

Illinois Institute of Technology

Cottage and Area Physical Modeling for Enhancing a Classic Country Club

Olympia Fields Country Club

IPRO 320

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Table of Contents

I. Abstract.....- 2 -

II. Team Information- 2 -

Team Logo.....- 3 -

Team Purpose- 3 -

Team Objectives.....- 3 -

III. Background- 3 -

History.....- 4 -

Current Issues- 4 -

Technology & Historical Considerations- 4 -

Ethical & Societal Considerations- 5 -

IV. Team Values Statement- 5 -

Desired Behavior.....- 5 -

Conflict Resolution.....- 5 -

V. Work Breakdown Structure- 6 -

Problem Solving Process- 6 -

Team Structure- 7 -

Gantt Chart- 7 -

VI. Expected Results- 10 -

Potential Obstacles to Project Success- 10 -

VII. Budget- 10 -

VIII. Designation of Roles- 11 -

IX. Appendix A.....- 12 -

X. Appendix B- 12 -

XI. References.....- 15 -

I. Abstract

The IPRO 320 team is tasked with assisting Olympia Fields Country Club in making 3D models of their cottages and designing a bridge.

Modeling all 26 cottages will necessitate the accurate collection of data from the cottages at the site. This will require the team to first survey the site and collect field data including measurements and digital photographs. After the data is collected, modeling of the cottages will start using computer software. This will be put into a presentable format for the country club. Also a publication is to be made on the process used in the collection of field data.

The designing of the new bridge will serve as a Capstone requirement working with Robinson Engineering. Achieving this objective will require information from the site as well as an understanding of regulations involved in constructing a bridge. The model of the bridge will be presented to the country club as a possibility for replacing the existing deteriorating bridge.

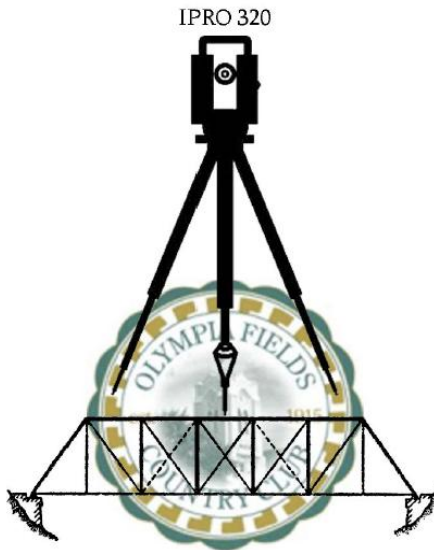
This document will give an extensive overview of the IPRO project. It will provide information on team members, details of the project procedure, and goals and expectations of the project. Work ethics and how to resolve team issues will be discussed. Also a brief history on Olympia Fields Country Club will be given.

II. Team Information

The IPRO 320 roster, along with each individual's strengths, skills, and expectations, can be found in appendices A & B.

Capstone Members: Carolyn Kois, Joshua Bradley, Jenelle Hill, Daniel Gima, and Angela Ng.

Team Logo



Team Purpose

We would like to meet our stated objectives by working effectively as team members. This includes learning from each other while working on different tasks that are part of a central goal and gaining real-world experience working with a client.

Team Objectives

- Develop a drawing set documenting existing conditions of the cottages for use by the Country Club in future planning.
- Develop a 3D digital model of the cottages.
- Design and engineer a replacement for the existing entrance bridge at the country club.
- Publish writing on taking digital photographs for field data

III. Background

History

Olympia Fields Country Club was founded in 1915 by Charles Beach, a prominent Chicago businessman. The location chosen for the club, alongside the Illinois Central Railroad twenty-five miles south of downtown Chicago, was selected for its accessibility by businessmen. The site features a small stream running through it with a luscious forest alongside the stream. After a year and a half to choose and plan for the site, the charter was signed on July 16th, 1915. The name Olympia was chosen as the Grecian people held games in ancient Olympia where the heroes would gather. The land was purchase in February 1917 and in November of the same year a banquet was given for the club's 200 new members. During WWII club loses in members and finances forced the club to sell almost half of its land. This resulted in the removal of one of the four golf courses. In recent years, the country club hosted the U.S. Open in 2003 and invested \$9.5 million to improve practice facilities, bunkers, and other projects in 2005.

