



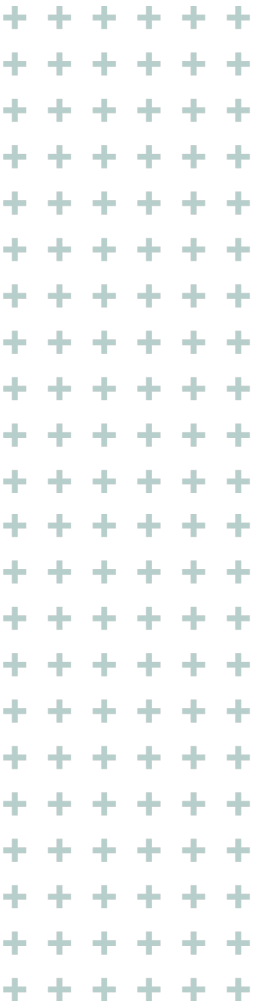
Project Communication and Management in Water Infrastructure Projects

Session 1 – Project Management and Communication for Managers and Engineers

Bill Reynolds, PE

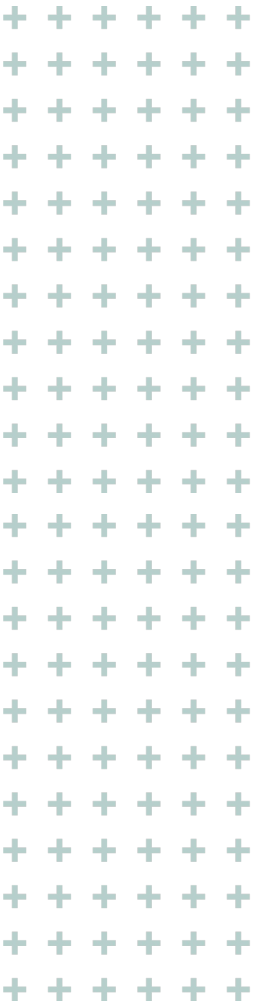
Introduction

- Why is this topic important?
 - Water infrastructure projects require careful coordination with a complex network of stakeholders
 - Accountability to demonstrate a good stewardship of public funds
- Overview of what will be covered:
 - Project management strategies
 - Perspective of both public and private roles
 - Effective communication techniques



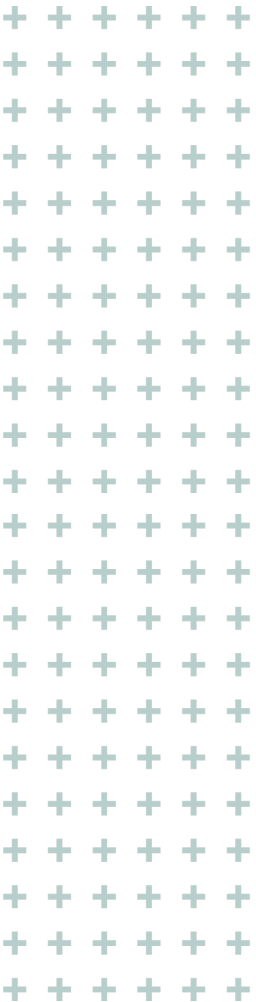
Unique Challenges in Water Infrastructure Projects

- Regulatory compliance
 - Meeting local, state, and federal guidelines
- Environmental considerations
 - Sustainability, critical areas, cultural or historic areas, and potential for discovery of contaminated materials
- Stakeholder engagement
 - Managing input from regulatory agencies, residents/customers, and businesses
- Community scrutiny
 - Handling complaints



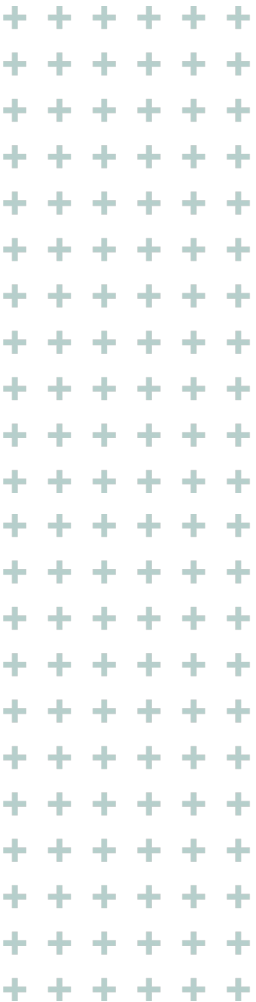
Core Project Management Pillars

- Planning and Scheduling
- Budget and Finance
- Risk Management
- Quality Assurance/Quality Control



