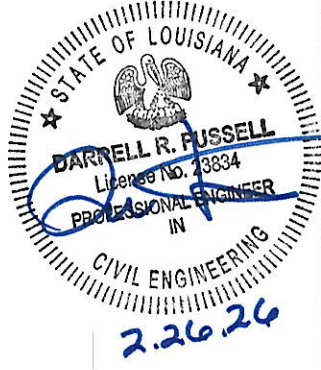


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JOB: Creative Dental Office Lot 1A N. Buchanan St. Covington, LA		DATE: 2.26.26
		BY: DRF

HYDROLOGICAL CALCULATIONS

Scope:

Provide drainage calculations for the proposed dental office at the corner of W. 21st Ave. and N. Buchanan St. in Covington, LA. The drainage calculations are based on the Rational Method for computing quantities of storm water runoff. The Rational method is based on the following:

$Q = CIA$

Q = peak runoff rate, cfs

C = runoff coefficient

I = average rainfall intensity

A = drainage area, acres

1. Existing Conditions:

The existing site is developed with grass yard areas and a limestone access drive for the existing building at 1116 W. 21st Ave. The site drains from north to south to the existing W. 21st Ave. ditch. The existing site drains as a single basin. (see plan for basin area details).

The existing drainage calculations are as follows:

Area = 0.46 Acres

Determination of "Tc"

Area = 0.46 Acres

Determination of "C"

Area Total = 0.46 acres

Area of Grass / Landscaping = 0.41 acres

Area Limestone Paving = 0.05 acres

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$$C = 0.25 (0.41/0.46) + 0.5(0.05/0.46) = 0.27$$

$$T_c = 18 \text{ min}$$

(See TR55 Worksheet for Tc calculation information.)

2. Developed Conditions:

The proposed plans call for the construction of a raised office building along with concrete paved parking, and drive areas. The total impervious area for the proposed site is 0.31 Acres. The developed site drains as one basin. The developed site drains as the existing. (see attached plan for developed site drainage details).

The developed drainage calculations are as follows:

Determination of "Tc"

$$\text{Area} = 0.46$$

Determination of "C"

$$\text{Area Total} = 0.46 \text{ acres}$$

$$\text{Area of Grass / Forest} = 0.15 \text{ acres}$$

$$\text{Area Impervious} = 0.31 \text{ acres}$$

$$C = 0.25 (0.15/0.46) + 0.95(0.31/0.46) = 0.72$$

$$T_c = 6 \text{ min (See TR55 Worksheet for Tc calculation information.)}$$

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JOB: Creative Dental Office Lot 1A N. Buchanan St. Covington, LA		DATE: 2.26.26
		BY: DRF

HYDRAFLOW COMPUTER ANALYSIS

The pre-developed and developed areas, “C” values and “Tc” values were input into the Program along with the rainfall intensity data provided in the LADOTD Hydraulics Manual, producing the following data for a 25-year storm.

Existing flow	0.81 cfs
Developed flow	2.91 cfs
Required storage	716 cf

Storage and Metering:

A detention area will be constructed along the east property line with a storage volume of 716 c.f.. A 6” PVC Metering Pipe sloped at 0.0026 ft/ft will be constructed from the detention area to the existing W. 21st Ave. ditch for a developed metered flow of 0.81 cfs. (see HydraFlow Pond Report and Sheet C1 for storage volume details.)

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Tuesday, Mar 3 2026, 12:57 PM

