

BROWNSTONE & MAIN

DRAINAGE CALCULATIONS

Run-on Flow Calculations

Upstream Drainage Basin	Area (ac)	c	f	i	Q
A (residential)	9.84	0.25	1.25	3.4	10.46
B (church)	1.06	0.9	1.25	3.4	4.05
C (Pasture)	1.78	0.2	1.25	3.4	1.51
TOTAL	12.68				16.02

Project Flow Calculations

Existing flow					
D1 - pond area	1.89	0.25	1.25	3.4	2.01
D2 - development site area	2.68	0.25	1.25	3.4	2.85
TOTAL	4.57				4.86

Developed Flow Calculations

D1 - pond area	1.89	0.25	1.25	3.4	2.01
D2 - development site area	2.68	0.9	1.25	3.4	10.25
TOTAL	4.57				12.26

Total existing and proposed flow offsite

Estimated existing 100 yr volume	$V = 4.86 \times 60 \text{ sec/min} \times 60 \text{ min/hr} \times 24/2 \times 67$	140,668	cu ft
Estimated developed 100 yr volume	$V = 12.26 \times 60 \text{ sec/min} \times 60 \text{ min/hr} \times 24/2 \times 68$	354,853	cu ft
Increase		214,186	cu ft

Approximate area available area for pond	60,863	sq ft
Top of pond elevation	45.0	ft
Initial trial depth for pond	3.52	ft
Freeboard	2.00	ft
Total depth	5.52	ft
Elevation of flow line of channel	42.37	ft
Initial elevation of bottom of pond	39.48	ft
Depth of pond below flow line of channel	2.89	ft
Storage volume of pond below channel elevation	175,842	cu ft
Additional storage needed above channel flow line	38,344	cu ft

NOTE: Above calculations are conceptual only, based on 2/3 of a triangular 100 year - 24 hour hydrograph. Once a site plan is vetted, plans will be submitted to Contra Costa County Flood Control Agency to develop a site-specific hydrograph for final design of retention pond and outlet structure.

BROWNSTONE & MAIN, OAKLEY, CA

STORM RUNOFF TABULATION

EXISTING IMPERVIOUS SURFACES	
LOCATION	AREA (SF)
SITE	0
TOTAL	0

NEW IMPERVIOUS SURFACES	
LOCATION	
HARDSCAPE	86,400.00
BUILDINGS	17,314.00
TOTAL	103,714.00

EXISTING PERVIOUS SURFACES	
LOCATION	
SITE	198,025.78

PROPOSED PERVIOUS SURFACES	
LANDSCAPE AREAS	
LANDSCAPE AREAS	4,440.00
POND	87,471.00
CHANNEL	4,942.00
TOTAL	96,853.00

NET INCREASE IN IMPERVIOUS SURFACES	96,853.00
MINIMUM TREATMENT REQUIRED (4%)	3,874.12
ACTUAL TREATMENT PROVIDED	92,413.00

TREATMENT METHOD: DETENTION POND AND VEGETATED CHANNEL

WATER POLLUTION AND GOOD HOUSEKEEPING NOTES

1. MATERIALS POLLUTION PREVENTION PLAN.
 - A. APPLICABLE MATERIALS OR SUBSTANCES LISTED BELOW ARE EXPECTED TO BE PRESENT ONSITE DURING CONSTRUCTION. OTHER MATERIALS AND SUBSTANCES NOT LISTED BELOW SHALL BE ADDED TO THE INVENTORY.

CONCRETE	PETROLEUM BASED PRODUCTS
DETERGENTS	CLEANING SOLVENTS
PAINTS (ENAMEL AND LATEX)	WOOD
METAL STUDS	MASONRY BLOCK
 - B. MATERIAL MANAGEMENT PRACTICES SHALL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES TO STORM WATER RUNOFF. AN EFFORT SHALL BE MADE TO STORE ONLY ENOUGH PRODUCT AS IS REQUIRED TO DO THE JOB.
 - C. ALL MATERIALS STORED ONSITE SHALL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR APPROPRIATE CONTAINERS.
 - D. PRODUCTS SHALL BE KEPT IN THEIR ORIGINAL CONTAINERS WITH THE ORIGINAL MANUFACTURER'S LABEL.
 - E. SUBSTANCES SHALL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.
 - F. WHENEVER POSSIBLE, A PRODUCT SHALL BE USED UP COMPLETELY BEFORE DISPOSING OF THE CONTAINER.
 - G. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL SHALL BE FOLLOWED.
 - H. THE CONTRACTOR SHALL CONDUCT INSPECTIONS TO ENDURE PROPER USE AND DISPOSAL OF MATERIALS ONSITE.
2. ONSITE AND OFFSITE PRODUCTS SPECIFIC PLAN
 - A. THE FOLLOWING PRODUCT SPECIFIC PRACTICES SHALL BE FOLLOWED ONSITE:
 - 1) PETROLEUM BASED PRODUCTS: ALL ONSITE VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTATIVE MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE. PETROLEUM PRODUCTS SHALL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED ANY ASPHALT SUBSTANCE USED ONSITE SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATION.
 - 2) PAINTS: ALL CONTAINERS SHALL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT SHALL NOT BE DISCHARGED TO THE CITY DRAINAGE SYSTEM BUT SHALL BE PROPERLY DISPOSED OF ACCORDING TO MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.



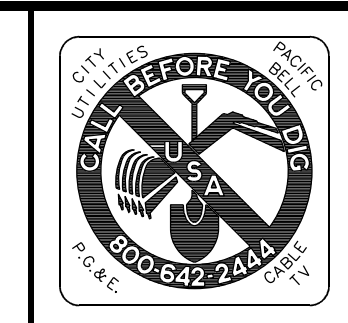
SCALE: 1" = 40'
 40 20 0 20 40
 IF PHYSICAL DISTANCE ACROSS SCALE BAR IS NOT EXACTLY TWO (2) INCHES, ADJUST SCALE ACCORDINGLY.

BY	DATE	CSJ	DATE	REVISIONS



Date: February 17, 2020
 Scale: 1" = 40'
 Designed: LA
 Drawn: LA
 Checked: LA
 Proj. Engr: LA
 File: 15-02

CSI Engineering
 77 Solano Square #283
 Benicia, CA 94510
 (707) 563-8612
 www.csieng.com



BROWNSTONE & MAIN

CONCEPTUAL STORM WATER PLAN

SHEET
C8
 8 OF 14 SHEETS
 APN: 034-210-006