

# National Science Foundation & Mathematics Engineering Science Achievement (MESA) Summer Team Internship Program

**Infrastructure Engineering Corporation : Jason Lash & Pedro Manguy & Malcolm Pirnie: Takesi Osuga**

## Introduction

### Infrastructure Engineering Corporation

Infrastructure Engineering Corporation is an engineering and construction management consulting firm primarily serving public agency clients.

During the Internship, Pedro and Jason worked on an emergency wells project for the City of Menlo Park Water and Sewer Improvements and for the City of Del Mar.



•Brianna Lutes of IEC take interns on a tour of the construction of West Feeder (ID-A) Pipeline Replacement for Rincon Del Diablo Municipal Water District.



### Malcolm Pirnie

Malcolm Pirnie is an environmental consulting firm which provides comprehensive services to water and wastewater engineering. Their services include project design involving modeling and CAD, and also construction management services including field supervision, special inspections and contract administration.

During this internship, Takesi worked in the field primarily on the contract administration of a major construction project, functioning in the role of an inspector, confirming that the construction and materials provided were in compliance with the contract documents.



•Takesi (left) from Malcolm Pirnie is inspecting the Fine Bubbles Diffusers in AST Basin #2 at IBWC. Takesi (right) is at his desk electronically linking RFI documents to contract documents



## Methods

### AUTOCAD Civil 3D

AutoCAD Civil 3D is a 3D modeling program used to design and prepare construction drawings for projects. In our internship (IEC), these projects included the emergency water supply project for the City of Menlo Park and water and sewer pipeline improvements for the City of Del Mar.



•IBWC waste water treatment plant construction site. (Malcolm Pirnie)

## Results

### Infrastructure Engineering Corporation

For the City of Menlo Park – Emergency Water Supply Project, Pedro and Jason helped develop the project map for Menlo Park. Towards the end of our internship, IEC and the City of Menlo Park were preparing to have a community meeting to determine the most adequate well sites.

Pedro also worked on a project for the City of Del Mar. He helped develop key maps that showed water and sewer pipeline. At the completion of our internship, the key maps were still in development.

### Malcolm Pirnie

At Malcolm Pirnie, Takesi worked on the paperless program used for documenting construction information between Malcolm Pirnie and its client, the City of San Diego. Takesi updated projects and linked them to their respective Request For Information (RFI) documents. This system documented and kept a complete record of the construction changes in the field, this included design changes made by field order, owner request, changed project conditions, etc.

## Conclusion

Acquiring hands-on experience in the field is a significant step in our professional development. This experience allowed us to develop a greater understanding of complex engineering projects that IEC and Malcolm Pirnie undertake and enhance our practical knowledge of the civil engineering field.

IEC specifically allowed Jason and Pedro to gain knowledge in the project planning process and how projects are designed according to the clients specifications and requirements.

Likewise, Takesi had the opportunity to learn about field engineering and the connection between contract documents and the project inspection processes. Takesi learned how these documents worked together and how they were used by the client, the contractor, equipment supplier and field engineer during construction of large scale projects.




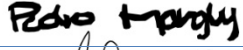
•A closer look at the PVC heat fusion device. (IEC)

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**100% SUBMITTAL**

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