

**Public Works-Bureau of Engineering and Construction**  
**High School Engineering Internship Program**

The Oakland public works engineering program was my first experience in a professional work environment and gave me a very solid idea of what civil engineering is really like and how much time and effort is dedicated to each field. I would very much like to state that I enjoyed the 6 weeks I spent there very much and because of this program I will definitely be considering a position in some form of engineering sometime in the future. It showed me that engineering is a very broad field full of different experiences and the process of collecting data and making Oakland better is much bigger than I would have anticipated. Lots of different variables play a part in this process and it was very fun to explore all the different fields and types of engineering rather than just sticking to one field for 6 weeks (like I honestly was expecting). One thing I enjoyed specifically was the attitude each worker displayed towards us and their job in general. Nearly every worker there gave off a very positive and cheerful vibe and not one of them reacted to us with annoyance or disdain. They all seemed to very much enjoy their time with us and almost seemed excited to show us what we were going to be doing on each day, yet still had the ability to remain professional and focused. Not only did this help me personally feel more comfortable around these people and the workplace in general but it hammered the idea in my head that having a job and doing work is something that is something that you should enjoy to some degree, and it isn't healthy to be motivated to do a job that you hate or that you find depressing and by the 2nd week I was having fun as well even though during that time I was mostly absorbing information and not really doing much actual work. Because of my time there I believe I will be considering a position in surveying in the near future. This was the station that I enjoyed the most because the whole process of collecting satellite data using the various amounts of tools around various parts of Oakland was a very fun experience for me and we even got to put our map data that we collected in physical form which made it all worth it in the end and gave me and my group a sense of accomplishment despite how simple it may have seemed. Once again I would like to say I very much enjoyed my time with all the people there and I am very thankful to you all for having us in your program and opening my eyes to the real world of engineering and work in general. I have no regrets about spending half my summer there and I have to say it was much better and much more fun than I thought it would be.

***-Cameron Stevenson, Oakland High School***

As someone who has been interested in the field of engineering for almost three years, this internship has been extremely beneficial to me. Not only has it introduced me to the many aspects of Civil Engineering, but it has also encouraged me to continue to pursue engineering in the future. I am grateful to have had this experience, and I hope that it continues for the benefit of generations of students in the future.

Overall, I do think that the City of Oakland Public Works achieved its primary goals as far as exposure to the field of Civil Engineering. Personally, it was most beneficial to be introduced to the many aspects of Civil Engineering, many of which I did not know existed, such as surveying, construction managing, and resident engineers. Although it was interesting to see all of these different areas throughout our six weeks, it would have been nice to be with the same person for more than three hours. With most people, we were only able to understand the surface of their job, rather than gaining an in depth understanding-we learned the purpose of the professionals' jobs, but did not learn how to do it. Of course, the goal was to get exposure, which we got, but it would have been nice to spend more time in each area.

I feel that the goal of professional experience was fully met, in that the interns were exposed to a professional office environment with behavioral and dress code expectations. I think that this is something that not many students are able to understand at our age, and it is important to know how to meet these expectations in the future when getting a job. In addition, being able to see behind the scenes of public works encouraged me to possibly pursue a career working for the city, because it truly is essential to citizens' daily lives.

Overall, I gained a vast amount of knowledge in a short eighteen days, that I did not expect whatsoever. My favorite part was merely seeing the incredible amount of thought, time, and money that goes into developing a single intersection-something I used to take for granted. I learned that the stereotype of slackers in government jobs was false for the most part, and that everyone in the office truly cares about their job and about the City of Oakland's right of way as whole. To be completely honest, after this internship I don't want to pursue Civil Engineering, unless I could specialize in the environment. However, that is not a direct result of the internship, and merely personal preference, because I believe it is vital to our future success. In college, I will probably go in as an "undeclared" to figure out where I want to go career wise, because there is so much out there that I have not even heard of. Ultimately though, this internship was a great experience overall and I would encourage others to do it and learn as much as possible during their time with the City.

