



December 21, 2012

Mr. Geoff Spitzer  
Chinburg Builders, Inc.  
3 Penstock Way  
Newmarket, NH 03857

Re: Cocheco Mills Service Design Summary

Mr. Spitzer:

At your request, I have compiled a summary of the electrical service design concerns at the Cocheco Falls Mills. As you are aware, although the project takes place within one large structure, it actually consists of two buildings as defined by the City of Dover and applicable construction standards. The northern most section of the renovated footprint is considered Mill #2 or 100 Main St and the area south of the masonry demising wall is Mill #3 or 383 Central Ave. Each of these buildings must be considered individually because applicable code does not allow for power to travel between the two mills.

#### Mill #2

This building presently has two services; one at 2000A 120/208V 3Ø 4W and another at 1600A 277/480V 3Ø 4W. The 2000A service energizes the entire portion of the building that is currently occupied. The 1600A main switch is no longer being utilized but previously serviced the commercial space occupied by AT&T.

When we performed an NEC load calculation with the new renovations included, the minimum electrical service required for Mill #2 in its entirety at 120/208V exceeded 2000A. Because the NEC does not allow more than one service per building with the same characteristics, we proposed to utilize the 277/480V service to energize the renovated space. Additionally, the 480V service should remain because the existing HVAC equipment, which will be put to use for the renovated space, operates at 480V.

#### Mill #3

This building presently has three services; one at 2000A 120/208V 3Ø 4W, a second at 2500A 120/208V 3Ø 4W and a third at 1600A 277/480V 3Ø 4W.

We performed load calculations for this building as well. A crew of our electricians collected data in the field to create a comprehensive power distribution riser diagram and a list of the significant mechanical loads by panelboard. Unoccupied areas were considered as commercial office space when performing those calculations. It was our hope that we would be able to add the renovated space loads to one of the two 120/208V electrical services. Unfortunately, the 2000A service is burdened with a large component of HVAC loads as well as the passenger elevators. Adding the new residential apartment load to that existing load would exceed the equipment rating. The status of the 2500A service is similar. The vastness of this building drives the calculated general lighting and receptacle load up to figures that make it impossible to add any significant load to that service as well. Conversely, the 480V service is loaded at less than 50% of its rated capacity. Therefore, similar to the Mill #2 situation, although there is sufficient available power to service the renovated space it is only available on the 277/480V system. To reiterate, because the NEC does not allow more than one service per building with the same characteristics, we proposed to utilize the 277/480V service to energize the renovated space.

After reviewing the existing conditions, we designed distribution systems utilizing the available 480V power. When we presented this to PSNH it was brought to our attention that it is PUC policy that customer owned dry type transformers are not allowed before the utility meter(s). It has been expressed to us that there is a concern with quality and continuity of service to the customer with a transformer between the utility owned transformer and the utility meter position. Although we understand the concern, it seems counterintuitive that thousands of other existing installations which have large circuit breakers in the same relative position would be acceptable. If forced to adhere to this PUC policy, it will add significant financial burden to your company unnecessarily because although there is sufficient existing power in the buildings the electrical services will have to be resized/increased.

Your original request for this project was to utilize Master Metering and have utility costs included in the monthly rent. This is also contrary to PUC policy so it was abandoned early on, but it may be another avenue of compromise in order to keep the project cost at a realistic threshold.

What follows is a synopsis of the options available to energize the renovated space.

1. Utilize the existing 480V power available in the building and distribute power throughout the renovation. Transformers will step the voltage down to 120/208V and no metering for the individual rental units would be installed. This Master Metering configuration is NOT approved by PSNH but is the most cost effective way to energize the renovated space.
2. Utilize the existing 480V power available in the building and distribute power throughout the renovation. Transformers will step the voltage down to 120/208V and modular metering for the individual rental units would be installed. This configuration does not comply with utility company policy but it is another cost effective way to energize the renovated space.
3. Add another 120/208V 3Ø 4W service to each building sized large enough to energize the renovated space. This configuration is a non-code compliant installation and would require special consideration by the local AHJ. It should also be noted that Mill #3 is already out of compliance because it has two 120/208V services in place. To ask that a *third* 120/208V service be allowed would be an egregious request. This configuration could add \$100,000 - \$200,000 in cost *per building*
4. Install a new 120/208V service large enough to accommodate the renovated space AND energize the current 120/208V service equipment. This is a code compliant configuration and abides by PUC policy. The caveat with this scenario is that the largest transformer PSNH can supply is 1 Megawatt. This may be large enough for Mill#2 if the utility company is willing to load their transformer slightly over 100% of its rated capacity, however the Mill #3 building would require a transformer of double that size. This configuration could add \$150,000 – 250,000 in cost *per building*
5. Rearrange the current load structure in each building by removing loads from the existing 120/208V services and relocating them to the 480V services. This configuration will require *extensive* rerouting of feeders, adding many transformers, adding distribution equipment and converting current rental space into mechanical space. This could add a total of \$250,000 - \$350,000 in cost

In conclusion, it seems that each of the options detailed above have hurdles to clear. It is our opinion that the circumstances surrounding these mills merit some consideration by PSNH and the PUC to assist in making this a viable/profitable project. It is our hope that this Summary has provided you with a clear, concise depiction of the challenge at hand so that all parties involved can come together to achieve a reasonable solution.

