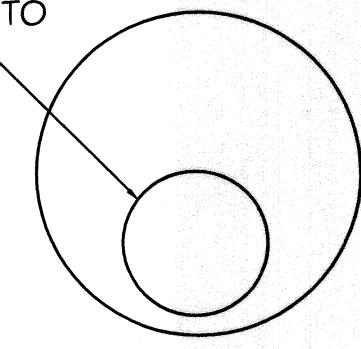


PROJECT: LIVING THE WORD INTERNATIONAL CHURCH			
STORMWATER RUN-OFF CALCULATIONS			
Formulas Used			
[1] RATIONAL METHOD: $Q = AiC$			
where:	Q =	Peak discharge of watershed in cubic feet per second (cfs) due to maximum storm as surer.	
	A =	Area of watershed in acres.	
	C =	Coefficient of run-off (2).	
	i =	Intensity of rainfall in inches per hour based on concentration time (3)	
[4] TC = $\frac{L^{0.8} (1000 - 9)^{0.7}}{(1140)(S^{0.5})}$			
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 watershed.	
PRIOR DEVELOPMENT 100 Year Frequency			
$Q = AiC$			
Waterlight Surfaces	sqft =	39374	sqft = 0.789 Acres
Gravel Surface	c(1) =	0.9	sqft = 2.280 Acres
Green Space	c(2) =	0.25	sqft = 0.191 Acres
Summary	c(3) =	0.15	sqft = 3.260 Acres
	c =	0.40	
Duration (D) = Time of concentration (TC)			
where	L =	run-off length ft	Elev diff = 3.8'
	c =	run-off coef	
	S =	percent slope	
therefore	TC = D =	minutes	
Expected rainfall intensity	i =	in/hr	
	$Q =$	6.772 cfs	25% reduction 1.443 cfs
POST DEVELOPMENT 100 Year Frequency			
$Q = AiC$			
Waterlight Surfaces	sqft =	10199	sqft = 2.398 Acres
Gravel Surface	c(1) =	0.9	sqft = 0.138 Acres
Green Space	c(2) =	0.25	sqft = 0.784 Acres
Summary	c(3) =	0.15	sqft = 3.260 Acres
	c =	0.69	
Duration (D) = Time of concentration (TC)			
where	L =	run-off length ft	Elev diff = 3.8'
	c =	run-off coef	
	S =	percent slope	
therefore	TC = D =	minutes	
Expected rainfall intensity	i =	in/hr	
	$Q =$	9.551 cfs	
DETENTION REQUIREMENTS			
Detention required	Q1-Q2+26Q1 =	cfs	
ONE HOUR DETENTION		cfs	
DETENTION DIMENSIONS	WIDTH	60 feet	
	LENGTH	240 feet	
	DEPTH	1.41 feet	
DISCHARGE END AREA REQUIREMENTS 100 Year Frequency			
$Q = c\sqrt{2gh}$			
where:	A =	Discharge Area required	
	g =	Acceleration of gravity	
	c =	Discharge coefficient	
	h =	Hydraulic head	
	Q =	Flow volume from run-off	
Pipe Servicing Size Drainage	Q =	5.622 cfs	h = 3.30 feet
	c =	0.62 coefficient	A = 0.622 sqft
	g =	32.16 ft/sec ²	D = 0.890 ft
REQUIRED CONDUIT = 12" inch inside diameter			
References:			
1. Chen, W.F. The Civil Engineering Handbook, 1995, Eq# 31.1, pg. 1036			
2. Beebe, Elwyn E. Data Book for Civil Engineers, Vol. 1, 1960, Tbl. B, pg. 18-02			
3. Beebe, Elwyn E. Data Book for Civil Engineers, Vol. 1, 1960, Fig. 9, pg. 18-01			
4. Chen, W.F. The Civil Engineering Handbook, 1995, Tbl. 31.2 Region Equation (n=0.015)			
5. Chen, W.F. The Civil Engineering Handbook, 1995, Eq# 26.32, pg. 969			

