

QUAIL RUN RETENTION CALCULATIONS

POND NO. 1 (EXISTING POND)

Total Acreage in Plat:

Phase I	25.33 Acres
Phase II	40.06 Acres
Total	65.39 Acres
Greenbelt Phase I	6.10 Acres
Greenbelt Phase II	1.47 Acres
Total	7.57 Acres
Total Developed Acreage:	
Less Greenbelts	65.39 Acres
	-7.57 Acres
57.82 Acres	

Detention Required:

Developed	(57.82) (50) (9.8) = 283.32 cfs
Undeveloped	(57.82) (35) (8.3) = 167.97 cfs
Detention Required = 115.35 cfs	
Allowed Release Rate = 167.97 cfs	

POND No. 2

Drainage Area Captured 16.75 Acres

Developed	(16.75) (0.50) (9.8) = 82.08 cfs
Undeveloped	(16.75) (0.35) (8.3) = 48.66 cfs
Detention Required = 32.42 cfs	
Allowed Release Rate = 48.66 cfs	

Off Site (Area 5) (6.30 acres) (.35) (8.3) = 18.30 cfs

Total Flow Into Pond = 100.38 cfs

Total Allowed Release Rate = 66.96 cfs

Calculate Average "C"

16.75 (.50)	= 8.375
6.30 (.35)	= 2.205
23.05	10.58
Average "C" = 10.58/23.05 = 0.459	

CHECK VARIOUS DURATION STORMS

15 min	I = 9.1	Q = (0.459) (9.1) (23.05) = 96.28 cfs
20 min	I = 8.3	Q = (0.459) (8.3) (23.05) = 87.81 cfs
30 min	I = 6.9	Q = (0.459) (6.9) (23.05) = 73.00 cfs
40 min	I = 5.7	Q = (0.459) (5.7) (23.05) = 60.31 cfs
50 min	I = 5.0	Q = (0.459) (5.0) (23.05) = 52.90 cfs
60 min	I = 4.4	Q = (0.459) (4.4) (23.05) = 46.55 cfs

CHECK STORAGE REQUIRED

15 min storm	Inflow (15) (96.28) (60) = 86,652 CF
	Outflow (0.5)(30)(66.96)(60) = 60,264 CF
	26,388 CF
20 min storm	Inflow (20) (87.81) (60) = 105,372 CF
	Outflow (0.5)(35)(66.96)(60) = 70,308 CF
	35,064 CF
30 min storm	Inflow (30) (73.00) (60) = 131,400 CF
	Outflow (0.5)(45)(66.96)(60) = 90,396 CF
	41,004 CF
40 min storm	Inflow (40) (60.31) (60) = 144,744 CF
	Outflow (0.5)(55)(66.96)(60) = 110,484 CF
	34,260 CF
50 min storm	Inflow (50) (52.90) (60) = 158,700 CF
	Outflow (0.5)(65)(66.96)(60) = 130,572 CF
	28,128 CF

Maximum Storage Volume required is 41,004 CF at the 30 minute storm duration.

Check Allowed Release

Phase 1 And 2	65.39Ac.(0.35)(8.3) = 189.96 cfs
Off Site Area 5	6.30Ac.(0.35)(8.3) = 18.30 cfs
Off Site Area 1	44.76Ac.(0.35)(7.2) = 112.80 cfs
Total Release Allowed = 321.06 cfs	

Released Without Detention:

Greenbelt Area 1	3.73Ac.(0.35)(8.3) = 10.84 cfs
Lots 1 Through 5, Blk. A	1.06Ac.(0.50)(9.8) = 5.19 cfs
Lots 1 Through 18, Blk. E	3.95Ac.(0.50)(9.8) = 19.35 cfs
Sub-total Release = 40.90 cfs	

Lots 1 Through 18, Blk. E 3.95Ac.(0.50)(9.8) = 19.35 cfs

Line "D" 72.34 cfs

Line "F" 18.18 cfs

Line "B" (Below Pond) 14.01 cfs

Sub-total Release 250.80 cfs

Released Allowed Pond No. 1 321.06 cfs

Less Sub-total Release 250.80 cfs

Allowed Release Pond No. 1 70.26 cfs

Calculate Average "C" for Pond:

44.76 (.35)	= 15.666
1.70 (.35)	= .595
4.80 (.50)	= 2.400
51.26	18.661
Average "C" = 18.661/51.26 = 0.364	

Maximum Storage Volume required is 142,863 CF at the 50 minute storm duration.

BENCH MARK SQUARE CUT IN CONCRETE AT BASE OF SOUTH APPROACH TO BRIDGE OVER SQUABBLE CREEK ON HWY. 205 ELEV.: 472.41

BENCH MARK 60D NAIL IN 3" PECAN TREE (TREE NO. 2314) PAV. STA. 1+83, 138' RT., AUDOBON LANE ELEV.: 480.88

BENCH MARK 60D NAIL IN 36" PECAN TREE (TREE NO. 2302) PAV. STA. 8+30, 71' RT., MEMORIAL DRIVE ELEV.: 466.79

BENCH MARK 60D NAIL IN 18" PECAN TREE (TREE NO. 2114) PAV. STA. 10+97, 63.5' RT., AUDOBON LANE ELEV.: 501.54

QUAIL RUN COMMERCIAL RETENTION POND

Total Area Of Plat 15.61 acres

TOTAL COMMERCIAL AREA DEVELOPED 15.61 ACRES

Developed	(15.61) (0.80) (9.8) = 122.38 cfs
Undeveloped	(15.61) (0.35) (8.3) = 45.35 cfs
TOTAL TO BE RETAINED 78.77 cfs	
ALLOWED RELEASE 45.35 cfs	

Drainage Captured by the Pond:

Total Area Developed	14.89
Plus Highway R.O.W.	0.76
Plus Pond	0.72
16.37	

Flow into Pond:

(14.89) (.80) (9.8)	= 116.74 cfs
(1.48) (.35) (8.3)	= 4.30 cfs
TOTAL 121.04 cfs	

Calculate Average "C":

14.89 (.80)	= 11.912
1.48 (.35)	= 0.518
16.37	12.43
Average "C" = 12.43/16.37 = 0.7593	

