

Your Challenge is our Ambition

30 Acre Commercial Land Development – East White Hills Civil Infrastructure Design

CHIMO Construction Management Limited



SPARTAN ENGINEERING c/o Engineering 8700 Project Group 8 Faculty of Engineering and Applied Science Memorial University of Newfoundland St. John's, NL AIB 3X5

Mr. Karl Green CHIMO Construction Management Limited 1 Crosbie Place St. John's, NL A1B 3Y8

February 2, 2011

Dear Mr. Green:

The enclosed document is a Detailed Work Plan developed by SPARTAN ENGINEERING for CHIMO Construction Management Limited for the design of the civil infrastructure for the commercial land development in East White Hills.

This detailed work plan includes a description of the project, the methodology to be used throughout the project execution, the principal tasks and subtasks associated with the design, the approach to project scheduling, and other key items vital to delivering the project successfully.

If you have any questions or concerns regarding the contained documentation, we would be pleased to discuss them with you.

Sincerely, SPARTAN ENGINEERING

Laura Alexander

Melissa A. Martin

Nick Mallam

Melissa S. Martin

cc: Dr. Steve Bruneau, ENGI 8700 Course Instructor



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1.0 **PROJECT DESCRIPTION**

SPARTAN ENGINEERING (SPARTAN) has been contracted to design the civil infrastructure for a commercial land development in the east end of St. John's for CHIMO Construction Management Limited (CHIMO). The development is located on Robin Hood Bay Road, on an undeveloped site across the street from the existing A1 Automotive location, and will be approximately 30 acres in size. See Figure 1 below for an aerial picture of the site location.



Figure 1: Location of Commercial Development

A geotechnical investigation and property survey were conducted previously on the site to aid in the development of the proposed commercial development. Three alternatives for a general site layout will be developed and presented to CHIMO; all three choices will include site access from Robin Hood Bay Road. The configurations will vary but will aim to achieve optimization of land in the form of approximately 1 acre commercial sites.

Upon choosing an alternative, the preliminary design process will commence. As the site is zoned commercial-industrial, the design of the street will include curb, gutter and sidewalk. Grading will be designed to achieve the most economical solution with regards to cut and fill for the development of the site; the storm, sanitary, and water systems will be designed in conjunction with the grading. Tentatively, the sanitary and water main systems will connect with existing sanitary and water in Robin Hood Bay Road. The storm sewer system will drain into a marsh located across the street from the site. After receiving approval of the preliminary design phase, detailed design and drafting will be completed. The fine-tuning of grades will be developed in this stage.



2.0 PROJECT REQUIREMENTS

CHIMO Construction Management Limited has contracted SPARTAN ENGINEERING to complete the design for:

Design and grades for new access road

• The design of the new access will be chosen from three alternatives presented to CHIMO. Upon selection, grades will be determined in the preliminary stage and adjusted in the final design stage.

Water, storm, and sanitary services

• Services in the new access will connect with the existing services in Robin Hood Bay Road, with the exception of the storm sewer system; this system will be routed across the street and into a marsh.

Development of drawings

• Three phases of drawings will occur for this project: First, three alternatives will be drafted and submitted to CHIMO for selection. Second, the preliminaries of the preferred alternative will be completed and submitted. Lastly, the final tender drawings will be completed and submitted to CHIMO upon completion of the project.

Road services details

• Plan and profiles of the access to the commercial development will be contained within the drawings package. The profiles will give an accurate representation of the services that are being designed.

Cost estimate

• SPARTAN will produce an initial Class D cost estimate with ±12% accuracy. In the final stages a Class A estimate of ±5% accuracy will be produced before the project goes to tender.

Schedule

• A preliminary schedule of all project activities and milestones to be submitted to CHIMO and the course instructor will be produced at the start of the project and included within the detailed work plan.

To ensure all project requirements are met, SPARTAN will guarantee communication remains constant with the client throughout the term.



