COURSE SYLLABUS
The University of Texas at Arlington
College of Engineering
Department of Civil Engineering
CE 4306
INFRASTRUCTURE ASSET MANAGEMENT
(3 Credit Hours)

Instructors: Mohammad Najafi, Ph.D., P.E., G. ‘Gus’ Khankarli, Ph.D., P.E., PMP

Office Numbers: 428 Nedderman Hall and 144 CELB

Office Telephone Number: 817-272-0507 and 817-272-9180 (Lab)

Email Address: najafi@uta.edu, khankarl@uta.edu

Office Hours: Monday through Thursday 5:30 pm-6:00 pm or by appointment

Course Number, Section Number, and Course Title: CE 4306-001, Infra Asset Management

Time and Place of Class Meetings: Monday through Thursday, 3:30 – 5:20 PM; NH 106

Teaching Assistant (TA): Babak Haji

Office Number: Civil Engineering Laboratory Building (CELB) – Room 141

Office Telephone Number: 817-272-9164

Email: babak.hajimohammadhasan@mavs.uta.edu

Office Hours: Tuesday and Thursday, 1:00 - 3:00 PM (Additional Office Hours by Appointment).

Description of Course Content: Infrastructure inventory, inspection, and life cycle costs. Topics include pipeline deterioration parameters, asset management technologies, risk assessment, government regulations and case studies. Prerequisite: Grade of C or better in either CE 3310 or IE 3312.

Course Objectives:
(1) Possess a broad-based civil engineering education to successfully obtain professional positions, and practice civil engineering in a wide range of professional settings including consulting firms, industries, and government agencies.
(2) Exhibit professional growth throughout their careers by taking on increasing professional responsibilities, and pursue life-long learning by participation in job-related training activities, and/or attending graduate school, and obtaining professional engineering license.

Student General Learning Outcomes: Upon completion of the course, the student will have:

(1) an ability to plan and to assess the condition of an asset to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
(2) an ability to function on multi-disciplinary teams
(3) an ability to identify, formulate, and solve engineering problems
(4) an understanding of professional and ethical responsibility
(5) an ability to communicate effectively
(6) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
(7) a recognition of the need for, and an ability to engage in life-long learning
(8) a knowledge of contemporary issues
(9) an ability to use the techniques, skills and modern engineering tools necessary for engineering practice

**Specific Course Learning Outcomes:** Upon completion of the course, the student will:

1. Understand asset management principles
2. Understand planning principles
3. Understand planning constraints for a major infrastructure project
4. Understand major sources of funding and total project cost principles
5. Understand the process of identifying and responding to risk
6. Explore ways to quantitatively analyze, select optimal planning alternatives for assets

**Requirements: SOFTWARE:**
Student should have a working knowledge of and access to Microsoft Word®®, Microsoft Excel®®, Microsoft PowerPoint®.

**Required Textbooks and Other Course Materials:**

2. Handouts, notes, reading assignments, problem solutions and other information are located on the class Blackboard site.

**Referenced Textbooks**


**Descriptions of major assignments and examinations with due dates:**

**ALL students (including Distance Learners) must take ALL Tests in class, in person**

Responses to the tests should be as follows to receive maximum credit:
1. Only blue pen is acceptable; should you make an error simply strike through it.
2. Include your full name.
3. Legible handwriting is a must.

Homework assignments, a research paper and presentation, and two exams constitute the assignments and testing in this class.

All assignments must be turned in at the start of the class or, if, submitted electronically with the instructor’s approval, prior to the class period in which they are due. Failure to do so will constitute a grade of zero for the assignment in question.

One week of advanced notice will be provided in scheduling each exam. The final exam will be given on the scheduled date according to the university’s published final exams schedule. The final presentation is scheduled on the date shown in the course outline. Note that failure to appear for an exam/presentation at the scheduled time will constitute a grade of zero in that exam/presentation.

Homework and paper in this class are the minimum assignments considered adequate to achieve basic proficiency of course material. Homework will be discussed in class. When doing the homework, specify date, name, course, and problem number at top of each page. Each problem is to be started on a new page, as applicable. Include at the beginning of the problem, the problem statement and any diagrams given as well as any additional diagram needed to solve the problem. Then show solution. If calculations are required, all calculations should show four (4) significant figures for intermediate values calculated. Final answer should be rounded to two (2) significant figures unless all data is greater than three (3) significant figures. Then use minimum number of significant figures dictated by problem (greater than 3).
When establishing elevations or distances for design drawing, answers must be in hundreds of a foot or thousands of a meter.

