

Stormwater Control Plan
For a Regulated Project
Grant Avenue Mixed Use
Novato, CA

March 1, 2024

AMG & Associates
Amanda Locke, 818-600-2518

Prepared by Ruggeri-Jensen-Azar & Associates
for the City of Novato
to assist users of the BASMAA Post-Construction Manual

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Attachments

Stormwater Control Plan Exhibit
Stormwater Sizing Calculator Spreadsheet

This Stormwater Control Plan was prepared using the template dated March 1, 2024.

I. Project Data

Table 1. Project Data Form

Project Name	Grant Avenue Mixed Use
Application Submittal Date	March 1, 2024
Project Location	Grant Avenue and 4 th Street in Novato, CA
Project Phase No.	Not Applicable
Project Type and Description	6-Story Mixed Use Retail and Residential with Parking
Total Project Site Area (acres)	1.12 Acres±
Total New and Replaced Impervious Surface Area	43,244 SF±
Total Pre-Project Impervious Surface Area	43,300 SF±
Total Post-Project Impervious Surface Area	43,244 SF±

II. Setting

II.A. Project Location and Description

This project involves the demolition of an existing commercial building and single-family residential, which will be replaced by a new mixed-used residential/commercial building and indoor parking lot. The parcel will be merged into a single lot at the intersection of Grant Avenue and 4th Street in Novato. See Figure 1.

The proposed use is consistent with current commercial/residential zoning. The planned number of units is 207, which will be located on the top five levels of the building, with the ground floor consisting of an indoor parking lot and three retail spaces fronting Grant Avenue. The project will include an emergency vehicle access driveway.

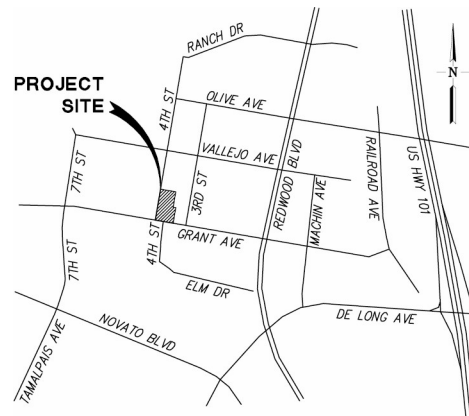


Figure 1. Vicinity Map of Project Site.

II.B. Existing Site Features and Conditions

The site is nearly rectangular with a small rectangular extension on the Easterly portion. The topography of the site is generally flat with the central portion of the parcel sloping towards lightly towards the northeast corner. Most of the site is covered with buildings or paved. The perimeter of the site adjacent to Grant Avenue is landscaped with mature trees. See Figure 2. Soils and silty clays are typical of the area (Hydrologic Soil Group “D”). The existing drainage system is connected to a

municipal storm drain along the northerly curb of Grant Avenue.

II.C. Opportunities and Constraints for Stormwater Control

Constraints include impermeable soils (hydrologic soil group D), very high intensity land use, and flat slopes. Disposal of runoff to deep infiltration is not feasible on this site due to the low permeability of the clay soils. High land values, the objective of creating a dense retail area, and parking requirements limit opportunities to reduce site imperviousness.

Setback areas—approximately forty feet on the northerly side, six to fifteen feet on the easterly side, five to thirteen feet to the south, and five to seven feet to the west—might be usable as locations for treatment BMPs; however, these areas will also include landscaping paths, driveways, and utilities at various locations. The City storm drain system in Grant Avenue is deep enough to provide sufficient hydraulic head is to route runoff across the surface of the site to a stormwater treatment facility, through the facility, and then to drain treated runoff to the City storm drain.



Figure 2. Existing Site Conditions.

III. Low Impact Development Design Strategies

III.A. Optimization of Site Layout

The site is densely developed infill within the existing urbanized area. Future retail areas have been included in the development plan to be concentrated along Grant Avenue and an indoor parking lot will be used to reduce the amount of impervious area within the site compared to the previous site. Landscaping in these areas will maximize aesthetic value and ensure the continued health of shrubs and trees within the project boundary.

III.B. Dispersal of Runoff to Pervious Areas and Flow Thru Planters

Landscaped areas at the perimeter of the site, particularly the northerly boundary of the site which contains a setback of approximately 40 feet, will be used to disperse runoff from the building; in addition, most of the building roof runoff will be collected by flow thru planters before reaching the ground, therefore mitigating the amount of treatment BMPs required for the site.

