EXAMPLE

DRAFT

Stormwater Treatment Facilities Operation and Maintenance Plan

for a Small Commercial Project
123 Main Street
Anytown, USA

May 8, 2015

XYZ Corporation
Jane Jones, 707-555-1212

This example prepared by Dan Cloak Environmental Consulting
for the City of Napa
to assist users of the BASMAA Post-Construction Manual

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Stormwater Control Plan Exhibit

As-Built Drawings (in Final O&M Plan)

This Stormwater Facilities Operation and Maintenance Plan was prepared using the template dated May 8, 2014.

I. Introduction

I.A. Site Description

The site is flat and abuts Main Street, a major arterial. Total site area is 28,800 square feet, including:

- A 4,680 SF single-story retail building.
- About 15,000 SF paved area including walkways, a plaza, parking areas, and circulation. Circulation includes a drive-through lane for a coffee shop.

Soils are silty clays (Hydrologic Soil Group "D").

Stormwater treatment is provided by three bioretention facilities.

II. Designation of Responsible Individuals (to be completed in Final O&M Plan)

II.A. Designated Contact for Operation and Maintenance

[name, title or position]
[address]
[telephone and email]

II.B. Off-Hours or Emergency Contact

[name, title or position]
[address]
[telephone and email]

II.C. Corporate Officer (authorized to execute agreements with the City, Town, or County)

[name, title or position]
[address]
[telephone and email]

II.D. Initial Training of Responsible Individuals

Following completion of construction, the bioretention facilities will be maintained by the contractor for two years, except for routine policing for trash, which will be done by the owner's and lessee's personnel. During this 2-year period, the owner's landscape maintenance crew will coordinate to meet with the contractor's personnel on-site during maintenance. At these times, the contractor's personnel will demonstrate proper maintenance procedures.

III. Facilities to be Maintained

III.A. Facility Descriptions

There are three bioretention facilities on-site. All have the following features:

- Surrounded by a concrete curb. Where adjacent to pavement, curbs are thickened and an impermeable vertical cutoff wall protects the pavement subgrade from moisture intrusion.

- Each layer built flat and level. See Figure 1.
- 12 inches of Class 2 permeable, Caltrans specification 68-2.02F(3)
- 18 inches sand/compost mix
- 4 in. dia. PVC SDR 35 perforated pipe underdrain, installed with the invert at the top of the Class 2 permeable layer with holes facing down, and connected to the overflow structure at that same elevation

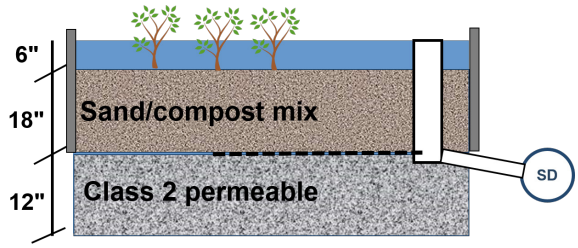


Figure 1. Bioretention Cross-Section (schematic)

- 6-inch-deep reservoir between top of soil elevation and overflow grate elevation
- Concrete drop inlet with frame overflow structure, with grate set to specified elevation, connected to storm drain in Main Street
- Plantings
- Irrigation system with drip emitters and "smart" irrigation controllers
- Sign identifying the facility as a stormwater treatment facility.

III.A.1. Bioretention Facility #1

See the attached Stormwater Control Plan Exhibit. Bioretention Facility #1 receives drainage from Drainage Management Area (DMA) 1, which includes the roof of the refuse area and the delineated portion of the parking lot, totaling 3,075 SF of impervious surface. During heavier rainfall events, Bioretention Facility #1 may also receive drainage from adjacent landscaped areas DMA-4 and DMA-5, totaling 1,925 SF. Inflow is via curb cuts that accept sheet flow from the pavement. The facility underdrain is connected to the overflow structure [specify in final O&M Plan], which is connected via a [specify pipe] to the City's storm drain system at a drop inlet in front of the site.

