

***ENGINEERING DESIGN PROJECT
DELIVERABLE E – PROJECT PLAN & COST ESTIMATE
TASK 05: PROTOTYPING TEST PLAN***

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1. Abstract

This Document comprises the 4th Task of Deliverable E, which is somewhat derived from the elements of Task 03, the Prototyping Equipment List of needed software and hardware for the assembly of future prototypes. The elements of this document will be referred to in our discussion of project risks and the mitigation strategies we have in mind to address them, which will include the discussion of risks that could affect the assembly of prototypes needed for the trajectory of the project’s overall completion and progression to stay on course. Thus, this Task acts as a predecessor to Task 05, our Project Risk Analyses & Mitigation Planning Outline.

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2. Introduction

Every prototype must have a testing plan to accompany it. This combination of the first implementation of a design into a comprehensive, focused, physical, or analytical prototype and the testing that corresponds to whichever type of prototype is chosen is crucial to learning about the strengths of the designed structure (or element of a structure, if a focused prototype is constructed), as well as its weaknesses; what could be improved, what can be abandoned all together, or what can be potentially modified into a separate or more independent design that can be used elsewhere to act as a supportive addition or a supplemental element. All of these are made possible with testing a prototype, whether high or low in its fidelity. This is what is outlined in this document; it will use the template that we were provided with in Lecture No. 011 (and recommended to be used in the Deliverable’s Instruction/Objectives Page on our course Brightspace Website), and will feature our test objectives, a description of the prototype used and of the test method used, a description of what results we aim to record, and how these results will be used, and, finally, will provide a timeline for how long these tests will last and when they will commence.

3. Background on our Decided Prototype Testing Plan

This background is very summative and indicative of our current status as First-Year Engineering Students who do not have any educational training on the use of loads or destructive tests on mechanical or civil structures.

Our professor, Professor Muslim Majeed, discussed with our class during his dictating of Lecture No. 011 that the only type of testing that we, as teams working on this type of structure for our project, having no training in the determining of loads to apply to structures or how to conduct any type of destructive tests without the necessary knowledge of how buildings should be tested, can perform on our prototypes would be feedback from our client(s). This makes sense, seeing as our knowledge of how to conduct these very specific tests requiring some amount of applicable knowledge of load capacity and failure, stress and so on is indeed very limited, and, with some students, is nothing. This would then mean that the only applicable and feasible way to test our prototypes in the prototyping deliverables (F through H) is to ask for specific feedback from our client(s), asking them to be as detailed as possible in their explanation of what does and does not work in the structure of the prototype to compensate for the lack of numerical and value-based results and observations we cannot get from our client’s feedback.

4. Prototype Testing Plan

<i>Test ID</i>	<i>Test Objective</i>	<i>Description Of Prototype Used</i>	<i>Basic Test Method Employed</i>	<i>Description Of Results To Be Recorded</i>	<i>Result Utilization</i>	<i>Estimated Test Duration</i>	<i>Planned Start Date</i>
1	<ul style="list-style-type: none"> To provide a roadmap of where our design should go next, in order to improve our design To verify the feasibility of our design, in other words, to confirm whether or not a focused subsystem or comprehensive system is ready to be built, based on the user’s satisfaction Analyzing critical subsystems that have a bearing on the functional integrity of the structure (a review of Functional Requirement fulfillment) 	<ul style="list-style-type: none"> 3-D Printed Small-Scale Model of Building Interior & Roof (Very Low Fidelity) 	Detailed Constructive Feedback from our Client(s) on various elements of the design and its functionality	The overall similarity that the prototype our team presents our clients has to what they have in mind for what the design should look like	This feedback will be used to improve the integrity of our detailed design, and will inform us on how to proceed with our next prototype	The length of a Client Meeting, either allotted by the course’s requirement for one to be held, or by our own request (circa 10-20 mins)	Tuesday November 07 TH , 2023