Project Planning and Scheduling

- Why it matters
 - Set expectations for project delivery, timeline
 - Keeps the project on track
- Key elements
 - Scope development – collaborate with all parties
 - Detailed Level of Effort (LOE) and fee estimate
 - Schedule and milestones, realistic timelines
 - State assumptions, exclusion, and deliverables
- Tools
 - Word, Excel, Projects, Gantt charts, BlueBeam, accounting software (billing), project management software



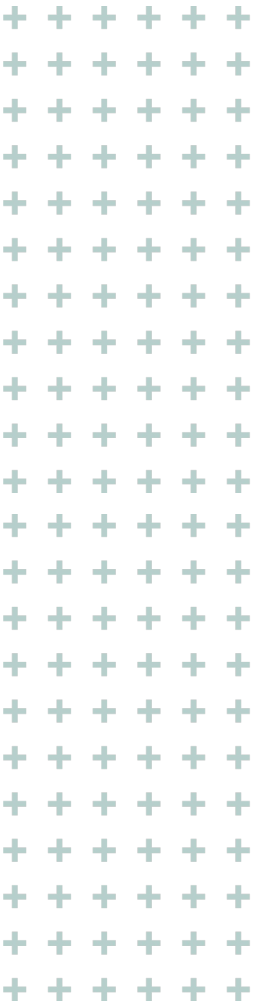
Sample LOE (Work Breakdown Structure)

Labor Hours by Classification																
Staff Type # (See Labor Rates Table)	Labor Code	1	10	11	14	67	70	75	118	91	12	30				
Staff Type Hourly Rate		\$253.38	\$246.52	\$215.23	\$207.21	\$193.40	\$168.38	\$150.90	\$150.90	\$136.01	\$239.07	\$273.07				
Drawing/Task Title	Job Title	Sr. Principal Engineer	Principal Engineer	Sr. Project Manager	Project Engineer	Sr. GIS Analyst	CAD Manager	CAD Tech II	Sr. Project Administrator	Project Administrator	Project Manager	Principal Planner		Hour Total	Dollar	Total
Task 1.2 Proj Mgmt.																
1.1 Biweekly Status		6		24										30.0	\$6,686	
1.1.a Draft & final meeting agenda		2		12	12									26.0	\$5,576	
1.1.b Draft & final meeting minutes		4		24										28.0	\$6,179	
1.2 SPU Comm. - Monthly Proj One Mtgs		24		24										48.0	\$11,247	
1.2.a Minutes				36										36.0	\$7,748	
1.3 Monthly Progress/Invoice				72						36				108.0	\$20,393	
1.3 Monthly Progress/Invoice (QA/QC)		56								12		12		80.0	\$19,098	
1.3.f WMBE Utilization, Forecast, Coord										24				24.0	\$3,264	
1.4 Maintain Issues, Decision, Change Log		6		24	36									66.0	\$14,145	
1.5 SharePoint Maintenance & Support		2		4	4		12							22.0	\$4,217	
1.6 Subconsultant Coordination		24		48			6							78.0	\$17,422	
TASK 1.2 SUBTOTAL		124		268	52		18			72		12		546.0	\$115,976	