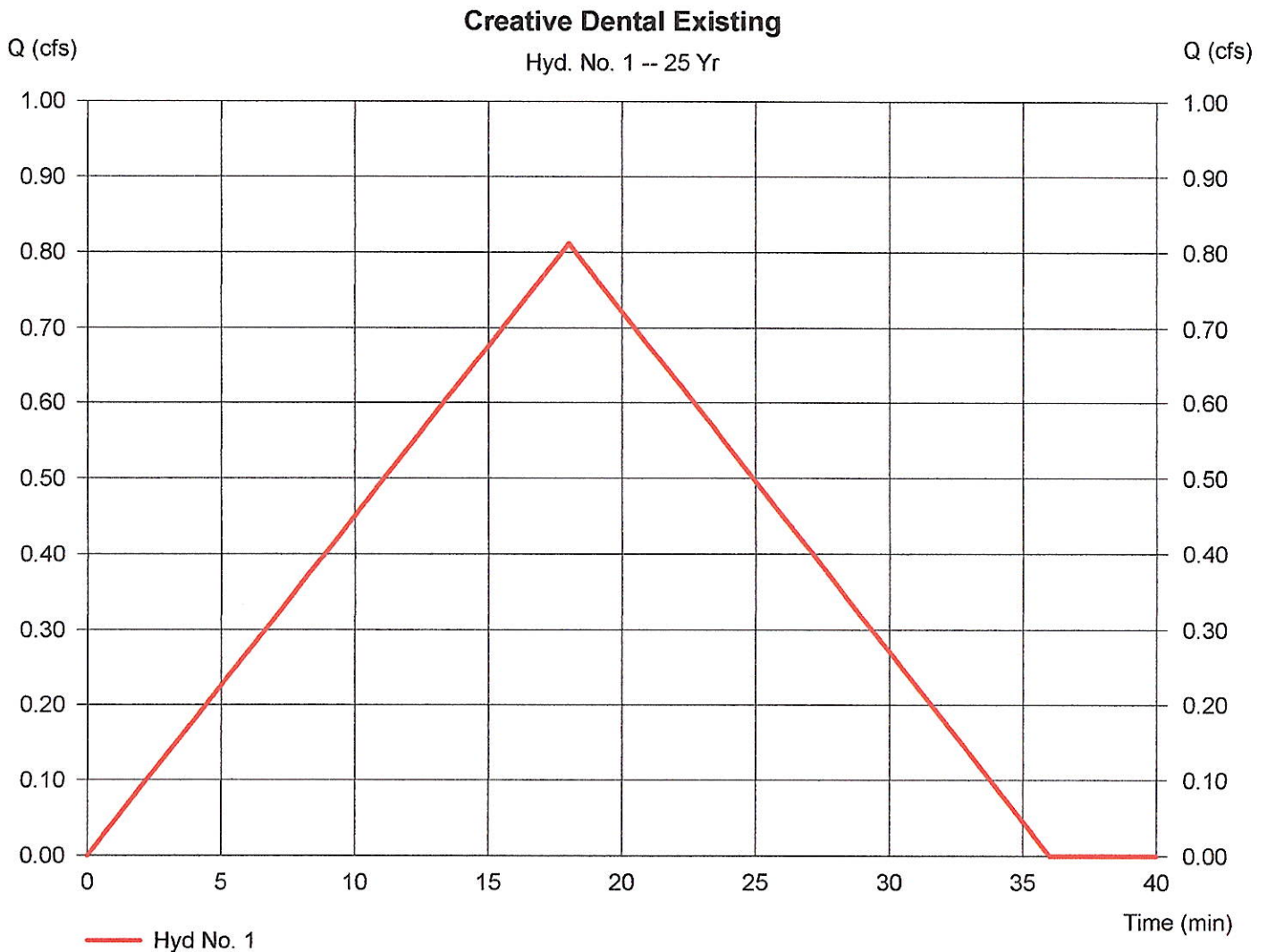
Hyd. No. 1

Creative Dental Existing

Hydrograph type = Rational
Storm frequency = 25 yrs
Drainage area = 0.460 ac
Intensity = 6.533 in/hr
IDF Curve = louisiana.IDF

Peak discharge = 0.81 cfs
Time interval = 1 min
Runoff coeff. = 0.27
Tc by TR55 = 18.00 min
Asc/Rec limb fact = 1/1