3.0 METHODOLOGY

3.1 **Project Approach**

In January 2011, SPARTAN was partnered with CHIMO to develop the design, drafting and cost estimation for the civil infrastructure of a commercial land development located on Robin Hood Bay Road in St. John's, NL. A project of this magnitude requires extensive planning and preparation prior to completing any design work in order to properly identify the project deliverables expected by the client. SPARTAN plans to approach the project in a manner that effectively meets the client's needs, while at the same time adhering to all design codes and standards.

In the initial stages of the project, SPARTAN is to conduct preliminary research and review of background material. SPARTAN will need to conduct research to determine the land zoning of the 30 acre development. CHIMO has provided SPARTAN with a previously completed geotechnical investigation and property survey; team members will have to review these documents to become familiar with the existing site conditions. SPARTAN has created a preliminary schedule for the four month term; this schedule includes all milestones relating to course requirements, as well as milestones required to complete the design project on time. SPARTAN is also responsible for conducting research to determine what codes and standards will govern the design of the civil infrastructure.

Site layout is the first step in the design process; SPARTAN is to develop three alternatives for site access and plan of the commercial land development. Each alternative will delineate an access road and divide the remaining land into approximately 1 acre commercial sites. The foremost aim in this stage is to ensure all alternatives maximize the land area. After CHIMO selects a site layout alternative, the next step in the process is design the road grade; all grading will be designed to best balance the cut and fill on the site. All designs will follow regulations defined by the City of St. John's. Once a method has been determined for grading; design work will commence for all sewer and water systems; this includes storm, sanitary and water main systems. All systems will be designed according to the City of St. John's Subdivision Manual, Specification book and standard sewer design spreadsheet. Finally, the concluding step in the design process is to complete all drafting work; this includes preliminary drawings and final tender drawings of all roads and sewer systems.

The next stage in the project is to complete material take-offs; this will be necessary in order to complete the project cost estimate. This stage will commence following the conclusion of all design and drafting work. All group members will be responsible for determining quantities of materials, man hours, and their associated costs; CHIMO has offered assistance in determining unit prices for materials and the cost of labour. Once the quantity take-off is complete, SPARTAN will produce a preliminary Class D cost estimate as well as a finalized Class A cost estimate.

The completion of the final report and presentation will be ongoing throughout the four month term; all group members will contribute to both documents to evenly distribute the work load. The project manager is responsible for ensuring both deliverables are completed on time.



3.2 Group Organization, Roles and Meetings



Any member of SPARTAN may call a group meeting at any time if they feel one is necessary. Please see Appendix A for SPARTAN ENGINEERING's summary of qualifications (SOQ).



3.3 Client Interaction and Role

SPARTAN plan to work closely with CHIMO throughout the course of the project to ensure the clients needs and expectations are met. Weekly meetings between CHIMO and SPARTAN take place at 1 Crosbie Place, and are held every Wednesday at 1:00 pm for approximately 30 minutes, however the meeting times may change based on the client's needs. The project contacts for CHIMO are Karl Green and Dave Leonard; SPARTAN's main point of contact with the client is the project manager, Laura Alexander.

The weekly meetings will allow SPARTAN to offer the client project status updates and allow the opportunity for both parties to ask any questions. Between meetings, the primary manner of communication between both groups will be via email or phone if necessary.

The role of CHIMO during the duration of the project is to provide all essential information required for the successful completion of the project. CHIMO will also offer any required guidance to ensure SPARTAN remain focused upon the deliverables. It is the responsibility of SPARTAN to ensure all needs of the client are met, and that the project is completed on schedule to the highest standards of both companies.

3.4 Design Principals

There are several design principals to be considered when designing the civil infrastructure for a land development. For the entirety of this project the *National Building Code of Canada (NBCC)* as well as any relevant *Canadian Standards Association (CSA)* standards will be followed. Clearing, grubbing, grading and street construction will be designed in reference with the *City of St. John's Specifications Book* and the *Subdivision Manual*. The sanitary and storm sewers capacity will be calculated using the standard spreadsheets provided by the City of St. John's. All services in the new access road will adhere to the *City of St. John's Subdivision Manual*.