Staff Type # (See Labor Rates Table)	Staff Type Hourly Rate	Drawing/Task Title	Labor Hours by Classification												Hour Total	Dollar	Total
			Labor Code	1	10	11	14	67	70	75	118	91	12	30			
			Job Title	Sr. Principal Engineer	Principal Engineer	Sr. Project Manager	Project Engineer	GIS Analyst	CAD Manager	CAD Tech II	Sr. Project Administrator	Project Administrator	Project Manager	Principal Planner			
Task 1.2 Proj Mgmt.																	
1.1 Biweekly Status				6		24									30.0	\$6,686	
1.1.a Draft & final meeting agenda				2		12	12								26.0	\$5,576	
1.1.b Draft & final meeting minutes				4		24									28.0	\$6,179	
1.2 SPU Comm. - Monthly Proj One Mtgs				24		24									48.0	\$11,247	
1.2.a Minutes						36									36.0	\$7,748	
1.3 Monthly Progress/Invoice						72									72.0	\$15,888	
1.3 Monthly Progress/Invoice (QA/QC)				56							12		12		80.0	\$19,098	
1.3.f WMBE Utilization, Forecast, Coord											24				24.0	\$5,284	
1.4 Maintain Issues, Decision, Change Log				6		24	36								66.0	\$14,145	
1.5 SharePoint Maintenance & Support				2		4	4		12						22.0	\$4,217	
1.6 Subconsultant Coordination				24		48			6						78.0	\$17,422	
TASK 1.2 SUBTOTAL				124		268	52		18			72		12	546.0	\$115,976	
Task 7.2 Community Outreach Support																	
7.1 Subconsultant/SPU Coordination				12		6									18.0	\$4,133	
7.2 Meeting Attendance				5		5									10.0	\$2,343	
7.3 Review of Outreach Products				4		8									16.0	\$3,528	
TASK 7.2 SUBTOTAL				21		19								4	44.0	\$10,004	
Task 8.2 Investigate Existing Conditions - Parking																	
8.1.a Develop Draft/Final Plan				2		8	16								26.0	\$5,644	
8.1.b Contractor Coordination				2		2	8					8			20.0	\$3,892	
8.1.c Perform Monitoring of Field work				1		4	28								33.0	\$7,410	
8.1.d Parking Review Notes				2		4	8								14.0	\$3,085	
8.1.e Base Map Update with Parking Info						2	8		12						22.0	\$4,189	
TASK 8.2 SUBTOTAL				7		20	68		12			8			119.0	\$25,986	
Task 9.2 60 Percent Design Development																	
9.1 Charitable and 80% comments responses				4		12	48		4						68.0	\$12,258	
9.2 Design Package Deliverable checklist				4											4.0	\$1,014	
9.3 Design Drawings Development				80	12	128	120		188	240			12		862.0	\$188,111	
9.4 Update Basis of Design Technical Memo				4		8	16						4		32.0	\$6,854	
9.5 Update Capital Cost Estimates & Basis of Estimate				4		12	48						40		68.0	\$12,447	
9.6 Traffic Control Plans				4	2	14	112		20	20					172.0	\$34,733	
9.7 Spec. Tech Specs				1	2	4	16								23.0	\$4,363	
9.8 Commissioning - SCADA - Plan				2		8	4								14.0	\$3,085	
9.9 Asset Management Data File				2		2	32	16							64.0	\$13,451	
9.10 Submittal Control Document - ID Contractor Submittals				1		4	28								33.0	\$7,410	
9.11 Community Impacts Update				1		4	12								17.0	\$3,643	
9.12 Corridor Sequence Recommendation				4		8	24		8	8					42.0	\$9,263	
9.13 Meetings, Workshops				4		8	12								22.0	\$4,791	
9.14 60% Review Mtg. Comments, Resp.				8		8	20								36.0	\$7,383	
9.15 Field Site Visits				20		24	32								76.0	\$16,384	
TASK 9.2 SUBTOTAL				144	16	342	700	32	288	288	4		12		1668.0	\$330,283	
Task 10.2 80 Percent Design Development																	
10.1 Charitable and 80% comments responses				4		12	48		4						68.0	\$12,258	
10.2 Design Package Deliverable checklist				4											4.0	\$1,014	
10.3 Design Drawings Development				12	10	112	120		188	240			12		864.0	\$188,534	
