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Sullivan Estates – Conception to Commissioning

The Architectural Designer--cum -“Co-Developer & Project/Construction Manager”

**An Architectural Treatise on a Residential Development using the Design-Build
Concept of Project Delivery, with the Architectural Designer as Entrepreneur and
Technical Expert**

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Sullivan **E**states – **C**onception to **C**ommissioning

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Architectural Designer-cum -“Co-Developer & Project/Construction

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TABLE OF CONTENTS

Executive Summary.....	i
Acknowledgement.....	ii
List of Acronyms.....	v.
Abstract.....	vi
Chapter 1	1
1.0 Introduction	1
1.1 Background	1
1.2 Location and Description	2
1.3 Project Development Information	2
1.4 Project Information	4
Chapter 2	6
2.1. Problem Statement	6
2.2. Problem Solution	6
2.3. Architectural Investigation	6
Chapter 3	9
3.1. Pre-Feasibility Study	9
3.2. Engaging the Professionals	13
3.3. Concomitant Legal Issues	16
3.4. Design Brief	18
3.5. Design Discourse	24
3.6. Financial Approval	30

Chapter 4.....	36
4.1. Construction Phase	36
4.2. Bank Security for the Interim Financing	36
4.3. The Real Estate (Dealers and Developers) Act of Jamaica	37
4.4. Closing	38
4.5. Spatial Allocation of Typical Units in Blocks 1, 2 & 3.	39
Chapter 5	42
5.1. Analysis and Interpretation	42
Chapter 6	44
Literature Review	
6.1 Modernistic Property Development	44
6.2 How to Manage a Project	47
6.3 The Project Management Body of Knowledge (PMBOK)	50
6.4 Architect Turned Developer	52
6.5 Architect / Project Manager	57
6.6 Architect Turned Construction Manager	62
6.7 Architect now entering Construction Management	68
6.8 Annotated AIAB146 Standard Form of Amendment	70
6.9 Integrated Design and Construction: Three Approaches	71
Appendices.....	76
References.....	81

EXECUTIVE SUMMARY

This Thesis Project seeks to dispel the notion, that a Triplex Block of Row Units is one that is configured with two end units sandwiching an inner middle unit.

It further seeks to dispel the myth, that an upper level unit by virtue of being off the ground is bereft of external ground space.

Today's upwardly mobile and professional home seeker gives a preference to the end unit because it has three sides, with exposed wall surfaces thus allowing an infusion of light, ventilation and a commune with the external environment.

In addition, the potential homeowner notwithstanding being in an upper level unit is still desirous of having a private drying yard and strategically positioned parking, as though he were on the ground floor.

This thesis project seeks to demystify both shortcomings in the eye of the sophisticated home seeker, by providing an aesthetically pleasing and utilitarian solution.

Additionally, the focus of the Thesis Project is the creation of that seamless assemblage of all the architectural, infrastructural and structural design and constructional elements, needed to bring a quality architectural project to fruition- reflecting competency, diligence and in-depth technical and design application.

Coupled with the foregoing, the added roles of the Architectural Designer, in his capacity as Co-Developer and Project/Construction Manger are explored in the real world context. This context encompassed a successful client brief development through to the constructed product. And finally, the startup process of the of the end users settling in their respective *eight end units*, with the client retaining the only middle unit for rental and a perennial income generation.

ACKNOWLEDGEMENTS

The completion of this project would have been severely compromised, were it not for structural engineer and professional engineering partner Charles D. Green, who had in the past nurtured the environment to give credence to the maxim that knowledge is infinite and renewable.

Structural technologist, drafter, and just in time visiting site engineer, Earl A. Robinson, was invaluable in putting his usual technical touch to the appendices of this work.

Librarian extraordinaire and proof reader, Angella Robinson gave her signal nod to this document thus making it palatable.

My Mother Elizabeth Grey who has always imbued the kind of bionic confidence in me.

LIST OF ACRONYMS

- KSAC - Kingston and St. Andrew Corporation
- NEPA - The National Environmental and Planning Agency
- NWA - The National Works Agency
- MOH - The Ministry of Health
- NWC - The National Water Commission
- SRC - The Scientific Research Council
- NRCA - The National Research and Conservation Authority
- JFB - The Jamaica Fire Brigade
- SD - The Survey Department
- REB - The Real Estate Board
- TO - The Title Office
- LVD - The Land Valuation Department
- JNHT - Jamaica National Heritage Trust
- UDC - Urban development Corporation
- KMR - Kingston Metropolitan Area
- WRA - Water Resources Authority
- NLA - The National Land Agency
- *ibid* - same as before
- *Viz.* - Namely, *videlicet*.
- AIA - American Institute of Architects
- CM - Construction Manager
- NFU - North Florida University

- PM - Project Manager
- Ft. - foot
- sq. ft - square foot
- ft² - square foot

ABSTRACT

The upwardly mobile house hunters are on their laptops surfing real estate sites for a certain kind of housing solution that offers the best of both worlds.

On the one hand, they want the intimacy of row units with the aura of security and close proximity to neighbours and a kind of social interdependence. Yet, on the other hand, they yearn for the vista afforded by the stand-alone units, which are significantly more expensive, both in initial capital outlay and lifecycle costs.

How about the “*Triple Sided Triplex*”, which has no middle unit, and wherein each of the units has three sides for that sought after vista, light, ventilation, and delight, albeit being row units?

This of course is in contrast to the conventional triplex, which has a boxed in middle unit with a command of only two sides videlicet the front and rear, whilst the other two end units command the usual three side views - front rear and side.

The approach is to satisfy the demands of the house consuming public within the parameters of a framework of price sensitivity, yet with significant trappings of both the row and stand-alone units – gardens, even for the top floor units, parking, vistas on three sides and the conjoined party walls that often times echoes safety and kinship.

Chapter 1

1.0 Introduction

1.1 Background

The need for privately gated housing communities in Kingston Jamaica seemed to have stemmed from the ratcheting effect of crime in the metropolitan region and its direct and indirect sequel on city and urban dwellers. Moreover, there is a paucity of land for residential construction coupled with the astronomical asking prices when they are made available to the market. Additionally, apart from the price constraint, the astute professional has developed an appetite for a kind of communal living in terms of proximity to each other, yet the need to retain his privacy and interdependence. The same may hold true for the retiring adult who can no longer afford the stand-alone dwelling with its perceived security loopholes. Then came along the gated community with the trappings of the upscale units, and although they are joined together with shared walls and amenities, the security concerns seem to be less of an impediment when compared to being on its own land.

Sullivan Estates is a housing complex representing one of a suite of projects designed and implemented by the Author of this Thesis, against the backdrop of meeting the growing demand by the professional class for affordable but elegant architectural solution.

The goals also included the provision of an affordable, climate sensitive solution, which met the discerning, thrifty and often times upwardly mobile astute professional home seeker.

The development represents the fulfillment of a dream by ‘new kid on the block’ - Client / Developer, Tony Prendergast, in filial devotion to an atavistic urge to enter the fray

of property development. And thereafter, let the developmental community conspire to make him succeed notwithstanding professional counsel and guidance in the inherent processes.

Sullivan Estates is a private-gated Residential Townhouse Complex consisting of Nine Architecturally Designed Townhouses and Apartments dispersed over half an acre of landscaped site in the Sullivan Community. Sullivan Estates has amenities including a gazebo, a badminton court, stand-by generator, security house, general post box area, reserve water supply and a gated entry. It has an attractively landscaped private rear and side gardens with *eight end units (and not the expected six)*, albeit three sets of triplexes.

1.2 Location & Description

The community of Sullivan is located in the middle class residential area of Sullivan Ave about three miles on the outskirts of a major Town centre - Half Way Tree – the capital of the parish of St. Andrew, which is part of Metropolitan Kingston and St. Andrew in Jamaica West Indies.

1.3 Project Development Information

1.3.1 Scope of Works

The works contained in the development comprised both sub-structure and super-structure works and include the construction of roads, water supply system, sewerage system, storm water drains, the site development works and the construction of:-

- Five Two Bed Room Town Houses - consisting of two stories and all being **four end units**.

- Four Two Bed Room Apartments – two on the Ground floor and two on the First floor totaling **four end units**

NB the end units are normally preferred and fetch higher prices than the middle units because of the three-sided scenery, coupled with more ventilation, light and walk-around the buildings, and with more gardening opportunities. The middle units have only two sides {front and rear} and thus offer less of the attributes when compared to end units.

1.3.2 Sullivan Estates Residential Development

The proposal was to develop Half an Acre of Prime Residential land at number 31A Sullivan Ave in the Parish of St. Andrew into Nine Strata Lots and One Communal Lot, consisting of roadways and green areas.

The location of the Site benefits from a range of public services including paved roads, telephone, electricity and piped water supply. Shopping is within close proximity; postal services, educational institutions and police protection are available at nearby Town Centres and within easy reach, both by private and public transportation.

The site has a frontage of approximately 100 ft to the road, and a depth of 233 ft. It is generally on grade with the road from which it maintains a gentle fall towards the South East where it boundaries with Merrivale Apartments, a massive three storied complex – the last phase which was also designed by the Arthur of this Thesis and consist, of Attic floors not dissimilar to Sullivan Estates.

1.4 Infrastructure

1.4.1 Roads

The width of the road within the site is 20 ft with 1-1/2" asphaltic concrete dressing on 9" marl hard core with kerb walls, and channels. The width of the roadway allows for longitudinal parking to the eastern boundary. Otherwise, assigned parking consists of grasscrete (blocks on edge with earth in fill).

Water Supply is via 50 mm diameter PVC water mains. Sewage Disposal is via 6" and 4" PVC pipes which gravity flow to a 100M³ Bio-digester Septic Tank with Hybrid Reid Bed and Soak away Pit.

1.4.2 Total Development Cost

The development was budgeted to cost \$M 108

1.4.3 Selling Price of Each Unit Type

Ground Floor Apartments \$M13

Town Houses \$M 14

First Floor Apartments \$M 15

1.4.4 Construction Financing

The Construction financing was sought from the Jamaica Mortgage Bank to the tune of US\$ 970,000.00

1.4.5 Construction Period

The construction period lasted eighteen months.

1.4.6 Structure of Loan Repayment

Repayment of the loan was made from Sale Proceeds, which commenced in the Forth month, and was completed in the Sixteenth month.

Chapter 2

2.1 Problem Statement

The Client's brief called for four sets of duplexes (that is, eight end units with $8 \times 4 = 32$ habitable rooms), thus eliminating the inclusion of middle units. This would permit a **three-side** walk around and windows to three sides to all **eight end units** -- the higher priced option of the market when compared to the middle units. However, the zoning requirements for that particular area of fifty habitable rooms to the acre (or 25 to the half acre), and the size of the lot with the prescribed set back between blocks of units, would not allow for the realization of his brief.

