CONSTRUCTION PLANS
FOR
SADDLEBROOK
PHASE I
CITY OF LUCAS
COLLIN COUNTY, TEXAS

DEVELOPER:

SADDLEBROOK ESTATES, LTD
TWO TURTLE CREEK
3838 OAK LAWN AVE., SUITE 1212
DALLAS, TEXAS 75219
(214) 522-4945

OWNER:

THE SKORBURG COMPANY
TWO TURTLE CREEK
3838 OAK LAWN AVE., SUITE 1212
DALLAS, TEXAS 75219
(214) 522-4945

ENGINEER:

JONES & BOYD, INC.
16800 DALLAS PARKWAY, SUITE 240
DALLAS, TEXAS 75248
(972) 248-7676

LOCATION MAP
NOT TO SCALE

NTMWD NOTES

1. North Texas Municipal Water District (NTMWD) 42-inch and 20-inch water transmission pipelines are located within the limits of the construction.
2. Operation of heavy earthmoving equipment, compaction equipment or heavy construction equipment, such as concrete trucks, shall be restricted to specific crossing points across NTMWD easements, as approved by the NTMWD. The crossings shall be designated and verified to provide a minimum of five feet of cover.
3. To assure that placing of significant loads over the NTMWD pipeline does not damage the existing pipeline, no materials shall be stockpiled on the NTMWD easement, without authorization from the NTMWD. If the contractor desires to use NTMWD's easement for stockpile of materials, contact NTMWD Engineering at (972) 442-5405 so your plans for use of NTMWD's easement can be reviewed.
4. In areas where the cover between the top of the NTMWD pipeline and the bottom of the sub-grade is three (3) feet or less, it is requested that the sub-grade preparation be deleted and thickened pavement section be used to limit construction activities over the pipeline.
5. Crossing of the NTMWD easement with other utilities, such as TV cable, phone, gas and electric, shall be coordinated with the NTMWD to avoid damage to the NTMWD facilities.
6. Outdoor lighting, landscaping, screening walls or other facilities shall not be installed in NTMWD easements without written approval of the NTMWD.
7. Unless otherwise shown or required a minimum of one-foot clearance shall be provided for all utilities crossing the NTMWD pipelines.
8. The contractor shall contact NTMWD Engineering at (972) 442-5405 at least 48 hours prior to performing any work in the vicinity of the NTMWD facilities.
9. Water and Sewer lines crossing the NTMWD easements shall be installed in compliance with the Rules and Regulations for Public Water Systems, Paragraphs 290.44 (e), Location of Water Lines.
10. Septic systems are not permitted within NTMWD easements.
11. Excavation adjacent to NTMWD pipelines, manholes and other appurtenances to install proposed improvements shall be performed so that the manholes, pipelines or appurtenances are not displaced or damaged. Any damage to the manholes, pipelines or appurtenances shall be repaired to the satisfaction of the NTMWD. Further, any cost for repair of damage to the manholes, pipelines or appurtenances resulting from construction by the developer or contractor will be the responsibilty for the developer.

GENERAL NOTES:

1. ALL MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION FOR NORTH CENTRAL TEXAS PUBLISHED BY NCTCOG WITH CITY OF LUCAS REVISIONS. THESE SPECIFICATIONS SHALL BE MADE PART OF THESE PLANS. ALL WORK SHALL BE INSPECTED BY THE CITY OF LUCAS PUBLIC WORKS INSPECTORS.
2. ALL CONSTRUCTION WITHIN TEXAS DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY SHALL USE MATERIALS AND INSTALLATION THAT IS ALSO IN ACCORDANCE WITH TxDOT STANDARD SPECIFICATIONS AND DETAILS. ALL WORK WITHIN TxDOT RIGHT-OF-WAY SHALL BE INSPECTED BY TxDOT INSPECTORS.
3. ALL CONSTRUCTION WITHIN NORTH TEXAS MUNICIPAL WATER DISTRICT EASEMENTS SHALL BE INSTALLED IN ACCORDANCE WITH N.T.M.W.D. SPECIFICATIONS AS LISTED ON THESE PLANS. N.T.M.W.D. SHALL BE CONTACTED PRIOR TO BEGINING ANY WORK WITHIN N.T.M.W.D. EASEMENT AREAS.
4. CONTRACTOR SHALL NOTIFY CITY OF ALLEN PUBLIC WORKS DEPARTMENT PRIOR TO BEGINNING ANY WORK WITHIN CITY OF ALLEN EASEMENT AREAS.
4. EXISTING UTILITIES SHOWN ON THESE PLANS WERE TAKEN FROM EXISTING RECORDS. CONTRACTOR SHALL FIELD VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
5. CONTRACTOR SHALL VERIFY ALL TIE IN ELEVATIONS SHOWN ON THE PLANS.

RECORD DRAWING
THIS DRAWING HAS BEEN REVISED TO REFLECT THE ACTUAL CONSTRUCTION DETAILS AS CONTAINED IN THE RECORDS OF THE CONTRACTOR. ELEVATIONS SHOWN ON THIS PLAN WERE NOT FIELD VERIFIED.
JONES & BOYD, INC.
BY:
DATE: 2/22/01

INDEX

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23-24	OFFSITE 12" WATER LINE
25-26	TxDOT STANDARD DETAILS

BENCHMARKS:

1. "□" 1/2" IR, W of Ingram Rd. +- 1025' N of N edge of Lucas Rd. +- 6' E of fence. Elev. 637.08
2. "□" 1/2" IR, E of Ingram Rd. +- 2650' N of N edge of Lucas Rd. +- 28' E & 37' N of fence corner. Elev. 639.20

The seal appearing on this document was authorized by Thomas K. Juhn, P.E. 81799 on Feb. 14, 2001. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

STATE OF TEXAS
THOMAS K. JUHN
81799
LICENSED
PROFESSIONAL ENGINEER
2/14/01

JMW H:\projects\SK4403\dwg\SK4403COVERSHEET.dwg 12/20/00 10:39 am

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

LINE TABLE		
LINE	BEARING	LENGTH
L1	N45°41'26"W	7.18'
L2	S46°49'59"E	7.34'
L3	S48°18'19"W	1.13'
L4	N39°22'11"E	5.19'
L5	N46°23'56"W	8.98'
L6	S89°18'34"W	10.36'
L7	S46°32'04"W	144.26'
L8	N75°36'54"W	189.38'
L9	S75°42'11"E	199.41'
L10	S00°01'48"W	135.90'
L11	S00°14'40"W	230.76'
L12	S00°16'20"E	162.80'
L13	S89°18'34"W	142.46'
L14	S37°31'45"W	111.91'
L15	S37°31'45"W	109.85'
L16	S89°18'34"W	132.61'
L17	S00°16'20"E	394.19'
L18	S00°08'16"E	188.14'
L19	N54°34'16"E	261.83'
L20	N54°34'16"E	247.67'
L21	S00°08'16"E	265.22'
L22	S00°28'10"E	91.20'
L23	S00°17'48"E	633.37'
L24	S59°42'57"W	117.10'
L25	S89°42'59"W	453.70'
L26	S89°18'34"W	293.35'

CURVE TABLE						
CURVE	DELTA	RADIUS	LENGTH	TANGENT	CHORD BEARING	CHORD
C1	13°43'57"	380.00	91.08	45.76	N07°33'25"W	90.86
C2	15°56'48"	765.00	212.92	107.15	S06°39'51"E	212.23
C3	32°44'28"	565.00	322.86	165.97	N00°16'01"W	318.49
C4	13°44'38"	565.00	135.52	68.09	N09°45'57"W	135.20
C5	18°59'52"	565.00	187.34	94.54	N06°36'17"E	186.48
C6	16°47'39"	635.00	186.13	93.74	S07°42'23"W	185.46
C7	90°00'00"	55.00	86.39	55.00	S45°41'26"E	77.78
C8	46°12'36"	335.00	270.18	142.92	S66°12'16"W	262.92
C9	90°00'00"	55.00	86.39	55.00	N45°41'26"W	77.78
C10	49°47'14"	465.00	404.06	215.78	N65°47'50"W	391.47
C11	90°00'00"	55.00	86.39	55.00	N44°18'34"E	77.78
C12	51°07'06"	335.00	298.88	160.21	S63°45'01"W	289.07
C13	4°54'30"	335.00	28.70	14.36	S40°38'43"W	28.69
C14	16°22'54"	65.00	185.35	445.06	S41°46'18"E	128.64
C15	90°00'00"	20.00	31.42	20.00	N45°41'26"W	28.28
C16	8°24'41"	415.00	60.92	30.52	N04°53'47"W	60.87
C17	11°05'17"	100.00	19.35	9.71	S03°33'29"E	19.32
C18	16°24'33"	200.00	57.28	28.84	N06°13'07"W	57.08
C19	13°13'13"	200.00	46.15	23.18	S21°02'00"E	46.05
C20	20°38'10"	100.00	36.02	18.21	N17°19'32"W	35.82
C21	6°19'01"	345.00	38.04	19.04	N03°50'57"W	38.02
C22	90°00'00"	20.00	31.42	20.00	N44°18'34"E	28.28
C23	179°48'59"	65.00	204.00	–	N44°18'34"E	130.00
C24	90°00'00"	55.00	86.39	55.00	N44°18'34"E	77.78
C25	90°00'00"	55.00	86.39	55.00	S44°18'34"W	77.78
C26	90°00'00"	20.00	31.42	20.00	S44°18'34"W	28.28
C27	180°04'20"	65.00	204.29	–	S43°12'51"W	130.00
C28	15°56'48"	800.00	222.66	112.05	S08°39'51"E	221.94
C29	15°56'48"	730.00	203.18	102.25	S08°39'51"E	202.52
C30	10°31'19"	600.00	110.19	55.25	N11°22'35"W	110.03
C31	32°44'28"	530.00	302.86	155.69	N00°16'01"W	298.76
C32	18°31'35"	600.00	162.59	81.80	N08°20'28"E	162.10
C33	16°47'39"	670.00	196.39	98.90	S07°42'23"W	195.69
C34	16°47'39"	600.00	175.87	88.57	S07°42'23"W	175.24
C35	153°27'42"	65.00	174.10	275.63	N51°48'39"W	126.53
C36	90°00'00"	20.00	31.42	20.00	S45°41'26"E	28.28
C37	90°00'00"	20.00	31.42	20.00	N44°18'34"E	28.28
C38	182°56'32"	65.00	207.54	–	N43°37'46"E	129.96
C39	40°12'48"	370.00	259.68	135.45	S69°12'10"W	254.39
C40	51°07'06"	300.00	267.66	143.47	S63°45'01"W	258.87
C41	49°47'14"	500.00	434.47	232.02	N65°47'50"W	420.93
C42	49°47'14"	430.00	373.65	199.54	N65°47'50"W	362.00
C43	294°50'31"	65.00	334.49	–	N00°41'26"W	70.00

INGRAM ROAD (CO. RD. 262)

FARM-TO-MARKET NO. 2170

COUNTRY CLUB ROAD (FM-1378)

LYNN LANE

GLENBROOK CIRCLE

GLENBROOK ESTATES
VOL. E, PG. 87

LOT 1 | LOT 23 | LOT 24 | LOT 43 | LOT 44 | LOT 50

Δ=15°26'40"
R=1959.08
L=528.08
T=265.65
C.B.=N81°14'32"E
Chd.=526.49

SUBDIVISION SIGN REQUIRED AT ENTRANCE MEDIAN ISLAND (SEE NOTE NO. 6 BELOW)

10' R.O.W. DEDICATION
(11,925 S.F./0.274 AC.)

25'X25' VISIBILITY EASEMENTS

N88°57'52"E 338.38'

N73°31'12"E 326.09'

S73°31'12"W 130.00'

LANDSCAPE EASEMENT

20' WATER MAIN ESMT TO THE CITY OF ALLEN VOLUME 863, PAGE 232

10' NORTH TEXAS MUNICIPAL WATER DISTRICT ESMT VOLUME 2181, PAGE 786

S89°44'40"E 264.05'

SADDLEBROOK DRIVE

SADDLEBROOK DRIVE

WILTSHIRE COURT

BLOCK A

EX. ZONING: R-1.5

DRAINAGE EASEMENT

100' DRAINAGE EASEMENT

20' DRAINAGE EASEMENT

MATCH LINE

LOT	ACRES
1	2.02
2	1.50
3	1.98
4	1.66
5	1.52
6	1.50
7	1.50
8	1.50
9	1.56
10	1.54
11	1.50
12	1.50
13	1.50
14	1.50
15	1.57
16	1.51
17	1.51
18	1.52
50	1.51
51	1.53
52	1.57
53	1.69
54	1.65
55	1.50
56	1.50
57	2.00
58	2.02
59	2.00

CITY OF ALLEN
VOL. 819, PG. 4

SARAH JEAN COLSTON
92-0092458

NANCY D. FISHER
94-0034179

KENNETH E. JONES & WIFE
DOROTHY E. JONES
VOL. 699, PG. 759

ROY LEWIS

JEFFERY ANDRESS, VOL. 4450, PG. 2615

CITY OF LUCAS
VOL. 2896, PG. 943

DONALD LARKIN
VOL. 1160, PG. 583

BOBBY N. KIRKPATRICK
94-0063531

INTERSTATE INVESTMENT GROUP, INC.
VOL. 3961, PG. 1383

ARCELIA O. CENTER
VOL. 1344, PG. 853

DR. L.W. BARNETT
VOL. 92-0024492

ALLEN ISD
VOL. 1454, PG. 527

ALLEN ISD
VOL. 1002, PG. 128

POINT OF BEGINNING

"P-K" NAIL SET

N89°59'22"E 1,083.81'

103.43' N89°59'22"E

N00°35'12"W 1834.94'

S00°14'40"W 230.49'

S00°01'48"W 710.28'

S00°16'20"E 576.66'

S00°08'16"E 477.70'

S00°28'10"E 91.06'

NORTH

LEGEND

I.R.F.	IRON ROD FOUND
I.R.S.	IRON ROD SET
B.L.	BUILDING LINE
U.E.	UTILITY EASEMENT

GENERAL NOTES:

1. BEARINGS BASED ON THE RECORDED PLAT OF TRAVIS RANCH ESTATES, CAB. K, PG. 840 COLLIN COUNTY PLAT RECORDS. NORTHEAST LINE OF SAID ADDITION HELD AS N00°37'31"W.
2. 1/2" IRON RODS SET AT ALL LOT CORNERS, UNLESS OTHERWISE NOTED.
3. NO PORTION OF SUBJECT PROPERTY LIES WITHIN THE 100 YEAR FLOOD PLAIN PER F.I.R.M. MAP NO. 48085C0455-G PUBLISHED BY F.E.M.A. DATED JANUARY 19, 1996.
4. LANDSCAPE EASEMENTS AND DRAINAGE EASEMENTS TO BE MAINTAINED BY THE HOMEOWNERS ASSOCIATION.
5. THE NTMWD EASEMENT RESTRICTS CONSTRUCTION OF PERMANENT STRUCTURES SUCH AS FOUNDATIONS, WALLS, POOLS, AND PERMANENT STORAGE BUILDINGS. ITEMS SUCH AS DRIVEWAYS, FENCES, SPRINKLER SYSTEMS AND NORMAL LANDSCAPING PLANS THAT ENCROACH ON THE NTMWD EASEMENTS ARE ALLOWED. HOWEVER, THE NTMWD ASSUMES NO RESPONSIBILITY FOR DAMAGES RESULTING FROM THE NEED TO REPAIR OR MAINTAIN THE NTMWD PIPELINES. FURTHER, ANY COST FOR REPAIR FOR DAMAGE TO THE PIPELINES RESULTING FROM CONSTRUCTION BY THE DEVELOPER, CONTRACTOR OR OWNER WILL BE THE RESPONSIBILITY OF THE DEVELOPER, CONTRACTOR OR OWNER.
6. DEVELOPER TO INSTALL LANDSCAPED SUBDIVISION ENTRANCE SIGN IN MEDIAN ISLAND ON SADDLEBROOK DRIVE AT F.M. 2170. PER CITY OF LUCAS REQUIREMENTS. SIGN AND LANDSCAPING TO BE MAINTAINED BY THE HOMEOWNER'S ASSOCIATION.

FINAL PLAT

SADDLEBROOK ESTATES, PHASE I

73.565 ACRES OUT OF
J. GRAYUM SURVEY, ABSTRACT NO. 354
J. SNIDER SURVEY, ABSTRACT NO. 824
CITY OF LUCAS
COLLIN COUNTY, TEXAS

SADDLEBROOK ESTATES, LTD. — OWNER
c/o The Skorburg Company
Two Turtle Creek
3838 Oak Lawn Ave., suite 1212
Dallas, Texas 75219
(214) 522-1945

JONES & BOYD, INC. — SURVEYOR/ENGINEER
16800 Dallas Parkway, Suite 240
Dallas, Texas 75248
(972)248-7676

40 LOTS — AUGUST 1, 2001

WJJ H:\projects\SK403\dwg\SK403FPT.dwg 8/1/01 10:33 am

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

LEGEND

I.R.F.	IRON ROD FOUND
I.R.S.	IRON ROD SET
B.L.	BUILDING LINE
U.E.	UTILITY EASEMENT

BEARINGS BASED ON THE RECORDED PLAT OF TRAVIS RANCH ESTATES, CAB. K, PG. 840 COLLIN COUNTY PLAT RECORDS. NORTHEAST LINE OF SAID ADDITION HELD AS N00°37'31"W.

INGRAM ROAD (CO. RD. 262)

ALLEN ISD
VOL. 1002, PG. 128

THE SPARKS TRUST
VOL. 1696, PG. 50

MATCH LINE

POINT OF BEGINNING

"P-K" NAIL SET

N89°59'22"E 1,083.81'

103.43' N89°59'22"E

N04°33'09"E 322.59'

N00°17'01"W 846.39'

N00°41'36"W 294.09'

S89°18'34"W 264.44'

Δ=294°43'25"
R=65.00
L=334.35
C.B.=N01°31'53"E
Chd.=70.11

Δ=3°46'42"
R=430.00
L=28.36
T=14.18
C.B.=N83°03'58"W
Chd.=28.35

Δ=14°41'30"
R=370.00
L=94.87
T=47.70
C.B.=S30°50'43"W
Chd.=94.61

Δ=37°48'21"
R=300.00
L=197.95
T=102.73
C.B.=N19°17'17"E
Chd.=194.38

N51°48'32"W 70.00'

25' TEMPORARY VEHICULAR ACCESS EASEMENT BY SEPARATE INSTRUMENT

TEMPORARY VEHICULAR ACCESS EASEMENT (TO BE AUTOMATICALLY ABANDONED UPON DEDICATION OF PHASE 2 RIGHT-OF-WAY).

TEMPORARY VEHICULAR ACCESS EASEMENT (TO BE AUTOMATICALLY ABANDONED UPON DEDICATION OF PHASE 2 RIGHT-OF-WAY).

BRIARDALE DRIVE

SADDLEBROOK DRIVE

SADDLEBROOK DRIVE

SADDLEBROOK DRIVE

ESTATES ROAD

60' DRAINAGE EASEMENT

DRAINAGE EASEMENT

51 1.53 acres
50 1.51 acres
49 1.53 acres
48 1.51 acres
47 1.51 acres
46 1.59 acres
45 1.71 acres
44 1.68 acres
4 1.52 acres BLOCK B
14 1.50 acres
15 1.57 acres
16 1.51 acres
17 1.51 acres
18 1.52 acres
19 1.51 acres
20 1.86 acres
23 1.59 acres
22 1.59 acres
21 1.83 acres

BOBBY N. KIRKPATRICK
94-0063531

INTERSTATE INVESTMENT GROUP, INC.
VOL. 3961, PG. 1383

ARCELIA O. CENTER
VOL. 1344, PG. 853

KATHLEEN S. MILLER
96-0029521

GEORGE PAUL MILLIGAN
VOL. 3075, PG. 56

VADA KATHLEEN CLEVELAND

BRYMA, INC.
96-0047682

S00°08'16"E 477.70'
S00°28'10"E 91.06'
S00°17'48"E 752.09'

FUTURE PHASE II

SADDLEBROOK ESTATES, LTD.
VOL. 4785, PG. 3278

MEADOW HILLS DEVELOPMENT, L.P.
VOL. 4143, PG. 4158

TRAVIS RANCH ESTATES
VOL. K, PG. 840

LOT 1

LOT 18

30' STRIP TO COLLIN COUNTY
VOL. 2343, PG. 221, D.R.C.C.T.

CO. RD. NO 224

TRAVIS RANCH RD.

"P-K" NAIL SET

77.46' N89°52'23"W

865.35' N00°37'31"W (BASIS OF BEARINGS)

POINT OF COMMENCING

TR. 10
TR. 11
TR. 12
TR. 13
TR. 9
TR. 8

RANCH ESTATES SUBDIVISION
VOL. 653, PG. 464

Filed for Record in:
Collin County, McKinney TX
Honorable Helen Starnes
Collin County Clerk
On: Sep 12 2001 At 9:41am
Doc/Num : 2001- 0114857
Recording/Type:PL 36.00
Receipt #: 30000

NOTE: 1/2" IRON RODS SET AT ALL LOT CORNERS, UNLESS OTHERWISE NOTED.

