

PROJECT PROPOSAL BASKETBALL COURT DESIGN

Done By:

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Mr. Mark Lamer

NAU

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Flagstaff, AZ 86011

Dear Mr. Mark Lamer

It was a pleasure meeting you last week. We truly appreciate your generous offer to assist in our project.

Enclosed is the project proposal. As you will see, we have included more detailed information of the services we are offering. If you have any questions or inquiries, please contact us. The project manager, Hamad Alqalaf, can be reached at (714)930-6438 or by e-mail: ha228@nau.edu.

Sincerely Yours,

Adel Alnasser

Daij Alfahad

Hamad Alqalaf

Table of content:

- 1.0 Project Understanding and Approach.3
 - 1.1 Purpose..... 3
 - 1.2 Background and Existing Conditions.....3
 - 1.3 Stakeholder, Client and Technical Advisor..... 3
 - 1.4 Technical Process..... 3
 - 1.5 Challenges..... 4
- 2.0 Scoop of Services..... 4
 - 2.1 Task 1: Project management..... 5
 - 2.2 Task 2: Literature Review..... 5
 - 2.3 Task 3: Surveying.....5
 - 2.4 Task 4: Hydrology Analysis..... 5
 - 2.5 Task 5: Geotechnical Analysis..... 6
 - 2.6 Task 6: Drainage System Design..... 6
 - 2.7 Task 7: Court Design..... 6
 - 2.8 Task 8: Additional Features..... 7
 - 2.9 Task 9: Traffic Analysis.....7
 - 2.10 Task 10: Final Design.....7
- 3.0 Staffing Plan and schedule.....8
 - 3.1 Staffing plan.....8
 - 3.2 Schedule.....10
- Appendix A.....11
- Appendix B.....12

1.0 Project Understanding and Approach:

This is a site development project in the city of Flagstaff. The project is the design of a basketball court with drainage system for Homeowner Association Management. The site is located at 590 W Cinnabar Trail, Flagstaff AZ, 86005 (Appendix/ A).

1.1 Purpose:

In the neighborhood, there is a piece of land that is not being used. The residents would like to have a basketball court since they are not allowed to park or use this land for any activities. Therefore, the HOA decided to explore utilizing the empty land for a basketball court.

1.2 Background and Existing Conditions:

The land has a detention basin that is about 1/3 of the total area. Also, there are some trees on the land that might be in the way of the proposed location of the basketball court. There is no parking spots by the land.

1.3 Stakeholder, Client and Technical Advisor:

The main stakeholder is the Homeowner Association, and the project client is Dr. Edward Smaglik. Also, helping with the project is Mr. Mark Lamer as a technical advisor.

1.4 Technical Process:

- **Surveying the site:** This will be done to help us design the drainage system and to help establish the ground surface elevation for the basketball court. This will include the calculation of the cut and fill required for the project.
- **Geotechnical analysis:** This part of analysis will be important to test the site's soil. Also, it will be important to figure out the soil type to prevent any settlement or soil failure.
- **Hydrology:** This will be necessary for rainstorm analysis as well as the design of the hydraulic components including channels for the drainage system.
- **Concrete design:** This will be used for court surface design.

- Traffic analysis: This will be done for the area to know if there is any traffic system to be installed or if any striping and signage is needed. This analysis will help enhance the safety and efficiency of the location.
- Regulations and policies: This will be important when designing any component of this project. We will follow Flagstaff codes and client requirements when designing this court and its utilities.
- Basketball court guidelines: The design will follow the high school court dimensions considering the limited design area.

1.5 Challenges

There are several challenges associated with this project. First of all, the empty land has a variety of elevations. This will require the team to spend more time surveying the site. Another challenge is related to the soil type. Since it is a drainage area, the moisture content of the soil can be high. Therefore, the soil will need to be tested and improved if needed. Also, another challenge would be designing the proper drainage system to keep the water from reaching the court.

2.0 Scope of Services

The tasks below are the work process that the team will be performing for the client in regard of designing the basketball court.

Task 1: Project management

Task 2: Literature Review

Task 3: Surveying

Task 4: Hydrology Analysis

Task 5: Geotechnical Analysis

Task 6: Drainage System Design

Task 7: Court Design

Task 8: Additional Features

Task 9: Traffic Analysis

Task 10: Final Design

Task 1: Project management

These tasks are to organize the project:

- Task 1.1 Professional Meetings
This include meetings with client, technical advisor and other organizations.
Deliverables: Documentation of meetings
- Task 1.2 Team Meetings
This include all the meetings between the team members.
Deliverables; Documentation of the meetings

Task 2: Data Collection

- Task 2.1 Meeting with Home Owner Association
The team will have to meet with the Stakeholder to identify any additional constrains.
Deliverables: Documentation of the meeting
- Task 2.2 Policies and Regulations Research
This includes the research of all the regulations and policies regarding the project. Meetings with Flagstaff municipal and other organizations might be part of this task. Also, more constrains might be identified after finishing this task.
Deliverables: a list of all the policies and regulations along with any additional required design constrains.