2.2 Problem Solution

The Architectural solution proffered three sets of triplexes {that is, nine units with $9 \times 3 = 27$ habitable rooms (plus 9 optional attic rooms making 36 habitable rooms)} with a **three-side** walk around to **eight end units** within the size of site, regulatory framework and prescribed set backs being achieved.

2.3 Architectural Investigation

In addition to achieving the Client's wishes, the Architectural Design Solution sought to investigate an Archetypal Form in which, despite being a triplex (namely Blocks # 1 & 2) —all three units are end units and have a three sidewalk around and by extension fenestration in all three sides. The traditional triplex block (namely Block # 3) has one middle unit and two end units, thus allowing two-side walk around to the middle unit, and three-side walk around to the end units, which are the prized purchase of the buying market. This is so, because of its potential for more generous infusion of light and ventilation resulting from its three exposed surfaces.

The design moreover, sought a solution for the top floor unit (notwithstanding being on the top floor) having its own front and back yards space allocation on ground level.

Additionally, Sullivan Estates represents an educational experience in the study of the relationship between the conception of an Architectural Space; and the act of designing and constructing that space, within the context of a technical, regulatory and a business framework, all rolled into the purview of the Architectural Designer.

The Thesis Project also seeks to examine the efficacy of the Design-Build Concept of Delivery with the Architectural Designer who is the technical expert, also being the Co-Developer, Project Manager, and Construction Manager with all the industry accepted risks of each of the portfolio roles.

Notwithstanding the foregoing though, the main emphasis of this Thesis Project, is the *ARCHITECTURAL DESIGN*, which sought to demonstrate competency in the design and assembly of the various *Architectural, Civil and Structural Engineering* elements that comprised the project (see appendix AP.1). The Design Thesis sought to chronicle the technical side of the project, its development and its outcome. It exhibited a combination of scope, complexity and depth of intellectual and technical investigation, against the backdrop of a formidable project sponsor, making his debut in the unforgiving property development industry.

This Project Thesis consisted of the initial stage of creating a Co-Developers' relationship by way of a Joint Venture Partnership. It was then followed by the over arching Project Management Stage of Initiating the Project (with its continuum throughout all phases). Then came the Major Design Thesis Component (viz. the Architectural Design),

followed by the Construction Management phase, which covered the implementation of the Project, to the Close Out, and Commissioning.

Chapter 3

The processes that must be undertaken in the realization of the development included the findings from the feasibility studies that have to be garnered /collected and evaluated to ascertain whether there was in fact a viable project in the offering.

3.1 Pre-feasibility study

Brown (2003) of Implementation Ltd. posited that the target market must be defined and a pre-feasibility study undertaken in order to decide whether the project is worth pursuing. This was completed and it assisted the Developers in providing a graphic assessment of what could have been achieved in terms of financing requirements, unit size, infrastructural requirements and zoning densities. A Planning Enquiry was also made and the inputs of the utility companies ascertained. As a matter of import, that was completed even before the land was acquired, as an *option to purchase agreement* was entered into with the vendor of the land.

The pre-feasibility study was a necessary prelude to the design brief and provided the knowledge and information for informing the design team as to what could have reasonably be afforded at the material time in question for inclusion at the pre-design stage. The pre-feasibility study also permitted the exploration of a number of risk-assessments. For example, what was the impact of increasing costs and possible delays? The impact of violence on the Project was also examined. Additionally, the impact of alternative scenarios on the cash flows was evaluated. .

Throughout that phase, there was always the real possibility of a “No Go” Decision being taken.

The feasibility study in short, was a reflection of all the assumptions that were proffered and those kept on changing as more information came to light – a clear case of progressive elaboration.

The salient areas recommended by Brown (2003) and actually touched on by the Project Designers included the following:

3.1.1 The Project Budget

This Budget included the following:

- The Cash Flow Projection
- The Profit & Loss Account.
- Risk Analyses
- Market Research Data, which informed the Market Price for the units, the Possible Demand for the units and the time line within which they would have been sold. Moreover, the quantum and structure of the deposits, coupled with the affordability and behaviour of the housing market were all determinants in arriving at the development cost.
- The availability and ease of access to short term bridging finance and long-term mortgages at affordable interest rates when compared to the private capital markets were all explored.

As a matter of record, throughout the various stages of the design and construction documentation processes, the feasibility study was being used to inform the viability of the proposed housing development as per recommended by Brown (2003)

3.1.2. Land Acquisition

Based on the recommendation of Brown (2003) due diligence was conducted prior to the acquisition of the land and included the following:

- a. Boundary and topographical surveys was commissioned
- b. Legal advice regarding the limitations imposed by restrictive covenants, rights-of-ways and the ability to construct multi-dwellings thereon and the issuing of splinter titles.
- c. The eventual hand over of the ownership of roads and sewerage to the purchasers and not the local authorities and the legal implications for so doing.
- d. The Future ownership of roads and sewerage disposal services - were these to be retained by the developer, handed over to future purchasers or to the local authorities? What were the legal implications and the mechanics involved?
- e. The Surveyors were instructed to identify major trees and existing landscaping worth retaining in the Development.
- f. Boreholes were dug and soil investigations conducted by the civil/structural engineer.

3.1.3. The Location of Sullivan Avenue

The project was deemed feasible in view of the fact that the Planning requirements were met, as it was compliant with the following Acts:-

a) The planning requirements

The Town and Country Planning Act defines the areas in which residential and commercial development may take place in Kingston and St. Andrew, the municipality in which the development took place. On the other hand, the Land Development and Utilization Commission Act forbids the unauthorized development of agricultural land for residential uses. In addition, the Local Improvements Act prohibits the sub-division of land without approval from the competent authority that is NEPA.

b) The environmental requirements

The Natural Resources Conservation Authority (NRCA) Act stipulates for the environmental assessment of any project consisting of over nine lots before approval is granted. This was not applicable to Sullivan Estates, as the number of lots did not exceed nine.

The density and other similar requirements of the proposed development were considered before committing to purchase as per the recommendations of Brown (2003).

3.2 Engaging the Professionals

3.2.1. Professional Fees

A developer must be guided by professional advice from the technical experts. More often than not, the level, cost and quality of advice is a function of the professional skill sets of the provider of such advice and expertise. It stands to reason therefore, that the more costly one's professional team is, the more will be the impact on the selling price of the units as cited by Woodstock (2003). He continued by emphasizing that notwithstanding that fact, the shrewd developer would rather reduce his profit margin by the inclusion fees and proceed with greater confidence and less risk than not to have had wise counsel at all insists Woodstock (2003).

Woodstock (2003) continued by asking the question, "How many developers retain the services of a landscape architect? For the equivalent of say 2% of selling price, a developer may receive 4% in value in terms of sales promotion and marketability.

3.2.2. Co-Developer/Project Manager

The author of this Thesis was invited to be a co-developer in the project by way of waiving his fees in exchange for equity in the Development Co. He was also selected as the Project Manager to tap into his demonstrable skills and intimate knowledge of the development processes, having worked for four years in the top tier of the Local Municipal Government - the Kingston and St. Andrew Corporation.

3.2.3. Attorney-at-Law

The Law Firm, Hilton & Associates, was brought on board. After investigation, they confirmed that the title had no caveats that would prevent a multifamily development from being implemented. In other words, under the Town and Country Development Order – in its present state and without going to the Courts for a modification to the title, the development could have proceeded forthwith. The density allowed for the location under consideration is fifty habitable rooms to the acre, which equates to twenty-five habitable rooms to the half-acre site in question.

3.2.4. Commissioned Land Surveyors

The Surveying firm of Kenlish and Assoc. was commissioned to undertake a title search to ascertain the integrity of the title and to conduct a boundary identification, which was found to be in breach and was noted for eventual correction.

3.2.5. Architectural Designer

Here again the author of this thesis was given the task of coming up with a suitable brief to match the understanding of the client (and now co-developer Tony) but with several modifications to meet the density of the development area and a potential income market. Instead of four sets of duplexes, the Architectural Designer was now designing three sets of triplexes with each unit having three habitable rooms making a total of **twenty-seven** for which a successful case was made to the local authority based on the geometry of the design. The calculated number based on the acreage is **twenty-five** habitable rooms.

3.2.6. Civil /Structural Engineer

A Professionally Registered Civil/Structural Engineer - Charles D. Green was commissioned to undertake soils test to ascertain the bearing capacity and the percolation rate of the soil to inform the design process. Moreover, he not only designed the structural and civil engineering components, but also was a professional soundboard and consultative resource throughout the Design-Build phases based on the specificity of his experiences.

3.2.7. Quantity Surveyor

The Quantity Surveyor Firm – Greebilt Engineering was never commissioned in the feasibility stage. They came on board after statutory approval was granted by the KSAC. However, in hindsight, it would have been better to have brought them on board even in the embryonic stage.

3.2.8. Electro-Mechanical Engineer

No Electro-Mechanical Engineering skill set was brought on board for guidance at the design stage of the project.

3.3 Concomitant Legal Issues

3.3.1. Kipwik Establishment Ltd.

Minott (2003) Attorney-at-Law, of the Law Firm Myers Fletcher and Gordon counsels that a number legal considerations must be explored when venturing in a residential development similar to the one under consideration. One such issue is whether to develop the property as an individual or as an incorporated company. On the advice of our Consultant Accountant, a Limited Liability Company was incorporated to take title to the land and to carry out the development. The obvious advantages of going that particular route rather than implementing the development in the developer's own name; included the protection that a limited liability affords and the convenience of being able to divide profits and losses in accordance with shareholding. It was important to have noted, that the company paid tax on its profits at the rate of 33%, as against 25% for individuals. Notwithstanding the higher amount, the decision was made to go the route of a Limited Liability Company videlicet Kipwik Establishment Ltd.

3.3.2. LAND ACQUISITION

The Land was bought by the Developer

3.3.3. The Vendor's Title

Due diligence enquiries as recommended by Minott (2003) were carried out to ascertain inter alia:

That the Client/Co-Developer owned the land, because a leasehold interest would not have sufficed, in view of the fact that it is not a marketable instrument in the Jamaican context. In short, the mortgage institutions do not lend on leasehold security.

A search was made to ascertain what restrictive covenants, easements and other encumbrances affected the subject land. Point in fact, there are cases where covenants prohibiting sub-division into smaller lots, which would require modification or discharge prior to development taking place. The court procedure could take as many as three (3) months to a year to have it fully discharged.