The exams will generally relate to the material covered in the lectures or in assignments. The philosophy of the exam is not to merely test your total recall or memorization, but to extend your thinking from theory and example problems to engineering situations. Each exam may include both open and closed book portions.

See the “Make-up Exam and Assignment Policy” section for accommodations of incomplete or missed assignments.

Grading Policy: Grades are based on two exams, four homework assignments, group research paper, presentation, and attendance/participation. Grades will be determined by averaging the exams and all assignments.

A) Tests:

Students are expected to seat themselves with at least 1 empty seat between other students.

ITEMS ALLOWED/NOT ALLOWED DURING QUIZZES, TESTS or EXAMS:
No items (backpacks, cell-phones, I-pads, etc.) are allowed on the desk except as noted below:

“Closed Book” means Students may not have anything on their desk area during the test except: Blue pen, calculator.

“Open Book” means Students must work independently to complete the assigned requirements, if assigned.

1) Midterm Exam

There will be a midterm exam which will cover material discussed in the lectures and in guest presentations, as applicable. The midterm exam represents 20% of the student's final grade.

2) Final Exam

There will be a final exam which will cover material discussed in the lectures and in guest presentations as applicable. The final exam represents 20% of the student's final grade.

B) HOMEWORK & IN CLASS QUIZZES AND RESEARCH PROJECTS:

The primary assignments for homework will be reading and working problems assigned by the Instructor. Late homework (i.e., turned in after class has started) will not be graded. Homework should be identified as follows:

1) Student Name (Printed)
2) Student Instructor Assigned Number (Student ID #)
3) Chapter/lecture assigned (if there are problems from more than one Chapter, list other Chapters also).
4) Due Date

Begin each problem with the Chapter/lecture Number and then the Problem number. Problem #7 in Chapter 3 thus is shown as “3.7”. Place problems in proper order. Do not place additional designations on the HW such as “Homework # 2”.

Problem #7 in Chapter 3 thus is shown as “3.7”. Place problems in proper order. Do not place additional designations on the HW such as “Homework # 2”.

Problem #7 in Chapter 3 thus is shown as “3.7”. Place problems in proper order. Do not place additional designations on the HW such as “Homework # 2”.
C) Term Group Project

There is one term group project, which will be discussed in class and completed throughout the term. Groups will be composed of about three (3) to five (5) students per group or as assigned. Students will be given the option to organize their own groups. Students without groups will be assigned to a team by the instructor. All instructions and relevant material for the term group project will be handed out at the scheduled date.

The group project is comprised of a Final Report and a Final Oral Presentation. Each submittal will receive a single group grade. However, the individual grade of each student depends on his or her peer evaluation of the student's work within the team. The final presentation will be evaluated by the peer groups.

The term group project submittals need to be turned in by the date and time they are due. The term group project and presentation represents 35% of the student's final grade. The breakdown of the term group project grade is shown in GRADING section below.

PRESENTATION:

Students will form teams, prepare reports and make presentations to the class and the instructor. The teams' reports constitute 20% of the overall grade.

The teams' presentations and critique constitute 15% of the overall grade and will be graded on:

2% Spelling/Grammar/Punctuation
3% Subject Content & Thoroughness of topic discussion
2% Verbal/Graphic Communication including presentation organization
2% Documentation of references
2% Response to Questions
4% Critique

Grading Policy:

Grades will be determined according to the following scale (the grading scale may be lowered at the discretion of the Instructor, but will not be raised):

<table>
<thead>
<tr>
<th>Grade</th>
<th>% Required*</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>&gt; 90.0 – 100</td>
</tr>
<tr>
<td>B</td>
<td>= 80.0 – 89.9</td>
</tr>
<tr>
<td>C</td>
<td>= 70.0 – 79.9</td>
</tr>
<tr>
<td>D</td>
<td>= 60.0 – 69.9</td>
</tr>
<tr>
<td>F</td>
<td>&lt; 60.0</td>
</tr>
</tbody>
</table>

* Any rounding which influences the final grade on any assignment, quiz, Test, Final Exam or overall course grade, is at the Instructor's discretion.

Course Grade

The course grade breakdown is as follows:

1) Exam #1 20%
2) Exam #2 20%
3) Homework/Assignment 20%
4) Class Attendance & Participation 5%
5) Presentation and Critique 15%
6) Research Report 20%

TOTAL 100%
Attendance Policy:
Registered students are expected to attend all classes in person (except for Distance Learning students, if any). Class participation and discussions are essential for full professional development. Please arrive and be seated promptly. Instructor reserves the right to reduce points towards final grade to mitigate class disruptions.

Distance Learning students can participate in class discussions through email. Participation of Distance Learning students is highly recommended as it may impact the final grade.