III.C. Stormwater Control Measures

As shown in the Stormwater Control Plan Exhibit, the runoff from the impervious areas on the site, including roofs and paved areas, will be routed to eleven flow thru bioretention planters and two bioretention in landscape area. The runoff from all pervious areas on the site will be directed to four bioretention in landscape area. The bioretention facilities will be designed and constructed to the criteria in the BASMAA *Post-Construction Manual* (July 2014), including the following features:

- Each layer built flat, level, and to the elevations specified in the plans:
 - Bottom of Gravel Layer (BGL)
 - Top of Gravel Layer (TGL)
 - Top of Soil Layer (TSL)
 - Overflow Grate
 - Facility Rim
- 12 inches of Class 2 permeable, Caltrans specification 68-2.02F(3)
- 18 inches sand/compost mix meeting BASMAA specifications
- 4 in. dia. PVC SDR 35 perforated pipe underdrain, installed with the invert at the bottom of the Class 2 permeable layer with holes facing down, and connected to the overflow structure at that same elevation
- 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 system that routes to Grant Avenue
- Vertical cutoff walls, plastic header board, or approved equal to protect adjacent pavement
- Plantings selected for water conservation
- Irrigation system on a separate zone, with drip emitters and “smart” irrigation controllers
- Sign identifying the facility as a stormwater treatment facility.

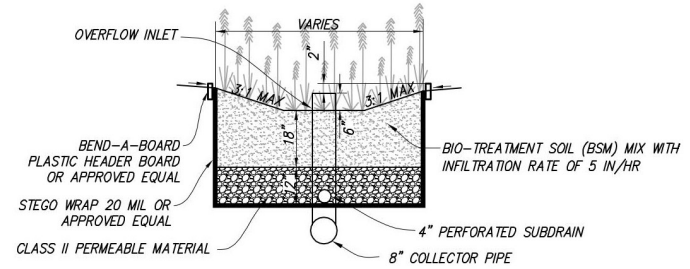


Figure 3. Bioretention in Landscape Area

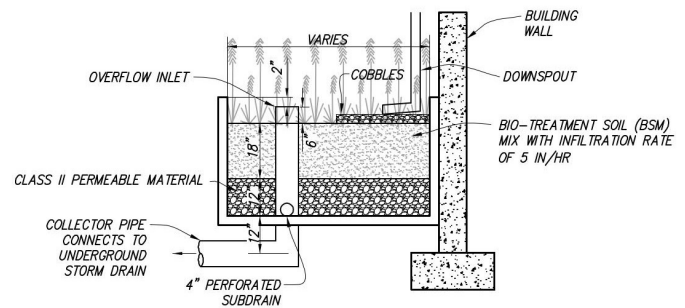


Figure 4. Bioretention Planter

IV. Documentation of Drainage Design

IV.A. Descriptions of Each Drainage Management Area

IV.A.1. Drainage Management Areas

Table 2. Drainage Management Areas (DMAs) as shown on the Exhibit.

DMA Name	Surface Type	Area (SF)
DMA-1	Landscape/Impervious	3,146
DMA-2	Landscape/Impervious	1,635
DMA-3	Landscape/Impervious	1,225
DMA-4	Landscape/Impervious	2,660
DMA-5	Paving	2,906
DMA-6	Courtyard	9,337
DMA-7	Roof	852
DMA-8	Roof	818
DMA-9	Roof	890
DMA-10	Roof	1,191
DMA-11	Roof	476
DMA-12	Roof	1,473
DMA-13	Roof	1,463
DMA-14	Roof	1,079
DMA-15	Roof	1,462
DMA-16	Roof	1,182
DMA-17	Roof	1,060
DMA-18	Roof	416
DMA-19	Roof	1,211
DMA-20	Roof	986
DMA-21	Roof	968
DMA-22	Roof	1,097
DMA-23	Roof	803
DMA-24	Roof	913
DMA-25	Roof	464
DMA-26	Roof	450
DMA-27	Roof	1,075
DMA-28	Roof	1,208
DMA-29	Roof	1,456
DMA-30	Roof	1,596
DMA-31	Roof	999

DMA Name	Surface Type	Area (SF)
DMA-32	Roof	447
DMA-33	Roof	896
DMA-34	Roof	910

IV.A.2. Drainage Management Area Descriptions

DMA 1, totaling 3,146 square feet, drains the landscape/ impervious area between the northern edge of the building and the northerly boundary. DMA-1 drains to Bioretention Facility #7.