FINAL PLAT

SADDLEBROOK ESTATES, PHASE I

73.565 ACRES OUT OF
J. GRAYUM SURVEY, ABSTRACT NO. 354
J. SNIDER SURVEY, ABSTRACT NO. 824
CITY OF LUCAS
COLLIN COUNTY, TEXAS

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Dallas, Texas 75219
(214) 522-1945

JONES & BOYD, INC. — SURVEYOR/ENGINEER
16800 Dallas Parkway, Suite 240
Dallas, Texas 75248
(972)248-7676

40 LOTS — AUGUST 1, 2001 — Sheet 2 of 3

WJJ H:\projects\SK403\dwg\SK403FPT.dwg 8/1/01 10:33 am

OWNER'S CERTIFICATION

WHEREAS Saddlebrook Estates Ltd., a Texas limited partnership, is the owner a 73.565 acre tract of land out of the J. Grayum Survey, Abstract No. 354, and the J. Snider Survey, Abstract No. 824, being located in the City of Lucas, Collin County, Texas, being part of that 123.510 acre tract of land described in Deed to Saddlebrook Estates, Ltd. as recorded in Volume 4785, Page 3278, Collin County Deed Records, and being more particularly described as follows:

COMMENCING at a one-half inch iron rod set for corner, said point being the southwest corner of said 123.510 acre tract, said point also being the northwest corner of a tract of land described in Deed to Meadow Hills Development, L.P., as recorded in Volume 4143, Page 4158, Collin County Deed Records, said point also being in the east line of a 30 foot strip of land conveyed to Collin County, Texas by Deed recorded in Volume 2343, Page 221, Collin County Deed Records;

THENCE North 00 degrees 37 minutes 31 seconds West, 865.35 feet along the east line of said 30 foot strip to a "P-K" nail set for corner, said point being in the north line of said 30 foot strip of land, said point also being in the north right-of-way line of McGarity Road-County Road 224 (45 foot R.O.W.);

THENCE North 89 degrees 52 minutes 23 seconds West, 77.46 feet along the north line of said McGarity Road to a one-half inch iron rod set for corner, said point being the southeast corner of a called 40 acre tract of land described in Deed to The Sparks Trust as recorded in Volume 1696, Page 50, Collin County Deed Records;

THENCE North 00 degrees 17 minutes 01 seconds West, 846.39 feet to a "P-K" nail set for corner, said point being the southwest corner of a called 9.8336 acre tract of land described in Deed to Allen Independent School District as recorded in Volume 1002, Page 128, Collin County Deed Records;

THENCE North 89 degrees 59 minutes 22 seconds East, passing at 980.38 feet a one-half inch iron rod set, continuing for a total distance of 1,083.81 feet, along the south line of said 9.8336 acre tract to a one-half inch iron rod set for the POINT OF BEGINNING;

THENCE North 00 degrees 35 minutes 12 seconds West, 1,834.94 feet along the east line of said 9.8336 acre tract and along the east line of a called 4.919 acre tract described in Deed to Allen Independent School District as recorded in Volume 1454, Page 527, Collin County Deed Records, and along the east line of a called 13.285 acre tract described in Deed to Dr. L.W. Barnett and wife as recorded in Document No. 92-0024492, Collin County Deed Records, to a one-half inch iron rod set for corner in the south right-of-way line of F.M. 2170-Estates Parkway (105 foot R.O.W.);

THENCE along the south line of said F.M. 2170 as follows:
North 88 degrees 37 minutes 52 seconds East, 338.38 feet to a one-half inch iron rod set for corner;
Northeasterly, 528.08 feet along a curve to the left having a radius of 1,959.08, a central angle of 15 degrees 26 minutes 40 seconds, a tangent of 265.65 feet, and a chord bearing and distance of North 81 degrees 14 minutes 32 seconds East, 526.49 feet to a one-half inch iron rod set for corner;
North 73 degrees 31 minutes 12 seconds East, 326.09 feet to a one-half inch iron rod set for corner, said point being the northwest corner of a tract of land described in Deed to Sarah Jean Colston as recorded in Document No. 92-0092458, Collin County Deed Records;

THENCE South 00 degrees 01 minutes 48 seconds West, 710.28 feet along the west line of said Colston tract and along the west line of a called 2.00 acre tract described in Deed to Nancy D. Fisher as recorded in Document No. 94-0034179, Collin County Deed Records, and along the west line of a called 20.00 acre tract of land described in Deed to Kenneth E. Jones and wife as recorded in Volume 699, Page 759, Collin County Deed Records, to a one-half inch iron rod found for corner;

THENCE South 00 degrees 14 minutes 40 seconds West, 230.49 feet continuing along the west line of said Jones tract to a five-eighths inch iron rod found for corner;

THENCE South 00 degrees 16 minutes 20 seconds East, 576.66 feet, continuing along the west line of said Jones tract and along the west line of a tract of land conveyed to Roy Lewis, and also along the West line of a tract of land conveyed to Jeffery Andress as described in Deed recorded in 4450, Page 2815, Collin County Deed Records, and also along the west line of a called 2.996 acre tract of land described in Deed to the City of Lucas as recorded in Volume 2896, Page 943, Collin County Deed Records, to a one-half inch iron rod found for corner, being the northwest corner of a called 1.50 acre tract of land described in Deed to Donald Larkin and wife as recorded in Volume 1160, Page 583, Collin County Deed Records;

THENCE South 00 degrees 08 minutes 16 seconds East, 477.70 feet along the west line of said Larkin tract and along the west line of a called 2.00 acre tract of land described in Deed to Bobby N. Kirkpatrick as recorded on Document No. 94-0063531, Collin County Deed Records, and also along the west line of a called 4.365 acre tract of land described in Deed to Interstate Investment Group, Inc. as recorded in Volume 3961, Page 1383, Collin County Deed Records, to a one-half inch iron rod found for corner, being the northwest corner of a called 1.50 acre tract described in Deed to Arcelia O. Center as recorded in Volume 1344, Page 853, Collin County Deed Records;

THENCE South 00 degrees 28 minutes 10 seconds East, 91.06 feet along the west line of said Center tract to a one-half inch iron rod found for corner, being the northwest corner of a tract of land described in Deed to Kathleen S. Miller as recorded in Document No. 96-0029521, Collin County Deed Records;

THENCE South 00 degrees 17 minutes 48 seconds East, 752.09 feet along the west line of said Miller tract, and along the west line of called 1.50 acre tract of land described in Deed to George Paul Milligan and wife as recorded in Volume 3075, Page 56, Collin County Deed Records, also along the west line of a tract of land conveyed to Vada Cleveland, also along the west line of a called 8.691 acre tract described in Deed to Bryma, Inc. as recorded in Document No. 96-0047882, Collin County Deed Records, to a one-half inch iron rod set for the southwest corner of said Bryma tract, being in the north line of Ranch Estates Subdivision as recorded in Volume 653, Page 400, Collin County Deed Records.

THENCE South 89 degrees 42 minutes 57 seconds West, 654.55 feet along the north line of said Ranch Estates to a one-half inch iron rod set for corner, being the northwest corner of said Ranch Estates;

THENCE South 89 degrees 18 minutes 34 seconds West, 300.72 feet to a one-half inch iron rod set for corner;

THENCE Northeasterly, 197.95 feet along a curve to the right having a radius of 300.00 feet, a central angle of 37 degrees 48 minutes 21 seconds, a tangent of 102.73 feet, and a chord bearing and distance of North 19 degrees 17 minutes 17 seconds East, 194.38 feet to a one-half inch iron rod set for corner;

THENCE North 51 degrees 48 minutes 32 seconds West, 70.00 feet to a one-half inch iron rod set for corner;

THENCE Southwesterly, 94.87 feet along a curve to the left having a radius of 370.00 feet, a central angle of 14 degrees 41 minutes 30 seconds, a tangent of 47.70 feet, and a chord bearing and distance of South 30 degrees 50 minutes 43 seconds West, 94.61 feet to a one-half inch iron rod set for corner;

THENCE South 89 degrees 18 minutes 34 seconds West, 264.44 feet to a one-half inch iron rod set for corner;

THENCE North 00 degrees 41 minutes 26 seconds West, 294.09 feet to a one-half inch iron rod set for corner;

THENCE Northwesterly, 28.36 feet along a curve to the left having a radius of 430.00 feet, a central angle of 03 degrees 46 minutes 42 seconds, a tangent of 14.18 feet, and a chord bearing and distance of North 83 degrees 03 minutes 58 seconds West, 28.35 feet to a one-half inch iron rod set for corner;

THENCE Northeasterly, 334.35 feet along a curve to the right having a radius of 65.00 feet, a central angle of 294 degrees 43 minutes 25 seconds, and a chord bearing and distance of North 01 degree 31 minutes 53 seconds East, 70.11 feet to a one-half inch iron rod set for corner;

THENCE North 04 degrees 33 minutes 09 seconds East, 322.59 feet to a one-half inch iron rod set for corner in the south line of aforementioned 9.8336 acre tract;

THENCE North 89 degrees 59 minutes 22 seconds East, 103.43 feet to the POINT OF BEGINNING and containing 3,204,489 square feet or 73.565 acres of land.

OWNERS' DEDICATION

KNOW ALL MEN BY THESE PRESENTS:

That Saddlebrook Estates, Ltd., a Texas limited partnership, acting by and through the undersigned authorities, does hereby adopt this plat designating the hereinabove described property as SADDLEBROOK ESTATES, PHASE I, an addition to the City of Lucas, Texas, and do hereby dedicate to the public use forever the rights-of-way, streets, easements and alleys shown thereon.
This plat approved subject to all platting ordinances, rules, regulations, and resolutions of the City of Lucas, Texas. Sidewalks shall be constructed by the homebuilder in accordance with the requirements of the City of Lucas, Texas.

WITNESS my hand this 8 day of August, 2001.

Saddlebrook Estates, Ltd.

By: Saddlebrook Estates G.P. Corporation

Title: Richard M. Starberg, President
Richard M. Starberg
President

STATE OF TEXAS

COUNTY OF DALLAS

Before me, the undersigned authority, a Notary Public in and for the said County and State on this day personally appeared Richard M. Starberg known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same in the capacity therein stated.

Given under my hand and seal this 8th day of August, 2001.

KELLI L. BURNS
Notary Public, State of Texas
My Commission Expires July 29, 2003

Kelli L. Burns
Notary Public in and for the State of Texas

LOCATION MAP
1" = 1000'

SURVEYOR'S CERTIFICATION

KNOW ALL MEN BY THESE PRESENTS:
That I, Dan B. Ramsey, Surveyor, hereby certify that I have prepared this plat from an actual and accurate survey of the land, and that the corner monuments shown thereon were properly placed under my personal supervision in accordance with the subdivision regulations of the City of Lucas, Texas.

Dan B. Ramsey, R.P.L.S. No. 4172

STATE OF TEXAS
REGISTERED
DAN B. RAMSEY
4172
PROFESSIONAL
LAND SURVEYOR

STATE OF TEXAS

COUNTY OF DALLAS

BEFORE ME, the undersigned authority in and for the State of Texas, on this day personally appeared DAN B. RAMSEY, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and consideration therein expressed and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this 3rd day of August, 2001.

CATHY L. CUNNYNGHAM
Notary Public, State of Texas
My Comm. Expires 06/29/03

Notary Public in and for the State of Texas

"RECOMMENDED FOR APPROVAL"

CHAIRMAN, PLANNING & ZONING COMMITTEE
CITY OF LUCAS, TEXAS

8/23/01
DATE

"APPROVED"

T. Peps
MAYOR
CITY OF LUCAS, TEXAS

8-28-01
DATE

"ATTEST"

Kathy Wilkerson
CITY SECRETARY
CITY OF LUCAS, TEXAS

8/28/01
DATE

CITY OF LUCAS, TEXAS SEAL

Filed for Record in:
Collin County, McKinney TX
Honorable Helen Starnes
Collin County Clerk

On Sep 12 2001
At 9:41am

Doc/Num : 2001- 0114857

Recording/Type:PL 36.00
Receipt #: 30000

N 296

FINAL PLAT

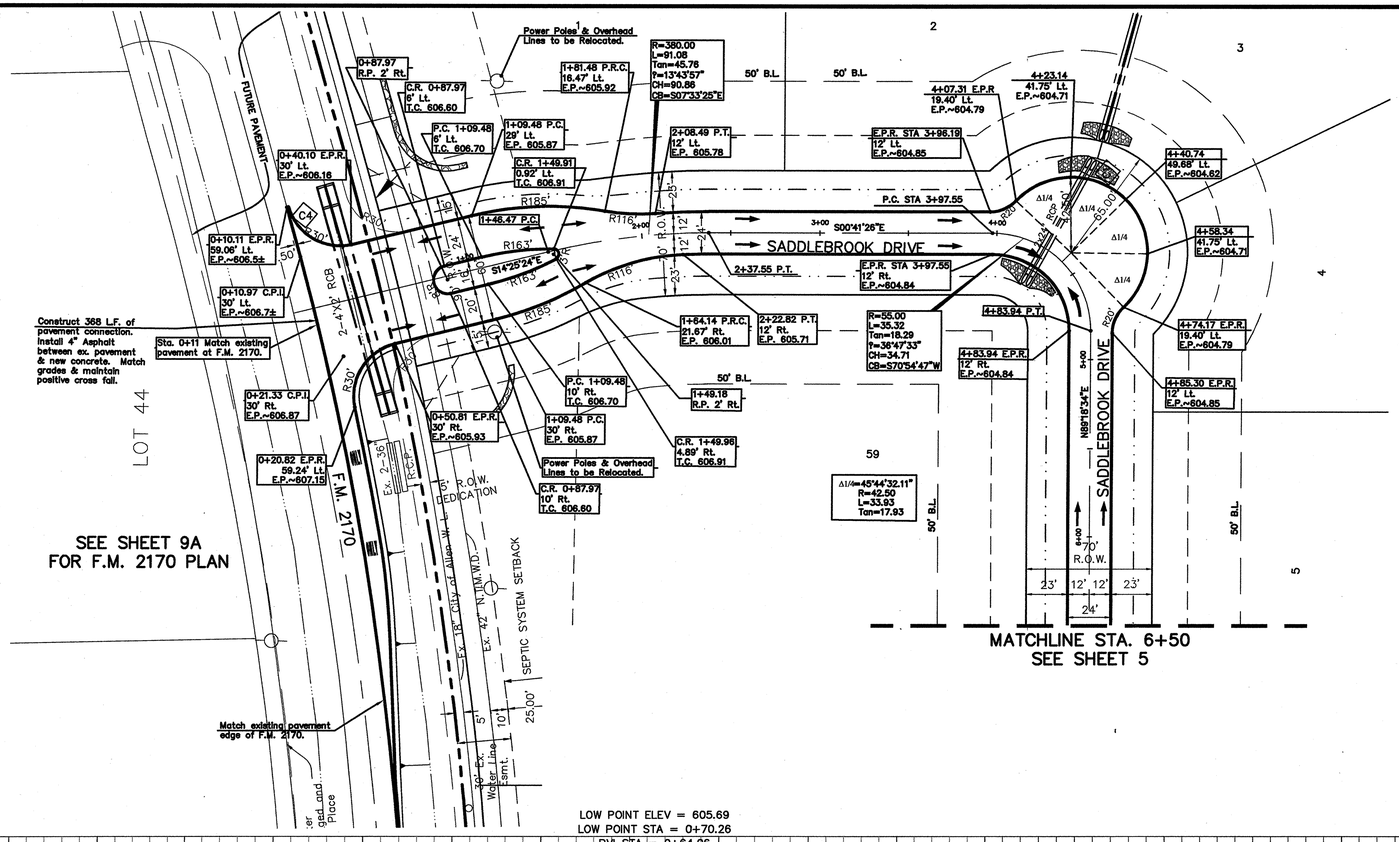
SADDLEBROOK ESTATES, PHASE I

73.565 ACRES OUT OF
J. GRAYUM SURVEY, ABSTRACT NO. 354
J. SNIDER SURVEY, ABSTRACT NO. 824
CITY OF LUCAS
COLLIN COUNTY, TEXAS

SADDLEBROOK ESTATES, LTD.	OWNER
c/o The Skorburg Company Two Turtle Creek 3838 Oak Lawn Ave., suite 1212 Dallas, Texas 75219	(214) 522-1945
JONES & BOYD, INC.	SURVEYOR/ENGINEER
16800 Dallas Parkway, Suite 240 Dallas, Texas 75248	(972)248-7676

40 LOTS | AUGUST 1, 2001 | Sheet 3 of 3

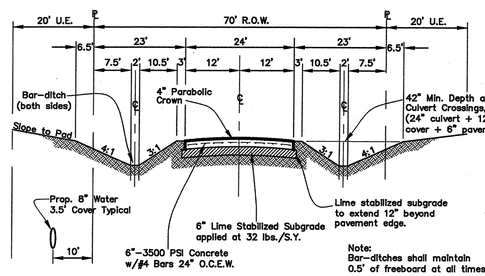
WJJ H:\projects\SK403\dwg\SK403FP1.dwg 8/1/01 10:33 am



GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft. Horiz.
1 inch = 4 ft. Vert.

CAUTION: Existing underground utilities. Contractor to field verify the location of all existing utilities prior to excavation.



Typical Pavement Section (24' Width)
N.T.S.

NTMWD NOTES

1. North Texas Municipal Water District (NTMWD) 42-inch and 20-inch water transmission pipelines are located within the limits of the construction.
2. Operation of heavy earthmoving equipment, compaction equipment or heavy construction equipment, such as concrete trucks, shall be restricted to specific crossing points across NTMWD easements, as approved by the NTMWD. The crossings shall be designated and verified to provide a minimum of five feet of cover.
3. To assure that placing of significant loads over the NTMWD pipeline does not damage the existing pipeline, no materials shall be stockpiled on the NTMWD easement, without authorization from the NTMWD. If the contractor desires to use NTMWD's easement for stockpile of materials, contact NTMWD Engineering at (972) 442-5405 so your plans for use of NTMWD's easement can be reviewed.
4. In areas where the cover between the top of the NTMWD pipeline and the bottom of the sub-grade is three (3) feet or less, it is requested that the sub-grade preparation be deleted and thickened pavement section be used to limit construction activities over the pipeline.
5. Crossing of the NTMWD easement with other utilities, such as TV cable, phone, gas and electric, shall be coordinated with the NTMWD to avoid damage to the NTMWD facilities.
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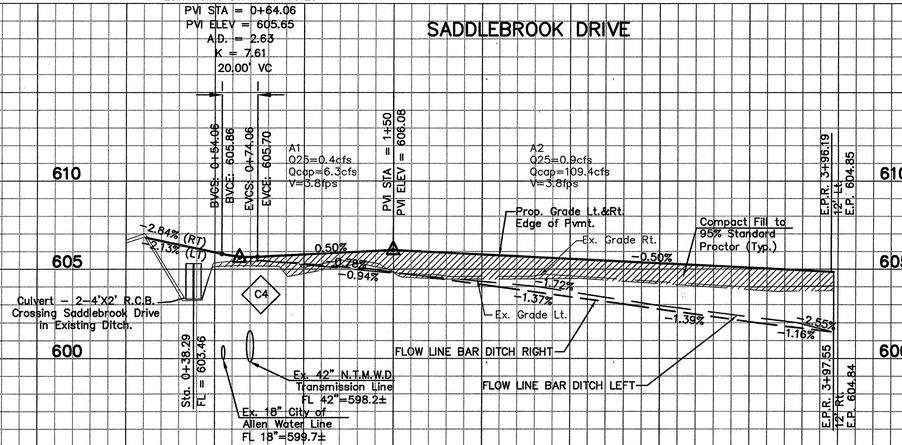
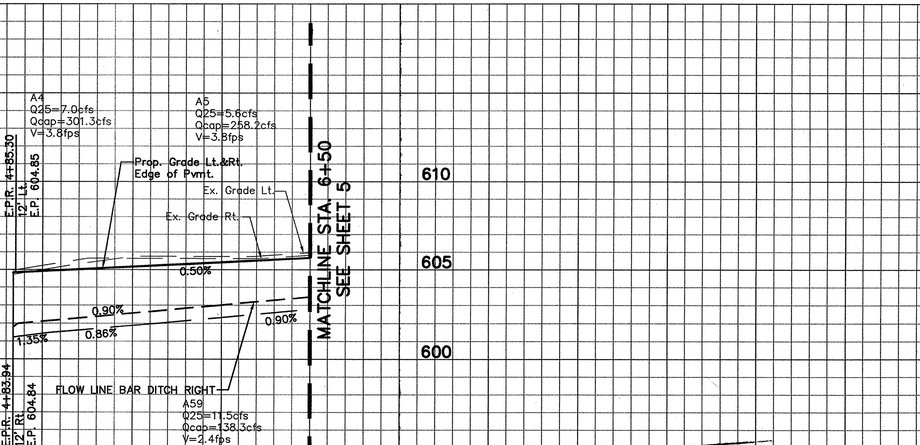




RECORD DRAWING
THIS DRAWING HAS BEEN REVISED TO REFLECT THE ACTUAL CONSTRUCTION DETAILS AS CONTAINED IN THE RECORDS OF THE CONTRACTOR. ELEVATIONS SHOWN ON THIS PLAN WERE NOT FIELD VERIFIED.
JONES & BOYD, INC.
BY:
DATE: 5/22/01

BENCHMARKS:

1. "□" 1/2" IR, W of Ingram Rd. +- 1025' N of N edge of Lucas Rd. +- 6' E of fence. Elev. 637.08
2. "□" 1/2" IR, E of Ingram Rd. +- 2650' N of N edge of Lucas Rd. +- 28' E & 37' N of fence corner. Elev. 639.20

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE
1	Revise entrance pavement for Saddlebrook Drive.	JMW	2/14/01

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
4	ADDED TO NTMWD NOTES & EXISTING W.L. TO PROFILE	CMG	01/08/01
3	Revised Per City Comments	SSC	12/22/00
2	Add Right Turn Lane & Revise Culvert.	CMG	12/19/00
1	Cont. Saddlebrook through site. Adjust stationing.	JMW	12/05/00

The seal appearing on this document was authorized by Thomas K. Juhn, P.E. 81799 on Feb.14, 2001. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

STATE OF TEXAS · THOMAS K. JUHN · 81799 · LICENSED PROFESSIONAL ENGINEER
2/14/01

Jones & Boyd, Inc.
16800 Dallas Parkway, Suite 240
Dallas, Texas 75248
Tel: 972-248-7676
Fax: 972-248-1414
- Engineering
- Planning
- Landscape Architecture
- Surveying

PAVING PLAN & PROFILE

SADDLEBROOK DRIVE (0+00 to 6+50)

