

CITY OF NEWTON

IN BOARD OF ALDERMEN

PUBLIC FACILITIES COMMITTEE BUDGET REPORT

THURSDAY, APRIL 30, 2015

Present: Ald. Crossley (Chair), Lennon, Albright, Brousal-Glaser, Danberg, and Laredo
Absent: Ald. Gentile and Lappin
Also present: Ald. Fuller, Johnson, and Sangiolo
City staff present: Josh Morse (Commissioner of Public Buildings) and Alice Ingerson (Community Preservation Planner)

REFERRED TO FINANCE AND APPROPRIATE COMMITTEES

#375-14(2) HIS HONOR THE MAYOR submitting in accordance with Section 5-1 of the City of Newton Charter the FY16 Municipal/School Operating Budget totaling \$361,997,264 passage of which shall be concurrent with the FY16-FY20 Capital Improvement Program (#375-14). [04/15/15 @ 5:08 PM]
EFFECTIVE DATE OF SUBMISSION 04/21/15; LAST DATE TO PASS THE BUDGET 06/05/15

REFERRED TO FINANCE AND APPROPRIATE COMMITTEES

#375-14 HIS HONOR THE MAYOR submitting the FY16-FY20 Capital Improvement Plan pursuant to section 5-3 of the Newton City Charter. [10/15/14 @ 3:01 PM]

REFERRED TO FINANCE AND APPROPRIATE COMMITTEES

#375-14(4) HIS HONOR THE MAYOR submitting the FY 2016 – FY 2020 Supplemental Capital Improvement Plan. [04/15/15 @ 4:57 PM]

PUBLIC BUILDINGS DEPARTMENT BUDGET

Commissioner of Public Buildings Josh Morse provided the overview of the Public Buildings Department budget. The Commissioner proceeded with a synopsis of the past year's accomplishments and next year's desired outcomes as described below.

FY 2015 Accomplishments

Efficient Project Management

This fiscal year the Public Buildings Department continued to keep all of its major capital projects on time and within budget. The projects included:

- Construction near completion of the Fire Station 10 and Wires Building,
- Completed renovation of the Carr School,
- Ongoing construction of the Angier School,
- Completion of the Cabot School feasibility study and
- Completion of the Fire Station 3/Headquarters feasibility study through schematic design. The department was able to achieve this goal by addressing issues when they arose, having enough staff with the right qualifications to take ownership and responsibility of

projects. Now that the Public Buildings Department is at the appropriate staffing levels, the Commissioner attends some of the City's different cluster meetings to discuss and coordinate with departments on upcoming building projects and look ahead to any possible issues. Commissioner Morse meets regularly with the Department of Public Works and Parks & Recreation Departments to look at their upcoming projects to determine whether they are in the area of any planned Public Buildings projects and to ensure that any opportunity for efficiencies are captured.

The Public Buildings Department analyzes all change orders associated with a project to ensure that they accurately reflect the costs of the change. The department meets weekly with contractors on submitted change orders. The department works to strike a balance with contractors by working through the change orders and paying fairly. Realistically, there are going to be errors and omissions in projects that result in true change orders. A City project manager needs to have a presence on projects to look at all of the details of a project to catch issues before they become problems. Doing this saves the City significant money. Time management is also an essential component of safeguarding against cost increases. If a contractor misses a day of work due to weather or some other circumstance, the Public Buildings Department asks for the plan to accelerate the work to make up for the lost day. The department sets the scheduling standards early on for each project.

Lessons Learned Database

The Commissioner created a Lessons Learned Database (attached), which the Commissioner and project managers update every week. The database is used on all projects. The biggest lesson the Commissioner learned is to over-communicate plans to people in the proximity of any project. Communication for projects may include mailings, flyers, neighborhood meetings, and off-line meetings in personal settings. It can mean the difference between a successful project and a not so successful project. The Public Buildings Department needs to get into all aspects of projects including outside the construction scope to ensure the best possible outcome.

It has also been helpful to have working groups for larger projects that include members of the Design Review Committee, the Aldermen, the Public Buildings Department, and Administration for collaborative planning. It often results in higher-level discussions beyond construction and the project site.

