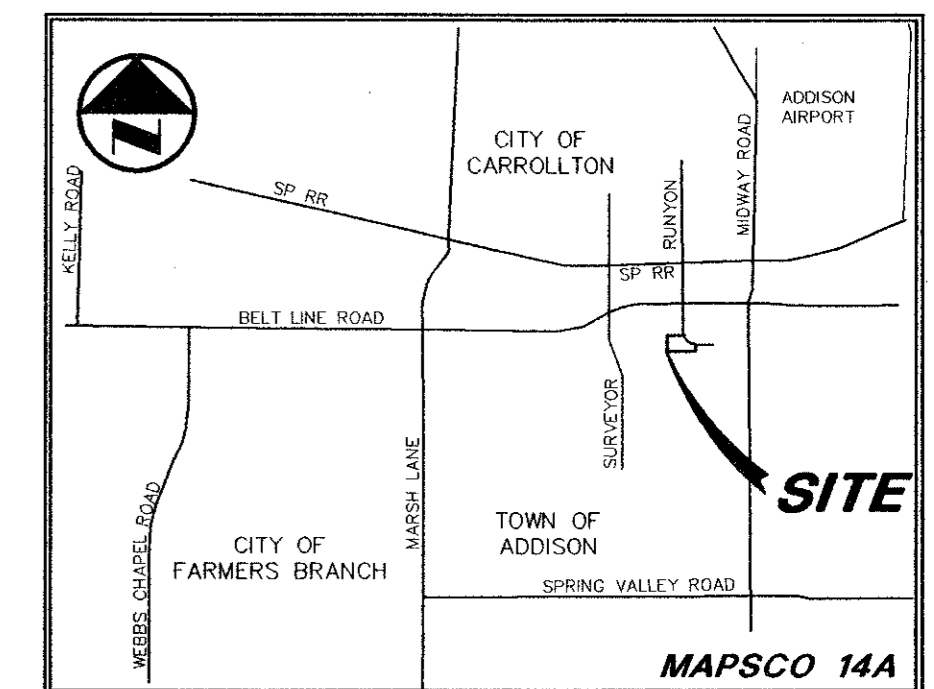


LEGEND

- PP FIRE HYDRANT
- LS POWER POLE
- LM LIGHT STANDARD
- WM WATER METER
- WV WATER VALVE
- CL CLEANOUT
- MH MANHOLE
- GM GAS METER
- PL PROPERTY LINE
- EXIST CONTOUR
- EXIST SPOT ELEVATION
- EXIST TOP OF CURB ELEVATION
- EXIST GUTTER ELEVATION
- PROPOSED CONTOUR
- PROP TOP OF CURB ELEVATION
- PROP GUTTER ELEVATION
- PROP SPOT ELEVATION
- PROP DRAINAGE FLOW DIRECTION
- PROP DRAINAGE DIVIDE
- DA DRAINAGE AREA
- Q cfs.



VICINITY MAP

DETENTION BASIN DESIGN CALCULATIONS

GIVEN: Area = 1.61
Prop C = 0.90
Prop Tc = 10 min
Max Q = 9.66 cfs

RESULT: Maximum Required Storage = 3,405 cf
RESULT: Maximum Provided Storage = 3,528 cf

