UNIVERSIDAD PARA LA COOPERACION INTERNACIONAL
(UCI)

PROJECT MANAGEMENT PLAN FOR THE HERNANDEZ'S FAMILY HOME ADDITION PROJECT IN THE CAPITAL OF BELIZE

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DEDICATION

This paper is dedicated to my husband Jose Carlos Donaldo Hernandez for supporting and encouraging me to follow my dreams and being the pillar of our family.

Also, to my children for inspiring and keeping me focused on my goal to provide them with a better future.

Lastly, to my fellow classmates and teachers from whom I have learned invaluable life lessons.

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I cannot express enough thanks to the Universidad para la Cooperacion Internacional (University for International Cooperation), Global School of Project Management for providing an adequate platform for distance education with which we complete this process 100%.

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Also, to my caring, loving and supportive family for their time, their understanding, and their trust in me. Their love and encouragement when the times got rough was exactly what I needed to push through. As well, a heartfelt thank you to the Organization of American States for giving me the scholarship that made my dream of studying this program a reality.

Finally, from the very bottom of my heart, a sincere thank you to all those who unknowingly contributed to the achievement of this goal.

To all of you, infinite thanks.

ABSTRACT

The objective of this document is to develop a Project Management Plan for the Hernandez's family home addition project in the capital of Belize. The development of the project plan will ensure the construction is completed successfully, it is done right, and that it meets the Hernandez family's needs. Furthermore, the plan integrates sustainable principles to optimize the utilization of project resources. The completion of this project will accommodate the Hernandez's growing family and provide a home suitable for family living. Most importantly, however, is the fact that it will ensure the project is completed within reasonable timelines, and of acceptable quality.

The final product of this project consists of the development of a Project Management Plan that meets industry standards and complies with the Project Management Body of Knowledge Guide framework. This study is made up of the final deliverables of the project that correspond to the management plans: management plans for scope, schedule, costs, quality, resources, communications, risks, procurement, and stakeholders. For this research, a descriptive, analytical, quantitative, and qualitative methodology and the guide provided by the Project Management Institute are used.

To ensure the success of the project, a Scope Management Plan, Scheduled Management Plan, Cost Management Plan, Quality management Plan, Resource management Plan, Communication Management Plan, Risk Management Plan, Procurement Management Plan, and a Stakeholder Management Plan were developed in alignment with the Project Management Body of Knowledge. Taken into account was also concluding work highlighting the importance of managing and controlling the triple constraint, which is the model that describes the three most significant restrictions on any project: scope, schedule, and cost.

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ABBREVIATIONS AND ACRONYMS

- Final Graduation Project (FGP)
- Project Management Body of Knowledge (PMBOK)
- Project Management Institute (PMI)
- Project Management Office (PMO)
- Requirements Management (RM)
- Work Breakdown Structure (WBS)
- Universidad para la Cooperación Internacional (UCI)

EXECUTIVE SUMMARY

As the Hernandez family grows, their infrastructure and utility needs also grow. The couple has a young child and are now planning their second son; thus, their current living conditions will soon become inadequate. It is evident that extra living space is going to be needed. To address this, the Hernandez family has decided to build the second story of their current home which will give them the much-needed space. To ensure the success of the project, a project management plan is necessary especially since, as literature has shown, improper planning is considered the top reason for the many reasons for project failures.

The overall purpose of the study was to develop a Project Management Plan that integrated sustainable principles to effectively carry out project management activities. This ensures the Hernandez family will complete its building operations within a reasonable timeframe, desirable quality, and within budget. A project plan, to a certain degree, guarantees the success of the project and will ensure that the necessary safeguards are in place. Planning is needed to identify desired goals, reduce risks, avoid missed deadlines, and ultimately deliver the expected product, service, or result.

The Final Graduation Project's general objective was to develop a Project Management Plan that integrates sustainable principles to optimize the utilization of project resources for the Hernandez's residential addition. An addition needed in order to accommodate its growing family and provide a home suitable for growing family living. The specific objectives were: to develop a project scope plan to ensure the project specific goals, deliverables, features, and budgets are properly identified and managed; to prepare a project schedule plan outlining all activities, deliverables, and milestones required for this project completion and ensuring they are completed in the established timeframes; to create a project cost plan to properly identify the financial obligation and requirements of the project; to construct a project quality plan that describes the activities, standards, tools, and processes necessary to achieve quality in the delivery of this project; to develop a project resource plan for assigning

resources and work packages in a manner that complies with international laws and conventions on labor; to create a project communications plan clearly defining the project communication strategies and line of reporting authority; to identify and mitigate the risks that the project is subject to and developing a project risk management plan; to develop a project procurement plan to form the purchase framework for all materials and services needed for the project completion; and to develop a project stakeholders plan for the proper identification and support of all the project stakeholders ensuring effective stakeholders' engagement..

Having explored the objectives outlined previously, it can be concluded that the Hernandez's Family Home Addition Project in feasible and viable under the parameters specified, within the timeframe of six months at a cost of no more than BZ$110,0000.00. It is of crucial importance that the different areas of the project plan are follow as outlined to ensure the cost, time, and scope of the project is maintained. If this plan is followed, all the constrains and assumptions considered, manage, and control, the success of the project is almost guaranteed.

The project scope plan developed will ensure the project scope is properly monitor and control, and at the same time will prevent scope creep that can be devastating to the project performance. Additionally, to ensure financial obligations are met, the project cost plan need to be closely monitored. This will ensure the project specific goals, deliverables, features, and budgets are properly identified and managed. The top three risks identified for this project were delay deliveries, weather conditions, and lock of qualified and skilled workers. Those also need to be closely monitored.

It is highly recommended that the project manager regularly monitors the scheduled plan, scope management plan, cost management plan, and the risk management plan as a minimum to quickly pick-up and take necessary actions before they become a major issue on the overall project. Additionally, it is highly recommended that all required industry standards and building codes are followed, both international and local when appliable.

1 INTRODUCTION

1.1. Background

The Hernandez family can be described as a typical middle class Belizean family. This young couple is currently living in a 750 square foot house with a single bedroom, two bathrooms, a kitchen, and a living room that doubles as the dining room. This house was constructed around five years ago with a foundation strong enough to support a second story if ever needed. At the time, as a couple without any children, this house was considered adequate, spacious, and comfortable.

Three years ago, they decided to build a family and increase the members in their household. Soon they welcomed their first son. Having him as a toddler, the house and its layout were still considered adequate. However, as their son grows, his needs become apparent, and soon he will require his room. Furthermore, the couple is contemplating and planning on welcoming a second child. Thus, they have decided to expand their living space by building a second story which will provide the needed additional space. Moreover, they plan to make some modifications to their current living space to accommodate a separate living room and dining room.

In summary, this addition/extension project will provide four-bedrooms, two-bathrooms, a most needed laundry room, and a small study area.

1.2. Statement of the problem

The Hernandez has constructed a house before; however, the project management approach in use is not sufficient to successfully deliver a product of this magnitude. Due to the size and complexity of the project, it is of great importance to produce an extensive management tool. Each element of the Project Management Plan will be created, along with all of the tools, techniques, and concepts used to justify each management decision selected for the application. This Project Management Plan will ensure that Hernandez family obtains the needed space by guaranteeing a successful project.

1.3. Purpose

The purpose of this study is to develop a Project Management Plan that integrates sustainable principles to optimize the utilization of project resources for the Hernandez's residence addition which will accommodate its growing family and provide a home suitable for growing family living. Furthermore, this project plan will guarantee the success of the project and will ensure that the necessary safeguards are in place. Additionally, this will also ensure the Hernandez family is aware of the necessary financial obligation of this project, resources, and risks associated with it. Most importantly, it will ensure the project is completed in reasonable timelines, and of acceptable quality.

1.4. General objective

- To develop a Project Management Plan that integrates sustainable principles needed to optimize the utilization of project resources for the addition to the Hernandez's residence. This addition is needed in order to accommodate its growing family and provide a home suitable for a growing family.

1.5. Specific objectives

- To develop a project scope plan to ensure that the project specific goals, deliverables, features, and budgets are properly identified and managed.
- To prepare a project schedule plan outlining all activities, deliverables, and milestones required for this project's completion while ensuring that it meets all deadlines.
- To create a project cost plan to properly identify the financial obligation and requirements of the project.
- To construct a project quality plan that describes the activities, standards, tools, and processes necessary to achieve quality in the delivery of this project.
- To develop a project resource plan for assigning resources and work packages in a manner that complies with international laws and conventions on labor.

- To create a project communications plan to clearly define the project communication strategies and line of reporting authority.
- To identify and mitigate possible project risk factors and developing a project risk management plan.
- To develop a project procurement plan to form the purchase framework for all materials and services needed for the project's completion.
- To develop a project stakeholder's plan for the proper identification and support of all project stakeholders to ensure effective stakeholder's engagement.

2 THEORETICAL FRAMEWORK

2.1 Company/Enterprise framework

2.1.1 Company/Enterprise background

As stated in 1.1 above, the construction project outlined in this research is for the Hernandez family and, as such, their family structure will be described below. The Hernandez household consists of three members, Mr. Hernandez (husband), Mrs. Hernandez (Wife), and Junior, their firstborn son. They built their current home a few years ago before the birth of their son. With their son's arrival and their planning of their second child, they have determined that there is a need for more space to accommodate their growing family. To ensure the successful completion of this construction project, a more comprehensive strategy for project execution is required. With this in mind, the Hernandez's have agreed that a more comprehensive project management plan must be produced.

2.1.2 Mission and vision statements

As a family, the Hernandez's have the following Mission and Vision statements. Those are based on their morals, ethics, and their ideology as a family. The development of this project management plan for the construction of the second story is aligned with their mission and vision as outlined below.

Mission Statement

To seek, accept and perform God's will as a family. Develop a proper work and life balance by, as best as possible, making the best use of our time, talent, and resources for the family's prosperity and that of others. Archive educational, financial, and health well-being, honoring God throughout the entire journey.

Vision Statements

To be a unified family, creating a nurturing environment, faith in God, truth, love, and happiness, mental and physical well-being.

2.1.3 Organizational structure

The Hernandez's household is a typical Belizean family consisting of three members: Mr. Hernandez (husband), Mrs. Hernandez (Wife), and their firstborn son. As this research continues, the primary contact will be Mrs. Hernandez who is responsible for ensuring the project management plan becomes an output of this exercise. Figure 1 below illustrated the family structure. All financial decisions are made as a couple including the construction of this project.

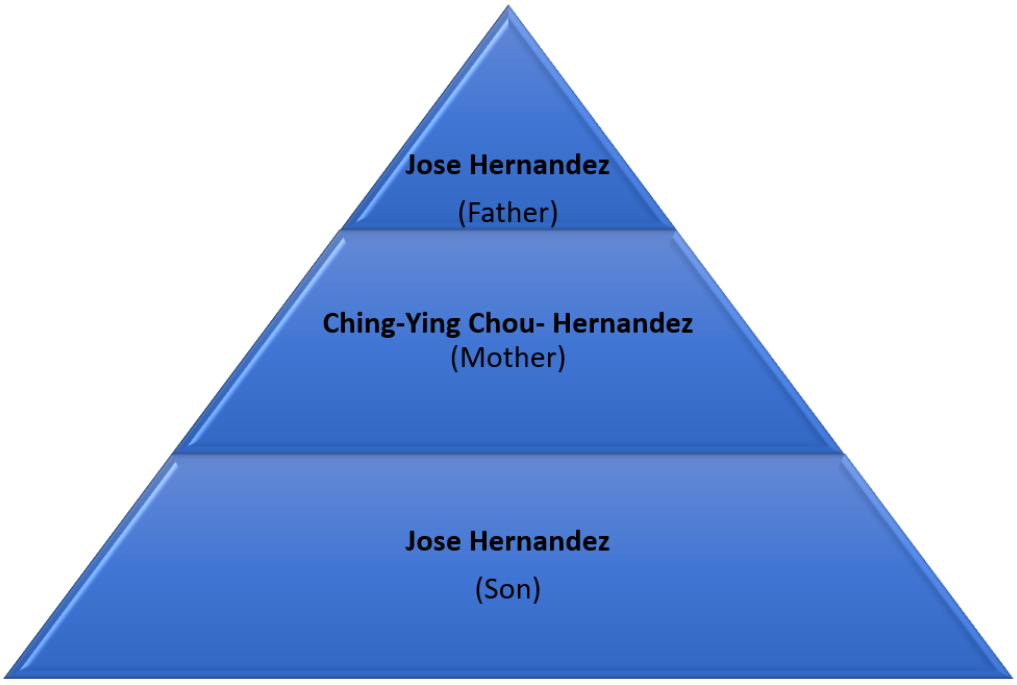

Figure 1: Hernandez's Household Organizational Structure

2.1.4 Products offered

The Hernandez's household does not provide any services per se. Mr. Hernandez works as a Systems Analyst at Belize's largest commercial bank. He also runs a small firm (Olympus Business Solutions) that specializes in IT consultancy and software development. Ms. Hernandez is a teacher by profession.

2.2 Project Management concepts

2.2.1 Project

A project is defined as a sequence of tasks that must be completed to attain a certain outcome. According to the Project Management Institute (PMI), the term Project refers to "a temporary endeavor undertaken to create a unique product, service, or result" (PMBOK, 2013).

2.2.2 Project management

Project management is very important in the production of goods and services. From idea generation to final production of product or service, each step can be categorized as individual projects (Schwalbe, 2009). Furthermore, any project requires a project manager, who leads the project to its logical conclusion.

According to the Project Management Institute, project management is the "application of knowledge, skills, tools, and techniques to project activities to meet the project requirements", and accomplished through meticulous application and incorporation of "47 logically grouped project management processes, which are categorized into five Process Groups." (PMBOK, 2013). Typically, a project is managed by some form of framework, referred to as a project methodology. This Methodology focuses on the processes that a project goes through namely initiation, planning, executing, monitoring and controlling, and closing.

A project is not the normal day-to-day activity undertaken by the organization. Rather, it is a specific non-routine activity of varying time frames and impacts and the viability of the business in the long run. A typical project has the following characteristics (Schwalbe, 2009):

- **Timeline**: A project has a definite timeline with measurable starting and endpoint.
- **Resources**: A project has limited resources of capital and manpower.

- **Tools**: Special types of tools and techniques are used for project management (Gantt Charts, etc.)
- **Team**: Project management requires a diverse team stretching across departments and functions.

To see the holistic view of the scope and activities required for a project, a project manager will prepare a project work breakdown structure (WBS), which is a visual, hierarchical, and deliverable-oriented deconstruction of a project. Furthermore, PMI defines a WBS as “A deliverable-oriented hierarchical decomposition of the work to be executed by the project team to accomplish the project objectives and create the required deliverables” (PMBOK, 2013). As stated by Wysocki (2011), a WBS is a helpful diagram for project managers because it allows them to work backward from the final deliverable of a project and identify all the activities needed to achieve a successful project. With this in mind, a WBS will be created for the project as referred to in this document, and constructed within the “triple constraints” of time, cost and quality in mind.

2.2.3 Project life cycle

The PMBOK (2013) outlines the project life cycle as a series of phases that a project undergoes from its start to its completion. Figure 2 below outlines the typical project life cycle structure; starting the project, organizing and preparing, carrying out the work, and closing the project. Furthermore, its process group interaction can be seen in Figure 3.

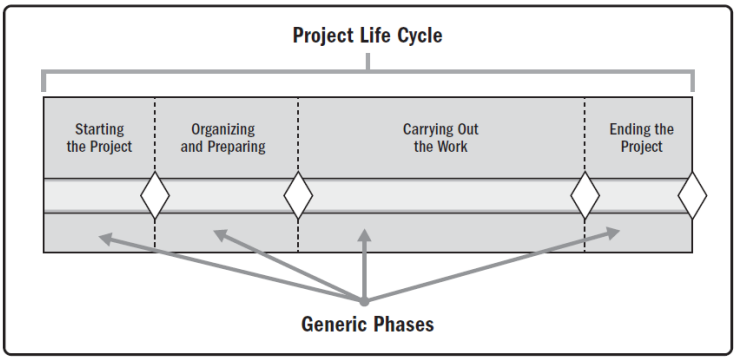

Figure 2: Generic Project Life Cycle. Taken from PMBOK (2013).

Additionally, Westland (2007) states that a typical project is divided into the following phases. Each phase of the project has its importance and impact on the overall success of the project.

- **Initiation Phase**: In this phase of the project, feedback received from customers is analyzed and brainstorming is done to develop a new product or modify an existing product to meet the new demands.
- **Project Definition Phase**: In this phase of the project, efforts are made to define solutions for the problem posed by customers.
- **Feasibility Study**: In this phase, planning of the project is made and definite milestones are established.
- **Project Execution**: In this phase, all activities and milestones established in the earlier phase are executed in a timely and orderly manner. This phase utilizes the maximum of all resources.
- **Project Conclusion**: This is the last phase of the project. In this phase, the final product or service is handed over to the operations team for commercial production.

However, the development of the Final Graduation Project (FGP) will consist of the creation of the Project Management Plan for the building of the second story of Hernandez's project. This will consist of six (6) phases:

- PHASE 1: Initiation Phase
- PHASE 2: Design Phase
- PHASE 3: Pre-Construction Phase
- PHASE 4: Construction
- PHASE 5: Post Construction Phase
- PHASE 6: Project Closure

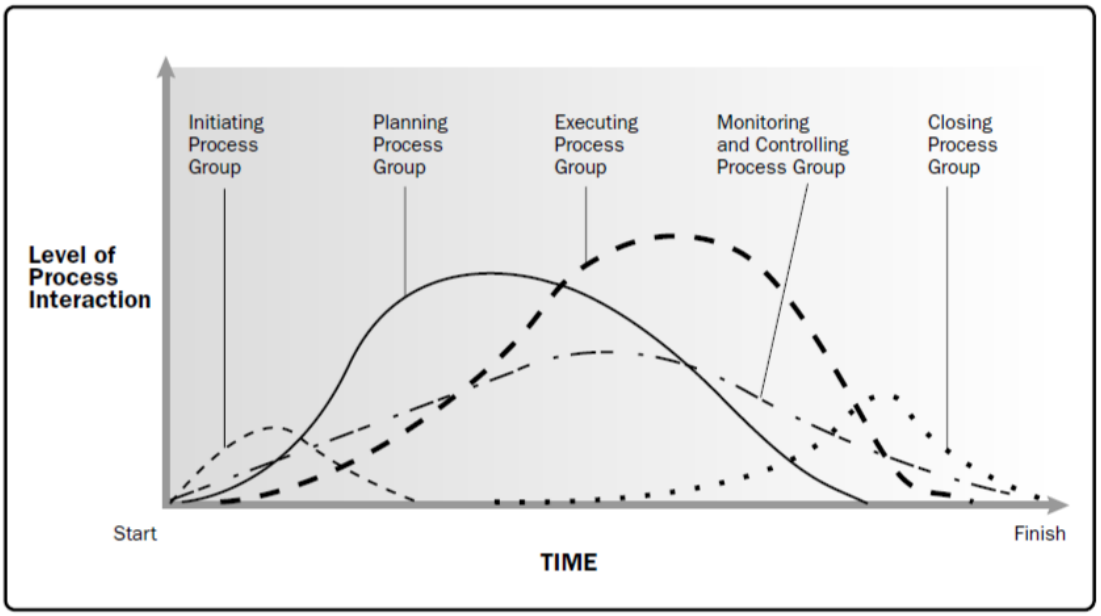

Figure 3: Process groups interact in a Phase or Project. Taken from PMBOK (2013).

2.2.4 Project management processes

Only the processes involved in initiating and planning a project will be used to develop the Project Management Plan for the building of the second story. The Project Management Plan will be a compilation of subsidiary documents created as a result of each initiating and planning process activity. A subsidiary document is a document created to support the main document. PMI outlines, “Develop Project Management Plan is the process of defining, preparing, and coordinating all plan components and consolidating them into an integrated project plan” PMBOK (2013), see Figure 4, and Figure 5.