It was also ascertained that the title was by plan rather than description. Had the latter been the case, an application to re-register by plan would have had to be effected, and this would have taken an inordinate length of time, in some instances up to nine months. Title by plan, which is the norm for the market and mortgagees companies, would not normally be issued from a parent title by description.

The Commissioned Land Surveyors Kenlish Assoc was instructed to visit the then newly acquired property to ensure that there were no encroachments or breaches of restrictive covenants.

3.3.4 The Lot Sale Agreement

There was no need for the prospective lot purchasers to sign a Nomination Agreement, in pursuance of which the lot will be transferred directly by third party to the nominated lot purchasers, as the title was fully in the name of the client. Neither was Split Contracts entered into as the Stamp Duty Act was amended to discourage that

practice. In any event, the project was done under the Strata Act and not the Sub-Division Act and hence, there was no advantages to be had by splitting the contract save for lots and chattels. As a matter of information, over the years, the practice developed of having two separate agreements – one for the sale of land constituting one agreement and the other for the purchaser contract in a separate agreement for the construction of a house on the land. This method, if not carefully executed by an experienced Attorney in conveyance, may not achieve its result of minimizing stamp duty and transfer tax. Point in fact; the introduction of the 2% contractor's levy may obliterate any gains hoped for by so doing emphasized Minott (2003). Hence, it is pointless in splitting the contract in instances where the Developer and the Contractor are the same person , as the Developer is entitled under the Transfer Tax Exemption Order 1974 to a rebate of 75% of the transfer tax he confirms (Minott, 2003).

3.4 Design Brief

3.4.1. Preliminary Costing and Designs

Resulting from the feasibility study, the design brief was formulated and a -number of key processes were examined (Brown, J., 2003). Hereinafter is a synopsis of the areas that were explored by Building Tectonics – the Project Designers:-

1. Site Planning and Design incorporating the zoning densities and meeting the other statutory requirements for parking, water storage, sewage disposal, amenity areas, building set backs, seeding, road reservations, and retention of trees on the site.

2. The proposed height of the buildings, number of habitable rooms, area of footprints to site area, parking for residents and visitors, and parking, ingress/egress of the buildings for the disabled.
3. The type of finishes and specifications, fenestrations, floors and wall finishes, roof type and finishes, et cetera.
4. Recreational amenity areas, hard and soft landscaping.
5. Electricity supply - above or below ground, kerbs and gutters, and road paving.

3.4.2. Value Engineering & Constructability Analysis

The Contractor was brought on stream very early in the design stage to ensure that savings would accrue by way of construction methods and approaches from the view of the constructor using the Joint Consultative Contract (JCC) form of contract. This of course necessitated that the contract be negotiated as opposed to having it tendered on a competitive basis.

3.4.3. Infrastructural Works

A topographical survey was undertaken to guide the design of the infrastructural works. This served to minimize guesswork particularly with the works that are under ground, and can contribute immensely to gross over expenditure and costs over-runs.

3.4.4. Building Construction - Sub and Super Structures

The domestic construction sector feels comfortable with a construction cost that is within the band of 50 to 55% of the selling price of the units, and the Quantity Surveyors-Greebilt Engineering used that percentage in building up its costs to ensure project viability.

3.4.5. Finance Charges

There are a number of variables, which may contribute to an appreciable increase in interest costs and thus negatively affect the developer's projected profit margin. Cognizance was taken of all of them and behavioural action instituted to mitigate them including the hereinafter:

a) A thorough understanding of the implications of the Real Estate (Dealers & Developers) Act. The Law restricts the use of purchasers' deposits, which has cash flow implications.

b) Increase interest costs by the banks or due to governmental action, and/or inaction

c) Inability to pre-sell a certain number of units even before the construction is started.

d) The cost of delays in completing construction works and achieving Practical Completion, which are irrecoverable from liquidated damages, imposed on the contractor.

e) Legal fees and other financial charges involved on loan security documentation were noted and budgeted for.

f) Commitment fees and interest costs on loans, and all the terms and conditions contained in commitment letters and loan agreements received from financial institutions, were fully explored and accounted for particularly those that had costs implications.

g) Possible delays in collecting sales proceeds were recognized and pre-emptive action taken to mitigate it. Additionally, the Attorneys for the mortgage lending agencies, purchasers and the attorneys-at-law for the subject development were monitored. So too were the delays of all third party interest directly and/or indirectly involved in the project. Additionally, the time line taken by the Registrar of Titles in registering Transfers and Mortgage Loans, coupled with every other direct or indirect stakeholder involved in the processes were carefully monitored and tracked as recommended by Brown (2003).

3.4.6. Cash Flow

The cash flow reflected the developer's estimate of units to be pre-sold and those to be sold after the commencement of the construction works. The projected time line, for the consumption of his equity (as the equity funding must be exhausted), before loan financing could have been accessed.

3.4.7. Developer's Overheads.

Property taxes on the land prior to purchasers assuming responsibility

- a. Cost of statutory approvals.

- b. Insurances not carried by contractors. For example, “All Risks” insurance on unsold units after Practical Completion has been granted or on units where legal possession has not been delivered.
- c. Security costs incurred by the developer.

3.4.8. Project Selling Expenses

Advertising and promotion.

- a. Commissions paid to real estate brokers.
- b. Legal fees for preparing sales agreements.
- c. Legal fees and costs on Transfers including Stamp Duties, Registration Fees and Transfer Tax.

3.4.9. Developer’s Profit Margin

The Developer’s Profit Margin is the most flexible of all elements of the development budget continued Brown (2003). It is also the only element that has a high probability of decreasing rather than increasing. Consonantly, it must be constantly monitored to ensure its credibility and the project being successful.

The Strength of the housing market – that is, whether it is a buyers’ or sellers’ market would in essence influence the level of the Developer’s profit margin.

The amount of the developer's equity contribution – that is, the more his contribution, the less he would have to borrow and hence the less exposed he would be.

Influence exerted by financing institutions such as the NHT and JMB

The developer would expect a margin of a minimum of 10% calculated on the total development cost. Assuming that the Developer's equity is 30 % of project costs, this would equate to a 331/3% Return on Equity Invested as cited by Brown (2003).

Property Development is fraught with risk, uncertainty and so many variables and known and unknown unforeseeable argues Brown (2003). Hence, to be successful, the developer must reduce his exposure to risk and uncertainty to a minimum and must frequently update his development budgets, cash flow projections and feasibility studies to mirror real time conditions.

3.4.10. Selling Price

The elements of the Project Budget at 3.4.1 to 3.4.9 hereinbefore would drive the selling price of the completed units. The selling price is generally fixed and can only be increased if there are clauses to that effect in the developer's sales agreement. In cases where there is a robust demand for the units and the scheme is phased, then later phases may accommodate a higher pricing structure. However, in cases where the demand for the later phases is anemic, this can result in a reduction in prices (all other factors being equal), and/or postponement or discontinuation of the rest of the scheme (Brown, J., 2003).

3.5 Design Discourse

3.5.1 Schematic Designs

Schematic Designs were executed and discussed ad nauseam with the Engineer before being submitted as preliminary designs to the KSAC for comments and directions.

Similarly, sketch proposals were also floated to a number of the Statutory Agencies for their comment, in particular the Ministry of Health. This was important as there were concerns relating to the type of sewerage system that would be allowed in the Metropolis of Kingston and St. Andrew, against the background of already polluted water aquifers therein. Comments were similarly sought from the National Works Agency about the set back from the roadway and to ascertain their plans for widening of it.

3.5.2 Site Development

The subject site is 2208M² (23772 ft² or 216'x 110') and is situated on the main arterial road in an urban residential setting in the Kingston 8 Area of the parish of St. Andrew and gently slopes away from the roadway. The approximately North-South rectangular half-acre plot is advantageously positioned to capitalize on the nighttime sea breeze and the daytime mountain breeze. There is no Central Sewerage System in the area. Potable water, Electricity and Telephony are within easy reach of the site. The site is bounded to the East and West by private dwellings and to the south by a three storied apartment complex- videlicet Merrivale Apartment, a complex. Sullivan Ave runs along the north of the site. Statutory requirements dictate that buildings be no more than three stories high and density no more than fifty habitable rooms to the acre. The National Water Commission, the local water under taker does not guarantee sufficient water pressure in buildings beyond two stories.

3.5.3 The Site Plan Design

The disposition of the blocks on the site was primarily to ensure that a number of factors were positively impacted. Firstly, the building area had to be no more than fifty percent of the site area. The matching of the building footprints to mimic the north south axis not only displayed a faithful allegiance to the morphology of the site, but also allowed for the capitalization of the prevailing diurnal and nocturnal winds. The banking of the units in triplexes allowed for and contributed to an airy feel that allows for the quick exchange of air through and around the blocks. At the southern end, there is an out of view sewerage system comprising of a 100M³ Bio-Digester Septic Tank with its attendant Hybrid Filter Bed, Chlorination Chamber and Soak away pit. Above the sewerage, system is Badminton Court, which is part of the Amenity Area provided.

The spaces between the blocks of units in addition to contributing to that visual expansiveness of the site, also contribute to that feeling of fluidity by way of moving within and around all the blocks. In addition, it appreciably adds to the amenity areas of the development. The Northern end of the scheme comprises of an area designated for a family barbecue complete with a gazebo and children's play area. The block of buildings are all located to the Western Side of the Site thus allowing an almost equal area for parking, roadway, and a strip of green area to soften the site. The adequately set back celebrated entrance gate ensures that entering vehicles do not obstruct the free passage of vehicles on the normally busy Sullivan Avenue.

3.5.4 Vehicular Parking

The Parking is provided at the rate of two per unit and one per two units for visitors along the eastern boundary of the property. In addition, each unit is allowed an extra parking

area by a third vehicle locking in the already two assigned parking spots. A parking is also designated for the disabled and any visiting service unit.

3.5.5 Design of the Envelope of the Buildings

The exterior of the blocks are designed so that the front of the blocks have generous patios that allow for ample shade from the mid morning sun in the East and provide generous outdoor tropical living by ensuring that the interior flows onto the exterior. Both the living areas and the master bedrooms of each block are housed-in by the patios that run the entire width of the blocks. The wraps around front patios are semi-circular and have a soft visual feel to the eye. The rear western side has appreciably less patio space, but still caters for the outward movement from within the building. The shading element is not as pronounced, but instead allows an open vista to the sky vault from the top floors. On the ground floors, the movement from within to without assures immediate access to the outdoor utility spaces to the rear and parking to the front. There are generous windows to both the front and rear and in the case of the end units, the north and south façades have ample fenestration.