Capital Planning

Commissioner Morse provided updates on smaller capital improvement projects, as follows:

- The Angino Farm Barn Project is complete.
- The City Hall Accessibility Project construction documents are 90% complete. There will be one more review of these plans before the project is sent out to bid. The Commissioner expects that the project will be done over the spring, fall, and winter. Communication with the Health and Human Services and the Cultural Affairs Departments regarding this project and its timeline is ongoing.
- The Jackson Homestead Archives Project is moving along. The project schedule is developed, there are revised plans, and the City has received bids. Commissioner Morse

met with Lisa Dady, the new Director of the Newton History Museum, who is very involved with the planning. Portions of the project will be disruptive to patrons and staff of the museum but the building will remain open throughout construction.

- Phase I of the Preferred Vendor Program is very successful. Funding for Phase II of the Preferred Vendor Project should be docketed within the next few weeks. The Commissioner believes that all of the projects included in Phase II are good projects and timely due to increased utility rates. The Solar Power Purchase Agreement Request for Proposals for several locations in the City is almost complete. The City has entered into a favorable gas contract for pricing that is less than the contracted rates four years ago. The City has hired a broker for the electricity contract.

Operations & Maintenance

The Public Buildings Department expanded the preventative maintenance program for backup generators, security systems, fuel storage tanks and the related monitoring systems. When the boilers are upgraded, the monitoring systems should also be upgraded to provide the most efficient heating system. It is important that maintenance projects are comprehensive to capture all cost benefits associated with projects. The department continued with natural gas conversions in municipal buildings. Several mini-split ductless HVAC systems were installed in municipal buildings this past year. (Note: The Chair pointed out that mini split cooling systems should be installed in all of the Committee rooms within City Hall. The current air conditioning units are noisy and make it difficult to hear presenters and speakers.) The City has received close to \$1 million in energy rebates this past year.

Training and Staff Development

The Public Buildings Department completed the training for all staff on a variety of areas including procurement, legislative processes, and legal requirements. The staff in the department is cross-trained to ensure that everyone is able to perform a wide variety of department functions.

Commissioner Morse has an open door policy with all of his staff. He firmly believes that if you treat people with respect and stand up for them they will respect you. He treats everyone the way he would like to be treated. When decisions are made that affect staff, they are included in the discussion. He also makes an effort to share information with everyone and maintain daily communication.

Jack Cowell filled the Capital Planner position within the Public Buildings Department this fiscal year. Mr. Cowell's office is located at City Hall, which is helpful, as Mr. Cowell provides an instant conduit to the Comptroller, Treasurer and the Executive Department. Mr. Cowell responsibilities include the planning and costing for the capital improvement plan. In addition, he attends public building meetings on capital projects. Mr. Cowell provides ongoing tracking of capital projects using Microsoft Project and Excel. All of the project timelines are expected to be available to the public through the City's website.

Conclusion

The Public Buildings Department met all of its Fiscal Year 2015 outcomes.

FY 2016 Outcomes and Strategies

Project Management

The department will continue to strive for 100% on time and on budget for all capital projects in Fiscal Year 2016 on projects that include the Angier Elementary School, Fire Station #3 and Fire Headquarters, Zervas Elementary School, and Cabot Elementary School.

Capital Planning

Commissioner Morse explained that the Public Buildings Department would continue to update and refine the five-year Capital Improvement Plan as scope for projects change. The department will continue to work with all of the stakeholders involved in projects to ensure that planning and construction of projects goes as smoothly as possible.

Operations & Maintenance

In Fiscal Year 2016, the department will continue to expand its preventative maintenance program with a focus on reducing reactive requests. The department will continue to work with the School Department on preventative maintenance and building operation in Fiscal Year 2016. The relationship between the School Department and the Public Building Department has never been stronger and everyone is working well together. There is no longer an us versus them mentality. It makes a real difference in project execution when people are working together.

Energy Efficiency & Sustainability

In Fiscal Year 2016, the retrofits of 14 buildings will be completed, which should result in a 4% reduction in building energy consumption. The department will manage the installation of solar panels at a number of city properties. The Commissioner does not anticipate that the Rumford Landfill Solar Project would be complete until the next fiscal year. The City is applying for an up to \$250,000 grant but there is no guarantee that the City will receive the Green Community Grant.

