

Exeter Road Water Storage Tank Construction Sequence

TO: Mark Fois, Carl McMorran, Aquarion Water Company
FROM: Amanda Keyes, Tighe & Bond
COPY: Peter Galant and James Collins, Tighe & Bond
DATE: January 10, 2020

Executive Summary

This memorandum summarizes the expected sequence of activities for the construction of a second tank at the Exeter Road Tank property as well as the expected impacts of construction on the neighborhood and Aquarion's plan for mitigating those impacts.

Construction of the new Exeter Road Tank is expected to take approximately 17 months. Potential impacts of the construction on the neighborhood are expected to be primarily related to noise, dust, and increased traffic. Aquarion will require the Contractor to take measures to reduce these impacts, which will include:

- Construction of a 10-foot high sound barrier to minimize noise, visual impact, and dust migration from the site.
- Use of a temporary electrical service in lieu of a diesel generator to decrease noise generation.
- Limiting large deliveries to outside school bus pick up and drop off hours, and requiring traffic control during any concrete or large equipment deliveries that occur during these hours

1 Introduction

The 0.75 million gallon (MG) Exeter Road Tank (Photo 1) is the primary storage tank for the main pressure zone in Aquarion's Hampton, NH water system. The tank was constructed in 1983 and has the original interior and exterior paint coatings. After determining the need for a second storage tank in the main pressure zone, Aquarion determined that a second tank at the same location as the existing Exeter Road Tank is the most feasible alternative from fire protection, system operations, and cost perspectives.

This memorandum summarizes the expected sequence of activities for the project, the potential impacts of construction on the neighborhood, and Aquarion's plan for mitigating those impacts. The actual sequence and timing of activities will be determined by the contractor selected to perform the work and the time of year in which the work is authorized. The project durations were estimated by Tighe & Bond based upon our experience with similar projects at other locations.



PHOTO 1:
Exeter Road Tank

If approved, construction of the new Exeter Road Tank is expected to take approximately 17 months. The construction of the new tank will include the following phases:

1. Plan review (no construction on site)
2. Site preparation
3. Foundation and pedestal construction
4. Construction and painting of the tank bowl
5. Interior piping and appurtenances
6. Site work and restoration

Figure 1 provides a summary of a typical schedule of tank construction with durations of each construction activity. The schedule is based on a five-day work week from 7:00 AM to 5:00 PM Monday through Friday through the majority of the work. Saturday work for non-construction clean-up and preparation activities is assumed for the construction and painting of the tank bowl. If the tank builder is not allowed to conduct any work on weekends, it would extend the length of time to construct the tank. Depending on when construction commences, a winter shutdown may be necessary. The following sections detail the mitigation measures that Aquarion will take to minimize impacts on the neighborhood and the anticipated construction activities during each stage of construction.

2 Mitigation Measures

The primary neighborhood impacts consist of noise, dust, and construction traffic. The following sections outline how Aquarion will work with the tank builder to reduce the impacts on the residents.

2.1 Communications

Two-way communications will be key to making this a successful project. During construction, Aquarion will provide monthly project progress updates on its website and bi-weekly email updates to interested parties. The cellphone number and email of the on-site observer will be provided to interested parties to contact with any construction-related concerns. The construction observer will be dedicated full-time to the site and will ensure that the contractor adheres to the requirements outlined in this memorandum and required by the contract to minimize neighborhood impacts based on the specific construction activities planned each day.

2.2 Noise

During the construction, the contractor would typically utilize a generator to operate their tools. Aquarion will require the contractor to install and utilize a temporary electrical service to eliminate the noise associated with an on-site generator. The contractor will also be required to install a 10' high sound barrier/screening fence along the southern border of the tank site (Figure 2), between the tank site and the Falcone Circle neighborhood.

