INTRODUCTION

Northside Dining Terrace, Philadelphia, Pennsylvania is a 1 story building. The client is Drexel University. The architect is EM architecture. The mechanical engineer is D.J. Ververelli, the electrical engineer is D.J. Ververelli and the structural engineer is The Harmon Group.

Summary of Your Achievement: Northside Dining Terrace achieved an overall rating of 55%.

To find out how the performance of Northside Dining Terrace compares to other buildings that have been assessed, and to obtain certification, the data must be verified by a licensed engineer or architect who has undergone the Green Globes training and certification.

Percentage of points achieved by Northside Dining Terrace for each module:

<table>
<thead>
<tr>
<th>Module</th>
<th>Percentage Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management</td>
<td>36%</td>
</tr>
<tr>
<td>Site</td>
<td>70%</td>
</tr>
<tr>
<td>Energy</td>
<td>49%</td>
</tr>
<tr>
<td>Water</td>
<td>22%</td>
</tr>
<tr>
<td>Resources</td>
<td>29%</td>
</tr>
<tr>
<td>Emissions</td>
<td>95%</td>
</tr>
<tr>
<td>Indoor Environment</td>
<td>73%</td>
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PROJECT MANAGEMENT POLICIES AND PRACTICES

This section evaluates the extent to which an integrated design process and a team approach have been used to generate design solutions that will meet the needs identified in previous stages of the project delivery process. It also addresses the purchasing policy and development of commissioning documentation and an emergency response plan.

Northside Dining Terrace achieved a score of 36% on the Green Globes™ rating scale for its integrated design process, integration of environmental purchasing, a commissioning plan and emergency response plan.

Integrated design process
Summary of Your Achievements

An integrated design process was used for the design development.

A team approach was used throughout the progressive stages of the design process. It involved collaboration of the architect, engineers, consultants, and other stakeholders.

Opportunities for improvement

Use green design facilitation to support green design integration.

Environmental Purchasing

Opportunities for improvement

Incorporate aspects of "green" specifications, such as those from the GreenSpec® menu or the Reference Specifications for Energy and Resource Efficiency.

Select products which have less environmental impact, including energy-saving, high-efficiency equipment and materials.

Commissioning Plan - Documentation

Summary of Your Achievements

A best-practice, project commissioning plan is being implemented that includes the following:

• “Design Intent” and “Basis of Design” documentation has been reviewed.

Opportunities for improvement

Engage a Commissioning Authority.

Include Commissioning requirements in the Construction Documentation.

Develop a Commissioning Plan.

Emergency response plan

Opportunities for improvement

In Division 1, state the project's environmental goals and procedures with regard to emergency response. An emergency response plan should be in place prior to project start-up to mitigate the likelihood of environmental emergencies occurring on-site during site preparation or construction.

SITE Rating Earned: 70%

This section evaluates the design strategies for optimal use of the site based on information about the site, and in response to the requirements set out at the previous stages of the project delivery process.
Northside Dining Terrace achieved a score of 70% on the Green Globes™ rating scale for the site design and enhancement measures to minimize the building's impact on the site.

Development area
Summary of Your Achievements
The building is constructed on an existing serviced site.
The building is constructed on land that is neither a wetland nor a wildlife corridor.
The design accommodates the building's functions while minimizing disturbance to the site's topography, soils and vegetation.

Minimization of ecological impact
Summary of Your Achievements
Erosion control measures are in place in accordance with best management practices (BMPs) to protect the site during construction as well as over the long term.
At least 30% of impervious surfaces will be shaded to avoid creating a heat island.
A combination of green roof and high albedo materials (reflectance of at least 0.65 and emissivity of at least 0.9) will help to avoid creating a heat island.
Obtrusive aspects of exterior lighting such as, light trespass and sky glow will be avoided to preserve the nocturnal sky.

Enhancement of watershed features
Opportunities for improvement
Provide a stormwater management plan to prevent damage to project elements, including vegetation, on this and neighboring sites. Include an engineering design of the site drainage pattern, including volume calculations and site management strategies. Aim for no increase in run-off. Or, if the site already consists of more than 50% impervious surface in its pre-development state, aim for a reduction of 25% in storm water run-off.

