

ASCE Pipelines 2021 Conference

Recap/Highlights

by Nancy McWilliams

PUG Vice Chair

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Quality Management and
Design Review

Essential Infrastructure
Emergency Repair of the West
Fork Interceptor

Connections to Concrete Pipe

Quality Management and Pipeline Design Review

Gary Savanyu,
Trinity River
Authority, TX

Groger Beiler
& James Chae,
Jacobs, WA

- Two separate presentations
- Focus on Quality Management
- Discussed interaction between Agency and Designer
- Suggestions for quality management, plan review and post construction follow-up.



Quality Management

Meet up front to discuss
Owner needs and
wants:

- Appropriateness for the project location and surrounding area
- Time
- Economics
- Constructability
- Durability
- Future Maintenance

- Implement a Quality Management Program
 - ▣ Includes standardization and continuous improvement
 - ▣ Nobody has total knowledge, accept comments from reviewers as sharing their knowledge
 - ▣ Engage staff for the duration of the project.
 - ▣ Each phase should have its own Quality Mgt: design, owner, construction
 - ▣ Checklists



Quality Management Team

- Design Review
 - ▣ Always get a fresh set of eyes, small firms may need outside assistance for review
 - ▣ Construction details should be reviewed by PE
 - ▣ Making sure all the details are there can be by EIT
- Make the Most of Review Comments
 - ▣ Make comments appropriate to the submittal stage
 - ▣ Differentiate between critical comments, incorrect information, and editorial comments



Plan Review Considerations

- Is the project constructable?
- Are all the materials readily available?
- Is there a way to save costs?
- How will this impact the community?
- Ignored material cost, calculated all based on installed cost
- Be specific with comments rather than asking broad stroke questions – Does this meet all regulations?

This is not a helpful comment:

2.04	DEWATERING STRUCTURE	A. Specified by Contractor with approval of Engineer.
2.05	EROSION CONTROL AT CULVERT ENDS	A. See Article Compost Filter Berm.
2.06	HIGH VISIBILITY FENCING	A. High Visibility Fence: UV stabilized, orange, high-density polypropylene mesh. B. Height: 4 feet minimum. C. Support Posts: Wood or steel with sufficient strength and durab the fence through the life of the Project.
2.07	INLET PROTECTION	A. As specified under Article General, Paragraph K, Inlet Protectio
2.08	MATERIALS ON HAND	A. As specified under Article General, Paragraph L, Materials on 1
2.09	MULCHING	A. Short-Term: Provide independent test results documenting that meets the requirements in Table 1, Short-Term Mulch Test Req



Follow-up

- Post Construction Review
 - ▣ Did the contractor provide an adequate staffing?
 - ▣ Were adequate easements/workspace available for the Contractor to construct the project?
 - ▣ Were there details that worked particularly well or poorly?
 - ▣ Were there change orders and how can we eliminate them in the future?
 - ▣ Were there any underground utilities encountered that were not noted during design?
 - ▣ Was the Designer responsive to change requests and shop drawings?
- Feed this information back into QMP.



Essential Infrastructure Emergency Repair of the West Fork Interceptor

Tom Davies, P.E.
and Steven
E. Metzler, P.E.,
M.ASCE

Trinity River
Authority, TX

- 102" sewer carrying over 150 mgd of wastewater
- West Fork Trinity River at flood stage (12' vs 2' normal) due to 8"-10" of rain the previous week



Finding the Break

- Plant was taking in 500 MGD more than normal so they were looking for something but didn't know what
- Mussel survey crew found the break



- They believe additional overburden from highway construction contributed to collapse

Emergency Response

TRWA has on-call contractors.

TRWA pays the LDs for the contractors to move from their current work to assist with repair

- Emergency Response Team
 - ▣ Contractor, engineering and consultant
- Secured Bank and Stopped Overflow
- Live Flow Repair
 - ▣ Failed
 - ▣ Installed bypass
- Bypass Operation
 - ▣ 5-20" pipes— 3,000 ft ea
 - ▣ 5 weeks to set up
 - ▣ Ran for 3 days



Lessons Learned

- Live Flow Repair
 - ▣ In hindsight should not have attempted
- Bypass Challenges
 - ▣ Towels, bedsheets, basketballs, etc.
- Bypass System
 - ▣ Designed with 50% redundancy
 - ▣ One large hole for intake so pumps starved each other
- Ultimate Solution
 - ▣ New pipe being designed to run on other side of the highway



Making Connections to Concrete Pressure Pipe

Andrew
E.Romer,P.E.,
M.ASCE, AECOM

Richard
I.Mueller,P.E.,
M.ASCE, American
Concrete Pressure
Pipe Association

- Discussed considerations for making connections to concrete pipe including:
- Direct connections for relocations or extensions
- Inserting tees, valves or line stops

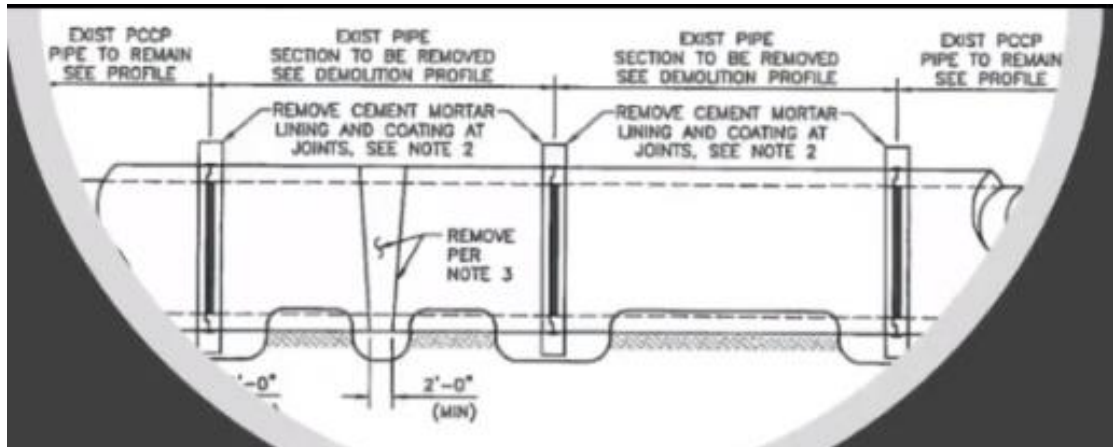
AWWA C300, Reinforced
Concrete Pressure Pipe, Steel
Cylinder Pipe

AWWA C301, Prestressed
Concrete Pressure Pipe, Steel
Cylinder Pipe

AWWA C303, Concrete
Pressure Pipe, Bar-Wrapped
Steel Cylinder Pipe

Planning

- Identify exact type of pipe
- Obtain original design drawings
- Show limit of removal on plans



Thrust Restraint

- New Tee
 - ▣ Does not change forces along axis of existing pipe, need tie-back or thrust block
- New Valve or Line-Stop
 - ▣ Verify that thrust can be dissipated in soil-pipe friction or install collar





THANK YOU!