

Best Jobs in America

 CNN Money Magazine ranked Civil Engineering as the 4th best job in America

What do you know about Civil Engineering?



Civil Engineering Specialties

- Structural (Buildings/Bridges)
- Transportation(Roadway/Traffic/Railroad/Airports)
- Water/Waste Water
- Storm Water
- Environmental
- Geotechnical
- Planning

How do you become a Civil Engineer?

Education

- Relevant High School Classes
- College Engineering Curriculum
 - BS required ~5 years
 - MS recommended ~30 credit hours
- ABET Accredited
- ASCE
- EI/PE

Education

- ABET Accredited Programs
 - NMSU
 - UNM
 - CSU
 - CU
 - AFA
 - Colorado School of Mines













Extra Curricular Activities

- Steel Bridge Competition
- Concrete Canoe





Education Costs

- In State Tuition
 - ~\$8,000 \$10,000 per year
 - Typically fully funded for graduate school
- Scholarships
 - Women in Engineering Scholarships
 - ASCE
- Salaries
 - ~\$40,000 entry level
 - \$40,000 \$120,000 pay range over a career
 - Zero or minimal school debt

Civil Engineering Specialties

- Structural (Buildings/Bridges)
- Transportation(Roadway/Traffic/Railroad/Airports)
- Water/Waste Water
- Storm Water
- Environmental
- Geotechnical
- Planning

Water/Waste Water



Source Water



Filters



Distribution Pumps



Wastewater Treatment Plant



Primary Clarifier

Storm Water



Storm Event



Inlet



Inside of Storm Manhole



Culverts



Channel

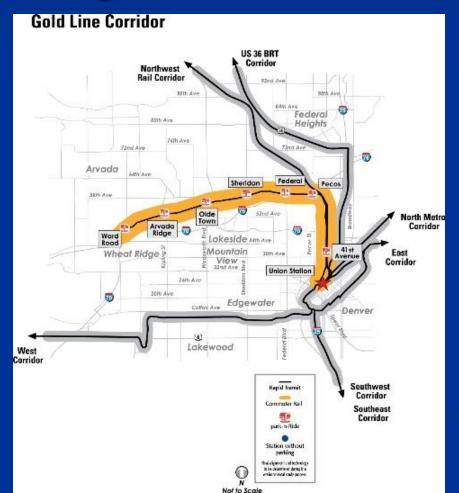
- Idea or Problem
- Funding
- Public Involvement
- Evaluating Solutions
- Project Design
- Construction

Idea or Problem: Small water district has an old concrete potable water tank that needs repairs.





Idea or Problem: A city has too much traffic congestion on the roadways.





Funding:

- Engineer's Cost Estimate
- Evaluate Client's Finances can they afford these improvements
- Evaluate Possible Funding Sources
 - Grants
 - Loans
 - Taxes
 - Rate Increases

Public Involvement:

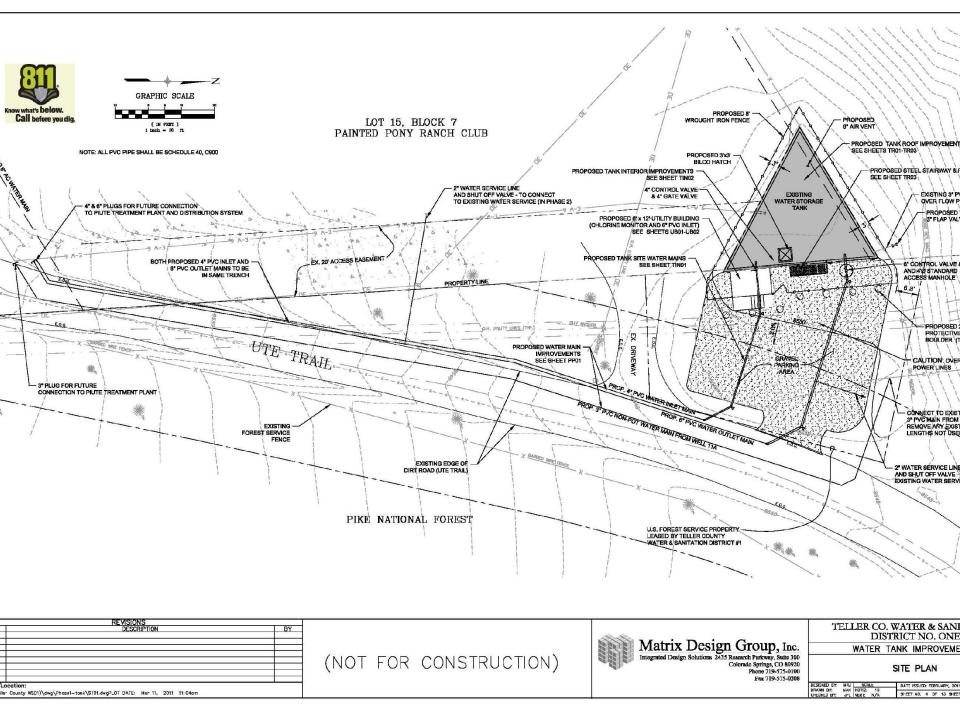
- Public Meetings
 - Present Project Concept/Alternatives Analysis
 - Technical, Financial, Feasibility
 - Allow for Public's Questions and Comments
 - Public Approval/Informed Consent
 - Could be Multiple Meetings for 1 Project
 - Revise Plans Based on Public Comments

