Managing the Construction Project Manager

The Developer's Project Manager is responsible only for the oversight of the GC General Contractors Construction Manager, who is usually a civil, Mechanical or Electrical Engineer. It can also be a Technician or an experienced Supervisor.

The Developer's PM is not responsible generally for work supervised by the Construction Manager. That responsibility for supervision of the various trades and workers lies with the GC (and subcontractors) and the Designer of the particular sub trade. The subcontractors submit shop drawings which are "reviewed" – not "approved" – only by all the parties involved. In the case of an error or omission, the courts will divide the responsibility of the error according to the weight that each person had with regard to the responsibility which was relied upon. The Developer's Engineer is generally not responsible for the errors and omission in the drawings which are reviewed by the designer and prepared by the subcontractor. These two parties have the most responsibility since they have the most input in to the design and construction of the element.

The GC Construction Managers cooperates and coordinates the works of the Engineers and Architects. The following professionals are involved in the executing of the works:

- Civil Engineer:: Site Work & Utilities,
- Structural Engineer: Foundation, Structure,
- Architect: Roof , Closed in Shell,
- Mechanical Engineer
- Electrical Engineering,
- Architectural Interior Designer: Interior Fit up.
- Landscape Architect
- Energy analyst

In addition, the GC construction Manager manages about 30 trades on one project and usually has more than one project to manage at a given time in various stages of completion. The trend is for Construction Managers to work also as Estimators in house for the GC in order to assume responsibility for an estimate.

Commissioning

Nearing the end of all the sub trades work, it is time to commission or set up the Mechanical, Electrical, and Energy Management systems to ensure they work as designed to prepare for Building Occupancy. This is highly specialized work and required experts in their respective narrow disciplines to do the work properly. The CG Construction Manager is usually required to coordinate by schedule how the commissioning will take place as laid out in the specifications. A list of documents and events to be scheduled are sometimes included in the specification, especially for a more complex project such as a Water Treatment Plant. There is testing of equipment, submission of equipment ratings, balancing of mechanical systems, and checking of fixtures working, a process run through etc. commissioning is one of the most complex phases of the construction project. Trouble here can be costly since it is done near the end of a construction project. The "stuff" swept under the proverbial carpet comes to light here. An experienced M&E contractor makes all the difference here especially as to the quality assurance had during the project's lifespan.

Quality Control/ Quality Assurance / Owner's Inspectors

A QC/ QA Engineer is sometimes employed on a more complex project to ensure that the highest standard of workmanship and materials have been employed as bid on at tender. These are managed by the Owner's Engineer on behalf of the Owner.

An owner always employs independent inspectors to ensure quality of the soils, concrete, and steel and formwork. There are firms who specialize in this type of trade. More of this is discussed below.

Manage Marketing / Leasing Program

The Developer's PM has to keep not only the construction on track, but also the development entirety on track. This means that the marketing plan established early in the project is being implemented. Continued success in gaining tenants or a buyer is paramount for project success.

VIII. QUALITY ASSURANCE

Monthly Field Visits by Owner's Rep.

The Owner's representative and the project Owner should visit the site at least once per month. This is to inspect the works, meet with the Engineers, and GC staff, and gain knowledge of the upcoming monthly progress draw on the construction loan finds. It would be negligent not to visit the site at least monthly even if the project is a great distance. Much about the project's progress and competency of the construction staff can

be learned by making these mandatory visits. A meeting between the GC or Builder and the Design staff takes place monthly. This is when the progress draw may be discussed as well as outstanding Change Orders.

Approve Change Orders

It is incumbent upon the Owner's Engineer to ensure that Change Order's or changes to the scope of the work or an alteration to the plans and spec initiated by the GC or requested by the owner be approved in a timely manner. Owner's engineers should check to ensure that the amounts billed are correct and reasonable. Invoices or detailed estimates may be requested by the owner from subcontractor through the GC. This helps avoid the owner being soaked by the billing.

Pay Monthly Progress Draws

As second area of responsibility of the Owner's engineer is to ensure that the Contractor is paid in a timely fashion for an amount not more nor less than the actual work completed as the date of billing, usually the last day of the month.

An Owner's representative has to ensure that the monthly billing is approved for an amount not too much over as to overpay in case the GC goes bankrupt; nor to pay too little thereby depriving the GC (and subcontractors) of their due. This is one of the most important functions of the owner's representative and must not be taken lightly. If a billing is to be cut back due to perceived overbilling, a telephone call is in order to the GC to explain why. There must remain an amount left for the owner to be protected in case the GC can't finish the work and somebody else must finish it. The Engineer/ Architect who approved the billing should carry insurance for this function as the stakes are usually very high.

Milestone; Substantial completion 95%

Since the value of 95% of the total construction contract is paid up, then the project is said to be "substantially complete". This has a legal connotation according to the General Conditions of the Construction Contract. Therefore, it is prerogative to ensure it is an accurate milestone.