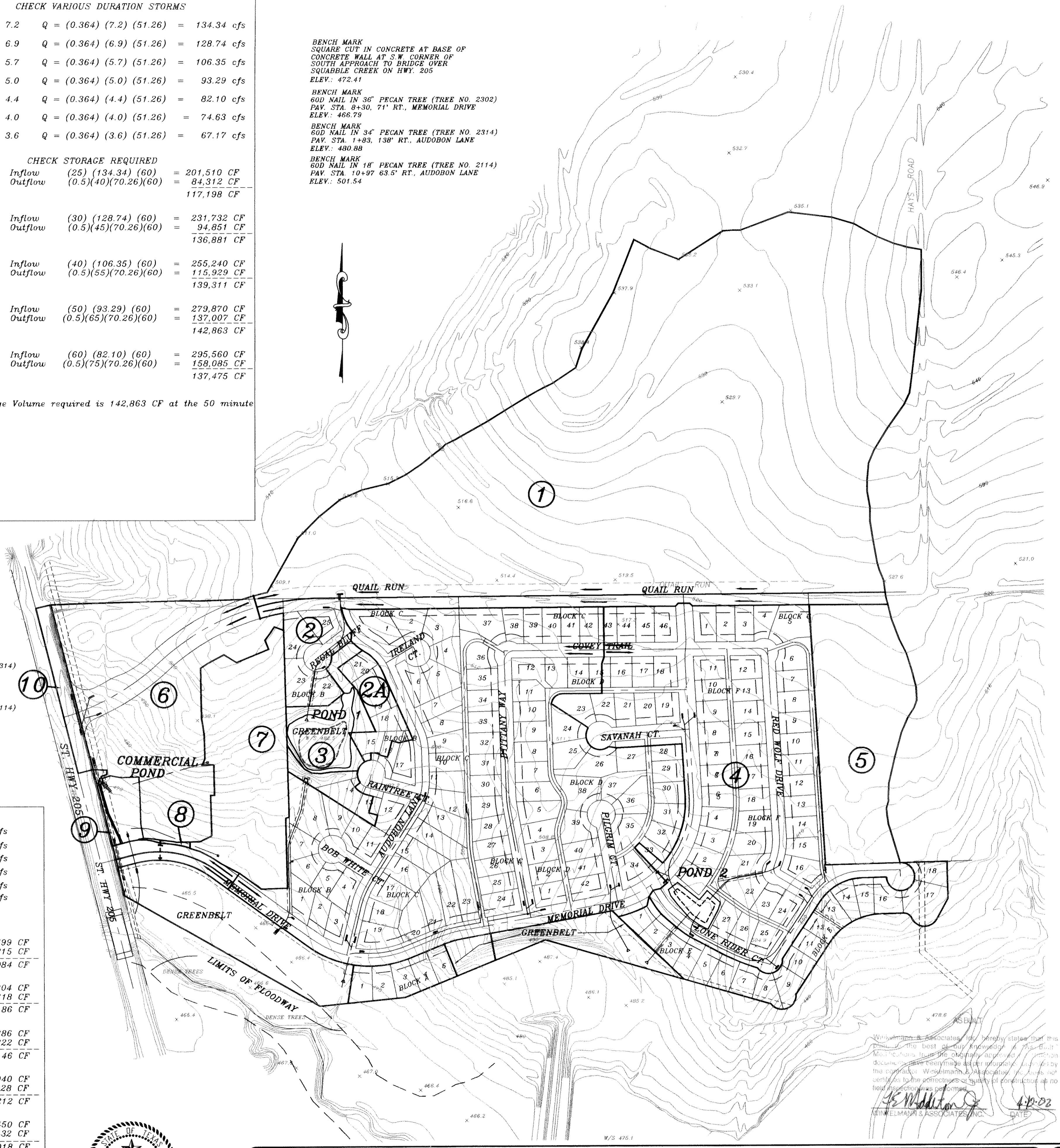
CHECK VARIOUS DURATION STORMS

15 min	I = 9.1	Q = (0.7598) (9.1) (16.37) = 113.11 cfs
20 min	I = 8.3	Q = (0.7598) (8.3) (16.37) = 103.17 cfs
30 min	I = 6.9	Q = (0.7598) (6.9) (16.37) = 85.76 cfs
40 min	I = 5.7	Q = (0.7598) (5.7) (16.37) = 70.85 cfs
50 min	I = 5.0	Q = (0.7598) (5.0) (16.37) = 62.15 cfs
60 min	I = 4.4	Q = (0.7598) (4.4) (16.37) = 54.69 cfs

CHECK STORAGE REQUIRED

15 min storm	Inflow (15) (113.11) (60) = 101,799 CF
	Outflow (0.5)(30)(45.35)(60) = 40,815 CF
	60,984 CF
20 min storm	Inflow (20) (103.17) (60) = 123,804 CF
	Outflow (0.5)(35)(45.35)(60) = 47,618 CF
	76,186 CF
30 min storm	Inflow (30) (85.76) (60) = 154,386 CF
	Outflow (0.5)(45)(45.35)(60) = 61,222 CF
	93,164 CF
40 min storm	Inflow (40) (70.85) (60) = 170,040 CF
	Outflow (0.5)(55)(45.35)(60) = 74,828 CF
	95,212 CF
50 min storm	Inflow (50) (62.15) (60) = 186,450 CF
	Outflow (0.5)(65)(45.35)(60) = 88,432 CF
	98,018 CF
60 min storm	Inflow (60) (54.69) (60) = 196,884 CF
	Outflow (0.5)(75)(45.35)(60) = 102,038 CF
	94,846 CF

Maximum Storage Volume required is 98,018 CF at the 50 minute storm duration.



HAROLD L. EVANS CONSULTING ENGINEER P.O. BOX 28355 2331 GUS THOMASSON ROAD, SUITE 102 DALLAS, TEXAS 75228, (214) 328-8133		RETENTION POND DRAINAGE AREA MAP QUAIL RUN VALLEY NO. 1 AND NO. 2 QUAIL RUN VALLEY RETAIL CITY OF ROCKWALL	
REV. 6/11/01 REV. 6/11/01 REV. 3/3/01 REV. 2/21/15	DATE 6/11/01 SCALE 1" = 200' DESIGN H.L.E. DRAWN	SHEET NO. 11 21 JOB NO. 0020	SHEET NO. 11 21 JOB NO. 0020



DRAINAGE TABLE

DRAINAGE AREA NO.	ACRES	T.C.	C	I 100 YR.	Q 100 YR.	SUM Q 100 YR.
LINE A & B						
1	44.76	29.0	0.95	7.2	96.68	112.80
2	2.19	29.0	0.5	7.2	8.30	120.68
2A	0.93	29.1	0.5	7.2	3.35	124.03
2B	0.59	29.1	0.5	7.2	2.12	126.16
2C	1.09	29.1	0.5	7.2	3.92	130.08
3	1.70	29.2	0.35	7.2	4.28	134.36
RET. POND 1						
3A	0.62	29.2	0.35	7.2	1.56	71.82
4	1.34	29.8	0.5	7.1	4.76	76.58
5	0.92	30.2	"	6.9	3.17	79.75
6	1.24	10.0	"	9.8	6.08	85.83
LINE E & C						
8	2.57	10.0	0.5	9.8	12.59	
9	2.88	"	"	"	14.11	26.70
10	2.91	"	"	"	14.26	40.96
11	1.16	"	"	"	5.68	46.64
12	1.29	"	"	"	6.32	52.96
13	2.18	"	"	"	10.68	63.64
LINE D						
14	3.55	10.0	0.5	9.8	17.40	
15	2.32	"	"	"	11.37	28.77
16	2.92	"	"	"	14.31	43.08
QUAIL RUN AT 205						
17	1.04	10.0	0.8	9.8	8.15	
17A	0.46	"	0.35	"	1.56	9.71
18	2.33	"	0.8	"	18.27	27.98
19	0.66	"	"	"	5.17	33.15
LINE X						
20	1.28	10.0	0.8	9.8	10.04	43.19
20A	0.30	"	0.35	"	1.03	44.22
LINE Q						
21	3.39	10.0	0.8	9.8	26.58	70.80
LINE R						
21A	1.90	10.0	0.8	9.8	14.90	85.70
RET. POND						
21B	4.37	10.0	0.8	9.8	34.26	119.96
LINE F						
22	0.43	10.0	0.8	9.8	3.37	3.37
23	0.30	"	0.5	"	1.47	4.84
LINE L						
24	2.23	10.0	0.5	9.8	10.93	
25	2.21	"	"	"	10.83	21.76
26	1.15	"	"	"	5.64	27.40
27	0.87	"	"	"	4.26	31.66
28	1.49	"	"	"	7.30	38.96
LINE M						
29	2.54	10.0	0.5	9.8	12.45	
30	0.83	"	"	"	4.07	16.52
31	2.95	"	"	"	14.46	30.98
LINE N						
32	0.19	10.0	0.5	9.8	0.93	
32A	2.59	"	0.35	8.3	7.52	8.45
33	0.31	"	0.5	9.8	1.52	9.97
33A	1.29	"	0.35	8.3	3.75	13.72
34	2.42	"	0.35	"	7.03	20.75
35	1.25	"	0.5	9.8	6.13	26.88
RET. POND 2						
36	0.73	10.0	0.5	9.8	3.58	100.40
37	0.78	"	"	"	3.82	
38	0.75	"	"	"	3.68	
LINE P						
39	1.32	10.0	0.5	9.8	6.47	
40	2.39	"	"	"	11.71	18.18
A STREET AT 205						
41	0.47	10.0	0.5	9.8	2.30	

