

CITY OF SANTEE

**PRIORITY DEVELOPMENT PROJECT (PDP)
STORM WATER QUALITY MANAGEMENT PLAN (SWQMP)
FOR
HABITAT FOR HUMANITY 1ST STREET
TM2023-1**

**8932 1ST STREET
SANTEE, CA 92071**

**ASSESSOR'S PARCEL NUMBER(S):
384-106-16
ENGINEER OF WORK:**



WILLIAM G. MACK, PE 73620

PREPARED FOR:

SAN DIEGO HABITAT FOR HUMANITY
8123 MERCURY COURT
SAN DIEGO, CA 92111
(619) 293-4663

PDP SWQMP PREPARED BY:

PASCO LARET SUITER AND ASSOCIATES
1911 SAN DIEGO AVENUE SUITE 100
SAN DIEGO, CA 92110
(858) 259-8212

DATE OF SWQMP:
August, 2023

PLANS PREPARED BY:
PASCO LARET SUITER AND ASSOCIATES
1911 SAN DIEGO AVENUE SUITE 100
SAN DIEGO, CA 92110
(858) 259-8212

Page intentionally blank

TABLE OF CONTENTS

Acronym Sheet

PDP SWQMP Preparer's Certification Page

PDP SWQMP Project Owner's Certification Page

Submittal Record

Project Vicinity Map

FORM I-1 Applicability of Permanent, Post-Construction Storm Water BMP Requirements

FORM I-2 Project Type Determination Checklist (Standard Project or PDP)

FORM I-3B Site Information Checklist for PDPs

FORM I-4 Source Control BMP Checklist for All Development Projects

FORM I-5 Site Design BMP Checklist for All Development Projects

FORM I-6 Summary of PDP Structural BMPs

Attachment 1: Backup for PDP Pollutant Control BMPs

Attachment 1a: DMA Exhibit

Attachment 1b: Tabular Summary of DMAs and Design Capture Volume Calculations

Attachment 1c: Harvest and Use Feasibility Screening (when applicable)

Attachment 1d: Categorization of Infiltration Feasibility Condition (when applicable)

Attachment 1e: Pollutant Control BMP Design Worksheets / Calculations

Attachment 2: Backup for PDP Hydromodification Control Measures

Attachment 2a: Hydromodification Management Exhibit

Attachment 2b: Management of Critical Coarse Sediment Yield Areas

Attachment 2c: Geomorphic Assessment of Receiving Channels

Attachment 2d: Flow Control Facility Design

Attachment 3: Structural BMP Maintenance Plan

Attachment 3a: B Structural BMP Maintenance Thresholds and Actions

Attachment 3b: Draft Maintenance Agreement (when applicable)

Attachment 4: Copy of Plan Sheets Showing Permanent Storm Water BMPs

ACRONYMS

| | |
|---------|--|
| APN | Assessor's Parcel Number |
| BMP | Best Management Practice |
| HMP | Hydromodification Management Plan |
| HSG | Hydrologic Soil Group |
| MS4 | Municipal Separate Storm Sewer System |
| N/A | Not Applicable |
| NRCS | Natural Resources Conservation Service |
| PDP | Priority Development Project |
| PE | Professional Engineer |
| SC | Source Control |
| SD | Site Design |
| SDRWQCB | San Diego Regional Water Quality Control Board |
| SIC | Standard Industrial Classification |
| SWQMP | Storm Water Quality Management Plan |

SWQMP PREPARER'S CERTIFICATION PAGE

Project Name: HABITAT FOR HUMANITY 1ST STREET
Permit Application Number: [Insert Permit Application Number]

PREPARER'S CERTIFICATION

I hereby declare that I am the Engineer in Responsible Charge of design of storm water best management practices (BMPs) for this project, and that I have exercised responsible charge over the design of the BMPs as defined in Section 6703 of the Business and Professions Code, and that the design is consistent with the PDP requirements of the [INSERT AGENCY NAME] BMP Design Manual, which is a design manual for compliance with local [INSERT AGENCY NAME] and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2015-0100) requirements for storm water management.

I have read and understand that the [City Engineer] has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the BMP Design Manual. I certify that this PDP SWQMP has been completed to the best of my ability and accurately reflects the project being proposed and the applicable BMPs proposed to minimize the potentially negative impacts of this project's land development activities on water quality. I understand and acknowledge that the plan check review of this PDP SWQMP by the [City Engineer] is confined to a review and does not relieve me, as the Engineer in Responsible Charge of design of storm water BMPs for this project, of my responsibilities for project design.

PE 73620, EXP 12/31/24

Engineer of Work's Signature, PE Number & Expiration Date

WILLIAM G MACK

Print Name

PASCO LARET SUITER AND ASSOCIATES

Company

Date

Engineer's Seal:



Page intentionally blank

SWQMP PROJECT OWNER'S CERTIFICATION PAGE

Project Name: HABITAT FOR HUMANITY 1ST STREET

Permit Application Number: [Insert Permit Application Number]

PROJECT OWNER'S CERTIFICATION

This PDP SWQMP has been prepared for [INSERT PROJECT OWNER'S COMPANY NAME] by [INSERT SWQMP PREPARER'S COMPANY NAME]. The PDP SWQMP is intended to comply with the PDP requirements of the [INSERT AGENCY NAME] BMP Design Manual, which is a design manual for compliance with local [INSERT AGENCY NAME] and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2015-0100) requirements for storm water management.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan. Once the undersigned transfers its interests in the property, its successor-in-interest shall bear the aforementioned responsibility to implement the best management practices (BMPs) described within this plan, including ensuring on-going operation and maintenance of structural BMPs. A signed copy of this document shall be available on the subject property into perpetuity.

Project Owner's Signature

ROXANN JANES

Print Name

SAN DIEGO HABITAT FOR HUMANITY

Company

Date

Page intentionally blank

SUBMITTAL RECORD

Use this Table to keep a record of submittals of this PDP SWQMP. Each time the PDP SWQMP is re-submitted, provide the date and status of the project. In column 4 summarize the changes that have been made or indicate if response to plancheck comments is included. When applicable, insert response to plancheck comments behind this page.

| Submittal Number | Date | Project Status | Summary of Changes |
|------------------|-----------|--|-----------------------------------|
| 1 | 2/17/2023 | X Preliminary Design / Planning/ CEQA <input type="checkbox"/> Final Design | Initial Submittal |
| 2 | 6/8/2023 | X Preliminary Design / Planning/ CEQA <input type="checkbox"/> Final Design | 2 nd Discretionary Sub |
| 3 | 8/2/2023 | X Preliminary Design / Planning/ CEQA <input type="checkbox"/> Final Design | 3 rd Discretionary Sub |
| 4 | | <input type="checkbox"/> Preliminary Design / Planning/ CEQA <input type="checkbox"/> Final Design | |

PROJECT VICINITY MAP

Project Name: HABITAT FOR HUMANITY – 1ST STREET

Permit Application Number: TM2023-1

[Insert Project Vicinity Map here]



VICINITY MAP ↑
NOT TO SCALE N

| Applicability of Permanent, Post-Construction Storm Water BMP Requirements (Storm Water Intake Form for all Development Permit Applications) | | Form I-1 Model BMP Design Manual [August 31, 2015] |
|---|---|--|
| Project Identification | | |
| Project Name: HABITAT FOR HUMANITY – FIRST STREET | | |
| Permit Application Number: TM2023-1 | | Date: 6/8/23 |
| Project Address: 8932 1 ST STREET, SANTEE, CA 92071 | | |
| Determination of Requirements | | |
| <p>The purpose of this form is to identify permanent, post-construction requirements that apply to the project. This form serves as a short <u>summary</u> of applicable requirements, in some cases referencing separate forms that will serve as the backup for the determination of requirements.</p> <p>Answer each step below, starting with Step 1 and progressing through each step until reaching "Stop". Upon reaching a Stop, do not complete further Steps beyond the Stop.</p> <p>Refer to BMP Design Manual sections and/or separate forms referenced in each step below.</p> | | |
| Step | Answer | Progression |
| Step 1: Is the project a "development project"? See Section 1.3 of the BMP Design Manual for guidance. | X Yes | Go to Step 2. |
| | <input type="checkbox"/> No | Stop. Permanent BMP requirements do not apply. No SWQMP will be required. Provide discussion below. |
| Discussion / justification if the project is <u>not</u> a "development project" (e.g., the project includes <i>only</i> interior remodels within an existing building): | | |
| Step 2: Is the project a Standard Project, Priority Development Project (PDP), or exception to PDP definitions? To answer this item, see Section 1.4 of the BMP Design Manual <i>in its entirety</i> for guidance, AND complete Form I-2, Project Type Determination. | <input type="checkbox"/> Standard Project | Stop. <u>Only Standard Project requirements apply, including Standard Project SWQMP.</u> |
| | X PDP | <u>Standard and PDP requirements apply, including PDP SWQMP.</u> Go to Step 3. |
| | <input type="checkbox"/> Exception to PDP definitions | Stop. <u>Standard Project requirements apply, and any additional requirements specific to the type of project.</u> Provide discussion and list any additional requirements below. Prepare Standard Project SWQMP. |

[Step 2 Continued from Page 1] Discussion / justification, and additional requirements for exceptions to PDP definitions, if applicable:

| | | |
|---|--|---|
| Step 3 (PDPs only). Is the project subject to earlier PDP requirements due to a prior lawful approval? See Section 1.10 of the BMP Design Manual for guidance. | <input type="checkbox"/> Yes | Consult the [City Engineer] to determine requirements. Provide discussion and identify requirements below. Go to Step 4. |
| | <input checked="" type="checkbox"/> No | BMP Design Manual PDP requirements apply. Go to Step 4. |

Discussion / justification of prior lawful approval, and identify requirements (*not required if prior lawful approval does not apply*):

| | | |
|--|---|--|
| Step 4 (PDPs only). Do hydromodification control requirements apply? See Section 1.6 of the BMP Design Manual for guidance. | <input checked="" type="checkbox"/> Yes | PDP structural BMPs required for pollutant control (Chapter 5) and hydromodification control (Chapter 6). Go to Step 5. |
| | <input type="checkbox"/> No | Stop. PDP structural BMPs required for pollutant control (Chapter 5) only. Provide brief discussion of exemption to hydromodification control below. |

Discussion / justification if hydromodification control requirements do not apply:

| | | |
|--|--|--|
| Step 5 (PDPs subject to hydromodification control requirements only). Does protection of critical coarse sediment yield areas apply based on review of WMAA Potential Critical Coarse Sediment Yield Area Map? See Section 6.2 of the BMP Design Manual for guidance. | <input type="checkbox"/> Yes | Management measures required for protection of critical coarse sediment yield areas (Chapter 6.2). Stop. |
| | <input checked="" type="checkbox"/> No | Management measures not required for protection of critical coarse sediment yield areas. Provide brief discussion below. Stop. |

| Priority Determination Form | | Form I-2 Model BMP Design Manual [August 31, 2015] | |
|---|---------|---|---|
| Project Information | | | |
| Project Name: HABITAT FOR HUMANITY 1 ST STREET | | | |
| Permit Application Number: TM2023-1 | | Date: 8/2/23 | |
| Project Address: 8932 1 ST STREET, SANTEE, CA 92071 | | | |
| Project Type Determination: Standard Project or Priority Development Project (PDP) | | | |
| The project is (select one): <input checked="" type="checkbox"/> New Development <input type="checkbox"/> Redevelopment | | | |
| The total proposed newly created or replaced impervious area is: 16,620 ft ² (0.38) acres | | | |
| Is the project in any of the following categories, (a) through (f)? | | | |
| Yes X | No | (a) | New development projects that create 10,000 square feet or more of impervious surfaces (collectively over the entire project site). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land. |
| Yes | No X | (b) | Redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site on an existing site of 10,000 square feet or more of impervious surfaces). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land. |
| Yes | No X | (c) | <p>New and redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site), and support one or more of the following uses:</p> <ul style="list-style-type: none"> (i) Restaurants. This category is defined as a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (Standard Industrial Classification (SIC) code 5812). (ii) Hillside development projects. This category includes development on any natural slope that is twenty-five percent or greater. (iii) Parking lots. This category is defined as a land area or facility for the temporary parking or storage of motor vehicles used personally, for business, or for commerce. (iv) Streets, roads, highways, freeways, and driveways. This category is defined as any paved impervious surface used for the transportation of automobiles, trucks, motorcycles, and other vehicles. |

Form I-2 Page 2, Form Template Date: August 31, 2015

| | | | |
|-----|---------|-----|--|
| Yes | No X | (d) | <p>New or redevelopment projects that create and/or replace 2,500 square feet or more of impervious surface (collectively over the entire project site), and discharging directly to an Environmentally Sensitive Area (ESA). "Discharging directly to" includes flow that is conveyed overland a distance of 200 feet or less from the project to the ESA, or conveyed in a pipe or open channel any distance as an isolated flow from the project to the ESA (i.e. not commingled with flows from adjacent lands).</p> <p><i>Note: ESAs are areas that include but are not limited to all Clean Water Act Section 303(d) impaired water bodies; areas designated as Areas of Special Biological Significance by the State Water Board and San Diego Water Board; State Water Quality Protected Areas; water bodies designated with the RARE beneficial use by the State Water Board and San Diego Water Board; and any other equivalent environmentally sensitive areas which have been identified by the Copermittees. See BMP Design Manual Section 1.4.2 for additional guidance.</i></p> |
| Yes | No X | (e) | <p>New development projects, or redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface, that support one or more of the following uses:</p> <ul style="list-style-type: none"> (i) Automotive repair shops. This category is defined as a facility that is categorized in any one of the following SIC codes: 5013, 5014, 5541, 7532-7534, or 7536-7539. (ii) Retail gasoline outlets (RGOs). This category includes RGOs that meet the following criteria: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day. |
| Yes | No X | (f) | <p>New or redevelopment projects that result in the disturbance of one or more acres of land and are expected to generate pollutants post construction.</p> <p><i>Note: See BMP Design Manual Section 1.4.2 for additional guidance.</i></p> |

Does the project meet the definition of one or more of the Priority Development Project categories (a) through (f) listed above?

No – the project is not a Priority Development Project (Standard Project).

X Yes – the project is a Priority Development Project (PDP).

The following is for redevelopment PDPs only:

The area of existing (pre-project) impervious area at the project site is: 2,654 ft² (A)

The total proposed newly created or replaced impervious area is 16,640 ft² (B)

Percent impervious surface created or replaced (B/A)*100: 627 %

The percent impervious surface created or replaced is (select one based on the above calculation):

less than or equal to fifty percent (50%) – only new impervious areas are considered PDP

OR

X greater than fifty percent (50%) – the entire project site is a PDP

**Site Design Checklist
For PDPs**

Form I-3B (PDPs)
Model BMP Design Manual
[August 31, 2015]

Project Summary Information

| | |
|--|--|
| Project Name | HABITAT FOR HUMANITY 1 ST STREET |
| Project Address | 8932 1 ST STREET |
| Assessor's Parcel Number(s) (APN(s)) | 384-106-16 |
| Permit Application Number | |
| Project Hydrologic Unit | Select One: <input type="checkbox"/> Santa Margarita 902 <input type="checkbox"/> San Luis Rey 903 <input type="checkbox"/> Carlsbad 904 <input type="checkbox"/> San Dieguito 905 <input type="checkbox"/> Penasquitos 906 <input checked="" type="checkbox"/> San Diego 907 <input type="checkbox"/> Pueblo San Diego 908 <input type="checkbox"/> Sweetwater 909 <input type="checkbox"/> Otay 910 <input type="checkbox"/> Tijuana 911 |
| Project Watershed (Complete Hydrologic Unit, Area, and Subarea Name with Numeric Identifier) | SAN DIEGO, LOWER SAN DIEGO, 907.12, SANTEE |
| Parcel Area (total area of Assessor's Parcel(s) associated with the project) | <u>0.65</u> Acres (<u>28,490</u> Square Feet) |
| Area to be Disturbed by the Project (Project Area) | <u>0.65</u> Acres (<u>28,490</u> Square Feet) |
| Project Proposed Impervious Area (subset of Project Area) | <u>0.38</u> Acres (<u>16,620</u> Square Feet) |
| Project Proposed Pervious Area (subset of Project Area) | <u>0.27</u> Acres (<u>11,870</u> Square Feet) |
| Note: Proposed Impervious Area + Proposed Pervious Area = Area to be Disturbed by the Project. This may be less than the Parcel Area. | |

Description of Existing Site Condition

Current Status of the Site (select all that apply):

- Existing development
- Previously graded but not built out
- Demolition completed without new construction
- Agricultural or other non-impervious use
- Vacant, undeveloped/natural

Description / Additional Information:

Existing single family home with corresponding parking area and (2) sheds.

Existing Land Cover Includes (select all that apply):

- Vegetative Cover
- Non-Vegetated Pervious Areas
- Impervious Areas

Description / Additional Information:

The existing site exists as a single family home, with minor concrete walkways, an asphalt parking area, and a vegetated yard.

Underlying Soil belongs to Hydrologic Soil Group (select all that apply):

- NRCS Type A
- NRCS Type B
- NRCS Type C
- NRCS Type D

Approximate Depth to Groundwater (GW):

- GW Depth < 5 feet
- 5 feet < GW Depth < 10 feet
- 10 feet < GW Depth < 20 feet
- GW Depth > 20 feet

Existing Natural Hydrologic Features (select all that apply):

Watercourses

Seeps

Springs

Wetlands

None

Description / Additional Information:

Description of Existing Site Drainage Patterns

How is storm water runoff conveyed from the site? At a minimum, this description should answer:

- (1) whether existing drainage conveyance is natural or urban;
- (2) Is runoff from offsite conveyed through the site? if yes, quantify all offsite drainage areas, design flows, and locations where offsite flows enter the project site, and summarize how such flows are conveyed through the site;
- (3) Provide details regarding existing project site drainage conveyance network, including any existing storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, natural or constructed channels; and
- (4) Identify all discharge locations from the existing project site along with a summary of conveyance system size and capacity for each of the discharge locations. Provide summary of the pre-project drainage areas and design flows to each of the existing runoff discharge locations.

Describe existing site drainage patterns:

The existing site consists of urban drainage. Runoff sheet flows across the site from the southeastern corner to the northwestern corner and outlets into an existing natural channel on the southern side of Park Avenue. The project receives no offsite runoff. Along the southern PL, there is an existing natural berm preventing drainage from the 3rd Street Right of Way from entering the project site. 1st Street to the east flows north in an existing natural swale that meets an existing natural swale on the southern side of Park Avenue that then flows west along the southern edge of the Park Avenue Right of Way. Drainage from this project flows west down Park Avenue, North down Edgemoor Drive before entering the San Diego River and flowing west to the Pacific Ocean.

Description of Proposed Site Development

Project Description / Proposed Land Use and/or Activities:

The proposed development proposes 17 townhomes for residential use.

List/describe proposed impervious features of the project (e.g., buildings, roadways, parking lots, courtyards, athletic courts, other impervious features):

Impervious area for the proposed project includes concrete pavements, roofs for homes and a trash enclosure, and incidental curbs and walls.

List/describe proposed pervious features of the project (e.g., landscape areas):

This project proposes amended soils, a rock lined brow ditch, and permeable paver areas.

Does the project include grading and changes to site topography?

Yes

No

Description / Additional Information:

Description of Proposed Site Drainage Patterns

Does the project include changes to site drainage (e.g., installation of new storm water conveyance systems)?

Yes

No

If yes, provide details regarding the proposed project site drainage conveyance network, including storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, natural or constructed channels, and the method for conveying offsite flows through or around the proposed project site. Identify all discharge locations from the proposed project site along with a summary of the conveyance system size and capacity for each of the discharge locations. Provide a summary of pre- and post-project drainage areas and design flows to each of the runoff discharge locations. Reference the drainage study for detailed calculations.

Describe proposed site drainage patterns::

The existing project drainage sheet flows across the project site and ultimately outlets into Park Avenue to the Northwester corner of the project site, creating a single POC for all drainage. Due to the small flow lengths in existing conditions, it has been determined that a time of concentration of 5 minutes will be utilized to determine the 100 yr storm intensity. A depth of 2.5 inches for the 100 yr, 6-hr storm has been determined using isopluvial maps in the County of San Diego Hydrology Manual. From this value, utilizing figure 3-1 of the County of San Diego Hydrology Manual, an Intensity of 6.59 in/hr was determined. An existing condition weighted runoff coefficient of 0.40 was determined using a value of $C=0.35$ for pervious areas and $C=0.90$ for impervious areas based on Table 3-1 of the County of San Diego Hydrology Manual for Urban areas with type D Soils. From these values, utilizing the rational method formula, a peak runoff flow of 1.74 cfs and a peak runoff volume of 2,382 cf was determined for the project's existing conditions.

This project includes the installation of 9 above grade biofiltration planters, around 5,000 sf of permeable pavers, amended soil areas with area drains, tree wells, and corresponding storm drain piping. The majority of the site drainage will flow west into a proposed rocklined brow ditch prior to outletting to an 18"x18" brooks box grate inlet with 5"x10" weir at grate. The drainage entering this inlet then flows into a D-25 curb outlet prior to outletting into Park Avenue. A small portion of the project flows east and outlets into 1st Street either via sheet flow (self mitigating and de-minis areas) or through D-27 sidewalk underdrains. All this drainage ultimately flows North and West, confluencing with the drainage from the D-25 curb outlet, creating a single POC for this project. Utilizing the standards listed above for existing conditions, a peak runoff flow of 2.75 cfs and peak runoff volume of 3,755 cf was determined for the proposed condition's 100 yr storm. This creates a peak flow differential of 1.01 cfs and a peak volume differential of 1,374 cf. This project proposes 1,591 cf of additional storage below permeable pavers. In the 100 yr storm, a peak volume of 1,757 cf at a rate of 1.29 cfs is sent to these pavers. To meet the required drawdown time of 72 hours, an orifice has been sized at the outlet of this paver area to allow for a flow of 0.006138 cfs. Based on this detention, the peak outlet flow of the project's proposed condition is 1.58 cfs, which is less than the 1.74 cfs in existing conditions. Therefore the proposed project reduces the site's peak flow and peak volume of the 100 year storm from existing to proposed conditions.

Identify whether any of the following features, activities, and/or pollutant source areas will be present (select all that apply):

- X On-site storm drain inlets
- Interior floor drains and elevator shaft sump pumps
- X Interior parking garages
- X Need for future indoor & structural pest control
- X Landscape/Outdoor Pesticide Use
- Pools, spas, ponds, decorative fountains, and other water features
- Food service
- Refuse areas
- Industrial processes
- X Outdoor storage of equipment or materials
- X Vehicle and Equipment Cleaning
- X Vehicle/Equipment Repair and Maintenance
- X Fuel Dispensing Areas
- Loading Docks
- X Fire Sprinkler Test Water
- X Miscellaneous Drain or Wash Water
- X Plazas, sidewalks, and parking lots

Description / Additional Information:

Identification and Narrative of Receiving Water and Pollutants of Concern

Describe flow path of storm water from the project site discharge location(s), through urban storm conveyance systems as applicable, to receiving creeks, rivers, and lagoons as applicable, and ultimate discharge to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable):
 Drainage from this project flows west down Park Avenue, North down Edgemoor Drive before entering the San Diego River and flowing west to the Pacific Ocean.

List any 303(d) impaired water bodies within the path of storm water from the project site to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable), identify the pollutant(s)/stressor(s) causing impairment, and identify any TMDLs and/or Highest Priority Pollutants from the WQIP for the impaired water bodies:

| 303(d) Impaired Water Body | Pollutant(s)/Stressor(s) | TMDLs / WQIP Highest Priority Pollutant |
|----------------------------|--|---|
| San Diego River (lower) | Benthic Community Effects, Bifenthrin, Chlordane, Chloride, Color, Cyfluthin, Cypermethrin, Indicator Bacteria, Nitrogen, Oxygen (dissolved), Permethrin, Phosphorus, Pyrethroids, Total Dissolved Solids, Toxicity, Turbidity | |

Identification of Project Site Pollutants*

***Identification of project site pollutants is only required if flow-thru treatment BMPs are implemented onsite in lieu of retention or biofiltration BMPs (note the project must also participate in an alternative compliance program unless prior lawful approval to meet earlier PDP requirements is demonstrated)**

Identify pollutants expected from the project site based on all proposed use(s) of the site (see BMP Design Manual Appendix B.6):

| Pollutant | Not Applicable to the Project Site | Expected from the Project Site | Also a Receiving Water Pollutant of Concern |
|-----------------------------|------------------------------------|--------------------------------|---|
| Sediment | | | |
| Nutrients | | | |
| Heavy Metals | | | |
| Organic Compounds | | | |
| Trash & Debris | | | |
| Oxygen Demanding Substances | | | |
| Oil & Grease | | | |
| Bacteria & Viruses | | | |
| Pesticides | | | |

Hydromodification Management Requirements

Do hydromodification management requirements apply (see Section 1.6 of the BMP Design Manual)?

Yes, hydromodification management flow control structural BMPs required.

No, the project will discharge runoff directly to existing underground storm drains discharging directly to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.

No, the project will discharge runoff directly to conveyance channels whose bed and bank are concrete-lined all the way from the point of discharge to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.

No, the project will discharge runoff directly to an area identified as appropriate for an exemption by the WMAA for the watershed in which the project resides.

Description / Additional Information (to be provided if a 'No' answer has been selected above):

Critical Coarse Sediment Yield Areas*

***This Section only required if hydromodification management requirements apply**

Based on the maps provided within the WMAA, do potential critical coarse sediment yield areas exist within the project drainage boundaries?

Yes

No, No critical coarse sediment yield areas to be protected based on WMAA maps

If yes, have any of the optional analyses presented in Section 6.2 of the BMP Design Manual been performed?

6.2.1 Verification of Geomorphic Landscape Units (GLUs) Onsite

6.2.2 Downstream Systems Sensitivity to Coarse Sediment

6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite

No optional analyses performed, the project will avoid critical coarse sediment yield areas identified based on WMAA maps

If optional analyses were performed, what is the final result?

No critical coarse sediment yield areas to be protected based on verification of GLUs onsite

Critical coarse sediment yield areas exist but additional analysis has determined that protection is not required. Documentation attached in Attachment 2.b of the SWQMP.

Critical coarse sediment yield areas exist and require protection. The project will implement management measures described in Sections 6.2.4 and 6.2.5 as applicable, and the areas are identified on the SWQMP Exhibit.

Discussion / Additional Information:

Flow Control for Post-Project Runoff*

***This Section only required if hydromodification management requirements apply**

List and describe point(s) of compliance (POCs) for flow control for hydromodification management (see Section 6.3.1). For each POC, provide a POC identification name or number correlating to the project's HMP Exhibit and a receiving channel identification name or number correlating to the project's HMP Exhibit.

There is a single POC (POC-1) at the northwest corner of the project site. This ultimately flows the lower San Diego River and Pacific Ocean.

Has a geomorphic assessment been performed for the receiving channel(s)?

No, the low flow threshold is 0.1Q2 (default low flow threshold)

Yes, the result is the low flow threshold is 0.1Q2

Yes, the result is the low flow threshold is 0.3Q2

Yes, the result is the low flow threshold is 0.5Q2

If a geomorphic assessment has been performed, provide title, date, and preparer:

Discussion / Additional Information: (optional)

Other Site Requirements and Constraints

When applicable, list other site requirements or constraints that will influence storm water management design, such as zoning requirements including setbacks and open space, or local codes governing minimum street width, sidewalk construction, allowable pavement types, and drainage requirements.

Optional Additional Information or Continuation of Previous Sections As Needed

This space provided for additional information or continuation of information from previous sections as needed.

| Source Control BMP Checklist for All Development Projects (Standard Projects and Priority Development Projects) | | Form I-4 Model BMP Design Manual [August 31, 2015] | |
|---|--|---|--|
| Project Identification | | | |
| Project Name Habitat for Humanity 1 st Street | | | |
| Permit Application Number TM2023-1 | | | |
| Source Control BMPs | | | |
| All development projects must implement source control BMPs SC-1 through SC-6 where applicable and feasible. See Chapter 4 and Appendix E of the Model BMP Design Manual for information to implement source control BMPs shown in this checklist. | | | |
| Answer each category below pursuant to the following. | | | |
| <ul style="list-style-type: none"> • "Yes" means the project will implement the source control BMP as described in Chapter 4 and/or Appendix E of the Model BMP Design Manual. Discussion / justification is not required. • "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided. • "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project has no outdoor materials storage areas). Discussion / justification may be provided. | | | |
| Source Control Requirement | | Applied? | |
| SC-1 Prevention of Illicit Discharges into the MS4 | | X Yes | <input type="checkbox"/> No <input type="checkbox"/> N/A |
| Discussion / justification if SC-1 not implemented: | | | |
| SC-2 Storm Drain Stenciling or Signage | | X Yes | <input type="checkbox"/> No N/A |
| Discussion / justification if SC-2 not implemented: | | | |
| SC-3 Protect Outdoor Materials Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal | | X Yes | <input type="checkbox"/> No <input type="checkbox"/> N/A |
| Discussion / justification if SC-3 not implemented: | | | |
| SC-4 Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal | | X Yes | <input type="checkbox"/> No <input type="checkbox"/> N/A |
| Discussion / justification if SC-4 not implemented: | | | |

| Source Control Requirement | Applied? | | |
|---|---|---|--|
| SC-5 Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal | X Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| Discussion / justification if SC-5 not implemented: | | | |
| <p>SC-6 Additional BMPs Based on Potential Sources of Runoff Pollutants (must answer for each source listed below)</p> <ul style="list-style-type: none"> <input type="checkbox"/> On-site storm drain inlets <input type="checkbox"/> Interior floor drains and elevator shaft sump pumps <input type="checkbox"/> Interior parking garages <input type="checkbox"/> Need for future indoor & structural pest control <input type="checkbox"/> Landscape/Outdoor Pesticide Use <input type="checkbox"/> Pools, spas, ponds, decorative fountains, and other water features <input type="checkbox"/> Food service <input type="checkbox"/> Refuse areas <input type="checkbox"/> Industrial processes <input type="checkbox"/> Outdoor storage of equipment or materials <input type="checkbox"/> Vehicle and Equipment Cleaning <input type="checkbox"/> Vehicle/Equipment Repair and Maintenance <input type="checkbox"/> Fuel Dispensing Areas <input type="checkbox"/> Loading Docks <input type="checkbox"/> Fire Sprinkler Test Water <input type="checkbox"/> Miscellaneous Drain or Wash Water <input type="checkbox"/> Plazas, sidewalks, and parking lots | <ul style="list-style-type: none"> x Yes <input type="checkbox"/> Yes X Yes X Yes X Yes <input type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> Yes X Yes X Yes X Yes X Yes <input type="checkbox"/> Yes X Yes X Yes X Yes | <ul style="list-style-type: none"> <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No | <ul style="list-style-type: none"> <input type="checkbox"/> N/A X N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A X N/A X N/A X N/A X N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A X N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A |

Discussion / justification if SC-6 not implemented. Clearly identify which sources of runoff pollutants are discussed. Justification must be provided for all "No" answers shown above.

| Site Design BMP Checklist for All Development Projects (Standard Projects and Priority Development Projects) | | Form I-5 Model BMP Design Manual [August 31, 2015] | |
|---|--|---|--|
| Project Identification | | | |
| Project Name Habitat for Humanity 1 st Street | | | |
| Permit Application Number TM2023-1 | | | |
| Site Design BMPs | | | |
| <p>All development projects must implement site design BMPs SD-1 through SD-8 where applicable and feasible. See Chapter 4 and Appendix E of the Model BMP Design Manual for information to implement site design BMPs shown in this checklist.</p> <p>Answer each category below pursuant to the following.</p> <ul style="list-style-type: none"> • "Yes" means the project will implement the site design BMP as described in Chapter 4 and/or Appendix E of the Model BMP Design Manual. Discussion / justification is not required. • "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided. • "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project site has no existing natural areas to conserve). Discussion / justification may be provided. | | | |
| Site Design Requirement | | Applied? | |
| SD-1 Maintain Natural Drainage Pathways and Hydrologic Features | | X Yes | <input type="checkbox"/> No <input type="checkbox"/> N/A |
| Discussion / justification if SD-1 not implemented: | | | |
| SD-2 Conserve Natural Areas, Soils, and Vegetation | | X Yes | <input type="checkbox"/> No <input type="checkbox"/> N/A |
| Discussion / justification if SD-2 not implemented: | | | |
| SD-3 Minimize Impervious Area | | X Yes | <input type="checkbox"/> No <input type="checkbox"/> N/A |
| Discussion / justification if SD-3 not implemented: | | | |
| SD-4 Minimize Soil Compaction | | X Yes | <input type="checkbox"/> No <input type="checkbox"/> N/A |
| Discussion / justification if SD-4 not implemented: | | | |
| SD-5 Impervious Area Dispersion | | X Yes | <input type="checkbox"/> No <input type="checkbox"/> N/A |
| Discussion / justification if SD-5 not implemented: | | | |

Form I-5 Page 2 of 2, Form Template Date: August 31, 2015

| Site Design Requirement | Applied? | | |
|---|------------------------------|-----------------------------|------------------------------|
| SD-6 Runoff Collection | X Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| Discussion / justification if SD-6 not implemented: | | | |
| SD-7 Landscaping with Native or Drought Tolerant Species | X Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| Discussion / justification if SD-7 not implemented: | | | |
| SD-8 Harvesting and Using Precipitation | <input type="checkbox"/> Yes | <input type="checkbox"/> No | X N/A |
| Discussion / justification if SD-8 not implemented: | | | |

| | |
|---|--|
| Summary of PDP Structural BMPs | Form I-6 (PDPs) Model BMP Design Manual [August 31, 2015] |
| Project Identification | |
| Project Name Habitat for Humanity 1 st Street | |
| Permit Application Number | |
| PDP Structural BMPs | |
| <p>All PDPs must implement structural BMPs for storm water pollutant control (see Chapter 5 of the BMP Design Manual). Selection of PDP structural BMPs for storm water pollutant control must be based on the selection process described in Chapter 5. PDPs subject to hydromodification management requirements must also implement structural BMPs for flow control for hydromodification management (see Chapter 6 of the BMP Design Manual). Both storm water pollutant control and flow control for hydromodification management can be achieved within the same structural BMP(s).</p> | |
| <p>PDP structural BMPs must be verified by the local jurisdiction at the completion of construction. This may include requiring the project owner or project owner's representative and engineer of record to certify construction of the structural BMPs (see Section 1.12 of the BMP Design Manual). PDP structural BMPs must be maintained into perpetuity, and the local jurisdiction must confirm the maintenance (see Section 7 of the BMP Design Manual).</p> | |
| <p>Use this form to provide narrative description of the general strategy for structural BMP implementation at the project site in the box below. Then complete the PDP structural BMP summary information sheet (page 3 of this form) for each structural BMP within the project (copy the BMP summary information page as many times as needed to provide summary information for each individual structural BMP).</p> | |
| <p>Describe the general strategy for structural BMP implementation at the site. This information must describe how the steps for selecting and designing storm water pollutant control BMPs presented in Section 5.1 of the BMP Design Manual were followed, and the results (type of BMPs selected). For projects requiring hydromodification flow control BMPs, indicate whether pollutant control and flow control BMPs are integrated or separate.</p> | |
| <p>After completing the grading and layout of the proposed project, along with the infiltration feasibility of the project (no infiltration condition), and considering the overall roof drainage schematic, 9 above grade, lined biofiltration planters were proposed adjacent to the proposed townhomes to receive and treat the majority of on-site roof drainage. Additional impervious areas that could not be feasibly routed to one of these planters were then directed to amended soils to achieve impervious area dispersion treatment as self-retaining areas (minimum 11" deep of amended soils to satisfy hydromodification requirements for these areas). Note that these areas meet all requirements as laid out in SD-5 in the City of Santee BMP design manual. Tree wells are utilized for treatment in other areas and this drainage is routed to the permeable paver storage described next. A permeable paver driveway was also proposed to minimize impervious area to receive the rest of the project's impervious area. This permeable paver area meets all requirements laid out in SD-6B. All other areas on site that could not be routed to these were determined to either be self mitigating landscaped areas or impervious de-minimis areas (less than 2% of the projects overall impervious footprint).</p> <p>(Continue on page 2 as necessary.)</p> | |

(Page reserved for continuation of description of general strategy for structural BMP implementation at the site)

(Continued from page 1)

After locating and selecting the feasible treatment alternatives for the project, detailed calculations were completed to ensure that all site design requirements have been met, and the required volume has been provided to meet all DCV requirements. It was determined that a demand sufficient enough did not exist to implement harvest and use. A SWQMP map was then prepared outlining the site layout and stormwater design. The O&M documents were then prepared and are acceptable to the responsible part.

| Structural BMP Summary Information (Copy this page as needed to provide information for each individual proposed structural BMP) | |
|---|--|
| Structural BMP ID No. BMP-1 | |
| Construction Plan Sheet No. C-1.0 | |
| Type of structural BMP: <input type="checkbox"/> Retention by harvest and use (HU-1) <input type="checkbox"/> Retention by infiltration basin (INF-1) <input type="checkbox"/> Retention by bioretention (INF-2) <input type="checkbox"/> Retention by permeable pavement (INF-3) <input type="checkbox"/> Partial retention by biofiltration with partial retention (PR-1) <input checked="" type="checkbox"/> Biofiltration (BF-1) <input type="checkbox"/> Biofiltration with Nutrient Sensitive Media Design (BF-2) <input type="checkbox"/> Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F <input type="checkbox"/> Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) <input type="checkbox"/> Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) <input type="checkbox"/> Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) <input type="checkbox"/> Detention pond or vault for hydromodification management <input type="checkbox"/> Other (describe in discussion section below) | |
| Purpose: <input type="checkbox"/> Pollutant control only <input type="checkbox"/> Hydromodification control only <input checked="" type="checkbox"/> Combined pollutant control and hydromodification control <input type="checkbox"/> Pre-treatment/forebay for another structural BMP <input type="checkbox"/> Other (describe in discussion section below) | |
| Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual) | William G Mack PE 73620 PLSA ENGINEERING 1911 San Diego Avenue, Suite 100 San Diego, CA 92110 858-259-8212 |
| Who will be the final owner of this BMP? | San Diego Habitat for Humanity 8213 Mercury Court San Diego, CA 92111 |
| Who will maintain this BMP into perpetuity? | San Diego Habitat for Humanity 8213 Mercury Court San Diego, CA 92111 |
| What is the funding mechanism for maintenance? | San Diego Habitat for Humanity 8213 Mercury Court San Diego, CA 92111 |

Structural BMP ID No. BMP-1

Construction Plan Sheet No. C-1.0

Discussion (as needed):

Structural BMP Summary Information

(Copy this page as needed to provide information for each individual proposed structural BMP)

Structural BMP ID No. BMP-2

Construction Plan Sheet No. C-1.0

Type of structural BMP:

- Retention by harvest and use (HU-1)
- Retention by infiltration basin (INF-1)
- Retention by bioretention (INF-2)
- Retention by permeable pavement (INF-3)
- Partial retention by biofiltration with partial retention (PR-1)
- Biofiltration (BF-1)
- Biofiltration with Nutrient Sensitive Media Design (BF-2)
- Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F
- Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)
- Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below)
- Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)
- Detention pond or vault for hydromodification management
- Other (describe in discussion section below)

Purpose:

- Pollutant control only
- Hydromodification control only
- Combined pollutant control and hydromodification control
- Pre-treatment/forebay for another structural BMP
- Other (describe in discussion section below)

Who will certify construction of this BMP?
Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)

William G Mack PE 73620
PLSA ENGINEERING
1911 San Diego Avenue, Suite 100
San Diego, CA 92110
858-259-8212

Who will be the final owner of this BMP?

San Diego Habitat for Humanity
8213 Mercury Court
San Diego, CA 92111

Who will maintain this BMP into perpetuity?

San Diego Habitat for Humanity
8213 Mercury Court
San Diego, CA 92111

What is the funding mechanism for maintenance?

San Diego Habitat for Humanity
8213 Mercury Court
San Diego, CA 92111

Structural BMP ID No. BMP-2

Construction Plan Sheet No. C-1.0

Discussion (as needed):

| Structural BMP Summary Information (Copy this page as needed to provide information for each individual proposed structural BMP) | |
|---|--|
| Structural BMP ID No. BMP-3 | |
| Construction Plan Sheet No. C-1.0 | |
| Type of structural BMP: <input type="checkbox"/> Retention by harvest and use (HU-1) <input type="checkbox"/> Retention by infiltration basin (INF-1) <input type="checkbox"/> Retention by bioretention (INF-2) <input type="checkbox"/> Retention by permeable pavement (INF-3) <input type="checkbox"/> Partial retention by biofiltration with partial retention (PR-1) <input checked="" type="checkbox"/> Biofiltration (BF-1) <input type="checkbox"/> Biofiltration with Nutrient Sensitive Media Design (BF-2) <input type="checkbox"/> Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F <input type="checkbox"/> Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) <input type="checkbox"/> Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) <input type="checkbox"/> Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) <input type="checkbox"/> Detention pond or vault for hydromodification management <input type="checkbox"/> Other (describe in discussion section below) | |
| Purpose: <input type="checkbox"/> Pollutant control only <input type="checkbox"/> Hydromodification control only <input checked="" type="checkbox"/> Combined pollutant control and hydromodification control <input type="checkbox"/> Pre-treatment/forebay for another structural BMP <input type="checkbox"/> Other (describe in discussion section below) | |
| Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual) | William G Mack PE 73620 PLSA ENGINEERING 1911 San Diego Avenue, Suite 100 San Diego, CA 92110 858-259-8212 |
| Who will be the final owner of this BMP? | San Diego Habitat for Humanity 8213 Mercury Court San Diego, CA 92111 |
| Who will maintain this BMP into perpetuity? | San Diego Habitat for Humanity 8213 Mercury Court San Diego, CA 92111 |
| What is the funding mechanism for maintenance? | San Diego Habitat for Humanity 8213 Mercury Court San Diego, CA 92111 |

Structural BMP ID No. BMP-3

Construction Plan Sheet No. C-1.0

Discussion (as needed):

Structural BMP Summary Information

(Copy this page as needed to provide information for each individual proposed structural BMP)

Structural BMP ID No. BMP-4

Construction Plan Sheet No. C-1.0

Type of structural BMP:

- Retention by harvest and use (HU-1)
- Retention by infiltration basin (INF-1)
- Retention by bioretention (INF-2)
- Retention by permeable pavement (INF-3)
- Partial retention by biofiltration with partial retention (PR-1)
- Biofiltration (BF-1)
- Biofiltration with Nutrient Sensitive Media Design (BF-2)
- Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F
- Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)
- Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below)
- Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)
- Detention pond or vault for hydromodification management
- Other (describe in discussion section below)

Purpose:

- Pollutant control only
- Hydromodification control only
- Combined pollutant control and hydromodification control
- Pre-treatment/forebay for another structural BMP
- Other (describe in discussion section below)

Who will certify construction of this BMP?
Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)

William G Mack PE 73620
PLSA ENGINEERING
1911 San Diego Avenue, Suite 100
San Diego, CA 92110
858-259-8212

Who will be the final owner of this BMP?

San Diego Habitat for Humanity
8213 Mercury Court
San Diego, CA 92111

Who will maintain this BMP into perpetuity?

San Diego Habitat for Humanity
8213 Mercury Court
San Diego, CA 92111

What is the funding mechanism for maintenance?

