



DESIGN GUIDELINES

for

PORTLAND TECHNOLOGY PARK

City of Portland, Maine

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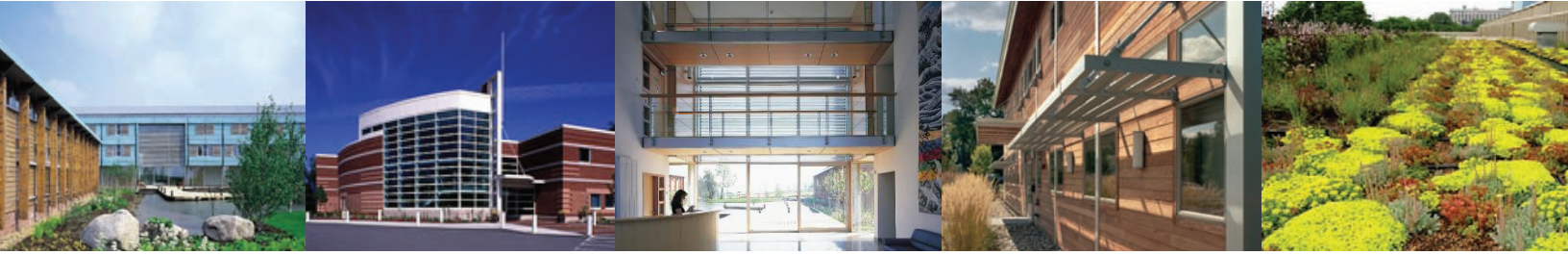


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Landscape design plays a vital role in a well designed office park by providing sun shading and in an eye pleasing humane environment.

INTRODUCTION

The development of the Portland Technology Park Development (PTPD) offers an opportunity to create a quality working environment expressing its own unique identity while, at the same time, becoming a model of environmental sustainability and a vital and integral part of the City of Portland. In general the achievement of these two goals requires:

Adherence to a code of design standards specifically identified for the building and open space.

Adherence to energy and environmental codes equal to or better than those required in the City of Portland Green Building Code.

The use of an architectural language that reflects the regional culture and the use of the building.

It is the intention of these guidelines to ensure a cohesive physical environment fitted properly to its site and its community. The guidelines are not meant to restrict the creative interpretation of Architects working at the Portland Technology Park Development in future years, but should be viewed as an opportunity to participate in the creative process of developing a timeless, sustainable and beautiful Technology Park Campus



A rendering of the proposed development from the North with the Rt 95 on-ramp shown to the right. Buildings shown are only examples which meet the intent of the Design Guidelines, they are not actual proposed designs. Rendering by Scott Simons Architects.



*Buildings should be situated appropriately in the landscape with the long side facing south for passive solar opportunities. Solar shading devices in this building at USM Gorham prevent overheating in the summer while allowing for the sun to enter in the winter.
-University of Southern Maine Childcare by TFH Architects, Gorham, ME*

DEVELOPMENT GOALS

The City's goal for the PTPD property is to create a forward thinking, low impact, environmentally friendly Technology Park development. The City reserves the right to review all development proposals for compliance with the Design and Energy/Environmental Standards listed below and to request changes and/or revisions to bring the design into conformance with the PTPD standards and goals.