Task 3: Surveying

- Task 3.1 Data Collection
The team will survey the site and collect data in order to help with constructing a topography.
Deliverable: a list of points collected for the site
- Task 3.2 Topographic Map
The team will use the data collected earlier to create the topographic map for the site using AutoCAD.
Deliverables: The AutoCAD topographic map

Task 4: Hydrology Analysis

- Task 4.1 Existing Infrastructures Analysis
This task will include an analysis using Bentley Flow Master to identify if the existing channel is working properly with the project.
Deliverables: A memo showing the results of analysis

- Task 4.2 Runoff Analysis
This is the analysis of 20, 50 and 100 years storm. This will help identify the design discharge.
Deliverables: A memo showing the design discharge for the drainage system.

Task 5: Geotechnical Analysis

- Task 5.1 Soil Analysis
The team will conduct soil in situ/ in lab test as required to figure out the soil type and any required modification.
Deliverables: Soil test report or a memo showing the work done regarding soil type identification.
- Task 5.2 Cut, Fill and Compaction
The team will figure out the cut and fill required for the project using the topography. Also, based on the soil type identified, the team will have to deal with compaction if required.
Deliverables: A memo showing the cut and fill analysis.

Task 6: Drainage System Design

- Task 6.1 Detention Basin Improvement
The team will use the design discharge determined from the hydrology analysis to design the drainage system.
Deliverables: A memo with a drawing of the design.

Task 7: Court Design

- Task 7.1 Court Dimensions
The team will have to determine the size of the full court based on the available area. The court may not be an official size but still scaled to be at acceptable size for players. The size of the court will most likely be a high school court with dimension of 72ft x42ft
Deliverables: AutoCAD drawing with the dimensions of the court
- Task 7.2 Court Surface Material
The team will have to come up with the best surface possible for Flagstaff conditions. A concrete design will be part of this task.
Deliverables: A memo
- Task 7.3 Basketball Court Equipment
The basketball hoops will be chosen for the project along with their prices.
Deliverables: Equipment and prices

Task 8: Additional Features

- **Task 8.1 Sidewalk and Benches**
The court need to have an entrance to it through a designed sidewalk. Also, benches are required for the site when people are there to watch.
- **Task 8.2 Fence**
The fence might be required around some parts of the court to prevent the ball from going into the road or the drainage area.

Deliverables for both 8.1 and 8.2: A full site drawing with all the elements.

Task 9: Traffic Analysis

- **Task 9.1 Traffic Signage**
The team will have to evaluate the traffic around the site and add the required signage.
- **Task 9.2 Traffic Striping**
The team will need to add striping for a safe access to the site.

Deliverables for both 9.1 and 9.2: Memo with photos of what signs and stripes are needed for the site and where they are supposed to be placed.

Task 10: Final Design

- **Task 10.1 Design Report**
After completing all the previous tasks, the team will prepare a document with all the work put together. This will be the final recommendation on the design of the proposed basketball court.
Deliverables: Design report
- **Task 10.2 Presentation**
The team will also prepare a final presentation and present to the undergraduate board for final grade.
Deliverables: PowerPoint presentation and poster board
- **Task 10.3 Website**
The team will design a website to describe the project as well as stating the purpose of it.
Deliverables: Project Website

3.0 Staffing Plan and Schedule

3.1 Staffing Plan

The team established a staffing plan based on the project tasks requirements. Table 1 shows in details the plan for the Basketball project.

Table 1: Staffing Plan

Tasks	Staff	Classification	Rate (\$/hr)	Hours	Cost Estimate(\$)
1.1 Professional Meetings	Hamad Alqalaf Adel Alnasser Daij Alfahad	Engineering	80	30	2400
1.2 Team meetings	Hamad Alqalaf Adel Alnasser Daij Alfahad	Engineering	80	46	3680
2.1 meeting with Home Owner Association	Adel Alnasser Daij Alfahad	Engineering	80	12	960
2.2 Policies and Regulations Research	Hamad Alqalaf Adel Alnasser	Engineering	80	24	1920
3.1 Data Collection	Hamad Alqalaf Daij Alfahad	Technician	45	24	1080
3.2 Topographic Map	Hamad Alqalaf Adel Alnasser Daij Alfahad	Technician	45	15	675
4.1 Existing Infrastructures Analysis	Hamad Alqalaf Daij Alfahad	Engineering	80	16	1280
4.2 runoff analysis	Adel Alnasser Daij Alfahad	Engineering	80	16	1280
5.1 Soil Analysis	Hamad Alqalaf Adel Alnasser	Engineering	80	16	1280
5.2 Cut and Fill and Compaction.	Adel Alnasser Daij Alfahad	Engineering	80	16	1280
6.1 Open Channel Design	Hamad Alqalaf Daij Alfahad	Engineering	80	22	1760
7.1 court dimensions	Adel Alnasser	Technician	45	20	900
7.2 court surface material	Hamad Alqalaf Adel Alnasser Daij Alfahad	Technician	45	36	1620
7.3 Purchasing Equipment	Hamad Alqalaf Adel Alnasser Daij Alfahad	Engineering	80	18	1440
8.1 Sidewalk and benches	Adel Alnasser	Engineering	80	12	960
8.2 Fence	Daij Alfahad	Engineering	80	12	960