Current Issues

Olympia Fields Country Club has been opened for over ninety years. Since then the club has expanded with new construction including 26 cottages in total. At the owner's request, these cottages need to be modeled to document existing conditions. Along with modeling the cottages, the amount of livable space for each of the cottages need to be calculated for tax purposes.

Another issue the country club needs to resolve is the replacement of a dilapidated vehicular bridge. The two-lane bridge in question is at the entrance of the club and spans a stream. This bridge will need to be reconstructed due to its age and level of disrepair. The new bridge should fit in with the theme of the club and also meet specifications for allowance of emergency vehicles to pass through.

Technology & Historical Considerations

Current representation of the cottages in the country club is limited to a black and white 2D map showing the numbering and locations of the cottages. Lidar data is also available which will provide a digital 3D point cloud of the area. Digital cameras can provide detailed pictorial representations of the cottages. With GPS equipment attached to the camera, the location of where that picture was taken can be provided. Software such as AutoCAD and 3DS Max are tools that can be used to create both 2D and 3D models of virtually anything.

Another way of modeling would be to sync digital pictures through software that uses GPS technology to provide a 3D representation of the pictures. PhotoSynth is one such software.

When the country club was opened the technology to digitally represent the cottages was not available. The country club has been expanding over the years and the time has come for more accurate representation. It is also necessary to replace the bridge that will allow emergency vehicles to pass through.

Ethical & Societal Considerations

Although there no concerns with the outcome of the project on the residents dwelling within the country club or the country club owners on modeling the buildings and designing a bridge, some considerations must be taken while collecting data for the project. These concern the privacy of the residents. Data will need to be collected within close proximity of the cottages and pictures of the cottages will be taken. Also consideration should be taken not to damage any of the property while collecting data.

IV. Team Values Statement

Desired Behavior

- Attending all weekly meeting on time
- Clear communication regarding time scheduling conflicts
- Addressing conflicts within the team quickly and fairly

Our team environment should be one that values the ideas and opinions of all of its members, where criticism is always constructive and positive. Workload and tasks should be delegated in a fair manner with a synergistic team climate. All team members should feel useful and valued within the group and should handle their individual obligations in a responsible, timely manner in order to meet our scheduled deadlines. Conflicts with individual team member should be resolved in a professional manner and should be addressed by the team as a whole when necessary under the guidance of a faculty mediator or neutral third party student.

Conflict Resolution

Allocated IPRO meeting times should be well planned with a set agenda that is to be enforced by a daily team leader. A secretary will be appointed for each class period to accurately record progress. The secretary shall post the minutes on iGroups for easy access and shall write the agenda for the following meeting, becoming the team leader for that

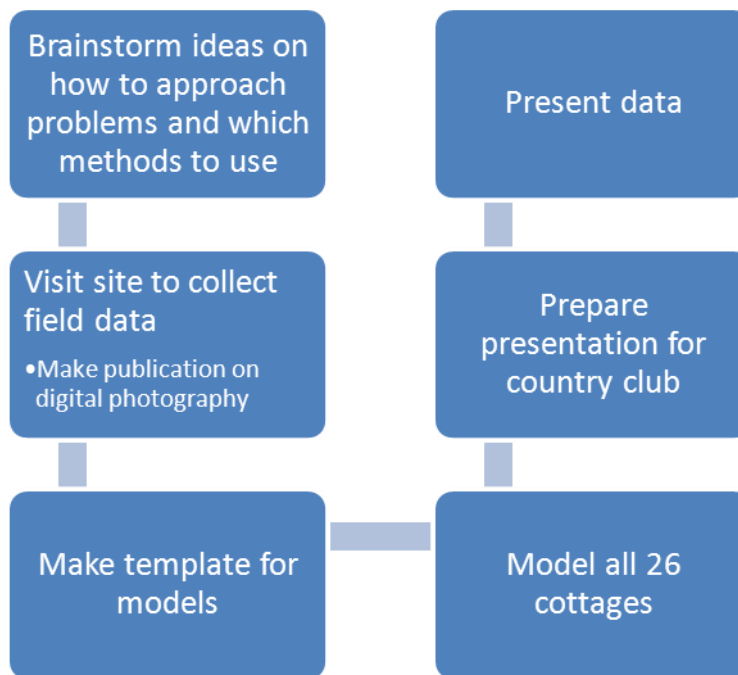
meeting. The meeting environment shall be encouraging and should reward excellence. Constructive criticism should be used to stimulate individual professional growth as well as the overall success of the team. A schedule should be created at the beginning of the semester so that progress can be accurately measured as to ensure the projects timely completion. Major tasks shall be scheduled as to allow each team member to be aware of the team's overall progress. Quality control will be implemented to insure document accuracy. Although the bulk of meeting and planning shall take place during allocated IPRO times, if needed, individual and small group work should occur outside of class.