10.4 Update Basis of Design Technical Memo				4		8	12								24.0	\$5,080	
10.5 Update Capital Cost Estimates & Basis of Estimate				4		8	24						24		60.0	\$12,446	
10.6 Traffic Control Plans				4	2	4	68		12	12					94.0	\$19,631	
10.7 Spec. Tech Specs				1	1	2	12								16.0	\$3,411	
10.8 Commissioning - SCADA - Plan				2		8	4								14.0	\$3,085	
10.9 Asset Management Data File				2		2	16	16	4						40.0	\$8,521	
10.10 Submittal Control Document - ID Contractor Submittals				1		2	12								15.0	\$3,176	
10.11 Community Impacts Update				1		2	8								11.0	\$2,343	
10.12 Corridor Sequence Recommendation				4		8	12		4	4					24.0	\$5,080	
10.13 Meetings, Workshops				4		8	12								24.0	\$4,791	
10.14 80% Review Mtg. Comments, Resp.				8		8	20								36.0	\$7,383	
10.15 Field Site Visits				20		24	32								76.0	\$16,384	
TASK 10.2 SUBTOTAL				128	18	358	844	16	344	328	4		12		1236.0	\$256,771	
Task 11.2 100 Percent Design																	
11.1 Charitable and 80% comments responses				2		8	24		4						38.0	\$7,375	
11.2 Design Package Deliverable checklist				4											4.0	\$1,014	
11.3 Design Drawings Development				40	6	10	140		76	100			8		410.0	\$86,938	
11.4 Update Basis of Design Technical Memo				2		4	8						4		18.0	\$3,828	
11.5 Update Capital Cost Estimates & Basis of Estimate				2		4	16						16		38.0	\$8,080	
11.6 Traffic Control Plans				2		4	16		8	8					38.0	\$7,227	
11.7 Spec. Tech Specs				1	2	4									7.0	\$1,513	
11.8 Commissioning - SCADA - Plan				1		4	2								7.0	\$1,520	
11.9 Asset Management Data File				2		2	4	8	1						16.0	\$3,411	
11.10 Submittal Control Document - ID Contractor Submittals				1		1	8								10.0	\$2,148	
11.11 Community Impacts Update				1		1	4								6.0	\$1,281	
11.12 Corridor Sequence Recommendation				1		2	8		1	2					13.0	\$2,343	
11.13 Meetings, Workshops				4		8	12								24.0	\$4,791	
11.14 90% Review Mtg. Comments, Resp.				8		8	20								36.0	\$7,383	
11.15 Bid Drawing Set Production (not P&ID review)				4		8	16		8	12					48.0	\$10,260	
11.16 Bid Drawing Set Production				4		8	16		8	12					48.0	\$10,260	
TASK 11.2 SUBTOTAL				76	6	112	244	6	100	108	4		24		760.0	\$157,468	
Task 12.2 Procurement Support (Advertise and Bidding)																	
12.1 Pre bid meeting				3		4									7.0	\$1,521	
12.2 Address up to two (2) questions provided by bidders				4		8	12								24.0	\$5,080	
12.3 Prepare up to two (2) addenda				4		8	16								24.0	\$5,080	
12.4 Update Bid Plans into Confirmed Drawings				2		4	8		2	8					24.0	\$5,080	
TASK 12.2 SUBTOTAL				13		24	36		2	8	4				87.0	\$18,681	
Task 13.2 Permitting Support																	
13.1 City of Shoreline RCOW permit application				2		4	8		8	8	20				50.0	\$10,580	
13.2 SDCOT Electrical Service application				1		4	4				5				17.0	\$3,165	
13.3 SDCOT Permitting Assistance				1		4	4				5				17.0	\$3,165	
13.4 SDCOT Permits Assistance				4		8	20		16	16	80				144.0	\$34,880	
13.5 Permitting meetings with SPU staff agencies				4		8	4								16.0	\$3,337	
13.6 4000 permit TCF - 60% and 80% review																	
13.7 Address agency comments																	
TASK 13.2 SUBTOTAL				13		24	60		20	24	120				344.0	\$69,269	
Hour Total				1023	26	3973	7164	36	340	340	120		216	112	1616	\$339,659	
Labor Total				\$164,768	\$5,802	\$132,214	\$554,304	\$100,380	\$100,340	\$21,736	\$9,791	\$26,776	\$4,368		\$655,655		
Grand Total: \$655,655																	
Grand Total: \$655,655																	