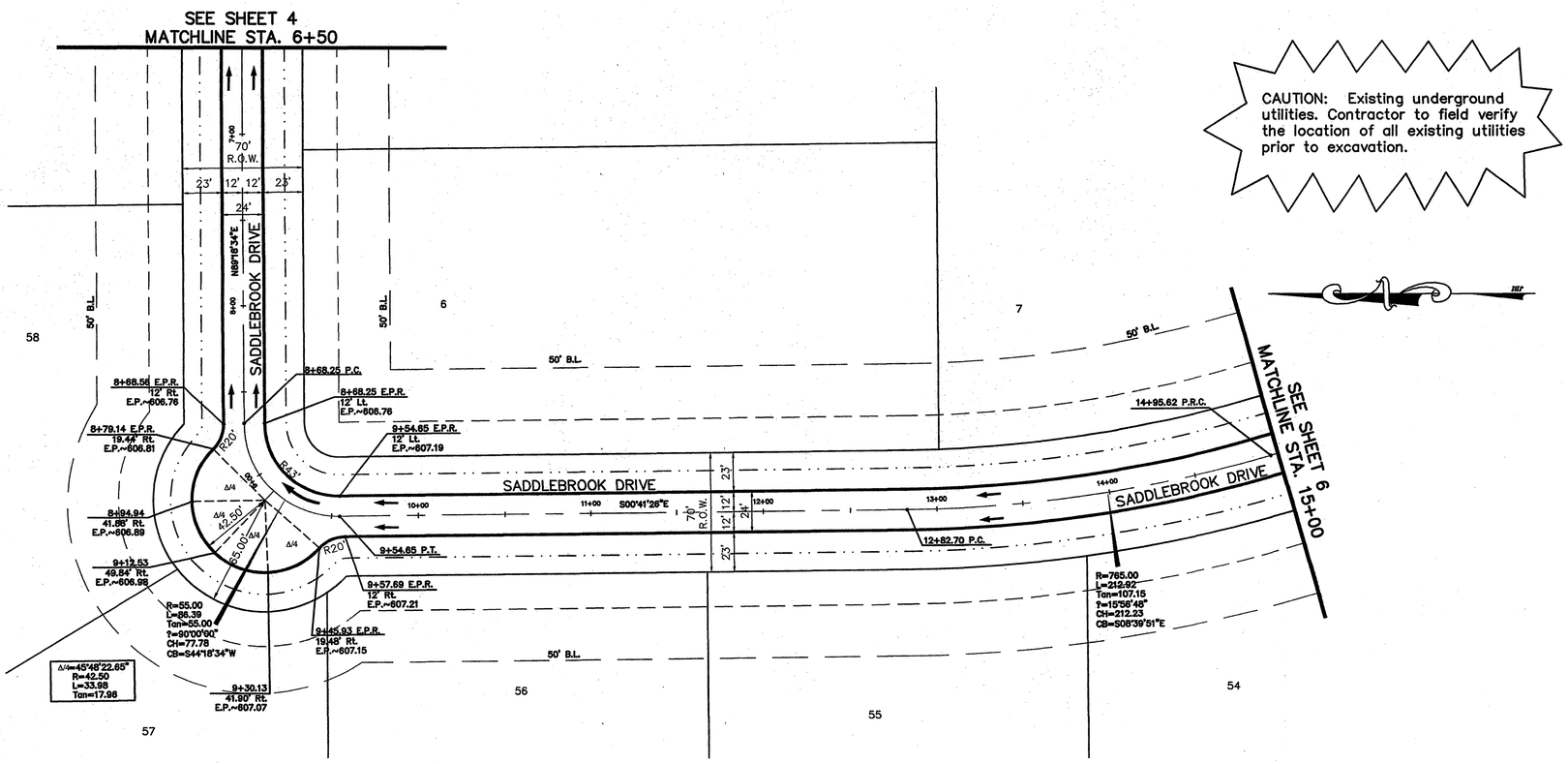
SADDLEBROOK

City of Lucas, Collin County, Texas

PROJECT NO. SK403

SHEET NO. 4

Plot Info: Drawing: H:\Projects\SK403\dwg\SK403PV.dwg Plotted by: JMW Plot date: 2/7/01 10:49 am
Drawing Info: JMW H:\Projects\SK403\dwg\SK403PV.dwg 2/6/01 Plot time: 11:06 am



GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
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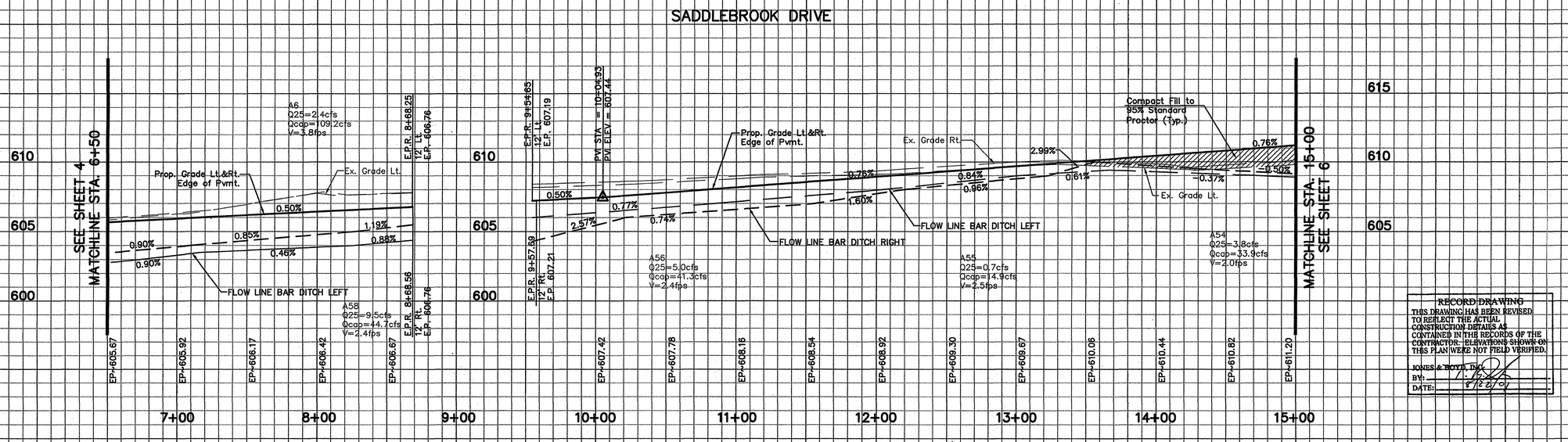

RECORD DRAWING
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JONES & BOYD, INC.
BY:
DATE: 6/22/01

BENCHMARKS:

1. "D" 1/2" IR, W of Ingram Rd. +– 1025' N of N edge of Lucas Rd. +– 6' E of fence. Elev. 637.08
2. "D" 1/2" IR, E of Ingram Rd. +– 2650' N of N edge of Lucas Rd. +– 28' E & 37' N of fence corner. Elev. 639.20

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
2	ADDED NOTES TO NTMWD NOTES	CMG	01/08/01
1	Cont. Saddlebrook through site. Adjust stationing.	JMW	12/05/00

The seal appearing on this document was authorized by Thomas K. Juhn, P.E. 81799 on Jan. 08, 2001. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

STATE OF TEXAS · THOMAS K. JUHN · 81799 · LICENSED PROFESSIONAL ENGINEER

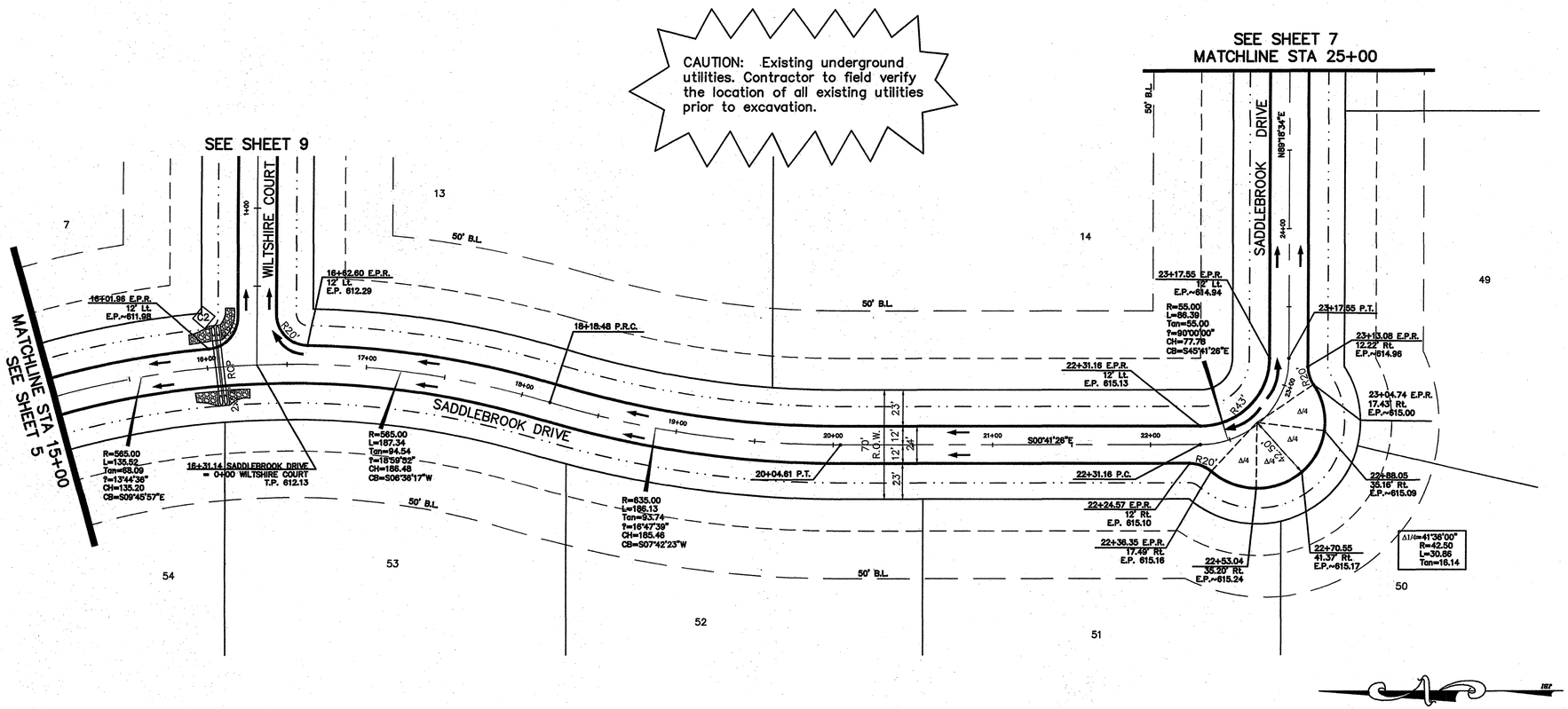
Jones & Boyd, Inc.
16800 Dallas Parkway, Suite 240
Dallas, Texas 75248
Tel: 972-248-7676
Fax: 972-248-1414
- Engineering
- Planning
- Landscape Architecture
- Surveying

PAVING PLAN & PROFILE
SADDLEBROOK DRIVE (6+50 to 15+00)
SADDLEBROOK
City of Lucas, Collin County, Texas

PROJECT NO. SK403
SHEET NO. 5

Plot Info: Drawing: H:\Projects\SK403\dwg\SK403PV.dwg Plotted by: tc Plot date: 12/18/00 1:17 pm
Drawing Info: tc H:\Projects\SK403\dwg\SK403PV.dwg 12/18/00 1:17 pm Plotted by: tc Plot date: 12/18/00 Plot time: 12:08 pm

CAUTION: Existing underground utilities. Contractor to field verify the location of all existing utilities prior to excavation.



GRAPHIC SCALE

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(IN FEET)
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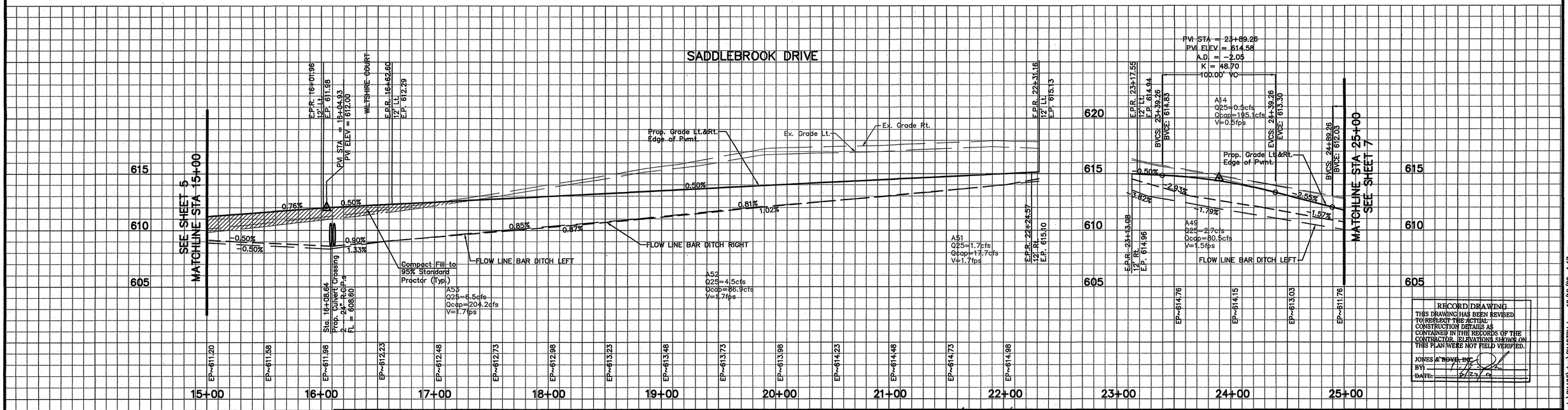

RECORD DRAWING
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JONES & BOYD, INC.
BY:
DATE: 5/29

BENCHMARKS:

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1	Cont. Saddlebrook through site. Adjust stationing.	JMW	12/05/00

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STATE OF TEXAS
THOMAS K. JUHN
81799
LICENSED PROFESSIONAL ENGINEER

Jones & Boyd, Inc.
16800 Dallas Parkway, Suite 240
Dallas, Texas 75248
Tel: 972-248-7676
Fax: 972-248-1414

- Engineering
- Planning
- Landscape Architecture
- Surveying

PAVING PLAN & PROFILE

SADDLEBROOK DRIVE (15+00 to 25+00)

SADDLEBROOK

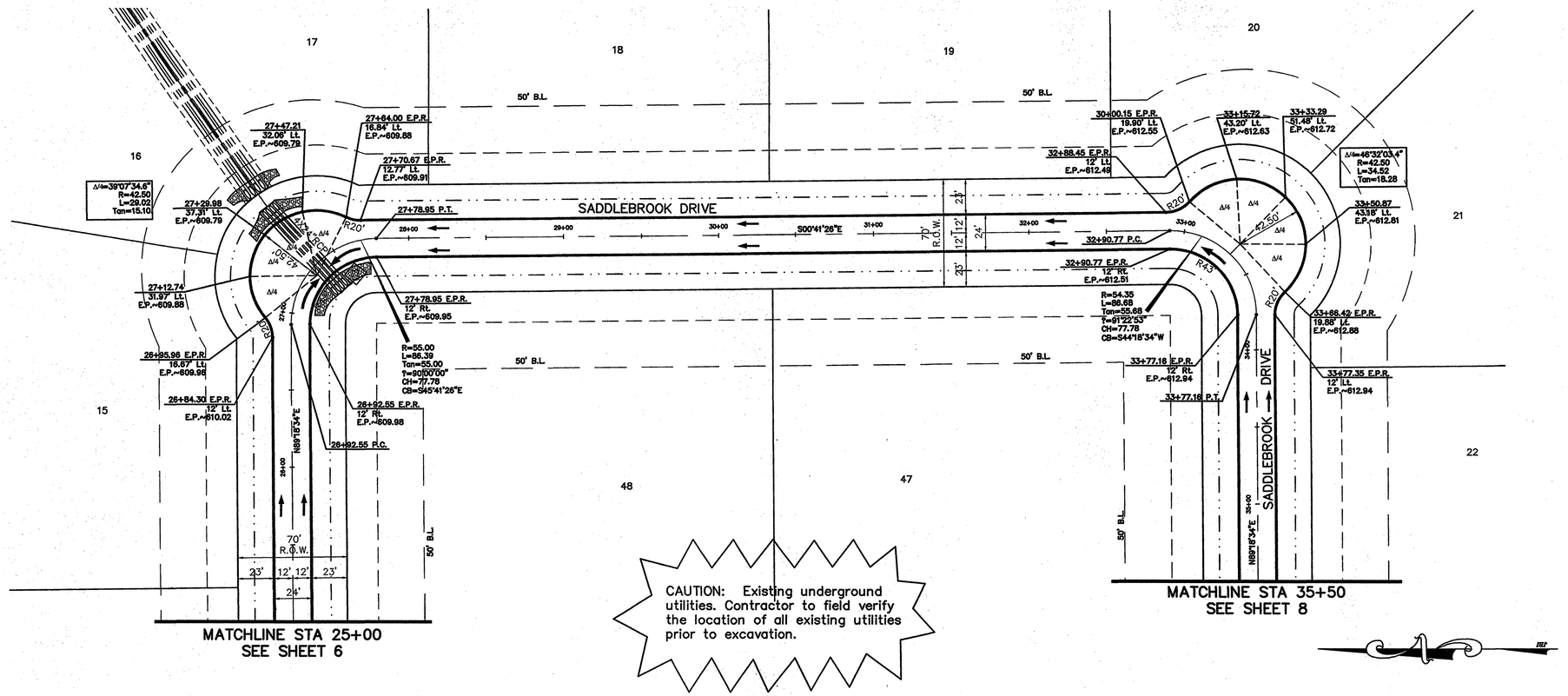
City of Lucas, Collin County, Texas

PROJECT NO. SK403

SHEET NO. 6

Plot Info: Drawing: H:\Projects\SK403\dwg\SK403PV.dwg Plotted by: tc Plot date: 12/18/00 Plot time: 12:08 pm

Drawing Info: tc H:\Projects\SK403\dwg\SK403PV.dwg 12/18/00 1:17 pm



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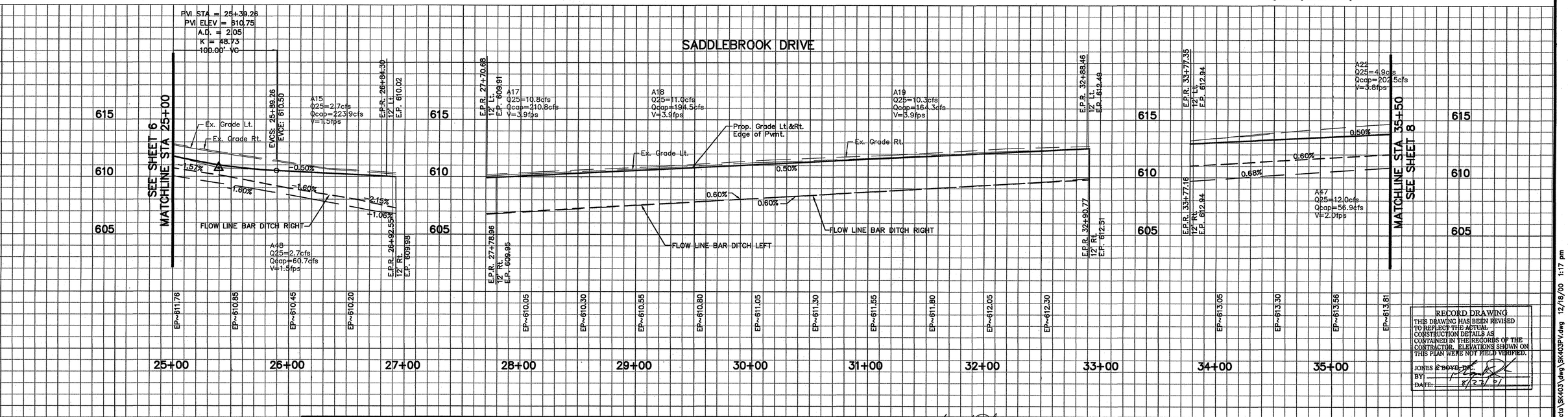


RECORD DRAWING
THIS DRAWING HAS BEEN REVISED TO REFLECT THE ACTUAL CONSTRUCTION DETAILS AS CONTAINED IN THE RECORDS OF THE CONTRACTOR. ELEVATIONS SHOWN ON THIS PLAN WERE NOT FIELD VERIFIED.
JONES & BOYD, INC.
BY:
DATE: 8/27/01

BENCHMARKS:

1. "□" 1/2" IR, W of Ingram Rd. +– 1025' N of N edge of Lucas Rd. +– 6' E of fence. Elev. 637.08
2. "□" 1/2" IR, E of Ingram Rd. +– 2650' N of N edge of Lucas Rd. +– 28' E & 37' N of fence corner. Elev. 639.20

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
2	ADDED NOTES TO NTMWD NOTES	CMG	01/08/01
1	Cont. Saddlebrook through site. Adjust stationing.	JMW	12/05/00

The seal appearing on this document was authorized by Thomas K. Juhn, P.E. 81799 on Jan. 08, 2001. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

STATE OF TEXAS · THOMAS K. JUHN · 81799 · LICENSED PROFESSIONAL ENGINEER · 1/8/01

Jones & Boyd, Inc.
16800 Dallas Parkway, Suite 240
Dallas, Texas 75248
Tel: 972-248-7676
Fax: 972-248-1414
- Engineering
- Planning
- Landscape Architecture
- Surveying

PAVING PLAN & PROFILE

SADDLEBROOK DRIVE (25+00 to 35+50)

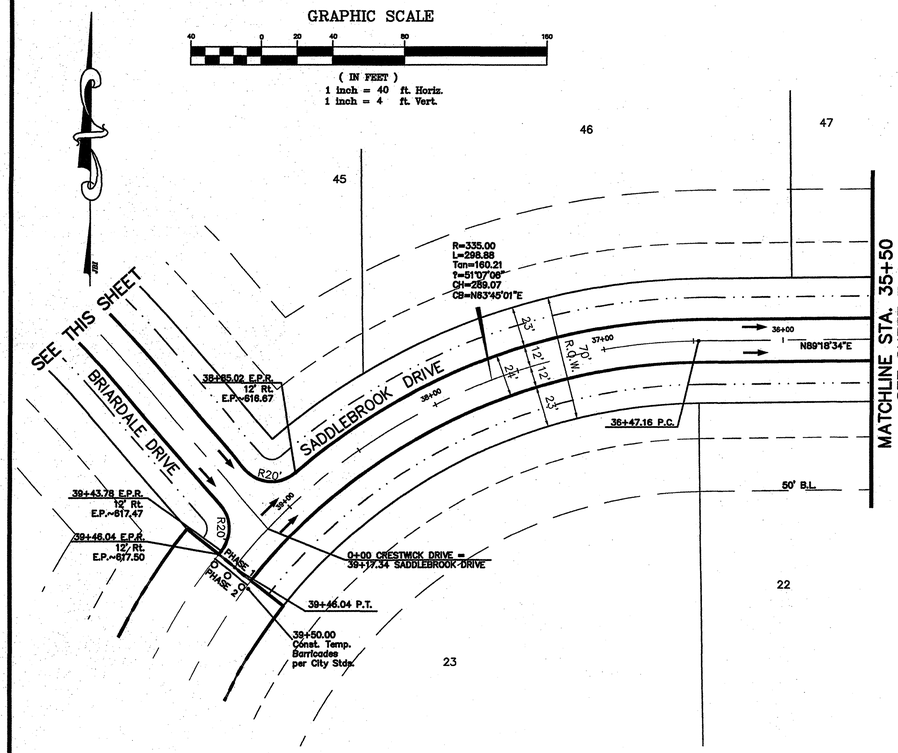
SADDLEBROOK

City of Lucas, Collin County, Texas

PROJECT NO. SK403

SHEET NO. 7

Plot Info: Drawing: H:\Projects\SK403\dwg\SK403PV.dwg Plotted by: tc Plot date: 12/18/00 Plot time: 12:08 pm
Drawing Info: to H:\Projects\SK403\dwg\SK403PV.dwg 12/18/00 1:17 pm