Enhancement of site ecology
Summary of Your Achievements
The site-planning documents specify a naturalized landscape using native trees, shrubs and ground cover, with minimal lawn.

**ENERGY** Rating Earned: **49%**

This section evaluates the design strategies to minimize the building's energy consumption using the site's features and microclimate, space optimization, the integration of energy-efficient systems and renewable energy, and alternatives to automobile transportation.
Northside Dining Terrace received a score of 49% based on the assessment of best-design practices and energy performance on the Green Globes™ rating scale for energy efficiency.

Building energy performance

Northside Dining Terrace achieved a sub-score of 0% for its energy consumption. Energy consumption target figures were not entered.

Opportunities for improvement

Ensure that the projected energy consumption meets or exceeds the preset energy-use targets. Include the energy performance requirements in the specifications.

Energy demand minimization

Summary of Your Achievements

Space optimization

The floor area has been optimized to efficiently fulfill the building's functional and spatial requirements while minimizing the amount of space that needs to be heated and cooled (i.e. kitchen and utility equipment is separated from other areas).

Response to microclimate and topography

The building is located and oriented on the site to optimize the effect of microclimatic conditions for heating or cooling (i.e. building is south facing to optimize the heat in winter months with deep overhang to minimize heat gain in summer months).

Opportunities offered by the site topography, and design measures – including location and orientation – are optimized to provide shelter against wind and snow deposition.

Integration of daylighting

The amount of daylighting is optimized through building orientation and window-to-wall size ratios (i.e. window wall optimizes natural light with provision of sun shading).

The indicated visible transmittance (VT) of the window glazing is 0.7.

Building envelope

The thermal resistance of the exterior enclosure meets Building Energy Code levels. The reported thermal resistance (R) of the roof is 30.

Window glazing with a low U value and window treatments that enhance interior thermal comfort are specified. The indicated U value of the window glazing is 0.29.

There are measures to prevent groundwater and/or rain penetration into the building.

Opportunities for improvement

Space Optimization
If possible, phase the construction process.

Response to microclimate and topography

Include measures to maximize natural ventilation and cooling or to integrate hybrid ventilation. These might include, operable windows, trickle vents, openings located to catch prevailing breezes, or horizontal pivot windows. Consider the room depth and height ratios and the possibility of open floor plans to optimize cross-ventilation.

Integration of daylighting

Provide specifications for daylighting systems, integrated electrical lighting and daylighting control systems. An account of the daily and seasonal variations should be included in the construction documents. Provide the modeling results and manufacturers' information on the lighting controls. Develop an operating manual to ensure that appropriate adjustments can be made to the lighting systems to account for daily and seasonal changes.

Building envelope

Detail the continuous air/vapor barrier and show how it will avoid thermal bridging, provide thermal comfort to the occupants and prevent condensation in the building. Include product data on air/vapor barrier materials.

Energy-efficient systems

Summary of Your Achievements

The building's energy efficiency is increased through the use of energy-efficient equipment. The design includes the following:

- Energy-efficient lighting fixtures, lamps and ballasts
- Lighting controls
- Energy-efficient HVAC equipment
- Energy-efficient hot water service systems
- Building automation systems
- Energy-efficient motors

Opportunities for improvement

Consider integrating the following energy efficient equipment:

- High efficiency (modulating or condensing) boilers
- High efficiency chillers
- Variable speed drives
- Energy-efficient elevators
Opportunities for improvement

Summary of Your Achievements

Renewable sources of energy
Consider integrating renewable energy sources. Provide details of the complete system and calculations that demonstrate the renewable energy contribution.

Energy-efficient transportation

Public transport/car-pooling
Public transport is easily accessible, within 0.3 miles and with service at least every 15 minutes during rush hours.

Cycling facilities
Safe, covered storage areas with fixed mountings for securing bicycles against theft are included in the design.

Changing facilities for building tenants and staff are included in the design.

Opportunities for improvement

Public transport/car-pooling

Include features that will promote car/van pooling, such as sheltered waiting areas and priority parking.

WATER Rating Earned: **22%**

This section evaluates the design strategies to conserve treated water and minimize the need for off-site treatment of water.

