WEST SAN CARLOS MIXED-USE

SAN JOSE, CALIFORNIA

LEGEND

C-1 Land Use Plan

C-2 Site Plan/Conceptual Landscape Plan

C-3 Grading Plan

S-1 Stormwater Control Plan

S-2 Stormwater Control Plan Details

S-3 Stormwater Control Plan Notes

A-1 Building Elevation

TYPE V CONSTRUCTION

BUILDING SUMMARY

Wrap Building

	Plan 1A 1 bed/1 bath	Plan 1B 1bed /1bath	Plan 2A 2bed/2 bath	Plan 2B 2 bed+den/2 bath	Plan 2C 2 bed/2 bath	Plan TH 2 bed/2.5 bath	
Avg. Net Area	710 s.f.	831 s.f.	991 s.f.	1,116 s.f.	1,044 s.f.	1,350 s.f.	
Street Level	14 du	4 du	7 du	6 du	1 du	8 du	40 du
Level 1	22 du	9 du	13 du	6 du	3 du	0 du	53 du
Level 2	22 du	9 du	13 du	6 du	3 du	0 du	53 du
Level 3	22 du	9 du	13 du	6 du	3 du	0 du	53 du
Level 4	6 du	5 du	6 du	0 du	2 du	0 du	19 du
	86 du	36 du	52 du	24 du	12 du	8 du	
	39%	17%	24%	11%	6%	4.00%	100%
	56%		44%				
							218 du

TOTAL UNITS		**218 du**	
Lot Size	**148,138 s.f.**	**3.40 a.c.**	
Total Net Area	**192,620 s.f.**		
Avg. Unit Size	**884 s.f.**		
Density	**64 du/ac**	**Linear Park 25,900 s.f.**	**Retail 22,380 s.f.**

PARKING SUMMARY

Parking Required

	One Bed	Two Bed
Wrap Building		
Required Ratio	1.5 stalls	1.8 stalls
Unit Provided	122 du	96 du
	183 stalls	173 stalls
	Parking Required	356

Residential/Guest Parking Required		356
Retail Parking Required	(1/400 s.f.)	56
Total Parking Required		**412**

Parking Provided

Parking Structure		
Retail Parking	56 stalls (	28 compact stalls, 28 full size stalls)
Guest Parking	36 stalls (	19 compact stalls, 17 full size stalls)
Residential Parking	327 stalls (	150 compact stalls, 177 full size stalls)
Total Parking Structure Parking	**419 stalls (**	**197 compact stalls 230 full size stalls)**

OPEN SPACE SUMMARY

Open Space Required

160 s.f. per unit

160 s.f./du x 218 du = 34,880.0 s.f.

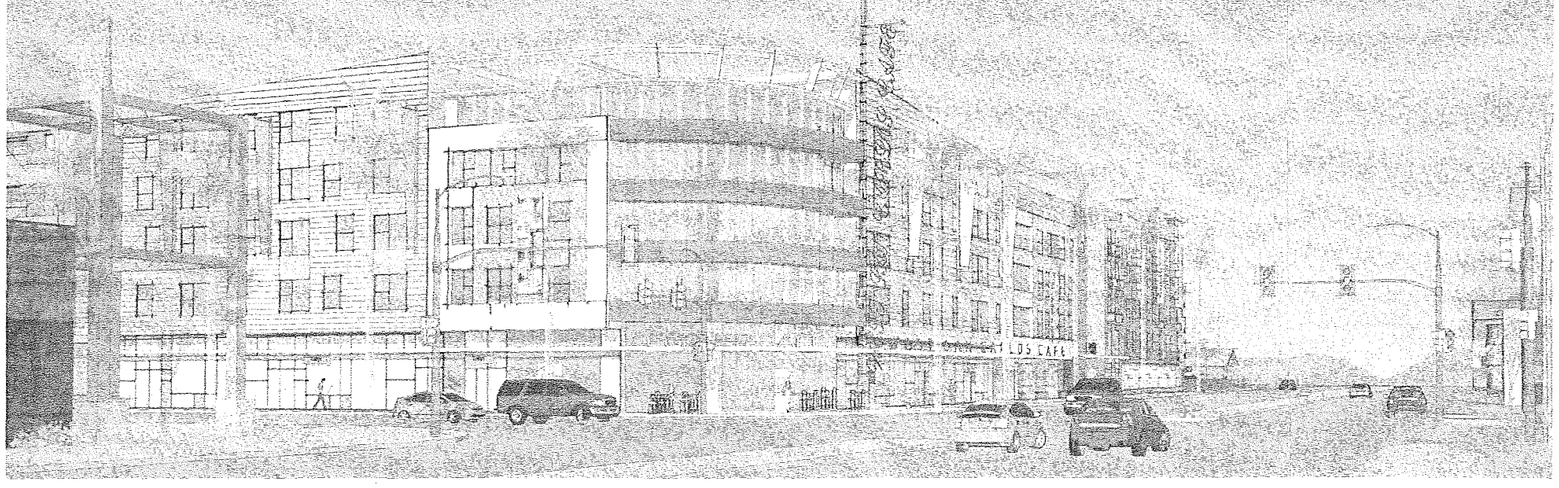
Private Open Space Provided

Wrap Building

	min. area/du	units with patio/deck	
Private Patio/Deck	60 s.f.	110	6600 s.f
Courtyard Area	10,335 s.f.		
Open to sky lightwell	5,715 s.f.		

Common Open Space Provided

Linear Park	23,900 s.f.
total open space provided	**46,550 s.f.**



Developer:
Republic Urban Properties
95 S. Market Street, 3rd Floor
San Jose, CA 95113
Contact: Michael VanEvery
Phone: 408-977-7718

Architect:
McLarand Vasquez Emsiek & Partners Studio
350 Frank H. Ogawa Plaza, #100
Oakland, CA 94612
Contact: Chek Tang, AIA
Phone: 510-267-3188

Civil Engineer:
HMH Engineers
1570 Oakland Road
San Jose, CA 95131
Contact: Amie Ashton
Phone: 408-487-2200

Landscape Architect:
Isaacson Wood & Associates
1961 The Alameda
San Jose, CA 95126
Contact: Jay Isaacson
Phone: 408-249-6152

WEST SAN CARLOS Mixed-Use

SAN JOSE, CALIFORNIA

REPUBLIC URBAN PROPERTIES

GENERAL DEVELOPMENT PLAN - EXHIBIT C

DATE: 08/07/2008

PROJECT #: 2007-30112

SCALE:

0

NORTH

SHEET #:

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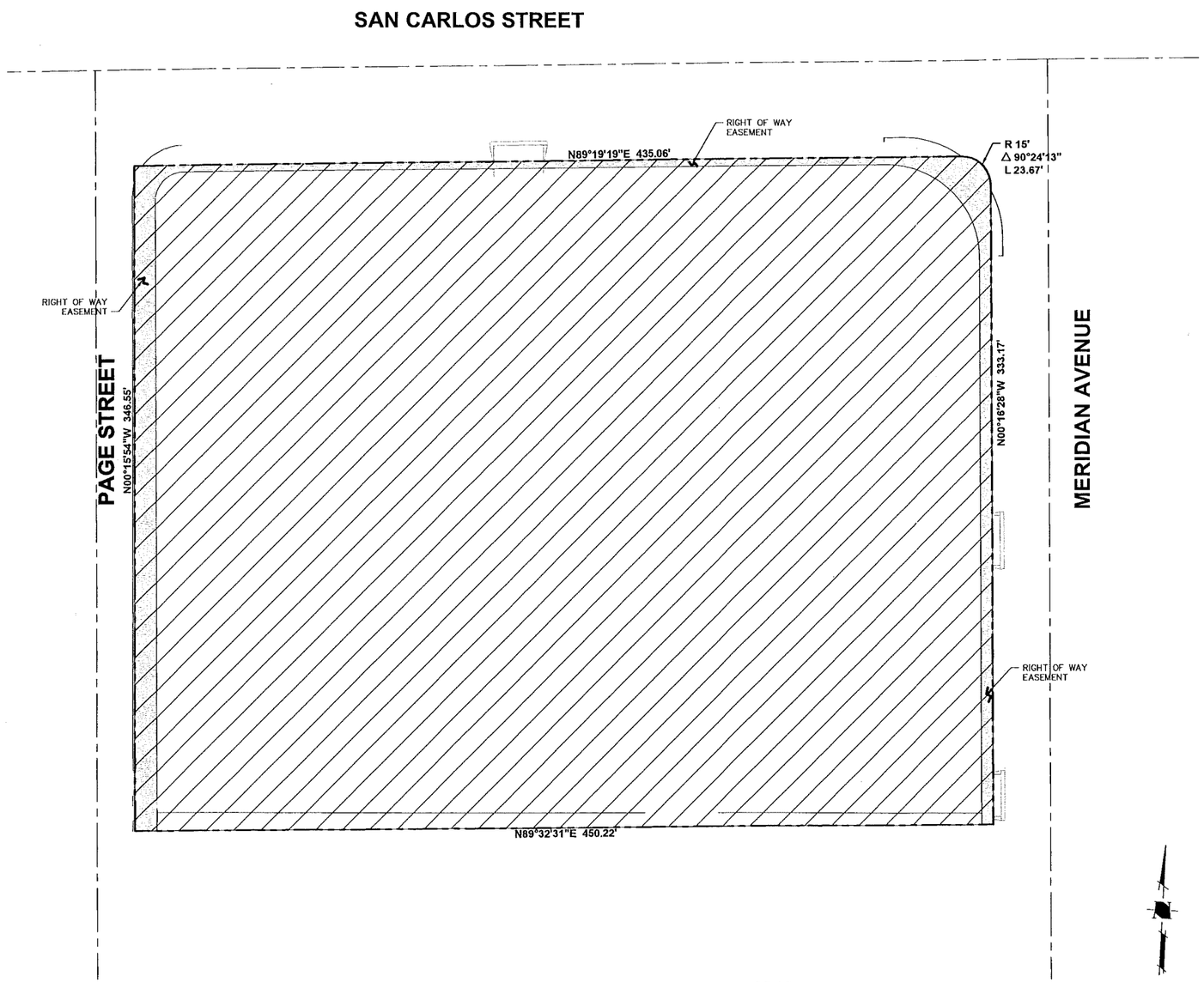
MVE STUDIO



