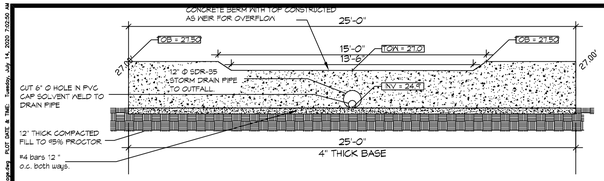
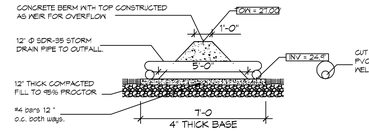


D SECTION
SCALE: NTS

BERM & WEIR



4 DETAIL
SCALE: NTS

NO NET FILL CALCULATIONS

FILL CALCS
74.05 s.f. (Section B) x 52.75 ' (Section A) = 3,906 c.f.
36.35 s.f. (Section A) x 93.50 ' (Section B) = 3,399 c.f.
Average Fill Calcs = 3,653 c.f.

RE-SHAPE EXISTING 25' SWALE
3 sections of swale average 3.95 s.f. x 183 linear ft long
Average Fill Calc for Swale = 723 c.f.

(NOTE: ALL SIDEWALKS and DRIVES ARE LEVEL WITH EXISTING GRADES)

Fill Total = 4,376 c.f.

SWALE BETWEEN BUILDING CUT CALCS
AVERAGE AREA = 1.76 s.f. & 1.57 s.f. = 1.67 s.f.
LENGTH OF SWALE = 133 ft
Volume of SWALE CUT = 222 c.f.

RE-SHAPE EXISTING 25' SWALE CUT CALCS
3 sections of swale average 4.95 s.f. x 183 linear ft long
Average Fill Calc for Swale = 906 c.f.

WOODED AREA CUT CALCS
The area to be cut is (138.7ft x 53.5ft.) x 0.50 ft depth = 3,710 c.f.

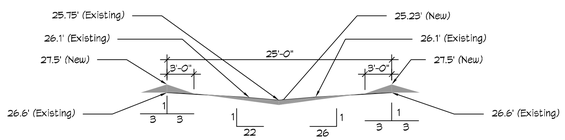
CUT Totals : 4,838 c.f.

GENERAL SITE DRAINAGE NOTES

1. REMOVE DEBRIS AND CLEAN BOTTOM OF EXISTING SWELL.
2. ALL ELEVATIONS SHOWN ARE M.S.L. AND ARE PLUS OR MINUS
3. FIELD VERIFY ALL ELEVATIONS AND AND DRAINAGE SYSTEM PLACEMENT PRIOR TO START OF WORK.