San Diego Habitat for Humanity
8213 Mercury Court
San Diego, CA 92111

Structural BMP ID No. BMP-4

Construction Plan Sheet No. C-1.0

Discussion (as needed):

Structural BMP Summary Information

(Copy this page as needed to provide information for each individual proposed structural BMP)

| | |
|---|--|
| Structural BMP ID No. BMP-5 | |
| Construction Plan Sheet No. C-1.0 | |
| Type of structural BMP: <input type="checkbox"/> Retention by harvest and use (HU-1) <input type="checkbox"/> Retention by infiltration basin (INF-1) <input type="checkbox"/> Retention by bioretention (INF-2) <input type="checkbox"/> Retention by permeable pavement (INF-3) <input type="checkbox"/> Partial retention by biofiltration with partial retention (PR-1) <input checked="" type="checkbox"/> Biofiltration (BF-1) <input type="checkbox"/> Biofiltration with Nutrient Sensitive Media Design (BF-2) <input type="checkbox"/> Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F <input type="checkbox"/> Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) <input type="checkbox"/> Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) <input type="checkbox"/> Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) <input type="checkbox"/> Detention pond or vault for hydromodification management <input type="checkbox"/> Other (describe in discussion section below) | |
| Purpose: <input type="checkbox"/> Pollutant control only <input type="checkbox"/> Hydromodification control only <input checked="" type="checkbox"/> Combined pollutant control and hydromodification control <input type="checkbox"/> Pre-treatment/forebay for another structural BMP <input type="checkbox"/> Other (describe in discussion section below) | |
| Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual) | William G Mack PE 73620 PLSA ENGINEERING 1911 San Diego Avenue, Suite 100 San Diego, CA 92110 858-259-8212 |
| Who will be the final owner of this BMP? | San Diego Habitat for Humanity 8213 Mercury Court San Diego, CA 92111 |
| Who will maintain this BMP into perpetuity? | San Diego Habitat for Humanity 8213 Mercury Court San Diego, CA 92111 |
| What is the funding mechanism for maintenance? | San Diego Habitat for Humanity 8213 Mercury Court San Diego, CA 92111 |

Structural BMP ID No. BMP-5

Construction Plan Sheet No. C-1.0

Discussion (as needed):

| Structural BMP Summary Information (Copy this page as needed to provide information for each individual proposed structural BMP) | |
|---|--|
| Structural BMP ID No. BMP-6 | |
| Construction Plan Sheet No. C-1.0 | |
| Type of structural BMP: <input type="checkbox"/> Retention by harvest and use (HU-1) <input type="checkbox"/> Retention by infiltration basin (INF-1) <input type="checkbox"/> Retention by bioretention (INF-2) <input type="checkbox"/> Retention by permeable pavement (INF-3) <input type="checkbox"/> Partial retention by biofiltration with partial retention (PR-1) <input checked="" type="checkbox"/> Biofiltration (BF-1) <input type="checkbox"/> Biofiltration with Nutrient Sensitive Media Design (BF-2) <input type="checkbox"/> Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F <input type="checkbox"/> Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) <input type="checkbox"/> Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) <input type="checkbox"/> Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) <input type="checkbox"/> Detention pond or vault for hydromodification management <input type="checkbox"/> Other (describe in discussion section below) | |
| Purpose: <input type="checkbox"/> Pollutant control only <input type="checkbox"/> Hydromodification control only <input checked="" type="checkbox"/> Combined pollutant control and hydromodification control <input type="checkbox"/> Pre-treatment/forebay for another structural BMP <input type="checkbox"/> Other (describe in discussion section below) | |
| Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual) | William G Mack PE 73620 PLSA ENGINEERING 1911 San Diego Avenue, Suite 100 San Diego, CA 92110 858-259-8212 |
| Who will be the final owner of this BMP? | San Diego Habitat for Humanity 8213 Mercury Court San Diego, CA 92111 |
| Who will maintain this BMP into perpetuity? | San Diego Habitat for Humanity 8213 Mercury Court San Diego, CA 92111 |
| What is the funding mechanism for maintenance? | San Diego Habitat for Humanity 8213 Mercury Court San Diego, CA 92111 |

Structural BMP ID No. BMP-6

Construction Plan Sheet No. C-1.0

Discussion (as needed):

| Structural BMP Summary Information | |
|---|--|
| (Copy this page as needed to provide information for each individual proposed structural BMP) | |
| Structural BMP ID No. BMP-7 | |
| Construction Plan Sheet No. C-1.0 | |
| Type of structural BMP: <input type="checkbox"/> Retention by harvest and use (HU-1) <input type="checkbox"/> Retention by infiltration basin (INF-1) <input type="checkbox"/> Retention by bioretention (INF-2) <input type="checkbox"/> Retention by permeable pavement (INF-3) <input type="checkbox"/> Partial retention by biofiltration with partial retention (PR-1) <input checked="" type="checkbox"/> Biofiltration (BF-1) <input type="checkbox"/> Biofiltration with Nutrient Sensitive Media Design (BF-2) <input type="checkbox"/> Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F <input type="checkbox"/> Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) <input type="checkbox"/> Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) <input type="checkbox"/> Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) <input type="checkbox"/> Detention pond or vault for hydromodification management <input type="checkbox"/> Other (describe in discussion section below) | |
| Purpose: <input type="checkbox"/> Pollutant control only <input type="checkbox"/> Hydromodification control only <input checked="" type="checkbox"/> Combined pollutant control and hydromodification control <input type="checkbox"/> Pre-treatment/forebay for another structural BMP <input type="checkbox"/> Other (describe in discussion section below) | |
| Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual) | William G Mack PE 73620 PLSA ENGINEERING 1911 San Diego Avenue, Suite 100 San Diego, CA 92110 858-259-8212 |
| Who will be the final owner of this BMP? | San Diego Habitat for Humanity 8213 Mercury Court San Diego, CA 92111 |
| Who will maintain this BMP into perpetuity? | San Diego Habitat for Humanity 8213 Mercury Court San Diego, CA 92111 |
| What is the funding mechanism for maintenance? | San Diego Habitat for Humanity 8213 Mercury Court San Diego, CA 92111 |

Structural BMP ID No. BMP-7

Construction Plan Sheet No. C-1.0

Discussion (as needed):

| Structural BMP Summary Information (Copy this page as needed to provide information for each individual proposed structural BMP) | |
|---|--|
| Structural BMP ID No. BMP-8 | |
| Construction Plan Sheet No. C-1.0 | |
| Type of structural BMP: <input type="checkbox"/> Retention by harvest and use (HU-1) <input type="checkbox"/> Retention by infiltration basin (INF-1) <input type="checkbox"/> Retention by bioretention (INF-2) <input type="checkbox"/> Retention by permeable pavement (INF-3) <input type="checkbox"/> Partial retention by biofiltration with partial retention (PR-1) <input checked="" type="checkbox"/> Biofiltration (BF-1) <input type="checkbox"/> Biofiltration with Nutrient Sensitive Media Design (BF-2) <input type="checkbox"/> Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F <input type="checkbox"/> Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) <input type="checkbox"/> Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) <input type="checkbox"/> Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) <input type="checkbox"/> Detention pond or vault for hydromodification management <input type="checkbox"/> Other (describe in discussion section below) | |
| Purpose: <input type="checkbox"/> Pollutant control only <input type="checkbox"/> Hydromodification control only <input checked="" type="checkbox"/> Combined pollutant control and hydromodification control <input type="checkbox"/> Pre-treatment/forebay for another structural BMP <input type="checkbox"/> Other (describe in discussion section below) | |
| Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual) | William G Mack PE 73620 PLSA ENGINEERING 1911 San Diego Avenue, Suite 100 San Diego, CA 92110 858-259-8212 |
| Who will be the final owner of this BMP? | San Diego Habitat for Humanity 8213 Mercury Court San Diego, CA 92111 |
| Who will maintain this BMP into perpetuity? | San Diego Habitat for Humanity 8213 Mercury Court San Diego, CA 92111 |
| What is the funding mechanism for maintenance? | San Diego Habitat for Humanity 8213 Mercury Court San Diego, CA 92111 |

Structural BMP ID No. BMP-8

Construction Plan Sheet No. C-1.0

Discussion (as needed):

| Structural BMP Summary Information (Copy this page as needed to provide information for each individual proposed structural BMP) | |
|---|--|
| Structural BMP ID No. BMP-9 | |
| Construction Plan Sheet No. C-1.0 | |
| Type of structural BMP: <input type="checkbox"/> Retention by harvest and use (HU-1) <input type="checkbox"/> Retention by infiltration basin (INF-1) <input type="checkbox"/> Retention by bioretention (INF-2) <input type="checkbox"/> Retention by permeable pavement (INF-3) <input type="checkbox"/> Partial retention by biofiltration with partial retention (PR-1) <input checked="" type="checkbox"/> Biofiltration (BF-1) <input type="checkbox"/> Biofiltration with Nutrient Sensitive Media Design (BF-2) <input type="checkbox"/> Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F <input type="checkbox"/> Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) <input type="checkbox"/> Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) <input type="checkbox"/> Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) <input type="checkbox"/> Detention pond or vault for hydromodification management <input type="checkbox"/> Other (describe in discussion section below) | |
| Purpose: <input type="checkbox"/> Pollutant control only <input type="checkbox"/> Hydromodification control only <input checked="" type="checkbox"/> Combined pollutant control and hydromodification control <input type="checkbox"/> Pre-treatment/forebay for another structural BMP <input type="checkbox"/> Other (describe in discussion section below) | |
| Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual) | William G Mack PE 73620 PLSA ENGINEERING 1911 San Diego Avenue, Suite 100 San Diego, CA 92110 858-259-8212 |
| Who will be the final owner of this BMP? | San Diego Habitat for Humanity 8213 Mercury Court San Diego, CA 92111 |
| Who will maintain this BMP into perpetuity? | San Diego Habitat for Humanity 8213 Mercury Court San Diego, CA 92111 |
| What is the funding mechanism for maintenance? | San Diego Habitat for Humanity 8213 Mercury Court San Diego, CA 92111 |

Structural BMP ID No. BMP-9

Construction Plan Sheet No. C-1.0

Discussion (as needed):

ATTACHMENT 1 BACKUP FOR PDP POLLUTANT CONTROL BMPS

This is the cover sheet for Attachment 1.

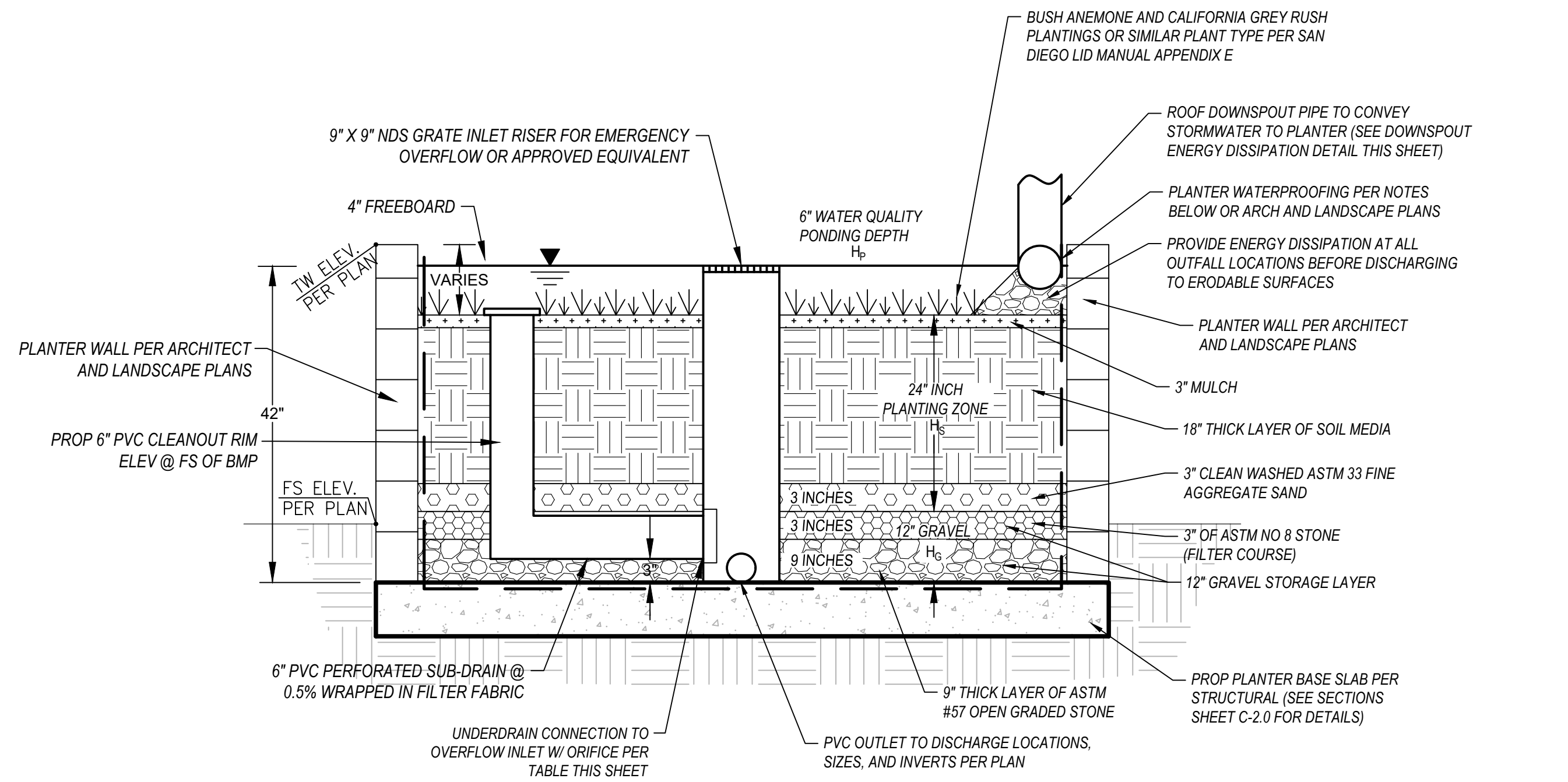
Indicate which Items are Included behind this cover sheet:

| Attachment Sequence | Contents | Checklist |
|---------------------|--|---|
| Attachment 1a | DMA Exhibit (Required) See DMA Exhibit Checklist on the back of this Attachment cover sheet. | <input checked="" type="checkbox"/> Included |
| Attachment 1b | Tabular Summary of DMAs Showing DMA ID matching DMA Exhibit, DMA Area, and DMA Type (Required)* *Provide table in this Attachment OR on DMA Exhibit in Attachment 1a | <input type="checkbox"/> Included on DMA Exhibit in Attachment 1a <input checked="" type="checkbox"/> Included as Attachment 1b, separate from DMA Exhibit |
| Attachment 1c | Form I-7, Harvest and Use Feasibility Screening Checklist (Required unless the entire project will use infiltration BMPs) Refer to Appendix B.3-1 of the BMP Design Manual to complete Form I-7. | <input checked="" type="checkbox"/> Included <input type="checkbox"/> Not included because the entire project will use infiltration BMPs |
| Attachment 1d | Form I-8, Categorization of Infiltration Feasibility Condition (Required unless the project will use harvest and use BMPs) Refer to Appendices C and D of the BMP Design Manual to complete Form I-8. | <input checked="" type="checkbox"/> Included <input type="checkbox"/> Not included because the entire project will use harvest and use BMPs |
| Attachment 1e | Pollutant Control BMP Design Worksheets / Calculations (Required) Refer to Appendices B and E of the BMP Design Manual for structural pollutant control BMP design guidelines | <input checked="" type="checkbox"/> Included |

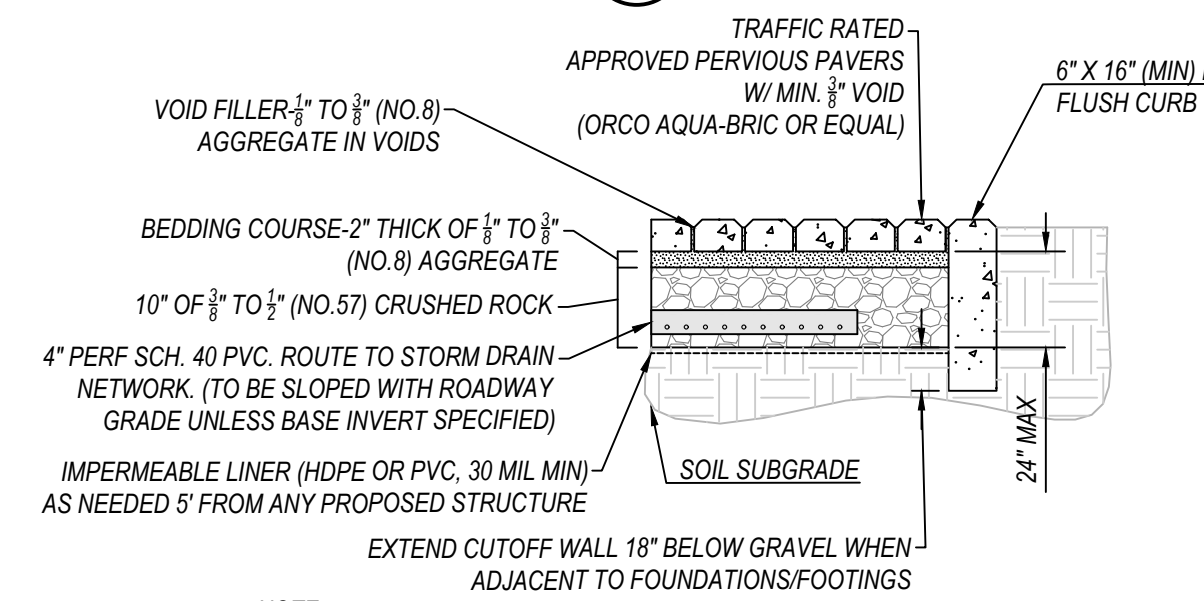
Use this checklist to ensure the required information has been included on the DMA Exhibit:

The DMA Exhibit must identify:

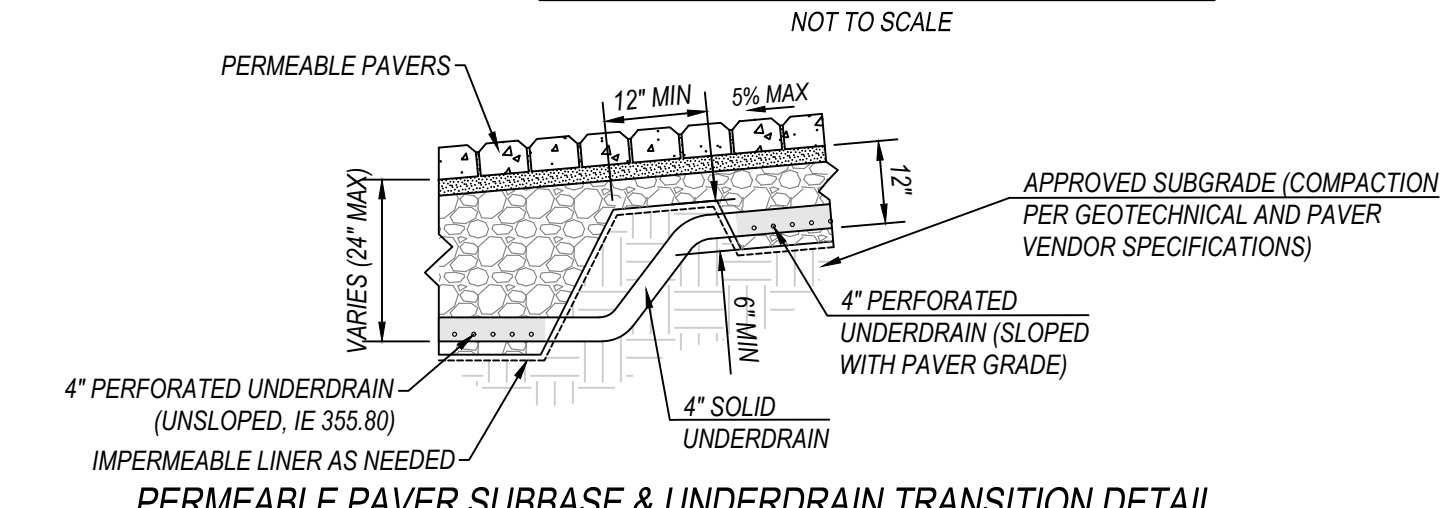
- Underlying hydrologic soil group
- Approximate depth to groundwater
- Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
- Critical coarse sediment yield areas to be protected
- Existing topography and impervious areas
- Existing and proposed site drainage network and connections to drainage offsite
- Proposed demolition
- Proposed grading
- Proposed impervious features
- Proposed design features and surface treatments used to minimize imperviousness
- Drainage management area (DMA) boundaries, DMA ID numbers, and DMA areas (square footage or acreage), and DMA type (i.e., drains to BMP, self-retaining, or self-mitigating)
- Potential pollutant source areas and corresponding required source controls (see Chapter 4, Appendix E.1, and Form I-3B)
- Structural BMPs (identify location, type of BMP, and size/detail)



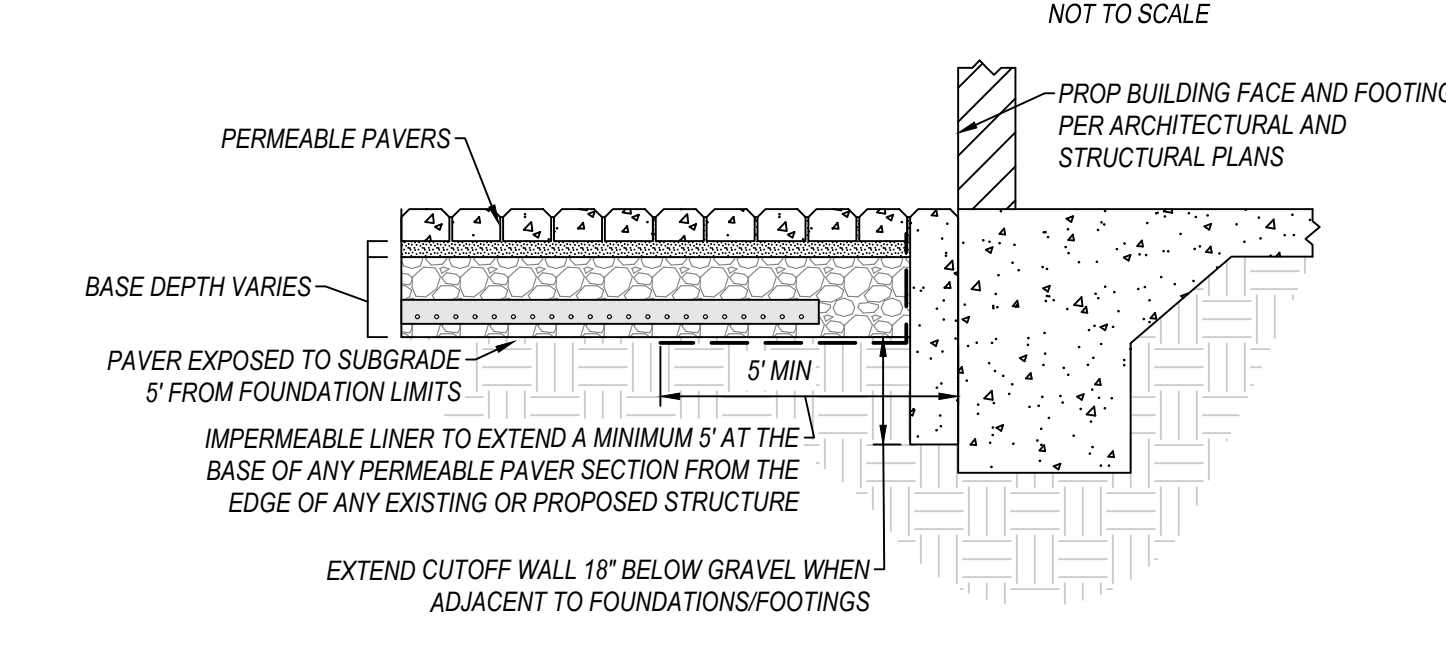
A1 TYPICAL SECTION: BIOFILTRATION PLANTER CROSS SECTION (BF-1)
NOT TO SCALE



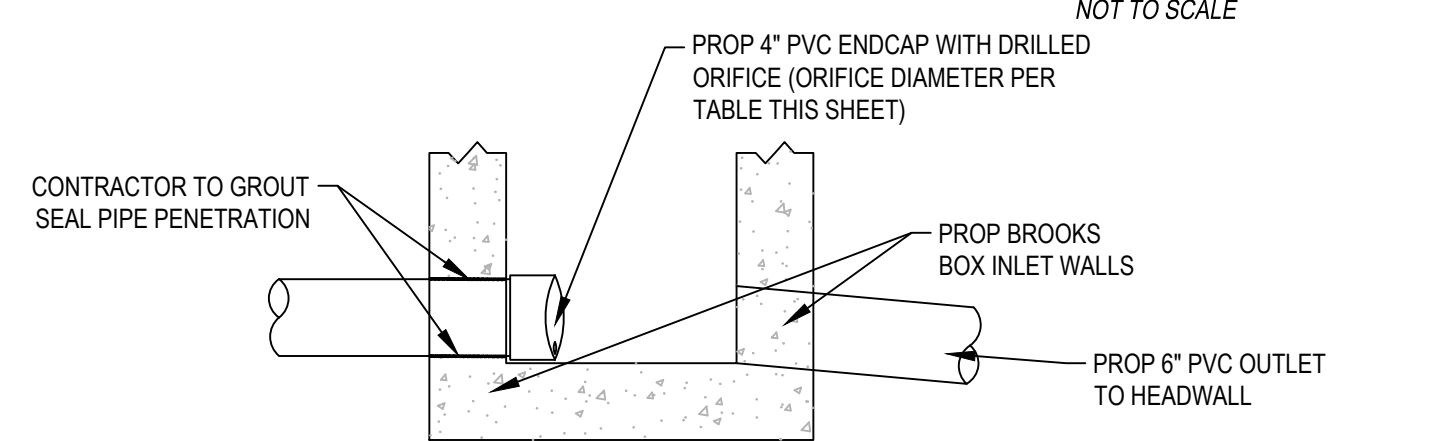
PERMEABLE PAVER DETAIL
NOT TO SCALE



PERMEABLE PAVER SUBBASE & UNDERDRAIN TRANSITION DETAIL
NOT TO SCALE



PERMEABLE PAVER IMPERMEABLE LINER LIMIT DETAIL
NOT TO SCALE

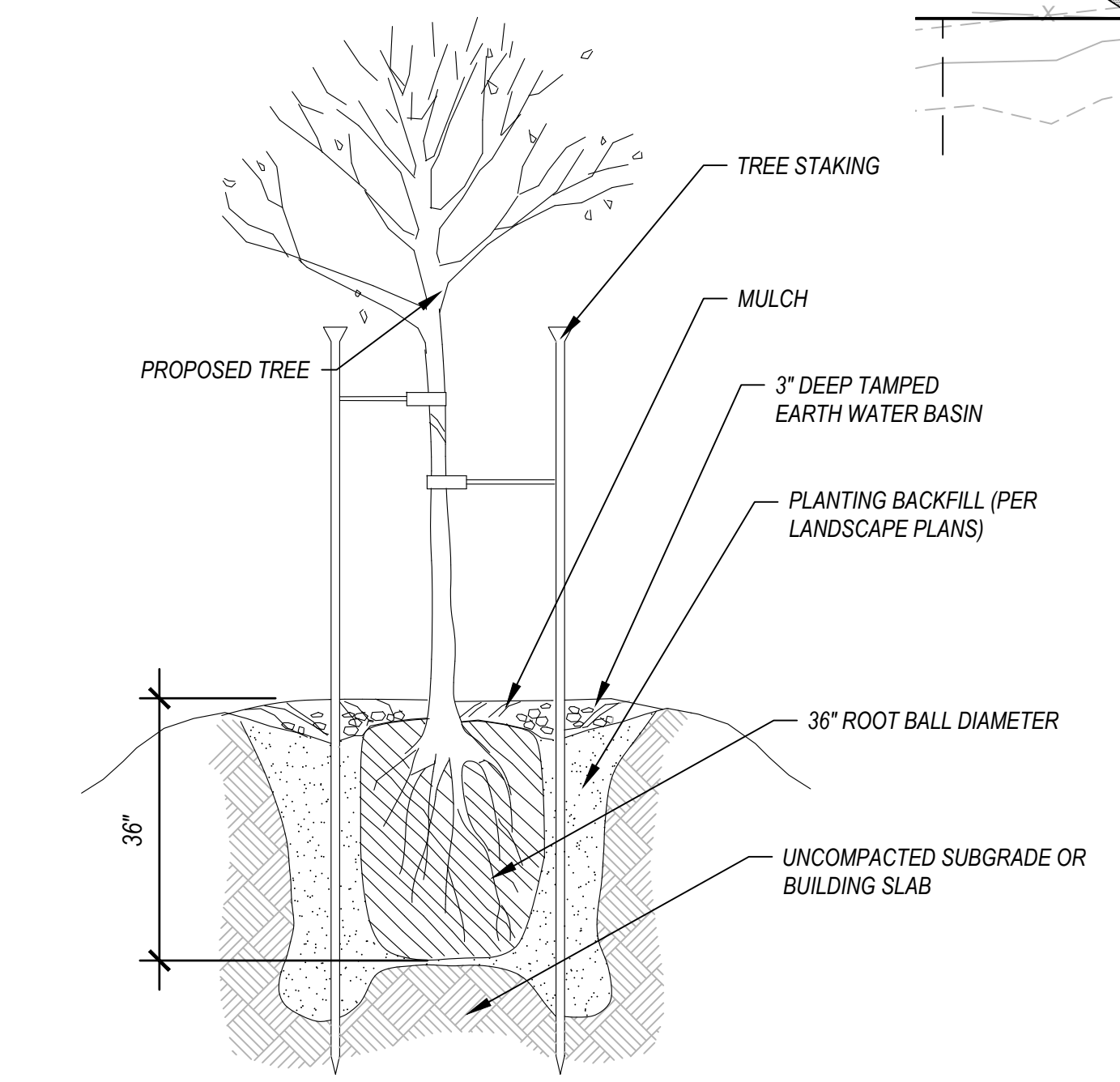


A3 BROOKS BOX INLET CONNECTION DETAIL (PAVER OUTLET DETAIL)
NOT TO SCALE

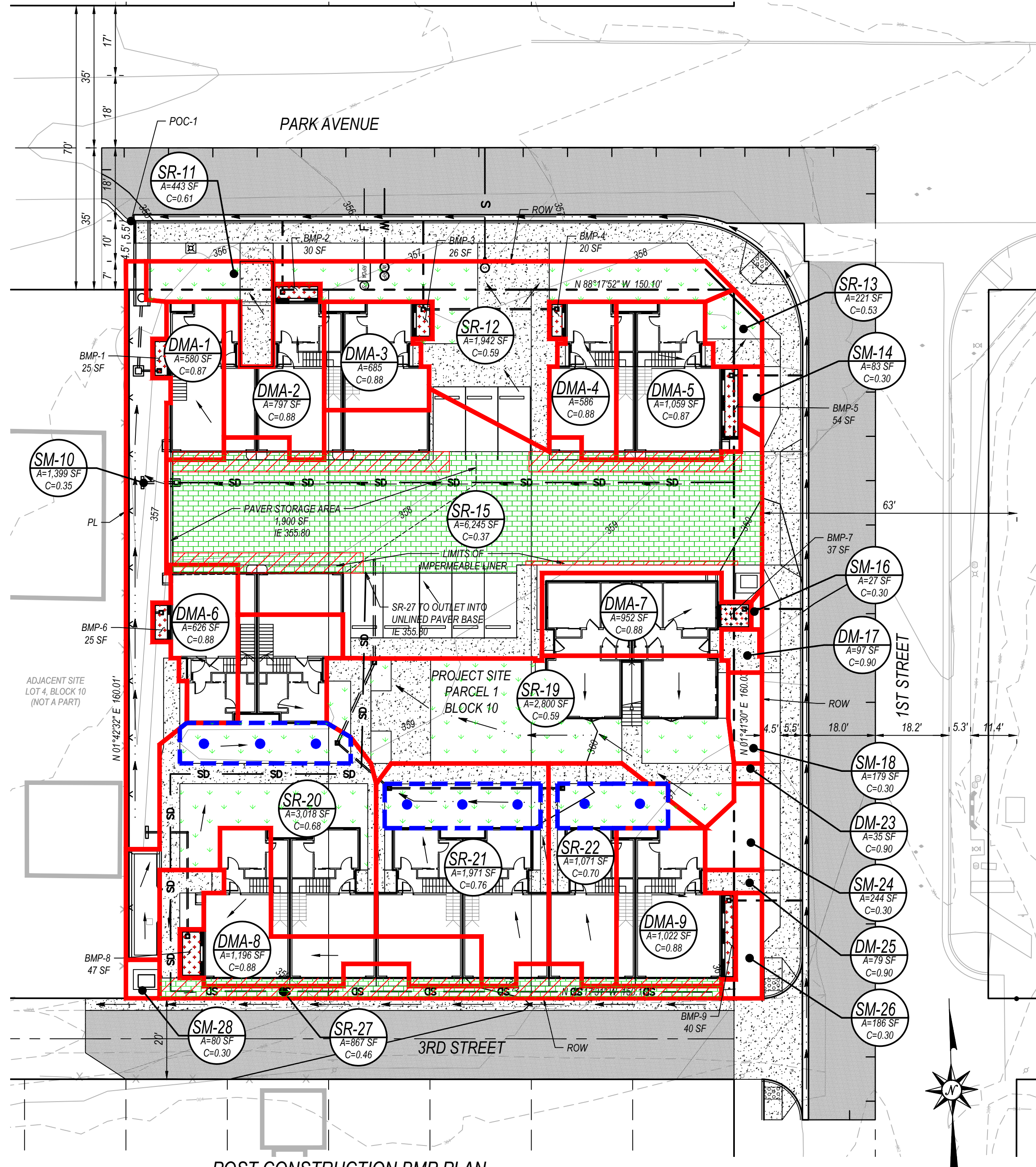
A2 9\"/> NOT TO SCALE

BMP SIZE & ORIFICE DIAMETER SUMMARY

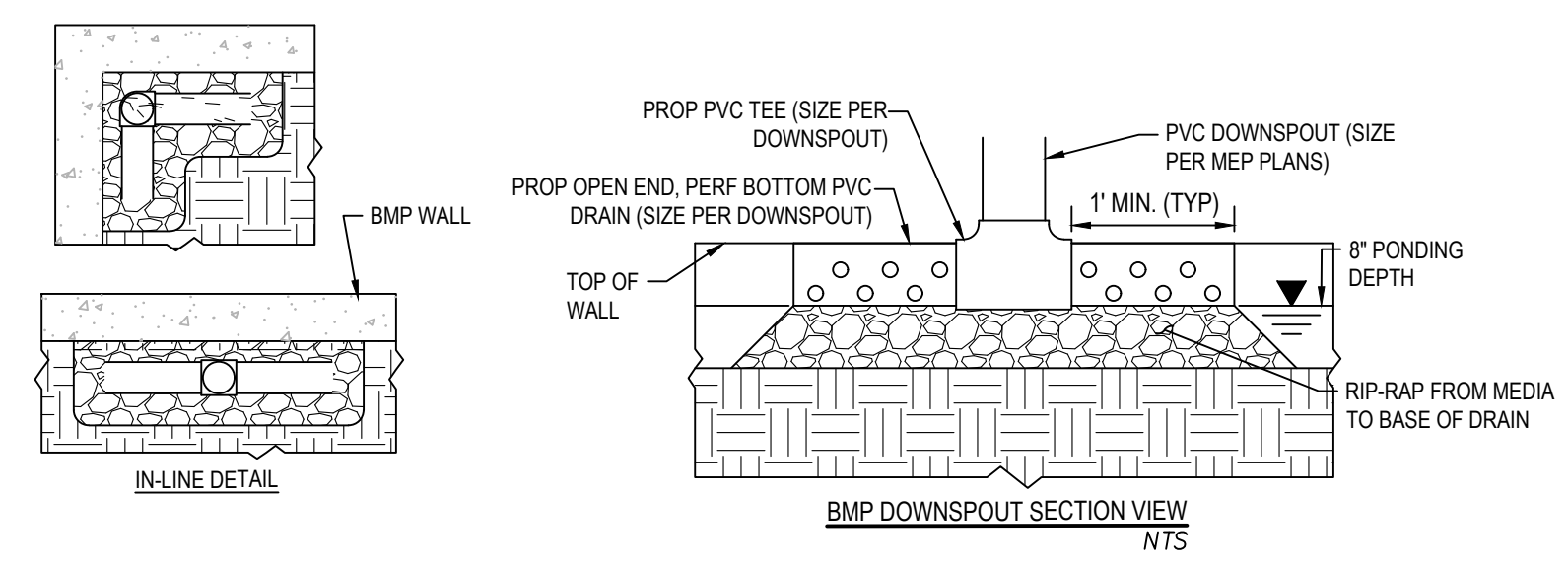
| BMP # | DCV REQUIRED (FT ³) | H ₁ (FT) | H ₂ (FT) | H ₃ (FT) | EFFECTIVE DEPTH (FT) | HMP ORIFICE (IN) | A (FT ²) | VOLUME PROVIDED (FT ³) |
|-------|---------------------------------|---------------------|---------------------|---------------------|----------------------|------------------|----------------------|------------------------------------|
| 1 | 25 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 25 | 38 |
| 2 | 35 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 30 | 45 |
| 3 | 30 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 26 | 39 |
| 4 | 26 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 20 | 29 |
| 5 | 46 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 54 | 81 |
| 6 | 28 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 25 | 38 |
| 7 | 42 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 37 | 56 |
| 8 | 52 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 47 | 71 |
| 9 | 45 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 40 | 60 |



TREE WELL PLANTER DETAIL
SCALE: NTS
(SEE LANDSCAPE PLANS FOR ADDITIONAL SPECS AND DETAILS)



POST CONSTRUCTION BMP PLAN
SCALE: 1" = 20'

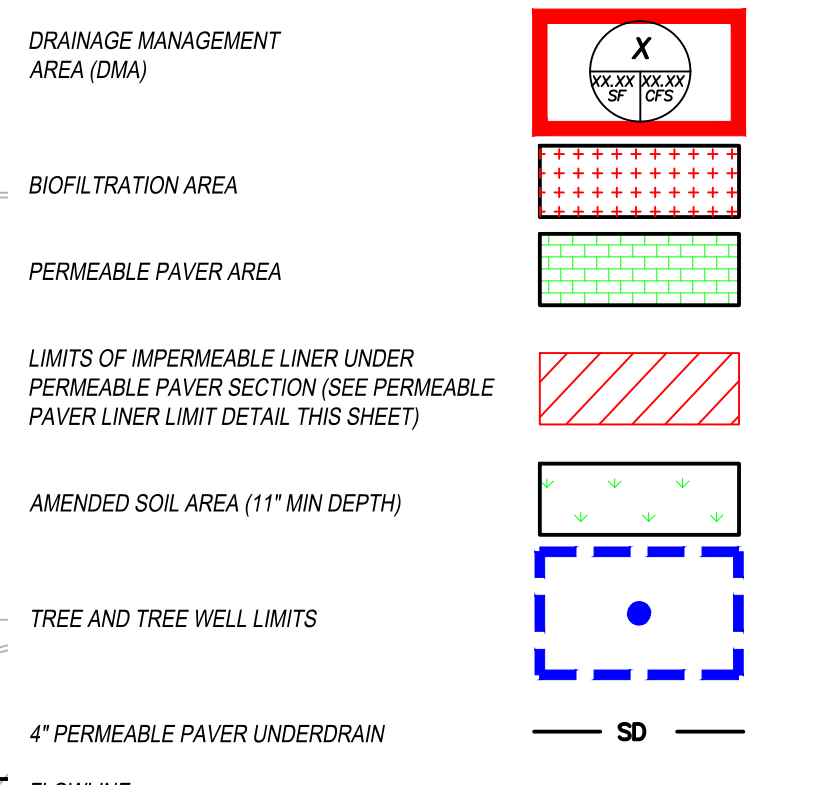


DOWNSPOUT ENERGY DISSIPATION/ OUTLET DETAILS
NOT TO SCALE

CONTRACTOR REQUIREMENTS FOR ENGINEER OF WORK POST-CONSTRUCTION BMP CERTIFICATION:

- THE CONTRACTOR IS TO CONSTRUCT ALL BMPs AS DESIGNATED ON THIS PLAN, PURSUANT TO APPROVED MAINTENANCE AGREEMENT. IF IN FIELD CONDITIONS WARRANT A PORTION OF THIS DESIGN INFEASIBLE, THE CONTRACTOR IS TO NOTIFY THE ENGINEER OF WORK IMMEDIATELY.
- PRIOR TO THE INSTALLATION OF THESE BMPs, THE CONTRACTOR IS TO PROVIDE THE FOLLOWING TO THE ENGINEER OF RECORD:
 - SUBMITTALS FOR SOIL MEDIA MIXES, SAND, AND GRAVEL USED IN BMP CONSTRUCTION.
 - PURCHASE ORDERS FOR ALL PROPRIETARY BMP SYSTEMS.
- SHOULD THE REQUIRED DOCUMENTATION LISTED ABOVE NOT BE PROVIDED TO THE ENGINEER OF WORK PRIOR TO THE TIME OF INSTALLATION, THE ENGINEER OF WORK RESERVES THE RIGHT TO REFUSE CERTIFICATION OF THESE BMPs UNTIL EITHER THE NECESSARY DOCUMENTATION HAS BEEN PROVIDED, OR A WRITTEN CERTIFICATION OF MATERIAL SPECIFICATION PER PLAN HAS BEEN PROVIDED BY THE CONTRACTOR. THIS ACCEPTING LIABILITY SHOULD IT BE FOUND THAT THESE BMPs WERE NOT INSTALLED TO PLAN AT A LATER DATE.

LEGEND:



IMPERVIOUS AREA TABULATIONS:

EXISTING IMPERVIOUS AREA: 2,654 S.F. (0.06 ACRES, 9%)
 PROPOSED IMPERVIOUS AREA: 18,920 S.F. (0.38 ACRES, 58%)
 PROPOSED PERMEABLE PAVER AREA: 4,348 S.F. (0.10 ACRES, 15%)
 RUNOFF FACTOR: 0.90 = IMPERVIOUS, 0.30 = PERVIOUS, 0.10 = PERMEABLE PAVERS
 WEIGHTED RUNOFF FACTOR = (58% X 0.90) + (26% X 0.30) + (15% X 0.10) = 0.62
 REFER TO THE BMP AREA SUMMARY TABLE FOR ALL PROPOSED BMP AREAS

GEOLOGY NOTES:

UNDERLYING HYDROLOGIC SOIL GROUP: TYPE D
 APPROXIMATE DEPTH TO GROUNDWATER: >30 FEET

PERMANENT POST-CONSTRUCTION BMP NOTES:

- OPERATION AND MAINTENANCE SHALL BE SECURED BY AN EXECUTED AND RECORDED STORM WATER MANAGEMENT AND DISCHARGE CONTROL, MAINTENANCE AGREEMENT (SWM/DCMA) OR ANOTHER MECHANISM APPROVED BY THE CITY ENGINEER, THAT ASSURES ALL PERMANENT BMPs WILL BE MAINTAINED IN PERPETUITY, PER THE LAND DEVELOPMENT MANUAL, STORM WATER STANDARDS.
- ANY MODIFICATIONS TO THE PERMANENT POST-CONSTRUCTION BMP DEVICES/STRUCTURES SHOWN ON PLAN REQUIRES A CONSTRUCTION CHANGE TO BE PROCESSED AND APPROVED THROUGH DEVELOPMENT SERVICES DEPARTMENT BY THE ENGINEER OF WORK. APPROVAL OF THE CONSTRUCTION CHANGE IS REQUIRED PRIOR TO CONSTRUCTION OF THE PERMANENT BMP.

NOTES:

- ALL DMAs UTILIZING IMPERVIOUS AREA DISPERSION WILL SATISFY POLLUTANT CONTROL AND HYDROMODIFICATION REQUIREMENTS BY AMENDING THE TOP 11 INCHES OF THE PERVIOUS AREA WITHIN THE DMA (PER FACTSHEET SD-B IMPERVIOUS AREA DISPERSION), AND THE OVERALL PERVIOUS AREA WITHIN EACH DMA IS GREATER THAN 50% OF THE OVERALL DMA.

DRAINAGE MANAGEMENT AREA LEGEND

DMA DRAINAGE MANAGEMENT AREA
 SM SELF MITIGATING DRAINAGE AREA
 SR SELF RETAINING DRAINAGE AREA
 DM DEMINIMIS DRAINAGE AREA

BIOFILTRATION PLANT SPECIES NOTE

BIOFILTRATION PLANTINGS WILL BE PER THE PROPOSED LANDSCAPE PLANS AND SHALL BE BASED ON THE CITY OF SANTEE BMP DESIGN MANUAL PLANT LIST IN APPENDIX E.20. NOTE HOWEVER THAT THIS PLANT LIST IS TO BE USED TO AID IN PLANT SELECTION. SHOULD THE LANDSCAPE ARCHITECT DETERMINE THAT BASED ON THE SPECIFIC CLIMATE, PONDING DEPTH AND OTHER SITE CONDITIONS, PLANTINGS NOT INCLUDED ON THIS LIST WOULD BE MORE SUITABLE, THE BMP DESIGN MANUAL DEFERS TO THE CERTIFIED LANDSCAPE ARCHITECT FOR SPECIES SELECTION WITHIN THESE BMPs.

BIOFILTRATION WATER PROOFING NOTES

- PREP WALL AND FOOTING - SPRAY APPLY "MARFLEX 5000" COMMERCIAL MEMBRANE TO BACK OF WALL, TOP OF FOOTING AND BOTTOM OF PLANTER PER MANUFACTURER'S SPECIFICATIONS.
- ADDRESS ANY EXPANSION JOINTS WITH 12-INCH MIN. STRIP OF "SOCC-SHIELD 300" MEMBRANE (10 MIL. MIN. THICKNESS) CENTERED OVER JOINT, ADHERED TO "MARFLEX" OVER SPRAY JOINT WITH "MARFLEX 5000" TO MANUFACTURER'S REQUIRED MIL THICKNESS.
- APPLY "SOCC-SHIELD 300" MEMBRANE (10 MIL. MIN. THICKNESS) TO ADHERE TO THE "MARFLEX 5000" OVER ENTIRE WALL, STEM WALL AND PLANTER BOTTOM INCLUDING TREATED EXPANSION JOINTS. OVERLAP MATERIAL SEAMS A MIN. OF 6-INCHES IN ALL DIRECTIONS.
- ATTACH TACK STRIP AT TOP OF MEMBRANE AND ON SIDE ENDS OF WALL FROM TOP OF MEMBRANE TO TOP OF FOOTING.
- APPLY "COOL-COAT" OR EQUIVALENT U.V. RESISTANT MEMBRANE ABOVE TACK STRIP TO TOP OF WALL PER MANUFACTURER'S SPECIFICATIONS.

ADDITIONAL WATER PROOFING NOTES

- PER GEOTECHNICAL RECOMMENDATIONS, NO INFILTRATION IS FEASIBLE ON THIS SITE. HOWEVER, SHOULD A WATER QUALITY TREATMENT BMP BE PROPOSED WITH AN OPEN BOTTOM (PERMEABLE PAVERS OR TREE WELLS), AN IMPERMEABLE LINER SHALL BE PROPOSED AT THE BASE OF EACH BMP SECTION TO A DISTANCE AT LEAST 5' FROM THE CLOSEST BUILDING STRUCTURE OR RETAINING WALL.

PROJECT DATA
 SOIL TYPE: D
 SLOPE CONDITION: FLAT
 PCCSYA: NOT LOCATED WITHIN SITE
 GROUNDWATER DEPTH: > 30'

SWQMP DMA MAP
 HABITAT FOR HUMANITY - 1ST STREET
 SANTEE, CA
 PROJECT NUMBER: 3741
 SCALE: 1" = 20'
 DATE: AUGUST, 2023

PASCO LARET SUITER & ASSOCIATES
 San Diego | Solana Beach | Orange County
 Phone 858.259.8212 | www.plsaengineering.com

August 2, 2013
Project No. SO21.1213

Ms. Roxann Janes, Real Estate Development/Construction Operations Director
San Diego Habitat for Humanity
8128 Mercury Court
San Diego, CA 92111


GEOTECHNICAL PLAN REVIEW NO. 2
HABITAT FOR HUMANITY PROPOSED RESIDENTIAL STRUCTURES, TM 2023-1,
8932 FIRST STREET
SANTEE, CALIFORNIA

In accordance with your request and authorization, **Geo-Logic Associates (GLA)**, has conducted a further review of the Civil Plan for the subject site and provide further clarification regarding the impermeable liner limit for the permeable paver areas and the recommended 5-foot setback from all foundations.

The requested detail is attached as Figure 1.

We appreciate this opportunity to be of service. If you have any questions regarding this report, please do not hesitate to contact the undersigned.