GRAPHIC SCALE

30 0 15 30 60 120

(In Feet)
1 inch = 30 feet

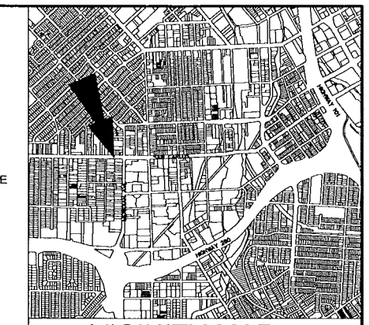
Legend

PROJECT BOUNDARY
RIGHT OF WAY
RIGHT OF WAY EASEMENT

HATCH PATTERN	LAND USE CATEGORY	AREA	PERCENTAGE OF SITE
	MIXED USE (DWELLINGS, OPEN SPACE PRIVATE DRIVES)	3.59	±100%
	GROSS ACREAGE:	±3.59 Ac.	100.0%

DENSITY

198 ATTACHED DWELLING UNITS / ±3.59 ACRES (NET) = 55.2 DU/AC



VICINITY MAP

Permitted Uses

Development Standards

Environmental Mitigation Notes

	BY	DATE	REVISIONS
△			
△			
△			
△	AA	06.07.2006	Respond to City Comments
△	AA	05.09.2006	Respond to City Comments
△	AA	02.06.2006	Respond to City Comments

Republic Urban Properties LLC
95 South Market, Third Floor
San Jose, CA 95113

Date:	11.13.2007
Scale:	1"=30'
Designed:	AA
Drawn:	FC
Checked:	RTH
Proj. Engr:	DRR
File:	352500LURZ

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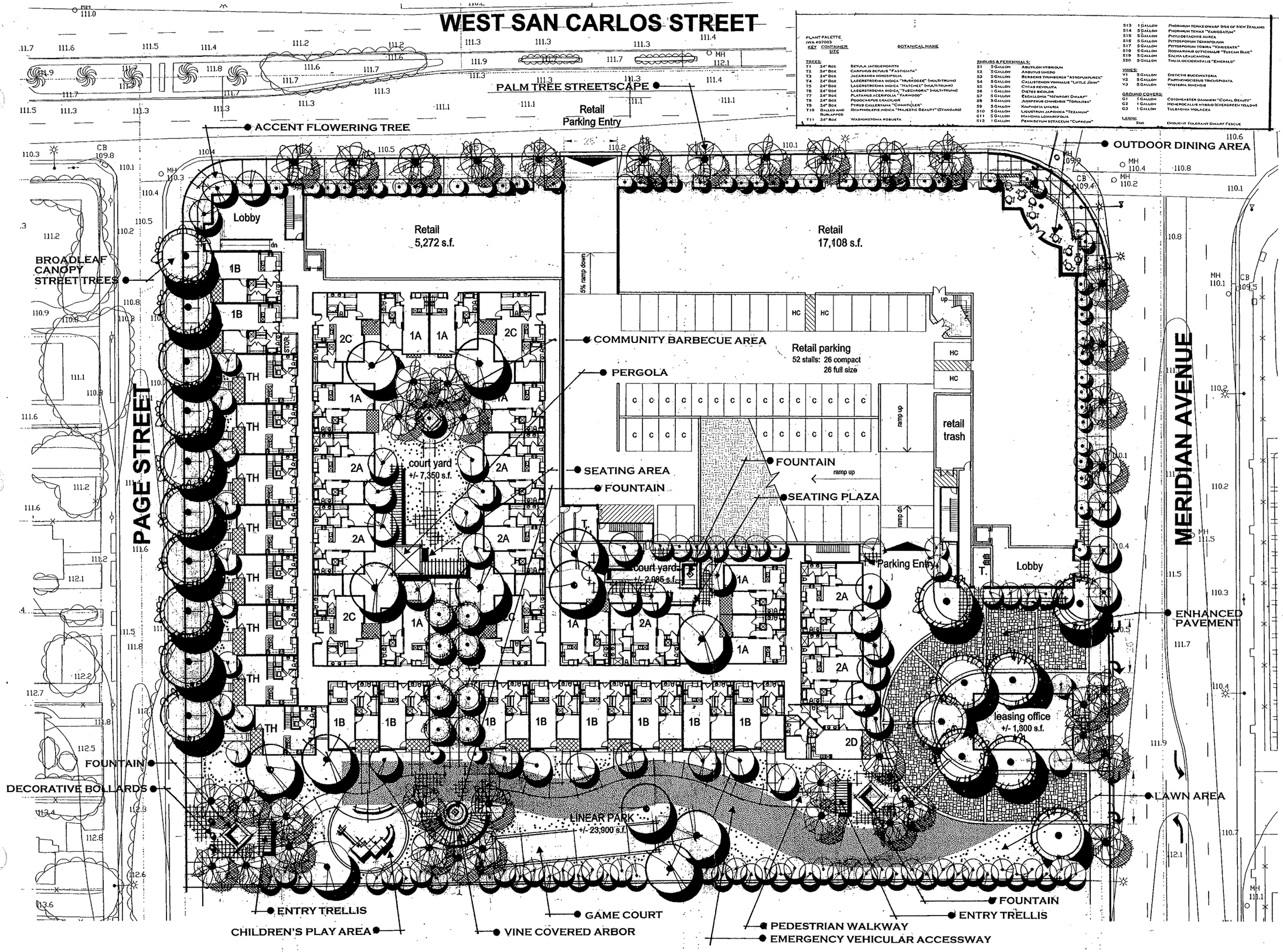
GENERAL DEVELOPMENT PLAN- EXHIBIT C
PDC 07-096
LAND USE PLAN