***-Rachel Alberts, Oakland Technical High School***

My experience working as a student trainee for Oakland Public Works this summer was remarkably significant to me in many ways. It was an eye-opening experience to learn and actually witness the procedures civil engineers go through to begin and complete a project. Having the chance to attend meetings, visit construction sites, and use the software and tools engineers utilize, including Auto-CAD and GIS, taught me a lot. I learned of the fundamental skills required to be an engineer, including teamwork, detail oriented, possessing effective

communication skills and learning from one's mistakes. As an engineer in a public sector, I learned that it is necessary to always take the public into consideration and to make decisions in their best interest.

As a participant in this program, I learned of the various specializations and disciplines of engineering. Prior to it, the only discipline of engineering I was aware of was transportation. Participating in the different divisions of the department afforded me with the opportunity to gain knowledge on the structural, hydraulic, survey, and environmental aspects of civil engineering. I also learned of pavement and the reasoning behind designs to meet American Disability Act requirements. Now that I have an understanding, I have a different perspective and I am appreciative of road and sidewalk appearance.

Overall, I enjoyed working with fellow Oakland high school students and learning from civil engineers who make Oakland a better city. I appreciate having the opportunity to receive advice from civil engineers and having them explain to me the requirements to become one. As a college student, I plan to take on positions like this one to help me gain a better practice of the field, so I could improve my community once I am an engineer. Most importantly, this program solidified my decision to become an engineer.

***-Yuliza Rios-Oregon, McClymonds High School***

Coming into this program I had one thought in my mind. Internships look good for colleges. Thinking that I already knew a lot about civil engineering and how the city works, I did not come to this program with an open mind. This fault worked to my disadvantage. On the first day of the program I was confident that I wouldn't learn as much as I did. With deep regret, this caused me to be confident enough to not ask that many questions when I had the opportunity. Overall this experience has taught me that people always have room to learn no matter what one may think.

Through this program, I've learned many things about public works that I did not know impacted people's lives. One of the biggest things that made me appreciate the work in public works was the Disabilities Act that causes things in the right of way to all be handicap accessible. From the slope of the side walk for people in wheelchairs, to the bright yellow half dome plates to help direct visually impaired people to the sidewalk, are all aspects of public works that many of us take for granted. Spending my least two weeks in Taiwan, I realized how blessed America is to be equipped with all these acts to help support the disabled because here, only able bodied people are able to get around. For example, there is no ramp that connects the side walk to the asphalt on many intersections, the sidewalks all have many tripping hazards and many bus stops are not handicap accessible.

This program has not really taught me much in terms of what it takes to be successful but I it allowed me to witness firsthand what it takes to be successful. Besides a background in math in science, everyone had always told me that to be a good writer will always help in the

engineering field and I never really understood how until now. Having good writing skills allows one to produce better presentations and helps with communication.

After going through this internship, I have a better understanding of how civil engineering affects the lives of the people. After learning that public works' main goal is to make the lives of the people easier, I think that this job as a civil engineer will bring me a feeling of accomplishment after a day's work and I believe that this is something that I will enjoy pursuing as my career.

***-Aaron Mao, Oakland Technical High School***

I would first like to start off by saying that this program has been a wonderful experience, and I very greatly appreciate you letting me be a part of it. I thought the program did a good job achieving its goals, especially in introducing students to a career in public service. Before this program, I and probably many of the other interns were not thinking about working in public service. I believe that the biggest reason teens don't usually consider public service is because they don't realize that public service is a thing; most people tend to take the infrastructure around them for granted. This program does an excellent job exposing the effort and planning actually required to maintain infrastructure and truly makes me appreciate everything the city does for us. I think many teens, if they knew about this work, would be very interested in working for this noble cause, and this program proves that. I really like the work environment of public works and I think that the internship has done an excellent job exposing me to that positive work environment. All the staff are kind, patient, helpful, and humorous. My preconceptions of civil engineering have been completely shattered by this program. The level of planning going into one street or timing one traffic light is amazing. The amount of standards to be followed is fantastic. This program really teaches you to appreciate public servants for the work that they do. I am unsure however if this internship provided an understanding of the professional workplace, unless I don't understand what the professional workplace environment is like. Everyone in public works seems too personal and kind in general (have I said that too many times?) to fit the stereotype of the cold, non-personal professional workspace. This environment in public works seems perfect to me and makes me optimistic for a career in an office environment. Success plays off of this environment. You're only going to truly enjoy what you do (my idea of success) if you're surrounded by a group of fun and amiable people who love what they do. This internship has helped reinforce this belief. Success also requires hard work and dedication. Many of the employees in public works told me about the work required to get to their position, the long tests, the school work. I believe they believe that their hard work has paid off greatly for them and the community who benefits from their work. One of the many things that I've realized through this internship is that civil engineers do one of the few jobs that truly help people. I'm drawn to civil engineering as a career because I get to be creative and I get to help the community as a whole.