Training and Staff Development

The staffing structure in the department is changing slightly. Current Program Manager Alex Valcarce is being promoted to Deputy Commissioner of Public Buildings, as he is prepared to take on a larger role within the department. Mr. Valcarce will continue to provide oversight on a number of construction projects and manage the Project Managers.

In addition, the Facilities Director position has been removed from the upcoming budget. The employee that held the position left a few months ago. Public Buildings Department employees, Steve Regan, Jay Bradley and Arthur Cabral proposed dividing the duties amongst themselves, which has worked very well. Steve Regan does not want an increase in pay, as he feels it is his job, Arthur Cabral is retired and is working part-time for the City and Jay Bradley feels the same way as Mr. Regan but the Commissioner must discuss the change in responsibilities with the union and the Human Resources Department on the possible need to reclassify Mr. Bradley's job as Storekeeper. The Executive Department supports the removal of the position but will increase the Public Building Department staff by one, if it is determined that the department needs the position.

Day-to-Day Customer Experience

In the upcoming fiscal year, the Public Buildings Department will focus on doing a better job cleaning its buildings. Many of the City's buildings are not at an acceptable level of cleanliness. The goal is to provide training and hold staff accountable if they fail to meet an appropriate level of cleanliness. The department will also look at how and when to improve outdated facilities within a building, as some areas are past the point of cleaning. It is important that materials that are easy to clean and maintain are used when areas are renovated. The Commissioner will be sending out questionnaires to staff and customers on the cleanliness of the buildings in order to determine how to prioritize any improvements.

Questions and Comments

There was concern that the Public Building's Department did not have enough custodial staff. The Commissioner explained that an analysis of whether to hire additional custodial help was done and it was determined that it made sense to hire an additional custodian in the short-term but in the long-term it made more sense to increase overtime funding. Therefore, the overtime account for custodians was increased.

Is the lighting project around City Hall complete, as it is very dark in front of City Hall? The project is not complete. The Conservation Commission is concerned with the siting of some of the lights near the pond, as the lighting could affect the wildlife that have made the pond their habitat. Commissioner Morse will look at expanding the lighting in City Hall Circle. It was pointed out that the banners hung in front of City Hall for the "Newton Arts Festival" were blocking some of the lighting for the front of City Hall.

If the acquisition of the Aquinas property is approved, how will it influence staffing in the Public Buildings Department? Commissioner Morse is comfortable with the department's staffing level for the next twelve months. The intention is to get the building ready to house all of the Pre-K classrooms in September. The rest of the proposed programs for the building require planning. Should any additional staff be needed the Commissioner would look for a short-term contract employee.

The numbers in the Capital Improvement Plan Line Item 19 for the Pre-School and Lincoln-Eliot School do not add up correctly. It would be helpful to have that corrected before the Aquinas discussion.

Why is there an increase in the water and sewer costs? The Commissioner responded that the City is irrigating more sites like the Carr Elementary School. The department is monitoring the costs and looking at possibly installing wells at various sites.

What is the snow stand-by pay line item and why does it not have any funding? The line item is there because some of the Public Building's employees have done snow removal in the past and may in the future.

Are there any plans for renovations to the Main Library? The Library Director is looking at the possibility of a \$32 million project that includes expansion of the library building. The

project is currently in the feasibility stage. The Commissioner is meeting with the Library Director on short-term improvement needs like updating the restrooms.

Has there been any thought to renovating the Ed Center on Walnut Street to create true office space for the School Administration? The School Administration is working on determining the long-term use of the space, which needs to be done before any real money is invested into the building.

What is happening with the Nahanton Park tool shed? The Public Buildings Department still has some wood material stored in the building. The department has begun to clean out the building but in order to continue with the clean out the department needs to put dumpsters on the site, which cannot be done until the temporary fire station is no longer in use. The Commissioner also does not want to leave a vacant building in the woods.

It would be useful to have clear statements on the accomplishments and outcomes for the small projects in the Public Buildings Department.