Sheet C-1 Of Sheets

JOB NUMBER 3525.00

3390CSRZ



PLANT PALETTE
IWA #07003

KEY	CONTAINER SIZE	BOTANICAL NAME
TREES:		
T1	24" BOX	BETULA JACQUEMONTII
T2	24" BOX	CARPINUS BETULUS "FASTIGIATA"
T3	24" BOX	JACARANDA MIMOSIFOLIA
T4	24" BOX	LAGERSTROEMIA INDICA "MUSKOGEE" (MULTI-TRUNK)
T5	24" BOX	LAGERSTROEMIA INDICA "NATCHEZ" (MULTI-TRUNK)
T6	24" BOX	LAGERSTROEMIA INDICA, "TUSCARORA" (MULTI-TRUNK)
T7	24" BOX	PLATANUS ACERIFOLIA "FAIRWOOD"
T8	24" BOX	PODOCARPUS GRACILIOR
T9	24" BOX	PYRUS CALLERYANA "CHANTICLEER"
T10	BALLED AND BURLAPPED	RHAPHIOLEPIS INDICA "MAJESTIC BEAUTY" (STANDARD)
T11	24" BOX	WASHINGTONIA ROBUSTA
SHRUBS & PERENNIALS:		
S1	5 GALLON	ABUTILON HYBRIDUM
S2	5 GALLON	ARBUTUS UNEDO
S3	5 GALLON	BERBERIS THUNBERGII "ATROPURPUREA"
S4	5 GALLON	CALLISTEMON VIMINALIS "LITTLE JOHN"
S5	5 GALLON	CYCAS REVOLUTA
S6	1 GALLON	DIETES BICOLOR
S7	5 GALLON	ESCALLONIA "NEWPORT DWARF"
S8	5 GALLON	JUNIPERUS CHINENSIS "TORULOSA"
S9	5 GALLON	KNIPHOFIA UVARIA
S10	5 GALLON	LIGUSTRUM JAPONICA "TEXANUM"
S11	5 GALLON	MAHONIA LOMARIFOLIA
S12	1 GALLON	PENNISETUM SETACEUM "CUPREUM"
S13	1 GALLON	PHORMIUM TENAX DWARF FAX OF NEW ZEALAND
S14	5 GALLON	PHORMIUM TENAX "VARIEGATUM"
S15	5 GALLON	PHYLLOSTACHYS AUREA
S16	5 GALLON	PITTOSPORUM TENUIFOLIUM
S17	5 GALLON	PITTOSPORUM TOBIRA "VARIEGATA"
S18	5 GALLON	ROSMARINUS OFFICINALIS "TUSCAN BLUE"
S19	5 GALLON	SALVIA CACANTHA
S20	5 GALLON	THUJA OCCIDENTALIS "EMERALD"
VINES:		
V1	5 GALLON	DISTICTIS BUCCINATORIA
V2	5 GALLON	PARTHENOCISSUS TRICUSPIDATA
V3	5 GALLON	WISTERIA SINENSIS
GROUND COVERS:		
G1	1 GALLON	COTONEASTER DAMMERI "CORAL BEAUTY"
G2	1 GALLON	HEMEROCALLIS HYBRID (EVERGREEN YELLOW)
G3	1 GALLON	TULBAGHIA VIOLACEA
LAWN:		
	SOD	DROUGHT TOLERANT DWARF FESCUE

WEST SAN CARLOS Mixed-Use

SAN JOSE, CALIFORNIA

REPUBLIC URBAN PROPERTIES

CONCEPTUAL LANDSCAPE ARCHITECTURAL PLAN
STREET LEVEL

GENERAL DEVELOPMENT PLAN - EXHIBIT C

FILE #: PDC07-096

DATE:	08.01.2008
PROJECT #:	2007-30112
SCALE:	1"=20'-0"

0 20' 40'

NORTH

SHEET #: C-2

ISAACSON WOOD & ASSOCIATES
1961 THE ALAMEDA, SAN JOSE, CA 95126 (408) 249-4181
LANDSCAPE ARCHITECTURE

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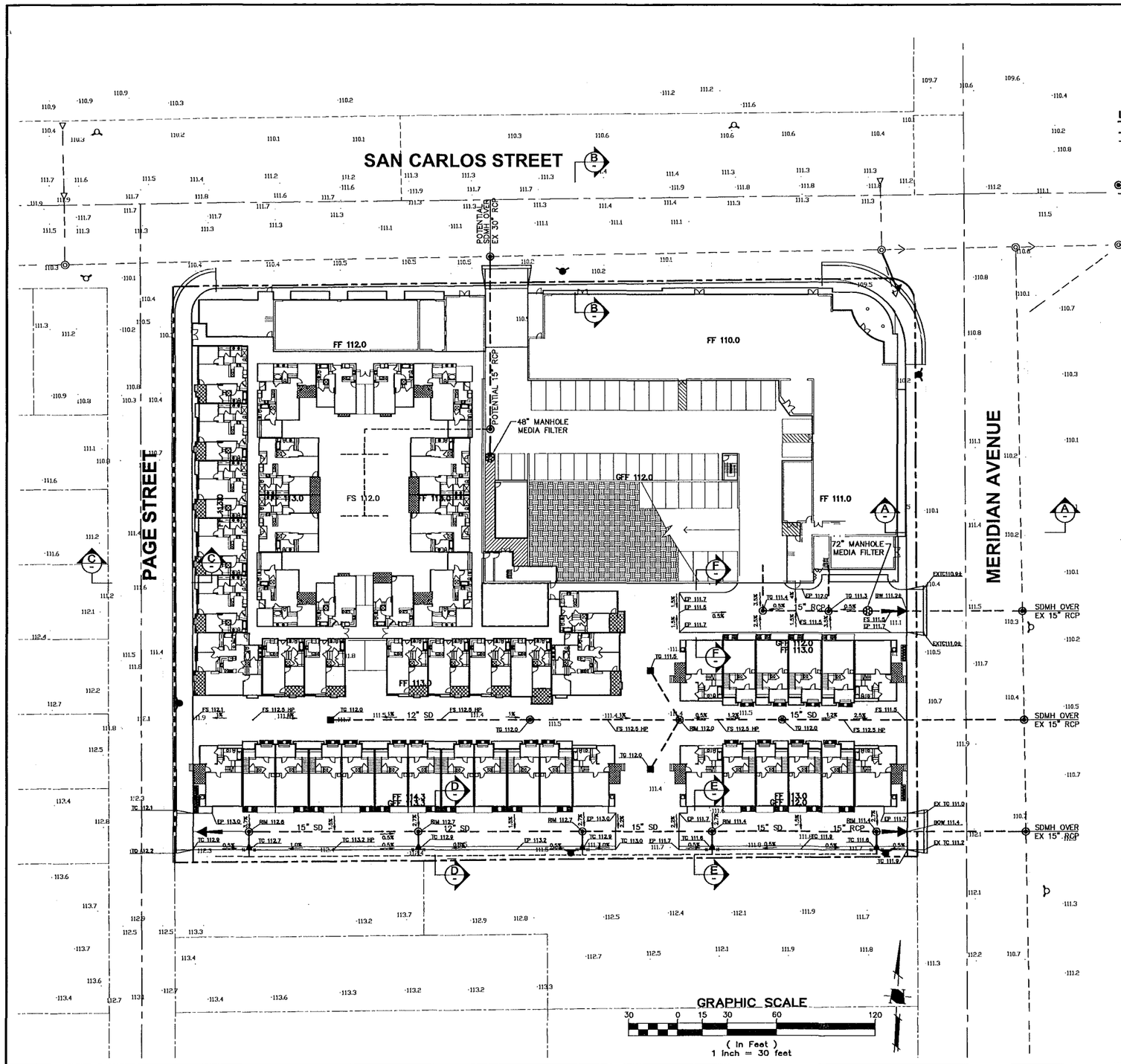
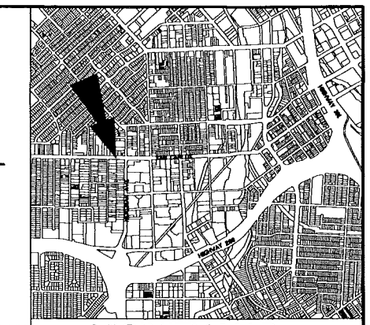
MVE STUDIO

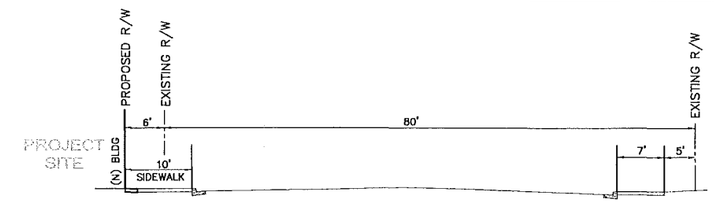


LEGEND

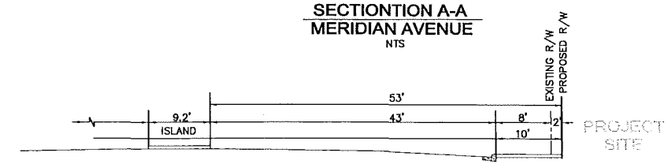
	PROJECT BOUNDARY
	RIGHT OF WAY
FF 29.7	FINISHED FLOOR ELEVATION
GFF 29.7	GARAGE FINISHED FLOOR ELEVATION
6.3%	STREET SLOPE
	OVERLAND RELEASE DIRECTION
	STORM DRAIN MANHOLE, PIPE AND INLET
	STORM UNDER DRAIN
	FIRE HYDRANT
TG 29.8	TOP OF GRATE ELEVATION
FS 29.8	FINISH SURFACE
EP 29.8	EDGE OF PAYMENT
	CATCH BASIN
	EXISTING STORM DRAIN MANHOLE, PIPE AND INLET