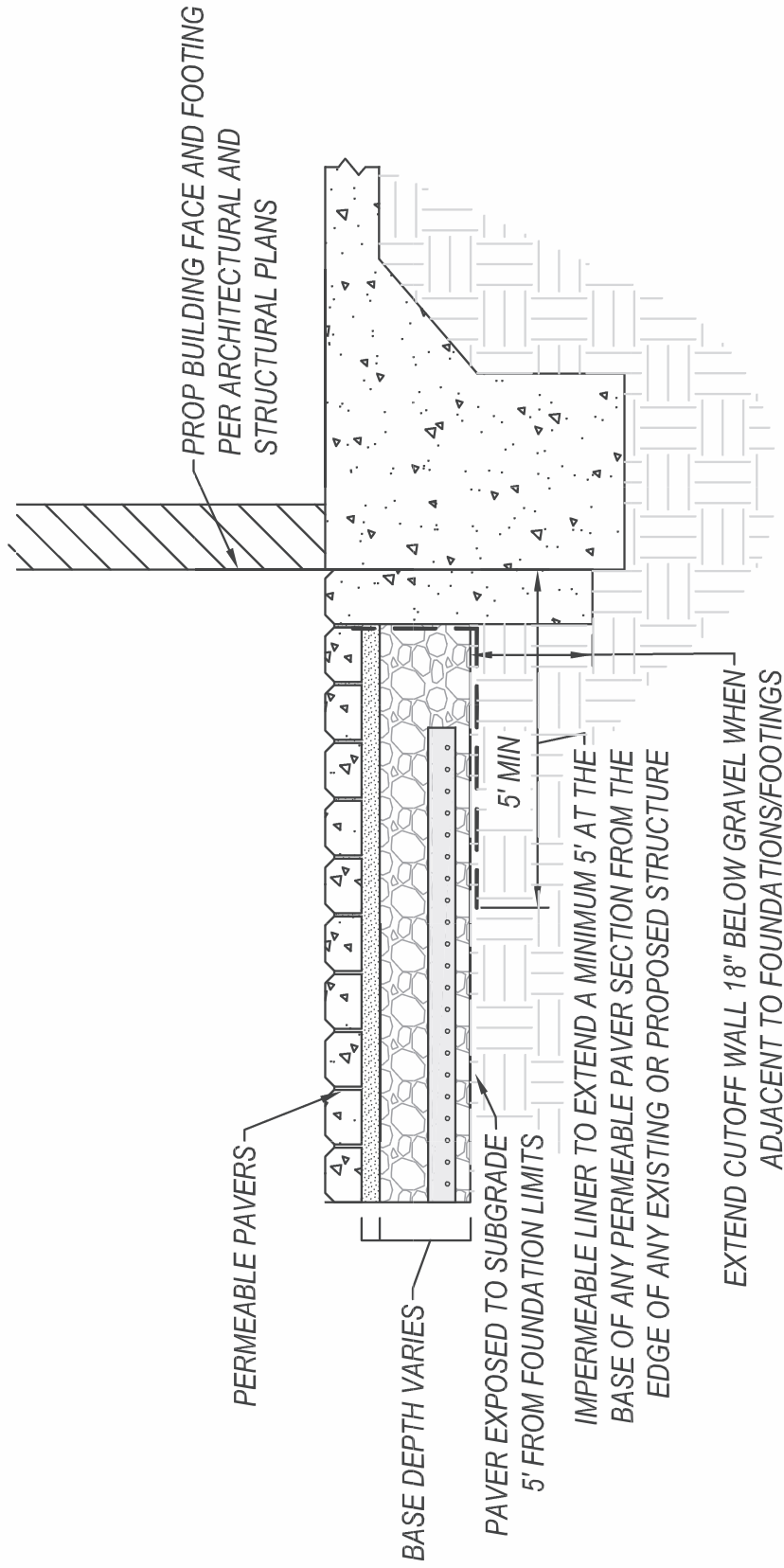
Geo-Logic Associates


Joseph G. Franzone, PE, GE 2189
Principal Geotechnical Engineer



Attachment: Figure 1 – Permeable Paver Impermeable Liner Limit Detail

Distribution: (1) Addressee- electronic submittal
(1) PLSA Engineering, Attn.: Mr. Zack Sikora



PERMEABLE PAVES IMPERMEABLE LINER LIMIT DETAIL

NOT TO SCALE

FIGURE 1

BMP Sizing and DCV Summary Table

| BMP Location | BMP Description | Total Area (sq-ft) | Impervious Area (sq-ft) | Pervious Area (sq-ft) | Permeable Paver Area (sq-ft) | % Impervious | % Pervious | % Permeable Pavers | C Weighted Runoff Factor | Min 3% Treatment Area (sq-ft) | Min HMP Sizing Table BMP Area (sf) | BMP Area Provided (sf) | DCV Required (Cu-Ft) | BMP Volume Provided (cf) |
|------------------------|-----------------|--------------------|-------------------------|-----------------------|------------------------------|--------------|------------|--------------------|--------------------------|-------------------------------|------------------------------------|------------------------|----------------------|--------------------------|
| DMA-1 | Biofiltration | 580 | 555.00 | 25.0 | 0.0 | 96% | 4% | 0% | 0.87 | 15 | 25 | 25 | 25 | 38 |
| DMA-2 | Biofiltration | 797 | 767.00 | 30.0 | 0.0 | 96% | 4% | 0% | 0.88 | 21 | 35 | 30 | 35 | 45 |
| DMA-3 | Biofiltration | 685 | 659.00 | 26.0 | 0.0 | 96% | 4% | 0% | 0.88 | 18 | 30 | 26 | 30 | 39 |
| DMA-4 | Biofiltration | 586 | 566.50 | 19.5 | 0.0 | 97% | 3% | 0% | 0.88 | 15 | 26 | 20 | 26 | 29 |
| DMA-5 | Biofiltration | 1059 | 1005.00 | 54.0 | 0.0 | 95% | 5% | 0% | 0.87 | 28 | 46 | 54 | 46 | 81 |
| DMA-6 | Biofiltration | 637 | 612.00 | 25.0 | 0.0 | 96% | 4% | 0% | 0.88 | 17 | 28 | 25 | 28 | 38 |
| DMA-7 | Biofiltration | 952 | 915.00 | 37.0 | 0.0 | 96% | 4% | 0% | 0.88 | 25 | 42 | 37 | 42 | 56 |
| DMA-8 | Biofiltration | 1196 | 1149.00 | 47.0 | 0.0 | 96% | 4% | 0% | 0.88 | 31 | 52 | 47 | 52 | 71 |
| DMA-9 | Biofiltration | 1022 | 982.00 | 40.0 | 0.0 | 96% | 4% | 0% | 0.88 | 27 | 45 | 40 | 45 | 60 |
| SM-10 | Self-Mit | 1388 | 75.00 | 1313.0 | 0.0 | 5% | 95% | 0% | 0.33 | NA | NA | NA | 23 | NA |
| SR-11 | Imperv Disp | 443 | 212.00 | 231.0 | 0.0 | 48% | 52% | 0% | 0.59 | NA | NA | NA | 13 | 13 |
| SR-12 | Imperv Disp | 1942 | 946.00 | 996.0 | 0.0 | 49% | 51% | 0% | 0.59 | NA | NA | NA | 58 | 58 |
| SR-13 | Imperv Disp | 221 | 85.00 | 136.0 | 0.0 | 38% | 62% | 0% | 0.53 | NA | NA | NA | 6 | 6 |
| SM-14 | Self-Mit | 83 | 0.00 | 83.0 | 0.0 | 0% | 100% | 0% | 0.30 | NA | NA | NA | 1 | NA |
| SR-15 | Perm Pavers | 6245 | 1989.00 | 349.0 | 3907.0 | 32% | 6% | 63% | 0.37 | NA | 4206 | 4206 | 114 | 3523 |
| SM-16 | Self-Mit | 27 | 0.00 | 27.0 | 0.0 | 0% | 100% | 0% | 0.30 | NA | NA | NA | 0 | NA |
| DM-17 | Deminimis | 97 | 97.00 | 0.0 | 0.0 | 100% | 0% | 0% | 0.90 | NA | NA | NA | 4 | NA |
| SM-18 | Self-Mit | 179 | 8.00 | 171.0 | 0.0 | 4% | 96% | 0% | 0.33 | NA | NA | NA | 3 | NA |
| SR-19 | Imperv Disp | 2800 | 1370.00 | 1430.0 | 0.0 | 49% | 51% | 0% | 0.59 | NA | NA | NA | 83 | 83 |
| SR-20 | Tree Wells | 3018 | 1935.00 | 1083.0 | 0.0 | 64% | 36% | 0% | 0.68 | NA | NA | NA | 103 | 300 |
| SR-21 | Tree Wells | 1971 | 1506.00 | 465.0 | 0.0 | 76% | 24% | 0% | 0.76 | NA | NA | NA | 75 | 300 |
| SR-22 | Tree Wells | 1071 | 699.00 | 372.0 | 0.0 | 65% | 35% | 0% | 0.69 | NA | NA | NA | 37 | 200 |
| DM-23 | Deminimis | 35 | 35.00 | 0.0 | 0.0 | 100% | 0% | 0% | 0.90 | NA | NA | NA | 2 | NA |
| SM-24 | Self-Mit | 244 | 0.00 | 244.0 | 0.0 | 0% | 100% | 0% | 0.30 | NA | NA | NA | 4 | NA |
| DM-25 | Deminimis | 79 | 79.00 | 0.0 | 0.0 | 100% | 0% | 0% | 0.90 | NA | NA | NA | 4 | NA |
| SM-26 | Self-Mit | 186 | 0.00 | 186.0 | 0.0 | 0% | 100% | 0% | 0.30 | NA | NA | NA | 3 | NA |
| SR-27 | Perm Pavers | 867 | 373.00 | 53.0 | 441.0 | 43% | 6% | 51% | 0.46 | NA | 697 | 697 | 20 | 467 |
| SM-28 | Self-Mit | 80 | 0.00 | 80.0 | 0.0 | 0% | 100% | 0% | 0.30 | NA | NA | NA | 1 | NA |
| TOTAL DMA AREA: | | 28490 | 16619.5 | 7522.5 | 4348.0 | 58% | 26% | 15% | 0.62 | 197 | 329 | 304 | 882 | 5405 |

NOTE: Weighted runoff factor based on percent of impervious, pervious, and paver area in each respective DMA

$$C = (\text{Impervious \%} * \text{Impervious Runoff Factor}) + (\text{Pervious \%} * \text{Landscape Runoff Factor}) + (\text{Pavers \%} * \text{Permeable Pavers Runoff Factor})$$

Runoff Factor

| | |
|------------------|------|
| Impervious | 0.9 |
| Landscape | 0.30 |
| Permeable Pavers | 0.10 |

P85th Parameters

| | | |
|------------|------|-------|
| Intensity: | 0.20 | in/hr |
| Precip: | 0.60 | in |

| BMP Effective Depth Calculations | | | | Tree Credit Volume Calculations | | | | | |
|--|------------------------------|-------|-----------------|---------------------------------|-----------|------------|--------------------------------------|-----------------------|-----|
| LAYER | Depth (ft) | Voids | Effective Depth | DMA # | Tree Type | Max Credit | Soil Vol provided/ Soil Vol Required | Effective TCV (Cu-Ft) | |
| Ponding Depth | 0.5 | 1 | 0.50 | | | | | | |
| Soil Depth (includes sand and mulch) | 2 | 0.25 | 0.50 | SR-20 | (3) #2 | 300 cf | 1170 cf / 1060 cf | 300 | |
| Gravel Depth (above underdrain invert) | 0.75 | 0.67 | 0.50 | SR-21 | (3) #2 | 300 cf | 1287 cf / 1060 cf | 300 | |
| | Total Effective Depth | | | 1.50 | SR-22 | (2) #2 | 200 cf | 858 cf / 707 cf | 200 |

Conceptual Design and Sizing Approach for Storm Water Pollutant Treatment and Flow Control

DMA's using impervious area dispersion are considered to meet both pollutant control and hydromodification flow control requirements if ALL of the following criteria are met:

- All impervious area within the DMA discharges to the pervious area before the runoff discharges from the DMA.
- As a minimum, the top 11 inches of the pervious area uses amended soils in accordance with the SD-F fact sheet and the pervious area also meets the requirements for dispersion (e.g. slope, inflow velocities, etc.) in the SD-B fact sheet.
- The impervious to pervious area ratio is 1:1 or less.

Impervious Area Dispersion designed to meet both pollutant control and flow control requirements are designated as SSD BMP's.

*Note that all DMA's utilizing impervious area dispersion will satisfy pollutant control and hydromodification requirements by amending the top 11 inches of the pervious area within the DMA, and the overall pervious area within each dma is greater than 50% of the overall DMA.

* Note that each Tree well will provide 3' deep soil. The min Soil Volume to achieve full credit is 2 cf per sf of canopy volume, therefore a ratio of provided soil volume to the required for full credit is utilized to determine effective TCV

| Botanical Name | Common Name | Mature Height (ft) | Mature Canopy Diameter (ft) | Credit Volume per Tree (ft ³) |
|------------------------------------|---------------------------|--------------------|-----------------------------|---|
| 1 <i>Ceanothus 'Ray Hartman'</i> | California Mountain Lilac | 30 | 10 | 40 |
| 2 <i>Pittosporum Phyllanoides</i> | Willow Pittosporum | 25 | 15 | 100 |
| 3 <i>Salix Lasiolepis</i> | Arroyo Willow | 25 | | |
| 4 <i>Arbutus Unedo</i> | Strawberry Tree | 30 | | |
| 5 <i>Prunus Iliifolia</i> | Hollyleaf Cherry | 30 | 20 | 180 |
| 6 <i>Prunus Lyoni</i> | Catalina Cherry | 40 | | |
| 7 <i>Cercis Occidentalis</i> | Western Redbud | 25 | | |
| 8 <i>Heteromeles Arbutifolia</i> | Toyon, Christmas Berry | 25 | 25 | 290 |
| 9 <i>Alnus Rhombifolia</i> | White Elder | 75 | | |
| 10 <i>Arbutus 'Marina'</i> | Hybrid Strawberry Tree | 35 | | |
| 11 <i>Chilopsis Linearis</i> | Desert Willow | 30 | | |
| 12 <i>Lyonsiburnus Floribundus</i> | Catalina Ironwood | 50 | | |
| 13 <i>Magnolia Grandiflora</i> | Southern Magnolia | 40 | | |
| 14 <i>Pinus Torreyana</i> | Torrey Pines | 80 | 30 | 420 |
| 15 <i>Platanus Racemosa</i> | California sycamore | 60 | | |
| 16 <i>Quercus Agrifolia</i> | Coast Live Oak | 70 | | |
| 17 <i>Quercus Engelmannii</i> | Engelmann Oak | 50 | | |
| 18 <i>Quercus Suber</i> | Cork Oak | 40 | | |
| 19 <i>Sambucus Mexicana</i> | Blue Elderberry | 30 | | |

Table B.1-1: Runoff factors for surfaces draining to BMPs – Pollutant Control BMPs

| Category | Surface Type | Runoff Factor (C) |
|------------------------------|---|---------------------|
| Impervious Surfaces | Roofs, Concrete, Asphalt, Unit Pavers (grouted) | 0.90 |
| Semi-Pervious Surfaces | Decomposed Granite, Cobbles, Crushed Aggregate, Compacted soil (unpaved parking) | 0.30 |
| Engineered Pervious Surfaces | Green Roofs per SD-C Permeable Pavement per SD-D, Amended Soils per SD-F, Landscaped/Mulched Soils Permeable Pavement per INF-3 | 0.10 |
| Natural Pervious Surfaces | Type A Soil | 0.10 |
| | Type B Soil | 0.14 |
| | Type C Soil | 0.23 |
| | Type D Soil | 0.30 |
| Dispersion Areas | Areas <u>routed to</u> or <u>servicing</u> as a dispersion area per SD-B | See Dispersion Area |

Table G.2-5: Sizing Factors for Hydromodification Flow Control Biofiltration BMPs Designed Using Sizing Factor Method

| Lower Flow Threshold | Soil Group | Pre-Project Slope | Rain Gauge | A |
|----------------------|------------|-------------------|------------|-------|
| 0.1Q ₂ | A | Flat | Lindbergh | 0.320 |
| 0.1Q ₂ | A | Moderate | Lindbergh | 0.300 |
| 0.1Q ₂ | A | Steep | Lindbergh | 0.285 |
| 0.1Q ₂ | B | Flat | Lindbergh | 0.105 |
| 0.1Q ₂ | B | Moderate | Lindbergh | 0.100 |
| 0.1Q ₂ | B | Steep | Lindbergh | 0.095 |
| 0.1Q ₂ | C | Flat | Lindbergh | 0.055 |
| 0.1Q ₂ | C | Moderate | Lindbergh | 0.050 |
| 0.1Q ₂ | C | Steep | Lindbergh | 0.050 |
| 0.1Q ₂ | D | Flat | Lindbergh | 0.050 |
| 0.1Q ₂ | D | Moderate | Lindbergh | 0.050 |
| 0.1Q ₂ | D | Steep | Lindbergh | 0.050 |

ASSUMING 0.125" ORIFICE FOR EACH BMP, CUTOFF FLOW BASED ON ORIFICE FLOW CALCULATION IS 0.00075 CFS
 Orifice equation, $Q=CoAe(2gh)^{1/2}$

Drawdown Time for Biofiltration BMP-1

| | | | |
|-----------------------|--------|-------|--------------------|
| Outlet Q: | 0.0008 | cfs | 1.296 in/hr |
| BMP Percolation Rate: | 5 | in/hr | 0.0001 ft/sec |
| BMP Area: | 25.0 | sq-ft | |
| BMP Percolation Rate: | 0.00 | cfs | |
| Basin Volume: | 38 | cu-ft | |
| DCV/Average Q: | 50083 | secs | 13.91 Hours |

Drawdown Time for Biofiltration BMP-2

| | | | |
|-----------------------|--------|-------|--------------------|
| Outlet Q: | 0.0008 | cfs | 1.080 in/hr |
| BMP Percolation Rate: | 5 | in/hr | 0.0001 ft/sec |
| BMP Area: | 30.0 | sq-ft | |
| BMP Percolation Rate: | 0.00 | cfs | |
| Basin Volume: | 45 | cu-ft | |
| DCV/Average Q: | 60100 | secs | 16.69 Hours |

Drawdown Time for Biofiltration BMP-3

| | | | |
|-----------------------|--------|-------|--------------------|
| Outlet Q: | 0.0008 | cfs | 1.246 in/hr |
| BMP Percolation Rate: | 5 | in/hr | 0.0001 ft/sec |
| BMP Area: | 26.0 | sq-ft | |
| BMP Percolation Rate: | 0.00 | cfs | |
| Basin Volume: | 39 | cu-ft | |
| DCV/Average Q: | 52087 | secs | 14.47 Hours |

Drawdown Time for Biofiltration BMP-4

| | | | |
|-----------------------|--------|-------|--------------------|
| Outlet Q: | 0.0008 | cfs | 1.662 in/hr |
| BMP Percolation Rate: | 5 | in/hr | 0.0001 ft/sec |
| BMP Area: | 19.5 | sq-ft | |
| BMP Percolation Rate: | 0.00 | cfs | |
| Basin Volume: | 29 | cu-ft | |
| DCV/Average Q: | 39065 | secs | 10.85 Hours |

Drawdown Time for Biofiltration BMP-5

| | | | |
|-----------------------|--------|-------|--------------------|
| Outlet Q: | 0.0008 | cfs | 0.600 in/hr |
| BMP Percolation Rate: | 5 | in/hr | 0.0001 ft/sec |
| BMP Area: | 54.0 | sq-ft | |
| BMP Percolation Rate: | 0.01 | cfs | |
| Basin Volume: | 81 | cu-ft | |
| DCV/Average Q: | 108180 | secs | 30.05 Hours |

Drawdown Time for Biofiltration BMP-6

| | | | |
|-----------------------|--------|-------|--------------------|
| Outlet Q: | 0.0008 | cfs | 1.296 in/hr |
| BMP Percolation Rate: | 5 | in/hr | 0.0001 ft/sec |
| BMP Area: | 25.0 | sq-ft | |
| BMP Percolation Rate: | 0.00 | cfs | |
| Basin Volume: | 38 | cu-ft | |
| DCV/Average Q: | 50083 | secs | 13.91 Hours |

Drawdown Time for Biofiltration BMP-7

| | | | |
|-----------------------|--------|-------|--------------------|
| Outlet Q: | 0.0008 | cfs | 0.876 in/hr |
| BMP Percolation Rate: | 5 | in/hr | 0.0001 ft/sec |
| BMP Area: | 37.0 | sq-ft | |
| BMP Percolation Rate: | 0.00 | cfs | |
| Basin Volume: | 56 | cu-ft | |
| DCV/Average Q: | 74123 | secs | 20.59 Hours |

Drawdown Time for Biofiltration BMP-8

| | | | |
|-----------------------|--------|-------|--------------------|
| Outlet Q: | 0.0008 | cfs | 0.689 in/hr |
| BMP Percolation Rate: | 5 | in/hr | 0.0001 ft/sec |
| BMP Area: | 47.0 | sq-ft | |
| BMP Percolation Rate: | 0.01 | cfs | |
| Basin Volume: | 71 | cu-ft | |
| DCV/Average Q: | 94157 | secs | 26.15 Hours |

Drawdown Time for Biofiltration BMP-9

| | | | |
|-----------------------|--------|-------|--------------------|
| Outlet Q: | 0.0008 | cfs | 0.810 in/hr |
| BMP Percolation Rate: | 5 | in/hr | 0.0001 ft/sec |
| BMP Area: | 40.0 | sq-ft | |
| BMP Percolation Rate: | 0.00 | cfs | |
| Basin Volume: | 71 | cu-ft | |
| DCV/Average Q: | 94157 | secs | 26.15 Hours |

DMA 1

| Worksheet B.2-1: DCV | | | | |
|-----------------------|--|------|--------------|------------|
| Design Capture Volume | | | | |
| 1 | 85th percentile 24-hr storm depth from Figure B.1-1 | d= | 0.60 | inches |
| 2 | Area Tributary to BMP (s) | A= | 0.01 | acres |
| 3 | Area Weighted runoff factor (estimate using Appendix B.1.1 and | C= | 0.87 | unitless |
| 4 | Trees Credit Volume | TCV= | 0.00 | cubic-feet |
| 5 | Rain Barrels Credit Volume | RCV= | 0.00 | cubic-feet |
| 6 | Calculate DCV = (3630 x C x d x A) - TCV - RCV | DCV= | 25.35 | cubic-feet |

DMA 2

| Worksheet B.2-1: DCV | | | | |
|-----------------------|--|------|--------------|------------|
| Design Capture Volume | | | | |
| 1 | 85th percentile 24-hr storm depth from Figure B.1-1 | d= | 0.60 | inches |
| 2 | Area Tributary to BMP (s) | A= | 0.02 | acres |
| 3 | Area Weighted runoff factor (estimate using Appendix B.1.1 and | C= | 0.88 | unitless |
| 4 | Trees Credit Volume | TCV= | 0.00 | cubic-feet |
| 5 | Rain Barrels Credit Volume | RCV= | 0.00 | cubic-feet |
| 6 | Calculate DCV = (3630 x C x d x A) - TCV - RCV | DCV= | 34.97 | cubic-feet |

DMA 3

| Worksheet B.2-1: DCV | | | | |
|-----------------------|--|------|--------------|------------|
| Design Capture Volume | | | | |
| 1 | 85th percentile 24-hr storm depth from Figure B.1-1 | d= | 0.60 | inches |
| 2 | Area Tributary to BMP (s) | A= | 0.02 | acres |
| 3 | Area Weighted runoff factor (estimate using Appendix B.1.1 and | C= | 0.88 | unitless |
| 4 | Trees Credit Volume | TCV= | 0.00 | cubic-feet |
| 5 | Rain Barrels Credit Volume | RCV= | 0.00 | cubic-feet |
| 6 | Calculate DCV = (3630 x C x d x A) - TCV - RCV | DCV= | 30.05 | cubic-feet |

DMA 4

| Worksheet B.2-1: DCV | | | | |
|-----------------------|--|------|--------------|------------|
| Design Capture Volume | | | | |
| 1 | 85th percentile 24-hr storm depth from Figure B.1-1 | d= | 0.60 | inches |
| 2 | Area Tributary to BMP (s) | A= | 0.01 | acres |
| 3 | Area Weighted runoff factor (estimate using Appendix B.1.1 and | C= | 0.88 | unitless |
| 4 | Trees Credit Volume | TCV= | 0.00 | cubic-feet |
| 5 | Rain Barrels Credit Volume | RCV= | 0.00 | cubic-feet |
| 6 | Calculate DCV = (3630 x C x d x A) - TCV - RCV | DCV= | 25.79 | cubic-feet |

DMA 5

| Worksheet B.2-1: DCV | | | | |
|-----------------------|--|------|--------------|------------|
| Design Capture Volume | | | | |
| 1 | 85th percentile 24-hr storm depth from Figure B.1-1 | d= | 0.60 | inches |
| 2 | Area Tributary to BMP (s) | A= | 0.02 | acres |
| 3 | Area Weighted runoff factor (estimate using Appendix B.1.1 and | C= | 0.87 | unitless |
| 4 | Trees Credit Volume | TCV= | 0.00 | cubic-feet |
| 5 | Rain Barrels Credit Volume | RCV= | 0.00 | cubic-feet |
| 6 | Calculate DCV = (3630 x C x d x A) - TCV - RCV | DCV= | 46.04 | cubic-feet |

DMA 6

| Worksheet B.2-1: DCV | | | | |
|-----------------------|--|------|--------------|------------|
| Design Capture Volume | | | | |
| 1 | 85th percentile 24-hr storm depth from Figure B.1-1 | d= | 0.60 | inches |
| 2 | Area Tributary to BMP (s) | A= | 0.01 | acres |
| 3 | Area Weighted runoff factor (estimate using Appendix B.1.1 and | C= | 0.88 | unitless |
| 4 | Trees Credit Volume | TCV= | 0.00 | cubic-feet |
| 5 | Rain Barrels Credit Volume | RCV= | 0.00 | cubic-feet |
| 6 | Calculate DCV = (3630 x C x d x A) - TCV - RCV | DCV= | 27.92 | cubic-feet |

DMA 7

| Worksheet B.2-1: DCV | | | | |
|-----------------------|--|------|--------------|------------|
| Design Capture Volume | | | | |
| 1 | 85th percentile 24-hr storm depth from Figure B.1-1 | d= | 0.60 | inches |
| 2 | Area Tributary to BMP (s) | A= | 0.02 | acres |
| 3 | Area Weighted runoff factor (estimate using Appendix B.1.1 and | C= | 0.88 | unitless |
| 4 | Trees Credit Volume | TCV= | 0.00 | cubic-feet |
| 5 | Rain Barrels Credit Volume | RCV= | 0.00 | cubic-feet |
| 6 | Calculate DCV = (3630 x C x d x A) - TCV - RCV | DCV= | 41.73 | cubic-feet |

DMA 8

| Worksheet B.2-1: DCV | | | | |
|-----------------------|--|------|--------------|------------|
| Design Capture Volume | | | | |
| 1 | 85th percentile 24-hr storm depth from Figure B.1-1 | d= | 0.60 | inches |
| 2 | Area Tributary to BMP (s) | A= | 0.03 | acres |
| 3 | Area Weighted runoff factor (estimate using Appendix B.1.1 and | C= | 0.88 | unitless |
| 4 | Trees Credit Volume | TCV= | 0.00 | cubic-feet |
| 5 | Rain Barrels Credit Volume | RCV= | 0.00 | cubic-feet |
| 6 | Calculate DCV = (3630 x C x d x A) - TCV - RCV | DCV= | 52.41 | cubic-feet |

DMA 9

Worksheet B.2-1: DCV

Design Capture Volume

| | | | | |
|---|---|------|--------------|------------|
| 1 | 85th percentile 24-hr storm depth from Figure B.1-1 | d= | 0.60 | inches |
| 2 | Area Tributary to BMP (s) | A= | 0.02 | acres |
| 3 | Area Weighted runoff factor (estimate using Appendix B.1.1 and | C= | 0.88 | unitless |
| 4 | Trees Credit Volume | TCV= | 0.00 | cubic-feet |
| 5 | Rain Barrels Credit Volume | RCV= | 0.00 | cubic-feet |
| 6 | Calculate DCV = $(3630 \times C \times d \times A) - TCV - RCV$ | DCV= | 44.79 | cubic-feet |

SR-20

Worksheet B.2-1: DCV

Design Capture Volume

| | | | | |
|---|---|------|---------------|------------|
| 1 | 85th percentile 24-hr storm depth from Figure B.1-1 | d= | 0.60 | inches |
| 2 | Area Tributary to BMP (s) | A= | 0.07 | acres |
| 3 | Area Weighted runoff factor (estimate using Appendix B.1.1 and | C= | 0.68 | unitless |
| 4 | Trees Credit Volume | TCV= | 300.00 | cubic-feet |
| 5 | Rain Barrels Credit Volume | RCV= | 0.00 | cubic-feet |
| 6 | Calculate DCV = $(3630 \times C \times d \times A) - TCV - RCV$ | DCV= | 103.32 | cubic-feet |

SR-21

Worksheet B.2-1: DCV

Design Capture Volume


| | | | | |
|---|---|------|--------------|------------|
| 1 | 85th percentile 24-hr storm depth from Figure B.1-1 | d= | 0.60 | inches |
| 2 | Area Tributary to BMP (s) | A= | 0.05 | acres |
| 3 | Area Weighted runoff factor (estimate using Appendix B.1.1 and | C= | 0.76 | unitless |
| 4 | Trees Credit Volume | TCV= | 300.00 | cubic-feet |
| 5 | Rain Barrels Credit Volume | RCV= | 0.00 | cubic-feet |
| 6 | Calculate DCV = $(3630 \times C \times d \times A) - TCV - RCV$ | DCV= | 74.75 | cubic-feet |


SR-22


Worksheet B.2-1: DCV


Design Capture Volume


| | | | | |
|---|---|------|--------------|------------|
| 1 | 85th percentile 24-hr storm depth from Figure B.1-1 | d= | 0.60 | inches |
| 2 | Area Tributary to BMP (s) | A= | 0.02 | acres |
| 3 | Area Weighted runoff factor (estimate using Appendix B.1.1 and | C= | 0.69 | unitless |
| 4 | Trees Credit Volume | TCV= | 200.00 | cubic-feet |
| 5 | Rain Barrels Credit Volume | RCV= | 0.00 | cubic-feet |
| 6 | Calculate DCV = $(3630 \times C \times d \times A) - TCV - RCV$ | DCV= | 37.04 | cubic-feet |


| | | | |
|---|---|--|---------|
|  | | Project Name Habitat for Humanity 1st Street | |
| | | BMP ID BMP #1 | |
| Sizing Method for Pollutant Removal Criteria | | Worksheet B.5-1 | |
| 1 | Area draining to the BMP | 580.00 | sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.87 | |
| 3 | 85 th percentile 24-hour rainfall depth | 0.60 | inches |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | 25 | cu. ft. |
| BMP Parameters | | | |
| 5 | Surface ponding [6 inch minimum, 12 inch maximum] | 6 | inches |
| 6 | Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations | 24 | inches |
| 7 | Aggregate storage (also add ASTM No 8 stone) above underdrain invert (12 inches typical) – use 0 inches if the aggregate is not over the entire bottom surface area | 9 | inches |
| 8 | Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area | 3 | inches |
| 9 | Freely drained pore storage of the media | 0.2 | in/in |
| 10 | Porosity of aggregate storage | 0.4 | in/in |
| 11 | Media filtration rate to be used for sizing (maximum filtration rate of 5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate (includes infiltration into the soil and flow rate through the outlet structure) which will be less than 5 in/hr.) | 5 | in/hr. |
| Baseline Calculations | | | |
| 12 | Allowable routing time for sizing | 6 | hours |
| 13 | Depth filtered during storm [Line 11 x Line 12] | 30 | inches |
| 14 | Depth of Detention Storage [Line 5 + (Line 6 x Line 9) + (Line 7 x Line 10) + (Line 8 x Line 10)] | 15.6 | inches |
| 15 | Total Depth Treated [Line 13 + Line 14] | 45.6 | inches |
| Option 1 – Biofilter 1.5 times the DCV | | | |
| 16 | Required biofiltered volume [1.5 x Line 4] | 38 | cu. ft. |
| 17 | Required Footprint [Line 16/ Line 15] x 12 | 10 | sq. ft. |
| Option 2 – Store 0.75 of remaining DCV in pores and ponding | | | |
| 18 | Required Storage (surface + pores) Volume [0.75 x Line 4] | 19 | cu. ft. |
| 19 | Required Footprint [Line 18/ Line 14] x 12 | 15 | sq. ft. |
| Footprint of the BMP | | | |
| 20 | BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Line 11 in Worksheet B.5-4) | 0.03 | |
| 21 | Minimum BMP Footprint [Line 1 x Line 2 x Line 20] | 15 | sq. ft. |
| 22 | Footprint of the BMP = Maximum(Minimum(Line 17, Line 19), Line 21) | 15 | sq. ft. |
| 23 | Provided BMP Footprint | 25 | sq. ft. |
| 24 | Is Line 23 ≥ Line 22? | Yes, Performance Standard is Met | |


| | | | | |
|---|--|------------------------|-----------------------------------|--|
|  | | Project Name | Habitat for Humanity - 1st Street | |
| | | BMP ID | BMP #1 | |
| Sizing Method for Volume Retention Criteria | | Worksheet B.5-2 | | |
| 1 | Area draining to the BMP | 580.00 | sq. ft. | |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.87 | | |
| 3 | 85 th percentile 24-hour rainfall depth | 0.60 | inches | |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | 25 | cu. ft. | |
| Volume Retention Requirement | | | | |
| 5 | Measured infiltration rate in the DMA Note: When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30 When in no infiltration condition and the actual measured infiltration rate is unknown enter 0.0 if there are geotechnical and/or groundwater hazards identified in Appendix C or | 0 | in/hr. | |
| 6 | Factor of safety | 2 | | |
| 7 | Reliable infiltration rate, for biofiltration BMP sizing [Line 5 / Line 6] | 0 | in/hr. | |
| 8 | Average annual volume reduction target (Figure B.5-2) When Line 7 > 0.01 in/hr. = Minimum (40, 166.9 x Line 7 + 6.62) When Line 7 ≤ 0.01 in/hr. = 3.5% | 3.5 | % | |
| 9 | Fraction of DCV to be retained (Figure B.5-3) When Line 8 > 8% = $0.0000013 \times \text{Line } 8^3 - 0.000057 \times \text{Line } 8^2 + 0.0086 \times \text{Line } 8 - 0.014$ When Line 8 ≤ 8% = 0.023 | 0.023 | | |
| 10 | Target volume retention [Line 9 x Line 4] | 1 | cu. ft. | |


| | | | |
|---|---|---|------------------------|
|  | | Project Name Habitat for Humanity - 1st St | |
| | | BMP ID BMP #1 | |
| Volume Retention for No Infiltration Condition | | | Worksheet B.5-6 |
| 1 | Area draining to the biofiltration BMP | 580.00 | sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.87 | |
| 3 | Effective impervious area draining to the BMP [Line 1 x Line 2] | 507 | sq. ft. |
| 4 | Required area for Evapotranspiration [Line 3 x 0.03] | 15 | sq. ft. |
| 5 | Biofiltration BMP Footprint | 25 | sq. ft. |
| Landscape Area (must be identified on DS-3247) | | | |
| | Identification | 1 | 2 |
| 6 | Landscape area that meet the requirements in SD-B and SD-F Fact Sheet (sq. ft.) | | |
| 7 | Impervious area draining to the landscape area (sq. ft.) | | |
| 8 | Impervious to Pervious Area ratio [Line 7/Line 6] | 0.00 | 0.00 |
| 9 | Effective Credit Area If (Line 8 >1.5, Line 6, Line 7/1.5) | 0 | 0 |
| 10 | Sum of Landscape area [sum of Line 9 Id's 1 to 5] | 0 | sq. ft. |
| 11 | Provided footprint for evapotranspiration [Line 5 + Line 10] | 25 | sq. ft. |
| Volume Retention Performance Standard | | | |
| 12 | Is Line 11 \geq Line 4? | Volume Retention Performance Standard is Met | |
| 13 | Fraction of the performance standard met through the BMP footprint and/or landscaping [Line 11/Line 4] | 1.64 | |
| 14 | Target Volume Retention [Line 10 from Worksheet B.5.2] | 1 | cu. ft. |
| 15 | Volume retention required from other site design BMPs [(1-Line 13) x Line 14] | -0.373152 | cu. ft. |
| Site Design BMP | | | |
| | Identification | Site Design Type | Credit |
| 16 | 1 | | cu. ft. |
| | 2 | | cu. ft. |
| | 3 | | cu. ft. |
| | 4 | | cu. ft. |
| | 5 | | cu. ft. |
| | Sum of volume retention benefits from other site design BMPs (e.g. trees; rain barrels etc.). [sum of Line 16 Credits for Id's 1 to 5] Provide documentation of how the site design credit is calculated in the PDP SWQMP. | 0 | cu. ft. |
| 17 | Is Line 16 \geq Line 15? | Volume Retention Performance Standard is Met | |


| | | | |
|---|---|--|---------|
|  | | Project Name Habitat for Humanity 1st Street | |
| | | BMP ID BMP #2 | |
| Sizing Method for Pollutant Removal Criteria | | Worksheet B.5-1 | |
| 1 | Area draining to the BMP | 797.00 | sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.88 | |
| 3 | 85 th percentile 24-hour rainfall depth | 0.60 | inches |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | 35 | cu. ft. |
| BMP Parameters | | | |
| 5 | Surface ponding [6 inch minimum, 12 inch maximum] | 6 | inches |
| 6 | Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations | 24 | inches |
| 7 | Aggregate storage (also add ASTM No 8 stone) above underdrain invert (12 inches typical) – use 0 inches if the aggregate is not over the entire bottom surface area | 9 | inches |
| 8 | Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area | 3 | inches |
| 9 | Freely drained pore storage of the media | 0.2 | in/in |
| 10 | Porosity of aggregate storage | 0.4 | in/in |
| 11 | Media filtration rate to be used for sizing (maximum filtration rate of 5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate (includes infiltration into the soil and flow rate through the outlet structure) which will be less than 5 in/hr.) | 5 | in/hr. |
| Baseline Calculations | | | |
| 12 | Allowable routing time for sizing | 6 | hours |
| 13 | Depth filtered during storm [Line 11 x Line 12] | 30 | inches |
| 14 | Depth of Detention Storage [Line 5 + (Line 6 x Line 9) + (Line 7 x Line 10) + (Line 8 x Line 10)] | 15.6 | inches |
| 15 | Total Depth Treated [Line 13 + Line 14] | 45.6 | inches |
| Option 1 – Biofilter 1.5 times the DCV | | | |
| 16 | Required biofiltered volume [1.5 x Line 4] | 52 | cu. ft. |
| 17 | Required Footprint [Line 16/ Line 15] x 12 | 14 | sq. ft. |
| Option 2 – Store 0.75 of remaining DCV in pores and ponding | | | |
| 18 | Required Storage (surface + pores) Volume [0.75 x Line 4] | 26 | cu. ft. |
| 19 | Required Footprint [Line 18/ Line 14] x 12 | 20 | sq. ft. |
| Footprint of the BMP | | | |
| 20 | BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Line 11 in Worksheet B.5-4) | 0.03 | |
| 21 | Minimum BMP Footprint [Line 1 x Line 2 x Line 20] | 21 | sq. ft. |
| 22 | Footprint of the BMP = Maximum(Minimum(Line 17, Line 19), Line 21) | 21 | sq. ft. |
| 23 | Provided BMP Footprint | 30 | sq. ft. |
| 24 | Is Line 23 ≥ Line 22? | Yes, Performance Standard is Met | |


| | | | | |
|---|--|------------------------|-----------------------------------|--|
|  | | Project Name | Habitat for Humanity - 1st Street | |
| | | BMP ID | BMP #2 | |
| Sizing Method for Volume Retention Criteria | | Worksheet B.5-2 | | |
| 1 | Area draining to the BMP | 797.00 | sq. ft. | |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.88 | | |
| 3 | 85 th percentile 24-hour rainfall depth | 0.60 | inches | |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | 35 | cu. ft. | |
| Volume Retention Requirement | | | | |
| 5 | Measured infiltration rate in the DMA Note: When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30 When in no infiltration condition and the actual measured infiltration rate is unknown enter 0.0 if there are geotechnical and/or groundwater hazards identified in Appendix C or | 0 | in/hr. | |
| 6 | Factor of safety | 2 | | |
| 7 | Reliable infiltration rate, for biofiltration BMP sizing [Line 5 / Line 6] | 0 | in/hr. | |
| 8 | Average annual volume reduction target (Figure B.5-2) When Line 7 > 0.01 in/hr. = Minimum (40, 166.9 x Line 7 + 6.62) When Line 7 ≤ 0.01 in/hr. = 3.5% | 3.5 | % | |
| 9 | Fraction of DCV to be retained (Figure B.5-3) When Line 8 > 8% = $0.0000013 \times \text{Line } 8^3 - 0.000057 \times \text{Line } 8^2 + 0.0086 \times \text{Line } 8 - 0.014$ When Line 8 ≤ 8% = 0.023 | 0.023 | | |
| 10 | Target volume retention [Line 9 x Line 4] | 1 | cu. ft. | |


| | | | |
|---|---|---|------------------------|
|  | | Project Name Habitat for Humanity - 1st St | |
| | | BMP ID BMP #2 | |
| Volume Retention for No Infiltration Condition | | | Worksheet B.5-6 |
| 1 | Area draining to the biofiltration BMP | 797.00 | sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.88 | |
| 3 | Effective impervious area draining to the BMP [Line 1 x Line 2] | 699 | sq. ft. |
| 4 | Required area for Evapotranspiration [Line 3 x 0.03] | 21 | sq. ft. |
| 5 | Biofiltration BMP Footprint | 30 | sq. ft. |
| Landscape Area (must be identified on DS-3247) | | | |
| | Identification | 1 | 2 |
| 6 | Landscape area that meet the requirements in SD-B and SD-F Fact Sheet (sq. ft.) | | |
| 7 | Impervious area draining to the landscape area (sq. ft.) | | |
| 8 | Impervious to Pervious Area ratio [Line 7/Line 6] | 0.00 | 0.00 |
| 9 | Effective Credit Area If (Line 8 >1.5, Line 6, Line 7/1.5) | 0 | 0 |
| 10 | Sum of Landscape area [sum of Line 9 Id's 1 to 5] | 0 | sq. ft. |
| 11 | Provided footprint for evapotranspiration [Line 5 + Line 10] | 30 | sq. ft. |
| Volume Retention Performance Standard | | | |
| 12 | Is Line 11 \geq Line 4? | Volume Retention Performance Standard is Met | |
| 13 | Fraction of the performance standard met through the BMP footprint and/or landscaping [Line 11/Line 4] | 1.43 | |
| 14 | Target Volume Retention [Line 10 from Worksheet B.5.2] | 1 | cu. ft. |
| 15 | Volume retention required from other site design BMPs [(1-Line 13) x Line 14] | -0.34580385 | cu. ft. |
| Site Design BMP | | | |
| | Identification | Site Design Type | Credit |
| 16 | 1 | | cu. ft. |
| | 2 | | cu. ft. |
| | 3 | | cu. ft. |
| | 4 | | cu. ft. |
| | 5 | | cu. ft. |
| | Sum of volume retention benefits from other site design BMPs (e.g. trees; rain barrels etc.). [sum of Line 16 Credits for Id's 1 to 5] Provide documentation of how the site design credit is calculated in the PDP SWQMP. | 0 | cu. ft. |
| 17 | Is Line 16 \geq Line 15? | Volume Retention Performance Standard is Met | |


| | | | |
|---|---|--|---------|
|  | | Project Name Habitat for Humanity 1st Street | |
| | | BMP ID BMP #3 | |
| Sizing Method for Pollutant Removal Criteria | | Worksheet B.5-1 | |
| 1 | Area draining to the BMP | 685.00 | sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.88 | |
| 3 | 85 th percentile 24-hour rainfall depth | 0.60 | inches |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | 30 | cu. ft. |
| BMP Parameters | | | |
| 5 | Surface ponding [6 inch minimum, 12 inch maximum] | 6 | inches |
| 6 | Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations | 24 | inches |
| 7 | Aggregate storage (also add ASTM No 8 stone) above underdrain invert (12 inches typical) – use 0 inches if the aggregate is not over the entire bottom surface area | 9 | inches |
| 8 | Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area | 3 | inches |
| 9 | Freely drained pore storage of the media | 0.2 | in/in |
| 10 | Porosity of aggregate storage | 0.4 | in/in |
| 11 | Media filtration rate to be used for sizing (maximum filtration rate of 5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate (includes infiltration into the soil and flow rate through the outlet structure) which will be less than 5 in/hr.) | 5 | in/hr. |
| Baseline Calculations | | | |
| 12 | Allowable routing time for sizing | 6 | hours |
| 13 | Depth filtered during storm [Line 11 x Line 12] | 30 | inches |
| 14 | Depth of Detention Storage [Line 5 + (Line 6 x Line 9) + (Line 7 x Line 10) + (Line 8 x Line 10)] | 15.6 | inches |
| 15 | Total Depth Treated [Line 13 + Line 14] | 45.6 | inches |
| Option 1 – Biofilter 1.5 times the DCV | | | |
| 16 | Required biofiltered volume [1.5 x Line 4] | 45 | cu. ft. |
| 17 | Required Footprint [Line 16/ Line 15] x 12 | 12 | sq. ft. |
| Option 2 – Store 0.75 of remaining DCV in pores and ponding | | | |
| 18 | Required Storage (surface + pores) Volume [0.75 x Line 4] | 23 | cu. ft. |
| 19 | Required Footprint [Line 18/ Line 14] x 12 | 17 | sq. ft. |
| Footprint of the BMP | | | |
| 20 | BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Line 11 in Worksheet B.5-4) | 0.03 | |
| 21 | Minimum BMP Footprint [Line 1 x Line 2 x Line 20] | 18 | sq. ft. |
| 22 | Footprint of the BMP = Maximum(Minimum(Line 17, Line 19), Line 21) | 18 | sq. ft. |
| 23 | Provided BMP Footprint | 26 | sq. ft. |
| 24 | Is Line 23 ≥ Line 22? | Yes, Performance Standard is Met | |


| | | | | |
|---|--|--|------------------------|--|
|  | | Project Name Habitat for Humanity - 1st Street | | |
| | | BMP ID BMP #3 | | |
| Sizing Method for Volume Retention Criteria | | | Worksheet B.5-2 | |
| 1 | Area draining to the BMP | 685.00 | sq. ft. | |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.88 | | |
| 3 | 85 th percentile 24-hour rainfall depth | 0.60 | inches | |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | 30 | cu. ft. | |
| Volume Retention Requirement | | | | |
| 5 | Measured infiltration rate in the DMA Note: When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30 When in no infiltration condition and the actual measured infiltration rate is unknown enter 0.0 if there are geotechnical and/or groundwater hazards identified in Appendix C or | 0 | in/hr. | |
| 6 | Factor of safety | 2 | | |
| 7 | Reliable infiltration rate, for biofiltration BMP sizing [Line 5 / Line 6] | 0 | in/hr. | |
| 8 | Average annual volume reduction target (Figure B.5-2) When Line 7 > 0.01 in/hr. = Minimum (40, 166.9 x Line 7 + 6.62) When Line 7 ≤ 0.01 in/hr. = 3.5% | 3.5 | % | |
| 9 | Fraction of DCV to be retained (Figure B.5-3) When Line 8 > 8% = $0.0000013 \times \text{Line } 8^3 - 0.000057 \times \text{Line } 8^2 + 0.0086 \times \text{Line } 8 - 0.014$ When Line 8 ≤ 8% = 0.023 | 0.023 | | |
| 10 | Target volume retention [Line 9 x Line 4] | 1 | cu. ft. | |


