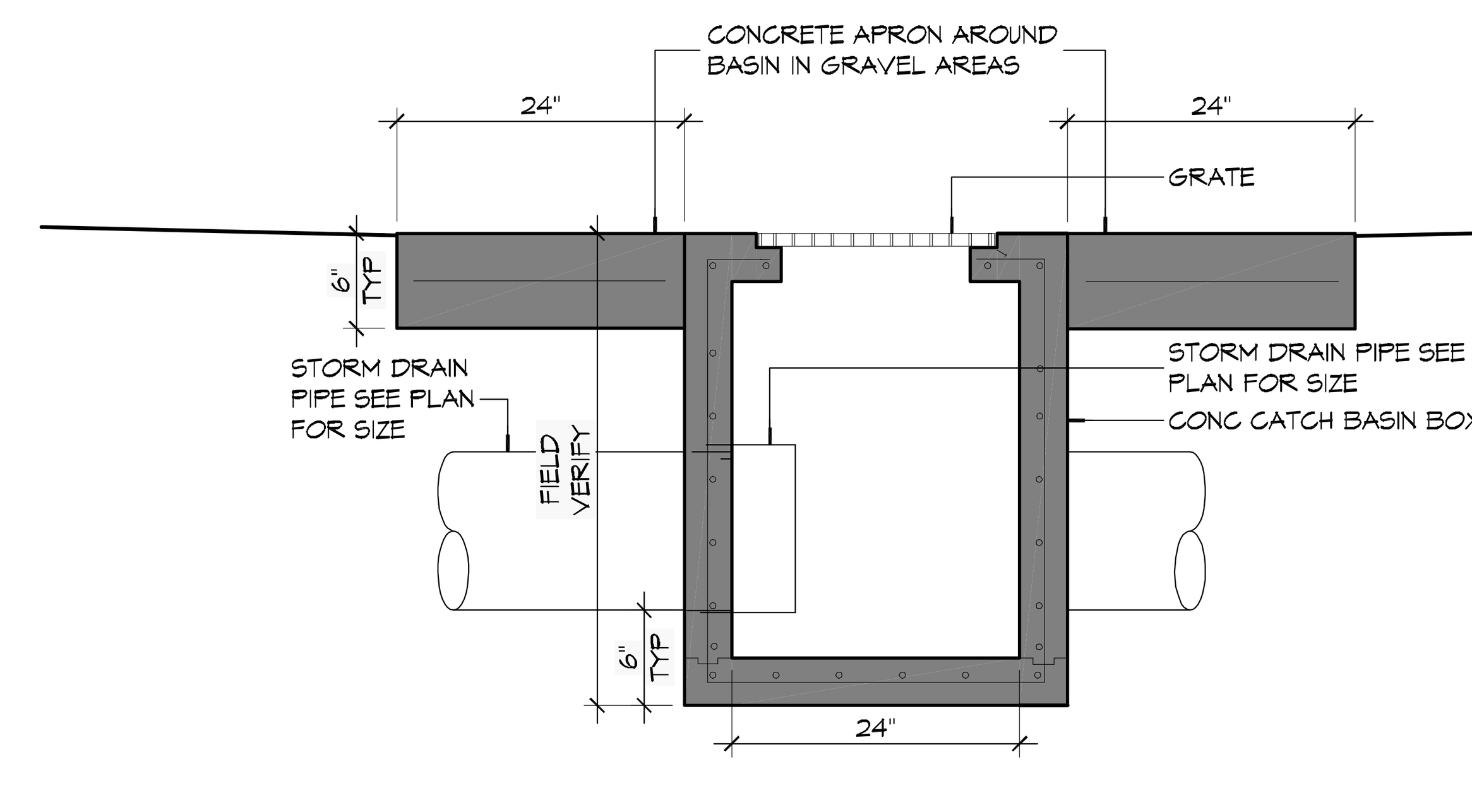
SOUTH LARGE PARKING LOT HAS THE SAME AVERAGE ELEVATION AS THE SITE. THEREFORE NO MITIGATION REQUIRED.	CHURCH ELEVATION = 28.56FT HOWEVER BFE = 28.0 FT. (DIFF OF 1.23'); THE CHURCH IS 4,989 S.F. WITH PORCH. 4,989 s.f. X 1.23' = 6,136 cu ft.	THE GROUND AROUND THE CHURCH ELEVATION = 28.06FT HOWEVER BFE = 28.0 FT. (DIFF OF 1.23') AND IT SLOPES FOR 15' TO NATURAL GRADE; THE PERIMETER OF THE CHURCH = 306'. 1/2 x 1.23' x 15' x 306' = 2,823 cu. ft.	THE DRIVEWAY HAS THE SAME AVERAGE ELEVATION AS THE SITE. THEREFORE NO MITIGATION REQUIRED.	THE NORTH PARKING LOT HAS THE SAME AVERAGE ELEVATION AS THE SITE. THEREFORE NO MITIGATION REQUIRED.
AVERAGE LOT ELEVATION = 26.77FT				

TOTAL DISPLACEMENT =
(6,136 + 2,823) cu ft = 8, 959 cu. ft.
DIVIDE THIS BY THE LENGTH OF HOLE AND AVG DEPTH OF THE HOLE
= 9,135 cu. ft.

