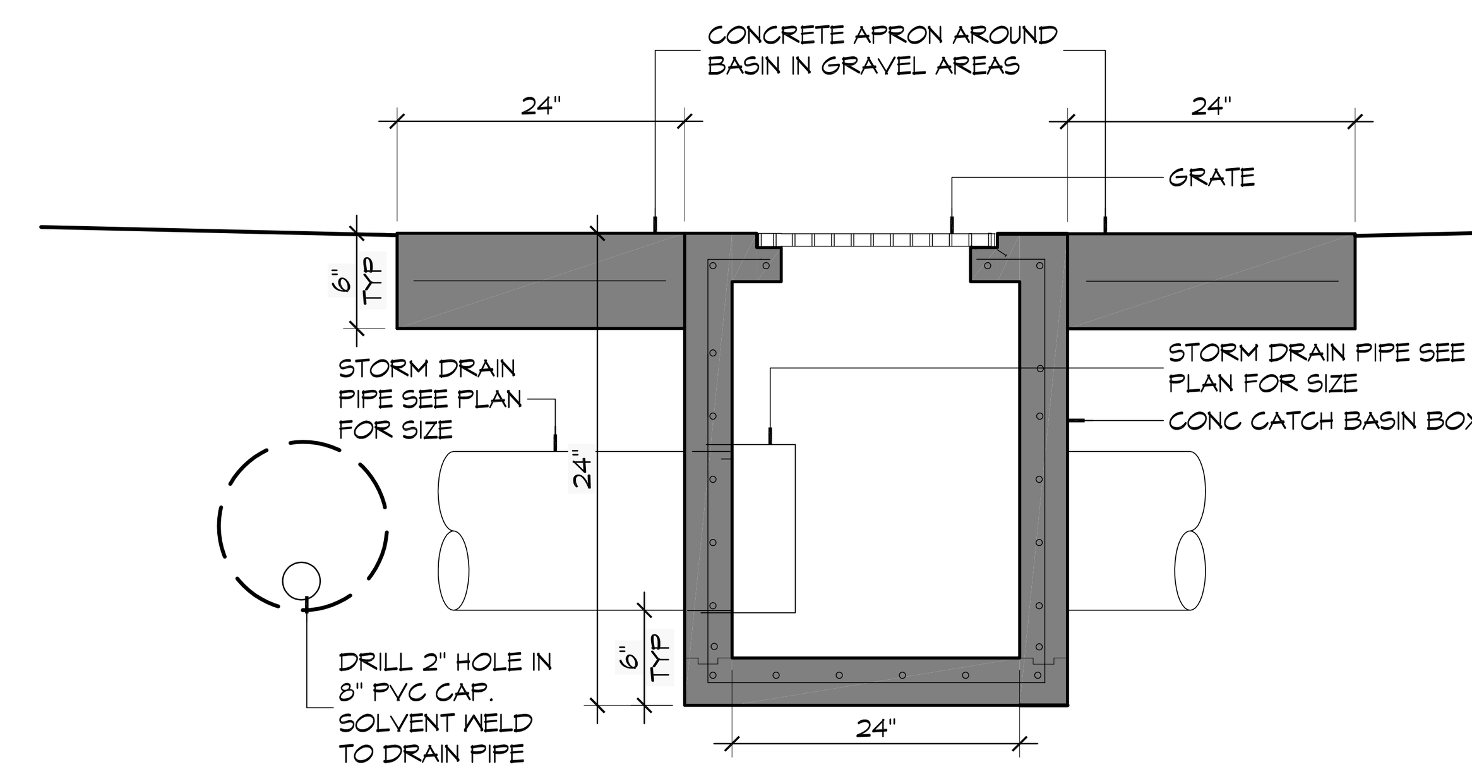
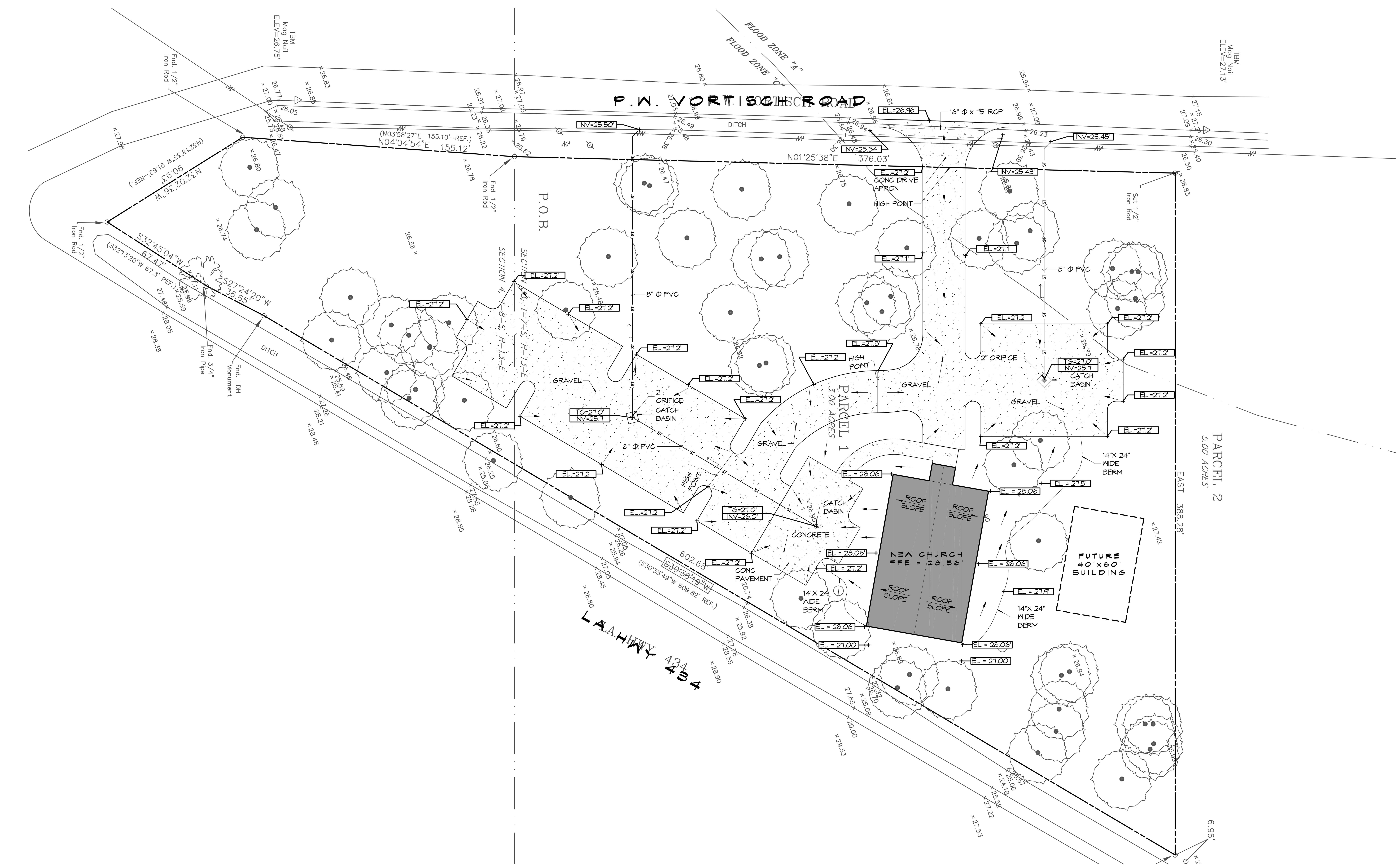