| | | | |
|---|---|---|------------------------|
|  | | Project Name Habitat for Humanity - 1st St | |
| | | BMP ID BMP #3 | |
| Volume Retention for No Infiltration Condition | | | Worksheet B.5-6 |
| 1 | Area draining to the biofiltration BMP | 685.00 | sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.88 | |
| 3 | Effective impervious area draining to the BMP [Line 1 x Line 2] | 601 | sq. ft. |
| 4 | Required area for Evapotranspiration [Line 3 x 0.03] | 18 | sq. ft. |
| 5 | Biofiltration BMP Footprint | 26 | sq. ft. |
| Landscape Area (must be identified on DS-3247) | | | |
| | Identification | 1 | 2 |
| 6 | Landscape area that meet the requirements in SD-B and SD-F Fact Sheet (sq. ft.) | | |
| 7 | Impervious area draining to the landscape area (sq. ft.) | | |
| 8 | Impervious to Pervious Area ratio [Line 7/Line 6] | 0.00 | 0.00 |
| 9 | Effective Credit Area If (Line 8 >1.5, Line 6, Line 7/1.5) | 0 | 0 |
| 10 | Sum of Landscape area [sum of Line 9 Id's 1 to 5] | 0 | sq. ft. |
| 11 | Provided footprint for evapotranspiration [Line 5 + Line 10] | 26 | sq. ft. |
| Volume Retention Performance Standard | | | |
| 12 | Is Line 11 \geq Line 4? | Volume Retention Performance Standard is Met | |
| 13 | Fraction of the performance standard met through the BMP footprint and/or landscaping [Line 11/Line 4] | 1.44 | |
| 14 | Target Volume Retention [Line 10 from Worksheet B.5.2] | 1 | cu. ft. |
| 15 | Volume retention required from other site design BMPs [(1-Line 13) x Line 14] | -0.3040554 | cu. ft. |
| Site Design BMP | | | |
| | Identification | Site Design Type | Credit |
| 16 | 1 | | cu. ft. |
| | 2 | | cu. ft. |
| | 3 | | cu. ft. |
| | 4 | | cu. ft. |
| | 5 | | cu. ft. |
| | Sum of volume retention benefits from other site design BMPs (e.g. trees; rain barrels etc.). [sum of Line 16 Credits for Id's 1 to 5] Provide documentation of how the site design credit is calculated in the PDP SWQMP. | 0 | cu. ft. |
| 17 | Is Line 16 \geq Line 15? | Volume Retention Performance Standard is Met | |


| | | |
|---|---|--|
|  | | Project Name Habitat for Humanity 1st Street |
| BMP ID | | BMP #4 |
| Sizing Method for Pollutant Removal Criteria | | Worksheet B.5-1 |
| 1 | Area draining to the BMP | 586.00 sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.88 |
| 3 | 85 th percentile 24-hour rainfall depth | 0.60 inches |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | 26 cu. ft. |
| BMP Parameters | | |
| 5 | Surface ponding [6 inch minimum, 12 inch maximum] | 6 inches |
| 6 | Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations | 24 inches |
| 7 | Aggregate storage (also add ASTM No 8 stone) above underdrain invert (12 inches typical) – use 0 inches if the aggregate is not over the entire bottom surface area | 9 inches |
| 8 | Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area | 3 inches |
| 9 | Freely drained pore storage of the media | 0.2 in/in |
| 10 | Porosity of aggregate storage | 0.4 in/in |
| 11 | Media filtration rate to be used for sizing (maximum filtration rate of 5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate (includes infiltration into the soil and flow rate through the outlet structure) which will be less than 5 in/hr.) | 5 in/hr. |
| Baseline Calculations | | |
| 12 | Allowable routing time for sizing | 6 hours |
| 13 | Depth filtered during storm [Line 11 x Line 12] | 30 inches |
| 14 | Depth of Detention Storage [Line 5 + (Line 6 x Line 9) + (Line 7 x Line 10) + (Line 8 x Line 10)] | 15.6 inches |
| 15 | Total Depth Treated [Line 13 + Line 14] | 45.6 inches |
| Option 1 – Biofilter 1.5 times the DCV | | |
| 16 | Required biofiltered volume [1.5 x Line 4] | 39 cu. ft. |
| 17 | Required Footprint [Line 16/ Line 15] x 12 | 10 sq. ft. |
| Option 2 – Store 0.75 of remaining DCV in pores and ponding | | |
| 18 | Required Storage (surface + pores) Volume [0.75 x Line 4] | 19 cu. ft. |
| 19 | Required Footprint [Line 18/ Line 14] x 12 | 15 sq. ft. |
| Footprint of the BMP | | |
| 20 | BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Line 11 in Worksheet B.5-4) | 0.03 |
| 21 | Minimum BMP Footprint [Line 1 x Line 2 x Line 20] | 15 sq. ft. |
| 22 | Footprint of the BMP = Maximum(Minimum(Line 17, Line 19), Line 21) | 15 sq. ft. |
| 23 | Provided BMP Footprint | 20 sq. ft. |
| 24 | Is Line 23 ≥ Line 22? | Yes, Performance Standard is Met |


| | | | |
|---|--|--|---------|
|  | | Project Name Habitat for Humanity - 1st Street | |
| | | BMP ID BMP #4 | |
| Sizing Method for Volume Retention Criteria | | Worksheet B.5-2 | |
| 1 | Area draining to the BMP | 586.00 | sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.88 | |
| 3 | 85 th percentile 24-hour rainfall depth | 0.60 | inches |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | 26 | cu. ft. |
| Volume Retention Requirement | | | |
| 5 | Measured infiltration rate in the DMA Note: When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30 When in no infiltration condition and the actual measured infiltration rate is unknown enter 0.0 if there are geotechnical and/or groundwater hazards identified in Appendix C or | 0 | in/hr. |
| 6 | Factor of safety | 2 | |
| 7 | Reliable infiltration rate, for biofiltration BMP sizing [Line 5 / Line 6] | 0 | in/hr. |
| 8 | Average annual volume reduction target (Figure B.5-2) When Line 7 > 0.01 in/hr. = Minimum (40, 166.9 x Line 7 + 6.62) When Line 7 ≤ 0.01 in/hr. = 3.5% | 3.5 | % |
| 9 | Fraction of DCV to be retained (Figure B.5-3) When Line 8 > 8% = $0.0000013 \times \text{Line } 8^3 - 0.000057 \times \text{Line } 8^2 + 0.0086 \times \text{Line } 8 - 0.014$ When Line 8 ≤ 8% = 0.023 | 0.023 | |
| 10 | Target volume retention [Line 9 x Line 4] | 1 | cu. ft. |


| | | | |
|---|---|---|------------------------|
|  | | Project Name Habitat for Humanity - 1st St | |
| | | BMP ID BMP #4 | |
| Volume Retention for No Infiltration Condition | | | Worksheet B.5-6 |
| 1 | Area draining to the biofiltration BMP | 586.00 | sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.88 | |
| 3 | Effective impervious area draining to the BMP [Line 1 x Line 2] | 516 | sq. ft. |
| 4 | Required area for Evapotranspiration [Line 3 x 0.03] | 15 | sq. ft. |
| 5 | Biofiltration BMP Footprint | 20 | sq. ft. |
| Landscape Area (must be identified on DS-3247) | | | |
| | Identification | 1 | 2 |
| | | 3 | 4 |
| | | 5 | |
| 6 | Landscape area that meet the requirements in SD-B and SD-F Fact Sheet (sq. ft.) | | |
| 7 | Impervious area draining to the landscape area (sq. ft.) | | |
| 8 | Impervious to Pervious Area ratio [Line 7/Line 6] | 0.00 | 0.00 |
| 9 | Effective Credit Area If (Line 8 >1.5, Line 6, Line 7/1.5) | 0 | 0 |
| 10 | Sum of Landscape area [sum of Line 9 Id's 1 to 5] | 0 | sq. ft. |
| 11 | Provided footprint for evapotranspiration [Line 5 + Line 10] | 19.5 | sq. ft. |
| Volume Retention Performance Standard | | | |
| 12 | Is Line 11 \geq Line 4? | Volume Retention Performance Standard is Met | |
| 13 | Fraction of the performance standard met through the BMP footprint and/or landscaping [Line 11/Line 4] | 1.26 | |
| 14 | Target Volume Retention [Line 10 from Worksheet B.5.2] | 1 | cu. ft. |
| 15 | Volume retention required from other site design BMPs [(1-Line 13) x Line 14] | -0.1541943 | cu. ft. |
| Site Design BMP | | | |
| | Identification | Site Design Type | Credit |
| 16 | 1 | | cu. ft. |
| | 2 | | cu. ft. |
| | 3 | | cu. ft. |
| | 4 | | cu. ft. |
| | 5 | | cu. ft. |
| | Sum of volume retention benefits from other site design BMPs (e.g. trees; rain barrels etc.). [sum of Line 16 Credits for Id's 1 to 5] Provide documentation of how the site design credit is calculated in the PDP SWQMP. | 0 | cu. ft. |
| 17 | Is Line 16 \geq Line 15? | Volume Retention Performance Standard is Met | |


| | | | |
|---|---|--|---------|
|  | | Project Name Habitat for Humanity 1st Street | |
| | | BMP ID BMP #5 | |
| Sizing Method for Pollutant Removal Criteria | | Worksheet B.5-1 | |
| 1 | Area draining to the BMP | 1059.00 | sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.87 | |
| 3 | 85 th percentile 24-hour rainfall depth | 0.60 | inches |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | 46 | cu. ft. |
| BMP Parameters | | | |
| 5 | Surface ponding [6 inch minimum, 12 inch maximum] | 6 | inches |
| 6 | Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations | 24 | inches |
| 7 | Aggregate storage (also add ASTM No 8 stone) above underdrain invert (12 inches typical) – use 0 inches if the aggregate is not over the entire bottom surface area | 9 | inches |
| 8 | Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area | 3 | inches |
| 9 | Freely drained pore storage of the media | 0.2 | in/in |
| 10 | Porosity of aggregate storage | 0.4 | in/in |
| 11 | Media filtration rate to be used for sizing (maximum filtration rate of 5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate (includes infiltration into the soil and flow rate through the outlet structure) which will be less than 5 in/hr.) | 5 | in/hr. |
| Baseline Calculations | | | |
| 12 | Allowable routing time for sizing | 6 | hours |
| 13 | Depth filtered during storm [Line 11 x Line 12] | 30 | inches |
| 14 | Depth of Detention Storage [Line 5 + (Line 6 x Line 9) + (Line 7 x Line 10) + (Line 8 x Line 10)] | 15.6 | inches |
| 15 | Total Depth Treated [Line 13 + Line 14] | 45.6 | inches |
| Option 1 – Biofilter 1.5 times the DCV | | | |
| 16 | Required biofiltered volume [1.5 x Line 4] | 69 | cu. ft. |
| 17 | Required Footprint [Line 16/ Line 15] x 12 | 18 | sq. ft. |
| Option 2 – Store 0.75 of remaining DCV in pores and ponding | | | |
| 18 | Required Storage (surface + pores) Volume [0.75 x Line 4] | 35 | cu. ft. |
| 19 | Required Footprint [Line 18/ Line 14] x 12 | 27 | sq. ft. |
| Footprint of the BMP | | | |
| 20 | BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Line 11 in Worksheet B.5-4) | 0.03 | |
| 21 | Minimum BMP Footprint [Line 1 x Line 2 x Line 20] | 28 | sq. ft. |
| 22 | Footprint of the BMP = Maximum(Minimum(Line 17, Line 19), Line 21) | 28 | sq. ft. |
| 23 | Provided BMP Footprint | 54 | sq. ft. |
| 24 | Is Line 23 ≥ Line 22? | Yes, Performance Standard is Met | |


| | | | | |
|---|--|---------------------|-----------------------------------|--|
|  | | Project Name | Habitat for Humanity - 1st Street | |
| | | BMP ID | BMP #5 | |
| Sizing Method for Volume Retention Criteria | | | Worksheet B.5-2 | |
| 1 | Area draining to the BMP | 1059.00 | sq. ft. | |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.87 | | |
| 3 | 85 th percentile 24-hour rainfall depth | 0.60 | inches | |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | 46 | cu. ft. | |
| Volume Retention Requirement | | | | |
| 5 | Measured infiltration rate in the DMA Note: When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30 When in no infiltration condition and the actual measured infiltration rate is unknown enter 0.0 if there are geotechnical and/or groundwater hazards identified in Appendix C or | 0 | in/hr. | |
| 6 | Factor of safety | 2 | | |
| 7 | Reliable infiltration rate, for biofiltration BMP sizing [Line 5 / Line 6] | 0 | in/hr. | |
| 8 | Average annual volume reduction target (Figure B.5-2) When Line 7 > 0.01 in/hr. = Minimum (40, 166.9 x Line 7 + 6.62) When Line 7 ≤ 0.01 in/hr. = 3.5% | 3.5 | % | |
| 9 | Fraction of DCV to be retained (Figure B.5-3) When Line 8 > 8% = $0.0000013 \times \text{Line } 8^3 - 0.000057 \times \text{Line } 8^2 + 0.0086 \times \text{Line } 8 - 0.014$ When Line 8 ≤ 8% = 0.023 | 0.023 | | |
| 10 | Target volume retention [Line 9 x Line 4] | 1 | cu. ft. | |


| | | | |
|---|---|---|------------------------|
|  | | Project Name Habitat for Humanity - 1st St | |
| | | BMP ID BMP #5 | |
| Volume Retention for No Infiltration Condition | | | Worksheet B.5-6 |
| 1 | Area draining to the biofiltration BMP | | 1059.00 sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | | 0.87 |
| 3 | Effective impervious area draining to the BMP [Line 1 x Line 2] | | 921 sq. ft. |
| 4 | Required area for Evapotranspiration [Line 3 x 0.03] | | 28 sq. ft. |
| 5 | Biofiltration BMP Footprint | | 54 sq. ft. |
| Landscape Area (must be identified on DS-3247) | | | |
| | Identification | 1 | 2 |
| 6 | Landscape area that meet the requirements in SD-B and SD-F Fact Sheet (sq. ft.) | | |
| 7 | Impervious area draining to the landscape area (sq. ft.) | | |
| 8 | Impervious to Pervious Area ratio [Line 7/Line 6] | 0.00 | 0.00 |
| 9 | Effective Credit Area If (Line 8 >1.5, Line 6, Line 7/1.5) | 0 | 0 |
| 10 | Sum of Landscape area [sum of Line 9 Id's 1 to 5] | 0 sq. ft. | |
| 11 | Provided footprint for evapotranspiration [Line 5 + Line 10] | 54 sq. ft. | |
| Volume Retention Performance Standard | | | |
| 12 | Is Line 11 \geq Line 4? | Volume Retention Performance Standard is Met | |
| 13 | Fraction of the performance standard met through the BMP footprint and/or landscaping [Line 11/Line 4] | 1.96 | |
| 14 | Target Volume Retention [Line 10 from Worksheet B.5.2] | 1 cu. ft. | |
| 15 | Volume retention required from other site design BMPs [(1-Line 13) x Line 14] | -1.0164528 cu. ft. | |
| Site Design BMP | | | |
| | Identification | Site Design Type | Credit |
| 16 | 1 | | cu. ft. |
| | 2 | | cu. ft. |
| | 3 | | cu. ft. |
| | 4 | | cu. ft. |
| | 5 | | cu. ft. |
| | Sum of volume retention benefits from other site design BMPs (e.g. trees; rain barrels etc.). [sum of Line 16 Credits for Id's 1 to 5] Provide documentation of how the site design credit is calculated in the PDP SWQMP. | | 0 cu. ft. |
| 17 | Is Line 16 \geq Line 15? | Volume Retention Performance Standard is Met | |


| | | | |
|---|---|--|---------|
|  | | Project Name Habitat for Humanity 1st Street | |
| | | BMP ID BMP #6 | |
| Sizing Method for Pollutant Removal Criteria | | Worksheet B.5-1 | |
| 1 | Area draining to the BMP | 637.00 | sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.88 | |
| 3 | 85 th percentile 24-hour rainfall depth | 0.60 | inches |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | 28 | cu. ft. |
| BMP Parameters | | | |
| 5 | Surface ponding [6 inch minimum, 12 inch maximum] | 6 | inches |
| 6 | Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations | 24 | inches |
| 7 | Aggregate storage (also add ASTM No 8 stone) above underdrain invert (12 inches typical) – use 0 inches if the aggregate is not over the entire bottom surface area | 9 | inches |
| 8 | Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area | 3 | inches |
| 9 | Freely drained pore storage of the media | 0.2 | in/in |
| 10 | Porosity of aggregate storage | 0.4 | in/in |
| 11 | Media filtration rate to be used for sizing (maximum filtration rate of 5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate (includes infiltration into the soil and flow rate through the outlet structure) which will be less than 5 in/hr.) | 5 | in/hr. |
| Baseline Calculations | | | |
| 12 | Allowable routing time for sizing | 6 | hours |
| 13 | Depth filtered during storm [Line 11 x Line 12] | 30 | inches |
| 14 | Depth of Detention Storage [Line 5 + (Line 6 x Line 9) + (Line 7 x Line 10) + (Line 8 x Line 10)] | 15.6 | inches |
| 15 | Total Depth Treated [Line 13 + Line 14] | 45.6 | inches |
| Option 1 – Biofilter 1.5 times the DCV | | | |
| 16 | Required biofiltered volume [1.5 x Line 4] | 42 | cu. ft. |
| 17 | Required Footprint [Line 16/ Line 15] x 12 | 11 | sq. ft. |
| Option 2 – Store 0.75 of remaining DCV in pores and ponding | | | |
| 18 | Required Storage (surface + pores) Volume [0.75 x Line 4] | 21 | cu. ft. |
| 19 | Required Footprint [Line 18/ Line 14] x 12 | 16 | sq. ft. |
| Footprint of the BMP | | | |
| 20 | BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Line 11 in Worksheet B.5-4) | 0.03 | |
| 21 | Minimum BMP Footprint [Line 1 x Line 2 x Line 20] | 17 | sq. ft. |
| 22 | Footprint of the BMP = Maximum(Minimum(Line 17, Line 19), Line 21) | 17 | sq. ft. |
| 23 | Provided BMP Footprint | 25 | sq. ft. |
| 24 | Is Line 23 ≥ Line 22? | Yes, Performance Standard is Met | |


| | | | |
|---|--|--|---------|
|  | | Project Name Habitat for Humanity - 1st Street | |
| | | BMP ID BMP #6 | |
| Sizing Method for Volume Retention Criteria | | Worksheet B.5-2 | |
| 1 | Area draining to the BMP | 637.00 | sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.88 | |
| 3 | 85 th percentile 24-hour rainfall depth | 0.60 | inches |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | 28 | cu. ft. |
| Volume Retention Requirement | | | |
| 5 | Measured infiltration rate in the DMA Note: When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30 When in no infiltration condition and the actual measured infiltration rate is unknown enter 0.0 if there are geotechnical and/or groundwater hazards identified in Appendix C or | 0 | in/hr. |
| 6 | Factor of safety | 2 | |
| 7 | Reliable infiltration rate, for biofiltration BMP sizing [Line 5 / Line 6] | 0 | in/hr. |
| 8 | Average annual volume reduction target (Figure B.5-2) When Line 7 > 0.01 in/hr. = Minimum (40, 166.9 x Line 7 + 6.62) When Line 7 ≤ 0.01 in/hr. = 3.5% | 3.5 | % |
| 9 | Fraction of DCV to be retained (Figure B.5-3) When Line 8 > 8% = $0.0000013 \times \text{Line } 8^3 - 0.000057 \times \text{Line } 8^2 + 0.0086 \times \text{Line } 8 - 0.014$ When Line 8 ≤ 8% = 0.023 | 0.023 | |
| 10 | Target volume retention [Line 9 x Line 4] | 1 | cu. ft. |


| | | | |
|---|---|---|------------------------|
|  | | Project Name Habitat for Humanity - 1st St | |
| | | BMP ID BMP #6 | |
| Volume Retention for No Infiltration Condition | | | Worksheet B.5-6 |
| 1 | Area draining to the biofiltration BMP | | 637.00 sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | | 0.88 |
| 3 | Effective impervious area draining to the BMP [Line 1 x Line 2] | | 558 sq. ft. |
| 4 | Required area for Evapotranspiration [Line 3 x 0.03] | | 17 sq. ft. |
| 5 | Biofiltration BMP Footprint | | 25 sq. ft. |
| Landscape Area (must be identified on DS-3247) | | | |
| | Identification | 1 | 2 |
| 6 | Landscape area that meet the requirements in SD-B and SD-F Fact Sheet (sq. ft.) | | |
| 7 | Impervious area draining to the landscape area (sq. ft.) | | |
| 8 | Impervious to Pervious Area ratio [Line 7/Line 6] | 0.00 | 0.00 |
| 9 | Effective Credit Area If (Line 8 >1.5, Line 6, Line 7/1.5) | 0 | 0 |
| 10 | Sum of Landscape area [sum of Line 9 Id's 1 to 5] | 0 sq. ft. | |
| 11 | Provided footprint for evapotranspiration [Line 5 + Line 10] | 25 sq. ft. | |
| Volume Retention Performance Standard | | | |
| 12 | Is Line 11 \geq Line 4? | Volume Retention Performance Standard is Met | |
| 13 | Fraction of the performance standard met through the BMP footprint and/or landscaping [Line 11/Line 4] | 1.49 | |
| 14 | Target Volume Retention [Line 10 from Worksheet B.5.2] | 1 cu. ft. | |
| 15 | Volume retention required from other site design BMPs [(1-Line 13) x Line 14] | -0.31460205 cu. ft. | |
| Site Design BMP | | | |
| | Identification | Site Design Type | Credit |
| 16 | 1 | | cu. ft. |
| | 2 | | cu. ft. |
| | 3 | | cu. ft. |
| | 4 | | cu. ft. |
| | 5 | | cu. ft. |
| | Sum of volume retention benefits from other site design BMPs (e.g. trees; rain barrels etc.). [sum of Line 16 Credits for Id's 1 to 5] Provide documentation of how the site design credit is calculated in the PDP SWQMP. | 0 cu. ft. | |
| 17 | Is Line 16 \geq Line 15? | Volume Retention Performance Standard is Met | |


| | | | |
|---|---|--|---------|
|  | | Project Name Habitat for Humanity 1st Street | |
| BMP ID | | BMP #7 | |
| Sizing Method for Pollutant Removal Criteria | | Worksheet B.5-1 | |
| 1 | Area draining to the BMP | 952.00 | sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.88 | |
| 3 | 85 th percentile 24-hour rainfall depth | 0.60 | inches |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | 42 | cu. ft. |
| BMP Parameters | | | |
| 5 | Surface ponding [6 inch minimum, 12 inch maximum] | 6 | inches |
| 6 | Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations | 24 | inches |
| 7 | Aggregate storage (also add ASTM No 8 stone) above underdrain invert (12 inches typical) – use 0 inches if the aggregate is not over the entire bottom surface area | 9 | inches |
| 8 | Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area | 3 | inches |
| 9 | Freely drained pore storage of the media | 0.2 | in/in |
| 10 | Porosity of aggregate storage | 0.4 | in/in |
| 11 | Media filtration rate to be used for sizing (maximum filtration rate of 5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate (includes infiltration into the soil and flow rate through the outlet structure) which will be less than 5 in/hr.) | 5 | in/hr. |
| Baseline Calculations | | | |
| 12 | Allowable routing time for sizing | 6 | hours |
| 13 | Depth filtered during storm [Line 11 x Line 12] | 30 | inches |
| 14 | Depth of Detention Storage [Line 5 + (Line 6 x Line 9) + (Line 7 x Line 10) + (Line 8 x Line 10)] | 15.6 | inches |
| 15 | Total Depth Treated [Line 13 + Line 14] | 45.6 | inches |
| Option 1 – Biofilter 1.5 times the DCV | | | |
| 16 | Required biofiltered volume [1.5 x Line 4] | 63 | cu. ft. |
| 17 | Required Footprint [Line 16/ Line 15] x 12 | 16 | sq. ft. |
| Option 2 – Store 0.75 of remaining DCV in pores and ponding | | | |
| 18 | Required Storage (surface + pores) Volume [0.75 x Line 4] | 31 | cu. ft. |
| 19 | Required Footprint [Line 18/ Line 14] x 12 | 24 | sq. ft. |
| Footprint of the BMP | | | |
| 20 | BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Line 11 in Worksheet B.5-4) | 0.03 | |
| 21 | Minimum BMP Footprint [Line 1 x Line 2 x Line 20] | 25 | sq. ft. |
| 22 | Footprint of the BMP = Maximum(Minimum(Line 17, Line 19), Line 21) | 25 | sq. ft. |
| 23 | Provided BMP Footprint | 37 | sq. ft. |
| 24 | Is Line 23 ≥ Line 22? | Yes, Performance Standard is Met | |


| | | | | |
|---|--|---------------------|-----------------------------------|--|
|  | | Project Name | Habitat for Humanity - 1st Street | |
| | | BMP ID | BMP #7 | |
| Sizing Method for Volume Retention Criteria | | | Worksheet B.5-2 | |
| 1 | Area draining to the BMP | 952.00 | sq. ft. | |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.88 | | |
| 3 | 85 th percentile 24-hour rainfall depth | 0.60 | inches | |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | 42 | cu. ft. | |
| Volume Retention Requirement | | | | |
| 5 | Measured infiltration rate in the DMA Note: When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30 When in no infiltration condition and the actual measured infiltration rate is unknown enter 0.0 if there are geotechnical and/or groundwater hazards identified in Appendix C or | 0 | in/hr. | |
| 6 | Factor of safety | 2 | | |
| 7 | Reliable infiltration rate, for biofiltration BMP sizing [Line 5 / Line 6] | 0 | in/hr. | |
| 8 | Average annual volume reduction target (Figure B.5-2) When Line 7 > 0.01 in/hr. = Minimum (40, 166.9 x Line 7 + 6.62) When Line 7 ≤ 0.01 in/hr. = 3.5% | 3.5 | % | |
| 9 | Fraction of DCV to be retained (Figure B.5-3) When Line 8 > 8% = $0.0000013 \times \text{Line } 8^3 - 0.000057 \times \text{Line } 8^2 + 0.0086 \times \text{Line } 8 - 0.014$ When Line 8 ≤ 8% = 0.023 | 0.023 | | |
| 10 | Target volume retention [Line 9 x Line 4] | 1 | cu. ft. | |


| | | | |
|---|---|---|------------------------|
|  | | Project Name Habitat for Humanity - 1st St | |
| | | BMP ID BMP #7 | |
| Volume Retention for No Infiltration Condition | | | Worksheet B.5-6 |
| 1 | Area draining to the biofiltration BMP | 952.00 | sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.88 | |
| 3 | Effective impervious area draining to the BMP [Line 1 x Line 2] | 835 | sq. ft. |
| 4 | Required area for Evapotranspiration [Line 3 x 0.03] | 25 | sq. ft. |
| 5 | Biofiltration BMP Footprint | 37 | sq. ft. |
| Landscape Area (must be identified on DS-3247) | | | |
| | Identification | 1 | 2 |
| 6 | Landscape area that meet the requirements in SD-B and SD-F Fact Sheet (sq. ft.) | | |
| 7 | Impervious area draining to the landscape area (sq. ft.) | | |
| 8 | Impervious to Pervious Area ratio [Line 7/Line 6] | 0.00 | 0.00 |
| 9 | Effective Credit Area If (Line 8 >1.5, Line 6, Line 7/1.5) | 0 | 0 |
| 10 | Sum of Landscape area [sum of Line 9 Id's 1 to 5] | 0 | sq. ft. |
| 11 | Provided footprint for evapotranspiration [Line 5 + Line 10] | 37 | sq. ft. |
| Volume Retention Performance Standard | | | |
| 12 | Is Line 11 \geq Line 4? | Volume Retention Performance Standard is Met | |
| 13 | Fraction of the performance standard met through the BMP footprint and/or landscaping [Line 11/Line 4] | 1.48 | |
| 14 | Target Volume Retention [Line 10 from Worksheet B.5.2] | 1 | cu. ft. |
| 15 | Volume retention required from other site design BMPs [(1-Line 13) x Line 14] | -0.4606992 | cu. ft. |
| Site Design BMP | | | |
| | Identification | Site Design Type | Credit |
| 16 | 1 | | cu. ft. |
| | 2 | | cu. ft. |
| | 3 | | cu. ft. |
| | 4 | | cu. ft. |
| | 5 | | cu. ft. |
| | Sum of volume retention benefits from other site design BMPs (e.g. trees; rain barrels etc.). [sum of Line 16 Credits for Id's 1 to 5] Provide documentation of how the site design credit is calculated in the PDP SWQMP. | 0 | cu. ft. |
| 17 | Is Line 16 \geq Line 15? | Volume Retention Performance Standard is Met | |


| | | | |
|---|---|--|---------|
|  | | Project Name Habitat for Humanity 1st Street | |
| | | BMP ID BMP #8 | |
| Sizing Method for Pollutant Removal Criteria | | Worksheet B.5-1 | |
| 1 | Area draining to the BMP | 1196.00 | sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.88 | |
| 3 | 85 th percentile 24-hour rainfall depth | 0.60 | inches |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | 52 | cu. ft. |
| BMP Parameters | | | |
| 5 | Surface ponding [6 inch minimum, 12 inch maximum] | 6 | inches |
| 6 | Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations | 24 | inches |
| 7 | Aggregate storage (also add ASTM No 8 stone) above underdrain invert (12 inches typical) – use 0 inches if the aggregate is not over the entire bottom surface area | 9 | inches |
| 8 | Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area | 3 | inches |
| 9 | Freely drained pore storage of the media | 0.2 | in/in |
| 10 | Porosity of aggregate storage | 0.4 | in/in |
| 11 | Media filtration rate to be used for sizing (maximum filtration rate of 5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate (includes infiltration into the soil and flow rate through the outlet structure) which will be less than 5 in/hr.) | 5 | in/hr. |
| Baseline Calculations | | | |
| 12 | Allowable routing time for sizing | 6 | hours |
| 13 | Depth filtered during storm [Line 11 x Line 12] | 30 | inches |
| 14 | Depth of Detention Storage [Line 5 + (Line 6 x Line 9) + (Line 7 x Line 10) + (Line 8 x Line 10)] | 15.6 | inches |
| 15 | Total Depth Treated [Line 13 + Line 14] | 45.6 | inches |
| Option 1 – Biofilter 1.5 times the DCV | | | |
| 16 | Required biofiltered volume [1.5 x Line 4] | 79 | cu. ft. |
| 17 | Required Footprint [Line 16/ Line 15] x 12 | 21 | sq. ft. |
| Option 2 – Store 0.75 of remaining DCV in pores and ponding | | | |
| 18 | Required Storage (surface + pores) Volume [0.75 x Line 4] | 39 | cu. ft. |
| 19 | Required Footprint [Line 18/ Line 14] x 12 | 30 | sq. ft. |
| Footprint of the BMP | | | |
| 20 | BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Line 11 in Worksheet B.5-4) | 0.03 | |
| 21 | Minimum BMP Footprint [Line 1 x Line 2 x Line 20] | 31 | sq. ft. |
| 22 | Footprint of the BMP = Maximum(Minimum(Line 17, Line 19), Line 21) | 31 | sq. ft. |
| 23 | Provided BMP Footprint | 47 | sq. ft. |
| 24 | Is Line 23 ≥ Line 22? | Yes, Performance Standard is Met | |

| | | | | |
|---|--|------------------------|-----------------------------------|--|
|  | | Project Name | Habitat for Humanity - 1st Street | |
| | | BMP ID | BMP #8 | |
| Sizing Method for Volume Retention Criteria | | Worksheet B.5-2 | | |
| 1 | Area draining to the BMP | 1196.00 | sq. ft. | |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.88 | | |
| 3 | 85 th percentile 24-hour rainfall depth | 0.60 | inches | |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | 52 | cu. ft. | |
| Volume Retention Requirement | | | | |
| 5 | Measured infiltration rate in the DMA Note: When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30 When in no infiltration condition and the actual measured infiltration rate is unknown enter 0.0 if there are geotechnical and/or groundwater hazards identified in Appendix C or | 0 | in/hr. | |
| 6 | Factor of safety | 2 | | |
| 7 | Reliable infiltration rate, for biofiltration BMP sizing [Line 5 / Line 6] | 0 | in/hr. | |
| 8 | Average annual volume reduction target (Figure B.5-2) When Line 7 > 0.01 in/hr. = Minimum (40, 166.9 x Line 7 + 6.62) When Line 7 ≤ 0.01 in/hr. = 3.5% | 3.5 | % | |
| 9 | Fraction of DCV to be retained (Figure B.5-3) When Line 8 > 8% = $0.0000013 \times \text{Line } 8^3 - 0.000057 \times \text{Line } 8^2 + 0.0086 \times \text{Line } 8 - 0.014$ When Line 8 ≤ 8% = 0.023 | 0.023 | | |
| 10 | Target volume retention [Line 9 x Line 4] | 1 | cu. ft. | |

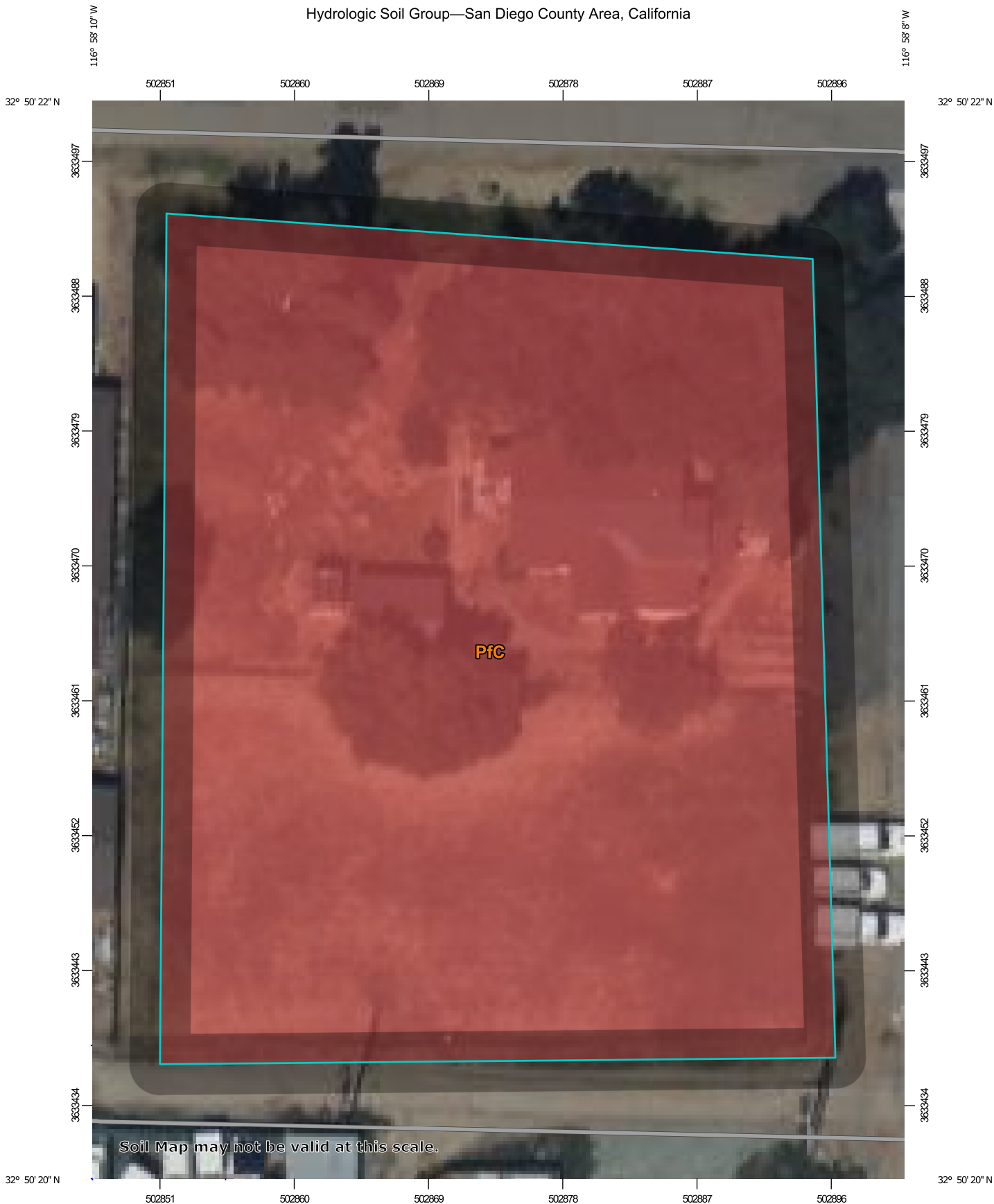
| | | | |
|---|---|---|------------------------|
|  | | Project Name Habitat for Humanity - 1st St | |
| | | BMP ID BMP #8 | |
| Volume Retention for No Infiltration Condition | | | Worksheet B.5-6 |
| 1 | Area draining to the biofiltration BMP | | 1196.00 sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | | 0.88 |
| 3 | Effective impervious area draining to the BMP [Line 1 x Line 2] | | 1048 sq. ft. |
| 4 | Required area for Evapotranspiration [Line 3 x 0.03] | | 31 sq. ft. |
| 5 | Biofiltration BMP Footprint | | 47 sq. ft. |
| Landscape Area (must be identified on DS-3247) | | | |
| | Identification | 1 | 2 |
| 6 | Landscape area that meet the requirements in SD-B and SD-F Fact Sheet (sq. ft.) | | |
| 7 | Impervious area draining to the landscape area (sq. ft.) | | |
| 8 | Impervious to Pervious Area ratio [Line 7/Line 6] | 0.00 | 0.00 |
| 9 | Effective Credit Area If (Line 8 >1.5, Line 6, Line 7/1.5) | 0 | 0 |
| 10 | Sum of Landscape area [sum of Line 9 Id's 1 to 5] | 0 sq. ft. | |
| 11 | Provided footprint for evapotranspiration [Line 5 + Line 10] | 47 sq. ft. | |
| Volume Retention Performance Standard | | | |
| 12 | Is Line 11 \geq Line 4? | Volume Retention Performance Standard is Met | |
| 13 | Fraction of the performance standard met through the BMP footprint and/or landscaping [Line 11/Line 4] | 1.49 | |
| 14 | Target Volume Retention [Line 10 from Worksheet B.5.2] | 1 cu. ft. | |
| 15 | Volume retention required from other site design BMPs [(1-Line 13) x Line 14] | -0.5906607 cu. ft. | |
| Site Design BMP | | | |
| | Identification | Site Design Type | Credit |
| 16 | 1 | | cu. ft. |
| | 2 | | cu. ft. |
| | 3 | | cu. ft. |
| | 4 | | cu. ft. |
| | 5 | | cu. ft. |
| | Sum of volume retention benefits from other site design BMPs (e.g. trees; rain barrels etc.). [sum of Line 16 Credits for Id's 1 to 5] Provide documentation of how the site design credit is calculated in the PDP SWQMP. | 0 cu. ft. | |
| 17 | Is Line 16 \geq Line 15? | Volume Retention Performance Standard is Met | |

| | | |
|---|---|--|
|  | | Project Name Habitat for Humanity 1st Street |
| | | BMP ID BMP #9 |
| Sizing Method for Pollutant Removal Criteria | | Worksheet B.5-1 |
| 1 | Area draining to the BMP | 1022.00 sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.88 |
| 3 | 85 th percentile 24-hour rainfall depth | 0.60 inches |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | 45 cu. ft. |
| BMP Parameters | | |
| 5 | Surface ponding [6 inch minimum, 12 inch maximum] | 6 inches |
| 6 | Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations | 24 inches |
| 7 | Aggregate storage (also add ASTM No 8 stone) above underdrain invert (12 inches typical) – use 0 inches if the aggregate is not over the entire bottom surface area | 9 inches |
| 8 | Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area | 3 inches |
| 9 | Freely drained pore storage of the media | 0.2 in/in |
| 10 | Porosity of aggregate storage | 0.4 in/in |
| 11 | Media filtration rate to be used for sizing (maximum filtration rate of 5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate (includes infiltration into the soil and flow rate through the outlet structure) which will be less than 5 in/hr.) | 5 in/hr. |
| Baseline Calculations | | |
| 12 | Allowable routing time for sizing | 6 hours |
| 13 | Depth filtered during storm [Line 11 x Line 12] | 30 inches |
| 14 | Depth of Detention Storage [Line 5 + (Line 6 x Line 9) + (Line 7 x Line 10) + (Line 8 x Line 10)] | 15.6 inches |
| 15 | Total Depth Treated [Line 13 + Line 14] | 45.6 inches |
| Option 1 – Biofilter 1.5 times the DCV | | |
| 16 | Required biofiltered volume [1.5 x Line 4] | 67 cu. ft. |
| 17 | Required Footprint [Line 16/ Line 15] x 12 | 18 sq. ft. |
| Option 2 – Store 0.75 of remaining DCV in pores and ponding | | |
| 18 | Required Storage (surface + pores) Volume [0.75 x Line 4] | 34 cu. ft. |
| 19 | Required Footprint [Line 18/ Line 14] x 12 | 26 sq. ft. |
| Footprint of the BMP | | |
| 20 | BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Line 11 in Worksheet B.5-4) | 0.03 |
| 21 | Minimum BMP Footprint [Line 1 x Line 2 x Line 20] | 27 sq. ft. |
| 22 | Footprint of the BMP = Maximum(Minimum(Line 17, Line 19), Line 21) | 27 sq. ft. |
| 23 | Provided BMP Footprint | 40 sq. ft. |
| 24 | Is Line 23 ≥ Line 22? | Yes, Performance Standard is Met |

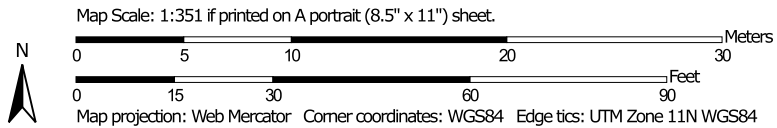
| | | | | |
|---|--|------------------------|-----------------------------------|--|
|  | | Project Name | Habitat for Humanity - 1st Street | |
| | | BMP ID | BMP #9 | |
| Sizing Method for Volume Retention Criteria | | Worksheet B.5-2 | | |
| 1 | Area draining to the BMP | 1022.00 | sq. ft. | |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.88 | | |
| 3 | 85 th percentile 24-hour rainfall depth | 0.60 | inches | |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | 45 | cu. ft. | |
| Volume Retention Requirement | | | | |
| 5 | Measured infiltration rate in the DMA Note: When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30 When in no infiltration condition and the actual measured infiltration rate is unknown enter 0.0 if there are geotechnical and/or groundwater hazards identified in Appendix C or | 0 | in/hr. | |
| 6 | Factor of safety | 2 | | |
| 7 | Reliable infiltration rate, for biofiltration BMP sizing [Line 5 / Line 6] | 0 | in/hr. | |
| 8 | Average annual volume reduction target (Figure B.5-2) When Line 7 > 0.01 in/hr. = Minimum (40, 166.9 x Line 7 + 6.62) When Line 7 ≤ 0.01 in/hr. = 3.5% | 3.5 | % | |
| 9 | Fraction of DCV to be retained (Figure B.5-3) When Line 8 > 8% = $0.0000013 \times \text{Line } 8^3 - 0.000057 \times \text{Line } 8^2 + 0.0086 \times \text{Line } 8 - 0.014$ When Line 8 ≤ 8% = 0.023 | 0.023 | | |
| 10 | Target volume retention [Line 9 x Line 4] | 1 | cu. ft. | |

| | | | |
|---|---|---|------------------------|
|  | | Project Name Habitat for Humanity - 1st St | |
| | | BMP ID BMP #9 | |
| Volume Retention for No Infiltration Condition | | | Worksheet B.5-6 |
| 1 | Area draining to the biofiltration BMP | 1022.00 | sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.88 | |
| 3 | Effective impervious area draining to the BMP [Line 1 x Line 2] | 896 | sq. ft. |
| 4 | Required area for Evapotranspiration [Line 3 x 0.03] | 27 | sq. ft. |
| 5 | Biofiltration BMP Footprint | 40 | sq. ft. |
| Landscape Area (must be identified on DS-3247) | | | |
| | Identification | 1 | 2 |
| 6 | Landscape area that meet the requirements in SD-B and SD-F Fact Sheet (sq. ft.) | | |
| 7 | Impervious area draining to the landscape area (sq. ft.) | | |
| 8 | Impervious to Pervious Area ratio [Line 7/Line 6] | 0.00 | 0.00 |
| 9 | Effective Credit Area If (Line 8 >1.5, Line 6, Line 7/1.5) | 0 | 0 |
| 10 | Sum of Landscape area [sum of Line 9 Id's 1 to 5] | 0 | sq. ft. |
| 11 | Provided footprint for evapotranspiration [Line 5 + Line 10] | 40 | sq. ft. |
| Volume Retention Performance Standard | | | |
| 12 | Is Line 11 \geq Line 4? | Volume Retention Performance Standard is Met | |
| 13 | Fraction of the performance standard met through the BMP footprint and/or landscaping [Line 11/Line 4] | 1.49 | |
| 14 | Target Volume Retention [Line 10 from Worksheet B.5.2] | 1 | cu. ft. |
| 15 | Volume retention required from other site design BMPs [(1-Line 13) x Line 14] | -0.5047833 | cu. ft. |
| Site Design BMP | | | |
| | Identification | Site Design Type | Credit |
| 16 | 1 | | cu. ft. |
| | 2 | | cu. ft. |
| | 3 | | cu. ft. |
| | 4 | | cu. ft. |
| | 5 | | cu. ft. |
| | Sum of volume retention benefits from other site design BMPs (e.g. trees; rain barrels etc.). [sum of Line 16 Credits for Id's 1 to 5] Provide documentation of how the site design credit is calculated in the PDP SWQMP. | 0 | cu. ft. |
| 17 | Is Line 16 \geq Line 15? | Volume Retention Performance Standard is Met | |

Hydrologic Soil Group—San Diego County Area, California




Soil Map may not be valid at this scale.



MAP LEGEND

Area of Interest (AOI)









 Area of Interest (AOI)

Soils

Soil Rating Polygons





 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points





 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Diego County Area, California
 Survey Area Data: Version 18, Sep 14, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 24, 2022—Apr 29, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
|------------------------------------|---|--------|--------------|----------------|
| PfC | Placentia sandy loam, thick surface, 2 to 9 percent slo pes | D | 0.6 | 100.0% |
| Totals for Area of Interest | | | 0.6 | 100.0% |

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.