3.5 Cost Estimating Strategy and Level of Accuracy

SPARTAN will be completing both an initial and final cost estimate, following the completion of the preliminary designs and drafting as well as the finalized tender designs and drawings.

SPARTAN will begin the initial cost estimate as the preliminary drawings are completed; these drawings will give an idea of the necessary manpower to complete the project. The initial cost estimate will consist of a quantity take-off of the basic materials, and an estimate of the necessary labour to complete the project. The markup percentage will then be determined from these numbers and associated risks from completing the job. The initial cost estimate will be within an accuracy of plus or minus twelve percent ($\pm 12\%$).

Final cost estimating will begin upon the completion of the finalized tender drawings; this will be within an accuracy of plus or minus five percent (\pm 5%), as requested by the client. An



accurate estimate of the cost of materials and labor will be accumulated and compiled in an Excel worksheet to be priced based on unit prices. Markup will also be added to cost of project in the final cost estimate. The project manager is responsible for ensuring the final estimate is accurate. CHIMO will assist in determining the unit prices for materials and the costs associated with labour.

3.6 Desired Outcomes

SPARTAN, the engineering consultant, has a contractual obligation to CHIMO, the client, to design the civil infrastructure for the commercial land development on Robin Hood Bay Road. This agreement, however, does not solely include the requirement to design the infrastructure with compliance of both the client's and the City of St. John's standards, but also to adhere to the following traits:

Cost efficiency

• The most cost effective alternatives, building materials, and labour hours must be considered in the design of the infrastructure, while remaining in compliance with current design standards.

Comprehensive planning and scheduling

• By carefully producing a detailed work plan and schedule, SPARTAN will be able to complete the design work and cost estimate within the term deadline and successfully meet the client's needs.

Broad range of alternatives

• SPARTAN will provide CHIMO with several viable and realistic preliminary alternatives with regards to new site access in order to meet the client's needs, while adhering to city standards.

Best utilization of land space

• When designing site access, SPARTAN will produce alternatives which best utilize the 30 acre land space, in order to maximize the potential of the land development.

High quality drafting

• All three phases of drawings completed by SPARTAN will be carried out with the highest quality, and will be in compliance with both CHIMO's and the City of St. John's drafting standards.

Effective communication/working relationship

• SPARTAN plan to develop a very close working relationship with CHIMO, in means to ensure communication is constant throughout the duration of the project. A strong working relationship with the client will also ensure that SPARTAN will gain an abundance of knowledge regarding the design of civil infrastructure.



Effective reporting

• A final report and presentation is required for course evaluation. SPARTAN will produce a report summarizing the work produced within the four month term, highlighting the deliverables achieved to meet the client's needs.

3.7 Reporting and Deliverables

Producing effective project reporting is crucial to highlight and convey the project progress to both the client and the course instructor. By producing a detailed technical report, SPARTAN will be able to effectively summarize the work completed throughout the four month term, including collected data, calculations, as well as drafts and drawings.

Throughout the duration of the project, various forms of project reporting will be conducted to identify the progress of the project. SPARTAN ENGINEERING has identified eleven total project deliverables which will be presented to CHIMO and to the ENGI 8700 class. Currently, two of our initial deliverables have been completed and submitted to both parties for review. All other deliverables (aside from final reporting) are currently in progress. Table 1 below illustrates SPARTAN'S project deliverables and progress to-date.