V. Work Breakdown Structure

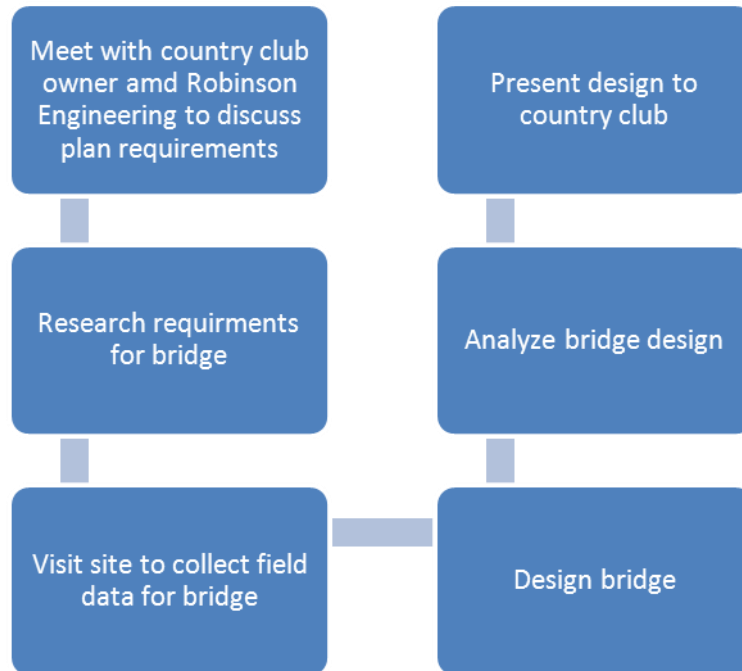
Problem Solving Process

The team will need to visit the country club site several times to conduct initial collection of field data. After this data is collected additional visits to the site may be required.

Modeling of Cottages



Designing of Bridge



Team Structure

Work on this project will be a collaborative effort with every member involved. No official team leader will be assigned. Instead each member will be able to test their abilities on different parts of the project and gain new skills along the way. Leadership will be incorporated in the project by assigning a leader for each group meeting. Along the way roles will be assigned to members on a part of the project that they have not had much experience with, with help from the more experienced members if needed and for quality control. Quality control will insure that all documentation is accurate. Each team member will be able to gain new skills while working on the project. As the project continues the team will break down into smaller groups during the second half of the class session for the second session of the week. This will be to maximize focus on a certain part of the project allowing the team to be more detailed.