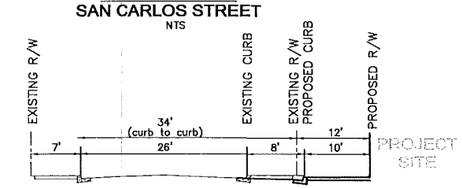
VICINITY MAP



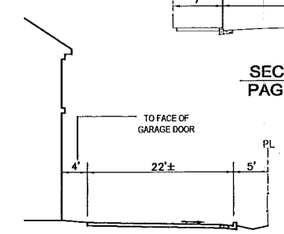
SECTIONTION A-A
MERIDIAN AVENUE
NTS



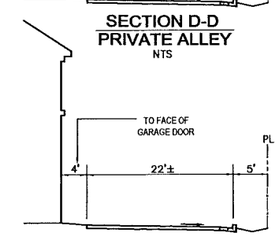
SECTION B-B
SAN CARLOS STREET
NTS



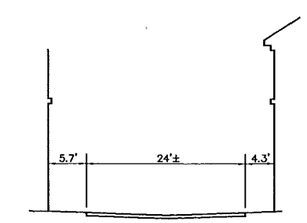
SECTION C-C
PAGE STREET
NTS



SECTION D-D
PRIVATE ALLEY
NTS



SECTION E-E
PRIVATE ALLEY
NTS



SECTION F-F
PRIVATE ALLEY
NTS

BY	DATE	REVISIONS
AA	08.07.2008	Respond to City Comments
AA	08.08.2008	Respond to City Comments
AA	02.06.2008	Respond to City Comments

Republic Urban Properties LLC
95 South Market, Third Floor
San Jose, CA 95113

Date:	11.13.2007
Scale:	1"=30'
Designed:	AA
Drawn:	FC
Checked:	RTH
Proj. Engr:	DRR
File:	352500GPRZ

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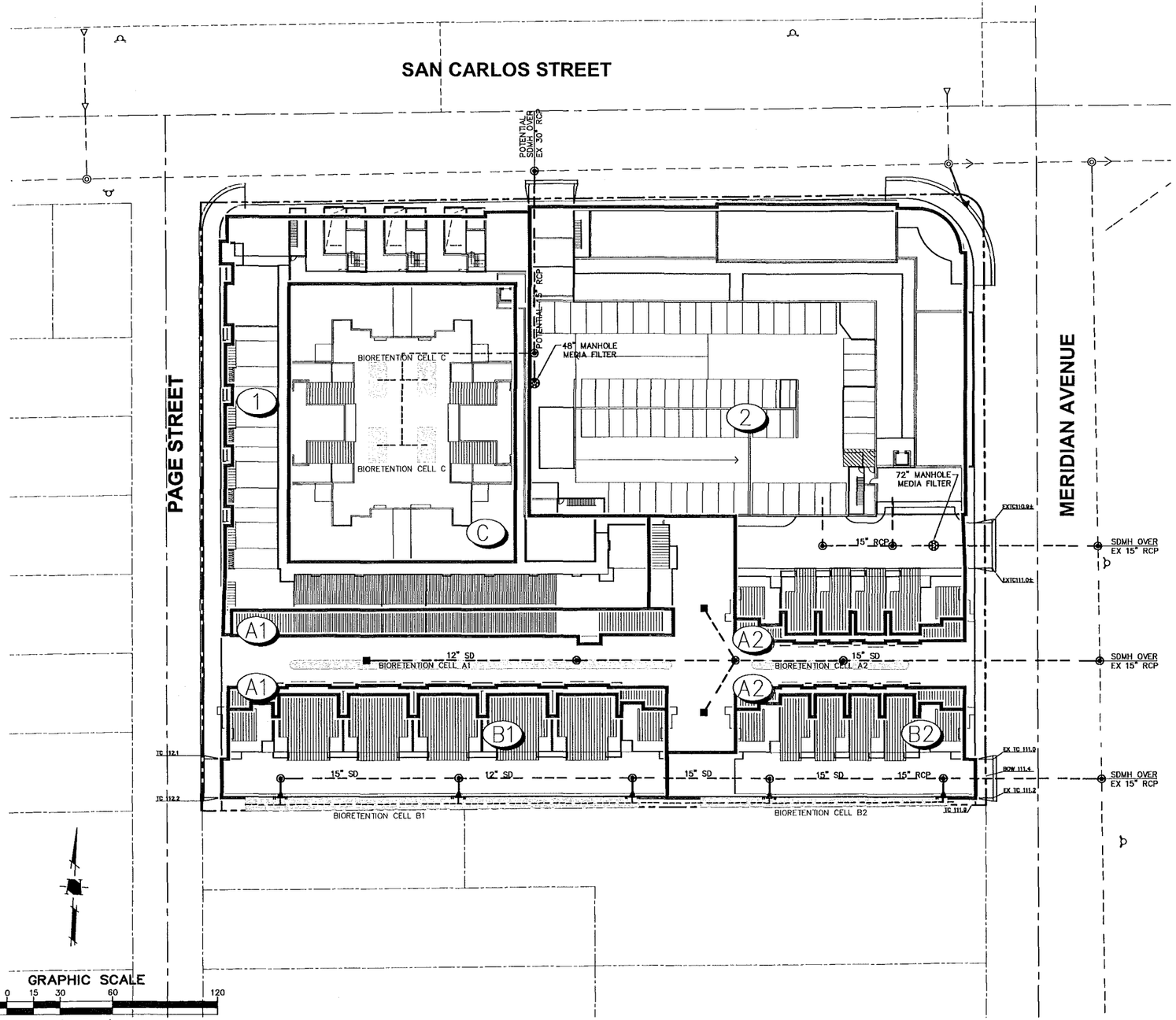
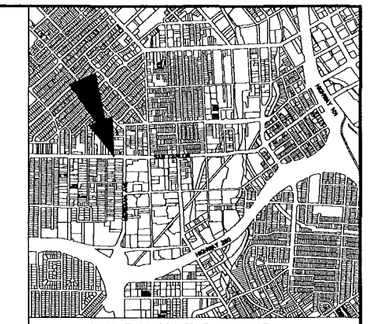
GENERAL DEVELOPMENT PLAN- EXHIBIT C
PDC 07-096
Conceptual Grading and Drainage Plan

Sheet C-3 Of Sheets
JOB NUMBER 3525.00

3390CSRZ





VICINITY MAP

LEGEND

- PROJECT BOUNDARY
- RIGHT OF WAY
- CURB AND GUTTER WITH CURB CUTS
- FF 29.7 / GFF 29.7 — FINISHED FLOOR ELEVATION / GARAGE FINISHED FLOOR ELEVATION
- 0.3% — STREET SLOPE
- OVERLAND RELEASE DIRECTION
- STORM DRAIN MANHOLE, PIPE AND INLET
- FIRE HYDRANT
- TG 29.8 — TOP OF GRATE ELEVATION
- FS 29.8 — FINISH SURFACE
- EP 29.8 — EDGE OF PAYMENT
- CATCH BASIN
- EXISTING STORM DRAIN MANHOLE, PIPE AND INLET
- MANHOLE MEDIA FILTER (STORMFILTER OR EQUIVALENT SEE DETAIL, SHEET S-2)
- (1) DRAINAGE AREA 1-ROOF AREA DRAINING TO MANHOLE MEDIA FILTER (SEE SHEET S-3 FOR SIZING CALCS)
- (2) DRAINAGE AREA 2-COMBINED ROOF & DRIVEWAY AREA DRAINING TO MANHOLE MEDIA FILTER (SEE SHEET S-3 FOR SIZING CALCS)
- (A) DRAINAGE AREA A-ROOF AREA DRAINING TO BIORETENTION CELL (SEE SHEET S-3 FOR SIZING CALCS)
- (B) DRAINAGE AREA B-COMBINED ROOF & DRIVEWAY AREA DRAINING TO BIORETENTION CELL (SEE SHEET S-3 FOR SIZING CALCS)
- (C) DRAINAGE AREA C-ROOF AREA DRAINING TO BIORETENTION CELL (SEE SHEET S-3 FOR SIZING CALCS)
- BIORETENTION CELL (SEE DETAILS, SHEET S-2)

PERVIOUS AND IMPERVIOUS SURFACES COMPARISON

	Existing Condition (sq. ft.)	%	Proposed Condition (sq. ft.)	%	Difference (sq. ft.)	%
Site (acres): 3.59	Site (sqft): 156,380		156,380			
Building Footprint(s)	43,147	28%	109,136	70%	65,989	42%
Parking	62,589	40%	17,424	11%	-45,265	-29%
Sidewalks,Patios, Paths, etc.	2,227	1%	9,317	6%	7,090	5%
Landscaping	48,317	31%	20,503	13%	-27,814	-18%
Total	156,380	100%	156,380	100%		
Impervious Surfaces	108,063	69%	135,877	87%	27,814	18%
Pervious Surfaces	48,317	31%	20,503	13%	-27,814	-18%
Total	156,380	100%	156,380	100%		

