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| **Project Scope Statement #2** |  |

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| **Building Name / Number:** | Main Library, 41 |
| **Project Name:** | Steam Savings-PRV, steam traps, and valve replacements |
| **Internal WO:** |  |
| **Date Issued / Revised:** | Jan 2, 2012 |
| **Project Scope Statement** | |
| The Library’s annual utility expense is almost $1.3 million with steam accounting for $775,000 of it. Much of the steam distribution equipment is original and in need of replacement. Below are some of the recommendations for steam energy saving items listed in order of priority.  Pressure Reducing Valve stations(PRV):  There are seventeen main PRV stations in the building. The age of the stations vary, with the majority of them being forty plus years old. The building was designed for 2lbs of steam for perimeter radiation and 5lbs for air handler reheats. The following PRV stations are leaking through or are fixed in position and will not adjust with steam pressures ranging from 7 Ibs to 13 Ibs. Below are the PRV stations that are not operating correctly and are in need of repair or replace. The cost to replace the PRV stations would approximately be $75,000.  Mechanical room 2:  PRV1: AHU10, 11 and 12 reheat coils  PRV2: Radiation for center wing, and east entry  PRV3: Heat exchanger 1, 2(Radiation) and 3(Reheats). Move HX3 to PRV1 and combine PR2 and PRV3 together and install an automated control valve to turn on/off radiation with outside air conditions.  Mechanical room 444A:  PRV12: Serves heat exchanger 8 that serves reheats for AHU18-20, and the two rare book units.  1st Stack Addition Attic:  PRV13: South Half of 1st thru 5th stack’s radiation  PRV14: North Half of 1st thru 5th stack radiation  *\*Removal of asbestos from the piping will be required for installation of new PRV stations.*  Steam Traps:  The building steam traps have not been replaced for years and several of them are blowing through. There are approximately 800 traps in the building. With the steam pressure through the PRV station being much higher than the design value, the traps may have been damaged and are need of repair/replacement. This work needs to be done in conjunction or after PRV replacement.  Valve replacement:  There is a broad style of control valves located in the building with many of these being original equipment and leaking through.   * It would be recommended to replace the steam radiation valves in the 2nd, 3rd, and 7th additions of the main library. These valves were recently inspected by retro commissioning and the valves leaking through had maintenance work orders entered to repair or replace them. There are still numerous radiation valves that are of original installation. Updating the remaining control valves would approximately be $25,000. * Install new thermostats and radiation zone control valves, in the 1st through 5th stack additions. The radiators on these zone valves are equipped with manual valves. The majority of these manual valves have been recently replaced. There are still manual valves that leak through and cause overheating of the stacks area. There are approximately 68 of zone valves. The steam supply to these zone valves is from two separate PRV stations, PRV13 and 14. There are isolation control valves on these two steam feeds that are currently under DDC control that shuts off the steam supply when temperature gets above 40F outside. Since there are isolation valves, the savings and benefits for replacing the zones valves will not be as significant. The estimated cost to replace the zone valves and thermostats would be around $95,000. * Install isolation control valves on the radiation steam mains that serve the 1st, 2nd, 3rd, and 7th additions. This would allow for more precise summer/winter switchover control, resulting in a reduction of unnecessary steam usage and overheating of the building in mild weather conditions. To achieve this, five control valves will need to be installed on the radiation steam mains and controlled through the DDC system. The estimated cost would be: $35,000   *\*Removal of asbestos from the piping will be required for installation of isolation valves.* | |
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