Project Design:

- Surveying
- Design of Improvements
- Construction Drawings
- Specifications
- Cost Estimate







	STR. ID.	603-01185	603-01245	603-01305	603-01365	615-00030	603-60120	510-00132	603-05018 603-05024 603-05030 603-05036 604-00305 604-00310						604-00315 604-00350 6		
STATION / OFFSET		REINFORCED CONCRETE PIPE (CIP)				EMBANKMENT PROTECTOR TYPE 3	FLEXIBLE PIPE	STRUCTURAL PLATE PIPE	REINFORCED CONCRETE END SECTION (CIF)				TYPE C INLET				
	[LF					LF	LF		EA				EA			
		18"	24"	30"	36"	EA	12"	132"	18"	24"	30"	36"	5 FT.	10 FT.	15 FT.	SPECIAL	
US 285																	
488+10.00 / 39.50 RT	0-1					1	25										
493+65.00 / 44.36 RT	M-1	98															
494+70.00 / 52.00 RT	*A-3		54 140														
494+70.00 / 110.00 RT 496+24.57 / 102.93 RT	A-2 A-1		140							4						 	
	B-1	47								1			4			 	
497+00.00 / 0.00 RT 496+74.00 / 57.00 RT	A-4	4/	192										1				
497+50.00 / 0.00 RT	A-6		52											1			
497+12.0 / 57.00 RT	A-5		34											-			
496+80.00 / 95.00 RT	POND A												<u> </u>	 	<u> </u>	 	
498+00.00 / 0.00 RT	B-2	47											1			+	
497+50.00 / 57.00 RT	C-1		34										<u> </u>			 	
497+38.48 / 96.99 RT	L-2	27														1 1	
497+66.35 / 101.04 RT	L-1								1				1			 	
497+80	ELK CREEK							28					1			 	
499+68.00 / 57.00 RT	D-2		15														
499+68.51 / 71.60 RT	D-1									1							
500+00.00 / 49.00 LT	D-3		104														
	CHECK DAM																
501+97.00 / 49.00 LT	14		45														
502+04.00 / 0.00 RT	I-3		53											1			
502+13.00 / 57.00 RT	I-2		25														
502+23.77 / 79.54 RT	I-1									1							
	CHECK DAM																
	CHECK DAM																
	CHECK DAM																
508+07.08 / 70.04 RT	J-1		455							1						\vdash	
506+14.30 / 86.70 LT	J-2 CHECK DAM		155										1			-	
																	
509+00.00 / LT 512+30.00 / 42.00 RT	CHECK DAM	10											-		-	-	
512+30.00 / 42.00 RT	K-2 K-1	10							4				-		-	-	
512+50.00 / 42.00 RT	K-3	18							-				-		-	-	
515+41.00 / 65.00 RT	10-0	10														 	
520+49.50 / 53.90 RT													 		 	 	
320118.307 33.80 KI												 	 	 	 	 	
ELK CREEK ROAD													1			 	
103+82.78 / 52.18 RT	G-3	54											1		1	 	
34+45.99 / 34.22 LT	G-1									1					<u> </u>	 	
104+38.50 / 38.87 LT	G-2		14										1		1	 	
HOOK RAMP																	
66+86.45 / 31.90 RT	E-1										1						
67+84.93 / 43.30 LT	E-2			121												1	
68.47.78 / 32.74 RT	*N-1			16							1						
68+61.16 / 22.82 RT	E-3			100													
ELIZABETH DATE																<u> </u>	
ELK CREEK ROAD	15.				400							_					
101+36.20 / 104.19 RT	'E-4				136							1					
101+40.08 / 91.71 RT	F-1		10							1							
101+86.19 / 87.41 RT	F-2		19													1	
101+70.00 / 95.00 RT	POND I																
ELK CREEK ROAD																	
104+33.97 / 55.26 LT	H-1		91											1	-	++	
103+68.88 / 53.29 RT	H-2	54	91										 	1	 		
100700.007 00.26 KT	1172	V-1											 	<u>'</u>		 	
																+	
	TOTALS:	354	1026	237	136	1	25	28	2	6	2	1	3	4	1	3	
						-							<u> </u>		<u> </u>		

Construction:

- Bidding on Design
- Construction Management
- As Built Drawings



Summary:

- Civil Engineers are Problem Solvers
- Our Solutions MUST be
 - Cost Effective
 - Address Public Concerns
 - Realistic



Questions?

Liz Staten:

liz.staten@hdrinc.com

Melanie Jollett:
mjollett@csu.org

http://www.asceville.org

Engineering Problems and Solutions

