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Municipal Climate Adaptation Guidance Series: Site Plan Review Ordinances

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SITE PLAN REVIEW HANDBOOK

AND

CLIMATE RESILIENCE

This guidance document is comprised of revisions to the Site Plan Review Handbook: A Guide to Developing a Site Plan Review System, published in October 1997 by the Maine State Planning Office. These revisions are designed to update the Handbook to reflect the need for, and to promote, greater climate resiliency among Maine municipalities.

PART A. OVERVIEW OF SITE PLAN REVIEW

Part A of the Handbook is designed to familiarize municipal officials, staff, and the general public with the concept of site plan review. Among other things, it helps the reader understand key issues and make informed decisions about the kinds of things that should be considered as part of the Site Plan Review process. It does not include model ordinance provisions, but provides background on various aspects of development.

The passages from Part A which appear below, have been edited to reflect a new focus on issues relating to climate resiliency (new language for Part A is underlined):

WHAT ISSUES DOES SITE PLAN REVIEW ADDRESS?

Site plan review deals with how a particular development is designed. Site plan regulations typically address issues related to public health, public safety, and the environment such as water supply, sewage disposal, traffic, emergency access, and stormwater management. In addition, many communities choose to address the protection of neighboring properties through standards for buffering, noise, lighting, and other external impacts. Some communities also choose to deal with how new projects fit into the community and review site design and landscaping provisions. In a time when climate variability has become a fact of life, communities are striving to increase their resiliency by assuring that new development projects are designed to minimize the impacts of more frequent severe storm events.

EXPANSION OF THE AMOUNT OF IMPERVIOUS OR PAVED SURFACES

While the construction of buildings or structures is the focus of most **site plan review** regulations, communities should also be mindful of the environmental impacts resulting from the construction of

parking lots and other paved or impervious surface areas (including roofs). Impervious surfaces can significantly increase both the rate and volume of surface runoff, cause contamination of ground and surface waters, and when used for vehicle circulation and parking, give rise to noise and traffic safety concerns. For these reasons, many communities require that the creation of impervious surface areas greater than certain size (e.g. 1,000 square feet) go through **site plan review**.

PUBLIC SAFETY, HEALTH, AND ENVIRONMENTAL FACTORS

Most communities choose to address basic issues dealing with public safety, public health, and the environment in their site plan review process. In these cases, factors considered in the review process may include:

- *Adequacy of access to the site*
- *Provisions for access into and out of the site*
- *Pedestrian and vehicular circulation within the site*
- *Layout of parking*
- *Provisions for emergency vehicle access*
- *Stormwater management (including LID techniques)*
- *Erosion and sedimentation control*
- *The protection of the water quality in water bodies*
- *Groundwater quality protection*
- *Provisions for groundwater recharge*
- *Solid and hazardous wastes management*
- *Provisions for water supply and sewage disposal*
- *Handicapped accessibility*
- *Provisions for fire protection*
- *The management of important natural resources (floodplains, unique natural areas, wildlife habitat, etc.*
- *The protection of historic and archaeological resources*
- *Provisions to manage potential impacts of more frequent flooding and rising storm surge levels*

PART B. DEVELOPING A SITE PLAN REVIEW SYSTEM

Part B of the Handbook is designed to help craft a site plan review ordinance and, in Sections 9 through 11, it provides an array of provisions which can be included in a site plan review ordinance.

The editing instructions (written in italics) and revised language for Sections 9 through 11, which appear below, are designed to amend these provisions so they better reflect issues relating to climate adaptation and resilience.

SECTION 9. THE BASIC SITE PLAN REVIEW SYSTEM

A. Purpose and Applicability Provisions

APPLICABILITY OF SITE PLAN REVIEW

(9) *Replace existing provision with:*

The creation of more than 2,000 square feet of Impervious Area within any three (3) year period.

D. Submission Requirements

2. Existing Conditions

(3) *Replace existing provision with:*

location and size of any existing sewer and water mains, culverts and drains, on-site sewage disposal systems, wells, underground tanks and installations, and utility lines and poles on the subject property, abutting streets, and land that may serve the development or that may be affected by post-development stormwater runoff. Appropriate site grade elevations and culvert, pipe and utility structure invert elevations must be provided as necessary to demonstrate the direction of flow.