When will the Administration begin to address the Elliot Street site buildings? It would be appropriate to begin to look at a feasibility study for the site. There are 11 acres on that site that could be better utilized. Many of the buildings on the site could be consolidated.

ACTION

A motion to approve the Public Buildings Department's Capital Improvement Plan, Supplemental Capital Plan, and the proposed Budget with an amendment to change the account number for the building improvement line item from 0111502-5825 to C011502-5825 was made. The amendment will allow funds in that line item to be used to fund contractual services as well as the purchase of materials. The Committee took a straw vote, which carried by a vote of six in favor and none opposed.

The Committee adjourned at approximately 9 PM.

Respectfully submitted,

Deborah Crossley, Chairman

Public Buildings Department

Lessons Learned Database

Energy	Maintenance	Construction	Design	Process
Complex energy management systems are not needed, and have little value on public safety buildings that operate 24/7.	Lighting ballasts can not be integral to the fixture.	Trade inspections need to be thorough, often, and scheduled at appropriate times.	Integrated design meetings are essential for a successful project. These should include all sub consultants.	Never spend money you don't have. In order to ensure this does not happen, replenish the Mayor's contingency as frequently as possible.
Extreme care must be given to the sizing of MEP equipment. This equipment is typically oversized well above what is actually needed.	Walk-out roof access should be provided when possible. If this is not possible, ships ladders are next best, last option is fixed ladders. If you do not provide access to a roof, it, and the equipment on it, will not be maintained.	P-traps have to be verified to have been installed prior to installation of pan-type drains. Trap primers should be specified as much as possible.	Project expectations need to be clearly set, stated, and documented before design begins.	Working groups should involve elected officials when appropriate. This helps keep the BOA updated and makes the process smoother.
When MEP equipment sizing is reduced, ensure that all other impacted areas are adjusted as well. Structural for example.	Avoid gutters and downspouts whenever possible. Interior roof drains are best. Gutters and downspouts get clogged, freeze up, and create water and ice issues wherever they drain to. Can not stress this point enough. Great care and detail need to go into how water comes off of roofs.	The site should be secured as soon as the contractor takes control of the property. There should be no delay in this.	Establish an energy performance target before a designer is brought on board, and then make sure they know what it is, and how we want to achieve it.	For larger projects, and projects that have significant impacts on the community, establish routine community meetings to receive feedback and to provide updates.
Perimeter radiation is rarely needed with the efficient envelope and window systems we specify.	Avoid low small roofs. These typically do not have easy access which means that they don't get quality maintenance.	The CMP needs to be reviewed with Police, Fire, and Traffic during draft stage.	Utilize the integrated design meetings to meet the energy target.	In cases where night work, or work that severely impacts the neighborhood, over communicate and use every means of communication possible.
Glazing systems are inherently less efficient and therefore no glazing should be specified that is not requested or needed.	Be very careful with trees next to buildings. Roots damage the foundation, the trees can provide climbing access to the roof if tall enough, and trees with leaves that grow above the roof can clog roof drains.	Temperature controls prior to, during, and after concrete pours is crucial. When the building is wrapped, access points should only be open when absolutely needed, and should be closed asap.	Understand that every design change has a ripple effect. These can either drive costs up, or down in other areas. For example, if the rooftop equipment is reduced in size, the structural steel should reflect this change.	For projects requiring site plan approval, there should be at least one meeting with both Public Facilities and the Design Review Committee prior to trying to get site plan approval. This allows for questions, comments, and concerns that can then be responded to prior to trying to get approval.

