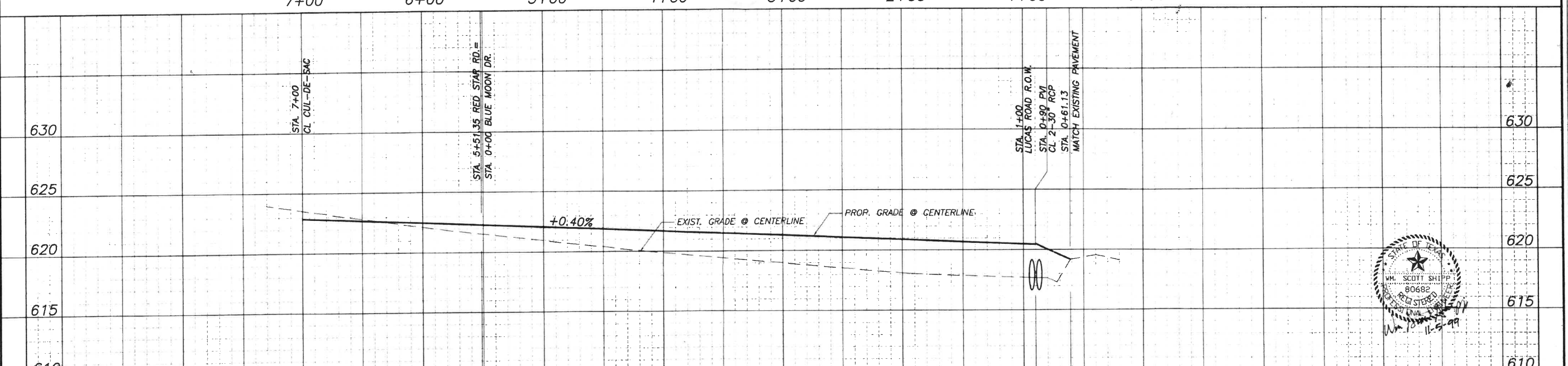
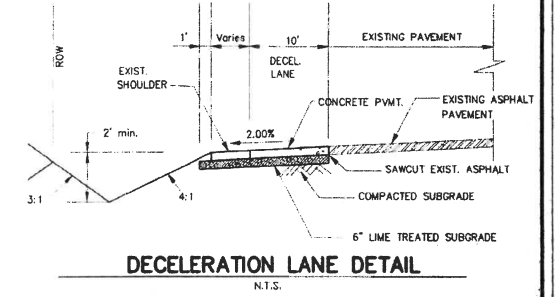
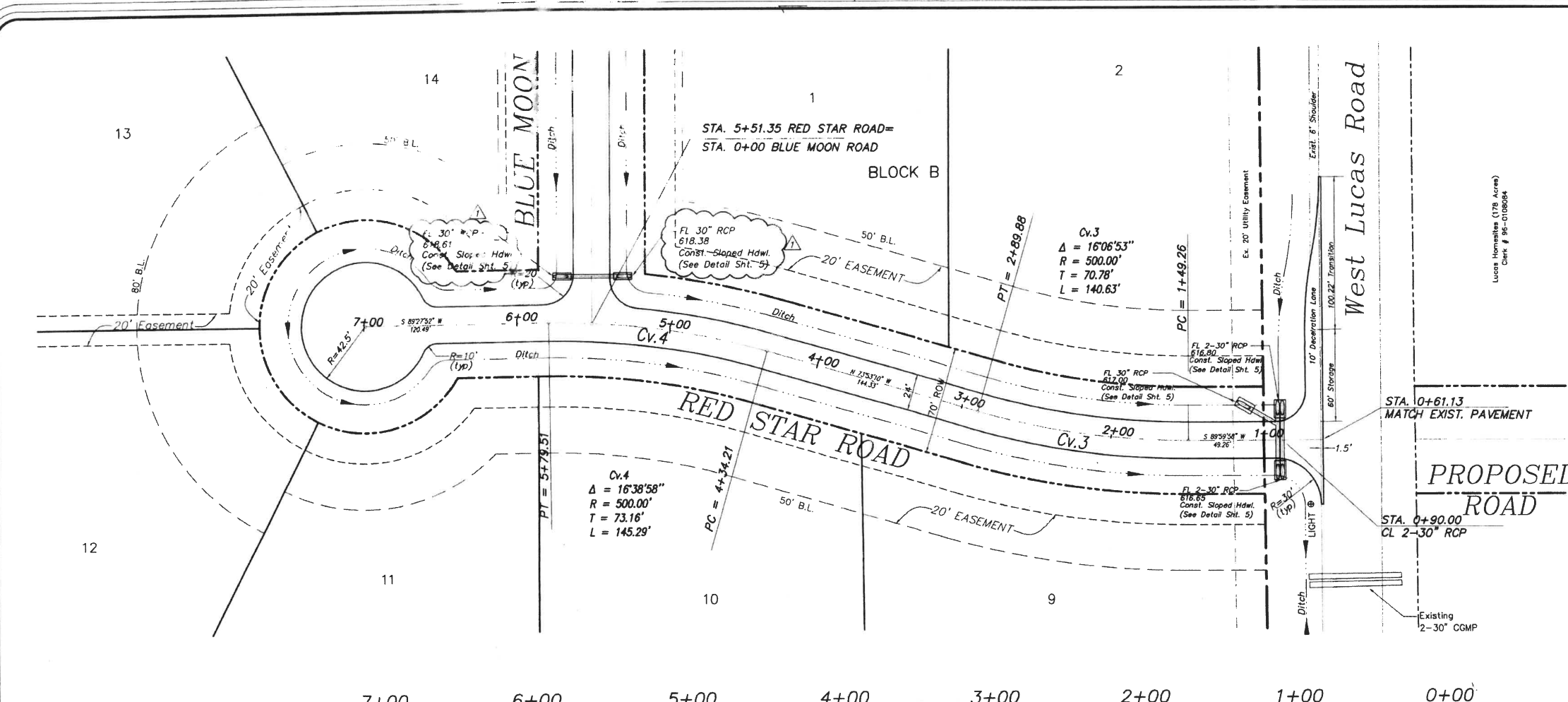


