

STORM WATER CONTROL PLAN

**DIANA AVENUE RESIDENTIAL SUBDIVISION
730 & 760 DIANA AVENUE
MORGAN HILL, CALIFORNIA
SANTA CLARA COUNTY**

Prepared for:

**Dividend Homes, Inc.
385 Woodview Avenue, Suite 100
Morgan Hill, CA 95037**

Prepared by:

**BKF ENGINEERS
1730 North First Street, Suite 600
San Jose, CA 95112**



March 27, 2024

Certification

Project: Diana Avenue Residential Subdivision
Address: 730 & 760 Diana Avenue, Morgan Hill, CA

I certify under penalty of law that the selection, sizing, and design of the Storm Water Control Measures meet the Central Coast Regional Water Quality Control Board (RWQCB) PCR requirements including applicable performance requirements. This document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted.

Phong Kiet, PE

Title: Associate Principal



ENGINEERS / SURVEYORS / PLANNERS

1730 North First Street, Suite 600
San Jose, CA 95112
(408) 467-9100

Date _____

(Note: Any subsequent amendments to the SWMP should be reflected on this page.)

AS-BUILT CERTIFICATION:

Based on a visual inspection, I certify that the sizing, selection and preliminary design of the treatment Best Management Practices and control measures in the Storm Water Control Plan meet the requirements of City of Morgan Hill's Best Management Practices Manual for the City's Storm Water Management Program and the NPDES Permit issued by the Regional Water Quality Control Board.

Phong Kiet, PE

Title: Associate Principal



ENGINEERS / SURVEYORS / PLANNERS

**1730 North First Street, Suite 600
San Jose, CA 95112
(408) 467-9100**

Date _____

Table of Contents

1. Project Information.....	4
1.1 Project Data Table.....	4
1.2 General Information.....	4
1.3 Receiving Water Bodies	5
1.4 Potential Pollutants.....	5
2. Project Site Assessment Summary.....	5
2.1 Site Topography	5
2.2 Geology and Soil Types.....	5
2.3 Hydrologic Considerations.....	5
3. Project Storm Water Performance Criteria and Drainage Management	6
3.1 Development Area and BMP Requirement Tier	6
3.2 Drainage Management Areas	6
4. Site Design and Storm Water Control Measures.....	7
4.1 Tier 1: Site Design and Runoff Reduction Measures.....	7
4.2 Tier 2: Water Quality Treatment.....	8
4.3 Tier 3: Runoff Retention.....	8
4.4 Tier 4: Peak Management	9
5. Best Management Practices (BMP) Operation and Maintenance Plan	9
5.1 Location of TCMs That Require O&M Practices to Function	9
5.2 BMP Maintenance	9
5.3 Maintenance Agreement.....	14
5.4 Limitations	15
6. Appendices	
6.1 Storm Water and Low-Impact Development Performance Requirement Worksheet	
6.1.a. Watershed Management Zone Map	
6.2 Storm Water Calculation Tables	
6.3 Relevant Project Plan Sheets	
6.4 Central Coast SCM Sizing Calculator (PCR-2 Bioretention)	
6.5 Preliminary Post-Construction Requirements Calculation	
6.6 Post Construction BMP Maintenance and/or Source Control Activities Table	
6.7 Self Inspection Program Description Table	
6.8 Employee Training Program Table	
6.9 Maintenance Agreement	
6.10 Stormwater Detention Product Information	

1. Project Information

1.1 Project Data Table

a. Project Name/Number	Diana Avenue Residential Subdivision / App. No. TBD
b. Application Submittal Date	03/27/2024
c. Project Location	730 & 760 Diana Avenue, Morgan Hill, CA 95037 (APN 726-06-013 & 726-06-015)
d. Project Phase No.	N/A
e. Project Type and Description	Residential / 23 new single family homes with a 28 foot wide public street
f. Total Project Site Area	132,905 sq. ft.
g. Total New Impervious Surface Area	79,938 sq. ft.
h. Total Replaced Impervious Surface Area	N/A
i. Total Pre-Project Impervious Surface Area	12,000 sq. ft.
j. Total Post-Project Impervious Surface Area	79,938 sq. ft.
k. Net Impervious Area	79,938 sq. ft.
l. Watershed Management Zone	WMZ 1
m. Design Storm Frequency and Depth	
m.1 PCR 2 Water Quality Treatment	85 th percentile, 1.2"/24-hour
m.2 PCR 3 Runoff Retention	95 th percentile, 1.7"/24-hour
m.3 Flood Control/PCR 4 Peak Flow Management	25-year, 5.25"/24-hour
n. Urban Sustainability Area	N/A
o. PCR Tier	Tier 4

1.2 General Information

Project Address: 730 & 760 Diana Avenue
Morgan Hill, CA
APN: 726-06-013 & 726-06-015

Application No.: TBD

Applicant: Dividend Homes, Inc.
385 Woodview Avenue, Suite 100
Morgan Hill, CA 95037
Contact: Joshua Vrotsos
Phone Number: 858.682.9062

Project Use: Residential

Project Description: The 730-760 Diana Ave residential development covers approximately 2.60 acres to construct 23 single family homes with a 28-foot-wide public

street over 0.45 acres (3.05 acres in total). The site surrounds the 740 Diana Ave property and the existing drainage flows into the southern property.

1.3 Receiving Water Bodies

The subject project will discharge storm water runoff to the City of Morgan Hill storm drain system. This area of City storm drain system drains into the Morgan Hill Retention Pond. During major storms, water can be pumped out of the pond and discharged northward into Fisher Creek. Otherwise, the water from this area flow southward into Butterfield Channel.

1.4 Potential Pollutants

Potential pollutants for the subject project may include trash, sediments, nutrients, dust, construction debris and pesticides. Petroleum products could be potential pollutants in the case of a spill. The construction of the project and long term maintenance should not add any of the following pollutants: copper, nickel, diazinon, mercury, chlordane, DDT, dieldrin and PCBs.

2. Project Site Assessment Summary

2.1 Site Topography

The proposed project site consists of two existing residential parcels surrounding another residential parcel. The site is developed on the northern end of the parcels and undeveloped on the southern end. The project site is bound by Diana Avenue to the north/northwest, existing residential properties to the east and west, and an undeveloped parcel to the south. The project site topography is relatively flat and generally slopes north to south. There is a light scattering of trees throughout the site and natural groundcover in the undeveloped portions.

2.2 Geology and Soil Types

According to the California Geologic Survey, the site is not located within any liquefaction hazard zone, landslide zone or fault rupture hazard zone. Subsurface exploration was performed on October 24, 2023 with three borings drilled to depths ranging from 25 to 35 feet below the existing ground surface. The findings are described by Quantum Geotechnical, Inc. in a March 25, 2024 report. The subsurface conditions encountered consisted of a shallow layer of very stiff sandy silt with gravel at the surface that extended to depths of 3 to 3.5 feet. Underlying this layer, medium dense to very dense silty, clayey gravel and sand layers with a few cobbles were encountered to the maximum depth explored. Groundwater was not encountered at the time of exploration.

2.3 Hydrologic Considerations

The proposed project site does not contain any known wetlands, watercourses, seeps or springs. Per the California Geologic Survey, the historically high groundwater table is expected to occur at depths of 30 to 40 feet below the existing ground surface. At the time of the preparation of this report, no known water wells exist on the project site.

3. Project Storm Water Performance Criteria and Drainage Management

3.1 Development Area and BMP Requirement Tier

Total Project Drainage Area:	132,905 SF (3.05 acres)
Project Type:	Residential (New Development & Redevelopment)
Pre-project Impervious Area:	12,000 SF (Existing Roofs & Driveways)
Post-project Impervious Area:	79,938 SF
Replaced Impervious Area:	0 SF
New Impervious Area:	79,938 SF
<u>Total New and Replaced Impervious Area:</u>	<u>79,938 SF</u>
BMP Tier:	Tier 4

Special Circumstances:

This project is located within Central Coast RWQCB Watershed Management Zone 1 (WMZ 1) per the Resolution R3-2013-0032 WMZ Map (see Appendix 6.1.a).

See Appendix 6.1 for a copy of the project's Performance Requirements No. 1 & 2 checklists (City of Morgan Hill Stormwater Management Guidance Manual "Appendix A").

3.2 Drainage Management Areas

See Appendix 6.3 for a copy of the Storm Water Control Plan showing the locations of the project's Drainage Management Areas (DMA's).

The following table summarizes the characteristics of the project's DMA:

DMA Summary Table

DRAINAGE AREAS	DRAINAGE AREA SIZE (SQ. FT.)	PERVIOUS SURFACE (SQ. FT.)	TYPE OF PERVIOUS SURFACE (SQ. FT.)	IMPERVIOUS SURFACE (SQ. FT.)	TYPE OF IMPERVIOUS SURFACE	PROPOSED TREATMENT CONTROLS
DMA-1	56,016	25,933	LANDSCAPE	30,083	ROADWAY, SIDEWALK, ROOF	TCM-1 SUBSURFACE INFILTRATION TANK
DMA-2	47,430	15,930	LANDSCAPE, PERMEABLE PAVEMENT	31,500	ROADWAY, SIDEWALK, ROOF	TCM-3 SUBSURFACE INFILTRATION TANK
DMA-3	9,600	9,600	LANDSCAPE, PERMEABLE PAVEMENT	0	NONE	PERMEABLE PAVEMENT
DMA-R1	3,700	100	LANDSCAPE	3,600	ROADWAY, SIDEWALK	TCM-R1 BIORETENTION PLANTER BOX
DMA-R2	5,720	2,250	LANDSCAPE	3,470	ROADWAY, SIDEWALK	TCM-R2 BIORETENTION PLANTER BOX
DMA-R3	5,945	2,500	LANDSCAPE	3,445	ROADWAY, SIDEWALK	TCM-R3 BIORETENTION PLANTER BOX
DMA-R4	5,698	2,250	LANDSCAPE	3,448	ROADWAY, SIDEWALK	TCM-R4 BIORETENTION PLANTER BOX
DMA-R5	2,052	900	LANDSCAPE	1,152	ROADWAY, SIDEWALK	TCM-R5 BIORETENTION PLANTER BOX
DMA-R6	6,340	3,100	LANDSCAPE	3,240	ROADWAY, SIDEWALK	TCM-R6 BIORETENTION PLANTER BOX

4. Site Design and Storm Water Control Measures

4.1 Performance Requirement No. 1: Site Design and Runoff Reduction

The proposed project will incorporate site design measures wherever feasible. These include:

- Minimize compaction of highly permeable soils.
- Minimize stormwater runoff by implementing site design measures including:
 - Direct roof runoff onto vegetated areas safely away from building foundations and footings.
 - Direct runoff from sidewalks, walkways and patios onto vegetated areas safely away from building foundations and footings.

- Direct runoff from driveways and uncovered parking lots onto vegetated areas safely away from building foundations and footings.
 - Construct driveways with permeable surface.
- Minimize stormwater runoff by implementing on-site source control measure including:
 - Fire sprinkler test water/condensate drain lines drain to sanitary sewer.
 - Interior floor drains/boiler drain lines plumbed to sanitary sewer.
 - Beneficial landscaping/IPM, including minimizing irrigation, runoff, pesticides and fertilizers.
 - Maintenance including pavement sweeping, catch basin cleaning and good housekeeping.
 - Storm drain labeling.

4.2 Performance Requirement No. 2: Water Quality Treatment

The design storm depth for the 85th percentile storm event is 1.2 inches in 24 hours. The project will utilize 4 foot deep subsurface infiltration tank systems (TCM 1, 2. See Appendix 6.10 Contech UrbanPond Concrete Stormwater Detention Brochure for example) for onsite treatment. Onsite stormwater will be infiltrated based on an estimated Class D soil infiltration rate of 0.5 inch/hour. A soil percolation test will be conducted as a part of the geotechnical report. The surface area required for infiltration of the 85th percentile storm event within the subsurface tanks to satisfy the stormwater treatment requirements. The infiltration tanks have been sized for more strict requirements found in PCR No. 3. Self-treating permeable pavement will be provided for the emergency access drive aisle through 760 Diana Ave as the only vehicular traffic provide through there will be for fire department vehicles or city maintenance equipment.

Offsite Treatment will be provided by in-ground flow-through bioretention planters (TCM-R1-R6). These bioretention planters have been sized to the 4% flow method. See Appendices 6.2 and 6.4 for the relevant calculations and Appendix 6.3 for the construction details.

4.3 Performance Requirement No. 3: Runoff Retention

Per the Region 3 Stormwater Management Guidance Manual the project will utilize the storage available within the project TCM bioretention planters and subsurface tanks to retain the 95th percentile 24-hour rainfall event. Runoff from impervious areas have been computed at 95th percentile rate and post construction treatment controls have been sized to capture, store and treat stormwater. During the rainfall event, infiltration will be occurring within the 24 hours. This infiltrated volume will contribute to the overall retention for the project.

Onsite retention will be provided by the subsurface infiltration tanks. A 2.88 foot retention depth will be provided within the 4 foot deep tanks for infiltration stormwater treatment requirements. The volume retained within the tanks and infiltrated into the ground will fulfill the PCR No. 3 requirements with the 25% freeboard volume required by the City of Morgan Hill for all Ponding Basins.

Offsite retention will be provided by the in-ground bioretention planters that are necessary for stormwater treatment. A 12 inch ponding depth will be necessary for

retention volume along with drain rock depths ranging from 18 inches (minimum) to 26 inches. The volume infiltrated into the ground during the rain event is included in the retention calculation. See Appendices 6.2 and 6.5.

4.4 Performance Requirement No. 4: Peak Management

The project will meet the City of Morgan Hill requirement of retaining the 25 year, 5.25" 24 hour storm volume plus an additional 25% freeboard volume to match the pre-project discharge from the site due to the existing drainage pattern for overland release at the City's request. This is a more stringent requirement than Performance Requirement No. 4: Peak Management. The pre-project discharge will be converted into a retention volume to reduce the overall retention volume requirement.

Onsite TCMs will retain the Overland release volume to match pre-project flows/volume discharge. Subsurface infiltration tanks, detention pipes, and a detention pond will be used to retain the stormwater runoff during a storm event where the city storm drainage system is overcapacity or the site cannot discharge via underground pipes. See Appendix 6.2 (Table 6.2.3a).

Offsite TCMs will include the in-ground bioretention planters, detention pipes, and a detention pond. The retention volume will be kept onsite until it matches the pre-project overland release volume. See Appendix 6.2 (Table 6.2.3b).

All water quality treatment requirements are met by the treatment control measures described above. Trash capture inlet inserts will be provided on all drainage structures and to help treat first flush events. A full hydrology analysis and hydraulics analysis of the specific system will be provided during the construction documents phase within the stormwater control report; please see Appendix 6.5 for the preliminary calculations.

5. BMP Operation and Maintenance Plan

5.1 Location of TCMs that require O&M practices to function

See Appendix 6.2 for a copy of the project Storm Water Control Plan showing the locations of the proposed Treatment Control Measures.

5.2 BMP Maintenance

A. Maintenance Objectives

A comprehensive monitoring and maintenance program is an essential element of a long-term storm water management plan. The proposed storm water system for the subject project will operate in an automatic and reliable manner. However, as with all physical infrastructure, the storm water system will need adequate routine maintenance to function as designed. See Post Construction BMP Maintenance and/or Source Control Activities Table in Appendix 6.6; Sample BMP Inspection & Maintenance Form in Appendix 6.7; and Employee Training Program Table in Appendix 6.8. The monitoring and maintenance program has the following goals:

- To monitor all BMPs to assess whether they continue to function as appropriate mitigation for the effects of urban non-point source pollution on receiving waters in a manner consistent with the highest regard for public safety;
- To set forth the expected routine maintenance functions and associated schedules that allow the BMPs to function as designed;
- To anticipate non-routine maintenance needs that may arise and suggest appropriate responses to these needs;
- The operations and maintenance plan will be a “living document” that can be modified in the future to save costs (without compromising the goals of the program) and to adjust to changes at the site or in regulatory guidance.

B. Scheduling of Monitoring and Maintenance

Routine maintenance for the BMPs should be carried out on a schedule similar to the rest of the storm water system. This will typically require a thorough inspection and maintenance visit in late summer or early fall prior to the rainy season. Observations and recommendations for corrective measure (if necessary) will be recorded and kept by Dividend Homes, Inc., see contact information listed under section 1.1, and until the responsibility transfers to Property Management which will be established at a later time. Remedial maintenance will be performed immediately or scheduled to take place within a reasonable time frame. Records will be available to the City of Morgan Hill for review upon request.

The following general monitoring and maintenance guidelines shall be performed:

- A thorough inspection and maintenance of all the BMP's mentioned above shall be conducted in late summer or early fall prior to the rainy season (October 1st).
- All BMP's mentioned above shall be monitored following major storm events (greater than 1-inch of rain).
- Any debris and/or sediment encountered anywhere on the project site shall be removed as necessary.
- Remedial maintenance shall be performed immediately as conditions allow.
- Inspection, monitoring and maintenance shall be performed by the Property Owner/Manager. Records of inspection, monitoring and maintenance shall be kept by the Property Owner/Manager and made available to the City of Morgan Hill upon request. See Appendix 6.6 for a Sample BMP Inspection/Maintenance Form and see Appendix 6.7 for BMP Maintenance Plan and Operation and Maintenance Inspection Report.
- If mosquito larvae are present and persistent, contact the County for information and advice. Mosquito larvicide should be applied only when absolutely necessary and then only by a licensed individual or contractor.
- Representatives of the City, the local vector control district and the Regional Water Quality Control Board may enter the common areas for purposes of verifying proper operation and maintenance of the BMP's outlined in the approved plan.
- It is the responsibility of Property Owner to ensure that all monitoring and maintenance of treatment control measures is performed on time and as scheduled until the responsibility transfers to Property Management, which will be established at a later time.

A summary of the inspection and maintenance schedule for source control and treatment control BMP's is shown in Table 1.

C. Summary of Maintenance Requirements

The maintenance for all source and treatment control BMP's is as described below. See Table 1 for a summary of the inspection and maintenance schedule. Records of observations and recommendations shall be kept by the Property Owner/Management and made available to the City of Morgan Hill upon request. See Appendix 6.6 for a Sample BMP Inspection/Maintenance Form and see Appendix 6.7 for BMP Maintenance Plan and Operation and Maintenance Inspection Report.