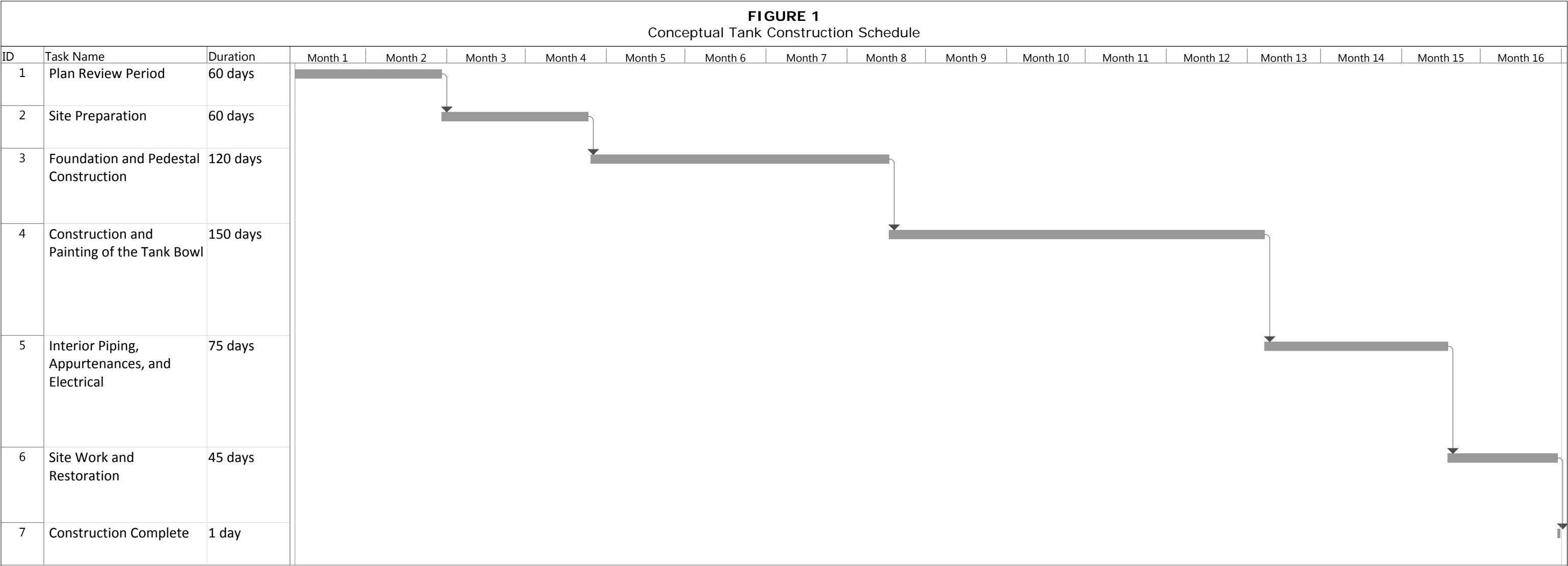




FIGURE 2: Sound Barrier Fence

2.3 Work Hours

Construction hours shall be between 7 AM and 5 PM, Monday through Friday with some weekend work through the steel construction and painting stages. Aquarion will only allow Saturday cleanup and prep work that does not generate loud noise or dust and will only allow this work from 9:00 AM to 5:00 PM on Saturdays.

2.4 Traffic


There will be an increase in daytime traffic on the roads leading to the tank site. Increased traffic will include concrete delivery trucks, material deliveries, and worker vehicles. The site access plan (Figure 3) shows two different access routes that may be utilized to access the site and deliver materials. Aquarion is aware that school bus pickup and drop off times on Falcone Circle are approximately between 6:45 AM and 8:45 AM and between 2:00 PM and 3:45 PM, respectively. The contractor will be required to limit deliveries of concrete or large equipment to outside of these hours to the extent practical. If the construction sequence requires concrete or large equipment deliveries during bus pick up or drop off hours, a police detail will be required to provide for additional safety.

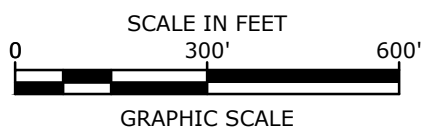
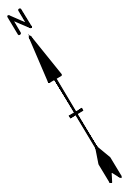
To further reduce construction vehicle impacts to the neighborhood, Aquarion asked NHDOT to allow an access road to be constructed to the tank site from the Route 101 on-ramp, which would eliminate construction traffic through the neighborhood. NHDOT has indicated that access from the on-ramp would not be allowed.