BENCH MARK
 SQUARE CUT IN CONCRETE AT BASE OF
 CONCRETE WALL AT S.W. CORNER OF
 SOUTH APPROACH TO BRIDGE OVER
 SQUIBBLE CREEK ON HWY. 205
 ELEV.: 472.41

BENCH MARK
 60D NAIL IN 34" PECAN TREE (TREE NO. 2314)
 PAV. STA. 1+83.136' RT. AUDOBON LANE
 ELEV.: 480.88

BENCH MARK
 60D NAIL IN 36" PECAN TREE (TREE NO. 2302)
 PAV. STA. B+30.71' RT. MEMORIAL DRIVE
 ELEV.: 466.79

BENCH MARK
 60D NAIL IN 18" PECAN TREE (TREE NO. 2114)
 PAV. STA. 10+97.635' RT. AUDOBON LANE
 ELEV.: 501.54

AS-BUILT

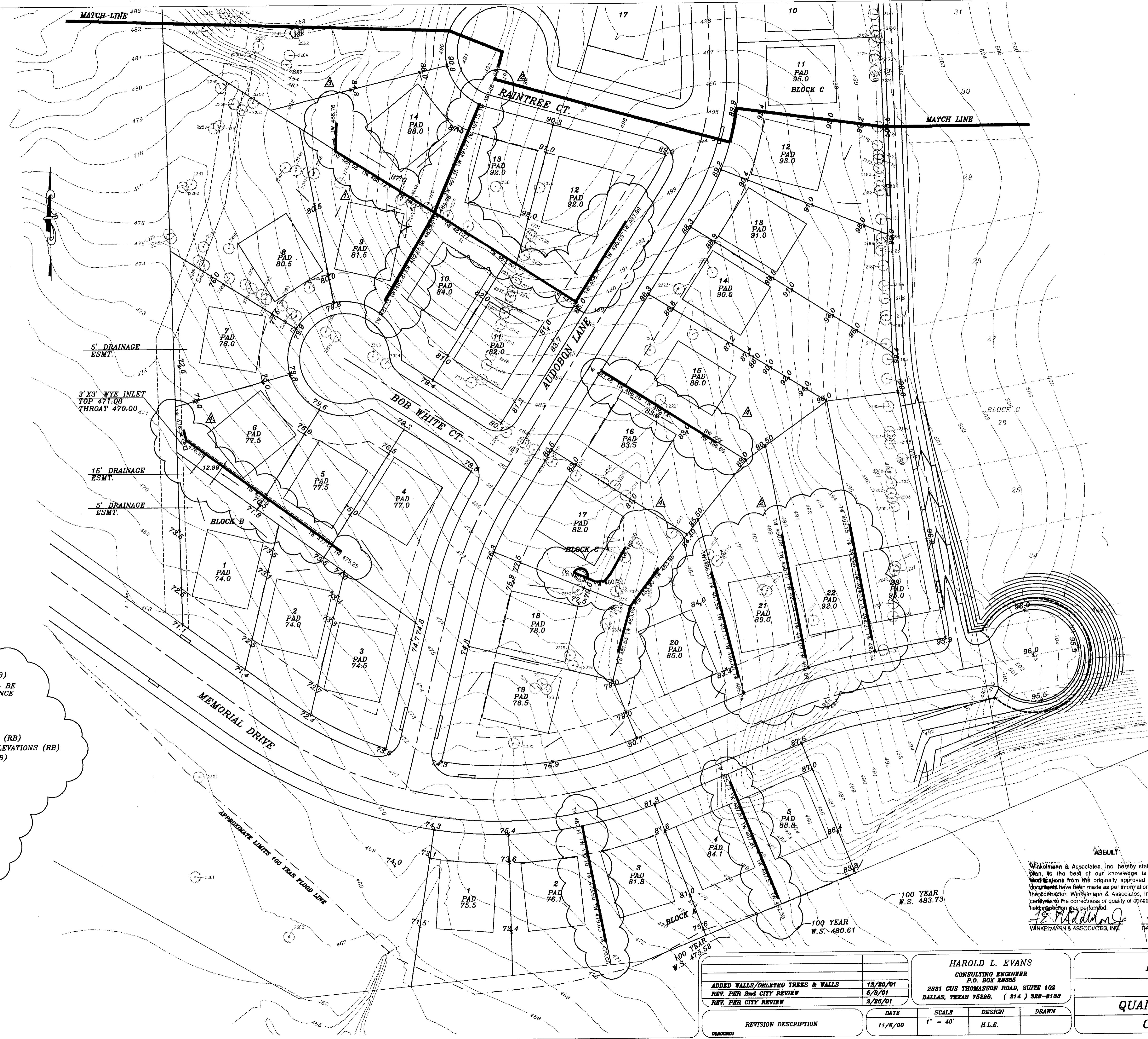
WIRELMANN & ASSOCIATES, INC. hereby states that this plan and all other instruments and documents have been filed as per information furnished by the contractor, WIRELMANN & ASSOCIATES, INC. This does not certify as to the correctness or quality of construction as no field inspection was performed.