1. Landscape Maintenance

The following landscape maintenance shall be performed on all landscape areas:

- Landscape areas within the project site shall be covered with plants or some type of ground cover to minimize erosion. No areas are to be left as bare dirt that could erode.
- Pesticides and fertilizers shall be stored as hazardous materials and in appropriate packaging. Over spraying onto paved areas shall be avoided when applying fertilizers and pesticides. Pesticides and fertilizers will be prohibited from being stored outside.
- Landscape areas shall be inspected for debris and obstructions to drainage flow. All debris and obstructions to drainage flow shall be removed.

2. Storm Drainage Collection System Maintenance

The storm drainage collection system consists of area drains, catch basins, drop inlets, distribution piping, and manholes. The following maintenance shall be performed on all storm drainage collection systems:

- *Inlet and Catch Basin Cleaning.* Inspect all overflow drains, area drains, catch basins drop inlets and manholes twice a year for debris and sediment before and after the rainy season (before October 1st and after April 1st). During inspection, all debris and sediment shall be removed.
- *Regular Pavement Sweeping.* Regular pavement sweeping can have a significant impact on the control of such constituents of concern as trash and debris, particulates, and heavy metals. All pavement should be swept on a regular basis to control the build-up of sediment and trash with particular attention to the early fall period prior to the onset of the winter rainy season. Pavement Sweeping should not be less than monthly.

3. Storm Water Treatment System Maintenance

Bio-Retention Area (Basins and Flow-Through Planter):

To ensure that the storm water treatment system is properly functional and operational, the following routine maintenance, but not limited to, shall be performed:

- Overflow drains within the bio-retention area shall be inspected twice a year before and after the rainy season for debris and sediment (before October 1st and after April 1st). Any debris or accumulations of sediment encountered shall be removed.
- After every major storm event (greater than 1-inch of rain) all overflow drains, storm drain clean out boxes and manholes shall be inspected to remove any obstructions to the flow.

- If eroded areas are observed in the bio-retention area, repair the area by placing a seeded blanket on eroded area as soon as scour is observed.
- Herbicides, pesticides or non-organic fertilizers should not be used in the bio-retention area. Instead, use integrated pest management techniques and hand weed these areas.
- When water stands in the bio-retention basin between storms and does not drain within five days after rainfall, the 24" thick treatment soil section (infiltration rate of 5 to 10 inches per hour) and planting shall be replaced per the development Improvement Plans.
- In addition to above, the Property Owner/Management shall follow the Bio-retention Area Maintenance Plan and Operation and Maintenance Inspection Report in Appendices 6.6 & 6.7.

4. Dumpster Area

- Dumpster and garbage can lids must be kept on securely.
- Wastewater must be collected and discharged to the sanitary sewer.

5. Sidewalks, plazas, gutters and Parking Lots

- Outdoor areas and parking lots should be cleaned by sweeping as needed. If water is used to clean or rinse, it must be collected and disposed of properly.

Table 1: Inspection and Maintenance Schedule Summary

Areas	Inspection	Schedule
Landscaping	Inspect for erosion, damage to vegetation, channelization of flow and sediment accumulation	Twice a year: before and after the rainy season (before October 1 st and after April 1 st)
	Mow grass to maintain an acceptable height. Irrigate areas during dry seasons. Aerate soil by cultivating and adding mulch.	As needed (frequent seasonally)
Storm Drainage Collection System	Inspect area drains, catch basins, drop inlets, and manholes	Twice a year: before and after the rainy season (before October 1 st and after April 1 st)
	Clean area drains, catch basins, drop inlets, and manholes	Twice a year: before and after the rainy season (before October 1 st and after April 1 st). After every major storm event
Storm Water Treatment System	Inspect treatment basin	Twice a year: before and after the rainy season (before October 1 st and after April 1 st). After every major storm event
Dumpster Area	Dumpster and garbage can lids must be kept on securely. Wastewater must be collected and discharged to the sanitary sewer.	As needed
Sidewalks, plazas, gutters and Parking Lots	1. Outdoor areas and parking lots should be cleaned by sweeping. If water is used to clean or rinse, it must be collected and disposed of properly.	As needed

5.3 Maintenance Agreement

See Appendix 6.9 for a draft copy of the project's Maintenance Agreement.

5.4 Limitations

This report was prepared in general accordance with the accepted standard of practice in surface-water hydrology and storm water management existing in northern California for projects of similar scale at the time the investigations were performed. No other warranties, expressed or implied, are made.

As is customary, we note that readers should recognize that the interpretation and elevation of factors affecting the hydrologic context of any site is a difficult and inexact art. Judgments leading to conclusions and recommendations are generally made with an incomplete baseline monitoring, can reduce the inherent uncertainties associated with such studies. We note, in particular, that many factors affect local and regional issues related to the management of storm water from both a quantity and quality perspective.

We have used standard environmental information—such as rainfall, topographic mapping, and soil mapping—in our analyses and approaches without verification or modification, in conformance with local custom. New information or changes in regulatory guidance could influence the plans or recommendations, perhaps fundamentally. As updated information becomes available, the interpretations and recommendations contained in this report may warrant change. To aid in revisions, we ask that readers or reviewers advise us of new plans, conditions, or data of which they are aware.

Concepts, findings, interpretations and recommendations contained in this report are intended for the exclusive use of the subject project, under the conditions presently prevailing except where noted otherwise. Their use beyond the boundaries of the site could lead to environmental or structural damage, and/or to noncompliance with water-quality policies, regulations or permits.

Finally, we ask once again that readers who have additional pertinent information, who observed changed conditions, or who may note material errors should contact us with their findings at the earliest possible date, so that timely changes may be made.

















6. Appendices

Appendix 6.1

**Storm Water and Low-Impact Development Performance Requirement
Certifications**

APPENDIX B

Stormwater Control Plan Checklist

Stormwater Control Plan Required Contents	PR Level	Done?
1. Project Information	All	
• Project name		
• Application number		
• Address and assessor's parcel number		
• Name of Applicant		
• Project Phase number (if project is being constructed in phases)		N/A
• Project Type (e.g., commercial, industrial, multi-unit residential, mixed-use, public), and description		
2. Project Areas	All	
• Total project site area		
• Total new impervious surface area		
• Total replaced impervious surface area		
• Total new pervious area		
• Calculation of Net Impervious Area		
3. Statement of Performance Requirements that apply to the project:	All	
• Performance Requirement No.1 – Site Design and Runoff Reduction		
• Performance Requirement No.2 – Water Quality Treatment		
• Performance Requirement No. 3 – Runoff Retention		
• Performance Requirement No. 4 – Peak Management		N/A
4. Delineation of Drainage Management Areas (DMAs)	All	
5. Summary of Site Design and Runoff Reduction Performance Requirement measures selected for the project (see PR-1 checklist)	PR-1	TBD
6. Description of Runoff Reduction Measures and Structural Stormwater Control Measures, by Drainage Management Area and for entire site	PR-2, 3, and 4	TBD
7. Water quality treatment calculations used to comply with the Water Quality Treatment Performance Requirement and any analysis to support infeasibility determination	PR-2	TBD
8. Documentation certifying that the selection, sizing, and design of the Stormwater Control Measures meet the full or partial Water Quality Treatment Performance Requirements (see PR-2 checklist)	PR-2	TBD

Stormwater Control Plan Required Contents	PR Level	Done?
9. Statement that Water Quality Treatment Performance Requirement has been met on-site, or, if not achievable: <ul style="list-style-type: none"> • Documentation of the volume of runoff for which compliance cannot be achieved on-site and the associated off-site compliance requirements • Statement of intent to comply with Water Quality Treatment Performance Requirement through Alternative Compliance 	PR-2	TBD
10. LID Site Assessment Summary (see PR-3 checklist)	PR-3	TBD
11. LID Site Design Measures Used (see PR-3 checklist)	PR-3	TBD
12. Supporting calculations used to comply with the applicable Runoff Retention Performance Requirements	PR-3	TBD
13. Documentation demonstrating infeasibility where Site Design and Runoff Reduction measures and retention-based Stormwater Control Measures cannot retain required runoff volume	PR-3	TBD
14. Documentation demonstrating percentage of the project's Equivalent Impervious Surface Area dedicated to retention-based Stormwater Control Measures	PR-3	TBD
15. Statement that Runoff Reduction Performance Requirement has been met on-site, or, if not achievable: <ul style="list-style-type: none"> • Documentation of the volume of runoff for which compliance cannot be achieved on-site and the associated off-site compliance requirements • Statement of intent to comply with Runoff Retention Performance Requirements through an Alternative Compliance agreement 	PR-3	TBD
16. Supporting calculations used to comply with the applicable Peak Management Performance Requirements	PR-4	N/A
17. Documentation demonstrating infeasibility where on-site compliance with Peak Management Performance Requirements cannot be achieved	PR-4	N/A
18. Statement that Peak Management Performance Requirement has been met on-site, or, if not achievable: <ul style="list-style-type: none"> • Documentation of the volume of runoff for which compliance cannot be achieved on-site and the associated off-site compliance requirements • Statement of intent to comply with Peak Management Requirements through an Alternative Compliance agreement 		N/A
19. O&M Plan for all structural SCMs to ensure long-term performance	PR-2, 3, and 4	✓
20. Owner of facilities and responsible party for conducting O&M	PR-2, 3, and 4	✓

PERFORMANCE REQUIREMENT NO. 1 SITE DESIGN AND RUNOFF REDUCTION CERTIFICATION	
DESIGN STRATEGY	INCORPORATED?
1. Limit disturbance of creeks and natural drainage features.	N/A
2. Minimize compaction of highly permeable soils.	YES
3. Limit clearing and grading of native vegetation at the site to the minimum area needed to build the project, allow access, and provide fire protection.	N/A
4. Minimize impervious surfaces by concentrating improvements on the least sensitive areas of the site, while leaving the remaining land in a natural undisturbed state.	N/A
5. Minimize stormwater runoff by implementing one or more of the following design measures:	YES
a) Direct roof runoff into cisterns or rain barrels for reuse.	
b) Direct roof runoff onto vegetated areas safely away from building foundations and footings.	✓
c) Direct runoff from sidewalks, walkways, and/or patios onto vegetated areas safely away from building foundations and footings.	✓
d) Direct runoff from driveways and/or uncovered parking lots onto vegetated areas safely away from building foundations and footings.	✓
e) Construct bike lanes, driveways, uncovered parking lots, sidewalks, walkways, and patios with permeable surfaces.	✓

I, Phong Kiet, acting as the Project Engineer for 730 Diana Avenue
730 & 760 Diana Avenue, Morgan Hill, CA 95037
project, located at (APN 726-06-013/-015), hereby state that the Site
Design and Runoff Reduction design strategies indicated above have been incorporated into the
design of the project.

Signature

02/07/2024

Date

SOURCE CONTROL CHECKLIST		
ON-SITE SOURCE CONTROL MEASURES	INCORPORATED?	
Wash area/racks, drain to sanitary sewer ¹	<input type="checkbox"/>	N/A
Covered dumpster area, drain to sanitary sewer ¹	<input type="checkbox"/>	N/A
Sanitary sewer connection or accessible cleanout for swimming pool/spa/fountain ¹	<input type="checkbox"/>	N/A
Parking garage floor drains plumbed to sanitary sewer ¹	<input type="checkbox"/>	N/A
Fire sprinkler test water/condensate drain lines drain to landscape/sanitary sewer ¹	<input checked="" type="checkbox"/>	
Interior floor drains/boiler drain lines plumbed to sanitary sewer	<input type="checkbox"/>	N/A
Beneficial landscaping/IPM (minimize irrigation, runoff, pesticides and fertilizers; promotes treatment)	<input checked="" type="checkbox"/>	
Outdoor material storage protection	<input type="checkbox"/>	N/A
Covers, drains for loading docks, maintenance bays, fueling areas	<input type="checkbox"/>	N/A
Maintenance (pavement sweeping, catch basin cleaning, good housekeeping)	<input checked="" type="checkbox"/>	
Storm drain labeling	<input checked="" type="checkbox"/>	
Other ² _____	<input type="checkbox"/>	

Notes:

¹ Subject to sanitary sewer authority requirements.

² See CASQA Stormwater BMP Handbook for New Development and Redevelopment for additional BMPs for vehicle service repair facilities, fuel dispensing areas, industrial processes, rooftop equipment and other pollutant generating activities and sources:

<https://www.casqa.org/resources/bmp-handbooks/new-development-redevelopment-bmp-handbook>

PERFORMANCE REQUIREMENT NO. 2: WATER QUALITY TREATMENT

CERTIFICATION

	ON-SITE WATER QUALITY TREATMENT MEASURES (IN ORDER OF PRIORITY)	INCORPORATED?
1.	<p>Low Impact Development (LID) Treatment Systems designed to retain stormwater runoff generated by the 85th percentile 24-hour storm. Stormwater Control Measures implemented (circle all that apply, design documentation is required):</p> <ul style="list-style-type: none"> • Harvesting and Use, • Infiltration, • Evapotranspiration 	YES
2.	<p>Biofiltration Treatment Systems – with the following design parameters:</p> <ul style="list-style-type: none"> a) Maximum surface loading rate appropriate to prevent erosion, scour and channeling within the biofiltration treatment system itself and equal to 5 inches per hour, based on the flow of runoff produced from a rain event equal to or at least: <ul style="list-style-type: none"> i. 0.2 inches per hour intensity; or ii. Two times the 85th percentile hourly rainfall intensity for the applicable area, based on historical records of hourly rainfall depth b) Minimum surface reservoir volume equal to the biofiltration treatment system surface area times a depth of 6 inches c) Minimum planting medium depth of 24 inches. The planting medium must sustain a minimum infiltration rate of 5 inches per hour throughout the life of the project and must maximize runoff retention and pollutant removal. A mixture of sand (60%-70%) meeting the specifications of American Society for Testing and Materials (ASTM) C33 and compost (30%-40%) may be used. A Regulated Project may utilize an alternative planting medium if it demonstrates its planting medium is equal to or more effective at attenuating pollutants than the specified planting medium mixture. d) Proper plant selection¹³ e) Subsurface drainage/storage (gravel) layer with an area equal to the biofiltration treatment system surface area and having a minimum depth of 12 inches f) Underdrain with discharge elevation at top of gravel layer g) No compaction of soils beneath the biofiltration facility (ripping/loosening of soils required if compacted) h) No liners or other barriers interfering with infiltration, except for situations where lateral infiltration is not technically feasible 	YES

¹³ Technical guidance for designing bioretention facilities is available from the Central Coast LID Initiative. The guidance includes design specifications and plant lists appropriate for the Central Coast climate: http://www.centralcoastlidi.org/Central_Coast_LIDI/LID_Structural_BMPs.html

3.	<p>Non-Retention Based Treatment Systems – designed to meet at least one of the following hydraulic sizing criteria:</p> <p>(a) Volume Hydraulic Design Basis – Treatment systems whose primary mode of action depends on volume capacity shall be designed to treat stormwater runoff equal to the volume of runoff generated by the 85th percentile 24-hour storm event, based on local rainfall data.</p> <p>(b) Flow Hydraulic Design Basis – Treatment systems whose primary mode of action depends on flow capacity shall be sized to treat:</p> <p>(i) The flow of runoff produced by a rain event equal to at least two times the 85th percentile hourly rainfall intensity for the applicable area, based on historical records of hourly rainfall depths; or</p> <p>(ii) The flow of runoff resulting from a rain event equal to at least 0.2 inches per hour intensity.</p>	N/A
----	--	-----

I, Phong Kiet, acting as the Project Engineer for 730 Diana Avenue
730 & 760 Diana Avenue, Morgan Hill, CA 95037
project, located at (APN 726-06-013/-015), hereby state that the On-Site Water Quality Treatment Measures indicated above have been incorporated into the design of the project.

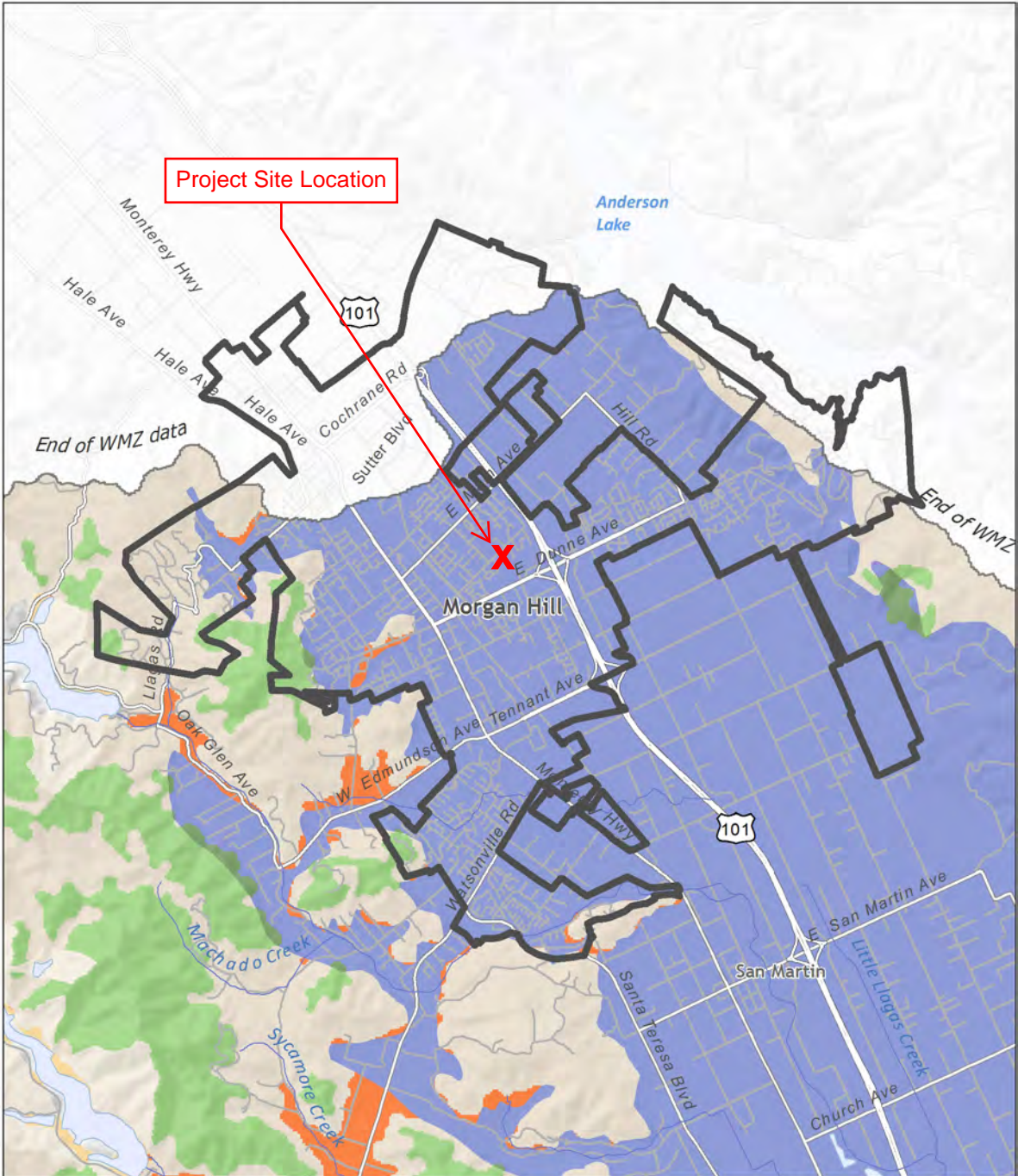
Signature

02/07/2024

Date

Appendix 6.1.a

**Location of Project Site within Central Coast RWQCB Watershed Management
Zone Map**



Project Site Location

Anderson Lake

101

Sutter Blvd

Hill Rd

E. Main Ave

E. Duane Ave

Morgan Hill

Tennant Ave

W. Edmundson Ave

Watsonville Rd

101

San Martin

Church Ave

Santa Teresa Blvd

Machado Creek

Oak Glen Ave

Llagos Rd

Monterey Hwy

Hale Ave

Hale Ave

Hale Ave

End of WMZ data

End of WMZ

CENTRAL COAST JOINT EFFORT

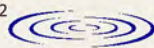
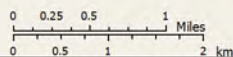
Morgan Hill, California

