

Construction Management Resources Needs

In the past 3 to 5 years, the number of active District construction projects has far exceeded the capacity of in-house construction services staff to provide construction management (CM) and inspection services for each project. As a result, District staff have augmented full-time equivalent staff with supplemental construction management service agreements. In light of current significant construction projects and a growing workload of construction in the coming decade, it is necessary to ensure appropriate resources are available for successful project completion.

At the October 15, 2018 CIP Committee meeting, during review of several active construction projects, the Committee requested that additional information on construction management staffing be provided. Staff presented additional information to the CIP Committee at its February 11, 2019 meeting; after discussion, the Committee recommended that this topic be presented to the full Board.

Background

As the number of construction projects has increased in the past several years, staff has hired consultant firms, through competitive selection processes, to perform CM and inspection services for District projects that cannot be staffed with in-house staff, in most cases, due to a lack of staff availability. Staff has experienced numerous challenges and difficulties with this approach on several construction projects. Some examples of such issues are:

1. CM consultants lack thorough knowledge of the district's plans, specifications, and construction Contract Documents;
2. CM consultants have not been firm enough in enforcing contractor performance requirements per Contract Documents;
3. Consultant inspectors have had oversights regarding a contractor's substitution of specified materials with nonspecified materials, resulting in a finished product with poor workmanship and/or performance, and a lack of adherence to the Contract Documents' process for such actions;
4. District staff (the projects' design engineers), whose core skills reside in project design and general project oversight, is responsible for managing the CM consultants which require seasoned field experience to make quick decisions to keep up with the fast-paced construction tempo.
5. Regulatory permit conditions have not been enforced by consultant CM firms, resulting in compliance violations; and
6. CM consultants are not as sophisticated or sensitive as District CM staff are in responding to neighborhood concerns and issues during construction.

Options for the Future

The above-listed issues have significantly impacted quality, timeliness, costs and the success of several current or recently-completed construction project. To address these issues, staff has developed and evaluated several options for consideration, as follow:

1. **Option 1:** Maintain the status quo of 17 in-house Construction Services staff (1 unit manager, 6 engineers, 2 chief inspectors, and 8 inspectors). The staffing of District construction projects would be determined by staff's availability. CM consultants would be hired for many projects and would continue to be managed by project-design engineers.
2. **Option 2:** Increase the number of positions in the Construction Services Unit to fully staff all District construction projects. Specialty inspection services would be provided by on-call consultants managed by District's CM staff. An average of 45 Construction Services staff (CM and inspectors) would be required over the next 10 years to fully staff all District construction projects.
3. **Option 3:** Increase the number of positions in the Construction Services Unit to fully staff some construction projects. Continue to hire consultant CM firms on larger/complex projects, but embed District CM staff into the project teams to help oversee and manage the consultant CM firms. An average of 37 Construction Services staff (CM and inspectors) would be required over the next 10 years for this hybrid approach.
4. **Option 4:** Increase the number of positions in the Construction Services Unit to fully staff the larger, more complex construction projects, and hire consultant CM firms to manage the smaller projects. This option would require about the same number of Construction Services staff over the next 10 years as for Option 3.

Staff has evaluated these options, held several discussions internally, and presented and discussed the options with the Board's CIP Committee. Staff has also benchmarked with other water agencies to learn of their practices and experiences. A few agencies perform all CM services with in-house staff, but most employ an approach of using internal staff and CM consultant services; of these, most embed their own staff with the consultant team to leverage in-house staff's knowledge of the Contract Documents and understanding of an agency's priorities and policy concerns. Such embedding also provides general owner-administrative oversight.

Option 2 would require the largest increase in the number of internal staff members and would likely take at least five years to achieve. Some construction management consultant services would still be necessary to provide scheduling and/or claims analysis expertise, and specialty inspections, depending on the project.

With regard to Option 4, full District staffing of larger projects would likely still require using consultant CM services for specific expertise (i.e., tunneling), specialty

inspections, and/or to address certain project risk exposures. Furthermore, use of external CM staffing for the District's "smaller" construction projects, such as annual inspection and rehabilitation of District pipeline segments or repair of flood protection infrastructure, may not always serve the District's mission well. For such projects, in-house staff construction management would be preferred in order to apply and build on institutional knowledge of the District's water supply system and flood protection assets.

Staff's Plan to Move Forward

Staff believes that Option 3, a hybrid approach wherein consultant CM services are obtained when needed, but internal CM engineers and inspectors are embedded in each project where consultant services are used, would best address the previously-listed construction management difficulties and challenges. Option 3 would also be a stepping stone to pursuing Option 2 in the future.

The number of internal construction services staff required to implement Option 3 would be approximately 30-35 staff. This would provide the District flexibility in staffing projects that are best suited to developing and maintaining institutional knowledge in desired areas, and determining which project would benefit from external CM assistance.

Table 1 presents preliminary project staffing guidelines with the implementation of Option 3. This is one example of how the staff could be deployed.

Table 1. CM Staffing Approach for Option 3

Estimated Project Construction Cost	District Staffing Approach
Up to \$30M	Fully staff with in-house construction manager/inspector(s).
\$30M -\$80M	Consultant CM and embed 1 District construction manager + 1 District inspector.
\$80M-\$200M	Consultant CM and embed 2 District construction managers + 2 District inspectors.
\$200M +	Consultant CM and embed 3 District construction managers + 3 District inspectors.

Cost Implications

The cost projections for capital projects in the CIP include the cost of construction management services. Analysis of construction management costs for recent projects shows costs to be similar, whether construction management services are provided by District staff or by consultants. Implementing the option recommended in this memo would not have a significant impact on project budgets or groundwater production charges. Greater involvement by District construction services staff is expected to address the recently-experienced construction challenges and difficulties.

Next Steps

Staff plans to initiate recruitment for up to five additional positions—3 construction engineers and 2 inspectors. This plan would allow District managers to assign staff to certain projects by summer 2019. The additional positions would provide construction management support for the following projects:

1. RWTP Reliability Improvement Project
2. Watershed Asset Rehabilitation Program
3. Upper Llagas Creek Flood Protection Project
4. 10-Year Pipeline Inspection and Rehabilitation Program