Deliverable	Quantity	Date	Progress
Statement of Qualifications (SOQ)	1	12-Jan-11	Complete
Detailed Work Plan	1	02-Feb-11	Complete
Weekly Minutes (Client)	10	N/A	30%
Weekly Minutes (Company)	10	N/A	30%
Weekly Progress Reports	10	N/A	30%
Weekly Agenda (Client)	10	N/A	30%
Weekly Agenda (Company)	10	N/A	30%
Final Report	1	04-Apr-11	N/A
Final Presentation	1	05-Apr-11	N/A

Table 1: SPARTAN ENGINEERING'S Project Deliverables and Progress

3.8 Troubleshooting

Superior leadership, project organization, cooperation and communication between both parties are essential in minimizing the number of issues that will arise throughout the execution of the project. Although SPARTAN expects to keep setbacks to a minimum, if problems arise, the group will deal with them in an organized and systematic manner. Potential obstacles which could arise throughout the term of this project include the misinterpretation of a task at hand, or a judgement error by a member of the SPARTAN team. SPARTAN aims to deal with all minor obstacles and setbacks within the group; however, if additional input is required, SPARTAN ENGINEERING will seek aid from the client or a faculty engineer with the best knowledge of the issue. Weekly meetings with the client will provide SPARTAN with the opportunity to express any issues or concerns encountered



throughout the project duration. SPARTAN'S goal throughout the project is to minimize the number of problems that occur and to address the issues in a professional manner to ensure successful completion of the project.





4.0 TASKS

The design work of the civil infrastructure for the commercial land development on Robin Hood Bay Road can broken down into eight primary tasks, as well as several subtasks within each primary task. The primary tasks include development of alternatives, road grading design, sanitary sewer design, storm sewer design, water main system design, drafting, cost estimation, and course requirements. The allocation of each task, the estimated duration of each task, and resource requirements are displayed in a tabular form in Appendix B.

4.1 Development of Alternatives

The first step in the design process will be to determine three alternatives for potential site layout of the 30 acre land area, based on the client's intended usage of the land. Each alternative will delineate an access road and divide the remaining land into approximately 1 acre commercial sites. All three options must comply with the relative regulations set by the City of St. John's. It is imperative that each alternative is designed as to maximize the number of sites and in the most economic fashion.

4.2 Road Grading Design

All road grading design must follow the regulations set forth by the City of St. John's. Grading will be designed to best balance the cut and fill on the site.

4.3 Sanitary Sewer Design

The City of St. John's provides a methodology for the design of all sanitary sewers in the city. These regulations will be followed in the design work; the capacity of all sanitary sewers will be calculated using the City's standard sewer design spreadsheet.

4.4 Storm Sewer Design

Storm sewer design will be determined following the design guidelines stated in the City of St. John's Subdivision Manual. Once again, the City's standard sewer design spreadsheet will be utilized to calculate the capacity of the new storm sewers.

4.5 Water Main System Design

Water system design for East White Hills will be completed using the guidelines for water main design, as stated in the City of St. John's Subdivision Manual.

4.6 Drafting

Drafting will be completed for all site layout alternatives, which will be submitted to CHIMO for selection. Upon selection, preliminary design and drafting of the site roads and sewers will be submitted to CHIMO for review. Once approval is received, drafting work will commence on tender drawings for the completion of the project.





4.7 Cost Estimation

Quantity take-offs will be performed from the preliminary drawings; an Excel spreadsheet will then be used to create a cost estimate. Two estimates will be produced; a Class D estimate, which will be within an accuracy of plus or minus twelve percent (\pm 12%) and a Class A estimate, which will be within an accuracy of plus or minus five percent (\pm 5%).

4.8 Course Requirements

Throughout the four month term of the project, there are several duties to be completed as a component of course requirements, as well as other administrative duties. Some items must be completed and submitted regularly and others are considered major milestones of the course. Items to be completed/submitted on regular intervals include meeting minutes (for both client meetings and company meetings), weekly progress reports, and weekly agendas; all of which are submitted to both the client and the course instructor. All group members are expected to contribute to the regular interval items throughout the term. Major milestones within the project are the detailed work plan, and the final presentation/report; the timely submittal of these items will be managed by the project manager.



5.0 SCHEDULE

Based on the project requirements, SPARTAN have created a work breakdown structure (WBS) and a detailed project schedule, which will provide the necessary framework for detailed cost estimating and project control.