DMA 2, totaling 1,635 square feet, drains the landscape/ impervious area between the western edge of the building and the westerly boundary. DMA-2 drains to Bioretention Facility #1 and #14, which is a flow thru planter.

DMA 3, totaling 1,225 square feet, drains the landscape/ impervious area between the southern edge of the building and the southerly boundary. DMA-3 drains to Bioretention Facility #3, which is a flow thru planter.

DMA 4, totaling 2,660 square feet, drains the landscape/impervious area between the eastern edge of the building and the easterly boundary. DMA-4 drains to Bioretention Facility #5.

DMA 5, totaling 2,906 square feet, drains the asphalt concrete emergency vehicle access driveway near the northerly boundary. DMA-5 drains to a low point at Bioretention Facility #7.

DMA 6, totaling 9,337 square feet, drains the courtyard above the parking level. DMA-6 drains to Bioretention Facility #8 and #13.

DMA 7, totaling 852 square feet, drains a minority of the northern portion of the roof. DMA-7 drains to Bioretention Facility #6, which is a flow thru planter.

DMA 8, totaling 818 square feet, drains a minority of the northern portion of the roof. DMA-8 drains to Bioretention Facility #6, which is a flow thru planter.

DMA 9, totaling 890 square feet, drains a minority of the northern portion of the roof. DMA-9 drains to Bioretention Facility #6, which is a flow thru planter.

DMA 10, totaling 1,191 square feet, drains a minority of the northern portion of the roof. DMA-10 drains to Bioretention Facility #6, which is a flow thru planter.

DMA 11, totaling 476 square feet, drains a minority of the northern portion of the roof. DMA-11 drains to Bioretention Facility #1, which is a flow thru planter.

DMA 12, totaling 1,473 square feet, drains a minority of the western portion of the roof. DMA-12 drains to Bioretention Facility #1, which is a flow thru planter.

DMA 13, totaling 1,463 square feet, drains a minority of the western portion of the roof. DMA-13 drains to Bioretention Facility #1, which is a flow thru planter.

DMA 14, totaling 1,079 square feet, drains a minority of the western portion of the roof. DMA-14 drains to Bioretention Facility #2, which is a flow thru planter.

DMA 15, totaling 1,462 square feet, drains a minority of the western portion of the roof. DMA-15 drains to Bioretention Facility #2, which is a flow thru planter.

DMA 16, totaling 1,182 square feet, drains a minority of the western portion of the roof. DMA-16 drains to Bioretention Facility #2, which is a flow thru planter.

DMA 17, totaling 1,060 square feet, drains a minority of the western portion of the roof. DMA-17 drains to Bioretention Facility #2, which is a flow thru planter.

DMA 18, totaling 416 square feet, drains a minority of the southern portion of the roof. DMA-18 drains to Bioretention Facility #2, which is a flow thru planter.

DMA 19, totaling 1,211 square feet, drains a minority of the southern portion of the roof. DMA-19 drains to Bioretention Facility #3, which is a flow thru planter.

DMA 20, totaling 986 square feet, drains a minority of the southern portion of the roof. DMA-20 drains to Bioretention Facility #3, which is a flow thru planter.

DMA 21, totaling 968 square feet, drains a minority of the southern portion of the roof. DMA-21 drains to Bioretention Facility #4, which is a flow thru planter.

DMA 22, totaling 1,097 square feet, drains a minority of the southern portion of the roof. DMA-22 drains to Bioretention Facility #4, which is a flow thru planter.

DMA 23, totaling 803 square feet, drains an upper level portion of the roof fronting the courtyard above the parking level. DMA-23 drains to Bioretention Facility #12, which is a flow thru planter.

DMA 24, totaling 913 square feet, drains an upper level portion of the roof fronting the courtyard above the parking level. DMA-24 drains to Bioretention Facility #12, which is a flow thru planter.

DMA 25, totaling 464 square feet, drains an upper level portion of the roof fronting the courtyard above the parking level. DMA-25 drains to Bioretention Facility #12, which is a flow thru planter.

DMA 26, totaling 450 square feet, drains an upper level portion of the roof fronting the courtyard above the parking level. DMA-26 drains to Bioretention Facility #11, which is a flow thru planter.

DMA 27, totaling 1,075 square feet, drains an upper level portion of the roof fronting the courtyard above the parking level. DMA-27 drains to Bioretention Facility #11, which is a flow thru planter.