Time	In	Out	Storage
5 min	10.49	0.90 x 10.5 x 1.61 = 15.2 cfs	4,347 cf
10 min	8.74	0.90 x 8.7 x 1.61 = 12.7 cfs	213 cf
15 min	7.52	0.90 x 7.5 x 1.61 = 10.9 cfs	7,599 cf
20 min	6.80	0.90 x 6.8 x 1.61 = 9.9 cfs	5,796 cf
30 min	5.75	0.90 x 5.8 x 1.61 = 8.3 cfs	1,803 cf
40 min	5.00	0.90 x 5.0 x 1.61 = 7.2 cfs	9,807 cf
50 min	4.45	0.90 x 4.5 x 1.61 = 6.4 cfs	7,245 cf
60 min	3.91	0.90 x 3.9 x 1.61 = 5.7 cfs	11,824 cf
70 min	3.55	0.90 x 3.3 x 1.61 = 5.1 cfs	8,694 cf
80 min	3.33	0.90 x 3.3 x 1.61 = 4.8 cfs	3,130 cf
90 min	3.10	0.90 x 3.1 x 1.61 = 4.5 cfs	14,997 cf
5 min Storm	In 5 x 15.2 x 60 = 4,560 cf	Out 0.5 x 15 x 9.7 x 60 = 4,347 cf	Storage = 213 cf
10 min Storm	In 10 x 12.7 x 60 = 7,599 cf	Out 0.5 x 20 x 9.7 x 60 = 5,796 cf	Storage = 1,803 cf
15 min Storm	In 15 x 10.9 x 60 = 9,807 cf	Out 0.5 x 25 x 9.7 x 60 = 7,245 cf	Storage = 2,562 cf
20 min Storm	In 20 x 9.9 x 60 = 11,824 cf	Out 0.5 x 30 x 9.7 x 60 = 8,694 cf	Storage = 3,130 cf
30 min Storm	In 30 x 8.3 x 60 = 14,997 cf	Out 0.5 x 40 x 9.7 x 60 = 11,592 cf	Storage = 3,405 cf
40 min Storm	In 40 x 7.2 x 60 = 17,388 cf	Out 0.5 x 50 x 9.7 x 60 = 14,490 cf	Storage = 2,898 cf
50 min Storm	In 50 x 6.4 x 60 = 19,344 cf	Out 0.5 x 60 x 9.7 x 60 = 17,388 cf	Storage = 1,956 cf
60 min Storm	In 60 x 5.7 x 60 = 20,396 cf	Out 0.5 x 70 x 9.7 x 60 = 20,396 cf	Storage = 110 cf
70 min Storm	In 70 x 5.1 x 60 = 23,160 cf	Out 0.5 x 80 x 9.7 x 60 = 23,160 cf	Storage = 0 cf
80 min Storm	In 80 x 4.8 x 60 = 26,082 cf	Out 0.5 x 90 x 9.7 x 60 = 26,082 cf	Storage = 0 cf
90 min Storm	In 90 x 4.5 x 60 = 24,256 cf	Out 0.5 x 100 x 9.7 x 60 = 28,980 cf	Storage = (4,724)cf

DRAINAGE CALCULATION TABLE

DA DESTINATION	DA	AREA	C	I ₂₅	I ₁₀₀	Q ₂₅	Q ₁₀₀
INTO DETENTION/STM	A	0.77	0.9	7.29	8.74	5.05	6.06
INTO DETENTION/STM	B	0.15	0.9	7.29	8.74	0.98	1.18
INTO ADJACENT PARKING	C	0.18	0.9	7.29	8.74	1.18	1.41
INTO STM. W/O DETENTION	D	0.04	0.9	7.29	8.74	0.26	0.31
INTO STM. W/O DETENTION	E	0.18	0.9	7.29	8.74	1.18	1.42
INTO STM. W/O DETENTION	F	0.10	0.9	7.29	8.74	0.66	0.80
INTO STM. W/O DETENTION	G	0.08	0.9	7.29	8.74	0.52	0.63
INTO STM. W/O DETENTION	H	0.08	0.9	7.29	8.74	0.52	0.63
INTO STREET W/O DETENTION	I	0.11	0.9	7.29	8.74	0.72	0.87
INTO STREET W/O DETENTION	J	0.09	0.9	7.29	8.74	0.59	0.71
INTO STREET W/O DETENTION	K	0.04	0.9	7.29	8.74	0.26	0.31
INTO DETENTION/STM	L	0.23	0.9	7.29	8.74	1.51	1.81
OFF SITE							
INTO DETENTION/STM	M	0.35	0.9	7.29	8.74	2.30	-

