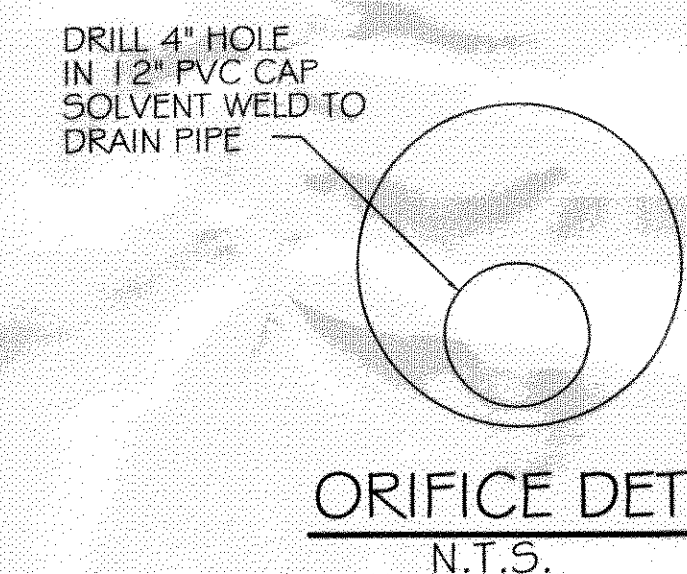
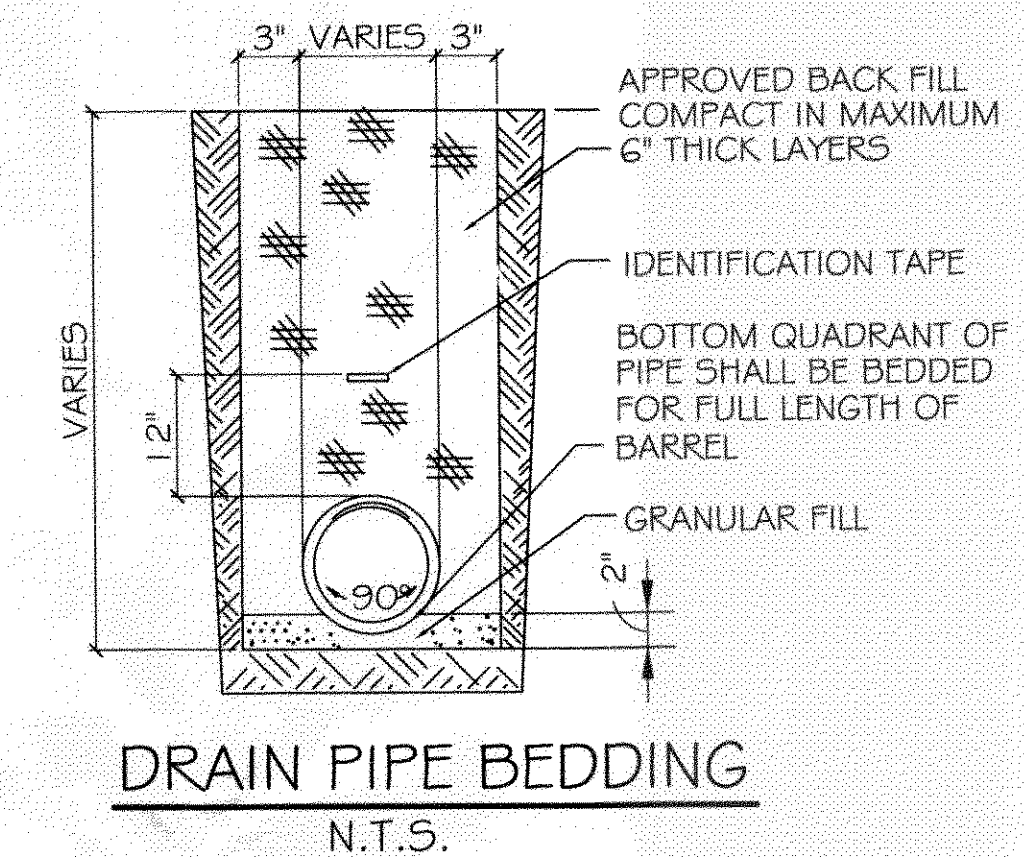
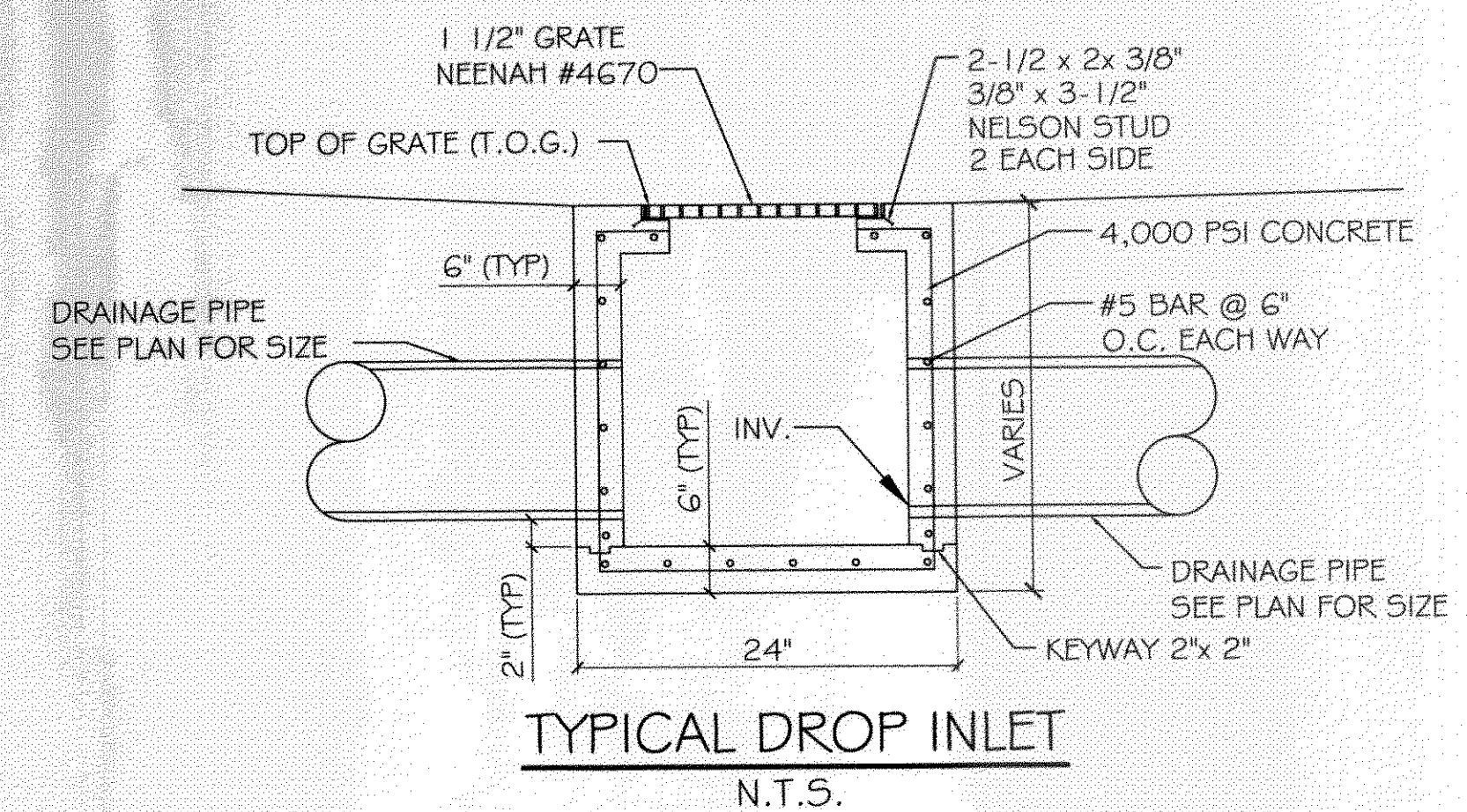