Regards,

Christian LaRocca  
President





P.O. BOX 8213 PORTSMOUTH, NH 03802  
P: 603.430.9414 F: 603.427.6699

January 30, 2013

Geoff,

As identified in our earliest design meetings for the ongoing Cocheco Mill renovations, Energy Saving systems are at the core of all design and specifications. Incorporated into the HVAC design of the proposed residential apartments as well as the existing commercial systems, we specified the following pieces of energy-saving equipment:

**RESIDENTIAL:**

**Individual Heat Pump Units:** Florida Heat Pump “EP-series” units averaged at 15.7 EER and 5.6 COP. Almost all of these units are equipped with ECM motors, except for those that did not have ECM as a factory option (EP012 units). When compared to standard efficiency heat pumps ( McQuay Effinity Series average of 12.2 EER, and 4.7 COP) vs. ours: approximately 25% savings in both EER and COP with Florida Heat pump. Not measured in SEER as they are year-round units.

- **Evaporative Cooler VFD :** Variable Frequency Drives on the evaporative cooling tower’s 40HP fan motor. Approximately 55% savings with VFD in SEER.
- **Main Circulation VFDs:** Variable Frequency Drives on both main circulator pumps, rated at 40HP per pump. Approximately 40% savings with VFD with pressure differential system.
- **Automated Control Package:** Improved efficiency through automation of boiler temperature modulation, evaporative tower control, domestic hot water production, and variable frequency drives. Will impact gas consumption. Approximately 10% savings in gas and overall energy of boilers on average.
- **Ventilation equipment:** Specified modulating gas valves for Reznor fresh make up air units to conserve gas consumption during swing seasons. Approximately 8 to 10% savings in gas consumption

**COMMERCIAL:**

- We intend to install drive and control packages on the southern commercial towers as well, which will impact those systems (main circulators, gas consumption, evaporative cooler) similarly to the statistics shown above.

Sincerely,

A handwritten signature in black ink, appearing to read 'Peter Robitaille', with a long horizontal flourish extending to the right.

Peter Robitaille  
President  
East Coast Heating & A/C



**ADDENDUM - Cocheo Millworks – Energy Efficiency Improvements:**

2/1/13

RE: The Cocheo Millworks – Residential Apartment Fit-up  
100 Main Street, Dover, NH 03820

Energy Efficiency improvements are at the core of purchase and renovation of the Cocheo Millworks. Outlined in the attached letter from East Coast Heating and AC are a list upgraded Energy Efficient HVAC equipment.

In addition, the building owner has done or will be doing the following:

- (1) **New Roof System:** The installation of a new roof is almost complete. To significant energy saving design considerations were made:
  - a. 4” of rigid insulation was installed as the roofing base.
  - b. White EPDM rubber roofing was selected over traditional black. This will not only significantly reduce the cooling load during the summer but the lower roof temperature will decrease the burden on the roof-top cooling equipment.
- (2) **Windows:**
  - a. Existing double-glazed aluminum extruded Windows are being restored with damaged gaskets being replaced, and specifically checked for degraded or missing sealants.
  - b. 20-30 original single-paned wood windows are being replaced with new extruded aluminum windows w/ thermal breaks, double-glazed sash and low-E coatings.
- (3) **Lighting:**
  - a. Interior common hallway lighting (Residential areas): All interior common lighting will be equipped with energy efficient compact florescent lamps.
  - b. Stairwells and common hallway lighting circuits are on occupancy sensor switching.
  - c. All utility room lighting is energy efficient T-8 Florescent strips.
- (4) **Apartment Appliances:** Apartment appliances will be Energy Star rated.
- (5) **Programmable Thermostats:** Each apartment will have programmable thermostats to control heat and ac.
- (6) **Energy Audit:** A building wide energy audit is underway to gather energy use data (Electrical and Natural gas bills) and analyze to determine

*Information compiled by: Geoff Spitzer, LEED AP – Senior PM for Chinburg Builders, Inc.*