3.5.6 Architectural Delight

There are three blocks of triplexes making up the nine-unit development. Moreover, for the first time in Jamaica's Residential Architectural History, the **Triple Triplex** design (save for Block # 3) consists of one town house at one end and two apartments - one above the other at the other end. The third block of triplex nearest to the entry consists of the usual three town houses with the middle one being sandwiched by the end ones. Blocks one and two, with the hybrid design of one unit above the other qualifies the development to be built under the Strata Act as opposed to the Subdivision Act.

3.5.7 The Design Philosophy

Sullivan Estate was designed to meet and /or surpass the following criteria:

- The design met all the statutory requirements
- The design had Real Estate Worth (that is) it should appreciate with inflation and keep pace with the value of similar properties in locations that are approximately on par with it.
- The design has Delight, that is, the design not only meets the expectations of the prospective buyers but also, surpassed it. The flexible design that allows the option for attic living, the assigned drying yard for the first floor apartments, the nooky space on the ground floor apartment underneath the top floor apartment stair case that can be used as a computer room- cum- overnight helper's room, are by no means industry norms.

3.5.8 The Approval Process

Any development within the Kingston and St. Andrew jurisdiction must seek planning permission from NEPA and Building Approval from the KSAC. The KSAC in turn will seek commentaries from other stakeholder agencies. In this instant case, the Architectural Designer made submissions directly to a number of statal and para-statal agencies in a bid to fast tract the approval process. They in turn made commentaries/no comments to the KSAC and copied him as a matter of protocol. Upon-receiving commentaries from the hereinbefore-mentioned Authorities, the designs were iteratively and incrementally modified to meet those statutory requirements.

3.5.9 Official Submission to the KSAC

Then finally, the nine sets of the modified construction documents were submitted to the Kingston and St. Andrew Corporation with the requisite application fees for ultimate approval from the Council. The application was sent in the advanced preliminary design stages to all the Statutory Agencies. Consequently, this meant that virtually all the issues would have been met and the timeline from application to final approval took less than sixty days compared to a six to twelve month processing period had it not gone through the steps that it did.

3.5.10 Real Estate Board Approval

Under the Real Estate Act of Jamaica, any development over five units that is being offered for sale to the public and which seeks to collect deposits from the public must be registered with the Real Estate Board of Jamaica.

The promoters of the development must first meet the fit and proper criteria by way of getting finger print clearance from the Police Department and financial propriety from the Trustee in Bankruptcy. An added advantage of being registered with the R.E.B. is that the Developer pays only 25% of the transfer tax on the sale of the lots to the end users. The transfer tax now stands at 5% (2009) of the Selling Price of the lots, which means that the Developer pays only 1.25% per unit sold. An added bonus is that of a confidence booster to the seller and the buyer. This is so because of the due diligence that is required prior to registration with the board and hence once the project is registered, then the issue of officialdom watching on behalf of the purchaser offers some measure of solace to the prospective homeowner.

It is instructive to note also, that the R.E.B. has to approve all drawdowns of deposits that the purchasers would have made and kept in an escrow account in the names of the purchaser/developer/R.E.B. In fact, at any point in time, the maximum draw down would be 90% of the value of the work done for up to that point in time. In addition, the work would have to be authenticated by a qualified quantity surveyor. The R.E.B. would also make periodic inspections on behalf of the purchasers to be fully satisfied that the work is progressing in a timely fashion and as per approval and with approved variations from the statutory agencies. In short, were the Developer someone who has already established his name in the industry, and had imbued sufficient confidence in the purchasers, then the deposits from them would appreciably defray the cost of construction with far less to be borrowed from the bank. The benefit to the purchaser normally would entail a lower pre-construction price as opposed to the finished unit price. Additionally, all interest accrued to the deposits will be used to off set the price of the assigned unit to him.

3.6 Financial Approval

3.6.1 Financial Planning & Proposal

An application was made to the Jamaica Mortgage Bank for interim Construction Financing. They asked for and were given the following information in order to make an arms length assessment and ultimate approval of the Project.

Woodstock (2003) of Consultants and Project Management Ltd. recommends that the financial proposal presented should include the following:-

1. A Project Brief

2. The Developer's Budget
3. A Profit and Loss Statement
4. A Cash Flow Projection
5. Costing of Town House / Apartment Units
6. Infrastructural Costs
7. Sales Projection
8. Use of Purchasers Deposit

3.6.2 Project Brief

The project brief was provided and depicted an over view of the development which gave a description of the location, scope of work which were undertaken, the development cost, selling price of the units, financing required, the development period and the loan repayment period.

3.6.3 Developer's Budget

A developer's budget was prepared detailing all the components, which were costed in the project such as-

1. Land
2. Housing
3. Infrastructure
4. Financial Cost
5. Selling Cost
6. Developers Cost

7. Legal Cost

Those elemental costs that made up the Developer's Budget were supported by detailed information and supporting documentation.

3.6.4 Land

The cost of the land was verified by a valuation report from a qualified Land Valuator.

3.6.5 Housing Costs

The housing contractor who was selected to construct the units provided a detailed cost break down with all the relevant information for each type of unit. The information was verified by the project quantity surveyor, and was supplied as supporting document to the Developer's Budget.

3.6.6 Infrastructure Cost

The infrastructure contractor was the same contractor as the housing contractor. From the quantities provided by the Quantity Surveyor, the contractor provided an infrastructure cost. That cost was verified by the Quantity Surveyor and used as supporting document to the Developer's Budget.

3.6.7 Professional Fees

Those fees were negotiated between the professional required for the project and the developer.

3.6.8 Financial Cost

The interest, which was incurred on the loan for the construction over the life of the project was incorporated into the cash flow and drove the monthly repayments. There was also a commitment fee, which was 1% of the loan requested.

3.6.9 Selling Cost

The cost is incurred in the marketing of the development. That cost is somewhat low as the demand for the units in that particular development is relatively good.

3.6.10 Developers Cost

That cost was made up of costs not directly related to the infrastructure or the housing construction but miscellaneous cost incurred in getting approvals et cetera.

3.6.11 Legal Cost

Those were the costs incurred in splintering the titles and for transfers.

3.6.12 Developers Profit Margin

The percentage markup depends on the other throughput costs, coupled with market demands, which had influenced the selling price of the units.

3.6.13 Project Profit or Loss

The profit or loss statement indicated to the lending institution the viability of the development. The information was gleaned from the developer's budget, and the projected income was tabulated from the expected sales of the units.

3.6.14 Cash Flow

The cash flow was based on the loan financing which was obtained for the development of the infrastructure and the construction of the housing units. The monthly requirement was arrived at from a schedule which the contractors provided indicating the amount of funds which was required on a monthly basis.

The fact that the developer was allowed to use 90% of the purchaser's deposits, was not only taken into account but was also reflected in the cash flow.

The monthly draw down was indicated so that the lending institution will be able to programme the needs of the developer. Interest was calculated on the funds outstanding at an agreed rate.

The repayment of the loan was from the sales proceeds, which were used to liquidate the loan.

3.6.15 Sale Projection

The Developer prepared a sales projection, which indicated the amount of sales likely to take place in each month by unit and value. The Schedule that was presented to the financial institution indicated the deposits paid.

3.6.16 Use of Purchasers Deposit

The developer was entitled to use up to 90% of the deposits in the construction of the development. That amount was only used on the presentation of the project quantity surveyor certificate, verifying that it represented construction work actually done and submitted by the contractor.

3.6.17 Sources Of Financing

The Developer's Budget indicated the total cost of the development, and from that budget, the financial institution loan interim financing was determined to be 70%. The remaining 30% came from the Developer's equity

The Jamaica Mortgage Bank provided the loan funding for construction purposes only. The Developer's equity was used to purchase the land, professional fees, selling cost, developer's costs and legal cost.

In addition to the above, limited financing was generated from income from the previous phase of the project as it was done sequentially in blocks of three videlicet Blocks 1, 2 & 3.

Chapter 4

Overall Outcomes, Strategy and Techniques

4.1 Construction Phase of the Development

Vide Appendix A.P. 1 for the Architectural, Civil Engineering and Structural Engineering Drawings from which the Development was built.

See also Appendix AP.2 – AP.33, for the Bill of Quantities, Contractual Agreements, and other supporting documents that formed part of the Construction Documents for the Sullivan Project.

During project execution, a number of issues were dealt with the chief ones being:

4.2 Bank Security for the Interim Financing (during the Construction Phase)

Jamaica Mortgage Bank required a first mortgage on the property. They also asked and were given a debenture over the other assets of the newly formed company videlicet Kipwik Establishment Ltd. Additionally; this was also supported by the personal guarantees of the directors and the assignment of a policy on the life of the majority equity holder Tony Prendergast. In addition, the JMB Attorney prepared all requisite security documents, after which his fees, plus the stamp duty on the transactions were settled by the Developer.

4.3 The Real Estate (Dealers and Developers) Act of Jamaica

The Act stipulates that where a developer has entered into a prepayment contract as was the case with Kipwik Establishment.:

He must register with the Real Estate Board, as the project comprised more than five (5) units. All requisite approvals had to be obtained and copies deposited with the Real Estate Board.

4.3.1 Salient Issues Attendant to the Project included the following inter alia:

All payments sales proceeds received from purchasers were placed in a trust account pending closing.

A maximum of 90% of those funds were accessed as the work progressed, based on certificates for work already done and materials already supplied to the site, and verified by the project Q.S.

The developer was obligated to register a charge over the entire property in favour of the Real Estate Board and ranked *pari passu* with the Bank's security, that is, on equal footing with that of the Mortgage Bank.

4.4 Closing

- As recommended by Woodstock (2003) a number of areas were examined and acted upon namely:
- The transfers were executed and the splinter titles procured on time
- Sullivan Estates was done under the Registration Strata Titles Act. Here the strata plan is the equivalent of the pre-checked plan and it described the lots into which the building was divided. The pre-checked plan (or site layout plan of the project) and the subdivision approval were lodged with the Registrar of Titles during the early part of the construction. This ensured that the surrendered application was referenced to the pre-checked plan (or DP #).
- All shortfalls, escalation and interest were collected from the purchasers.
- All proceeds from the long-term mortgage companies were collected.
- The construction contracts stipulated that payments of the balance of the construction cost must be made at practical completion. The balances were verified by the project quantity surveyor, which then triggered the start of the defects liability period, during which certified defects were corrected.
- Late payment interests were claimed by the developer and in no case did the amounts exceed the true losses incurred.
- The Construction Agreements were drafted to allow an escalation clause to protect the right of the developer to recover certified escalations.