Watershed management zones

- | | | |
|---|---|----|
| 1 | 5 | 9 |
| 2 | 6 | 10 |
| 3 | 7 | |
| 4 | 8 | |

Urban area boundary

Data sources
Watershed management zones: Stillwater Sciences, 2012
Base data: ESRI 2010



Stillwater Sciences
www.stillwatersci.com

Appendix 6.2

Storm Water Calculation Tables

Table 6.2.1a – Onsite Treatment Control Measure Summary

TREATMENT CONTROL MEASURE SUMMARY TABLE																			
DMA #	TCM #	Location	Treatment Type	LID or Non-LID	Sizing Method	Drainage Area (SF)	Impervious Area (SF)	Pervious Area (Permeable Pavement) (SF)	Pervious Area (Other) (SF)	Runoff Coeff. "C"+	% Onsite Area Treated by LID or Non-LID TCM	Bioretention Area Required (4%)(SF)	Bioretention Area Provided (SF)	Overflow Riser Height (in)	85th% (1.2" Rain) Volume(CF)	95th% (1.7" Rain) Volume(CF)++	24 hr 25 year total rainfall (5.25" Rain) Volume(CF)+++	Impervious Area Type	Comments
1	1	Onsite	Subsurface Infiltration System	LID	N/A	56,016	30,083	0	25,933	0.364	54.15%	-	-	-	2,037	3,692	11,139	Roadway, Sidewalk, Roof	Infiltration Tank (0.5 in/hr, 4' deep tank)
2	3	Onsite	Subsurface Infiltration System	LID	N/A	47,430	31,500	520	15,410	0.461	45.85%	-	-	-	2,188	3,966	11,966	Roadway, Sidewalk, Roof	Infiltration Tank (0.5 in/hr, 4' deep tank)
3	-	Onsite	Self-treating areas	LID	N/A	9,600	0	7,100	2,500	0.040	9.28%	-	-	-	-	-	-	-	Permeable Pavement
Totals:						113,046	61,583	7,620	43,843	N/A	109.28%	0	0	N/A	-	7,658	-	-	

Footnotes:
+ $C = 0.858I^3 - 0.78I^2 + 0.774I + 0.04$, where "I" is the fraction of the tributary area that is impervious
++ TCM required storage volume equals full 95th% runoff with native soil infiltration if necessary
+++ Per City of Morgan Hill Master Plan, Sizing for Volume Retention in underground structures and ponding basins requires 1.25 Safety Factor

Table 6.2.1b – Offsite Treatment Control Measure Summary

TREATMENT CONTROL MEASURE SUMMARY TABLE																		
												Bioretention						
DMA #	TCM #	Location	Treatment Type	LID or Non-LID	Sizing Method	Drainage Area (SF)	Impervious Area (SF)	Pervious Area (Permeable Pavement) (SF)	Pervious Area (Other) (SF)	Runoff Coeff. "C"+	% Onsite Area Treated by LID or Non LID TCM	Bioretention Area Required (4%)(SF)	Bioretention Area Provided (SF)	Overflow Riser Height (in)	95th% (1.7" Rain) Volume(CF)++	24 hr 25 year total rainfall (5.25" Rain) Volume(CF)†††	Impervious Area Type	Comments
R1	R1	Offsite	Bioretention unlined w/ underdrain	LID	2C. Flow: 4% Method **	3,700	3,600	0	100	0.845	12.56%	144	148	12	453	1,368	Roadway, Sidewalk	In Ground Flow Through Planter Box
R2	R2	Offsite	Bioretention unlined w/ underdrain	LID	2C. Flow: 4% Method **	5,720	3,470	0	2,250	0.414	19.42%	148	148	12	343	1,036	Roadway, Sidewalk	In Ground Flow Through Planter Box
R3	R3	Offsite	Bioretention unlined w/ underdrain	LID	2C. Flow: 4% Method **	5,945	3,445	0	2,500	0.394	20.18%	148	148	12	339	1,024	Roadway, Sidewalk	In Ground Flow Through Planter Box
R4	R4	Offsite	Bioretention unlined w/ underdrain	LID	2C. Flow: 4% Method **	5,698	3,448	0	2,250	0.413	19.34%	147	148	12	341	1,029	Roadway, Sidewalk	In Ground Flow Through Planter Box
R5	R5	Offsite	Bioretention unlined w/ underdrain	LID	2C. Flow: 4% Method **	2,052	1,152	0	900	0.381	6.97%	50	52	12	113	342	Roadway, Sidewalk	In Ground Flow Through Planter Box
R6	R6	Offsite	Bioretention unlined w/o underdrain	LID	2C. Flow: 4% Method **	6,340	3,240	0	3,100	0.346	21.52%	142	142	-	318	961	Roadway, Sidewalk	In Ground Flow Through Planter Box
Footnotes:						Totals:	29,455	18,355	0	11,100	N/A	100.00%	779	786	N/A	N/A	5,759	

Footnotes:
** Sizing for Bioretention Area Required calculated using the 4% Method $([Impervious\ Area + 0.1 \times Pervious\ Area] \times 0.04)$
+ $C = 0.858I^3 - 0.78I^2 + 0.774I + 0.04$, where "I" is the fraction of the tributary area that is impervious
++ TCM required storage volume equals full 95th% runoff with native soil infiltration if necessary
+++ Per City of Morgan Hill Master Plan

Table 6.2.2a – Onsite Treatment Control Measure Retention Volume Sizing

TREATMENT CONTROL MEASURE RETENTION VOLUME SIZING TABLE									
DMA #	TCM #	Location	Treatment Type	TCM Surface Area (SF)	TCM Retention Depth (ft)	TCM below ground volume (CF)	Infiltration Volume over 24 hours ³ (CF)	TCM total volume (CF)	Volume Check ³
1	1	Onsite	Subsurface Infiltration System	1,515	2.88	4,356	1,515	5,871	OK
2	3	Onsite	Subsurface Infiltration System	1,940	2.88	5,578	1,940	7,518	OK

Footnotes:

³Infiltration Rate set to 0.5 in/hr per for poor soil (Class D)

Table 6.2.2b – Offsite Treatment Control Measure Retention Volume Sizing

TREATMENT CONTROL MEASURE RETENTION VOLUME SIZING TABLE													
DMA #	TCM #	Location	Treatment Type	TCM Top Surface Area (SF)	TCM Bottom Surface Area (SF)	TCM above ground volume (CF)	Ponding depth (in)	Bio soil media depth (in) ¹	Drain rock depth (in) ²	TCM below ground volume (CF)	Infiltration Volume over 24 hours ³ (CF)	TCM total volume (CF)	Volume Check
R1	R1	Offsite	Bioretention unlined w/o underdrain	148	148	148	12	12	26	165	148	461	OK
R2	R2	Offsite	Bioretention unlined w/o underdrain	148	148	148	12	12	18	126	148	422	OK
R3	R3	Offsite	Bioretention unlined w/o underdrain	148	148	148	12	12	18	126	148	422	OK
R4	R4	Offsite	Bioretention unlined w/o underdrain	148	148	148	12	12	18	126	148	422	OK
R5	R5	Offsite	Bioretention unlined w/o underdrain	52	52	52	12	12	18	44	52	148	OK
R6	R6	Offsite	Bioretention unlined w/o underdrain	142	142	142	12	12	18	121	142	405	OK
Footnotes:				786								2,280	

¹Assume 25% void ratio

²Assume 40% void ratio

³Infiltration Rate set to 0.5 in/hr per for poor soil (Class D)

Table 6.2.3a – Onsite Treatment Control Measure Overland Release Sizing

TREATMENT CONTROL MEASURE OVERLAND RELEASE SIZING TABLE												
DMA #	TCM #	Location	Retention Type	Pre Project Overland Release Volume allowed (CF)	Overland Release Volume Retention Required (CF)	Infiltration Tank Surface Area (SF)	Infiltration Tank Below Ground Volume (4' depth)	Detention Pipe- Length (LF)	Detention Pipe Volume- 24"(CF)	Detention Pond (CF)	TCM total volume (CF)	Volume Check
1	1, 2	Onsite	TCM 1: Infiltration Tank TCM 2: Detention Pipe	4,901	6,237	1,515	6,060	80	260	0	6,320	OK
2	3, 4, 5	Onsite	TCM 3: Infiltration Tank TCM 4: Detention Pipe TCM 5: Detention Pond	2,075	9,891	1,940	7,760	150	470	1,700	9,930	OK

Table 6.2.3b – Offsite Treatment Control Measure Overland Release Sizing

TREATMENT CONTROL MEASURE OVERLAND RELEASE SIZING TABLE												
DMA #	TCM #	Location	Retention Type	Pre Project Overland Release Volume allowed (CF)	Overland Release Volume Retention Required (CF)*	Bioretention Surface Area (SF)	Bioretention Total Volume (CF)	Detention Pipe- Length (LF)	Detention Pipe Volume-18" (CF)	Detention Pond (CF)	TCM total volume (CF)	Volume Check
R1, R2, R3, R4, R5, R6	R1, R2, R3, R4, R5, R6, R7, R8	Offsite	TCM R1-R6: Bioretention TCM R7: Detention Pipe TCM R8 Detention Pond	2,577	3,977	786	2,280	415	705	1,050	4,035	OK

Appendix 6.3

Relevant Project Plan Sheets

DRAWING NAME: \\BKF-S\\vol4\\2023\\31724-730\\Diana_Subdivision\\Morgan_Hill\\ENG-\\Planning\\Sheets\\03-D\\Diana_SP.dwg
PLOT DATE: 02-07-24 PLOTTED BY: noon



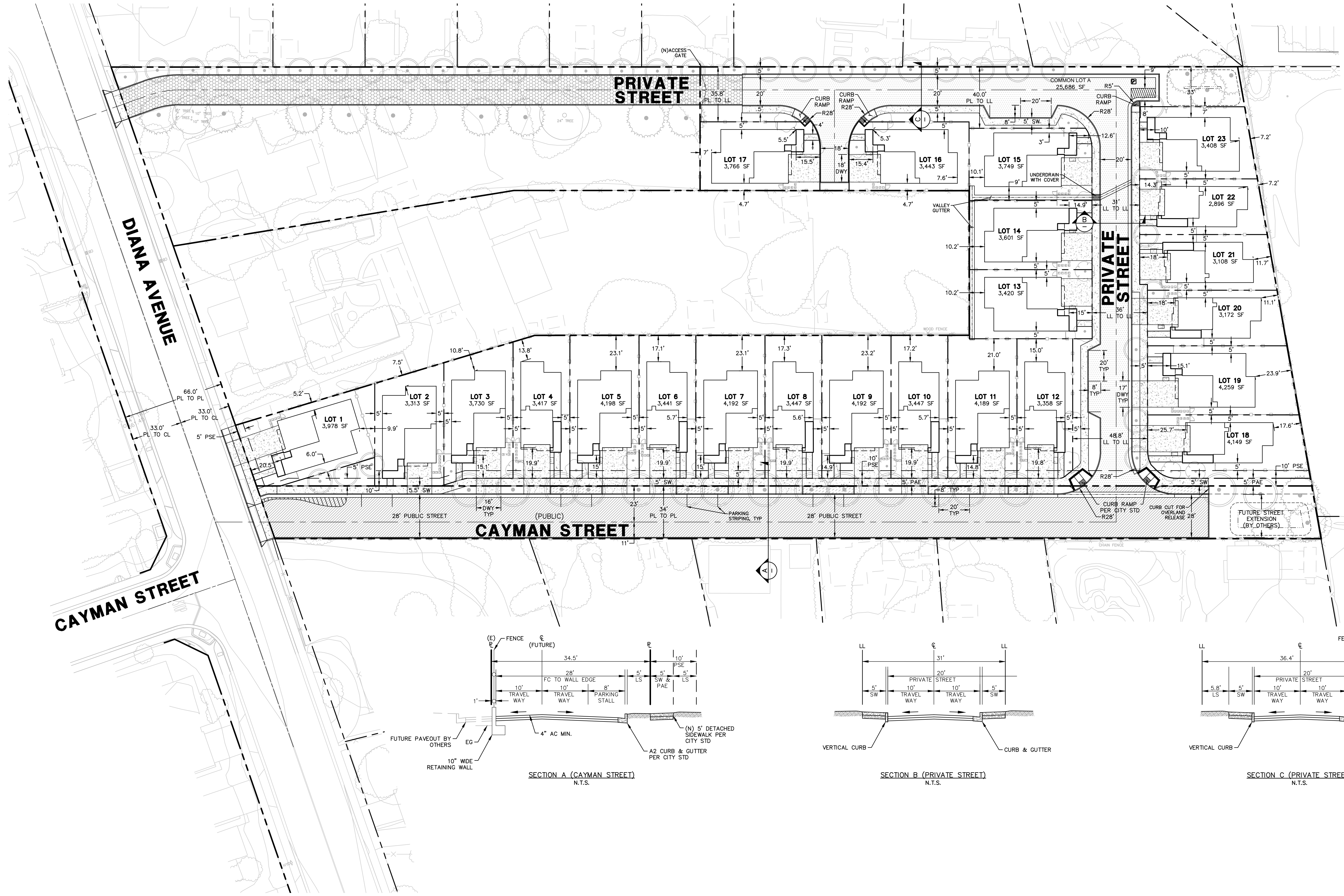
BKF ENGINEERS
1730 N. FIRST STREET
SUITE 600
SAN JOSE, CA 95112
(408) 467-9100
www.bkf.com

