“BITE” OF SCIENCE

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MONTEREY BAY AQUARIUM RESEARCH INSTITUTE

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AGENDA

1. Personal Introduction
2. My Story and How did I get where I am today?
3. Why is Public Works my Profession and What do I produce?
4. What STEM skills and knowledge are needed for my job?
5. What can Civil Engineers do to support STEM students?
6. Q&A
MY STORY

• Grew up in the Oakland Hills in San Francisco Bay Area
• Went to College at Cal Poly San Luis Obispo
• Lived in Los Angeles, Ventura & Monterey Counties
• North Monterey County for last 20 Years
• Personal Activities include enjoying time with Family
• Camping / Glamping / Hiking / Beachcomber / BBQ
• Boy Scouts
  • Troop 275 (Prunedale) Scoutmaster
MY STORY

1. Civil Engineering BS Degree at Cal Poly San Luis Obispo
2. Intern Positions
   a) Qume Corporation, Hayward, CA for one summer  
   b) Cannon Associates, San Luis Obispo, CA for 2½ years
3. Three job offers upon Graduation
   a) Kiewit Construction  
   b) Martin Marietta  
   c) Halliburton Services
WHAT IS CIVIL ENGINEERING

Civil engineering is an engineering discipline that deals with the design, construction, and maintenance of the built environment, including works such as roads, bridges, dams, airports, water/sewer systems, pipelines, and railways.

Civil engineers work closely with surveyors, geotechnical engineers and other specialized engineers to design, grade, drain, pave, and install water supply, sewer, electric and communications services.

Civil engineers spend time visiting project sites, meeting with clients and stakeholders and preparing construction plans.
WHAT IS CIVIL ENGINEERING

Civil Engineering sub disciplines include:

1. Land Surveyors
2. Geotechnical Engineers
3. Structural and Bridge Engineers
4. Water Resources
5. Materials Engineering
6. Traffic/Transportation Engineers
7. Municipal Engineers
8. Airport Engineers
9. Port and Coastal Engineers
10. Solid Waste and Landfill Engineers
POST COLLEGE EMPLOYMENT:

1. Halliburton Services for 4½ years in Los Angeles, Houston, Bakersfield and beyond
2. Willdan Associates for 10 years in Ventura
3. Harris & Associates for 8 years in Los Angeles and Gilroy
4. Other consulting firms for 5 years
5. Harris & Associates last 7 years in Salinas
6. Received Professional Registration as Civil Engineer in 1994
HARRIS & ASSOCIATES

1. Medium-sized Consulting Company with 200+ employees
2. Only work for Public Agencies
3. Services include:
   a) Civil Design
   b) Program and Construction Management
   c) Environmental Permitting and Compliance
   d) Asset Management
   e) Finance Districts
4. Primarily in California (Concord, Irvine, Los Angeles, San Diego, Fresno, Salinas)
5. 100% Employee Owned
MY PROFESSIONAL CAREER

“Civic” Engineer and Infrastructure Program Manager for 30 Years

1. Worked for over 75 Public Agencies throughout California
2. Deputy City Engineer for Malibu, Moorpark, and Westlake Village (1990 – 1997)
3. City Engineer for Gonzales (Since 2014)
4. City Engineer for San Juan Bautista (Since 2017)
5. Program Manager for Cities of Monterey, Morgan Hill, Gilroy, Seaside, Watsonville
6. Client Manager for Monterey and Santa Cruz Counties
7. Fort Ord Reuse Authority, Castroville Community Services District and TAMC

Main expertise is delivery of Public Agency Capital Improvement Projects
DAY IN MY WORK LIFE

1. Pursue contracts with Public Agencies
   • Track opportunities and prepare proposals to win new work
2. Negotiate scope, fee, and schedule for our contracts
3. Juggle project deliverables and deadlines
4. Site visits
5. Client meetings (Coordination meetings, City Council meetings, Public Workshops, etc.)
6. Professional Association involvement
7. Keep 25-person Office in Downtown Salinas functioning and growing
   • Recruit and retain staff
8. Project budgets and Invoice clients
MY “WORK PRODUCT” IS CAPITAL PROJECT DELIVERY