Design Quality

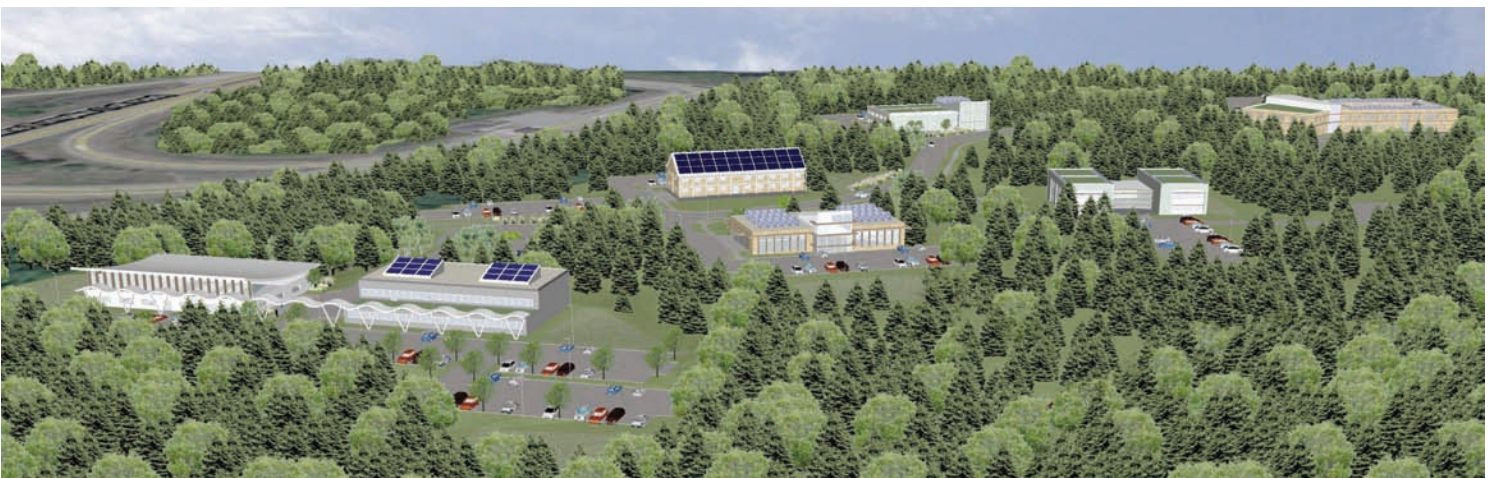
To achieve the City's goal they encourage proposals that are developed by innovative, well respected design professionals. All proposals for the PTPD unit areas shall be designed by an architect licensed to practice in the State of Maine. They shall include a complete set of drawings showing all exterior elements of the building, a colored rendering of the buildings exterior, and a sample board of the proposed exterior materials.

Durability

Development proposals for the PTPD unit areas shall be designed to last a minimum of 50 years without major repair or replacement. Materials shall be selected that have proven track record of performance in climates similar to that of Maine, that are attractive, durable, and easy to maintain.

Energy/Environmental Performance

Development proposals for the PTPD unit areas shall be designed to achieve a minimum performance level that is consistent with the City's Green Building Code. Specific recommendations for performance are also outlined under Design Standards, below.



Rendering of the proposed development from the South with Rt 95 shown to the left. Buildings shown are only examples which meet the intent of the Design Guidelines, they are not actual proposed designs. Rendering by Scott Simons Architects.

SITE DESIGN

Design Relationship to Site

Individual building developments shall demonstrate a reasonably unified design relative to other building developments and common areas within the park. Compatibility of design shall include such elements as building architecture and layout (see Building Design Standards), pedestrian and vehicular circulation plans, design of open spaces, drainage, topography, vegetation and preservation of natural features. Integration of open spaces and natural features may be achieved by incorporation of outdoor amenities for the benefit of users of the site, such as outdoor seating areas, trash and recycling receptacles, and interconnectivity with adjacent trail networks.

Stormwater Management and Site Design

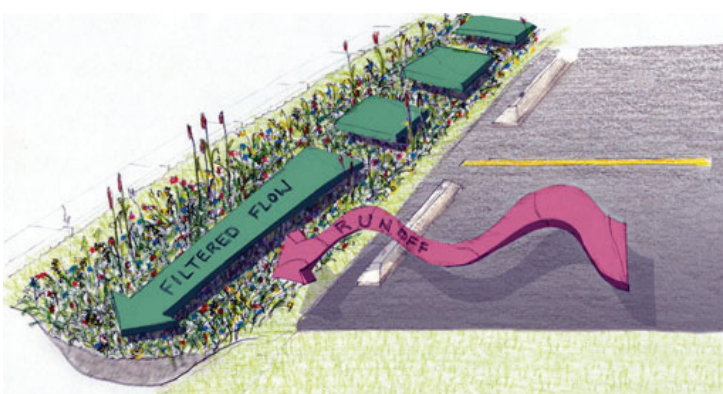
Low impact stormwater management and site design shall seek to mimic the existing site hydrology by limiting piped infrastructure, limiting increases to the steepness of site grades, and maximizing surface stormwater conveyance and treatment through the use of gravel wetlands. Stormwater management design shall seek to maintain the natural wetland hydrology of the site through the addition of constructed gravel wetlands, underdrained soil filters, pervious roadway base (rock sandwich), and drainage channel protections. Stormwater management design shall consist of curb cuts with surface flow to sediment forebays, followed by gravel wetlands or underdrained soil filters in place of traditional closed drainage systems.

