

PD-18: Site Vegetation, Maintenance and Irrigation

1-6 points

Goal: Promote sustainable site vegetation within the project footprint by selecting plants and maintenance methods that benefit the ecosystem.

Sustainability Linkage

Using sustainable site vegetation supports the environmental and economic sustainability principles by enhancing and protecting the ecosystem by choosing native and non-invasive species, and by reducing maintenance costs.



Background and Scoring Requirements

Background

For the purpose of this criterion, the key terms are defined as follows:

- **“Native plant species”** – Plants native to the EPA Level III ecoregion per the EPA’s [Level III and IV Ecoregions of the Continental United States website](#)¹ that contains the roadway project site or known to naturally occur within 200 miles of the roadway construction site (also see Sustainable Sites Initiative’s [Guidelines and Performance Benchmarks](#)²).
- **“Non-invasive plant species”** – The following items should be performed to ensure that a plant species is considered “non-invasive”: 1) Consult existing local (e.g. city, county, and State natural resources agencies) vegetation policy and procedure that is applicable to the roadway project and ensure vegetation selected and seed mixes used are specifically formulated to prevent the use of invasive plant species and noxious weeds. The [National Invasive Species Information Center’s website](#)³ provides information on how to identify invasive species, 2) Use local and/or regional lists to identify invasive plant species; and 3) Comply with noxious weed laws. The Natural Resources Conservation Service provides Federal- and State-listed noxious species lists by state at USDA’s [Introduced, Invasive, and Noxious Plants website](#)⁴.
- **“Noxious weeds”** – Plants introduced into an ecosystem, which are often invasive, that once established are highly destructive, competitive and difficult to control. They have economic and ecological impacts and are very difficult to control once established. Some noxious weeds are a public health threat to humans and animals, while others destroy native and beneficial plant communities, increase erosion concerns, and clog waterways.
- **“Site vegetation”** – All vegetation associated with a particular roadway project and shall include all vegetation within the roadway’s right-of-way or disturbed area associated with the roadway project (whichever is greater). This can include, but is not limited to, roadside vegetation, decorative planting (e.g., planter boxes or potted plants in urban areas), and vegetation contained in stormwater facilities (e.g., bioswales and rain gardens). Vegetation includes plants and plant propagules such as seeds.

Highway corridors provide opportunities for the movement of invasive species through the landscape. Invasive plant or animal species can move on vehicles and in the loads they carry. Invasive plants can be moved from site to site during spraying and mowing operations. Weed seed can be inadvertently introduced into the corridor during construction on equipment and through the use of mulch, imported soil or gravel, and sod. Some invasive plant

species might be deliberately planted in erosion control, landscape, or wildflower projects. Millions of miles of highway rights-of-ways traverse public and private lands. Many of these adjacent lands have weed problems and the highway rights-of-way provide corridors for further spread. (*Federal Highway Administration Guidance on Invasive Species*⁵).

As explained by the United States National Arboretum (USNA) on their *Invasive Plants website*⁶, invasive species are particularly problematic in construction areas and road cuts as they thrive where the continuity of a natural ecosystem is breached. Ultimately, invasive plants alter habitats and reduce biodiversity. Rich, diverse plant communities can become barren, inhospitable expanses of invasive plants with little value to wildlife. Invasive plants may even deplete groundwater resources. Plants introduced to North America from other parts of the world have come to dominate millions of acres of forest, desert, prairie, and wetlands by out-competing native species.

Native plant species are beneficial and sustainable for roadway projects as they are well adapted to their native climate and soil types. Once established, native plants require little to no maintenance. Properly selected native plant species do not need insecticides or routine irrigation to thrive (sometimes, spot irrigation is needed to control invasive species). Native plants provide habitat for native animals and insects; native wildlife prefers native plants.

While not as beneficial to a native ecosystem, non-invasive plant species that are adapted to site conditions and climate can be considered if there are no native species available that would meet design intent. The following attributes should be considered in determining whether plants are appropriate for the site: cold hardiness, heat tolerance, salt tolerance, soil moisture range, plant water use requirements, soil volume requirements, soil pH requirements, sun/shade requirements, pest susceptibility, and maintenance requirements.” (Sustainable Sites Initiative’s *Guidelines and Performance Benchmarks*²) Both native and non-native plants selected should embody these attributes.

Scoring Requirements

In order to achieve points for this criterion, the following prerequisite must be met:

Prerequisite PD-18.1P

0 points. All site vegetation shall use, or consist of, native and/or non-invasive species and non-noxious species only. The project shall minimize disturbance of native species.

Requirement PD-18.1

1 – 3 points. Vegetation Planning and Selection

Implement one or more of the features in Table PD-18.1.A. Points for features are cumulative if the project has more than one feature; however, Requirement PD-18.1 shall not exceed a total of three points.