1. Determine client’s need and project delivery method
2. Develop scope of work, identify stakeholders and technical designer
3. Prepare Bid Documents
   • In-House Design staff or Outside Consultants
4. Permitting
5. Project Budget and Funding
6. Issue for Bid / Award Contract
7. Construction Management

I am proud of my work due to the positive impact to communities by improving roadways, parks, municipal facilities, water, sewer and storm drain systems.
CURRENT AND RECENT PROJECTS

1. City of Gonzales Wastewater Treatment Plant Expansion
2. City of Gonzales $5M Alta Street Pavement Rehabilitation
3. City of Gonzales Well 7 Project
4. City of Gonzales Low Impact Development Bioretention Basins
5. City of Gonzales Community Pool Renovation
6. City of Morgan Hill $25M Downtown Investment Program
7. City of San Juan Bautista Well 5 and 6 Project
8. City of San Juan Bautista City Hall ReRoof
GONZALES WASTEWATER TREATMENT PLANT EXPANSION

1. Plant Upgrades (ie, Sludge Removal, Berm Repairs)
2. Expand for new Industrial Businesses (Agriculture Processing Plants)
3. Improve treatment to remove nutrients
4. Engage Wastewater Engineers
5. Coordinate with State Regulators
1. Reconstruct 10,000 feet of main roadway thru Gonzales
2. Engage Pavement Engineer for Design Specifications
   • Deflection Analysis Report
   • Full Depth Reclamation method
3. Prepare Construction Documents
4. Bid/Award Construction Contract
5. Public Workshop
6. Construction Manager
7. Adjusted Roadway striping using Traffic Engineer
8. Added Pedestrian Crossings
GONZALES WELL 7 PROJECT

1. Drill new well to replace old poorly constructed Well 3
2. Engage Hydrogeologist to prepare specifications
3. Engage Electrical Engineer for PG&E service and generator
4. Issue project for bid
5. Drill and develop well
6. Use a computer Water Model to determine system pressures
7. Challenging to size well motor/pump and electrical service
8. Currently equipping and connecting well to city water system
ALWAYS NEW APPROACHES TO PUBLIC WORKS CONSTRUCTION

1. Mapping, CADD, GIS and Augmented Reality
2. Drones and Robots
3. Advanced Materials/Cement mix/Roadway materials
4. Sewer pipeline repair/rehab techniques
5. Water and Wastewater Treatment Plants
6. Building/Facility management
   - LEED Certification
   - Low Impact Development / Green Technologies
STEM SKILLS TO BE SUCCESSFUL IN CIVIL ENGINEERING

1. Curious how things work
2. Problem solving
3. Math skills
4. Interested in new technologies
5. Motivated in improving local communities
6. Project Management (budget and schedule)
7. Work in a Team
8. Combination of Office and Field work
THOUGHTS ON INDUSTRY SUPPORT OF STEM STUDENTS

1. Tours of Public Works Facilities
   • Wastewater Treatment Plants
   • Water Treatment Plants
   • Landfills
2. Visit Projects under Construction
3. Class Room Presentations and Simulations
4. Professional Association engagement
5. Scholarships
6. Community Colleges
PROFESSIONAL ASSOCIATIONS

   • Board President for 6 years
2. American Council of Engineering Companies
   • Monterey Bay Chapter
3. California Society of Professional Engineers
4. American Society of Civil Engineers
5. American Public Works Association Monterey Bay Chapter (1999 – present)
   • 30,000 member National Organization
   • Chapter Board President in 2003
   • Recognized for Two National Projects of the Year
   • Student Scholarships and Internships
COMMUNITY COLLEGE RESOURCES

1. Gavilan College
   • Leslie Jordan, Instructor
     Water Resources Management Program

2. Cabrillo College
   • Jo-Ann Panzardi, Chair/Instructor, Engineering Department
     Engineers Without Borders
Thank you

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Who we are:
Harris & Associates, Inc.
www.WeAreHarris.com