Gantt Chart

Part 2

ID	Task Name	Duration	Start	Finish	Predecessors
1	Golf Course Opens :-)	49 days ⁷	Tue 1/11/11	Thu 3/17/11	
2	Research 3D Modeling software options	3 days	Tue 1/11/11	Thu 1/13/11	
3	Team Organization	7 days	Thu 1/13/11	Fri 1/21/11	
4	Create Numbering system	5 days	Thu 1/20/11	Tue 1/26/11	
5	Photo Compiling	5 days	Thu 1/20/11	Tue 1/26/11	
6	Architectural Majors	3 days	Sat 1/22/11	Tue 1/26/11	
7	Site Visit	4 hrs	Sat 1/22/11	Sat 1/22/11	
8		4 hrs	Sat 1/22/11	Sat 1/22/11	
9	Project Plan	8 days	Thu 1/20/11	Fri 1/28/11	
10	Midterm Review Presentation Slides	8 days	Tue 3/1/11	Thu 3/10/11	
11	Spring Break	5 days	Mon 3/14/11	Fri 3/18/11	
12	Ethics Deliverable	1 day	Fri 4/8/11	Fri 4/8/11	
13	Abstract/Brochure Poster	1 day	Mon 4/26/11	Mon 4/26/11	
14	Final Presentation	1 day	Wed 4/27/11	Wed 4/27/11	
15	IPRO Day	1 day	Thu 4/28/11	Thu 4/28/11	14
16	Final Project Report	1 day	Fri 4/29/11	Fri 4/29/11	15

VI. Expected Results

The team expects to create a professionally processed drawing set as well as performance model documenting existing conditions of the Olympia Fields Country Club's cottages for future planning, this should include a field survey book of cottage data.

The team expects to design an aesthetically pleasing and structurally sound entrance bridge to the Olympia Field Country Club that fits in with current architectural styling and motifs.

Data shall be gathered from field visits to the Olympia Fields Country Club. This shall include high resolution photographs, Lidar data, as well as physical building and bridge measurements.

Products shall include a booklet presenting our professionally processed drawing set of cottages as well as an electronic copy of the team's performance modeled. We will also be producing engineering and architectural drawings for the entrance bridge.

This project will allow our clients to have accurate set of drawings and renderings that document existing conditions, which will aid in future development or expansion.

We will produce a Project Plan, a physical copy of our drawing set and bridge designs as well as an electronic copy of our performance model, a publication on digital photography of field data, an IPRO Poster, and an IPRO Presentation. All final deliverables will put under quality control from an appointed member with appropriate expertise.

Potential Obstacles to Project Success

A handful of potential obstacles may occur while conducting the project as with any team project. Accuracy of data is an issue that is of utmost importance. Quality control will need to be implemented along the way as to check for errors. Communication will need to be addressed because of the large team so that each task is done efficiently and effectively. Also time is a factor because the project will need to be completed by a certain date.

VII. Budget

Activity	Cost	Description
Equipment	\$1,000	High end desktop for 3D models-Dell XPS
Printing/Supplies	\$500	Modeling materials and portable storage device
Printing/Supplies	\$1,200	Color Printing of survey, posters, and large-scale printing
Transportation	\$250	Reimbursement for

		car/public transportation for surveying
Other Expenses	\$500	Prototyping
Other Expenses	\$500	Licenses for remote sensing data and viewers: Lidar
Totals	\$3,950	

VIII. Designation of Roles

For each meeting an Agenda will be prepared in advance. In general, topics for old business, " " new business," and "discussion" will be listed. The Meeting Leader will prepare the agenda and distribute it via email on the day before the next meeting. The agenda will be a one page action summary. It will also be posted to the appropriate folder on iGroups. The Meeting Leader will also bring sufficient hard copies for the class, including at least 1 for the adviser. This will insure up-to-date version control.

At a meeting run by the Meeting Leader, a designated Secretary will monitor attendance and take notes for inclusion in the meeting summary.

The summary will include the current status on the 5 most important items, categorized as "completed", "to do", and "problems". It should take no more than 15 minutes to complete the summary, add the agenda for the next meeting, and upload.

The Secretary then becomes the next Meeting Leader, preparing the next agenda and running the next meeting. A Secretary-Designate shall also be chosen at each meeting so that the rotation is known 2 steps ahead. These responsibilities will rotate through all members of the team.

Each student is responsible for insuring that they are functionally listed on igroups and that the necessary email accounts are kept open.

At each meeting a safety briefing will be reviewed, and each participant is to have an identifying placard.