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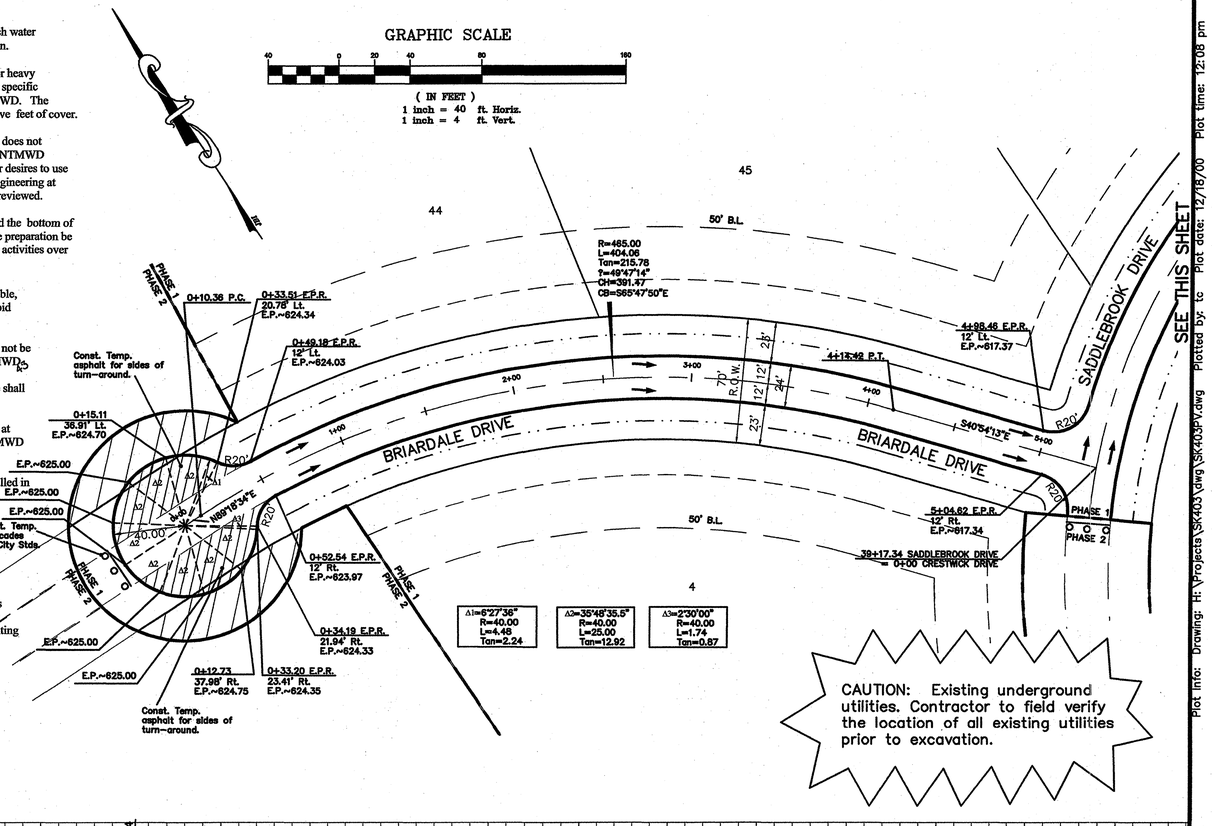
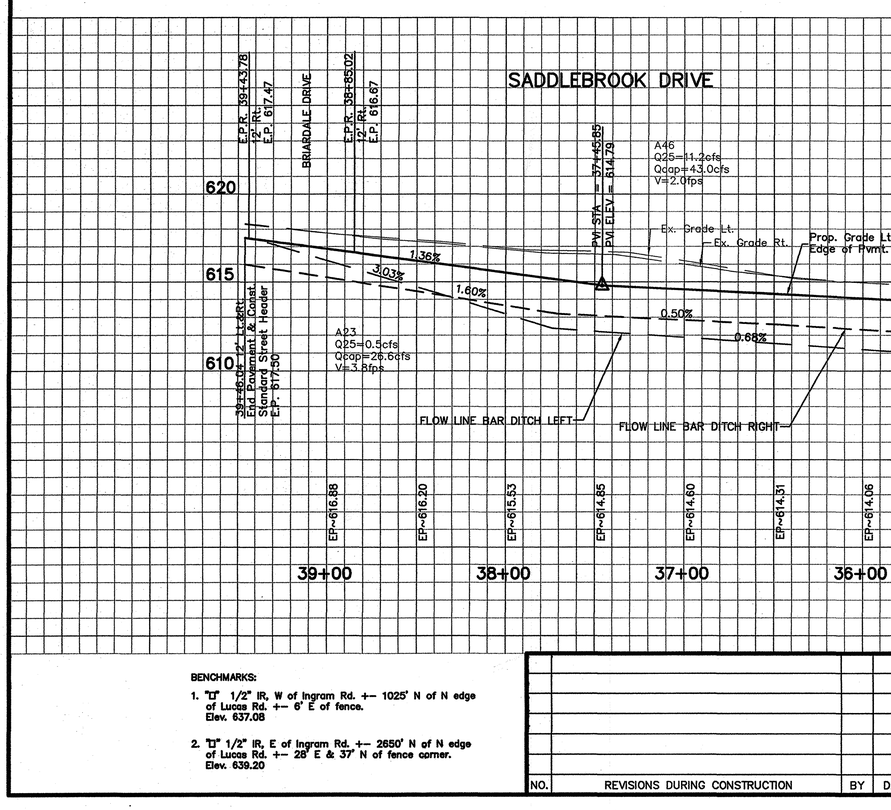
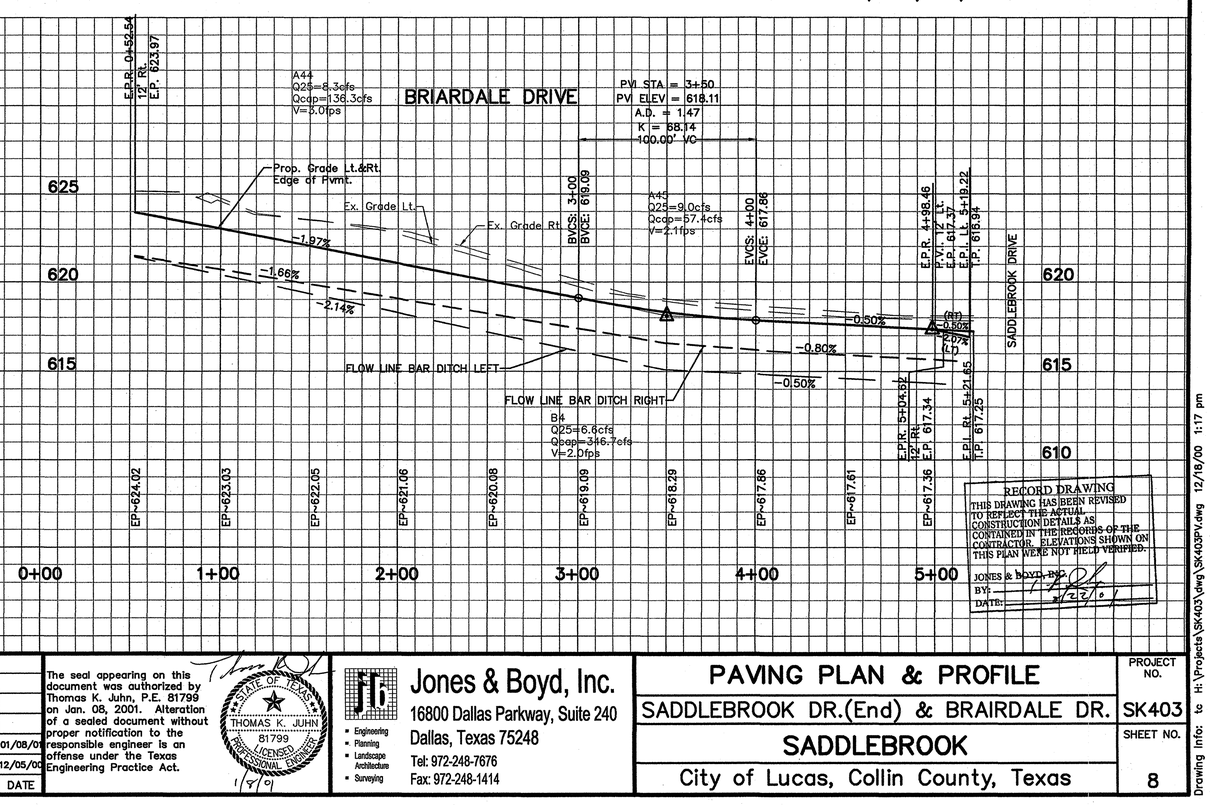


CAUTION: Existing underground utilities. Contractor to field verify the location of all existing utilities prior to excavation.





RECORD DRAWING
THIS DRAWING HAS BEEN REVISED TO REFLECT THE ACTUAL CONSTRUCTION DETAILS AS CONTAINED IN THE RECORDS OF THE CONTRACTOR. ELEVATIONS SHOWN ON THIS PLAN WERE NOT FIELD VERIFIED.
JONES & BOYD, INC.
BY:
DATE: 12/7/01

BENCHMARKS:

1. "D" 1/2" IR, W of Ingram Rd. +- 1025' N of N edge of Lucas Rd. +- 6' E of fence. Elev. 637.08
2. "D" 1/2" IR, E of Ingram Rd. +- 2650' N of N edge of Lucas Rd. +- 28' E & 37' N of fence corner. Elev. 639.20

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
2	ADDED NOTES TO NTMWD NOTES	CMG	01/08/01
1	Cont. Saddlebrook through site. Adjust stationing.	JMW	12/05/00

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STATE OF TEXAS
THOMAS K. JUHN
81799
LICENSED
PROFESSIONAL ENGINEER
1/8/01

Jones & Boyd, Inc.
16800 Dallas Parkway, Suite 240
Dallas, Texas 75248
Tel: 972-248-7676
Fax: 972-248-1414

- Engineering
- Planning
- Landscape Architecture
- Surveying

PAVING PLAN & PROFILE

SADDLEBROOK DR.(End) & BRAIRDALE DR.

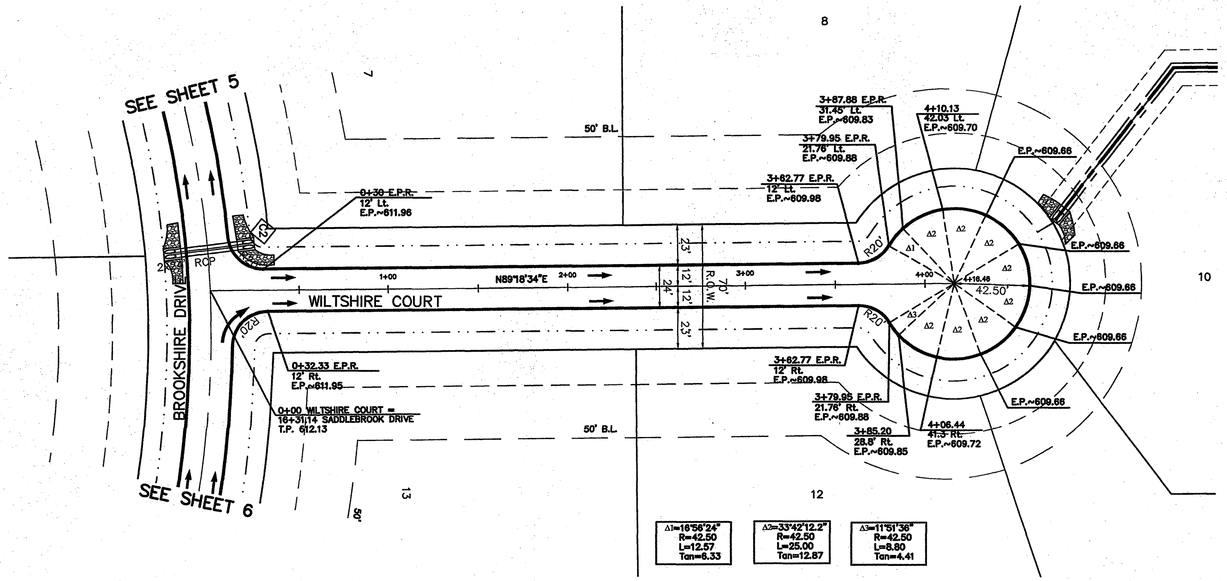
SADDLEBROOK

City of Lucas, Collin County, Texas

PROJECT NO. SK403

SHEET NO. 8

Plot Info: Drawing: H:\Projects\SK403\dwg\SK403PV.dwg Plotted by: tc Plot date: 12/18/00 Plot time: 12:08 pm
Drawing Info: tc H:\Projects\SK403\dwg\SK403PV.dwg 12/18/00 1:17 pm



CAUTION: Existing underground utilities. Contractor to field verify the location of all existing utilities prior to excavation.

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft. Horiz.
1 inch = 4 ft. Vert.

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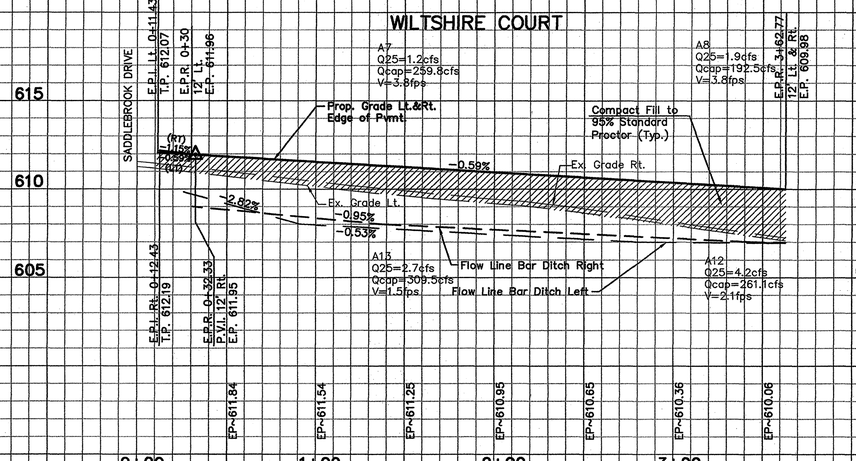

RECORD DRAWING
THIS DRAWING HAS BEEN REVISED TO REFLECT THE ACTUAL CONSTRUCTION DETAILS AS CONTAINED IN THE RECORDS OF THE CONTRACTOR. ELEVATIONS SHOWN ON THIS PLAN WERE NOT FIELD VERIFIED.
JONES & BOYD, INC.
BY:
DATE: 8/20/01

BENCHMARKS:

1. "D" 1/2" IR, W of Ingram Rd. +- 1025' N of N edge of Lucas Rd. +- 6' E of fence. Elev. 637.08
2. "D" 1/2" IR, E of Ingram Rd. +- 2650' N of N edge of Lucas Rd. +- 28' E & 37' N of fence corner. Elev. 639.20

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
2	ADDED NOTES TO NTMWD NOTES	CMG	01/08/01
1	Cont. Saddlebrook through site. Adjust stationing.	JMW	12/05/00

The seal appearing on this document was authorized by Thomas K. Juhn, P.E. 81799 on Jan. 08, 2001. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

STATE OF TEXAS
THOMAS K. JUHN
81799
LICENSED
PROFESSIONAL ENGINEER
1/8/01

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Dallas, Texas 75248
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Fax: 972-248-1414
- Engineering
- Planning
- Landscape Architecture
- Surveying

PAVING PLAN & PROFILE

WILTSHIRE COURT

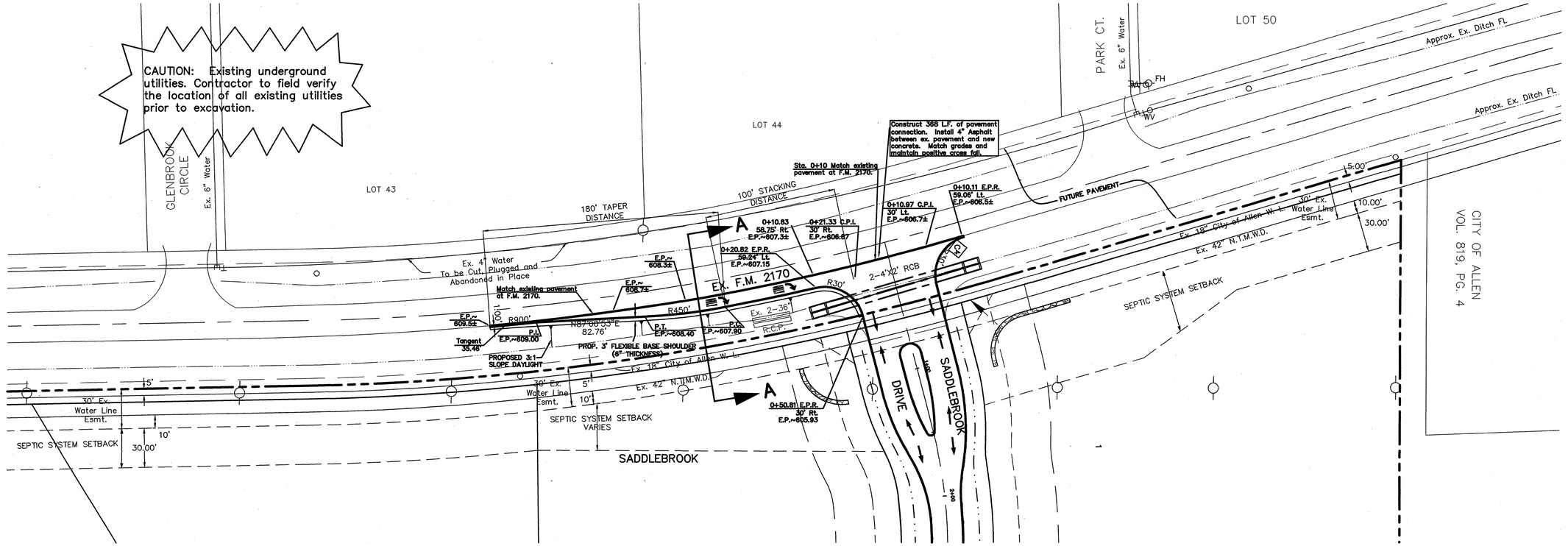
SADDLEBROOK

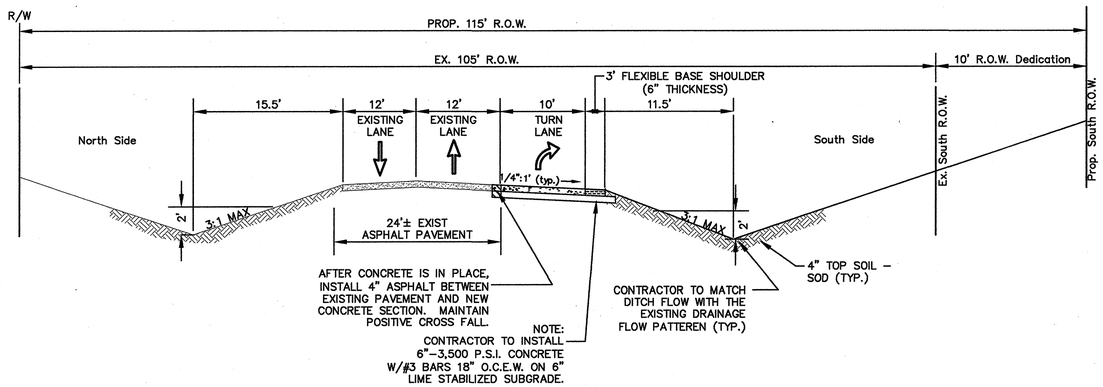
City of Lucas, Collin County, Texas

PROJECT NO. SK403

SHEET NO. 9

Plot Info: Drawing: H:\Projects\SK403\dwg\SK403PV.dwg Plotted by: tc Plot date: 12/18/00 Plot time: 12:08 pm
Drawing Info: tc H:\Projects\SK403\dwg\SK403PV.dwg 12/18/00 1:17 pm





TYPICAL SECTION A-A
N.T.S.

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
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NO.	REVISIONS DURING CONSTRUCTION	BY	DATE
1	Lengthen right turn lane per TxDOT comments.	JMW	2/14/01

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
4	ADDED TO NTMWD NOTES & ADDED TEXT TO EASEMENT	CMG	01/08/01
3	Revised F.M. 720 Cross Section	SSC	12/22/00
2	Added Joint Detail & Changed Text	CMG	12/19/00
1	Added Turning Lane on Ex. F.M. 2170	TC	12/18/00

The seal appearing on this document was authorized by Thomas K. Juhn, P.E. 81799 on Feb. 14, 2001. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

STATE OF TEXAS · THOMAS K. JUHN · 81799 · LICENSED PROFESSIONAL ENGINEER

2/14/01

RECORD DRAWING
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JONES & BOYD, INC.
BY: T. K. Juhn
DATE: 5/22/01

NTMWD NOTES

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- Engineering
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PAVING PLAN
F.M. 2170
SADDLEBROOK
City of Lucas, Collin County, Texas

PROJECT NO. SK403
SHEET NO. 9A

Plot Info: Drawing: H:\Projects\SK403\dwg\SK403PV.dwg Plotted by: JMW Plot date: 2/6/01 Plot time: 11:06 am
Drawing Info: JMW H:\Projects\SK403\dwg\SK403PV.dwg 2/7/01 10:49 am

LOT 24

LOT 43

LOT 44

GLENBROOK CIRCLE

F.M. 2170

30' Ex. Water Easement Vol. ____ Pg. ____

5' LANDSCAPE BERM SEE L.S. PLAN

Ex. 18" City of Allen

Ex. 42" N.T.M.W.D.

Septic System Setback

SADDLEBROOK DRIVE

F.P. 609.1 57

F.P. 608.7 58

F.P. 606.7 59

F.P. 606.0 1

F.P. 605.8 2

F.P. 609.9 56

F.P. 608.6 6

F.P. 607.6 5

F.P. 606.0 4

F.P. 606.0 3

F.P. 611.2 55

CITY OF ALLEN VOL. 819, PG. 4

SARAH JEAN-COESTON 92-0092458

NANCY D. FISH 94-0034179

KENNETH E. JONES & WIFE DOROTHY E. JONES VOL. 699, PG. 759

DR. L.W. BARNETT VOL. 92-0024492

POND

OVER-FLOW

CONC. OUTLET STRUCTURE FOR POND #1 SEE DETAILS SHEET 15A

CAUTION: Existing underground utilities. Contractor to field verify the location of all existing utilities prior to excavation.