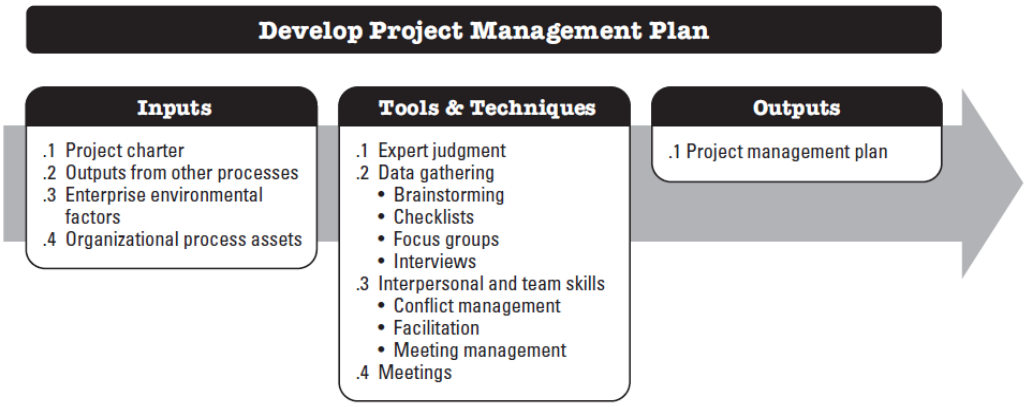

Figure 4: Develop Project Management Plan: Input, Tools & Techniques, and outputs. Taken from PMBOK (2013).

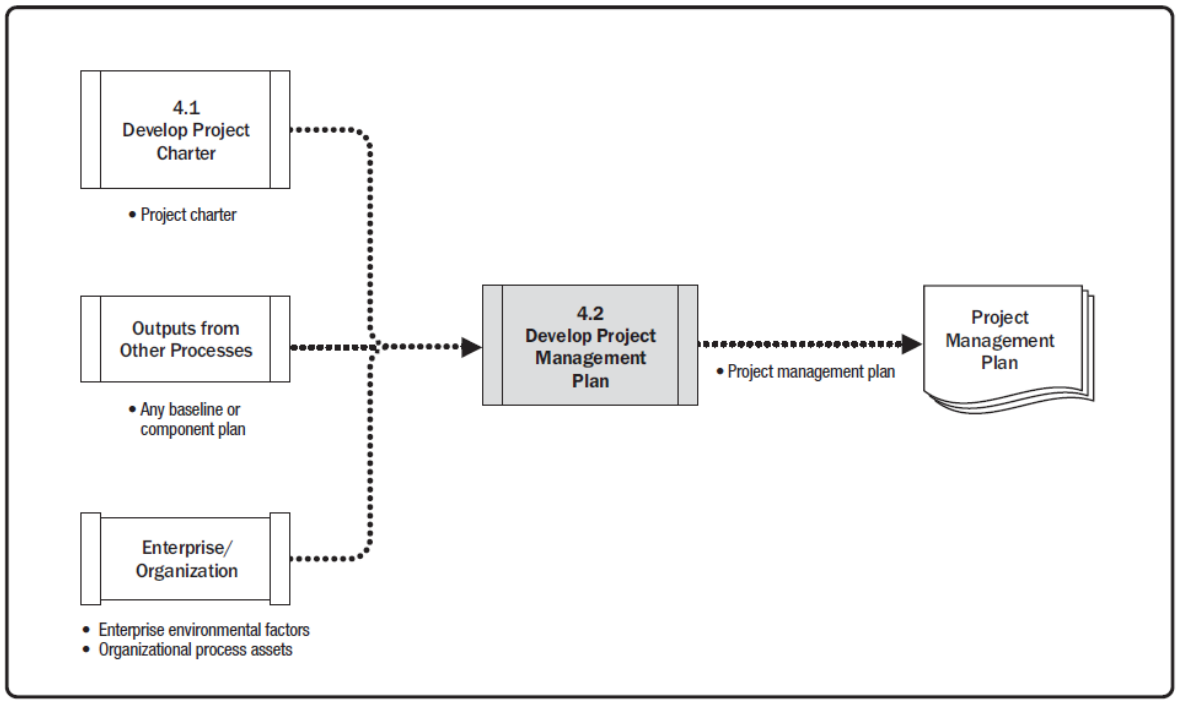

Figure 5: Develop Project Plan: Data Flow Diagram. Taken from PMBOK (2013).

2.2.5 Project management knowledge areas

According to the PMBOK (2013) there are 49 processes mapped across 5 phases and 10 knowledge areas. The 10 Knowledge Areas that have been defined in project management are listed below. Definitions below are taken directly from PMBOK (2013):

- **Project Integration Management**: Project Integration Management includes the processes and activities to identify, define, combine, unify, and coordinate the various processes and project management activities within the Project Management Process Groups.
- **Project Scope Management**: Project Scope Management includes the processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully.
- **Project Schedule Management**: Project Schedule Management includes the processes required to manage the completion of the project in a timely fashion.
- **Project Cost Management**: Project Cost Management includes the processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs so the project can be completed within the approved budget.
- **Project Quality Management**: Project Quality Management includes the processes for incorporating the organization's quality policy regarding planning, managing, and controlling project and product quality requirements in order to meet stakeholders' expectations.
- **Project Resource Management**: Project Resource Management includes the processes to identify, acquire, and manage the resources needed for the successful completion of the project.
- **Project Communications Management**: Project Communications Management includes the processes required to ensure timely and appropriate planning, collection, creation, distribution, storage, retrieval, management, control, monitoring, and ultimate disposition of project information.
- **Project Risk Management**: Project Risk Management includes the processes of conducting risk management planning, identification, analysis, response planning, response implementation, and monitoring risks in a project.

- **Project Procurement Management**: Project Procurement Management includes the processes necessary to purchase or acquire products, services, or results needed from outside the project team.
- **Project Stakeholder Management**: Project Stakeholder Management includes the processes required to identify the people, groups, or organizations that could impact or be impacted by the project, to analyze stakeholder expectations and their impact on the project, and to develop appropriate management strategies for effectively engaging stakeholders in project decisions and execution.

The 5 process groups are;

- **Initiation Phase**: Start of the process with developing the initial report and identifying the stakeholders.
- **Planning Phase**: Planning of the project by preparation of the management plan, scope, etc.
- **Execution Phase**: Execution of the project as per planned management data across all the knowledge areas.
- **Monitoring and Controlling Phase**: Monitoring & Controlling of the project as per the planned progress.
- **Closing Phase**: Handover of the project to the customer after the final sign-off.

Table 1 below outlines the 10 Knowledge Areas and 5 process groups mapped with 49 processes.

Table 1: 10 Knowledge Areas and 5 process groups mapped with 49 processes. Taken from PMBOK (2013).

PROCESS GROUPS	INITIATING	PLANNING	EXECUTING	MONITOR & CONTROL	CLOSING
Project Integration Management	• Develop Project Charter	• Develop Project Management Plan	• Direct & Manage Project Work	• Monitor & Control Project Work • Perform Integrated Change Control	
Project Scope Management		• Plan Scope Management • Collect Requirement • Define Scopes • Create WBS		• Validate Scope • Control Scope	
Project Time Management		• Plan Schedule Management • Define Activities • Sequence Activities • Estimate Activity Resources • Estimate Activity Duration • Develop Schedule		• Control Schedule	
Project Cost Management		• Plan Cost Management • Estimate Costs • Determine Budget		• Control Costs	
Project Quality Management		• Plan Quality Management	• Perform Quality Assurance	• Control Quality	
Project HR Management		• Plan HR Management	• Acquire Project Team • Develop Project Team • Manage Project Team		
Project Communication Management		• Plan Communication Management	• Manage Communications	• Control Communications	
Project Risk Management		• Plan Risk Management • Identify Risks • Plan Qualitative Risk Analysis • Plan Quantitative		• Control Risks	

PROCESS GROUPS	INITIATING	PLANNING	EXECUTING	MONITOR & CONTROL	CLOSING
		Risk Analysis • Plan Risk Responses			
Project Procurement Management		• Plan Procurement Management	• Conduct Procurement	• Control Procurement	• Close Procurement
Project Stakeholder Management	• Identify Stakeholders	• Plan Stakeholders Management	• Manage Stakeholders Engagement	• Manage Stakeholders Engagement	

2.3 Other applicable theory/concepts related to the project topic and context

2.3.1 Sustainable Construction

Sustainable construction is the practice of creating a healthy environment that's based on ecological principles. According to Kibert (1994), sustainable construction focuses on six principles: “conserve, reuse, recycle/renew, protect nature, create non-toxic and high quality”.

3 METHODOLOGICAL FRAMEWORK

3.1 Information sources

An Information Source is a source of information for somebody, i.e. anything that might inform a person about something or provide knowledge to somebody (Merriam & Tisdell, 2015). Additionally, as summarized by Alok & Mishra (2017) there are two major approaches to gathering information about a situation, person, problem or phenomenon. Depending upon the approach to information gathering taken, data can be categorized as either primary data or secondary data with both terms being described below. Furthermore,

Figure 6 provides an overview of the different approaches to information gathering, also referred to as methods of data collection.

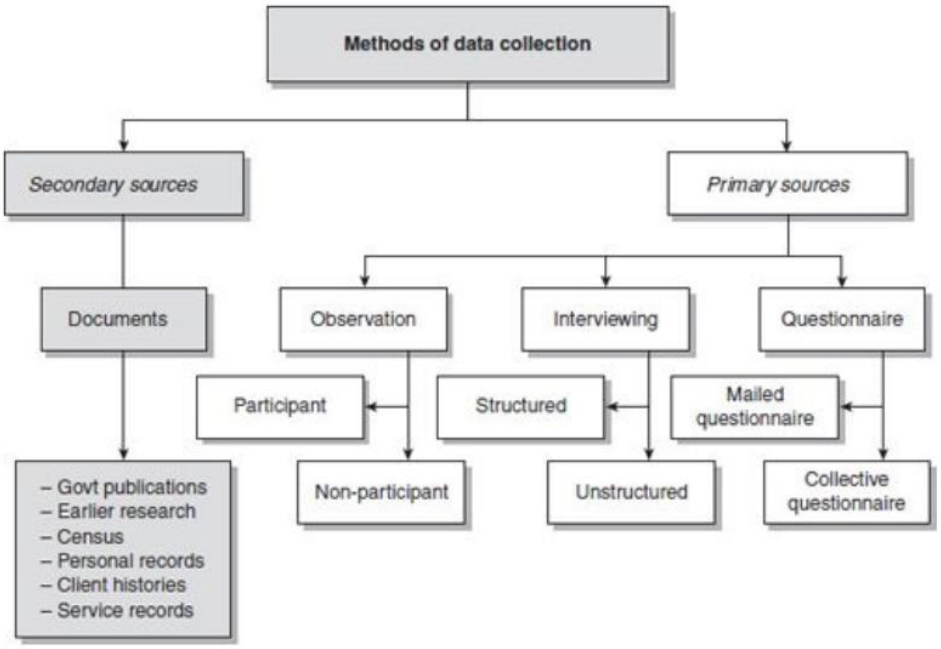

Figure 6: Methods of data collection. Taken from Taken from Alok & Mishra (2017).

3.1.1 Primary sources

Before defining primary sources, I will define primary data as defined by Alok & Mishra (2017), “Information collected for the specific purpose of a study either by the

researcher or by someone else". Primary sources are defined as **"**sources that provide primary data such as interviews, observations, and questionnaires".

In summary, a primary source provides direct or firsthand evidence about an event, object, person, or work (Merriam & Tisdell, 2015). Primary sources provide the original materials on which other research is based and enable third-party to get as close as possible to what actually happened during a particular event or time period. Additionally, Merriam & Tisdell (2015) stated that "published materials can be viewed as primary resources if they come from the period that is being discussed, and were written or produced by someone with firsthand experience of the event".

For the Final Graduation Project, the primary information sources that will be used are meeting minutes, interviews with members of the Hernandez family and other stakeholders such as contractors and real estate developers.

3.1.2 Secondary sources

"Sometimes the information required is already available in other sources such as journals, previous reports, or even censuses. You can simply extract that information for the specific purpose of your study. This type of data which already exists but you extract for the purpose of your study is called secondary data." (Alok & Mishra, 2017). Thus, secondary sources are "sources that provide secondary data. Sources such as books, journals, previous research studies, records of an agency, client or patient information already collected and routine service delivery records" (Merriam & Tisdell, 2015).

In summary, secondary sources describe, discuss, interpret, comment upon, analyze, evaluate, summarize, and process primary sources (Taylor, Bogdan, & DeVault, 2015). It is important to note that secondary sources often lack the freshness and immediacy of the original material. Appendix 4 contains the list of second sources that will be consulted for this study.

3.1.3 Study information sources

Table 2 below outlines the different information sources that will be used for each specific objective of this study.

Table 2: Information sources for the FGP. Developed by the author.

ID	Objectives	Information sources	
		Primary	Secondary
1	To develop a project scope plan to ensure that the project specific goals, deliverables, features, and budgets are properly identified and managed.	Meeting minutes and personal interview with lead project manager and other experts.	Appendix 4 list in collaboration with the PMBOK® Guide.
2	To prepare a project schedule plan outlining all activities, deliverables, and milestones required for this project's completion while ensuring that it meets all deadlines.	Personal interview with experts and the Hernandez's household head.	Appendix 4 list in collaboration with the PMBOK® Guide.
3	To create a project cost plan to properly identify the financial obligation and requirements of the project.	Personal interview with experts and the Hernandez's household head.	Appendix 4 list in collaboration with the PMBOK® Guide.
4	To construct a project quality plan that describes the activities, standards, tools, and processes necessary to achieve quality in the delivery of this project.	Personal interview with experts and the Hernandez's household head.	Appendix 4 list in collaboration with the PMBOK® Guide.
5	To develop a project resource plan for assigning resources and work packages in a manner that complies with international laws and conventions on labor.	Personal interview with experts and the Hernandez's household head.	Appendix 4 list in collaboration with the PMBOK® Guide.

ID	Objectives	Information sources	
		Primary	**Secondary**
6	To create a project communications plan to clearly define the project communication strategies and line of reporting authority.	Personal interview with expert and the Hernandez's household head.	Appendix 4 list in collaboration with the PMBOK® Guide.
7	To identify and mitigate possible project risk factors and developing a project risk management plan.	Personal interview with expert and the Hernandez's household head.	Appendix 4 list in collaboration with the PMBOK® Guide.
8	To develop a project procurement plan to form the purchase framework for all materials and services needed for the project's completion.	Personal interview with expert, suppliers and the Hernandez's household head.	Appendix 4 list in collaboration with the PMBOK® Guide.
9	To develop a project stakeholder's plan for the proper identification and support of all project stakeholders to ensure effective stakeholder's engagement.	Personal interview with experts and the Hernandez's household head.	Appendix 4 list in collaboration with the PMBOK® Guide.

3.2 Research methods

Alok & Mishra (2017) states that “research methods include all the techniques and methods which have been taken for conducting research whereas research methodology is the approach in which research troubles are solved thoroughly. It is the science of studying how research is conducted systematically. In this field, the researcher explains himself with the different steps generally taken to study a research problem. Hence, the scientific approach which is adopted for conducting a research is called methodology.”

The basic types of research are described and compared in the following sections. Furthermore, Figure 7 provides an overview of the research process.

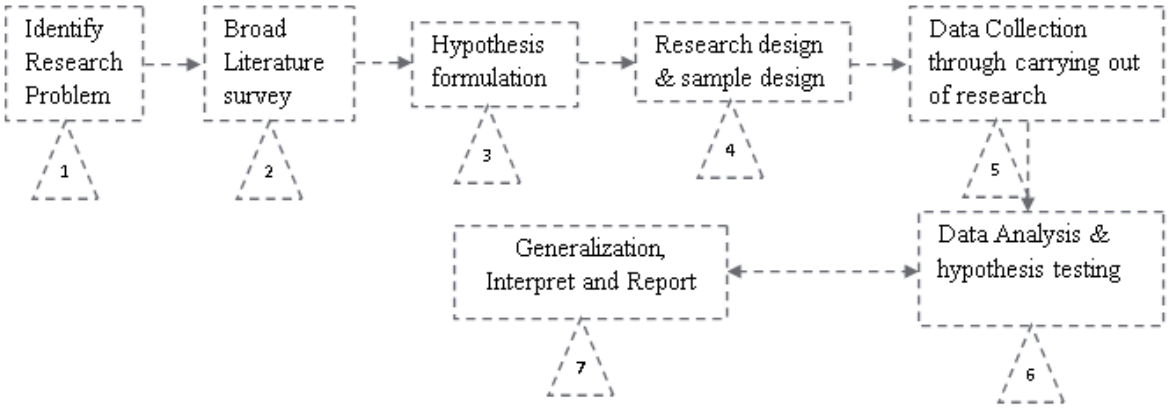

Figure 7: The Research Process. Taken from Alok & Mishra (2017).

3.2.1 Descriptive Research

“Descriptive research consists of survey and fact-finding investigation of different kinds. The main purpose of descriptive research is explanation of the set of circumstances as it is present as such. The term ‘Ex post facto’ research has been used to elaborate this type of research in different areas or subjects of research. The main feature of this method is that the scientist does not have direct control over the variables; he can only report what is happening or what has happened.” (Alok & Mishra, 2017).

3.2.2 Analytical Research

In analytical research, “the researcher could use the facts, information, data which is already available, and analyze these sources to make a hypothesis and evaluation of the material.” (Alok & Mishra, 2017).

3.2.3 Applied Research

“Applied research refers to finding a solution for a specific, practical problem facing an individual, society or an industrial or business organization. For example, how to abolish hate crime, what are the ways to market a product, what is causing increased poverty etc. ” (Alok & Mishra, 2017).

3.2.4 Fundamental Research

“Fundamental research is mainly concerned with overview and with the formulation of a theory. This is a pure and basic type of research. For example, an investigation looking for whether stress levels influence how often students engage in academic cheating or how caffeine consumption impacts the brain. ” (Alok & Mishra, 2017).

3.2.5 Quantitative Research

“Quantitative research is based on the aspect of quantity or extent. It is related to objects that can be expressed in terms of quantity or something that can be counted. Such type of research involves systematic experimental analysis of observable phenomenon via statistical, mathematical or computational techniques in numerical form such as statistics, percentages, etc. ” (Alok & Mishra, 2017).

3.2.6 Qualitative Research

Qualitative research is “concerned with qualitative phenomenon, i.e., relating to quality or variety. Such type of research is typically descriptive and harder to analyze than quantitative data. Qualitative research involves looking in-depth at non-numerical data. It is more naturalistic or anthropological.” (Alok & Mishra, 2017).

3.2.7 Conceptual Research

“Conceptual research is that related to some abstract idea(s) or theory. It focuses on the concept and theory that explain the theory being studied. It is generally used by logicians, philosophers and theorist to develop new concepts or to again understand the existing ones.” (Alok & Mishra, 2017).

3.2.8 Empirical Research

“Empirical research relies on experience or observation alone. It is a way of gaining knowledge by means of direct and indirect observation or experience. We can also refer to it as an experimental type of research. “ (Alok & Mishra, 2017).

3.2.9 Methods used for the research

For this research, a variety of research methods will be used, those being descriptive, analytical, quantitative, and qualitative. As a result, Table 3 below provides a summary of research methods that will be used on each of the FGP objectives.

Table 3: Research methods against the FGP objective. Developed by the author of the study.