J.C. Mohr
 WIRELMANN & ASSOCIATES, INC.
 DATE 4-10-02



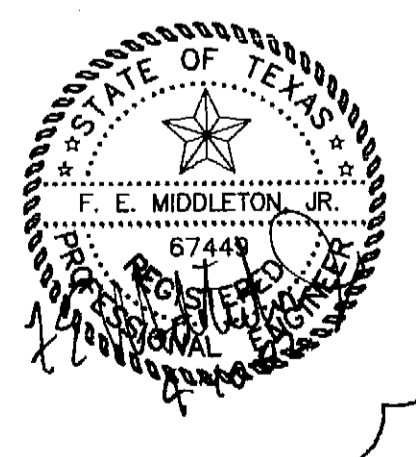
HAROLD L. EVANS CONSULTING ENGINEER P.O. BOX 28365 2331 CUS THOMASSON ROAD, SUITE 102 DALLAS, TEXAS 75228, (214) 328-8133		DRAINAGE AREA MAP QUAIL RUN VALLEY NO. 1 AND NO. 2 QUAIL RUN VALLEY RETAIL CITY OF ROCKWALL		SHEET NO. 12 21 JOB NO. 0020
REV PER 3rd CITY REVIEW 6/11/01 REV 2/22/01	DATE 4-10-02	SCALE 1" = 200'	DESIGN H.L.E.	DRAWN

0020_PHASE2_0020DRN2



- ▲ 12/20/01 ADDED WALLS (RB)
- ▲ REMOVED 20 TREES & WILL BE REPLACED PER CITY ORDINANCE
- ▲ WALLS PER "AS-BUILT"

- ▲ 10/17/01 DELETED WALLS (RB)
- ▲ 10/17/01 REVISED WALL ELEVATIONS (RB)
- ▲ 10/17/01 ADDED WALLS (RB)



BENCH MARK
 SQUARE CUT IN CONCRETE AT BASE OF
 CONCRETE WALL AT S.W. CORNER OF
 SOUTH APPROACH TO BRIDGE OVER
 SQUABBLE CREEK ON HWY. 206
 ELEV.: 478.41

BENCH MARK
 60D NAIL IN 36" PECAN TREE (TREE NO. 2802)
 PAV. STA. 8+30, 71' RT., MEMORIAL DRIVE
 ELEV.: 486.79

BENCH MARK
 60D NAIL IN 34" PECAN TREE (TREE NO. 2814)
 PAV. STA. 1+83, 138' RT., AUDOBON LANE
 ELEV.: 480.88

BENCH MARK
 60D NAIL IN 18" PECAN TREE (TREE NO. 2114)
 PAV. STA. 10+87 88.5' RT., AUDOBON LANE
 ELEV.: 501.54

Winkelman & Associates, Inc. hereby states that this plan to the best of our knowledge is "As Built".
 Modifications from the originally approved construction documents have been made as per information provided by the contractor. Winkelman & Associates, Inc. does not certify to the correctness or quality of construction as no field inspection was performed.

J. S. Middleton
 WINKELMAN & ASSOCIATES, INC. DATE 4-10-02



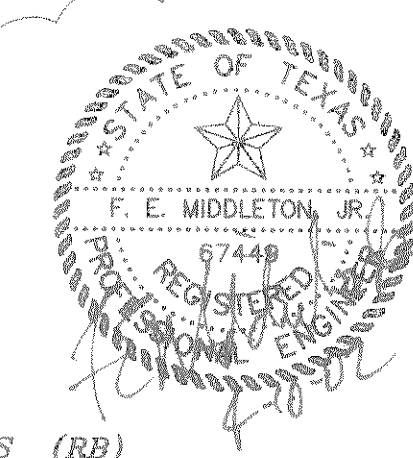
ADDED WALLS/DELETED TREES & WALLS	12/20/01
REV. PER 2nd CITY REVIEW	5/9/01
REV. PER CITY REVIEW	2/25/01

HAROLD L. EVANS
 CONSULTING ENGINEER
 P.O. BOX 28855
 2331 CUS THOMASSON ROAD, SUITE 102
 DALLAS, TEXAS 75228, (214) 328-8188

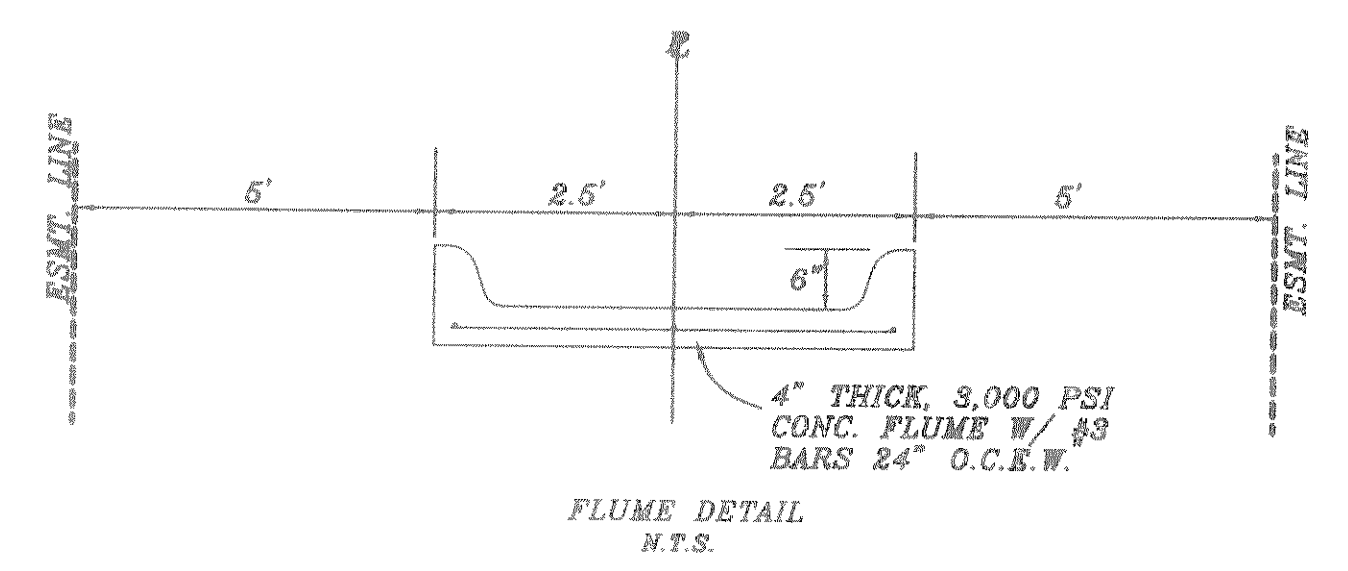
LOT GRADING PLAN	
QUAIL RUN VALLEY NO. 1	
CITY OF ROCKWALL	

REVISION	DESCRIPTION	DATE	SCALE	DESIGN	DRAWN
0000001		11/6/00	1" = 40'	H.L.E.	