Contractor & Owner's Punch Lists

Both the Owner's Representative and the contractor should produce a "Punch List" or Deficiency List should be prepared by both parties. This is simply a list of the work outstanding in order to finish tout the contract plans and specs. A punch list can be 10 typed pages long. The lists should be circulated among the subcontractors as well as the GC. . If the GC does his own punch list ahead of the owner, many deficiencies can be headed off before they make the official punch list of the owner. Every item on the punch list must be rectified satisfactorily before the owner makes his or her final payment.

Milestone: Final completion 98%

Once most of the "punch" list (deficiency list) is completed, the milestone of final completion is obtained by the GC. This is the time that the rest of the problem or deficient work becomes part of the warranty list. The warranty usually runs for 1 year pas the date of this milestone. No more deficient items besides warranty items can be added to the list past this date, so the owner's rep must ensure that everything that is deficient must be included.

Obtain Occupancy Permit

The Architect should apply for the Building Occupancy list after the building is commissioned after Fire Safety Systems are operational. The entire fire System must be certified by the governing body. The mechanical and electrical systems must be commissioned. The Energy monitoring and control System (EMCS) must also be commissioned. The Building Inspector will check to see that the building is up to code before the Occupancy Permit is issued. This is necessary before a tenant or owners can move in and occupy the space with staff.

As-Built Survey

The GC's superintendent and the GC PM must keep "As-Built" drawings. The Site Superintendent must keep measurements of the underground utilities in case they have to be dug up at a later date. The GC PM must keep all other "As Builts" such as Structural and Architectural. The Architect will produce an final set of plans based on these drawings. They should be stamped by the GC Engineer if possible

Warranty/ Maintenance Training / EMCS: Operations and Maintenance (O&M) manuals must be prepared by the GC PM. This includes all the contact information for the Subcontractors in case maintenance contracts are awarded. They also include certain illustrations as well as warranty release instruments.

Operations and Maintenance (O&M) manuals must be prepared by the GC PM. This includes all the contact information for the Subcontractors in case maintenance contracts are awarded. They also include certain illustrations as well as warranty release instruments.

Property Management /Lease Up

Depending on whether the project is a built/ own/lease or a build/own/ transfer will depend on whether the project Developer will hire the services of a property manager. There is a professional designation, CPM certified Property Manager, which ensures that your property is in the hands of a skilled and committed professional with a professional profile to match. Companies specialize in this field. In the lease up of a project, someone dedicated to getting the message out and the clients in is indispensable if the project is to be a success.

If the project is to be sold immediately upon completion, then contracting a Real Estate agent with a negotiated sales payment plan (3-6% or one month's rent) is essential. These agents are experts at marketing your project and since they do the showing are worth the added expense. One month lost to no sale can be costlier in the long run than the fees the agent charges. The Real Estate Agents are regulated by the province in which they reside and do business. Don't ignore the lease up; it's a critical factor to the success to the project.

End of One Year Warranty, / File Closing / Achieving

This is the part of the project where all the deficiencies of the work done improperly or not done at all come to the surface. If the owner has onsite personnel looking for warranty work, expect that there will be lots of call backs. This is where Quality control during construction pays off. Encourage the Property Manager to contact the subcontractor directly if possible contractually. If not expect to spend a lot of time looking for and correcting problem from poor QC. It's usually M& E problems that crop up, but there can be things as diverse as leaks coming from the junction of two trades work; or it can be as esoteric as door hardware. Many disputes held over from the construction project can be a nuisance. Final payment should be withheld until all the subs return to finish their work. If they don't return in a timely fashion, or miss a site meeting, take their payment and hire some else or get close their bond. This is a problem as much in a bad economy as it is in a boon time.

Convert construction loan to Short Term Financing Stabilization

Once the project is 98% complete and the warranty period has begun, and once the project has a solid tenant, and the take out mortgage has been put in place, the project is considered to have stabilized. Its time to look for a new venture!

Exit Strategy (Flip or Hold)

Every Real Estate Investment needs to have an exit strategy. There is a time to sell the project and re-invest those funds for another project to bring a higher return instead of just holding on. Real estate over the latter half of the 20th century paid over 8.5%; in some areas such as California much higher. If your business is Property Management, then you will be holding a larger portfolio perhaps. If it is development, you might flip the property after improvements have been done. It depends entirely on your skills as a successful entrepreneur as to what course to take. It may make sense not even to be involved in a long term sinking market at all. It's hard to lose money in Real Estate. But it's not too hard to lose money in Development. Much residential developers in fact should be just carpenter contractors. Just because you can swing a hammer or because you own a back hoe doesn't substitute for all the prerequisite strategic planning. Most developers fail because they have capital, but not skill. Many developers fail because they have skill but not cash flow. Be very careful before entering the development business. And that's what it is: a business providing a product –an expensive one at that –to a willing and capable buyer. Anyone can build, but it takes a special Jack to make money in a highly complex field that requires wearing many hats and various personality types.