ID	Objectives	Descriptive Research	Analytical Research	Quantitative Research	Qualitative Research
1	To develop a project scope plan to ensure the project specific goals, deliverables, features, and budgets are properly identified and managed.	It provides a thorough explanation of the numerous components of the scope management plan, as they presently exist.	Will be employed by using facts or information from the different sources to drive decision-making when creating the documents that comprise the scope management plan.	Methodical sampling method analyzes statistical records to describe variables to determine contributory proceedings between causal scope factors and to facilitate the best projections of future outcomes in this knowledge area.	Provides insight into various key components of this knowledge area; is a basis for further research and offers an indication of how and why decisions are made about scope management.
2	To prepare a project schedule plan outlining all activities, deliverables, and milestones required for this project's	It provides a thorough explanation of the numerous components of the scheduled plan, as	This will be employed by using information from the different sources to drive decision-making when	Methodical sampling method analyses statistical records to describe variables to determine contributory proceedings between	Provides insight into various key components of this knowledge area; is a basis for further research and offers

ID	Objectives	Descriptive Research	Analytical Research	Quantitative Research	Qualitative Research
	completion ensuring that they are completed in established adequate times.	they presently exist.	creating the documents that will comprise the time/ schedule management plan.	causal time factors and to facilitate the best projections of future outcomes in this knowledge area.	an indication of how and why decisions are made about time management.
3	To create a project cost plan to properly identify the financial obligation and requirements of the project.	It provides a thorough explanation of the numerous components of the cost management plan, as they presently exist.	This will be employed by using information from the different sources to drive decision-making when creating the documents that will comprise the cost management plan.	Methodical sampling method analyzes statistical records to describe variables to determine contributory proceedings between causal cost factors and to facilitate the best projections of future outcomes in this knowledge area.	Provides insight into various key components of this knowledge area; is a basis for further research and offers an indication of how and why decisions are made about cost management.

ID	Objectives	Descriptive Research	Analytical Research	Quantitative Research	Qualitative Research
4	To construct a project quality plan that describes the activities, standards, tools, and processes necessary to achieve quality in the delivery of this project.	It provides a thorough explanation of the numerous components of the quality management plan, as they presently exist.	This will be employed by using different information sources to drive decision-making when creating the documents that will comprise the quality management plan.	Methodical sampling method analyzes statistical records to describe variables to determine contributory proceedings between causal quality factors and to facilitate the best projections of future outcomes in this knowledge area.	Provides insight into various key components of this knowledge area; is a basis for further research and offers an indication of how and why decisions are made about quality management.
5	To develop a project resource plan for assigning resources to work packages in a manner that complies with international laws and conventions on labor.	It provides a thorough explanation of the numerous components of the resource management plan,	This will be employed by using the different information sources to drive decision-making when creating the documents that will	Methodical sampling method analyzes statistical records to describe variables to determine contributory proceedings between causal resource factors and to facilitate the	Provides insight into various key components of this knowledge area; is a basis for further research and offers an indication of how and why decisions

ID	Objectives	Descriptive Research	Analytical Research	Quantitative Research	Qualitative Research
		as they presently exist.	comprise the human resource management plan.	best projections of future outcomes in this knowledge area.	are made about resource management.
6	To create a project communications plan for clearly defining the project communication strategies and line of reporting authority.	It will provide a thorough explanation of the numerous components of the communication management plan, as they presently exist.	This will be employed by using the different information sources to drive decision-making when creating the documents that will comprise the communications management plan.	This unbiased, methodical sampling method analyzes statistical records to describe variables to determine contributory proceedings between causal communication factors and to facilitate the best projections of future outcomes in this knowledge area.	Provides insight into various key components of this knowledge area; is a basis for further research and offers an indication of how and why decisions are made about communication management.

ID	Objectives	Descriptive Research	Analytical Research	Quantitative Research	Qualitative Research
7	To identify and mitigate risks that the project is subject to and developing a project risk management plan.	It will provide a thorough explanation of the numerous components of the risk management plan, as they presently exist.	This will be employed by using the different information sources to drive decision-making when creating the documents that will comprise the risk management plan.	Methodical sampling method analyzes statistical records to describe variables to determine contributory proceedings between causal risk factors and to facilitate the best projections of future outcomes in this knowledge area.	Provides insight into various key components of this knowledge area; is a basis for further research and offers an indication of how and why decisions are made about risk management.
8	To develop a project procurement plan to form the purchase framework for all materials and services needed for the project's completion.	It will provide a thorough explanation of the numerous components of the procurement management plan,	This will be employed by using information derived from different sources to drive decision-making when creating the documents that will	Methodical sampling method analyzes statistical records to describe variables to determine contributory proceedings between causal procurement factors and to facilitate	Provides insight into various key components of this knowledge area; is a basis for further research and offers an indication of how and why decisions

ID	Objectives	Descriptive Research	Analytical Research	Quantitative Research	Qualitative Research
		as they presently exist.	comprise the procurement management plan.	the best projections of future outcomes in this knowledge area.	are made about procurement management.
9	To develop a project stakeholder's plan for the proper identification and support of all project stakeholders to ensure effective stakeholders, engagement.	This method will provide a thorough explanation of the numerous components of the stakeholder management plan, as they presently exist.	This will be employed by using information derived from different sources identified to drive decision-making when creating the documents that will comprise the stakeholder management plan.	Methodical sampling method analyzes statistical records to describe variables to determine contributory proceedings between causal stakeholder factors and to facilitate the best projections of future outcomes in this knowledge area.	Provides insight into various key components of this knowledge area; is a basis for further research and offers an indication of how and why decisions are made about stakeholder management.

3.3 Tools

The PMBOK® Guide defines a tool as “something tangible, such as a template or software program, used in performing an activity to produce a product or result” (PMBOK, 2013).

Each tool used in the Final Graduation Project is outlined in Table 4 below.

Table 4: Tools against the FGP objective. Developed by the author of the study.

ID	Objectives	Tools
1	To develop a project scope plan to ensure the project’s specific goals, deliverables, features, and budgets are properly identified and managed.	Requirement’s traceability matrix template, Microsoft Vision Professional 2016, Requirements Documentation template, Requirements Management Plan template, Work Breakdown Structure generator, and Scope Management Plan template, Microsoft Word 2016
2	To prepare a project schedule plan outlining all activities, deliverables, and milestones required for this project’s completion, ensuring those are completed in the established deadlines.	Schedule Management Plan template, Microsoft Project 2016, Microsoft Visio Professional 2016, and Activity List template, Microsoft Word 2016
3	To create a project cost plan to properly identify the financial obligation and requirements of the project.	Cost Management Plan template, Microsoft Excel 2016 Project Budgeting template, and Cost Baseline template, Microsoft Word 2016

ID	Objectives	Tools
4	To construct a project quality plan that describes the activities, standards, tools, and processes necessary to achieve quality in the delivery of this project.	Quality Management Plan template and Quality Management tools, Microsoft Word 2016
5	To develop a project resource plan for assigning resources and work packages in a manner that complies with international laws and conventions on labor.	Human Resource Management template and Responsibility Assignment Matrix, Microsoft Word 2016
6	To create a project communications plan that clearly defines the project communication strategies and line of reporting authority.	Communications Management Plan template and Communications Matrix, Microsoft Word 2016
7	To identify and mitigate possible risks that the project is subject to and developing a project risk management plan.	Risk Management Plan template, and Risk Register template, Microsoft Word 2016
8	To develop a project procurement plan to form the purchase framework for all materials and services needed for the project completion.	Procurement Management Plan template, Microsoft Word 2016

ID	Objectives	Tools
9	To develop a project stakeholders plan for the proper identification and support of all the project's stakeholders and ensure effective stakeholders' engagement.	Stakeholder Management Plan template, Stakeholder Analysis Chart, Microsoft Excel 2016, Stakeholder Register template, Stakeholder Engagement Assessment Matrix, Mindtools, Microsoft Word 2016

3.4 Assumptions and constraints

According to the PMBOK® Guide, defines an assumption as "a factor in the planning process considered to be true, real, or uncertain, without proof or demonstration" (PMBOK, 2013). It also defines a constraint as "a limiting factor that affects the execution of a project, program, portfolio, or process" (PMBOK, 2013).

The assumptions and constraints considered on the Final Graduation Project for each specific objective outline in Table 5 below.

Table 5: Assumptions and contains for the FGP. Developed by the author of the study.

ID	Objectives	Assumptions	Constraints
1	To develop a project scope plan to ensure that the project specific goals, deliverables, features, and budgets are properly identified and managed.	The scope management plan will identify all the work required.	The time allocated for this activity might not be sufficient.

ID	Objectives	Assumptions	Constraints
2	To prepare a project schedule plan outlining all activities, deliverables, and milestones required for this project's completion while ensuring that it meets all deadlines.	The time allocated for the development of the Project Management Plan and the building is sufficient.	The time allocated for the building must not exceed 9 months.
3	To create a project cost plan to properly identify the financial obligation and requirements of the project.	The budget created during planning will accurately depict the financial resources required for the construction.	The budget for the building must not exceed 100,000.00 dollars.
4	To construct a project quality plan that describes the activities, standards, tools, and processes necessary to achieve quality in the delivery of this project.	The Quality Management Plan will identify the necessary technical and managerial quality requirements of the project.	The building must withstand natural disasters, such as hurricanes and flooding.
5	To develop a project resource plan for assigning resources and work packages in a manner that complies with international laws and conventions on labor.	Sufficient human resources to complete the project are available.	Specialties skill labor might not be available.

ID	Objectives	Assumptions	Constraints
6	To create a project communications plan to clearly define the project communication strategies and line of reporting authority.	The necessary technology required is sufficient for the communication needs.	The unavailability of necessary technology, and utilities, such as electricity and internet.
7	To identify and mitigate possible project risk factors and developing a project risk management plan.	There is sufficient information required to adequately identify most, if not all risks of the project.	A fundamental risk is missed and not treated because it is not identified.
8	To develop a project procurement plan to form the purchase framework for all materials and services needed for the project's completion.	An adequate list of suppliers is identified.	Suppliers are unable to deliver the project's needs.
9	To develop a project stakeholder's plan for the proper identification and support of all project stakeholders to ensure effective stakeholder's engagement.	The stakeholder management contains the complete list of all stakeholders involved.	Inadequate and lack of information/communication.

3.5 Deliverables

The PMBOK® Guide defines a deliverable as "any unique and verifiable product, result, or capability to perform a service that is required to be produced to complete a process, phase, or project" (PMBOK, 2013).

The deliverables for the Final Graduation Project for each specific objective outline in Table 6 below.

Table 6: FGP Deliverables. Developed by the author.

ID	Objectives	Deliverables
1	To develop a project scope plan to ensure that the project specific goals, deliverables, features, and budgets are properly identified and managed.	Scope Management Plan
2	To prepare a project schedule plan outlining all activities, deliverables, and milestones required for this project's completion while ensuring that it meets all deadlines.	Schedule Management Plan
3	To create a project cost plan to properly identify the financial obligation and requirements of the project.	Cost Management Plan
4	To construct a project quality plan that describes the activities, standards, tools, and processes necessary to achieve quality in the delivery of this project.	Quality Management Plan
5	To develop a project resource plan for assigning resources and work packages in a manner that complies with international laws and conventions on labor.	Human Resource Management Plan
6	To create a project communications plan to clearly define the project communication strategies and line of reporting authority.	Communications Management Plan
7	To identify and mitigate possible project risk factors and developing a project risk management plan.	Risk Management Plan

ID	Objectives	Deliverables
8	To develop a project procurement plan to form the purchase framework for all materials and services needed for the project's completion.	Procurement Management Plan
9	To develop a project stakeholder's plan for the proper identification and support of all project stakeholders to ensure effective stakeholder's engagement.	Stakeholder Management Plan

4 RESULTS

4.1 Scope Management Plan

4.1.1 Introduction

A Scope Management Plan is a collection of processes that ensure that the project includes all the required work to complete it and excludes all unnecessary work. Most importantly, it details how the project scope will be defined, developed, and verified. Furthermore, it defines and outlines the responsibilities of everyone. To a certain degree, it serves as a guide for managing and controlling the scope.

This Scope Management Plan for the Hernandez family's home addition project follows a five-step process: Collect Requirements, Define Scope, Create WBS, Verify Scope, and Control Scope.

4.1.2 Approach

For the Hernandez family's home addition project, the scope management will be the sole responsibility of the project manager. The project scope of this project is defined by the Scope Statement, Work Breakdown Structure, and the WBS Dictionary included within this document. In a traditional project, the project manager, sponsor, and stakeholders will establish and approve documentation for measuring project scope. This project is no different and will also follow that principle.

Any required changes to the agreed scope will have to follow the formal process of a change request, and its effect on the project overall will be evaluated. Changes may be requested by the project manager, stakeholders, or any member of the project team.

As per industry standards, once a change request is received, the project manager has the responsibility and must submit the change request to the Change Control Board and Project Sponsor for acceptance. Once approved, and only on approval, the project manager will update all project documents and communicate the scope

change to all stakeholders. Once fully discussed and feedback has been received from the project manager and stakeholders, the project sponsor is responsible for the acceptance of the final project deliverables and project scope.

4.1.3 Roles and Responsibilities

The project manager, sponsor, and team hold critical roles in managing the scope of this project. Therefore, they must be aware of their responsibilities to ensure that work performed is per what was defined on the project scope throughout the entire project lifecycle. Table 7 below defines the roles and responsibilities for the scope management of this project.

Table 7: Scope Management Roles and Responsibilities

Name	Role	Responsibilities
Head of the Hernandez Family	Sponsor	1. Approve or deny scope change requests as deemed appropriate 2. Evaluate the need for scope change requests 3. Accept project deliverables
Ching-Ying Chou - Hernandez	Project Manager	1. Measure and verify the project's scope 2. Facilitate scope change requests 3. Facilitate impact assessments of scope change requests 4. Organize and facilitate scheduled change control meetings 5. Communicate outcomes of scope change requests 6. Update project documents upon approval of all scope changes
General contractor	Team Lead	1. Measure and verify project scope 2. Validate scope change requests

Name	Role	Responsibilities
		3. Participate in impact assessments of scope change requests 4. Communicate outcomes of scope change requests to the team 5. Facilitate team level change review process
Subcontractor	Team Member	1. Participate in defining change resolutions 2. Evaluate the need for scope changes and communicate them to the project manager as necessary

4.1.4 Scope Definition

The scope for this project was defined through a comprehensive requirements collection process. First, a thorough analysis was performed based on meetings with different general and sub-contractors, revision of building codes, building requirements from the project's sponsor and industry standards was completed. This exercise resulted in the requirements management plan and its related documents.

Furthermore, the deliverables of the projects were also developed as a result of the requirements collection process and input from subject matter experts who, in this case, are building engineers and general contractors. Expert judgments were used. The process of expert judgment provided invaluable feedback on the most effective ways to meet the requirements, construction methodologies, and most appropriate materials to use.

4.1.5 Project Scope Statement

The project scope statement provides a detailed description of the project, deliverables, constraints, exclusions, assumptions, and acceptance criteria.

4.1.5.1 Project Scope Statement

This project includes the construction of an addition/extension to the Hernandez's residence that will provide them with a final addition of four-bedrooms and two-bathrooms. This includes complete tiling, all electrical, and painting.

4.1.5.2 Project Acceptance Criteria

This project will be accepted once the new addition has been successfully constructed and confirmed that it meets all the agreed requirements such as plumbing, electrical, windows, doors, tiles, and paint among others.

4.1.5.3 Project Deliverables

The deliverable for this project is the construction of the new building addition, which translates to four-bedroom, two-bathrooms, one laundry room, and a study area.

4.1.5.4 Project Exclusions

This project does not include maintenance or fixing of the current building. It also does not include the construction of a fence or complex landscaping activities.

4.1.5.5 Project Constraints

The project is not to exceed 6 months in duration or BZ$100,000.00 in expenditure.

4.1.5.6 Project Assumptions

The existing blueprint and construction permits are still valid. Also, the existing structures are within industry standards and don't require much effort to build on them.

4.1.6 Work Breakdown Structure

For the effective and efficient management of the work required to complete this project, it will be subdivided into individual work packages. This allows the Project manager to effectively manage the project's scope as the project team works on the tasks necessary for project completion. The project is broken down into five phases: the Initiation phase; the Pre-construction phase; the Construction phase; the Post-construction phase; and the Closure phase. Each of these phases is then subdivided further down to work packages as seen in Figure 8.

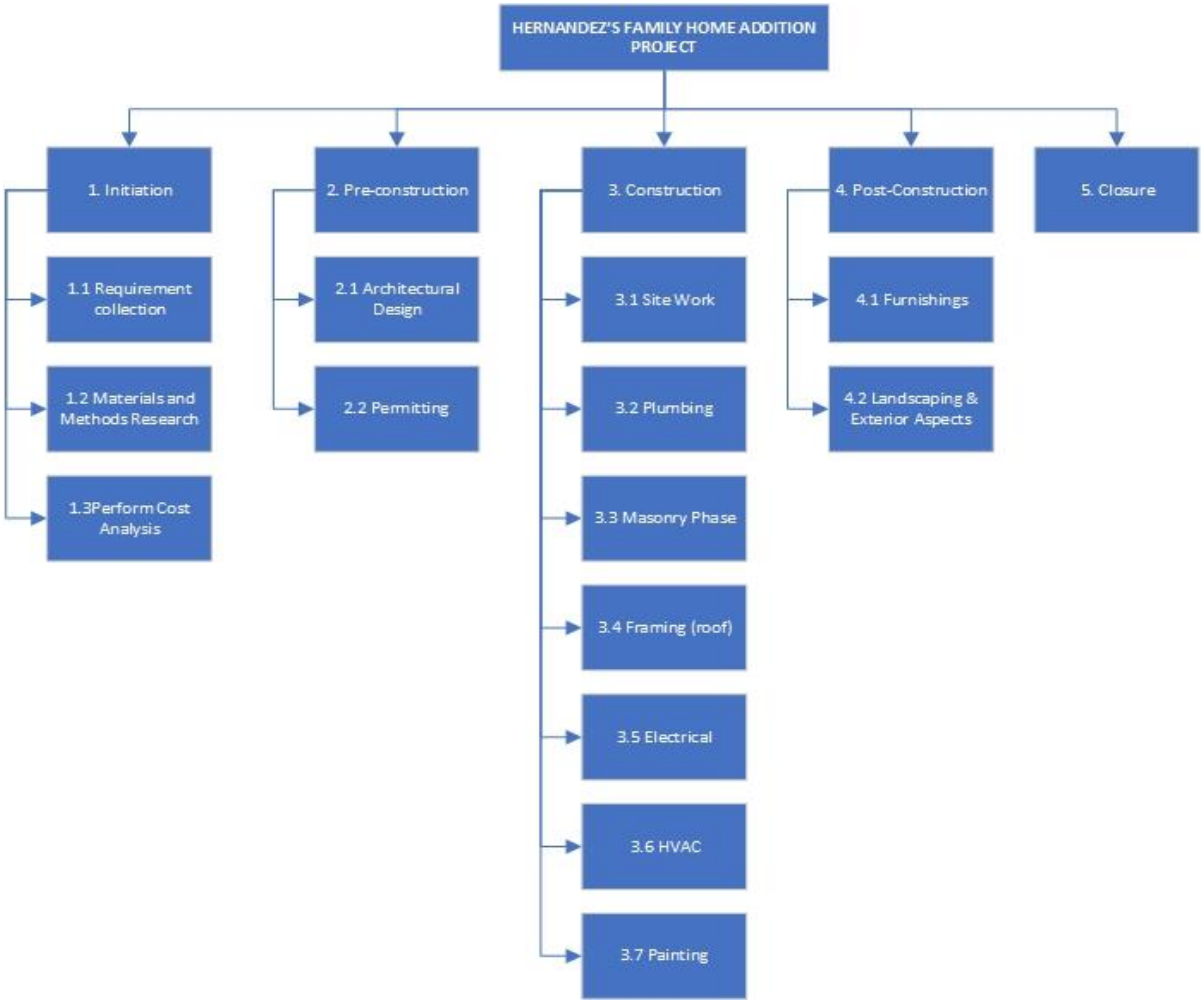

Figure 8: Work Breakdown Structure (WBS)

Furthermore, Table 8 provides the WBS Dictionary to more clearly define the work necessary for successful project completion. This WBS Dictionary includes an entry for each WBS element in Figure 8 above. Additionally, it provides a detailed description of each element and the expected deliverables, budget, and resources needed for the element. It is expected that the project team will use the WBS Dictionary as a statement of work for each WBS element.