Public Buildings Department

Lessons Learned Database

<p>Do not overthink control systems. There is a fine line between smart energy management, and inoperable systems.</p>	<p>Plantings at the perimeter of the building need to be well thought out. No plantings that attract animals, provide a habitat for animals, or cause a threat to the building or people should be used. Additionally, the plantings need to be able to survive limited watering, snow removal, etc.</p>	<p>Roof inspection and walkthroughs are critical prior to membrane installation.</p>	<p>Never consider value engineering until the cost estimates are reconciled, and a full scope clarification is performed. Taking something out that we want, before we know if there are things in the design adding to the cost that we don't want, is not appropriate.</p>	<p>Joint meetings, when possible, are very useful and minimize design teams time, and thus costs. They also more effectively utilize everyone's time.</p>
<p>All energy investments should be evaluated using life cycle cost analysis. That said, remember that the insulation in your walls will be there for the life of the building.</p>	<p>Before a final site plan is determined, snow removal and snow storage plans must be in place. Things like benches, bollards, raised planters, curbs, islands, etc. must all be looked at with an eye for snow. If you don't make it easy, either standards are reduced, or items get damaged.</p>	<p>Mockups should be used on every project, and should involve the commissioning agent, design team, and all impacted trades.</p>	<p>Review all narratives in great detail before they go to the cost estimators.</p>	<p>Consider meeting with abutters on location. It tends to much more productive when you meet with residents in an informal setting. This has proven very useful on many occasions.</p>
<p>Energy modeling should be done throughout the project, but it is extremely important to set energy performance expectations early, and model from the beginning.</p>	<p>Before a final site plan is determined, landscaping and grass cutting plans must be established. If you don't make it easy, either standards are reduced, or items get damaged.</p>	<p>The HVAC system flush should be done with the construction filters in, and it should be confirmed that normal pleated filters are installed prior to turnover.</p>	<p>Be very sensitive to words like custom, automated, and operable. Often times there are more creative ways to achieve the same end product with a different approach.</p>	<p>Provide routine updates to the BOA on the status of change orders and contingencies. This will make funding transfer requests much easier, as they already know what's coming.</p>

Public Buildings Department

Lessons Learned Database

<p>Energy modeling needs to be done based on the normal school day, and the actual hours of operation. The normal school day allows for comparison to benchmarks, and the actual operation allows for budgeting and tracking.</p>	<p>Designers team and their consultants must put themselves in the shoes of the guys who maintain the building and grounds. Make sure there's room to turn a wrench on a trap. Make sure there is clearance to open filter access doors. Make sure there are slop sinks in appropriate locations. Make sure there are outlets in hallways for cleaning equipment. Just use common sense, and if you're not sure please ask.</p>	<p>Extreme care should be taken to temperature and humidity controls and monitoring during wood floor acclimation.</p>	<p>Storefront is very expensive. Consider wall systems with punched windows to achieve a similar design at a fraction of the cost.</p>	<p>The most important part of a public forum is to provide them the opportunity to speak and ask questions. The presentation should be short enough to ensure we provide this opportunity.</p>
<p>Solar orientation is very important early in the design, as this has serious impacts on lighting, heating/cooling loads, and potential for solar pv.</p>	<p>In areas where caustic or acidic chemicals are used, ensure all exposed materials can stand up to the environment.</p>	<p>Glazed stone products should be inspected carefully upon receipt. They tend to be damaged during delivery.</p>	<p>Glass in the envelope is expensive, and less efficient than the wall system. Do not use more than is needed, and there must be value added in every case.</p>	<p>When reviewing exterior building materials, samples should be provided for display.</p>
<p>Deconfliction of the roof plan is important for solar pv.</p>	<p>Make sure rooftop equipment is not set too high on the curb. If the workers can't reach the access handles, they are less likely to maintain the equipment, and are more likely to get hurt while doing so.</p>	<p>We need to follow our noise ordinance, but we also need to make sure that trucks and other equipment is not idling outside the site waiting for the gates to open. They can stage at truck stops if needed.</p>	<p>Be sensitive to windows in gyms. They are often covered up once the building is operational. If glass is desired, translucent panels are a good alternative when trying to break up the massing.</p>	<p>Street views with and without trees are the most valuable slide in a presentation. What people will really see from their perspective is very important.</p>
<p>The lights in the building need to be able to be turned off when not in use.</p>	<p>Do not paint hand rails. These get scratched and look really bad.</p>	<p>Major deliveries should be coordinated with Police and should be communicated out to the public.</p>	<p>Limit the number of different exterior building materials. Each transition adds a complexity as well as cost.</p>	

