

# MEMO

**TO:** Nick Cheng  
**CC:** Marvinitta Hartwig, David Dyer  
**FROM:** David Krickbaum  
**RE:** Post FOR US 6 and Federal water line design status  
**DATE:** May 12, 2011

Prior to the US 6 and Federal project being shelved, the status of the plans to relocate the Denver Water line is summarized below.

Two submittals have been made to Denver Water for review of the plans to relocate the existing 30- and 12-inch water lines. The plans were reviewed by Matt Turney, Vincent Gaiter and other Denver Water Staff. The second set of comments from Matt and Vincent has not yet been incorporated and are included below. Olsson's responses to the comments are shown in italics.

## Comments from Matt Turney, December 29, 2010

- We'd like to extend the south tie-in approximately 200 feet to tie into an existing Butterfly Valve. Don Wyman will work with CDOT to discuss this betterment.
- There is not much in the way of as-built info at this location. I am attaching what we do have. This will help you more accurately portray the pipe to be demo'd and tied onto.
- It is unclear to me if the pipelines to be replaced have been potholed. This is especially important at the tie-in locations.
- I am skeptical that a curved casing will work. Not sure how pipe will be threaded through. The peak in the pipeline without an air valve is a problem (especially the 30").
- The vault detail provided by DW is an example of an expansion joint vault used on a previous project. It is by no means a standard detail. This detail needs to be customized to fit this project. Please go over in fine detail. This includes ensuring thrust wall is capable of handling thrust generated by the vertical bend on the exterior of the vault. I can provide the name of the structural engineer who designed this vault.
- As the drawings continue to develop, a review by Cay Stroher our cathodic protection engineer will be required.
- Drafting and Format comments will be provided by Bruce Schulte. Bruce can also help with details you may need.

*Water line potholing and plan revisions are needed if the connection to the existing is moved 200 feet to the west.*

*We have talked to Garney Construction and Northwest pipe about the bridge and casing profile. Neither have concerns about installing the casing and water lines along the bridge arc.*

*Structural design for the vault is needed for the traffic loading and the thrust. Structural design is not part of the consultant's scope. It was our understanding that structural design would be prepared by CDOT.*

*Cathodic protection comments were received via email, but have not been incorporated. The comments are attached.*

*Drafting and format comments have not been received from Bruce Schulte.*

*Redlines from Matt Turney are attached.*

#### Comments from Vincent Gaiter, January 10, 2011

- I would also like this project to be separated out into two separate Water "Only" submittal. One should show the Conduit relocation and Details with Cover Sheet.
- The second Submittal should show just the Distribution main being relocated having the Conduit grayed out. The Details for the Bridge hangers and placement along with pipe material.
- There should also be one overall utility drawing showing all utilities and relocated water lines.

*Original proposal and scope did not anticipate preparing two separate water plan sets.*

*Details for bridge hangars, their locations and casing thickness are needed from CDOT bridge structural engineer.*

*Comments and redlines from Vincent are attached.*

#### **Additional considerations**

1. Mike Mohseni and I have talked about how to drain water from the casing if the carrier pipe were to leak. He suggested drain holes in the casing which could work until the casing goes through the abutment and underground. If water leaks out of the pipe, it will drain to the expansion vaults. A float and instrumentation could be installed that would send an alarm if water begins to pond in the vault. Another option would be to install a drain line from the vault to prevent water accumulation. The drawback is the possibility that the leak would go undetected.
2. After internal discussions we need clarification from Denver Water regarding the need for putting the water lines in steel casings. If it is to protect the water lines that is fine. If it is to provide a means of removing the water line for maintenance, Denver Water needs to realize that in order to remove the water line from the casing it will be necessary to remove the vault and dig a trench in Federal Boulevard to remove the pipe.
3. Denver Water and our internal review identified a need for an air relief valve (ARV) on both water lines. The ARV would be located at the crest of the casing. Access through the bridge deck would be needed to provide maintenance access to the ARV.
4. Jacking the water line was briefly discussed at the beginning of the project, but was not given very serious consideration. Should horizontal directional drilling or pipe jacking be discussed again with Denver Water?

5. As-built information provided by Denver Water for the existing Conduit 3 is attached.