Tasks	Staff	Classification	Rate (\$/hr)	Hours	Cost Estimate(\$)
9.1 Traffic Signage	Hamad Alqalaf	Technician	45	18	810
9.2 Traffic Striping	Daij Alfahad	Technician	45	18	810
10.1 Design Report	Hamad Alqalaf Adel Alnasser Daij Alfahad	Engineering	80	18	1440
10.2 Presentation	Hamad Alqalaf Adel Alnasser Daij Alfahad	Engineering	80	24	1920
10.3 Website	Daij Alfahad	Technician	45	16	720
Total				429	\$ 29175

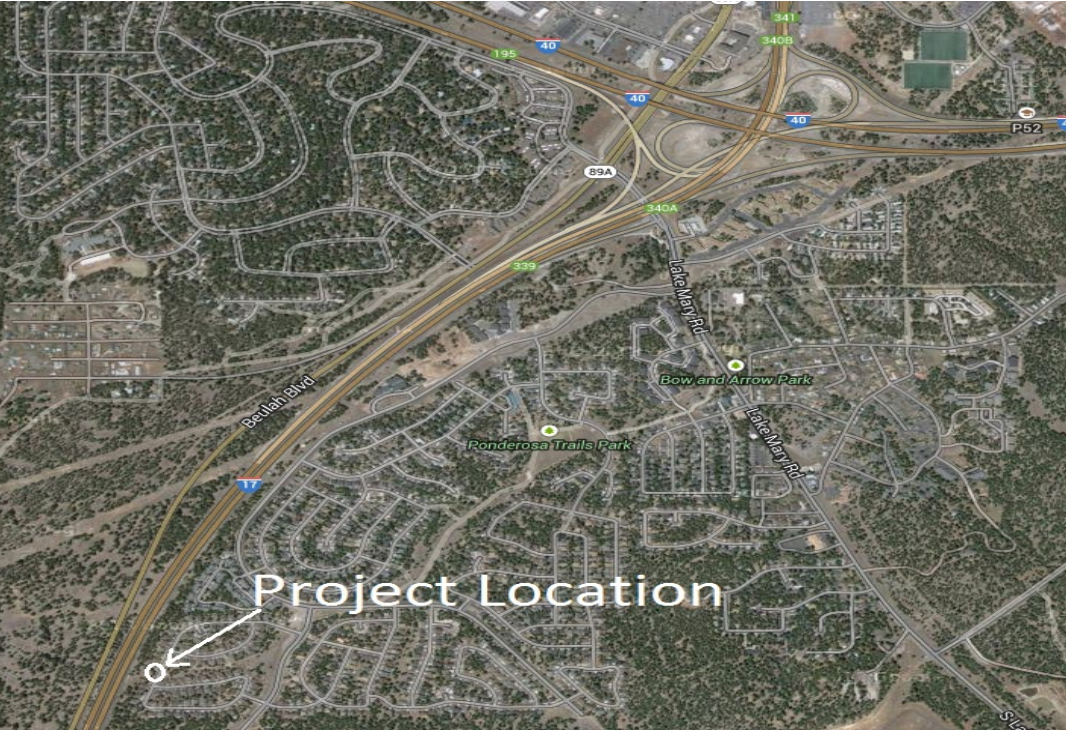
Ten major tasks and twenty-one sub-tasks need to be done. Three engineers will be working on this project as a team and help each other to complete it. Engineer Adel will be in charge of two tasks, engineer Hamad will be in charge of one task, and engineer Daij will be in charge of three tasks. All of the engineers will be in charge of the rest of the tasks as shown in the table above. A total of 429 hours are needed to complete the whole project.

The fee for each engineer is going to be \$80/hour for working on this project, and \$45/hour for the technician. The total of cost estimate is going to be \$29,175.

3.2 Schedule

In the attached Gant Chart it shows the start date and the end date of the major tasks. The will go through the whole year. The project will start in spring 2013. The team is planning on completing the project by the end of October and present it in November. [Appendix B]

Appendix A



Site Location



Closer Look at the Location