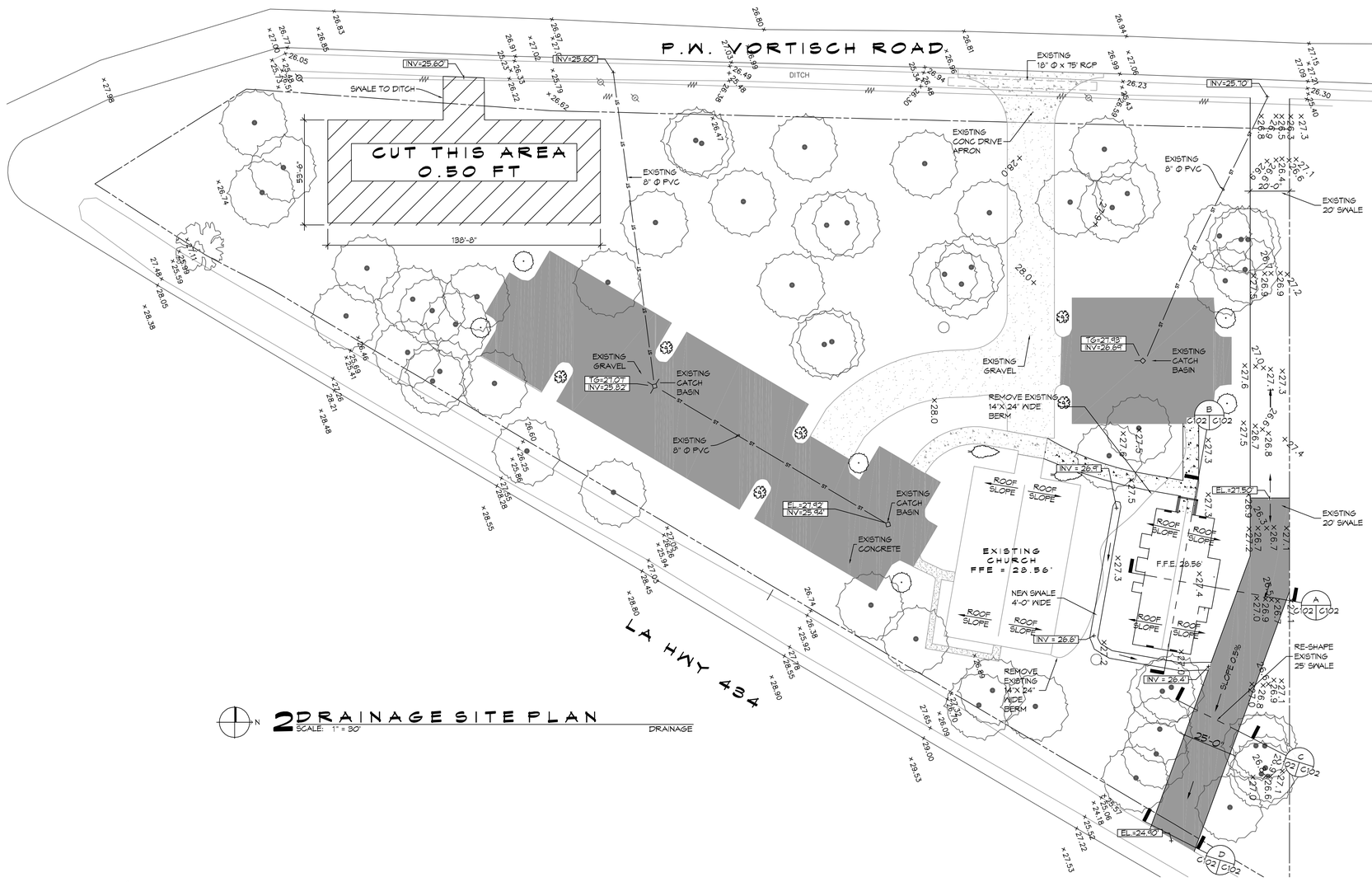
SITE DRAINAGE LEGEND

TG=100.0' — TOP OF GRATE
INV=100.0' — INVERT OF PIPE
ST — NEW SUBSURFACE DRAINAGE PIPE
DRAINAGE FLOW DIRECTION ARROW
AREA OF DETAINED RAINWATER



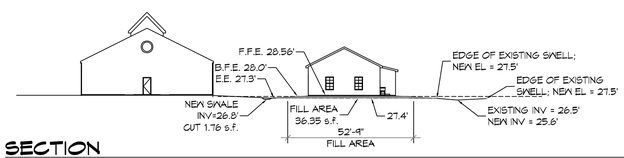
C SECTION
SCALE: NTS

TYPICAL RESHAPED SWALE FOR DETENTION

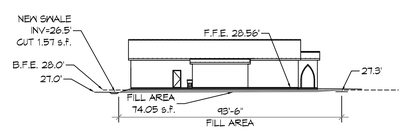


2 DRAINAGE SITE PLAN
SCALE: 1" = 30'

DRAINAGE



A SECTION
SCALE: NTS



B SECTION
SCALE: NTS

STORM WATER RUN-OFF CALCULATIONS

OUR LADY OF FATIMA
68110 VORTISCH ROAD
LACOMBE, LOUISIANA

Drainage Calculations - Modified Rational Method, LDOTD Hydraulics Manual
Predevelopment Condition
25 Year Frequency

Q= CIA			Factor	Area, sf	Total
	C	Undeveloped/Green Space	0.2	131,697	26330.4
		Gravel Surface	0.25	0	0
		Building/ Concrete Parking	0.95	0	0
				131,697	26330.4
		Weighted C Factor	0.20		
	I	Hydraulic Length, L	210 feet		
		Slope, in %, S	0.4762	Slope Calc=	0.004762
		Runoff Coefficient, C	0.20		
		Time of Concentration	Tc	40.0 minutes	
			8.121071	0.172558	1.158672
		I, Intensity from Region 1		4.51	
		D	0.681396		
		a	4.611		
		b	0.346		
		c	-0.798		
	Area, Acres		3.023		
	Q25 Flow, cfs		C*I*A	2.73 cfs	

Q25 Predev Flow	**2.73 cfs**
10% Reduction	**2.46 cfs**

OUR LADY OF FATIMA
68110 VORTISCH ROAD
LACOMBE, LOUISIANA

Drainage Calculations - Modified Rational Method, LDOTD Hydraulics Manual
Postdevelopment Condition
25 Year Frequency