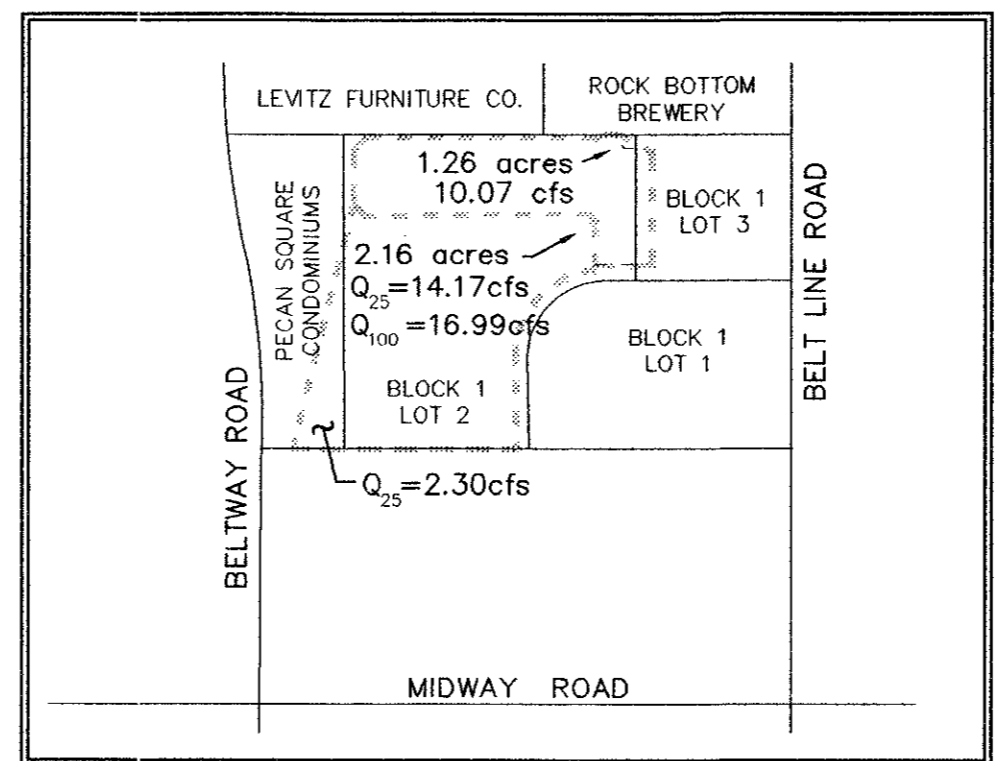
INLET SIZE CALCULATIONS

Q = CA√2gh
C = 0.7 (clogging factor)
A = AREA INLET OPENING (sq ft)
g = 32.2 ft/sec
h = 0.7 (depth of water)
AREA GRATE INLET No.36 = 4 sq ft
MAX Q GRATE INLET No.36 = 6.0 cfs

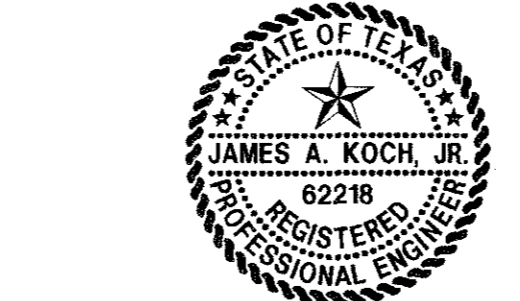
NOTE:
GRATE INLETS TO BE INSTALLED ARE TO BE "American Industrial Pre-cast Products, Inc." CATCH BASINS OR APPROVED EQUAL.