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Date: Oct. 19, 1999	P.C.:						
Engineer: S. Shipp	File: Road-b.dwg						
Drawn By: D.L. Wilson	Project No: 333.000						
<table border="1"> <thead> <tr> <th>NO.</th> <th>DATE</th> <th>REVISIONS</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>10/29/99</td> <td>Changed 24" RCP to 30" RCP</td> </tr> </tbody> </table>		NO.	DATE	REVISIONS	1	10/29/99	Changed 24" RCP to 30" RCP
NO.	DATE	REVISIONS					
1	10/29/99	Changed 24" RCP to 30" RCP					



PAVING PLAN & PROFILE
RED STAR ROAD
OAK PARK ADDITION
Town of Lucas, Texas
D.R. Horton Custom Homes

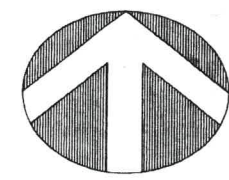
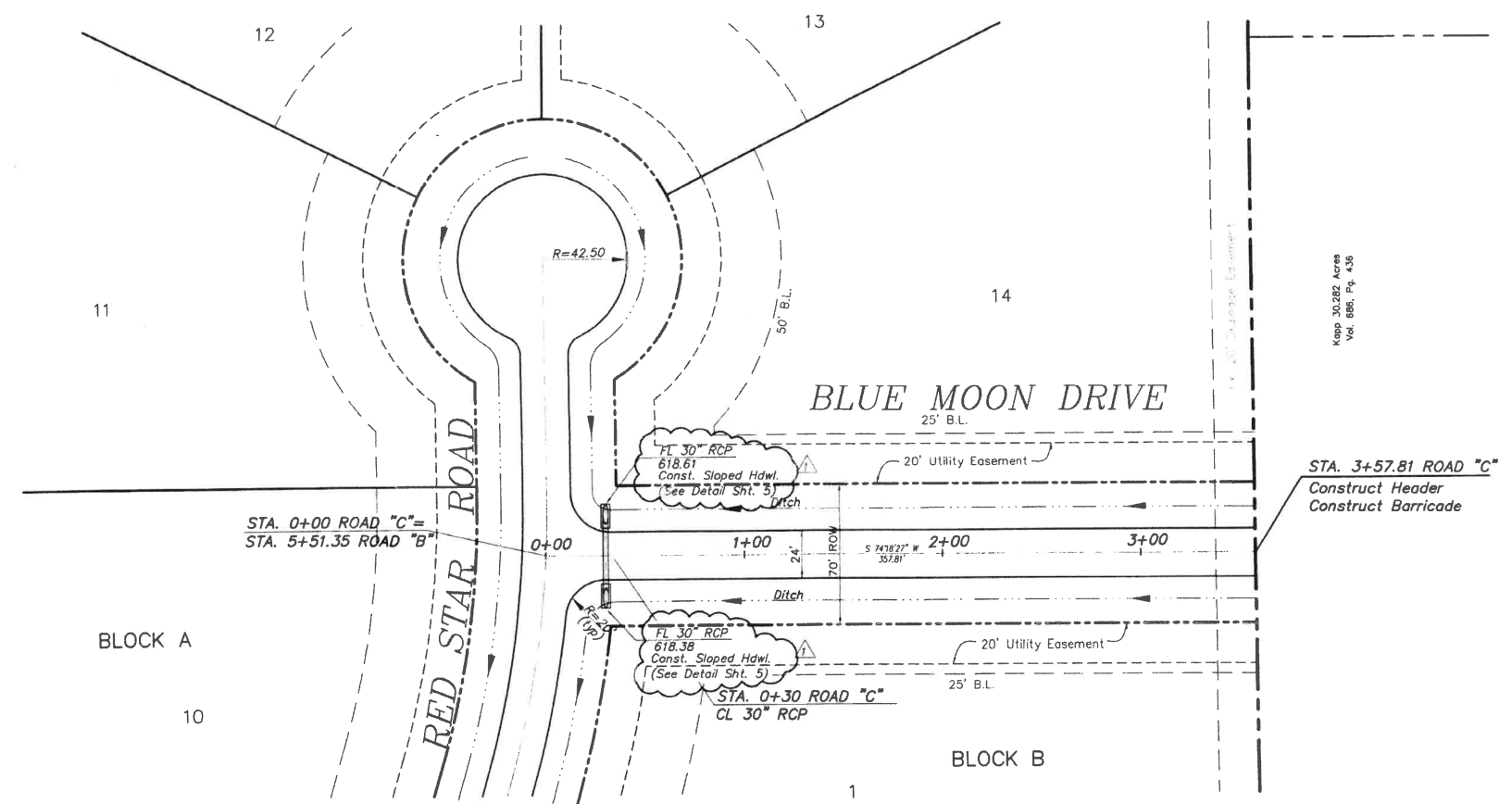
310 East IH-30, Ste. 280 Garland, Texas 75043 (972)226-4333 Fax (972)226-4448