Stormwater management and site design shall limit disruption of natural hydrology by reducing impervious cover and managing stormwater runoff through a stormwater management plan focused on maintaining natural hydrology, treatment of the water quality volume (as defined by Maine DEP), and stream channel protection. Stormwater management design shall manage runoff rate from storm events which contribute to stream channel erosion, such as the 1 and 2 year, 24 hr rainfall events. The post development runoff rate will match the pre-development rate.

Site design, good housekeeping plans and site maintenance plans should consider reducing or eliminating sources of contaminants and reducing pollutants from stormwater runoff. Site design may seek to maintain surface hydrology through means of pervious layers below roadways, driveways or parking lots in lieu of traditional, closed pipe culverts, which channelize flow. Site design shall seek to avoid or minimize impacts to the natural, wooded wetlands that encompass much of the site. Site design should seek to implement pervious surfaces, be it by reducing paved areas or by utilizing pervious hardscape technologies (pervious pavements, pervious pavers).



Horizontal sunshading reduces solar gain and planting softens and cools the hard surfaces of the pedestrian walkways and parking.



Parking lots will slope to gravel wetlands with open drainage channels. Image Courtesy of New York MTA.



Rendering of the PTPD looking south towards building unit area 4 and gravel wetlands on the right.



Planted gravel wetlands along the road edge will serve to capture and filter runoff and the native trees and landscape will be largely preserved.



Stormwater treatment wetland, Photo Courtesy of Stormwater Magazine.



Constructed wetland for stormwater treatment; Town of Acton, MA; design by Woodard & Curran Inc.

Materials or Wastes

No materials or wastes shall be deposited on any area of the site in such form or manner that they may be transferred beyond the lot boundaries by natural causes or forces. All stumps and debris generated by site clearing activities shall be utilized on site for temporary erosion control measures or immediately removed and reused offsite to the maximum possible extent. Building construction contractors shall develop a construction debris sorting and recycling plan. Building construction debris shall be recycled to the maximum extent practical.

Building tenants shall develop or implement existing recycling programs, and shall be responsible for contracting with a waste management service that provides recycling programs for paper, metal and plastic waste streams.

Building tenants shall develop and implement pollution prevention programs. Pollution prevention activities should include sweeping of paved areas (minimum of twice per year), minimization or elimination of the use of fertilizers, pesticides or herbicides on landscaped areas, strategic winter deicer use, and safe and sheltered outdoor material storage.

All material which might cause fumes or dust, or constitute a fire hazard if stored out-of-doors, shall be stored in enclosed containers.

Soil Erosion and Sediment Control

Reduce pollution from construction activities by controlling soil erosion, waterway sedimentation and airborne dust generation. This should be accomplished by following the erosion and sedimentation control plan developed for the overall site, in addition to the latest Maine DEP approved erosion and sediment control measures. Frequent, documented inspection of erosion and sediment control measures during construction shall be required in accordance with local and state regulations.

Traffic

Development proposals shall identify all proposed traffic controls (signage and striping), traffic-related pedestrian features, parking areas, and interior traffic circulation for each building site if the layout of the site differs from the permitted PTPD plan. A Traffic Movement Permit exists for the PTPD, and was based on an anticipated traffic generation for the full build-out of the permitted PTPD site. Development proposals shall modify the overall PTPD Traffic Movement Permit if the anticipated traffic generation numbers for any individual development site exceed the anticipated pro-rata share of the traffic forecast for the full site in the Traffic Movement Permit.



Examples of pervious pavers.