730 & 760 DIANA AVENUE SITE DEVELOPMENT PLAN

C3.0

2/09/2024

20231724-10



LEGEND

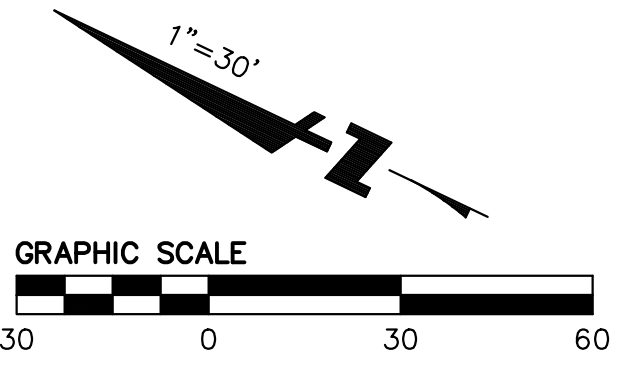
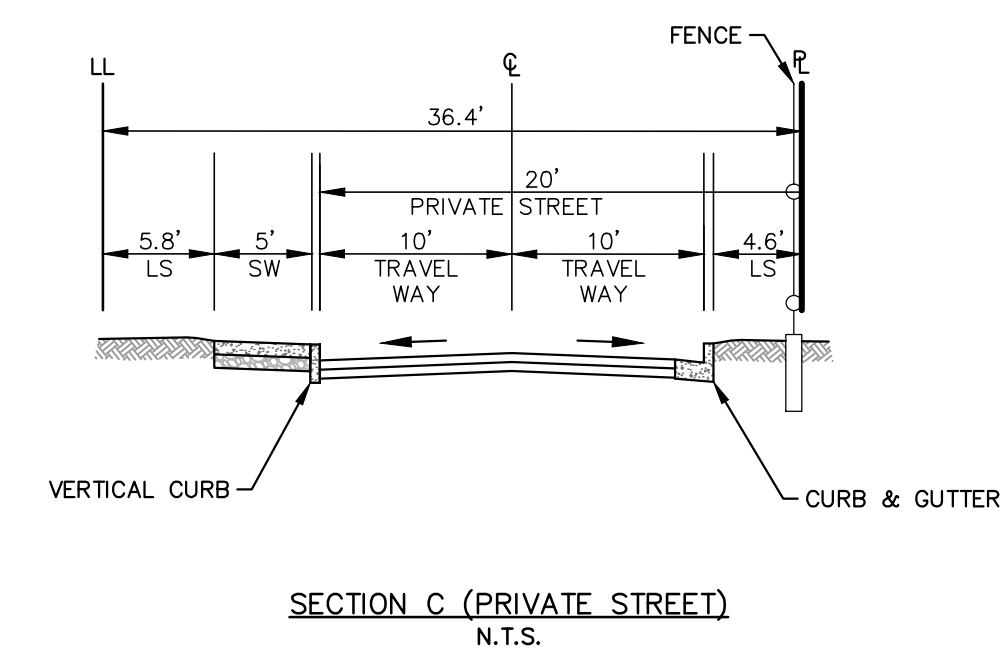
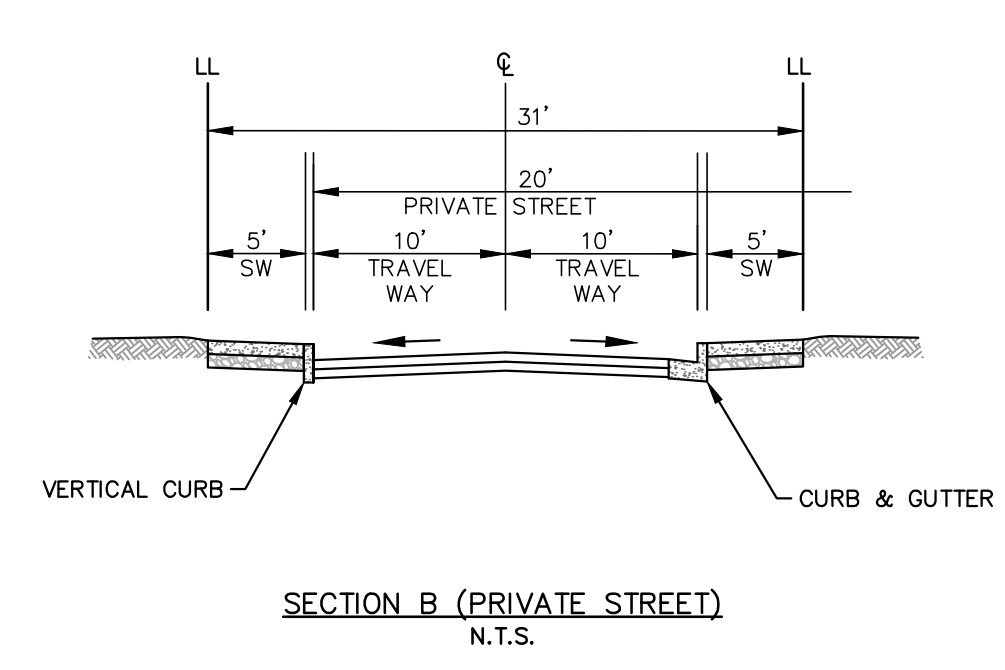
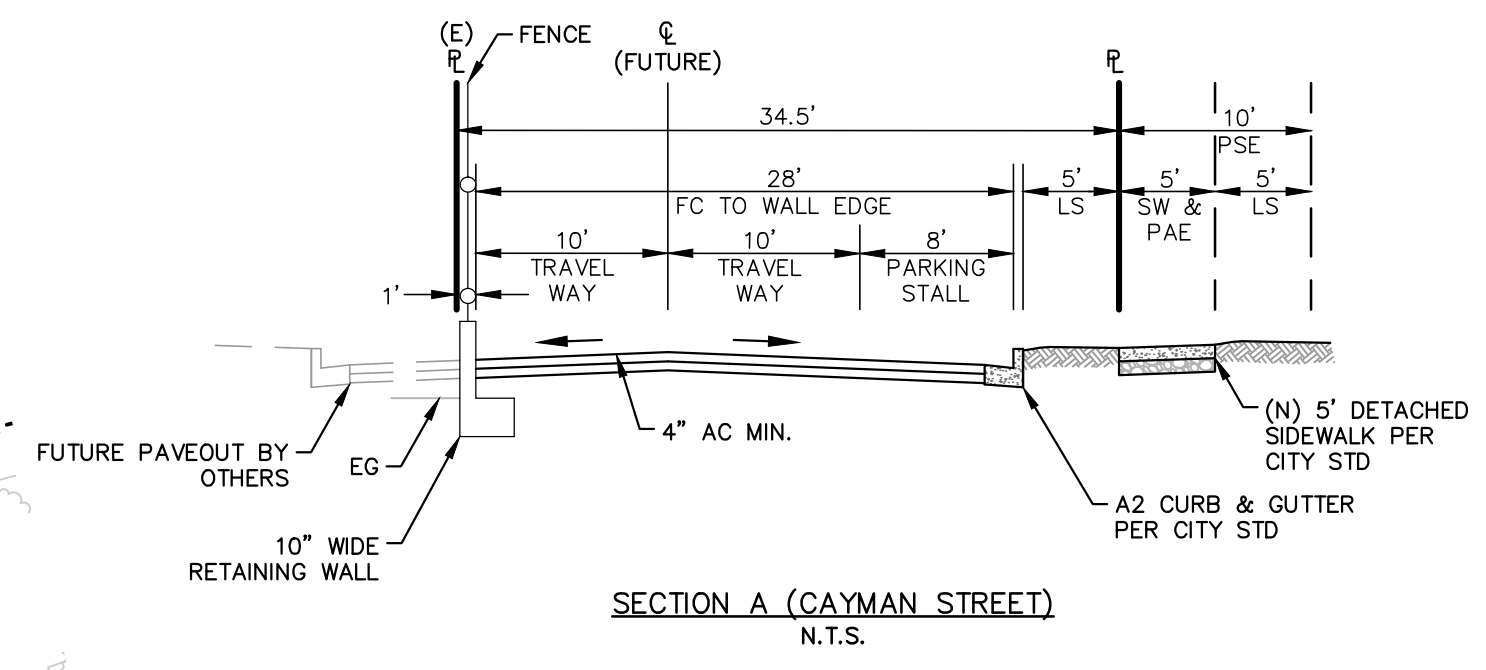
BOUNDARY LINE	---
LOT LINE	- - -
STREET CENTER LINE	---
EASEMENT LINE	---
VERTICAL CURB	---
PAINTED RED CURB	---
VERTICAL CURB & GUTTER	---
AC PAVEMENT (PUBLIC)	---
AC PAVEMENT (PRIVATE)	---
GRASSPAVE PERVIOUS SECTION	---
CONCRETE SIDEWALK/DRIVEWAY	---
GREEN INFRASTRUCTURE: STORMWATER PLANTER	---
DETENTION POND	---
DRIVEWAY	---
ADA PARKING MARKING	---
WHEEL STOP	---
4"x4" BLUE FIRE HYDRANT MARKER	---
7 FT FENCE (SEE LANDSCAPE PLANS)	---

NOTES:

1. NEW CURB AND GUTTER, SIDEWALK, AND ADA RAMPS TO BE INSTALLED PER CITY STANDARD DETAILS.
2. SEE VESTING TENTATIVE MAP FOR EASEMENT INFORMATION AND DIMENSIONS.
3. ALL SIGNING AND STRIPING SHALL CONFORM TO THE LATEST PROVISIONS OF CA MUTCD, CALTRANS STANDARD PLANS AND SPECIFICATIONS, AND THE CITY OF MORGAN HILL STANDARD DETAILS.
4. ALL STRIPING DAMAGED AS PART OF CONSTRUCTION AND PAVEMENT WORK SHALL BE REPLACED WITH THERMOPLASTIC STRIPING TO THE SATISFACTION OF THE CITY TRAFFIC ENGINEER.

ABBREVIATIONS:

BLDG	BUILDING
CL	CENTER LINE
BC	BACK OF CURB
BW	BACK OF WALK
DWY	DRIVEWAY
(E)	EXISTING
EG	EXISTING GRADE
FC	FACE OF CURB
LL	LOT LINE
LS	LANDSCAPE
MIN	MINIMUM
(N)	NEW
PL	PROPERTY LINE
R	RADIUS
STD	STANDARD
SW	SIDEWALK
TYP	TYPICAL
PS	PARKING STALL
PAE	PUBLIC ACCESS EASEMENT
PSE	PUBLIC SERVICE EASEMENT



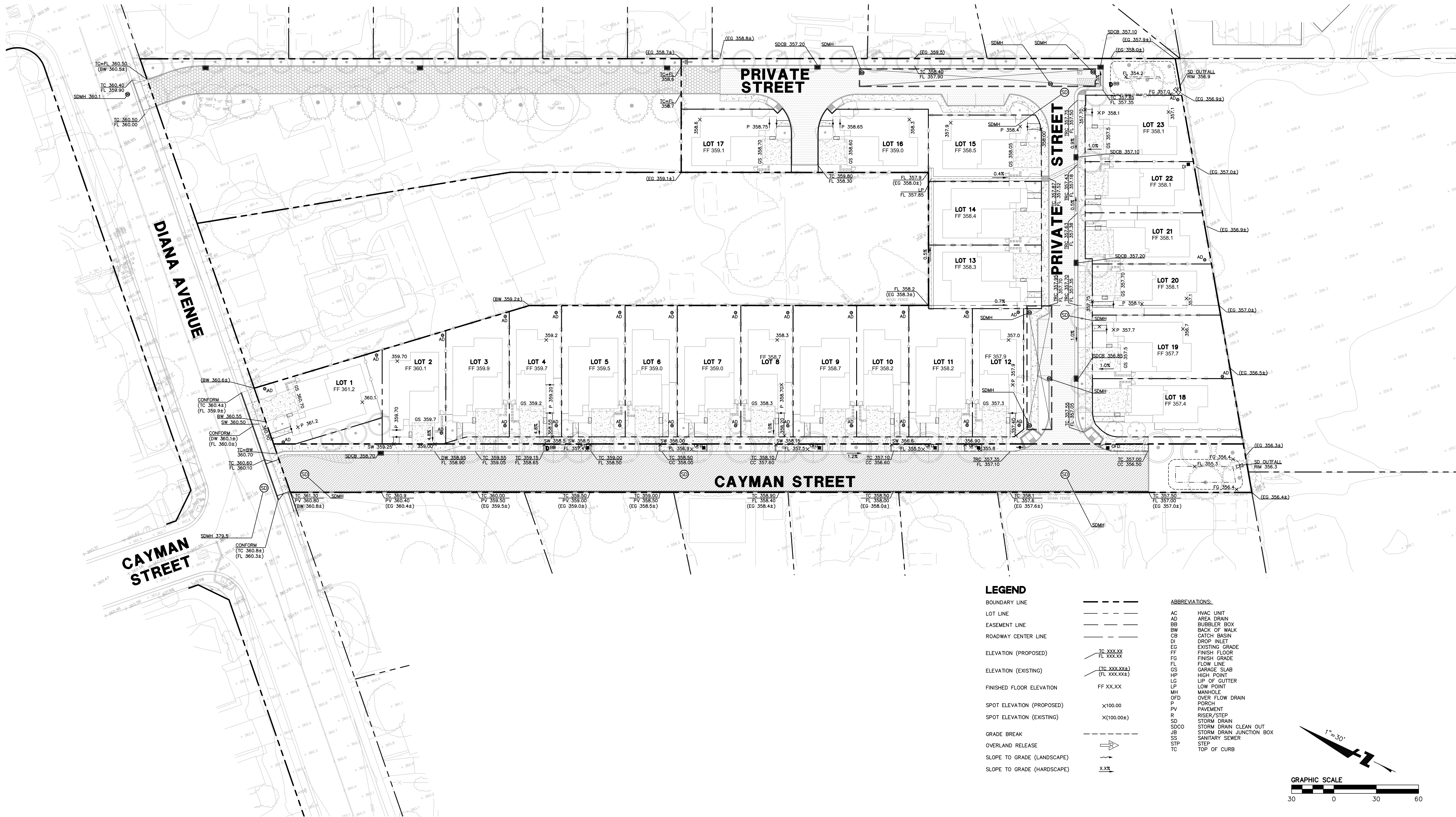
DRAWING NAME: \\BKF-S\\vol4\\2023\\231724-730 Diana_Subdivision_Morgan_Hill\\ENG-\\Planning\\Sheets\\04-D\\Diana_CD.dwg
PLOT DATE: 02-07-24
PLOTTED BY: noon



BKF ENGINEERS
1730 N. FIRST STREET
SUITE 600
SAN JOSE, CA 95112
(408) 467-9100
www.bkf.com

730 & 760 DIANA AVENUE PRELIMINARY GRADING & DRAINAGE PLAN

C4.0
2/09/2024
20231724-10



DRAWING NAME: \\BKF-S\vol4\2023\31724-730_Diana_Subdivision\Sheets\05-DIANA_UT.dwg
PLOT DATE: 02-07-24 PLOTTED BY: noon



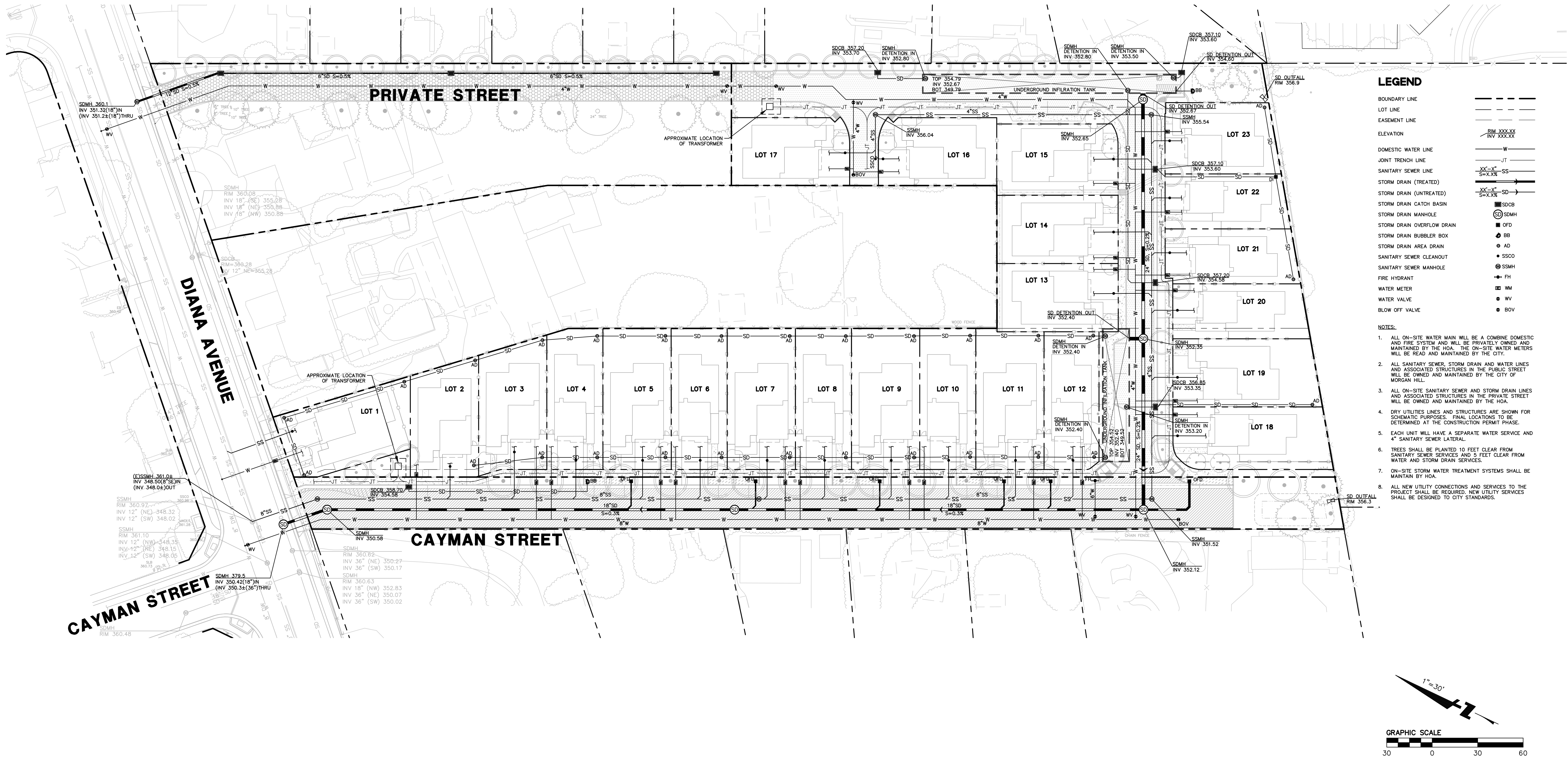
BKF ENGINEERS
1730 N. FIRST STREET
SUITE 600
SAN JOSE, CA 95112
(408) 467-9100
www.bkf.com

730 & 760 DIANA AVENUE PRELIMINARY UTILITY PLAN

C5.0

2/09/2024

20231724-10



DRAWING NAME: C:\Temp\AcPub\1\ch_39752\06-DIANA_SW.dwg
PLOT DATE: 02-09-24 PLOTTED BY: noon

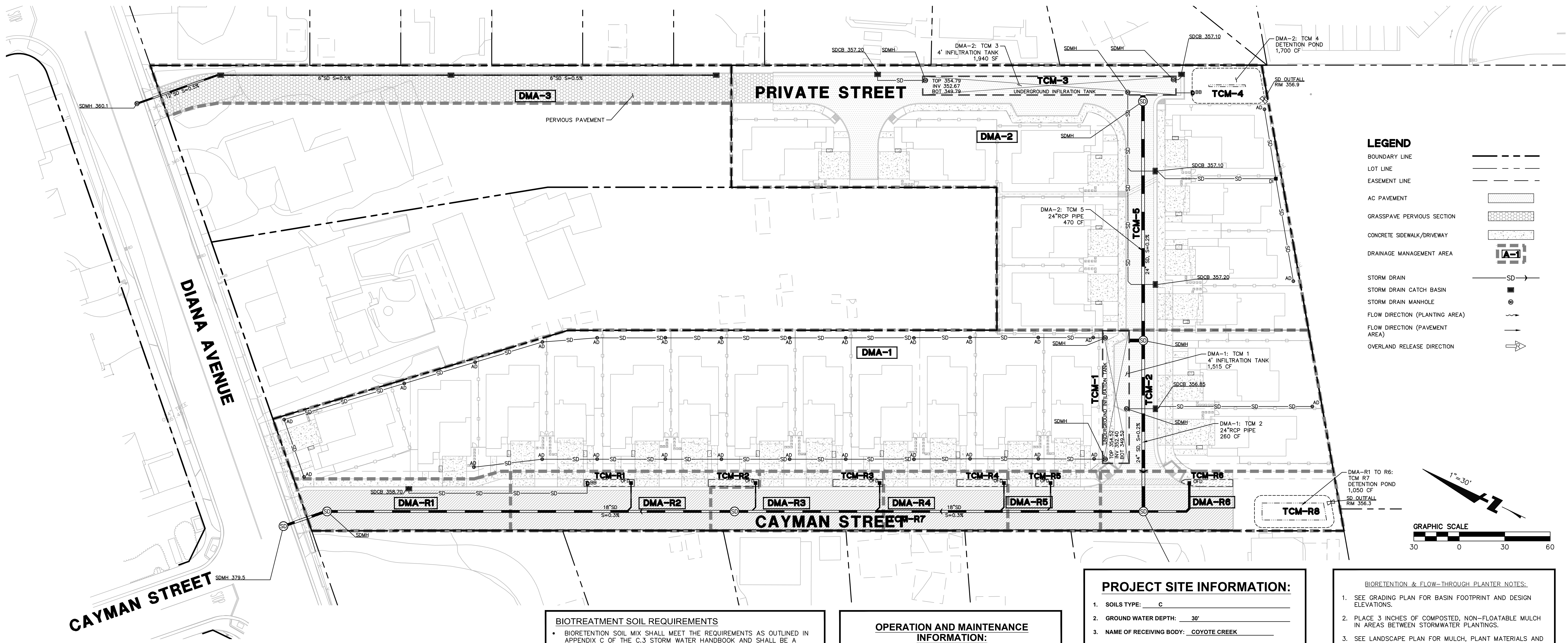


BKF ENGINEERS
1730 N. FIRST STREET
SUITE 600
SAN JOSE, CA 95112
(408) 467-9100
www.bkf.com

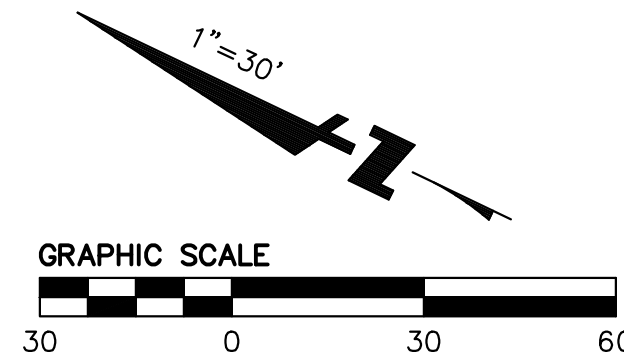
730 & 760 DIANA AVENUE PRELIMINARY STORMWATER CONTROL PLAN

C6.0
2/09/2024

20231724-10



- LEGEND**
- BOUNDARY LINE
 - LOT LINE
 - EASEMENT LINE
 - AC PAVEMENT
 - GRASSPAVE PERVIOUS SECTION
 - CONCRETE SIDEWALK/DRIVEWAY
 - DRAINAGE MANAGEMENT AREA
 - STORM DRAIN
 - STORM DRAIN CATCH BASIN
 - STORM DRAIN MANHOLE
 - FLOW DIRECTION (PLANTING AREA)
 - FLOW DIRECTION (PAVEMENT AREA)
 - OVERLAND RELEASE DIRECTION



