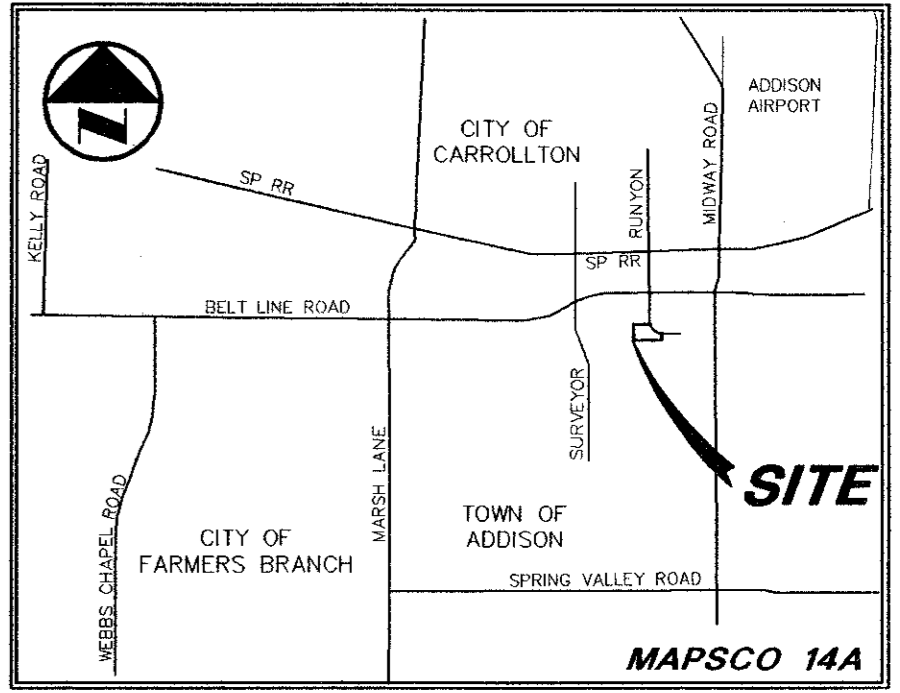


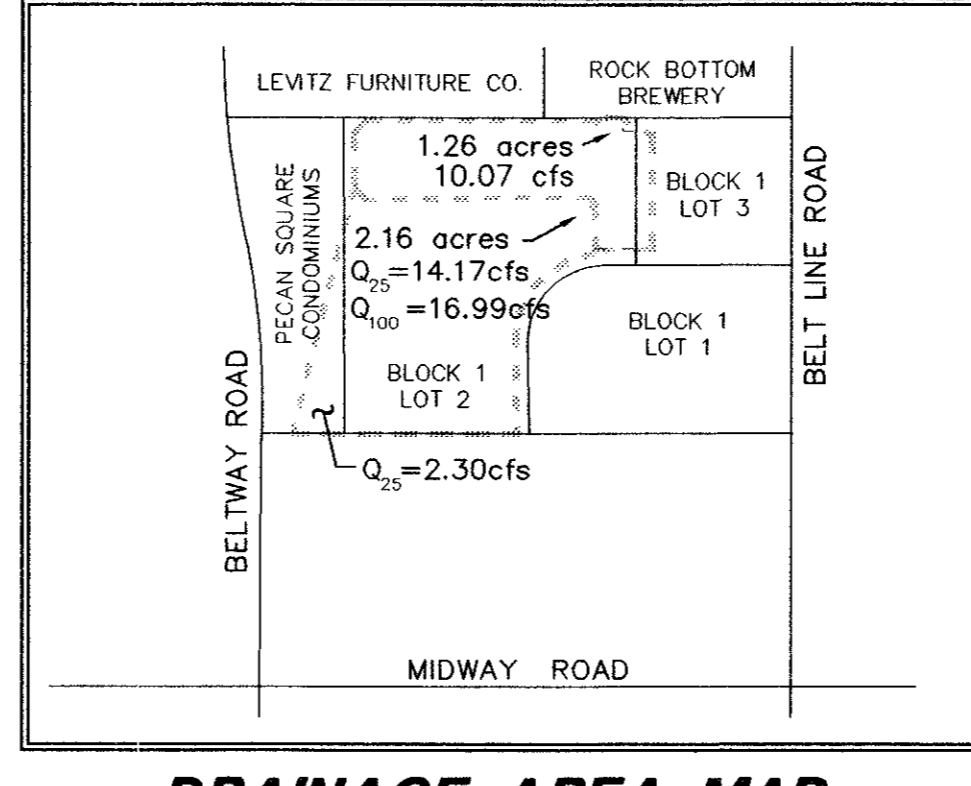
- LEGEND**
- PP FIRE HYDRANT
  - LS LIGHT STANDARD
  - WM WATER METER
  - WV WATER VALVE
  - CN CLEANOUT
  - MH MANHOLE
  - GM GAS METER
  - PL PROPERTY LINE
  - EL. 612.32 EXIST. CONTOUR
  - EL. 612.32 EXIST. SPOT ELEVATION
  - EL. 611.92 EXIST. TOP OF CURB ELEVATION
  - EL. 611.92 EXIST. GUTTER ELEVATION
  - 613 PROPOSED CONTOUR
  - TC 614.5 PROP. TOP OF CURB ELEVATION
  - G 614.0 PROP. GUTTER ELEVATION
  - S 614.5 PROP. SPOT ELEVATION
  - PROP. DRAINAGE FLOW DIRECTION
  - PROP. DRAINAGE DIVIDE
  - DA DRAINAGE AREA
  - Q cfs.