Rating Options

Aggregation Method: Dominant Condition

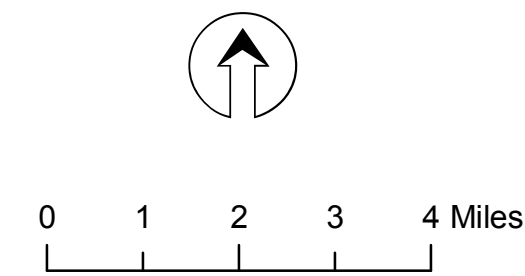
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

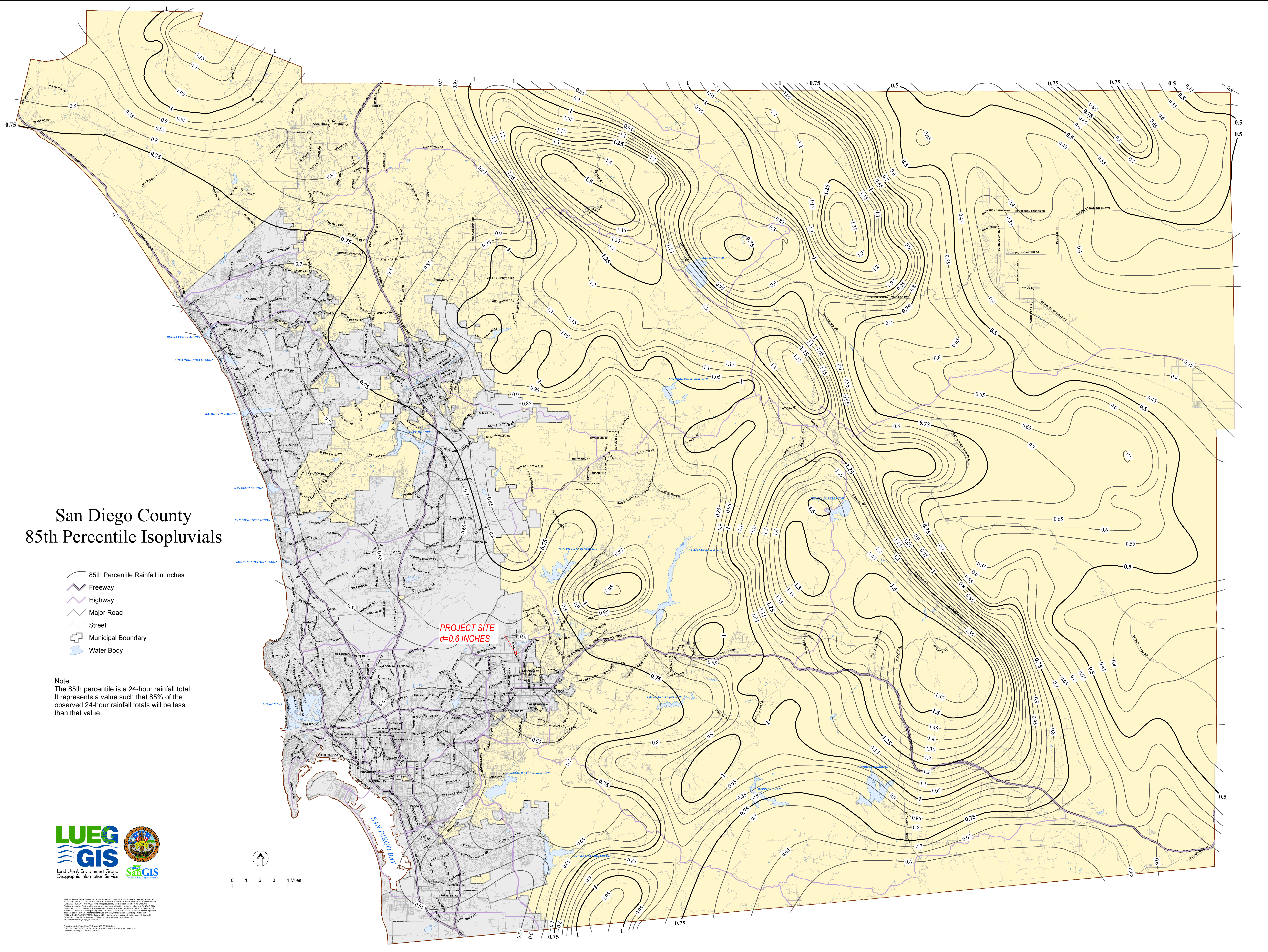
San Diego County 85th Percentile Isopluvials

-  85th Percentile Rainfall in Inches
-  Freeway
-  Highway
-  Major Road
-  Street
-  Municipal Boundary
-  Water Body

Note:
The 85th percentile is a 24-hour rainfall total.
It represents a value such that 85% of the
observed 24-hour rainfall totals will be less
than that value.



PROJECT SITE
d=0.6 INCHES



THIS MAP AND ALL INFORMATION CONTAINED HEREIN ARE THE PROPERTY OF LUEG GIS. NO WARRANTY IS MADE BY LUEG GIS FOR THE ACCURACY OF THE INFORMATION CONTAINED HEREIN. LUEG GIS SHALL NOT BE LIABLE FOR ANY DAMAGES, INCLUDING CONSEQUENTIAL DAMAGES, ARISING FROM THE USE OF THIS MAP. THE INFORMATION CONTAINED HEREIN IS FOR INFORMATIONAL PURPOSES ONLY AND SHOULD NOT BE USED AS A BASIS FOR ANY DECISIONS. LUEG GIS SHALL NOT BE LIABLE FOR ANY DAMAGES, INCLUDING CONSEQUENTIAL DAMAGES, ARISING FROM THE USE OF THIS MAP. THE INFORMATION CONTAINED HEREIN IS FOR INFORMATIONAL PURPOSES ONLY AND SHOULD NOT BE USED AS A BASIS FOR ANY DECISIONS.

1. Is there a demand for harvested water (check all that apply) at the project site that is reliably present during the wet season?

Toilet and urinal flushing

Landscape irrigation

Other: _____

2. If there is a demand; estimate the anticipated average wet season demand over a period of 36 hours. Guidance for planning level demand calculations for toilet/urinal flushing and landscape irrigation is provided in Section B.3.2.

[Provide a summary of calculations here]

Landscape Irrigation Demand - > 1,479 Gal/ irrigated acre moderate water use
 0.17 ac irrigated x 1,470 gal/ac x 0.13368 cf/gal = 33 cf (landscaping)
 Total Demand = 33 cf

3. Calculate the DCV using worksheet B-2.1.

DCV = 885 _____ (cubic feet)

[Provide a summary of calculations here]

0.25 DCV = 221.258 cf

| | | |
|---|--|--|
| <p>3a. Is the 36-hour demand greater than or equal to the DCV?</p> <p><input type="checkbox"/> Yes ↓ / <input checked="" type="checkbox"/> No ⇒</p> | <p>3b. Is the 36-hour demand greater than 0.25DCV but less than the full DCV?</p> <p><input type="checkbox"/> Yes ↓ / <input checked="" type="checkbox"/> No ⇒</p> | <p>3c. Is the 36-hour demand less than 0.25DCV?</p> <p><input checked="" type="checkbox"/> Yes ↓</p> |
|---|--|--|

| | | |
|--|--|--|
| <p>Harvest and use appears to be feasible. Conduct more detailed evaluation and sizing calculations to confirm that DCV can be used at an adequate rate to meet drawdown criteria.</p> | <p>Harvest and use may be feasible. Conduct more detailed evaluation and sizing calculations to determine feasibility. Harvest and use may only be able to be used for a portion of the site, or (optionally) the storage may need to be upsized to meet long term capture targets while draining in longer than 36 hours.</p> | <p>Harvest and use is considered to be infeasible.</p> |
|--|--|--|

Is harvest and use feasible based on further evaluation?

Yes, refer to Appendix E to select and size harvest and use BMPs.

No, select alternate BMPs.

Appendix C: Geotechnical and Groundwater Investigation Requirements

Worksheet C.4-1 Page 3 of 4

Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria

Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?

| Criteria | Screening Question | Yes | No |
|----------|--|-----|----|
| 5 | Do soil and geologic conditions allow for infiltration in any appreciable rate or volume? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D. | | X |

Provide basis: See attached text, Section 3.3.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

| | | | |
|---|---|--|---|
| 6 | Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2. | | X |
|---|---|--|---|

Provide basis: See attached text, Section 3.3.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

Form I-8 Page 2 of 4

| Criteria | Screening Question | Yes | No |
|--|---|-----|----|
| 3 | Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3. | | X |
| <p>Provide basis: See attached text, Section 3.3.</p> <p>Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.</p> | | | |
| 4 | Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3. | | X |
| <p>Provide basis: See attached text, Section 3.3.</p> <p>Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.</p> | | | |
| Part 1 Result * | <p>If all answers to rows 1 - 4 are “Yes” a full infiltration design is potentially feasible. The feasibility screening category is Full Infiltration</p> <p>If any answer from row 1-4 is “No”, infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a “full infiltration” design. Proceed to Part 2</p> | | |

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by Agency/Jurisdictions to substantiate findings

Form I-8 Page 3 of 4

Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria

Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?

| Criteria | Screening Question | Yes | No |
|----------|--|-----|----|
| 5 | Do soil and geologic conditions allow for infiltration in any appreciable rate or volume? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D. | | X |

Provide basis: **See attached text, Section 3.3.**

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

| | | | |
|---|---|--|---|
| 6 | Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2. | | X |
|---|---|--|---|

Provide basis: **See attached text, Section 3.3.**

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

Form I-8 Page 4 of 4

| Criteria | Screening Question | Yes | No |
|---|--|-----|------------------------|
| 7 | <p>Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</p> | | X |
| <p>Provide basis: See attached text, Section 3.3.</p> <p>Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.</p> | | | |
| 8 | <p>Can infiltration be allowed without violating downstream water rights? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</p> | | X |
| <p>Provide basis: See attached text, Section 3.3.</p> <p>Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.</p> | | | |
| Part 2 Result* | <p>If all answers from row 1-4 are yes then partial infiltration design is potentially feasible. The feasibility screening category is Partial Infiltration.</p> <p>If any answer from row 5-8 is no, then infiltration of any volume is considered to be infeasible within the drainage area. The feasibility screening category is No Infiltration.</p> | | No Infiltration |

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by Agency/Jurisdictions to substantiate findings

| Factor of Safety and Design Infiltration Rate Worksheet | | | | Form I-9 | |
|---|------------------------|--|---------------------|---------------------------------|---------------------------------|
| Factor Category | | Factor Description | Assigned Weight (w) | Factor Value (v) | Product (p) $p = w \times v$ |
| A | Suitability Assessment | Soil assessment methods | 0.25 | 2.0 | 0.5 |
| | | Predominant soil texture | 0.25 | 3.0 | 0.75 |
| | | Site soil variability | 0.25 | 2.0 | 0.5 |
| | | Depth to groundwater / impervious layer | 0.25 | 2.0 | 0.5 |
| | | Suitability Assessment Safety Factor, $S_A = \Sigma p$ | | | |
| B | Design | Level of pretreatment/ expected sediment loads | 0.5 | 2.5 | 1.25 |
| | | Redundancy/resiliency | 0.25 | 2.0 | 0.5 |
| | | Compaction during construction | 0.25 | 2.0 | 0.5 |
| | | Design Safety Factor, $S_B = \Sigma p$ | | | |
| Combined Safety Factor, $S_{total} = S_A \times S_B$ | | | | 5 | |
| Observed Infiltration Rate, inch/hr, $K_{observed}$ (corrected for test-specific bias) | | | | See attached text, Section 3.3. | |
| Design Infiltration Rate, in/hr, $K_{design} = K_{observed} / S_{total}$ | | | | See attached text, Section 3.3. | |
| Supporting Data | | | | | |
| Briefly describe infiltration test and provide reference to test forms: See attached text, Section 3.3. | | | | | |

Groundwater was not encountered in the borings or percolation test holes. Construction excavation for the building foundations is not anticipated to encounter groundwater, and groundwater is not considered to be a factor in the design and construction of the at-grade structure, however, local seepage and ponding water may occur after periods of precipitation due to the impermeable nature of the near-surface soils.

3.3 Soil Infiltration Testing

Four shallow borings were advanced to facilitate soil infiltration testing in the approximate locations and depths directed by the Project Civil Engineer across the site. The infiltration borings were advanced and testing was completed on December 15, 2022.

The approximate locations of the four infiltration tests (P-1 through P-4) are presented on Figure 2. The site is mantled by soil of the Placentia Sandy Loam (per Web Soil Survey, 2002; Map Symbol PfC, Appendix C). In accordance with the Web Soil Survey, the Placentia Sandy Loam has the following typical profile:

Typical profile of PfC:

H1 - 0 to 13 inches: Sandy loam

H2 - 13 to 34 inches: Clay

The conditions encountered at each of the infiltration testing locations follow in Table 1:

| Table 1 – Percolation/Infiltration Test Summary | | |
|--|--|--|
| Test Number | Soil Conditions Encountered as Measured Below Existing Ground Surface | Depth to Bottom of Infiltration Test from Proposed Ground Surface |
| P-1 | 0-14 inches: Sandy silt to silty sand 14-48 inches: Sandy clay to clayey sand | 48 inches |
| P-2 | 0-15 inches: Silty sand 15-48 inches: Sandy clay | 48 inches |
| P-3 | 0-11 inches: Sandy silt to silty sand 11-48 inches: Sandy clay to clayey sand | 48 inches |
| P-4 | 0-13 inches: Sandy silt to silty sand 13-48 inches: Sandy clay | 48 inches |

Note: Test locations are presented in Figure 2, percolation tests number P-1 through P-4.

Infiltration testing was performed in all four borings in accordance with the recommendations set forth by the City of Santee, BMP Design Manual for Permanent Site Design, Storm Water Treatment and Hydromodification Management, dated February 2016, Appendix C and D using the borehole percolation test method (as described in Section D.3.3.2, Appendix D).

A reduction factor was applied to the percolation rate to derive the infiltration rate to correct for non-vertical flow in accordance with the procedures described in the “County of Los Angeles Department of Public Works, Geotechnical and Materials Engineering Division, Guidelines for Geotechnical Investigation and Reporting, Low Impact Development Stormwater Infiltration, Administrative Manual GS200.2”, dated July 2017, Page 9 of 17.

The corrected percolation test rates are reported as raw (vertical) infiltration rates for each test location in Table 2 below. The raw infiltration rate is converted into the Design Infiltration Rate in the table below using an applied safety factor of 5.0 (see Appendix C to account for “site suitability” and system “design” in accordance with Form I-9 in “City of Santee BMP Design Manual, February 2016”).

The City of Santee Forms I-8 and Worksheet C.4.1 (adapted from the City of Santee, dated February 2016) provides site infiltration feasibility and is presented in Appendix C.

| Table 2 - Infiltration Test Results from Percolation Testing | | |
|---|--|---|
| Percolation Test Number (Figure 2) | Raw Vertical Infiltration Rate, (inches/hour) | Design Infiltration Rate (with Safety Factor = 5.0), (inches/hour) |
| P-1 | 0.9 | 0.2 |
| P-2 | 2.0 | 0.4 |
| P-3 | 0.5 | 0.1 |
| P-4 | 1.2 | 0.2 |

Note: Depth measured below finished (proposed) ground surface.

The results of the infiltration testing at all four locations indicate a very fine-grained, sandy clay to clayey sand across the site. The infiltration rate is accordingly low and less than the 0.5 inches per hour threshold that the City of Santee recommends for onsite storm water infiltration. Accordingly, this site is not feasible for near-surface water infiltration.

We would recommend a minimum (horizontal) distance of 5 feet between the closest permeable pavement infiltration and any structures or retaining walls.

ATTACHMENT 2

BACKUP FOR PDP HYDROMODIFICATION CONTROL MEASURES

This is the cover sheet for Attachment 2.

Mark this box if this attachment is empty because the project is exempt from PDP hydromodification management requirements.

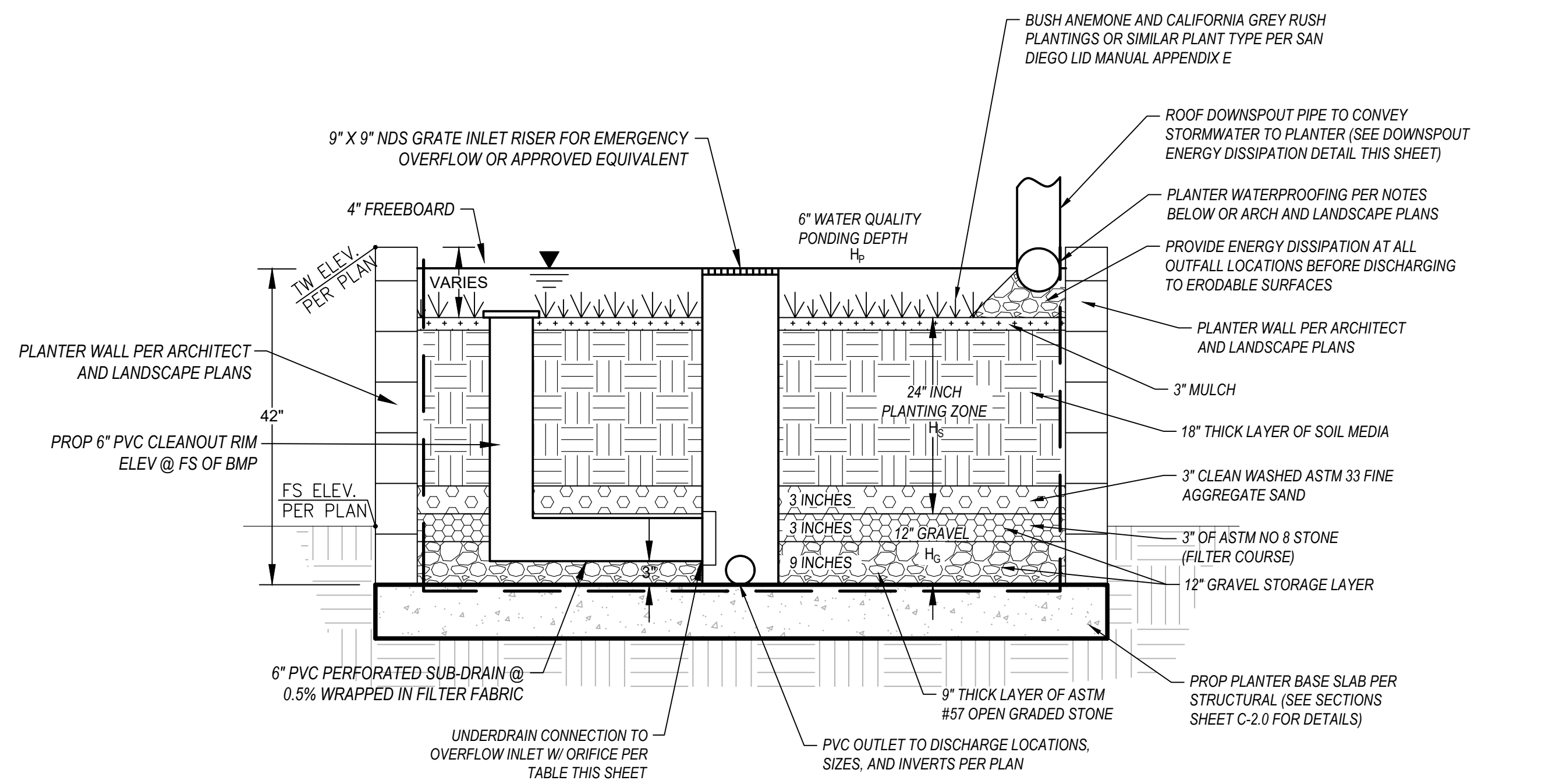
Indicate which Items are Included behind this cover sheet:

| Attachment Sequence | Contents | Checklist |
|---------------------|--|--|
| Attachment 2a | Hydromodification Management Exhibit (Required) | <input checked="" type="checkbox"/> Included See Hydromodification Management Exhibit Checklist on the back of this Attachment cover sheet. |
| Attachment 2b | Management of Critical Coarse Sediment Yield Areas (WMAA Exhibit is required, additional analyses are optional) See Section 6.2 of the BMP Design Manual. | <input checked="" type="checkbox"/> Exhibit showing project drainage boundaries marked on WMAA Critical Coarse Sediment Yield Area Map (Required) Optional analyses for Critical Coarse Sediment Yield Area Determination <input type="checkbox"/> 6.2.1 Verification of Geomorphic Landscape Units Onsite <input type="checkbox"/> 6.2.2 Downstream Systems Sensitivity to Coarse Sediment <input type="checkbox"/> 6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite |
| Attachment 2c | Geomorphic Assessment of Receiving Channels (Optional) See Section 6.3.4 of the BMP Design Manual. | <input checked="" type="checkbox"/> Not performed <input type="checkbox"/> Included <input type="checkbox"/> Submitted as separate stand-alone document |
| Attachment 2d | Flow Control Facility Design, including Structural BMP Drawdown Calculations and Overflow Design Summary (Required) See Chapter 6 and Appendix G of the BMP Design Manual | <input checked="" type="checkbox"/> Included <input type="checkbox"/> Submitted as separate stand-alone document |
| Attachment 2e | Vector Control Plan (Required when structural BMPs will not drain in 96 hours) | <input type="checkbox"/> Included <input checked="" type="checkbox"/> Not required because BMPs will drain in less than 96 hours |

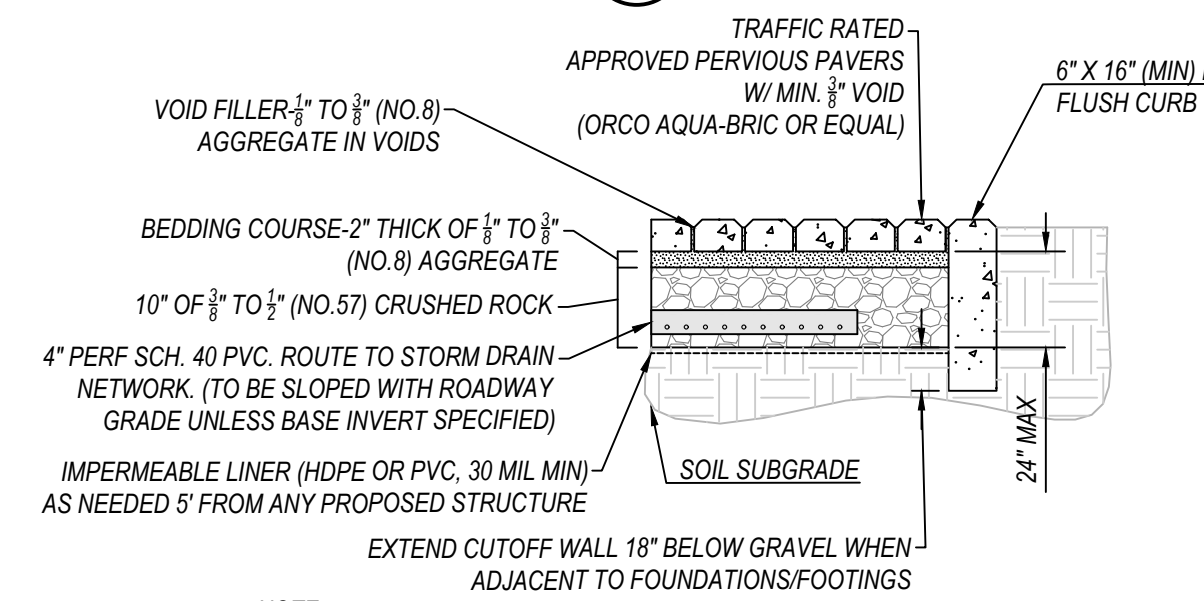
Use this checklist to ensure the required information has been included on the Hydromodification Management Exhibit:

The Hydromodification Management Exhibit must identify:

- Underlying hydrologic soil group
- Approximate depth to groundwater
- Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
- Critical coarse sediment yield areas to be protected
- Existing topography
- Existing and proposed site drainage network and connections to drainage offsite
- Proposed grading
- Proposed impervious features
- Proposed design features and surface treatments used to minimize imperviousness
- Point(s) of Compliance (POC) for Hydromodification Management
- Existing and proposed drainage boundary and drainage area to each POC (when necessary, create separate exhibits for pre-development and post-project conditions)
- Structural BMPs for hydromodification management (identify location, type of BMP, and size/detail)



A1 TYPICAL SECTION: BIOFILTRATION PLANTER CROSS SECTION (BF-1)
NOT TO SCALE

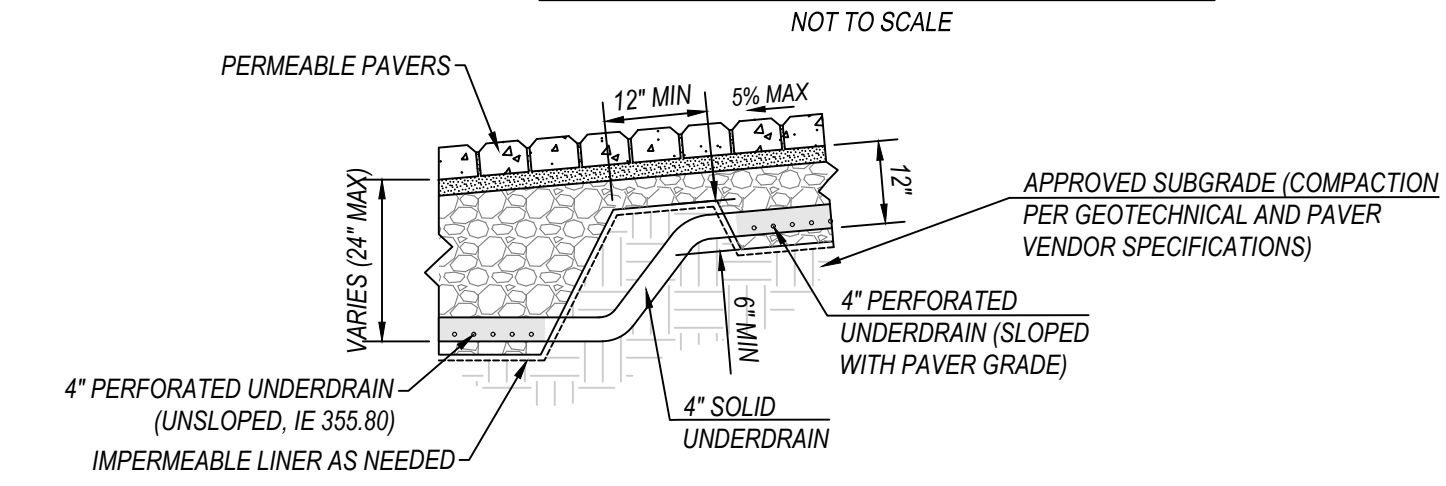


A2 9" NDS INLET CONNECTION DETAIL
NOT TO SCALE

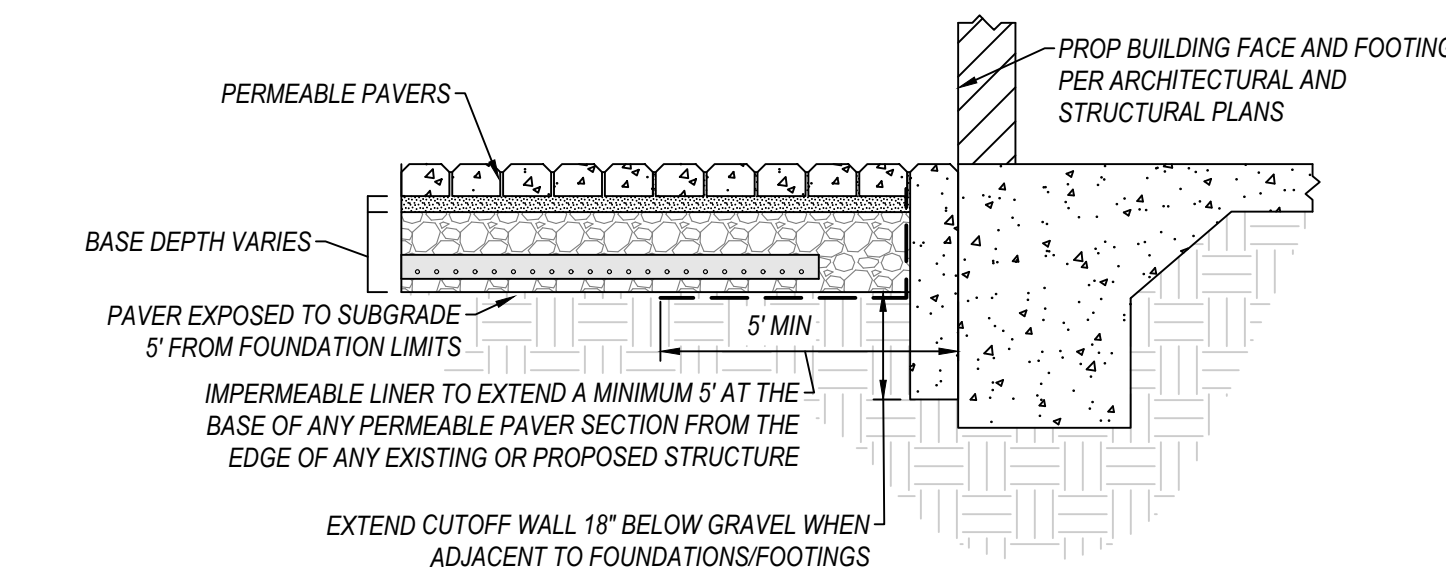
BMP SIZE & ORIFICE DIAMETER SUMMARY

| BMP # | DCV REQUIRED (FT ³) | H ₁ (FT) | H ₂ (FT) | H ₃ (FT) | EFFECTIVE DEPTH (FT) | HMP ORIFICE (IN) | A (FT ²) | VOLUME PROVIDED (FT ³) |
|-------|---------------------------------|---------------------|---------------------|---------------------|----------------------|------------------|----------------------|------------------------------------|
| 1 | 25 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 25 | 38 |
| 2 | 35 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 30 | 45 |
| 3 | 30 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 26 | 39 |
| 4 | 26 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 20 | 29 |
| 5 | 46 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 54 | 81 |
| 6 | 28 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 25 | 38 |
| 7 | 42 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 37 | 56 |
| 8 | 52 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 47 | 71 |
| 9 | 45 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 40 | 60 |

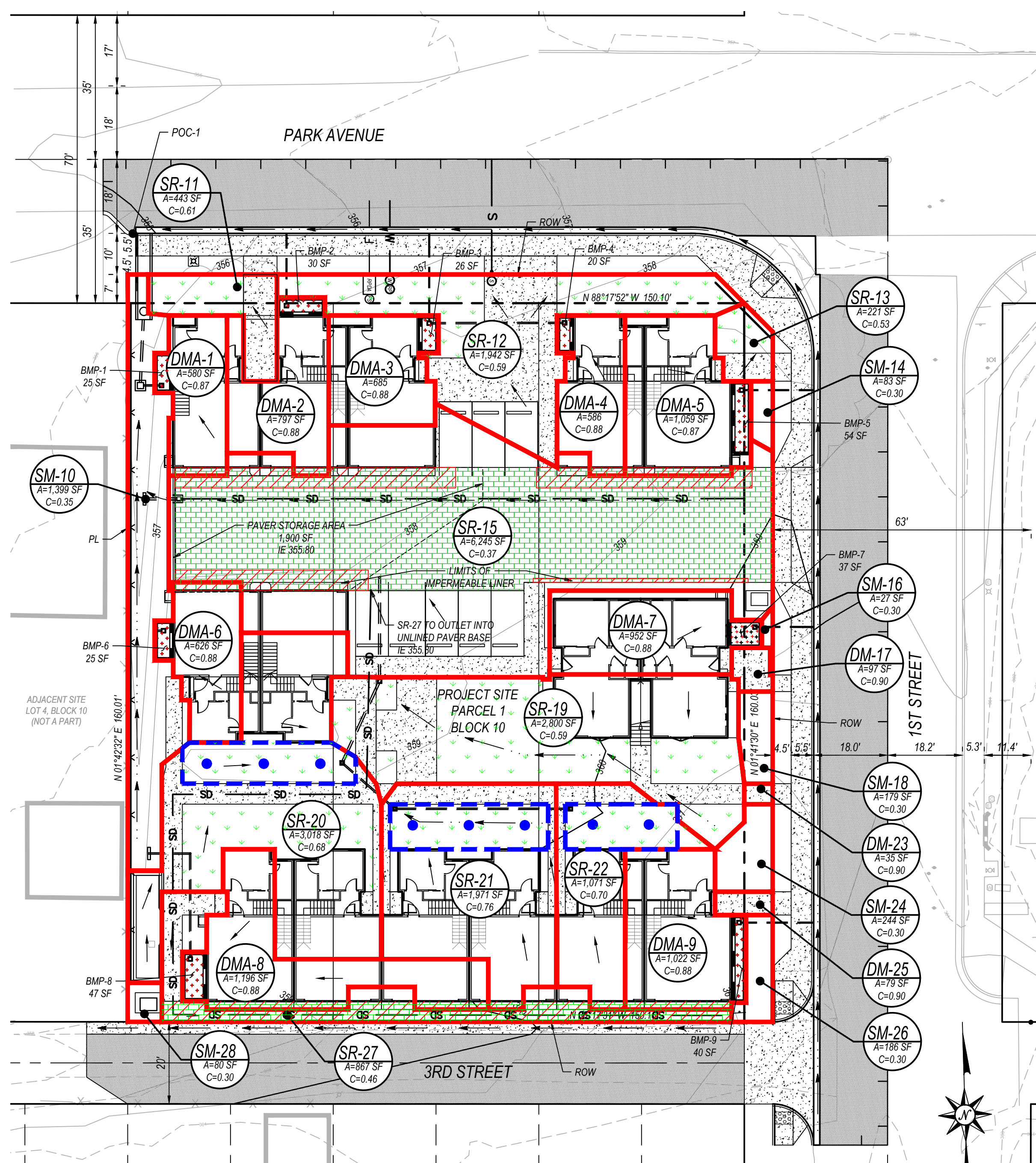
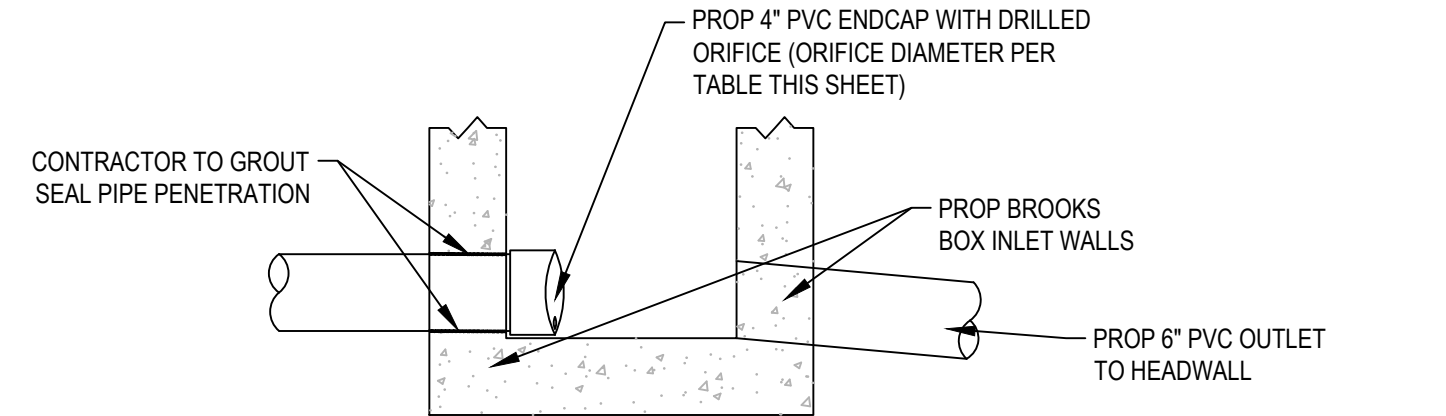
PERMEABLE PAVER DETAIL
NOT TO SCALE



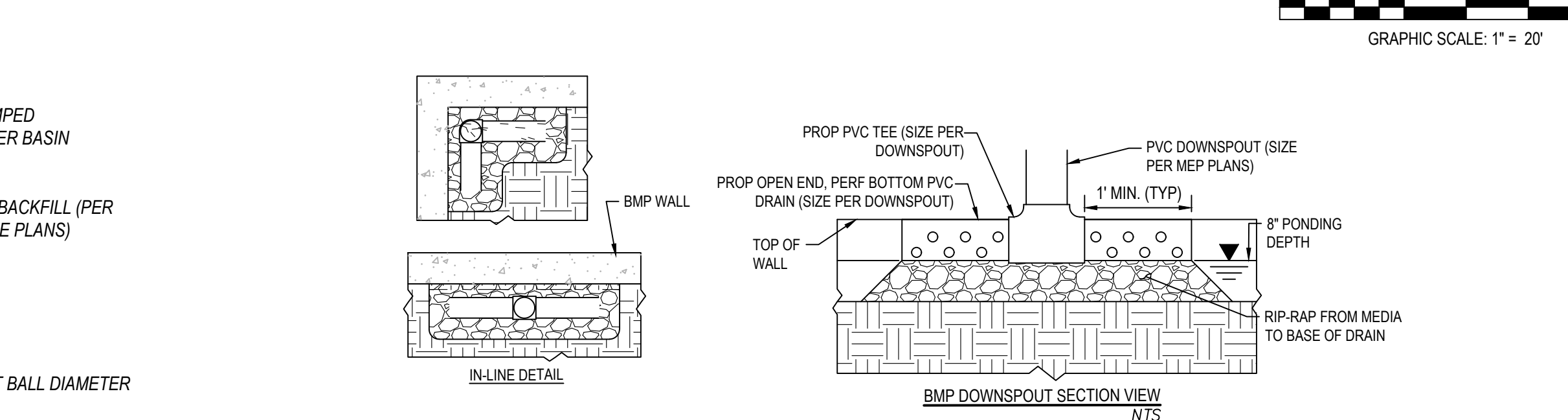
PERMEABLE PAVER IMPERMEABLE LINER LIMIT DETAIL
NOT TO SCALE



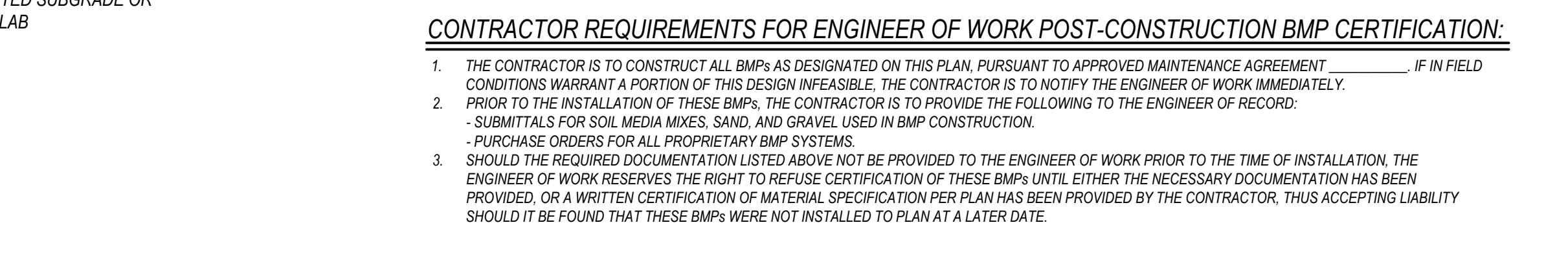
A3 BROOKS BOX INLET CONNECTION DETAIL (PAVER OUTLET DETAIL)
NOT TO SCALE



POST CONSTRUCTION BMP PLAN
SCALE: 1" = 20'



DOWNSPOUT ENERGY DISSIPATION/OUTLET DETAILS
NOT TO SCALE



SSD-BMP Automated Worksheet I-1: Step 1. Calculation of Design Capture Volume (V1.0)

| Category | # | Description | <i>i</i> | <i>ii</i> | <i>iii</i> | <i>iv</i> | <i>v</i> | <i>vi</i> | <i>vii</i> | <i>viii</i> | <i>ix</i> | <i>x</i> | Units |
|---|--|---|----------|-----------|------------|-----------|----------|-----------|------------|-------------|-----------|------------|------------|
| Standard Drainage Basin Inputs | 1 | Drainage Basin ID or Name | SR-11 | SR-12 | SR-13 | SR-19 | SR-20 | SR-21 | SR-22 | | | | unitless |
| | 2 | 85th Percentile 24-hr Storm Depth | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | | | | inches |
| | 3 | Is Hydromodification Control Applicable? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | | | | yes/no |
| | 4 | Impervious Surfaces <u>Not Directed to Dispersion Area</u> (C=0.90) | | | | | 1,935 | 1,506 | 699 | | | | sq-ft |
| | 5 | Semi-Pervious Surfaces <u>Not Serving as Dispersion Area</u> (C=0.30) | | | | | | | | | | | sq-ft |
| | 6 | Engineered Pervious Surfaces <u>Not Serving as Dispersion Area</u> (C=0.10) | | | | | 1,083 | 465 | 372 | | | | sq-ft |
| | 7 | Natural Type A Soil <u>Not Serving as Dispersion Area</u> (C=0.10) | | | | | | | | | | | sq-ft |
| | 8 | Natural Type B Soil <u>Not Serving as Dispersion Area</u> (C=0.14) | | | | | | | | | | | sq-ft |
| | 9 | Natural Type C Soil <u>Not Serving as Dispersion Area</u> (C=0.23) | | | | | | | | | | | sq-ft |
| | 10 | Natural Type D Soil <u>Not Serving as Dispersion Area</u> (C=0.30) | | | | | | | | | | | sq-ft |
| SSD-BMPs Proposed | 11 | Does Tributary Incorporate Dispersion and/or Rain Barrels? | Yes | Yes | Yes | Yes | No | No | No | | | | yes/no |
| | 12 | Does Tributary Incorporate Tree Wells? | No | No | No | No | Yes | Yes | Yes | | | | yes/no |
| Dispersion Area & Rain Barrel Inputs (Optional) | 13 | Impervious Surfaces Directed to Dispersion Area per SD-B (Ci=0.90) | 212 | 946 | 85 | 1,370 | | | | | | | sq-ft |
| | 14 | Semi-Pervious Surfaces Serving as Dispersion Area per SD-B (Ci=0.30) | | | | | | | | | | | sq-ft |
| | 15 | Engineered Pervious Surfaces Serving as Dispersion Area per SD-B (Ci=0.10) | 231 | 996 | 136 | 1,430 | | | | | | | sq-ft |
| | 16 | Natural Type A Soil Serving as Dispersion Area per SD-B (Ci=0.10) | | | | | | | | | | | sq-ft |
| | 17 | Natural Type B Soil Serving as Dispersion Area per SD-B (Ci=0.14) | | | | | | | | | | | sq-ft |
| | 18 | Natural Type C Soil Serving as Dispersion Area per SD-B (Ci=0.23) | | | | | | | | | | | sq-ft |
| | 19 | Natural Type D Soil Serving as Dispersion Area per SD-B (Ci=0.30) | | | | | | | | | | | sq-ft |
| 20 | Number of Rain Barrels Proposed per SD-E | 0 | 0 | 0 | 0 | | | | | | | # | |
| 21 | Average Rain Barrel Size | 0 | 0 | 0 | 0 | | | | | | | gal | |
| Initial Runoff Factor Calculation | 22 | Total Tributary Area | 443 | 1,942 | 221 | 2,800 | 3,018 | 1,971 | 1,071 | 0 | 0 | 0 | sq-ft |
| | 23 | Initial Runoff Factor for Standard Drainage Areas | 0.00 | 0.00 | 0.00 | 0.00 | 0.61 | 0.71 | 0.62 | 0.00 | 0.00 | 0.00 | unitless |
| | 24 | Initial Runoff Factor for Dispersed & Dispersion Areas | 0.48 | 0.49 | 0.41 | 0.49 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | unitless |
| | 25 | Initial Weighted Runoff Factor | 0.48 | 0.49 | 0.41 | 0.49 | 0.61 | 0.71 | 0.62 | 0.00 | 0.00 | 0.00 | unitless |
| 26 | Initial Design Capture Volume | 11 | 48 | 5 | 69 | 92 | 70 | 33 | 0 | 0 | 0 | cubic-feet | |
| Dispersion Area Adjustment & Rain Barrel Adjustment | 27 | Total Impervious Area Dispersed to Pervious Surface | 212 | 946 | 85 | 1,370 | 0 | 0 | 0 | 0 | 0 | 0 | sq-ft |
| | 28 | Total Pervious Dispersion Area | 231 | 996 | 136 | 1,430 | 0 | 0 | 0 | 0 | 0 | 0 | sq-ft |
| | 29 | Ratio of Dispersed Impervious Area to Pervious Dispersion Area for DCV Reduction | 0.90 | 0.90 | 0.60 | 1.00 | n/a | n/a | n/a | n/a | n/a | n/a | ratio |
| | 30 | Adjustment Factor for Dispersed & Dispersion Areas | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | ratio |
| | 31 | Runoff Factor After Dispersion Techniques | 0.00 | 0.00 | 0.00 | 0.00 | 0.61 | 0.71 | 0.62 | n/a | n/a | n/a | unitless |
| | 32 | Design Capture Volume After Dispersion Techniques | 0 | 0 | 0 | 0 | 92 | 70 | 33 | 0 | 0 | 0 | cubic-feet |
| 33 | Total Rain Barrel Volume Reduction | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | cubic-feet | |
| Results | 34 | Final Adjusted Runoff Factor | 0.00 | 0.00 | 0.00 | 0.00 | 0.61 | 0.71 | 0.62 | 0.00 | 0.00 | 0.00 | unitless |
| | 35 | Final Effective Tributary Area | 0 | 0 | 0 | 0 | 1,841 | 1,399 | 664 | 0 | 0 | 0 | sq-ft |
| | 36 | Initial Design Capture Volume Retained by Dispersion Area and Rain Barrel(s) | 11 | 48 | 5 | 69 | 0 | 0 | 0 | 0 | 0 | 0 | cubic-feet |
| | 37 | Remaining Design Capture Volume Tributary to Tree Well(s) | 0 | 0 | 0 | 0 | 92 | 70 | 33 | 0 | 0 | 0 | cubic-feet |
| No Warning Messages | | | | | | | | | | | | | |