(9) Delete paragraph and renumber subsequent paragraphs accordingly.

3. Proposed Development Activity

(2) Replace existing provision with:

A stormwater management plan, prepared by a Maine-licensed professional engineer in accordance with the *Maine Stormwater Best Management Practices Manual*, Maine Department of Environmental Protection, which includes:

a) A plan depicting the locations, elevations and construction or planting details of all existing and proposed LID and conventional stormwater management features.
b) Calculations utilizing NOAA Atlas-14 precipitation data that estimate pre- and post-development stormwater runoff quantity and quality, including:
    1) Levels of phosphorus, total suspended solids and hydrocarbons; and
    2) Discharge peak flows resulting from a two, ten and twenty-five-year, 24-hour storm.
c) A program for the ongoing operation and maintenance of the stormwater management system, which includes:
    1) An operation and maintenance manual with descriptions, schedules and assignments of responsibility for all necessary tasks; and
    2) An executable contract between the applicant and a party with demonstrated technical expertise for all maintenance, repair and monitoring activities associated with all features of the stormwater management plan. The contract must require immediate notification of the CEO of any contract termination of expiration.

(12) Replace existing provision with:

A sediment and erosion control plan, prepared by a Maine-licensed professional engineer in accordance with *Maine Erosion and Sediment Control BMPs*, Maine Department of Environmental Protection, March 2003, that describes and shows the locations, elevations, installation schedule and construction or planting details of all proposed pre- and post-construction erosion and sediment control measures.

(13) Add the following provision:

In coastal areas prone to flooding, the board may request a risk assessment prepared by a qualified engineer estimating base flood elevations and projected shoreland location of the highest astronomical tide (HAT) line given projected erosion rates and considering 2 feet of sea level rise.

E. Standards and Criteria

2. Traffic Access and Parking

Parking Layout and Design

(7) Add the following provision

Parking areas and roadways should be designed to reduce the percentage of impervious cover on the site, and encourage the use of LID techniques to the maximum extent practicable and in accordance with the *Maine Stormwater Best Management Practices Manual*, Maine Department of Environmental Protection.

4. Stormwater Management

Second alternative standard

(1) Replace existing provision with:

To the extent practicable, the plan must manage stormwater using the site's natural features, modified as necessary through the use of LID stormwater management techniques. To the extent that the use of LID techniques interferes with the essential functions or character of the proposed development, conventional stormwater management techniques may be used.

(2) Replace existing provision with:

Unless the discharge is directly into the ocean, major river segment of great pond, the proposed stormwater management system must detain, retain, or induce the infiltration of stormwater from the two-year, ten-year, and twenty-five-year, 24-hour storms so that post-development peak flows do not exceed pre-development peak flows. In calculating pre-development peak flows, any portion of a site that was wooded within five years prior to submission of the application must be treated as undisturbed woods.

(3) Replace existing provision with:

The capacity of on- and off-site systems and channels must be sufficient to carry post-development flows without adverse effects such as flooding, soil erosion and damage to vegetation, on adjacent and downstream properties, streets and shoreland areas. Any improvements necessary to increase carrying capacities or mitigate adverse effects are the responsibility of the applicant.

(5) Delete paragraph and renumber subsequent paragraphs accordingly.

5. Erosion Control

Replace existing provision with:

Erosion Control - All building, site, and roadway designs and layouts must harmonize with existing topography and conserve desirable natural surroundings to <u>the greatest</u>

practicable extent, such that filling, excavation and earth moving activity are minimized. Parking lots on sloped sites must be terraced to avoid undue cut and fill and the need for retaining walls. Natural vegetation must be preserved and protected wherever practicable.

Soil erosion and sedimentation of watercourses and water bodies must be minimized by an active control program designed and implemented in accordance with *Maine Erosion and Sediment Control BMPs*, Maine Department of Environmental Protection, March 2003.