Budgeting and Financial Management

- Estimating LOE and costs
 - Use metrics from previous similar projects
 - Proportion of construction costs
- Budget tracking
 - Accounting reports, monthly invoices
 - Earned Value Management
 - Separate budgets for subconsultants and vendors
- Transparent reporting
 - Detailed monthly progress reports
 - Accomplishments, deliverables, next tasks



Earned Value Calculation

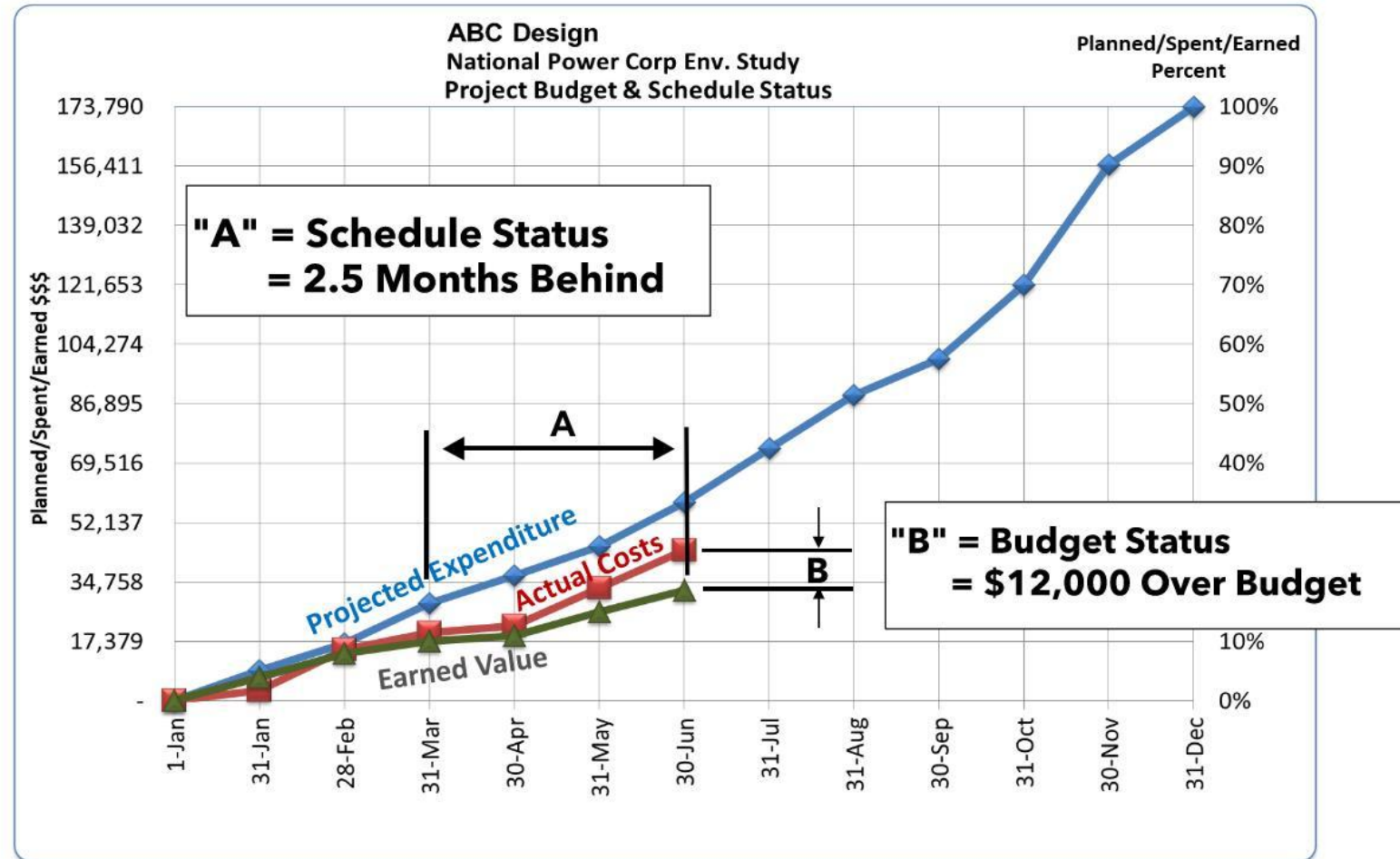
Task Description		Task Budget		Percent Complete		Earned Value
A.	Develop Background Data	\$13,140	x	65%	=	\$8,541
B.	Conduct Case Studies					
	1. Select Case Study Sites	2,920	x	100%	=	2,920
	2. Prepare Briefing Documents	2,960	x	100%	=	2,960
	3. Develop Data Management Plan	7,650	x	100%	=	7,650
	4. Visit Case Study Sites	19,700	x	20%	=	3,940
	5. Analyze Waste Samples	17,500	x	0%	=	0
C.	Evaluate Costs for Case Studies					
	1. Develop Cost Models	8,060	x	10%	=	806
	2. Perform Preliminary Designs	10,860	x	0%	=	0
	3. Estimate Costs	8,820	x	0%	=	0
D.	Evaluate Potential for Treatment	4,420	x	30%	=	1,326
E.	Assess Cost Impacts	5,260	x	0%	=	0
F.	Evaluate Cost Impact Models	6,240	x	0%	=	0
G.	Project Reporting					
	1. Topical Reports					
	a. Background Data	8,940	x	10%	=	894
	b. Case Study Site Visits	8,940	x	0%	=	0
	c. Waste Sampling	8,940	x	0%	=	0
	2. Draft Report	18,100	x	0%	=	0
	3. Final Report	7,940	x	0%	=	0
H.	Project Management	13,400	x	25%	=	3,350
Totals		\$173,790				\$32,387