SSD-BMP Automated Worksheet I-2: Step 2. Dispersion Area Validation (V1.0)

| Category | # | Description | <i>i</i> | <i>ii</i> | <i>iii</i> | <i>iv</i> | <i>v</i> | <i>vi</i> | <i>vii</i> | <i>viii</i> | <i>ix</i> | <i>x</i> | Units |
|---------------------------------|----|--|------------|------------|------------|------------|----------|-----------|------------|-------------|-----------|----------|------------|
| Standard Dispersion Area Inputs | 1 | Drainage Basin ID or Name | SR-11 | SR-12 | SR-13 | SR-19 | - | - | - | - | - | - | unitless |
| | 2 | Final Design Capture Volume (DCV) | 0 | 0 | 0 | 0 | - | - | - | - | - | - | cubic-feet |
| | 3 | Is Hydromodification Control Applicable? | Yes | Yes | Yes | Yes | - | - | - | - | - | - | yes/no |
| | 4 | Total Impervious Area Dispersed to Pervious Surface | 212 | 946 | 85 | 1,370 | - | - | - | - | - | - | sq-ft |
| | 5 | Total Engineered Pervious Surface and/or Natural Soil Dispersion Area (Does Not Include Semi-Pervious Surfaces Serving as Dispersion Area) | 231 | 996 | 136 | 1,430 | - | - | - | - | - | - | sq-ft |
| | 6 | Ratio of Dispersed Impervious Area to Total Engineered Pervious Surface and/or Natural Soil Dispersion Area | 0.92 | 0.95 | 0.63 | 0.96 | - | - | - | - | - | - | unitless |
| | 7 | Dispersion Area Length (Length of Sheet Flow Across Dispersion Area) | 23 | 25 | 13 | 93 | | | | | | | feet |
| | 8 | Dispersion Area Slope | 5.0 | 4.0 | 3.0 | 3.2 | | | | | | | % |
| | 9 | Thickness of Amended Soil | 11 | 11 | 11 | 11 | | | | | | | inches |
| | 10 | How is Flow Dispersed Across Width of Dispersion Area (definitions below*)? | Sheet Flow | Sheet Flow | Sheet Flow | Sheet Flow | | | | | | | unitless |
| Results | 11 | Is DCV Requirement Fully Satisfied by Dispersion Area? | Yes | Yes | Yes | Yes | - | - | - | - | - | - | yes/no |
| | 12 | Is Hydromodification Control Requirement Satisfied by Dispersion Area? | Yes | Yes | Yes | Yes | - | - | - | - | - | - | yes/no |
| | 13 | Are Dispersion Area Length, Slope, and Thickness of Amended Soil (when applicable) Adequate? | Yes | Yes | Yes | Yes | - | - | - | - | - | - | yes/no |
| <u>No Warning Messages</u> | | | | | | | | | | | | | |

Notes:

***How is Flow Dispersed Across Width of Pervious Dispersion Area?**

- Sheet Flow: Flow arrives as sheet flow across the width of the adjacent impervious area
- Spreader(s): Flow is discharged from flow spreader(s) across the width of the pervious area
- Roof Drains: Discharge from roof drains distributed across the width of the pervious area
- Curb Cuts: Discharge from curb cuts distributed across the width of the pervious area
- Other: Other (Describe in PDP SWQMP)

SSD-BMP Automated Worksheet I-3: Step 3. Tree Well Sizing (V1.0)

| Category | # | Description | <i>i</i> | <i>ii</i> | <i>iii</i> | <i>iv</i> | <i>v</i> | <i>vi</i> | <i>vii</i> | <i>viii</i> | <i>ix</i> | <i>x</i> | Units | |
|-------------------------------|----|--|----------|-----------|------------|-----------|-------------------------------|-------------------------------|-------------------------------|-------------|-----------|----------|------------|----------|
| Standard Tree Well Inputs | 1 | Drainage Basin ID or Name | - | - | - | - | SR-20 | SR-21 | SR-22 | - | - | - | unitless | |
| | 2 | Design Capture Volume Tributary to BMP | - | - | - | - | 92 | 70 | 33 | - | - | - | cubic-feet | |
| | 3 | Is Hydromodification Control Applicable? | - | - | - | - | Yes | Yes | Yes | - | - | - | yes/no | |
| | 4 | Predominant NRCS Soil Type Within Tree Well(s) Location | | | | | D | D | D | | | | unitless | |
| | 5 | Select a Tree Species for the Tree Well(s) Consistent with SD-A Tree Palette Table Note: Numbers shown in list are Tree Species Mature Canopy Diameters | | | | | 15' - Willow Pittosporum | 15' - Willow Pittosporum | 15' - Willow Pittosporum | | | | | unitless |
| | 6 | Tree Well(s) Soil Depth (Installation Depth) Must be 30, 36, 42, or 48 Inches; Select from Standard Depths** | | | | | 36 | 36 | 36 | | | | | inches |
| | 7 | Number of Identical* Tree Wells Proposed for this DMA | | | | | 3 | 3 | 2 | | | | | trees |
| | 8 | Proposed Width of Tree Well(s) Soil Installation for One (1) Tree | | | | | 10.0 | 11.0 | 11.0 | | | | | feet |
| | 9 | Proposed Length of Tree Well(s) Soil Installation for One (1) Tree | | | | | 13.0 | 13.0 | 13.0 | | | | | feet |
| Tree Data | 10 | Botanical Name of Tree Species | - | - | - | - | Pittosporum Phillyraeoides | Pittosporum Phillyraeoides | Pittosporum Phillyraeoides | - | - | - | unitless | |
| | 11 | Tree Species Mature Height per SD-A | - | - | - | - | 25 | 25 | 25 | - | - | - | feet | |
| | 12 | Tree Species Mature Canopy Diameter per SD-A | - | - | - | - | 15 | 15 | 15 | - | - | - | feet | |
| | 13 | Minimum Soil Volume Required In Tree Well (2 Cubic Feet Per Square Foot of Mature Tree Canopy Projection Area) | - | - | - | - | 353 | 353 | 353 | - | - | - | cubic-feet | |
| | 14 | Credit Volume Per Tree | - | - | - | - | 100 | 100 | 100 | - | - | - | cubic-feet | |
| Tree Well Sizing Calculations | 15 | DCV Multiplier To Meet Flow Control Requirements | - | - | - | - | 3.17 | 3.17 | 3.17 | - | - | - | unitless | |
| | 16 | Required Retention Volume (RRV) To Meet Flow Control Requirements | - | - | - | - | 292 | 222 | 105 | - | - | - | cubic-feet | |
| | 17 | Number of Trees Required | - | - | - | - | 3 | 3 | 2 | - | - | - | trees | |
| | 18 | Total Area of Tree Well Soil Required for Each Tree | - | - | - | - | 118 | 118 | 118 | - | - | - | sq-ft | |
| | 19 | Approximate Required Width of Tree Well Soil Area for Each Tree | - | - | - | - | 11 | 11 | 11 | - | - | - | feet | |
| | 20 | Approximate Required Length of Tree Well Soil Area for Each Tree | - | - | - | - | 11 | 11 | 11 | - | - | - | feet | |
| | 21 | Number of Trees Proposed for this DMA | - | - | - | - | 3 | 3 | 2 | - | - | - | trees | |
| | 22 | Total Area of Tree Well Soil Proposed for Each Tree | - | - | - | - | 130 | 143 | 143 | - | - | - | sq-ft | |
| | 23 | Minimum Spacing Between Multiple Trees To Meet Soil Area Requirements (when applicable)*** | - | - | - | - | 15.0 | 15.0 | 15.0 | - | - | - | feet | |
| Results | 24 | Are Tree Well Soil Installation Requirements Met? | - | - | - | - | Yes | Yes | Yes | - | - | - | yes/no | |
| | 25 | Is Remaining DCV Requirement Fully Satisfied by Tree Well(s)? | - | - | - | - | Yes | Yes | Yes | - | - | - | yes/no | |
| | 26 | Is Hydromodification Control Requirement Satisfied by Tree Well(s)? | - | - | - | - | Yes | Yes | Yes | - | - | - | yes/no | |
| No Warning Messages | | | | | | | | | | | | | | |

Notes:
 *If using more than one mature canopy diameter within the same DMA, only the smallest mature canopy diameter should be entered. Alternatively, if more than one mature canopy diameter is proposed and/or the dimensions of multiple tree well installations will vary, separate DMAs may be delineated.
 **If the actual proposed installation depth is not available in the table of standard depths, select the next lower depth.
 ***Tree Canopy or Agency Requirements May Also Influence the Minimum Spacing of Trees.



8932 1st Street Potential Critical Course Sediment Yield Exhibit

NOT TO SCALE



ATTACHMENT 3
Structural BMP Maintenance Information

This is the cover sheet for Attachment 3.

Indicate which Items are Included behind this cover sheet:

| Attachment Sequence | Contents | Checklist |
|----------------------------|--|--|
| Attachment 3a | Structural BMP Maintenance Thresholds and Actions (Required) | <input checked="" type="checkbox"/> Included See Structural BMP Maintenance Information Checklist on the back of this Attachment cover sheet. |
| Attachment 3b | Draft Maintenance Agreement (when applicable) | <input checked="" type="checkbox"/> Included <input type="checkbox"/> Not Applicable |

Use this checklist to ensure the required information has been included in the Structural BMP Maintenance Information Attachment:

Preliminary Design / Planning / CEQA level submittal:

Attachment 3a must identify:

- Typical maintenance indicators and actions for proposed structural BMP(s) based on Section 7.7 of the BMP Design Manual

Attachment 3b is not required for preliminary design / planning / CEQA level submittal.

Final Design level submittal:

Attachment 3a must identify:

- Specific maintenance indicators and actions for proposed structural BMP(s). This shall be based on Section 7.7 of the BMP Design Manual and enhanced to reflect actual proposed components of the structural BMP(s)
- How to access the structural BMP(s) to inspect and perform maintenance
- Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)
- Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
- Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
- Recommended equipment to perform maintenance
- When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management

Attachment 3b: For private entity operation and maintenance, Attachment 3b shall include a draft maintenance agreement in the local jurisdiction's standard format (PDP applicant to contact the [City Engineer] to obtain the current maintenance agreement forms).

RECORDING REQUESTED BY:

City of Santee, CA

AFTER RECORDING MAIL TO:

City Clerk
City of Santee
10601 Magnolia Avenue
Santee, CA 92071-1266

ABOVE SPACE FOR RECORDER'S USE

AGREEMENT TO PERFORM STORM WATER FACILITIES MAINTENANCE

NO RECORDATION FEE REQUIRED; THIS DOCUMENT IS EXEMPT FROM RECORDING FEES PURSUANT TO CALIFORNIA GOVERNMENT CODE SECTIONS 27383

DOCUMENTARY TRANSFER TAX DUE \$ 0

Assessor's Parcel No. 384-106-16

Project No. _____

This AGREEMENT for the maintenance and repair of certain Storm Water Management Facilities is entered into between SAN DIEGO HABITAT FOR HUMANITY (hereinafter referred to as "Owner") and the City of Santee (hereinafter referred to as "City") for the benefit of the City, the successors in interest to the City, and the public generally.

RECITALS

A. Owner is the owner of certain real property located in the City of Santee, California, more particularly described in **Exhibit "A"** hereto (hereinafter referred to as the "Property"), and has proposed that the Property be developed as 17 UNIT RESIDENTIAL DEVELOPMENT

_____ in accordance with applications for Tentative Map No. ____

_____, Development Review No. _____, Conditional Use Permit No. _____, Grading Permit No. _____ which are on file with the City. This Agreement is required as a condition of approval for such development as set forth in Resolution Nos. _____.

B. In accordance with the City of Santee's Storm Water Management and Discharge Control Ordinance, (Santee Municipal Code, Chapter 9.06), the City of Santee Subdivision Ordinance, the City of Santee Zoning Ordinance, the City of Santee Grading Ordinance and/or other ordinances or regulations of the City which regulate land development and urban runoff, Owner has prepared and submitted to the City, a site specific Storm Water Quality Management Plan (hereinafter the SWQMP), prepared by PLSA ENGINEERING and dated _____ as it currently exists or may hereafter be amended and which is on file with the City's Department of Development Services. The SWQMP proposes that storm water runoff from the Property be treated by the use of various storm water management facilities which are identified in the SWQMP as "Best Management Practices" or "BMP's":

The precise location and extent of the BMP's are described and shown in the SWQMP. The SWQMP specifies the frequency, manner, and standards by which the BMP's must be repaired and maintained in order to retain their effectiveness, as set forth in the Operation and Maintenance Section included in the SWMP.

C. The information contained in the SWQMP and the Owner's representation that the BMP's will be maintained pursuant to the SWQMP have been relied upon by City in approving Owner's development applications. It is the purpose of this Agreement to assure that the BMP's are maintained in perpetuity, by creating obligations which are enforceable against the Owner and the Owner's successors in interest in the Property. It is intended that these obligations be enforceable notwithstanding other provisions related to BMP maintenance which are provided by law.

AGREEMENT

NOW, THEREFORE, for consideration of City's approval of the above development applications and the mutual covenants set forth herein, IT IS HEREBY AGREED AS FOLLOWS:

1. **Maintenance of Storm Water Management Facilities.** Owner agrees, for itself and its successors in interest, to all or any portion of the Property, to comply in all respects with the requirements of the Storm Water Management and Discharge Control Ordinance and the SWQMP with regard to the maintenance

of all BMP's as designated in the SWQMP, and in particular agrees to perform, at its sole cost, expense and liability, the following "Maintenance Activities": all inspections, cleaning, repairs, servicing, maintenance and other actions specified in the SWQMP, with respect to all of the BMP's listed at Recital "B" above, at the times and in the manner specified in the SWQMP as it currently exists or may be amended or modified as provided herein. Owner shall initiate, perform and complete all Maintenance Activities at the required time, without request or demand from City or any other agency. Owner further agrees that "Maintenance Activities" shall include replacement or modification of the BMP's in the event that the BMP fails to provide the necessary water quality treatment, it is found that the BMP was not installed correctly, or in the event that the BMP is not functioning as intended. Replacement shall be with an identical type, size and model of BMP, except that:

(a) The City Engineer may authorize substitution of an alternative BMP if he or she determines that it will function as good or better than the failed BMP. The City requires that proposed modifications be submitted for review and approval prior to making any changes in the field, and that the Storm Water Quality Management Plan be revised or amended and resubmitted for approval; and

(b) Pursuant to Section 9.06.200 of the Storm Water Management and Discharge Control Ordinance, any discharge that would result in or contribute to a violation of the City's NPDES Permit and any amendment, revision or re-issuance thereof, either separately considered or when combined with other discharges, is prohibited. Liability for any such discharge shall be the responsibility of the owner(s) causing or responsible for the discharge. Owner agrees that if the BMP, in the judgment of the Director of Development Services, is inappropriate or inadequate to the circumstances and has or may result in a violation of water quality standards, the BMP must be modified or replaced with an upgraded BMP to prevent any actual or potential violation.

2. Annual Inspection and Certification by Owner

Owner agrees to provide documentation of BMP maintenance as required for the City to ensure that all storm water BMPs are properly maintained and are functioning as intended, in compliance with the site specific Storm Water Quality Management Plan. Owner shall provide annual certification that BMPs have been properly maintained for the time period of *September 1 to August 31, each year. This documentation is due to the City prior to September 15th of each year.* Structural BMPs for which annual certification is required includes, but is not limited to: drainage inserts; detention basins; hydrodynamic separators; swales; filters;

bioretention facilities; and Low Impact Development Integrated Management Practices (LID IMPs).

3. **Notices.** Owner further agrees that it shall, prior to transferring ownership of any land on which any of the above BMP's are located, and also prior to transferring ownership of any such BMP, provide clear written notice of the above maintenance obligations associated with that BMP to the transferee. The Storm Water Quality Management Plan and all associated records must also be provided to all subsequent owners upon transfer of property title.

4. **City's Right to Perform Maintenance.** It is agreed that City shall have the right, but not the obligation, to elect to perform any or all of the Maintenance Activities if, in the City's sole judgment, Owner has failed to perform the same. It is recognized and understood that the City makes no representation that it intends to or will perform any of the Maintenance Activities, and any election by the City to perform any of the Maintenance Activities, shall in no way relieve Owner of its continuing maintenance obligations under this agreement. If the City elects to perform any of the Maintenance Activities, it is understood that the City shall be deemed to be acting as the agent of the Owner and said work shall be without warranty or representation by City as to safety or effectiveness, shall be deemed to be accepted by Owner "as is", and shall be covered by Owner's indemnity provisions below.

If the City performs any of the Maintenance Activities, after City has served written notice to the Owner to perform the same, and the Owner has failed to do so within a reasonable time stated in the City's written notice, then Owner shall pay all of the City's costs incurred in performing the Maintenance Activities within sixty days of receipt of an invoice for those costs.

5. **Right of Entry and Inspection by City.** Owner hereby grants to City a perpetual right of entry over, under and across Owner's Property, for purposes of accessing the BMP's and performing inspection of the BMP's or any of the Maintenance Activities related to maintenance of the BMP's. City shall have the right, at any time and without prior notice to Owner, to enter upon any part of said area as may be necessary or convenient for such purposes. Owner shall at all times maintain the Property so as to make the City's access clear and unobstructed. City is required to perform periodic inspection of Structural BMPs. Owner agrees to pay reasonable fees levied by the City on Owners of BMPs for the costs of managing the BMP inspection and maintenance tracking program.

6. **Administration of Agreement for City.** City hereby designates its Department of Development Services with responsibility and authority to administer this Agreement on behalf of City. Any notice or communication related to the

implementation of this Agreement desired or required to be delivered to City shall be addressed to:

Director of Development Services
City of Santee
10601 Magnolia Avenue
Santee, CA 92071

The City Engineer is also granted authority to enter into appropriate amendments to this Agreement on behalf of City, provided that the amendment is consistent with the purposes of this Agreement as set forth above.

7. **Defense and Indemnity.** City shall not be liable for, and Owner and its successors in interest shall defend and indemnify City and the employees and agents of City, against any and all claims, demands, liability, judgments, awards, fines, mechanic's liens or other liens, labor disputes, losses, damages, expenses, charges or costs of any kind or character, including attorneys' fees and court costs (hereinafter collectively referred to as "CLAIMS"), related to this Agreement and arising either directly or indirectly from any act, error, omission or negligence of Owner, Owner's successors, or their contractors, licensees, agents, servants or employees, including, without limitation, claims caused by the concurrent negligent act, error or omission, whether active or passive of City. Owner shall have no obligation, however, to defend or indemnify City from a claim if it is determined by a court of competent jurisdiction that such claim was caused by the sole negligence or willful misconduct of City. Nothing in this Agreement, in the City's approval of the subdivision or other applications or plans and specifications, or inspection of the work, is intended to acknowledge responsibility for any such matter, and City shall have absolutely no responsibility or liability therefore unless otherwise provided by applicable law.

8. **Common Interest Developments.** If the Property is developed as a "Common Interest Development" as defined in Civil Code section 4100 which will include membership in or ownership of an "Association" as defined in Civil Code section 4080, then the following provisions of this Paragraph 7 shall apply during such time as the Property is encumbered by a "Declaration" as defined in Civil Code section 4135, and the Common Area, as "Common Area" is defined in Civil Code section 4095, of the Property is managed and controlled by the Association:

(a) The Association, through its Board of Directors, shall assume full responsibility to perform the MAINTENANCE ACTIVITIES pursuant to this Agreement, and shall undertake all actions and efforts necessary to accomplish the MAINTENANCE ACTIVITIES, including but not limited to, levying regular or special assessments against each member of the

Association sufficient to provide funding for the MAINTENANCE ACTIVITIES, conducting a vote of the membership related to such assessments if required by law. In the event insufficient votes have been obtained to authorize an assessment, the Association shall seek authority from a court of competent jurisdiction for a reduced percentage of affirmative votes necessary to authorize the assessment, re-conducting the vote of the membership in order to obtain the votes necessary to authorize an assessment, and the Association shall take all action authorized by the Declaration or California law to collect delinquent assessments, including but not limited to, the recording and foreclosure of assessment liens.

(b) No provision of the Declaration, nor any other governing document of the Association or grant of authority to its members, shall grant or recognize a right of any member or other person to alter, improve, maintain or repair any of the Property in any manner which would impair the functioning of the BMP's to manage drainage or storm water runoff as described in the SWQMP. In the event of any conflict between the terms of this Agreement and the Declaration or other Association governing documents, the provisions of this Agreement shall prevail.

9. **Agreement Binds Successors and Runs With the Property.** It is understood and agreed that the terms, covenants and conditions herein contained shall constitute covenants running with the land and shall be binding upon the heirs, executors, administrators, successors and assigns of Owner and City, shall be deemed to be for the benefit of all persons owning any interest in the Property (including the interest of City or its successors in the easement granted herein). It is the intent of the parties hereto that this Agreement shall be recorded and shall be binding upon all persons purchasing or otherwise acquiring all or any lot, unit or other portion of the Property, who shall be deemed to have consented to and become bound by all the provisions hereof.

10. **Owner's Continuing Responsibilities Where Work Commenced or Permit Obtained.** Notwithstanding any other provision of this Agreement, no transfer or conveyance of the Property or any portion thereof shall in any way relieve Owner of or otherwise affect Owner's responsibilities for installation or maintenance of BMP's which may have arisen under the ordinances or regulations of City referred to in Recital B above, or other federal, state or local laws, on account of Owner having obtained a permit which creates such obligations or having commenced grading, construction or other land disturbance work.

11. **Amendment and Release.** The terms of this Agreement may be modified only by a written amendment approved and signed by the Director of Development Services and by the Owner or Owner's successor(s) in interest. This

Agreement may be terminated and Owner and the Property released from the covenants set forth herein, by a Release which City may execute if it determines that another mechanism will assure the ongoing maintenance of the BMP's or that it is no longer necessary to assure such maintenance.

12. **Agreement is Intended to Supplement Not Supercede.** This Agreement is intended to supplement and not supercede the requirements of the Chapter 9.06 of the Santee Municipal Code – Storm Water Management and Discharge Control. The requirements listed herein are in addition to the requirements set forth in the Code including Civil Actions and Enforcement Powers established under the Code.

13. **Governing Law and Severability.** This Agreement shall be governed by the laws of the State of California. Venue in any action related to this Agreement shall be in the Superior Court of the State of California, County of San Diego, East County Division. In the event that any of the provisions of this Agreement are held to be unenforceable or invalid by any court of competent jurisdiction, the validity, and enforceability of the remaining provisions shall not be affected thereby.

IN WITNESS WHEREOF, the parties have executed this Agreement on the _____ day of _____, 201__.

CITY OF SANTEE:

By: _____
Melanie Kush
Director of Development Services

OWNERS: _____

By: _____
(sign here)

(print name here)

(title of signatory)

By: _____
(sign here)

(print name here)

(title of signatory)

(All OWNERS must sign)

(Proper notary acknowledgment of execution by OWNER must be attached.)

(President or vice-president **and** secretary or assistant secretary must sign for corporations. If only one officer signs, the corporation must attach a resolution certified by the secretary or assistant secretary under corporate seal empowering that officer to bind the corporation.)

**CITY OF SANTEE
CERTIFICATE OF ACCEPTANCE
FOR
AGREEMENT TO PERFORM STORM WATER FACILITIES MAINTENANCE**

This AGREEMENT by and between the City of Santee, a municipal corporation, and _____ is accepted for recording by the undersigned officers on behalf of the City of Santee pursuant to authority granted by Resolution No. 148-89 of the Santee City Council adopted on August 9, 1989.

Date: _____

By: _____

Melanie Kush
Director of Development Services

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California }
County of San Diego }

On _____
(date), before me, Patsy Bell, Santee City Clerk (name and title of the officer), personally appeared _____

(Name(s) of Signer(s)), who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Patsy Bell, City Clerk [Seal]

EXHIBIT 'A'

'EXHIBIT B'

BMP MAINTENANCE FACT SHEET FOR STRUCTURAL BMP BF-1 BIOFILTRATION

Biofiltration facilities are vegetated surface water systems that filter water through vegetation, and soil or engineered media prior to discharge via underdrain or overflow to the downstream conveyance system. Biofiltration facilities have limited or no infiltration. They are typically designed to provide enough hydraulic head to move flows through the underdrain connection to the storm drain system. Typical biofiltration components include:

- Inflow distribution mechanisms (e.g., perimeter flow spreader or filter strips)
- Energy dissipation mechanism for concentrated inflows (e.g., splash blocks or riprap)
- Shallow surface ponding for captured flows
- Side slope and basin bottom vegetation selected based on climate and ponding depth
- Non-floating mulch layer
- Media layer (planting mix or engineered media) capable of supporting vegetation growth
- Filter course layer consisting of aggregate to prevent the migration of fines into uncompacted native soils or the aggregate storage layer
- Aggregate storage layer with underdrain(s)
- Impermeable liner or uncompacted native soils at the bottom of the facility
- Overflow structure

Normal Expected Maintenance

Biofiltration requires routine maintenance to: remove accumulated materials such as sediment, trash or debris; maintain vegetation health; maintain infiltration capacity of the media layer; replenish mulch; and maintain integrity of side slopes, inlets, energy dissipators, and outlets. A summary table of standard inspection and maintenance indicators is provided within this Fact Sheet.

Non-Standard Maintenance or BMP Failure

If any of the following scenarios are observed, the BMP is not performing as intended to protect downstream waterways from pollution and/or erosion. Corrective maintenance, increased inspection and maintenance, BMP replacement, or a different BMP type will be required.

- The BMP is not drained between storm events. Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging of the media layer, filter course, aggregate storage layer, underdrain, or outlet structure. The specific cause of the drainage issue must be determined and corrected.
- Sediment, trash, or debris accumulation greater than 25% of the surface ponding volume within one month. This means the load from the tributary drainage area is too high, reducing BMP function or clogging the BMP. This would require pretreatment measures within the tributary area draining to the BMP to intercept the materials. Pretreatment components, especially for sediment, will extend the life of components that are more expensive to replace such as media, filter course, and aggregate layers.
- Erosion due to concentrated storm water runoff flow that is not readily corrected by adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan. If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction.

BF-1

Biofiltration

Other Special Considerations

Biofiltration is a vegetated structural BMP. Vegetated structural BMPs that are constructed in the vicinity of, or connected to, an existing jurisdictional water or wetland could inadvertently result in creation of expanded waters or wetlands. As such, vegetated structural BMPs have the potential to come under the jurisdiction of the United States Army Corps of Engineers, SDRWQCB, California Department of Fish and Wildlife, or the United States Fish and Wildlife Service. This could result in the need for specific resource agency permits and costly mitigation to perform maintenance of the structural BMP. Along with proper placement of a structural BMP, **routine maintenance is key to preventing this scenario.**

BF-1 Biofiltration

SUMMARY OF STANDARD INSPECTION AND MAINTENANCE FOR BF-1 BIOFILTRATION

The property owner is responsible to ensure inspection, operation and maintenance of permanent BMPs on their property unless responsibility has been formally transferred to an agency, community facilities district, homeowners association, property owners association, or other special district.

Maintenance frequencies listed in this table are average/typical frequencies. Actual maintenance needs are site-specific, and maintenance may be required more frequently. Maintenance must be performed whenever needed, based on maintenance indicators presented in this table. The BMP owner is responsible for conducting regular inspections to see when maintenance is needed based on the maintenance indicators. During the first year of operation of a structural BMP, inspection is recommended at least once prior to August 31 and then monthly from September through May. Inspection during a storm event is also recommended. After the initial period of frequent inspections, the minimum inspection and maintenance frequency can be determined based on the results of the first year inspections.

| Threshold/Indicator | Maintenance Action | Typical Maintenance Frequency |
|---|--|--|
| Accumulation of sediment, litter, or debris | Remove and properly dispose of accumulated materials, without damage to the vegetation or compaction of the media layer. | <ul style="list-style-type: none"> • Inspect monthly. If the BMP is 25% full* or more in one month, increase inspection frequency to monthly plus after every 0.1-inch or larger storm event. • Remove any accumulated materials found at each inspection. |
| Obstructed inlet or outlet structure | Clear blockage. | <ul style="list-style-type: none"> • Inspect monthly and after every 0.5-inch or larger storm event. • Remove any accumulated materials found at each inspection. |
| Damage to structural components such as weirs, inlet or outlet structures | Repair or replace as applicable | <ul style="list-style-type: none"> • Inspect annually. • Maintenance when needed. |
| Poor vegetation establishment | Re-seed, re-plant, or re-establish vegetation per original plans. | <ul style="list-style-type: none"> • Inspect monthly. • Maintenance when needed. |
| Dead or diseased vegetation | Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans. | <ul style="list-style-type: none"> • Inspect monthly. • Maintenance when needed. |
| Overgrown vegetation | Mow or trim as appropriate. | <ul style="list-style-type: none"> • Inspect monthly. • Maintenance when needed. |
| 2/3 of mulch has decomposed, or mulch has been removed | Remove decomposed fraction and top off with fresh mulch to a total depth of 3 inches. | <ul style="list-style-type: none"> • Inspect monthly. • Replenish mulch annually, or more frequently when needed based on inspection. |

*"25% full" is defined as $\frac{1}{4}$ of the depth from the design bottom elevation to the crest of the outflow structure (e.g., if the height to the outflow opening is 12 inches from the bottom elevation, then the materials must be removed when there is 3 inches of accumulation – this should be marked on the outflow structure).

BF-1

Biofiltration

| SUMMARY OF STANDARD INSPECTION AND MAINTENANCE FOR BF-1 BIOFILTRATION (Continued from previous page) | | |
|---|--|---|
| Threshold/Indicator | Maintenance Action | Typical Maintenance Frequency |
| Erosion due to concentrated irrigation flow | Repair/re-seed/re-plant eroded areas and adjust the irrigation system. | <ul style="list-style-type: none"> • Inspect monthly. • Maintenance when needed. |
| Erosion due to concentrated storm water runoff flow | Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan. If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction. | <ul style="list-style-type: none"> • Inspect after every 0.5-inch or larger storm event. If erosion due to storm water flow has been observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintenance when needed. If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction. |
| <p>Standing water in BMP for longer than 24 hours following a storm event</p> <p>Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health</p> | Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains, or repairing/replacing clogged or compacted soils. | <ul style="list-style-type: none"> • Inspect monthly and after every 0.5-inch or larger storm event. If standing water is observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintenance when needed. |
| <p>Presence of mosquitos/larvae</p> <p>For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology</p> | <p>If mosquitos/larvae are observed: first, immediately remove any standing water by dispersing to nearby landscaping; second, make corrective measures as applicable to restore BMP drainage to prevent standing water.</p> <p>If mosquitos persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria due to release rates controlled by an orifice installed on the underdrain, the [City Engineer] shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.</p> | <ul style="list-style-type: none"> • Inspect monthly and after every 0.5-inch or larger storm event. If mosquitos are observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintenance when needed. |
| Underdrain clogged | Clear blockage. | <ul style="list-style-type: none"> • Inspect if standing water is observed for longer than 24-96 hours following a storm event. • Maintenance when needed. |

BF-1

Biofiltration

References

American Mosquito Control Association.

<http://www.mosquito.org/>

California Storm Water Quality Association (CASQA). 2003. Municipal BMP Handbook.

<https://www.casqa.org/resources/bmp-handbooks/municipal-bmp-handbook>

County of San Diego. 2014. Low Impact Development Handbook.

<http://www.sandiegocounty.gov/content/sdc/dpw/watersheds/susmp/lid.html>

San Diego County Copermittees. 2016. Model BMP Design Manual, Appendix E, Fact Sheet BF-1.

http://www.projectcleanwater.org/index.php?option=com_content&view=article&id=250&Itemid=220

BF-1

Biofiltration

Page Intentionally Blank for Double-Sided Printing

BF-1 Biofiltration

| | | |
|------------------------------|------------|--|
| Date: | Inspector: | BMP ID No.: |
| Permit No.: | APN(s): | |
| Property / Development Name: | | Responsible Party Name and Phone Number: |
| Property Address of BMP: | | Responsible Party Address: |

| INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 1 of 5 | | | |
|---|---|------|--------------------------------------|
| Threshold/Indicator | Maintenance Recommendation | Date | Description of Maintenance Conducted |
| Accumulation of sediment, litter, or debris Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A | <input type="checkbox"/> Remove and properly dispose of accumulated materials, without damage to the vegetation <input type="checkbox"/> If sediment, litter, or debris accumulation exceeds 25% of the surface ponding volume within one month (25% full*), add a forebay or other pre-treatment measures within the tributary area draining to the BMP to intercept the materials. <input type="checkbox"/> Other / Comments: | | |
| Poor vegetation establishment Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A | <input type="checkbox"/> Re-seed, re-plant, or re-establish vegetation per original plans <input type="checkbox"/> Other / Comments: | | |

*"25% full" is defined as ¼ of the depth from the design bottom elevation to the crest of the outflow structure (e.g., if the height to the outflow opening is 12 inches from the bottom elevation, then the materials must be removed when there is 3 inches of accumulation – this should be marked on the outflow structure).

BF-1 Biofiltration

| | | |
|-------------|------------|-------------|
| Date: | Inspector: | BMP ID No.: |
| Permit No.: | APN(s): | |

| INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 2 of 5 | | | |
|--|---|------|--------------------------------------|
| Threshold/Indicator | Maintenance Recommendation | Date | Description of Maintenance Conducted |
| Dead or diseased vegetation Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A | <input type="checkbox"/> Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans <input type="checkbox"/> Other / Comments: | | |
| Overgrown vegetation Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A | <input type="checkbox"/> Mow or trim as appropriate <input type="checkbox"/> Other / Comments: | | |
| 2/3 of mulch has decomposed, or mulch has been removed Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A | <input type="checkbox"/> Remove decomposed fraction and top off with fresh mulch to a total depth of 3 inches <input type="checkbox"/> Other / Comments: | | |

BF-1 Biofiltration

| | | |
|-------------|------------|-------------|
| Date: | Inspector: | BMP ID No.: |
| Permit No.: | APN(s): | |

| INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 3 of 5 | | | |
|---|---|------|--------------------------------------|
| Threshold/Indicator | Maintenance Recommendation | Date | Description of Maintenance Conducted |
| Erosion due to concentrated irrigation flow Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A | <input type="checkbox"/> Repair/re-seed/re-plant eroded areas and adjust the irrigation system <input type="checkbox"/> Other / Comments: | | |
| Erosion due to concentrated storm water runoff flow Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A | <input type="checkbox"/> Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan <input type="checkbox"/> If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction <input type="checkbox"/> Other / Comments: | | |

BF-1 Biofiltration

| | | |
|-------------|------------|-------------|
| Date: | Inspector: | BMP ID No.: |
| Permit No.: | APN(s): | |

| INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 4 of 5 | | | |
|---|--|------|--------------------------------------|
| Threshold/Indicator | Maintenance Recommendation | Date | Description of Maintenance Conducted |
| Obstructed inlet or outlet structure Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A | <input type="checkbox"/> Clear blockage <input type="checkbox"/> Other / Comments: | | |
| Underdrain clogged (inspect underdrain if standing water is observed for longer than 24-96 hours following a storm event) Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A | <input type="checkbox"/> Clear blockage <input type="checkbox"/> Other / Comments: | | |
| Damage to structural components such as weirs, inlet or outlet structures Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A | <input type="checkbox"/> Repair or replace as applicable <input type="checkbox"/> Other / Comments: | | |

BF-1 Biofiltration

| | | |
|-------------|------------|-------------|
| Date: | Inspector: | BMP ID No.: |
| Permit No.: | APN(s): | |

| INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 5 of 5 | | | |
|---|---|------|--------------------------------------|
| Threshold/Indicator | Maintenance Recommendation | Date | Description of Maintenance Conducted |
| <p>Standing water in BMP for longer than 24-96 hours following a storm event*</p> <p>Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health</p> <p>Maintenance Needed?</p> <p><input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A</p> | <p><input type="checkbox"/> Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains, or repairing/replacing clogged or compacted soils</p> <p><input type="checkbox"/> Other / Comments:</p> | | |
| <p>Presence of mosquitos/larvae</p> <p>For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology</p> <p>Maintenance Needed?</p> <p><input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A</p> | <p><input type="checkbox"/> Apply corrective measures to remove standing water in BMP when standing water occurs for longer than 24-96 hours following a storm event.**</p> <p><input type="checkbox"/> Other / Comments:</p> | | |

*Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging of the media layer, filter course, aggregate storage layer, underdrain, or outlet structure. The specific cause of the drainage issue must be determined and corrected.

**If mosquitos persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria due to release rates controlled by an orifice installed on the underdrain, the [City Engineer] shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.

SD-1

Tree Wells

BMP MAINTENANCE FACT SHEET FOR SITE DESIGN BMP SD-1 TREE WELLS

Tree wells as site design BMPs are trees planted in configurations that allow storm water runoff to be directed into the soil immediately surrounding the tree. The tree may be contained within a planter box or structural cells. The surrounding area will be graded to direct runoff to the tree well. There may be features such as tree grates, suspended pavement design, or shallow surface depressions designed to allow runoff into the tree well. Typical tree well components include:

- Trees of the appropriate species for site conditions and constraints
- Available growing space based on tree species, soil type, water availability, surrounding land uses, and project goals
- Entrance/opening that allows storm water runoff to flow into the tree well (e.g., a curb opening, tree grate, or surface depression)
- Optional suspended pavement design to provide structural support for adjacent pavement without requiring compaction of underlying layers
- Optional root barrier devices as needed; a root barrier is a device installed in the ground, between a tree and the sidewalk, intended to guide roots down and away from the sidewalk in order to prevent sidewalk lifting from tree roots
- Optional tree grates; to be considered to maximize available space for pedestrian circulation and to protect tree roots from compaction related to pedestrian circulation; tree grates are typically made up of porous material that will allow the runoff to soak through
- Optional shallow surface depression for ponding of excess runoff
- Optional planter box drain

Normal Expected Maintenance

Tree health shall be maintained as part of normal landscape maintenance. Additionally, ensure that storm water runoff can be conveyed into the tree well as designed. That is, the opening that allows storm water runoff to flow into the tree well (e.g., a curb opening, tree grate, or surface depression) shall not be blocked, filled, re-graded, or otherwise changed in a manner that prevents storm water from draining into the tree well. A summary table of standard inspection and maintenance indicators is provided within this Fact Sheet.

Non-Standard Maintenance or BMP Failure

Tree wells are site design BMPs that normally do not require maintenance actions beyond routine landscape maintenance. The normal expected maintenance described above ensures the BMP functionality. If changes have been made to the tree well entrance / opening such that runoff is prevented from draining into the tree well (e.g., a curb inlet opening is blocked by debris or a grate is clogged causing runoff to flow around instead of into the tree well, or a surface depression has been filled so runoff flows away from the tree well), the BMP is not performing as intended to protect downstream waterways from pollution and/or erosion. Corrective maintenance will be required to restore drainage into the tree well as designed.

Surface ponding of runoff directed into tree wells is expected to infiltrate/evapotranspire within 24-96 hours following a storm event. Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging or compaction of the soils surrounding the tree. Loosen or replace the soils to restore drainage.

SD-1

Tree Wells

Other Special Considerations

Site design BMPs, such as tree wells, installed within a new development or redevelopment project are components of an overall storm water management strategy for the project. The presence of site design BMPs within a project is usually a factor in the determination of the amount of runoff to be managed with structural BMPs (i.e., the amount of runoff expected to reach downstream retention or biofiltration basins that process storm water runoff from the project as a whole). When site design BMPs are not maintained or are removed, this can lead to clogging or failure of downstream structural BMPs due to greater delivery of runoff and pollutants than intended for the structural BMP. Therefore, the [City Engineer] may require confirmation of maintenance of site design BMPs as part of their structural BMP maintenance documentation requirements. Site design BMPs that have been installed as part of the project should not be removed, nor should they be bypassed by re-routing roof drains or re-grading surfaces within the project. If changes are necessary, consult the [City Engineer] to determine requirements.

SD-1 Tree Wells

| SUMMARY OF STANDARD INSPECTION AND MAINTENANCE FOR SD-1 TREE WELLS | | |
|--|--|---|
| <p>The property owner is responsible to ensure inspection, operation and maintenance of permanent BMPs on their property unless responsibility has been formally transferred to an agency, community facilities district, homeowners association, property owners association, or other special district.</p> <p>Maintenance frequencies listed in this table are average/typical frequencies. Actual maintenance needs are site-specific, and maintenance may be required more frequently. Maintenance must be performed whenever needed, based on maintenance indicators presented in this table. The BMP owner is responsible for conducting regular inspections to see when maintenance is needed based on the maintenance indicators. During the first year of operation of a structural BMP, inspection is recommended at least once prior to August 31 and then monthly from September through May. Inspection during a storm event is also recommended. After the initial period of frequent inspections, the minimum inspection and maintenance frequency can be determined based on the results of the first year inspections.</p> | | |
| Threshold/Indicator | Maintenance Action | Typical Maintenance Frequency |
| Tree health | Routine actions as necessary to maintain tree health. | <ul style="list-style-type: none"> • Inspect monthly. • Maintenance when needed. |
| Dead or diseased tree | Remove dead or diseased tree. Replace per original plans. | <ul style="list-style-type: none"> • Inspect monthly. • Maintenance when needed. |
| Standing water in tree well for longer than 24 hours following a storm event Surface ponding longer than approximately 24 hours following a storm event may be detrimental to tree health | Loosen or replace soils surrounding the tree to restore drainage. | <ul style="list-style-type: none"> • Inspect monthly and after every 0.5-inch or larger storm event. If standing water is observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintenance when needed. |
| Presence of mosquitos/larvae For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology | Disperse any standing water from the tree well to nearby landscaping. Loosen or replace soils surrounding the tree to restore drainage (and prevent standing water). | <ul style="list-style-type: none"> • Inspect monthly and after every 0.5-inch or larger storm event. If mosquitos are observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintenance when needed |
| Entrance / opening to the tree well is blocked such that storm water will not drain into the tree well (e.g., a curb inlet opening is blocked by debris or a grate is clogged causing runoff to flow around instead of into the tree well; or a surface depression is filled such that runoff drains away from the tree well) | Make repairs as appropriate to restore drainage into the tree well. | <ul style="list-style-type: none"> • Inspect monthly. • Maintenance when needed. |

SD-1 Tree Wells

References

American Mosquito Control Association.

<http://www.mosquito.org/>

County of San Diego. 2014. Low Impact Development Handbook.

<http://www.sandiegocounty.gov/content/sdc/dpw/watersheds/susmp/lid.html>

San Diego County Copermittees. 2016. Model BMP Design Manual, Appendix E, Fact Sheet SD-1.

http://www.projectcleanwater.org/index.php?option=com_content&view=article&id=250&Itemid=220

SD-1 Tree Wells

| | | |
|------------------------------|------------|--|
| Date: | Inspector: | BMP ID No.: |
| Permit No.: | APN(s): | |
| Property / Development Name: | | Responsible Party Name and Phone Number: |
| Property Address of BMP: | | Responsible Party Address: |

| INSPECTION AND MAINTENANCE CHECKLIST FOR SD-1 TREE WELLS PAGE 1 of 2 | | | |
|--|--|------|--------------------------------------|
| Threshold/Indicator | Maintenance Recommendation | Date | Description of Maintenance Conducted |
| Dead or diseased tree Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A | <input type="checkbox"/> Remove dead or diseased tree <input type="checkbox"/> Replace per original plans <input type="checkbox"/> Other / Comments: | | |
| Standing water in tree well for longer than 24 hours following a storm event Surface ponding longer than approximately 24 hours following a storm event may be detrimental to tree health Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A | <input type="checkbox"/> Loosen or replace soils surrounding the tree to restore drainage <input type="checkbox"/> Other / Comments: | | |

SD-1 Tree Wells

| | | |
|-------------|------------|-------------|
| Date: | Inspector: | BMP ID No.: |
| Permit No.: | APN(s): | |

| INSPECTION AND MAINTENANCE CHECKLIST FOR SD-1 TREE WELLS PAGE 2 of 2 | | | |
|--|--|------|--------------------------------------|
| Threshold/Indicator | Maintenance Recommendation | Date | Description of Maintenance Conducted |
| <p>Presence of mosquitos/larvae</p> <p>For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology</p> <p>Maintenance Needed?</p> <p><input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A</p> | <p><input type="checkbox"/> Disperse any standing water from the tree well to nearby landscaping</p> <p><input type="checkbox"/> Loosen or replace soils surrounding the tree to restore drainage (and prevent standing water)</p> <p><input type="checkbox"/> Other / Comments:</p> | | |
| <p>Entrance / opening to the tree well is blocked such that storm water will not drain into the tree well (e.g., a curb inlet opening is blocked by debris or a grate is clogged causing runoff to flow around instead of into the tree well; or a surface depression is filled such that runoff drains away from the tree well)</p> <p>Maintenance Needed?</p> <p><input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A</p> | <p><input type="checkbox"/> Make repairs as appropriate to restore drainage into the tree well</p> <p><input type="checkbox"/> Other / Comments:</p> | | |

Impervious Area Dispersion

BMP MAINTENANCE FACT SHEET

FOR

SITE DESIGN BMP SD-B IMPERVIOUS AREA DISPERSION

Impervious area dispersion (dispersion) refers to the practice of effectively disconnecting impervious areas from directly draining to the storm drain system by routing runoff from impervious areas such as rooftops (through downspout disconnection), walkways, and driveways onto the surface of adjacent pervious areas. The intent is to slow runoff discharges, and reduce volumes. Typical dispersion components include:

- An impervious surface from which runoff flows will be routed with minimal piping to limit concentrated inflows
- Splash blocks, flow spreaders, or other means of dispersing concentrated flows and providing energy dissipation as needed
- Dedicated pervious area, typically vegetated, with in-situ soil infiltration capacity for partial or full infiltration
- Optional soil amendments to improve vegetation support, maintain infiltration rates and enhance treatment of flows
- Overflow route for excess flows to be conveyed from dispersion area to the storm drain system or discharge point

Normal Expected Maintenance

Vegetated area shall be maintained as part of normal landscape maintenance. Additionally, ensure that storm water runoff can be conveyed into the vegetated area as designed. That is, the mechanism that allows storm water runoff from impervious area to flow into the pervious area (e.g., a curb cut allows runoff from a parking lot to drain onto adjacent landscaping area, or a roof drain outlet is directed to a lawn) shall not be removed, blocked, filled, or otherwise changed in a manner that prevents storm water from draining into the pervious area. A summary table of standard inspection and maintenance indicators is provided within this Fact Sheet.

Non-Standard Maintenance or BMP Failure

Impervious area dispersion is a site design BMP that normally does not require maintenance actions beyond routine landscape maintenance. If changes have been made to the area, such as the vegetated area has been replaced with impervious area, or the mechanism that allows storm water runoff from impervious area to flow into the pervious area has been removed (e.g., roof drains previously directed to vegetated area have been directly connected to the street or storm drain system), the BMP is not performing as intended to protect downstream waterways from pollution and/or erosion. Corrective maintenance will be required to restore drainage into the pervious area as designed. If the pervious area has been removed, contact the [City Engineer] to determine a solution.

Runoff directed into vegetated areas is expected to be drained within 24-96 hours following a storm event. Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging or compaction of the soils. Loosen or replace the soils to restore drainage.

Impervious Area Dispersion

Other Special Considerations

Site design BMPs, such as impervious area dispersion, installed within a new development or redevelopment project are components of an overall storm water management strategy for the project. The presence of site design BMPs within a project is usually a factor in the determination of the amount of runoff to be managed with structural BMPs (i.e., the amount of runoff expected to reach downstream retention or biofiltration basins that process storm water runoff from the project as a whole). When site design BMPs are not maintained or are removed, this can lead to clogging or failure of downstream structural BMPs due to greater delivery of runoff and pollutants than intended for the structural BMP. Therefore, the [City Engineer] may require confirmation of maintenance of site design BMPs as part of their structural BMP maintenance documentation requirements. Site design BMPs that have been installed as part of the project should not be removed, nor should they be bypassed by re-routing roof drains or re-grading surfaces within the project. If changes are necessary, consult the [City Engineer] to determine requirements.