4.5 Spatial Allocation of Each of the Typical Units in Blocks 1, 2 & 3.

4.5.1. Town House (Common to Blocks 1, 2 & 3)

4.5.1. - (1.1-1.6) Ground Floor

- 1.1. Front Patio.....16'-0" X 5'-0" = 80ft²
- 1.2. Living / Dining Room.....13'-0" X 18'-0" = 234ft²
- 1.3. Kitchen.....11'-0' X 11'-0" = 121ft²
- 1.4. Powder Room.....5'-0" X 5'-0" = 25ft²
- 1.5. Laundry Room.....5'-0" X 5'-10" = 29ft²
- 1.6. Rear Terrace.....16'-0" X 3'-0" = 48ft²

4.5.1.-(2.1-2.8) First Floor

- 2.1. Front Patio.....16'-0" X 5'-0" = 80ft²
- 2.2. Master Bed Room & Closet.....16'-0" X 14'-6" = 232ft²
- 2.3. Master Bath Room.....5'-6" X 8'-6" = 47ft²
- 2.4. Bed Room # 2.....11'-0 X 11'-0" = 121ft²
- 2.5. Bath Room # 2.....16'-0 X 3'-0" = 48ft²
- 2.6. Rear Patio to B. Rm. # 2.....3'-0" X 3'-0" = 9ft²
- 2.7. Potential Attic Room/Bath Room..11' X 16'-0" = 176ft²
- 2.8 Rear Yard Space to Town House...17' X 12'-6" = 213ft²

4.5.2. Ground Floor Apartments (Common to Blocks 1&2)

4.5.2-(2.1-2.15) Ground Floor Apartments

2.1. Front Patio.....	16'-0" X 5'-0" = 80ft ²
2.2. Living / Dining Room.....	13'-0" X 18'-0"= 234ft ²
2.3. Kitchen.....	11'-0' X 11'-0"= 12ft ²
2.4. Powder Room.....	5'-0" X 5'-0" = 25ft ²
2.5. Laundry Room.....	5'-0"X 5'-10" = 29ft ²
2.6. Rear Terrace.....	16'-0" X 3'-0" = 48ft ²
2.7. Nooky Space (under Staircase)...	3'-0" X 10'-0" = 30ft ²
2.8. Front Patio to M. Bed Room.....	16'-0" X 5'-0" = 80ft ²
2.9. Master Bed Room & Closet.....	16'-0" X 14'-6"= 232ft ²
2.10 Master Bath Room.....	5'-6" X 8'-6" = 47ft ²
2.11. Bed Room # 2.....	11'-0 X 11'-0" =121ft ²
2.12. Bath Room # 2.....	5'-0' x 8'-0" = 40ft ²
2.13. Rear Patio to Bed Rm. # 2.....	3'-0" X 3'-0" = 09ft ²
2.14 Rear Patio to Kitchen / Laundry	16'-0" X 3'-0"= 48ft ²
2.15 Rear Yard Space to G. Fl.....	Apt26-0"X12'-6"= 325ft ²

4.5.3. First Floor Apartments (Common to Blocks 1&2)

4.5.3-(3.1-3.14) First Floor Apartments

3.1. Front Patio.....	16'-0" X 5'-0" = 80ft ²
3.2. Living / Dining Room.....	13'-0" X 18'-0"=234ft ²
3.3. Kitchen.....	11'-0' X 11'-0"= 121ft ²

- 3.4. Powder Room.....5'-0" X 5'-0" =25ft²
- 3.5. Laundry Room..... 5'-0"X 5'-10" =29ft²
- 3.6. Rear Terrace.....16'-0" X 3'-0 = 48ft²
- 3.7. Front Patio to M. Bed Room.....16'-0" X 5'-0" = 80ft²
- 3.8. Master Bed Room & Closet.....16'-0"X 14'-6"= 232ft²
- 3.9. Master Bath Room..... 5'-6" X 8'-6" = 47ft²
- 3.10. Bed Room # 2..... 11'-0" X 11'-0 = 121ft²
- 3.11. Bath Room # 2..... 5'-0' x 8'-0" = 40ft²
- 3.12. Rear Patio to B. Rm. # 2..... 16'-0 X 3'-0" = 48ft²
- 3.13. Potential Attic Rm. /Bath Rm... 11'-0"X 32'-0"= 352ft²
- 3.14 Rear Yard Space to F. Fl. Apt.... 8'-6" X 9'-6" = 81ft²

Chapter 5

5.0 Analysis and Interpretation of Results

5.1 Interpretation

The innovative archetypal form, which allows an elderly couple to reside totally on the ground floor, (applicable to the ground floor apartments only) with access to generous yard space, is a welcomed departure from the industry norm.

The First floor Apartment dwellers, albeit being off the ground do have their own yard spaces, which is spectacular to say the least.

The town house occupying both levels is for the traditionalist who has no intention to depart from the norm, but at the same time would feel unique to be in the kind of development that offers a different product that delights the proprietor.

Each unit was assigned front and rear yard spaces even with the top floor unit being not at ground level. The top floor Apartments, videlicet Apartments 3 and 6 were both assigned two parking spots as per the other units. Additionally, they were given a rear drying yard of 81 sq. ft each. Similarly, the town house has a 213 square foot and the ground floor units have 325 square foot of rear yard space each, thus compensating for their lack of attic potential.

The third assigned parking for each unit in cases of a temporary need for parking spaces without intruding on their neighbours' is also a welcome positive departure from what usually obtains industry wide.

Interestingly too, a forty-nine year lease was given to the unit owners for the exclusive right and use of their respective back yard spaces and the double car park spaces assigned to them. That route had to be taken, in view of the fact that the development was

done under the Registration Strata Titles Act, as opposed to the Registration Subdivision Titles Act, wherein the proprietors would have owned the land outright in the latter case.

Chapter 6

6.0 Literature Review

6.1 Modernistic Property Development

Havard (2008) affirms the view that in Modernistic Property Development – Regulatory input of the Local Authorities has a key role in the development process. He adds that this role can be very complex given the range of functions, powers and goals they possess. Accordingly, he posits the view that local authorities can possess a wide range of powers, goals and functions as follows:

- strategic planning
- land use planning
- development control
- development promoter
- landowner / proxy landowner
- economic facilitator
- representative of an area slated for development

These concerns are generally shared among several statal and para-statal bodies he concludes.

Havard (2008) adds that the range of local authorities has always been complex, but it has become more so in recent years. Here in Jamaica Local Authorities, assuming a very loose definition might be taken to include the KSAC, NEPA, NWA, NWC, SRC, MOH, UDC, and JNHT as well as the various parish councils island wide. The various powers of

these authorities can be far reaching. However, those earlier identified above will be looked in some detail.

6.1.1. Strategic planning

Havard (2008) identifies strategic planning as the overall development of an area, or country for that matter. This is often times a written document and includes maps of the designated areas and set out the overall objectives of the local authority concerned with economic development by way of land use. Areas are delineated for residential, commercial and industrial development. It identifies broad areas where these developments should be undertaken and where there could be concern about the development. It can specifically identify objectives and policy direction concerning national objectives. On the local scene, NEPA would be seen as that such body to undertake that kind of task. NEPA's remit is very wide and its aim is to set strategic direction for authorities at the local government level.

6.1.2 Land use planning

The plan offers considerable guidance to developers as to what would or would not be favoured in the locality. The document is of considerable importance and goes through a long process of preparation and consultation before it is finally ratified and brought into use. The land use planning is a map-based system that speaks to the execution of the strategic plans laid down by the higher authorities. The plan system records and classifies existing and established land uses and identifies land suitable for development of various kinds. The identification of this land should be in accordance with the overall national strategic objectives laid down in the structure plan. It is instructive to note that the classification of

land into various categories is by no means a guarantee that developments of that type would be automatically given the green light. On the other hand, that other non-conforming developmental proposals are eliminated from applying and being given due consideration. In fact all developments would and do require planning application to be made to the competent authorities (Havard 2002).

6.1.3 Developmental Control

All developments in Jamaica that require any kind of material change is liable for some kind of planning permission. This includes change of use, refurbishment and new build. Applications are normally submitted to the KSAC, the Portmore Municipal Council, or the other local Parish Councils. The technical officers would then carry out site visits and other consultations and make recommendations for approval and /or refusal to the building and planning committee, made up of elected members of the authority, who make the final decision on the development going forward or not.

6.1.4 Development Promoter, Landowner, Economic Facilitator, and Representative of a Developmental Area

Havard (2008) argues that the four concerns as stated above should be grouped together because of their similarity, and complementary effect on each other, and at other times contradictory effect on the other functions of the local authority

Local Authorities (like the UDC) do have, or are entrusted with considerable land holdings, on behalf of the Central Government. They are also invariably concerned with the development of specific areas, the socio-economic well-being of the constituents, the respect

for the environment and actions that will ensure and sustain urban regeneration. In short, the local authorities are often times the promoter and facilitator of strategic and often times large sites, in urban or semi-urban settings that can have ripple effects on neighbouring communities, and their way of life for generations to come.

Interestingly, some local authorities do also act on either side of the development fence at one time or the other or even at the same time. Nevertheless, there is a modern trend towards private sector type entrepreneurial behaviour, or partnerships with the private sector to achieve the desired goals. This can be seen with the development of the partnership urban regeneration companies such the Kingston Restoration Company. They can find themselves promoting and designing developments that they themselves may have to judge via their development control system. In all fairness, this is a work in progress and it seems to work reasonably well in many cases, with the authorities achieving their goals, whilst still being accountable and responsible to the community.

Notwithstanding this though, the role of the local authority in the development process is of paramount importance, and with the decentralization and changing structures of governance, this trend will continue well into the future (Havard 2008).

6.2 How to Manage a Project

Reh (1997) identifies a number of key steps that must be undertaken to increase the likely hood of bringing in a project on time and within budget. Those steps are as per herein after:

1. Scope Definition

The first step in any project is defining the scope of the project. What is it that is supposed to be accomplished by managing this project? What are the project outcomes? Equally important are the exclusions, that is, what are the tasks and activities that will not be in the project.

2. What and who are the Available Resources?

Who are the people, what equipment, how much money will be available to achieve the project outcomes? A project manager, usually will not have direct control of these resources, but will have to manage them through the client.

3. How much time would be allocated to the project?

What is the timeline for project completion? Once the project timeline and critical path have been signed off on, the deadlines and milestones are usually fixed. Accelerating the project comes with a cost and so too is project delay.

4. The Project Team

Select the technical experts and other people for the project team and initiate discussions and consensus.

5. Create a Work Breakdown Structure

What are the major work packages to be achieved? What activities would have to be done to achieve those work packages and in turn what other activities will those necessitate to ensure completion? Repeat the process to the lowest tier of work packages.

