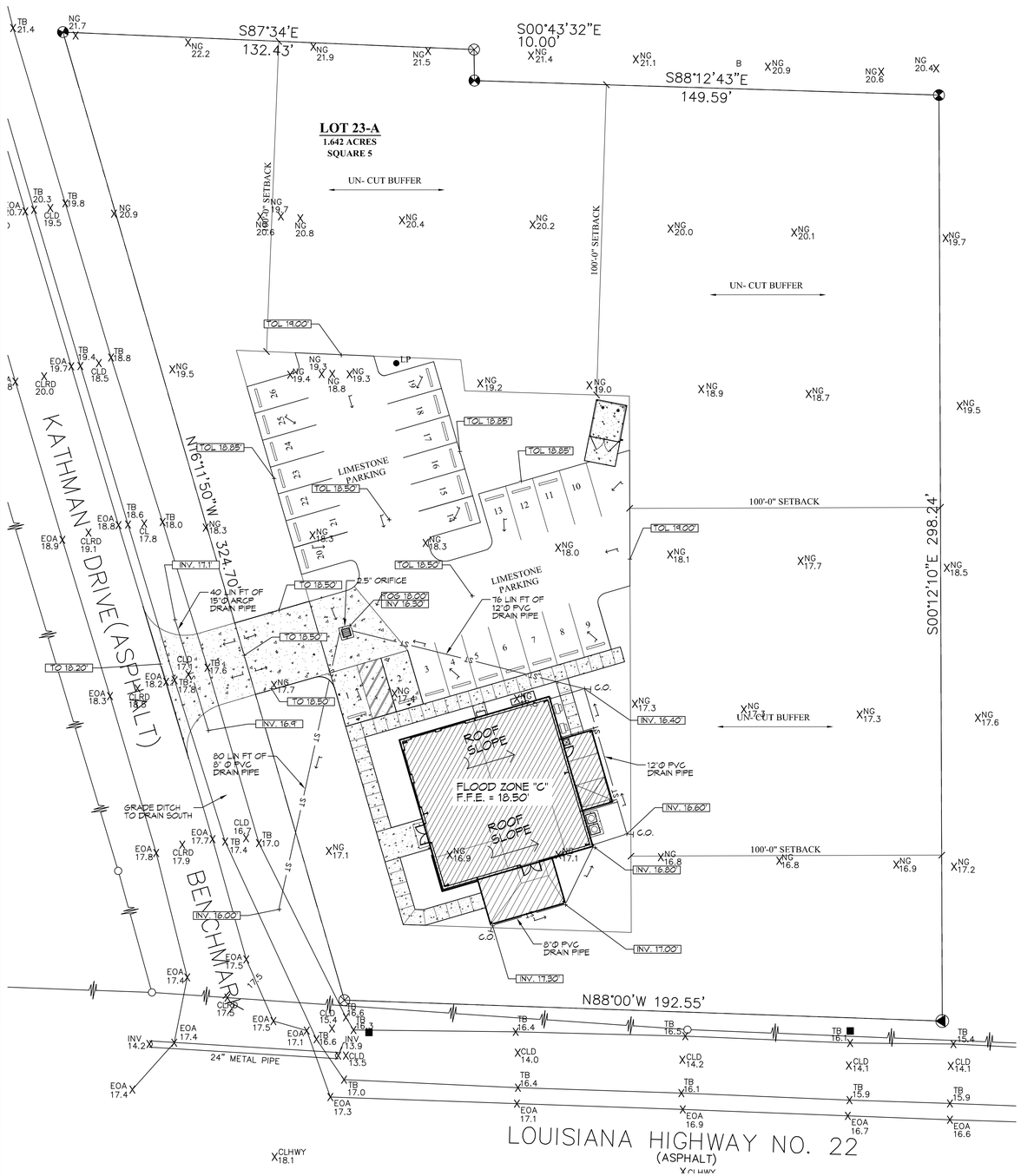


1 DRAINAGE PLAN
SCALE: 1" = 30'-0"

PROJECT:	RESTAURANT
	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= $\left(L^{3.4}\left(\frac{1000}{S}-9\right)^{0.7}\right) / \left(1140c^{0.5}i^{0.5}\right)$

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		71532.2	sqft =	1.642	Acres
c(3) =	0.15				
Summary		71532.2	sqft =	1.642	Acres
c =	0.15				

Duration (D) = Time of concentration (TC)

where	L = 304	run-off length ft	Elev diff =	3
	c = 0.15	run-off coef		
	S = 0.3086	percent slope		
therefore	TC = D = 23.58	minutes		
Expected rainfall intensity	i = 7.66	in/hr		

Q_1 = 1.887 cfs — 10% reduction 0.189 cfs

POST DEVELOPMENT
25 Year Frequency

$Q_2 = Aci$

Watertight Surfaces		5296.6	sqft =	0.122	Acres
c(1) =	0.9				
Gravel Surface		0	sqft =	0.000	Acres
c(2) =	0.25				
Green Space		66235.6	sqft =	1.521	Acres
c(3) =	0.15				
Summary		71532.2	sqft =	1.642	Acres
c =	0.21				