Kurtz-Bedford Associates, Inc. **KBA** Sheet: 2
Consulting Engineers & Surveyors
352 Cedar Creek Drive Coppell, Texas 75019 (972)462-7441 Fax (972)462-7661
4222 Rosehill Rd, Suite 2 Garland, Texas 75043 (972)240-5999 Fax (972)240-4466

NOV 16 1999

C:\proj\333-00\DWG\pavd-c.dwg Fri Oct 29 13:59:07 1999

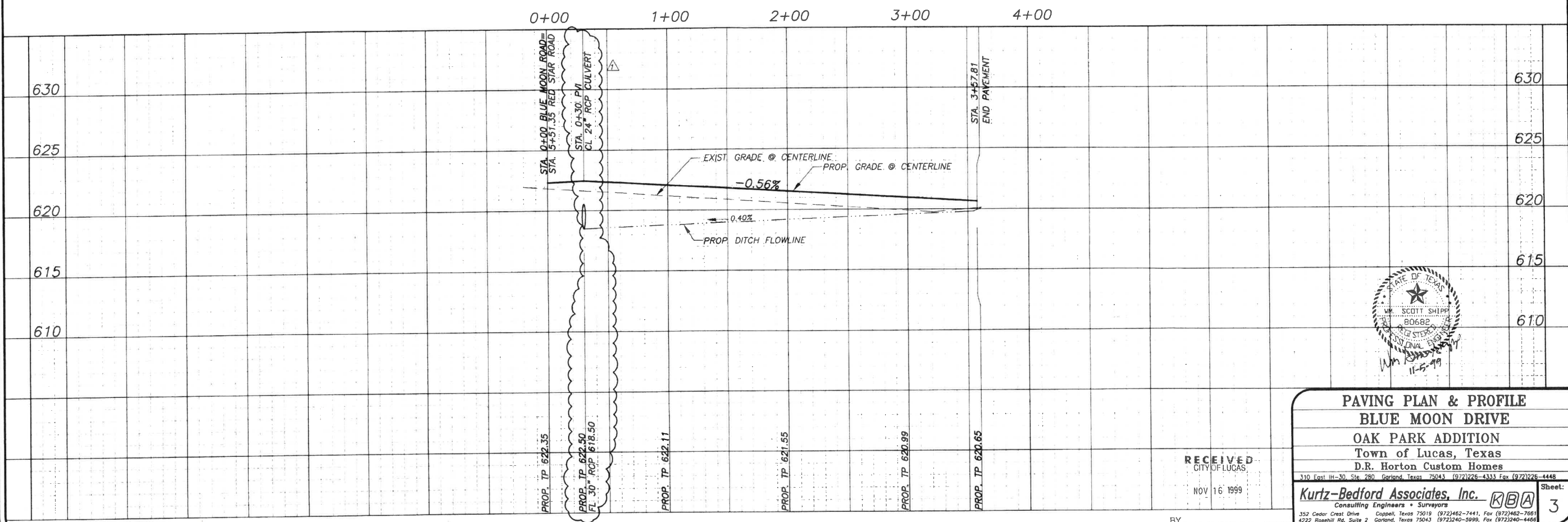
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Date: Oct 19, 1999	P.C.						
Engineer: S. Shipp	File: Road-c.dwg						
Drawn By: D.L. Wilson	Project No.: 333,000						
<table border="1"> <tr> <th>NO.</th> <th>DATE</th> <th>REVISIONS</th> </tr> <tr> <td>1</td> <td>10/29/99</td> <td>Changed 24" RCP to 30" RCP</td> </tr> </table>		NO.	DATE	REVISIONS	1	10/29/99	Changed 24" RCP to 30" RCP
NO.	DATE	REVISIONS					
1	10/29/99	Changed 24" RCP to 30" RCP					



NORTH

0 20' 40' 80'
SCALE: 1" = 40'

Kepp 30.282 Acres
Vol. 886, Pg. 436



PAVING PLAN & PROFILE
BLUE MOON DRIVE
OAK PARK ADDITION
Town of Lucas, Texas
D.R. Horton Custom Homes

RECEIVED
 CITY OF LUCAS
 NOV 16 1999

310 East IH-30, Ste. 280, Garland, Texas 75043 (972)226-4333 Fax (972)226-4448

Kurtz-Bedford Associates, Inc. **KBA** Sheet: **3**
 Consulting Engineers • Surveyors
 352 Cedar Crest Drive Coppell, Texas 75019 (972)462-7441, Fax (972)462-7681
 4222 Rosehill Rd., Suite 2 Garland, Texas 75043 (972)240-5999, Fax (972)240-4466