Daniel Barufaldi  
Economic Development Director  
d.barufaldi@dover.nh.gov



288 Central Avenue  
Dover, New Hampshire 03820-4169  
(603) 516-6043  
Fax: (603) 516-6049  
www.dover.nh.gov

## Dover Business & Industrial Development Authority City of Dover, New Hampshire

January 28, 2013

Ms. Debora Howland  
Executive Director  
NH public Utilities Commission  
21 South Fruit Street – Suite 10  
Concord, NH 03301-2429

Dear Director Howland,

I am writing to you today to urge you to honor the request of the Dover Mills Partnership to grant a waiver of the PUC's Master Metering rule #303.02 to allow the installation of one meter socket for the apartments at the Cocheco Falls Mill complex. I am told this approach is the only one that is viable for the building owner to provide energy efficient electricity, heat and hot water to this 120 unit apartment development in the heart of downtown Dover.

This mill and the adjacent Washington Street Mill, also owned by the Dover Mills Partnership, are the economic anchors for an increasingly vibrant Dover downtown core. It is critical to the continuing economic health of Dover that this project succeeds, is energy efficient to allow that success, and is allowed to utilize the only viable engineered solution to service the apartment units currently being built in the mill.

Historically, when this mill complex enjoyed a high level of occupancy, downtown Dover prospered. When the Mill occupancy shrunk, the downtown economy contracted, jobs were lost and retailers went out of business. It is clear that the occupants of 120 apartment units in this mill will make a tangible and significant contribution to the Dover economy and to the economic health of the Dover core. This waiver will allow a viable and efficient way forward for this important Dover development.

Thank you for your consideration of the waiver request.

Sincerely,

A handwritten signature in cursive script that reads 'Daniel J. Barufaldi'.

Daniel J. Barufaldi  
Director of Economic Development

cc: G. Spitzer  
B. Shone

CHRISTOPHER G. PARKER, AICP  
Director

c.parker@dover.nh.gov



288 Central Avenue  
Dover, New Hampshire 03820-4169  
(603) 516-6008  
Fax: (603) 516-6049  
www.dover.nh.gov

## City of Dover, New Hampshire

### DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT

January 28, 2013

Ms. Debora Howland  
Executive Director  
NH Public Utilities Commission  
21 South Fruit Street - Suite 10  
Concord, NH 03301-2429

Subject: Dover Mills Partnership Waiver Request.

Dear Director Howland,

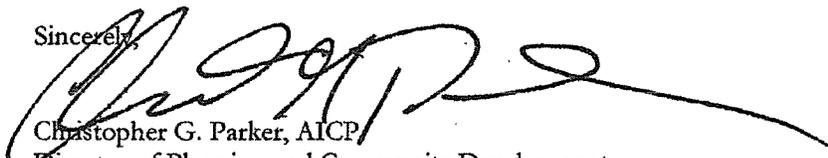
It is with pleasure that I write to you to today in support of the request of the Dover Mills Partnership to receive a waiver of the PUC's Master Metering rule #303.02. This waiver would allow the installation of one meter socket for the apartments at the Cocheco Falls Mill complex. In speaking with the owner, Mr. Chinburg, I understand that this approach will allow for the provision of energy efficient electricity, heat and hot water to 120 residential units being added to this former mill, located in downtown Dover.

You may be aware that this mill and the adjacent Washington Street Mill, both owned and operated by Dover Mills Partnership, are great examples of the economic revitalization that Dover has been working towards over the past twenty years. These two downtown symbols of economic growth act as anchors for an increasingly vibrant urban core. It continues to be my hope that through the infusion of residential opportunity downtown, we will see more commercial growth and activity in downtown Dover, and that this residential growth will inspire other rehabilitation and reuse of similar buildings. In addition, for the building to be successful, it also must be energy efficient. This is an important standard we wish to see in our adaptive reuse of buildings, and I'd hope from a planning perspective that we can point to this reuse as a template for future growth in Dover.

As you can well imagine Dover's mills drove its prosperity, not just in the 1850s, but also in the 1990s. When the mill complexes have enjoyed high occupancy levels the rest of Dover's downtown prospered. We have seen a slow down when the office users in the mill have reduced and we are pleased to see the replacement of this office space with 120 apartment units that will have a strong marketability and desire. We expect to see these units make a tangible and significant contribution to the vibrancy and economy of Dover's core.

This waiver will allow a viable and efficient way forward for this important Dover development. I am happy to answer any questions regarding my support for this waiver, or to assist in any other way. Thank you for your consideration of the waiver request.

Sincerely,

  
Christopher G. Parker, AICP  
Director of Planning and Community Development

CC (via email): Brint Shone  
Geoff Spitzer