Duration (D) = Time of concentration (TC)

where	L = 132	run-off length ft	Elev diff =	3.5
	c = 0.21	run-off coef		
	S = 1.3393	percent slope		
therefore	TC = D = 16.84	minutes		
Expected rainfall intensity	i = 7.66	in/hr		

Q_2 = 2.588 cfs

DETENTION REQUIREMENTS

Detention required Q_2-Q_1	0.70 cfs		
ONE HOUR DETENTION	2514.8 cuft		
DETENTION DIMENSIONS	WIDTH	103	feet
	LENGTH	114	feet
	DEPTH	0.21	feet

DISCHARGE END AREA REQUIREMENTS
10 Year Frequency

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

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 =	0.189	cfs	h =	1.00	feet
c =	0.62	coefficient	A =	0.038	sqft
g =	32.16	ft/sec/sec			

REQUIRED CONDUIT = 2.54 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. 8, pg. 18-02
3. Seelye, Elwyn E. Data Book for Civil Engineers, Vol.1 1960. Fig.8, pg. 18-01
4. Chen, W.F. The Civil Engineering Handbook. 1995. Tbl. 31.2 Regen Equation (n=0.013)
5. Chen, W.F. The Civil Engineering Handbook. 1995. Eq.# 28.37, pg. 969

DRAINAGE NOTES

1. ELEVATIONS SHOWN ARE MSL.
2. FIELD VERIFY ALL ELEVATIONS AND AND DRAINAGE SYSTEM PLACEMENT PRIOR TO START OF WORK.
3. PROVIDE VERTICAL ELBOW AT DOWNSPOUTS WITH SPLASH BLOCKS.

DRAINAGE LEGEND

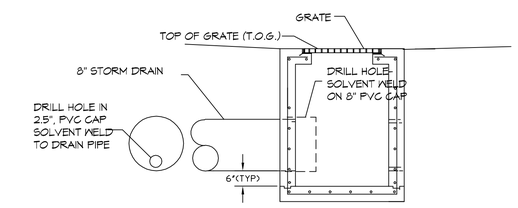
- TOC XXX.X — TOP OF CONCRETE ELEVATION
- TOG XXX.X — TOP OF GRATE ELEVATION
- INV XXX.XX — INVERT OF PIPE ELEVATION
- "15" — CMP (CORRAGATED METAL PIPE) DRAINAGE OF FLOW ARROW, SEE PLAN FOR SIZE
- EL XXX.X — NEW ELEVATION
- NG XXX.X — NATURAL GRADE
- SLOPE

FLOOD ZONE

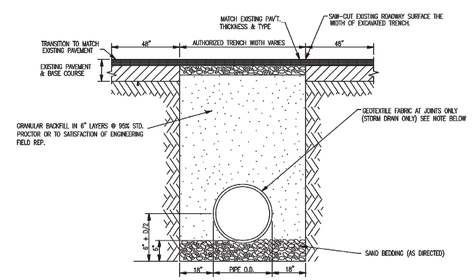
ZONE "C"

BUILDING ELEVATION

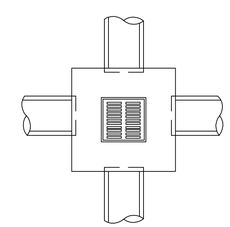
FINISHED FLOOR ELEVATION = 18.50'



2 DROP INLET PIPE CAP
SCALE: N.T.S.

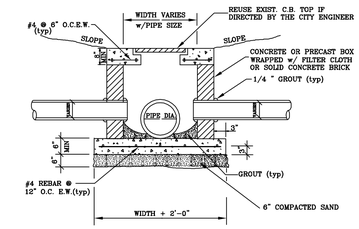


TYPICAL DETAIL FOR CULVERTS IN ROADWAYS
N.T.S.



TYPICAL DROP INLET
NTS

NOTE: NUMBER OF CULVERTS INTO/OUT OF BOX WILL VARY.



SECTION DROP INLET
NTS

NOTES:
1. ALL GEOTEXTILE FABRIC TO BE 3'-0" WIDE AND TO OVERLAP NO LESS THAN 1/2 OF PIPE DIAMETER. COST OF FABRIC IS TO BE ABSORBED IN THE UNIT PRICE OF DRAIN PIPE AND SHALL NOT BE MEASURED FOR SEPERATE PAYMENT.
2. ADDITIONAL BEDDING MATERIAL MAY BE REQUIRED AS DIRECTED BY THE ENGINEER.
3. TIMBER PLANKING UNDER CULVERTS MAY BE REQUIRED BY ENGINEER.

3 PIPE BEDDING AND DROP INLET
SCALE: N.T.S.

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Slidell, LA 70458

REVISIONS

#	DESCRIPTION	DATE
1	REVISED CUT/FILL CALCS	4/26/2019

SEAL:

STATE OF LOUISIANA — BRIAN A. MISTICH — License No. 30187 — PROFESSIONAL ENGINEER

NEW RESTAURANT
ABANERO
MEXICAN
RESTAURANT
LA. HWY 1025 DEER CROSS DRIVE
MADISONVILLE, LA 70447

JOB No:	2398	DATE:	10-24-2018
DRAWN BY:	CAD	CHECKED BY:	BAM

SHEET TITLE:
DRAINAGE PLAN

DRAWING NUMBER:
C101

SHEET No: 4 of 2

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