2.5 Erosion Control

The contractor will be required to implement erosion controls during construction to prevent erosion and sediment loss at the site. The construction of the new storage tank will create additional impervious area on the site. Aquarion will design the site with a stormwater

Legend:

- School Bus Route
- Delivery Route
- General Access
-  School Bus Stop



SITE ACCESS PLAN

AQUARION WATER COMPANY
HAMPTON, NEW HAMPSHIRE

DATE: 11/13/2019

SCALE: AS SHOWN

FIGURE: # 3

Tighe&Bond
Engineers | Environmental Specialists

infiltration pond and drainage improvements so the peak runoff rate is not increased above existing conditions.

2.6 Dust Control

Site work and foundation construction could generate dust. The contractor will be required to take measures to prevent dust from migrating off site including cleaning of paved surfaces and control of dust with water or calcium chloride.

2.7 Containment During Surface Preparation and Painting

The contractor will provide containment during steel surface preparation and when coatings are applied via spray methods to prevent particulates in the air from migrating off site. The containment will consist of tenting of the area with canvas sheeting.

2.8 Background Checks

Aquarion will require all contractor employees to pass a background check to work on site.

3 New Tank Construction

3.1 Plan Review Period

Once the contract is awarded, the contractor will take the first 2 months for project planning and to prepare for the construction. The contractor's plans and proposed materials will be reviewed by the Engineer and Owner for compliance with the project specifications. There will be no on-site activity during this period.

3.2 Site Preparation

Site preparation will take approximately 2 months. Site preparation work will begin with removing the north-west and north portions of the existing site fence and constructing a temporary fence around the construction area. Once the fencing is complete and site access is restricted to construction personnel only, the contractor will begin to clear the tank site. Clearing will include removal of trees and stumps in the area west and north of the existing tank. The contractor will then prepare an excavation for the concrete footing for the tank.

Equipment Required

Construction activities will require the use of excavation equipment including excavators, loaders, rollers, and dump trucks.

Neighborhood Impacts and Mitigation Measures

As discussed in Section 2, the contractor will construct a 10 foot high construction sound barrier along the property lines facing the Falcone Circle neighborhood to minimize noise, visual impact, and dust migration from the site (Figure 2). Aquarion will have a full-time construction observer on site throughout construction to monitor that proper measures to minimize noise and dust from the site are being implemented.

Noise generation will primarily consist of construction equipment engines. Soil borings indicate that there is no bedrock in the excavation area. However, a jack hammer will be used if rock removal is necessary. Dust generation is expected during this period and the contractor will control dust with water, calcium chloride, or equivalent techniques.

3.3 Foundation and Pedestal Construction

The tank foundation is constructed within the excavation dug during the site preparation stage. The contractor will form the tank foundation and loads of concrete will be delivered to fill the forms with concrete. The contractor will then form and pour the pedestal walls (Photo 2).



PHOTO 2: Tank Foundation



PHOTO 3: Tank Foundation Wall Backfilled

After the foundation is backfilled (Photo 3), the contractor will erect a temporary crane inside of the tank pedestal. The tank pedestal walls are constructed using a “jump form” system. The lowest ring is constructed first and then the concrete forms are moved upward using the crane, to pour the second pedestal ring on top of the first. Rings continue to be built upward until the height of the bottom of the tank bowl is reached (Photos 4-6).

Foundation and pedestal construction will take approximately 4 months.



PHOTOS 4-6: Tank Pedestal Construction

Equipment Required

Construction activities will require concrete truck deliveries, a concrete pump truck, and crane.

Neighborhood Impacts and Mitigation Measures

Noise during the construction of the pedestal and foundation will include equipment motors and workers moving forms. The greatest potential neighborhood impact during this portion of the work is the coming and going of concrete delivery trucks. The foundation pour will be a large pour occurring over the course of a single day. On that day approximately 20 to 25 concrete trucks could go to and from the site over the course of the day. For the pedestal construction, the tank builder typically completes two concrete pours per day, one in the morning and one in the afternoon. For each pour, two concrete trucks will likely be required along with a pump truck that will get delivered with the first pour and leave the site at the end of the day. As discussed in Section 2, the contractor will be required to limit concrete deliveries to outside bus pick up and drop off hours to the extent practical and will be required to utilize police details for deliveries if they occur during those hours. The contractor would typically begin use of an on-site generator to operate hand tools during this stage of work. Aquarion will require the contractor to install a temporary electrical service to be utilized throughout the work for any equipment that would normally be generator-operated. This will decrease the noise generation of work on the site.