Hydrograph Volume = 876 cuft



TR55 Tc Worksheet

Hydraflow Hydrographs by Intelisolve

Hyd. No. 1

Creative Dental Existing

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 4.80	0.00	0.00	
Land slope (%)	= 0.68	0.00	0.00	
Travel Time (min)	= 17.94	+ 0.00	+ 0.00	= 17.94
Shallow Concentrated Flow				
Flow length (ft)	= 18.00	0.00	0.00	
Watercourse slope (%)	= 0.68	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	= 1.33	0.00	0.00	
Travel Time (min)	= 0.23	+ 0.00	+ 0.00	= 0.23
Channel Flow				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.026	0.015	0.015	
Velocity (ft/s)	= 0.00	0.00	0.00	
Flow length (ft)	= 0.0	0.0	0.0	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				18.16 min

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Tuesday, Mar 3 2026, 12:59 PM

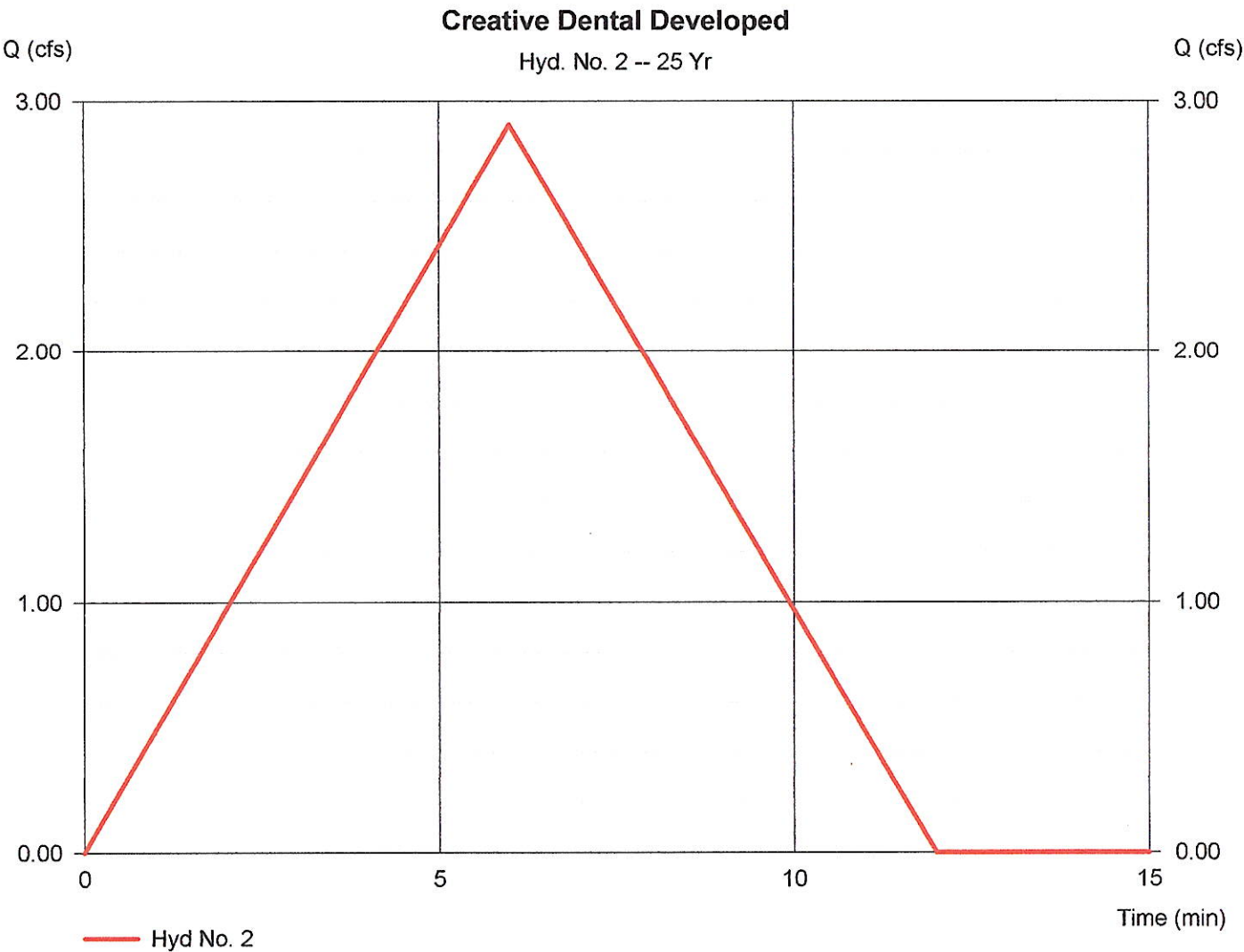
Hyd. No. 2

Creative Dental Developed

Hydrograph type = Rational
Storm frequency = 25 yrs
Drainage area = 0.460 ac
Intensity = 8.775 in/hr
IDF Curve = louisiana.IDF

Peak discharge = 2.91 cfs
Time interval = 1 min
Runoff coeff. = 0.72
