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report



Town of
Sanford
MAINE



Former Aerofab Building Demolition
Demolition Summary Report

April 2011

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1.0 PROJECT SUMMARY

1.1 Project Description

This project consisted of the design, demolition, and restoration of the abandoned Aerofab building located at 3 Aerofab Drive and at 0 Pioneer Avenue in Sanford, Maine (the project site). The project site consists of two adjacent parcels identified by the Town of Sanford as map J29, lots 17D and 19A. The Aerofab building located on parcel 19A was approximately 30,000 square feet on a lot size of approximately 34,000 square feet. The building generally consisted of a rubber membrane roofing system on a wood deck, interior and exterior walls of wood frame construction, exposed concrete floor slab; wood, sheetrock, and plaster wall and ceiling systems, HVAC, plumbing and electrical systems. The building/project site included two covered bridge walkways crossing the Mousam River (along the northeast side of the property) at first floor level, and one elevated, free-standing, covered walkway crossing the river at second floor level. Also located on the project site property, was an abandoned elevated wood railroad trestle and an abandoned aboveground oil storage tank. The trestle was demolished along with the building and the oil tank was removed by others shortly after the demolition was complete.

In addition to the demolition of the Aerofab building, a white wood structure located near the entrance of the Aerofab property was also demolished. This abandoned building was identified as building 126-A. The building was approximately 800 square feet in size and owned by the adjacent property owner (Regco, Inc.).

The project scope of work included the demolition and removal of the building superstructures to the floor slab grade and demolition of the concrete floor slabs and associated foundations (to a depth of two feet below top of slab). This work included the abandonment of utilities; protection, maintenance, and necessary post-demolition structural support of covered walkways; clean-up, removal, and disposal of waste debris and miscellaneous trash; and site restoration in accordance with the contract documents.

The three covered walkways (two at first floor and one elevated) remained after the building demolition. The scope of the demolition work included sealing each entrance of the first-floor walkways into the Aerofab building, constructing post-demolition structural temporary support system for the walkways, and protecting the walkways for the duration of demolition activities. The Contractor (S&R Corporation) was required to and provided a structural analysis of each structure.

1.2 Project Team

The parties involved with the demolition of the Aerofab building include the following:

- Owner: Town of Sanford, Maine
- Project and Contract Administrator: Credere Associates, LLC
Westbrook, Maine
- Designer & Construction Administration: Weston & Sampson, Inc.
Portsmouth, New Hampshire
- Contractor: S&R Corporation
Lowell, Massachusetts

Creder Associates, LLC (Creder) was in charge of the administration of contracts and disbursement of money for the design and construction of the project. Weston & Sampson completed the design, reviewed/approved S&R Corporation (S&R) submittals, and provided limited (approximately 12 hours per week) construction inspection during the project.

S&R Corporation was one of three contractors that bid on the project. S&R was selected based on the bid presented and experience with similar projects. S&R subcontracted with four local companies to assist with the project goals.

1.3 Permits

S&R was required to apply for, obtain, and pay for all permits and licenses required, including but not limited to a Town of Sanford Building Permit and any others as required by local, state, and federal agencies. S&R was responsible for all fees and costs associated with decommissioning and termination of services.

S&R obtained the building/demolition permit from the Town of Sanford. S&R determined that no other permits (federal, state, local) were required for the demolition work. A permit to remove the roofing materials, which contained asbestos, was obtained by others prior to the demolition. The removal of the roof was completed prior to the start of demolition and was completed by others.

A copy of the building permit issued by the town is included in Appendix A.

1.4 Project Schedule

The project schedule of events is presented in the table below. The schedule provided by S&R is included Appendix B. There were no significant variations in the schedule and the actual schedule of events. There were no significant delays during the project. Once demolition commenced, there were only two days of no work due to inclement weather (e.g., heavy snow).

Aerofab Demolition Schedule of Events

Event	Date
Advertisement of Demolition Bid	10/14/10
Award of Demolition Contract to S&R	11/15/10
Building/Demolition Permit Obtained	12/3/10
Start of Construction Activity (Install E&S, Utility Caps, and Building Prep)	12/13/10
Start Building Demolition	1/04/11
Building Knock-down Complete, Start Demolition and Crushing of Concrete/Brick	1/10/11
Complete Site Grading	1/14/11
Project Substantially Complete	1/20/11

2.0 DEMOLITION

S&R was contracted to conduct the demolition and restoration of the site. As part of the bidding documents, S&R was encouraged to use local labor. S&R subcontracted with four local companies to assist with construction activities including the following:

- Utility Abandonment
- Installation of E&S controls
- Installation of fencing
- Structural analysis of covered walkways

2.1 Utility Abandonment

Prior to the start of demolition activities, the utilities connected to the building were required to be abandoned. S&R was responsible for contacting the utility agency and coordinating the abandonment. The following utilities were contacted:

- Central Maine Power Company (CMP) - electrical
- Fairpoint Communications - telephone
- Sanford Water District - water
- Sanford Sewer District - sewer

The electrical and telephone utilities were disconnected by CMP and Fairpoint representatives, respectively. The water and sewer were abandoned by S&R's subcontractor under the guidance of the Sanford water and sewer departments.

2.2 Demolition/Deconstruction

After the utilities were abandoned and the E&S controls were installed, demolition activities began. Initial activities included collection and removal of loose paper, removal of accessible metal, and the disconnection of the Aerofab building from adjacent structures.