IX. THE ENVIRONMENT

Environment Canada

The Acts that affect Land Development include at least the following Federal and Provincial Acts:

Federal Acts:

Canada Water Act

Artic Waters Pollution Prevention Act

Canada Environmental Assessment Act

Canadian Environmental Protection Act

Fisheries Act

Species at Risk Act

Canada Wildlife Act

Migratory Birds Convention Act, 1994

Wild Animal and Plant ProtectionAct
Pest Control Products Act
Ocean Act
Indian Act
Naviagate able Water Protection Act
Canada Shipping Act
Transportation of Dangerous Goods Act
Etc.

Provincial Acts:

Land Act
Land Titles Act
Strata Act
Environmental Management Act
Environmental Assessment Act
Water Act
Health Act
Utilities Commission Act

Canadian Environmental Protection Act

Acceding to the CEPA Canadian Environmental Protection Act Guiding Principles, Sustainable development is put forward as follows:

The Government of Canada's environmental protection strategies are driven by a vision of environmentally sustainable economic development.

This vision depends on a clean, healthy environment and strong economic development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. Real Estate Developers have an important role to play in this vision of sustainable development. In the construction end of things, Pollution Prevention is paramount. It is forwarded as follows:

CEPA 1999 requires the virtual elimination of away from managing pollution after it has been created to preventing pollution. Pollution prevention is "the use of processes, practices, materials, products, substances or energy that avoid or minimize the creation of pollutants and waste and reduce the risk to the overall environment or human health."

"Green building" is the way of the present, not the future. Every new development should involve environmental/engineers/ biologist, and energy analysts and other professionals who are familiar with new techniques for pollution prevention. See appendix for the LEED guides tables of contents for an overview of how to build green.

The CEPA 1999 provides the following guiding principal with regard to the Ecosystem Approach:

Based on natural geographic units rather than political boundaries, the ecosystem approach recognizes the relationship between land, air, and water wildlife and human activities. It also considers environmental, social and economic elements that affect the environment as a whole.

A biologist may be employed along with the environmental engineer to see what environmental permits are required. Most developments today require environmental permits.

Canadian Environmental Assessment Act

The second important Federal Act regarding the environment in Canada is the Canadian Environmental Assessment Act.

The two main purposes of this act is to:

- "ensure that projects are considered in a careful and precautionary manner before federal authorities take action in connection with them, in order to ensure that such projects do not cause significant adverse environmental effects";
- "to encourage responsible authorities to take actions that promote sustainable development and thereby achieve or maintain a healthy environment and a healthy economy":

A preliminary "screening" or first report is conducted to determine if there is need for a more "compressive" study and report is necessary. It depends on the judgment of the authority involved to determine whether a screening or comprehensive report is undertaken.

Health Canada

Besides the Environment Canada Acts, there is a second Federal Branch dealing with Workplace safety and promote health in the workplace. There is much information to study on the Government of Canada websites, but here it will suffice to list the major topics for the developer's consideration, at least:

- Air Quality
- Climate Change and Health
- Contaminated Sites
- Environmental Health Assessment
- Hazards in Your Environment
- Noise
- Occupational Health and Safety
- Employee Assistance Services
- Occupational Radiation
- WHMIS : Workplace Hazardous Material Information System
- Hazardous Products & Controlled ProductsReg.
- Compressed Gas
- Flammable and combustible Material
- Oxidizing Material
- Poisonous and infectious Material
- Materials Causing Other Toxic Effects
- Bio hazardous Infectious Material
- Corrosive Materials
- Dangerously Reactive Materials
- Workplace Health
- Radiation
- Water Quality

It is incumbent upon the developer or Owner's Representative to ensure that the Federal and Provincial Laws are being complied with by the Builders especially- a hazardous and dangerous environment. Human safety is paramount!

X. CONCLUSION

This brief and concise work outlines some of the main things encountered in Real Estate Development. Now it is time for you to go out and find a viable project and bring it to fruition. Good luck!

REFERENCES

- [1] Collier, N.S., (2003) Construction funding: The Process of Real Estate Development, Appraisal, and Finance 3rd ed Wiley
- [2] Government of Canada, (2004) A Guide to Understanding the Canadian Environmental Protection Act, 1999
- [3] Horgarth R. (2008) Insurance Law for the Construction Industry Oxford Kelleher T H (2009) Smith, Currie and Hancock's Construction law: A Practical guide for the Construction Professional Wiley Kone D.L. (2006) Land Development 10th ed.
- [4] AIA (2003) The Architect's Guide to Design- Build Services Wiley Rumane A R (2011) Quality management in Construction Projects CRC Press

Appendices

Original Documents are available for a fee from:

- Association of Consulting Engineering Companies Canada
- Association of Professional Engineers and Geoscientists of New Brunswick
- Canadian Construction Association
- Canadian Construction Documents Committee
- Canadian Green Building Council (LEED)
- Construction Specifications Canada
- FIDIC International Federation of Consulting Engineers
- Harvard Business Review