OUTLET CONTROL CALCULATIONS

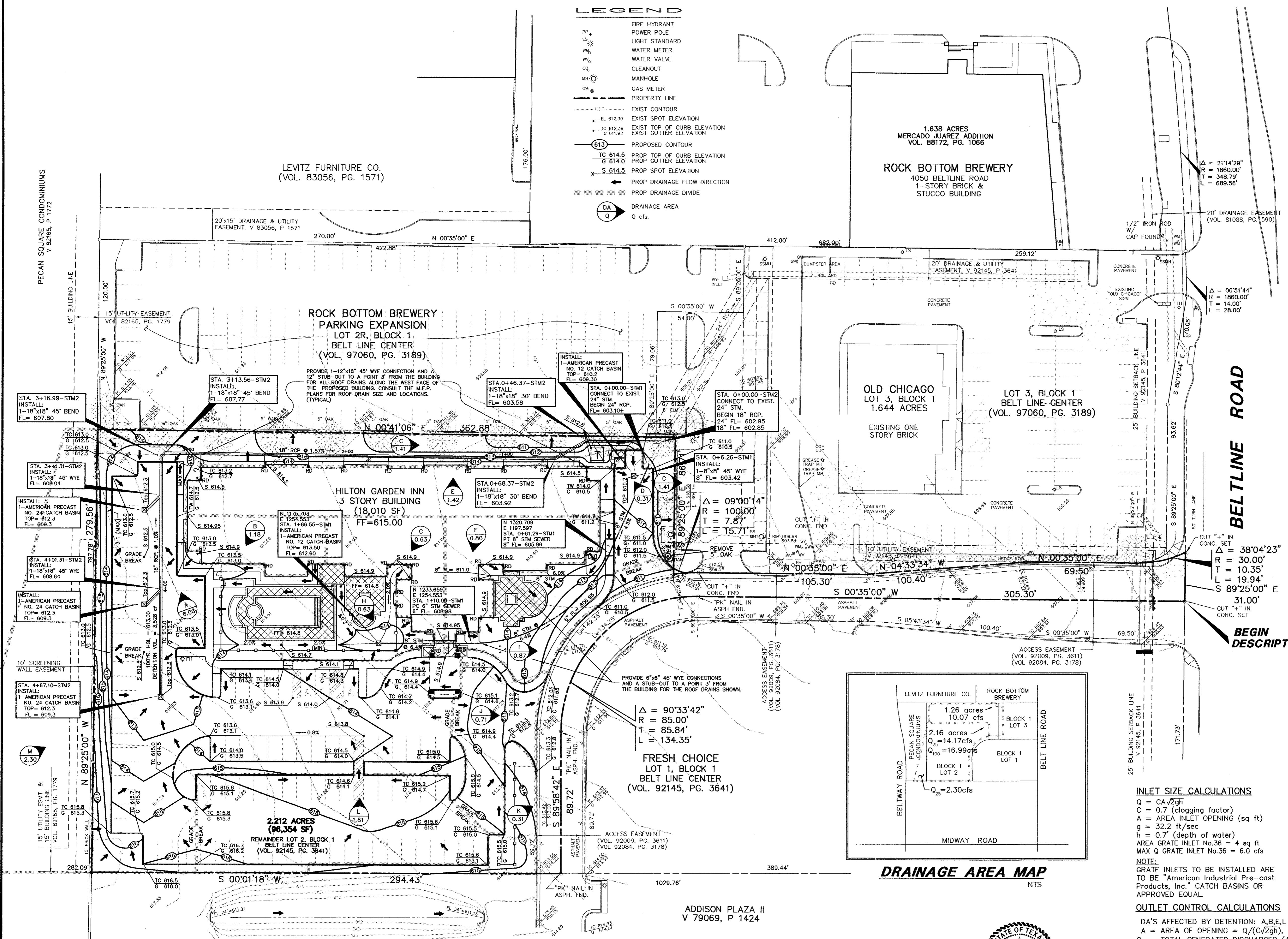
DA'S AFFECTED BY DETENTION: A,B,E,L
A = AREA OF OPENING = Q/(C√2gh), WHERE
Q₁₀₀ = TOTAL GENERATED DISCHARGE (A-L) = 16.99 cfs
Q₂₅ = TOTAL ALLOWABLE DISCHARGE (A-L) = 14.17 cfs
Q₁₀₀ = BYPASS DISCHARGED INTO STREET (I,J,K) = 1.89 cfs
Q₁₀₀ = BYPASS DISCHARGED INTO PARKING (C) = 1.41 cfs
Q₂₅ = BYPASS DISCHARGED INTO STM (E,D,F,G,H) = 3.78 cfs
Q₂₅ = OFFSITE DISCHARGED INTO DETENTION (M) = 2.30 cfs
Q₂₅ = DETAINED DISCHARGED = Q₂₅ - Q₁₀₀ (BYPASS) + Q₂₅ (OFFSITE) = 9.66 cfs
C = CLOGGING FACTOR = 0.7
g = GRAVITATIONAL CONSTANT = 32.2 ft/sec
h = AVAILABLE HEAD = 613.0-612.3 = 0.7 ft
A = 2.06 SF/3 = 0.69 SF per GRATE INLET
CONTRACTOR TO REDUCE EACH NO. 24 GRATE INLET OPENING WITHIN THE DETENTION AREA TO 0.69 SF.



DRAINAGE AREA MAP



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LEVITZ FURNITURE CO.
(VOL. 83056, PG. 1571)

1.638 ACRES
MERCADO JUAREZ ADDITION
VOL. 88172, PG. 1066

ROCK BOTTOM BREWERY
4050 BELTLINE ROAD
1-STORY BRICK & STUCCO BUILDING

ROCK BOTTOM BREWERY PARKING EXPANSION
LOT 2R, BLOCK 1
BELT LINE CENTER
(VOL. 97060, PG. 3189)

OLD CHICAGO
LOT 3, BLOCK 1
1.644 ACRES
EXISTING ONE STORY BRICK

LOT 3, BLOCK 1
BELT LINE-CENTER
(VOL. 97060, PG. 3189)

HILTON GARDEN INN
3 STORY BUILDING
(18,010 SF)
FF=615.00

FRESH CHOICE
LOT 1, BLOCK 1
BELT LINE CENTER
(VOL. 92145, PG. 3641)

2.212 ACRES
(96,354 SF)
REMAINDER LOT 2, BLOCK 1
BELT LINE CENTER
(VOL. 92145, PG. 3641)

ADDISON PLAZA II
V 79069, P 1424

PACHECO KOCH 9401 LBJ Freeway, Suite 300
Consulting Engineers, Inc. Dallas, Texas 75243
Civil Engineering • Land Surveying (214) 235-3031

GRADING & DRAINAGE

HILTON GARDEN INN
RUNYON AT BELTLINE ROAD
REMAINDER LOT 2, BLOCK 1

TOWNES of ADDISON, TEXAS

DESIGN	DRAWN	DATE	SCALE	NOTES	FILE	NO.
JAK	MWA/CHI	OCT 1997	1"=30'			C-3