NOTE: Trees along east property line shall be protected.

Tree Line

RECORD DRAWING
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JONES & BOYD, INC.
BY:
DATE: 1/22/01

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

LEGEND
- x 625.50 EP — EDGE OF PAVEMENT SPOT ELEVATIONS
- x 625.50 — FINISH GROUND SPOT ELEVATIONS
- → — DIRECTION OF FLOW
- 625 — PROPOSED CONTOURS
- 625 - - - EXISTING CONTOURS

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(MATCH LINE SEE SHEET 11)

BENCHMARKS:

1. "□" 1/2" IR, W of Ingram Rd. +– 1025' N of N edge of Lucas Rd. +– 6' E of fence. Elev. 637.08
2. "□" 1/2" IR, E of Ingram Rd. +– 2650' N of N edge of Lucas Rd. +– 28' E & 37' N of fence corner. Elev. 639.20

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE
1	Revise Entrance Paving and Landscape Berms.	JMW	2/13/01

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
5	ADDED NOTES TO NTMWD NOTES	CMG	01/05/01
4	Show existing topo. information at exit point.	JMW	12/19/00
3	Create two detention ponds for storage.	JMW	12/18/00
2	Lower berm, raise pads, create swale along west.	JMW	12/8/00
1	Adjust the proposed contours.	JMW	11/30/00

The seal appearing on this document was authorized by Thomas K. Juhn, P.E. 81799 on Feb. 13, 2001. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

STATE OF TEXAS — THOMAS K. JUHN — 81799 — LICENSED PROFESSIONAL ENGINEER — 2/13/01

Jones & Boyd, Inc.
16800 Dallas Parkway, Suite 240
Dallas, Texas 75248
Tel: 972-248-7676
Fax: 972-248-1414
Engineering · Planning · Landscape Architecture · Surveying

GRADING PLAN

Details

SADDLEBROOK

City of Lucas, Collin County, Texas

PROJECT NO. SK403

SHEET NO. 10

Plot Info: Drawing: H:\Projects\SK403\dwg\SK403GR.dwg Plotted by: JMW Plot date: 2/7/01 Plot time: 3:32 pm

Drawing Info: JMW H:\Projects\SK403\dwg\SK403GR.dwg 2/7/01 5:41 pm

(MATCH LINE SEE SHEET 10)

(MATCH LINE SEE SHEET 12)

DR. L.W. BARNETT VOL. 92-0024492

ALLEN ISD VOL. 1454, PG. 527

ALLEN ISD VOL. 1002, PG. 128

KENNETH E. JONES & WIFE DOROTHY E. JONES VOL. 699, PG. 759

ROY LEWS

JEFFERY ANDRESS, VOL. 4450, PG. 2615

CITY OF LUCAS, VOL. 2896, PG. 943

DONALD LARKIN VOL. 1160, PG. 583

BOBBY N. KIRKPATRICK 94-0063531

VOL. 3961, PG. 1383 GROUP, INC. INTERSTATE INVESTMENT

Ex. Tree Line

WILTSHIRE LANE

SADDLEBROOK DRIVE

F.P. 613.0 54

F.P. 609.8 7

F.P. 609.2 8

F.P. 608.7 9

F.P. 608.9 10

F.P. 615.0 53

F.P. 612.8 13

F.P. 611.5 12

F.P. 608.9 11

F.P. 616.2 52

F.P. 617.3 51

F.P. 615.3 14

F.P. 611.4 15

F.P. 609.3 16

F.P.

RECORD DRAWING
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JONES & BOYD, INC.
BY:
DATE: 8/22/01

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

LEGEND

x 625.50 EP	EDGE OF PAVEMENT SPOT ELEVATIONS
x 625.50	FINISH GROUND SPOT ELEVATIONS
	DIRECTION OF FLOW
625	PROPOSED CONTOURS
625	EXISTING CONTOURS

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3. To assure that placing of significant loads over the NTMWD pipeline does not damage the existing pipeline, no materials shall be stockpiled on the NTMWD easement, without authorization from the NTMWD. If the contractor desires to use NTMWD's easement for stockpile of materials, contact NTMWD Engineering at (972) 442-5405 so your plans for use of NTMWD's easement can be reviewed.
4. In areas where the cover between the top of the NTMWD pipeline and the bottom of the sub-grade is three (3) feet or less, it is requested that the sub-grade preparation be deleted and thickened pavement section be used to limit construction activities over the pipeline.
5. Crossing of the NTMWD easement with other utilities, such as TV cable, phone, gas and electric, shall be coordinated with the NTMWD to avoid damage to the NTMWD facilities.
6. Outdoor lighting, landscaping, screening walls or other facilities shall not be installed in NTMWD easements without written approval of the NTMWD.
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11. Excavation adjacent to NTMWD pipelines, manholes and other appurtenances to install proposed improvements shall be performed so that the manholes, pipelines or appurtenances are not displaced or damaged. Any damage to the manholes, pipelines or appurtenances shall be repaired to the satisfaction of the NTMWD. Further, any cost for repair of damage to the manholes, pipelines or appurtenances resulting from construction by the developer or contractor will be the responsibilty for the developer.

NOTE: Trees along east property line shall be protected.

BENCHMARKS:

1. "D" 1/2" IR, W of Ingram Rd. +- 1025' N of N edge of Lucas Rd. +- 6' E of fence. Elev. 637.08
2. "B" 1/2" IR, E of Ingram Rd. +- 2650' N of N edge of Lucas Rd. +- 28' E & 37' N of fence corner. Elev. 639.20

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE
5	ADDED NOTES TO NTMWD NOTES	CMG	01/05/01
4	Revise proposed contours along east boundary.	JMW	12/19/00
3	Create two detention ponds for storage.	JMW	12/18/00
2	Add tree note, swale along west, street names.	JMW	12/8/00
1	Adjust the proposed contours.	JMW	11/30/00

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE

The seal appearing on this document was authorized by Thomas K. Juhn, P.E. 81799 on Jan. 05, 2001. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

STATE OF TEXAS · THOMAS K. JUHN · 81799 · LICENSED PROFESSIONAL ENGINEER

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16800 Dallas Parkway, Suite 240
Dallas, Texas 75248
Tel: 972-248-7676
Fax: 972-248-1414

- Engineering
- Planning
- Landscape Architecture
- Surveying

GRADING PLAN

Details

SADDLEBROOK

City of Lucas, Collin County, Texas

PROJECT NO. SK403

SHEET NO. 11

Plot Info: Drawing: H:\Projects\SK403\dwg\SK403GR.dwg Plotted by: CMG Plot date: 1/5/01 Plot time: 3:54 pm

Drawing Info: CMG H:\Projects\SK403\dwg\SK403GR.dwg 1/5/01 3:39 pm

(MATCH LINE SEE SHEET 11)

(MATCH LINE SEE SHEET 12A)

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

LEGEND

- x 625.50 EP — EDGE OF PAVEMENT SPOT ELEVATIONS
- x 625.50 — FINISH GROUND SPOT ELEVATIONS
- DIRECTION OF FLOW
- 625 — PROPOSED CONTOURS
- 625 - - - EXISTING CONTOURS

F.P. 617.7 (50)
F.P. 616.6 (49)
F.P. 612.1 (48)
F.P. 610.8 (17)
F.P. 624.1 (44)
F.P. 620.0 (45)
F.P. 616.3 (46)
F.P. 614.6 (47)
F.P. 612.3 (18)
F.P. 621.5 (4)
F.P. 618.6 (23)
F.P. 615.6 (22)
F.P. 614.4 (21)
F.P. 612.6 (19)
F.P. 612.9 (20)

SADDLEBROOK DRIVE

BRIARDALE DRIVE

CONC. OUTLET STRUCTURE FOR POND #2 SEE DETAILS SHEET 15A

NOTE: Trees along east property line shall be protected.

Ditch to be extended in Phase 2 to keep runoff from Ranch Estates.

RANCH ESTATES SUBDIVISION
VOL. 653, PG. 464

VOL. 3961, PG. 1383
GROUP, INC.
INTERSTATE INVESTMENT

ARCELIA O.
CENTER VOL.
1344, PG. 853

KATHLEEN S. MILLER
96-0029521

GEORGE PAUL MILLIGAN
VOL. 3075, PG. 56

VADA
KATHLEEN
CLEVELAND

BR
INC.
96-0047682

NTMWD NOTES

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BENCHMARKS:

1. "D" 1/2" IR, W of Ingram Rd. +- 1025' N of N edge of Lucas Rd. +- 6' E of fence. Elev. 637.08
2. "D" 1/2" IR, E of Ingram Rd. +- 2650' N of N edge of Lucas Rd. +- 28' E & 37' N of fence corner. Elev. 639.20

RECORD DRAWING
THIS DRAWING HAS BEEN REVISED TO REFLECT THE ACTUAL CONSTRUCTION DETAILS AS CONTAINED IN THE RECORDS OF THE CONTRACTOR. ELEVATIONS SHOWN ON THIS PLAN WERE NOT FIELD VERIFIED.
JONES|BOYD, INC.
BY:
DATE: 8/22/01

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
5	ADDED NOTES TO NTMWD NOTES	CMG	01/05/01
4	Show drainage swale to the south.	JMW	12/19/00
3	Create two detention ponds for storage.	JMW	12/18/00
2	Add tree protection note, update street names.	JMW	12/8/00
1	Adjust the proposed contours.	JMW	11/30/00

The seal appearing on this document was authorized by Thomas K. Juhn, P.E. 81799 on Jan. 05, 2001. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

STATE OF TEXAS
THOMAS K. JUHN
81799
LICENSED
PROFESSIONAL ENGINEER
1/5/01

Jones & Boyd, Inc.
16800 Dallas Parkway, Suite 240
Dallas, Texas 75248
Tel: 972-248-7676
Fax: 972-248-1414

- Engineering
- Planning
- Landscape Architecture
- Surveying

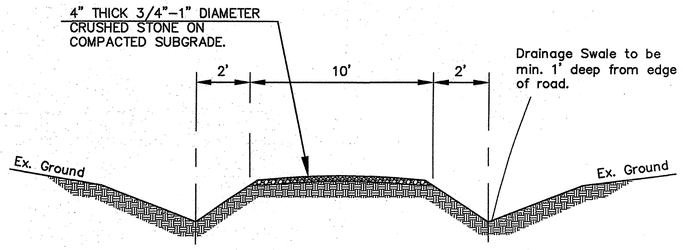
GRADING PLAN
Details
SADDLEBROOK
City of Lucas, Collin County, Texas

PROJECT NO. SK403
SHEET NO. 12

Plot Info: Drawing: H:\Projects\SK403\dwg\SK403GR.dwg Plotted by: CMG Plot date: 1/5/01 Plot time: 3:47 pm
Drawing Info: CMG H:\Projects\SK403\dwg\SK403GR.dwg 1/5/01 3:39 pm

LEGEND

x 625.50 EP	EDGE OF PAVEMENT SPOT ELEVATIONS
x 625.50	FINISH GROUND SPOT ELEVATIONS
→	DIRECTION OF FLOW
625	PROPOSED CONTOURS
625	EXISTING CONTOURS



Temprorary Access Road
Typ. Section
N.T.S.

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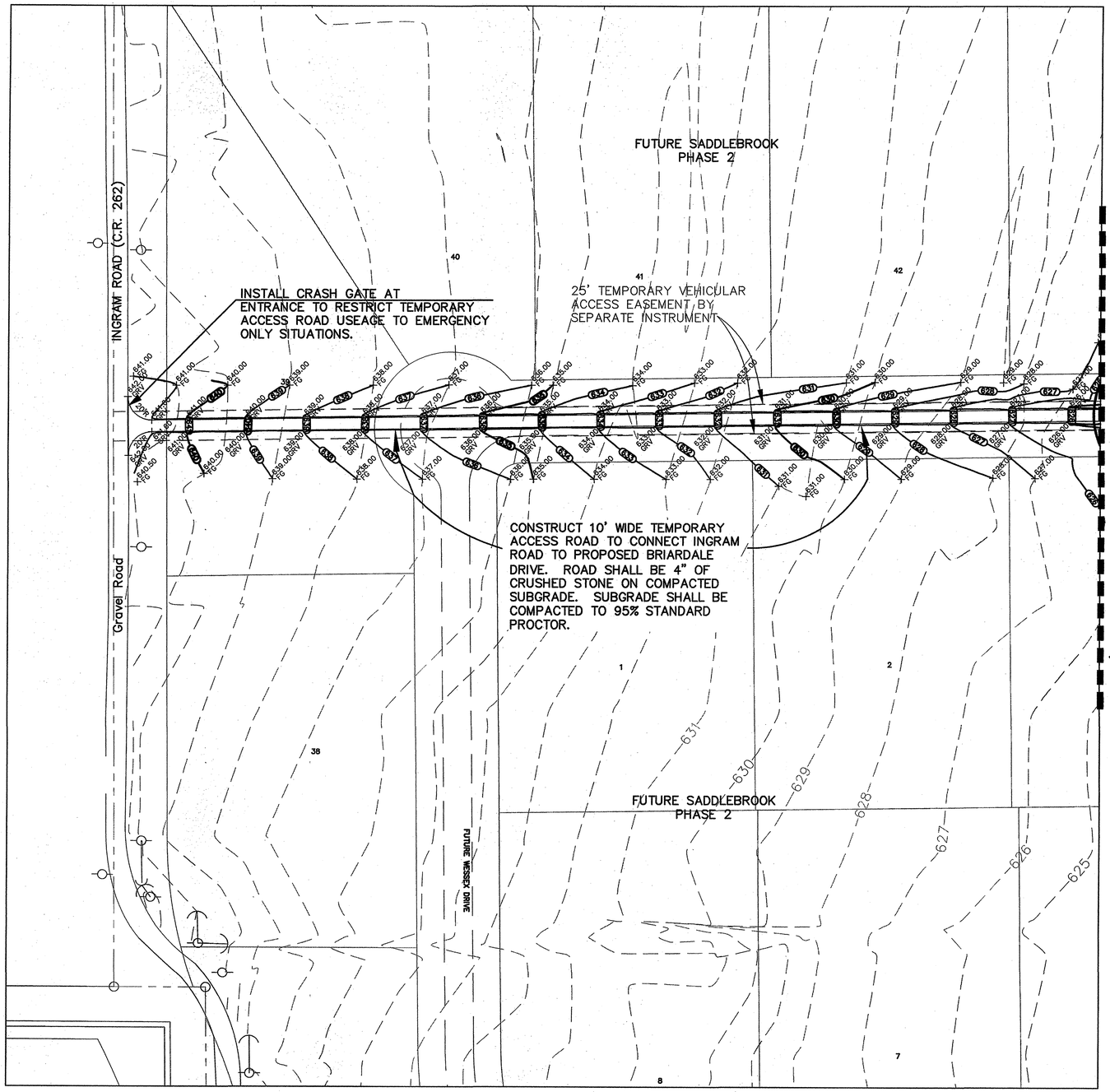
GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.



RECORD DRAWING
THIS DRAWING HAS BEEN REVISED TO REFLECT THE ACTUAL CONSTRUCTION DETAILS AS CONTAINED IN THE RECORDS OF THE CONTRACTOR. ELEVATIONS SHOWN ON THIS PLAN WERE NOT FIELD VERIFIED.
JONES & ~~BOYD, INC.~~
BY:
DATE: 8/22/01

BENCHMARKS:

1. "D" 1/2" IR, W of Ingram Rd. +- 1025' N of N edge of Lucas Rd. +- 6' E of fence. Elev. 637.08
2. "D" 1/2" IR, E of Ingram Rd. +- 2650' N of N edge of Lucas Rd. +- 28' E & 37' N of fence corner. Elev. 639.20

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
3	ADDED NOTES TO NTMWD NOTES	CMG	01/05/01
2	Add Typ. Section, Gate & Drainage.	CMG	12/19/00
1	Add Temporary Access Road for Second Entrance.	JMW	12/18/00

The seal appearing on this document was authorized by Thomas K. Juhn, P.E. 81799 on Jan. 05, 2001. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

STATE OF TEXAS · THOMAS K. JUHN · 81799 · LICENSED PROFESSIONAL ENGINEER · 1/5/01

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16800 Dallas Parkway, Suite 240
Dallas, Texas 75248
Tel: 972-248-7676
Fax: 972-248-1414

- Engineering
- Planning
- Landscape Architecture
- Surveying

GRADING PLAN

SADDLEBROOK

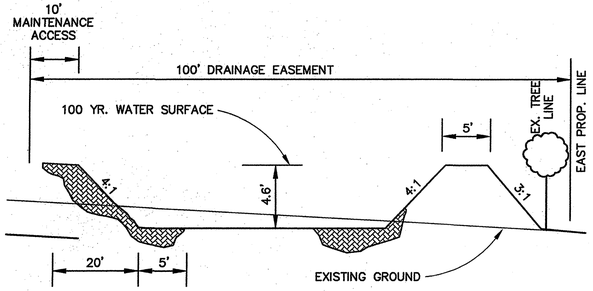
City of Lucas, Collin County, Texas

PROJECT NO. SK403

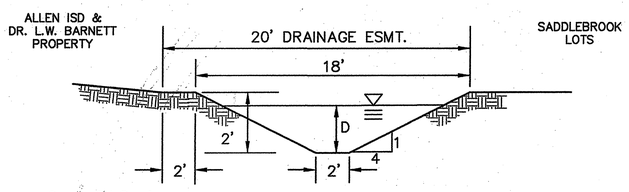
SHEET NO. 12A

Plot Info: Drawing: H:\Projects\SK403\dwg\SK403GR.dwg Plotted by: CMG Plot date: 1/5/01 Plot time: 3:31 pm

Drawing Info: CMG H:\Projects\SK403\dwg\SK403GR.dwg 1/5/01 3:31 pm

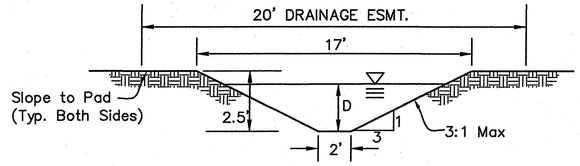


TYPICAL DRY POND SECTION A–A
N.T.S.



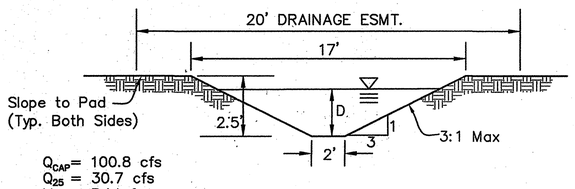
Q_{CAP} = 84.8 cfs
Q_{25} = 53.3 cfs
V = 3.77 fps
D = 1.65'
S = 0.7%

SWALE ALONG WEST PROPERTY LINE SECTION B–B
N.T.S.



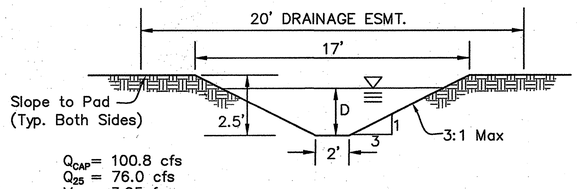
Q_{CAP} = 100.8 cfs
Q_{25} = 29.2 cfs
V = 3.10 fps
D = 1.47'
S = 0.5%

CHANNEL SECTION C–C
N.T.S.



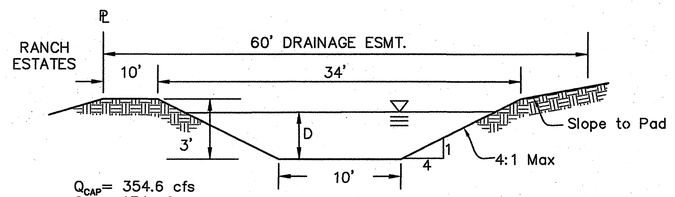
Q_{CAP} = 100.8 cfs
Q_{25} = 30.7 cfs
V = 3.14 fps
D = 1.50'
S = 0.5%

CHANNEL SECTION D–D
N.T.S.



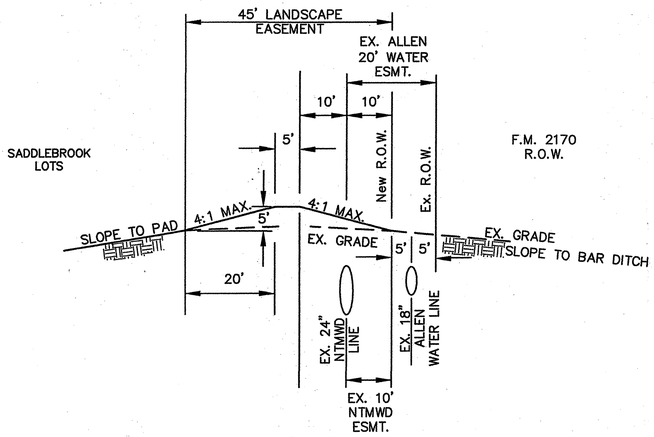
Q_{CAP} = 100.8 cfs
Q_{25} = 76.0 cfs
V = 3.95 fps
D = 2.22'
S = 0.5%

CHANNEL SECTION E–E
N.T.S.



Q_{CAP} = 354.6 cfs
Q_{25} = 134 cfs
V = 4.13 fps
D = 1.86'
S = 0.5%

CHANNEL SECTION F–F
N.T.S.



BERM ALONG NORTH PROPERTY LINE SECTION G–G
N.T.S.