BIOTREATMENT SOIL REQUIREMENTS

- BIOTREATMENT SOIL MIX SHALL MEET THE REQUIREMENTS AS OUTLINED IN APPENDIX C OF THE C3 STORM WATER HANDBOOK AND SHALL BE A MIXTURE OF FINE SAND AND COMPOST MEASURED ON A VOLUME BASIS OF 60-70% SAND AND 30-40% COMPOST. CONTRACTOR TO REFER TO APPENDIX C FOR SAND AND COMPOST MATERIAL SPECIFICATIONS. CONTRACTOR MAY OBTAIN A COPY OF THE C3 HANDBOOK AT: [HTTPS://CLEANWATER.SCCGOV.ORG/SITES/G/FILES/EXJCPB461/FILES/sovjrpmp_c.pdf](https://cleanwater.sccgov.org/sites/g/files/exjcpb461/files/sovjrpmp_c.pdf)
- PRIOR TO ORDERING THE BIOTREATMENT SOIL MIX OR DELIVERY TO THE PROJECT SITE, CONTRACTOR SHALL PROVIDE A BIOTREATMENT SOIL MIX SPECIFICATION CHECKLIST, COMPLETED BY THE SOIL MIX SUPPLIER AND CERTIFIED TESTING LAB.

PERVIOUS PAVEMENT REQUIREMENTS:

CONTRACTOR OR PERMITEE SHALL:

- PROVIDE CERTIFICATION FROM THE PAVEMENT MANUFACTURER THAT THE PAVEMENT MEETS THE REQUIREMENTS OF THE C3 STORMWATER HANDBOOK FOR PERVIOUS PAVEMENT. THIS INCLUDES, BUT IS NOT LIMITED TO, HAVING A MINIMUM SURFACE INFILTRATION RATE OF 100"/HR WHEN TESTED IN ACCORDANCE WITH ASTM C1701.
- ONLY CONTRACTORS HOLDING CERTIFICATION OF COMPLETION IN THE INTERLOCKING CONCRETE PAVEMENT INSTITUTES' P/CP INSTALLER TECHNICIAN COURSE SHALL BE USED TO INSTALL THE PAVEMENT AND AT LEAST ONE FOREMAN WITH THIS CERTIFICATION SHALL BE ON THE JOBSITE AT ALL TIMES DURING PERVIOUS CONCRETE INSTALLATION.
- PROTECT THE EXCAVATED AREA FOR PERVIOUS PAVEMENT FROM EXCESSIVE COMPACTION DUE TO CONSTRUCTION TRAFFIC AND PROTECT THE FINISHED PAVEMENT FROM CONSTRUCTION TRAFFIC.

OPERATION AND MAINTENANCE INFORMATION:

- I. PROPERTY INFORMATION:**
- I.A. PROPERTY ADDRESS:
730 & 760 DIANA AVENUE
MORGAN HILL, CA 95037
- I.B. PROPERTY OWNER:
DIANA AVENUE INVESTORS, LLC
- II. RESPONSIBLE PARTY FOR MAINTENANCE:**
- II.A. CONTACT:
JOSHUA VROTSOS
- II.B. PHONE NUMBER OF CONTACT:
(408) 779-5900
- II.C. EMAIL:
JVROTSOS@VIDENDHOMES.COM
- II.D. ADDRESS:
385 WOODVIEW AVENUE, STE 100
MORGAN HILL, CA 95037

PROJECT SITE INFORMATION:

- SOILS TYPE: C
- GROUND WATER DEPTH: 30'
- NAME OF RECEIVING BODY: COYOTE CREEK
- FLOOD ZONE: ZONE X
- FLOOD ELEVATION (IF APPLICABLE):

SOURCE CONTROL MEASURES:

- BENEFICIAL LANDSCAPING.
- USE OF WATER EFFICIENT IRRIGATION SYSTEMS.
- MAINTENANCE (PAVEMENT SWEEPING, CATCH BASIN CLEANING, GOOD HOUSEKEEPING).
- STORM DRAIN LABELING.

SITE DESIGN MEASURES:

- PROTECT EXISTING TREES, VEGETATION, AND SOIL.
- MINIMIZE COMPACTION OF HIGHLY PERMEABLE SOILS.
- LANDSCAPING
 - WALKWAYS AND PATIOS.
- DIRECT RUNOFF FROM ROOFS, SIDEWALKS, PATIOS, AND DRIVEWAYS TO LANDSCAPED AREAS.
- CLUSTER STRUCTURES/PAVEMENT.
- CONSTRUCT DRIVEWAYS WITH PERMEABLE SURFACES.

BIOTRETENTION & FLOW-THROUGH PLANTER NOTES:

- SEE GRADING PLAN FOR BASIN FOOTPRINT AND DESIGN ELEVATIONS.
- PLACE 3 INCHES OF COMPOSTED, NON-FLOATABLE MULCH IN AREAS BETWEEN STORMWATER PLANTINGS.
- SEE LANDSCAPE PLAN FOR MULCH, PLANT MATERIALS AND IRRIGATION REQUIREMENTS
- CURB CUTS SHALL BE A MINIMUM 18" WIDE AND SPACED AT MAXIMUM 10' O.C. INTERVALS AND SLOPED TO DIRECT STORMWATER TO DRAIN INTO THE BASIN. CURB CUTS SHALL ALSO NOT BE PLACED INLINE WITH OVERFLOW CATCH BASIN. SEE GRADING PLAN FOR MORE DETAIL ON LOCATIONS OF CURB CUTS.
- A MINIMUM 0.2' DROP BETWEEN STORM WATER ENTRY POINT (I.E. CURB OPENING, FLUSH CURB, ETC.) AND ADJACENT LANDSCAPE FINISHED GRADE.
- DO NOT COMPACT NATIVE SOIL / SUBGRADE AT BOTTOM OF BASIN. LOOSEN SOIL TO 12" DEPTH.

STANDARD STORMWATER CONTROL NOTES:

- STANDING WATER SHALL NOT REMAIN IN THE TREATMENT MEASURES FOR MORE THAN FIVE DAYS. TO PREVENT MOSQUITO GENERATION. SHOULD ANY MOSQUITO ISSUES ARISE, CONTACT THE SANTA CLARA VALLEY VECTOR CONTROL DISTRICT (DISTRICT). MOSQUITO LARVICIDES SHALL BE APPLIED ONLY WHEN ABSOLUTELY NECESSARY, AS INDICATED BY THE DISTRICT, AND THEN ONLY BY A LICENSED PROFESSIONAL OR CONTRACTOR. CONTACT INFORMATION FOR THE DISTRICT IS PROVIDED BELOW.
- DO NOT USE PESTICIDES OR OTHER CHEMICAL APPLICATIONS TO TREAT DISEASED PLANTS, CONTROL WEEDS OR REMOVED UNWANTED GROWTH. EMPLOY NON-CHEMICAL CONTROLS (BIOLOGICAL, PHYSICAL AND CULTURAL CONTROLS) TO TREAT A PEST PROBLEM. PRUNE PLANTS PROPERLY AND AT THE APPROPRIATE TIME OF YEAR. PROVIDE ADEQUATE IRRIGATION FOR LANDSCAPE PLANTS. DO NOT OVER WATER.

DRAWING NAME : C:\Temp\AcPub\11-sh-39752\06-01\DMA_SW.dwg
PLOT DATE: 02-08-24 PLOTTED BY: noon



BKf ENGINEERS
1730 N. FIRST STREET
SUITE 600
SAN JOSE, CA 95112
(408) 467-9100
www.bkf.com

730 & 760 DIANA AVENUE

PRELIMINARY STORMWATER CONTROL CALCULATIONS

C6.2
2/09/2024

20231724-10

ONSITE STORMWATER CALCULATION TABLES

TREATMENT CONTROL MEASURE SUMMARY TABLE																			
DMA #	TCM #	Location	Treatment Type	LID or Non-LID	Sizing Method	Drainage Area (SF)	Impervious Area (SF)	Pervious Area (Permeable Pavement) (SF)	Pervious Area (Other) (SF)	Runoff Coeff. "C"+	% Onsite Area Treated by LID or Non-LID TCM	Bioretention			Infiltration				
												Bioretention Area Required (4%)(SF)	Bioretention Area Provided (SF)	Overflow Riser Height (in)	85th% (1.2" Rain) Volume(CF)	95th% (1.7" Rain) Volume(CF)++	24 hr 25 year total rainfall (5.25" Rain) Volume(CF)+++	Impervious Area Type	Comments
1	1	Onsite	Subsurface Infiltration System	LID	N/A	56,016	30,083	0	25,933	0.364	54.15%	-	-	-	2,037	3,692	11,139	Roadway, Sidewalk, Roof	Infiltration Tank (0.5 in/hr, 4' deep tank)
2	3	Onsite	Subsurface Infiltration System	LID	N/A	47,430	31,500	520	15,410	0.461	45.85%	-	-	-	2,188	3,966	11,966	Roadway, Sidewalk, Roof	Infiltration Tank (0.5 in/hr, 4' deep tank)
3	-	Onsite	Self-treating areas	LID	N/A	9,600	0	7,100	2,500	0.040	9.28%	-	-	-	-	-	-	-	Permeable Pavement
Totals:						113,046	61,583	7,620	43,843	N/A	109.28%	0	0	N/A		7,658			

Footnotes:
+ C=0.858i³-0.78i²+0.774i+0.04, where "i" is the fraction of the tributary area that is impervious
++ TCM required storage volume equals full 95th% runoff with native soil infiltration if necessary
+++ Per City of Morgan Hill Master Plan, Sizing for Volume Retention in underground structures and ponding basins requires 1.25 Safety Factor

TREATMENT CONTROL MEASURE RETENTION VOLUME SIZING TABLE									
DMA #	TCM #	Location	Treatment Type	TCM Surface Area (SF)	TCM Retention Depth (ft)	TCM below ground volume (CF)	Infiltration Volume over 24 hours ³ (CF)	TCM total volume (CF)	Volume Check ³
1	1	Onsite	Subsurface Infiltration System	1,515	2.88	4,356	1,515	5,871	OK
2	3	Onsite	Subsurface Infiltration System	1,940	2.88	5,578	1,940	7,518	OK

Footnotes:
³Infiltration Rate set to 0.5 in/hr per for poor soil (Class D)

TREATMENT CONTROL MEASURE OVERLAND RELEASE SIZING TABLE												
DMA #	TCM #	Location	Retention Type	Pre Project Overland Release Volume allowed (CF)	Overland Release Volume Retention Required (CF)	Infiltration Tank Surface Area (SF)	Infiltration Tank Below Ground Volume (4' depth)	Detention Pipe- Length (LF)	Detention Pipe Volume- 24"(CF)	Detention Pond (CF)	TCM total volume (CF)	Volume Check
1	1, 2	Onsite	TCM 1: Infiltration Tank TCM 2: Detention Pipe	4,901	6,237	1,515	6,060	80	260	0	6,320	OK
2	3, 4, 5	Onsite	TCM 3: Infiltration Tank TCM 4: Detention Pipe TCM 5: Detention Pond	2,075	9,891	1,940	7,760	150	470	1,700	9,930	OK

OFFSITE STORMWATER CALCULATION TABLES

TREATMENT CONTROL MEASURE SUMMARY TABLE																		
DMA #	TCM #	Location	Treatment Type	LID or Non-LID	Sizing Method	Drainage Area (SF)	Impervious Area (SF)	Pervious Area (Permeable Pavement) (SF)	Pervious Area (Other) (SF)	Runoff Coeff. "C"+	% Onsite Area Treated by LID or Non-LID TCM	Bioretention Area Required (4%)(SF)	Bioretention		95th% (1.7" Rain) Volume(CF)++	24 hr 25 year total rainfall (5.25" Rain) Volume(CF)+++	Impervious Area Type	Comments
													Bioretention Area Provided (SF)	Overflow Riser Height (in)				
R1	R1	Offsite	Bioretention unlined w/ underdrain	LID	2C. Flow: 4% Method **	3,700	3,600	0	100	0.845	12.56%	144	148	12	453	1,368	Roadway, Sidewalk	In Ground Flow Through Planter Box
R2	R2	Offsite	Bioretention unlined w/ underdrain	LID	2C. Flow: 4% Method **	5,720	3,470	0	2,250	0.414	19.42%	148	148	12	343	1,036	Roadway, Sidewalk	In Ground Flow Through Planter Box
R3	R3	Offsite	Bioretention unlined w/ underdrain	LID	2C. Flow: 4% Method **	5,945	3,445	0	2,500	0.394	20.18%	148	148	12	339	1,024	Roadway, Sidewalk	In Ground Flow Through Planter Box
R4	R4	Offsite	Bioretention unlined w/ underdrain	LID	2C. Flow: 4% Method **	5,698	3,448	0	2,250	0.413	19.34%	147	148	12	341	1,029	Roadway, Sidewalk	In Ground Flow Through Planter Box
R5	R5	Offsite	Bioretention unlined w/ underdrain	LID	2C. Flow: 4% Method **	2,052	1,152	0	900	0.381	6.97%	50	52	12	113	342	Roadway, Sidewalk	In Ground Flow Through Planter Box
R6	R6	Offsite	Bioretention unlined w/o underdrain	LID	2C. Flow: 4% Method **	6,340	3,240	0	3,100	0.346	21.52%	142	142	-	318	961	Roadway, Sidewalk	In Ground Flow Through Planter Box
Totals:						29,455	18,355	0	11,100	N/A	100.00%	779	786	N/A	N/A	5,759		

Footnotes:
** Sizing for Bioretention Area Required calculated using the 4% Method ([Impervious Area + 0.1 x Pervious Area] x 0.04)
+ C=0.858i³-0.78i²+0.774i+0.04, where "i" is the fraction of the tributary area that is impervious
++ TCM required storage volume equals full 95th% runoff with native soil infiltration if necessary
+++ Per City of Morgan Hill Master Plan

TREATMENT CONTROL MEASURE RETENTION VOLUME SIZING TABLE													
DMA #	TCM #	Location	Treatment Type	TCM Top Surface Area (SF)	TCM Bottom Surface Area (SF)	TCM above ground volume (CF)	Ponding depth (in)	Bio soil media depth (in) ¹	Drain rock depth (in) ²	TCM below ground volume (CF)	Infiltration Volume over 24 hours ³ (CF)	TCM total volume (CF)	Volume Check
R1	R1	Offsite	Bioretention unlined w/o underdrain	148	148	148	12	12	26	165	148	461	OK
R2	R2	Offsite	Bioretention unlined w/o underdrain	148	148	148	12	12	18	126	148	422	OK
R3	R3	Offsite	Bioretention unlined w/o underdrain	148	148	148	12	12	18	126	148	422	OK
R4	R4	Offsite	Bioretention unlined w/o underdrain	148	148	148	12	12	18	126	148	422	OK
R5	R5	Offsite	Bioretention unlined w/o underdrain	52	52	52	12	12	18	44	52	148	OK
R6	R6	Offsite	Bioretention unlined w/o underdrain	142	142	142	12	12	18	121	142	405	OK
Footnotes:					786							2,280	

¹Assume 25% void ratio
²Assume 40% void ratio
³Infiltration Rate set to 0.5 in/hr per for poor soil (Class D)

TREATMENT CONTROL MEASURE OVERLAND RELEASE SIZING TABLE												
DMA #	TCM #	Location	Retention Type	Pre Project Overland Release Volume allowed (CF)	Overland Release Volume Retention Required (CF)*	Bioretention Surface Area (SF)	Bioretention Total Volume (CF)	Detention Pipe- Length (LF)	Detention Pipe Volume-18" (CF)	Detention Pond (CF)	TCM total volume (CF)	Volume Check
R1, R2, R3, R4, R5, R6	R1, R2, R3, R4, R5, R6, R7, R8	Offsite	TCM R1-R6: Bioretention TCM R7: Detention Pipe TCM R8 Detention Pond	2,577	3,977	786	2,280	415	705	1,050	4,035	OK

Footnotes:
* Sizing for Volume Retention in underground structures and ponding basins requires 25% Freeboard