The East White Hills 30 acre land development project has been broken down into five major design tasks, a drafting stage and project cost estimation. Each individual task has then been segmented into subtasks which have been assigned accordingly and given adequate durations throughout the project.

During the development of alternatives, three options will be chosen by SPARTAN and presented to CHIMO. Each option will follow the regulations set out by the City of St. John's and will outline subdivisions of the remaining land and a primary access road for the land development. Once the final design is chosen, preliminary drawings of all roads, sanitary and storm sewer, and water systems will be completed and finalized. Quantity take offs can then be executed from the drawings and a cost estimate will ensue. This will then initiate the final report and presentation process due at the end of the four month term.

The work breakdown structure and project schedule will serve SPARTAN as the primary method of identifying the sequence of events during the project. The project schedule has been created using Microsoft Project and can be found in Appendix C. During group meetings, tasks within the project schedule will be reviewed to ensure SPARTAN remains on track and within the appointed timeline. One of the responsibilities of the project manager is to ensure the schedule is maintained and is in compliance with the client. As with all projects, SPARTAN is aware that some changes to task durations may change throughout the project and will be adjusted as required.



6.0 COSTS, DELIVERABLES AND RISKS

6.1 Costs

The costs associated with the execution of the project course will be minimal for SPARTAN ENGINEERING. The two main cost components for this project include the cost of printing and binding services (SOQ, detailed work plan, final presentation) and the cost of transportation to CHIMO offices for weekly meetings. Each member of SPARTAN initially contributed \$20.00 each, for a grand total of \$80.00, to cover all printing costs. A breakdown of the money spent to-date can be seen below in Table 2.

Items	Cost (\$)	Balance (\$80.00)						
SOQ Printing	40.00	40.00-						
Business Cards & Stickers	5.00	35.00-						
SOQ Folders	5.00	30.00-						

Table 2: SPARTAN Costs To-Date

It is expected that additional money will be needed for the production of the final report; in this event, each member of SPARTAN ENGINEERING will contribute an additional \$20.00. To cover the cost of transportation to CHIMO offices, all group members are rotating driving duties. All cost related items are being managed and recorded by Nick Mallam.

6.2 Deliverables

In order to remain environmentally friendly, SPARTAN plan to minimize the number of hardcopies distributed to both the client and the course instructor. Meeting agendas and meeting minutes are distributed electronically to CHIMO before/after each meeting, the course instructor is carbon copied on both documents; it is up to the receiver if they chose to print these documents. A hardcopy of the weekly progress reports will be submitted to the instructor when required; an electronic copy will be sent to the client.

All drawings (site layout, plan/profile of street) will be available in electronic copies; however, SPARTAN will provide CHIMO with hard copies for review purposes. SPARTAN will provide the quantity take-off and cost estimates (both Class D and Class A) in a hard copy to CHIMO, as this will be necessary for review. Both the client and the course instructor will be given hardcopies of the detailed work plan and final report. The course instructor will receive hardcopies of all course deliverables on the designated due date.

6.3 Risks

Minimal risks are foreseen for this project; however, SPARTAN ENGINEERING recognizes that minor issues may arise throughout the term of the project. Since the project involves an extensive amount of drafting work, all members are expected to contribute in order to



complete all work; therefore time constraints of group members may be an obstacle, based on their individual work loads. Another potential obstacle which may arise throughout this project involves the design of the storm sewer system. CHIMO would like to route storm drainage though an existing, neighbouring property; SPARTAN recognizes this as a potential risk in the design portion of the project. The final risk related to SPARTAN undertaking this project relates to the existing knowledge of its members; although each team member has some knowledge in the area of municipal engineering, there may be some questions encountered during the design process due to inexperience.