Parking Lots

Parking lots should be carefully integrated into the Development with respect to site access, building access and landscape qualities. Parking spaces should be designed to reduce impervious surface area as much as possible, and provide, where possible, preferred parking for low-emitting and fuel-efficient vehicles for 5% of the total vehicle parking capacity of the site. Confirmation via a parking analysis is required to justify the development of the maximum number and associated size (ranging from 8'-2" x 18' to 9' x 18') of parking spaces as approved and shown in the subdivision plat and overall site plan, which is different for each building unit but generally between 3-4 spaces/1,000 square feet of building area.

Reduce heat islands to minimize impact on microclimate and human and wildlife habitat. Consider providing any combination of the following strategies for 50% of the site hardscape (including roads, sidewalks, courtyards and parking lots): Shade (within 5 years of occupancy), paving materials with a solar reflective index (SRI) of at least 29 and/or open grid pavement system.



An example of acceptable light poles, furniture, sidewalks, and landscape design.

Sidewalks

Development proposals shall include internal sidewalks, illustrating the manner in which the developer will provide this amenity to take advantage of the topography and natural features of the site. Internal site sidewalks shall seek to limit impervious surface ratio while providing safe egress, maintaining appropriate desire line pathways, and enhancing building entrances, as applicable to each building development area. Design of sidewalks should consider use of pervious pavement products, such as pervious concrete or pervious pavers as they reduce sheet flow at the extremities of the parking lots by allowing rain to permeate the ground evenly across the walkway.



Rendering of the entry to the PTPD with building unit area 1 to the left, demonstrating the intent of the landscaping and sidewalks. The tall grasses and boulders to the right show the intended look of the proposed gravel wetlands. Rendering by Scott Simons Architects.



An example of subtle yet strong and beautiful lighting and signage.



Pedestrian walkways should be lit with bollard type fixtures (right) and parking areas should be lit with pole mounted down-lights (left).



Parking lot lighting should be pole mounted and shine in a downward direction.

Bicycle Racks

Encourage reduction in pollution and land development impacts from automobile use. It is required to provide bicycle parking in accordance with city standards. Shower and changing facilities in the building are encouraged.

EXTERIOR LIGHTING

Lighting strategies should seek to provide efficient, safe light levels, good color quality light, and minimal light pollution. Development proposals shall identify the location and style of lighting to be used in the development, and shall be accompanied by a lighting photometric plan in accordance with City Site Plan Review requirements. All roadway, driveway and parking areas shall be required to provide a light fixture of the same make, model, pole type and base design as the fixture chosen for the main access roadway (not selected at this time). Sizes can vary to accommodate specific use requirements.

All lighting fixtures shall be hooded or shielded so that the light shines downward. Efforts shall be made to minimize light trespass from the building and site, reduce sky-glow to increase night sky access, improve nighttime visibility through glare reduction and reduce development impact on nocturnal environments. The use of low energy or LED fixtures is encouraged. Light color should be uniform. The use of high pressure sodium lights is not allowed. All exterior lighting shall conform to the Site Lighting Standards of the City of Portland Technical Manual.

Light fixtures associated with the building and walkways should be of a style and height that enhance the architectural character of the buildings. Illumination of parking lots with large flood lights mounted on the building is not allowed; small, pole mounted fixtures along the edges of the lots are encouraged, and taller pole mounted fixtures will be allowed provided they meet the applicable standards of the City of Portland's Technical Manual. The objective is to provide a more even illumination, less glare, more security, and be more in scale with the desired character of the PTP Campus.

Pedestrian pathways should be illuminated with lamp post or bollard type light fixtures, of a scale and character in keeping with the size of the pathways they are serving.

Entrance way lighting should develop in a hierarchical way, with primary entrances receiving higher quality and quantity of illumination, to reflect their relative importance.

Landscape lighting can be developed to supplement other lighting, and can enhance the character of the PTP Campus. Overall, the exterior lighting should enhance the architecture and the landscaped environment, be placed in an orderly way throughout the Development to reinforce the building and pathway patterns, and harmonize with other signage and site furniture to contribute



Examples of acceptable signage.



An example of a parking lot which is integrated into the landscape. The use of grass lawns is discouraged, however.



Rendering of the PTPD looking towards building unit areas 6 and 7 with gravel wetlands in the foreground. Rendering by Scott Simons Architects.

to the desired appearance of the PTP campus. It should help attain a safe, attractively illuminated nighttime environment that complements the appeal of the daytime environment.