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. Students will not be automatically dropped for non-attendance. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. Contact the Financial Aid Office for more information.

Americans with Disabilities Act: The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the Americans with Disabilities Act (ADA). All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

If you: a) need accommodations because of a disability; b) have emergency medical information to share with the Instructor; or 3) if you need special arrangements in case the building must be evacuated, please inform the Instructor immediately. Please see the Instructor (privately – if you choose) after the 1st class.

Academic Integrity: It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University. According to the UT System Regents' Rule 50101, §2.2, "Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts."

Student Support Services Available: The University of Texas at Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. These resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals to resources for any reason, students may contact the Maverick Resource Hotline at 817-272-6107 or visit www.uta.edu/resources for more information.

Electronic Communication Policy: The University of Texas at Arlington has adopted the University "MavMail" address as the sole official means of communication with students. MavMail is used to remind students of important deadlines, advertise events and activities, and permit the University to conduct official transactions exclusively by electronic means. For example, important information concerning registration, financial aid, payment of bills, and graduation are now sent to students through the MavMail system. All students are assigned a MavMail account. Students are responsible for checking their MavMail regularly. Information about activating and using MavMail is available at
http://www.uta.edu/oit/email/. There is no additional charge to students for using this account, and it remains active even after they graduate from UT Arlington.

To obtain your NetID or for logon assistance, visit https://webapps.uta.edu/oit/selfservice/. If you are unable to resolve your issue from the Self-Service website, contact the Helpdesk at helpdesk@uta.edu.

**Final Review Week:** A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week unless specified in the class syllabus. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. Classes are held as scheduled during this week and lectures and presentations may be given.

**Librarian to Contact:**
Students are expected to consult various Library books on the course subject matter throughout the semester. Students are also encouraged to bring journal articles of their interest, to help them understand how the course is applied in real life situations. The Librarian to Contact is:
Sylvia George-Williams
Engineering Librarian, UT Arlington Science & Engineering Library
NH B03C
(817) 272-7519
sylvia@uta.edu

**E-Culture Policy:**

The University of Texas at Arlington has adopted the University email address as an official means of communication with students. Through the use of email, UT-Arlington is able to provide students with relevant and timely information, designed to facilitate student success. In particular, important information concerning registration, financial aid, payment of bills, and graduation may be sent to students through email.

All students are assigned an email account and information about activating and using it is available at www.uta.edu/email. New students (first semester at UTA) are able to activate their email account 24 hours after registering for courses. There is no additional charge to students for using this account, and it remains active as long as a student is enrolled at UT-Arlington. Students are responsible for checking their email regularly.

Check with Instructor regarding granting Instructor permission to communicate student’s information to him/her via e-mail. Instructor will not communicate grades without prior written permission from student.

**UTA’s E-mail is the prime means for communication.** The University and the Instructor have the right to send communications to students via e-mail, and the right to expect the student to receive and read such communications in a timely fashion. The Office of Information Technology (OIT) assigns all students an official UTA e-mail address. This OIT assigned e-mail address is the one to which the University and Instructor will send e-mail communications. Students are expected to check this OIT assigned e-mail address on a frequent and consistent basis to stay current with University and Instructor communications. The University and the Instructor recommends checking e-mail daily recognizing that some e-mails may be time-critical.

**Secondary means for communication:** A student must give current and correct local and permanent addresses and telephone numbers to the Office of the Registrar (OR) and must notify the OR immediately of any changes. Official correspondence may be mailed, versus e-mailed- to the appropriate address depending on the nature of the correspondence and the academic calendar; if the student has moved and
failed to correct the address given to the OR, she or he will not be relieved of responsibility on the grounds that the correspondence was not delivered.

**Make-up Exam Policy:**
Only extenuating circumstances may be accepted as an excuse for missing a Test or the Final Exam. Health related excuses require: 1) a written medical report; 2) Clearly printed or typed name of the physician; 3) Signature of the physician; and 4) phone number where the physician can be contacted. Whether or not the student is allowed to take a make-up exam is ultimately at the discretion of the Instructor.

**Grade Grievance Policy:** If a student believes there is a discrepancy regarding his or her grade, the student shall contact the Instructor as soon as is practicable. The Instructor will schedule an appointment with the student to review the issue. If after all attempts between the student and the Instructor, to reconcile the differences regarding the grade, have been exhausted, then the student may seek remedy under the grade grievance policy in the catalog.

For issues involving scholastic dishonesty, see the Academic Dishonesty entry in the UTA undergraduate catalog.