SHEET NO.	19
	21
JOB NO.	0020



▲ 10/17/01 DELETED WALLS (RB)
 ▲ WALLS PER "AS BUILT"



BENCH MARK
 SQUARE CUT IN CONCRETE AT BASE OF
 CONCRETE WALL AT S.E. CORNER OF
 SOUTH APPROACH TO BRIDGE OVER
 SQUARE CREEK ON HWY. 206
 ELEV.: 472.41

BENCH MARK
 60D NAIL IN 3" PECAN TREE (TREE NO. 2514)
 PAV. STA. 1+83, 136' RT., AUDUBON LANE
 ELEV.: 480.88

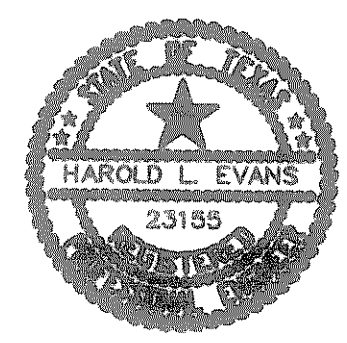
BENCH MARK
 60D NAIL IN 36" PECAN TREE (TRES NO. 2302)
 PAV. STA. 8+30, 71' RT., MEMORIAL DRIVE
 ELEV.: 486.79

BENCH MARK
 60D NAIL IN 18" PECAN TREE (TREE NO. 2114)
 PAV. STA. 10+97 63.5' RT., AUDUBON LANE
 ELEV.: 501.54

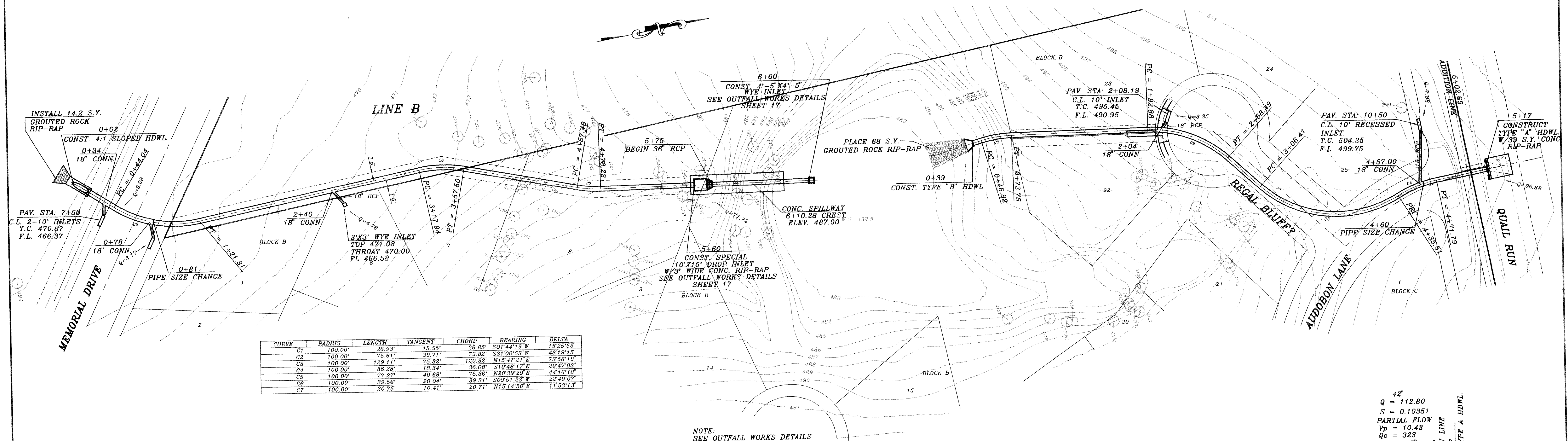
ASBUILT

Winkelmann & Associates, Inc. hereby states that this plan, to the best of our knowledge is "As Built." Modifications from the originally approved construction documents have been made as per information provided by the contractor. Winkelmann & Associates, Inc. does not certify as to the correctness or quality of construction as no field inspection was performed.