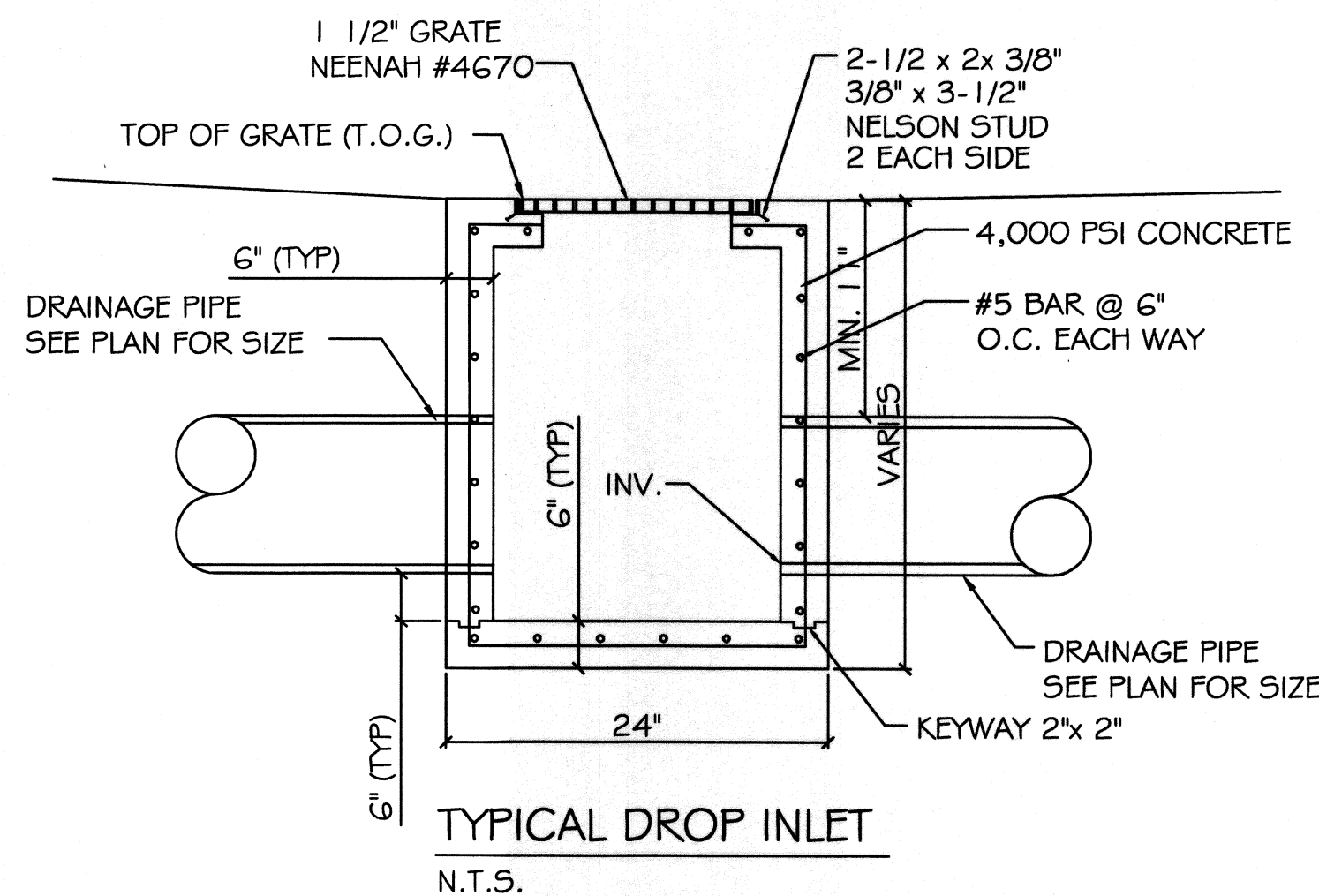
DRAINAGE PLAN NOTES:

1. DRAIN PIPE & FITTINGS WITHIN PROPERTY LINE SHALL BE POLYVINYL CHLORIDE PLASTIC PIPE, MEETING CLASS 100 C-900 PVC.
2. ELEVATIONS SHOWN ARE M.S.L.
3. FIELD VERIFY ALL ELEVATIONS AND DRAINAGE SYSTEM PLACEMENT PRIOR TO START OF WORK.
4. THERE IS NO EVIDENCE OF EXISTING OFF-SITE FLOW CROSSING THE PROPERTY.

DRILL 6" HOLE IN 18" PVC CAP SOLVENT WELD TO DRAIN PIPE



ORIFICE DETAIL
N.T.S.