Table 8: WBS Dictionary

Level	WBS Code	Element Name	Description of Work	Deliverables	Budget	Resources
1	**1**	**Initiation**	**Agreements and contracts signing**	**Project start**	**$ 730.00**	**Contracts**
2	1.1	Requirement collection	Determine client specific requirements	Requirements Analysis document	$ -	
2	1.2	Materials and Methods Research	Research materials, methodologies, and architectural standards applicable and best suitable for the project	List of recommended materials	$ -	Computer and internet
2	1.3	Perform Cost Analysis	Determine project cost necessary, including time and resources	Project cost plan	$ 730.00	Computer and internet
1	**2**	**Pre-construction**	**Getting everything ready for construction to begin**	**Plans and permitting**	**$ -**	
2	2.1	Architectural Design	Building blueprint development	Because this is an addition, the	$ -	

Level	WBS Code	Element Name	Description of Work	Deliverables	Budget	Resources
2	2.2	Permitting	Obtaining construction approval for the area and building from the Central Building Authority and Belmopan City Council.	blueprints and permits already exist.	$ -	
1	**3**	**Construction**	**Actual construction work**	**The building**	**$92,270.00**	
2	3.1	Site Work	All work that is required for the actual construction to begin, such as land clearing, cleaning, or repairing the existing foundation.	Construction site ready to begin	$ 570.00	Blueprint, materials, and workers
2	3.2	Plumbing	Prepare all Plumbing work necessary for the building	Plumbing foundation	$ 2,000.00	Materials and workers
2	3.3	Masonry Phase	Building the walls, including the installation of the windows, doors, and tiles	Building without roof	$70,000.00	Blueprint, materials, and workers
2	3.4	Framing (roof)	Preparing the framing and constructing the roof, including gutter installation	House roof	$10,000.00	Blueprint, materials, and workers

Level	WBS Code	Element Name	Description of Work	Deliverables	Budget	Resources
2	3.5	Electrical	The running and installation of all electrical requirements, which include outlets, lights, and switches among others.		$ 4,000.00	Blueprint, materials, and workers
2	3.6	HVAC	Installation of AC and heating appliances	Aire conditioning installation	$ 3,000.00	Materials and workers
2	3.7	Painting	Painting the entire building, interior, and exterior	House painted	$ 2,700.00	Materials and workers
1	**4**	**Post-Construction**	**All finishing touches, such as furniture, gardening**		**$ 7,000.00**	
2	4.1	Furnishings	Installation of all furniture requires, specifically those essential for bathrooms and kitchen	Bathrooms and kitchen functional	$ 5,000.00	Blueprint, materials, and workers
2	4.2	Landscaping & Exterior Aspects	Any landscaping needed, land beautification efforts, and fence repaired if necessary	Land beatification	$ 2,000.00	Blueprint, materials, and workers
1	5	Closure	Completion of project	House keys	$ -	

4.1.7 Scope Verification

The Project Manager will verify interim project deliverables against the original scope as defined in the scope statement, WBS and WBS Dictionary. If they meet the requirements defined in the project plan, the Project Sponsor (Client) will be notified to inspect and validate before formal acceptance of the deliverable. In this case, this is done by the project manager and the client visiting the construction site and conducting a formal inspection. Dependent on the deliverable, a simple eye inspection would be sufficient, other times quality test may be performed.

Once inspection is successfully completed, a meeting is held, where the Project Manager will present the deliverable to the Project Sponsor and the Project Sponsor will accept the deliverable by signing a project deliverable acceptance document.

4.1.8 Scope Control

As previously defines, any changes to the scope will need to follow a formal change request process. The change will be properly evaluated against the project triple constraints. Once the Project Manager has accepted a change request, it will be submitted the change request to the Change Control Board and Project Sponsor for acceptance, as they are the only ones with authority to approve.

The day-to-day activities of the project progress and scope control will be conducted by evaluating and comparing the progress against the defined WBS Dictionary by using it as a statement of work for each WBS element.

4.2 Schedule Management Plan

4.2.1 Introduction

A Schedule Management Plan is a roadmap for the execution of a project. Such a plan is fundamental to the success of a project, as, without a project scheduled plan, a project will run out of control. Furthermore, it provides the project team, sponsor, and stakeholders a picture of the project's status at any given time; we can see if the project is behind or ahead.

This Schedule Management Plan for the Hernandez's Family home addition project will define the approach the project team will use in creating the project schedule. It also includes how the team will monitor the project schedule and manage changes after the baseline schedule has been approved. Overall, it includes identifying, analyzing, documenting, prioritizing, approving, or rejecting, and publishing all schedule-related changes.

4.2.2 Schedule Management Approach

Although there is a vast array of tools that can be used to create a scheduled plan, for this project, Microsoft Project 2016 will be used. The project schedule is started by using the deliverables that were identified in the project's Work Breakdown Structure (WBS) as abased. To properly create a correlation, the activities will identify the specific work packages which must be performed to complete each deliverable. Furthermore, the activity sequence will be used to determine the order of work packages and assign relationships between project activities. Additionally, the duration estimated in the WBS will be used to calculate the number of works required to complete each work package, including resources needed for completion.

After the preliminary schedule has been developed, it will be reviewed by the project team and any resources tentatively assigned to project tasks. To ensure everyone is aware of the roadmap, it will be review by the entire project team, and each

resource must agree to the proposed work package assignments, including that the durations are reasonable, including the expected delivery date and time; schedule.

4.2.3 Schedule Project Milestones

The following Table 9 will be designated as milestones for the project schedule.

Table 9: Schedule Project Plan Milestones

ID	WBS Code	Element Name	Description of Work
2	**1**	**Initiation**	**Agreements and contracts signing**
3	1.1	Requirement collection	Determine client specific requirements
4	1.2	Materials and Methods Research	Research materials, methodologies, and architectural standards applicable and best suitable for the project
5	1.3	Perform Cost Analysis	Determine project cost necessary, including time and resources
6	**2**	**Pre-construction**	**Getting everything ready for construction to begin**
7	2.1	Architectural Design	Building blueprint development
8	2.2	Permitting	Obtaining construction approval for the area and building from the Central Building Authority and Belmopan City Council.
9	**3**	**Construction**	**Actual construction work**
10	3.1	Site Work	All work that is required for the actual construction to begin, such as land clearing, cleaning, or repairing the existing foundation.
11	3.2	Plumbing	Prepare all Plumbing work necessary for the building
12	3.3	Masonry Phase	Building the walls, including the installation of the windows, doors, and tiles

ID	WBS Code	Element Name	Description of Work
13	3.4	Framing (roof)	Preparing the framing and constructing the roof, including gutter installation
14	3.5	Electrical	The running and installation of all electrical requirements, which include outlets, lights, and switches among others.
15	3.6	HVAC	Installation of AC and heating appliances
16	3.7	Painting	Painting the entire building, interior, and exterior
17	**4**	**Post-Construction**	**All finishing touches, such as furniture, gardening**
18	4.1	Furnishings	Installation of all furniture requires, specifically those essential for bathrooms and kitchen
19	4.2	Landscaping & Exterior Aspects	Any landscaping needed, land beautification efforts, and fence repaired if necessary
20	5	Closure	Completion of project

4.2.4 Roles and Responsibilities

The project manager will be ultimately responsible for facilitating work package definition, sequencing, and estimating duration and resources with the project team. Once completed, the schedule will be validated with the project team, stakeholders, and the project sponsor. Furthermore, the project manager will obtain schedule approval from the project sponsor and baseline the schedule.

4.2.5 Project Schedules

Table 10 below displays the project schedule plan, followed by its Grant Chart in

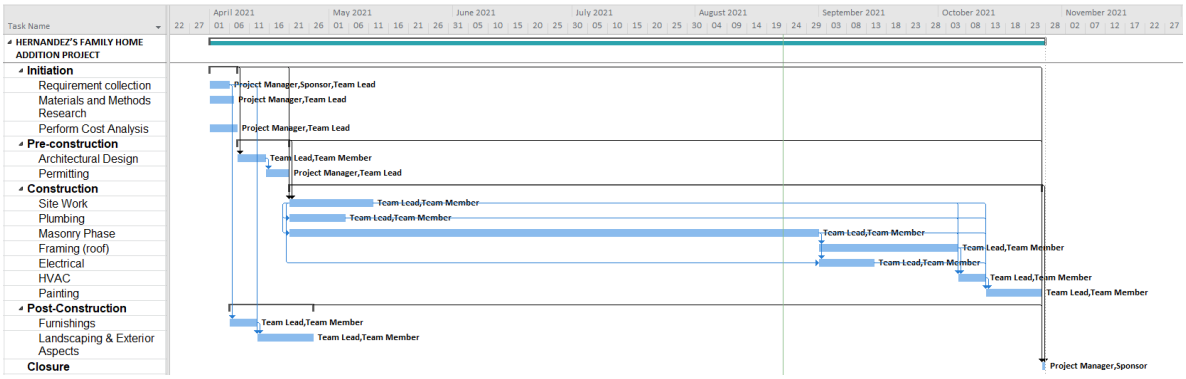

Figure 9, and finally the network diagram,

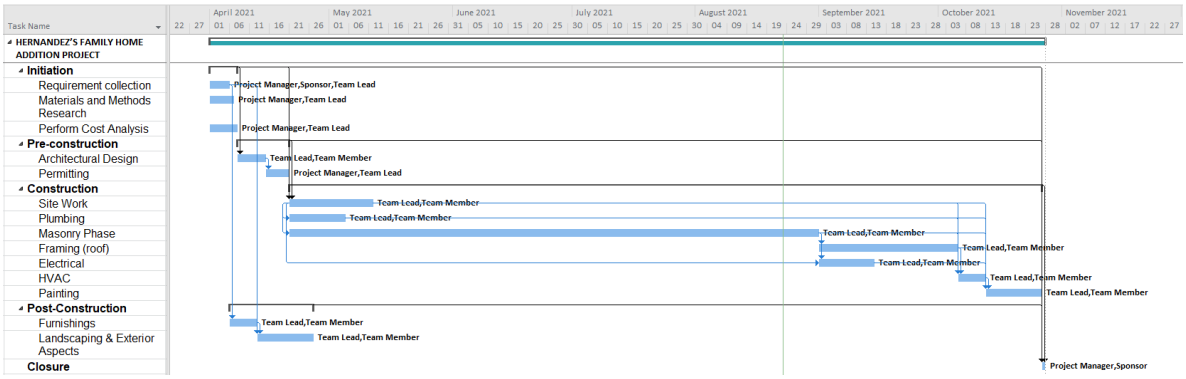

Figure 9.

Table 10: Schedule Project Plan

		Task Mode	WBS	Task Name	Duration	Start	Finish	Predecessors	Resource Names
1			0	**HERNANDEZ'S FAMILY HOME ADDITION PROJECT**	**150 days**	**Thu 01-04-21**	**Wed 27-10-21**		
2			**1**	**Initiation**	**5 days**	**Thu 01-04-21**	**Wed 07-04-21**		
3			1.1	Requirement collection	3 days	Thu 01-04-21	Mon 05-04-21		Project Manager,Sponsor,Team Lead
4			1.2	Materials and Methods Research	4 days	Thu 01-04-21	Tue 06-04-21		Project Manager,Team Lead
5			1.3	Perform Cost Analysis	5 days	Thu 01-04-21	Wed 07-04-21		Project Manager,Team Lead
6			**2**	**Pre-construction**	**9 days**	**Thu 08-04-21**	**Tue 20-04-21**		
7			2.1	Architectural Design	5 days	Thu 08-04-21	Wed 14-04-21	2	Team Lead,Team Member
8			2.2	Permitting	4 days	Thu 15-04-21	Tue 20-04-21	7	Project Manager,Team Lead
9			**3**	**Construction**	**135 days**	**Wed 21-04-21**	**Tue 26-10-21**		
10			3.1	Site Work	15 days	Wed 21-04-21	Tue 11-05-21	2,6	Team Lead,Team Member
11			3.2	Plumbing	10 days	Wed 21-04-21	Tue 04-05-21	10SS	Team Lead,Team Member
12			3.3	Masonry Phase	95 days	Wed 21-04-21	Tue 31-08-21	10SS	Team Lead,Team Member
13			3.4	Framing (roof)	25 days	Wed 01-09-21	Tue 05-10-21	12	Team Lead,Team Member
14			3.5	Electrical	10 days	Wed 01-09-21	Tue 14-09-21	10SS,12	Team Lead,Team Member
15			3.6	HVAC	5 days	Wed 06-10-21	Tue 12-10-21	10,11,12,13,14	Team Lead,Team Member
16			3.7	Painting	10 days	Wed 13-10-21	Tue 26-10-21	10,11,12,13,14,15	Team Lead,Team Member
17			**4**	**Post-Construction**	**15 days**	**Tue 06-04-21**	**Mon 26-04-21**		
18			4.1	Furnishings	5 days	Tue 06-04-21	Mon 12-04-21	3	Team Lead,Team Member
19			4.2	Landscaping & Exterior Aspects	10 days	Tue 13-04-21	Mon 26-04-21	3,18	Team Lead,Team Member
20			**5**	**Closure**	1 day	Wed 27-10-21	Wed 27-10-21	2,6,9,17	Project Manager,Sponsor

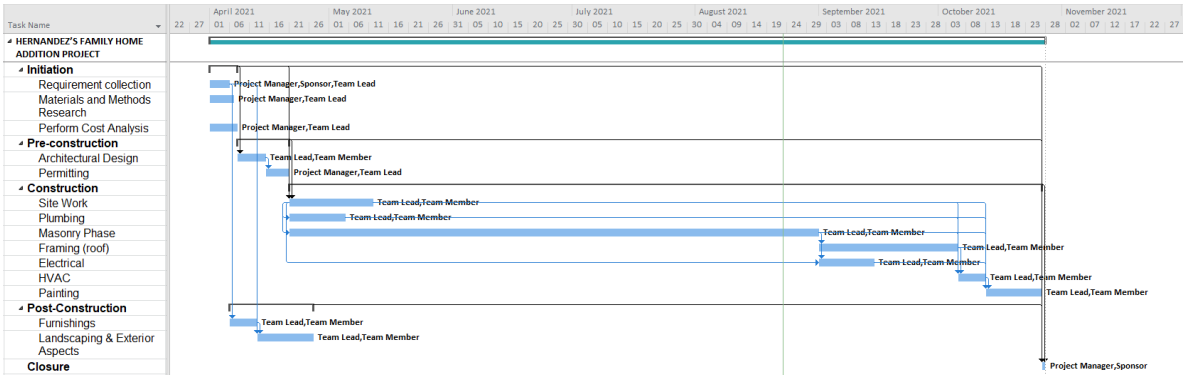

Figure 9: Project Gantt Chart

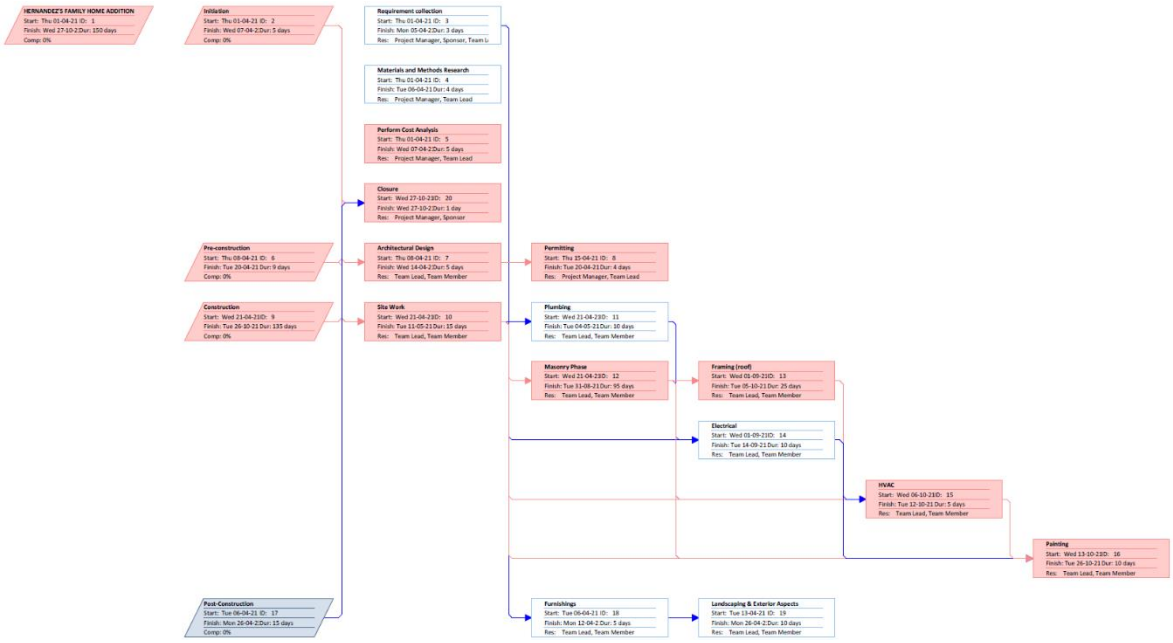

Figure 10: Project Network Diagram

4.2.6 Schedule Control

The project schedule plan is a live document that is constantly updated throughout the entire project lifecycle. It needs to be reviewed and updated as necessary on an appropriate periodicity with an actual start, actual finish, and completion percentages which are to be provided by task owners. The project sponsor will maintain awareness of the project schedule status and review and approve any schedule change requests submitted by the project manager.

4.2.7 Schedule Changes and Thresholds

Once a change to the schedule is necessary, the project manager and team need to review and evaluate the change. Most importantly, the project manager must determine which tasks will be impacted, the effect as a result of the potential change, and any alternatives resolution, if possible. Once the initial evaluation is completed, the defined baselines (boundary) below are to be used to determine if an official change request is submitted.

If either of the two following conditions is true, the formal process described in Section 4.2.8 needs to be followed.

1. The proposed change is estimated to reduce the duration of an individual work package by 10% or more, or increase the duration of an individual work package by 10% or more.
2. The change is estimated to reduce the duration of the overall baseline schedule by 10% or more, or increase the duration of the overall baseline schedule by 10% or more.

4.2.8 Scope Change

Any changes to the scope will need to follow a formal change request process. The change will be properly evaluated against the project triple constraints. Once the Project Manager has accepted a change request, it will be submitted the change request to the Change Control Board and Project Sponsor for acceptance, as they are the only ones with authority to approve.

4.3 Cost Management Plan

4.3.1 Introduction

A Cost Management Plan clearly defines how the costs on a project will be managed throughout the project's lifecycle. Most importantly, it sets the format and standards by which the project costs are measured, reported, and controlled.

In the Cost Management Plan for the Hernandez's Family home addition project, the Project Manager will be responsible for managing and reporting on the project's cost throughout the project. Furthermore, it is her responsible for accounting for cost deviations and presenting the project sponsor with options for getting the project back on budget, when applicable.

4.3.2 Approach

The Costs for the Hernandez's Family home addition project will be managed at the fourth level of the Work Breakdown Structure. Control Accounts (CA) will be created at this level to track costs. Earned Value calculations for the CA's will measure and manage the financial performance of the project. However, credit for work will be assigned at the work package level. As a rule of thumb, once work started on a specific work package, that works package with be credited 50%, and the remaining 50% is credited upon completion of all work defined in that work package. As a note, costs may be rounded to the nearest dollar and work hours rounded to the nearest whole hour or day, where applicable.

The project stats will be reported using the RAG (Red Amber Green) methodology, Table 11 further details.

Table 11: Project Cost RAG Status key

Legend	Definition/ Description
Green	The project budget is within the estimated cost.
Amber	Cost variances of +/- 0.1 in the cost and schedule performance indexes will change the status of the cost to cautionary.