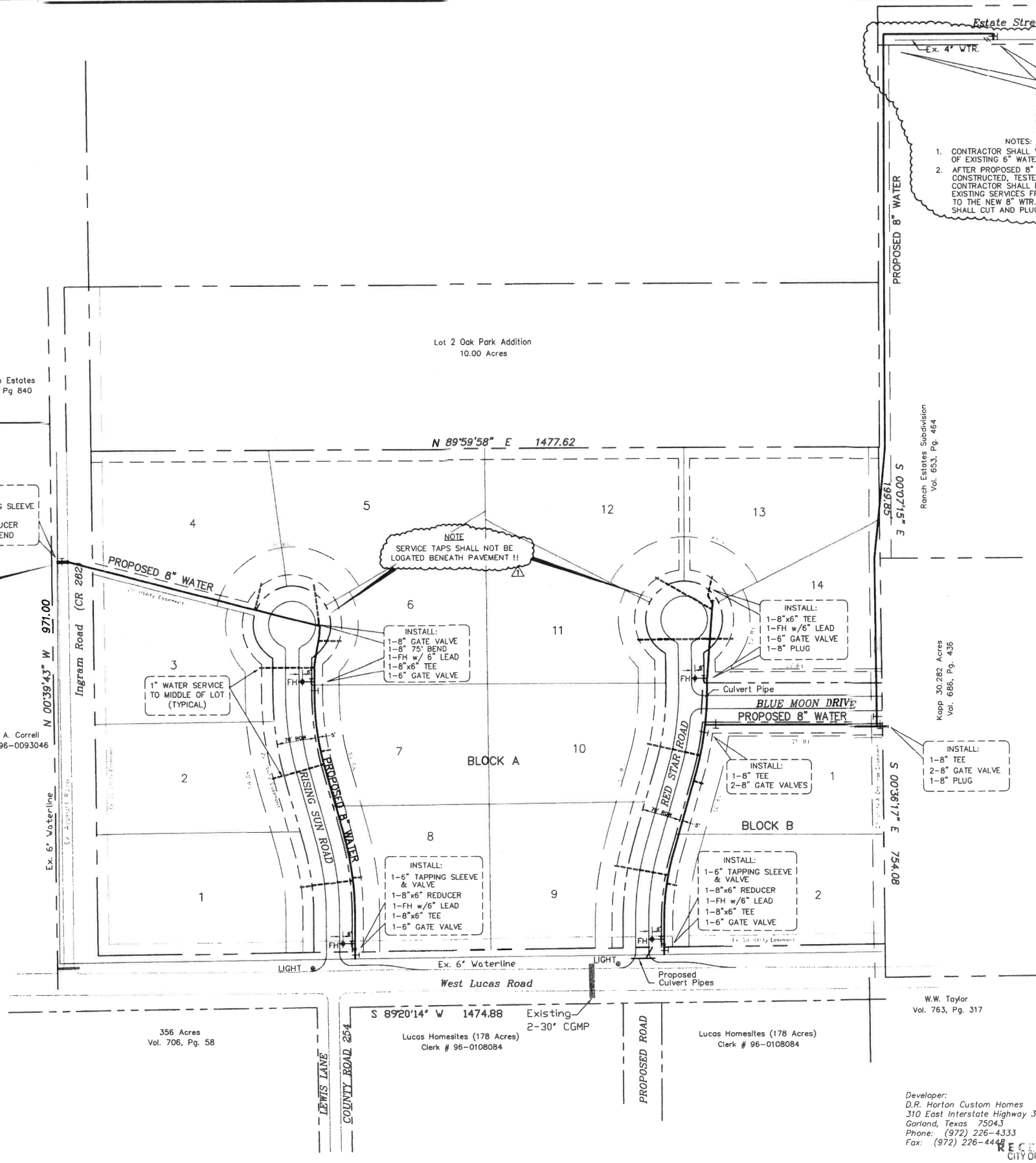
C:\Proj\333-00\DWG\Water.dwg Fri Nov 05 07:45:43 1999

NO.	DATE	REVISIONS
1	10/29/99	REVISED PER PRE-CONSTRUCTION MEETING
2		

APPROX. 25 L.F. OF 8" WATER TO BE INSTALLED BY OTHER THAN OPEN CUT USING 12" DIA. SCH. 80 CARRIER PIPE.

INSTALL:
1-6" TAPPING SLEEVE & VALVE
1-8"x6" REDUCER
1-8" 22.5' BEND

William A. Correll
Clerk # 96-0093046



INSTALL:
1-6" TAPPING SLEEVE & VALVE
1-8" X 6" REDUCER
2-8" 90° BENDS
1-8" TAPPING SLEEVE

NOTES:
1. CONTRACTOR SHALL VERIFY LOCATION OF EXISTING 6" WATERLINE.
2. AFTER PROPOSED 8" WTR. HAS BEEN CONSTRUCTED, TESTED AND ACCEPTED CONTRACTOR SHALL RELOCATE ANY EXISTING SERVICES FROM THE 4" WTR. TO THE NEW 8" WTR. THEN CONTRACTOR SHALL CUT AND PLUG THE EXIST. 4" WTR.



0 50' 100' 200'
SCALE: 1" = 100'



EXISTING ZONING IS R-1.5

WATER PLAN

OAK PARK ADDITION
Town of Lucas
Collin County, Texas

W.G. McKinney Survey, Abstract No. 583
310 East J-39, Suite 310 Garland, Texas 75043

Kurtz ~ Bedford Associates, Inc.
Consulting Engineers ~ Surveyors

Sheet: **4**

Developer:
D.R. Horton Custom Homes
310 East Interstate Highway 30, Suite 280
Garland, Texas 75043
Phone: (972) 226-4333
Fax: (972) 226-4448