Public Buildings Department

Lessons Learned Database

<p>Occupancy sensors should shut the lights off when the space is not in use, but the lights should have to be manually turned on. Often times the lights turn on when they really aren't needed.</p>	<p>Use manual equipment when possible and appropriate. It is more reliable and less expensive to maintain.</p>	<p>You can never communicate too much to the public. People will put up with major inconveniences if they no about them in advance, and no when it will end.</p>	<p>Be very careful when specifying proprietary components. This will add cost to the project.</p>	
<p>Variable speed drives need to be tied into the refrigerant and hot water control valves. If an AHU is driven down, the valves, and then boilers chillers should follow suit.</p>	<p>Epoxy floors in bathrooms, quarry tile in kitchens, and no wax floor products like linoleum in hallways and classrooms.</p>	<p>When you tell the public you will, or will not, do something. Follow through. It only takes one time to break their trust.</p>	<p>Never trust the manufacturer's rep when they quote costs. They will tell you a much lower cost to get you to specify their product, only to find out that the market dictates exponentially higher costs.</p>	
<p>Equipment start times should be staggered greater than 15 minutes prior to turning over a building.</p>	<p>Specify ceiling systems like act for ease of maintenance. There are other ceiling systems that are pretty, but make access very difficult.</p>	<p>Ensure that off-hour phones numbers are posted for residents to call in case of emergency or concerns.</p>	<p>Make sure you specify products that have "or equals" There may be three contractors who can install the same product, but this does not mean your getting competitive pricing.</p>	
<p>Solar PV systems impact the heating and cooling loads of buildings. This should be factored in when sizing mechanical systems.</p>	<p>Glass should never be carried to floor height to prevent damage.</p>	<p>Dust control is extremely important. A plan must be in place ahead of time, and sufficient water must be available, and delivered.</p>	<p>Be very careful when specifying Trane or Mcquay HVAC equipment. They will tell you that it is compatible with BMS software, but it rarely is, and it rarely works correctly.</p>	
<p>Kitchen hood exhaust fans should be variable speed. These not only use a ton of electricity, they also remove vast quantities of treated air.</p>	<p>Crushed stone should never be placed at the perimeter of buildings. This leads to broken windows during landscaping</p>	<p>A city employee should be on site every day to provide adequate oversight for all major projects.</p>	<p>Engineers will always overdesign their systems. Push back on the sizing of generators, boilers, hot water tanks, electrical services, chillers, ahu's, etc. Make them justify these components. Not only will smaller equipment cost less, but they are less expensive to operate, and will simplify design and save money in other areas.</p>	

Public Buildings Department

Lessons Learned Database

<p>If a space is unoccupied, there should be no exhaust or fresh air supply running.</p>	<p>North facing overhangs can be problematic for mildew and mold growth.</p>	<p>Any time there are unit prices, such as soils, the city employee needs to watch very carefully the amount of material being removed or provided. These costs can add up fast.</p>	<p>Challenge structural engineers to think outside the box. Their solutions are often not only overdesigned, but they tend to be more complicated than necessary.</p>	
<p>Flow restrictions in both duct and pipe should be minimized as much as possible. Avoid 90 degree bends when possible.</p>	<p>Porcelain tile stands up better than wood veneer. This should be at least 4 feet high in the hallways.</p>	<p>Trench boxes are not a suggestion. When required, they are not optional.</p>	<p>Market conditions and material costs need to be monitored when considering the escalation to bid number that you carry.</p>	
<p>Pump sizing should be reduced as much as possible as they use a great deal of electricity.</p>	<p>The broadcast of epoxy floors needs to be rough enough to prevent slipping, but not so rough that it can't be cleaned.</p>	<p>Utility companies take forever to do anything. Plan accordingly.</p>	<p>Establish early who is authorized to make design decisions and changes. For example, a teacher can make a request, but the decision to include something in the design needs to come from the project team.</p>	
<p>There should be no lights without lighting controls.</p>	<p>Chilled water fountains are not necessary, waste electricity, and are more expensive to maintain.</p>	<p>Vibration monitoring and existing condition surveys are important depending on the project and proximity to other structures.</p>	<p>When reviewing the design with public safety, make sure Police, Fire, and the user group are all in the same room. There can be opposing agendas, and this step is necessary to prevent redesign.</p>	
<p></p>	<p>Solar panel footprints should be marked so that snow removal can occur is needed without damaging the panels.</p>	<p>If behind in schedule, a plan must be developed and implemented immediately to get back on track. Do not wait until the end of the job to try and make up the time.</p>	<p>Ensure the Design Review Committee is involved early and often. It also proves useful to invite them to working group meetings.</p>	
<p></p>	<p>Pavers should not be used where plowing occurs.</p>	<p>Pay close attention to the number of tradespeople on the job. This can be a precursor to falling behind on specific trades.</p>	<p>Involve the community early in the design process. Not only is community feedback important, it's critical to squash rumors before they get out of hand.</p>	