Legend	Definition/ Description
Red	Cost variances of +/- 0.2 in the cost and schedule performance indexes will change the status of the cost to an alert stage. This will require corrective action from the Project Manager to bring the cost and/or schedule performance indexes below the alert level.

4.3.3 Measuring Project Costs

In summary, four Earned Value metrics can be used to measure projects cost performance, as detailed in Table 13. For this project, if the Schedule Performance Index or Cost Performance Index has a variance of between 0.1 and 0.2, the Project Manager must report the reason for the exception. On the other hand, If the SPI or CPI has a variance of greater than 0.2, the Project Manager must report the reason for the exception and a detailed corrective plan.

Table 12: Cost RAG Status for Cost Performance

Performance Measure	Amber	Red
Schedule Performance Index (SPI)	Between 0.9 and 0.8 or Between 1.1 and 1.2	Less Than 0.8 or Greater than 1.2
Cost Performance Index (CPI)	Between 0.9 and 0.8 or Between 1.1 and 1.2	Less Than 0.8 or Greater than 1.2

Table 13: Earned Value metrics for the project cost

Tool	Definition	Calculation	Interpretation
Schedule Variance (SV)	Schedule Variance is a measurement of the schedule performance for a project.	It's calculated by taking the Earned Value (EV) and subtracting the Planned Value (PV).	1) If SV is zero, then the project is perfectly on schedule. 2) If SV is greater than zero, the project is earning more value than planned thus it is ahead of schedule. 3) If SV is less than zero, the project is earning less value than planned, thus it is behind schedule.
Cost Variance (CV)	Cost Variance is a measurement of the budget performance for a project.	CV is calculated by subtracting Actual Costs (AC) from Earned Value (EV).	1) If CV is zero, then the project is perfectly on budget. 2) If CV is greater than zero, the project is earning more value than planned thus it is under budget. 3) If CV is less than zero, the project is earning less value than planned thus it is over budget.

Tool	Definition	Calculation	Interpretation
Schedule Performance Index (SPI)	Schedule Performance Index measures the progress achieved against that which was planned.	SPI is calculated as EV/PV.	1) If EV is equal to PV the value of the SPI is 1. 2) If EV is less than the PV then the value is less than 1, which means the project is behind schedule. 3) If EV is greater than the PV the value of the SPI is greater than one, which means the project is ahead of schedule.
Cost Performance Index (CPI)	Cost Performance Index measures the value of the work completed compared to the actual cost of the work completed.	CPI is calculated as EV/AC.	1) If CPI is equal to 1 the project is perfectly on budget. 2) If the CPI is greater than 1 the project is under budget, if it's less than 1 the project is over budget.

4.3.4 Reporting Format

In the Project Status Report, there will be a section specific for cost management, “Cost Management”. This section will contain the Earned Value Metrics identified in section 0. When applicable, and necessary, the report may include any corrective actions which are planned, as detailed in 4.3.5 below.

4.3.5 Cost Variance Response Process

The Control Thresholds for this project is a CPI or SPI of less than 0.8 or greater than 1.2. If the project reaches one of these Control Thresholds a Cost Variance Corrective Action Plan is required. This Cost Variance Corrective Action Plan will detail the actions necessary to bring the project back within budget and how the effectiveness of the actions in the plan will be measured.

4.3.6 Cost Change Control Process

Any changes to the cost will need to follow a formal change request process. The change will be properly evaluated against the project triple constraints. Once the Project Manager has accepted a change request, it will be submitted the change request to the Change Control Board and Project Sponsor for acceptance, as they are the only ones with authority to approve.

4.3.7 Project Budget

The budget for this project is detailed below. Costs for this project are presented summarized by each project phase in Table 14. Table 15 provides the individual cost estimates for each of the activities of the schedule.

Table 14: Project Budget

Item	Total
Initiation	BZ$ 730.00
Construction	BZ$ 92,270.00
Post-Construction	BZ$ 7,000.00
Total Project Cost	**BZ$ 100,000.00**
Contingency Reserve (10%)	BZ$ 10,000.00

Table 15: Project Cost Breakdown

ID	WBS Code	Element Name	Cost
2	**1**	**Initiation**	**$ 730.00**
3	1.1	Requirement collection	$ -
4	1.2	Materials and Methods Research	$ -
5	1.3	Perform Cost Analysis	$ 730.00
6	**2**	**Pre-construction**	**$ -**
7	2.1	Architectural Design	$ -
8	2.2	Permitting	$ -
9	**3**	**Construction**	**$ 92,270.00**
10	3.1	Site Work	$ 570.00
11	3.2	Plumbing	$ 2,000.00
12	3.3	Masonry Phase	$ 70,000.00
13	3.4	Framing (roof)	$ 10,000.00
14	3.5	Electrical	$ 4,000.00
15	3.6	HVAC	$ 3,000.00
16	3.7	Painting	$ 2,700.00
17	**4**	**Post-Construction**	**$ 7,000.00**
18	4.1	Furnishings	$ 5,000.00
19	4.2	Landscaping & Exterior Aspects	$ 2,000.00
20	**5**	**Closure**	**$ -**

4.4 Quality Management Plan

4.4.1 Introduction

The Quality Management Plan is an integral part of any project management plan. Its primary purpose is to describe how quality will be managed throughout the lifecycle of the project. Furthermore, it includes the processes and procedures for ensuring quality planning, assurance, and control are all conducted. All stakeholders must become familiar with how quality will be planned, assured, and controlled.

This Quality Management Plan for the Hernandez's Family home addition project will establish the activities, processes, and procedures for ensuring a quality product upon the conclusion of the project. The overall purpose of this plan is to

- Ensure quality is planned
- Define how quality will be managed
- Define quality assurance activities
- Define quality control activities
- Define acceptable quality standards

4.4.2 Approach

Quality must always be planned into a project to prevent unnecessary rework, waste, cost, and time; the Hernandez's Family home addition project is no exception. Quality is to be considered from both a product and process perspective. This project will meet its quality objectives by utilizing an integrated quality approach to define quality standards, measure quality, and continuously improve quality.

Process quality for this project will focus on the processes by which the project deliverable will be manufactured. Establishing process quality standards will ensure that all activities conform to industry and local standards, which will result in the successful delivery of the product. The Project Manager will define and document all organizational and project-specific quality standards for both product and processes.

All quality documentation will become part of the Hernandez's Family home addition project.

Metrics will be established and used to measure quality throughout the project life cycle for the product and processes. The Project Manager will be responsible for working with the project team to define these metrics, conduct measurements, and analyze results. These product and process measurements will be used as one criterion in determining the success of the project and must be reviewed by the project sponsor. Metrics will include:

- Building Design
- Schedule
- Resources
- Cost
- Process performance (Fabrication)
- Product performance (Attenuation, Tensile strength, Compression strength
- Customer Satisfaction

Quality improvements can be identified by any member of the project team. Each recommendation will be reviewed to determine the cost versus benefit of implementing the improvement, and how the improvement will affect the product or processes. If an improvement is implemented, the Project Manager will update all project documentation to include the improvement.

4.4.3 Quality Requirements/ Standards

Below are the quality standards and requirements for both the product and processes.

4.4.4 Product Quality

The product quality standards and requirements will be determined by the Project Manager. These standards will primarily be based on industry and local standards. There may be product-specific quality standards identified that are not currently part

of the documented organizational standards. In this case, the project manager will review these newly identified standards and will incorporate them into organizational documentation if approved, those changes will need to follow the formal change request process.

Where necessary, the Project Sponsor may request chemical tests to verify and test the concrete PH.

4.4.5 Process Quality

The process quality standards and requirements will be determined by the Project Manager. Many of these standards will be based on existing process standards.

4.4.6 Quality Assurance

The quality assurance of the Hernandez's Family home addition project focuses on the processes used in the construction of the building. To ensure quality, an iterative quality process will be used throughout the project life-cycle. This iterative process includes measuring process metrics, analyzing process data, and continuously improving the processes.

The Project Manager and the project team will perform assessments at planned intervals throughout the project to ensure all processes are being correctly implemented and executed. Table 16 below provides the key quality assurance metrics for this Project, and subsequent detailed in sections that follow.

Table 16: Quality Assurance Metrics

Process Action	Acceptable Process Standards	Process Phase	Assessment Interval
Steel strength	Tensile and yield	Onsite delivery	Per floor load
Concrete slump test	Required psi strength	Slump cone	Batch of concrete
Compression testing	4000 psi compressive strength	Steel cylinder	Factory tested

The site manager will provide day-to-day quality management and conduct process audits on a weekly basis, monitor process performance metrics, and assure all processes comply with the project and organizational standards. If discrepancies are found, the quality manager will meet with the project manager and review the identified discrepancies.

The project manager will schedule regular updates on the occuring project, management, and document reviews. In these reviews, an agenda item will include a review of project processes, any discrepancies and/or audit findings from the quality manager, and a discussion on process improvement initiatives. Quality assurance reviews, findings, and assessments should always result in some form of process improvement and, as a result, product improvement. All process improvement efforts must be documented, implemented, and communicated to all stakeholders as changes are made.

4.4.6.1 Steel Strength

The properties of structural steel result from both its chemical composition and its method of manufacture, including processing during fabrication.

Tensile strength is the resistance of steel to breaking under tensile tension. It's used to specify the point when steel goes from elastic (temporary) to plastic (permanent)

deformation. Usually, it's measured in units of force per cross-sectional area. Once a piece of steel is pulled past its tensile stress point, it will split apart. In essence, tensile strength is measured by the maximum stress that the steel can withstand while being stretched or pulled before breaking.

Yield strength is the maximum stress that can be applied before it begins to change shape permanently. This approximates the elastic limit of the steel. If stress is added to the metal but does not reach the yield point, it will return to its original shape after the stress is removed. When the stresses exceed the yield point, the steel will not be able to bounce back. Yield strength represents the upper limit of the load that can be safely applied to the metal, which makes it a very important number to know when designing components.

4.4.6.2 Concrete slump test

The concrete slump test measures the consistency of fresh concrete before it sets. It is performed to check the workability of freshly made concrete, and therefore the ease with which concrete flows. It can also be used as an indicator of an improperly mixed batch; it is used to ensure uniformity for different loads of concrete under field conditions. The popularity of this test is due to the simplicity of the apparatus used and the simplified procedure.

4.4.6.3 Compression testing

Compression testing is one of the most fundamental types of mechanical testing, alongside tensile and flexion tests. Compression tests are used to determine a material's behavior under applied crushing loads and are typically conducted by applying compressive pressure to a test specimen (usually of either a cuboid or cylindrical geometry) using platens or specialized fixtures on a universal testing machine.

4.4.7 Quality Control

The quality control for the Hernandez family's home addition project focuses primarily on the design and construction of the building. The quality performance standards for the building is in accordance with the industry and local construction standards. Additionally, all physical measurements will be conducted to ensure compliance with established quality standards.

The project team will perform all physical measurements on-site and will ensure that all physical and performance standards are met. Most importantly, it is imperative to the success of the project that all the established physical and performance standards are met.

4.4.8 Quality Control Measurements

The Hernandez family's home addition project building deliverables and processes must be measured and fall within the established standards and tolerances. The table below logs, Table 17 and Table 18, will be used by the project team in conducting these measurements and will be maintained for use as supporting documentation for the project's acceptance.

4.4.9 Quality Assurance Log

Table 17: Quality Assurance Log

Process Inspection	Date	Process Measured	Required Value	Actual Measured	Acceptable? (Y/N)	Recommendation	Date Resolved

4.4.10 Quality Control Log

Table 18: Quality Control Log

Deliverable	Date	Item Measured	Required Value	Actual Measured	Acceptable? (Y/N)	Recommendation	Date Resolved

4.5 Resource Management Plan

4.5.1 Introduction

A Resources Management Plan is a fundamental tool that aids in the management of a project's human resource activities throughout the project until its closure. It typically includes roles and responsibilities of team members throughout the project, project organization charts, how resources will be acquired, and the timeline for resources and skillsets among others.

Overall, the purpose of the resources management plan is to achieve project success by ensuring the appropriate human resources are acquired with the necessary skills and if any gaps in skills are identified, they are trained properly, team building strategies are clearly defined, and team activities are effectively managed.

4.5.2 Roles and Responsibilities

The roles and responsibilities of team members and stakeholders must be clearly defined in any project. Depending on the organizational structure, project team members may represent many different groups/ departments and act in the interest of different functional managers. Additionally, team members may have varying degrees of authority and responsibility.

The roles and responsibilities definition is essential to project success. All team members must clearly understand their roles and responsibilities to successfully perform their portion of the project. For this project, Table 19 outlines the team roles and responsibilities that have been established.

Table 19: Resource Management Roles and Responsibilities

Role	Authority	Responsibility	Competency/ Skills
Project Manager	• Full authority over all project resources and project direction. The only role that can override the project manager's role is the project sponsor's.	• Measure and verify project scope • Facilitate scope change requests • Facilitate impact assessments of scope change requests • Organize and facilitate scheduled change control meetings • Communicate outcomes of scope change requests • Update project documents upon approval of all scope changes	• Leadership/ management • Effective communication • Budgeting • Scheduling
Team Lead	• Full authority over their specific team (sub/ functional team)	• Measure and verify project scope • Validate scope change requests • Participate in impact assessments of scope change requests	• Leadership/ management • Effective communication • Budgeting Scheduling

Role	Authority	Responsibility	Competency/ Skills
		• Communicate outcomes of scope change requests to the team • Facilitate team level change review process	
Team Member	• None	• Participate in defining change resolutions • Evaluate the need for scope changes and communicate them to the project manager as necessary	• Dependent on their function, for example, mason, electrical, plumbers, etc.

4.5.3 Project Organizational Charts

The following RACI Chart, Table 20, shows the relationship between project tasks and team members where (R) represents who is responsible for completing the work, (A) accountable for ensuring task completion/sign off, (C) consulted before any decisions are made, and (I) informed of when an action/decision has been made. As per protocol, any proposed changes to project responsibilities must be reviewed and approved by the project manager. Changes will be proposed following the project's change control process as per the standard procedure.

Table 20: RACI

WBS Code	Activity	Project Manager	Team Lead	Team Member
1.1	Requirement collection	AR		
1.2	Materials and Methods Research	AR		
1.3	Perform Cost Analysis	AR		
2.1	Architectural Design	AR		
2.2	Permitting	AR		
3.1	Site Work	AR		
3.2	Plumbing	A	I	R
3.3	Masonry Phase	A	I	R
3.4	Framing (roof)	A	I	R
3.5	Electrical	A	I	R
3.6	HVAC	A	I	R
3.7	Painting	A	I	R
4.1	Furnishings	A	I	R
4.2	Landscaping & Exterior Aspects	A	I	R
5	Closure	A R		

4.5.4 Staffing Management

4.5.4.1 Staff Acquisition

For this project, staff will consist entirely of internal resources. There will be no outsourcing/contracting performed within the scope of this project. The project manager will negotiate with team leads to identify and assign resources following the project organizational structure. All resources must be approved by the appropriate team leader before they may begin any project work.

4.5.4.2 Training

Due to the nature of this project, there will be no training, each person who is hired is expected to already know the function for which they are hired. For example, electricians are expected to already be masters of the trade, and the same applies to plumbers, carpenters, and masons.

4.5.4.3 Performance Reviews

The project manager will review each team member's assigned work activities at the onset of the project and communicate all expectations of work to be performed. The project manager will then evaluate each team member throughout the project to evaluate their performance and how effectively they are completing their assigned work. Furthermore, team leaders will also perform informal performance reviews on each team member as they perform their duties.

4.5.4.4 Recognition and Rewards

Although the scope of this project does not allow for ample time to provide cross-training or potential for monetary rewards there is one planned recognition and reward for project team members. Upon the successful completion of the building, a small party will be held to celebrate the success and official key handing over to the Hernandez family.

4.5.5 Material Management

4.5.5.1 Material Acquisition

All materials and third-party services will be acquired following the protocol established in the project procurement plan, from the identified providers under the established conditions.

4.5.5.2 Materials Needed

This construction is concrete, therefore, at a high level, the materials needed will be Cement Blocks, Sand, Aggregates, Stone and Rock, Cement, Metal, among others.

4.6 Communication Management Plan

4.6.1 Introduction

The purpose of the Communications Management Plan is to define the communication requirements for the project and how the information will be distributed. Therefore, this plan sets the communications framework for this project. It will serve as a guide for communications throughout the life of the project and will be updated as communication needs change.

In summary, this plan identifies and defines the roles of persons involved in the project. It also includes a communications matrix that maps the communication requirements of the project. An in-depth guide for conducting meetings details, both the communications rules and how the meetings will be conducted, ensuring successful meetings. A project team directory is also included to provide contact information for all stakeholders directly involved in the project.

4.6.2 Approach

The project manager will take a proactive role in ensuring effective communications on this project. The communications requirements are documented in the Communications Matrix in Section 4.6.8 presented in this document. The Communications Matrix will be used as the guide for what information to communicate, who is to do the communicating, when to communicate it, and to whom to communicate.

4.6.3 Communications Management Constraints

All projects are subject to limitations and constraints as they must be within the scope and adhere to the budget, scheduling, and resource requirements. Project planning and documentation are no exception to this rule. For this project, all communication activities will occur within the project's approved budget, schedule, and resource allocations. The project manager is responsible for ensuring that communication activities are performed by the project team and without external resources which will result in exceeding the authorized budget.

Communication activities will occur under the frequencies detailed in the Communication Matrix to ensure the project adheres to schedule constraints. Any deviation of these timelines may result in excessive costs or schedule delays and must be approved by the project sponsor.

4.6.4 Stakeholder Communication Requirements

As part of identifying all project stakeholders, the project manager will communicate with each stakeholder to determine their preferred frequency and method of communication. This feedback will be maintained by the project manager in the project's Stakeholders' Register. In addition to identifying communication preferences, stakeholder communication requirements must identify the project's communication channels and ensure that stakeholders have access to them. If the project information is communicated via secured means or through internal company resources, all stakeholders, internal and external, must have the necessary access to receive project communications.

4.6.5 Roles and Responsibilities

Table 21 below describes the different roles and responsibilities for each function within this project.

Table 21: Communication Roles and Responsibilities

Role	Responsibility/ Communication
Project Sponsor	The project sponsor has authorized the project by signing the project charter. This person is responsible for the funding of the project and is ultimately responsible for its success. Communications should be presented in summary format unless the project sponsor requests more detailed communications.
Program Manager	The program manager oversees the project at the portfolio level and owns most of the resources assigned to the project. She is

Role	Responsibility/ Communication
	responsible for overall program costs and profitability as such they require more detailed communications than the Project Sponsor.
Key Stakeholders	These are the stakeholders who we need to communicate with and are not included in the other roles defined in this section.
Team Lead	The team lead requires close communications with the project manager and the project team.
Team Members	The project team is comprised of all persons who have a role carrying out work on the project. The project team needs to have a clear understanding of the work to be completed and the framework in which the project is to be executed. For the most part, they require a detailed level of communication which is achieved through day-to-day interactions with the project manager and other team members.

4.6.6 Project Team Directory

Table 22 presents contact information for all persons identified in this communications management plan. The email addresses and phone numbers in this table will be used to communicate with these people.

Table 22: Project Team Directory

Role	Name	Email	Phone
Project Sponsor	Mr. Hernandez	joseedesk@gmail.com	+(501) 600 -6780
Program Manager	Ms. Hernandez	kellyedesk@gmail.com	+(501) 600 -6811
Team Leads			

4.6.7 Communication Methods and Technologies

The project team will determine the communication methods and technologies based on several factors which include stakeholder communication requirements, available technologies (internal and external), and organizational policies and standards.

4.6.8 Communications Matrix

Table 23 identifies the communications requirements for this project.