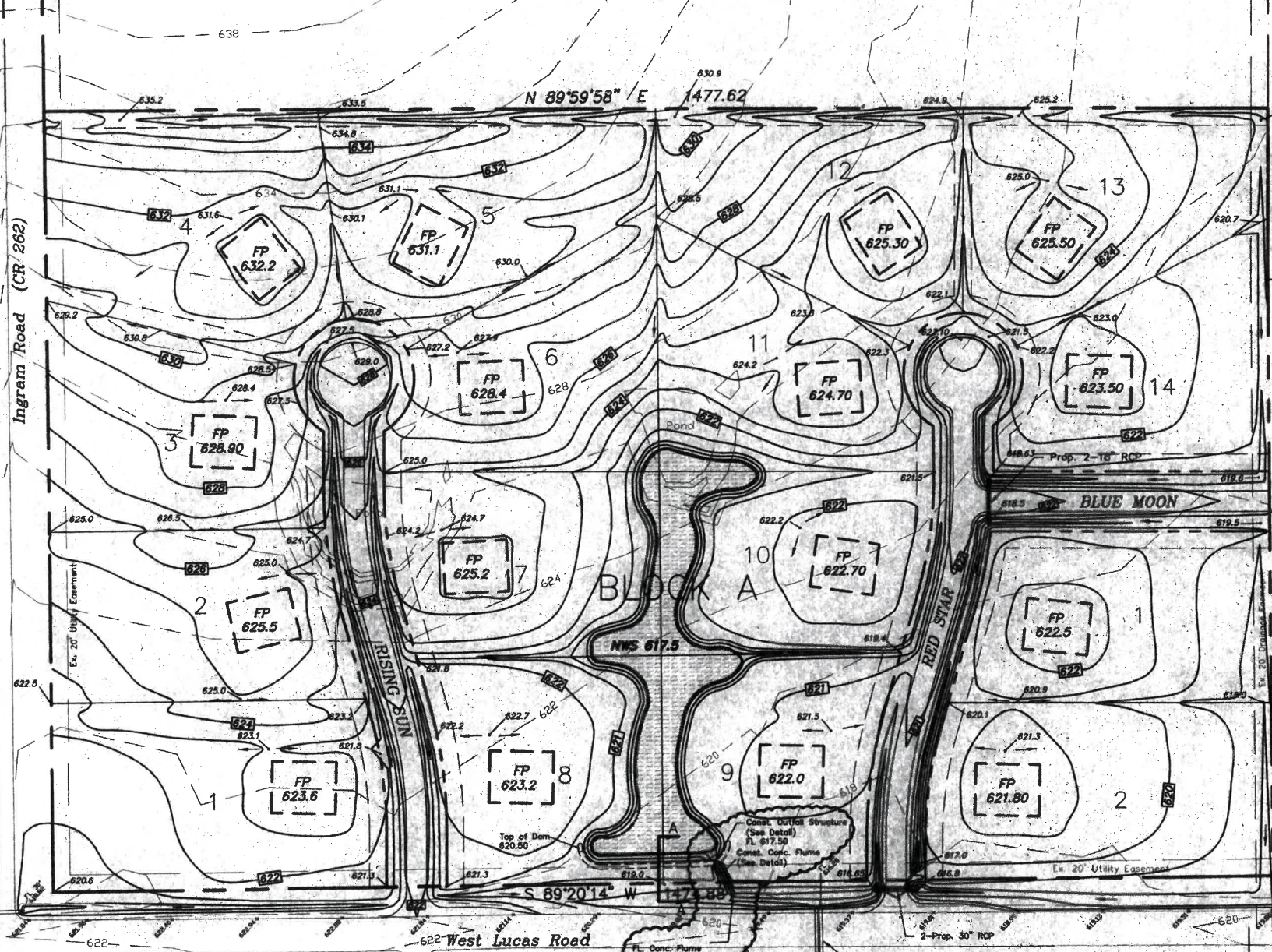
RECORDED
CITY OF LUCAS
NOV 16 1999

Travis Ranch Estates
Cabinet K, Pg 840

William A. Correll
Clerk # 96-0093046

Lot 2 Oak Park Addition
10.00 Acres

N 00°39'43" W 971.00
Ingram Road (CR 262)
30' ROW, Vol. 2343, Pg. 221



356 Acres
Vol. 706, Pg. 58

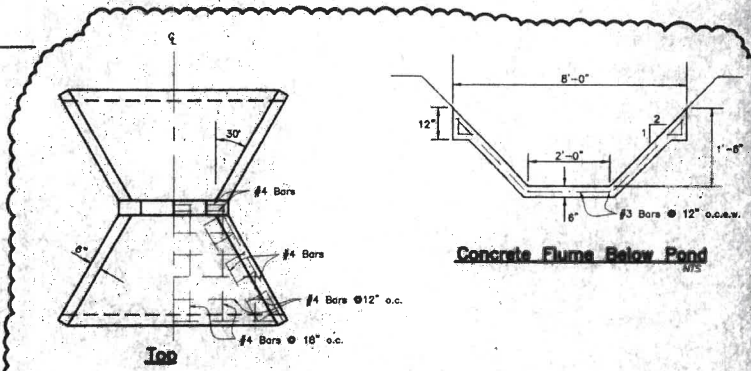
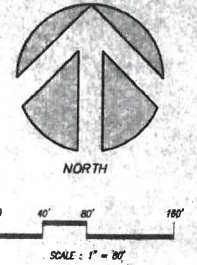
Lucas Homesites (178 Acres)
Clerk # 96-0108084

Lucas Homesites (178 Acres)
Clerk # 96-0108084

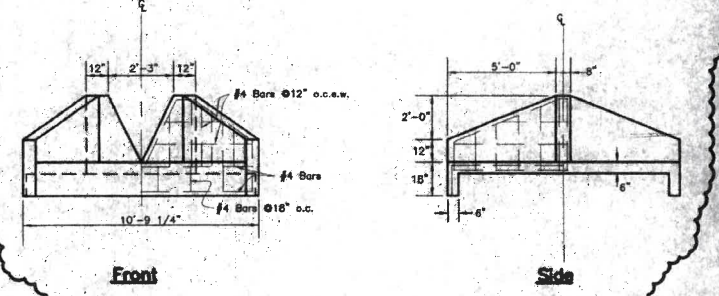
W.W. Taylor
Vol. 763, Pg. 317



Typical Sloped Headwall
NTS



Concrete Flume Below Pond
NTS



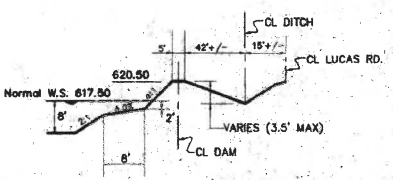
Pond Outfall Structure
NTS

LEGEND

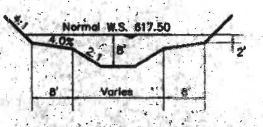
- Exist. Spot Elevation
- Exist. Contour
- Prop. Spot Elevation
- Proposed Contour
- Proposed Flow Direction