6. Gantt Chart

Develop a Gantt Chart to plan and sequence the activities that must be done to

achieve the interim and final outcome. A good project management tool is Microsoft Projects.

7. Create a Baseline Plan

Solicit feedback on preliminary plan from team members, client and other key stakeholders and adjust accordingly to the baseline plan.

8. Project Adjustments

Invariably, there is always usually an insufficient amount of time available and other resources to undertake the project. If the expectations are unrealistic, then always plead the case at the beginning of the project and not at the last minute when the project is in trouble.

9. Work Your Plan

Plans can be changed as needed, but must be done through a process of change control to avoid scope creep, and its effect on the triple constraints of project management.

10. Monitor and Control the Project

Be proactive and not wait until an event occurs to take corrective action. Assess the risks and mitigate them where possible.

11. Record Keeping - Document Everything

Remember to document everything. Document all changes including the time, the reason for so doing, the source, the timeline and the effect on the baseline.

12. Communication Plan

Devise a communication plan to keep all the project stakeholders fully informed of

their respective areas concerning progress and delays, changes and relevant issues that may positively or negatively affect the project's outcome.

6.3 The Project Management Body of Knowledge (PMBOK)

It is instructive to note, that The Project Management Body of Knowledge (PMBOK), which is a collection of processes and knowledge areas generally accepted as best practice within the project management discipline, takes a similar perspective.

As an internationally recognized standard (IEEE Std 1490-2003) provides the fundamentals of project management, irrespective of the type of project, be it construction, software, engineering, automotive etcetera.

PMBOK recognizes five basic processes groups and nine knowledge areas typical of almost all projects. PMBOK, a professional organization in the field of project management lists five basic concepts applicable to projects, programme and operations as follows:

1. Initiating
2. Planning
3. Executing
4. Monitoring and Controlling
5. Closing

PMBOK contends that processes overlap and interact throughout a project or phase. In addition, the Processes are described in terms of:

- Inputs (documents, plans, designs, et cetera)
- Tools and Techniques (mechanisms applied to inputs)
- Outputs (documents, products, et cetera)

PMBOK further add that the nine knowledge areas are:

1. Project Integration Management
2. Project Scope Management
3. Project Time Management
4. Project Cost Management
5. Project Quality Management
6. Project Human Resource Management
7. Project Communications Management
8. Project Risk Management
9. Project Procurement Management

Each knowledge area contains some or all of the project management processes. For example, Project Procurement Management includes:

- Procurement Planning
- Solicitation Planning
- Solicitation
- Source Selection

- Contract Administration
- Contract Closeout

Much of PMBOK is unique to project management, for example, critical path and work breakdown structure (WBS). Some areas overlap with other management disciplines. General management also includes planning, organizing, staffing, executing and controlling the operations of an organization. Financial forecasting, organizational behaviour and planning techniques are also similar.

6.4 Architect Turned Developer

According to the Architects Newspaper (2005) with reporter Deborah Grossberg - Often times with a booming real estate market and an ever-increasing general appreciation for good design, more and more architects are betting their own hard-earned cash that their skills will pay off in the development business.

For much of the American Institute of Architect's (A I A) 150-year history, the organization prohibited architects from engaging in development work. Intent on distinguishing architecture as a noble profession on the level of fine art, distinct from baser building trades like carpentry and masonry, the A I A also felt the need to protect its members from the economic ruin met by early architect-developers, like Robert Adam in London and Charles Bulfinch in Boston. It was not until 1964 (by then, the profession was well established and the success of architect-developers like John Portman of Atlanta) that the A I A relaxed its ban on working in property development. It even issued a document in 1971 encouraging architects to pursue it.

However, the practice still carries some stigma, harkening to the AIA founders' fears that the crassness of the business would compromise the conduct of the gentleman-architect. Architects have always done development, but high design firms haven't, said Gregg Pasquarelli of SHoP Architects, a firm that's been involved on the development side of its projects since building the Porter House at 366 West 15th Street in Manhattan's Meatpacking District in 2003. Nevertheless, all that is changing now.

The simple reason why better firms are getting involved in development was the skyrocketing real estate market. Peter Moore, an architect who's been developing his own projects with his firm Peter Moore Associates since the 1980s, said, "Because real estate has become so lucrative in the last dozen years, (prior to the global financial crisis) it is attracting more and more people, including good architects. Another factor is the public's increased sensitivity to design since 9/11. There is more recognition now that architecture can create value," said Jared Della Valle, principal of Brooklyn-based firm Della Valle + Bernheimer, which has been involved with an affordable housing development project in Brooklyn for the past three years. In other words, developers are beginning to see architects on more equal footing, as valuable creative partners who can help them conceptualize a project and make it more profitable from the outset.

Pasquarelli, who is trained as an architect and holds an undergraduate business degree, agrees that the perception of what designers can bring to the table has improved. "We are not just selling a building wrapper, but solving real design problems," he said. He goes even further stating, "There has been a big shift in the value and vision that architects

bring to a project, and we are finally being remunerated in equity, partnership, and property.”

It may be a prime time to dive in, but getting started in the development game still has a fair share of challenges. For one thing, the financial interests of developers and architects are often at odds, so doing both can at times feel schizophrenic. “Working as both developer and architect, in a way you are negotiating against yourself on fees,” said Della Valle. Since architects' fees are paid at the beginning of a project, you are paying interest on any dollar you get for fees as part of your loan. Architects' fees are one of the things that developers are always trying to reduce, besides pouring their own person-hours into their project.

Aside from conflicting interests, the hardest part for most architects is scraping together the cash for that first down payment on property and construction loans. Small practices often have trouble-convincing banks that they are right for a mortgage, and many do not want to risk their entire livelihood even if financing is attainable. The most common solution is to partner with a developer or investors, but on a more equal basis than in a standard for-fee project.

Many architects who develop their own projects swear by starting small. Pasquarelli worked with developer Jeffrey M. Brown on the Porter House project, investing a small fraction of the total cost but with a much larger percentage of his firm's net worth. Pasquarelli said that with the first project, we started out with a much smaller percentage of the equity. We waived our fees entirely and contributed a little capital. The first project made money, which we rolled into the second one. According to Sanders, the approach has

paid off. Architects are not usually paid very well anyway, he reasoned. As long as you have low overhead, you can make multiples of your regular fees (by trading them for shares).

Architect Galia Solomonoff went even further with the bartering idea for a six-story residential building she was working on in the East Village. She and the couple who owned the lot (they bought it for peanuts in the 1980s) took no loans at all, and convinced all the contractors involved (Solomonoff included) to waive part of their fees in exchange for equity. “The traditional wisdom of business people is to borrow as much as you possible can, put your building up as quickly as possible, and flip it before you pay too much interest,” reasoned Solomonoff. “The wisdom of artists is do not borrow and do not rush,” she concluded.

Sanders has made his equation work partly by picking a co-developer who is relatively new to the game. “Not having done a lot of development already, Seth is open to new ideas,” he said. He has also used some creative methods to offset up-front costs. With the help of real estate broker, Sanders managed to find a couple to pre-purchase an apartment in the development. Sanders is designing the top three floors according to the couple's specifications, but the rest of the building is up to him. Because residential work relies so much on the sanity of your clients, Sanders is of the opinion that the more you can be your own client, the better it would be.

You can also get into development to shed the burden of designing for clients. For us, the core reason to do self-propelled projects is to be able to do something you cannot do with conservative clients to go with the ideas you want. The next ones will be easier and

more affordable. Developing projects offers as many constraints as freedoms, but many architects have found the new limits compelling.

“It was fantastic because we only had to answer to ourselves,” said Pasquarelli. “We had to ask, do we really think that extra stainless steel detail is worth it?” “In addition, if the answer was yes, then we had to pay for it,” Bernheimer agreed. “You have to make decisions informed by economics but there is always the opposite challenge to do something unexpected within the constraints. The first development project is always the hardest for architects unaccustomed to working in real estate. From an architect's standpoint, the most daunting part of our development project has been the time commitment. The learning curve has been so steep that, of the two years we've spent on the project, a good six months were spent learning the ins and outs of the real estate market. The educational experience can be a plus, though. I really enjoyed that the team of experts you worked with as it balloons as the project gets under way. In a project where you have a developer's interest, there is a real estate person with a different outlook on the architecture and design market, as well as lawyers who have a more conservative point of view about the value of design. It enriches your role as an architect,” Bernheimer reflected.

“Developers usually just submit something that has already been done to avoid spending money on architects' fees. However, for most of the people (for whom affordable housing is created), it will be their first home purchase. That requires more thought about design rather than less,” endorsed Pasquarelli.

In terms of the local context, the city of Kingston could do more to encourage good architecture along with development. The KSAC and NEPA make feeble attempts, but they

are not doing enough. They ought to encourage a more fully integrated approach to harness the development process. Since the city has not managed to keep developers in check, the biggest strength architects can bring to development is a sense of responsibility for the built environment. It is encouraging to have architects develop because they bring integrity to the process. If you are looking to maximize your value, it is not necessarily strength to be an architect, but building buildings is not an abstract thing like selling bonds.

Most architects involved with development are continuing with their regular practice as well. He has to balance how much risk he can manage. Perhaps the most compelling reason for architects to get a taste for what it is like to be a developer is to encourage better understanding across the divide. The Architect must have a more participatory role and not merely heeding the call of the developer. He has to be able to enjoy both the freedom and substantially more of the responsibility.

6.5 The Architect / Project Manager

An advertisement for an Architect / Project Manager out of the North Florida University– Facilities Planning and Construction Office (2008) stated inter alia, that such an individual will be a creative, self-starter with a strong background in planning, project management, construction procedures, building codes, and will possess strong organizational, analytical and problem solving skills. He will also ensure compliance with building codes and professional standards by designing and reviewing all designs and working drawings. Essential qualities are excellent communication and interpersonal skills and a good command of AutoCAD and the normal Microsoft Office Suite.

He will be responsible for developing scope/budget documents for the project and is a representative during all phases of the design and construction phases.

He has to be able to write programme statements, construction administration, producing schematic designs and space arrangements and coordinating project requirements with external consultants.

6.5.1 The functions of such an Individual continued North Florida University (NFU) include but are not limited to the following:

1. Provide technical and project management expertise necessary to develop, advance and manage the building project from issue identification through construction and occupancy.
2. Determine design parameters and recommend decisions on the scope, budget and schedule of the construction project.
3. Oversee the design and construction of the project to ensure that all statutory requirements and standards are met, programme requirements are fulfilled, and expenditures are commensurate with programme need.
4. Provide critical technical assessment of construction documents prepared by sub-contractors. Assessments to include completeness of design, coordination of disciplines, consistency with programme, constructability, et cetera.
5. Represent the Organization and other stakeholders in design review, value analysis, construction coordination, inspections, building commissioning.
6. Review and approve shop drawings, material/equipment submittals and mock-ups, and monitor construction schedule and progress. Analyze

consultant/contractor test data. Resolve conflicts and problems to maintain quality and meet budget/schedule constraints. Track change orders and impact on project contingency accounts and project budget.