Northside Dining Terrace achieved a score of 22% on the Green Globes™ rating scale for water consumption and measures to minimize its use.

Water performance

Opportunities for improvement

Ensure that the projected water consumption meets the water-use targets.

Water-conserving features

Summary of Your Achievements

Minimal consumption of potable water
The design includes the following of water-efficient equipment:
- water-saving devices or proximity detectors on urinals
- low flush toilets (less than 1.6 gallons/flush)
- water-saving fixtures on faucets (less than 2.0 gallons/minute) and showerheads (less than 2.4 gallons/minute)
  - Minimal use of water for cooling towers
  - There are no wet cooling towers.

Opportunities for improvement

Minimal consumption of potable water

In addition to a water meter to measure the total amount of water supplied to the building, major water consumption operations such as boilers, cooling tower make-up lines, water-cooled air-conditioning units or special laboratory operations, should also be individually monitored.

Consider integrating the following water efficient equipment:

- Other water-saving plumbing fixtures and appliances include 2.4 gallons/minute low-flow kitchen faucets, domestic dishwashers which use 10 G per cycle or less, and commercial dishwashers (conveyor) which use 120 gallons/hour.

Provide manufacturers' data and proven-in-use documentation.

Minimal use of water for irrigation

Specify irrigation using non-potable water (i.e. captured rainwater or recycled site water). If rainwater will be used, ensure that there is a system for catchment, storage and distribution.

RESOURCES, BUILDING MATERIALS AND SOLID WASTE

This section evaluates the selection and specification of environmental requirements for construction materials. Documentation to ascertain the environmental sourcing of materials such as timber and timber products, blocks, bricks, plasterboards, paints etc. used on the project should be available.

Northside Dining Terrace achieved a score of 29% on the Green Globes™ rating scale for managing resources through waste reduction and site stewardship.

Systems and materials with low environmental impact

Opportunities for improvement

- Specify materials with low embodied energy. Provide evidence that the foundations, floor, structural system (column and beam, or post and beam combinations), roof and envelope (cladding, windows etc.) assembly materials have undergone a life cycle assessment. The
specifications should reflect the results of the “best run” life cycle assessment of the building's materials. “Best run” here means the specification with the lowest life cycle impact out of the number of the alternatives investigated. In Division 1, state the project's environmental goals and the general environmental procedures with regards to material selection and specification.

Materials that minimize consumption resources

Summary of Your Achievements

  Used building materials and components will be integrated in the construction (i.e. Reuse of existing countertops and point of sale millwork, walk in cooler, walk in box, merchandize display units - all items within the "Market area" except for new Subway equipment. ).

Opportunities for improvement

Specify materials high in recycled content such as crushed aggregate, carpets with fibers made of recycled content, ceiling tiles and metal products. Avoid materials where the recycled content may compromise the IAQ or service performance. Reference recycled-content standards, regulations and requirements. Provide material specifications which reflect the results of a life cycle assessment and post-consumer content. In Division 1, state the project's environmental goals and the general environmental procedures that address materials with recycled-content. In each CSI/Masterformat technical section, provide specific recycled-content percentages for post-industrial or post-consumer material. Document the rationale for using recycled materials, in terms of recycled content, embodied energy, durability, etc. For public bid projects, provide three different manufacturers.

Maximize the use of locally manufactured products and materials (produced within 500 miles of the site) as they generally require less energy for transportation and should therefore be cost competitive over materials from a more distant source. A target of 25% of the total percentage of products or materials should be locally manufactured or be from renewable sources. Documentation of locally manufactured materials should reflect the results of their life cycle assessment.

Where feasible, specify renewable materials such as cork, and bamboo. Before making the final selection, conduct a life cycle assessment using a tool such as Athena™ Environmental Resource Guide or BEES™.

Specify that only wood products from certified and sustainable sources will be used. Provide references to local, provincial, federal, and industry certified wood standards, regulations, and requirements. Provide a written confirmation from suppliers regarding the composition of the wood-based panel products and/or certification ((SFI), (FSC), (ATFS),
(CSA-SFM)) that the wood products have been monitored from origin to end consumer. In Division 1, state the project's environmental goals and the general environmental procedures that address certified sustainable wood. In Divisions 6, 9, and 12, list at least three different suppliers of certified wood.