Site Conditions	
Soil Type	*Silt Loam (B)*
Depth to Groundwater	*20 – 30 ft.*
100-Year Flood Elevation	*Undetermined*
Receiving Water Body	*Guadalupe River*
Pollutants	*Sediment, Grease, Oil, Heavy Metals, Hydrocarbons, Trash, Nutrients, Pesticides, Bacteria*
Pollutant Source Areas	*Roofs, Driveways, Trash Containers, Landscaping, Pet Waste*
Source Control Measures	*Covered Trash Collection Areas, Stenciled Inlets*

** Soil type and depth to groundwater information per C.3 Stormwater Handbook, Santa Clara Valley Urban Runoff Pollution Prevention Program, May 2004. Flood elevation information per FEMA Flood Insurance Rate Maps, August, 1982.*

BY	DATE	REVISIONS
AA	06.07.2006	Respond to City Comments
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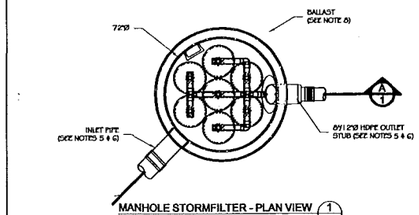
REGISTERED PROFESSIONAL ENGINEER — DANNY R. RAYMOND — Exp. 3/31/2008 — No. 26616 — CIVIL — STATE OF CALIFORNIA

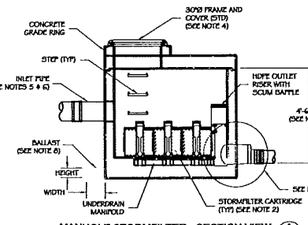
GENERAL DEVELOPMENT PLAN- EXHIBIT C
PDC 07-096
Conceptual Storm Water Control Plan

Sheet S-1 Of Sheets
JOB NUMBER 3525.00

3390CSRZ



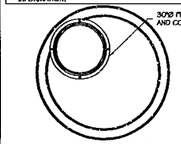
MANHOLE STORMFILTER - PLAN VIEW (1/1)



MANHOLE STORMFILTER - SECTION VIEW (A/1)

GENERAL NOTES

1) STORMFILTER BY CONTECH STORMWATER SOLUTIONS; PORTLAND, OR (800) 548-4667; SCARBOROUGH, ME (877) 907-6676; ELKRIDGE, MD (866) 740-3316.
2) FILTER CARTRIDGE(S) TO BE SIPHON-ACTUATED AND SELF-CLEANING. STANDARD DETAIL SHOWS MAXIMUM NUMBER OF CARTRIDGES. ACTUAL NUMBER REQUIRED TO BE SPECIFIED ON SITE PLANS OR IN DATA TABLE BELOW.
3) PRECAST MANHOLE STRUCTURE TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478. DETAIL REFLECTS DESIGN INTENT ONLY. ACTUAL DIMENSIONS AND CONFIGURATION OF STRUCTURE WILL BE SHOWN ON PRODUCTION SHOP DRAWING.
4) STRUCTURE AND ACCESS COVERS TO MEET AASHTO H-20 LOAD RATING.
5) STORMFILTER REQUIRES 2.3 FEET OF DROP FROM INLET TO OUTLET. IF LESS DROP IS AVAILABLE, CONTACT CONTECH STORMWATER SOLUTIONS. MINIMUM ANGLE BETWEEN INLET AND OUTLET IS 45°.
6) INLET PIPING TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR. PRECAST MANHOLE STORMFILTER EQUIPPED WITH A DUAL DIAMETER HDPE OUTLET STUB AND SAND COLLAR. EIGHT INCH DIAMETER OUTLET SECTION MAY BE SEPARATED FROM OUTLET STUB AT MOLDED-IN CUT LINE TO ACCOMMODATE A 12 INCH OUTLET PIPE. CONNECTION TO DOWNSTREAM PIPING TO BE MADE USING A FLEXIBLE COUPLING OR ECCENTRIC REDUCER, AS REQUIRED. COUPLING BY PERMCO OR EQUAL AND PROVIDED BY CONTRACTOR.
7) PROVIDE MINIMUM CLEARANCE FOR MAINTENANCE ACCESS. IF A SHALLOWER SYSTEM IS REQUIRED, CONTACT CONTECH STORMWATER SOLUTIONS FOR OTHER OPTIONS.
8) ANTI-FLOTATION BALLAST TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR, IF REQUIRED. BALLAST TO BE SET AROUND THE PERIMETER OF THE STRUCTURE.
9) ALL STORMFILTERS REQUIRE REGULAR MAINTENANCE. REFER TO OPERATION AND MAINTENANCE GUIDELINES FOR MORE INFORMATION.



MANHOLE STORMFILTER - TOP VIEW (1/2)

PRECAST MANHOLE STORMFILTER DATA

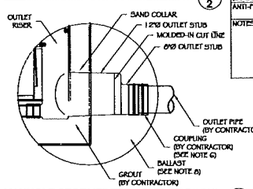
STRUCTURE ID	XXX
WATER QUALITY FLOW RATE (cfs)	X.XX
PEAK FLOW RATE (<1.0 cfs)	X.XX
RETURN PERIOD OF PEAK FLOW (yrs)	XXX
# OF CARTRIDGES REQUIRED	XX
CARTRIDGE FLOW RATE (1.5 or 7.5 gpm)	XX
MEDIA TYPE (CSF, PERLITE, ZPG)	XXXXX
RIM ELEVATION	XXX.XX

PIPE DATA:	I.E.	ORIENTATION	MATERIAL	DIAMETER
INLET PIPE #1	XXX.XX	XX°	XXX	XX"
INLET PIPE #2	XXX.XX	XX°	XXX	XX"
OUTLET STUB	XXX.XX	0°	XXX	6"/12"

ECCENTRIC REDUCER (BY CONTRACTOR)	YES/NO	SIZE
	XXX	XX" x XX"
ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	XX"	XX"

NOTES/SPECIAL REQUIREMENTS:

PIPE ORIENTATION KEY:
90°
180° -0°
270°



MANHOLE STORMFILTER - OUTLET DETAIL (2/2)

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THE STORMWATER MANAGEMENT StormFilter® U.S. PATENT No. 5,338,689, No. 5,707,517, No. 6,277,269 No. 6,649,046, No. 5,624,576, AND OTHER U.S. AND FOREIGN PATENTS PENDING

CONTECH STORMWATER SOLUTIONS www.contechstormwater.com

PRECAST 72" MANHOLE STORMFILTER
PLAN AND SECTION VIEWS
STANDARD DETAIL

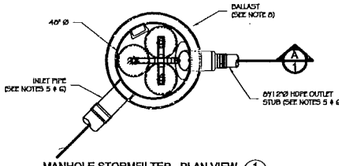
DRAWING 1 OF

DATE: XX.XX.XX | SCALE: NONE | FILE NAME: XXX | DRAWN: XXX | CHECKED: XXX

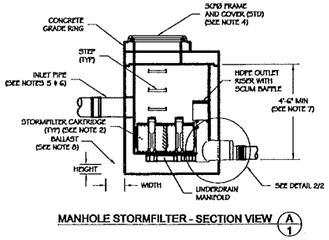
PRECAST 72" MANHOLE STORMFILTER
TOP AND SECTION VIEWS, NOTES AND DATA
STANDARD DETAIL

DRAWING 2 OF

DATE: XX.XX.XX | SCALE: NONE | FILE NAME: XXX | DRAWN: XXX | CHECKED: XXX



MANHOLE STORMFILTER - PLAN VIEW (1/1)



MANHOLE STORMFILTER - SECTION VIEW (A/1)

GENERAL NOTES

1) STORMFILTER BY CONTECH STORMWATER SOLUTIONS; PORTLAND, OR (800) 548-4667; SCARBOROUGH, ME (877) 907-6676; ELKRIDGE, MD (866) 740-3316.
2) FILTER CARTRIDGE(S) TO BE SIPHON-ACTUATED AND SELF-CLEANING. STANDARD DETAIL SHOWS MAXIMUM NUMBER OF CARTRIDGES. ACTUAL NUMBER REQUIRED TO BE SPECIFIED ON SITE PLANS OR IN DATA TABLE BELOW.
3) PRECAST MANHOLE STRUCTURE TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478. DETAIL REFLECTS DESIGN INTENT ONLY. ACTUAL DIMENSIONS AND CONFIGURATION OF STRUCTURE WILL BE SHOWN ON PRODUCTION SHOP DRAWING.
4) STRUCTURE AND ACCESS COVERS TO MEET AASHTO H-20 LOAD RATING.
5) STORMFILTER REQUIRES 2.3 FEET OF DROP FROM INLET TO OUTLET. IF LESS DROP IS AVAILABLE, CONTACT CONTECH STORMWATER SOLUTIONS. MINIMUM ANGLE BETWEEN INLET AND OUTLET IS 45°.
6) INLET PIPING TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR. PRECAST MANHOLE STORMFILTER EQUIPPED WITH A DUAL DIAMETER HDPE OUTLET STUB AND SAND COLLAR. EIGHT INCH DIAMETER OUTLET SECTION MAY BE SEPARATED FROM OUTLET STUB AT MOLDED-IN CUT LINE TO ACCOMMODATE A 12 INCH OUTLET PIPE. CONNECTION TO DOWNSTREAM PIPING TO BE MADE USING A FLEXIBLE COUPLING OR ECCENTRIC REDUCER, AS REQUIRED. COUPLING BY PERMCO OR EQUAL AND PROVIDED BY CONTRACTOR.
7) PROVIDE MINIMUM CLEARANCE FOR MAINTENANCE ACCESS. IF A SHALLOWER SYSTEM IS REQUIRED, CONTACT CONTECH STORMWATER SOLUTIONS FOR OTHER OPTIONS.
8) ANTI-FLOTATION BALLAST TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR, IF REQUIRED. BALLAST TO BE SET AROUND THE PERIMETER OF THE STRUCTURE.
9) ALL STORMFILTERS REQUIRE REGULAR MAINTENANCE. REFER TO OPERATION AND MAINTENANCE GUIDELINES FOR MORE INFORMATION.