7. Assist in coordination between contractors and sub-contractors as required for the successful completion of the project.
8. Conduct site visits and final inspections to ensure compliance with all design requirements, specifications and applicable codes. Assess the completed project to determine success based on building performance and satisfaction of stakeholder needs and expectations.
9. Communicate construction schedule and any resulting impacts services/systems to the community on an on-going basis (example disruption of traffic patterns).
10. Manage scope, budget and schedule to meet programme need and timeframe.
11. Assist in the development of guidelines and quality standards, which define design features and levels of quality required for all Projects.
12. Assist in administering the guidelines in a manner, which assures that programme requirements are met, quality assurance is maintained, and cost effective materials and methods are utilized. Assist in the development of technical guidelines and specifications as required.

6.5.2 Knowledge and Skill Set are key attributes and NFU (2008) cites the following as very important:

1. Extensive knowledge of design and construction processes and practices,

- building codes, standards, cost estimating, scheduling.
2. Extensive knowledge and ability in the principles and practice of project management.
 3. Skill in facilities programming, planning, design, construction, and project management.
 4. Knowledge of conceptual / technical interior design and space layout.
 5. Understanding of the increasing complexity of institutional designs and maintenance. Knowledge of the design/construction process.
 6. Ability to organize, evaluate and present information effectively (graphics, construction documents, written reports, presentations, et cetera).
 7. Strong communication and interpersonal skills are essential.
 8. Functional knowledge of the Procurement Process pertaining to purchasing and construction practices as well as administrative policies and practices.
 9. Ability to interact, negotiate and problem solve productively and move diverse groups to consensus (example workers, contractors, union leaders, design professionals, community members, government officials, and the public). Ability to lead project teams and willingness to work in a team environment.
 10. Ability to organize and lead planning and design processes and studies.
 11. Full familiarity and experience with the Project Management Book of Knowledge (PMBOK)
 12. Work with the client and other stakeholders to identify issues, determine programme and facility needs, evaluate alternatives and develop scope and schedules before the breach occurs.

13. Participate in the evaluation of potential consultants and sub-contractors. Assists in the development and maintenance of standardized details and specification for repetitive construction components.
14. Prepares project status reports for projects.
15. Have a strong ability to listen effectively and provide constructive advice that maintains optimism in project teams.
16. A supportive outlook to peers and project team members is highly desired.
17. Strong initiative to improve an existing organization and an ability to work effectively in teams is required.
18. Must have a sharp sense of design, creativity and architectural vision to bring creative but practical solutions to architectural challenges.
19. Experience with multiple stakeholder reviews, jurisdictional issues, planning analyses and documents, and making presentations to a wide variety of audiences.
20. Excellent oral and written communication skills, as well as a demonstrated ability to develop and maintain collaborative and effective relationships within a team approach.
21. Ability to manage all aspects of institutional project with varying scope and multiple stages of completion. Effective organizational, prioritization and multitasking skills are required.
22. Flexibility and capability to adapt to changing priorities and schedules in a changing construction environment.
23. Evidence of a management style that emphasizes teamwork, participation, partnership, communication, collaboration and team development. An expectation

that all senior managers are expected to foster the success of their peers as well as themselves.

6.6 Architect Turned Construction Manager

6.6.1 Construction Management

Construction Management as defined by the Construction Management Association of America is a professional management practice consisting of an array of services applied to construction projects and programs through the planning, design, construction and post construction phases for the purpose of achieving project objectives including the management of quality, cost, time and scope.

Construction Management is a discipline and management system specifically created to promote the successful execution of capital projects for owners. These projects can be highly complex. Few owners maintain the staff resources necessary to pay close, continuing attention to every detail--yet these details can "make or break" a project.

A professional CM can augment the owner's staff with pre-planning, design, construction, engineering and management expertise that can assure the best possible project outcome no matter what type of project delivery method used.

Information gleaned from the Enterprise Resource Database, expand on the definition of Construction managers as technical persons who plan, direct, and coordinate a wide variety of construction projects, including the building of all types of residential, commercial, and industrial structures, roads, bridges, wastewater treatment plants, and schools and hospitals. Construction managers may oversee an entire project or just part of

one. They schedule and coordinate all design and construction processes, including the selection, hiring, and oversight of specialty trade contractors, but they usually do not do any actual construction of the structure.

Construction managers are salaried or self-employed managers who oversee construction supervisors and workers. They are often called construction project managers, constructors, construction superintendents, project engineers, programme managers, construction supervisors, or general contractors. Construction managers may be owners or salaried employees of a construction management or contracting firm, or may work under contract or as a salaried employee of the property owner, developer, or contracting firm overseeing the construction project.

These managers coordinate and supervise the construction process from the conceptual development stage through final construction, making sure that the project is done on time and within budget. They often work with owners, engineers, architects, and others who are involved in the construction process. Given the designs for buildings, roads, bridges, or other projects, construction managers oversee the planning, scheduling, and implementation of those designs.

Large construction projects, such as an office building or industrial complex, are often too complicated for one person to manage. These projects are divided into many segments: site preparation, including land clearing and earth moving; sewage systems; landscaping and road construction; building construction, including excavation and laying of foundations and erection of the structural framework, floors, walls, and roofs; and building

systems, including fire-protection, electrical, plumbing, air-conditioning, and heating. Construction managers may be in charge of one or more of these activities.

Construction managers determine the best way to get materials to the building site and the most cost-effective plan and schedule for completing the project. They divide all required construction site activities into logical steps, budgeting the time required to meet established deadlines. This may require sophisticated estimating and scheduling techniques and use of computers with specialized software.

They also oversee the selection of general contractors and trade contractors to complete specific pieces of the project-which could include everything from structural metalworking and plumbing to painting and carpet installation. Construction managers determine the labor requirements and, in some cases, supervise or monitor the hiring and dismissal of workers. They oversee the performance of all trade contractors and are responsible for ensuring that all work is completed on schedule.

Construction managers direct and monitor the progress of construction activities, sometimes through construction supervisors or other construction managers. They oversee the delivery and use of materials, tools, and equipment; worker productivity and safety; and the quality of construction. They are responsible for obtaining all necessary permits and licenses and, depending upon the contractual arrangements, direct or monitor compliance with building and safety codes, other regulations, and requirements set by the project's insurers.

Work environment

Osbert Grey

Working out of a main office or out of a field office at the construction site, construction managers monitor the overall construction project. Decisions regarding daily construction activities generally are made at the jobsite. Managers may travel extensively when the construction site is not close to their main office or when they are responsible for activities at two or more sites. Management of overseas construction projects usually entails temporary residence in another country.

Often "on call" 24 hours a day, construction managers deal with delays, the effects of bad weather, or emergencies at the site. Most work more than a standard 40-hour week because construction may proceed around-the-clock. They may need to work this type of schedule for days or weeks to meet special project deadlines, especially if there are delays.

Although the work usually is not considered inherently dangerous, construction managers must be careful while performing onsite services (Enterprise Resource Database).

6.6.2 Services offered by the Professional Construction Manager

As determined by H.R. Gray Construction Management Services, such services are to ensure a project's success by meeting expectations of quality, time and cost. By managing risks and controlling costs, H.R. Gray Team argues that experienced construction managers must focus on achieving the result while monitoring the ongoing details. This comprehensive management at every stage of the project includes pre-construction planning, complete construction oversight, and post-construction services.

H.R. Gray offers for example the following services as a one-shop stop:

6.6.2.1. Construction Management Services

- Contract document development
- Contract bidding, negotiation and award
- CPM schedule development and monitoring
- Contract administration
- Cost Control
- Budget management and change control
- Quality and safety monitoring

6.6.2.2. Programme Management Services

- Administrative programme development
- CPM schedule development and analysis
- Master programme and budget preparation
- Programme oversight
- Detailed general engineering review
- Periodic programme status reporting

6.6.2.3. Owner's Representative

- Project cost estimating
- Constructability reviews
- Schedule and narrative development
- On-site inspections and monthly reporting

- Contract close-out

6.6.2.4. Claims Management and Resolution

- Alternative dispute resolution
- Schedule development and time impact analysis
- Claim entitlement and cost impact analysis
- Claim preparation and evaluation
- Factual and technical investigation
- Litigation support and expert testimony

6.6.2.5. KSAC Consultations

Here in Jamaica, there would also be the additional areas of consulting with the city government, that is, on the parish level, as per below:

- Consent decree negotiations
- Public right-of-way assessments
- KSAC construction specifications
- Plan and design review

Other Construction Management Services offered by H.R. Gray Construction Management Services include the hereinafter:

- Value engineering
- Design and construction schedules
- On-site management and coordination

- Change control and management
- Audits and cost-to-complete estimates
- Operation and maintenance manuals
- Owner training and orientation
- Final project walk-through

6.7. Architects now Entering Construction Management

Competition in the construction management (CM) arena is suddenly heating up from a new source, as architects incorporate CM functions into their scope of services, reports attorney Michael S. Zetlin, an expert in design and construction law.

"This rapidly developing trend will have broad implications for architects, property owners and the construction industry as a whole," said Zetlin, a partner in the law firm of Zetlin & De Chiara. "All parties should proceed very cautiously until the industry can comfortably absorb the changes taking place," he concluded.

Zetlin notes that within the recent past, the American Institute of Architects (AIA) published its first standardized document covering agreements in which an architect provides construction management services as an advisor to the owner.

"The AIA told us the CM document is a response to a 'very vocal demand' from many of its members," Zetlin explained. "It said the Institute wasn't going out of its way to encourage CM services, but that a growing number of architects apparently view it as a potentially significant new practice area."

According to Zetlin, the AIA representative also observed that the movement into the CM field was most noticeable among small and mid-sized architectural firms, and most prevalent now in the Midwest, although all parts of the nation are affected.

Zetlin observes that the influx of design professionals into construction management moves the profession as a whole closer to the design-build concept, which some larger firms are embracing. In design-build, one firm takes direct responsibility for the construction as well as the design.

However, even in the advisory functions of construction management, substantial risks accompany the benefits, the attorney cautions.

"Architects who intend to enter this new terrain must be prepared to meet the challenges imposed on CMs," he said, adding:

"The responsibilities spelled out in the AIA's standardized agreement are formidable, to say the least. Moreover, even the most competent firm of design professionals may not necessarily be properly suited to take on those duties. Every firm must give this careful consideration before making a commitment to CM."