III.A.2. Bioretention Facility #2

See the attached Stormwater Control Plan Exhibit. Bioretention Facility #2 receives drainage from DMA-2, comprising the walkway on the north side of the building and the delineated portion of the parking lot, totaling 6,450 SF of impervious surface. During heavier rainfall events, Bioretention Facility #2 may also receive drainage from adjacent landscaped area DMA-6, 550 SF. Inflow is via curb cuts that accept sheet flow from the pavement. The facility underdrain is connected to the overflow structure [specify in final O&M Plan], which is connected via a [specify pipe] to the City's storm drain system at a drop inlet in front of the site.

III.A.3. Bioretention Facility #3

See the attached Stormwater Control Plan Exhibit. Bioretention Facility #3 receives drainage from DMA-8, comprising the roof of the building, the walkway on the south side of the building, and the plaza on the street side. This drainage is piped via a tight-lined downspout on the south side of the building that goes under the drive-through aisle and "bubbles up" within the bioretention facility. DMA-8 also includes the driveway and drive-through lane to the south and west of the building, and the parking area on the west side of the site. north side of the building and the delineated portion of the parking lot, totaling 6,450 SF of impervious surface. During heavier rainfall events, Bioretention Facility #2 may also receive drainage from adjacent landscaped area on the south and west edges of

the site (DMA-7, 4,285 SF). Inflow from the paved areas is via curb cuts that accept sheet flow from the pavement. The facility underdrain is connected to the overflow structure [specify in final O&M Plan], which is connected via a [specify pipe] to the City's storm drain system at a drop inlet in front of the site.

III.B. Facility Construction Details

[To be added following construction]

[Attach As-Built Drawings to Final O&M Plan]

IV. Maintenance Activities

IV.A. General Maintenance Rules

At no time will synthetic pesticides or fertilizers be applied, nor will any soil amendments, other than aged compost mulch or sand/compost mix, be introduced. The top of soil surface will be maintained at or near the design elevation throughout. Irrigation systems will be maintained to conserve water while maintaining plant health.

Although it is unlikely to be needed, if plants are not thriving compost tea may be applied at a recommended rate of 5 gallons mixed with 15 gallons of water per acre, up to once per year between March and June. Compost tea will not be applied when temperatures are below 50°F or above 90°F or when rain is forecast within the next 48 hours.

The following may be applied for pest control if needed:

- Beneficial nematodes
- Safer® products
- Neem oil

IV.B. Maintenance Schedule

The three bioretention facilities will be maintained on the following schedule at a minimum.

IV.B.1. Routine Activities

The facilities will be examined daily for visible trash during regular policing of the site, and trash will be removed. Any graffiti, vandalism, or other damage will be noted and addressed within 48 hours.

The planted areas will be weeded by hand approximately monthly. At this time plants will be inspected for health and the irrigation system will be turned on manually and checked for any leaks or broken lines, misdirected spray patterns etc. Any dead plants will be replaced.

IV.B.2. Following Significant Rain Events

A significant rain event will be considered to be one that produces approximately a half-inch or more rainfall in a 24-hour period. Within 24 hours after each such event, the following will be conducted:

The surface of the facility will be observed to confirm there is no ponding.

- Inlets will be inspected, and any accumulations of trash or debris will be removed.

- The surface of the mulch layer will be inspected for movement of material. Mulch will be replaced and raked smooth if needed.