IX. Appendix A

IPRO 320 - Roster		
Team Member	Major	Contact Info
Timothy Biel	Architectural Engineering	tbiel@iit.edu
Joshua Bradley	Civil Engineering	jbradle4@iit.edu
Bill Briggs	(professor)	wbriggs@iit.edu
Leonard Gill	Industrial Tech. Management	lgill2@iit.edu
Daniel Gima	Civil Engineering	dgima@iit.edu
Melissa Hold	Architecture	mhold@iit.edu
Alisa Holm	Architectural Engineering	aholm@iit.edu
Jill Ishii	Civil Engineering	jishii@iit.edu
Carolyn Kois	Civil Engineering	ckois@iit.edu
Christopher La Marca	Civil Engineering	clamarc@iit.edu
William Lange	Architecture	wlange@iit.edu
William Matuszak	Architecture	wmatusza@iit.edu
Elizabeth Mauban	Architectural Engineering	emauban@iit.edu
Grant Mosey	Architecture	gmossey@iit.edu
Angela Ng	Civil Engineering	ang2@iit.edu
Trevor O'Keefe	Architecture	tokeefe1@iit.edu
Coral Pais	Architectural Engineering	cpais@iit.edu
Jenelle Hill	Civil Engineering	jtice@iit.edu
Professor Rohter	(professor)	rohter@iit.edu

X. Appendix B

Team Member	Strengths	Knowledge/Skills to Develop	Expectations For the Project
Timothy Biel	Patient and willingness to work hard, he has some AutoCAD skills.	Would like to further his skills in 3d modeling and hone his teamwork skills.	Expects to complete the tasks given in a manner that satisfies the client while learning new skills to help in the future.
Joshua Bradley	Been in an IPRO before and plans on learning from prior mistakes and triumphs. He considers himself fairly skilled at project management and is able to think "outside of the box". These skills will help the team come up with ideas and put them into action. He has a lot of experience with public speaking	Would like to work more with AutoCAD and other 3D modeling software. He also is anxious to put his civil engineering background to practice to see if he can solve real world problems. He would like to gain more confidence in his abilities in structural engineering.	Expects that he will put in a significant effort and expects others to do the same. He would like to work together as a team to accomplish what the owner has commissioned the team to do. Josh expects that IPRO requirements will come second to requirements set out by the owner.

	and also enjoys it.		
Leonard Gill	Works well in carrying out tasks.	Would like to improve basic construction processes/working in team environment.	Expects that end product will satisfy what the customer is looking to achieve
Daniel Gima	Hard worker and is willing to sacrifice for the team if necessary. He has surveying and basic engineering design experience as well as a proficient knowledge of AutoCAD, Mathcad, SAP2000 and Microsoft Office.	Would like to learn more about 3D graphics and rendering. He would also wants to develop as a leader in terms of taking responsibility and delegating and managing tasks.	Expects everyone in the team to put in hard work and contribute to a standard of excellence that is agreed upon by the group. He expects all members to grow and develop in not only their respective fields, but to gain an understanding of the disciplines of the other members of the team.
Jenelle Hill	Proficient knowledge of AutoCAD, MicroStation, SAP2000, STAAD, Mathcad, and Microsoft Office. She plans to contribute heavily to calculations in bridge design.	Wants to develop her understanding of different types of software available for digital modeling purposes. She would also like to further her understanding of way in which architects and engineers collaborate on projects.	Expects to be finished with majority of the work by spring break and expects the team to develop a book containing pictures and drawings of the cottages. She expects the team to develop multiple designs of a bridge and to impress the client/owner with a quality product that speaks highly of IIT and its students.
Melissa Hold	Experienced with AutoCAD and other architectural modeling software.	Would like to learn more about surveying in the field and integrating gathered data with Lidar data. She also wants to learn more about modeling in Autodesk.	Expects the team to have a complete set of drawings and model for the cottages as well as a new bridge design.
Alisa Holm	Basic knowledge in AutoCAD and is organized and detail oriented. She is able to complete tasks on time and is willing to learn new programs and methods in order to contribute to the team's goals.	Would like a better understanding of AutoCAD as well as writing formal reports. She wants to understand the processes needed to meet client's needs.	Expects to gain experience working with the class while working for the client/IPRO. She expects the team to showcase a professional project and product that we can be proud of.
Jill Ishii	Experience using AutoCAD as well as writing formal reports and is able to work as a member of a team. Writing of formal reports.	Would like to further her surveying skills and learn how to meet a client's needs. She hopes to learn more about bridge design and	Expects to gain valuable experiences with surveying and also putting the collected data to use for a client. She also looks forward to being able to work on