Current Date
=
June 30

Overall (Weighted) Percent Complete: \$32,387 / \$173,790 = 19%

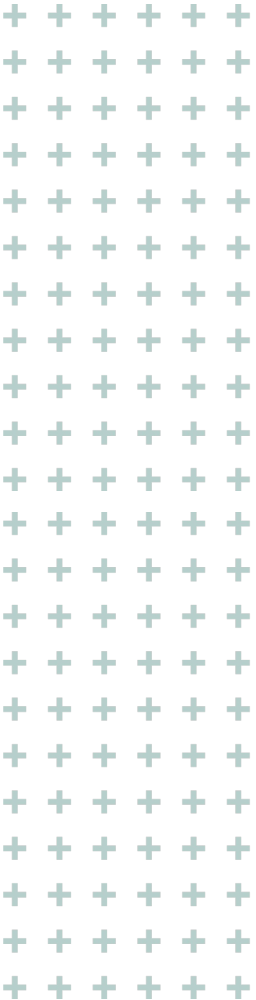


Earned Value Graph



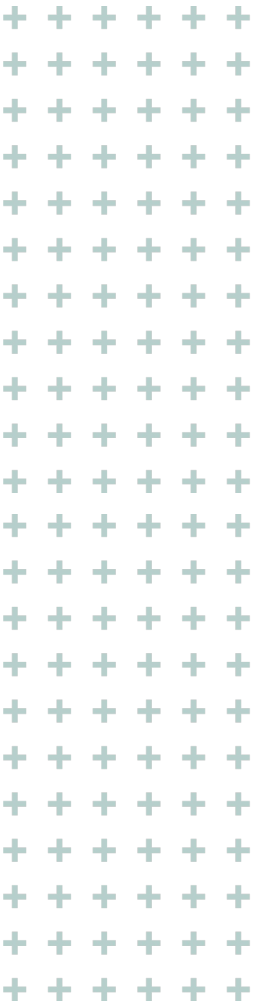
Risk Management

- Identifying risks
 - Common project risks (delays, funding issues, environmental factors)
 - Identify potential risks early, quantify as much as possible
 - Update “Live” Risk-Issue Log for tracking and documentation
 - Assign risk owners to monitor progress
- Developing strategies
 - Contingency plans and proactive problem-solving
 - Lesson-Learned documentation. “Own” mistakes so all parties can learn and improve skill set.

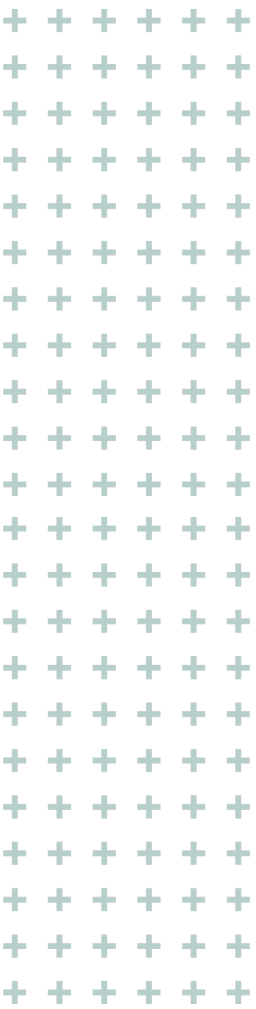


Quality Assurance and Control

- Ensuring high standards
 - Industry Standard Level of Care
 - Identified by State Professional Licensing Board
 - Business incentives for high quality of services
- Tracking progress
 - Quality Assurance (Policy)
 - Quality Control (Practice)
 - Senior-level reviewer is ideal



Sample QC Checklist



Project Name:

Job Number:

Project Manager:

QA/QC Reviewer:

Date Reviewed:

WATER SYSTEM CHECKLIST					
NA	DNS	OK			
METERS					
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(1)	Size of domestic meter	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(a)	RPBA required with all commercial building domestic meters	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(b)	DCVA required with all multifamily building domestic meters	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(2)	Size of irrigation meters	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(3)	Meters located within right-of-way	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(4)	Back flow prevention included in irrigation plan	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(5)	"Deduct" irrigation meters not allowed	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(6)	Separate taps for domestic, fire, & irrigation	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(7)	Check water comprehensive plan vs. drawings	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(8)	Location of pipe, (centered in easements)	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(9)	Size, type and length of mains (minimum 8" diameter DIP)	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(10)	System properly looped	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(11)	Extensions to adjacent properties	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(12)	Minimum cover for mains 10" and smaller is 36", max. cover is 48"; minimum cover for mains 12" and larger is 48", max. cover is 60"	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(13)	Connection fittings called out	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(14)	Hydrant spacing, 600 feet for residential; 300 feet for commercial (Check with Fire Marshal to verify locations)	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(15)	Valves required to provide isolation of system, (resilient wedge gate valve if 12" or less; butterfly valve if greater than 12"), min. 2 each Tee, 3 each cross.	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(16)	Maximum spacing of in-line valves is 500' for commercial and 800' for residential construction	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(17)	Blow-off required at end of mains	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(18)	Air vacuum and release valves where required	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(19)	Thrust blocks at change in direction or at "Tee" connections	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(20)	Thrust block table provided	