Tc by TR55 = 6.00 min
Asc/Rec limb fact = 1/1

Hydrograph Volume = 1,046 cuft



TR55 Tc Worksheet

Hydraflow Hydrographs by Intelisolve

Hyd. No. 2

Creative Dental Developed

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.410	0.011	0.011	
Flow length (ft)	= 10.0	24.0	0.0	
Two-year 24-hr precip. (in)	= 4.80	4.80	0.00	
Land slope (%)	= 1.00	1.00	0.00	
Travel Time (min)	= 3.74	+	0.42	+
			0.00	= 4.16
Shallow Concentrated Flow				
Flow length (ft)	= 0.00	0.00	0.00	
Watercourse slope (%)	= 0.00	0.00	0.00	
Surface description	= Paved	Unpaved	Paved	
Average velocity (ft/s)	= 0.00	0.00	0.00	
Travel Time (min)	= 0.00	+	0.00	+
			0.00	= 0.00
Channel Flow				
X sectional flow area (sqft)	= 1.08	0.00	0.00	
Wetted perimeter (ft)	= 3.79	0.00	0.00	
Channel slope (%)	= 0.12	0.00	0.00	
Manning's n-value	= 0.026	0.011	0.015	
Velocity (ft/s)	= 0.86	0.00	0.00	
Flow length (ft)	= 100.0	0.0	0.0	
Travel Time (min)	= 1.95	+	0.00	+
			0.00	= 1.95
Total Travel Time, Tc				6.10 min

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Tuesday, Mar 3 2026, 12:59 PM