Table 23: Communications Matrix

Communication Type	Objective of Communication	Medium	Frequency	Audience	Owner	Deliverable	Format
Kickoff Meeting	Introduce the project team and the project. Review project objectives and management approach.	Face to Face	Once	Project Sponsor Project Team Stakeholders	Project Manager	Agenda Meeting Minutes	Soft copy
Project Team Meetings	Review the status of the project with the team.	Face to Face Conference Call	Weekly	Project Team	Project Manager	Agenda Meeting Minutes	Soft copy

Communication Type	Objective of Communication	Medium	Frequency	Audience	Owner	Deliverable	Format
						Project Schedule	
Technical Design Meetings	Discuss and develop technical design solutions for the project.	Face to Face	As Needed	Project Technical Staff	Team Lead	Agenda Meeting Minutes	Soft copy
Monthly Project Status Meetings	Report on the status of the project to management.	Face to Face Conference Call	Monthly	PMO	Project Manager	Slide Updates Project Schedule	Soft copy
Project Status Reports	Report the status of the project including activities, progress, costs, and issues.	Email	Monthly	Project Sponsor Project Team	Project Manager	Project Status Report Project Schedule	Soft copy

4.6.9 Meeting Guidelines

4.6.9.1 Meeting Agenda

Meeting agenda will be distributed 5 business days in advance of the meeting. The agenda should identify the presenter for each topic along with a time limit for that topic. The first item in the agenda should be a review of action items from the previous meeting.

4.6.9.2 Meeting Minutes

Meeting minutes will be distributed within 2 business days following the meeting. Meeting minutes will include the status of all items from the agenda along with new action items and the Parking Lot list.

4.6.9.3 Action Items

Action Items are recorded in both the meeting agenda and minutes. Action items will include both the action item along with the owner of the action item. Meetings will start with a review of the status of all action items from previous meetings and end with a review of all new action items resulting from the meeting. The review of the new action items will include identifying the owner for each action item.

4.6.9.4 Note Taker

The note taker is responsible for documenting the status of all meeting items, maintaining a Parking Lot item list, and taking notes of anything else of importance during the meeting.

4.6.10 Communication Escalation Process

Efficient and timely communication is the key to a successful project completion. As such, any disputes, conflicts, or discrepancies regarding project communications must be resolved in a way that is conducive to maintaining the project schedule, ensuring the correct communications are distributed, and preventing any ongoing difficulties. To ensure projects, stay on schedule and issues are resolved, we will a standard escalation model to provide a framework for escalating communication

issues. Table 24 below defines the priority levels, decision authorities, and timeframes for resolution.

Table 24: Communication Escalation

Priority	Definition	Decision Authority	Timeframe for Resolution
Priority 1	The major impact to project or business operations. If not resolved quickly there will be a significant adverse impact on revenue and/or schedule.	Project Sponsor Project Manager	Within 4 hours
Priority 2	Medium impact to project or business operations which may result in some adverse impact to revenue and/or schedule.	Project Sponsor	Within one business day
Priority 3	A slight impact which may cause some minor scheduling difficulties with the project but no impact on business operations or revenue.	Project Manager	Within two business days
Priority 4	Insignificant impact to project but there may be a better solution.	Project Manager	Work continues and any recommendations are submitted via the project change control process

4.7 Risk Management Plan

4.7.1 Introduction

The Risk Management Plan briefly describes the purpose, terminology, and process of risk management for this project. In essence, it provides a general description of why risk management is essential to effectively managing a project.

As we begin a new project, we step/ start operating in an area of uncertainty that comes along with developing new and unique products or services. By doing so, these organizations take chances which results in risk playing a significant part in any project. Thus, the purpose of the risk management plan is to establish the framework in which the project team will identify risks and develop strategies to mitigate or avoid those risks.

4.7.2 Approach

The approach we have taken to manage risks for this project included a methodical process by which the project team identified, scored, and ranked the various risks. The most likely and highest impact risks were added to the project schedule to ensure that the assigned risk managers take the necessary steps to implement the mitigation response at the appropriate time during the schedule.

Risk managers will provide status updates on their assigned risks in the bi-weekly project team meetings, but only when the meetings include their risk's planned timeframe. Upon the completion of the project, during the closing process, the project manager will analyze each risk as well as the risk management process. Based on this analysis, the project manager will identify any improvements that can be made to the risk management process for future projects.

4.7.3 Top Three Risks

For the Hernandez family's home addition project, the top three high probability and high impact risks identified for this project are detailed below.

4.7.3.1 Delay Deliveries

There aren’t many hardware stores in the area, and some of the material will need to be obtained from other districts, this can potentially cause a logic issue for obtaining the materials in time. The project manager will mitigate this risk by ensuring to order the necessary materials ahead of scheduled time to accommodate potential delays in deliveries.

4.7.3.2 Weather Conditions

Many of the work to be conducted for this project is dependent on weather conditions. If the weather is not adequate, construction work will cause a significant delay as certain work cannot be done unless a proper foundation is in place, and concrete solidarity is affected by weather conditions. The project manager will mitigate this risk by keep track of weather conditions and ensure groundworks are done in time as to not delay additional work.

4.7.3.3 Not c

As previously stated, each staff that is hired is expected to be a master of his trade since we do not count with the necessary resources and time to train anyone. The lock of qualified workers for specific tasks such as electrical and plumbing can be causes of delays in the project's overall progress. The project manager will mitigate this risk by creating an alternate work schedule to compensate for the staffing shortage until additional staff hiring is done. The project manager will also keep a retainer for some of the most necessary skill workers from past projects.

4.7.4 Risk Identification

For this project, risk identification was conducted in the initial project risk assessment meeting. The method used by the project team to identify risks was the Crawford Slip method. The project manager chaired the risk assessment meeting and distributed notepads to each member of the team and allowed 10 minutes for all team members to record as many risks as possible.

4.7.4.1 Expert Interview

Two expert interviews were held for this project. The interviews revealed several risks which were then mitigated by making changes to the project plan. The remaining risks are included in the Risk Register.

4.7.4.2 Risk Assessment Meeting

A risk assessment meeting was held with key team members and stakeholders. The risks identified during this meeting were added to the project plan and Risk Register.

4.7.4.3 Historical Review of Similar Projects

The project team reviewed the history of similar projects to determine the most common risks and the strategies used to mitigate those risks.

4.7.5 Risk Qualification and Prioritization

To determine the severity of the risks identified by the team, a probability and impact factor was assigned to each risk. This process allowed the project manager to prioritize risks based upon the effect they may have on the project. The project manager utilized a probability-impact matrix to facilitate the team in moving each risk to the appropriate place on the chart.

Once the risks were assigned a probability and impact, and placed in the appropriate position on the chart, the recorder captured the finished product. It was only then that the project manager moved the process on to the next step: risk mitigation/avoidance planning. To summarize, risk is defined in two dimensions: the uncertainty dimension (assessed as the probability of occurrence), and the effect dimension (assessed as the impact on objectives). Proper assessment of risks requires an appropriate assessment of both probability and impact (Hillson, D. 2005). The probability and impact scales for the project along with the probability and impact matrix for this project are defined below.

4.7.5.1 Probability Scale

Table 25: Probability Scale

Likelihood	Probability Scale Description
1	A risk event that is not expected to occur during the project life cycle.
2	A risk event is expected to occur once during the project life cycle.
3	A risk event is expected to occur at least two times during each major phase of the project life cycle.

4.7.5.2 Probability Impact

Table 26: Probability Impact

Likelihood	Probability Impact Description
1	The consequence of a risk event, which does not result in a change in the project budget.
2	The consequence of a risk event, which requires an increase in the approved project budget between 1% - 2%.
3	The consequence of a risk event, which requires an increase in the approved project budget between 3% - 5%.

4.7.5.3 Probability and Impact Matrix

For the purposes of this project, the probability and impact matrix was used to conduct a qualitative assessment of the risks. The matrix is a two-dimensional grid that maps the likelihood of the risks occurrence (P) and their effect on the project objective (I). The risk score, often referred to as risk level or the degree of risk, is calculated by multiplying the two axes of the matrix (Thorhallsdóttir, K. 2018). The colors represent the urgency of risk response planning and determine reporting levels.

Probability	P x I		
1	1	2	3
2	2	4	6
3	3	6	9
Impact	1	2	3

P x I Key	
Green	Scores 1 -2
Yellow	Scores 3 - 5
Red	Scores 6 - 9

Figure 11: P x I matrix

4.7.6 Risk Monitoring

One of the most effective ways to monitor project risks is to add those risks with the highest scores to the project schedule with an assigned risk manager. This allows the project manager to see when these risks need to be monitored more closely and when to expect the risk manager to provide status updates at the bi-weekly project team meetings. Furthermore, we need to ensure risk monitoring is continuous throughout the life of the project and includes the identification of trigger conditions for each risk and thorough documentation of the process.

For this project, the most likely and greatest impact risks have been added to the project plan to ensure that they are monitored during the time the project is exposed to each risk. As risks approach on the project schedule, the project manager will ensure that the appointed risk manager provides the necessary status updates which include the risk status, identification of trigger conditions, and the documentation of the results of the risk response.

4.7.7 Risk Mitigation and Avoidance

Once risks have been qualified, the team must determine how to address those risks which have the greatest potential probability and impact on the project. For this project, the project manager has led the project team in developing responses to each identified risk. As more risks are identified, they will be qualified, and the team will develop avoidance and mitigation strategies. These risks will also be added to

the risk register and the project plan to ensure they are monitored at the appropriate times and are responded to accordingly.

The risks for this project will be managed and controlled within the constraints of time, scope, and cost. All identified risks will be evaluated to determine how they affect this triple constraint. The project manager, with the assistance of the project team, will determine the best way to respond to each risk to ensure compliance with these constraints.

In extreme cases, it may be necessary to allow flexibility to one of the project's constraints. Only one of the constraints for this project allows for flexibility as a last resort. If necessary, funding may be added to the project to allow for more resources to meet the time (schedule) and scope constraints. Time and scope are firm constraints and allow for no flexibility.

4.7.8 Risk Register

Every project must maintain a risk register to track risks and associated mitigation strategies. The Risk Register (**Error! Reference source not found.**) for this project is a log of all identified risks, their probability and impact on the project, and the mitigation strategy.

Table 27: Risk Register

ID	Risk	Causes	Consequence	Prob	Imp	Pxl	Trigger	Strategy	Cost (BZ$)	Owner
R01	Inflation	Due to the increase in demand vs supply, there can be inflation of the resources needed for this project	In having an inflation of the resources needed the cost of the project may increase or there will be a decline in purchasing power.	2	1	2	There is a demand, but low supply of resources needed for the project.	**Accept**: To be included in the contingency budget.	$2000	Procurement Officer
R02	Taxes	If the country increases its national debt, it may increase sales and contract taxes as a way to generate additional revenue for the country.	The increase in taxes will in effect increase the cost of outsourcing material and human resources for activities. This may lead to an increase in the cost of activities and the overall project.	1	2	2	National government has an extreme increase in borrowing.	**Accept**: To be included in the contingency budget.	$4000	Project Manager
R03	Regulation	The introduction of any new regulation that effects in some way the construction industry.	If the national government creates regulations that affect the construction project as those standards/ requirements were not taken into account.	1	3	3	New legislation or construction standards	**Escalate**: Take legal action have government permit the completion of the project without considered the new legislation as it was introduced after the project approval and initiation.	$10,000	Project Manager

ID	Risk	Causes	Consequence	Prob	Imp	PxI	Trigger	Strategy	Cost (BZ$)	Owner
R04	Liability	Any disputes with vendors or laborer's causes the risk of liability which may end in a court dispute.	Any disputes which may need to be settled in court will ultimately cost time and resources and even a delay in the project.	1	3	3	Disputes ending in court.	**Mitigate**: Establish clear contracts with vendors to protect us from liability.	$5,000	Project Manager
R05	Requirement Specification	If there are any additional requirements needed that might delay the project.	The change of requirements project sponsor might delay the start of the project and the overall life of the project.	1	3	3	Change Request	**Accept**: Ensure that all necessary requirements are met, and maintaining constant communication is kept to properly treat all new requirements.	US $5,000	Project Mana
R07	Quality	There is a risk of materials and services providers not meeting the quality standards needed for the project.	If there are any resources that do not meet the quality standards required for the project it may affect the overall results of the project or may require additional funds for reacquisition.	2	2	4	Resources with poor quality	**Avoid**: Ensure that procedures are in place for quality assurance.	USD $5,000	Purchasing Officer
R08	Safety and Security	Construction sites are full of dangers.	Key staff injury resulting in a huge cost and delay to	2	3	6	Construction site incident event	Avoid: Ensure that the necessary protection gear is	USD	Project Manager

ID	Risk	Causes	Consequence	Prob	Imp	PxI	Trigger	Strategy	Cost (BZ$)	Owner
		Personnel need to ensure all strategy guidelines are followed.	the project, even more if actions are taken against us.					given to all personnel and safety guidelines are followed.	$10,000	
R09	Natural Disaster	Acts of God; for example, extreme weather which leads to loss of resources and materials.	The region is prone to hurricanes and a strong storm with excess rainfall and winds which can cause damage to newly constructed walls and delay the project progress.	2	3	6	Weather reports.	Mitigation: Incorporate both structural and nonstructural mitigation measures in new development	USD $12,000	Project Manager
R10	Technical Capacity	A risk does exist of the resignation of key staff members.	If no succession plan is adopted, this will cause a delay in achieving key milestones due to the learning curve of new personnel.	2	2	4	The number of staff departures.	**Mitigate**: Ensure that a reliable succession plan is developed, and a good reward system is in place for employees.	USD $5,000	Project Manager
R11	Communication	Given a large number of stakeholders, there may exist a lack of communication to some parties.	Lack of communication can lead to confusion, fiction, lack of clarity, and mistrust by project stakeholders. The frequency and mode of communication	2	1	2	The number of miscommunications.	**Accept**: Ensure constant and scheduled communication through meeting, forums, etc	USD $2,000	Project Manager

ID	Risk	Causes	Consequence	Prob	Imp	PxI	Trigger	Strategy	Cost (BZ$)	Owner
			may be deficient. This may also cause conflict between stakeholder groups.							
R12	Legal	Legal action by any of the stakeholders can cause a delay in the project.	Issues arise with regulatory requirements and suppliers of project work that may need mediation.	1	3	3	Increasing requirements / conflicts.	**Mitigate**: Establish clear contracts with vendors to protect us from liability.	USD $5,000	Project Manager
R13	Information	Lack of proper data gathering as the project progresses.	Without proper tools and techniques for data gathering, the project can easily go off track leading to increased risks of failure.	2	3	6	Infrequent database updates.	Mitigation: Development of standard operating procedures and schedule audits.	USD $5000	Project Manager
R14	Financial	Lack of utilizing proper financial management tools and techniques.	Poor financial management can lead to increased expenditure over budget. Proper accounting methods need to be utilized.	2	3	6	Cost Performance Index	**Mitigation**: Perform audit regularly	USD $8000	Project Manager

4.8 Procurement Management Plan

4.8.1 Introduction

The overall purpose of the Procurement Management Plan is to define the procurement requirements for the project and how it will be managed from developing procurement documentation through contract closure. In essence, it sets the procurement framework for this project. In summary, it will serve as a guide for managing procurement throughout the life of the project and will be updated as acquisition needs change.

Overall, this plan identifies and defines the items to be procured, the types of contracts to be used in support of this project, the contract approval process, and decision criteria.

4.8.2 Approach

The project manager will provide oversight and management for all procurement activities under this project. The project manager will work with the project team to identify all items to be procured for the successful completion of the project. The contracts and purchasing department will review the procurement items, determine whether it is advantageous to make or buy the items (where applicable) and begin the vendor selection, purchasing, and contracting process. Furthermore, the project manager must ensure that the plan facilitates the successful completion of the project and does not become an overwhelming task in itself to manage.

4.8.3 Definitions

The purpose of the procurement definition is to describe, in specific terms, what items will be procured and under what conditions. For the purpose of this project, the following procurement items and/or services have been determined to be essential for project completion and success.

For this project, only the project manager, and assistant manager are authorized to approve purchases for the project team.

Table 28: Fundamental Items

Item/ Service	Justification
Reinforced Steel	Used to reinforce all concrete components
Concrete	This is a mixture resulting from sand and aggregate bound by cement that has chemically reacted with water.
Plywood	It will be used to produce formwork and in some instances as a substrate
Timber	It will be used to produce formwork and to reinforce some aspects of the buildings
Screws and Nails	Fasteners
Windows and Doors	Used as a transparent barrier to eliminate water, etc.
Ceilings	Used to separate floor levels
Mansard Roof System	Mechanically fastened metal C-channel used to profile the roof system
Gutter System	The metal system used to divert water
Concrete Floor System	The structural component used to uphold the dead weight and live weight of a floor system
Tiles	Flooring
Paint	Wall coating
Electrical components	House electricity

4.8.4 Contract Types

There are many different types of contracts like firm-fixed-price, time and materials (T&M), cost-reimbursable, and others. Different procurement items may also require different contract types.

For this project, all items and services to be procured for this project will be solicited under firm-fixed-price contracts. The project team will work with the project manager to define the item types, quantities, services, and required delivery dates. The project manager or assistant project manager will then solicit bids from various vendors in order to procure the items within the required time frame and at a reasonable cost under the firm fixed price contract. This contract will be awarded one base year only.

4.8.5 Risks

All procurement activities carry some potential for risk which must be managed to ensure project success. While all risks will be managed in accordance with the project's risk management plan, there are specific risks that pertain specifically to procurement that must be considered; they are identified in Table 29. Note that these risks are not all-inclusive and the standard risk management process of identifying, documenting, analyzing, mitigating, and managing risks will be used.

Table 29: Procurement Risks

ID	Risk
PR01	Unrealistic schedule and cost expectations for vendors
PR02	Manufacturing capacity capabilities of vendors
PR03	Conflicts with current contracts and vendor relationships
PR04	Potential delays in shipping and impacts on cost and schedule
PR05	Questionable past performance for vendors
PR06	Final product does not meet required specifications

4.8.6 Risk Management

Project risks will be managed in accordance with the project's risk management plan. However, for risks related specifically to procurement, there must be additional consideration and involvement. This is because project procurement efforts involve external organizations and that can potentially affect current and future business relationships as well as internal supply chain and vendor management operations.

Any decisions regarding procurement actions must be approved by the project sponsor. Any issues concerning procurement actions or newly identified risks will immediately be communicated to the project's manager, as well as the project sponsor.

4.8.7 Cost Determination

For this project, we will issue a Request for Quote (RFQ) to solicit proposals from various vendors. These will describe how they will meet our requirements and the cost of doing so. Where applicable, the proposals will include vendor support for all

items from the procurement definition paragraph as well as the base and out-year costs. Vendors will outline how the work will be accomplished, who will perform the work, vendors' experience in providing these goods, customer testimonials, backgrounds, and a line-item breakdown of all costs involved. Additionally, the vendors will be required to submit work breakdown structures and work schedules to show their understanding of the work to be performed and their ability to meet the project schedule.

All necessary and relevant information must be included in each proposal as the proposals will form the foundation of our selection criteria. Incomplete proposals will be discarded and won't even be considered.

4.8.8 Standardized Procurement Documentation

The procurement management process consists of many steps as well as ongoing management of all procurement activities and contracts. In this dynamic and sensitive environment, our goal must be to simplify procurement management by all means necessary in order to facilitate the successful completion of our contracts and project. To aid in simplifying these tasks, we will use standard documentation for all steps of the procurement management process. These standard documents have been developed and revised over many years to continually improve procurement efforts. They provide adequate levels of detail which allow for easier comparison of proposals, more accurate pricing, more detailed responses, and more effective management of contracts and vendors. For this project, Table 30 summarizes the most common document templates that will be used for this project.

Table 30: Standardized Procurement Documentation

ID	Document	Description
SPD01	Request for Proposal	A business document that announces a project, describes it and solicits bids from qualified contractors to complete it.
SPD02	Internal source selection evaluation forms	A document that facilitates the comparison of different providers.
SPD03	Non-disclosure agreement	A legally binding contract that establishes a confidential relationship.