DMA 28, totaling 1,208 square feet, drains an upper level portion of the roof fronting the courtyard above the parking level. DMA-28 drains to Bioretention Facility #11, which is a flow thru planter.

DMA 29, totaling 1,456 square feet, drains an upper level portion of the roof fronting the courtyard above the parking level. DMA-29 drains to Bioretention Facility #11, which is a flow thru planter.

DMA 30, totaling 1,596 square feet, drains an upper level portion of the roof fronting the courtyard above the parking level. DMA-30 drains to Bioretention Facility #14, which is a flow thru planter.

DMA 31, totaling 999 square feet, drains an upper level portion of the roof fronting the courtyard above the parking level. DMA-31 drains to Bioretention Facility #14, which is a flow thru planter.

DMA 32, totaling 447 square feet, drains an upper level portion of the roof fronting the courtyard above the parking level. DMA-32 drains to Bioretention Facility #10, which is a flow thru planter.

DMA 33, totaling 896 square feet, drains an upper level portion of the roof fronting the courtyard above the parking level. DMA-33 drains to Bioretention Facility #9, which is a flow thru planter.

DMA 34, totaling 910 square feet, drains an upper level portion of the roof fronting the courtyard above the parking level. DMA-34 drains to Bioretention Facility #9, which is a flow thru planter.

IV.B. Tabulation and Sizing Calculations

See the attached spreadsheet. The project does not include any self-treating or self-retaining areas

IV.B.1. Area Draining to Bioretention Facilities

Stormwater Treatment Table as shown on the Exhibit.

DMA	TOTAL AREA (SF)	POST PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	TREATMENT AREA REQUIRED (SF)	TREATMENT AREA PROVIDED (SF)	TYPE OF TREATMENT MEASURE	BIORETENTION
1	1,140	IMPERVIOUS	1.0	1140	46	54	BIORETENTION	BR #7
	2,006	LANDSCAPE	0.1	201	8			
2	398	IMPERVIOUS	1.0	398	16	29	PLANTER	BR #1, BR #14
	1,237	LANDSCAPE	0.1	124	5			
3	340	IMPERVIOUS	1.0	340	14	18	PLANTER	BR #3
	885	LANDSCAPE	0.1	89	4			
4	1,282	IMPERVIOUS	1.0	1282	51	58	PLANTER	BR #5
	1,378	LANDSCAPE	0.1	138	6			
5	2,906	IMPERVIOUS	1.0	2906	116	117	PLANTER	BR #7
6	9,337	IMPERVIOUS	1.0	9337	373	374	BIORETENTION	BR #8, & 13
7	852	IMPERVIOUS	1.0	852	34	42	PLANTER	BR #6
8	818	IMPERVIOUS	1.0	818	33	35	PLANTER	BR #6
9	890	IMPERVIOUS	1.0	890	36	42	PLANTER	BR #6
10	1,191	IMPERVIOUS	1.0	1191	48	48	PLANTER	BR #6
11	476	IMPERVIOUS	1.0	476	19	19	PLANTER	BR #1
12	1,473	IMPERVIOUS	1.0	1473	59	59	PLANTER	BR #1
13	1,463	IMPERVIOUS	1.0	1463	59	59	PLANTER	BR #1
14	1,079	IMPERVIOUS	1.0	1079	43	43	PLANTER	BR #2
15	1,462	IMPERVIOUS	1.0	1462	58	58	PLANTER	BR #2
16	1,182	IMPERVIOUS	1.0	1182	47	47	PLANTER	BR #2
17	1,060	IMPERVIOUS	1.0	1060	42	42	PLANTER	BR #2
18	416	IMPERVIOUS	1.0	416	17	28	PLANTER	BR #2
19	1,211	IMPERVIOUS	1.0	1211	48	51	PLANTER	BR #3
20	986	IMPERVIOUS	1.0	986	39	39	PLANTER	BR #3
21	968	IMPERVIOUS	1.0	968	39	43	PLANTER	BR #4
22	1,097	IMPERVIOUS	1.0	1097	44	44	PLANTER	BR #4
23	803	IMPERVIOUS	1.0	803	32	32	PLANTER	BR #12
24	913	IMPERVIOUS	1.0	913	37	37	PLANTER	BR #12
25	464	IMPERVIOUS	1.0	464	19	23	PLANTER	BR #12
26	450	IMPERVIOUS	1.0	450	18	18	PLANTER	BR #11
27	1,075	IMPERVIOUS	1.0	1075	43	43	PLANTER	BR #11
28	1,208	IMPERVIOUS	1.0	1208	48	48	PLANTER	BR #11
29	1,456	IMPERVIOUS	1.0	1456	58	58	PLANTER	BR #11
30	1,596	IMPERVIOUS	1.0	1596	64	64	PLANTER	BR #14
31	999	IMPERVIOUS	1.0	999	40	40	PLANTER	BR #14
32	447	IMPERVIOUS	1.0	447	18	18	PLANTER	BR #10
33	896	IMPERVIOUS	1.0	896	36	36	PLANTER	BR #9
34	910	IMPERVIOUS	1.0	910	36	44	PLANTER	BR #9
TOTAL	48,750	-	-	-	1,752	1,810	-	-