<b>PROJECT:</b>		<b>TABERNACLE CHURCH</b>	
STORMWATER RUN-OFF CALCULATIONS			
Formulas used:			
<b>[1] RATIONAL METHOD: <math>Q=AcI</math></b>			
where:	Q=	Peak discharge of watershed in cubic feet per second (cfs) due to maximum storm assumed.	
	A=	Area of watershed in acres.	
	c=	Coefficient of run-off [2]	
	I=	Intensity of rainfall in inches per hour based on concentration time [3]	
<b>[4] <math>TC = \frac{(L^{0.8}(\frac{1000}{c} - 9)^{0.7})}{(1140(s^{0.5}))}</math></b>			
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	
<b>PRIOR DEVELOPMENT</b>			
25 Year Frequency			
$Q_1 = AcI$			
Watertight Surfaces		5824	sqft = 0.134 Acres
Gravel Surface	c(1) = 0.9	0	sqft = 0.000 Acres
Green Space	c(2) = 0.25	22963	sqft = 0.527 Acres
Summary	c(3) = 0.15	28787	sqft = 0.661 Acres
	c = 0.30		
Duration (D) = Time of concentration (TC)			
where:	L=	run-off length ft	Elev diff = 1
	c=	run-off coef	
	S=	percent slope	
therefore	TC = D =	8.71 minutes	
Expected rainfall intensity	i =	2.33 in/hr	
	$Q_1 =$	0.465 cfs	
<b>POST DEVELOPMENT</b>			
25 Year Frequency			
$Q_2 = CIA$			
Watertight Surfaces		14805	sqft = 0.340 Acres
Gravel Surface	c(1) = 0.9		sqft = 0.000 Acres
Green Space	c(2) = 0.14	13982	sqft = 0.321
Summary	c(3) = 0.2	28787	sqft = 0.661 Acres
	c = 0.56		
D = Time of concentration (TC)			
TC =	$-.7039(L^{.3917})(c^{-1.1309})(S^{-.1995})$		
where:	L=	Runoff length ft	Elev diff = 7
	c=	Runoff coef	
	S=	Percent Slope	
therefore	TC = D =	5.60 minutes or	
and from Rainfall Intensity Table	I =	2.33 in/hr	
	$Q_2 =$	0.862 cfs	
<b>RESULTS</b>			
DETENTION REQUIRE $Q_2 - Q_1$		0.396 cfs	
ONE HOUR DETENTION		1431.7 cuft	
DETENTION DIMENSIONS	WIDTH	62 feet	
	LENGTH	100 feet	
	DEPTH	0.23 feet	
<b>DISCHARGE END AREA REQUIREMENTS</b>			
10 Year Frequency			
Area requirements for pipe servicing swale located in Zone #1 of the corresponding Key Plan			
<b>[5] <math>A = \frac{Q}{c\sqrt{(2gh)}}</math></b>			
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 =	0.862 cfs	H = 7.00 feet
	c =	0.62 coefficient	A = 0.07 sqft
	g =	32.16 ft/ft/sec	
<b>REQUIRED CONDUIT =</b>		3.47 inch diameter	Use 4" orifice
<b>References:</b>			
1. Chen, W.F. <i>The Civil Engineering Handbook</i> , 1995, Eq # 31.1, pg. 1035			
2. Seelye, Elwyn E. <i>Data Book for Civil Engineers</i> , Vol. 1 1960, Tbl. B, pg. 18-02			
3. Seelye, Elwyn E. <i>Data Book for Civil Engineers</i> , Vol. 1 1960, Fig. B, pg. 18-01			
4. Chen, W.F. <i>The Civil Engineering Handbook</i> , 1995, Tbl. 31.2 Regan Equation ( $n=0.013$ )			
5. Chen, W.F. <i>The Civil Engineering Handbook</i> , 1995, Eq. # 28.32, pg. 969			