SIGNAGE

Development proposals shall identify all proposed signage. Signs shall be designed in proportion and constructed of permanent materials and shall be coordinated with the building and landscaping design through the use of appropriate materials and finishes. Well-designed signage is encouraged in the Development, both in front of the building and on the building, as allowed by the City's existing ordinances. The use of raised metal letters, individual metal letters, and etched masonry or wood is encouraged; surface mounted plastic letters and interior-lit box signs are not allowed. Signs should be illuminated at night either from behind the raised lettering or with focused floodlights.

LANDSCAPING

Development proposals shall include a landscaping plan and maintenance program developed by a licensed Landscape Architect in the State of Maine. The landscaping plan shall be developed in conformance with the landscaping and landscape preservation standards outlined in the City's Technical Manual and Land Use Ordinance. All developed land areas not covered by structures, parking areas or circulation facilities shall be landscaped and maintained. In order to soften the visual impact of large expanses of pavement in parking lots, vegetation shall be planted or retained where feasible on islands or planting strips. Each building development is encouraged to provide vegetation within the developed areas of their site matching to and blending with the natural woodland features of the adjacent, undeveloped areas.

Maintained lawn areas and non-native tree and plant species are discouraged. Mulched and planted areas, wildflower and conservation mix grasses and native plant and tree species are encouraged. The use of low water demand plantings is encouraged, so far as they are sited properly and can thrive in the soils and site conditions of the property. Further, each parking area shall be required to provide landscaping as outlined the City of Portland's Code of Ordinances.

If maintained lawn areas are desired, these areas should be managed in a way to maximize soil and turf health. Lawn management should follow the guidance of the Maine Yardscaping partnership (<http://www.yardscaping.org/>).

BUILDING DESIGN STANDARDS

Building Massing and Form



Cascon Headquarters by Scott Simons Architects in Yarmouth, ME

The Master Plan envisions a series of one story and two story buildings developed along a curving roadway, as illustrated in the Site Plan, with natural, open space between them. All buildings should be oriented within 15 degrees of true south, to maximize their solar orientation. Rectangular footprints are encouraged, with the long sides of the rectangle facing south to maximize the opportunities for solar shading and passive solar heat gain.

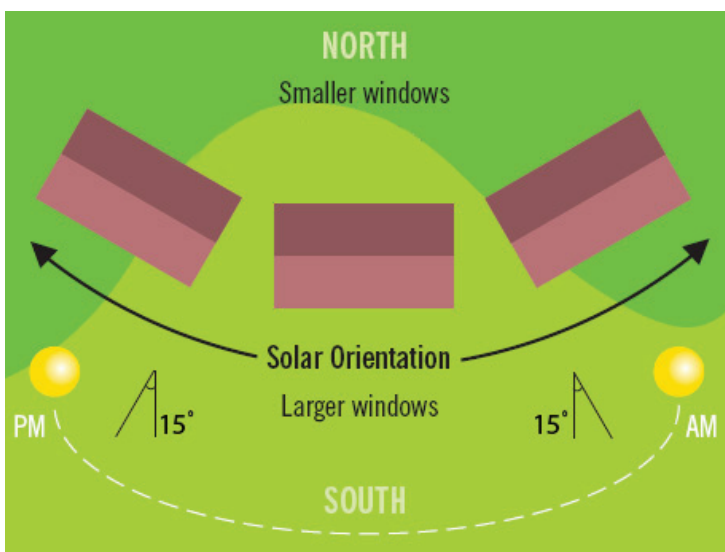
Simple building forms of a contemporary style are envisioned, that sit calmly on their sites that will foster a cohesive setting for the campus. Natural colors and materials are encouraged as in the above example of the Cascon Headquarters which has a vernacular form with modern fenestration and details. It is a simple, strong volume with thoughtful detailing to control water, snow and sun. Tacked on architectural features used to mimic an architectural style such as the example to the left is discouraged. It is a poor reference to classical architectural forms and motifs which have little to do with the function of the building or to contemporary architecture.



This type of office building is discouraged in the modern PTPD. It is a poor reference to classical architectural forms and motifs which have little to do with the function of the building or contemporary architecture.