RECORD DRAWING
THIS DRAWING HAS BEEN REVISED TO REFLECT THE ACTUAL CONSTRUCTION DETAILS AS CONTAINED IN THE RECORDS OF THE CONTRACTOR. ELEVATIONS SHOWN ON THIS PLAN WERE NOT FIELD VERIFIED.
JONES & BOYD, INC.
BY: T. K. Juhn
DATE: 4/22/01

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
1	Adjust the proposed contours.	JMW	11/30/00

The seal appearing on this document was authorized by Thomas K. Juhn, P.E. 81799 on Dec. 08, 2000. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

STATE OF TEXAS · THOMAS K. JUHN · 81799 · LICENSED · PROFESSIONAL ENGINEER

Jones & Boyd, Inc.
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Tel: 972-248-7676
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- Engineering
- Planning
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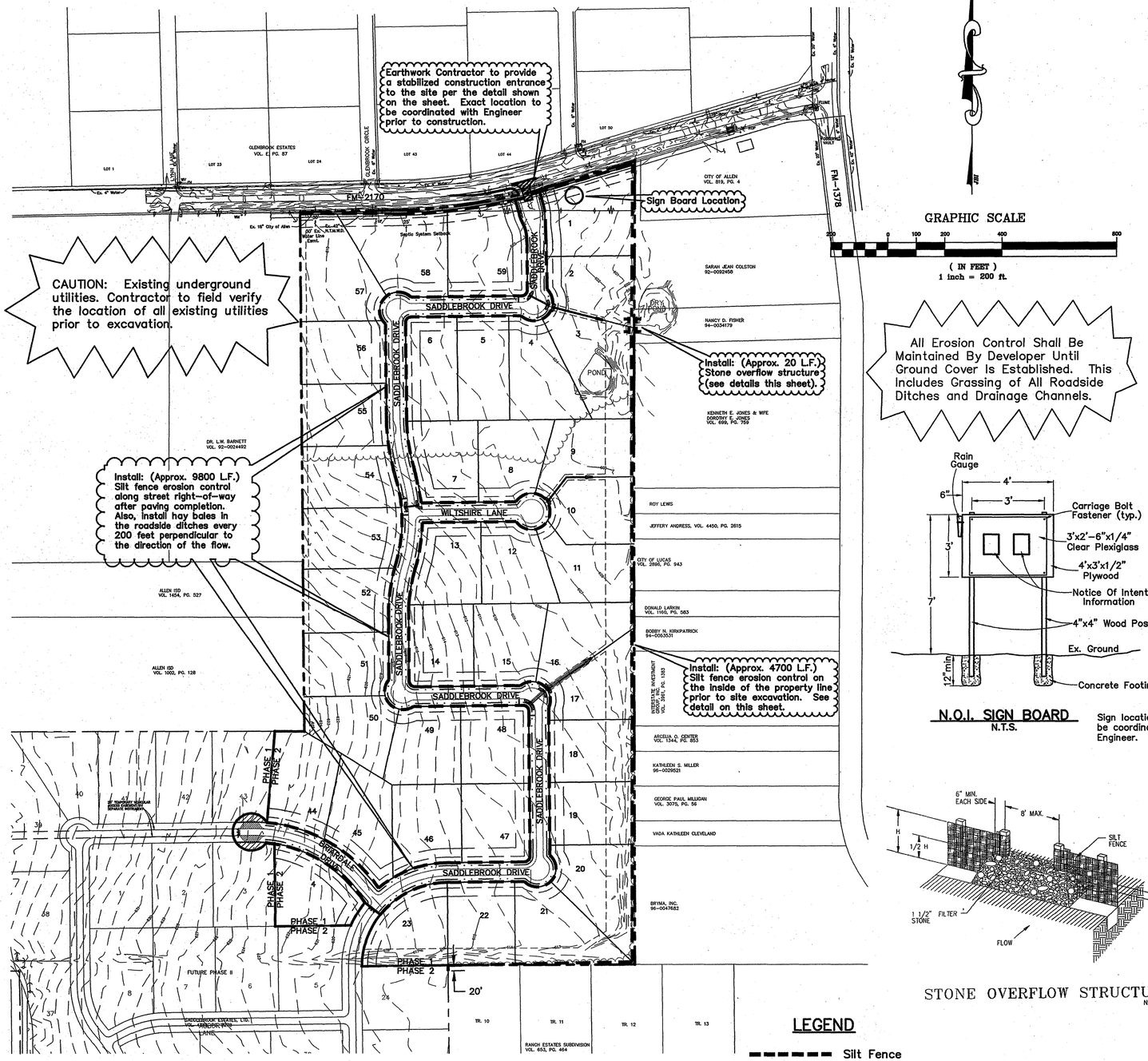
- Surveying

TYPICAL SECTIONS
BERMS & SWALES
SADDLEBROOK
City of Lucas, Collin County, Texas

PROJECT NO. SK403
SHEET NO. 13

Plot Info: Drawing: H:\Projects\SK403\DWG\SK403DET.dwg Plotted by: TC Plot date: 12/7/00 Plot time: 5:50 pm
Drawing Info: TC H:\Projects\SK403\DWG\SK403DET.dwg 12/7/00 5:38 pm



GRAPHIC SCALE

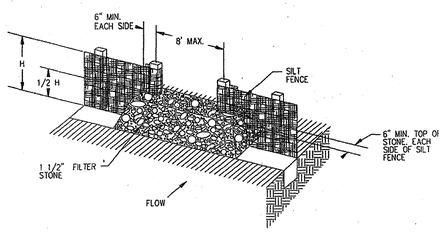
200 0 100 200 400 600

(IN FEET)
1 inch = 200 ft.

All Erosion Control Shall Be Maintained By Developer Until Ground Cover Is Established. This Includes Grassing of All Roadside Ditches and Drainage Channels.

N.O.I. SIGN BOARD
N.T.S.

Sign location shall be coordinated with Engineer.



STONE OVERFLOW STRUCTURE
N.T.S.

LEGEND

Silt Fence

Stone Overflow Structure
Install per details this sheet

GENERAL NOTES FOR THE EROSION CONTROL PLAN

1. All operators and/or contractors shall conform to the terms and conditions of the National Pollution Discharge Elimination Systems (NPDES) General Permit as published in the Federal Register, Vol. 63, No. 128, July 6, 1998, by the Environmental Protection Agency (EPA).
2. The Notice of Intent (NOI), as required by the General Permit, must be properly displayed on site at all times by each operator.
3. All releases of reportable quantities of hazardous substances shall be reported immediately to the facility operator and EPA.
4. The Contractor shall inspect the site at least once every fourteen days and within 24 hours of a 1/2-inch or greater rainfall event. The Contractor shall document the results. Copies of the inspection reports shall accompany the Contractor's monthly pay request. The Contractor shall not be paid until said reports are presented to the Owner/Owner's Represenative. The Earthwork Contractor shall be responsible for inspection until the Utility Contractor begins his work. The Utility Contractor shall be responsible for inspections until the Paving Contractor begins his work. The Paving Contractor shall be responsible for inspections until the Earthwork Contractor begins lot benching operations. The Earthwork Contractor shall make remaining inspections until project is accepted by the City.
5. Modifications to the Storm Water Pollution Prevention Plan shall be implemented and be in-place within a seven calendar day period.
6. If any contractor sees a violation by an operator or another contractor, he shall notify the operator and contractor in violation, as well as the facility operator.
7. Erosion control shall be installed prior to any grading.
8. Accumulated silt deposits shall be removed from silt fences and hay bale dikes when silt depth reaches six inches. Removal of silt deposits by the contractor shall be incidental to the performance of the contract and a separate bid item shall not be included.
9. The contractor shall add or delete erosion protection at the request and direction of the Operator or the City.
10. After installation of pavement, final lot benching and general cleanup, the grass groundcover shall be established in all street parkways, lots and all other disturbed areas. Materials shall be as specified in Item 2.15 and seeding shall be in accordance with Item 3.10 of the NCTCOG Standard Specifications. Depending upon schedule for house construction, grass establishment may be waived on a single lot basis if house construction begins immediately on that lot.
11. It shall be the contractor's responsibility to control and limit silt and sediment leaving the site. Specifically, the contractor shall protect all public streets, alleys, streams and storm drainage systems from erosion deposits.
12. If any erosion control is removed for construction and/or access purposes, the contractor shall replace it at the end of the work day.
13. It shall be the contractor's responsibility to provide a dumpster (or equal) to collect solid waste materials during construction.

NTMWD NOTES

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RECORD DRAWING
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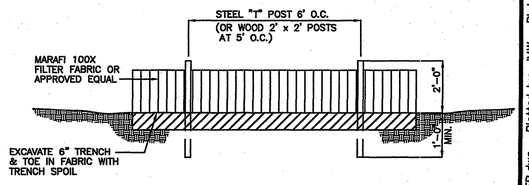
JONES & BOYD, INC.
BY:
DATE: 8/22/01

SILT FENCE
GENERAL NOTES:

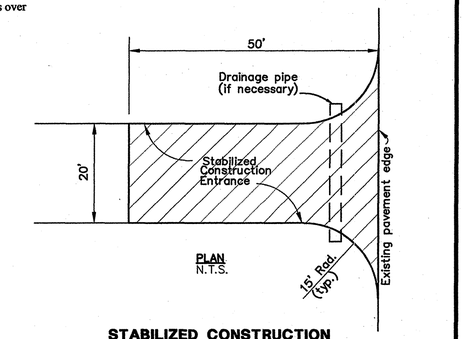
1. Steel posts which support the silt fence shall be installed on a slight angle toward the anticipated runoff source.
2. The toe of the silt fence shall be trenched in with a spade or mechanical trencher, so that the downslope face of the trench is flat and perpendicular to the line of flow.
3. The trench should be a minimum of six inches deep and four inches wide to allow for the silt fence to be laid in the ground and backfilled.
4. Silt fence should be securely fastened to each steel support post or to woven wire, which is in turn attached to the steel fence posts.
5. Inspection shall be frequent and repair or replacement shall be made promptly as needed.
6. Silt fence shall be removed when it has served its usefulness, so as not to block or impede storm flow or drainage.
7. Sediment trapped by this practice shall be disposed of in an approved site in a manner that will not contribute to additional siltation.
8. Accumulated silt shall be removed when it reaches a depth of six inches and disposed of in an approved spoil site or as in No. 7 above.
9. At point of surface flow concentration reinforce silt fence with wire mesh backing on downstream side of fence.
10. Filter fabric is to be Marafi 100X or approved equal. (Marafi, Inc.: 800-438-1855)



ELEVATION
N.T.S.

PLAN VIEW
SILT FENCE DETAIL
N.T.S.

SECTION
N.T.S.



PLAN
N.T.S.

STABILIZED CONSTRUCTION ENTRANCE

STABILIZED CONST. ENTRANCE GENERAL NOTES:

1. Crushed stone for construction entrance shall be 2"-3" at greatest dimension and shall be installed to a compacted depth of six inches.
2. Filter fabric is to be Marafi 100X or equal. (Marafi, Inc.: 800-438-1855)
3. If construction entrance crosses a drainage ditch, swale, etc., a drainage pipe shall be installed with min. 12 inches cover of crushed stone.

NOTE: SEE STORM WATER POLLUTION PREVENSION PLAN PREPARED SPECIFICALLY FOR THIS PROJECT FOR ADDITIONAL DETAIL REGARDING EROSION CONTROL & MONITORING.

BENCHMARKS:

1. "D" 1/2" IR, W of Ingram Rd. +- 1025' N of N edge of Lucas Rd. +- 6' E of fence. Elev. 637.08
2. "D" 1/2" IR, E of Ingram Rd. +- 2650' N of N edge of Lucas Rd. +- 28' E & 37' N of fence corner. Elev. 639.20

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
4	ADDED NOTES TO NTMWD NOTES & LOCATED EASEMENT	CMG	01/05/01
3	REVISED PER CITY COMMENTS	SSC	12/22/00
2	ADDED SILT FENCE ALONG R.O.W.	CMG	12/19/00
1	REVISED PER CITY COMMENTS	JMW	12/08/00

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STATE OF TEXAS · THOMAS K. JUHN · 81799 · LICENSED · PROFESSIONAL ENGINEER
1/8/01

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- Landscape Architecture
- Surveying

EROSION CONTROL PLAN

SADDLEBROOK

City of Lucas, Collin County, Texas

PROJECT NO. SK403

SHEET NO. 14

Plot info: Drawing: H:\Projects\SK403\dwg\SK403ER.dwg Plotted by: JMW Plot date: 12/8/00 Plot time: 9:10 am
Drawing info: JMW H:\Projects\SK403\dwg\SK403ER.dwg 12/8/00 9:24 am

DRAINAGE DESIGN THEORY

Q = CIA (Rational Method)

A = Area (Ac.)

= 123.51 Ac. Site → 73.60 Ac. Phase 1; 49.91 Ac. Phase 2

and

= 13.35 Ac. Offsite → 6.13 Ac. West; 7.22 Ac. East

136.86 Ac. Total Area

C = Coefficient of runoff

= 0.35 existing conditions

= Weighted C_w for developed conditions

C_w = [(Impervious Site) (1.00) + (Remaining Site) (.35) + (Offsite) (.50)] ÷ Total Area

Impervious Area:

Streets = 5.36 Ac (area from CADD)
Structure = [(70) (80) (67 units)] / 43560 = 8.61 Ac.
Driveway = [(50) (16) (67 units)] / 43560 = 1.23 Ac.
Misc. (Patio) = [(20) (20) (67 units)] / 43560 = 0.62 Ac.

Total = 15.82 Ac.

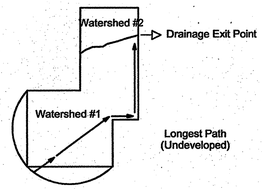
∴ C_w = [15.82 (1.0) + 107.69 (0.35) + 13.35 (0.5)] / 136.86

C_w = 0.44

T_c = Time of concentration (min.)

Point of interest is where drainage exits the project site. This takes place at one specific location for the entire project.

The site can be broken into two watersheds based on anticipated vertical design characteristics. See sketch #1 below.



Watershed #1 = 113.73 Ac.

Watershed #2 = 23.13 Ac.

T_c for Watershed #1 : (existing conditions)

$T_c = t_{overland} + t_{shallow} + t_{channel} + t_{pipe}$

$t_{overland} = .007 (nL_o)^{.8} / (P_2)^{.5} (S_o)^{.4}$

η = cultivated soil with >20% residual cover = 0.17
L_o = Max. 300 feet
P_2 = 4 in (Dallas value)
S_o = 2.7% average

$t_o = .007 [(0.17) (300)]^{.8} / (4)^{.5} (0.027)^{.4} = .1626 / .4716 = .3448$ hr.

t_o = 20.69 min.

$t_{shallow} = L_{sc} / 3600 (V_{sc})$ L_{sc} = from site plan; V_{sc} = grassed waterway @ 2.7% slope

Ram Gupta Hydrology Book
Fig. 12-7, Page 625
V_{sc} = 2.5 fps

t_{sc} = 1600 ft / 3600 (2.5 fps) = 1600 / 9000 = .1778 hr.

t_{sc} = 10.67 min.

$t_{channel} = L_{ch} / 3600 (V_{ch})$ L_{ch} = from site plan; V_{ch} = from Mannings Eq.

$V_{ch} = 1.486 (R^{2/3}) (S_{ch})^{1/2} / \eta$ R = A / P

A = (from typical section calculation) = 21.0 ft²
P = (from typical section) = 19.43 ft

∴R = 21.0 / 19.43 = 1.08

S_{ch} = 1.5% and η = 0.035 (grass channel)

$V_{ch} = 1.486 (1.08)^{2/3} (0.015)^{.5} / 0.035 = 0.1916 / 0.035 = 5.47$ fps

t_{ch} = 2800 ft / 3600 (5.47 fps) = 2800 / 19705.2 = .1421 hr.

t_{ch} = 8.53 min.

$t_{pipe} = L_p / 3600 (V_p) = 0$

$T_c = t_o + t_{sc} + t_{ch} + t_p$ = 20.69 + 10.67 + 8.53 + 0

T_c = 39.89 min. ⇒ $I_{wst#1}$ = 5.02 in / hr.

t_p = 0

∴T_c = 15.00 + 7.94 + 16.01 + 0

T_c = 38.95 min. ⇒ $I_{wst#1}$ = 5.10 in / hr.

However, by direction of the City Engineer a T_c of 20.0 min. shall be used for developed conditions.

T_c = 20.00 min. ⇒ $I_{wst#1}$ = 6.80 in / hr.

Developed Runoff:

Q_{100_D} = CIA

= 0.44 (6.80 in / hr.) (113.73 Ac.) + 0.44 (6.80 in / hr.) (23.13 Ac.)

= 340.28 cfs + 69.20 cfs

Q_{100_D} = 409.48 cfs

ΔQ to be detained = $Q_{100_D} - Q_{100_{EX}}$

= 409.48 cfs - 240.70 cfs

ΔQ to be detained = 168.78 cfs

Two detention ponds will be designed for this project and will be located in Watershed #1.

Detention Pond #1 shall be the downstream pond.
Detention Pond #2 shall be the upstream pond.

The release rate from Pond #1 shall be as follows:

$Q_{release} = Q_{in} + [Q_{100_{EX}} - Q_{100_D}] = Q_{in} - \Delta Q$

$Q_{release}$ = 340.28 – 168.78

$Q_{release}$ = 171.50 cfs allowable

T_c for Watershed #2 : (existing conditions)

$t_o = .007 [(0.17) (300)]^{.8} / (4)^{.5} (0.011)^{.4} = .1626 / .3293 = .4938$ hr.

t_o = 29.63 min.

$t_{sc} = 950$ ft / 3600 (1.6 fps) = 950 / 5760 = .1649 hr.

t_{sc} = 9.90 min.

$t_{ch} = t_p = 0$

$T_c = t_o + t_{sc}$ = 29.63 + 9.90

T_c = 39.53 min. ⇒ $I_{wst#2}$ = 5.05 in / hr.

Existing Runoff:

$Q_{100_{EX}}$ = CIA

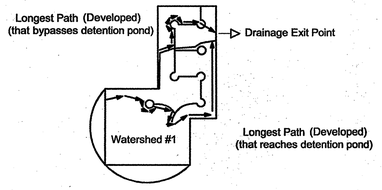
= 0.35 (5.02 in/hr) (113.73 Ac.) + 0.35 (5.05 in/hr.) (23.13 Ac.)

= 199.82 cfs + 40.88 cfs

$Q_{100_{EX}}$ = 240.70 cfs

T_c for Watershed #1 : (developed conditions)

See sketch #2 below.



T_c (for Developed flow reaching detention basin)

$T_c = t_o + t_{sc} + t_{ch} + t_p$

$t_o = .007 (\eta L_o)^{.8} / (P_2)^{.5} (S_o)^{.4}$ η = bermuda grass = 0.40; L_o = Max. 300 feet; P_2 = 4 in (Dallas value); S_o = 2.0% average

$= .007 ((0.40) (300))^{.8} / (4)^{.5} (0.020)^{.4}$

= .3224 / .4183 hr. = .7709 hr. = 46.25 min.

to be conservative, 15 min. will be used to be comparable with standard inlet time in a single family development with underground storm sewers.

t_o = 15.00 min.

$t_{sc} = L_{sc} / 3600 (V_{sc})$ L_{sc} = 1000 ft (from drainage area map); V_{sc} = 2.1 fps (from 1.9% sloped grassed waterway)

= 1000 / 3600 (2.1) = 1000 / 7560 hr. = .1323 hr.

t_{sc} = 7.94 min.

$t_{ch} = L_{ch} / 3600 (V_{ch})$ L_{ch} = 3400 ft (from drainage area map); V_{ch} (from Mannings Eq.)

$V_{ch} = 1.486 (R^{2/3}) (S_{ch})^{1/2} / \eta$ R = A / P

A = (from typical section calculation) = 32.44 ft²
P = (from typical section) = 25.34 ft

∴R = 32.44 / 25.34 = 1.28

S_{ch} = 0.5% and η = 0.035 (grass channel)

$V_{ch} = 1.486 (1.28)^{2/3} (0.005)^{.5} / 0.035 = 0.1239 / 0.035 = 3.54$ fps

$t_{ch} = 3400 / 3600 (3.54) = 3400 / 12744$ hr. = .2668 hr. = 16.01 min.

t_{ch} = 16.01 min.

STORMWATER DETENTION CALCULATIONS

Detention Pond #2

Storm Freq. 100 Yr.	Storm Duration (Min.)	Rain Fall Intensity (In./Hr.)	Future Conditions								
			C= 0.44								
			A= 69.32								
	15	7.52									
	20	6.80									
	30	5.75	C=	0.44		C=	0.44		C=	0.44	
	40	5.00	Tc=	15.00	Min.	Tc=	40.00	Min.	Tc=	70.00	Min.
	50	4.45	I=	7.52	In/Hr	I=	5.00	In/Hr	I=	3.65	In/Hr
	60	3.91	A=	69.32	Acres	A=	69.32	Acres	A=	69.32	Acres
	70	3.65	Q=	229.37	cfs	Q=	152.50	cfs	Q=	111.33	cfs
	80	3.35									
	90	3.08	C=	0.44		C=	0.44		C=	0.44	
			Tc=	20.00	Min.	Tc=	50.00	Min.	Tc=	80.00	Min.
			I=	6.80	In/Hr	I=	4.45	In/Hr	I=	3.35	In/Hr
			A=	69.32	Acres	A=	69.32	Acres	A=	69.32	Acres
			Q=	207.41	cfs	Q=	135.73	cfs	Q=	102.18	cfs
Present Conditions											
C=	0.35		C=	0.44		C=	0.44		C=	0.44	
Tc=	39.89	Min.	Tc=	30.00	Min.	Tc=	60.00	Min.	Tc=	90.00	Min.
I=	5.02	In/Hr	I=	5.75	In/Hr	I=	3.91	In/Hr	I=	3.08	In/Hr
A=	69.32	Acres	A=	69.32	Acres	A=	69.32	Acres	A=	69.32	Acres
Q=	121.80	cfs	Q=	175.38	cfs	Q=	119.26	cfs	Q=	93.94	cfs

Detention Pond Design

Storm Duration (Min.)	Storage Volume (cf)	Storage Volume (cy)
15	0	0
20	11260	417
30	38374	1421
40	49012	1815
50	50530	1872
60	32992	1222
70	31564	1169
80	14764	547
90	0	0
Design Volume:		1872
Design Volume (ac*ft)		1.16

	Elevation	Area Sq. Ft.	Area Ac.	Area Sq. Mi.
Bottom =	606	478	0.01	0.00
	607	9276	0.21	0.00
	608	22168	0.51	0.00
	609	39844	0.91	0.00
Top =	610	55865	1.28	0.00

Pond #1

Pond Elevation	Area Lower	Area Upper	Δh	Storage Storage (Cu.Ft.)	Storage Acre*ft	Storage Cumulative
606	0	478	0.00	0	0.00	0.00
607	478	9276	1.00	3953	0.09	0.09
608	9276	22168	1.00	15261	0.36	0.45
609	22168	39844	1.00	30577	0.71	1.16
610	39844	55865	1.00	47629	1.09	2.26