Impervious Area Dispersion

| SUMMARY OF STANDARD INSPECTION AND MAINTENANCE FOR SD-5 IMPERVIOUS AREA DISPERSION | | |
|--|---|---|
| <p>The property owner is responsible to ensure inspection, operation and maintenance of permanent BMPs on their property unless responsibility has been formally transferred to an agency, community facilities district, homeowners association, property owners association, or other special district.</p> <p>Maintenance frequencies listed in this table are average/typical frequencies. Actual maintenance needs are site-specific, and maintenance may be required more frequently. Maintenance must be performed whenever needed, based on maintenance indicators presented in this table. The BMP owner is responsible for conducting regular inspections to see when maintenance is needed based on the maintenance indicators. During the first year of operation of a structural BMP, inspection is recommended at least once prior to August 31 and then monthly from September through May. Inspection during a storm event is also recommended. After the initial period of frequent inspections, the minimum inspection and maintenance frequency can be determined based on the results of the first year inspections.</p> | | |
| Threshold/Indicator | Maintenance Action | Typical Maintenance Frequency |
| Poor vegetation establishment | Re-seed, re-plant, or re-establish vegetation per original plans. | <ul style="list-style-type: none"> Inspect monthly. Maintenance when needed. |
| Dead or diseased vegetation | Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans. | <ul style="list-style-type: none"> Inspect monthly. Maintenance when needed. |
| Overgrown vegetation | Mow or trim as appropriate. | <ul style="list-style-type: none"> Inspect monthly. Maintenance when needed. |
| <p>Standing water in vegetated pervious area for longer than 24 hours following a storm event</p> <p>Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health</p> | Disperse any areas of standing water to nearby landscaping (i.e., spread it out to another portion of the pervious area so it drains into the soil). Make appropriate corrective measures such as adjusting irrigation system, or repairing/replacing clogged or compacted soils. | <ul style="list-style-type: none"> Inspect monthly and after every 0.5-inch or larger storm event. If standing water is observed, increase inspection frequency to after every 0.1-inch or larger storm event. Maintenance when needed. |
| <p>Presence of mosquitos/larvae</p> <p>For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology</p> | Disperse any areas of standing water to nearby landscaping (i.e., spread it out to another portion of the pervious area so it drains into the soil). Loosen or replace soils to restore drainage (and prevent standing water) | <ul style="list-style-type: none"> Inspect monthly and after every 0.5-inch or larger storm event. If mosquitos are observed, increase inspection frequency to after every 0.1-inch or larger storm event. Maintenance when needed |
| Entrance / opening to the vegetated pervious area is blocked such that storm water from impervious area will not drain into the pervious area (e.g., a curb cut opening is blocked by debris or a roof drain outlet has been directly connected to the storm drain system) | Make repairs as appropriate to restore drainage into the vegetated pervious area. | <ul style="list-style-type: none"> Inspect monthly. Maintenance when needed. |

Impervious Area Dispersion

References

American Mosquito Control Association.

<http://www.mosquito.org/>

County of San Diego. 2014. Low Impact Development Handbook.

<http://www.sandiegocounty.gov/content/sdc/dpw/watersheds/susmp/lid.html>

San Diego County Copermittees. 2016. Model BMP Design Manual, Appendix E, Fact Sheet SD-5.

http://www.projectcleanwater.org/index.php?option=com_content&view=article&id=250&Itemid=220

Impervious Area Dispersion

| | | |
|------------------------------|------------|--|
| Date: | Inspector: | BMP ID No.: |
| Permit No.: | APN(s): | |
| Property / Development Name: | | Responsible Party Name and Phone Number: |
| Property Address of BMP: | | Responsible Party Address: |

| INSPECTION AND MAINTENANCE CHECKLIST FOR SD-5 IMPERVIOUS AREA DISPERSION PAGE 1 of 3 | | | |
|---|---|------|--------------------------------------|
| Threshold/Indicator | Maintenance Recommendation | Date | Description of Maintenance Conducted |
| Poor vegetation establishment Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A | <input type="checkbox"/> Re-seed, re-plant, or re-establish vegetation per original plans <input type="checkbox"/> Other / Comments: | | |
| Dead or diseased vegetation Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A | <input type="checkbox"/> Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans <input type="checkbox"/> Other / Comments: | | |
| Overgrown vegetation Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A | <input type="checkbox"/> Mow or trim as appropriate <input type="checkbox"/> Other / Comments: | | |

Impervious Area Dispersion

| | | |
|-------------|------------|-------------|
| Date: | Inspector: | BMP ID No.: |
| Permit No.: | APN(s): | |

| INSPECTION AND MAINTENANCE CHECKLIST FOR SD-5 IMPERVIOUS AREA DISPERSION PAGE 2 of 3 | | | |
|---|--|------|--------------------------------------|
| Threshold/Indicator | Maintenance Recommendation | Date | Description of Maintenance Conducted |
| <p>Standing water in vegetated pervious area for longer than 24 hours following a storm event</p> <p>Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health</p> <p>Maintenance Needed?</p> <p><input type="checkbox"/> YES</p> <p><input type="checkbox"/> NO</p> <p><input type="checkbox"/> N/A</p> | <p><input type="checkbox"/> Disperse any areas of standing water to nearby landscaping (i.e., spread it out to another portion of the pervious area so it drains into the soil). Make appropriate corrective measures to prevent standing water such as adjusting irrigation system, or repairing/replacing clogged or compacted soils</p> <p><input type="checkbox"/> Other / Comments:</p> | | |
| <p>Presence of mosquitos/larvae</p> <p>For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology</p> <p>Maintenance Needed?</p> <p><input type="checkbox"/> YES</p> <p><input type="checkbox"/> NO</p> <p><input type="checkbox"/> N/A</p> | <p><input type="checkbox"/> Disperse any areas of standing water to nearby landscaping (i.e., spread it out to another portion of the pervious area so it drains into the soil)</p> <p><input type="checkbox"/> Make corrective measures (see above) to restore drainage (and prevent standing water)</p> <p><input type="checkbox"/> Other / Comments:</p> | | |

Impervious Area Dispersion

| | | |
|-------------|------------|-------------|
| Date: | Inspector: | BMP ID No.: |
| Permit No.: | APN(s): | |

| INSPECTION AND MAINTENANCE CHECKLIST FOR SD-5 IMPERVIOUS AREA DISPERSION PAGE 3 of 3 | | | |
|---|---|------|--------------------------------------|
| Threshold/Indicator | Maintenance Recommendation | Date | Description of Maintenance Conducted |
| <p>Entrance / opening to the vegetated pervious area is blocked such that storm water from impervious area will not drain into the pervious area (e.g., a curb cut opening is blocked by debris or a roof drain outlet has been directly connected to the storm drain system)</p> <p>Maintenance Needed?</p> <p><input type="checkbox"/> YES</p> <p><input type="checkbox"/> NO</p> <p><input type="checkbox"/> N/A</p> | <p><input type="checkbox"/> Make repairs as appropriate to restore drainage into the vegetated pervious area*</p> <p><input type="checkbox"/> Other / Comments:</p> | | |

*If the pervious area has been removed, contact the [City Engineer] to determine a solution.

Permeable Pavement as Site Design BMP

BMP MAINTENANCE FACT SHEET

FOR

SITE DESIGN BMP SD-D PERMEABLE PAVEMENT AS SITE DESIGN BMP

Permeable pavement is pavement that allows for percolation through void spaces in the pavement surface into subsurface layers. When used as a site design BMP, the subsurface layers are designed to provide storage of storm water runoff so that outflow rates can be controlled via infiltration into subgrade soils. As a site design BMP, permeable pavement areas are designed to be self-retaining and are designed primarily for direct rainfall. Self-retaining permeable pavement areas have a ratio of total drainage area (including permeable pavement) to area of permeable pavement of 1.5:1 or less. Permeable pavement as structural BMP usually receives runoff from a larger tributary area than permeable pavement as site design BMP (see INF-3 for permeable pavement as structural BMP). Permeable pavement surfaces can be constructed from modular paver units or paver blocks, pervious concrete, porous asphalt, and turf pavers. Typical components include:

- Permeable surface layer
- Bedding layer for permeable surface
- Aggregate storage layer with optional underdrain(s)
- Optional final filter course layer over uncompacted existing subgrade
- Optional subsurface check dams at regular intervals when pavement is sloped (more closely spaced on steeper slopes)

Normal Expected Maintenance

Routine maintenance of permeable pavement includes: removal of materials such as trash and debris accumulated on the paving surface; vacuuming of the paving surface to prevent clogging; and flushing paving and subsurface gravel to remove fine sediment. If the BMP includes underdrains, check and clear underdrains. A summary table of standard inspection and maintenance indicators is provided within this Fact Sheet.

Non-Standard Maintenance or BMP Failure

If the permeable pavement area is not drained between storm events, or if runoff sheet flows across the permeable pavement area and flows off the permeable pavement area during storm events, the BMP is not performing as intended to protect downstream waterways from pollution and/or erosion. During storm events up to the 85th percentile storm event (approximately 0.5 to 1 inch of rainfall in San Diego County), runoff should not flow off the permeable pavement area. The permeable pavement area is expected to have adequate hydraulic conductivity and storage such that rainfall landing on the permeable pavement and runoff from the surrounding drainage area will go directly into the pavement without ponding or overflow (in properly designed systems, the surrounding drainage area is not more than half as large as the permeable pavement area). Following the storm event, there should be no standing water (puddles) on the permeable pavement area.

If storm water is flowing off the permeable pavement during a storm event, or if there is standing water on the permeable pavement surface following a storm event, this is an indicator of clogging somewhere within the system. Poor drainage can result from clogging of the permeable surface layer, any of the subsurface components, or the subgrade soils. The specific cause of the drainage issue must be determined and corrected. Surface or subsurface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Corrective maintenance, increased inspection and maintenance, BMP replacement, or a different BMP type will be required. If poor drainage persists after flushing of the paving, subsurface gravel, and/or underdrain(s) when applicable, or if it is determined that the underlying soils do not have the infiltration capacity expected, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction.

Permeable Pavement as Site Design BMP

Other Special Considerations

Site design BMPs, such as permeable pavement, installed within a new development or redevelopment project are components of an overall storm water management strategy for the project. The presence of site design BMPs within a project is usually a factor in the determination of the amount of runoff to be managed with structural BMPs (i.e., the amount of runoff expected to reach downstream retention or biofiltration basins that process storm water runoff from the project as a whole). When site design BMPs are not maintained or are removed, this can lead to clogging or failure of downstream structural BMPs due to greater delivery of runoff and pollutants than intended for the structural BMP. Therefore, the [City Engineer] may require confirmation of maintenance of site design BMPs as part of their structural BMP maintenance documentation requirements. Site design BMPs that have been installed as part of the project should not be removed, nor should they be bypassed by re-routing roof drains or re-grading surfaces within the project. If changes are necessary, consult the [City Engineer] to determine requirements.

The runoff storage and infiltration surface area in this BMP are not readily accessible because they are subsurface. This means that clogging and poor drainage are not easily corrected. If the tributary area draining to the BMP includes unpaved areas, the sediment load from the tributary drainage area can be too high, reducing BMP function or clogging the BMP. All unpaved areas within the tributary drainage area should be stabilized with vegetation. Other pretreatment components to prevent transport of sediment to the paving surface, such as grass buffer strips, will extend the life of the subsurface components and infiltration surface. Along with proper stabilization measures and pretreatment within the tributary area, **routine maintenance, including preventive vacuum/regenerative air street sweeping, is key to preventing clogging.**

Permeable Pavement as Site Design BMP

| SUMMARY OF STANDARD INSPECTION AND MAINTENANCE FOR SD-6B PERMEABLE PAVEMENT AS SITE DESIGN BMP | | |
|--|--|---|
| <p>The property owner is responsible to ensure inspection, operation and maintenance of permanent BMPs on their property unless responsibility has been formally transferred to an agency, community facilities district, homeowners association, property owners association, or other special district.</p> <p>Maintenance frequencies listed in this table are average/typical frequencies. Actual maintenance needs are site-specific, and maintenance may be required more frequently. Maintenance must be performed whenever needed, based on maintenance indicators presented in this table. The BMP owner is responsible for conducting regular inspections to see when maintenance is needed based on the maintenance indicators. During the first year of operation of a structural BMP, inspection is recommended at least once prior to August 31 and then monthly from September through May. Inspection during a storm event is also recommended. After the initial period of frequent inspections, the minimum inspection and maintenance frequency can be determined based on the results of the first year inspections.</p> | | |
| Threshold/Indicator | Maintenance Action | Typical Maintenance Frequency |
| Preventive vacuum/regenerative air street sweeping | Pavement should be swept with a vacuum power or regenerative air street sweeper to maintain infiltration through paving surface | <ul style="list-style-type: none"> Schedule/perform this preventive action at least twice per year. |
| Accumulation of sediment, litter, or debris on permeable pavement surface | Remove and properly dispose of accumulated materials. Inspect tributary area for exposed soil or other sources of sediment and apply stabilization measures to sediment source areas. Apply source control measures as applicable to sources of litter or debris. | <ul style="list-style-type: none"> Inspect monthly and after every 0.5-inch or larger storm event. Remove any accumulated materials found at each inspection. |
| Weeds growing on/through the permeable pavement surface | Remove weeds and add features as necessary to prevent weed intrusion. Use non-chemical methods (e.g., instead of pesticides, control weeds using mechanical removal, physical barriers, and/or physical changes in the surrounding area adjacent to pavement that will preclude weed intrusion into the pavement). | <ul style="list-style-type: none"> Inspect monthly. Remove any weeds found at each inspection. |
| Standing water in permeable paving area following a storm event, or runoff is observed overflowing off the permeable paving surface during a storm event | This condition requires investigation of why infiltration is not occurring. If feasible, corrective action shall be taken to restore infiltration (e.g., pavement should be swept with a vacuum power or regenerative air street sweeper to restore infiltration rates, clear underdrains if underdrains are present). BMP may require retrofit if infiltration cannot be restored. The [City Engineer] shall be contacted prior to any repairs or reconstruction. | <ul style="list-style-type: none"> Inspect monthly and after every 0.5-inch or larger storm event. If standing water is observed, increase inspection frequency to after every 0.1-inch or larger storm event. Maintenance when needed. |

Permeable Pavement as Site Design BMP

| SUMMARY OF STANDARD INSPECTION AND MAINTENANCE FOR SD-6B PERMEABLE PAVEMENT AS SITE DESIGN BMP (Continued from previous page) | | |
|--|--|---|
| Threshold/Indicator | Maintenance Action | Typical Maintenance Frequency |
| Presence of mosquitos/larvae For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology | <p>If mosquitos/larvae are observed: first, immediately remove any standing water by dispersing to nearby landscaping; second, make corrective measures as applicable to restore BMP drainage to prevent standing water.</p> <p>If mosquitos persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria because the underlying soils do not have the infiltration capacity expected, the [City Engineer] shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.</p> | <ul style="list-style-type: none"> • Inspect monthly and after every 0.5-inch or larger storm event. If mosquitos are observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintenance when needed. |
| Damage to permeable paving surface (e.g., cracks, settlement, misaligned paver blocks, void spaces between paver blocks need fill materials replenished) | Repair or replace damaged surface as appropriate. | <ul style="list-style-type: none"> • Inspect annually. • Maintenance when needed. |

References

American Mosquito Control Association.

<http://www.mosquito.org/>

California Storm Water Quality Association (CASQA). 2003. Municipal BMP Handbook.

<https://www.casqa.org/resources/bmp-handbooks/municipal-bmp-handbook>

County of San Diego. 2014. Low Impact Development Handbook.

<http://www.sandiegocounty.gov/content/sdc/dpw/watersheds/susmp/lid.html>

San Diego County Copermittees. 2016. Model BMP Design Manual, Appendix E, Fact Sheet SD-6.

http://www.projectcleanwater.org/index.php?option=com_content&view=article&id=250&Itemid=220

Permeable Pavement as Site Design BMP

| | | |
|------------------------------|------------|--|
| Date: | Inspector: | BMP ID No.: |
| Permit No.: | APN(s): | |
| Property / Development Name: | | Responsible Party Name and Phone Number: |
| Property Address of BMP: | | Responsible Party Address: |

| INSPECTION AND MAINTENANCE CHECKLIST FOR SD-6B PERMEABLE PAVEMENT AS SITE DESIGN BMP PAGE 1 of 3 | | | |
|---|--|------|--------------------------------------|
| Threshold/Indicator | Maintenance Recommendation | Date | Description of Maintenance Conducted |
| Accumulation of sediment, litter, or debris on permeable pavement surface Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A | <input type="checkbox"/> Remove and properly dispose of accumulated materials <input type="checkbox"/> Inspect tributary area for exposed soil or other sources of sediment and apply stabilization measures to sediment source areas. Apply source control measures as applicable to sources of litter or debris <input type="checkbox"/> Other / Comments: | | |
| Weeds growing on/through the permeable pavement surface Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A | <input type="checkbox"/> Remove weeds and add features as necessary to prevent weed intrusion <input type="checkbox"/> Use non-chemical methods (e.g., instead of pesticides, control weeds using mechanical removal, physical barriers, and/or physical changes in the surrounding area adjacent to pavement that will preclude weed intrusion into the pavement). <input type="checkbox"/> Other / Comments: | | |

Permeable Pavement as Site Design BMP

| | | |
|-------------|------------|-------------|
| Date: | Inspector: | BMP ID No.: |
| Permit No.: | APN(s): | |

| INSPECTION AND MAINTENANCE CHECKLIST FOR SD-6B PERMEABLE PAVEMENT AS SITE DESIGN BMP PAGE 2 of 3 | | | |
|---|--|------|--------------------------------------|
| Threshold/Indicator | Maintenance Recommendation | Date | Description of Maintenance Conducted |
| <p>Standing water in permeable paving area following a storm event, or runoff is observed overflowing off the permeable paving surface during a storm event*</p> <p>Maintenance Needed?</p> <p><input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A</p> | <p><input type="checkbox"/> If feasible, take corrective action to restore infiltration (e.g., sweep pavement with a vacuum power or regenerative air street sweeper to restore infiltration rates, clear underdrains if underdrains are present). BMP may require retrofit if infiltration cannot be restored. The [City Engineer] shall be contacted prior to any repairs or reconstruction.</p> <p><input type="checkbox"/> Other / Comments:</p> | | |
| <p>Presence of mosquitos/larvae</p> <p>For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology</p> <p>Maintenance Needed?</p> <p><input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A</p> | <p><input type="checkbox"/> Apply corrective measures to remove standing water in BMP when standing water occurs for longer than 96 hours following a storm event.**</p> <p><input type="checkbox"/> Other / Comments:</p> | | |

*If storm water is flowing off the permeable pavement during a storm event, or if there is standing water on the permeable pavement surface following a storm event, this is an indicator of clogging somewhere within the system. Poor drainage can result from clogging of the permeable surface layer, any of the subsurface components, or the subgrade soils. The specific cause of the drainage issue must be determined and corrected. Surface or subsurface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. If poor drainage persists after flushing of the paving, subsurface gravel, and/or underdrain(s) when applicable, or if it is determined that the underlying soils do not have the infiltration capacity expected, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction.

**If mosquitos persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria because the underlying soils do not have the infiltration capacity expected, the [City Engineer] shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.

Permeable Pavement as Site Design BMP

| | | |
|-------------|------------|-------------|
| Date: | Inspector: | BMP ID No.: |
| Permit No.: | APN(s): | |

| INSPECTION AND MAINTENANCE CHECKLIST FOR SD-6B PERMEABLE PAVEMENT AS SITE DESIGN BMP PAGE 3 of 3 | | | |
|--|--|------|--------------------------------------|
| Threshold/Indicator | Maintenance Recommendation | Date | Description of Maintenance Conducted |
| Damage to permeable paving surface (e.g., cracks, settlement, misaligned paver blocks, void spaces between paver blocks need fill materials replenished) Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A | <input type="checkbox"/> Repair or replace damaged surface as appropriate <input type="checkbox"/> Other / Comments: | | |
| Preventive vacuum/regenerative air street sweeping Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A | <input type="checkbox"/> Pavement should be swept with a vacuum power or regenerative air street sweeper to maintain infiltration through paving surface. <input type="checkbox"/> Schedule/perform this preventive action at least twice per year. <input type="checkbox"/> Other / Comments: | | |

ATTACHMENT 4

Copy of Plan Sheets Showing Permanent Storm Water BMPs

This is the cover sheet for Attachment 4.

Use this checklist to ensure the required information has been included on the plans:

The plans must identify:

- Structural BMP(s) with ID numbers matching Form I-6 Summary of PDP Structural BMPs
- The grading and drainage design shown on the plans must be consistent with the delineation of DMAs shown on the DMA exhibit
- Details and specifications for construction of structural BMP(s)
- Signage indicating the location and boundary of structural BMP(s) as required by the [City Engineer]
- How to access the structural BMP(s) to inspect and perform maintenance
- Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)
- Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
- Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
- Recommended equipment to perform maintenance
- When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management
- Include landscaping plan sheets showing vegetation requirements for vegetated structural BMP(s)
- All BMPs must be fully dimensioned on the plans
- When proprietary BMPs are used, site-specific cross section with outflow, inflow, and model number shall be provided. Photocopies of general brochures are not acceptable.

8932 1ST STREET, SANTEE, CA 92071
TENTATIVE MAP #TM2023-1

ASSESSORS PARCEL NUMBER
384-106-16

ENGINEER OF RECORD
PREPARED BY: PASCO, LARET, SUITER, & ASSOCIATES
1911 SAN DIEGO AVE, SUITE 100, SAN DIEGO, CA 92110
VIA TOPOGRAPHIC FIELD SURVEY
DATED: 09/29/2021

SHEET INDEX

SHEET C1.0 PRELIMINARY GRADING PLAN
SHEET C2.0 POST CONSTRUCTION BMP PLAN

TOPOGRAPHY SOURCE

PREPARED BY: PASCO, LARET, SUITER, & ASSOCIATES
1911 SAN DIEGO AVE, SUITE 100, SAN DIEGO, CA 92110
VIA TOPOGRAPHIC FIELD SURVEY
DATED: 09/29/2021

LEGAL DESCRIPTION

LOTS 1, 2, 3 IN BLOCK 10 OF SANTEE IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP THEREOF NUMBER 1484 FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY, OCTOBER 14, 1912. ALSO THAT PORTION OF THE SOUTH 15 FEET OF PARK AVENUE ADJOINING THE AFORESAID PREMISES ON THE NORTH, AS VACATED ON MARCH 6, 1917 BY RESOLUTION OF SAN DIEGO RECORDED IN BOOK 751 PAGE 31 OF DEEDS, BEING MORE PARTICULARLY DESCRIBED IN DOCUMENT NUMBER 2006-065587 D.O.R.

BENCHMARK

ELEVATIONS SHOWN HEREON ARE BASED ON A 3" BRASS DISC IN N+10 AS STATION 2116 SANTEE CITY CONTROL EL= 349.92 (NAD83).

BASIS OF BEARINGS

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM, NAD 83 (CGCS83) EPOCH 1991.35, ZONE 6, AS DETERMINED LOCALLY BY A LINE BETWEEN FIRST ORDER CONTROL STATIONS 2107 AND 2116 BEING A GRID BEARING OF N 55° 19' 46" E AS DERIVED FROM GEODETIC VALUES SHOWN ON RECORD OF SURVEY 11252, CITY OF SANTEE SURVEY CONTROL, FILED ON 8 OCTOBER 1987 AS FILE NUMBER 87-569294 IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY.

GRADING TABULATIONS

TOTAL AMOUNT OF SITE TO BE GRADED: 0.1XX AC (100% OF SITE)
EARTHWORK QUANTITIES:
CUT QUANTITIES: 50 CY
FILL QUANTITIES: 550 CY
MAX CUT DEPTH WITHIN BUILDING FOOTPRINT: 0.5'
MAX CUT DEPTH OUTSIDE BUILDING FOOTPRINT: 0'
MAX FILL DEPTH WITHIN BUILDING FOOTPRINT: 0.5'
MAX FILL DEPTH OUTSIDE BUILDING FOOTPRINT: 1.5'
NET IMPORT/EXPORT OF SOIL: 500 CUBIC YARDS
EARTHWORK QUANTITIES INCLUDE EXCAVATION FOR BUILDING AND SITE GRADING AS SHOWN ON THIS PLAN. THESE EARTHWORK QUANTITIES ARE FOR PERMITTING PURPOSES ONLY. THE CONTRACTOR SHOULD INDEPENDENTLY VERIFY THESE VALUES PRIOR TO BID AND CONSTRUCTION.

LEGEND

PROPERTY LINE

ROAD CENTERLINE

INTERNAL LOT LINE

RIGHT OF WAY

EXISTING BUILDING

EXISTING SEWER

EXISTING WATER

EXISTING GAS

EXISTING OVERHEAD ELECTRIC

EXISTING UNDERGROUND ELECTRIC

EXISTING COMM LINE

EXISTING UTILITY POLE

EXISTING ELECTRIC, COMM, OR TELECOMM BOX

EXISTING STREET LIGHT

EXISTING CONTOURS

EXISTING CURB AND GUTTER

EXISTING FENCE

EXISTING RETAINING SITE WALL

EXISTING SURVEY MONUMENT

PROPOSED 2" COPPER WATER SERVICE AND METER (PER SEPARATE ROW PERMIT) WITH WILKINS 975X2 BACKFLOW PREVENTER

PROPOSED 6" FIRE SERVICE (PER SEPARATE ROW PERMIT) WITH WILKINS 475DA RPDA

PROPOSED 6" SEWER LATERAL (PER SEPARATE ROW PERMIT)

PROPOSED STORM DRAIN

PROPOSED STORM DRAIN GRATE INLET

PROPOSED STORM DRAIN CLEANOUT

PROPOSED P.C.C. HARDSCAPE

PROPOSED 6" CURB AND GUTTER (PER SEPARATE ROW PERMIT)

PROPOSED BIOFILTRATION

A.C. GRIND AND OVERLAY ASPHALT ROADWAY

PROPOSED ASPHALT ROADWAY

LIMITS OF UTILITY TRENCHING

PROP PERMEABLE PAVERS

NO EASEMENTS EXIST PER PTR

MAPPING NOTE:

A FINAL MAP SHALL BE FILED AT THE COUNTY RECORDER'S OFFICE PRIOR TO THE EXPIRATION OF THE TENTATIVE MAP. IF APPROVED, A DETAILED PROCEDURE OF SURVEY SHALL BE SHOWN ON THE PARCEL MAP AND ALL PROPERTY CORNERS SHALL BE MARKED WITH DURABLE SURVEY MONUMENTS.

ZONING INFORMATION:

EXISTING AND PROPOSED ZONE: TC - TOWN CENTER (R-2Z)
OVERLAY ZONES: FAA SAFETY ZONE 6
COMMUNITY PLAN: TOWN CENTER SPECIFIC PLAN

PROJECT COORDINATES:

NAD 83 = 1882-6340 LAMBERT COORDINATES = 242-1779

WILLIAM G MACK, PE 73620 DATE

TOPOGRAPHY SOURCE

PREPARED BY: PASCO, LARET, SUITER, & ASSOCIATES
119 ABERDEEN DRIVE, CAROLLE-EX-THE-SEA, CA 92007
VIA TOPOGRAPHIC FIELD SURVEY
DATED: 04/05/2022

MAXIMILIAN LEBL, PLS 9323 DATE

OWNER'S STATEMENT

SAN DIEGO HABITAT FOR HUMANITY, AS OWNER OF THE PROPERTY, DESCRIBED HEREIN ACKNOWLEDGE THESE PLANS HAVE BEEN PREPARED AT MY DIRECTION WITH MY FULL CONSENT. I FULLY UNDERSTAND AND ACCEPT THE TERMS AND CONDITIONS CONTAINED HEREIN AND AS ATTACHED BY REFERENCE ON THIS GRADING PLAN.

IT IS AGREED THAT FIELD CONDITIONS MAY REQUIRE CHANGES TO THESE PLANS.

IT IS FURTHER AGREED THAT THE OWNER (DEVELOPER) SHALL HAVE A REGISTERED CIVIL ENGINEER MAKE SUCH CHANGES, ALTERATIONS OR ADDITIONS TO THESE PLANS WHICH THE CITY ENGINEER DETERMINES ARE NECESSARY AND DESIRABLE FOR THE PROPER COMPLETION OF THE IMPROVEMENTS.

ROXANN JAMES, DIRECTOR DATE

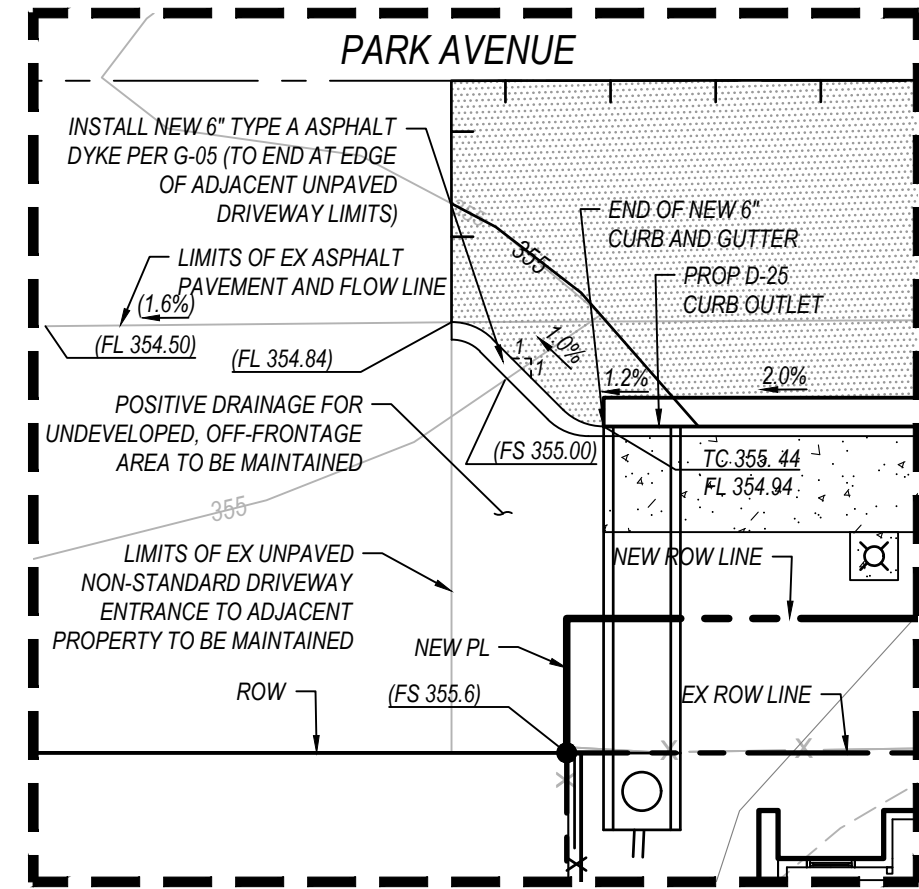
SAN DIEGO HABITAT FOR HUMANITY
8123 MERCURY COURT
SAN DIEGO, CA 92111

IMPERVIOUS AREA TABULATIONS

TOTAL DISTURBANCE: 0.65 ACRES (28,490 SF)
EXISTING ON SITE CONDITIONS
IMPERVIOUS AREA: 0.06 ACRES (2,654 SF)
PROPOSED ON SITE CONDITIONS
IMPERVIOUS AREA: 0.38 ACRES (16,708 SF)
PERVIOUS AREA: 0.27 ACRES (11,782 SF)

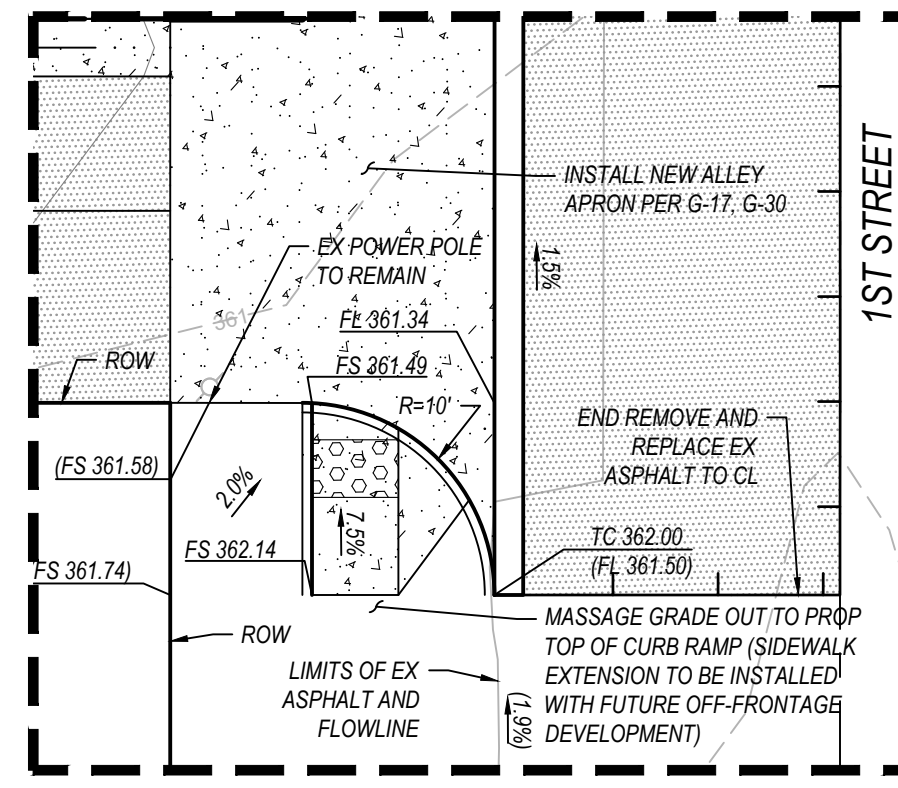
ABBREVIATION LEGEND

FL= FLOWLINE IE= INVERT ELEVATION
FS= FINISHED SURFACE LA= LANDSCAPED AREA
TC= TOP OF CURB (FL)= MATCH EX FL
FF= FINISHED FLOOR (FS)= MATCH EX FS
TW= TOP OF WALL (TC)= MATCH EX TC



PARK AVE FLOWLINE TRANSITION INSET

SCALE: 1"=10'
GRAPHIC SCALE: 1"= 10'



1ST STREET FLOWLINE TRANSITION INSET

SCALE: 1"=10'
GRAPHIC SCALE: 1"= 10'

STORM DRAIN KEYNOTE LEGEND:

- PROP 9" ADS ATRIUM DRAIN INLET
- PROP 9" GRATE DRAIN INLET
- PROP 12"X12" BROOKS BOX GRATE INLET W/ 12" ADS FLEXSTORM PURE TRASH CAPTURE FILTER INSERT (SEE DETAIL SHEET C1.1)
- PROP 18"X18" BROOKS BOX INLET WITH 10"X5" WEIR OPENING (WEIR TO HAVE MESH GRATE INSTALLED TO PROVIDE TRASH CAPTURE)
- PROP 3" PVC D-27 SIDEWALK UNDERDRAIN
- PROP 4" PVC DRAIN OUTLET THROUGH ENDWALL INTO 4" MEDIAN RIP RAP (SEE DETAIL SHEET C1.1)
- PROP 4" PVC DRAIN OUTLET THROUGH HEADWALL
- PROP PVC DRAIN TO OUTLET INTO PERMEABLE PAVER GRAVEL SECTION
- PROP MODIFIED D-75 ROCK LINED BROW DITCH
- PROP 4" PVC STORM DRAIN
- PROP 6" PVC STORM DRAIN
- PROP 8" PVC STORM DRAIN
- PROP D-25 CURB OUTLET
- PROP 18" WIDE CURB OPENING FOR OVERFLOW (SEE DETAIL SHEET C1.1)

NOTE THAT THE BROOKS BOX OUTLET IN THE NW CORNER OF THE SITE MEETS ALL TRASH CAPTURE REQUIREMENTS FOR THE SITE. EVEN WITH ASSUMING A 40% CLOGGING FACTOR, THE FACILITY SHOWN CAN CONVEY THE 100-YEAR STORM WITHOUT TRASH BYPASSING THIS TRASH CAPTURE FACILITY



BMP ELEVATION SUMMARY TABLE

| BMP # | TOP OF WALL | TOP OF PONDING (TOP OF GRATE) | BMP FINISHED SURFACE | BMP BASE ELEVATION | BMP INVERT OUT |
|-------|-------------|-------------------------------|----------------------|--------------------|----------------|
| 1 | 359.04 | 358.71 | 358.21 | 355.21 | 355.46 |
| 2 | 359.47 | 359.14 | 358.64 | 355.64 | 355.89 |
| 3 | 360.22 | 359.89 | 359.39 | 356.39 | 356.64 |
| 4 | 360.70 | 360.37 | 359.87 | 356.87 | 357.12 |
| 5 | 362.37 | 362.04 | 361.54 | 358.54 | 358.79 |
| 6 | 359.88 | 359.55 | 359.05 | 356.05 | 356.30 |
| 7 | 363.68 | 363.35 | 362.85 | 359.85 | 360.10 |
| 8 | 361.66 | 361.33 | 360.83 | 357.83 | 358.08 |
| 9 | 364.61 | 364.28 | 363.78 | 360.78 | 361.03 |

DEVELOPMENT SUMMARY:

- THIS IS A MAP OF A CONDOMINIUM PROJECT AS DEFINED IN SECTION 4125 OF THE CIVIL CODE OF THE STATE OF CALIFORNIA AND IS FILED PURSUANT TO THE SUBDIVISION MAP ACT. TOTAL NUMBER OF RESIDENTIAL CONDOMINIUM DWELLING UNITS IS 17.
- NUMBER OF EXISTING LOTS = 3 AND PROPOSED LOTS = 1.
- THIS PROJECT WILL BE CONSTRUCTED IN ONE PHASE.

| UNIT TYPE | # OF UNITS | SQUARE FOOTAGE PER UNIT | TOTAL PER UNIT |
|--------------|------------|-------------------------|----------------|
| 1 BR. UNIT C | 2 | 640 SF | 1,280 SF |
| 3 BR. UNIT D | 2 | 1,358 SF | 2,716 SF |
| 4 BR. UNIT A | 13 | 1,594 SF | 20,722 SF |
| TOTAL | 17 | | 24,730 SF |

SETBACKS:

STREET EDGE: 10'
SIDE ADJ R-1: 10'
SIDE: 10'
REAR: 10'

PRELIMINARY GRADING PLAN

SCALE: 1"=20'

DEVELOPMENT SUMMARY (cont'd):

MAX STRUCTURE HEIGHT: 55'
DENSITY:
BASE DENSITY: 1 DU/1,980 SF = 15 DU
ADDITIONAL UNITS SET ASIDE: =2.25 -> 3 DU
ADDITIONAL UNITS PER DENSITY BONUS: = 12 DU
TOTAL ALLOWED DWELLING UNITS: = 27 U

PARKING REQUIREMENTS:

| UNIT TYPE | # OF UNITS | CARS | MOTORCYCLES | BIKES |
|-----------------|------------|------|-------------|------------|
| 1 BR | 2 | 1.0 | 2 | |
| 3 BR | 2 | 1.5 | 3 | |
| 4 BR | 13 | 2.5 | 32.5 | |
| TOTAL REQUIRED: | | 37.5 | 0 | 1.5 DU 3.4 |
| TOTAL PROPOSED: | | 33 | 0 | |

EASEMENTS

NO EASEMENTS EXIST PER PTR

MAPPING NOTE:

A FINAL MAP SHALL BE FILED AT THE COUNTY RECORDER'S OFFICE PRIOR TO THE EXPIRATION OF THE TENTATIVE MAP. IF APPROVED, A DETAILED PROCEDURE OF SURVEY SHALL BE SHOWN ON THE PARCEL MAP AND ALL PROPERTY CORNERS SHALL BE MARKED WITH DURABLE SURVEY MONUMENTS.