Appendix 6.4

Central Coast SCM Sizing Calculator for PCR-2 Bioretention Areas

Central Coast Region Stormwater Control Measure Sizing Calculator

Version: 7/2/2018

1. Project Information

Project name:	Diana Avenue Public Street Development
Project location:	730 & 760 Diana Avenue, Morgan Hill
Tier 2/Tier 3:	Tier 2 - Treatment
Design rainfall depth (in):	1.2
Total project area (ft2):	29455
Total DMA area (ft2):	29455
Total new impervious area (ft2):	18355
Total replaced impervious within a USA (ft2):	0
Total replaced impervious not in a USA (ft2):	0
Total pervious/landscape area (ft2):	11100
Total SCM area (ft2):	786

Check Total DMA and SCM areas to ensure they match total project area

2. DMA Characterization

Name	DMA Type	Area (ft2)	Surface Type	New, Replaced?	Connection
R1 Impervious	Drains to SCM	3600	Concrete or asphalt	New	R1
R1 Pervious	Drains to SCM	100	Landscape	New	R1
R2 Impervious	Drains to SCM	3470	Concrete or asphalt	New	R2
R2 Pervious	Drains to SCM	2250	Landscape	New	R2
R3 Impervious	Drains to SCM	3445	Concrete or asphalt	New	R3
R3 Pervious	Drains to SCM	2500	Landscape	New	R3
R4 Impervious	Drains to SCM	3448	Concrete or asphalt	New	R4
R4 Pervious	Drains to SCM	2250	Landscape	New	R4
R5 Impervious	Drains to SCM	1152	Concrete or asphalt	New	R5
R5 Pervious	Drains to SCM	900	Landscape	New	R5
R6 Impervious	Drains to SCM	3240	Concrete or asphalt	New	R6
R6 Pervious	Drains to SCM	3100	Landscape	New	R6

DMA Summary Area	
Total assigned DMA area (ft2):	29455
New impervious area (ft2):	18355
Replaced impervious within a USA (ft2):	0
Replaced impervious not in a USA (ft2):	0
Total pervious/landscape area (ft2):	11100

3. SCM Characterization

						Flow Control	Reservoir
Name	SCM Type	Safety Factor	SCM Soil Type	Infiltr. Rate (in/hr)	Area (ft2)	Orifice?	Depth (in)
R1	Bioretention	1	Site-Specific	0.5	148	Yes	12
R2	Bioretention	1	Site-Specific	0.5	148	Yes	12
R3	Bioretention	1	Site-Specific	0.5	148	Yes	12
R4	Bioretention	1	Site-Specific	0.5	148	Yes	12
R5	Bioretention	1	Site-Specific	0.5	52	Yes	12
R6	Bioretention	1	Site-Specific	0.5	142	Yes	12

4. Run SBUH Model

5. SCM Minimum Sizing Requirements

SCM Name	Minimum SCM Area (ft2)
R1	144
R2	148
R3	148
R4	147
R5	50
R6	142

Central Coast Region Stormwater Control Measure Sizing Calculator

Version: 7/2/2018

1. Project Information

Project name:	Diana Avenue Public Street Development
Project location:	730 & 760 Diana Avenue, Morgan Hill
Tier 2/Tier 3:	Tier 2 - Storage
Design rainfall depth (in):	1.2
Total project area (ft2):	29455
Total DMA area (ft2):	29455
Total new impervious area (ft2):	18355
Total replaced impervious within a USA (ft2):	0
Total replaced impervious not in a USA (ft2):	0
Total pervious/landscape area (ft2):	11100
Total SCM area (ft2):	786

Check Total DMA and SCM areas to ensure they match total project area

2. DMA Characterization

Name	DMA Type	Area (ft2)	Surface Type	New, Replaced?	Connection
R1 Impervious	Drains to SCM	3600	Concrete or asphalt	New	R1
R1 Pervious	Drains to SCM	100	Landscape	New	R1
R2 Impervious	Drains to SCM	3470	Concrete or asphalt	New	R2
R2 Pervious	Drains to SCM	2250	Landscape	New	R2
R3 Impervious	Drains to SCM	3445	Concrete or asphalt	New	R3
R3 Pervious	Drains to SCM	2500	Landscape	New	R3
R4 Impervious	Drains to SCM	3448	Concrete or asphalt	New	R4
R4 Pervious	Drains to SCM	2250	Landscape	New	R4
R5 Impervious	Drains to SCM	1152	Concrete or asphalt	New	R5
R5 Pervious	Drains to SCM	900	Landscape	New	R5
R6 Impervious	Drains to SCM	3240	Concrete or asphalt	New	R6
R6 Pervious	Drains to SCM	3100	Landscape	New	R6

DMA Summary Area	
Total assigned DMA area (ft2):	29455
New impervious area (ft2):	18355
Replaced impervious within a USA (ft2):	0
Replaced impervious not in a USA (ft2):	0
Total pervious/landscape area (ft2):	11100

3. SCM Characterization

Name	SCM Type	Safety Factor	SCM Soil Type	Infiltr. Rate (in/hr)	Area (ft2)	Flow Control	Reservoir
						Orifice?	Depth (in)
R1	Bioretention	1	Site-Specific	0.5	148	Yes	12
R2	Bioretention	1	Site-Specific	0.5	148	Yes	12
R3	Bioretention	1	Site-Specific	0.5	148	Yes	12
R4	Bioretention	1	Site-Specific	0.5	148	Yes	12
R5	Bioretention	1	Site-Specific	0.5	52	Yes	12
R6	Bioretention	1	Site-Specific	0.5	142	Yes	12

4. Run SBUH Model

5. SCM Minimum Sizing Requirements

SCM Name	Min. Required Storage Vol. (ft3)	Depth Below Underdrain (ft)	Drain Time (hours)
R1	188	3.17	30.2
R2	180	3.03	29.0
R3	178	3.01	28.7
R4	178	3.01	28.7
R5	58	2.79	26.6
R6	166	2.93	28.0

Appendix 6.5

Preliminary Post-Construction Requirements Calculation



San Jose Office
1730 N. First Street, Suite 600
San Jose, CA, 95112
Tel 408.467.9100
Fax 408.467.9199

General Hydrology Calculations

A. PRE-PROJECT FLOW CALCULATION

STEP 1: RATIONAL FORMULA - PEAK FLOW RATE

$$Q = C_f \times I \times A$$

Where:

Q	=	Peak Flow-rate (cfs)
C _f	=	Runoff coefficient (from Step 4)
f	=	Adjusting factor for 10, 25, 50 and 100-year storms (f _{10 year} = 1.0)
i	=	Rainfall Intensity (inches/hr from Step 3)
A	=	Total Drainage Management Area (acres from Step 2)

Q _{pre-project}	=	1.39 cfs
--------------------------	---	----------

STEP 2: WATERSHED AREA (PROJECT LIMIT OF WORK)

This calculation is limited to the project drainagemangement area shown in the stormwater control plan (see attached Exhibit A)

Total Impervious Area (pre-project)	=	12,000	sf
Total Pervious Area (pre-project)	=	120,904	sf
Total Area	=	132,904	sf 3.05 acre

STEP 3: RAINFALL INTENSITY

95th/24 hr Percentile Rainfall (in)

Per Stormwater Management Guidance Manual Appendix C- Santa Clara Map

i	=	1.70 inch/hr
---	---	--------------

STEP 4: RUNOFF COEFFICIENT

Land Use	Runoff Coefficient	Area (sf)
Street, Driveway, Walkway, Roof	0.95	12000
Open Space	0.2	120904
Average C _f :	0.27	

B. POST-PROJECT FLOW CALCULATION

STEP 1: RATIONAL FORMULA

$$Q = C_f \times I \times A$$

Where:

Q	=	Peak Flow-rate (cfs)
C _f	=	Runoff coefficient (from Step 4)
f	=	Adjusting factor for 10, 25, 50 and 100-year storms (f _{10 year} = 1.0)
i	=	Rainfall Intensity (inches/hr from Step 3)
A	=	Total Drainage Management Area (acres from Step 2)

Q _{post-project}	=	3.38 cfs
---------------------------	---	----------

STEP 2: WATERSHED AREA (PROJECT LIMIT OF WORK)

This calculation is limited to the project drainagemangement area shown in the stormwater control plan (attached).
(see attached Exhibit A)

Total Impervious Area (post-project)	=	79,939 sf	
Existing Impervious Area	=	31,798 sf	
Proposed Impervious Area	=	55,531 sf	
Total Pervious Area (post-project)	=	52,965 sf	
Total Area A	=	132,904 sf	3.05 acre

STEP 3: RAINFALL INTENSITY

95th/24 hr Percentile Rainfall (in)

Per Stormwater Management Guidance Manual Appendix C- Santa Clara Map

i	=	1.70 inch/hr
---	---	--------------

STEP 4: RUNOFF COEFFICIENT

Land Use	Runoff Coefficient	Area (sf)
Street, Driveway, Walkway, Roof	0.95	79939
Open Space	0.2	52965
Average C _f :	0.65	



San Jose Office
1730 N. First Street, Suite 600
San Jose, CA, 95112
Tel 408.467.9100
Fax 408.467.9199

PCR 2: Treatment Calculation for 85th/25 hour rain event Stormwater Management Guidance Manual (June 2015)

A. Treatment Volume

2) Determination of Retention Volume

- Based on the Regulated Project's Watershed Management Zone (WMZ), determine the Regulated Project's Runoff Retention Requirement (e.g., retain 95th Percentile 24-hour Rainfall Event, or, retain 85th Percentile 24-hour Rainfall Event) from the WMZ map in Appendix C of this Manual.
- Determine the 85th or 95th percentile 24-hour rainfall event depth from the Rainfall Maps in Appendix C of this Manual.
- Compute the Runoff Coefficient¹⁶ "C" for the area tributary to the SCM, using the equation:

$$C = 0.858i^3 - 0.78i^2 + 0.774i + 0.04$$

Where "i" is the fraction of the tributary area that is impervious¹⁷

Note: If the Retention Tributary Area is 100% impervious (i.e., "i" = 1.0), then C = 0.89.

- Compute the Retention Volume:

$$\text{Retention Volume} = C \times \text{Rainfall Depth} \times \text{Retention Tributary Area}$$

$$\text{Retention Volume for 85th Percentile 24-hr Rainfall Depth} = C \times \text{Rainfall Depth}_{85th} \times \text{Retention Tributary Area}$$

85th/24 hr Percentile Rainfall (in)	1.20 inch/hr
Treatment Volume per Hydrology Calculations= $V=C*i/12*A$	5899.52 cf
Infiltration Rate (in/hr) based on adjacent project (Holiday Inn)-	0.72 inch/hr
Site Specific geotechnical investigation for infiltration rate is ongoing	

See SCM Calculator for Public Street Bioretention Area Calculations

B. Required Treatment Surface Area

STEP 2: Calculate the surface area needed to infiltrate the treatment volume within 48 hours.

48 Hour Standing Water Restriction

Volume infiltrated in 48 hours- V infil	$(\text{infiltration rate}/12*48)=$	2.88 ft
Treatment Surface Area Required	V/V infil=	2048.4434 sf

Tank Infiltration Surface Area Required= 2048.44 sf

PCR 3 Detention Tank Surface Area Required= 2,176.47 sf

PCR 3 Tank Requirements are more than PCR 2. PCR 3 requirements govern for treatment and retention.



San Jose Office
 1730 N. First Street, Suite 600
 San Jose, CA, 95112
 Tel 408.467.9100
 Fax 408.467.9199

PCR 3: Volume Calculations for 95th Percentile Stormwater Management Guidance Manual (June 2015)

A. Detention Volume Requirements

2) Determination of Retention Volume

- a) Based on the Regulated Project's Watershed Management Zone (WMZ), determine the Regulated Project's Runoff Retention Requirement (e.g., retain 95th Percentile 24-hour Rainfall Event, or, retain 85th Percentile 24-hour Rainfall Event) from the WMZ map in Appendix C of this Manual.
- b) Determine the 85th or 95th percentile 24-hour rainfall event depth from the Rainfall Maps in Appendix C of this Manual.
- c) Compute the Runoff Coefficient¹⁶ "C" for the area tributary to the SCM, using the equation:

$$C = 0.858i^3 - 0.78i^2 + 0.774i + 0.04$$

Where "i" is the fraction of the tributary area that is impervious¹⁷

Note: If the Retention Tributary Area is 100% impervious (i.e., "i" = 1.0), then C = 0.89.

- d) Compute the Retention Volume:

$$\text{Retention Volume} = C \times \text{Rainfall Depth} \times \text{Retention Tributary Area}$$

$$\text{Retention Volume for 85th Percentile 24-hr Rainfall Depth} = C \times \text{Rainfall Depth}_{85th} \times \text{Retention Tributary Area}$$

Step 1: Find the 95th Percentile Volume Calculations

95th/24 hr Percentile Rainfall (in)	1.70 inch/hr
Detention Volume per Hydrology Calculations= $V=C \times i / 12$	10829.31 cf
25% Freeboard On Ponding Basin=	13536.64 cf
City applies 25% freeboard to all retention requirements	

B. Private Tank Detention

STEP 2: Calculate the surface area required

Detention Tank Volume Required (no public street/bioretenion volume)	10447.06 cf
Detention Tank Depth Proposed	4.8 ft

Detention Tank Surface Area Provided=	2176.47 sf
---------------------------------------	------------

PCR 2 Tank Infiltration Surface Area Required=	2,048.44 sf
--	-------------

PCR 3 Tank Requirements are more than PCR 2. PCR 3 requirements govern for treatment and retention.

C. Public Bioretention Detention Volume

STEP 2: Calculate the surface area required

Bioretention Detention Volume Required (no private property volume)	2471.66 cf
Bioretention Surface Area required per SCM Calculator	734.24 sf
Ponding Depth	= 12 inches
Soil Ponding (.4 porosity*30" Soil Section)	= 12 inches
Infiltration Rate per(in/hr)	= 0.72 in/hr
Bioretention Volume (infiltrated in 24 hours+section)	2,545.60 sf

PCR 3 Volume Requirements are fulfilled by PCR 2 bioretention treatment requirements for the public street.



San Jose Office
 1730 N. First Street, Suite 600
 San Jose, CA, 95112
 Tel 408.467.9100
 Fax 408.467.9199

Morgan Hill Overland Release Detention
 Morgan Hill Storm Drain Design Standards
 Stormwater Management Guidance Manual (June 2015)

PCR 4 requires retention of 10 yr storm event to match pre-project condition. Less restrictive than City 100 year overland release requirement.

A. Initial Project Volume Calculations

STEP 1: Determine the Pre and Post Stormwater Volumes

24 Hour/25 year total rainfall (Per Master Plan)	i	5.3	in
$V_{pre-project}$	$V=C*i/12*A$	=	9,962.1 cf
$V_{post-project}$	$V=C*i/12*A$	=	33,443.5 cf
Retention Volume Required	=	23,481.4	cf
25% Freeboard On Ponding Basin=		29,351.8	cf
City applies 25% freeboard to all retention requirements			

STEP 2: Determine the PCR 3 Volumes

PCR 3 Detention Tank Volume Provided	=	10,447.1	cf
Infiltration rate (in/hr)	=	0.7	in/hr
PCR 3 Tank Infiltration Volume over 24 hours	=	1,852.6	cf
PCR 3 Bioretention Volume Provided	=	1,480.0	cf
PCR 3 Bioretention Infiltration over 24 hours	=	1,065.6	cf
Retention Volume Required after PCR3		14,506.5	cf

B. Morgan Hill Additional Volume Requirements

STEP 3: Determine Available Ponding Basin Volumes

Ponding Basin 1 Volume	=	3,000.0	cf
Basin 1 Infiltration Volume	=	1,383.8	cf
Ponding Basin 2 Volume	=	2,000.0	cf
Basin 2 Infiltration Volume	=	1,095.8	cf
Total Ponding Basin Volume	=	7,479.7	cf
Retention Volume Required after Basins	=	7,026.8	cf

STEP 4: Determine Available Oversized Pipe Volumes

Pipe 2- 24 inch 85 LF	=	267.0	cf
Pipe 1- 24 inch 150 LF	=	471.2	cf
Total Pipe Volume	=	738.3	cf
Retention Volume Required after Basins	=	6,288.6	cf

STEP 4: Determine Additional 5' depth Detention Tank Surface Area

Detention Tank depth	=	5	ft
Additional Detention Tank Surface Area Required	=	1,257.7	sf

C. Project Final Stormwater Review

STEP 5: List All Stormwater construction items

PCR 3 Detention Tank Voume Provided	=	10,447.1	cf
Morgan Hill Detention tank volume Provided	=	6,288.6	cf
Detention Tank depth	= 5	ft	
Detention Tank Surface Area	=	3347.1	sf
PCR 2 Bioretention Treatment Area	=	734.24	sf
Ponding Basin Volume		5,000.0	cf
24 inch Oversized Pipe provided	=	235	lf

Appendix 6.6

Post Construction BMP Maintenance and/or Source Control Activities Table

**Storm Water Treatment Measure Operation and Maintenance
Inspection Report for the Holiday Inn Express Morgan Hill Project**

This report and attached Inspection and Maintenance Checklists document the inspection and maintenance conducted for the identified storm water treatment measure(s) subject to the Maintenance Agreement between the City and the property owner during the annual reporting period indicated below.

I. Property Information:

Property Address or APN: 730 & 760 Diana Avenue, Morgan Hill, CA 95037 (APN 726-06-013 & 726-06-015)

Property Owner: Diana Avenue Investors, LLC

II. Contact Information:

Name of person to contact regarding this report: Joshua Vrotsos

Phone number of contact person: 408.779.5900 Email: jvrotsos@dividendhomes.com

Address to which correspondence regarding this report should be directed:

385 Woodview Avenue, Suite 100

Morgan Hill, CA 95037

III. Reporting Period:

This report, with the attached completed inspection checklists, documents the inspections and maintenance of the identified treatment measures during the time period from _____ to _____.