MANHOLE STORMFILTER - TOP VIEW (1/2)

PRECAST MANHOLE STORMFILTER DATA

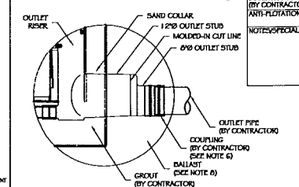
STRUCTURE ID	XXX
WATER QUALITY FLOW RATE (cfs)	X.XX
PEAK FLOW RATE (<1.0 cfs)	X.XX
RETURN PERIOD OF PEAK FLOW (yrs)	XXX
# OF CARTRIDGES REQUIRED	XX
CARTRIDGE FLOW RATE (1.5 or 7.5 gpm)	XX
MEDIA TYPE (CSF, PERLITE, ZPG)	XXXXX
RIM ELEVATION	XXX.XX

PIPE DATA:	I.E.	ORIENTATION	MATERIAL	DIAMETER
INLET PIPE #1	XXX.XX	XX°	XXX	XX"
INLET PIPE #2	XXX.XX	XX°	XXX	XX"
OUTLET STUB	XXX.XX	0°	XXX	6"/12"

ECCENTRIC REDUCER (BY CONTRACTOR)	YES/NO	SIZE
	XXX	XX" x XX"
ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	XX"	XX"

NOTES/SPECIAL REQUIREMENTS:

PIPE ORIENTATION KEY:
90°
180° -0°
270°



MANHOLE STORMFILTER - OUTLET DETAIL (2/2)

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THE STORMWATER MANAGEMENT StormFilter® U.S. PATENT No. 5,338,689, No. 5,707,517, No. 6,277,269 No. 6,649,046, No. 5,624,576, AND OTHER U.S. AND FOREIGN PATENTS PENDING

CONTECH STORMWATER SOLUTIONS www.contechstormwater.com

PRECAST 48" MANHOLE STORMFILTER
PLAN AND SECTION VIEWS
STANDARD DETAIL

DRAWING 1 OF

DATE: XX.XX.XX | SCALE: NONE | FILE NAME: XXX | DRAWN: XXX | CHECKED: XXX

PRECAST 48" MANHOLE STORMFILTER
TOP AND SECTION VIEWS, NOTES AND DATA
STANDARD DETAIL

DRAWING 2 OF

DATE: XX.XX.XX | SCALE: NONE | FILE NAME: XXX | DRAWN: XXX | CHECKED: XXX

	BY	DATE	REVISIONS
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△	AA	08.07.2008	Respond to City Comments
△	AA	05.09.2008	Respond to City Comments
△	AA	02.06.2008	Respond to City Comments

Republic Urban Properties LLC
95 South Market, Third Floor
San Jose, CA 95113

Date:	11.13.2007
Scale:	NTS
Designed:	AA
Drawn:	FC
Checked:	RTH
Proj. Engr:	DRR
File:	352500SWRZ

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STATE OF CALIFORNIA

GENERAL DEVELOPMENT PLAN- EXHIBIT C
PDC 07-096
Conceptual Storm Water Control Plan Details

Sheet S-2 Of Sheets

JOB NUMBER 3525.00

MAINTENANCE GUIDELINES

STORMWATER MANAGEMENT INC.

Maintenance Guidelines

The primary purpose of the StormFilter is to filter out and prevent pollutants from entering our waterways. Like any effective filtration system, periodically these pollutants must be removed to restore the StormFilter to its full efficiency and effectiveness.

Maintenance requirements and frequency are dependent on the pollutant load characteristics of each site.

Maintenance activities may be required in the event of a chemical spill or due to excessive sediment loading from site erosion or extreme storms. It is also good practice to inspect the system after severe storm events.

Types of Maintenance

Presently, procedures have been developed for two levels of maintenance:

- Inspection/minor maintenance
- Major maintenance.

Inspection/minor maintenance activities are combined since minor maintenance does not require special equipment and typically little or no materials are in need of disposal.

Inspection/minor maintenance typically involves:

- Inspection of the vault itself
- Removal of vegetation and trash and debris.

Major maintenance typically includes:

- Cartridge replacement
- Sediment removal

Important: Applicable safety (OSHA) and disposal regulations should be followed during all maintenance activities.

Maintenance Activity Timing

Two scheduled inspections/maintenance activities should take place during the year.

First, an inspection/minor maintenance activity should be done. During the minor maintenance activity (routine inspection, debris removal), the need for major maintenance should be determined and, if disposal during major maintenance will be required, samples of the sediments and media should be obtained.

Second, if required, a major maintenance activity (replacement of the filter cartridges and associated sediment removal) should be performed.

In addition to these two scheduled activities, it is important to check the condition of the StormFilter unit after major storms for damage caused by high flows and for high sediment accumulation that may be caused by localized erosion in the drainage area. It may be necessary to adjust the maintenance activity schedule depending on the actual operating conditions encountered by the system.

In general, minor maintenance activities will occur late in the rainy season, and major maintenance will occur in late summer to early fall when flows into the system are not likely to be present.

Maintenance Activity Frequency

The primary factor controlling timing of maintenance for the StormFilter is sedimentation.

A properly functioning system will remove solids from water by trapping particulates in the porous structure of the filter media. The flow through the system will naturally decrease as more and more solids are trapped. Eventually the flow through the system will be low enough to require replacement of the cartridges. It may be possible to extend the usable span of the cartridges by removing sediment from upstream trapping devices on an as-needed basis in order to prevent material from being re-suspended and discharged to the system.

Site conditions greatly influence maintenance requirements. StormFilter units located in areas with erosion or active construction should be inspected and maintained more often than those in fully stabilized areas.

The maintenance frequency may be adjusted as additional monitoring information becomes available during the inspection program. Areas that develop known problems should be inspected more frequently than areas that demonstrate no problems, particularly after large storms.

Ultimately, inspection and maintenance activities should be scheduled based on the historic records and characteristics of an individual StormFilter system. It is recommended that the maintenance agency develop a database to properly manage StormFilter maintenance programs.

Prior to the development of the maintenance database, the following maintenance frequencies should be followed:

Inspection/minor maintenance

- One time per year
- After Major Storms

Major maintenance

- One time per year
- In the event of a chemical spill

Frequencies should be updated as required.

The recommended initial frequency for inspection/minor maintenance is two times per year for the precast unit. StormFilter units should be inspected after all major storms. Sediment removal and cartridge replacement on an annual basis is recommended until further knowledge is gained about a particular system.

Once an understanding of site characteristics has been established, maintenance may not be needed for one to two years, but inspection is warranted.

Maintenance Methods

Inspection/Minor Maintenance

The primary goal of a maintenance inspection is to assess the condition of the cartridges relative to the level of sediment loading. It may be desirable to conduct this inspection during a storm to observe the relative flow through the filter cartridges. If the submerged cartridges are severely plugged, large amounts of sediments will be present and very little flow will be discharged from the drainage pipes. If this is the case, it is likely that the cartridges need to be replaced.

Warning: In the case of a spill, the worker should abort maintenance activities until the proper guidance is obtained. Notify the local hazard control agency and Stormwater Management Inc. immediately.

To conduct an inspection and/or minor maintenance:

Important: Maintenance must be performed by a utility worker familiar with StormFilter units.

1. If applicable, set up safety equipment to protect pedestrians from fall hazards due to open vault doors or when work is being done near walkways or roadways.
2. Visually inspect the external condition of the unit and take notes concerning defects/problems.

3. Open the doors to the vault and allow the system to air out for 5-10 minutes.
4. Without entering the vault, inspect the inside of the unit, including components.
5. Take notes about the external and internal condition of the vault.