**General Information:**

**Blackboard Site:** Handouts, notes, articles, and other information are located on Blackboard

*Minor adjustments to the syllabus may be necessary which will be posted on Blackboard.*

**Research Paper:** Students/assigned groups will submit a research topic in infrastructure maintenance, rehabilitation, or policy for approval by **February 9**. The research paper will be completed and turned in at the beginning of the class on **April 26, 2012** prior to the scheduled presentations.

The research paper will be between 10 to 12 pages. Its format and style guidelines shall follow UTA’s Thesis and Dissertation (T&D) Guidelines that can be found at: [http://grad.pci.uta.edu/students/services/thesis/](http://grad.pci.uta.edu/students/services/thesis/) and shall cover at a minimum:

- Introduction
- Discussion of the topic to cover all three areas of infrastructure evaluation, maintenance and renewal that are covered in the class or as approved.
- Conclusion
- References (minimum 10) and proper citations

Proper spelling, use of clear and concise sentences, structure, and compliance with UTA’s formatting requirements will be considered in the grading process.

Your last name/Group Number must appear in the upper right corner and the page numbers must be centered in the bottom of each page.

**Use of LAPTOP, I-pads or other electronic devices, or E-MAIL correspondence during class:** In order to minimize disruption, the use of all electronic devices will not be allowed during class. Students wishing to take notes via a laptop may do so only with prior permission from the Instructor.

**CELL PHONE use in classroom during class:** In order to minimize distractions, use of cell phones during class in the classroom is **prohibited**. Students must turn off their cell phones during class. If you are anticipating an important call, please inform the Instructor at the beginning of class and change the cell phone to “vibrate” mode. If your call comes through during class, leave the classroom quietly **before** beginning your conversation and return quietly as soon as the call is completed.

The Instructor reserves the right to adjust Students’ grades as a result of class disruption due to cell phone or non-adherence to the above electronic device usage policy.
<table>
<thead>
<tr>
<th>Class</th>
<th>Date</th>
<th>Day</th>
<th>Topic</th>
<th>Chapter</th>
<th>Instructor &amp; Guest Lecturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>July</td>
<td>T</td>
<td>Describe Course Objectives and Organize Project Teams; General Concepts</td>
<td>1</td>
<td>GAK</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>W</td>
<td>Asset Management and Planning</td>
<td>Handout</td>
<td>GAK</td>
</tr>
<tr>
<td>3</td>
<td>12</td>
<td>TH</td>
<td>Planning Objectives</td>
<td>2</td>
<td>GAK</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
<td>M</td>
<td>Planning procedures for major capital projects</td>
<td>3, 4</td>
<td>HW 1/GAK</td>
</tr>
<tr>
<td>5</td>
<td>17</td>
<td>T</td>
<td>Prioritization of capital and maintenance projects</td>
<td>4, 5, 6</td>
<td>GAK</td>
</tr>
<tr>
<td>6</td>
<td>18</td>
<td>W</td>
<td>Prioritization of capital and maintenance projects</td>
<td>5, 6, 7</td>
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<tr>
<td>7</td>
<td>19</td>
<td>TH</td>
<td>Financial analyses.</td>
<td>8</td>
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<td>8</td>
<td>23</td>
<td>M</td>
<td>MIDTERM EXAM</td>
<td>Proposal Due</td>
<td>Proctor/GAK</td>
</tr>
<tr>
<td>9</td>
<td>24</td>
<td>T</td>
<td>Financial Plans – Case Study in accordance with Federal Requirements</td>
<td>Handout</td>
<td>HW 2/GAK</td>
</tr>
<tr>
<td>10</td>
<td>25</td>
<td>W</td>
<td>Economic analyses I &amp; II</td>
<td>9 &amp; 10</td>
<td>GAK</td>
</tr>
<tr>
<td>11</td>
<td>26</td>
<td>TH</td>
<td>Risk Management</td>
<td>Handout</td>
<td>GAK</td>
</tr>
<tr>
<td>12</td>
<td>30</td>
<td>M</td>
<td>Risk Management Plans for Capital Assets – Case Study</td>
<td>Handout</td>
<td>HW 3/GAK</td>
</tr>
<tr>
<td>13</td>
<td>31</td>
<td>T</td>
<td>Environmental and social impact assessment I: requirements and procedures</td>
<td>11/Feasibility Due</td>
<td>MN</td>
</tr>
<tr>
<td>14</td>
<td>Aug</td>
<td>W</td>
<td>Environmental and social impact assessment II: sustainability, environmental justice, and other modern issues</td>
<td>12, 13</td>
<td>MN</td>
</tr>
<tr>
<td>15</td>
<td>2</td>
<td>TH</td>
<td>Public involvement and legal and institutional issues I: requirements and procedures</td>
<td>14</td>
<td>MN</td>
</tr>
<tr>
<td>16</td>
<td>6</td>
<td>M</td>
<td>Water Infrastructure Asset Management</td>
<td>Handout-FHWA Report</td>
<td>HW 4/GAK</td>
</tr>
<tr>
<td>17</td>
<td>7</td>
<td>T</td>
<td>Innovative Financing and Construction Services</td>
<td>16</td>
<td>GAK</td>
</tr>
<tr>
<td>18</td>
<td>8</td>
<td>W</td>
<td>Decision models and modern methods for treatment of uncertainty and risk.</td>
<td>17, 18</td>
<td>MN</td>
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<tr>
<td>19</td>
<td>9</td>
<td>TH</td>
<td>FINAL EXAM</td>
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<td>Proctor/GAK</td>
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<tr>
<td>20</td>
<td>13</td>
<td>M</td>
<td>Group Project Presentation</td>
<td>Project Report and Presentation Due</td>
<td>GAK</td>
</tr>
</tbody>
</table>
TERM GROUP PROJECT REPORT
(35% Final Grade)