7.0 REFERENCES

[1] Bruneau, S. E. (2011). *Final Year Capstone Design Project Course Guide for Students and Clients – ENGI 8700. Fourth Edition.*

[2] City of St. John's Department of Engineering. (2010). Specification Book. Fourth Edition

[3] City of St. John's. *Standard Sewer Calculation Spreadsheet*. Retrieved on January 30, 2011, from the City of St. John's website. <u>http://www.stjohns.ca/cityhall/publications.jsp</u>

[4] City of St. John's Department of Engineering. (2004). Subdivision Design Manual.

[5] National Research Council of Canada. (2005). *National Building Code of Canada 2005. Volume 1.*



APPENDIX A SUMMARY OF QUALIFICATIONS (6 Pages)



Your Challenge is our Ambition



Vision

SPARTAN ENGINEERING's vision is to expand and strengthen our working relationships within the engineering community, to enhance and develop new skills and abilities, and utilize innovative and evolving technologies to respond to the changing needs of our clients.

About Us

SPARTAN ENGINEERING is comprised of a team of individuals with a diverse background of engineering experience allowing us to provide innovative solutions of exceptional quality.

We strive to execute an open approach towards meeting the needs of our clients by listening to and respecting their objectives.

We provide the following engineering services:

- **Project Management**
- Structural
- Heavy Civil .
- Oil and Gas
- Environmental
- Hydrotechnical
- Geotechnical

Core Values

SAFETY

Our company aims to maintain high ethical standards and obey all applicable industry regulations.

INTEGRITY

We strive on employing the highest ethical standards, demonstrating honesty and fairness in all aspects of our company and work.

ADAPTIBILITY

We possess the ability to adapt to challenges and obstacles while maintaining a high level of professionalism and quality of work.

SPARTAN ENGINEERING



Safety

Integrity Adaptability

Software Capabilities TS Tower AutoCAD/AutoDesk STADD Pro. S Frame Arc GIS HEC-RAS/HMS Cost Works Ansys Land Desktop NMS InfoSewer

Industry Codes and Standards

National Building Code of Canada

National Fire Code of Canada

National Plumbing Code of Canada

National Electrical Code of Canada

CAN/CSA A23.3-04

CSIC-ICCA Handbook of Steel Construction S16

CSA S37-01 Antenna, Towers, and Antenna-Supporting Structures

Past Experience

- Olympic Construction Ltd.
- Pyramid Construction Ltd.
- Karwood Contracting Ltd.
- Kavanagh & Associates
- Tiller Engineering Inc.
- City of St. John's Construction Division/Hydrological Division
- Newfoundland and Labrador Housing Incorporated

- Nalcor Lower Churchill Project
- Oceaneering Canada Ltd.
- ExxonMobil Canada Ltd.
- Husky Energy
- CNLOPB
- Hydro One



Team Members







Nick Mallam

- 11 years of experience in the construction industry
- Able to perform structural layout and vertical and horizontal control
- Capable of coordinating structural, architectural, electrical and mechanical drawings with specifications and apply them to the construction process
- Experience as project superintendent has provided exceptional leadership qualities
- Possess a strong hands on point of view from a technical side of the construction process
- Experience working with local construction companies provides a good background in the civil engineering field

Melissa A. Martin, Architectural Engineering Technologist

- Able to produce full working construction drawings for Civil subdivisions, including storm and sewer plans, profiles and details
- Experience in calculating watersheads and capacities of storm sewer systems
- Previous experience in design and drafting of parking lot layouts, retaining walls, water retention tanks and accessibility solutions for existing buildings
- Able to perform field inspections and structural investigations
- Experience in producing specifications and cost estimates
- Assisted in temporary bridge design, including hydraulic calculations and production of over 200 cross sections of the river to be crossed

Laura Alexander

- Proficient in modeling and designing storm and sanitary sewer systems
- Experience in production of major street reconstruction designs utilizing city specifications
- Experience in collecting, monitoring, and analyzing flow meter data
- Completed major Hibernia cost analysis and presented to management
- Wrote several operational procedures and gained approval for offshore use