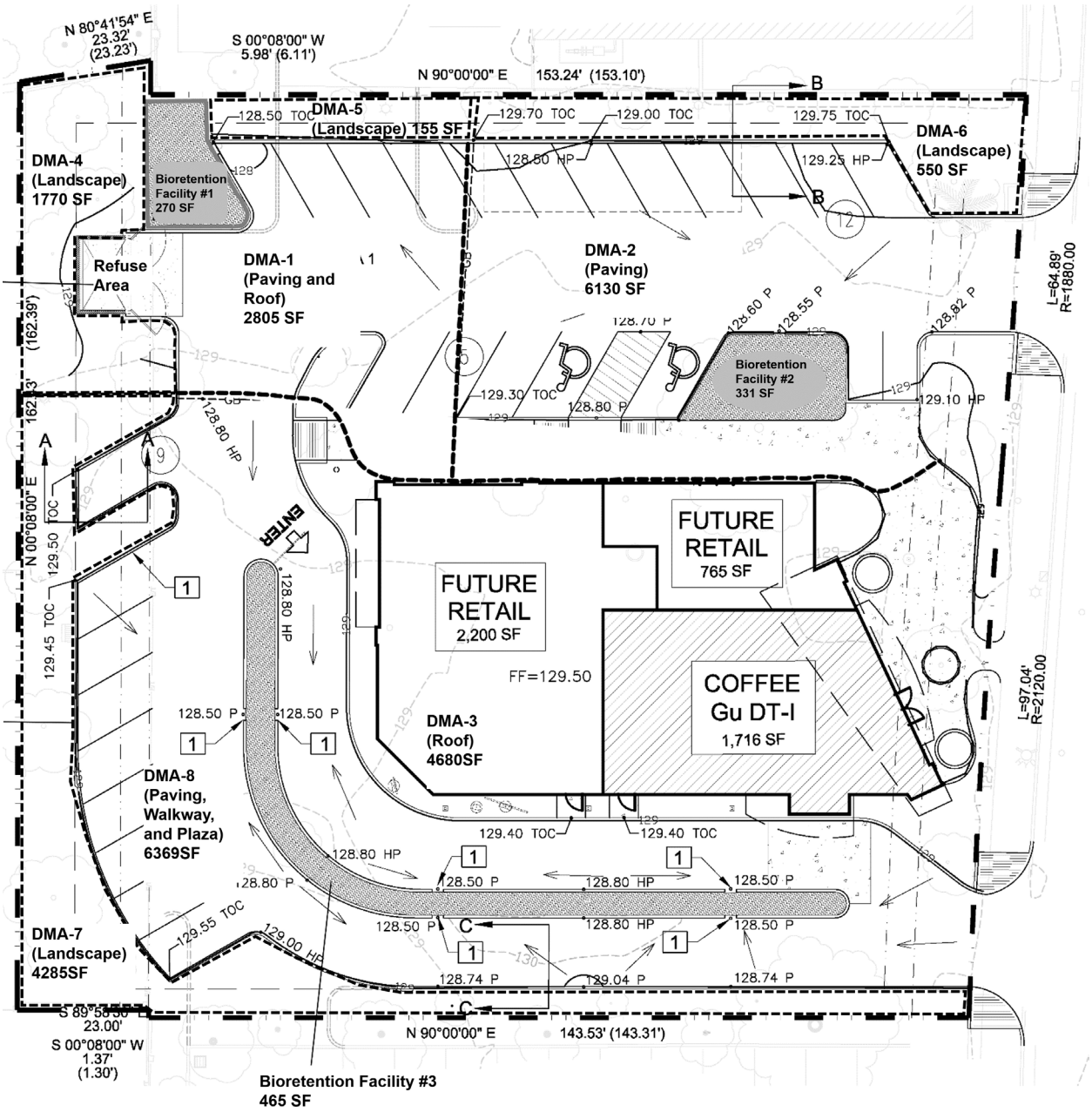
IV.B.3. Prior to the Start of the Rainy Season

In September or each year, facility inlets and outlets will be inspected to confirm there is no accumulation of debris that would block flow. If not previously addressed during monthly maintenance, any growth and spread of plantings that blocks inlets or the movement of runoff across the surface of the facility will be cut back or removed.

IV.B.4. Annually during Winter

Once, in December – February of each year, vegetation will be cut back as needed, debris removed, and plants and mulch replaced as needed. The concrete work will be inspected for damage. The elevation of the top of soil and mulch layer will be confirmed to be consistent with the 6-inch reservoir depth.

Stormwater Control Plan Exhibit

Example Commercial Site
123 Main Street
Anytown, USA

No Scale