Zoning Standards

Each building site shall meet the zoning requirements as identified within the Office Park Zone, Chapter 14 – Land Use, in the City of Portland City Code of Ordinance. Buildings shall not be greater than 55 feet in height; front yard (50'), side yard (25') and rear yard (50') setbacks between a building structure and the property line of the overall site parcel shall be maintained; pavement setbacks (15') between paved surfaces and the property line of the overall site parcel shall be maintained; a minimum number of parking spaces of 2.5/1,000 sf of building space shall be provided. The parking requirement may be waived upon review and approval by the planning authority if the building tenant can demonstrate that an alternate parking demand is anticipated for a particular building use. Reduction of paved parking areas is encouraged. See Parking Lots section of this document for further information.



Proper solar orientation with the long side of the building facing south allows for solar gain in the winter months and opportunities for sun-shading on the south side in the summer.



The Chestnut Street Lofts in Portland by TFH Architects blends corrugated metal cladding with rich masonry for a high quality exterior envelope. Careful detailing is essential to make this successful. Note calm and cohesive color palette.



The use of split face CMU such as in this generic building is not allowed. Note lack of relationship to the local climate and built environment.



JSA Architects' entrance to the Maine Med building successfully attracts visitors to its entrance and allows you to experience the interior from the sidewalk. Patterning within the masonry and a blend of metal and glass give the modern entry distinction.

BUILDING ENVELOPE

Exterior Siding

A wide variety of exterior siding materials is acceptable within the development. The goal of the Master Plan is to achieve an overall sense of continuity, quality, and durability, as well as innovation. The use of modern and "high tech" materials is encouraged, provided they are well designed and detailed. Exterior wall assemblies must meet or exceed the Maine Uniform Building and Energy Code.

Brick is a classic exterior building material in New England and can be used for the buildings in the PTP Development. Other masonry products in contrasting or non-contrasting colors or textures, such as precast concrete, granite, terra cotta tiles, etc. may also be used either in conjunction with brick or as the primary exterior material. Exposed concrete block and split faced concrete block is not allowed.

Metal (Alucabond, Alpolc or equivalent) and synthetic (Trespa or equivalent) wall Panels and fiber cement siding (Hardiplank, Cemplank or equivalent) are acceptable for the exterior siding material, provided they meet the durability goals of the Development. These materials are frequently used as a "rain screen", which is encouraged in the Development. Corrugated metal panels (PacClad or equivalent) are also acceptable, provided they are used in a way that does not make the buildings appear to be "industrial". Metal trim, copings, fascias, etc. are acceptable, provided the character and colors are compatible with the exterior siding material(s) and in keeping with the intent of the Master Plan.

The use of wood siding is acceptable provided it is properly treated for long-term durability. The use of painted wood siding is discouraged, because of its maintenance requirements. Vinyl siding may not be used.

High performance glass "curtainwalls" and/or "storefront" systems can be used as an exterior siding material, provided they exceed the Maine Uniform Building and Energy Code by 10%.

Windows

Minimum standards include double glazed high performance windows, with an all-window R-value which meets or exceeds the Energy Code (current code is 0.35 U-factor). High performance, double glass wall construction is encouraged, as are other innovative ways of using glass that achieve these performance goals.

Exterior window finishes can be aluminum, fiberglass, natural wood (provided they have a durable finish), and painted steel. Window frames shall be thermally broken for increased R value. Solid vinyl windows are not allowed. Highly reflective or mirrored glass may not be used. Visible Light Transmittance is encouraged to be 72% or better.



Natural wood siding can provide a great sense of warmth in combination with metal roofs, structure and sun shades. A dynamic and beautiful landscape grounds the building and enlivens the pedestrian edge.
-Cascon Headquarters in Yarmouth, ME by Scott Simons Architects

Horizontal sunshades or overhangs are recommended to cover 75% of the windows on the south exposure of the building. The exterior sun control devices should prevent direct sun penetration at noon during July and August. Vertical sunshades are encouraged on the west exposure to control solar heat gain during July and August. Properly designed shading devices will allow the sun to enter during the winter months and block the sun during the hottest months.