IV. Stormwater Treatment Measure Information:

The following stormwater treatment measures (identified treatment measures) are located on the property identified above and are subject to the Maintenance Agreement:

Identifying Number of Treatment Measure	Type of Treatment Measure	Location of Treatment Measure on the Property
TCM-1	Subsurface Infiltration Tank	West end of east-west private street
TCM-3	Subsurface Infiltration Tank	South end of north-south private street
TCM-R1	In-Ground Flow-Through Planter Box	Planting strip in Cayman Street sidewalk
TCM-R2	In-Ground Flow-Through Planter Box	Planting strip in Cayman Street sidewalk
TCM-R3	In-Ground Flow-Through Planter Box	Planting strip in Cayman Street sidewalk
TCM-R4	In-Ground Flow-Through Planter Box	Planting strip in Cayman Street sidewalk

TCM-R5	In-Ground Flow-Through Planter Box	Planting strip in Cayman Street sidewalk
TCM-R6	In-Ground Flow-Through Planter Box	Planting strip in Cayman Street sidewalk

V. Summary of Inspections and Maintenance:

Summarize the following information using the attached Inspection and Maintenance Checklists:

Identifying Number of Treatment Measure	Date of Inspection	Operation and Maintenance Activities Performed and Date(s) Conducted	Additional Comments
TCM-1			
TCM-3			
TCM-R1			
TCM-R2			
TCM-R3			
TCM-R4			
TCM-R5			
TCM-R6			

VI. Sediment Removal:

Total amount of accumulated sediment removed from the stormwater treatment measure(s) during the reporting period: _____ cubic yards.

How was sediment disposed?

- ☐ landfill
- ☐ other location on-site as described in and allowed by the maintenance plan
- ☐ other, explain _____

VII. Inspector Information:

The inspections documented in the attached Inspection and Maintenance Checklists were conducted by the following inspector(s):

Inspector Name and Title	Inspector's Employer and Address

VIII. Certification:

I hereby certify, under penalty of perjury, that the information presented in this report and attachments is true and complete:

Signature of Property Owner or Other Responsible Party

Date

Type or Print Name

Company Name

Address

Phone number: _____ Email: _____

Appendix 6.7

SAMPLE BMP INSPECTION & MAINTENANCE FORM

Date: _____

Responsible Inspector: _____

LANDSCAPE MAINTENANCE

<u>Location</u>	<u>Date</u>	<u>Observations</u> Maintenance or Repair Needed? Debris? Erosion Problems?	<u>Action Taken</u>	<u>Date</u> <u>Completed</u>

STORM DRAINAGE COLLECTION SYSTEM MAINTENANCE

<u>Location</u>	<u>Date</u>	<u>Observations</u> Debris or Sediment? Silt Accumulation?	<u>Action Taken</u>	<u>Date</u> <u>Completed</u>

STORMWATER TREATMENT SYSTEM MAINTENANCE

<u>Location</u>	<u>Date</u>	<u>Observations</u> Flow Obstructions? Overflow Drain Obstructions? Debris or Sediment? Erosion Problems?	<u>Action Taken</u>	<u>Date</u> <u>Completed</u>

SAMPLE FORM ONLY
INSPECTOR/OWNER TO EXPAND AND MODIFY AS NECESSARY

Appendix 6.8

Employee Training Program Table

Table A-4: Employee Training Program

Name of Responsible Part responsible for training: _____		
Provide the following information:		
Address _____		
Phone _____ Fax _____ E-mail: _____		
Description of Items for Training (e.g. maintenance, inspection, pesticide use, others as applicable to site)	Training Schedule	Employees To Be Trained (Job Category or Title)
Maintenance	Yearly	Property Management
Inspection	Yearly	Property Management

Appendix 6.9

Maintenance Agreement

RECORDING REQUESTED BY:

CITY OF MORGAN HILL

**WHEN RECORDED MAIL DOCUMENT
TO:**

CITY CLERK
CITY OF MORGAN HILL
17575 PEAK AVENUE
MORGAN HILL, CA 95037

RECORD AT NO FEE PER
GOVERNMENT CODE SECTIONS 6103
& 27383

APN:

SPACE ABOVE THIS LINE FOR RECORDER'S USE

**STORMWATER BEST MANAGEMENT PRACTICES,
OPERATION, AND MAINTENANCE AGREEMENT**

Upon completion of your review of this document, please initial the lines below to indicate that you understand its contents, including the following:

_____ I understand that my property is subject to ongoing water quality regulations and that my property may have stormwater treatment areas and facilities.

_____ I understand that there may be areas on my property that are reserved for stormwater treatment and which cannot be significantly altered, improved, or built upon.

_____ I understand that I will be responsible for having the stormwater treatment areas and facilities inspected regularly by a Qualified Stormwater Practitioner (QSP), in compliance with City and State regulations.

_____ I understand that I will be responsible for ensuring that all stormwater treatment areas and facilities continue to function satisfactorily, and I will have maintenance completed, as needed, based on inspection findings.

_____ I understand that there is an annual fee I will need to pay for the City's administration of this program.

_____ I understand that the fee for City administration of this program does not include inspections, and I will be expected to hire and pay my chosen QSP.

_____ I understand that some of the stormwater treatment facilities serving my property may be on a nearby property and that I may have a proportional responsibility for their inspection, operation, and maintenance.

THIS STORMWATER BEST MANAGEMENT PRACTICES OPERATION, AND MAINTENANCE AGREEMENT ("AGREEMENT") is made and entered into this _____ day of _____, (**ENTER YEAR**), by (**ENTER OWNER/HOA**), (hereinafter referred to as "COVENANTOR") and the City of Morgan Hill ("CITY"). CITY and COVENANTOR may be referred to individually as a "Party" or collectively as the "Parties" throughout this AGREEMENT.

RECITALS:

This AGREEMENT is made and entered into with reference to the following facts:

- A. CITY is authorized and required to regulate and control the disposition of storm and surface waters as set forth in CITY's National Pollutant Discharge Elimination System permit.
- B. COVENANTOR is the owner of a certain tract or parcel of land more particularly described in Exhibit "A" attached hereto and incorporated herein by this reference (the "PROPERTY").
- C. COVENANTOR desires to construct certain improvements of the kind or nature described in Morgan Hill Municipal Code Chapter 18.140 (the "ORDINANCE") on the PROPERTY that may alter existing stormwater conditions on both the PROPERTY and adjacent lands.
- D. To minimize adverse impacts due to these anticipated changes in existing storm and surface water flow conditions, COVENANTOR is required by CITY to implement Best Management Practices ("BMPs") and to build and maintain, at COVENANTOR's expense, stormwater management facilities ("FACILITIES"), more particularly described and shown in the (**ENTER NAME OF STORMWATER MAINTENANCE PLAN**) prepared by (**ENTER CIVIL ENGINEER COMPANAY**) and dated (**ENTER DATE OF PLAN**), which plans and any amendments thereto, are on file with CITY's Engineering & Utilities Department, and are hereby incorporated by this reference.
- E. CITY has reviewed and approved the Stormwater Runoff Management Plan (the "PLAN") subject to the execution of this AGREEMENT.

NOW, THEREFORE, in consideration of the benefit received and to be received by COVENANTOR, its successors, and assigns, as a result of CITY's approval of the Stormwater Runoff Management Plan, COVENANTOR, hereby covenants and agrees with CITY as follows:

- 1. Covenants Running with the Land; Property Subject to Agreement: All of the real property described in Exhibit "A" shall be subject to this AGREEMENT. It is intended and determined that the provisions of this AGREEMENT shall run with the land and shall be binding on all parties having or acquiring any right, title, or interest in the real PROPERTY or any portion thereof and shall be for the benefit of each owner of any of said parcels or any portion of said PROPERTY and shall inure to the benefit of and be binding upon each successor in interest of the owners thereof. Each and all of the limitations, easements, obligations, covenants, conditions, and restrictions contained herein shall be deemed to be, and shall be construed as, equitable servitudes, enforceable by any of the owners of any of the PROPERTY subject to this AGREEMENT against any other owner, tenant or occupant of the said PROPERTY, or any portion thereof.
- 2. Responsibility for Installation, Operation, and Maintenance: At its sole expense, COVENANTOR, its successors, and assigns, shall construct, operate, and perpetually maintain the FACILITIES in strict accordance with the PLAN and any amendments thereto that have been approved by CITY or required by the ORDINANCE. COVENANTORS with structural FACILITIES serving their property shall conduct inspections on the property in accordance with Exhibit "B."
- 3. Facility Modifications: At its sole expense, COVENANTOR, its successors, and assigns, shall make such changes or modifications to the FACILITIES as may be determined as reasonably necessary by CITY to ensure that the FACILITIES are properly maintained

and continue to operate as originally designed and approved. COVENANTOR agrees that it shall not modify the BMPs and shall not allow BMP maintenance activities to alter the designed function of the FACILITIES from its original design unless approved by CITY prior to the commencement of the proposed modification or maintenance activity.

4. Facility Inspections by City: At reasonable times and in a reasonable manner as provided in the ORDINANCE, CITY, its agents, employees, and contractors shall have the right of ingress and egress to the FACILITIES and the right to inspect the FACILITIES in order to ensure that the FACILITIES are being properly maintained, are continuing to perform in an adequate manner, and are in compliance with the ORDINANCE, the PLAN and any amendments thereto approved by CITY.
5. Failure to Perform Required Facility Repairs or Modifications: Should either COVENANTOR or its successors and assigns fail to implement the BMPs, maintain the FACILITIES, or correct any defects in the FACILITIES in accordance with the approved design standards and/or the PLAN, and in accordance with the law and applicable regulations of the ORDINANCE, after thirty (30) days from the date of the written notice from CITY, CITY shall have the right to enter the PROPERTY to perform remedial work, for which CITY will collect reimbursement for such work from COVENANTOR. Additionally, conditions from failure to implement the BMPs or to maintain or correct the FACILITIES shall be deemed a nuisance subject to abatement of such conditions as provided in Chapter 1.18 of the Morgan Hill Municipal Code. In addition, CITY may pursue other such remedies as provided by law, including, but not limited to, such civil and criminal remedies set forth in the ORDINANCE.
6. Indemnity: COVENANTOR, its successors, and assigns, shall defend, indemnify, and hold CITY harmless of and from any and all claims, liabilities, actions, causes of action, and damages for personal injury and property damage, including, without limitation, reasonable attorneys' fees, arbitration fees, or costs and court costs, arising out of or related to COVENANTOR's, its successors', and/or assigns' construction, operation, or maintenance of the FACILITIES except claims, liabilities, actions, causes of action, and damages that arise out of CITY's sole negligence or willful misconduct or the sole negligence or willful misconduct of any of CITY'S employees, agents, representatives, contractors, vendors, or consultants.
7. Obligations and Responsibilities of Covenantor: Initially, COVENANTOR is solely responsible for the performance of the obligations required hereunder and, to the extent permitted under applicable law, the payment of any and all fees, fines, and penalties associated with such performance or failure to perform under this AGREEMENT. Notwithstanding any provisions of this AGREEMENT to the contrary, upon the recordation of a deed or other instrument of sale, transfer or other conveyance of fee simple title to the PROPERTY or any portion thereof (a "Transfer") to a third party (the "Transferee"), COVENANTOR shall be released of all of its obligations and responsibilities under this AGREEMENT accruing after the date of such Transfer to the extent such obligations and responsibilities are applicable to that portion of the PROPERTY included in such Transfer, but such release shall be expressly conditioned upon the Transferee assuming such obligations and responsibilities by recorded written agreement for the benefit of CITY. Such written agreement may be included in the Transfer deed or instrument, provided that the Transferee joins in the execution of such deed or instrument. A certified copy of such deed, instrument, or agreement shall be provided to CITY. The provisions of the preceding three sentences shall be applicable to the original COVENANTOR and any successor Transferee who has assumed the obligations and responsibilities of COVENANTOR under this AGREEMENT as provided above.

COVENANTOR is responsible for paying to CITY an annual administrative fee as established by City Council to cover costs associated with review of inspection reports, logging inspections as required for compliance with CITY'S Phase II NPDES Permit, reporting to the Regional Water Quality Control Board, and follow-up as needed. City Council shall update fee schedules thereafter as applicable in perpetuity. COVENANTOR will be responsible for paying late fees and other penalties for submitting inspection reports and other documentation required by CITY more than seven days after submission deadlines.

8. Property Transfer: Nothing herein shall be construed to prohibit a transfer by COVENANTOR to subsequent owners and assigns.
9. Attorneys' Fees: In the event that any Party institutes legal action or arbitration against the other to interpret or enforce this AGREEMENT, or to obtain damages for any alleged breach hereof, the prevailing party in such action or arbitration shall be entitled to reasonable attorneys' or arbitrators' fees in addition to all other recoverable costs, expenses, and damages.
10. Further Documents: The Parties covenant and agree that they shall execute such further documents and instructions as shall be necessary to fully effectuate the terms and provisions of this AGREEMENT.
11. Entire Agreement: This AGREEMENT constitutes the entire agreement of the Parties with respect to the subject matter contained herein and supersedes all prior agreements, whether written or oral. There are no representations, agreements, arrangements, or undertakings, oral or written, that are not fully expressed herein.
12. Severability: In the event any part or provision of this AGREEMENT shall be determined to be invalid or unenforceable under the laws of the State of California, the remaining portions of this AGREEMENT that can be separated from the invalid, unenforceable provisions shall, nevertheless, continue in full force and effect.
13. No Waiver: The waiver of any covenant contained herein shall not be deemed to be a continuing waiver of the same or any other covenant contained herein.
14. Amendment: This AGREEMENT may be amended in whole or in part only by mutual written agreement. Any such amendment shall be recorded in Santa Clara County, California. In the event any conflict arises between the provisions of any such amendment and any of the provisions of any earlier document or documents, the most recently duly executed and recorded amendment shall be controlling.
15. Authority to Execute: The persons executing this AGREEMENT on behalf of the parties warrant that they are duly authorized to execute this AGREEMENT.

//

//

//

//

//

//

16. In the event that CITY shall determine, at its sole discretion, at any future time, that the FACILITIES are no longer required, then at the written request of COVENANTOR, its successors, and/or assigns, CITY shall execute a release of this AGREEMENT which COVENANTOR, its successors, and/or assigns, shall record in the Recorder's Office, at its expense.

Executed the day and year first above written.

COVENANTOR:

By: _____

Name: (ENTER NAME)

Title: (ENTER TITLE)

CITY OF MORGAN HILL:

By: _____

Name: SCOTT C. CREER

Title: CITY ENGINEER, CITY OF MORGAN HILL

APPROVED AS TO FORM:

By: _____

Name: DONALD A. LARKIN

Title: CITY ATTORNEY, CITY OF MORGAN HILL

EXHIBIT "A"

ENTER TITLE

ENTER LEGAL DESCRIPTION;

(ATTACH PLAT AS NEEDED)

EXHIBIT "B"

INSPECTION REQUIREMENTS

Inspections shall occur on a schedule compliant with the requirements imposed by the State of California. At this time, the following requirements are in place:

- (a) The COVENANTOR shall be responsible for having all stormwater management facilities inspected for condition and function by a certified Qualified Stormwater Practitioner (QSP).
- (b) Stormwater facility inspections completed by the QSP shall be completed once in the fall in preparation for the wet season, and once in the spring. Fall inspections shall include a visual inspection only. The spring inspection shall include a visual inspection as well as completion of technical tests and observations required under the CITY'S Phase II National Pollutant Discharge Elimination System (NPDES) Permit. COVENANTOR shall provide the CITY with records of inspections using the City's approved visual inspection report template (fall and spring inspections) and applicable City approved technical field data sheets (spring inspection only). COVENANTOR shall submit to the CITY all inspection documents with completed records of inspections, maintenance, and repair.

COVENANTOR understands that these requirements may be changed in the future as the direct result of changes in the regulations imposed on CITY or COVENANTOR by the State of California. CITY shall provide COVENANTOR with reasonable notice of changes in these requirements.

Appendix 6.10

Stormwater Detention Product Information



UrbanPond[®] Concrete Stormwater Detention



The experts you need to solve your stormwater challenges



Contech is the leader in stormwater solutions, helping engineers, contractors and owners with infrastructure and land development projects throughout North America.

With our responsive team of stormwater experts, local regulatory expertise and flexible solutions, Contech is the trusted partner you can count on for stormwater management solutions.

Your Contech Team



STORMWATER CONSULTANT

It's my job to recommend the best solution to meet permitting requirements.



STORMWATER DESIGN ENGINEER

I work with consultants to design the best approved solution to meet your project's needs.



REGULATORY MANAGER

I understand the local stormwater regulations and what solutions will be approved.



SALES ENGINEER

I make sure our solutions meet the needs of the contractor during construction.

Contech is your partner in stormwater management solutions



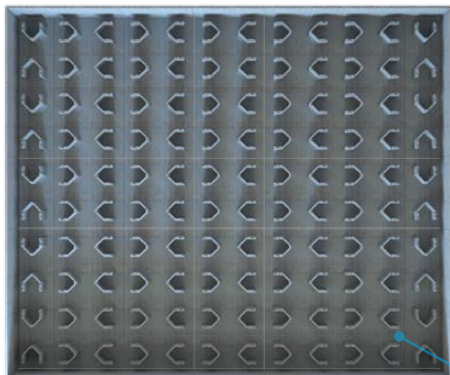
Innovative Concrete Stormwater Detention – UrbanPond®

UrbanPond is a modular precast concrete underground storage system that mimics the function of ponds and open detention basins. It has high void percentages to maximize stormwater volume, and its robust precast form allows systems to be buried deeper without the need for specialized backfill, increased wall thicknesses, or extra rebar reinforcement.

Modules are available in 8' x 8' feet square or 8' x 16' rectangular configurations, giving designers more versatility to accommodate dense development, urban infill or high-volume projects. The modular design can be placed under roadways, parking lots and landscape areas in various shapes, sizes, and depths. The system's internal offset leg configuration provides channel-less water distribution for stormwater entering and exiting the system, and the robust precast form allows it to be buried.

UrbanPond, a traffic-rated underground stormwater storage system, is designed and produced with considerations such as height of cover, live and dead loads, proximity to adjacent structures, and required detention volume.