Melissa S. Martin

- Areas of experience are focused in the civil design and offshore oil and gas industries
- Familiarity in project management and estimates of overall construction costs
- Knowledge in civil design work including underground drainage, spill containment, oil water separation systems, rough and finish grading, fence and road design
- Completed a North Amethyst field review and reservoir management document which will be utilized throughout Husky Energy to guide field development and operating methodology
- Strong interpersonal, organizational, and teamwork skills



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Contact Information

Memorial University of Newfoundland S.J. Carew Building St. John's, NL, A1B 3X5 Email: spartan.engineering@yahoo.ca



APPENDIX B

ALLOCATED TASKS (1 Page)

Your Challenge is Our Ambition

Primary Tasks	Subtasks	Personnel	Duration	Resource	
			(days)	Requirements	
Alternatives	Base Plan	MAM	2		
Development	Design	All	3	AutoCAD	
	Dialt	MAN	Z		
	Investigation Review	MAM NM	1	Geo. Report	
Road Design	Grade Design	MAM NM	3	COSJ	
	Road Design	LA MSM	1	Manual	
Sanitary Sewer Design	Sewer Design	MAM NM	3	COSJ Subdivision Manual	
Storm Sewer	Watershed Delineation	LA MSM	2	COSJ	
Design	Sewer Design	MAM NM	3	Manual, NBCC	
Water Main System Design	Design	LA MSM	3	COSJ Subdivision Manual	
	Drafting Preliminaries		5		
Drafting	Draft Tender Documents	MAM	5	AutoCAD	
	Review	LA MSM NM	4		
	Quantity Take off	All	2	AutoCAD, Excel	
Cost Estimation	Costing Spreadsheet	NM	3	Excel	
	Meeting Minutes & Agendas	All	1	Word	
	Progress Updates	All	1	Word, Excel	
Course Requirements	Work Plan	All	8	Word, Excel, Project	
	Final Report/Presentation	All	32	Word, Excel, Project, PowerPoint	

Abbreviations:

- NM Nick Mallam
- MSM Melissa S. Martin
- MAM Melissa A. Martin
- LA Laura Alexander



APPENDIX C

PRELIMINARY SCHEDULE (1 Page)

	SPARTAN ENGI - 8700 Civil Engineering Project SO Acre Land Development 30 Acre Land Development Preliminary Schedule Preliminary Schedule																	
To make the second of the s	ID Task Name	Duration Start	Finish	'11	23 Jan '11	3	0 Jan '11		06 Feb ''	11	13 Feb '11	20 Feb '11	27 Feb '11	06 Mar '11	13 Mar '11	20 Mar '11	27 Mar '11	03 Apr '11
	Initial Client Meeting #1	0 days Wed 19/01	11 Wed 19/01/1	TWTF	SSMTWT	FSS	S M T W	TFS	SMT	WTFS	SMTWTF	SSMTWT	FSSMTWT	FSSMTWT	FSSMTWT	FSSMTWTF	FSSMTWTF	SSMTWTF
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	9 Alt. Development - Submit to CHIMO	1 day Wed 09/02	11 Wed 09/02/1	1						09/02								
	10 Client Meeting # 5	0 days Wed 16/02	11 Wed 16/02/1	1						44/0								
Image Scale Scale Text States	11 Confirmation of Alternative from CHIMO	1 day Fri 11/02	11 Fri 11/02/1	1						11/0	2							
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□ □	20 Preliminaries - Submit to CHIMO	1 day Wed 02/03	11 Wed 02/03/1	1									J02/03	3				
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36 Skemi Fine Requirements 0 days Mon 0404/11 Mon 0404/11 Tue 0504/11	35 Final Report for Course Requirments	32 days Wed 16/02	11 Thu 31/03/1	1														
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Project: East White Hills	Task	 Progress		Summary	¢	External Tasks Deadline	*
Date: Fri 04/02/11	Split	 Milestone	Φ	Project Summary	~v	External Milestone	

Contact Information

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SPARTAN ENGINEERING

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