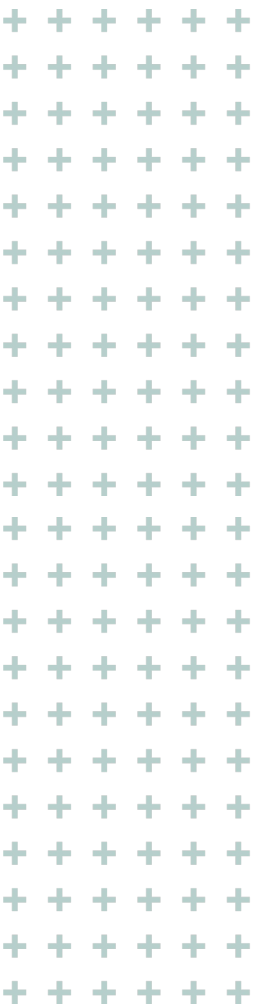
Standard of Care

National Society of Professional Engineers:

As professionals, PEs are held to a professional standard of care. Unlike the more onerous “contractor standard,” which warrants or guarantees a result, the professional standard of care does not. In virtually every state, when performing professional services, engineers are held to the “professional negligence standard of care,” which means that when a PE is sued for negligence, the plaintiff must establish that the PE breached a “reasonableness” standard as established by expert testimony, usually by another PE. To prevail against the PE, it is not enough necessarily that the suing party suffered harm. It is possible that the engineer’s design was “reasonable” under the circumstances and, therefore, the PE did not “breach the standard of care” but did all that a reasonably prudent PE would have done under the same or similar circumstances.

National Council of Examiners for Engineering and Surveying:

The NCEES doesn't define a specific "standard of care" for professional engineers, but it emphasizes the importance of maintaining a professional competency through Continuing Professional Competency (CPC) requirements. Essentially, NCEES standards focus on ensuring that licensed engineers and surveyors continue to demonstrate their competence through education and experience, thereby safeguarding the public.

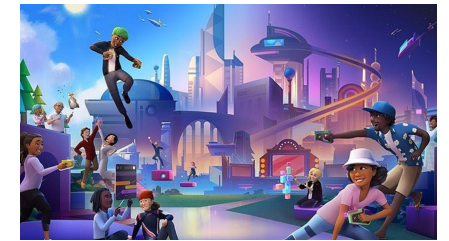


Evolving Communication

1980's: Technology allowed you to leave work at the office.



Today: Now “connected” to work 24/7.

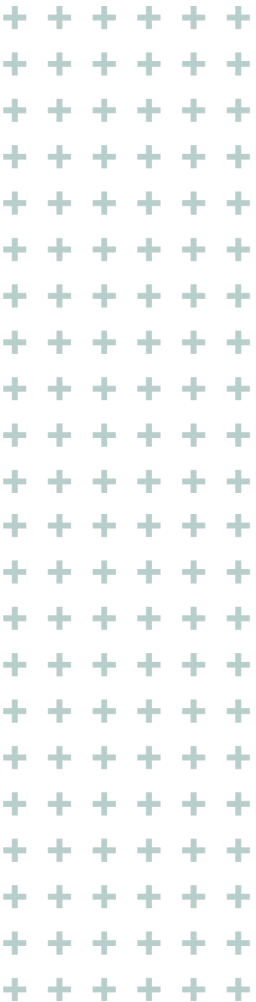


Quantity vs. quality of communication.



Internal Communication

- Why it's crucial
 - Aligns internal teams on the same project goals and timeline
 - Reduces duplications or gaps in workflow
- Best practices
 - Regular Department meetings, project dashboards/channels, clear documentation of scope, schedule, and budget
 - Weekly or biweekly brief check-in meetings
 - Clear task assignments and follow-ups