2 DETAIL
SCALE: NTS
TYPICAL CATCH BASIN



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 / INV=100.0 — TOP OF GRATE / INVERT OF PIPE

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

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

where: Time of concentration= time required for rain falling at most remote point to reach discharge point.
Site run-off coefficient based on conditions shown.
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		10% reductic	0.165 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 =	120	run-off length ft	Elev diff	1.2
	c =	0.22	run-off coef		
	S =	1.0000	percent slope		
therefore	TC = D =	14.90	minutes		
Expected rainfall intensity	i =	3.64	in/hr		
	Q_2 =	2.367 cfs			

DETENTION REQUIREMENTS

Detention require Q_2-Q_1	0.72	cfs		
ONE HOUR DETENTION	2577.2	cuft		
DETENTION DIMENSIONS		WIDTH	64	feet
		LENGTH	217	feet
		DEPTH	0.19	feet

DISCHARGE END AREA REQUIREMENTS
10 Year Frequency

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

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

Pipe Servicing Site Drainage					
Q =	0.165	cfs	h =	3.00	feet
c =	0.62	coefficie	A =	0.019	sqft
g =	32.16	ft/sec/sec			

REQUIRED CONDUIT = 1.87 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

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JOB No: 2250 | DATE: SEPTEMBER 3, 2015
DRAWN BY: KJK | CHECKED BY: CKD

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SHEET TITLE: SITE PLAN - DRAINAGE

DRAWING NUMBER: C102