V. Source Control Measures

V.A. Site activities and potential sources of pollutants

On-site activities that could potentially produce stormwater pollutants include:

- Driveways and parking lots
- Trash Management

V.B. Potential Pollutant Sources and Source Control Measures

Table 3. Pollutant Sources and Source Control Measures

Potential source of runoff pollutants	Permanent source control BMPs	Operational source control BMPs
Inlets (bioretention overflows)	All inlets will be marked with “No Dumping! Flows to Local Waterways” or similar	<p>Markings will be regularly inspected and repainted or replaced as needed.</p> <p>Lessees will receive stormwater pollution prevention brochures.</p> <p>Lease agreements will include the following provision: “Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains.”</p>
Indoor and structural pest control		Owner will retain only companies that are certified in Integrated Pest Management (IPM) for on-site pest-management.
Landscape maintenance	<p>Landscaping will minimize irrigation and runoff and be selected for pest resistance, and will minimize the need for fertilizers and pesticides.</p> <p>Plants will be selected appropriate to site soils, slopes, climate, sun, wind rain, land use, air movement, ecological consistency, and plant interactions.</p>	<p>Landscaping will be maintained using minimum or no pesticides.</p> <p>IPM information will be provided to new owners, lessees, and operators.</p>

Refuse area.	Refuse and recycled materials will be handled in the refuse area labeled "Trash Room" on the exhibit.	All dumpsters will be posted with signs stating "Do not dump hazardous materials here" or similar.
Plazas, sidewalks, and parking lots		Sidewalks and parking lots will be swept regularly. Debris and washwater from periodic pressure washing will be collected and disposed of to the sanitary sewer.

VI. Stormwater Facility Maintenance

VI.A. Ownership and Responsibility for Maintenance in Perpetuity

Maintenance of stormwater facilities will be the responsibility of the property owner and will be performed by the owner's contractors or employees as part of routine maintenance of buildings, grounds, and landscaping. The applicant has reviewed the Novato, CA, standard agreement regarding the maintenance of stormwater facilities and commits to execute any necessary agreements prior to completion of construction. Applicant accepts responsibility for interim operation and maintenance of stormwater treatment and flow-control facilities until such time as this responsibility is formally transferred to a subsequent owner.

VI.B. Summary of Maintenance Requirements for Each Stormwater Facility

The bioretention facilities will be maintained on the following schedule at a minimum. Details of maintenance responsibilities and procedures will be included in a Stormwater Facility Operation and Maintenance Plan to be submitted for approval prior to the completion of construction.

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.

Daily: The facilities will be examined for visible trash during regular policing of the site, and trash will be removed.

After Significant Rain Events: A significant rain event is 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.

Prior to the Start of the Rainy Season: In September or each year, the facility will be inspected to confirm there is no accumulation of debris that would block flow, and that growth and spread of plantings does not block inlets or the movement of runoff across the surface of the facility.

Annual Landscape Maintenance: 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.

VII. Construction Plan E.12 Checklist

Table 4. Construction Checklist Table to be incorporated in Construction Drawings

Stormwater Control		
Plan Page #	Source Control or Treatment Control Measure	See Plan Sheet #s
4, 5, and Exhibit	DMA's drains to Bioretention Facilities as specified; facility is designed according to provided details	C-4
9	Bioretention Facility overflows are marked with "No Dumping" message	
10	Trash room posted with signs stating "Do not dump hazardous materials here" or similar	
10	Trash receptacles are located near the interior sidewalk, emergency vehicle access lane, and within the courtyard area above the first floor	

VIII. Certifications

The preliminary design of stormwater treatment facilities and other stormwater pollution control measures in this plan are in accordance with the current edition of the BASMAA *Post-Construction Manual*