Due: Refer to the submission schedule

Grade: __________________ Group: _____________________________________________

OVERVIEW

Objective – This project will provide hands-on experience with the assessment, planning, analysis, feasibility study, development, and design of a major public infrastructure project as follows:

1. Project will be assigned by instructor.
2. The project is currently in the planning stage,
3. Analyze the project for planning and feasibility with respect to various issues illustrated in Figure 2.4 in the text, and
4. Determine feasible alternates based on your analysis of the available data and include documentation and presentation of your prioritized alternates.

Project Summary – A major project will be selected for this course. Students may also propose alternative projects. The project plan will be subdivided into three phases that will be covered in your report (20% of grade) and included in the Final Oral presentation, as follows:

1) Project Proposal (2.5%): In this phase your team will:

   (a) Perform a preliminary requirement analysis for the project, e.g., (i) project background and need, (ii) what are the program goals and objectives of the agency and how this project addresses some of these goals and objectives, (iii) What needs, deficiencies, and problems are being addressed by the selected project, and (iv) other issues such as what is the anticipated budget, schedule, and the planning stage etc.

   (b) Determine feasibility of the assignment. Assignment feasibility is to be able to identify most of the characteristics of interest or elements as highlighted in Figure-2.4 (textbook) and that information is available for you to conduct an analysis.

   (c) Summarize the information in a short memo (not to exceed 2 pages single spaced) clearly documenting your objectives and proposal to for this project. Also, include an introduction section describing the project and its background.

2) Project Feasibility Study and Analysis (2.5%)

   In this phase your team will
   a) Collect data with respect to each of the characteristics of interest or elements pointed out in Figure 2.4 (i.e., technical, social, political, institutional, etc) and identify various feasible alternatives.
   b) Based on available data and your analysis, prioritize various options or alternates that you have identified.
   c) Justify your answers based on your understanding of the planning, engineering, and economic issues discussed in the class and what you have learned through your individual efforts in Assign-1.
   d) Document your results.
3) **Documentation (15%)**: In this phase your team will prepare the final documentation for your project by including the comments received from your peer group and provide a cover letter describing the actions you have taken in response to the review comments. Also include a copy of your Power Point Presentation (electronic version for both Report (Word and PDF) and presentation). Final presentation will be scheduled as shown in the course outline.

**Checklist for Important Submittals (Check Course Outline for Dates)**

The submittal should follow the format for a Master's Thesis as published on UTA’s Graduate Studies Web site [http://grad.pci.uta.edu/students/services/thesis/](http://grad.pci.uta.edu/students/services/thesis/) and should have the following characteristics as a minimum:

- All material contained in the report should be electronic submissions.

- The report should include as a minimum an Abstract, Introduction, Agency and Project Description, Data and analysis, Feasible alternates, Criteria for evaluation, Evaluation results, Prioritized list of alternates, Conclusions, References, and Appendices.

- All material should be, space–and–a–half, with the exception of flowcharts and sketches, which can be done by hand (electronic drawings are preferred), leaving 1” top, bottom, left and right margins. Use a consistent font and font size throughout the submittal (Times New Roman-12 is encouraged but not required).

- All the pages must be numbered.

- A professionally–written memorandum addressed to Director of Engineering, appropriately dated, formally submitting for review and evaluation, and describing the content and organization of your report, followed by a table of contents that references each item within the submittal.

- The submittal should include any appendices, attachments or exhibits relevant to your project including a list of references (and copies where necessary for clarity).