ZONING INFORMATION:

EXISTING AND PROPOSED ZONE: TC - TOWN CENTER (R-2Z)
OVERLAY ZONES: FAA SAFETY ZONE 6
COMMUNITY PLAN: TOWN CENTER SPECIFIC PLAN

PROJECT COORDINATES:

NAD 83 = 1882-6340 LAMBERT COORDINATES = 242-1779

PASCO LARET SUITER & ASSOCIATES

San Diego | Solana Beach | Orange County
Phone 858.259.8212 | www.pascoengineering.com

project title



Stephen Dalton Architects
444 S. CEDROS, STUDIO 190
SOLANA BEACH, CA 92075
t. 858.792.5906 / f. 858.792.5916

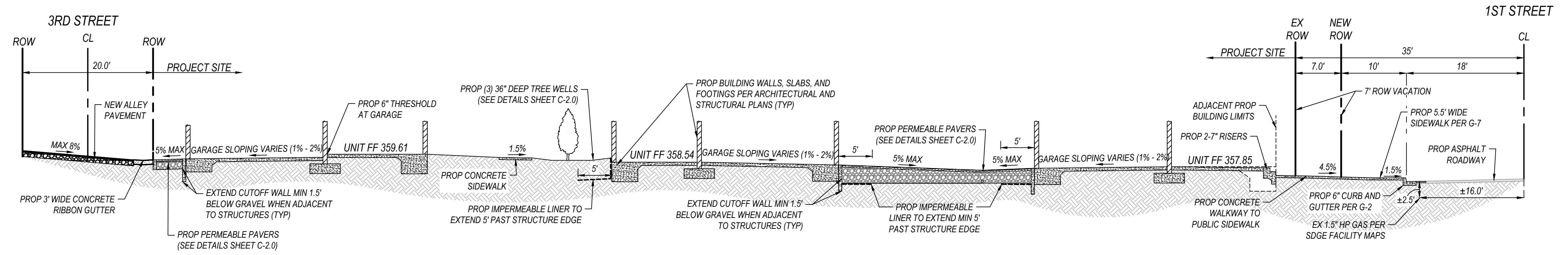
PRELIMINARY GRADING PLAN

job no. 3741
date

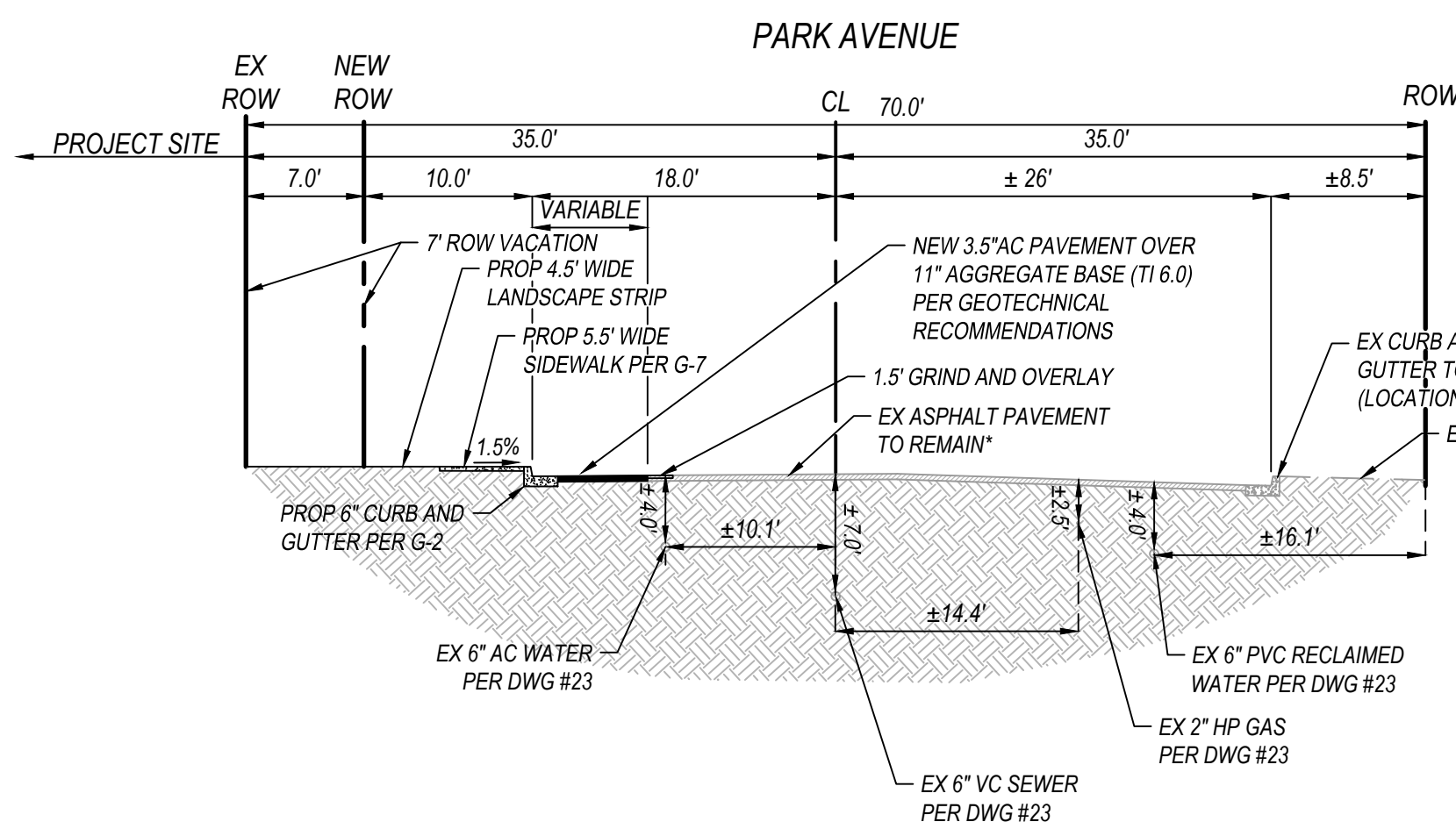
2/17/2023 TENTATIVE MAP 1ST
6/12/2023 TENTATIVE MAP 2ND
8/3/2023 TENTATIVE MAP 3RD

sheet C-1.0

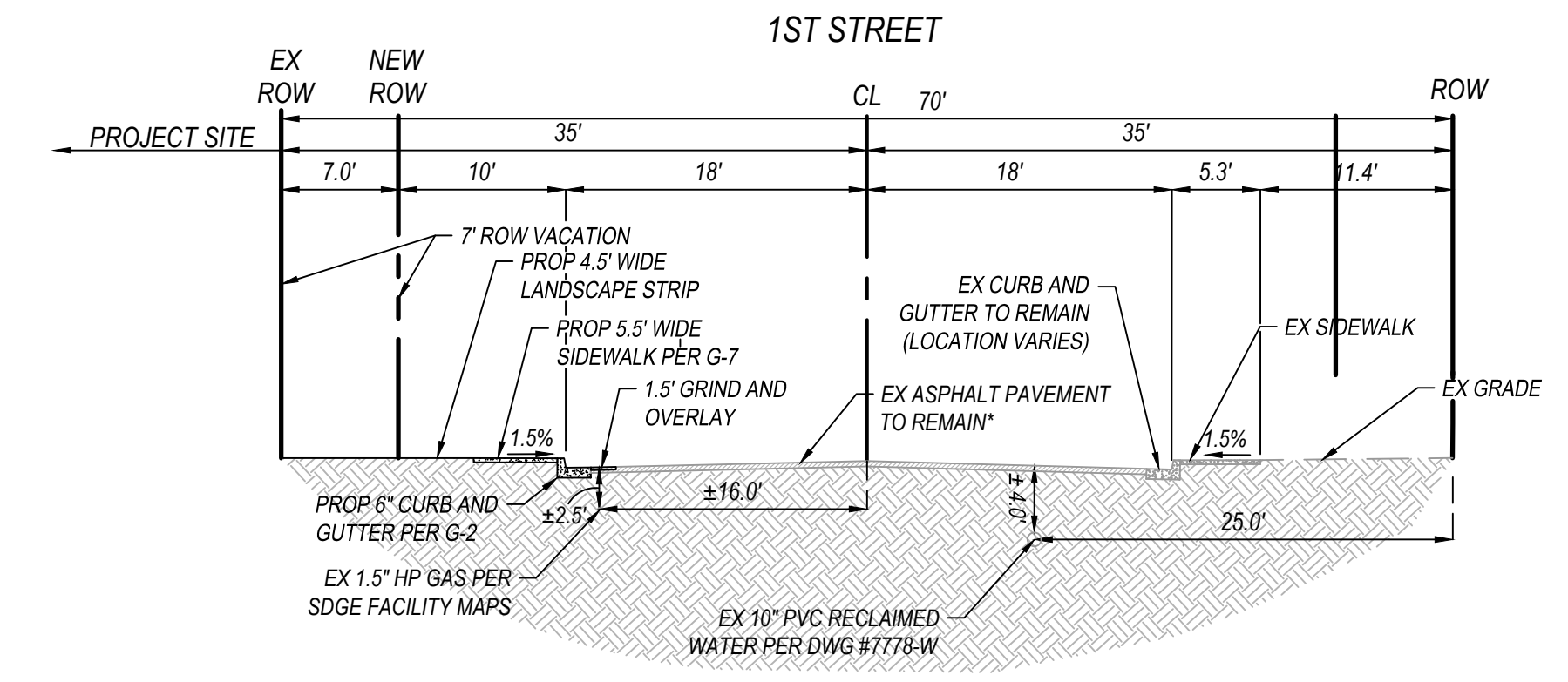
8932 1ST STREET, SANTEE, CA 92071
TENTATIVE MAP #TM2023-1



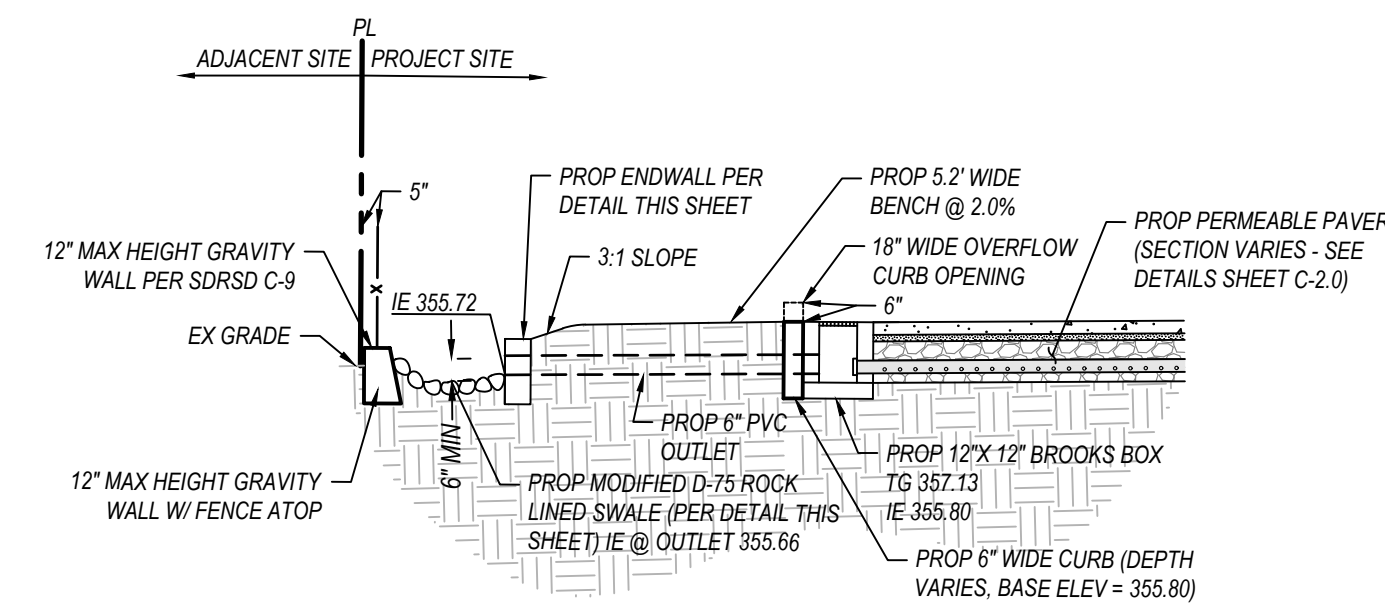
A-A N-S SITE PLAN SECTION
NOT TO SCALE



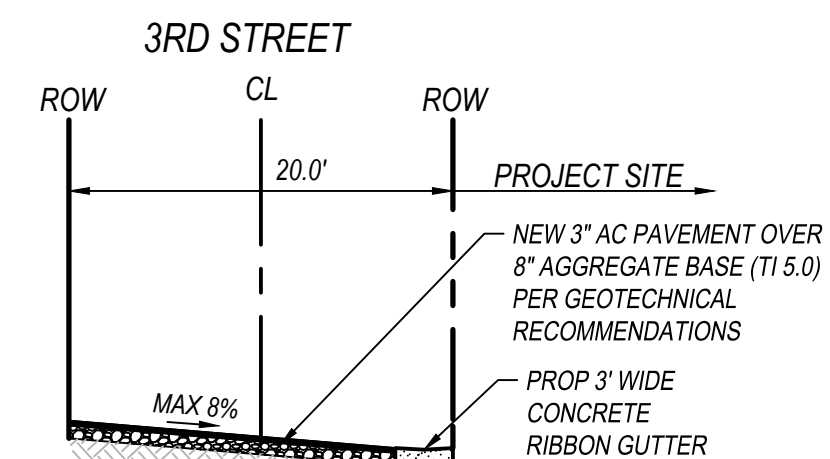
TYPICAL SECTION: PARK AVENUE
NOT TO SCALE
*NOTE THAT THE CONTRACTOR SHALL REPAIR OR REPLACED FAILED OR INADEQUATE PAVEMENT ADJACENT TO THE SITE TO CENTERLINE TO THE SATISFACTION OF THE DIRECTOR OF ENGINEERING/ CITY ENGINEER.



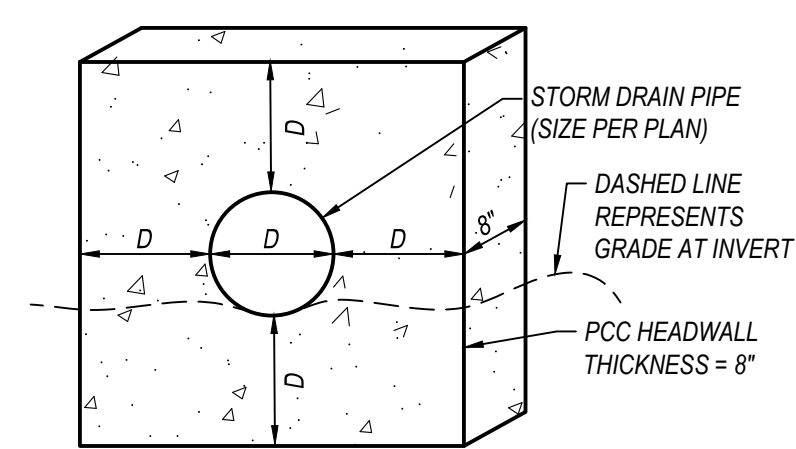
TYPICAL SECTION: 1ST STREET
NOT TO SCALE
*NOTE THAT THE CONTRACTOR SHALL REPAIR OR REPLACED FAILED OR INADEQUATE PAVEMENT ADJACENT TO THE SITE TO CENTERLINE TO THE SATISFACTION OF THE DIRECTOR OF ENGINEERING/ CITY ENGINEER.



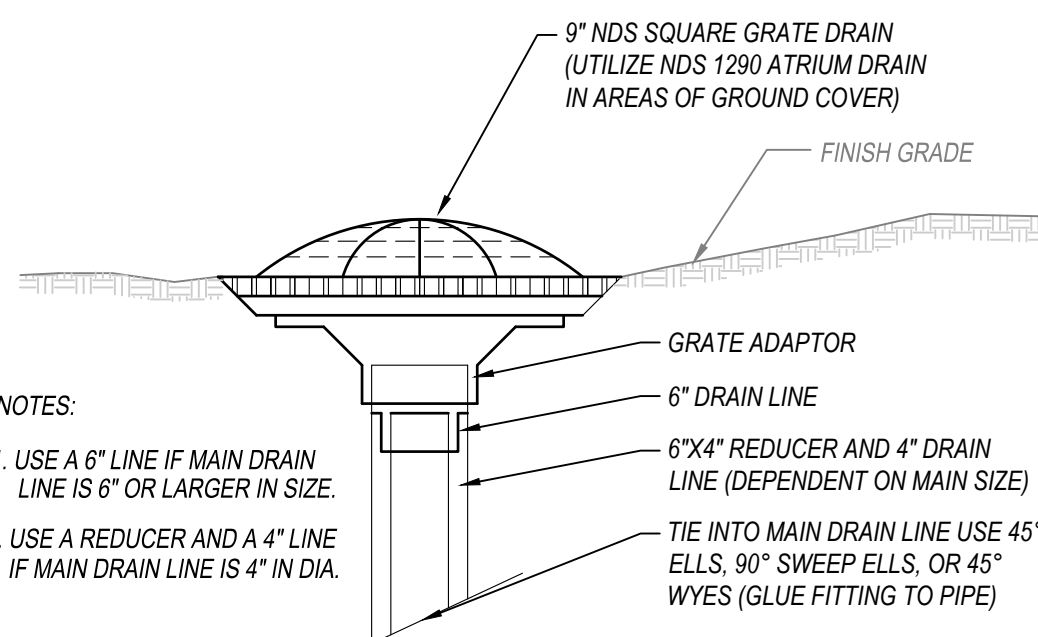
TYPICAL SECTION: PERMEABLE PAVER DRIVEWAY OUTLETTING INTO BROW DITCH
NOT TO SCALE



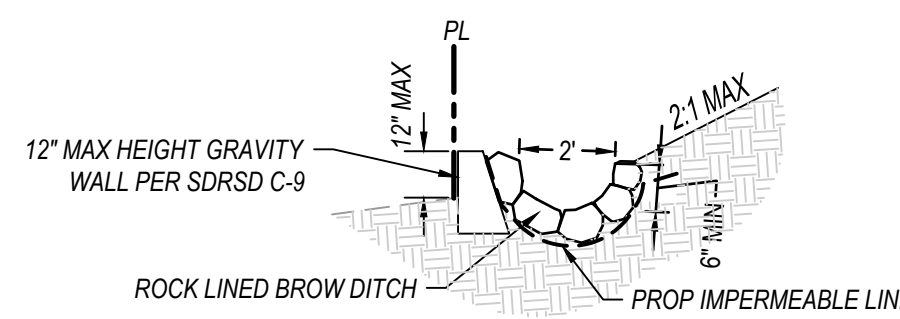
TYPICAL SECTION: 3RD STREET
NOT TO SCALE



TYPICAL DETAIL - PCC MODIFIED HEADWALL
NOT TO SCALE



GRATE/ ATRIUM DRAIN DETAIL
NOT TO SCALE



MODIFIED D-75 ROCKLINED BROW DITCH
NOT TO SCALE



VICINITY MAP
NOT TO SCALE

project title
HABITAT SANTEE
8932 1ST ST. SANTEE, CA 92071



Stephen Dalton Architects
444 S. CEDROS, STUDIO 190
SOLANA BEACH, CA 92075
t: 858.792.5906 / f: 858.792.5916

sdpa ARCHITECTS

job no. 3741
date

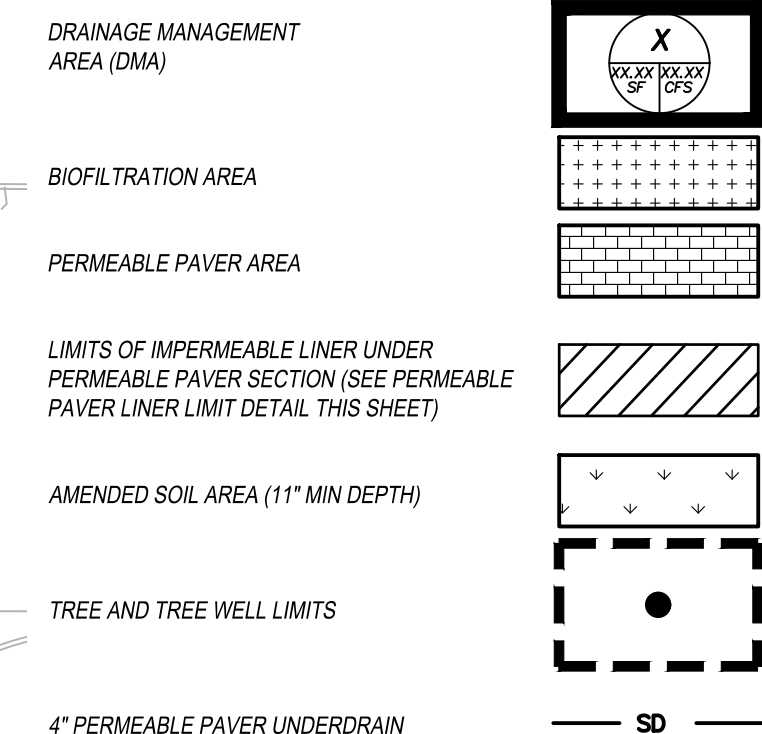
2/17/2023 TENTATIVE MAP 1ST
6/12/2023 TENTATIVE MAP 2ND
8/3/2023 TENTATIVE MAP 3RD

sheet C-1.1

PASCO LARET SUITER & ASSOCIATES
San Diego | Solana Beach | Orange County
Phone 858.259.8212 | www.plsaengineering.com

8932 1ST STREET, SANTEE, CA 92071
TENTATIVE MAP #TM2023-1

LEGEND:



IMPERVIOUS AREA TABULATIONS:

EXISTING IMPERVIOUS AREA: 2,654 S.F. (0.06 ACRES, 9%)
PROPOSED IMPERVIOUS AREA: 16,640 S.F. (0.38 ACRES, 58%)
PROPOSED PERMEABLE PAVEMENT AREA: 4,348 S.F. (0.10 ACRES, 15%)
RUNOFF FACTOR: 0.90 = IMPERVIOUS, 0.30 = PERVIOUS, 0.10 = PERMEABLE PAVERS
WEIGHTED RUNOFF FACTOR = (68% x 0.90) + (26% x 0.30) + (15% x 0.10) = 0.62
REFER TO THE BMP AREA SUMMARY TABLE FOR ALL PROPOSED BMP AREAS

GEOLOGY NOTES:

UNDERLYING HYDROLOGIC SOIL GROUP: TYPE D
APPROXIMATE DEPTH TO GROUNDWATER: >30 FEET

PERMANENT POST-CONSTRUCTION BMP NOTES:

- OPERATION AND MAINTENANCE SHALL BE SECURED BY AN EXECUTED AND RECORDED STORM WATER MANAGEMENT AND DISCHARGE CONTROL MAINTENANCE AGREEMENT (SWMDCMA), OR ANOTHER MECHANISM APPROVED BY THE CITY ENGINEER, THAT ASSURES ALL PERMANENT BMPS WILL BE MAINTAINED IN PERPETUITY, PER THE LAND DEVELOPMENT MANUAL, STORM WATER STANDARDS. ANY MODIFICATIONS TO THE PERMANENT POST-CONSTRUCTION BMP DEVICES/STRUCTURES SHOWN ON PLAN REQUIRES A CONSTRUCTION CHANGE TO BE PROCESSED AND APPROVED THROUGH DEVELOPMENT SERVICES DEPARTMENT BY THE ENGINEER OF WORK. APPROVAL OF THE CONSTRUCTION CHANGE IS REQUIRED PRIOR TO CONSTRUCTION OF THE PERMANENT BMP.

NOTES:

- ALL DMAS UTILIZING IMPERVIOUS AREA DISPERSION WILL SATISFY POLLUTANT CONTROL AND HYDROMODIFICATION REQUIREMENTS BY AMENDING THE TOP 11 INCHES OF THE PERVIOUS AREA WITHIN THE DMA. PER FACTSHEET SB-8 IMPERVIOUS AREA DISPERSION, AND THE OVERALL PERVIOUS AREA WITHIN EACH DMA IS GREATER THAN 50% OF THE OVERALL DMA.

DRAINAGE MANAGEMENT AREA LEGEND

DMA DRAINAGE MANAGEMENT AREA
SM SELF MITIGATING DRAINAGE AREA
SR SELF RETAINING DRAINAGE AREA
DM DEMINIMIS DRAINAGE AREA

BIOFILTRATION PLANT SPECIES NOTE

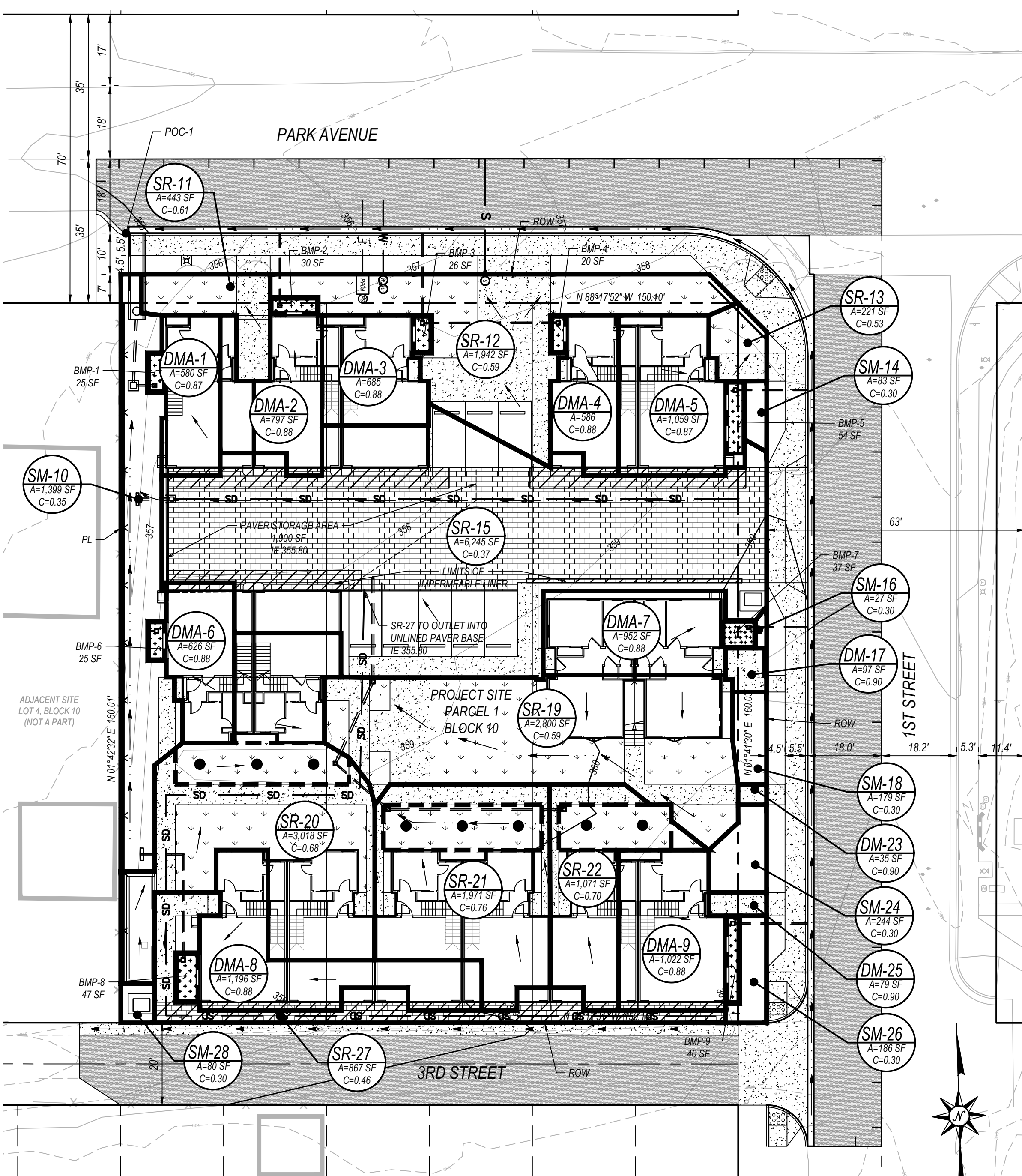
BIOFILTRATION PLANTINGS WILL BE PER THE PROPOSED LANDSCAPE PLANS AND SHALL BE BASED ON THE CITY OF SANTEE BMP DESIGN MANUAL PLANT LIST IN APPENDIX E.20. NOTE HOWEVER THAT THIS PLANT LIST IS TO BE USED TO AID IN PLANT SELECTION. SHOULD THE LANDSCAPE ARCHITECT DETERMINE THAT BASED ON THE SPECIFIC CLIMATE, PONDING DEPTH AND OTHER SITE CONDITIONS, PLANTINGS NOT INCLUDED ON THIS LIST WOULD BE MORE SUITABLE, THE BMP DESIGN MANUAL DEFERS TO THE CERTIFIED LANDSCAPE ARCHITECT FOR SPECIES SELECTION WITHIN THESE BMPs.

BIOFILTRATION WATER PROOFING NOTES

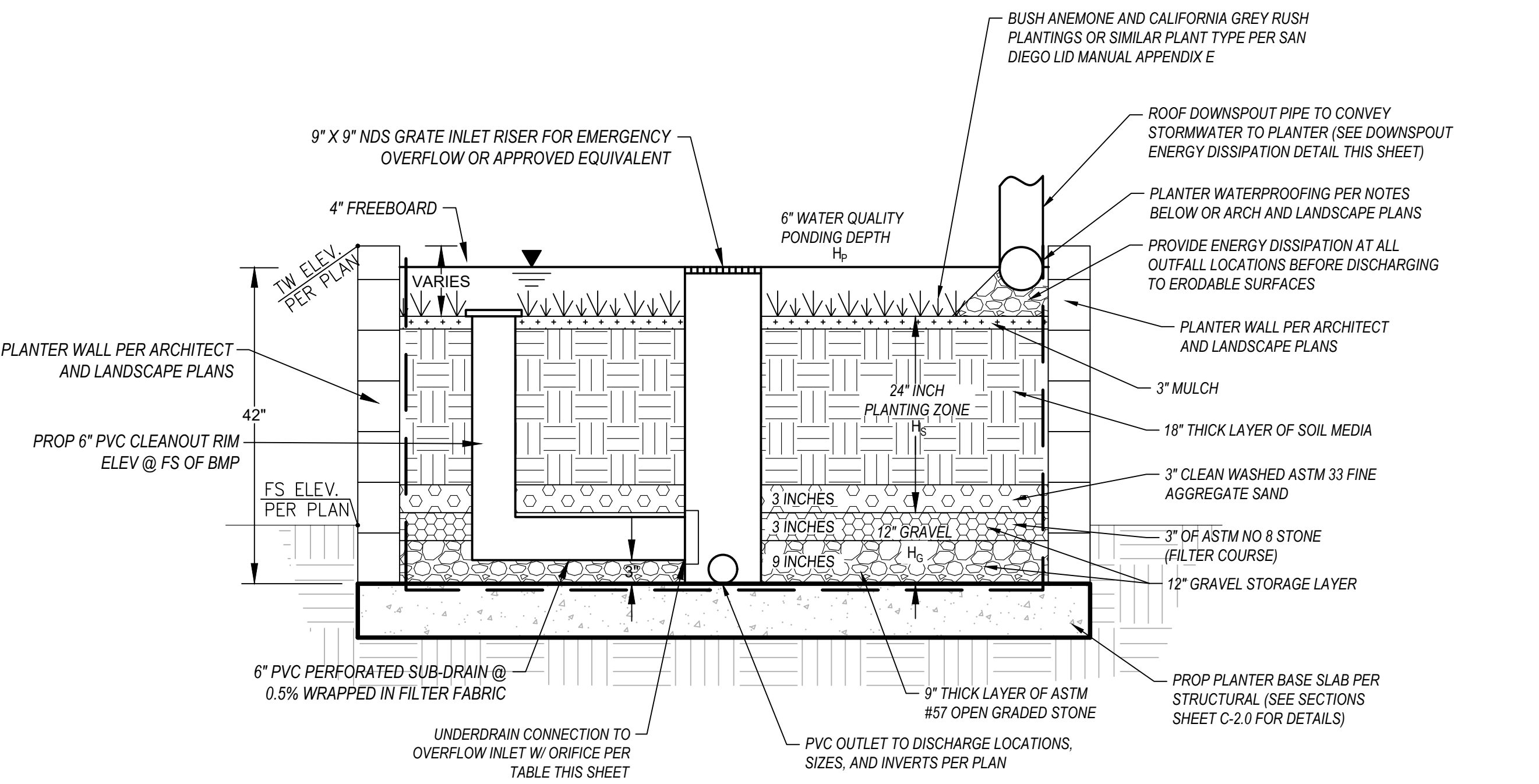
- PREP WALL AND FOOTING - SPRAY APPLY "MARFLEX 5000" COMMERCIAL MEMBRANE TO BACK OF WALL, TOP OF FOOTING AND BOTTOM OF PLANTER PER MANUFACTURER'S SPECIFICATIONS.
- ADDRESS ANY EXPANSION JOINTS WITH 1/2" MIN. STRIP OF "SOCO-SHIELD 300" MEMBRANE (10 ML. MIN. THICKNESS) CENTERED OVER JOINT, ADHERED TO "MARFLEX" OVER SPRAY JOINT WITH "MARFLEX 5000" TO MANUFACTURER'S REQUIRED MIL THICKNESS.
- APPLY "SOCO-SHIELD 300" MEMBRANE (10 ML. MIN. THICKNESS) TO ADHERE TO THE "MARFLEX 5000" OVER ENTIRE WALL, STEM WALL AND PLANTER BOTTOM INCLUDING TREATED EXPANSION JOINTS. OVERLAP MATERIAL SEAMS A MIN. OF 6-INCHES IN ALL DIRECTIONS.
- ATTACH TACK STRIP AT TOP OF MEMBRANE AND ON SIDE ENDS OF WALL FROM TOP OF MEMBRANE TO TOP OF FOOTING.
- APPLY "COOL-COAT" OF EQUIVALENT U.V. RESISTANT MEMBRANE ABOVE TACK STRIP TO TOP OF WALL PER MANUFACTURER'S SPECIFICATIONS.

ADDITIONAL WATER PROOFING NOTES

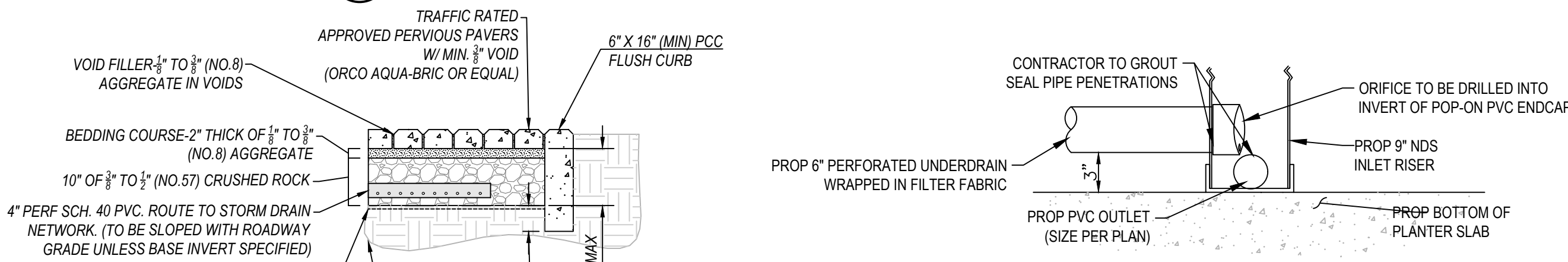
- PER GEOTECHNICAL RECOMMENDATIONS, NO INFILTRATION IS FEASIBLE ON THIS SITE. HOWEVER, SHOULD A WATER QUALITY TREATMENT BMP BE PROPOSED WITH AN OPEN BOTTOM (PERMEABLE PAVEMENT OR TREE WELLS), AN IMPERVIOUS LINER SHALL BE PROPOSED AT THE BASE OF EACH BMP SECTION TO A DISTANCE AT LEAST 5' FROM THE CLOSEST BUILDING STRUCTURE OR RETAINING WALL.



POST CONSTRUCTION BMP PLAN
SCALE: 1"=20'
GRAPHIC SCALE: 1" = 20'



A1 TYPICAL SECTION: BIOFILTRATION PLANTER CROSS SECTION (BF-1)
NOT TO SCALE

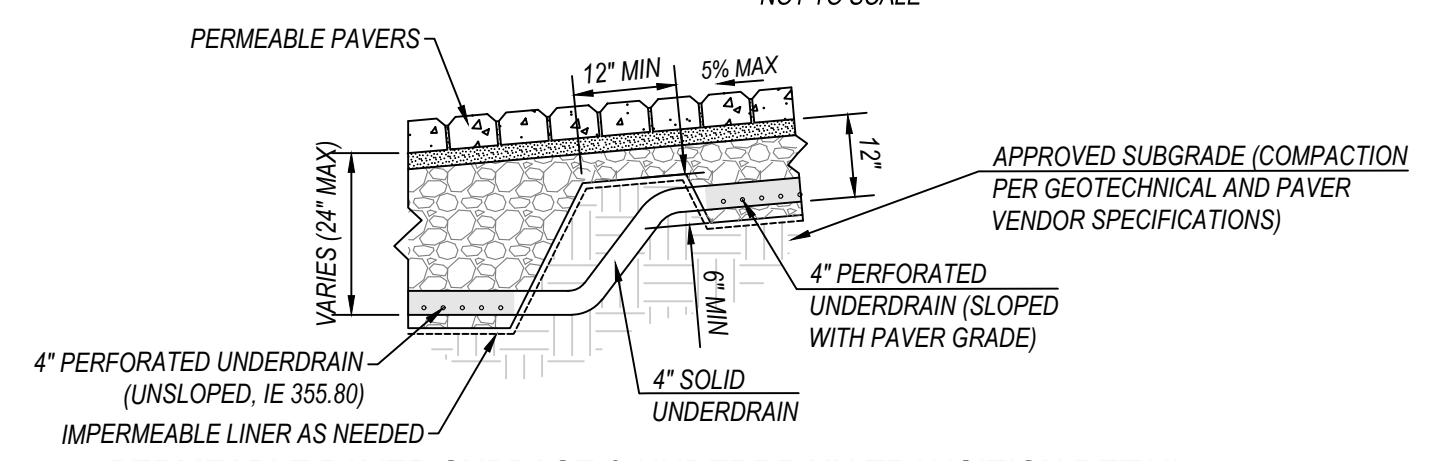


A2 9" NDS INLET CONNECTION DETAIL
NOT TO SCALE

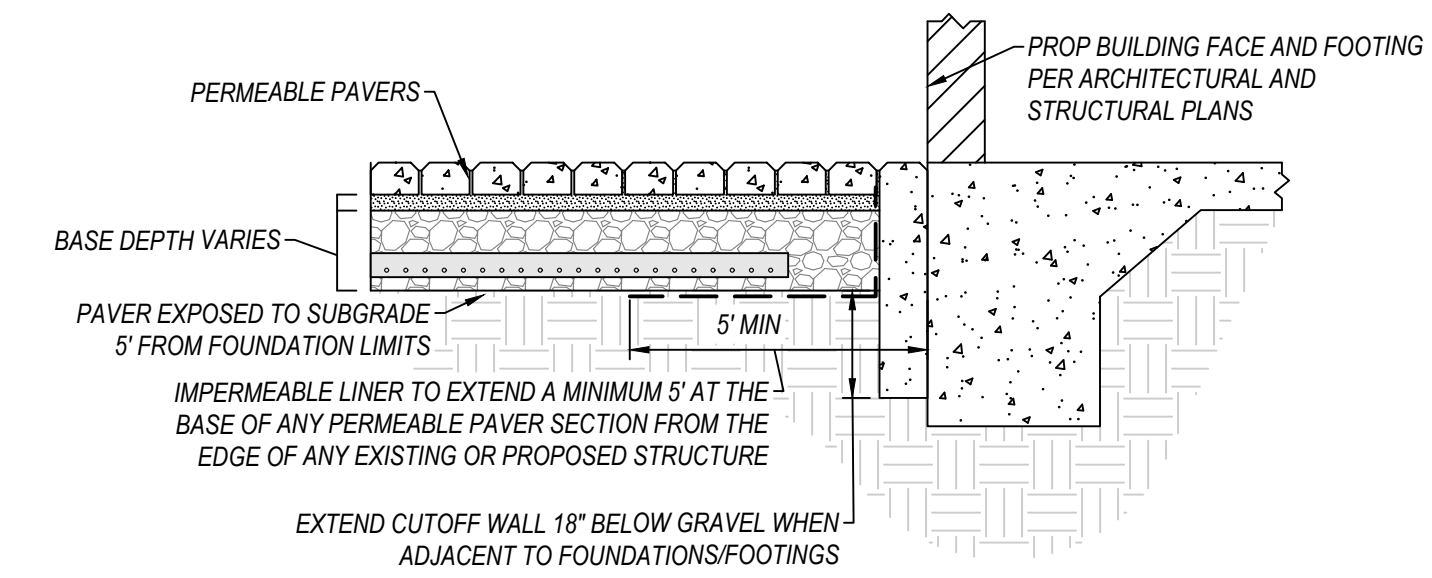
BMP SIZE & ORIFICE DIAMETER SUMMARY

| BMP # | DCV REQUIRED (FT ³) | H ₁ (FT) | H ₂ (FT) | H ₃ (FT) | EFFECTIVE DEPTH (FT) | HMP ORIFICE (IN) | A ₁ (FT ²) | VOLUME PROVIDED (FT ³) |
|-------|---------------------------------|---------------------|---------------------|---------------------|----------------------|------------------|-----------------------------------|------------------------------------|
| 1 | 25 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 25 | 38 |
| 2 | 35 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 30 | 45 |
| 3 | 30 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 26 | 39 |
| 4 | 26 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 20 | 29 |
| 5 | 46 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 54 | 81 |
| 6 | 28 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 25 | 38 |
| 7 | 42 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 37 | 56 |
| 8 | 52 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 47 | 71 |
| 9 | 45 | 0.5 | 2 | 0.75 | 1.5025 | 0.125 | 40 | 60 |

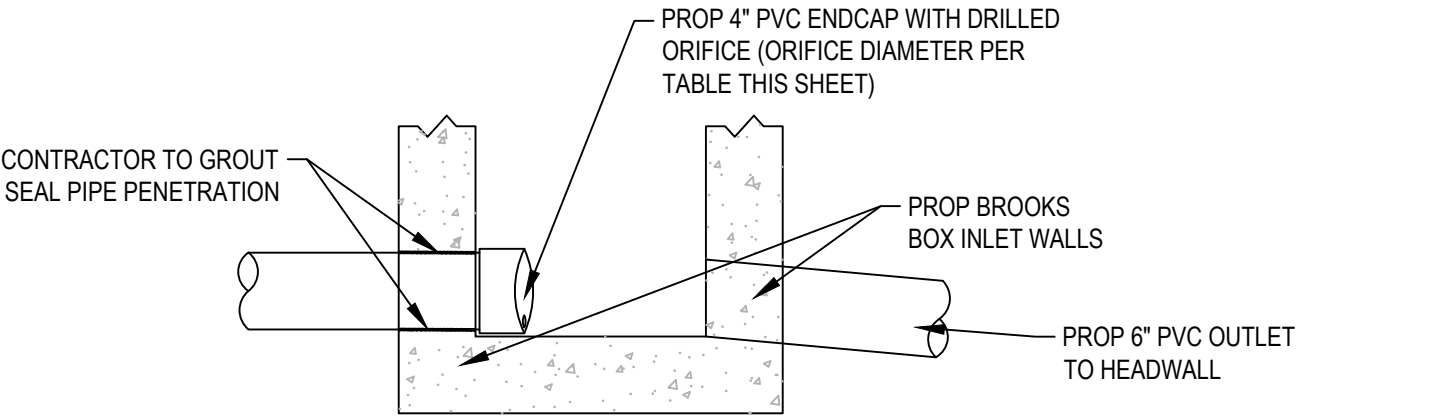
PERMEABLE PAVER DETAIL
NOT TO SCALE



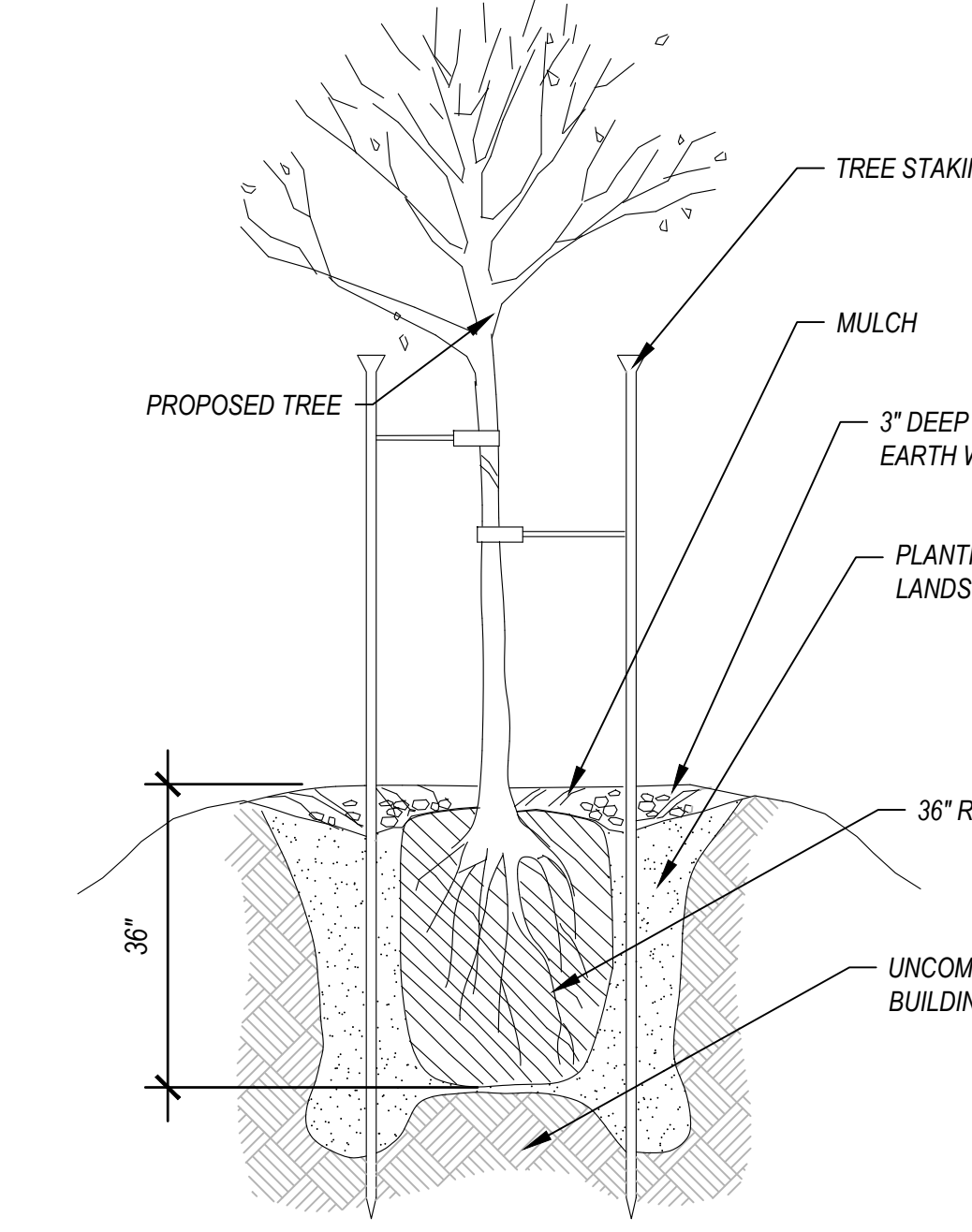
PERMEABLE PAVER SUBBASE & UNDERDRAIN TRANSITION DETAIL
NOT TO SCALE



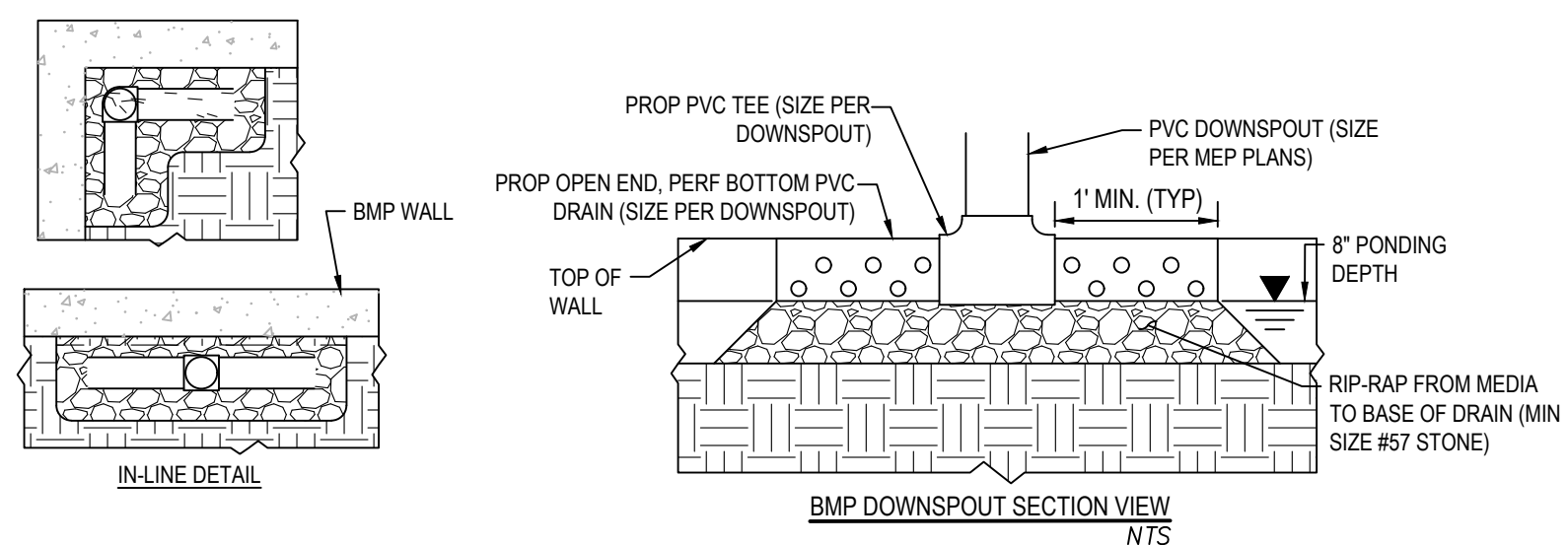
PERMEABLE PAVER IMPERVIOUS LINER LIMIT DETAIL
NOT TO SCALE



A3 BROOKS BOX INLET CONNECTION DETAIL (PAVER OUTLET DETAIL)
NOT TO SCALE



TREE WELL PLANTER DETAIL
SCALE: NTS
(SEE LANDSCAPE PLANS FOR ADDITIONAL SPECS AND DETAILS)



DOWNSPOUT ENERGY DISSIPATION/ OUTLET DETAILS
NOT TO SCALE

CONTRACTOR REQUIREMENTS FOR ENGINEER OF WORK POST-CONSTRUCTION BMP CERTIFICATION:

- THE CONTRACTOR IS TO CONSTRUCT ALL BMPs AS DESIGNATED ON THIS PLAN, PURSUANT TO APPROVED MAINTENANCE AGREEMENT IF IN FIELD CONDITIONS WARRANT A PORTION OF THIS DESIGN INFEASIBLE, THE CONTRACTOR IS TO NOTIFY THE ENGINEER OF WORK IMMEDIATELY.
- PRIOR TO THE INSTALLATION OF THESE BMPs, THE CONTRACTOR IS TO PROVIDE THE FOLLOWING TO THE ENGINEER OF RECORD:
 - SUBMITTALS FOR SOIL MEDIA MIXES, SAND, AND GRAVEL USED IN BMP CONSTRUCTION.
 - PURCHASE ORDERS FOR ALL PROPRIETARY BMP SYSTEMS.
- SHOULD THE REQUIRED DOCUMENTATION LISTED ABOVE NOT BE PROVIDED TO THE ENGINEER OF WORK PRIOR TO THE TIME OF INSTALLATION, THE ENGINEER OF WORK RESERVES THE RIGHT TO REFUSE CERTIFICATION OF THESE BMPs UNTIL EITHER THE NECESSARY DOCUMENTATION HAS BEEN PROVIDED, OR A WRITTEN CERTIFICATION OF MATERIAL SPECIFICATION PER PLAN HAS BEEN PROVIDED BY THE CONTRACTOR, THUS ACCEPTING LIABILITY SHOULD IT BE FOUND THAT THESE BMPs WERE NOT INSTALLED TO PLAN AT A LATER DATE.

project title
HABITAT SANTEE
8932 1ST ST. SANTEE, CA 92071



Stephen Dalton Architects
444 S. CEDROS, STUDIO 190
SOLANA BEACH, CA 92075
t. 858.792.5906 / f. 858.792.5916

POST-CONSTRUCTION BMP PLAN
step architects

job no. 3741
date 2/17/2023
TENTATIVE MAP 1ST
6/12/2023
TENTATIVE MAP 2ND
8/3/2023
TENTATIVE MAP 3RD

sheet C-2.0

PASCO LARET SUITER & ASSOCIATES
San Diego | Solana Beach | Orange County
Phone 858.259.8212 | www.plsaengineering.com