H. L. Evans
 HAROLD L. EVANS
 23155
 DATE 4-8-02
 WINKELMANN & ASSOCIATES, INC.



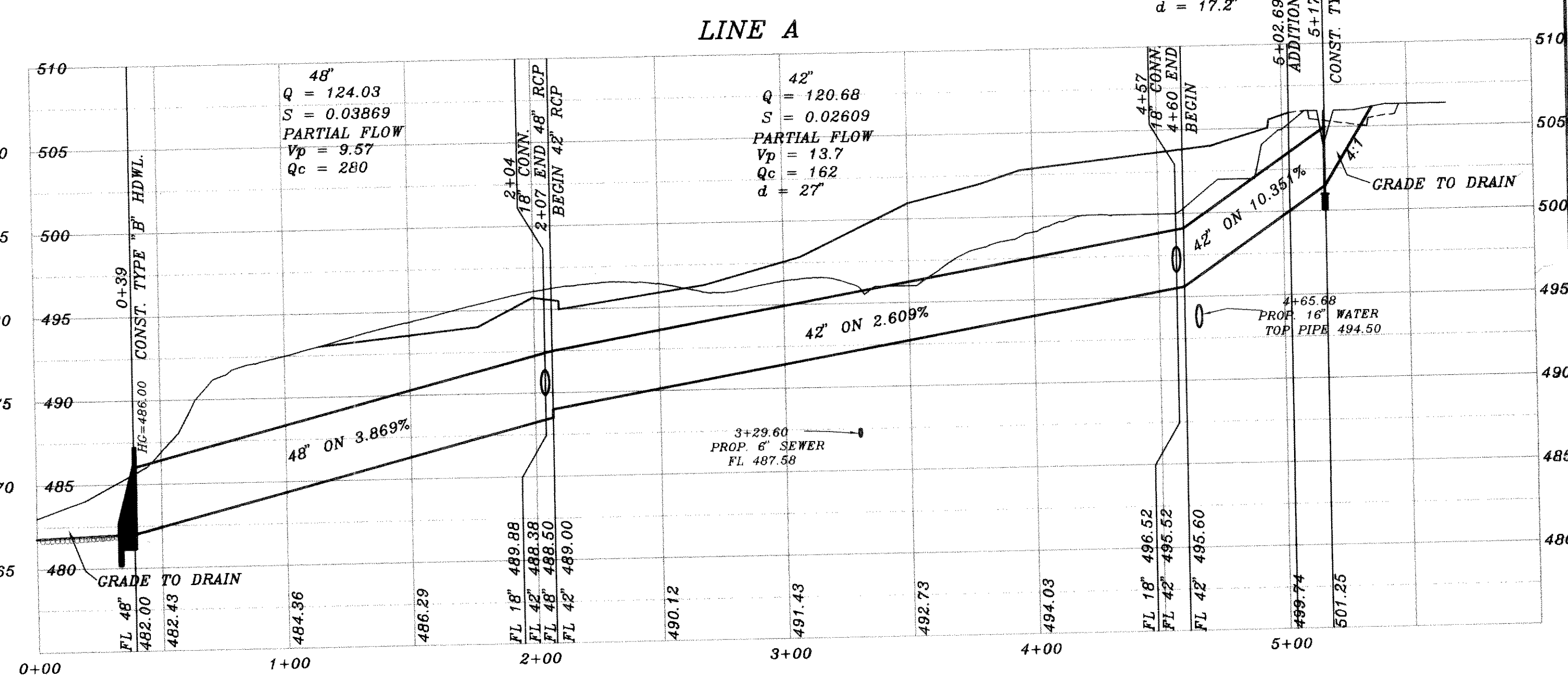
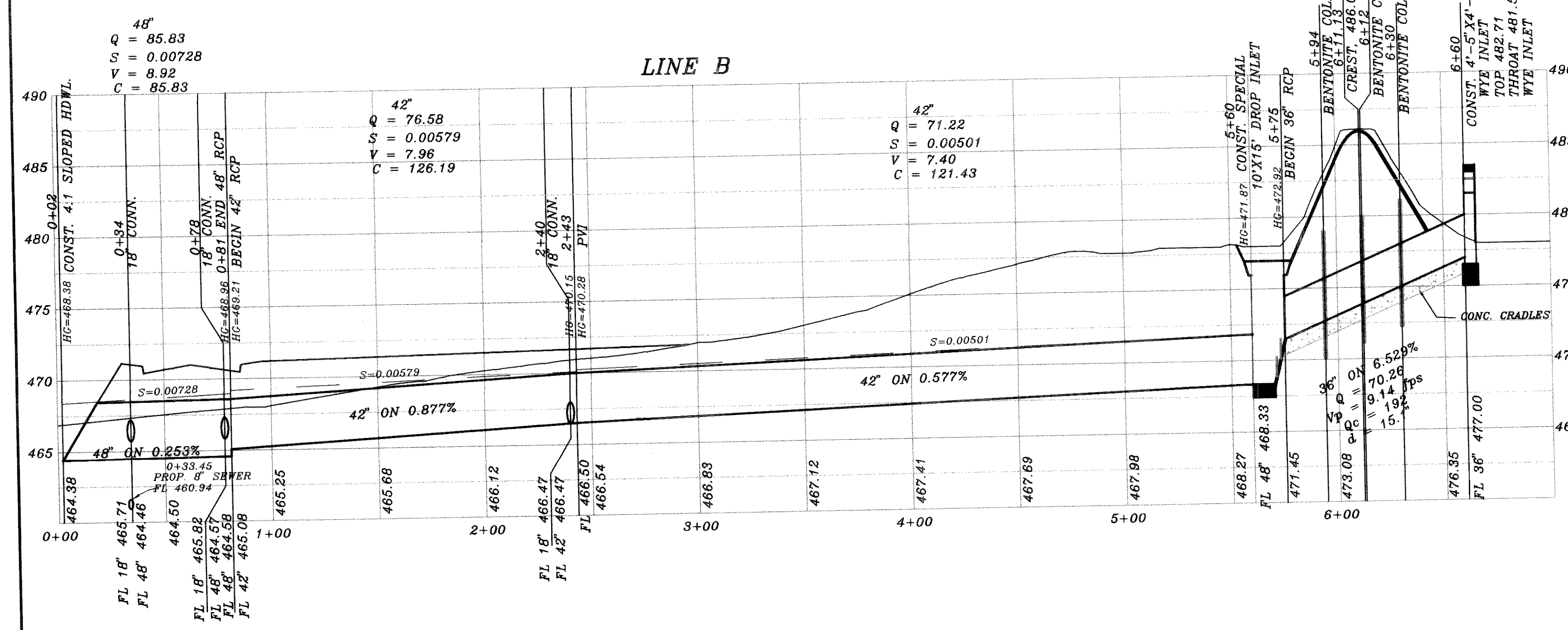
HAROLD L. EVANS CONSULTING ENGINEER P.O. BOX 28865 2381 GUS THOMASSON ROAD, SUITE 102 DALLAS, TEXAS 75226 (214) 398-8133		LOT GRADING PLAN		SHEET NO. 20	
REVISION DESCRIPTION 00000000		DATE 11/6/00	SCALE 1" = 40'	DESIGN H.L.E.	DRAWN
REV. PER 2nd CITY REVIEW 6/8/01		QUAIL RUN VALLEY NO. 1 CITY OF ROCKWALL		JOB NO. 0020	



CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C1	100.00'	26.93'	13.55'	26.85'	S01°44'19" W	152°53'
C2	100.00'	75.61'	39.71'	73.82'	S31°06'53" W	43°19'15"
C3	100.00'	129.11'	75.32'	120.33'	N15°42'21" E	73°58'18"
C4	100.00'	36.28'	18.34'	36.08'	S10°48'17" E	20°47'03"
C5	100.00'	72.57'	40.68'	75.36'	N20°39'29" E	44°16'18"
C6	100.00'	39.56'	20.04'	39.31'	S09°51'23" W	22°40'07"
C7	100.00'	20.75'	10.41'	20.71'	N15°14'50" E	11°53'13"

NOTE: SEE OUTFALL WORKS DETAILS SHEET 17

42"
Q = 112.80
S = 0.10351
PARTIAL FLOW
Vp = 10.43
Qc = 323
d = 17.2'



BENCH MARK
SQUARE CUT IN CONCRETE AT BASE OF
CONCRETE WALL AT S.W. CORNER OF
SOUTH APPROACH TO BRIDGE OVER
SQUABBLE CREEK ON HWY. 205
ELEV. = 472.41

BENCH MARK
60D NAIL IN 34' PECAN TREE (TREE NO. 2314)
PAV. STA. 1+83.138' RT. AUDOBON LANE
ELEV. = 480.88

BENCH MARK
60D NAIL IN 36' PECAN TREE (TREE NO. 2302)
PAV. STA. 8+39.71' RT. MEMORIAL DRIVE
ELEV. = 468.79

BENCH MARK
60D NAIL IN 18' PECAN TREE (TREE NO. 2114)
PAV. STA. 10+97.635' RT. AUDOBON LANE
ELEV. = 501.54



Winkelman & Associates, Inc. hereby states that this plan, to the best of our knowledge is "As Built." Modifications from the originally approved construction documents have been made as per information provided by the contractor, Winkelman & Associates, Inc. does not purport as to the correctness or quality of construction as no field inspection was performed.