H. Administrative Provisions

DEFINITIONS

Add New and Replace Existing Definitions with the following:

IMPERVIOUS AREA: An area that is covered by Impervious Surface. Impervious Area is measured horizontally in two dimensions (i.e. plan view).

IMPERVIOUS SURFACE: A material or structure on or above the ground that prevents or greatly impedes the infiltration of stormwater through the underlying soil. Impervious surfaces are typically used to shed water from buildings, storage areas, driveways, streets, parking lots, sidewalks, patios, etc., and include, but are not limited to, metal, stone, concrete, asphalt, and compacted gravel, crushed stone and dirt.

INFILTRATION: The process of stormwater percolating into the ground (subsurface materials). Also, a stormwater management technique that allows captured stormwater to infiltrate into the ground over a period of time.

INVERT ELEVATION: The lowest point at a given location on the inside of a pipe, tunnel, trench or drainage structure, such as a manhole.

LEVEL-LIP SPREADER: An erosion control device designed to prevent the concentrated flow of stormwater runoff by releasing collected water evenly over a broad, level outlet edge onto gently sloping ground.

LID: See “Low Impact Development”.

LOW IMPACT DEVELOPMENT (LID): The use of structural or non-structural features and practices that are designed to reduce storm water runoff, pollutant loads, discharge

volumes, and/or peak flow discharge rates of stormwater runoff by preserving or mimicking the natural hydrology of a development site.

PEAK FLOW: The greatest rate of flow in a drainage way, measured as volume per unit of time, resulting from a storm of specified frequency and duration.

PRACTICABLE: Available and feasible considering cost, existing technology and logistics based on the overall purpose of the project.

STORMWATER: The part of precipitation, including runoff from rain or melting ice and snow, that flows across the surface as sheet flow, shallow concentrated flow, or in drainage ways.

TWO (TEN, TWENTY-FIVE)-YEAR, 24-HOUR STORM: A precipitation event with a 50% (for two-year), 10% (for ten-year), or 4% (for 25-year) probability of being equaled or exceeded during any twenty-four-hour period during any given year.

SECTION 10. ALTERNATIVES FOR STRUCTURING THE SITE PLAN REVIEW SYSTEM

Options 2, 3, 4 and 5

CLASSIFICATION OF PROJECTS

Replace existing provision with:

The Planning Board shall classify each project as a major or minor development. Minor developments are smaller scale, less complex projects for which a less complex review process is adequate to protect the [City=s] [Town=s] interest. Major developments are larger, more complex projects for which a more detailed review process and additional information are necessary.

Minor developments shall include projects that involve: 1) creation or addition of fewer than [five thousand (5,000)] square feet of gross nonresidential floor area; 2) creation of addition of fewer than [five thousand (5,000)] square feet of impervious area; 3) creation of fewer than [five (5)] dwelling units in a five (5) year period; or, 4) the conversion of existing buildings or structures from one use to another without enlargement of the gross floor area.

Major developments shall include projects that involve: 1) creation or addition of [five thousand (5,000)] or more square feet of gross nonresidential floor area; 2) creation or addition of [five thousand (5,000)] or more square feet of impervious area; 3) creation

of [five (5)] or more dwelling units in a five (5) year period; or, 4) other proposals requiring review which are not classified as minor developments.

C. Submission Requirements

2. Site Plan Application Submission Requirements

2.1.b Existing Conditions

(3) *Replace existing provision with:*

location and size of any existing sewer and water mains, culverts and drains, on-site sewage disposal systems, wells, underground tanks and installations, and utility lines and poles on the subject property, abutting streets, and land that may serve the development or that may be affected by post-development stormwater runoff. Appropriate site grade elevations and culvert, pipe and utility structure invert elevations must be provided as necessary to demonstrate the direction of flow.

(9) Delete paragraph and renumber subsequent paragraphs accordingly.