I think that this program should be expanded, there are many more people who should have the opportunity to learn about civil engineering. One of the goals of the program is to get more people into civil engineering and public works for the future. Currently, the program in my view

does not expose enough people to public works. Perhaps there could be multiple summer sessions, or multiple sessions during the school year.

There was one major problem I believe the program has that I talked about during the debrief on the last day. The small groups don't allow everyone to get to know each other. I learned about the other two members in my group quite well but I barely even saw the members of other groups. Perhaps there could be group activities that could be engineering related to get everyone to know each other. It could also work as an icebreaker if used on the first day.

***-Victor Wu, Oakland Technical High School***

Being in the High School engineering internship program at Oakland Public works was definitely a worthwhile experience for me. I feel like I got a pretty good image of what it is like to be working as an engineer (specifically a civil engineer) in a professional workplace. Seeing real engineers at work changed my idea of what being an engineer is. I had always had this vague image of a bunch of engineers working in a giant room, only designing things and not doing much else. The internship taught me that civil engineering (and probably most kinds of engineering) is way more than that – it also involves lots of planning, management, and talking or listening to what the public has to say. I saw that you had to have really good social skills to work in public works – especially in traffic and transportation, where some of the public can be considered the equivalent of a backseat driver. I also learned a lot about how sidewalks and roads are built, judged, and repaired, and now everywhere I go I am silently judging a place's intersections, sidewalks, and roads as if I were a fashionista judging other people on the street. This station is not ADA compliant, I might think, or wow that's a really cool bike lane, look how big the buffer is. I love knowing about why something was put in or why something might be put in, and I'm glad I finally know what shark teeth are supposed to be. I will be sure to spread that information to my friends.

There are a lot of parts of civil engineering that I didn't really think about before coming to Public Works, like designing sidewalks, curb ramps, and intersections. I guess I used to take those for granted, as if people just kind of showed up, fixed or built whatever needed to be there, and left it for the public to use. Now that I know how much thought and stress goes into how a sidewalk looks, whether it's ADA compliant, will it be safe for people, etc., I appreciate walking on a nice sidewalk much more. I also thought that concrete was mixed and no other thought was put in it, but after seeing the materials lab I discovered that making concrete and asphalt is basically a science. Also, testing the concrete's strength is pretty cool. It's kind of amazing to see how much weight a single concrete cylinder can hold before exploding.

To me, working in a professional environment seemed a lot like school. Maybe it's because of Mr. Merrill's teaching style, where we are given an assignment and set to work on it. However, the main difference was that while in engineering class we usually work by ourselves, in Public Works people usually work together on a single project, even if they are working individually on some parts. I like that part of it; it makes the project feel more complete knowing that so many people put their efforts into it together. I understand that being able to work with others is

necessary to become successful, whether your definition of successful is to make a lot of money or just to have a job you enjoy. Many people told us to get lots of work experience – in short, internships equal huge bonus points when looking for a job. When I was younger, I thought success could easily be achieved by just going to college. I know now that that is definitely not how it works, and being in the internship showed me that I don't need to plan everything out while still in high school. Who knows, maybe I'll find out in college that engineering isn't for me and I'm going to end up being an English teacher instead. I think the only person I met in public works who knew what she wanted from the start and actually went through with it might have been Si. I personally think that that is amazing she was able to do that; it must have taken a lot of drive. However, it seemed like a lot of other people started in something else, in engineering or non-engineering, but saw something they liked better part way through and ended up doing that instead. As a result, I feel like I should be much more open-minded about college and take the opportunity to learn more about other things, in case there is something that I might find more interesting than the path that I have set myself upon.