   Be sure to record the level of sediment build-up on the floor of the vault, in the forebay, and on top of the cartridges. If flow is occurring, note the level of water and estimate the flow rate per drainage pipe. Record all observations.
6. Remove large loose debris and trash using a poke with a grapple or net on the end.
7. Close and fasten the door.
8. Remove safety equipment.
9. Make notes about the local drainage area relative to ongoing construction, erosion problems, or high loading of other materials to the system.
10. Finally, review the condition reports from the previous minor and major maintenance visits, and schedule cartridge replacement if needed.

Major Maintenance

Depending on the configuration of the particular system, a worker may be required to enter the vault to perform some tasks.

Important: If vault entry is required, OSHA rules for confined space entry must be followed.

Filter cartridge replacement should occur during dry weather. It may be necessary to plug the filter inlet pipe if base flows exist. Standing water present in the vault should be regarded as polluted and should be contained during this operation by temporarily capping the manifold connectors.

Replacement cartridges will be delivered to the site. Information concerning how to obtain the replacement cartridges is available from Stormwater Management, Inc.

Warning: In the case of a spill, the worker should abort maintenance activities until the proper guidance is obtained. Notify the local hazard control agency and Stormwater Management Inc. immediately.

To conduct cartridge replacement and sediment removal maintenance:

1. If applicable, set up safety equipment to protect pedestrians from fall hazards due to open vault doors or when work is being done near walkways or roadways.
2. Visually inspect the external condition of the unit and take notes concerning defects/problems.
3. Open the doors to the vault and allow the system to air out for 5-10 minutes.
4. Without entering the vault, give the inside of the unit, including components, a general condition inspection.
5. Make notes about the external and internal condition of the vault.

   Give particular attention to recording the level of sediment build-up on the floor of the vault, in the forebay, and on top of the internal components.
6. Remove large loose debris and trash using a pole with a grapple or net on the end.
7. Using a boom, crane, or other device (dolly and ramp), offload the replacement cartridges (up to 150 lbs. each) and set aside.
8. Remove used cartridges from the vault using one of the following methods:

Important: This activity will require that workers enter the vault to remove the cartridges from the drainage system.

Method 1:

a. Using an appropriate sling, attach the cable from the boom, crane, or tripod to the cartridge being removed. Contact SMI for specifications on appropriate attachment devices.

This activity will require that workers enter the vault to remove the cartridges from the drainage system and place them under the vault opening for lifting.

Important: Note that cartridges containing media other than the leaf media require unscrewing from their threaded connectors. Take care not to damage the manifold connectors. This connector should remain installed in the manifold and capped if necessary.

b. Remove the used cartridges (250 lbs. each) from the vault.

Important: Care must be used to avoid damaging the cartridges during removal and installation. The cost of repairing components damaged during maintenance will be the responsibility of the owner unless Stormwater Management performs the maintenance activities and damage is not related to discharges to the system.

c. Set the used cartridge aside or load onto the hauling truck.

d. Continue steps a through c until all cartridges have been removed.

Method 2:

a. Unscrew the cartridge cap.

b. Remove the cartridge hood.

c. Tip the cartridge on its side.

Important: Note that cartridges containing media other than the leaf media require unscrewing from their threaded connectors. Take care not to damage the manifold connectors. This connector should remain installed in the manifold and capped if necessary.

d. Empty the cartridge onto the vault floor.

e. Set the empty, used cartridge aside or load onto the hauling truck.

f. Continue steps a through e until all cartridges have been removed.

9. Remove deposited sediment from the floor of the vault and, if large amounts are present, from the forebay. This can usually be accomplished by shoveling the sediment into containers, which, once full, are lifted mechanically from the vault and placed onto the hauling truck. If Method 2 in Step 8 is used to empty the cartridges, or in cases of extreme sediment loading, a vector truck may be required.
10. Once the sediments are removed, assess the condition of the vault and the condition of the manifold and connectors. The connectors are short sections of 2-inch schedule 40 PVC, or threaded schedule 80 PVC that should protrude above the floor of the vault.
    a. If required, apply a light coating of FDA approved silicon grease to the outside of the exposed portion of the connectors. This ensures a watertight connection between the cartridge and the drainage pipe.
    b. Replace any damaged connectors.

11. Using the boom, crane, or tripod, lower and install the new cartridges. Once again, take care not to damage connections.
12. Close and fasten the door.
13. Remove safety equipment.
14. Make notes about the local drainage area relative to ongoing construction, erosion problems, or high loadings of other materials to the system.
15. Finally, dispose of the residual materials in accordance with applicable regulations. Make arrangements to return the used cartridges to Stormwater Management, Inc.

Related Maintenance Activities

(Performed on an as-needed basis)

StormFilter units are often just one of many components in a more comprehensive stormwater drainage and treatment system. The entire system may include catch basins, detention vaults, sedimentation vaults and manholes, detention/retention ponds, swales, artificial wetlands, and other miscellaneous components.

In order for maintenance of the StormFilter to be successful, it is imperative that all other components be properly maintained. The maintenance/repair of upstream facilities should be carried out prior to StormFilter maintenance activities.

In addition to considering upstream facilities, it is also important to correct any problems identified in the drainage area. Drainage area concerns may include: erosion problems, heavy oil and grease loading, and discharges of inappropriate materials.

Material Disposal

The accumulated sediment found in stormwater treatment and conveyance systems must be handled and disposed of in a manner that will not allow the material to affect surface or ground water. It is possible for sediments to contain measurable concentrations of heavy metals and organic chemicals (such as pesticides and petroleum products). Areas with the greatest potential for high pollutant loading include industrial areas and heavily traveled roads.

Sediments and water must be disposed of in accordance with all applicable waste disposal regulations. It is not appropriate to discharge untreated materials back to the stormwater drainage system.

Part of arranging for maintenance to occur should include coordination of disposal of solids (landfill coordination) and liquids (municipal vacuum truck decant facility, local wastewater treatment plant, on-site treatment and discharge).

Owners should contact the local public works department and inquire about how the department disposes of their street waste residuals. Stormwater Management Inc will determine disposal methods or must of the media contained in the cartridges. If the material has been contaminated with any unusual substance, the cost of special handling and disposal will be the responsibility of the owner.

Bioretention Facility Sizing

Minimum surface area required for bioretention cells is 4% of the total area draining to the cell (per City of San Jose design standards)

Drainage Area	Size	Min. Bioretention Cell Surface Area required (4%)	Proposed Bioretention Cell
A1	6,246 s.f.	250 s.f.	660 s.f.
A2	2,352 s.f.	94 s.f.	270 s.f
B1	14,143 s.f.	566 s.f.	575 s.f.
B2	8,309 s.f.	333 s.f.	338 s.f.
C	19,405 s.f.	777 s.f.	800 s.f.

Bioretention Cell Maintenance

The following maintenance activities and schedule are based on the recommendations provided in the California Stormwater BMP Handbook – New and Redevelopment.

The primary maintenance requirement for bioretention areas is that of inspection and repair or replacement of the treatment area's components. Generally, this involves nothing more than the routine periodic maintenance that is required of any landscaped area. Plants that are appropriate for the site, climatic, and watering conditions should be selected for use in the bioretention cell. Appropriately selected plants will aid in reducing fertilizer, pesticide, water, and overall maintenance requirements. Bioretention system components should blend over time through plant and root growth, organic decomposition, and the development of a natural soil horizon. These biologic and physical processes over time will lengthen the facility's life span and reduce the need for extensive maintenance.

Routine maintenance should include a biannual health evaluation of the trees and shrubs and subsequent removal of any dead or diseased vegetation (EPA, 1999). Diseased vegetation should be treated as needed using preventative and low-toxic measures to the extent possible. BMPs have the potential to create very attractive habitats for mosquitos and other vectors because of highly organic, often heavily vegetated areas mixed with shallow water. Routine inspections for areas of standing water within the BMP and corrective measures to restore proper infiltration rates are necessary to prevent creating mosquito and other vector habitat. In addition, bioretention BMPs are susceptible to invasion by aggressive plant species such as cattails, which increase the chances of water standing and subsequent vector production if not routinely maintained.

In order to maintain the treatment area's appearance it may be necessary to prune and weed. Furthermore, mulch replacement is suggested when erosion is evident or when the site begins to look unattractive. Specifically, the entire area may require mulch replacement every two to three years, although spot mulching may be sufficient when there are random void areas. Mulch replacement should be done prior to the start of the wet season.

Accumulated sediment and debris removal (especially at the inflow point) will normally be the primary maintenance function. Other potential tasks include replacement of dead vegetation, soil pH regulation, erosion repair at inflow points, mulch replenishment, unclogging the underdrain, and repairing overflow structures. There is also the possibility that the cation exchange capacity of the soils in the cell will be significantly reduced over time. Depending on pollutant loads, soils may need to be replaced within 5-10 years of construction (LID, 2000).