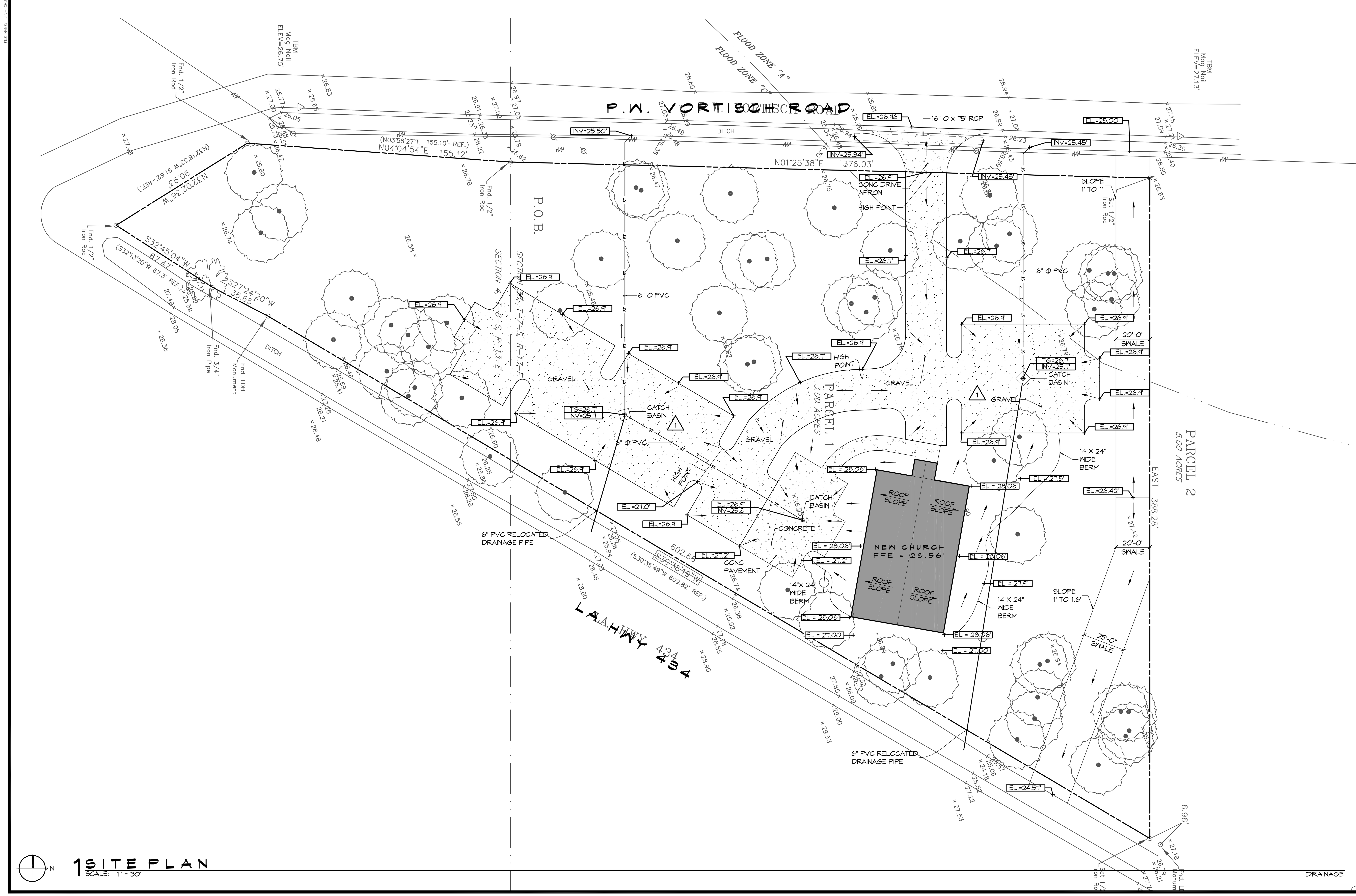
3 DETAIL
SCALE: NTS

NO NET FILL CALCULATIONS



2 DETAIL
SCALE: NTS

TYPICAL CATCH BASIN



1 SITE PLAN
SCALE: 1" = 30'

DRAINAGE

GENERAL SITE DRAINAGE NOTES

1. DRAIN PIPE(S) ALONG AIRPORT MUST BE THE BELL AND SPIGOT TYPE WITH "O" RING RUBBER GASKETS. THE BELLS OF THE PIPES SHALL BE LAID UPSTREAM. ALL JOINTS SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. ALL PIPES SHALL REQUIRE A 3" COMPACTED SAND OR LIMESTONE BASE.
2. REMOVE DEBRIS AND CLEAN BOTTOM OF DITCHES DOWN 6" IN DEPTH - REPLACE ANY BROKEN/CRUSHED PIPES OR CULVERTS WITH SAME SIZE AND TYPE.
3. DRAIN PIPE AND FITTINGS WITHIN PROPERTY LINE SHALL BE POLYVINYL CHLORIDE PLASTIC PIPE, MEETING CLASS 100 C-900 PVC.
4. ELEVATIONS SHOWN ARE M.S.L.
5. FIELD VERIFY ALL ELEVATIONS AND AND DRAINAGE SYSTEM PLACEMENT PRIOR TO START OF WORK.
6. PROVIDE VERTICAL ELBOW AT DOWNSPOUTS FOR CONNECTION TO SUBSURFACE DRAINAGE WHERE INDICATED. ELBOW ID SHALL BE SIZED SUCH THAT THE DOWNSPOUT CAN BE INSERTED INTO THE PIPE OPENING.