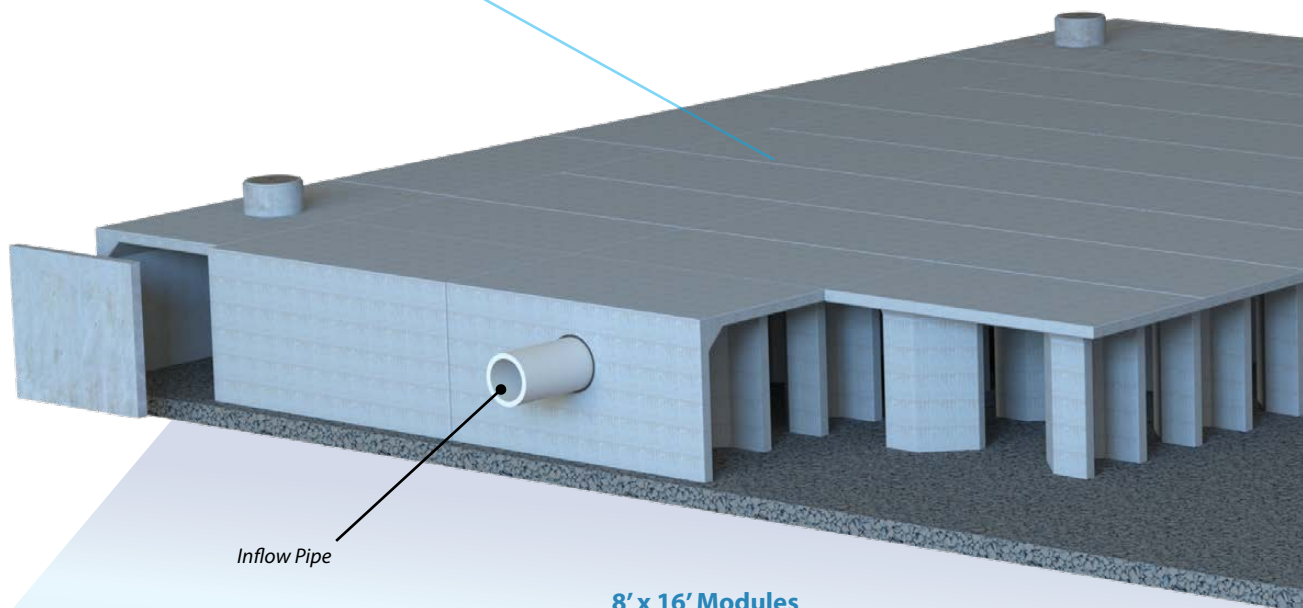
UrbanPond® Configurations



Top view without top slabs.

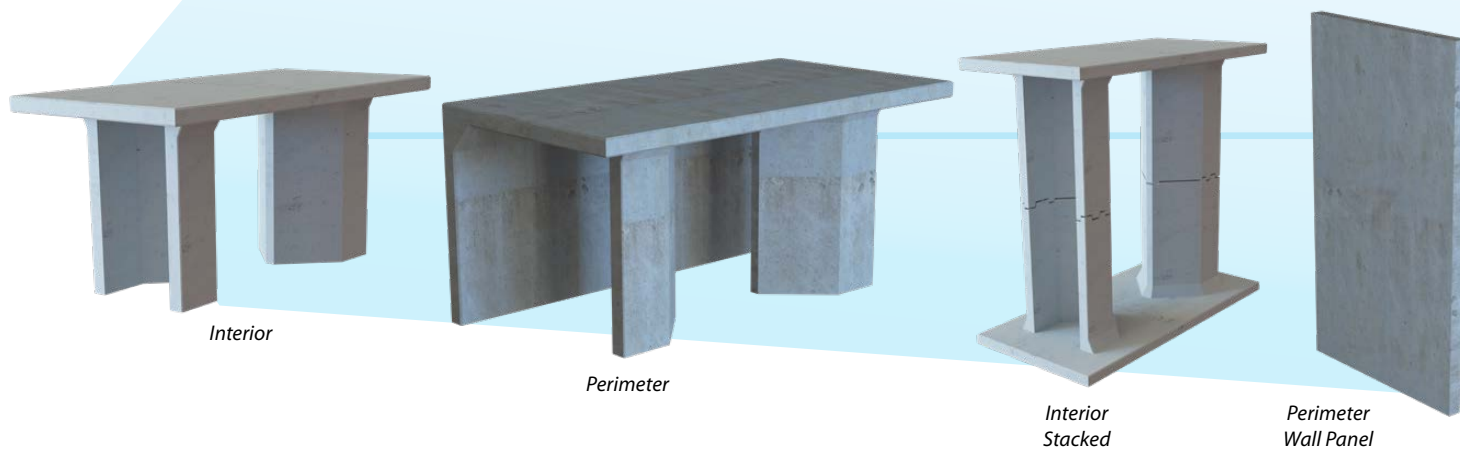
8' x 16' Module Assembly

The UrbanPond structure benefits from repeating tessellated shapes. Both the 8' x 8' and 8' x 16' modules can be combined for increased design versatility and efficiency.



Inflow Pipe

8' x 16' Modules



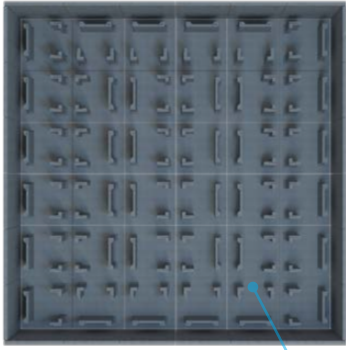
Interior

Perimeter

Interior Stacked

Perimeter Wall Panel

Multiple configurations allow for easy site integration

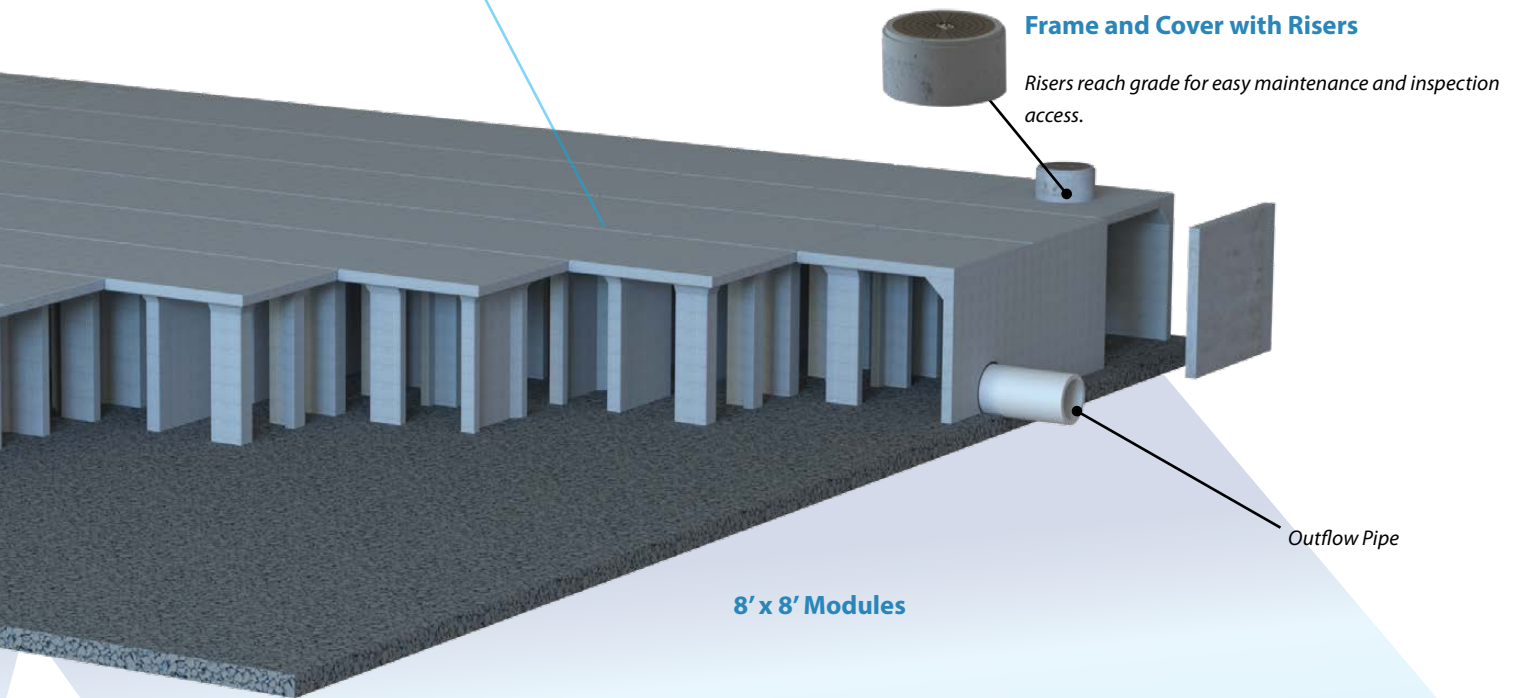
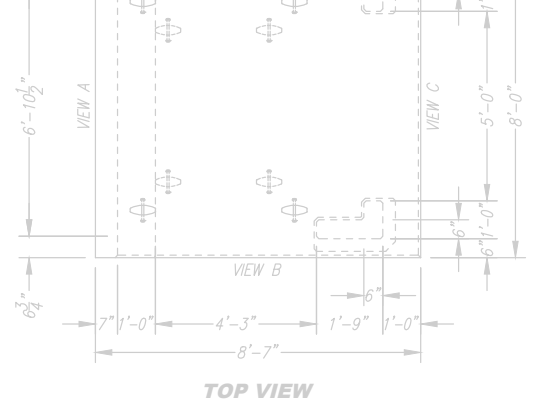


Top view without top slabs.

8' x 8' Module Assembly

The UrbanPond 8' x 8' modules' square tessellation repeats, covering a plane without any gaps or overlaps.

The offset leg configuration of the modules creates an open, channel-less internal space.

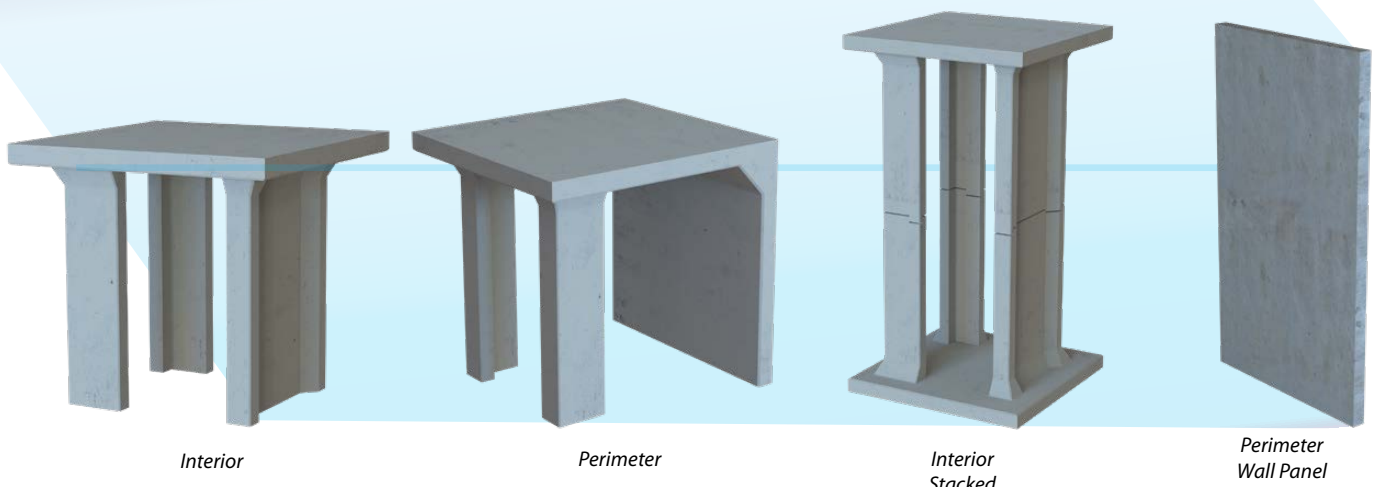


Frame and Cover with Risers

Risers reach grade for easy maintenance and inspection access.

Outflow Pipe

8' x 8' Modules



Interior


Perimeter

Interior Stacked

Perimeter Wall Panel

UrbanPond® Features and Benefits

FEATURE	BENEFIT
Various module sizes (8' x 8' and 8' x 16') to meet site constraints and installation requirements	Design flexibility while maximizing storage space
Optional built-in orifice control riser	Slowly discharges captured runoff to keep your site in compliance with local regulations
Designed to meet H-20 loading requirements	Superior strength & load capacity
Minimum cover of only 12"	Maximizes available depth
Can be backfilled with native soil	Eliminates the need to purchase rock required in other concrete systems



APPLICATION TIPS

- Best practice designs for subsurface infiltration include pretreatment to reduce cost and frequency of maintenance while ensuring the infiltration capacity of the facility.

UrbanPond® System Sizing

UrbanPond modules are available with inside heights ranging from 3 feet to 7 feet, in 6-inch increments, and the stacked UrbanPond modules are stackable up to 14 feet.

URBAN POND INSIDE HEIGHT (FT)	8' X 8' INTERIOR MODULE STORAGE VOLUME (CF)	8' X 8' PERIMETER MODULE STORAGE VOLUME (CF)	8' X 16' INTERIOR MODULE STORAGE VOLUME (CF)	8' X 16' PERIMETER MODULE STORAGE VOLUME (CF)
3	177	180	356	360
4	237	242	475	484
5	296	304	595	607
6	356	366	714	730
7	415	428	834	854
8	474		950	
9	532		1070	
10	592		1190	
11	652		1310	
12	712		1428	
13	772		1548	
14	830		1668	

A breakthrough system for underground storage management

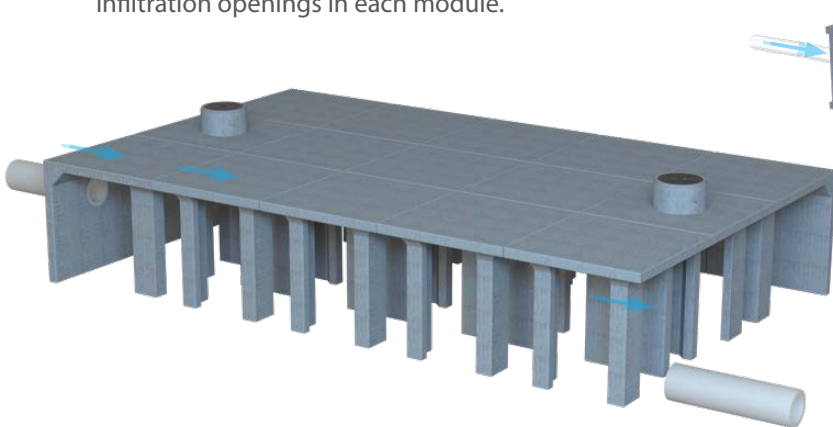
UrbanPond® Applications

Detention/Retention

Detention with controlled discharge utilizing built-in outlet orifice structures. Retention for long-term storage of runoff onsite to meet strict stormwater requirements.

Infiltration Galleries

UrbanPond infiltration galleries are designed to maximize the transfer of water for percolation into native soils and groundwater recharge. The features include 30" diameter infiltration openings in each module.

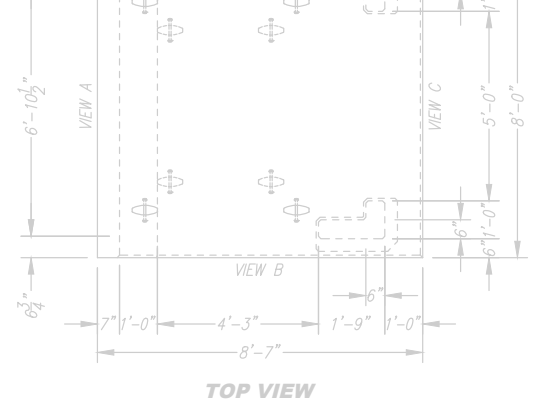
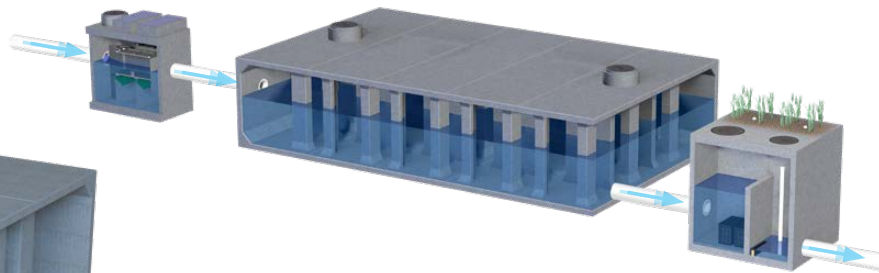


Flood Control

Flood Control of peak storm events to minimize downstream flooding and erosion.

Treatment Train Design Options

The example shows an upstream Debris Separating Baffle Box (DSBB) to treat large flows, and capture trash, debris, and suspended solids, as well as hydrocarbons. The Modular Wetlands Linear is downstream, and the only biofiltration product that can be placed downstream of a detention system.



UrbanPond® Maintenance

UrbanPond is designed to be maintained from the finished surface via a vacuum truck. Access ports are strategically placed throughout the system to facilitate maintenance. Modules can be modified to act as clear wells or pretreatment chambers for capturing trash, debris, and sediment. This consolidates maintenance requirements to a select few modules. Standard manholes, hinged manholes, and other access hatches are available.



UrbanPond® systems are designed with multiple port locations for easy maintenance.

A partner you can rely on



STORMWATER
SOLUTIONS



PIPE
SOLUTIONS



STRUCTURES
SOLUTIONS

Few companies offer the wide range of high-quality stormwater resources you can find with us — state-of-the-art products, decades of expertise, and all the maintenance support you need to operate your system cost-effectively.

THE CONTECH WAY

Contech® Engineered Solutions provides innovative, cost-effective site solutions to engineers, contractors, and developers on projects across North America. Our portfolio includes bridges, drainage, erosion control, retaining wall, sanitary sewer and stormwater management products.

TAKE THE NEXT STEP

For more information: www.ContechES.com

NOTHING IN THIS CATALOG SHOULD BE CONSTRUED AS A WARRANTY. APPLICATIONS SUGGESTED HEREIN ARE DESCRIBED ONLY TO HELP READERS MAKE THEIR OWN EVALUATIONS AND DECISIONS, AND ARE NEITHER GUARANTEES NOR WARRANTIES OF SUITABILITY FOR ANY APPLICATION. CONTECH MAKES NO WARRANTY WHATSOEVER, EXPRESS OR IMPLIED, RELATED TO THE APPLICATIONS, MATERIALS, COATINGS, OR PRODUCTS DISCUSSED HEREIN. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND ALL IMPLIED WARRANTIES OF FITNESS FOR ANY PARTICULAR PURPOSE ARE DISCLAIMED BY CONTECH. SEE CONTECH'S CONDITIONS OF SALE (AVAILABLE AT WWW.CONTECHES.COM/COS) FOR MORE INFORMATION.

CONTECH
ENGINEERED SOLUTIONS

Get social with us: [f](#) [in](#) [t](#) [v](#)

800-338-1122 | www.ContechES.com