J.E. Winkelman
WINKELMAN & ASSOCIATES, INC.
DATE: 4-10-02

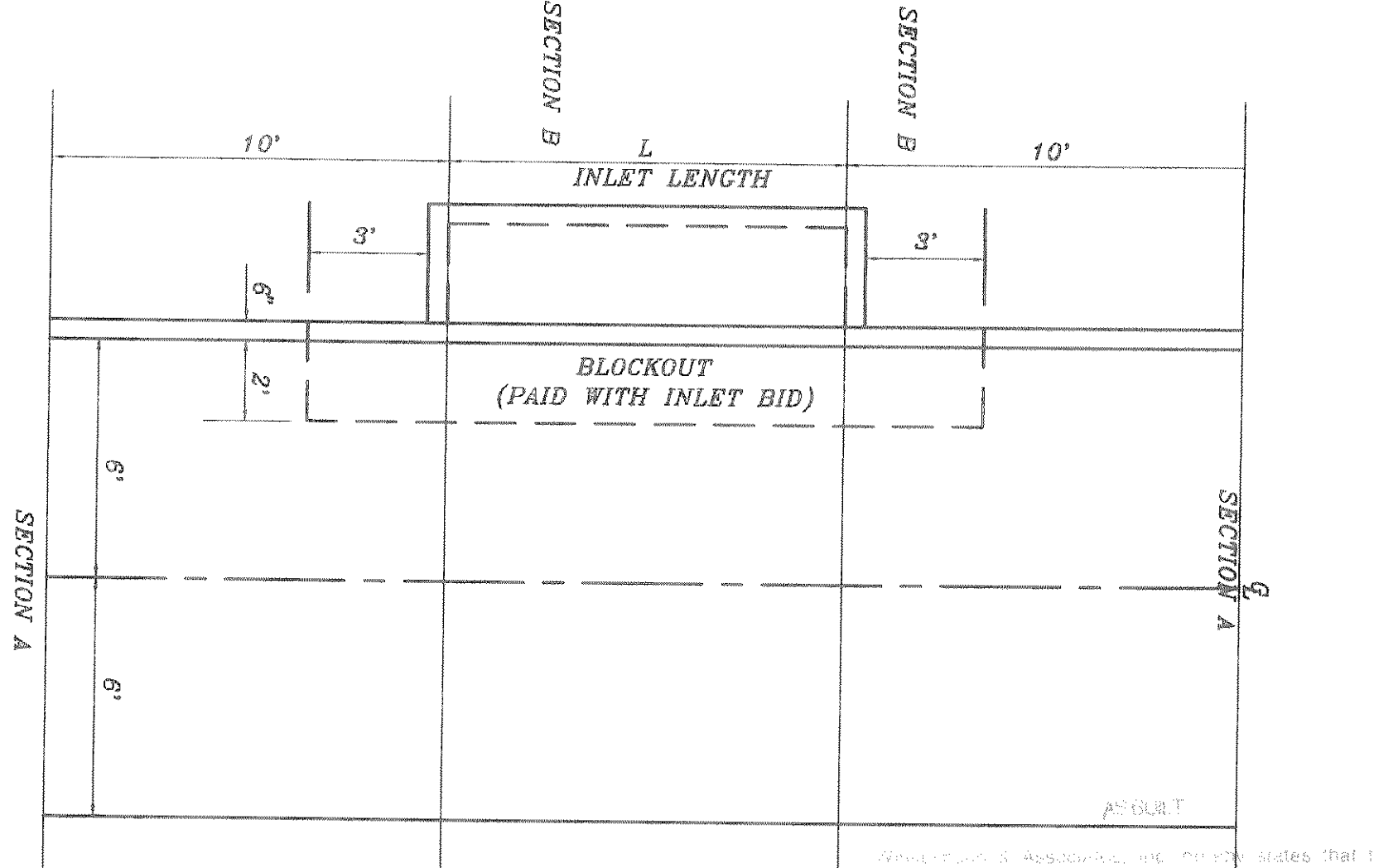
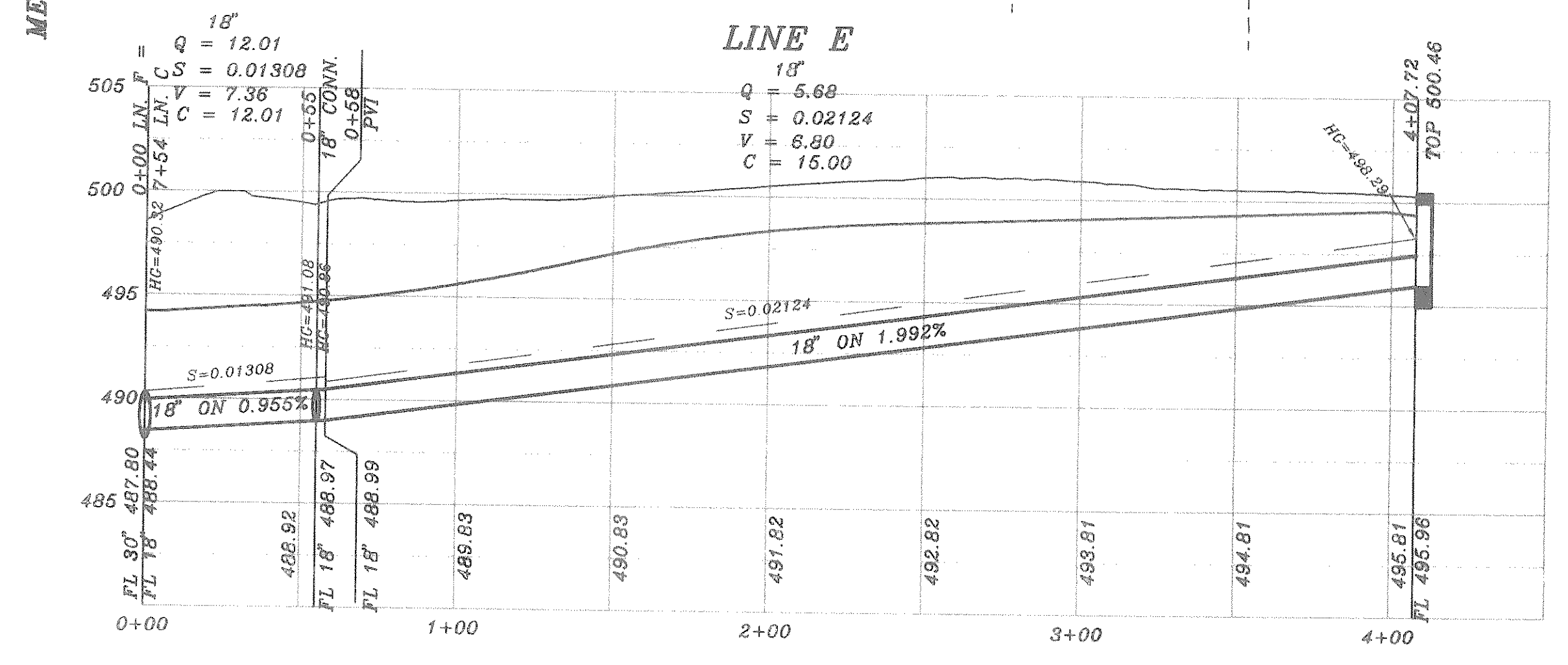
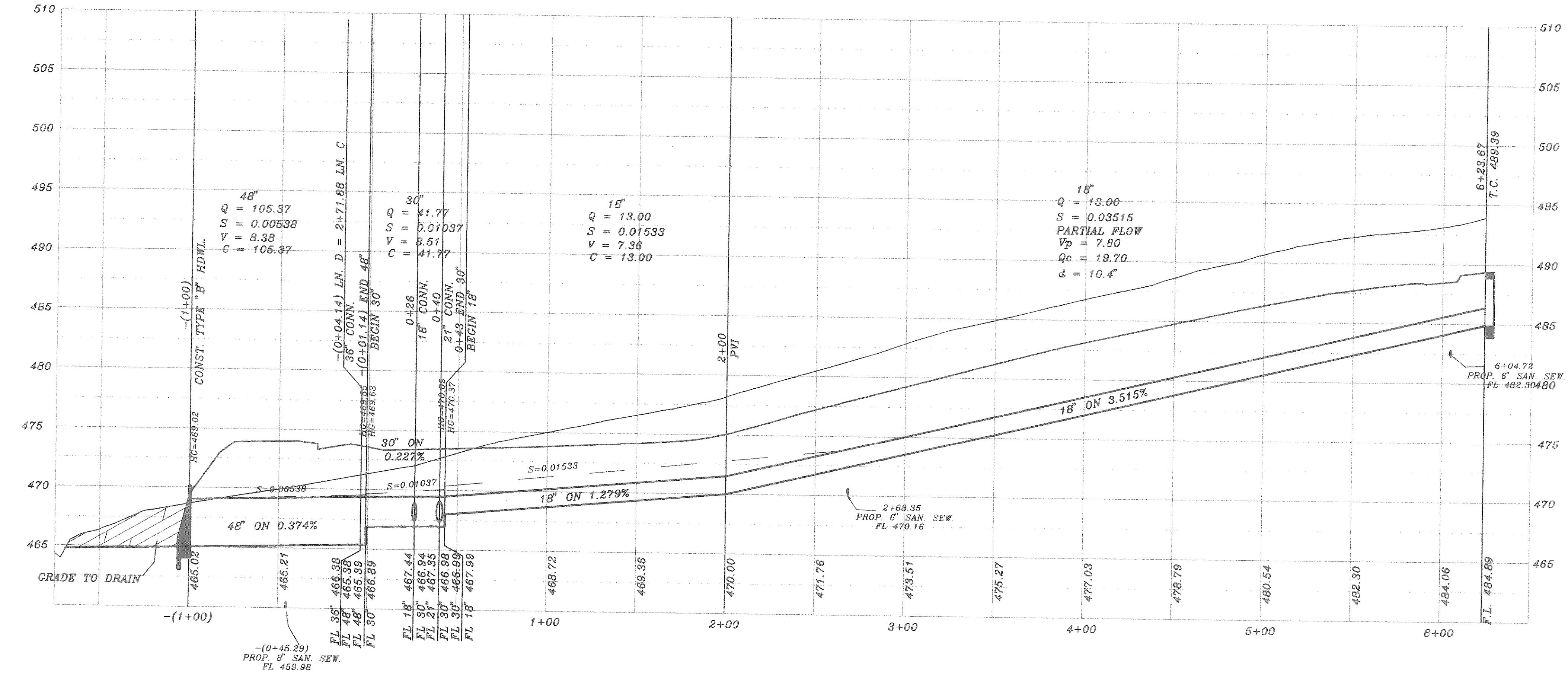
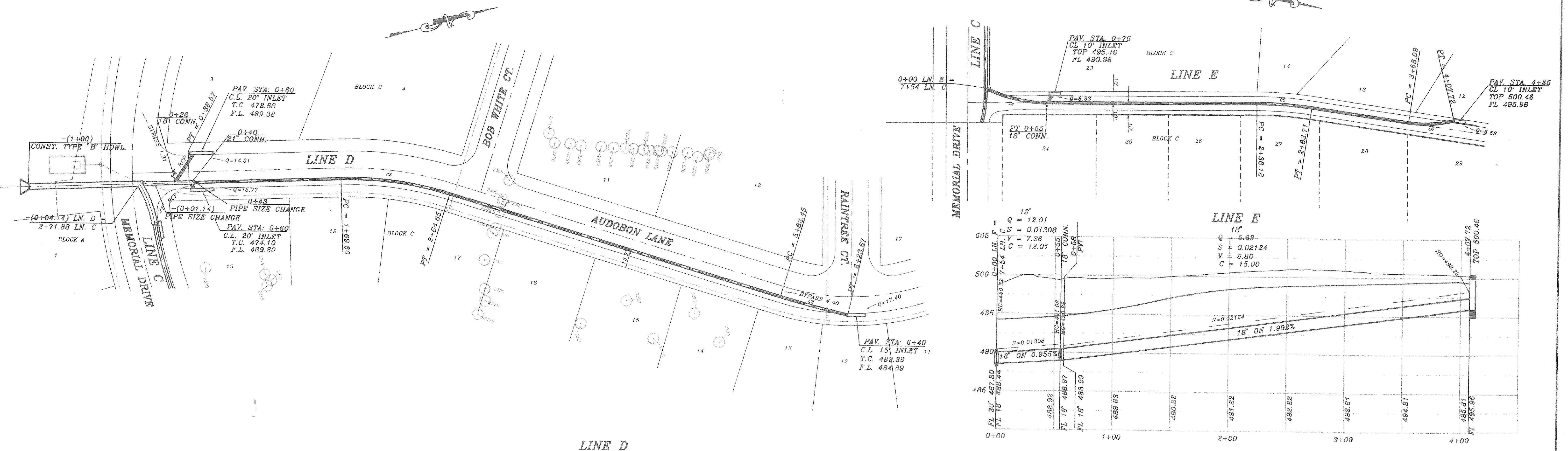
REV	DATE	DESCRIPTION
REV	7/12/01	
REV	5/7/01	
REV	2/22/01	