3.4 Construction and Painting of the Tank Bowl

Construction, painting, raising, and setting of the tank bowl will take approximately 5 months. The steel sheets that will comprise the tank are fabricated off site and delivered to the site for assembly. The bowl will be welded together around the pedestal on site (Photos 6 and 7).



PHOTOS 6-7: Tank Bowl Construction at Ground Level

Once the bowl of the tank is constructed, it will be painted at ground level (Photo 8). After painting, the bowl is lifted to the top of the pedestal using a series of jacks (Photo 9) and welded into place (Photo 10).



PHOTO 8: Bowl Painting



PHOTO 9: Bowl Raising

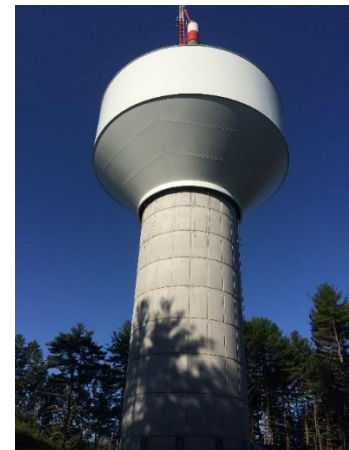


PHOTO 10: Bowl Setting

Steel sheets for the roof are then brought to the top of the tank using a crane and welded into place.

Equipment Required

Construction activities will require a crane to unload the steel sheets and assemble the steel sheets together, jacks to raise the tank bowl, and painting equipment.

Neighborhood Impacts and Mitigation Measures

Noise will include equipment motors and welding activities. As discussed in Section 2, the contractor will be required to continue utilizing a temporary electrical service to power equipment to minimize noise on site. For the steel preparation and coating work, the

contractor will be required to provide containment through tenting of the tank with canvas sheeting to prevent dust and paint particles from migrating off site.

3.5 Interior Piping, Appurtenances, and Electrical

Once the tank is raised, the contractor will complete the construction of the interior piping, and valve room. This construction will be limited to the interior of the tank. The interior and electrical work will take approximately 2-3 months.

Equipment Required

This portion of the project will not include exterior equipment.

Neighborhood Impacts

Noise would normally be from an equipment generator, but the contractor will be required to utilize a temporary electrical service to minimize noise generation.

3.6 Site Work and Restoration

Once the new tank is built and interior work is complete, the contractor will install site piping to connect the new tank to the distribution system and exterior drainage piping and structures, pave the access drive, and restore the grass surfaces. Once construction is complete, the construction equipment will be removed from the site, the property will be cleaned up and final landscaping will be completed. The site work and restoration will take approximately 1-2 months.

Equipment Required

Construction activities will require the use of excavation equipment including excavators, loaders, and dump trucks.

Neighborhood Impact

Noise will be limited to the excavation equipment. As with other stages of work, the contractor will be required to control dust generation from the site.

4 Existing Tank Rehabilitation

Construction of the new tank will enable Aquarion to remove the old tank from service for rehabilitation and painting while maintaining pressures and available fire flow to the system. Rehabilitation of the existing tank is critical to maintaining the structural integrity of the tank and the continued ability of the tank to protect stored water. Rehabilitation of the existing tank will include steel repairs, replacement of tank appurtenances such as vents and access manholes, and recoating of the interior and exterior of the tank. The rehabilitation process includes the following steps:

1. Site setup and draining and cleaning of the existing tank
2. Staging and containment installation
3. Cleaning and removal of existing coating
4. Steel rehabilitation and replacement of tank appurtenances

5. Painting of tank
6. Site cleanup

Once started, the tank painting and maintenance process will take approximately 4-6 months to complete.

J:\A\A1000 AWC\105 - Exeter Tank Replacement\Neighborhood Outreach\Construction Sequence Memo\Construction Sequence Memo - 1-3-2019.docx