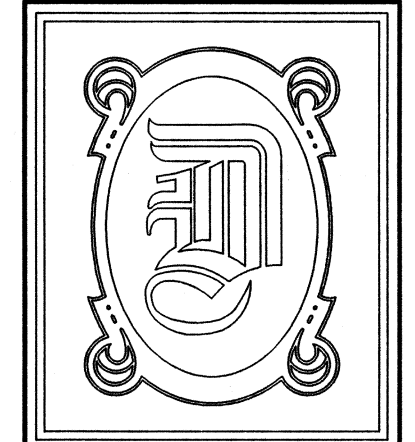
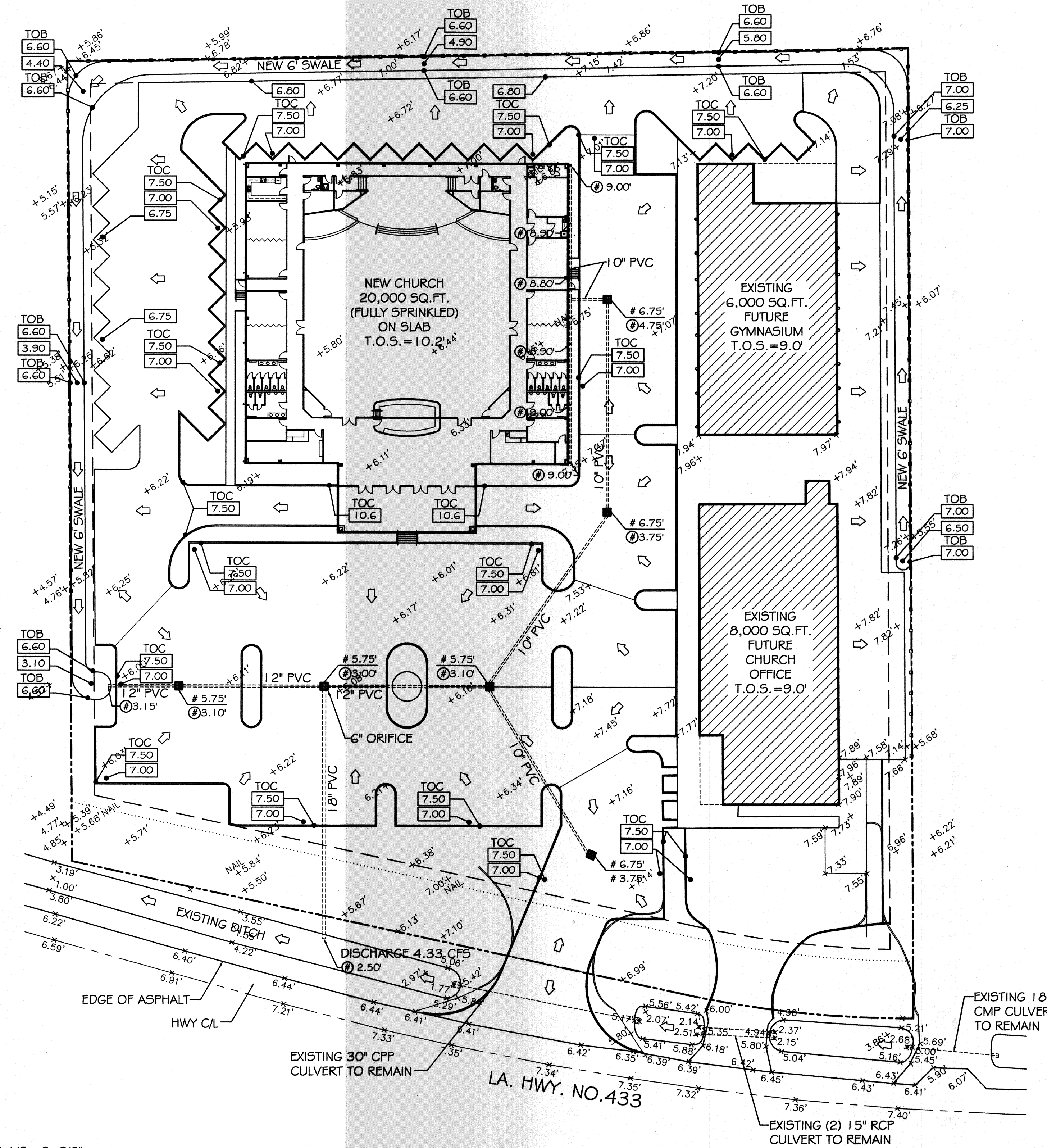
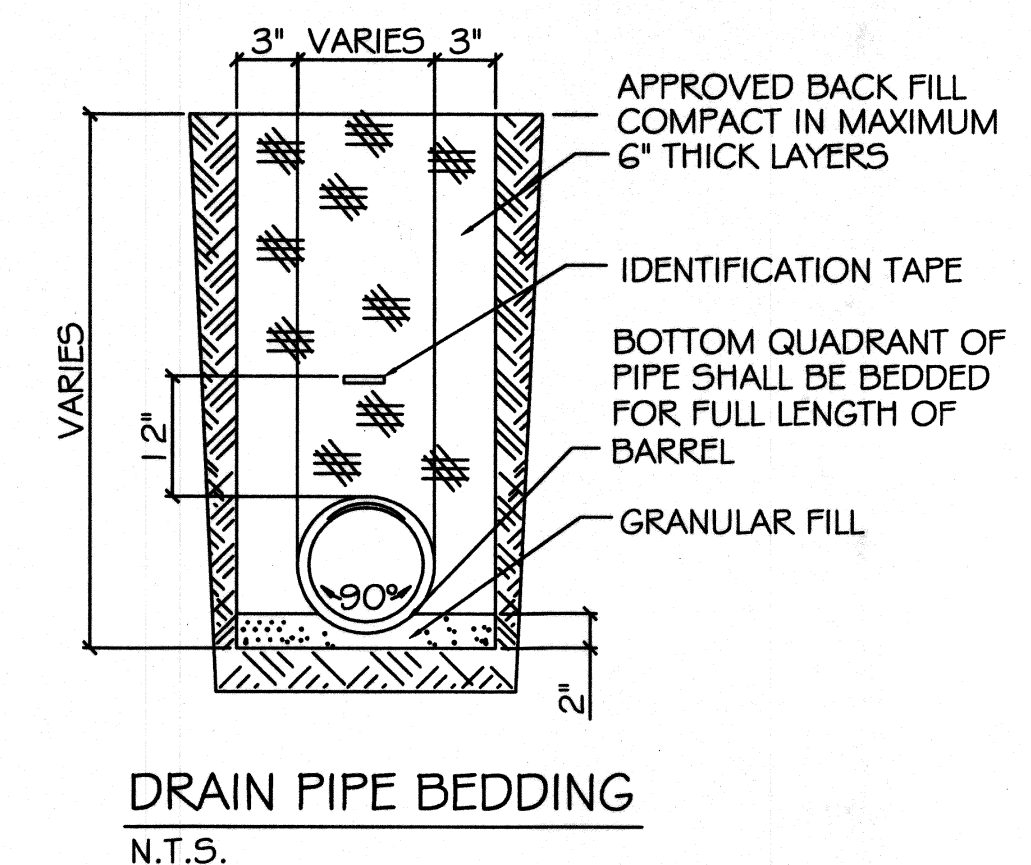


DRAINAGE PLAN

SCALE: 1" = 30'-0"

LEGEND

- - - - - PROPERTY LINE
- - - - - SETBACK LINE
- > SHEET FLOW ARROW
- ▽ INVERT ELEVATION
- ▽ TOP OF GRATE ELEVATION
- NEW ELEVATION



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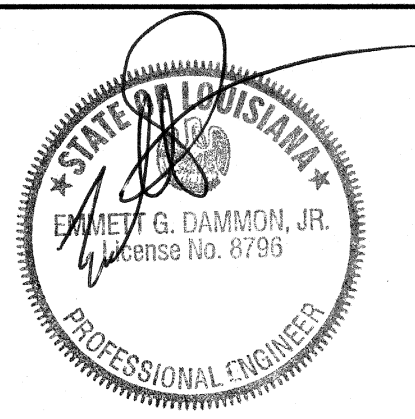
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LIVING THE WORD INTERNATIONAL

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70461

DRAINAGE PLAN



REV:

SCALE: AS NOTED

JOB#: 2128

DATE: 01-27-12

SHEET 6

C-5

OF 21