2.1.c Proposed Development Activity

(2) Replace existing provision with:

A stormwater management plan, prepared by a Maine-licensed professional engineer in accordance with the *Maine Stormwater Best Management Practices Manual*, Maine Department of Environmental Protection, which includes:

a) A plan depicting the locations, elevations and construction or planting details of all existing and proposed LID and conventional stormwater management features.
b) Calculations utilizing NOAA Atlas-14 precipitation data that estimate pre- and post-development stormwater runoff quantity and quality, including:
    1) Levels of phosphorus, total suspended solids and hydrocarbons; and
    2) Discharge peak flows resulting from a two, ten and twenty-five-year, 24-hour storm.
c) A program for the ongoing operation and maintenance of the stormwater management system, which includes:
    1) An operation and maintenance manual with descriptions, schedules and assignments of responsibility for all necessary tasks; and
    2) An executable contract between the applicant and a party with demonstrated technical expertise for all maintenance, repair and monitoring activities associated with all features of the stormwater management plan. The contract must require immediate notification of the CEO of any contract termination of expiration.

(12) Replace existing provision with:

A sediment and erosion control plan, prepared by a Maine-licensed professional engineer in accordance with *Maine Erosion and Sediment Control BMPs*, Maine Department of Environmental Protection, March 2003, that describes and shows the locations, elevations, installation schedule and construction or planting details of all proposed pre- and post-construction erosion and sediment control measures.

(13) Add the following provision:

In coastal areas prone to flooding, the board may request a risk assessment prepared by a qualified engineer estimating base flood elevations and projected shoreland location of the highest astronomical tide (HAT) line given projected erosion rates and considering 2 feet of sea level rise.

2.2 Major Developments

(3) Delete paragraph and renumber subsequent paragraphs accordingly.

SECTION 11. ADDITIONAL STANDARDS OF APPROVAL

Design Standards

1. Landscaping

Replace existing provision with:

Landscaping -Landscaping must be provided as part of site design. The landscape plan for the entire site must use landscape materials to integrate the various elements on site, preserve and enhance the particular identity of the site, and create a pleasing site character. The landscaping should define street edges, break up parking areas, soften the appearance of the development, screen it from abutting properties and, when incorporated into and LID design, help to control, cleanse and infiltrate stormwater runoff.

Landscaping may include plant materials such as trees, shrubs, groundcovers, perennials, and annuals, and other materials such as rocks, water, sculpture, art, walls, fences, paving materials, and street furniture.

10. Landscaping of Parking Lots

Replace existing provision with:

Landscaping of Parking Lots - Landscaping around and within parking lots shades their hot surfaces and visually softens their harsh appearance. Landscaping, when incorporated into a Low Impact Development (LID) stormwater management system filters pollutants, reduces runoff and encourages infiltration and groundwater replenishment. Landscaping should be installed to screen parking lots from adjacent residential uses and streets. A ten-car parking lot should contain at least one landscaped island, with an additional island for every 20 cars of parking capacity.

APPENDIX A BASIC MODEL

Appendix A of the Handbook presents a complete basic model site plan review ordinance.

The editing instructions (written in italics) and revised language for Appendix A, which appear below, are designed to transform the Basic Model Site Plan Review Ordinance into one that better reflects issues relating to climate adaptation and resilience.

SEC. 3. DEFINITIONS

3.2 *Add New and Replace Existing Definitions with the following:*

IMPERVIOUS SURFACE: A material or structure on or above the ground that prevents or greatly impedes the infiltration of stormwater through the underlying soil. Impervious surfaces are typically used to shed water from buildings, storage areas, driveways, streets, parking lots, sidewalks, patios, etc., and include, but are not limited to, metal, stone, concrete, asphalt, and compacted gravel, and dirt.

INFILTRATION: The process of stormwater percolating into the ground (subsurface materials). Also, a stormwater management technique that allows captured stormwater to infiltrate into the ground over a period of time.

INVERT ELEVATIONS: The elevation of an invert (lowest inside point) of pipe, utility infrastructure or sewer at a given location in reference to a bench mark.

LID: See “Low Impact Development”.

LOW IMPACT DEVELOPMENT (LID): The use of structural or non-structural features and practices that are designed to reduce storm water runoff, pollutant loads, discharge volumes, and/or peak flow discharge rates of stormwater runoff by preserving or mimicking the natural hydrology of a development site.

PEAK FLOW: The greatest rate of flow in a drainage way, measured as volume per unit of time, resulting from a storm of specified frequency and duration.