Overall, my main career goals still haven't changed too much: my ideal job would still be at Pixar, and I would love to work in computer animation/visualization. However, I have expanded on my career choices. I would willingly become a surveyor; I found out that I enjoy being out in the field more than being in the office, and surveying seems like a nice balance of the two. I also liked transportation, especially working with bike lanes. Since Oakland is still working on becoming totally bike-friendly, it seems like there is a lot of interesting work and ideas to be put into action. Civil engineering is so gigantically broad that it's definitely worth exploring, no matter whether I already have a goal in mind or not.

Thank you to everybody who took their time to teach us about their job. This internship has taught me real-life application of what I learned in engineering class, which gave me a better understanding of all the formulas and techniques I've stuffed into my head. I really enjoyed the experience and it has caused me to give more thought about what I want to be when I grow up.

One more critique I have is the level of work we get as interns. I feel that we were not given enough of a chance to do work for the city. However, survey combined elements of learning and working together very well, creating an excellent learning environment for us. Not only did we learn how to use GPS equipment and autoCAD for surveying, but we also applied what we learned to an actual project. That sense of accomplishment is valued greatly and really makes me appreciate the work being done.

Overall though, this program is excellent, and I appreciate you for creating it and letting me be a part of it. I hope this program continues to inspire many teens to get involved with public works as it has had for me. Thanks to this internship, I've taken a new interest in civil engineering and will be looking at colleges that have civil engineering programs for a very possible career in civil engineering.

***-Bennett Diamond, Oakland Technical High School***

When I first realized I was going to spend my summer at this internship, I was very much excited for those upcoming 6 weeks. I had received this opportunity by pure chance, as my teacher, Mr. Merrill, picked names out of a hat. I was only taken in after a friend and classmate of mine who was picked realized he was busy during the summer. As a result, I was very grateful of this opportunity and wanted to make the best of it.

First days are always a little messy. Coming into the conference room with over a dozen new faces to meet and greet, all supervisors of the different departments I would be in, I had to admit I was pretty dazzled. As the introductions came and went, I found it hard to remember every single detail each supervisor came up with in their many stories. Although when I was a little disappointed when I first discovered that our group of 9 would be split, I eventually saw the efficiency of the setup with 3 groups of 3 split among 3 departments. If the group was smaller than 9 by a little, I would like to have met everyone a bit more, as I only met one new fellow high school student despite attending with 8 others. It would've been fun to learn about the different points of views each of us picked up of this internship in addition to learning from the internship itself. But, in the end, groups of 3 fit well with the situation. It's a small group, but allows for enough points of view to make things interesting. I would not have wanted to be by myself or just with one other person, though.

The internship itself opened up a whole new world to me in terms of engineering. Growing up in a household that trained me towards math and sciences, I had always looked in this direction. However, even with a sister in civil engineering, I never had a single clue as to how the job functioned. I saw my sister office once in Hong Kong, but only for a few minutes. That was all the exposure I had towards engineering in all 17 years of my life up until now. I knew that engineering required math, calculating, formulas, computers, drawing, drafting, and measuring, but I didn't know how all these different subjects came together. So, each and every day at this internship was a new door into a higher room.

Sometimes, however, there were a few tedious hours since many people didn't know how much to expect from us as high school students. I hope that people can come to expect more from high school students, especially those educated in and from this area. Although we don't have the best school systems, growing up here allows for things like morals and helpful life skills to excel more than growing up elsewhere. I write things like these in hopes of piquing your interest in learning more about the intern-employee relationship in a situation like this one. I hope that this can help in ways a usual, thankful, and appreciative feedback report can.

Overall, I have enjoyed my 18 days at this internship greatly, and loved the many, many amiable people I've met. There really is a variety of different people with their own stories to tell. Although it was hard to remember every single person we met sometimes, it was nice to know everyone as to gather some sort of an idea of the current work environment at the Oakland Public Works Department. Again, I hope this is good feedback, and thank you so much for this great opportunity.

***-Mimi Shalf, Oakland Technical High School***

I am very grateful to have been part of this internship, and I am also grateful that you've reached out to other schools other than Oakland Tech. This internship was a very big eye opener for me. I am glad that I had the opportunity to work with engineers who taught me A TON of stuff that I'll be explaining ahead. In general, the goals of the program has, without a doubt, succeeded in all of its points.