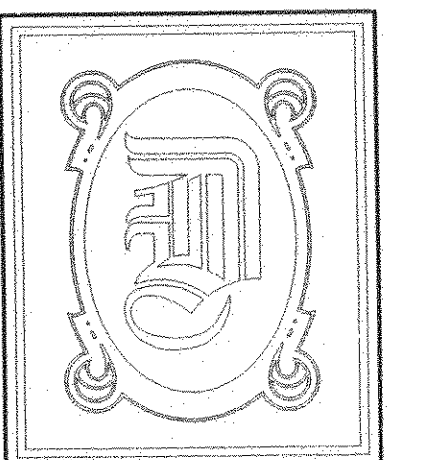
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REVIEWED FOR  
STATE FIRE MARSHAL  
AS PER REVIEW LETTER  
BY: WILLIAM D. JONES, ARCHITECT, CBO

*William D. Jones*

GUTTERS AND DOWN SPOUTS TO BE SEAMLESS ALUMINUM 24 GAUGE, COLOR TO BE SELECTED BY OWNER. GUTTERS TO BE "OGEE" IN CROSS SECTION, MINIMUM 6" WIDTH.

- 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) MUCK OUT 24" DEEP FOR FOUNDATION PAD MINIMUM, OR TO UNDISTURBED SOIL CAPABLE OF 1500 PSF BEARING.
  - 5) DOWN SPOUTS SHALL FLOW INTO SUB-SURFACE DRAINAGE.
  - 6) THERE IS NO EVIDENCE OF EXISTING OFF-SITE FLOW CROSSING THE PROPERTY. NEW DRAINAGE CALCULATIONS ARE DETERMINED ACCORDINGLY.
  - 6) THERE IS NO EVIDENCE OF EXISTING OFF-SITE FLOW CROSSING THE



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CHURCH

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BAPTIST CHURCH  
2445 FOURTH AVE.  
SLIDELL, LA

DRAINAGE  
DETAILS AND  
CALCULATIONS

*Robert Wiltse*

REV:

SCALE: AS NOTED

JOB#: 2050

DATE: 2-8-10

SHEET 7

C-6

OF 25