Media Filter Sizing

The following steps for sizing the proposed Manhole StormFilter units are taken from the Product Design Manual, Version 3.3, released September 2005 by Stormwater Management, Inc. (product manufacturer). The Rational Method information contained in Step 1 is based on the methodology provided by the Santa Clara Valley Urban Runoff Pollution Prevention Program for calculating design flow rates.

Area 1

Step 1. Calculate the peak flow rate from the water quality storm (Q_{treat}) for the site.

Use the Rational Method Q=CIA to solve for Q, given a rainfall intensity of 0.180 inches/hour, where Q = Flow (cubic feet/second), C = Runoff Coefficient, I = Rainfall Intensity (inches/hour), and A = Total Site Area (acres).

C .90 (estimated)

I *Rain Gage Correction Factor:* = 14.5 in. MAP_{site} / 13.9 in. $MAP_{SJ\ Airport\ gage}$ = 1.04

Corrected Design Rainfall Intensity (I): Rain Gage Correction Factor x Design Rainfall Intensity for San Jose Airport Rain Gage = 1.04 x 0.17 (per SCVURPPP C3 Handbook) = .180

A 20,190 sf. = .46 ac.

Q = .90 x .18 in/hr x .46 ac = 0.07 cfs

Step 2. Calculate the number of cartridges required to treat the peak water quality flow rate (N_{flow}) for the site.

$N_{flow} = Q_{treat}$ (449 $_{gpm/cfs}$ / $Q_{cart\ gpm/cart}$)

Notes:

- *Assume Q_{cart} = 15 $_{gpm/cart}$, which is the maximum flow rate that an individual cartridge can treat.*
- *If the number of cartridges is not a whole number, round the number of cartridges up to the next whole number.*

N_{flow} = (.07 cfs) x (449 $_{gpm/cfs}$ / 15 $_{gpm/cart}$) = 2.1 cart. = 3 cartridges

Configuration: *48" Manhole Stormfilter (3 cartridges)*

Area 2

Step 1. C .90 (estimated)

I *Rain Gage Correction Factor:* = 14.5 in. MAP_{site} / 13.9 in. $MAP_{SJ\ Airport\ gage}$ = 1.04

Corrected Design Rainfall Intensity (I): Rain Gage Correction Factor x Design Rainfall Intensity for San Jose Airport Rain Gage = 1.04 x 0.17 (per SCVURPPP C3 Handbook) = .180

A 53,734 sf. = 1.23 ac.

Q = .90 x .18 in/hr x 1.23 ac = 0.20 cfs

Step 2. $N_{flow} = Q_{treat}$ (449 $_{gpm/cfs}$ / $Q_{cart\ gpm/cart}$)

N_{flow} = (.20 cfs) x (449 $_{gpm/cfs}$ / 15 $_{gpm/cart}$) = 6 cartridges

Configuration: *72" Manhole Stormfilter (6 cartridges)*

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△	AA	06.07.2006	Respond to City Comments
△	AA	06.08.2006	Respond to City Comments
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Republic Urban Properties LLC
95 South Market, Third Floor
San Jose, CA 95113

Date:	11.13.2007
Scale:	NTS
Designed:	AA
Drawn:	FC
Checked:	RTH
Proj. Engr:	DRR
File:	352500SWRZ

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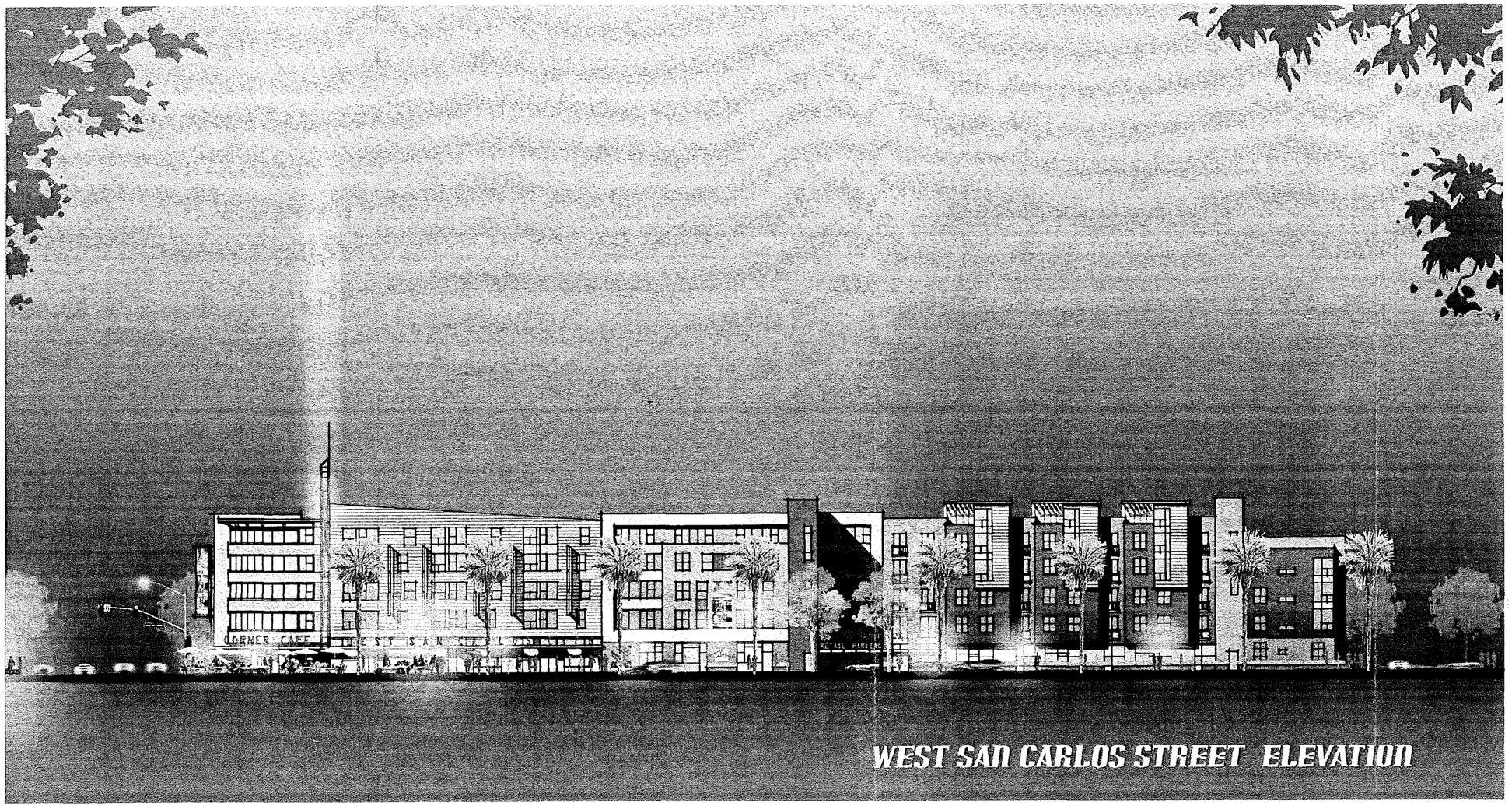
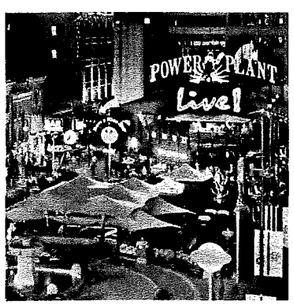
GENERAL DEVELOPMENT PLAN- EXHIBIT C
PDC 07-096
Conceptual Storm Water Control Plan Details

Sheet S-3 Of Sheets

JOB NUMBER 3525.00

3390CSRZ





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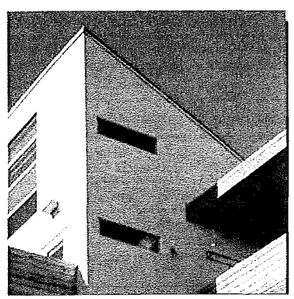

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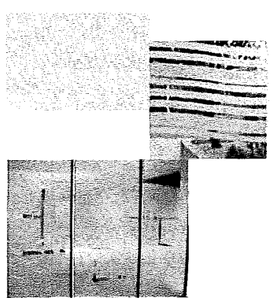

TEXTURE

COLOR

WEST SAN CARLOS Mixed-Use

SAN JOSE, CALIFORNIA

REPUBLIC URBAN PROPERTIES

GENERAL DEVELOPMENT
PLAN - EXHIBIT C

DATE:	08/07/2008
PROJECT #:	2007-30112
SCALE:	1"=20'-0"

0 20' 40'

NORTH

SHEET #: A-1

BUILDING ELEVATION

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