Total Pond Storage (Ac*Ft) with 1' of freeboard = 1.16

STORMWATER DETENTION CALCULATIONS

Detention Pond #1

Storm Freq. 100 Yr.	Storm Duration (Min.)	Rain Fall Intensity (In./Hr.)	Future Conditions								
			C= 0.44								
			A= 44.41								
	15	7.52									
	20	6.80									
	30	5.75	C=	0.44		C=	0.44		C=	0.44	
	40	5.00	Tc=	15.00	Min.	Tc=	40.00	Min.	Tc=	70.00	Min.
	50	4.45	I=	7.52	In/Hr	I=	5.00	In/Hr	I=	3.65	In/Hr
	60	3.91	A=	44.41	Acres	A=	44.41	Acres	A=	44.41	Acres
	70	3.65	Q=	146.94	cfs	Q=	97.70	cfs	Q=	71.32	cfs
	80	3.35									
	90	3.08	C=	0.44		C=	0.44		C=	0.44	
			Tc=	20.00	Min.	Tc=	50.00	Min.	Tc=	80.00	Min.
			I=	6.80	In/Hr	I=	4.45	In/Hr	I=	3.35	In/Hr
			A=	44.41	Acres	A=	44.41	Acres	A=	44.41	Acres
			Q=	132.87	cfs	Q=	86.95	cfs	Q=	65.46	cfs
Present Conditions											
C=	0.35		C=	0.44		C=	0.44		C=	0.44	
Tc=	39.89	Min.	Tc=	30.00	Min.	Tc=	60.00	Min.	Tc=	90.00	Min.
I=	5.02	In/Hr	I=	5.75	In/Hr	I=	3.91	In/Hr	I=	3.08	In/Hr
A=	44.41	Acres	A=	44.41	Acres	A=	44.41	Acres	A=	44.41	Acres
Q=	78.03	cfs	Q=	112.36	cfs	Q=	76.40	cfs	Q=	60.18	cfs

Detention Pond Design

Storm Duration (Min.)	Storage Volume (cf)	Storage Volume (cy)
15	29587	1096
20	58974	2184
30	99854	3698
40	125748	4657
50	155074	5743
60	145875	5403
70	109587	4059
80	87254	3232
90	32541	1205
Design Volume:		5743
Design Volume (ac*ft)		3.56

	Elevation	Area Sq. Ft.	Area Ac.	Area Sq. Mi.
Bottom =	600	46	0.00	0.00
	601	6283	0.14	0.00
	602	16972	0.39	0.00
	603	31164	0.72	0.00
	604	48464	1.11	0.00
	605	69090	1.59	0.00
Top =	606	93055	2.14	0.00

Pond #1

Pond Elevation	Area Lower	Area Upper	Δh	Storage Storage (Cu.Ft.)	Storage Acre*ft	Storage Cumulative
600	0	46	0.00	0	0.00	0.00
601	46	6283	1.00	2289	0.05	0.05
602	6283	16972	1.00	11194	0.26	0.31
603	16972	31164	1.00	23711	0.54	0.85
604	31164	48464	1.00	39497	0.91	1.76
605	48464	69090	1.00	58473	1.34	3.10
606	69090	93055	1.00	80776	1.85	4.96

Total Pond Storage (Ac*Ft) with 0.75' of freeboard = 3.56

RECORD DRAWING
THIS DRAWING HAS BEEN REVISED TO REFLECT THE ACTUAL CONSTRUCTION DETAILS AS CONTAINED IN THE RECORDS OF THE CONTRACTOR. ELEVATIONS SHOWN ON THIS PLAN WERE NOT FIELD VERIFIED.
JONES & BOYD, INC.
BY:
DATE: 4/22/01

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
1	Revise drainage calcs. based on new intensity.	JMW	12/18/00

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STATE OF TEXAS · THOMAS K. JUHN · 81799 · LICENSED PROFESSIONAL ENGINEER
4/22/01

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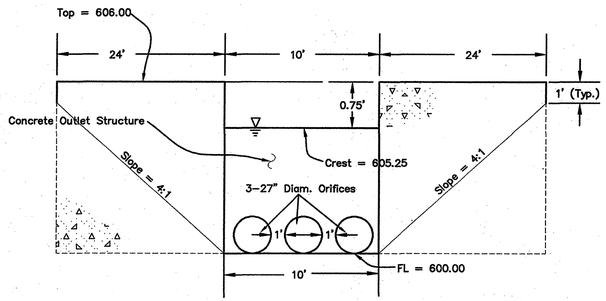
- Engineering
- Planning
- Landscape Architecture
- Surveying

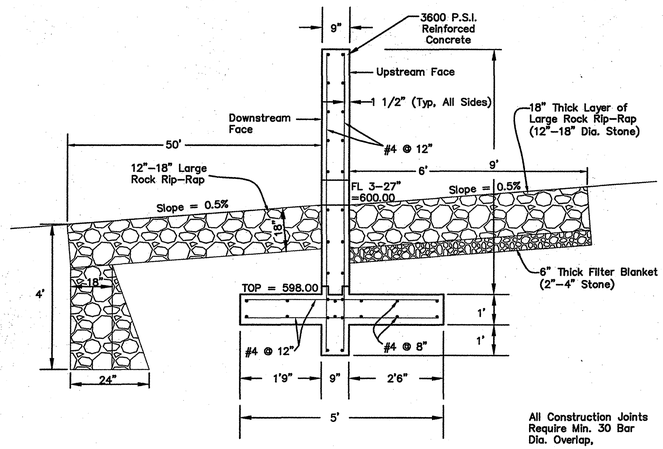
DRAINAGE DESIGN THEORY	PROJECT NO. SK403
SADDLEBROOK	SHEET NO. 15
CITY OF LUCAS, COLLIN COUNTY, TEXAS	

JMW H:\projects\SK403\dwg\SK403STORM-DETAILS.dwg 12/18/00 2:39 pm



PROFILE VIEW

N.T.S.



SIDE VIEW DETAIL

N.T.S.

POND#1 OUTLET STRUCTURE DETAIL

(Downstream)

Pond #1

Flow through a Circular Oriface in a Wall. $Q = C_c\,(A_o)\,(C_v\,(2\,(g)\,(\Delta H))^{1/2})$

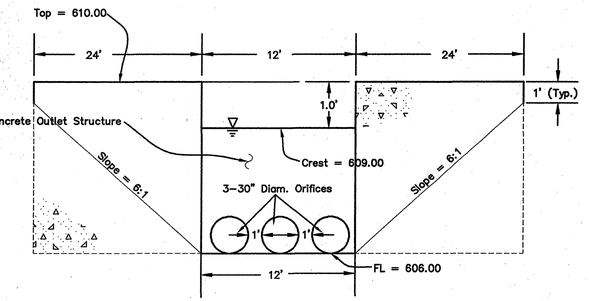
Diameter of the Oriface (in) = **27**
Number of Orifaces = **3**

A_o = Area of Orifice (ft^2) = 3.98
C_c = Coeff. of Contraction = 1.0
C_v = Coeff. of Velocity = 0.86

g = Gravity (ft^2/s) = 32.2

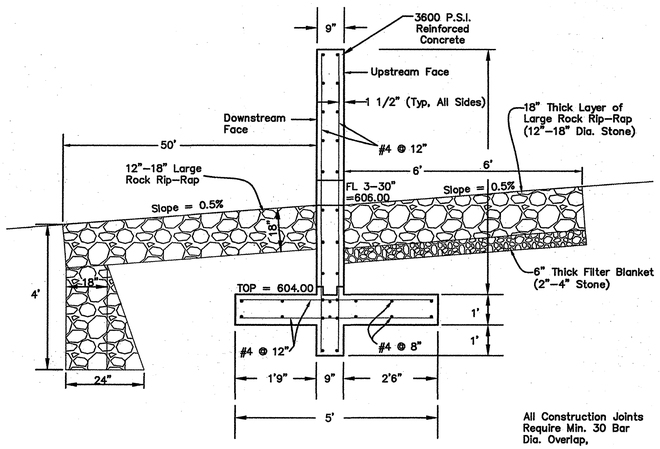
Allowable Release Rate = 171.50 cfs

H1 = Height of water in Pond above Oriface FL. (ft)	ΔH = H1 - H2 (ft)	Q = Flow out of the Pond (cfs)
1.5	0.375	50.41
2.0	0.875	77.01
2.5	1.375	96.53
3.0	1.875	112.72
3.5	2.375	126.87
4.0	2.875	139.58
4.5	3.375	151.24
5.0	3.875	162.05
100 Storm Elevation --> 5.25	4.125	167.20
5.5	4.375	172.19
6.0	4.875	181.76



PROFILE VIEW

N.T.S.



SIDE VIEW DETAIL

N.T.S.

POND#2 OUTLET STRUCTURE DETAIL

(Upstream)

Pond #2

Flow through a Circular Oriface in a Wall. $Q = C_c\,(A_o)\,(C_v\,(2\,(g)\,(\Delta H))^{1/2})$

Diameter of the Oriface (in) = **30**
Number of Orifaces = **3**

A_o = Area of Orifice (ft^2) = 4.91
C_c = Coeff. of Contraction = 1.0
C_v = Coeff. of Velocity = 0.86

g = Gravity (ft^2/s) = 32.2

Allowable Release Rate = 132.26 cfs

H1 = Height of water in Pond above Oriface FL. (ft)	ΔH = H1 - H2 (ft)	Q = Flow out of the Pond (cfs)
1.5	0.250	50.82
1.75	0.500	71.86
2.0	0.750	88.02
2.25	1.000	101.63
2.5	1.250	113.63
2.75	1.500	124.47
100 Storm Elevation --> 3.0	1.750	134.45
3.25	2.000	143.73
3.5	2.250	152.45
3.75	2.500	160.69
4.0	2.750	168.54

RECORD DRAWING
THIS DRAWING HAS BEEN REVISED TO REFLECT THE ACTUAL CONSTRUCTION DETAILS AS CONTAINED IN THE RECORDS OF THE CONTRACTOR. ELEVATIONS SHOWN ON THIS PLAN WERE NOT FIELD VERIFIED.
JONES & BOYD, INC.
BY:
DATE: 4/26/01

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
2	Corrected freeboard dimensions.	CMG	12/19/00
1	Add another outlet structure for 2nd pond.	JMW	12/18/00

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STATE OF TEXAS
THOMAS K. JUHN
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4/26/01

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- Surveying

DRAINAGE DESIGN THEORY

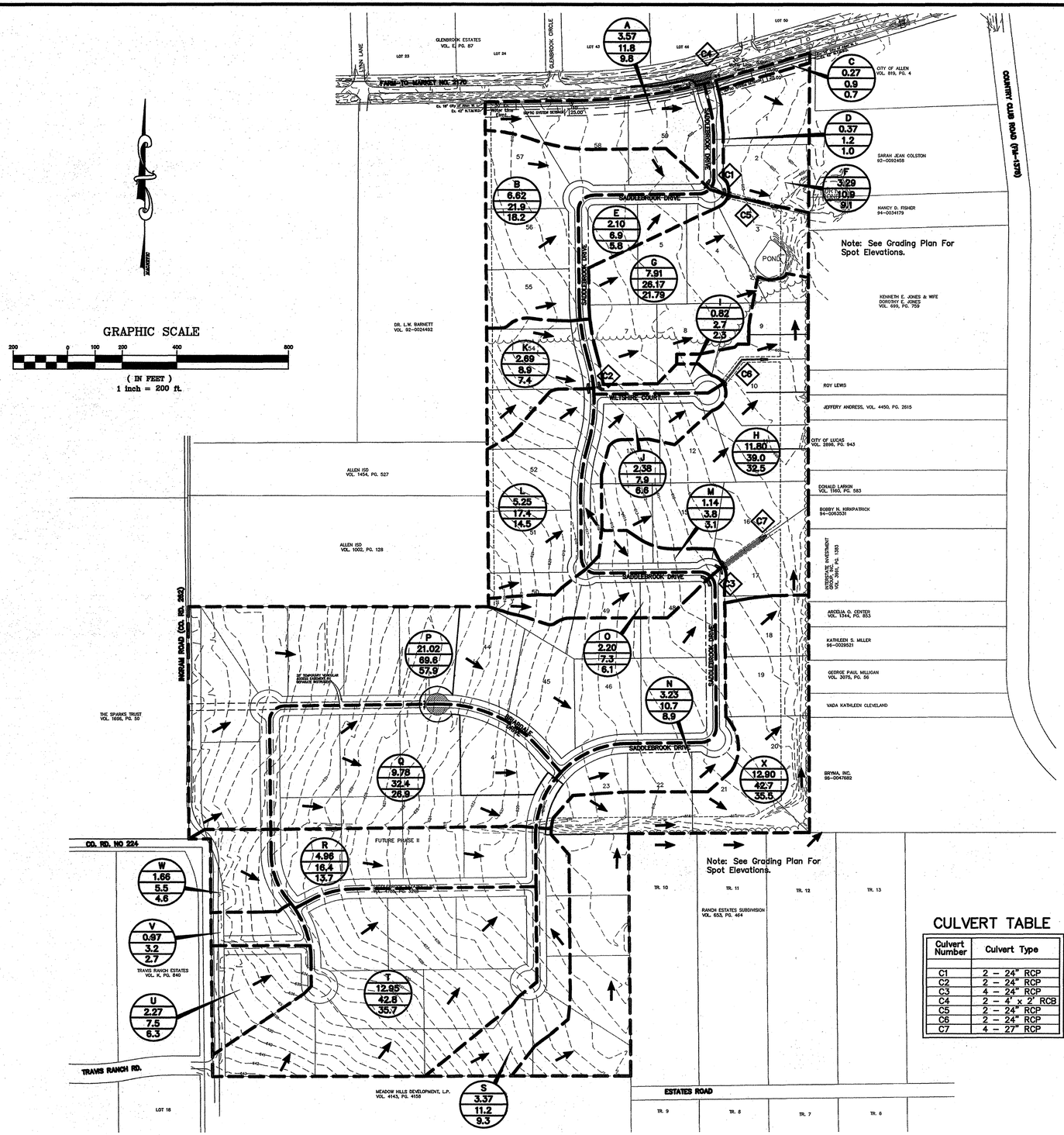
SADDLEBROOK

CITY OF LUCAS, COLLIN COUNTY, TEXAS

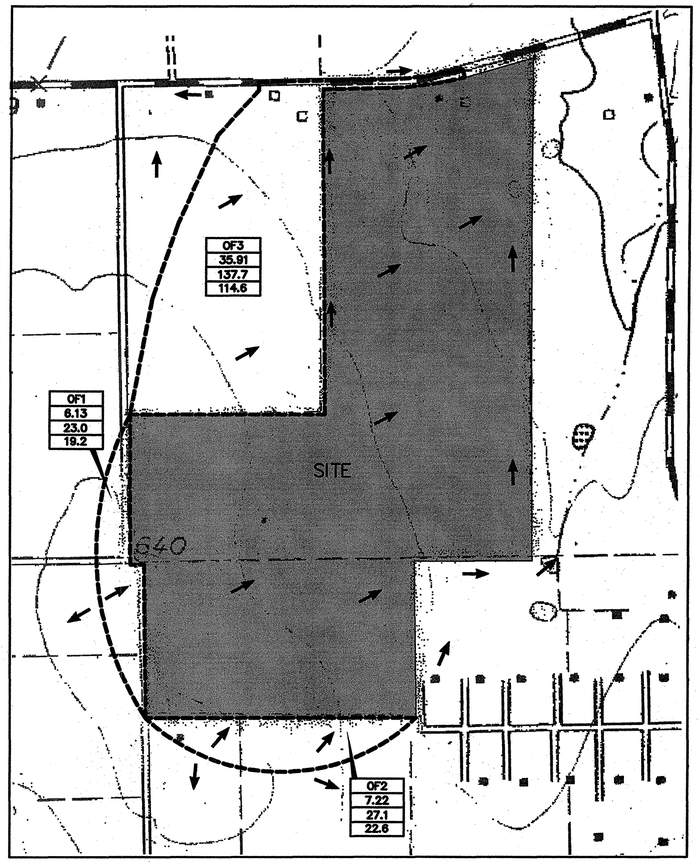
PROJECT NO. SK403

SHEET NO. 15A

JMW H:\projects\SK403\dwg\SK403STORM-DETAILS.dwg 12/18/00 4:22 pm



OFF-SITE DRAINAGE AREA MAP (1"=400')



OFF-SITE RUNOFF CALCULATIONS

Drainage Basin	Area (Acres) "A"	Runoff Coeff. "C"	Intensity (in./hr.) "I(25)"	Intensity (in./hr.) "I(100)"	Time(conc.) (minutes) T_C	Discharge (c.f.s.) "Q(25)"	Discharge (c.f.s.) "Q(100)"	Comment
OF1	6.13	0.5	6.26	7.52	15.0	19.2	23.0	Developed
OF2	7.22	0.5	6.26	7.52	15.0	22.6	27.1	Developed
OF3	35.91	0.51	6.26	7.52	15.0	114.6	137.7	Developed

ON-SITE RUNOFF CALCULATIONS

Drainage Basin	Area (Acres) "A"	Runoff Coeff. "C"	Intensity (in./hr.) "I(25)"	Intensity (in./hr.) "I(100)"	Time(conc.) (minutes) T_C	Discharge (c.f.s.) "Q(25)"	Discharge (c.f.s.) "Q(100)"	Comment
A	3.57	0.44	6.26	7.52	15.0	9.83	11.8	Developed
B	6.62	0.44	6.26	7.52	15.0	18.23	21.9	Developed
C	0.27	0.44	6.26	7.52	15.0	0.74	0.9	Developed
D	0.37	0.44	6.26	7.52	15.0	1.02	1.2	Developed
E	2.10	0.44	6.26	7.52	15.0	5.78	6.9	Developed
F	3.29	0.44	6.26	7.52	15.0	9.06	10.9	Developed
G	7.91	0.44	6.26	7.52	15.0	21.79	26.17	Developed
H	11.80	0.44	6.26	7.52	15.0	32.50	39.0	Developed
I	0.82	0.44	6.26	7.52	15.0	2.26	2.7	Developed
J	2.38	0.44	6.26	7.52	15.0	6.56	7.9	Developed
K	2.69	0.44	6.26	7.52	15.0	7.41	8.9	Developed
L	5.25	0.44	6.26	7.52	15.0	14.46	17.4	Developed
M	1.14	0.44	6.26	7.52	15.0	3.14	3.8	Developed
N	3.23	0.44	6.26	7.52	15.0	8.90	10.7	Developed
O	2.20	0.44	6.26	7.52	15.0	6.06	7.3	Developed
P	21.02	0.44	6.26	7.52	15.0	57.90	69.6	Developed
Q	9.78	0.44	6.26	7.52	15.0	26.94	32.4	Developed
R	4.96	0.44	6.26	7.52	15.0	13.66	16.4	Developed
S	3.37	0.44	6.26	7.52	15.0	9.28	11.2	Developed
T	12.95	0.44	6.26	7.52	15.0	35.67	42.8	Developed
U	2.27	0.44	6.26	7.52	15.0	6.25	7.5	Developed
V	0.97	0.44	6.26	7.52	15.0	2.67	3.2	Developed
W	1.66	0.44	6.26	7.52	15.0	4.57	5.5	Developed
X	12.90	0.44	6.26	7.52	15.0	35.53	42.7	Developed

CULVERT TABLE

Culvert Number	Culvert Type
C1	2 – 24" RCP
C2	2 – 24" RCP
C3	4 – 24" RCP
C4	2 – 4' x 2' RCB
C5	2 – 24" RCP
C6	2 – 24" RCP
C7	4 – 27" RCP

RECORD DRAWING
THIS DRAWING HAS BEEN REVISED TO REFLECT THE ACTUAL CONSTRUCTION DETAILS AS CONTAINED IN THE RECORDS OF THE CONTRACTOR. ELEVATIONS SHOWN ON THIS PLAN WERE NOT FIELD VERIFIED.
JONES & BOYD, INC.
BY:
DATE: 8/8/01

DRAINAGE THEORY
Q=CIA (25 yr. storm)
Q = Runoff (c.f.s.)
C = Runoff Coefficient
$C_{(undeveloped)} = 0.35$
$C_{(developed)} = 0.44$
I = Intensity (in/hr)
$I_{25} = 6.26$ (in/hr)
A = Area (Acres)

LEGEND
- 501 — Existing 1' Interval Contour
- 500 — Existing 5' Interval Contour
- Existing Storm Culvert
- Proposed Roadway Culvert and Headwall
- Proposed Drainage Area Divide
- Direction of Flow
- XX — Drainage Structure Lable
- XX / XX.XX / XX.X / XX.X — Prop. Drainage Area; Area (acres); 100 Yr. Runoff (c.f.s.); 25 Yr. Runoff (c.f.s.)
- XX / XX.XX / XX.X / XX.X — Offsite Drainage Area; Area (acres); 100 Yr. Runoff (c.f.s.); 25 Yr. Runoff (c.f.s.)