Hyd. No. 3

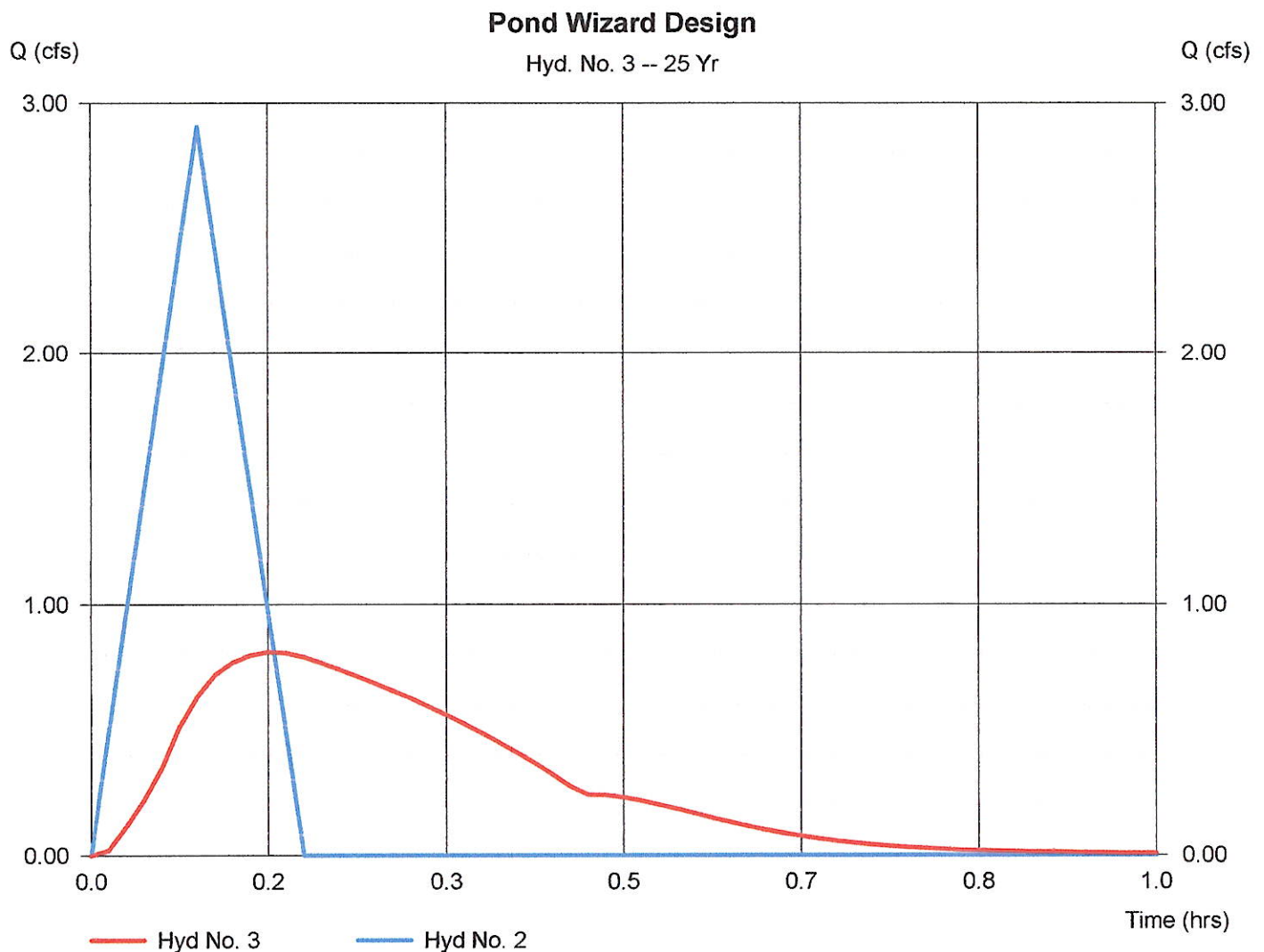
Pond Wizard Design

Hydrograph type = Reservoir
Storm frequency = 25 yrs
Inflow hyd. No. = 2
Reservoir name = Pond Wizard Design

Peak discharge = 0.81 cfs
Time interval = 1 min
Max. Elevation = 22.40 ft
Max. Storage = 716 cuft

Storage Indication method used.

Hydrograph Volume = 1,043 cuft



Pond Report

Hydraflow Hydrographs by Intelisolve

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Pond No. 1 - Pond Wizard Design

Pond Data

Bottom LxW = 125.2 x 1.0 ft Side slope = 3.0:1 Bottom elev. = 21.20 ft Depth = 1.20 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	21.20	125	0	0
0.06	21.26	171	9	9
0.12	21.32	217	12	20
0.18	21.38	263	14	35
0.24	21.44	309	17	52
0.30	21.50	356	20	72
0.36	21.56	402	23	95
0.42	21.62	450	26	120
0.48	21.68	497	28	149
0.54	21.74	545	31	180
0.60	21.80	592	34	214
0.66	21.86	641	37	251
0.72	21.92	689	40	291
0.78	21.98	738	43	334
0.84	22.04	787	46	379
0.90	22.10	836	49	428
0.96	22.16	885	52	480
1.02	22.22	935	55	534
1.08	22.28	985	58	592
1.14	22.34	1,035	61	653
1.20	22.40	1,086	64	716

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise (in)	= 6.00	0.00	0.00	0.00
Span (in)	= 6.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 21.20	0.00	0.00	0.00
Length (ft)	= 25.00	0.00	0.00	0.00
Slope (%)	= 0.26	0.00	0.00	0.00
N-Value	= .011	.013	.013	.013
Orif. Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 0.00	0.00	0.00	0.00
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfiltration = 0.000 in/hr (Wet area) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.