Public Buildings Department

Lessons Learned Database

	Stone dust should be used in lieu of concrete where snow removal does not occur.	Trades that do not work M-F, are not entitled to change orders for overtime to catch up.	If the project requires review by the Conservation Commission, and the commission is asking for mitigation, make sure there were actual adverse impacts to mitigate.	
	Exposed steel beams need to be designed in a way to prevent bird nesting.	Analyzing change order credits is just as important as change order adds. Guarantee that contractors will ask for more than they deserve, and offer back less than what we deserve.	Make sure you are coordinating building projects with DPW and Parks and Rec. For example, DPW should not pave a street before a large project starts. We will likely need to tear it up for utility work.	
	Asphalt curbing should be avoided at all costs. It saves some money up front, but it will not last and will cost more in the long run.	Do not accept an inferior finished product. If it does not meet the design intent, or quality standards. Make the contractor make it right on their dime.	It's never too early to do the site survey. This info can completely reshape a project.	
	Fencing should not be too close to sidewalks, roadways, or parking lots. Snow gets pushed against the fence causing damage.	Do not wait to perform the punch list until the end of the job. Punch lists should be made, and items addressed, as they arise.	Perform condition surveys of adjacent properties prior to large projects. If this is not done ahead of time, there is no way to prove that the project did not cause the damage in question.	
	Small narrow strips of grass should be avoided. These can not be done with mowers, and therefore do not get adequate landscaping.	Do not install ceilings until all punchlist items above the ceilings are complete.	Avoid unit prices and allowances when possible. If needed, ensure the specs are crystal clear. This is an area where large change orders are likely, and allowances tend to get eaten up.	
	Pedestrians will take the path of least resistance. If walkways are not direct routes, people will not use them.	Make sure the construction management plan addresses site distribution and traffic issues during the project. This plan needs to be reviewed with public safety, so that they can weigh in and plan their resources accordingly .	When possible, complete hazmat work like oil tank removal ahead of time. The markup in these areas is massive, and the city can, and has, saved hundreds of thousands of dollars by doing it ourselves.	

Public Buildings Department

Lessons Learned Database

	Fixed trash barrels get emptied by trucks that drive right up to the barrels. Either put the barrels close to a paved surface, or be prepared for damage to site amenities.	Never spend money you don't have. In order to ensure this does not happen, replenish the Mayor's contingency as frequently as possible.	The parameters for traffic studies are critical. The study needs to be broad enough, and data collection needs to be taken at appropriate times.	
	Slab on grade is always preferred. Any structure below grade is not only more expensive on the front end, but it is more likely to have environmental issues and costs.	If site excavation requires undermining of utilities like a duct bank, they must be fully supported to prevent collapse.	Even though the traffic work is separate from the project, it is viewed by the general public as one and the same. Therefore, this work must be tracked just as closely to ensure it meets the project schedule.	
	Crank windows are not preferred. They do not stand up over time.	Contractors will typically seek change orders for winter conditions. This needs to be analyzed carefully. If they are responsible for being behind schedule, and then create the winter condition problem, then we don't owe them anything. Additionally, snow removal is not unexpected for a job that occurs during the winter. They will often ask for money for this, but it should not be awarded unless extreme conditions occur.	Site distribution is one of the highest priorities on any project. The goal should be to allow student access to play areas without crossing roads or parking lots when possible.	
	Garbage disposals need to have guards to prevent injury and damage.	Monitor the sewer piping installation below grade very carefully. If pipe transitions are not smooth and seamless, the building will experience sewer backups and costly repairs down the road.	Walkability and bikeability are important, so both the traffic work and the site design should take these into consideration.	
	Water fountains should be attached to the building when possible. Free standing fountains are more susceptible to damage from freezing if not properly winterized.	Fall protection is not optional.	Concrete walkways should be 8ft wide. 4ft panels yield large ruts on either side from snow removal, and 6ft panels snap from the weight of the trucks.	