TABLE PD-18.1.A. VEGETATION PLANNING AND SELECTION

Requirement	Points	Feature	Minimum Requirements
PD-18.1a	1	Long-term vegetation planning	Have an integrated vegetation management plan to maintain the project and/or corridor, including management of site vegetation and management of invasive species (or continued efforts to eradicate them). This could include a plan and/or financing to support site vegetation.
PD-18.1b	1	Vegetation to replace or enhance structures	Use non-invasive species for snow fences, sight screens, or other otherwise constructed items (vegetation for more than 50% of the project need for snow fences, sight screens to meet this requirement) and/or use non-invasive species to enhance the aesthetics of structural features, such as retaining walls and noise walls.
PD-18.1c	1	Invasive species prevention during construction	Bring only equipment free of dirt, mud, and organics into sensitive sites, such as wetlands, prairies, and water bodies. Have a written plan for the inspection and cleaning of vehicles to prevent the unintentional spread of invasive species during construction.
PD-18.1d	2	Native species	<ul style="list-style-type: none"> • Plants or seed with a variety of native plant species only. (Non-invasive and non-noxious plants transplanted from impact areas within the project limits may be used.) • Use five or more native species in plantings to increase biodiversity and native habitat for wildlife. Selection of native species shall be appropriate for the context of the project. • Salvage rare plants and retain existing vegetation where possible. • Reuse native plants salvaged from other projects. • Eradicate all existing invasive and noxious plant species or, in cases where eradication is impossible, implement an invasive species management plan.

Requirement PD-18.2

1 – 3 points. Maintenance and Irrigation

Implement one or more of the features in Table PD-18.2.A. Points for features are cumulative if project has more than one feature; however, Requirement PD-18.2 shall not exceed a total of three points.

TABLE PD-18.2.A. VEGETATION MAINTENANCE

Requirement	Points	Feature	Minimum Requirements
PD-18.2a	1	Non-mechanical maintenance	No mowing or other mechanical means of maintenance is planned or required for long-term vegetation maintenance.
PD-18.2b	1	No long-term irrigation	No irrigation is planned or needed after the plant establishment period.
PD-18.2c	1	Non-potable water for irrigation	Use captured rainwater, gray water, captured stormwater, non-potable water conveyed by a public agency, and /or other context-appropriate non-potable water (both in the plant establishment period and beyond) for irrigation needs.
PD-18.2e	1	Reduction in use of fertilizers, insecticides, and herbicides	Appropriately use only fertilizers and pesticides (herbicides, insecticides, fungicides) acceptable in USDA Organic farming. No use of synthetic fertilizers or synthetic pesticides during the construction and plant establishment period.

Resources

Above-Referenced Resources

The following resources are referenced in this criterion and consolidated here:

1. EPA, Level III and IV Ecoregions of the Continental United States website, http://www.epa.gov/wed/pages/ecoregions/level_iii_iv.htm
2. The Sustainable Sites Initiative, *Guidelines and Performance Benchmarks* (2009), <http://www.coconino.az.gov/documentcenter/view/5469>
3. USDA, National Invasive Species Information Center's website, <http://www.invasivespeciesinfo.gov/index.shtml>
4. USDA, Introduced, Invasive, and Noxious Plants website, <http://plants.usda.gov/java/noxiousDriver>
5. FHWA, *Federal Highway Administration Guidance on Invasive Species* (August 10, 1999), http://www.environment.fhwa.dot.gov/ecosystems/wildlife/inv_guid.asp
6. USNA, *Invasive Plants* (2008), <http://www.usna.usda.gov/Gardens/invasives.html>

Additional Resources

The following resources provide information on this criterion topic in addition to the sources directly referenced:

7. USDA, *Introduced, Invasive, and Noxious Plants*, <https://plants.usda.gov/java/noxiousDriver>
8. FHWA, *Roadside Use of Native Plants*, http://www.environment.fhwa.dot.gov/ecosystems/vegmgt_rdsduse.asp

Scoring Sources

The project is considered to have met this criterion if the requirements above can be reasonably substantiated through the existence of one or more of the following documentation sources (or equal where not available):

1. A vegetation or landscape plan showing type, size, and location of all plant species. This can often be found in the standard project plans.
2. The specification sections relating to site vegetation. These are typically found in the technical specifications.
3. A copy of, or reference to (e.g., web address), the policy or procedure used to select plant species.
4. A design study report approved by the appropriate agency or authority that includes analysis of existing site vegetation, impacts, reuse of vegetation, references to evaluate the invasive species and noxious plants, and planned vegetation species.
5. An integrated vegetation management plan covering the long-term maintenance of vegetation (including irrigation, fertilizer and pesticide use, mechanical maintenance, and control of invasive species.)