

IMPACT ON SURROUNDING ENVIRONMENT

Review and Approval: Each new construction, building modification, grounds improvement or demolition project must be reviewed with regard to its impact upon its surrounding environment. All projects are to be reviewed by the Architectural Review Committee. Approval is required prior to detailed planning and construction. Typical areas of concern and recommendations are addressed below.

Aesthetics: Consideration should be given, not only to the appearance of a project itself, but also to the impact it will have on the overall appearance of the surrounding areas. This applies to modifications to existing facilities as well as to new facilities.

1. The appearance of new facilities should be appropriate for the immediate and campus-wide architectural context (see *Design Guidelines for Campus Architecture*).
2. The finish color of elements added to the exterior of existing facilities should blend with the existing color palette. The elimination and creation of openings in the façade of a building need to take into consideration the rhythm and balance set up by the existing windows and doors.
3. Projects involving additions to or projections from existing facilities should be contextual with the existing and surrounding facilities.
4. The installation of window air conditioning units, while undesirable, should be installed so as to minimize their projection from the exterior face of the facility.
5. The placement of exterior conduit and piping, while undesirable, is sometimes unavoidable and should be placed so as to take advantage of other vertical and/or horizontal elements.
6. Outdoor equipment (e.g. air conditioning units, emergency generators, transformers, etc.) installed at ground level should be located in remote / less traveled areas. When installing equipment at roof level, careful consideration should be given to site lines from the ground level (especially primary traffic routes) as well as upper levels of facilities. The installation of screening (e.g. walls, fencing or landscaping) may be necessary, either at ground level or at roof level, depending on the site lines of the installation.
7. The installation of unsightly outdoor structures/objects (e.g. loading docks, storage areas, sheds, tanks, trash / recycling containers, etc.) should be placed so as to take advantage of adjacent building and landscape screening features where available (i.e. within a remote alcove). Installation of additional screening may also be required.

Acoustics: Consideration should also be given to the impact a project will have on the acoustic properties of the surrounding area.

1. **Exterior:** The operation of noisy exterior mechanical/electrical equipment (e.g. air conditioning units, high velocity exhaust air discharges, emergency generators, etc.) can be very disruptive to adjacent building occupants and/or research functions.
 - Equipment should be selected so as to minimize the transmission of noise to these areas. It may be necessary to locate such equipment, as appropriate, at the roof level rather than at the ground level, or to locate it within an appropriately designed acoustical enclosure.
 - Noise-producing service areas (i.e. loading dock / receiving areas, trash / recycling areas, laboratory bulk tank areas, etc.) can also be disruptive. They should be located so as to minimize noise transmission to occupied areas, especially those that are more sensitive to noise.
2. **Interior:** The installation of noisy interior mechanical equipment/systems can have an equally negative impact.
 - Again, equipment should be selected and systems should be designed so as to minimize the transmission of noise to occupied areas. Locating mechanical equipment, such as air handling units, within a mechanical equipment room rather than within (or above the suspended ceiling within) an occupied space provides an obvious acoustic advantage.
 - As stated elsewhere, the allowable HVAC-related background noise level for a given type of occupancy should not exceed the guideline criteria provided in the chapter entitled

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Sound and Vibration Control in the current edition of the *ASHRAE Handbook, HVAC Applications*.

Odors/Fumes: Consideration should be given to the potential impact of objectionable odors and/or toxic fumes that could ultimately result from a project. This is especially applicable to loading docks, "wet" laboratories, laboratory animal facilities and agricultural animal facilities. Each fume exhaust system should be provided with a high velocity discharge stack of sufficient height and discharge velocity to prevent fumes from entering the ventilation systems of area buildings (see the *Air Distribution* section in these *Standards*).

Humidity: Evaporative cooling equipment (e.g. cooling towers) should be located such that, when operating under various wind and weather conditions, the associated plume of humid discharge air moves up and away from surrounding buildings, vehicles etc. Typically, this requires such equipment to be installed at roof level.

Plantings: Consideration should be given to the impact a project will have on adjacent trees and shrubs.

1. Structures/objects should be installed so as to minimize the negative impact on significant plantings (e.g. by shading, root damage, root compaction, etc.).
2. Equipment installed at ground level should be located relative to adjacent trees and shrubs such that significant plantings will not be damaged as a result of the long-term operation of this equipment (e.g. due to increased airflow at elevated temperatures).

Maintainability: When exterior equipment is installed at either the ground level or the roof level, consideration should be given to its impact on the maintenance of the surrounding area.

1. Ground-Level:

- All ground-level structures, objects, and equipment should be installed so as to facilitate lawn mowing and other grounds maintenance functions.
- All ground-level equipment should be located on poured concrete pads. Each piece of equipment that is located adjacent to a facility should be installed on a pad of sufficient size to eliminate small areas that would otherwise require mowing and/or refuse collection.
- No structure, object or piece of equipment should be located so close to the exterior of a building so as to greatly hinder exterior maintenance functions. Similar consideration should be given to the location of significant plantings.

2. Roof-Level:

- Each piece of roof-level equipment should either be located on an enclosed box type curb or should be supported above the roof surface a minimum distance of 3 ft to allow sufficient access for roof maintenance.

3. Interior and Exterior Equipment Access:

- The necessary clearances should be maintained to access areaways and other access openings that are required for the future replacement of existing mechanical and electrical equipment and/or the future installation of additional equipment.

Traffic/Access: Consideration should be given to the impact a project will have on traffic patterns and vehicular access to area facilities including pedestrian and bicycle traffic. Special consideration should be given to maintaining adequate emergency vehicle access.

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Impact of Surroundings on a Project: The reverse thought process should also be applied. Consideration should also be given to the impact that the existing surrounding area/environment will have on a new project. These issues are often overlooked.

1. Objectionable noise from existing equipment, service areas or vehicular traffic may have a negative impact on a new project.
2. Odors/fumes from other facilities in the area may have a very negative impact on a new project and should be addressed early on in the design process. The location of intake air openings relative to potential sources of odors such as loading docks should be considered.
3. Exterior air-cooled mechanical/electrical equipment installed by a project should be located relative to adjacent structures, trees and/or shrubs such that intake airflow is not impeded and exhaust airflow is not re-circulated. Otherwise, the proper function of new equipment may be hindered.
4. Exterior structures/equipment installed by a project should be located such that they are not vulnerable to damage by falling ice from roof overhangs.
5. Consideration should be given to the potential negative impact of roosting pigeons with regard to exterior structural/architectural features such as building canyons, cavities and shafts as well as louvers, overhangs, outcroppings, ledges and sills. The same is true of exterior mechanical equipment/systems such as window air conditioning units, cooling towers, and other air conditioning equipment. Appropriate steps should be taken to minimize such problems (see the *Pest Control* section in these *Standards*).