RECOMMENDED FOR APPROVAL
HUNTER ASSOCIATES TEXAS LTD.
CONSULTING ENGINEERS
APPROVED: *[Signature]*
DATE: _____



SECTION A-A (POND DAM)
NTS



TYPICAL POND SECTION
NTS

Developer:
D.R. Horton Custom Homes
310 East Interstate Highway 30, Suite 280
Garland, Texas 75043
Phone: (972) 226-4333
Fax: (972) 226-4448

LOT GRADING PLAN

OAK PARK ADDITION
Town of Lucas
Collin County, Texas

W.G. McKinney Survey, Abstract No. 583
310 East I-30, Suite 310 Garland, Texas 75043

Kurtz ~ Bedford Associates, Inc. **KBA** 5
Consulting Engineers ~ Surveyors

NO.	DATE	REVISIONS
1	12/13/99	REVISED OUTFALL STRUCTURE AT POND

C:\p03\333-00\DWG\99\99-04.dwg Tue Dec 14 09:14:17 1999

HYDRAULIC ANALYSIS
EX. 30" CGMP @ INGRAM RD.
1-30" CMP
Tc = 20 min.

AREA #	ACRES	"C"	I100	Q100
D-1	7.14	0.40	6.8	19.4
D-2	2.54	0.40	6.8	6.9
TOTAL				26.3 cfs

Assume outlet control: (Using Chart)
HW = 3.2 feet
Capacity = 28.0 cfs

HYDRAULIC ANALYSIS
CULVERT PIPE "B"
1-30" RCP
Tc = 20 min.

AREA #	ACRES	"C"	I100	Q100
D-4	2.31	0.40	6.8	6.3
D-6	3.24	0.40	6.8	8.8
TOTAL				15.1

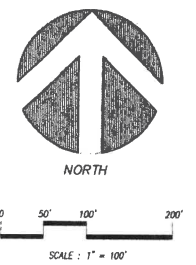
Assume inlet control: (Using Chart)
HW = 1.90 feet
Available HW = 4.0 feet

HYDRAULIC ANALYSIS
CULVERT PIPE "A"
2-30" RCP
Tc = 20 min.

AREA #	ACRES	"C"	I100	Q100
D-7	11.43	0.40	6.8	31.1
D-10	2.51	0.40	6.8	6.8
TOTAL				39.9 cfs

Assume Inlet Control: (Using chart)
HW = 2.3 feet
Available HW = 3.85 feet

HYDRAULIC ANALYSIS
CHANNEL SECTION
MIN. SLOPE = 0.40%
n = 0.025 R=1.92 A=28.0 sf
MIN. DEPTH=2'
Capacity=(1.49/n)*R^{2/3}*A^{2/3}
Capacity=(1.49/0.025)*(1.92)^{2/3}*(28.0)^{2/3}
Capacity=163.08 cfs
This exceeds max. required capacity.



DETENTION POND ROUTING

Peak Inflow (cfs) = 65.50
Time of Concentration (min) = 20.00
Normal Pool Elevation (ft) = 617.50

ROUTING CURVE:

STAGE (ft)	STORAGE (cu ft)	STORAGE (ac ft)	OUTFLOW (cfs)	25/T (cfs)	25/T+0 (cfs)
1.00	39574	308	2.40	435.7	442.1
2.00	85531	1,964	5.10	800.3	855.4
3.00	138023	3,169	6.90	1533.6	1540.5

DRAINAGE CALCULATIONS
Ultimate Development
For Tc of 20 min.

AREA #	ACRES	"C"	I100	Q100
D-1	7.14	0.40	6.8	19.4
D-2	2.54	0.40	6.8	6.9
D-3	10.36	0.40	6.8	28.2
D-4	2.31	0.40	6.8	6.3
D-5	13.72	0.40	6.8	37.3
D-6	3.24	0.40	6.8	8.8
D-7	11.43	0.40	6.8	31.1
D-8	1.57	0.40	6.8	4.3
D-9	2.30	0.40	6.8	6.3
D-10	2.51	0.40	6.8	6.8

Q100 = C x I100 x A

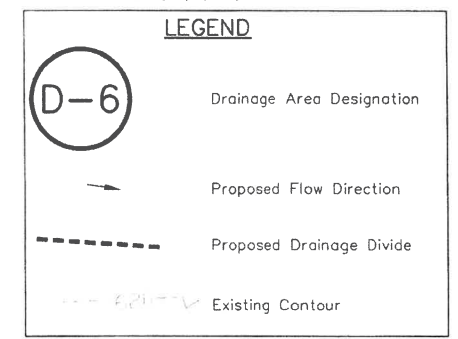
HYDROGRAPHS & FLOOD ROUTING:

TIME (min)	INFLOW (cfs)	25/T+0 (cfs)	OUTFLOW (cfs)	STORAGE 25/T (cu ft)	STORAGE (cu ft)	STORAGE (ac ft)	DEPTH (ft)
3	4.0	4.0	0	0	358	0.08	617.51
6	12.7	20.7	1	20.6	1850	0.42	617.55
9	25.0	58.2	3	57.9	5209	1.20	617.63
12	42.5	125.1	7	124.4	11199	2.57	617.78
15	57.1	223.4	1.2	222.2	19998	4.59	618.01
18	64.8	342.9	1.9	341.0	30683	7.05	618.28
21	65.3	469.2	2.5	466.7	42001	9.64	618.55
24	61.2	590.6	3.2	587.4	52868	1.214	618.79
27	53.0	698.4	3.7	694.7	62522	1.435	619.00
30	44.9	788.8	4.2	784.6	70815	1.621	619.18
33	33.3	858.6	4.6	854.0	77659	1.784	619.31
36	26.1	908.8	4.9	903.9	81355	1.868	619.41
39	20.4	945.6	5.0	940.6	84851	1.943	619.48
42	16.0	972.0	5.2	966.8	87012	1.998	619.53
45	12.5	990.2	5.2	985.0	88648	2.035	619.56
48	9.8	1002.1	5.2	995.9	89718	2.060	619.58
51	7.7	1008.9	5.3	1003.9	90347	2.074	619.59
54	6.0	1012.3	5.3	1007.0	90632	2.081	619.60
57	4.7	1012.5	5.3	1007.2	90648	2.081	619.60
60	3.7	1010.3	5.3	1005.1	90455	2.077	619.59
63	2.9	1006.4	5.3	1001.1	90100	2.066	619.59
66	2.3	1001.0	5.2	995.8	89619	2.057	619.58
69	1.8	994.5	5.2	989.3	89040	2.044	619.57
72	1.4	987.3	5.2	982.1	88387	2.029	619.55
75	1.1	979.4	5.2	974.2	87676	2.013	619.54
78	0.9	970.9	5.1	965.8	86922	1.995	619.53
81	0.7	962.2	5.1	957.0	86134	1.977	619.51
84	0.5	953.1	5.1	948.0	85322	1.959	619.50
87	0.4	943.9	5.0	938.8	84485	1.940	619.48

Peak Discharge = 5.3 cfs
Peak Elevation = 619.60

HYDRAULIC ANALYSIS
EX. 2-30" CMP @ LUCAS RD.

Assume inlet control: (From Culvert Capacity Chart)
Hw = 3.5' Capacity = 70.0 cfs
Calculate proposed Q at Culverts:
Q = (Pond discharge) + (D4+D6+D7+D8+D9)
Q = (5.3)+(63.6) = 68.9 cfs



No part of the subject property is shown to lie within a special flood hazard area.