		construction.	the bridge project with a team that is enthusiastic about the project.
Carolyn Kois	Knowledge of civil engineering design and analysis, proficiency in SAP2000, AutoCAD, Microsoft Office, and Mathcad	Would like to learn more about various types of 3D modeling software, develop a better understanding of the engineering design process by working with Robinson Engineering on the bridge project	Expects to produce a book with the results of the surveying and modeling, check the bridge designed by Robinson, and work with the client to complete any other work required for the bridge.
Christopher La Marca	Experience with using AutoCAD as well as Photoshop CS5 and SAP2000. Hard worker and perfectionist. He also had some surveying experience.	Wants to get better at AutoCAD and learn how to use 3D Max and other building modeling software.	Expects the team to accurately model all cottages and design an impressive bridge.
William Lange	Has previously led an IPRO and hopes to be able to share the positive and negative aspects with his team, so that they are able to benefit from his experiences.	Would like to further his knowledge of 3D modeling software as well as expanding his understanding of construction through the projects bridge design.	Expects to have a much more successful IPRO project than his previous IPRO because of the clearly stated problem. He thinks that with specific goals in mind, the team will be able to accomplish them in a timely manner.
William Matuszak	Architecture and construction background. He is knowledgeable in 3D rendering software's and has great collaborative skills.	Would like to further his skills in surveying and engineering design.	Expects to develop successful relationships with fellow classmates and to create a finished product is pleasing to the client.
Elizabeth Mauban	Diligent and able to follows through with tasks in organized manner. She has a basic knowledge of AutoCAD and surveying.	Wants to further develop her AutoCAD and 3D modeling skills. She also wants to learn how to see a project through from beginning to end.	Expects the group to work as a team to realize the client's goals.
Grant Mosey	Broad knowledge of architectural modeling software, as well as public speaking ability.	Would like to increase his understanding of surveying as well as his understanding of computer modeled topography.	Expects that the team will succeed in its goal of modeling existing conditions and developing a plan for replacing the existing bridge.
Angela Ng	Detail oriented almost to the point of perfection. She strives to do her best and will do as much work is necessary get things done. She will contribute when others shy away from a task and is willing to listen to others even when they offer	Would like to learn how to use new software, such as architectural modeling software. She hopes to develop her leadership skills, especially in terms of allowing others to take charge.	Expects to further her engineering experience through the bridge project and expects to learn more about working with others of different backgrounds and majors. She hopes that working in this capstone IPRO will give her

	constructive criticism.		further insight on bridge design from start to finish.
Trevor O'Keefe	Experienced with design as well as using design software. He is experienced in working with and leading teams. Trevor also brings a good sense of humor into the group and is able to keep a team on track.	I've never done much work building digital terrain. I've also never designed a bridge before. Both of those things will be pretty useful later in life. I also really want to learn to play the piano someday.	Expects the team to have a large number of experienced, intelligent, and motivated individuals. He expects this project to go very well and that team members will learn a lot from each other.
Coral Pais	Time management and listening skills that give her strength as a leader. She believes that she will be able to offer her time to this enthusiastic IPRO team in a way that will be beneficial to her and the team. She brings to the group an open mind and a sense of dedication. Coral is a dependable team player with leadership abilities and is also a great multi-tasker who strives for excellence.	Enthusiast for knowledge and would like to develop her designing skills through a better understanding of AutoCAD and similar programs. As a growing leader she wishes to be able to sharpen her leadership skills and is willing to accept guidance wherever it will aid her.	Expects the completion of a new design for the bridge and the modeling of the cottages on the Olympia Fields Country Club property. She expects the team to be able to support each other through various challenges with devotion and commitment, keeping the team's end goals in mind.

XI. References

<http://www.ofcc.info/>