Entrances

Entrances must be visible from the street or entrance drive to the property. Covered entrances are required to provide a transition into the building from the rain, snow and wind. Roof canopies, roof projections, and/or recessed doors are encouraged; vestibules with inner and outer sets of doors are strongly recommended, to manage heat loss at the entrance. Walk-off mats or grills are recommended in the vestibule to reduce the amount of dirt and moisture brought into the building.

Roofs

Roofs may be sloped or flat. Flat roofs should be single ply membrane type with a minimum pitch of 1/4 inch per foot. Pitched roofs must be minimum 25 year, "architectural grade" fiberglass shingles, or a standing seam metal roof or another equally durable material which meets the design goals of the Development.

As a means to reduce the "heat island effect" and reduce cooling loads, roofing material is encouraged to have a Solar Reflective Index (SRI) of minimum 29 where the pitch is greater than 2:12. Where the roof is less than or equal to a 2:12 pitch, it is encouraged to be SRI 78 or better. "Green roofs" are encouraged, to help manage stormwater run-off from the roof and reduce "heat island effect".



The Design Guidelines encourage green roofs such as these examples in Portland. Left: Bayside Apartment Building. Right: East End School by Stephen Blatt Architects.

Exterior Trim and Detailing

Exterior trim shall be designed to complement the exterior siding of the building. Masonry, metal, wood and synthetic materials may be used provided they are well detailed, durable, and appropriate for the development. Drip edges, copings, flashings, and other metal trim pieces associated with the roofs should be the same finish and color as the metal roofing material so as to appear as a cohesive element.



Flashing and trim details should have clean lines and carefully articulated edges. -Waynflete School Arts Center by Scott Simons Architects.



Photovoltaics at Portland's East End School. -Stephen Blatt Architects

ENERGY & ENVIRONMENTAL STANDARDS

The goal for the Development is to encourage innovation, high quality, and high performance in all the buildings built in the PTP Campus. To achieve their energy objectives, the City has established a Green Building Code. They also encourage innovative proposals that will help make the campus a leader in sustainable development.

Building Materials

The use of environmentally friendly products in the design and construction of all buildings in the Development is encouraged. Building materials shall be selected to insure the use of products with the lowest environmental impact, wherever possible. Life cycle cost data, highest possible recycled material content, readily renewable resources (bamboo, wheat board, etc.), locally sourced materials, lowest VOC rating, highest energy efficiency, and other factors shall be analyzed in all recommendations for the selection of materials and systems for all buildings in the Development. Materials shall conform to the standards set forth in the Maine Uniform Building and Energy Code.



Spray foam insulation creates a tight thermal envelope with minimal air leakage.



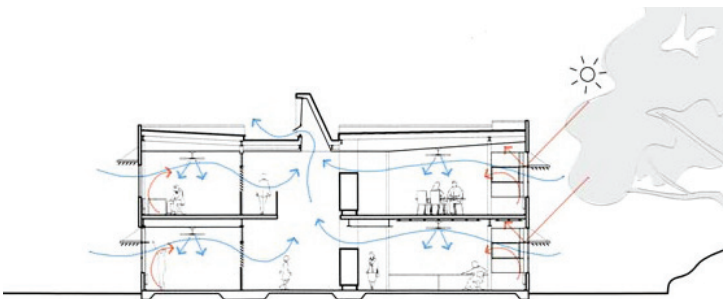
Waterless urinals significantly reduce water use.

Exterior Envelope Thermal Performance

Wall and roof assemblies shall meet or exceed the Maine Uniform Building and Energy Code. It is recommended that roof assemblies be a minimum of R-49 (Code: R-38) and wall assemblies be R-30 (Code: R-21) or greater.

Water Conservation

The use of dual flush toilets, ultra low flow or waterless urinals, motion sensors for all faucets, and other water saving features are recommended. The use of graywater and rain water harvesting for irrigation and toilet flushing is encouraged. This will reduce the long term utility costs to the owner and the impact on the public water and sewer systems.