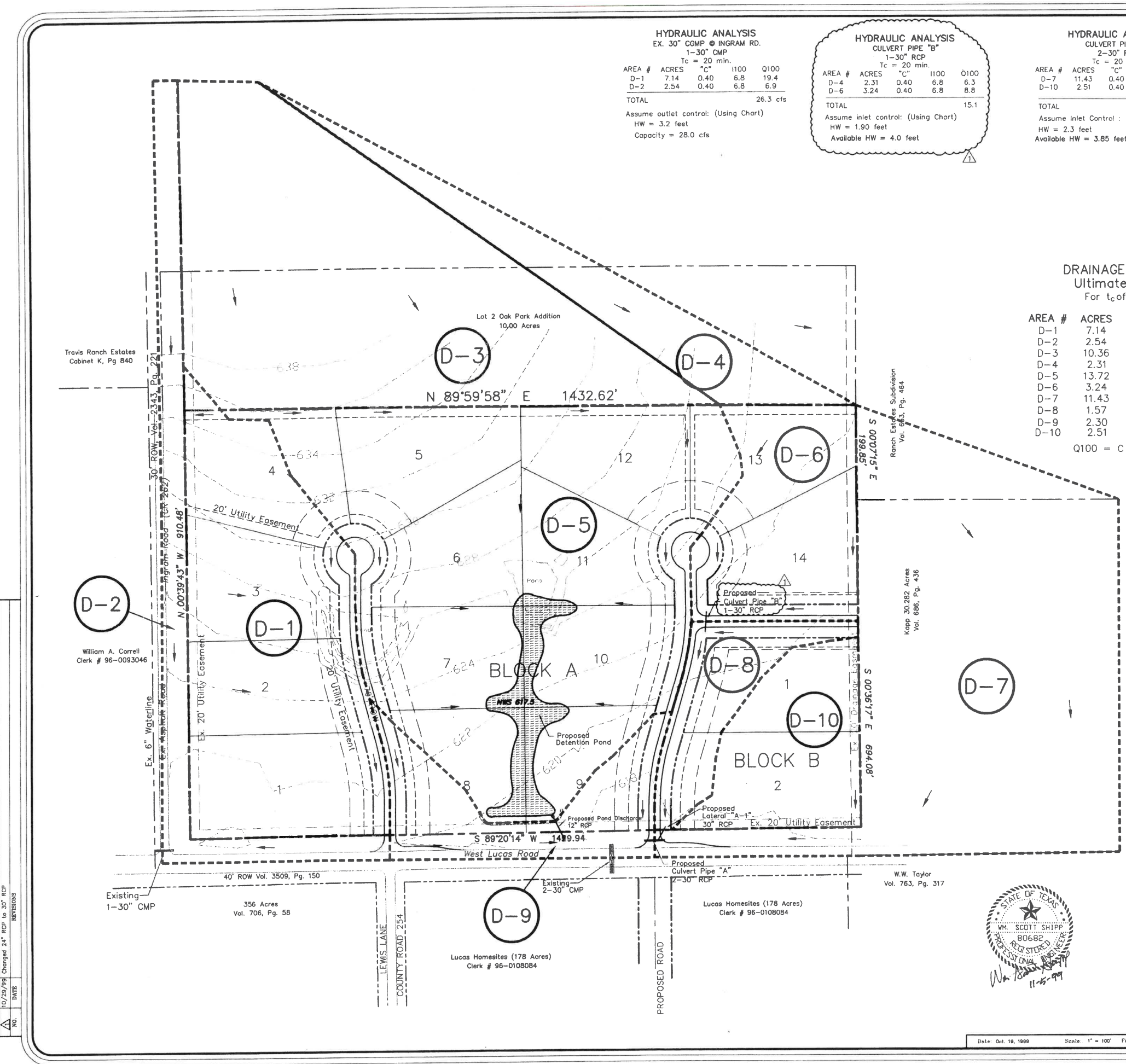
EXISTING ZONING IS R-1.5

DRAINAGE AREA MAP

OAK PARK ADDITION
Town of Lucas
Collin County, Texas
W.G. McKinney Survey, Abstract No. 583
310 East I-30, Suite 310 Garland, Texas 75043

Kurtz ~ Bedford Associates, Inc. **KBA**
Consulting Engineers ~ Surveyors

Sheet: **7**



Developer:
D.R. Horton Custom Homes
310 East Interstate Highway 30, Suite 280
Garland, Texas 75043
Phone: (972) 226-4333
Fax: (972) 226-4448

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CITY OF LUCAS

C:\Pro\1333-20\DWG\Drawn.dwg Fri Oct 29 10:53:10 1999



SCALE: 1" = 80'

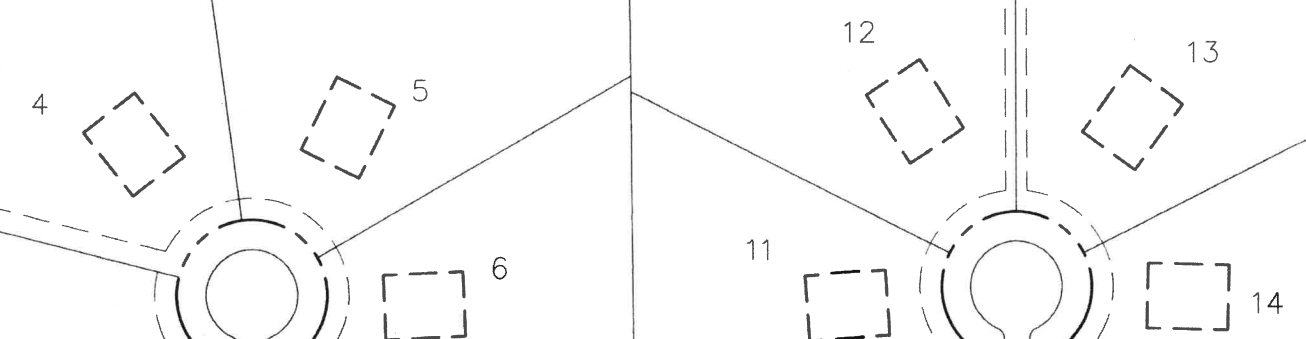
Lot 2 Oak Park Addition
10.00 Acres

Travis Ranch Estates
Cabinet K, Pg 840

N 00°39'43" W 971.00
Ingram Road (CR 262)

N 89°59'58" E 1477.62

S 00°07'15" E 199.85
Ranch Estates Subdivision
Vol. 653, Pg. 464



William A. Correll
Clerk # 96-0093046

Kapp 30.282 Acres
Vol. 686, Pg. 436

BLOCK A

NWS 617.5

BLUE MOON DRIVE

INSTALL STREET NAME SIGNS
PER CITY SPECIFICATIONS

S 00°36'17" E 754.08

(30" SIGN) STOP

(30" SIGN) STOP

INSTALL STREET NAME SIGNS
PER CITY SPECIFICATIONS

END CONSTRUCTION

ROAD WORK AHEAD

ROAD WORK AHEAD

END CONSTRUCTION

356 Acres
Vol. 706, Pg. 58

LIGHTED BARRICADE (TYPE I) SPACED
● 10' ALONG PAVEMENT CUT

LIGHTED BARRICADE (TYPE I) SPACED
● 10' ALONG PAVEMENT CUT

W.W. Taylor
Vol. 763, Pg. 317

ONE LANE OF TRAFFIC TO REMAIN OPEN IN BOTH
DIRECTIONS ON LUCAS ROAD AT ALL TIMES

Lucas Homesites (178 Acres)
Clerk # 96-0108084

Lucas Homesites (178 Acres)
Clerk # 96-0108084

Developer:
D.R. Horton Custom Homes
310 East Interstate Highway 30, Suite 280
Garland, Texas 75043
Phone: (972) 226-4333
Fax: (972) 226-4448



TRAFFIC CONTROL PLAN

OAK PARK ADDITION
Town of Lucas
Collin County, Texas
W.G. McKinney Survey, Abstract No. 583
310 East I-30, Suite 310 Garland, Texas 75043

Kurtz ~ Bedford Associates, Inc. 8
Consulting Engineers ~ Surveyors

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CITY OF LUCAS

Date: Oct. 19, 1999 Scale: 1" = 80' File: LUCASB-99.dwg Engineer: S. Shipp Project No: 333.000

BY _____

C:\pco\333-00\DWG\TRAFFIC.dwg Fri Nov 05 08:54:52 1999

NO.	DATE	REVISIONS