ID	Document	Description
SPD04	Letter of intent	A document declaring the preliminary commitment of one party to do business with another.
SPD05	Firm fixed-price contract	Provides for a price that is not subject to any adjustment based on the contractor's cost experience in performing the contract.
SPD06	Procurement audit form	Checklist to be used for auditing the procurement processes.
SPD07	Procurement performance evaluation form	Form/document for evaluating procurement performance.

4.8.9 Procurement Constraints

There are several constraints as outlined in Table 31 that must be taken into account as part of the project's procurement management plan. These constraints will be included in the RFP and communicated to all vendors to determine their ability to operate within these constraints.

Table 31: Procurement Constraints

ID	Area	Description
PC01	Schedule	The project schedule is not flexible and the procurement activities, contract administration, and contract fulfillment must be completed within the established project schedule.
PC02	Cost	The project budget has contingency and management reserves built-in; however, these reserves may not be applied to procurement activities. Reserves are only to be used in the event of an approved change in project scope or at management's discretion.
PC03	Scope	All procurement activities and contract awards must support the approved project scope statement. Any procurement activities or contract awards which specify work that is not in direct support of the project's scope statement will be considered out of scope and disapproved.
PC04	Resources	All procurement activities must be performed and managed with current personnel. No additional personnel will be hired or re-allocated to support the procurement activities on this project.
PC05	Technology	Parts specifications have already been determined and will be included in the statement of work as part of the RFP. While proposals may include suggested alternative material or manufacturing processes, parts specifications must match those provided in the statement of work exactly.

4.8.10 Contract Approval Process

The first step in the contract approval process is to determine what items or services will require procurement from outside vendors. This will be determined by conducting a cost analysis on products or services which can be provided internally and compared with purchase prices from vendors. Once the cost analyses are completed and the list of items and services to be procured externally is finalized, the purchasing and contracts department will send out solicitations to outside vendors.

Once solicitations are complete and proposals have been received by all vendors, the approval process begins. The first step of this process is to conduct a review of all vendor proposals to determine which of them meets the criteria established by the project team. Purchases less than $10,000 only require the approval of the assistant project manager; whereas purchases greater than $10,000 must be approved by the project manager and the sponsor. For these larger purchases, the project manager and sponsor will meet to determine which contract will be accepted.

4.8.11 Decision Criteria

The criteria for the selection and award of procurement contracts under this project will be based on the decision criteria outlined by Table 32, where each criterion is given a weight for an empirical selection process. The ultimate decision will be made based on these criteria as well as available resources.

Table 32: Decision Criteria

ID	Description	Weight
DC01	Ability of the vendor to provide all items by the required delivery date	15%
DC02	Quality	20%
DC03	Cost	25%
DC04	Expected delivery date	10%
DC05	Comparison of out-sourced cost versus in-sourcing	10%
DC06	Past performance	20%

4.8.12 Vendor Management

The project manager is ultimately responsible for managing vendors. To ensure the timely delivery and high quality of products from vendors, the project manager or the assistant project manager will meet weekly with each vendor to discuss the progress for each procured item. The purpose of these meetings will be to review all documented specifications for each product. It will also serve as an opportunity to ask questions or modify contracts or requirements ahead of time to prevent delays in delivery and schedule.

4.8.13 Performance Metrics

The following metrics (Table 33) are established for vendor performance for the project's procurement activities. Each metric is rated on a 1-3 scale as indicated below, where "1" represents Unsatisfactory, "2" Acceptable, and "3" Exceptional.

Table 33: Performance Metrics

Vendor	Product Quality	On Time Delivery	Documentation Quality	Development Costs	Development Time	Cost per Unit	Transactional Efficiency
Vender 1							
Vender 2							
Vender 3							

4.9 Stakeholders Management Plan

4.9.1 Introduction

Stakeholder Management includes the processes required to identify the people, groups, and organizations that could affect or be affected by the project, to analyze stakeholder expectations and their impact on the project, and to develop appropriate strategies for their effective engagement in a manner deemed appropriate. Most importantly, the Stakeholder Management Plan helps ensure that stakeholders are effectively involved in project decisions and execution throughout the lifecycle of the project.

4.9.2 Identify Stakeholders

To develop an effective plan for managing stakeholders, we first need to be clearly identified and assessed. Stakeholders will be identified by performing a stakeholder analysis in which potential stakeholders and relevant information, such as their interests, involvement, interdependencies, influence, and potential impact on project success needs to be gathered, documented, and analyzed.

To assist with stakeholder identification and analysis, the team has created and is completing a Stakeholder Analysis Register categorized as outlined in Table 34. Here, impact is measured by High (H), Medium (M) or Low (L), and State was (U) Unaware; this group has no information about the project, (R) Resistant; aware of the project and resistant to the changes and impacts the project may bring, (N) Neutral; aware of the project and neither supportive nor resistant, (S) Supportive; aware of the project and the potential changes and impacts and is supportive, and (L) Leading; aware of the project and actively engaged to ensure the project's success.

Table 34: Stakeholder Analysis Register

Group Name	No. in Group	Description & Key attributes	Impact on Project	Impacted by Project	Current State	Desired State	Issues, Opportunities and Risks	Mitigation Strategies and Actions
Steering Committee	3	Key decision makers & Sponsor	H	H	L	L	Issue: makes decisions based on emotions.	Mitigate through signed contracts of roles and responsibilities
Subcontractors	5	Contracted professional	H	H	S	S	Risk: Inaccurate or inefficient designs, lack of concern, and unprofessional	Regular checkups by project manager
Suppliers	3	Provide materials and services	H	M	S	S	Opportunity: International products may be cheaper than local Risk: Delivery delays and faulty materials	Risk: Preordering of necessary materials
Regulatory Bodies	3	Enforce construction codes and standards	H	L	N	N	Risk: Administrative and operation duties may burden the project resources	Compliance with national and international codes

4.9.3 Plan Stakeholder Management

Plan Stakeholder Management is the process of developing appropriate management strategies to effectively engage stakeholders throughout the lifecycle of the project. This being based on the analysis of their needs, interests, and potential impact on project success. The key benefit of this process is that it provides a clear, actionable plan to interact with project stakeholders to support the project's interests.

Based upon the information gathered in the Stakeholder Analysis Register and Communication Plan, the project manager will be responsible for engaging stakeholders throughout the lifecycle of the project. The level of engagement required for each stakeholder may vary throughout the project. In summary, highly engaged key stakeholders in the early stages of the project are pivotal for project kickoff, achieving staff buy-in, and clearing obstacles. As the project progresses, the level of engagement will shift from key stakeholders to the broader project team and end-users.

4.9.4 Stakeholder Engagement

To ensure the correct level of engagement is being achieved by each stakeholder, the project manager will analyze current levels of engagement by using the PMBOK Stakeholders Engagement Assessment Matrix.

Table 35: Stakeholder Engagement

Stakeholder	Unaware	Resistant	Neutral	Supportive	Leading
Steering Committee					C D
Subcontractors				C D	
Suppliers				C D	
Regulatory Bodies			C D		
Project Managers					C D

Stakeholder Engagement Assessment Matrix. List stakeholders and place a "C" for their current level of engagement and "D" in the column of their desired level of engagement.

4.9.5 Manage Stakeholder Engagement

Stakeholder Engagement Management is the process of communicating and working with stakeholders to meet their needs and expectations and to address issues as they occur. Stakeholder Engagement Management is the process to systematically foster appropriate stakeholder engagement in project activities throughout the life of the project. The key benefit of this process is that it allows the project manager to increase support and minimize resistance from stakeholders.

To effectively manage stakeholder engagement, in this project we will utilize the communication plan and strategies identified above to communicate project-related information to key stakeholders in a proactive and timely manner. Furthermore, the project team will also be actively listening and soliciting input and feedback to make sure communications are being received and understood, and also to capture important information to help make adjustments and to respond to problem areas.

4.9.6 Monitor Stakeholder Engagement

Monitor Stakeholder Engagement is the process of monitoring overall project stakeholder relationships and adjusting strategies and plans for engaging stakeholders. Monitor Stakeholder Engagement involves collecting data, assessing the level of engagement, and using insights from the data collection to adjust strategies and tactics for engaging effectively with stakeholders.

For this project, as mentioned in the Communications Plan and the Risk Management Plan, this project will have mechanisms to receive ongoing direct feedback from key stakeholders such as email, personal communication, site meetings, status meetings, and community meetings. Furthermore, as described in the Scope Management Plan, the project will solicit broad participation in the collection and validation of requirements, which will uncover issues and concerns early on, so that they can be addressed

5 CONCLUSIONS

1. The Project Management Plan for the addition to the Hernandez's residence was created using a variety of research methods which include descriptive, analytical, quantitative, and qualitative. Through the entire process, the PMBOK® Guide was the basis for templates development and became the primary reference. If this plan is followed, all the constrains, and assumptions considered, manage, and control, the success of the project is almost guaranteed.

2. The Project Charter was the first subsidiary element of the project management plan. It contains an overview of the Hernandez's residence project, its objectives, who the stakeholders are, and most importantly how it will be carried out. This is a fundamental document for the Hernandez's as it covers the scope of what the project will achieve, as well as the people involved, milestones, budget, and possible risks. Furthermore, the Hernandez's family is to use this document to ensure project sponsors and all stakeholders are in alignment on the project.

3. To avoid Scope creep, which is considered one of the most dangerous phenomena a project can face, and other triple constraint related issues for the Hernandez's residence project, a project scope plan was developed. In this manner, we ensure the project specific goals, deliverables, features, and budgets are properly identified and managed.

4. In order to adequately identify and manage each project's activity of the Hernandez's home addition project, a project schedule plan was created. It outlines all activities, deliverables, and milestones required for this project completion, ensuring those are completed in adequate times. It is notable that the project will take approximately six months from start to completion. It is on their best interest to ensure the schedule is maintained to avoid delays and additional costs.

5. To eliminated bribe, fraud, and money laundering, and improper use of the funds, proper financial management needs to be in place for this project. Furthermore, to ensure the Hernandez's family is aware, and ensure financial obligations are met, a project cost plan was created for the Hernandez's home addition project. The total project cost was estimated to be BZ$ 100,000.00 with a contingency reserve of 10%, equivalent to BZ$ 10,000.00.

6. A project resource plan was developed to assigned resources and necessary materials. This, in collaboration with the project procurement plan will ensure the most cost-effective materials are obtained, taking into account quality and longevity of such materials .

7. To ensure proper communication between all stakeholders, and to avoid miscommunication, a project communications plan was created to clearly define the communication strategies and line of reporting authority.

8. To ensure risks are properly treated for this project, a Risk Management Project was created to ensure all risks are mitigated and contingencies are in place. The top three risks identified for this project were delay deliveries, weather conditions, and lock of qualified and skilled workers.

9. A stakeholder management plan was created to ensure the existence of a baseline exists for how team plans to manage the goals and expectations of key stakeholders during the project lifecycle,

6 RECOMMENDATIONS

1. The triple constraints of project management are scope, time, and cost; to ensure the success of the Hernandez family's home addition project, all three needs to be properly control and manage. Therefore, it is important that the project manager regularly monitor the scheduled plan, to quickly pick-up and take necessary actions if any delays are occurring. Furthermore, the project manager also needs to regularly manage the Cost Plan to ensure we are not overbudget and spending more than the expected and projected amounts. By doing this, we will ensure the project's completion within the established timelines and budget. For such tasks, it is recommended that systems get implemented to manage effectively and efficiently, control and monitor, for example, accounting software for financial management.

2. To avoid any interruptions due to noncompliance by local government bodies, it is highly recommended that the project manager ensures that all required industry standards and building codes are followed. This includes any regulation and legal responsibilities.

3. Even the smallest risk has the potential to affect the project performance; that is why it's crucial that all the risks identified in the Risk Management Plan are managed regardless of its priority. This will ensure the optimal performance of the project, and its success witting the established parameters. The project manager is ultimately responsible to ensure this is done.

4. Miscommunication can cause confusion, and delays in any project. Therefore, it is highly recommended that the project communication plan is followed to ensure success of the project.

7 BIBLIOGRAPHY

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8 APPENDICES

8.1 FGP Charter

PROJECT CHARTER Formalizes the project start and confers the project manager with the authority to assign company resources to the project activities. Benefits: it provides a clear start and well defined project boundaries.	
Date	**Project Name:**
10/05/2021	Project Management Plan For The Hernandez's Family Home Addition Project in the Capital of Belize.
Knowledge Areas / Processes	**Application Area (Sector / Activity)**
Knowledge areas: Project Integration Management, Project Scope Management, Project Schedule Management, Project Cost Management, Project Quality Management, Project Resource Management, Project Communications Management, Project Risk Management, Project Procurement Management, Project Stakeholders Management **Process groups:** Initiating, Planning, Monitoring and Controlling, and Closing.	Planning/ Construction
Start date	**Finish date**
01/05/2021	31/08/2021

Project Objectives (general and specific)

General objective:
To develop a Project Management Plan that integrates sustainable principles needed to optimize the utilization of project resources for the addition to the Hernandez's residence. This addition is needed in order to accommodate its growing family, and provide a home suitable for a growing family.

Specific objectives:

1. To develop a project scope plan to ensure that the project specific goals, deliverables, features, and budgets are properly identified and managed.
2. To prepare a project schedule plan outlining all activities, deliverables, and milestones required for this project's completion while ensuring that it meets all deadlines.
3. To create a project cost plan to properly identify the financial obligation and requirements of the project.
4. To construct a project quality plan that describes the activities, standards, tools, and processes necessary to achieve quality in the delivery of this project.
5. To develop a project resource plan for assigning resources and work packages in a manner that complies with international laws and conventions on labor.
6. To create a project communications plan to clearly define the project communication strategies and line of reporting authority.
7. To identify and mitigate possible project risk factors and developing a project risk management plan.
8. To develop a project procurement plan to form the purchase framework for all materials and services needed for the project's completion.
9. To develop a project stakeholder's plan for the proper identification and support of all project stakeholders to ensure effective stakeholder's engagement.

Project purpose or justification (merit and expected results)

The main purpose of this project is to prepare a project management plan for the construction of the second story (addition) of Hernandez's residence to accommodate their growing family. The Hernandez's household already has a bungalow home that contains the foundation for a second story. The current home contains a master bedroom, and two bathrooms, including a kitchen, living room, and dining room. However, a single bedroom is not sufficient for the growing family, and therefore, Mr. Hernandez has decided to continue the construction of the second story of the house. This is the project referring to in this document.

As a secondary, direct impact, this exercise also serves as the practical application of the different theoretical concepts learned during the Master's program. Furthermore, the general contractor/ project management team understands the importance of the planning process and the project management plan, to the successful completion of this project. Therefore, this project management plan will serve as a base for project management and execution. In summary, this project management plan will help the Hernandez's complete their building operations within a reasonable time frame and quality according to the detailed time management plan. It also seeks to identify the cost-saving that may be achieved by proper cost estimates prepared and monitored and controlled by qualified project managers.

Description of Product or Service to be generated by the Project – Project final deliverables

As a result, a Project Management Plan and supplementary documentation will be produced.

Assumptions

The following are assumed in regards to the preparation of this project management plan, and the construction project as a whole;

1. The theoretical concept learned during this master's is sufficient to develop and deliver a high-quality plan.
2. This plan can be completed within the established timeline of the MPM regulations.
3. The actual execution of the project management plan is not a requirement for program completion.
4. The necessary support and guidance will be provided by the University.

Constraints

For this project, the following constraint is applicable;

1. **Time**: The time given for the completion of this plan is determined by the university and is considered short.
2. **Scope**: The scope of the project is limited to the creation of the project management plan, and not the actual execution of the project.
3. **Cost**: The student is working with a limited budget, and the cost of supplementary materials and services may become an issue.

.

Preliminary risks

For this project, the following risks are applicable;

1. **Time**: Time for each assignment submission is short, and as a result the student may submit assignment late and that may affect the overall grade.
2. **Scope**: The scope of the project is limited to the creation of the project management plan, and not the actual execution of the project.
3. **Quality**: Due to the limited time for each assignment submission, the quality of the work may not be of the highest quality standard as if additional time would be obtained.

Budget

BZ $100,000.00; This is an estimate, once the time management plan is completed, the fully cost will be determine.

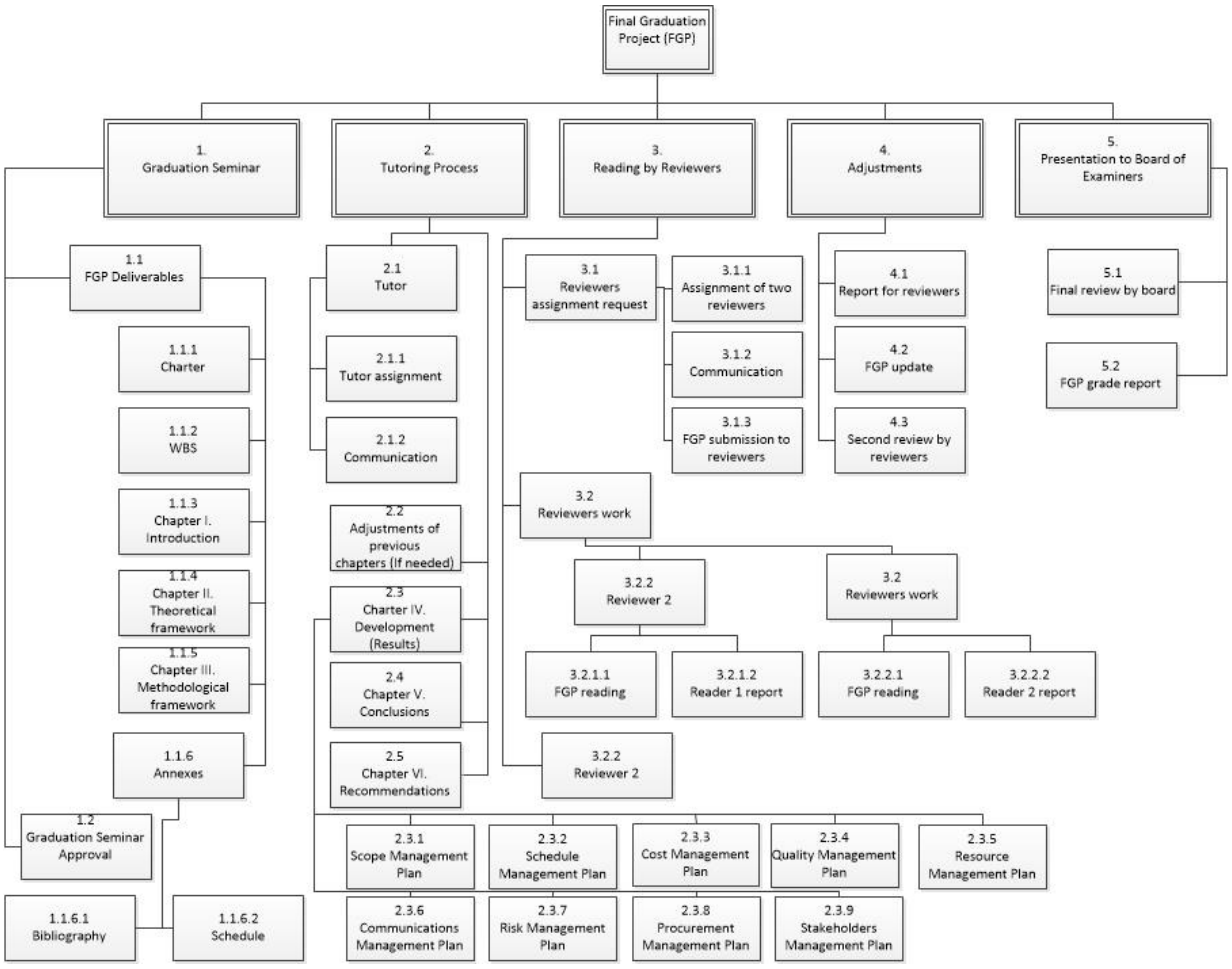
Milestones and dates

Milestone	Start date	End date
Submission of Charter	10-05-21	16-05-21
Submission of WBS	10-05-21	16-05-21
Submission of Introduction Chapter	17-05-21	23-05-21
Submission of FGP Schedule	17-05-21	23-05-21
Submission of Theoretical Framework	24-05-21	30-05-21
Submission of Methodological Framework	31-05-20	06-06-21
Submission of Executive Summary	07-06-21	13-06-21
Submission of Bibliography, Indexes	14-06-21	20-06-21
Acquisition of Signed Charter	21-06-21	29-06-21
Scope Management Plan	17-07-21	29-06-21
Schedule Management Plan	17-07-21	29-06-21
Cost Management Plan	17-07-21	29-06-21
Quality Management Plan	17-07-21	29-06-21
Resource Management Plan	17-07-21	29-06-21
Communications Management Plan	17-07-21	29-06-21
Risk Management Plan	17-07-21	29-06-21
Procurement Management Plan	17-07-21	29-06-21
Stakeholders Management Plan	17-07-21	29-06-21
Conclusion and Recommendations	30-06-21	13-07-21
Tutor Review	21-07-21	03-08-21
Final Project Submission	01-09-21	01-09-21
Completion of Final Graduation Project	07-09-21	07-09-21