HAROLD L. EVANS
CONSULTING ENGINEER
P.O. BOX 28355
2391 CUS THOMASSON ROAD, SUITE 102
DALLAS, TEXAS 75228. (214) 328-8133

PROPOSED DRAINAGE
LINE A AND LINE B
QUAIL RUN VALLEY NO. 1
CITY OF ROCKWALL

SHEET NO. 14
JOB NO. 0020

CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C2	290.70'	85.24'	48.05'	34.83'	S23°03'22" W	18°46'18"
C3	917.48'	60.22'	30.12'	60.21'	N30°33'42" E	08°45'38"
C4	117.46'	56.00'	28.01'	54.50'	N02°54'48" E	26°49'35"
C5	311.88'	47.53'	23.81'	47.48'	S06°08'01" E	08°43'55"
C6	100.00'	38.63'	20.08'	39.37'	N13°07'14" W	22°42'20"



ALLEY INLET PLAN
SCALE: 1" = 4'

SECTION A
SECTION B

4/10/02

BENCH MARK
SQUARE CUT IN CONCRETE AT BASE OF
CONCRETE WALL AT S.W. CORNER OF
SOUTH APPROACH TO BRIDGE OVER
SQUABBLE CREEK ON HWY 205
ELEV.: 472.41

BENCH MARK
60D NAIL IN 36" PECAN TREE (TREE NO. 2302)
PAV. STA. 9+30, 71' RT. MEMORIAL DRIVE
ELEV.: 486.79

BENCH MARK
60D NAIL IN 34" PECAN TREE (TREE NO. 2314)
PAV. STA. 1+80, 138' RT. AUDOBON LANE
ELEV.: 490.88

BENCH MARK
60D NAIL IN 18" PECAN TREE (TREE NO. 2114)
PAV. STA. 10+87 63.5' RT. AUDOBON LANE
ELEV.: 501.54

HAROLD L. EVANS CONSULTING ENGINEER P.O. BOX 28355 2331 CUS THOMASSON ROAD, SUITE 102 DALLAS, TEXAS 75228. (214) 328-8133		SHEET NO. 16 21 JOB NO. 0020
REVISION DESCRIPTION 00203TM3	DATE 11/8/00	SCALE 1" = 40' 1" = 6'
DESIGN H.L.E.	DRAWN	PROPOSED DRAINAGE LINE D QUAIL RUN VALLEY NO. 1 CITY OF ROCKWALL