PRACTICABLE: Available and feasible considering cost, existing technology and logistics based on the overall purpose of the project.

STORMWATER: The part of precipitation, including runoff from rain or melting ice and snow, that flows across the surface as sheet flow, shallow concentrated flow, or in drainage ways.

TWO (TEN, TWENTY-FIVE)-YEAR, 24-HOUR STORM: A precipitation event with a 50% (for two-year), 10% (for ten-year), or 4% (for 25-year) probability of being equaled or exceeded during any twenty-four-hour period during any given year.

SEC. 8. SUBMISSION REQUIREMENTS

8.2. Existing Conditions

8.2 (3) *Replace existing provision with:*

location and size of any existing sewer and water mains, culverts and drains, on-site sewage disposal systems, wells, underground tanks and installations, and utility lines and poles on the subject property, abutting streets, and land that may serve the development or may be affected by post-development stormwater runoff. Appropriate site grade elevations and culvert, pipe and utility structure invert elevations must be provided as necessary to demonstrate the direction of flow.

8.2 (9) Delete paragraph and renumber subsequent paragraphs accordingly

8.3 Proposed Development Activity

8.3 (2) *Replace existing provision with:*

A stormwater management plan, prepared by a Maine-licensed professional engineer in accordance with the *Maine Stormwater Best Management Practices Manual*, Maine Department of Environmental Protection, which includes:

a. a plan depicting the locations, elevations and construction or planting details of all existing and proposed LID and conventional stormwater management features;
b. calculations utilizing NOAA Atlas-14 precipitation data that estimate pre- and post-development stormwater runoff quantity and quality, including:
    1. levels of phosphorus, total suspended solids and hydrocarbons; and
    2. discharge peak flows resulting from a two, ten and twenty-five-year, 24-hour storm.
c. A program for the ongoing operation and maintenance of the stormwater management system, which includes:
    1. an operation and maintenance manual with descriptions, schedules and assignments of responsibility for all necessary tasks; and
    2. an executable contract between the applicant and a party with demonstrated technical expertise for all maintenance, repair and monitoring activities associated with all features of the stormwater management plan. The contract must require immediate notification of the CEO of any contract termination of expiration.

8.3 (12) *Replace existing provision with:*

A sediment and erosion control plan, prepared by a Maine-licensed professional engineer in accordance with *Maine Erosion and Sediment Control BMPs*, Maine Department of Environmental Protection, March 2003, that describes and shows the locations, elevations, installation schedule and construction or planting details of all proposed pre- and post-construction erosion and sediment control measures.

8.3 (13) *Add the following provision*

In coastal areas that are prone to flooding, the board may request a risk assessment prepared by a qualified engineer estimating base flood elevations and projected shoreland location of the highest astronomical tide (HAT) line given projected erosion rates and considering 2 feet of sea level rise.

SEC. 9. APPROVAL STANDARDS AND CRITERIA

9.8. Stormwater Management

9.8. (1) *Replace existing provision with:*

To the extent practicable, the plan must manage stormwater using the site's natural features, modified as necessary through the use of LID stormwater management techniques. To the extent that the use of LID techniques interferes with the essential functions or character of the proposed development, conventional stormwater management techniques may be used.

9.8. (2) *Replace existing provision with:*
Unless the discharge is directly into the ocean, major river segment of great pond, the proposed stormwater management system must detain, retain, or induce the infiltration of stormwater from the two-year, ten-year, and twenty-five-year, 24-hour storms so that post-development peak flows do not exceed pre-development peak flows. In calculating pre-development peak flows, any portion of a site that was wooded within five years prior to submission of the application must be treated as undisturbed woods.

9.8. (3) *Replace existing provision with:*
The capacity of on- and off-site systems and channels must be sufficient to carry post-development flows without adverse effects such as flooding, soil erosion and damage to vegetation, on adjacent and downstream properties, streets and shoreland areas. Any improvements necessary to increase carrying capacities or mitigate adverse effects are the responsibility of the applicant.

9.8. (5) *Delete paragraph and renumber subsequent paragraphs accordingly.*