Q= CIA			Factor	Area, sf	Total
	C	Undeveloped/Green Space	0.2	95,400	19080.00
		Gravel Surface	0.25	24,350	6088.75
		Building/ Concrete Parking	0.85	11,938	11341.10
				131,697	36510.85
		Weighted C Factor	0.277		
	I	Hydraulic Length, L	210 feet		
		Slope, in %, S	0.4762		0.004762
		Runoff Coefficient, C	0.277		
		Time of Concentration Tc	28.3 minutes		
			8.121071	4.280634	1.158672
		I, intensity from Region 1	5.42		
		D	0.470998		
		a	4.611		
		b	0.346		
		c	-0.798		
	Area, Acres		3.023		
	Q25 Flow, cfs	C*I*A	4.54 cfs		

Q25 Postdev Flow	**4.54 cfs**
Q25 Allowable Flow- Undeveloped Flow =	**2.46 cfs**

OUR LADY OF FATIMA
68110 VORTISCH ROAD
LACOMBE, LOUISIANA

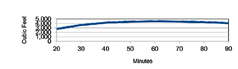
Drainage Calculations - Modified Rational Method, LDOTD Hydraulics Manual
Storage Requirements for a 25 Year Frequency Storm Event

i = a/(D + b) ^c
q = D x A x C

Max Storage Volume= (D x q) - (3 x Q25 Allowable Flow x (D + Tc)

Storm Duration (D)	Time	i	q, cfs	Max. Storage Volume, cf	Max. Storage Volume, ac-ft
10	min	7.86	6.59	1,133	0.026
20	min	6.28	5.26	2,759	0.063
30	min	5.27	4.42	3,658	0.084
40	min	4.56	3.83	4,154	0.095
50	min	4.04	3.39	4,395	0.101
60	min	3.64	3.05	4,474	0.103
70	min	3.31	2.78	4,427	0.102
80	min	3.05	2.56	4,290	0.098
90	min	2.83	2.37	4,083	0.094
100	min	2.64	2.21	3,821	0.088

Storage Volume, Cubic Feet
25 Year Storm



OUR LADY OF FATIMA
68110 VORTISCH ROAD
LACOMBE, LOUISIANA

Detention Area : Storage detention required = **4,474 c.f.**

There are 3 parking lots that are 64 ft wide and have an aggregate length of 333 ft; the parking lot edges are 0.2 ft above the TOG in those areas. The detention calculations are based on the area of a triangle (0.5xbxh) where 0.2 ft is divided by 2 = 0.1 ft depth

333 ft long
64 ft wide
0.1 ft depth
2131.2 cubic feet of detention

Swale Detained water surface elevation = 27.00 ft

Three different cross sections were evaluated for the new swale to detain rainwater up to the water surface elevation of 27.0 ft; beginning, middle and end of swale. The average area of these sections are 10.21 s.f. The length of swale to be used for detention is 183 ft.

18.21 s.f.
183 linear ft
2966.43 cubic feet of detention
Total detention provided = **5,098 c.f of water which exceeds the detention required.**

OUR LADY OF FATIMA
68110 VORTISCH ROAD
LACOMBE, LOUISIANA

Discharge End Area Calculations Q=cA(2gh)^1/2

Allowable Run Off, Q	2.46 CFS	per pipe
Friction Factor, c	0.98	
Acceleration, g	32.2 ft/ft/sec	
Height above Invert, H ft	1.63 ft	
End Area, Sq ft	0.24	10.24558
Square Inches	35.22 "	
Diameter, Inches	6.70 "	

Use 6.5" Diameter Oriface Plate in Terminal CB

SINCE EACH DETENTION AREA DETAINS APPROXIMATELY 1/2 OF THE VOLUME, EACH AREA SHOULD HAVE AN ORIFACE 35.22 SQ INCHES / 2 = 17.61 SQ INCHES. THEREFORE THE DIAMETER CALCULATES TO 4.74" DIAMETER ORIFACE.

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554 Old Spanish Trail
Slidell, LA 70458

#	DESCRIPTION	DATE

REVISIONS

SEAL:

MULTI PURPOSE BUILDING
OUR LADY OF FATIMA
68110 VORTISCH ROAD
LACOMBE, LOUISIANA 70445

JOB No:	2370	DATE:	06-17-2020
DRAWN BY:	CKD	CHECKED BY:	CKD

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SHEET TITLE:
SITE PLAN - DRAINAGE

DRAWING NUMBER:
C102

SHEET No: 4 of 12

FILE NAME: J:_CHURCHES\2370 - Our Lady Of Fatima Lacombe\Drawings\Current Drawings\C102 Site Drainage.dwg PLOT DATE & TIME: Tuesday, July 14, 2020 7:03:00 AM