Small firms and their clients can benefit from offering construction management services. Architects develop a new revenue source, make decisions more quickly during construction, and may potentially mitigate risks in the end. Clients have a single point of contact throughout the project and potentially reduce delays, project completion time, and non-tangible costs such as those associated with change orders.

This can be a money saver for many owners/developers, but requires a special type of architect. The architect you need to look for is the "master builder" from the "old school". Many colleges got away from teaching the fundamentals to architecture students, but there has been a recent resurgence of architects willing and more importantly wanting to take on the role of architect and builder. Utilizing the wrong architect could be a disaster, but so could hiring the wrong contractor. Make your decision wisely and always check for references.

6.8. Annotated AIA B144 Standard Form of the Amendment to the Agreement between Owner and Architect/Construction Management Addition

This document according to the Enterprise Resource Database is to be utilized when; the architect is to provide formal construction management services and not just standard observation services for the contract. Based on the agreement the architect would be responsible for hiring each of the individual subs and each of the individual contractors and would act in place of a general contractor, and not just as support services to a general contractor for the project.

By utilizing this form, the architect will be acting in place of the general contractor and has taken on all of the duties, responsibilities and liabilities of the general contractor in accordance with the standard construction management format. The architect's responsibilities will include all the issues as listed in articles one, two and three of the document.

6.9. Integrated Design and Construction: Three Approaches

Architect-led design-build is drawing increasing attention for its potential to improve the quality of construction, reduce adversarial relationships between builders and architects, and save time and money for the owner. Below are three firms' approaches to integrating design and construction.

6.9.1 Architect as Construction Manager

Gluck & Partners, Architects (PLG) of New York, founded in 1972, established AR/CS (Architectural Construction Services), Inc. in 1992 to provide an integrated system of architectural design and construction management. Today, the 40-person firm acts as construction manager for all its projects, the largest of which is a 30,000 SF new school in New York, the East Harlem School, for which they are providing a guaranteed maximum price.

“We do construction management because it delivers a higher degree of control at a lower price,” said Principal Tom Gluck. “We run a sophisticated construction management business, and it has affected every aspect of how we practice, from our most basic design process to the way we organize the documents to the way we interact with the site—everything is different.”

All the firm's projects are fast track (construction begins on a portion of work before construction documents for other work is completed), so instead of getting cost estimates, the firm gets bid prices. PLG designs and bids out the base building first, before determining

finishes or other variables. Once they know how much the bare bones building will cost, the firm works within the clients budget to complete the design.

”It does change the way we draw,” said Gluck. “We draw by bid package—concrete, waterproofing, plumbing—every trade gets its own set of about 10 drawings. The subcontractor can identify the information they need easily, which affects pricing.” Where a traditional set of drawings might be 300 sheets, by issuing a 10-page set for one trade, Gluck says they can get bids from smaller contractors with lower overhead who might find the task of sorting through a full set of drawings overwhelming.

The job superintendent is an architect from PLG’s office who is familiar with the drawings. Working with engineering consultants, the architectural firm draws the engineering drawings so the superintendent is familiar with all aspects of the project. “Because we provide so much supervision in the field, the engineer is willing to be less conservative because they know we will be getting the quality they designed. We also use subcontractors as a resource, because they have specialized knowledge in their trades. We can change the drawings based on their input,” said Gluck. “The traditional adversarial relationship with the contractor is gone, and we are spending the client’s money more efficiently.”

Gluck addressed professional liability concerns about providing construction supervision. “Architects have been advised to reduce risk, which ultimately means reducing responsibility and giving control of design and quality to someone else. By assuming construction supervision responsibilities, we believe we are in fact reducing our risk because

we are ensuring our work will be constructed as designed, detailed, and engineered.” Gluck opined.

6.9.2 Architect as Master Carpenter

James Walbridge, AIA, founded Tekton Architecture in San Francisco in 1995 and co-founded its construction arm, Artisans Builders Corporation, in 1996. The name “Tekton” was taken from the Greek “Archi-Tekton,” or “Chief Carpenter.” For Walbridge, the design and building process have always been inextricably linked. At 18, he was exposed to design-build process while working as a drafter and then a carpenter for an architect who was also a developer. When Walbridge went on to architecture school, he learned about the historical role of architect as master-builder, reinforcing his field experience.

In 2002, Tekton Architecture, Inc. came into being with the architecture and construction arms as separate corporations to eliminate any potential professional liability crossover. The firm has five people in the office (four of whom have extensive construction experience) and five to eight people in the field. “We are architects first—architects who build, not builders who design,” Walbridge said, adding, “Anything I can draw on paper, I can build.” The firm’s work consists primarily of high-end residential projects. All their projects are design-build, with Artisan Builders Corporation providing construction services about 75 percent of the time.

Walbridge says “that their integrated practice provides construction cost estimates after preliminary design, schematic design, and design development phases. These estimates

are typically within 15 to 20 percent of the total construction cost when pulling the building permit. Having an accurate idea of the cost early in the design process is very beneficial to his clients,” says Walbridge.

There are design and performance benefits to architect-led design-build as well, Walbridge says. “In every project, we are doing something we haven’t done before. Architect-led design-build is an opportunity to achieve a higher degree of design resolution. In an integrated practice like this, we can increase building performance exponentially. The process is more efficient, coordination is better, and there is no head-scratching in the field.”

6.9.3 Contractor by Necessity

D. Trent Zilmer started his own business, Z Design-Build Group Inc., in Chicago after eight years of practicing as an architect and 12 years as a project manager. He worked as a project manager for both for the state of Illinois and a real estate services and management firm, experiences he says gave him “the information, appetite, and experience to act as a general contractor as well as an architect.”

While employed as a project manager, Zilmer did residential renovation architectural projects on the side, but his clients often had trouble finding a dependable contractor to do the work. “We can design the hell out of a building, but can’t find anyone reliable to do the work. There was a great need for a reliable and ethical person to play the role of architect and contractor.” Upon completing his MBA and parting ways with his employer in 2004, Zilmer decided to fill that void. His work is primarily residential renovations, for which he

does all the architecture and works with a regular crew of subcontract for the construction work. He typically spends half his day in the office and half in the field.

Zilmer emphasized that architect-led design-build is beneficial for the client because they are dealing with a single entity, and because it saves money and time. “There’s a much higher probability of things being done right with architect-led design-build,” said Zilmer, adding, “Substitutions can maintain performance and save money if the architect is involved.”

Appendix

Appendix Ap.1

1) AP.1 - Architectural, Civil and Structural Drawings

The hereinafter drawings constitute the Architectural, Civil and Structural Drawings for Sullivan Estates Development videlicet AP.1

Appendix AP.1

Architectural Drawings

1. A0 Index Sheet
2. A1 Site Plan (Arch.)
3. A1.1 Demolition Plan

Blocks # 1& 2

4. A2 Block # 1 & 2 Ground floor Plan
5. A3 Block # 1 & 2 First Floor Plan
6. A4 Block #1 & 2 Roof Plan
7. A5 Block # 1 & 2 Sections
8. A6 Block # 1& 2 Elevations

Block # 3

9. A7 Block # 3 Ground Floor Plan
10. A8 Block # 3 First Floor Plan
11. A9 Block # 3 Roof Plan
12. A10 Block # 3 Sections
13. A11 Block # 3 Elevations

- 14. A12 Stair Case Details
- 15. A13 Blocks # 1 & 2 Ground Floor Plumbing & Electrical Layout
- 16. A14 Blocks # 1 & 2 First Floor Plumbing & Electrical Layout
- 17. A15 Block # 3 Ground Floor Plumbing & Electrical Layout
- 18. A16 Block # 3 First floor Plumbing & Electrical Layout
- 19. A17 Plumbing & Electrical Details

Blocks 1, 2 & 3

- 20. A18 Guard House Details
- 21. A19 Attic Floor Plan Blocks 1 2 & 3
- 22. A20 Leased Area for each unit

Civil Engineering Drawings

- 23. C1 Site Plan (Civil)
- 24. C2 Water Supply
- 25. C3 Sewer layout
- 26. C4 Finished Elevations & Storm Water Drainage
- 27. C5 Drain inlet Details
- 28. C6 Swimming Pool Details
- 29. C7 water Supply & connection Details
- 30. C8 Typical Man Holes & Sewer Details
- 31. C9 Typical Road Sections

Structural Engineering Drawings

Blocks # 1 & 2

- 32. S1 Proposed Foundation Plan

33. S2 Proposed First Floor RC Slab

34. S3 Sections 4-4

35. S4 RC Concrete Roof Slab

36. S5 Stair case Sections

Block # 3

37. S6 Foundation Plan Stiffeners

38. S7 First Floor RC Slab, Sections 1-1 to 3-3

39. S8 Sections 4-4 to 7-7

40. S9 RC Roof Slab, Sections 6-6

41. S10 Stair case Details

Blocks 1, 2 & 3

42. S11 Block Walls & Misc. details

APPENDICES AP.2 –AP.33

43. AP2 Quantity Surveyor Agreement

44. AP3 Priced Bill of Quantities. (BQ)

45. AP4 Cash Flow

46. AP5 Sale Agreement for Units in the Scheme

47. AP6 Bio-Digester (Section)

48. AP7 Bio-digester (Plan View)

49. AP8 Contract Agreement

50. AP9 Contract for Law Construction
51. AP10 Gantt Chart
52. AP11 General Summary of the BQ
53. AP12 Joint Venture Agreement
54. AP13 Labour Rate Sheet
55. APPLE List of Realtors
56. AP15 Monthly Report
57. AP16 Nomination Agreement
58. AP17 Priced Preliminaries
59. AP18 Project Budget
60. AP19 Sub-Contractor Agreement

PHOTOGRAPHS

61. AP20 Email Advertisement
62. AP21 View of All Blocks from Entry to Site
63. AP22 View of All Blocks from South of Site
64. AP23 Block # 1 under Construction
65. AP24 P.M. with Carpentry Crew on Site
66. AP25 P.M. & Eng. Students re Linear Programming on Site Tasks
67. AP26 P.M. Taking Progress Pictures to update Stake Holders
68. AP27 P.M. & Eng. Students Compressing the Critical Path Method
69. AP28 Block # 1 being Rough Cast (stucco)
70. AP29 Bio-Digester Septic Tank under Construction

71. AP30 American Standard Bath Room Fixtures
72. AP31 Kitchen Fixtures made of American Maple
73. AP32 Early Super Structure Work
74. AP33 Vertical Circulation - Staircase

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