Reuse of existing buildings

Building durability, adaptability and disassembly

Summary of Your Achievements

Building assemblies and materials have been specified for their durability and low maintenance (i.e. Exposed concrete, epoxy flooring, stainless steel toilet partitions, stainless steel kitchen equipment).

The construction documents indicate that the design promotes building adaptability (i.e. Dining area can be closed off from the Market area as needed based on hour of operation and demand. Dining area can also be used for functions and events while closing off the market area. The divider allows operating hours to be flexible, saving on utilities).

Opportunities for improvement

Specify structural, cladding and detailing materials, mechanical systems, and components that facilitate building disassembly. Where possible, use standard sized construction materials. The use of adhesives should be minimized and reversible mechanical fasteners used wherever practical. Show evidence in the design report, design drawings and specifications documentation that the building design allows for easy disassembly.

Reuse and recycling of construction/demolition waste

Opportunities for improvement

Provide a waste management/reduction plan and strategy, including a waste audit and a waste diversion strategy report. In Division 1, state the project's environmental goals and procedures that address the development of a Construction Waste Recycling Program to recycle as much of the construction waste building material as possible. Include demolition and construction waste reuse and recycling in Division 1 and 2 of the specifications. Include the reuse, recycling and recovery of demolition materials in Division 2 of the specifications. The specifications should either identify a separate contractor to remove reusable items, or require the demolition contractor to remove items for recycling and recovery. Schedule a walk-through with a deconstruction company to identify items that are valuable. Allow sufficient time in the construction schedule for the careful separation of reusable and recyclable items from waste.

Facilities for recycling and composting
Summary of Your Achievements

The construction documents indicate that there will be 100 ft² of space designated for the storage of recyclable waste.

**EMISSIONS, EFFlUENTS AND OTHER IMPACTS** Rating Earned: 95%

This section evaluates the strategies to avoid or minimize air emissions, ozone-depleting substances, effluents, pesticides, and hazardous materials. Note that it is assumed that halon-containing materials will not be introduced into the building.

Northside Dining Terrace achieved a score of 95% on the Green Globes™ rating scale for emissions, effluents and other environmental impacts.

Minimization of air emissions
Summary of Your Achievements

Low-NOx boilers and furnaces are specified (i.e. heat input of 199,999 BTU/hour).

Minimization of ozone-depletion
Summary of Your Achievements

A refrigeration system has been specified that avoids ozone-depleting substances (ODS) and potent industrial greenhouse gases (PIGG) (i.e. R 410 A).

The ozone-depleting potential of the refrigerant is equal to 0.


Control of surface run-off and prevention of sewer contamination
Summary of Your Achievements

There are measures to intercept and/or treat contaminated water to prevent pollutants including toxic materials, oils, and suspended materials from entering sewers or waterways (i.e. Grease traps on kitchen sanitary system).

Pollution minimization
Summary of Your Achievements

Integrated pest management

Components, materials and the protection of structural openings are specified to avoid infestation by pests.

Storage and control of hazardous materials

There will be secure, appropriately-ventilated storage areas for occupants to store hazardous and flammable materials.
Opportunities for improvement

Control of other pollutants (PCBs, asbestos, radon)

Provide a plan to remove or encapsulate all friable asbestos. Removal is the preferred option. Encapsulating asbestos is an acceptable and cost-effective option, as long as it does not compromise the health and safety of workers and occupants.

INDOOR ENVIRONMENT Rating Earned: 73%

This section evaluates the implementation of strategies used to ensure that the indoor environment is healthy and comfortable, in terms of providing a high level of indoor air quality, effective lighting, thermal comfort and suitable acoustic conditions.

Northside Dining Terrace achieved a score of 73% on the Green Globes™ rating scale for measures to provide a healthy, productive and comfortable environment.