SITE DRAINAGE LEGEND

TG=100.0 — TOP OF GRATE
INV=100.0 — INVERT OF PIPE
—ST—ST—ST— NEW SUBSURFACE DRAINAGE PIPE
⟶ DRAINAGE FLOW DIRECTION ARROW

STORM WATER RUN-OFF CALCULATIONS

PROJECT: New Church

STORMWATER RUN-OFF CALCULATIONS

Formulas used:

[1] RATIONAL METHOD: Q=Aci

where:
- Q= Peak discharge of watershed in cubic feet per second (cfs) due to maximum storm assumed.
- A= Area of watershed in acres.
- c= Coefficient of run-off [2].
- i= Intensity of rainfall in inches per hour based on concentration time. [3]

$$[4]\ TC = \frac{\left(L^{0.8}\left(\frac{1000}{c}-9\right)^{0.7}\right)}{(1140(s^{0.5}))}$$

where:
- TC= Time of concentration= time required for rain falling at most remote point to reach discharge point.
- c= Site run-off coefficient based on conditions shown.
- s= Percent slope of overland flow.

PRIOR DEVELOPMENT
25 Year Frequency

Q_1 = Aci				
Watertight Surfaces		0	sqft =	0.000 Acres
c(1) =	0.9			
Gravel Surface		0	sqft =	0.000 Acres
c(2) =	0.25			
Green Space		131697	sqft =	3.023 Acres
c(3) =	0.15			
Summary		131697	sqft =	3.023 Acres
c =	0.15			

Duration (D) = Time of concentration (TC)

where	L =	602	run-off length ft	Elev diff 1
	c =	0.15	run-off coef	
	S =	0.1661	percent slope	
therefore	TC = D =	28.40	minutes	
Expected rainfall intensity	i =	3.64	in/hr	

Q_1 = 1.651 cfs — 15% reduction = 1.403 cfs

POST DEVELOPMENT
25 Year Frequency

Q_2 = Aci				
Watertight Surfaces		8175	sqft =	0.188 Acres
c(1) =	0.9			
Gravel Surface		24359	sqft =	0.559 Acres
c(2) =	0.25			
Green Space		99163	sqft =	2.276 Acres
c(3) =	0.15			
Summary		131697	sqft =	3.023 Acres
c =	0.22			

Duration (D) = Time of concentration (TC)

where	L =	602	run-off length ft	Elev diff 1.2
	c =	0.22	run-off coef	
	S =	0.1993	percent slope	
therefore	TC = D =	24.17	minutes	
Expected rainfall intensity	i =	3.64	in/hr	

Q_2 = 2.367 cfs

DETENTION REQUIREMENTS

Detention required=Q_2-(Q_1-15%)	0.96	cfs
One Hour Dentention	3468.6	cuft
Detention Dimensions WIDTH	64	feet
LENGTH	217	feet
DEPTH	0.25	feet

DISCHARGE END AREA REQUIREMENTS
25 Year Frequency

$$[5]\ A = \frac{Q}{(c\sqrt{(2gh)})}$$

where:
- A= Discharge Area required
- g= Acceleration of gravity
- c= Discharge coefficient
- h= Hydraulic head
- Q= Flow volume from run-off

Pipe Servicing Site Drainage

Q =	1.403 cfs		h =	3.00 feet
c =	0.62 coefficie		A =	0.163 sqft
g =	32.16 ft/sec/sec			

REQUIRED CONDUIT = 5.47 inch inside diameter

References:
1. Chen, W.F. The Civil Engineering Handbook, 1995. Eq.# 31.1, pg. 1036
2. Seelye, Elwyn E. Data Book for Civil Engineers, Vol.1 1960. Tbl. B, pg. 18-02
3. Seelye, Elwyn E. Data Book for Civil Engineers, Vol.1 1960. Fig.B, pg. 18-01
4. Chen, W.F. The Civil Engineering Handbook, 1995. Tbl. 31.2 Regan Equation (n=0.013)
5. Chen, W.F. The Civil Engineering Handbook, 1995. Eq.# 28.32, pg. 969

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REVISIONS

#	DESCRIPTION	DATE
1	REVISED DRAINAGE	11-05-15

SEAL:

PRO MULTIS LACOMBE CHAPEL

PW VORTISCH ROAD AND LA HWY 434
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JOB No: 2250 DATE: SEPTEMBER 3, 2015
DRAWN BY: KJK CHECKED BY: CKD

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