GRANITE STATE GIANT—

POS PLANS LARGEST U.S. CLEANROOM

A detailed search coupled with step-by-step construction ensures on-time delivery despite 'unforeseen issues'

By Gerard O'Neill and Meeraj Mehta

In the fall of 2014, Prudential Overall Supply (POS) approached American Laundry Systems (ALS) for guidance in procuring a "green field site" for the purpose of constructing a cleanroom laundry facility in the Northeast region of the U.S. At the time, POS was servicing its New England/Northeast-based customers from its cleanroom laundry facility in Richmond, VA. The clean goods headed to a distribution/service center in Massachusetts and the soiled goods back to the cleanroom facility in Virginia. Then the routine started again the following day!

As you can imagine, the transportation costs and logistics were becoming cost prohibitive, in addition to putting exponentially increasing pressure on the existing facility as the volume of customers increased in both areas of the country. Prudential Overall Supply has been experiencing double-digit growth for many years and is expanding its capabilities to support that growth.

SYSTEMATIC SEARCH

We began our search with the assistance of multiple commercial real estate brokers to pinpoint a site in the 8–12 acre range with the necessary utilities to accommodate the facility.

Ideally the site had to possess the following attributes:

1. Easy highway access
2. An industrial park was preferred with underground utilities and GREAT curb appeal!
3. Large local employee base with public transit availability preferred
4. Light industrial zoning
5. Local tax incentives
6. Strong CCRs (covenants, conditions and restrictions)
7. Reasonable land/property costs (real estate taxes, corporate taxes, etc.)
8. Large-capacity utilities:
   - 10-by-12-inch sewer line with minimum POTW restrictions
   - 6-by-8-inch city water line or ability to drill wells, if necessary
   - 3,000-4,000 amps of 480 volts electrical service
   - 60 MMBTU of natural gas

ALS and its team of real estate professionals reviewed the following states: New York, Connecticut, Rhode Island, New Hampshire, Massachusetts, Vermont and Maine. Within approximately 90 days, we had compiled all of the information needed for POS to make an educated decision as to the "perfect location." Some states were dropped from the list rather quickly. New York, Vermont, Maine, Rhode Island and Connecticut were eliminated as the ideal location because the majority of the attributes

listed at right weren't available. Over 60 "green field" locations were analyzed for POS during this phase of the search and the remaining states, Massachusetts and New Hampshire both had viable potential locations.

The matrix in Figure 1 was used to provide POS with the pros and cons of all locations. New York was eliminated early in the evaluation due to distance from customers alone.

Eventually, we were left with 16 locations in Massachusetts and New Hampshire to analyze further. This effort included meeting with local politicians, code enforcement officials, etc. With guidance and input from Stefan Schurter, sr. vice president of POS, who acted as the Prudential liaison with overall project responsibility, the 16 locations finally were narrowed to four sites in New Hampshire. A final decision was made to go with a cul-de-sac location of 14-plus acres with perfectly flat, sandy soil in Nashua, NH. The selected site in New Hampshire met all of the aforementioned criteria, including utilities, location, zoning, etc. At that point, the first part of the project was completed and POS closed on the property in the summer of 2015.

ON TO CONSTRUCTION

Shortly thereafter, ALS was hired along with an architectural firm located in Irvine, CA, to design a Cleanroom laundry facility with industrial-laundry capability on the chosen 14-acre site in New Hampshire. ALS advised on the unique design parameters involved in building and operating in the cold and snowy climate of New Hampshire.

From the summer of 2015 to the summer of 2016, multiple iterations of layouts and designs were presented to the Prudential Team. Ultimately, POS approved a design comprising a total of 70,000 square feet. It called for a cleanroom laundry facility with expansions in two future phases of 40,000 square feet for an industrial laundry facility and a further 16,000 square feet for a cleanroom expansion.

All phases, present and future, were submitted to the City of Nashua Planning Board and approved unanimously in the winter of 2015.

The criteria for the building of this facility, the largest and cleanest, most automated, modern, dedicated cleanroom laundry in the United States—including future expansions—are listed on pg. 44.

Once the City of Nashua Planning Board approval was received and POS accepted a final design, the decision to build was made and an ALS-developed RFP (request for proposal) for general contracting (GC) was released to the market. A total of six GCs responded, with the project ultimately being awarded to Dacon Corp. of Natick, MA. All MEP work (building and laundry related), project management and owner's representation was awarded to ALS.

Figure 1. Prudential used a matrix to weigh the pros and cons of each location

NOTE: The lower the number, the better the score.