The program has helped me broaden my perspective about civil engineering. At first, I thought civil engineering was all about buildings and bridges. Even with further research on the Internet, my knowledge of civil engineering was still slim. However, after participating in this program I learned that civil engineering was a lot more about buildings and bridges. Engineers that worked with us showed and explained to us the variety of civil engineering: transportation engineering, structural engineering, geotechnical engineering, surveying, and a few more branches. I won't be going into deeper detail for the sake of your time, but I did learn a lot about engineering in general.

I got to learn what it was like to work in a cubicle/office. Most of my childhood memories, and even media, convinced me that working in an office setting required complete silence, very little respect and tolerance for others, favors after favors, GIGANTIC piles of papers, staring at a computer for hours and hours, and a lot more negative stuff that media has brought up. However, my experiences with Oakland Public Works has changed all of that. Everyone was friendly to each other, respected one another, some small chit-chat here and there, a medium stack of papers, and pretty much almost opposite of what media has told me. I am, indeed, extremely grateful that I was able to experience the environment of an office setting.

I also got to learn what it was like to go out in the field and work. With very little knowledge of engineering, I thought that engineers just went out to see how progress was flowing. This is true, but didn't know that things can go wrong. I first thought that getting your plans done and then submitting them to a contractor was all there was. However, I learned that there are dishonest contractors that cheat without remorse. I won't be going into further detail for the sake of your time, nor will I be pointing fingers, just a thing that I picked up.

My favorite part of this program was learning about how much work is being put into the streets. Before the start of this program, I had 0 knowledge of street paving and even traffic engineering itself. Learning about all the work and effort put into streets was fascinating. Seeing the complexity of the plans, amount of work, consideration, and dollars for a single project was intriguing. It aroused my curiosity. I wanted to learn more about all of this street paving and plans because streets seem like they don't require much work to put a strip of asphalt somewhere. This program made me rethink my career path, and I am glad that I got to learn about

One improvement that I suggest is to change the schedule. A Tuesday-Thursday schedule is simply too fast for the amount of information that we absorb. We are learning TONS and TONS each day on multiple subjects. I think the schedule should be changed to Monday, Wednesday, and Friday. A day before another session will give our brains enough time to sit on what we learned throughout the day, and further process the information that was given.



My career path has changed. During the program, I learned that you don't have to go to those big-name schools to be successful. I thought you had to go to a UC in order to be successful in life. After asking how my groupmates were doing academically, I was completely discouraged. My grades were not as high as theirs. Although I'm ranked top 10% in class rank, their grades were superior to mine, and they were also around top 10%. However, I learned that you can just go to a CC and then transfer to a UC. With this in mind, I decided that I should go to a CC first and then transfer to a UC to save money, possibly get a part time job, continue practicing Wing Chun, and see my friends who are taking the same career route as I am.

If I major in civil engineering, which comes 2nd in my majors list (architecture is first), I will definitely apply for Public Works. Every engineer that I worked with seemed passionate about their jobs, and very delighted to teach us about engineering. In my perspective and experiences, although some engineers said that working for private isn't too different from public, I feel like working in the Public's Department will enable me further enhance the betterment of Oakland.

And once again, I thank you SO much for giving me the opportunity to work with you all.

***-Matthew Saechao, Oakland High School***

During the six-week internship I became very aware of how much planning and work goes into something so simple like paving streets and fixing sidewalks. It was very eye opening to see projects printed on a sheet of 11 x 7 paper appear in real life. The program definitely achieved its goals. I learned that engineering isn't as I thought it was prior to the internship. Before the internship I thought civil engineering was bridges and skyscrapers but it's mostly planning and supervising. I also learned that the public services do more than just clean the streets and paint over graffiti. They test the concrete and asphalt that we walk and drive on. They make and fix signs for the streets and parks. They also fix police cars. A lot of the employees that my group and I encountered told us in order to be successful we just have to study hard and get our priorities straight. Finally I learned that working in an office you have to be very organized because paperwork can pile up quick and become a problem.

When the internship was over I noticed myself starting to like engineering more than I ever did before. Entering college there is a big chance that I may choose civil engineering as my major. If I do choose to do civil engineering I want to become a surveyor. I became interested in surveying when I went to the 12th Street bridge and took some points with the gps machine. Keenan and Ray also informed us that not many people are in the surveying field which makes it easier to get a job.

***-Ralph Redus, McClymonds High School***