Demolition of the building structure began on January 4, 2011. The building was demolished into piles and crushed onsite prior to transportation. The structure was removed utilizing two Caterpillar 345 tracked excavators with grapple attachments. Large piles of building debris were

created on the concrete slab. Once the building was deconstructed (2 days), the excavators crushed the debris with the grapples into sizes manageable for end use. The crushed debris was loaded into tractor trailer trucks (100 cubic yard capacity) and transported to a facility to be recycled (see Section 4.0). During these activities, metal was separated from the piles by hand or with the excavators. In addition to the excavators, S&R used two Bobcat skid steers with loader buckets to handle debris.

Once the building was removed, S&R initiated removal the concrete floor and foundation with the excavators. Foundations were removed to approximately 2 feet below the top of concrete slab grade. The concrete and brick were stock piled into the center of the site. A portable rock crusher was utilized to crush concrete and brick into 3-inch minus material. This material was used to grade the site.

On a daily basis upon the completion of project activities each day, or as necessary S&R inspected the adjacent properties and the river for debris that may have blown away during demolition. Construction-related debris observed was promptly picked up and disposed of as necessary. S&R was also required to control fugitive dust emissions.

2.3 Covered Walkways

The three covered walkways (two at the first floor level and one elevated) remained after the building demolition. The project scope included preserving and stabilizing each of the walkways. S&R provided a structural analysis of each structure. The two walkways close to the western end of the project required no additional support; however the most easterly walkway did require support. S&R contracted with a structural engineer (licensed in the state of Maine) to analyze the structures and approve of a support system. The analysis of the walkways was part of the project submittals, and is included in Appendix B.

In addition to S&R's analysis of the walkways, a structural engineer from Weston & Sampson observed the walkways and reviewed S&R's analysis and shoring of the walkways.

2.4 Site Restoration

After demolition activities were complete, the site was graded with the crushed concrete and brick. S&R graded the site to slightly slope away from the river towards two existing storm drains. S&R surveyed the area and the spot grades were included on the record drawings. S&R installed silt fence and hay bales along the edge of property that abuts the river. The silt fence and hay bales will remain until future construction is completed.

The site was secured with an 8-foot high chain link fence. The fence has two twelve-foot swing gates for access. The gates are chained and secured with a pad lock. The Town was provided with copies of keys to access the lock.

2.5 Construction Administration

In addition to the design of the Project, Weston & Sampson was contracted to conduct the construction administration. This includes review and approval of S&R's project submittals, construction inspections, responding to S&R's request for information, and construction close-out. Copies of the approved project submittals are included in Appendix B.

Construction inspections were conducted periodically throughout the project and during critical construction events. Weston & Sampson and Credere performed the inspections. Weston & Sampson maintained communication with S&R's supervisor throughout the project to resolve issues that surfaced and to maintain that the project was completed in accordance with the project specifications and plans. Photographic documentation of select phases of construction and demolition was conducted. Selected construction photographs are included in Appendix E. Copies of the construction inspection reports are included in Appendix F.

3.0 DESIGN MODIFICATIONS

There were no major design modifications from the original design. The following minor modifications were discussed in the field and approved prior to implementation.

3.1 Demolition of Building 126-A

In addition the demolition of the Aerofab building, a white wood structure located near the entrance of the Aerofab property was also demolished. Demolition of this building was done to satisfy the adjacent property owner for use of their property for S&R's staging area. This change was done in the design phase and was incorporated into the design plans. Demolition of this building is reflected on the record drawings.

3.2 Concrete Slab Left In-Place

The original design specified that 5-foot by 20-foot sections of concrete slab be left in-place in front to the covered walkways. This was to provide stability to the walkways, which were not demolished. It was decided to leave a five-foot wide section of concrete slab the entire length of building. This was done to prevent the new gravel grade from eroding into the adjacent river. This modification is shown on the record drawings.

3.3 Permanent Fence

The final location of the permanent fence was slightly relocated from the location shown on the design plans. This was done due to the removal of building 126-A. Also, two 12-foot swing gates were added to the fence. These modifications are shown on the record drawings.

3.4 Utility Abandonment

The final locations of the water and sewer abandonments were slightly modified. The water line was cut and capped approximately fifteen feet from the property line. The sewer line was plugged in an existing manhole. The Town of Sanford Public Works Department oversaw these abandonments and approved of the work. The abandonment locations are shown on the record drawings.

4.0 BUILDING RECYCLING

4.1 Recycling Rate

In an effort to divert materials from landfilling, the Project was designed to recycle or reuse material from demolition. Also, S&R was encouraged to reuse or recycle the maximum amount of material from demolition as possible.

The two most abundant materials from the demolition of the building were structural wood timbers and the concrete/brick in the floor and foundation. The wood timbers were inventoried prior to demolition in an effort to have S&R attempt to salvage the timbers for reuse. However, the timbers were not salvaged for reuse as structural wood based on condition. The species of wood that has value in the salvage market are hard woods or southern yellow pine. Most of the wood in the Aerofab building was either hemlock or a species of local pine.

Although the wood was not reused, it was recycled. The majority of the wood demolition debris (structural timbers, flooring, furniture, wall board, and brush) was transported to Bio-Fuels in Lewiston, ME to be processed into chips to be burned at a mass burn facility to generate electricity.

The other large demolition debris component was the concrete and brick from the walls, floors and foundation. The project specifications required S&R to remove this material to a minimum of two feet below top of concrete slab grade. This material was crushed on site and reused as a subgrade material at the site.

Other recyclable materials from demolition included paper and metal. Paper was collected and sent to a materials recycling facility in Scarborough, ME. Metal was separated, collected, and sent to a metal recycler (Schnitzer North East in Everett, MA).

The overall recycling rate for the building demolition was calculated at over 99%. This calculation does not include the asbestos containing roof material that was removed prior to

demolition by others. Refer to the waste disposal summary located in Appendix C for details the demolition recycling data.

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