	MA	NH	VT	ME	CT	RI
Cost of Doing Business	46	32	41	29	47	43
Workforce	20	41	50	41	32	38
Quality of Life	7	3	2	8	14	19
Infrastructure	45	48	49	46	42	50
Economy	19	33	23	48	49	44
Education	3	10	2	8	5	18
Innovation	5	26	37	43	21	34
Business Friendliness	21	13	31	28	24	45
Cost of Living	45	43	40	38	48	42
Access to Capital	9	19	31	29	7	23
Overall Score	**25**	**30**	**42**	**45**	**46**	**50**

BUILDING PROCESS OVERVIEW

Construction began with site clearing in the fall of 2016. As is typical with new construction, we had to overcome some obstacles. Specifically, we had to blast on-site ledge and granite, despite having a multitude of soil borings and monitoring wells. The blasted ledge and granite was subsequently reused to line all on-site storm-water retention ponds. All soil/fill and loam was reused on-site during construction as well. An eight-inch-wide precast concrete panel was chosen for the building with a 50 lbs. per square foot (over snow load and code) for the roof frame structure. All RTUs (roof top units) for both the main building and cleanroom units were placed on the exterior roof structure, thereby freeing up valuable cube space for the high-tech/specialty washers and dryers, ULPA filtration, etc. needed in the cleanroom.

With the work nearly finished, a Temporary Certificate of Occupancy was obtained early in September. Several punch-list items were completed by the end of that month. Prudential held

Figure 2. Prudential's Criteria for Immediate Building and Future Expansions

- 70,000 sq. ft. (now) to 120,000 sq. ft. (future) over 3 phases
- 103 parking spots (now) with additional 28 spots for future
- 30 ft. clear inside building
- 55 MMBTU gas service at 5 PSI pressure
- 2,500 KVA transformer for electrical service
- 1,000 KW diesel backup generator—2 × 500 KW in a single housing with load-shedding system
- 6-inch water service and 8-inch sprinkler service
- 10-inch sewer service with separate manhole connection for the office and production
- Supply all MEP supplies to internal cleanroom unit
- Diamond polish (finishes) all production floors (excluding employee areas)
- Independent, third party testing for duration of project
- Cleanroom standard ISO Class 3 (cleanest in the industry)
- 540 air exchanges per hour in the cleanroom
- 200,000 lbs. of cleanroom laundry per week (five days per week)
- 50–60 f/c (foot candles) for building lighting (highly efficient LED) with lighting-control system
- 70–100 f/c for cleanroom lighting
- 100+ seating capacity employee breakroom with separate HVAC system
- Cleanroom (BAS) Building Automation System
- Cleanroom Central Particle Measuring System
- Cleanroom Central Vacuum Cleaning System
- Cleanroom 99.9999% efficient ULPA filters
- Cleanroom temperature set point = 65°F with 65% relative humidity
- Interior parking for all trucks (15 route trucks) and three tractor trailers
- Separate/independent industrial laundry area
- Separate/isolated interior stock room and warehouse
- All the future isolation valves added to expand the process piping for future phase without any disruption
- Co-axial ducting on industrial dryers to preheat incoming cold air for energy conservation
- Split wastewater trenching for industrial washroom to assist in water reuse and water conservation
- Energy usage and recording system for the Process System
- Sarnafil Sikaplan Adhered System (specialty roofing)

a Customer Open House on Oct. 17 with a General Open House and Grand Opening to follow early in 2018.

The project budget was in the $15 million to $20 million range and was completed without overruns, despite unforeseen issues, such as the aforementioned ledge and granite.

"It will not just be Nashua's largest cleanroom plant, not just New England's largest cleanroom plant, or the East Coast's," Schurter says. "This will be the largest cleanroom laundry in the United States. It's really going to be a unique achievement. It's a first of a kind. We're really proud that we can build it. And I think it will really bring great jobs."

We'd like to acknowledge the following companies that played integral roles in this project, our 86th new plant for ALS.

- Prudential Overall Supply (Owner/Customer)
- Dacon Corp. (General Contractor)
- Hayner/Swanson, Inc. (Civil Engineer)
- Avilla Plumbing Inc.
- Florence Electric LLC
- North Point Outdoors TS

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Prudential Overall Supply chose **American Laundry Systems** to help procure a Green Field Site and construct their 70,000 sq ft. **(ISO Class 3)** Cleanroom Laundry Facility **(the largest in the United States).**

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