Effective ventilation system

Summary of Your Achievements

- Air intakes will be located more than 60 ft from major sources of pollution and at least the minimum recommended distances from lesser sources of pollution.
- Vent openings will be suitably protected.
- Systems and components are specified that will avoid the release of pollution and fibers into the ventilation air path.
- Sufficient ventilation will be provided to obtain an acceptable IAQ, in accordance with ANSI/ASHRAE 62.1-2004 using the Ventilation Rate Design Procedure. The reported design ventilation rate is 23 cfm/person.
- The mechanical ventilation system will have the capability of flushing-out the building with 100% outside air at ambient temperatures above 0°C.
- The filters have a minimum efficiency of 65% arrestance, or 40% atmospheric dust-spot efficiency for air distributed to occupied spaces.

Opportunities for improvement

To avoid re-entrainment, position air intakes and outlets at least 33 ft apart, and ensure that inlets will not be downwind of outlets.

Ensure that the mechanical systems will provide effective air exchange. One way of determining effective mechanical ventilation is through measurements of air exchange effectiveness (E) as determined by ASHRAE 129 - 1997 Measuring Air-Change Effectiveness. This compares the age of the air the occupants breathe to the age of the air that would reach the occupants throughout the test space if the indoor air were perfectly mixed. For mechanically ventilated buildings, well-designed ventilation systems should
result in an E-value greater than or equal to 0.9. For naturally ventilated spaces, demonstrate a distribution and laminar flow pattern that involves not less than 90% of the room or zone area in the direction of airflow for at least 95% of the hours of occupancy. In the case of standard HVAC systems, the construction documents should summarize all the calculations, indicating that the ventilation systems will be capable of achieving these requirements.

Specify an indoor air quality monitoring system either as an independent system or as a function of the BAS. Locate the CO$_2$ monitors in areas with high occupant densities and at the ends of the longest runs of the distribution ductwork.

Specify that personal control over the ventilation rates will be provided for a maximum of four to six occupants, either through personalized HVAC controls or, for naturally ventilated buildings, operable windows or operable trickle vents.

Source control of indoor pollutants

**Summary of Your Achievements**

There are measures to minimize the accumulation of moisture within the building and prevent the growth of fungus, mold, and bacteria on building surfaces and in concealed spaces (i.e. All stainless steel equipment and FRP at all walls in cooking and prep areas. Expoy flooring over concrete, sealed and caulked at all perimeters. ).

There will be easy access to the air-handling units (AHUs) to facilitate their maintenance and drainage and avoid the accumulation of debris.

There are measures to avoid pollution at-source (i.e. Direct exhaust over cooking areas with controls to ensure gas is turned off at malfunction of exhaust hoods. ).

The domestic hot water system is designed in such as way as to prevent the occurrence of *Legionella*.

Interior materials are specified that are low-VOC emitting, non-toxic, and chemically inert (i.e. paint ).

**Lighting**

**Summary of Your Achievements**

**Daylighting**

The construction documents indicate that the building provides direct ambient daylight to 80% of the primary spaces.

The building will provide ambient natural lighting, achieving a daylight factor of 0.2 for work places and or living/dining areas requiring moderate daylighting, and 0.5 for well day-lit work areas.

The construction documents indicate that there will be views to the building exterior,
or to atria from all primary interior spaces.
Solar shading devices are specified to enable occupants to control brightness and glare from direct daylighting.

Lighting design
Lighting levels will meet those recommended in *IESNA Lighting Handbook, 2000* for the types of tasks to be anticipated in the various building spaces.

**Opportunities for improvement**

**Lighting design**

In office occupancies ensure that the ambient natural light in primary spaces does not produce excessive direct or reflected glare, as defined in *IESNA RP-5, 1999, Recommended Practice of Daylighting*. Provide the design report and engineering calculations.

**Thermal comfort**

**Summary of Your Achievements**

The building design appears to conform to the *ASHRAE 55-2004* for thermal comfort.

**Acoustic comfort**

**Summary of Your Achievements**

The building is sited, and spaces within the building are zoned so as to provide optimum protection from undesirable outside noise, and fall within acceptable noise criteria (NC) ranges.

The construction documents specify the sound level transmission through the building envelope.

There are measures to mitigate acoustic problems associated with mechanical equipment noise and vibration, and plumbing systems.

**Opportunities for improvement**

Provide noise attenuation of the structural systems, and include measures to insulate primary spaces from impact noise.

Provide acoustic controls to meet the acoustic privacy requirements.