Shading Devices and Ventilation

Solar shading devices are encouraged on a minimum of 75% of south facing windows. See section "Windows" on pages 11 and 12 for further requirements. Solar shading devices and operable windows allow views and natural ventilation while keeping the sun's heat at bay. Providing a way for built-up hot air to escape at the top of the building allows for a "stack effect" to occur, bringing in fresh air from the windows and allowing the heated air to flow upwards and out the vent or operable window. These techniques foster a healthy and comfortable work environment with minimal heating and cooling loads. See adjacent diagram and examples.



An office building example in Auckland, NZ by Architectus uses operable windows and solar shading devices to naturally control the indoor air quality.



Appropriate natural daylighting significantly reduces the need for lighting and its associated energy consumption which lowers operational costs. -Rare Headquarters in England by Feilden Clegg Bradley Studios



Rooftop photovoltaics can offset the building's energy consumption and put energy back into the grid. -NASA Sustainability Base by McDonough + Partners

Lighting

Lighting electrical loads account for approximately 25% of the energy use of commercial buildings. Careful attention to reducing the watts/SF of development will go a long way towards reducing overall energy consumption. Appropriate use of natural daylighting and occupancy sensors can significantly reduce electrical loads.

The use of energy efficient LED and/or florescent light fixtures is highly recommended, not only to meet the State's energy code but to meet the goals of the PTP Campus.

Mechanical Systems

The mechanical systems shall be designed to minimize energy consumption and maximize human comfort throughout the range of operating conditions. While the most important part of energy conservation comes in a well insulated and tightly sealed building envelope, the design of the HVAC system is critical to meeting these goals and the City's Green Building Code.

Alternative Energy

Renewable energy use is encouraged as a means to decrease the use of fossil fuels and the release of harmful gasses and toxins into the environment. Many systems have a short pay-back time line and will significantly decrease the annual operating budget of the building. The use of photo-voltaic cell arrays to power the building is encouraged, both on the building and remotely located from the building as site constraints allow. The use of solar hot water roof panels is also encouraged, to generate hot water for use in the building. Rooftop mounted panels are acceptable.

CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN PRINCIPLES

Development proposals shall be designed incorporating Crime Prevention Through Environmental Design (CPTED) principles, as outlined in the City's Technical Manual. Development proposals shall create formal and informal natural surveillance networks on the site to increase on-site visibility and the safety of legitimate users and to deter potential offenders.

Physical Features

The placement and design of physical features shall maximize visibility to allow for surveillance opportunities to and from site features such as entrances and exits, walkways, assembly areas, corridors, stairways, windows, parking lots, landscaping, fences or walls, and any other physical attributes.

Lighting

The lighting of the site and building shall meet the lighting guidelines of this document, the City's technical standards for site lighting, and shall enable users to observe movement and activities on the site during the day and at night. Motion sensor activated lighting is permitted to provide adequate illumination of the site at night while still complying with applicable lighting curfew standards. Specifically, the lighting plan should satisfy the following criteria:

Create nighttime illumination of pedestrian travel paths and gathering areas, entrances and exits, and parking lots by achieving the following:

- Provide a clear view of an area from a distance and enable anyone moving in or immediately around it to be easily seen.
- Deny potential hiding spaces adjacent to existing and proposed pedestrian travel routes.
- Permit facial identification at a distance of at least 30' and create the perception of being identified.

Mechanical Surveillance Systems

If necessary, mechanical surveillance systems such as CCTV may be installed to monitor areas not easily observed such as parking lots and garages.

Access Management

Development proposals shall be designed to provide visible pathways and to offer proper guidance for legitimate users to access the site and to discourage unauthorized use of the site.

Orientation and Wayfinding

Development proposals shall be designed so that the layout, features and/or signage clearly guide the movement of vehicles and pedestrians along safe and predictable paths both during the daytime and nighttime. Specifically, the development proposals shall satisfy the following criteria:

- Placement of signage, lighting fixtures, landmarks, and landscape design features shall clearly guide users to and from the facility.
- Site features shall be designed to avoid the creation of entrapment zones that afford users no opportunity to escape or retreat from an approaching hazard.

Mechanical Access Control

If necessary, mechanical access control systems may be implemented such as assigning personnel at key building entry points or establishing other procedures such as mechanical auto closing devices, key cards, gates and other locking devices.

Territorial Reinforcement

Proposed developments shall be designed to clearly delineate private, semi-private, and public space.