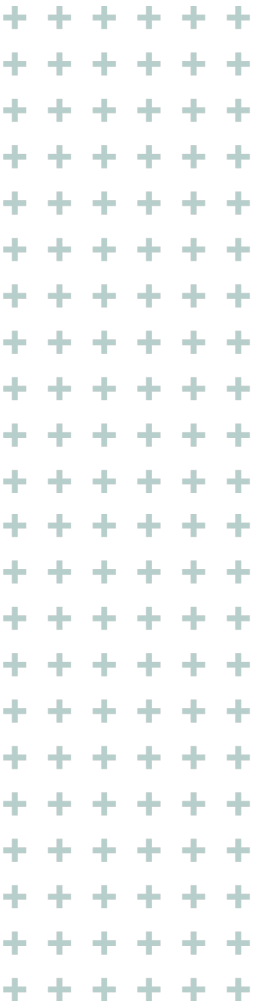
Internal Office Practices

- Communication methods
 - Establish guidelines for which medium is suitable for various content and messages.
 - Chats/DM's: conversational exchanges, not critical for documentation
 - Email: formal project discussions, file exchanges, hyperlinks, and documentation of decisions
- Courtesy
 - Open-door policy – respect time, 5-10 minutes
 - Hallway side conversations
 - Open workspace courtesy
 - Use collaborative workspaces
 - Timeliness of internal response – 2-4 hours
- Generational differences
 - “LOL”, “thumbs up”, other misinterpretations
 - Cap and punctuation in DMs
 - Preferences for personal vs. digital communication



External Communication

- Establish preferred communication protocol and methods with the client
- Tailor the message to the audience
 - A close client contact will be different than an elected official
- With clients and regulatory agencies
 - Clear updates and reports with clear questions and conclusions
 - Be conscious of professional language and tone
- With contractors and vendors
 - Defined expectations, scope clarity
- Timeliness of response – 1 business day maximum
 - Even if that response is “I’m working on it and will get back to you _____”
- Public Information Laws
 - Be aware that all written and electronic communication to and from public agencies becomes part of the public record and is subject to public information requests

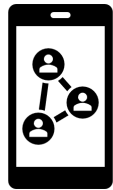


Stakeholder Engagement and Communication

- Importance of involvement
 - Enhances trust and truth
 - Improves project and policy outcomes
 - Increases transparency and accountability
 - Builds community ownership and support
 - Encourages civic education and engagement
- Strategies



Community & Open
House Meetings



Digital
Platforms



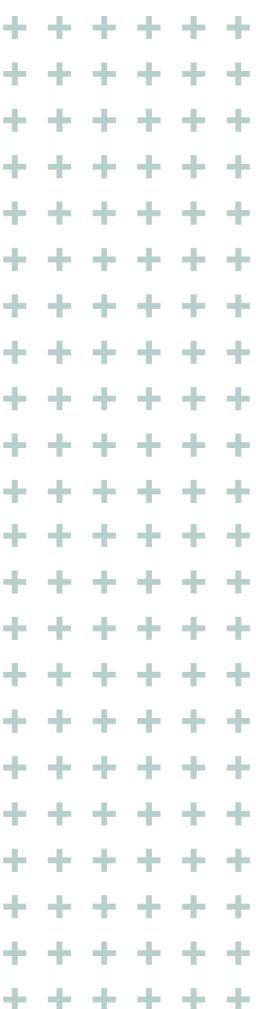
Advisory
Committees or
Task Forces



Targeted
Outreach



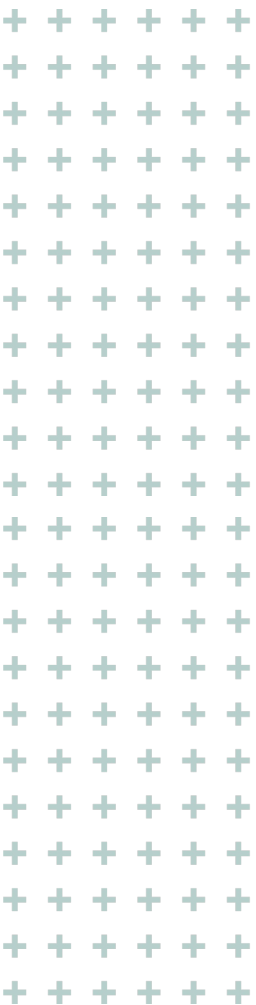
Clear and
Accessible
Information



Public Relations & Reporting

Managing public perception and updating the public

Be Proactive	Tell the Story	Stay Transparent	Engage Publicly	Leverage Trusted Voices
<ul style="list-style-type: none">• Communicate before issues escalate• Set a schedule	<ul style="list-style-type: none">• Highlight impacts and success• Add data and visuals	<ul style="list-style-type: none">• Acknowledge challenges clearly	<ul style="list-style-type: none">• Encourage two-way dialogue• Multi-channel communication	<ul style="list-style-type: none">• Use respected local figures



Key Takeaways

- Water infrastructure projects require structured management and effective communication
- Proactive planning minimizes risks and delays
- Transparent communication builds trust and keeps projects on track
- Adapt communication methods to align with the recipients' style and status