**DETENTION BASIN DESIGN CALCULATIONS**

<b>GIVEN:</b>	<b>RESULT:</b>	<b>RESULT:</b>
Area = 1.61	Maximum Required Storage = 3,405 cf	Maximum Provided Storage = 3,528 cf
Prop C = 0.90		
Prop Tc = 10 min		
Max Q = 9.66 cfs		

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 = 7,596 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 = 20,286 cf	Storage = 110 cf
70 min Storm	In 70 x 5.1 x 60 = 21,605 cf	Out 0.5 x 80 x 9.7 x 60 = 23,184 cf	Storage = (1,579)cf
80 min Storm	In 80 x 4.8 x 60 = 23,161 cf	Out 0.5 x 90 x 9.7 x 60 = 24,256 cf	Storage = (2,921)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



**INLET SIZE CALCULATIONS**

Q = CA√gh  
 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

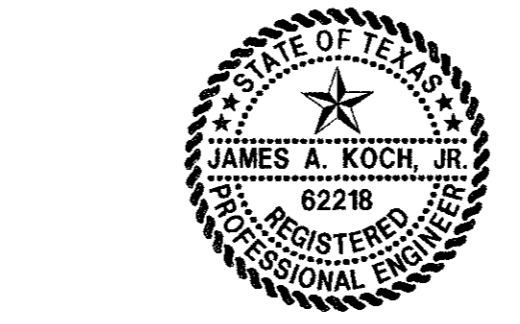
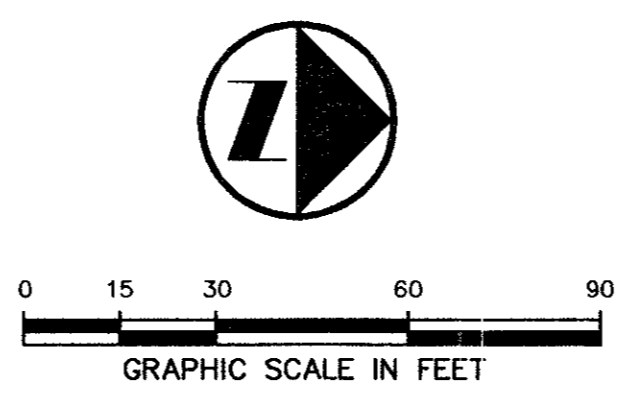
**NOTE:**  
 GRATE INLETS TO BE INSTALLED ARE TO BE "American Industrial Pre-cast Products, Inc." CATCH BASINS OR APPROVED EQUAL.

**OUTLET CONTROL CALCULATIONS**

DA'S AFFECTED BY DETENTION: A,B,E,L  
 A = AREA OF OPENING = Q/(C√gh), WHERE  
 Q<sub>100</sub> = TOTAL GENERATED DISCHARGE (A-L) = 16.99 cfs  
 Q<sub>25</sub> = TOTAL ALLOWABLE DISCHARGE (A-L) = 14.17 cfs  
 Q<sub>100</sub> = BYPASS DISCHARGED INTO STREET (I,J,K) = 1.89 cfs  
 Q<sub>100</sub> = BYPASS DISCHARGED INTO PARKING (C) = 1.41 cfs  
 Q<sub>25</sub> = BYPASS DISCHARGED INTO STM (E,D,F,G,H) = 3.78 cfs  
 Q<sub>25</sub> = OFFSITE DISCHARGED INTO DETENTION (M) = 2.30 cfs  
 Q<sub>25</sub> = DETAILED DISCHARGED  
 = Q<sub>25</sub> - Q<sub>100</sub>(BYPASS) + Q<sub>25</sub>(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 CALCULATION TABLE**

DA DESTINATION	DA	AREA	C	I <sub>25</sub>	I <sub>100</sub>	Q <sub>25</sub>	Q <sub>100</sub>
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	M	0.35	0.9	7.29	8.74	2.30	-



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**GRADING & DRAINAGE PLAN**

**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'			<b>C-3</b>