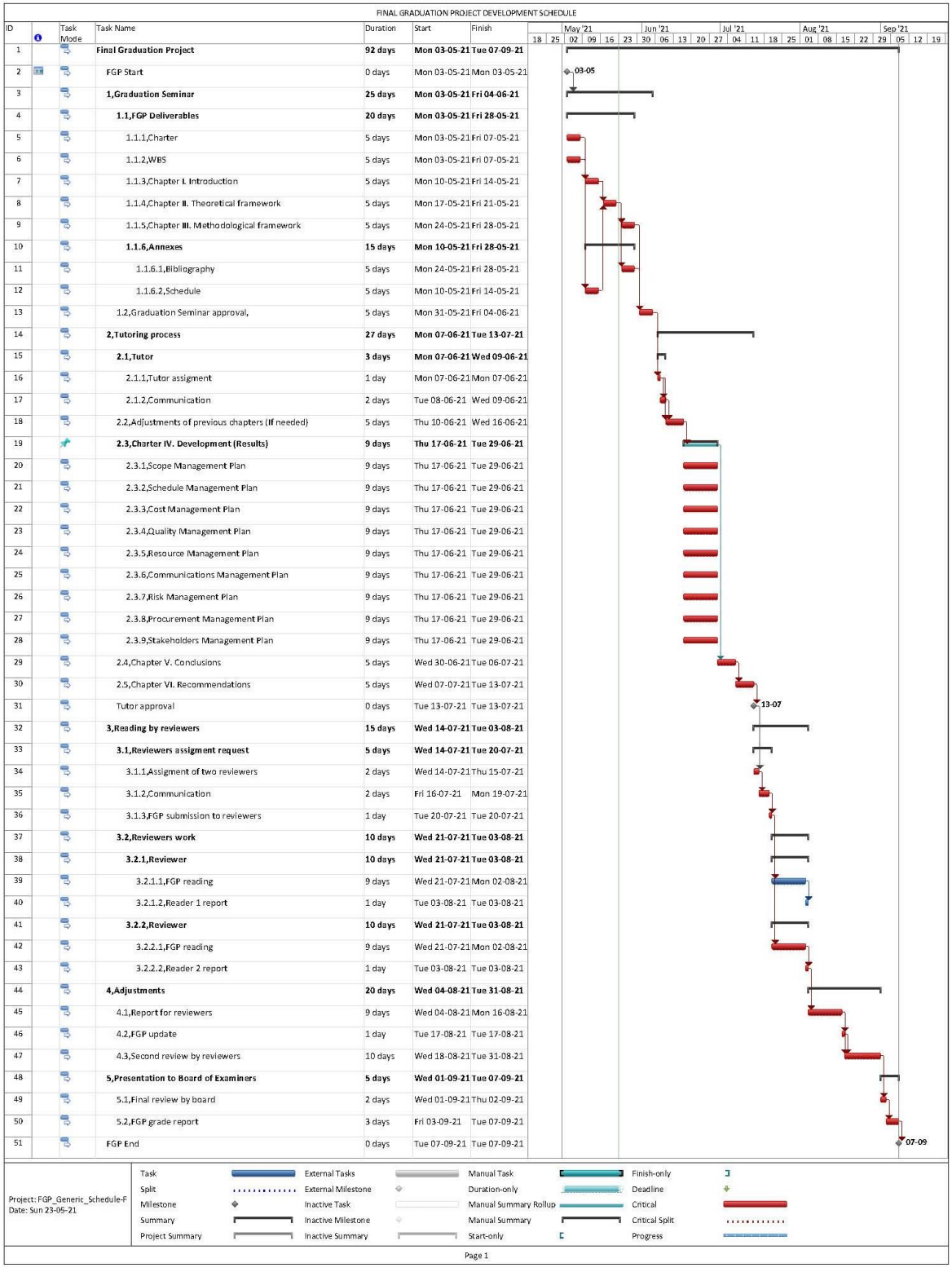
Relevant historical information
The Hernandez's family are a typical middle class Belizean family. As previously indicated, the family is increasing and therefore additionally living space is necessary for a more comfortable living. As a result of their first son, and the planning of their second child, they have decided to construct the second story of their current home. This addition will give them an additional four-bedroom and two-bedroom, including a must-needed laundry room.
Stakeholders
Direct stakeholders: Global School of Project Management, Universidad para la Cooperacion Internacional Organization of American States Ching-Ying Chou-Hernandez (Student) Tutors and Course Lecturers Reviewers Board of Examiners Hernandez' Household **Indirect stakeholders**: Belize Government

Project Manager: Ching-Ying Chou-Hernandez	**Signature:**
Authorized by:	**Signature:**

8.2 FGP WBS


Final Graduation Project (FGP)
1. Graduation Seminar
2. Tutoring Process
3. Reading by Reviewers
4. Adjustments
5. Presentation to Board of Examiners
1.1 FGP Deliverables
1.1.1 Charter
1.1.2 WBS
1.1.3 Chapter I. Introduction
1.1.4 Chapter II. Theoretical framework
1.1.5 Chapter III. Methodological framework
1.1.6 Annexes
1.1.6.1 Bibliography
1.1.6.2 Schedule
1.2 Graduation Seminar Approval
2.1 Tutor
2.1.1 Tutor assignment
2.1.2 Communication
2.2 Adjustments of previous chapters (If needed)
2.3 Charter IV. Development (Results)
2.4 Chapter V. Conclusions
2.5 Chapter VI. Recommendations
3.1 Reviewers assignment request
3.1.1 Assignment of two reviewers
3.1.2 Communication
3.1.3 FGP submission to reviewers
3.2 Reviewers work
3.2.2 Reviewer 2
3.2.1.1 FGP reading
3.2.1.2 Reader 1 report
3.2 Reviewers work
3.2.2 Reviewer 2
3.2.2.1 FGP reading
3.2.2.2 Reader 2 report
4.1 Report for reviewers
4.2 FGP update
4.3 Second review by reviewers
5.1 Final review by board
5.2 FGP grade report
2.3.1 Scope Management Plan
2.3.2 Schedule Management Plan
2.3.3 Cost Management Plan
2.3.4 Quality Management Plan
2.3.5 Resource Management Plan
2.3.6 Communications Management Plan
2.3.7 Risk Management Plan
2.3.8 Procurement Management Plan
2.3.9 Stakeholders Management Plan

8.3 FGP Schedule



ID	Task Mode	Task Name	Duration	Start	Finish
1		**Final Graduation Project**	**92 days**	**Mon 03-05-21**	**Tue 07-09-21**
2		FGP Start	0 days	Mon 03-05-21	Mon 03-05-21
3		**1,Graduation Seminar**	**25 days**	**Mon 03-05-21**	**Fri 04-06-21**
4		**1.1,FGP Deliverables**	**20 days**	**Mon 03-05-21**	**Fri 28-05-21**
5		1.1.1,Charter	5 days	Mon 03-05-21	Fri 07-05-21
6		1.1.2,WBS	5 days	Mon 03-05-21	Fri 07-05-21
7		1.1.3,Chapter I. Introduction	5 days	Mon 10-05-21	Fri 14-05-21
8		1.1.4,Chapter II. Theoretical framework	5 days	Mon 17-05-21	Fri 21-05-21
9		1.1.5,Chapter III. Methodological framework	5 days	Mon 24-05-21	Fri 28-05-21
10		**1.1.6,Annexes**	**15 days**	**Mon 10-05-21**	**Fri 28-05-21**
11		1.1.6.1,Bibliography	5 days	Mon 24-05-21	Fri 28-05-21
12		1.1.6.2,Schedule	5 days	Mon 10-05-21	Fri 14-05-21
13		1.2,Graduation Seminar approval,	5 days	Mon 31-05-21	Fri 04-06-21
14		**2,Tutoring process**	**27 days**	**Mon 07-06-21**	**Tue 13-07-21**
15		**2.1,Tutor**	**3 days**	**Mon 07-06-21**	**Wed 09-06-21**
16		2.1.1,Tutor assigment	1 day	Mon 07-06-21	Mon 07-06-21
17		2.1.2,Communication	2 days	Tue 08-06-21	Wed 09-06-21
18		2.2,Adjustments of previous chapters (If needed)	5 days	Thu 10-06-21	Wed 16-06-21
19		**2.3,Charter IV. Development (Results)**	**9 days**	**Thu 17-06-21**	**Tue 29-06-21**
20		2.3.1,Scope Management Plan	9 days	Thu 17-06-21	Tue 29-06-21
21		2.3.2,Schedule Management Plan	9 days	Thu 17-06-21	Tue 29-06-21
22		2.3.3,Cost Management Plan	9 days	Thu 17-06-21	Tue 29-06-21
23		2.3.4,Quality Management Plan	9 days	Thu 17-06-21	Tue 29-06-21
24		2.3.5,Resource Management Plan	9 days	Thu 17-06-21	Tue 29-06-21
25		2.3.6,Communications Management Plan	9 days	Thu 17-06-21	Tue 29-06-21
26		2.3.7,Risk Management Plan	9 days	Thu 17-06-21	Tue 29-06-21
27		2.3.8,Procurement Management Plan	9 days	Thu 17-06-21	Tue 29-06-21
28		2.3.9,Stakeholders Management Plan	9 days	Thu 17-06-21	Tue 29-06-21
29		2.4,Chapter V. Conclusions	5 days	Wed 30-06-21	Tue 06-07-21
30		2.5,Chapter VI. Recommendations	5 days	Wed 07-07-21	Tue 13-07-21
31		Tutor approval	0 days	Tue 13-07-21	Tue 13-07-21
32		**3,Reading by reviewers**	**15 days**	**Wed 14-07-21**	**Tue 03-08-21**
33		**3.1,Reviewers assigment request**	**5 days**	**Wed 14-07-21**	**Tue 20-07-21**
34		3.1.1,Assigment of two reviewers	2 days	Wed 14-07-21	Thu 15-07-21
35		3.1.2,Communication	2 days	Fri 16-07-21	Mon 19-07-21
36		3.1.3,FGP submission to reviewers	1 day	Tue 20-07-21	Tue 20-07-21
37		**3.2,Reviewers work**	**10 days**	**Wed 21-07-21**	**Tue 03-08-21**
38		**3.2.1,Reviewer**	**10 days**	**Wed 21-07-21**	**Tue 03-08-21**
39		3.2.1.1,FGP reading	9 days	Wed 21-07-21	Mon 02-08-21
40		3.2.1.2,Reader 1 report	1 day	Tue 03-08-21	Tue 03-08-21
41		**3.2.2,Reviewer**	**10 days**	**Wed 21-07-21**	**Tue 03-08-21**
42		3.2.2.1,FGP reading	9 days	Wed 21-07-21	Mon 02-08-21
43		3.2.2.2,Reader 2 report	1 day	Tue 03-08-21	Tue 03-08-21
44		**4,Adjustments**	**20 days**	**Wed 04-08-21**	**Tue 31-08-21**
45		4.1,Report for reviewers	9 days	Wed 04-08-21	Mon 16-08-21
46		4.2,FGP update	1 day	Tue 17-08-21	Tue 17-08-21
47		4.3,Second review by reviewers	10 days	Wed 18-08-21	Tue 31-08-21
48		**5,Presentation to Board of Examiners**	**5 days**	**Wed 01-09-21**	**Tue 07-09-21**
49		5.1,Final review by board	2 days	Wed 01-09-21	Thu 02-09-21
50		5.2,FGP grade report	3 days	Fri 03-09-21	Tue 07-09-21
51		FGP End	0 days	Tue 07-09-21	Tue 07-09-21

Task, Split, Milestone, Summary, Project Summary, External Tasks, External Milestone, Inactive Task, Inactive Milestone, Inactive Summary, Manual Task, Duration-only, Manual Summary Rollup, Manual Summary, Start-only, Finish-only, Deadline, Critical, Critical Split, Progress

8.4 Scientific Search Engines

Table 36: Scientific Search Engines. Taken from Alok & Mishra (2017).

Name	Description
iSEEK Education	iSeek is a tremendous, targeted search engine, designed especially for teachers, students, administrators, and caregivers. iSEEK is a suitable place where a researcher can find reliable, intelligent, and time-saving resources in a safe, editor-reviewed environment.
RefSeek	RefSeek offers more than I billion documents, books, web pages, newspapers, journals, and many more authoritative resources about any subject, without the sponsored links and commercial results.
Virtual LRC	The Virtual Learning Resources Center is the best of academic information websites. It has created a custom Google search. This search is curated by researchers, teachers, and library professionals worldwide to share immense resources for academic projects.
Academic Index	This search engine and web index were formed for college students. The websites in this index are selected by librarians, teachers, and educational groups. Researchers should be confident to check out their research guides for history, health, nursing studies, criminal justice, and mom subjects.
Digital Library of the Commons Repository	DLC is a place to find worldwide literature including free and open access full-text articles, papers, thesis, and dissertations.
Internet Public Library	In the Internet Public Library find resources by subject through the Internet Public Library's database.

Name	Description
InfoMine	The InfoMine is a fantastic tool for searching academic Internet resource collections, particularly in the sciences.
Microsoft Academic Search	Microsoft's academic search engine proposed access to more than 38 million different publications, with features including graphing, maps, paths, and tends that show how authors are connected.
Google Correlate	Google's super cool search tool will allow you to find searches that conflate with real-world data.
WorldCat	This software locates the data from 10,000 libraries worldwide including books, CDs, DVDs, and articles. Researchers can have out the nearest library with WorldCat's tools.
Google Books	Through Google books, you can search the books all over the world published by different publishers and can see the preview of the content as well as download the free content of the matter.
Scirus	Scirus is a complete research tool for scientific information which includes more than 460 million scientific items viz. courseware, journal content, educational website, patents, and many more.
Goodie Scholar	Try Google Scholar to find out scholarly relicts on Google. The search focuses on articles, patents, and legal documents. This software also provides the facility of citation counting of research articles to the researcher.
SpringerLink	It provides the access to millions of scientific documents from journals, e-journals, books, series, protocols, and reference works to the researcher.
Directory of Open Access Journal	Directory of Open Access Journal (DOAD) is an online directory that indexes and provides access to high-quality,

Name	Description
	open access, full-text quality controlled scientific and scholarly peer-reviewed journals.

8.5 Revision Dictum

Yara Villeda
Orange Walk Town
Orange Walk District
Belize C. A.

Academic Advisor
Master's Degree in Project Management
Universidad para la Cooperación Internacional

October 16, 2021

To Whom It May Concern

I Yara Villeda hereby declared that I have reviewed the document PROJECT MANAGEMENT PLAN FOR THE HERNANDEZ'S FAMILY HOME ADDITION PROJECT IN THE CAPITAL OF BELIZE, which is a partial fulfillment of the requirements of the Master in Project Management Degree from the Universidad para la Cooperación Internacional, authored by Mrs. Ching-Ying Chou-Hernandez. I reviewed and edited in close collaboration with Mrs. Hernandez grammar, style and form the entire document.

As a qualified reviewer under the program's requirements, I, holder of a bachelor's degree in English Teaching from the University of Belize thereby state that this document is accurate in the use of English Language, and as a result is Approved. My qualifications are attached for reference and verification.

Sincerely,

Yara Villeda
License OW2009-00492

8.6 Reviewer Credentials

UB

The Board of Trustees of the University of Belize
upon recommendation of the Faculty of Education and Arts
has conferred on

Dara Mariza Cal-Villeda

the degree of

Bachelor of Science in Secondary Education
(English)

Magna Cum Laude

with all the rights and privileges pertaining thereto. In witness whereof, the undersigned have set hereunto
their signatures and affixed the seal of this Institution,
this fourth day of December, two thousand and seventeen.

CHAIRMAN, BOARD OF TRUSTEES

PRESIDENT

DEAN

REGISTRAR

8.7 Act of Approval for Readership

TUTOR´S FGP APPROVAL REPORT
TO COMMENCE READERSHIP STAGE

Student: Ching-Ying Chou-Hernandez

Topic for Final Graduation Project: Project Management Plan For The Hernandez's Family Home Addition Project in the Capital OF BELIZE

Tutor: Róger Valverde Jiménez **Signature:** Firmado digitalmente por ROGER EDUARDO VALVERDE JIMENEZ Fecha: 2021.10.09 11:15:48 -06'00' **Date:** 09/10/2021

Telephone: (506) 6024-5599 **E-mail:** ingmappmp@gmail.com

MERIT CRITERIA: APPROVED TO COMMENCE READERSHIP STAGE

SUMMARY TABLE FOR FULFILLMENT OF MINIMUM FGP REQUIREMENTS

FGP Requirements	Fulfills requirements YES or NO
Introductory section	YES
Page numbering lowercase Roman numerals on bottom border, 2 space from the last line	
Spacing 1 ½	
Coversheet	
Approval sheet	
Dedication	
Awards	
Table of Contents	
Table of Illustrations	
Index of Tables	
Index of Abbreviations	
Executive Summary	YES
Summarized Background	
Summarized Objectives	
Summarized Methodology	
Summarized Results and Recommendations	
No more than 2pages long	
Prioritization of Results and Conclusions	
Summary Parts in separate paragraphs	
Single spacing	
1) FGP Introduction	YES
Written in prose format	
From 3 to 6 pages maximun	

1

Version 20150625

Background	
Problem	
Justification for the Project	
General Objective	
Specific Objectives	
Begin objectives with an infinitive verb	
The What and Why of the Objectives	
Complete sentences for the Objectives	
2) Theoretical Framework	YES
Elements and variables to consider during the study	
Relation between variables and theorizing	
Referential or Institutional Framework	
Theory of Project Management	
3) FGP Methodological Framework	YES
Relation with the FGP´s EDT	
Identification and description of the methods, techniques, procedures and tools	
Identification of Research Methods	
Identification of Application Techniques	
Identification of Information Processing and Analysis	
4) Content Development	YES
The entire document, right margin 2.5 cm and left margin 3.5 cm, superior margin 3.5 cm and inferior margin 3 cm	
Page numbering in Arabic numbering in the superior right area 5 spaces	
1 ½ spacing for the entire document except for the Executive Summary	
Font type Arial 12 or similar	
Title in uppercase and bold	
Subtitle in bold	
Title and numbering above the table throughout the document	
Title and numbering below the figures (Graphs, Diagrams, Photographs, Flow charts, etc.) throughout the document	
Contribution to knowledge, innovation.	
5) Conclusions	YES
6) Recommendations	YES
7) FGP Bibliography	YES
Bibliographical references according to standard format	
Alphabetical order according to author	
Quantity and quality of citations	
8) Annexes	YES
FGP Charter	
Description of FGP (EDT)	
Timeline	
Secondary information	