Public Buildings Department

Lessons Learned Database

	Always run an extra conduit or increase in size for future expansion.		Roofs need to be designed to be solar ready. This does not require additional steel, but the roof should be designed as clean as possible, and the roof system warranty needs to be compatible with a ballasted pv system.	
	Plumbing cleanouts are required every 50 feet. However, where they are placed is very important, and if needed more should be provided. Think of the plumber trying to clear a clogged pipe.		Stained concrete is more sustainable than painted concrete.	
			There should be no gates on perimeter emergency access roads.	
			Consider reducing the number of cameras inside the building, even if it means increasing the resolution. You can achieve the same level of coverage for a much smaller cost.	
			A single main entry is preferred. This improves security and operations.	
			Exterior lighting can comply with the light ordinance, but still be a nuisance to abutters. Shrouding the lights when possible is preferred.	
			Asphalt curbing should not be specified. It yields a savings up front, but it will not hold up, and will cost more down the road.	
			Buffering should always be planned for where cars are facing abutters. Headlights are a nuisance.	

Public Buildings Department

Lessons Learned Database

			When possible, buses and parents should not mix. The bus loop should be separate from the parent drop off.	
			Do not specify flooring and ceiling systems where they aren't needed. Storage closets, utility rooms, etc. do not need these finishes.	
			When possible, use the building contours to control acoustics from rooftop equipment. This will reduce the need for acoustic screens which are expensive.	
			Line of site at the main entry is important to efficient operations. Make sure that the administrative staff can easily see the main entrance.	
			Make sure that athletic outdoor areas are designed in a way that prevents negative impacts to abutters via foul balls or other flying objects.	
			Make sure that the full scope of work has been identified before starting design. Scope creep can bust a budget very quickly.	
			Slab moisture mitigation should not be included in the base bid. If needed, it should be priced out and paid for out of contingency.	
			Do not specify water based wood floor finish. It does not bond as well. Low voc oil based finish should be specified whenever possible.	

Public Buildings Department

Lessons Learned Database

			3 story buildings are appx 10% more energy efficient, less costly to build, and better utilize urban sites, than single or 2 story buildings.	
			For small buildings, consider prefab structures. They are much less expensive and their quality has improved significantly over the years.	
			City water flow tests should be performed early in the design phase. This will determine what fire equipment is needed.	
			AED devices should be hard wired into the building fire alarm panel. This will ensure that dispatch is notified when an AED is used.	
			Equipment must be specified and installed in new buildings to ensure police and fire radios work.	
			Whenever traffic improvements are made around a project, we must be sensitive to the ripple effect it has on the broader community.	
			Do not assume other departments who review the plans, understand what they're looking at. If they don't fully understand the plans, they will likely require something different during construction, thereby leading to a change order.	

Public Buildings Department

Lessons Learned Database

			Do everything you can to verify all existing conditions. If there are items that are either unknown, or if plans do not match actual conditions, expect significant change orders.	
			CMU is much more durable than drywall, but it does not need to be carried up to the ceiling. Use durable wall products where wear is expected. Above that, drywall is perfectly acceptable.	
			Be very sensitive to acoustics in the cafeteria and gym. If not designed correctly, these spaces become very problematic.	
			When specifying floor tile, thin mudset is perfectly acceptable. Thick just costs more with little to no added value for our applications.	
			If the project calls for irrigation, consider both rain water harvesting, as well as irrigation wells, to help reduce long term costs.	
			Exterior emergency generators should be sited in locations that minimize the impact to abutters. They are loud when operating.	
			Skylights should be avoided. They leak over time, and are a hazard when navigating roofs in the winter.	