BENCHMARKS:
1. "D" 1/2" IR, W of Ingram Rd. +– 1025' N of N edge of Lucas Rd. +– 6' E of fence. Elev. 637.08
2. "D" 1/2" IR, E of Ingram Rd. +– 2650' N of N edge of Lucas Rd. +– 28' E & 37' N of fence corner. Elev. 639.20

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
3	Added City of Allen & NTMWD Easements	CMG	01/08/01
2	Revised Culvert Along F.M. 2170.	CMG	12/19/00
1	REVISED PER CITY COMMENTS	SC	12/08/00

The seal appearing on this document was authorized by Thomas K. Juhn, P.E. 81799 on Jan. 08, 2001. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

STATE OF TEXAS · THOMAS K. JUHN · 81799 · LICENSED PROFESSIONAL ENGINEER · 1/8/01

Jones & Boyd, Inc.
16800 Dallas Parkway, Suite 240
Dallas, Texas 75248
Tel: 972-248-7676
Fax: 972-248-1414
- Engineering
- Planning
- Landscape Architecture
- Surveying

DRAINAGE AREA MAP

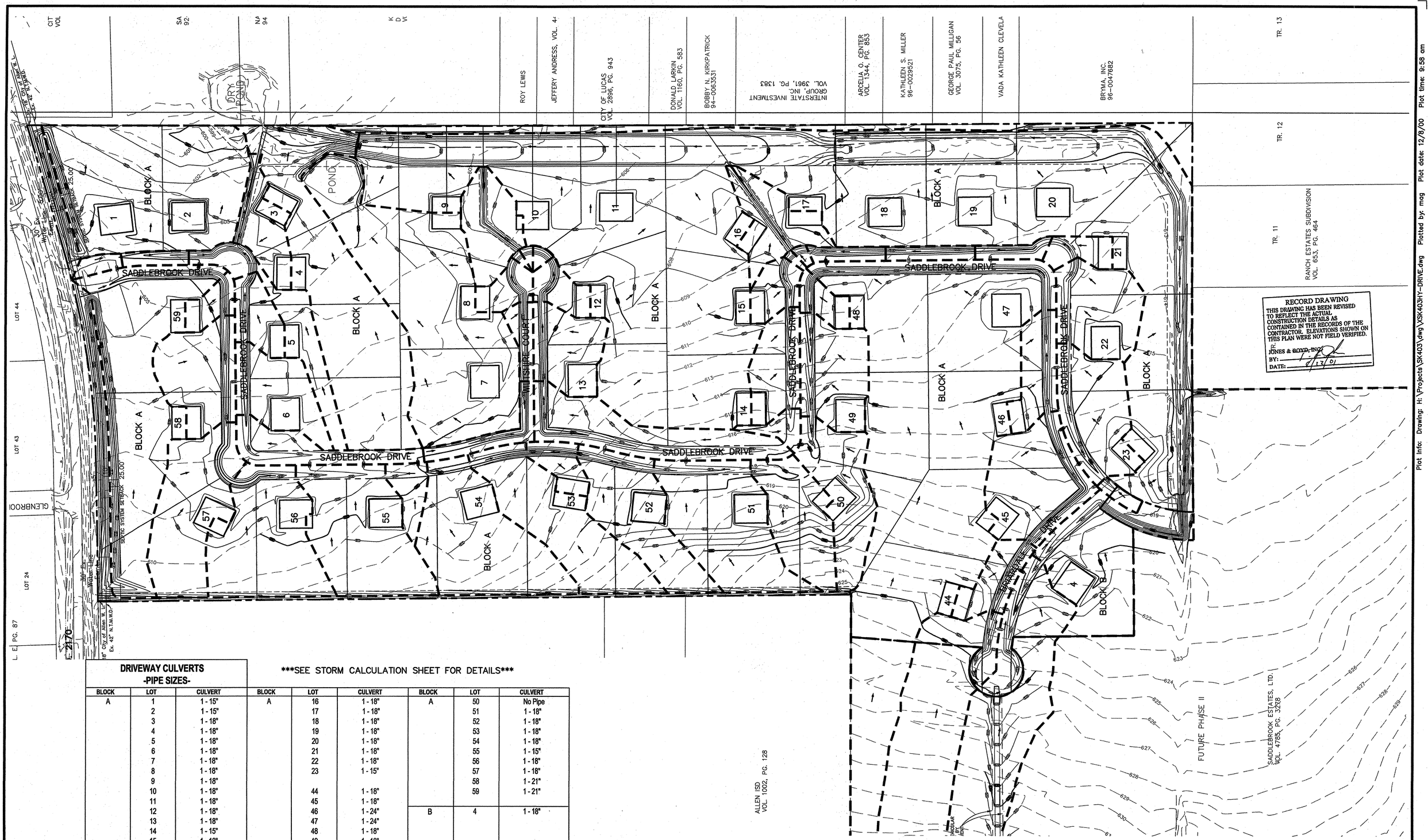
SADDLEBROOK

City of Lucas, Collin County, Texas

PROJECT NO. SK403

SHEET NO. 16

Plot Info: Drawing: H:\Projects\SK403\dwg\SK403HY.dwg Plotted by: mag Plot date: 12/8/00 Plot time: 8:26 am
Drawing Info: mag H:\Projects\SK403\dwg\SK403HY.dwg 12/8/00 10:08 am



DRIVEWAY CULVERTS -PIPE SIZES-

SEE STORM CALCULATION SHEET FOR DETAILS

BLOCK	LOT	CULVERT	BLOCK	LOT	CULVERT	BLOCK	LOT	CULVERT
A	1	1 - 15"	A	16	1 - 18"	A	50	No Pipe
	2	1 - 15"		17	1 - 18"		51	1 - 18"
	3	1 - 18"		18	1 - 18"		52	1 - 18"
	4	1 - 18"		19	1 - 18"		53	1 - 18"
	5	1 - 18"		20	1 - 18"		54	1 - 18"
	6	1 - 18"		21	1 - 18"		55	1 - 15"
	7	1 - 18"		22	1 - 18"		56	1 - 18"
	8	1 - 18"		23	1 - 15"		57	1 - 18"
	9	1 - 18"					58	1 - 21"
	10	1 - 18"		44	1 - 18"		59	1 - 21"
	11	1 - 18"		45	1 - 18"			
	12	1 - 18"		46	1 - 24"	B	4	1 - 18"
	13	1 - 18"		47	1 - 24"			
	14	1 - 15"		48	1 - 18"			
	15	1 - 18"		49	1 - 18"			

(1) ALL PIPES WITHIN RIGHT-OF-WAY SHALL BE REINFORCED CONCRETE PIPE PER CITY STANDARDS WITH 3:1 SLOPED END SECTIONS

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
2	Added City of Allen & NTMWD Easements.	CMG	01/08/01
1	Update proposed contours.	CMG	12/19/00

The seal appearing on this document was authorized by Thomas K. Juhn, P.E. 81799 on Jan. 08, 2001. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

STATE OF TEXAS — THOMAS K. JUHN — 81799 — LICENSED PROFESSIONAL ENGINEER — 1/8/01

Jones & Boyd, Inc.
16800 Dallas Parkway, Suite 240
Dallas, Texas 75248
Tel: 972-248-7676
Fax: 972-248-1414
- Engineering
- Planning
- Landscape Architecture
- Surveying

DRAINAGE AREA MAP

Driveway Culverts

SADDLEBROOK

CITY OF LUCAS, COLLIN COUNTY, TEXAS

PROJECT NO. SK403

SHEET NO. 17

Plot Info: Drawing: H:\Projects\SK403.dwg\SK403HY-DRIVE.dwg Plotted by: mag Plot date: 12/8/00 Plot time: 9:58 am

Drawing Info:

ROADWAY CULVERT CALCULATIONS

Theory: Rational Method

$Q = CiA$

$Tc = T_{overland} + T_{slow\ concentration} + T_{channel} + T_{pond(if\ applicable)}$

$Tc = \{(.007\ (n*L_o)^{.8})/(P^{.5}*S^{.4})\} + L_o/3600*V_{sc} + L_c/3600*V_c + L_{po}/3600*V_{po}$

Assume:

P = 4" per City of Dallas

n = 0.06 Mannings Coeff., Overland Flow

C = 0.6 per Table I City of Plano Runoff Coefficient for Single Family / Low Density

S = Weighted Average

Culvert	DA	Accum Area	L-overland	L-sc	L-channel	L-pipe	S-overland	S-sc	S-channel	S-pipe	V-sc	V-channel	T-overland	T-sc	T-channel	T-pipe	Tc	Tc	I-25yr	I-100yr	Run-Off	Q-25yr	Q-100yr	Tail Water	Culvert	Head Water	Velocity
Number	Number	(acres)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/ft)	(ft/ft)	(ft/ft)	(ft/sec)	(ft/sec)	(hr)	(hr)	(hr)	(hr)	(hr)	(min)	(in/hr)	(in/hr)	Coeff.	(cfs)	(cfs)	(ft)	(cfs)	(ft)	(fps)
C1	A	3.57	300.00	505.00	265.00	0.00	0.005	0.0080	0.0140	0.0000	1.42	3.27	0.29	0.10	0.02	0.00	0.416	24.932	5.25	6.33	0.44	8.25	9.95	2.36	23.54	2.75	3.75
	B	6.62	185.00	140.00	940.00	0.00	0.021	0.0100	0.0090	0.0000	1.60	3.45	0.11	0.02	0.08	0.00	0.416	24.932	5.25	6.33	0.44	15.29	18.44				
C2	K	2.69	300.00	160.00	55.00	0.00	0.020	0.0140	0.0050	0.0000	1.90	2.21	0.17	0.02	0.01	0.00	0.199	15.000	6.26	7.52	0.44	7.41	8.90	1.31	21.9	1.79	5.48
	L	5.25	170.00	150.00	675.00	0.00	0.047	0.0100	0.0090	0.0000	1.60	3.29	0.08	0.03	0.06	0.00	0.159	15.000	6.26	7.52	0.44	14.46	17.37				
C3	O	2.20	170.00	245.00	455.00	0.00	0.051	0.0100	0.0170	0.0000	1.60	3.30	0.07	0.04	0.04	0.00	0.155	15.000	6.26	7.52	0.44	6.06	7.28	2.37	64.0	2.97	5.09
	P	21.02	0.00	280.00	2795.00	0.00	0.000	0.0230	0.0100	0.0000	2.22	4.84	0.00	0.04	0.16	0.00	0.195	15.000	6.26	7.52	0.44	57.90	69.55				
C4	OF3	35.91	300.00	2145.00	1690.00	0.00	0.01	0.01	0.01	0.00	1.90	4.17	0.20	0.14	0.13	0.00	0.47	28.040	4.94	5.98	0.44	78.03	94.51	1.88	78.0	2.38	7.63
C5	A,B,D,E	12.66	300.00	505.00	265.00	80.00	0.005	0.0080	0.0140	0.0062	1.42	3.27	0.29	0.10	0.02	0.00	0.419	25.142	5.25	6.33	0.44	29.24	35.26	1.35	29.2	2.45	6.32
C6	I,J,K,L	11.14	170.00	150.00	1135.00	50.00	0.047	0.0100	0.0070	0.0050	1.60	3.16	0.08	0.03	0.08	0.00	0.180	15.000	6.26	7.52	0.44	30.68	36.86	1.38	30.7	2.45	6.47
C7	M,N,O,P	27.59	0.00	280.00	2795.00	72.00	0.000	0.0230	0.0100	0.0056	2.22	4.84	0.00	0.04	0.16	0.00	0.198	15.000	6.26	7.52	0.44	75.99	91.29	2.22	76.0	2.38	8.01

DRIVEWAY CULVERT CALCULATIONS

Theory: Rational Method: $Q=CiA$

$Tc = T_{overland} + T_{slow\ concentration} + T_{channel} + T_{pipe} + T_{pond(\ if\ applicable)}$

$Tc = \{(.007\ (n*Lof)^{.8})/(P^{.5}*S^{.4})\} + Lsc/3600*Vsc + Lc/3600*Vc + Lpi/3600*Vpi + Lpo/3600*Vpo$

Assume:

P = 4" per City of Lucas

n = 0.17 Mannings Coeff., Overland Flow

C = 0.44

S = Weighted Average

Driveway	Block & Lot	Accum Area	L-overland	L-sh. conc.	L-channel	S-overland	S-sc	V-sh. conc.	V-channel	T-overland	T-sh. conc.	T-channel	Tc	Tc	I-25yr	Run-Off	Q-25yr	Driveway Culvert
Number	Number	(acres)	(ft)	(ft)	(ft)	(ft/ft)	(ft/ft)	(ft/sec)	(ft/sec)	(hr)	(hr)	(hr)	(hr)	(min)	(in/hr)	Coeff.	(cfs)	("RCP)
1	A44	3.99	300.00	910.00	0.00	0.012	0.0209	2.20	2.09	0.38	0.11	0.00	0.497	29.814	4.74	0.44	8.32	18
2	A45	4.45	300.00	910.00	200.00	0.012	0.0209	2.20	2.06	0.38	0.11	0.03	0.524	31.432	4.60	0.44	9.01	18
3	A46	5.77	300.00	910.00	580.00	0.012	0.0209	2.20	2.04	0.38	0.11	0.08	0.576	34.553	4.40	0.44	11.17	24
4	A47	6.33	300.00	910.00	830.00	0.012	0.0209	2.20	2.02	0.38	0.11	0.11	0.611	36.662	4.30	0.44	11.98	24
5	B4	3.25	300.00	1000.00	0.00	0.017	0.0190	2.10	2.02	0.40	0.13	0.00	0.529	31.747	4.60	0.44	6.58	18
6	A23	0.13	0.00	150.00	0.00	N/A	0.0160	1.90	3.84	0.00	0.02	0.00	0.022	1.316	8.75	0.44	0.50	15
7	A22	1.26	0.00	150.00	300.00	N/A	0.0160	1.90	3.84	0.00	0.02	0.02	0.044	2.618	8.75	0.44	4.85	18
8	A21	2.26	0.00	150.00	560.00	N/A	0.0160	1.90	3.84	0.00	0.02	0.04	0.062	3.746	8.75	0.44	8.70	18
9	A20	2.52	0.00	150.00	660.00	N/A	0.0160	1.90	3.85	0.00	0.02	0.05	0.070	4.173	8.75	0.44	9.70	18
10	A19	2.67	0.00	150.00	860.00	N/A	0.0160	1.90	3.85	0.00	0.02	0.06	0.084	5.039	8.75	0.44	10.28	18
11	A18	2.85	0.00	150.00	1080.00	N/A	0.0160	1.90	3.85	0.00	0.02	0.08	0.100	5.991	8.75	0.44	10.97	18
12	A17	3.00	0.00	150.00	1280.00	N/A	0.0160	1.90	3.85	0.00	0.02	0.09	0.114	6.857	8.15	0.44	10.76	18
13	A49	1.04	300.00	100.00	0.00	0.027	0.0295	2.60	2.44	0.33	0.01	0.00	0.343	20.610	5.55	0.44	2.54	18
14	A48	1.98	300.00	100.00	250.00	0.027	0.0295	2.60	2.46	0.33	0.01	0.03	0.372	22.303	5.50	0.44	4.79	18
15	A14	0.17	130.00	90.00	0.00	0.004	0.0167	1.80	0.49	0.21	0.01	0.00	0.228	13.676	6.60	0.44	0.49	15
16	A15	0.83	130.00	90.00	250.00	0.004	0.0167	1.80	2.30	0.21	0.01	0.03	0.258	15.487	6.20	0.44	2.26	18
17	A16	1.16	130.00	90.00	380.00	0.004	0.0167	1.80	3.22	0.21	0.01	0.03	0.261	15.643	6.20	0.44	3.16	18
18	A51	0.98	300.00	170.00	0.00	0.035	0.0050	1.10	1.69	0.68	0.04	0.00	0.720	43.191	3.85	0.44	1.66	18
19	A52	2.70	300.00	170.00	250.00	0.035	0.0050	1.10	1.67	0.68	0.04	0.04	0.761	45.686	3.75	0.44	4.46	18
20	A53	3.98	300.00	170.00	450.00	0.035	0.0050	1.10	1.67	0.68	0.04	0.07	0.795	47.682	3.70	0.44	6.48	18
21	A55	0.28	170.00	110.00	0.00	0.010	0.0100	1.60	2.46	0.33	0.02	0.00	0.345	20.686	5.60	0.44	0.69	15
22	A56	2.05	170.00	110.00	220.00	0.010	0.0100	1.60	2.44	0.33	0.02	0.03	0.370	22.189	5.50	0.44	4.96	18
23	A57	2.76	170.00	110.00	410.00	0.010	0.0100	1.60	2.44	0.33	0.02	0.05	0.391	23.487	5.35	0.44	6.50	18
24	A58	4.23	170.00	110.00	600.00	0.010	0.0100	1.60	2.38	0.33	0.02	0.07	0.415	24.888	5.10	0.44	9.49	21
25	A59	5.22	170.00	110.00	860.00	0.010	0.0100	1.60	2.37	0.33	0.02	0.10	0.446	26.734	5.00	0.44	11.48	21
26	A13	1.28	300.00	390.00	0.00	0.003	0.0160	1.80	1.50	0.43	0.06	0.00	0.485	29.116	4.80	0.44	2.70	18
27	A12	2.03	300.00	390.00	190.00	0.003	0.0160	1.80	2.11	0.43	0.06	0.03	0.510	30.617	4.73	0.44	4.22	18
28	A11	2.33	300.00	390.00	320.00	0.003	0.0160	1.80	2.09	0.43	0.06	0.04	0.528	31.668	4.60	0.44	4.72	18
29	A10	2.37	300.00	390.00	400.00	0.003	0.0160	1.80	2.08	0.43	0.06	0.05	0.539	32.321	4.55	0.44	4.74	18
30	A7	0.31	0.00	370.00	0.00	N/A	0.0067	1.30	3.83	0.00	0.08	0.00	0.079	4.744	8.75	0.44	1.19	18
31	A8	0.52	0.00	370.00	190.00	N/A	0.0067	1.30	3.82	0.00	0.08	0.01	0.093	5.573	8.50	0.44	1.94	18
32	A9	0.80	0.00	370.00	290.00	N/A	0.0067	1.30	3.73	0.00	0.08	0.02	0.101	6.039	8.40	0.44	2.96	18
33	A6	0.62	0.00	500.00	0.00	N/A	0.0120	2.20	3.85	0.00	0.06	0.00	0.063	3.788	8.75	0.44	2.39	18
34	A5	1.46	0.00	500.00	180.00	N/A	0.0120	2.20	3.84	0.00	0.06	0.01	0.076	4.569	8.75	0.44	5.62	18
35	A4	1.88	0.00	500.00	350.00	N/A	0.0120	2.20	3.85	0.00	0.06	0.03	0.088	5.303	8.50	0.44	7.03	18
36	A3	2.67	0.00	500.00	420.00	N/A	0.0120	2.20	3.85	0.00	0.06	0.03	0.093	5.606	8.50	0.44	9.99	18
37	A1	0.11	0.00	40.00	0.00	N/A	0.0172	2.10	3.82	0.00	0.01	0.00	0.005	0.317	8.75	0.44	0.42	15
38	A2	0.24	0.00	100.00	170.00	N/A	0.0172	2.10	3.83	0.00	0.01	0.01	0.026	1.533	8.75	0.44	0.92	15
39	A54	1.86	300.00	180.00	0.00	0.023	0.0110	2.30	2.04	0.49	0.02	0.00	0.516	30.933	4.65	0.44	3.81	18
40	A50	NONE- DRIVEWAY TO MATCH PROPOSED GRADE																NO PIPE

BENCHMARKS:

1. "D" 1/2" IR, W of Ingram Rd. +- 1025' N of N edge of Lucas Rd. +- 6' E of fence.

2. "D" 1/2" IR, E of Ingram Rd. +- 2650' N of N edge of Lucas Rd. +- 28' E & 37' N of fence corner. Elev. 639.20

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
2	Revised Culvert Along F.M. 2170.	CMG	12/19/00
1	Added Driveway Culvert Calculation Information.	MG	12/8/00

The seal appearing on this document was authorized by Thomas K. Juhn, P.E. 81799 on Dec. 19, 2000. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

STATE OF TEXAS
THOMAS K. JUHN
81799
LICENSED
PROFESSIONAL ENGINEER
12/8/01

RECORD DRAWING
THIS DRAWING HAS BEEN REVISED TO REFLECT THE ACTUAL CONSTRUCTION DETAILS AS CONTAINED IN THE RECORDS OF THE CONTRACTOR. ELEVATIONS SHOWN ON THIS PLAN WERE NOT FIELD VERIFIED.
JONES & BOYD, INC.
BY:
DATE: 8/22/01

Jones & Boyd, Inc.
16800 Dallas Parkway, Suite 240
Dallas, Texas 75248
Tel: 972-248-7676
Fax: 972-248-1414
- Engineering
- Planning
- Landscape Architecture
- Surveying

DRAINAGE CALCULATIONS

SADDLEBROOK

City of Lucas, Collin County, Texas

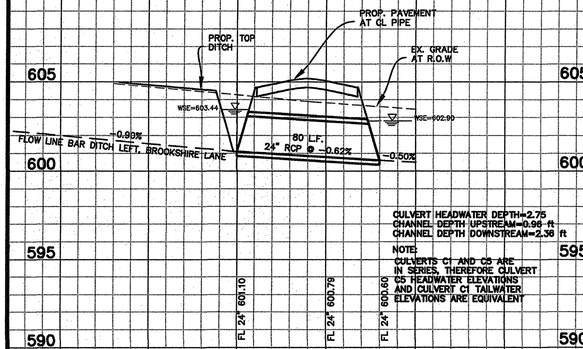
PROJECT NO. SK403

SHEET NO. 18

Plot Info: Drawing: H:\Projects\SK403\dwg\SK403HY.dwg Plotted by: mag Plot date: 12/8/00 10:08 am
Drawing Info: mag H:\Projects\SK403\dwg\SK403HY.dwg 12/8/00 8:26 am Plot time

CULVERT C1

CROSSING SADDLEBROOK DR. @ STA. 4+28
INSTALL: 2–24" CULVERT & HEADWALL (see details)

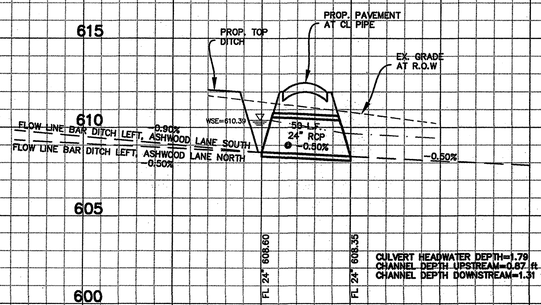


CULVERT HEADWATER DEPTH=2.75
CHANNEL DEPTH UPSTREAM=0.96 ft
CHANNEL DEPTH DOWNSTREAM=2.36 ft

NOTE:
CULVERTS C1 AND C5 ARE IN SERIES, THEREFORE CULVERT C5 HEADWATER ELEVATIONS AND CULVERT C1 TAILWATER ELEVATIONS ARE EQUIVALENT

CULVERT C2

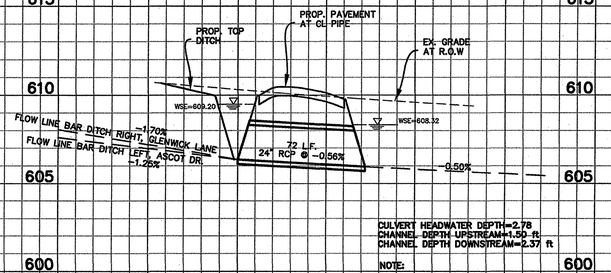
CROSSING SADDLEBROOK DR. NORTH OF WILTSHIRE CT.
INSTALL: 2–24" CULVERT & HEADWALL (see details)



CULVERT HEADWATER DEPTH=1.79
CHANNEL DEPTH UPSTREAM=0.87 ft
CHANNEL DEPTH DOWNSTREAM=1.31 ft

CULVERT C3

CROSSING SADDLEBROOK DR. @ STA. 27+37
INSTALL: 4–24" CULVERT & HEADWALL (see details)

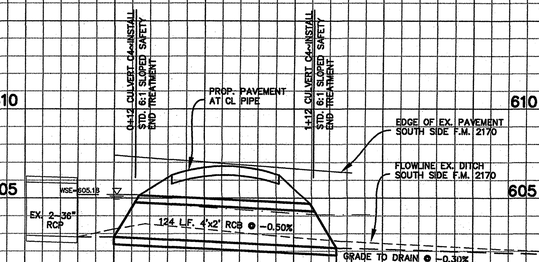


CULVERT HEADWATER DEPTH=2.78
CHANNEL DEPTH UPSTREAM=1.50 ft
CHANNEL DEPTH DOWNSTREAM=2.37 ft

NOTE:
CULVERTS C3 AND C7 ARE IN SERIES, THEREFORE CULVERT C7 HEADWATER ELEVATIONS AND CULVERT C3 TAILWATER ELEVATIONS ARE EQUIVALENT

CULVERT C4

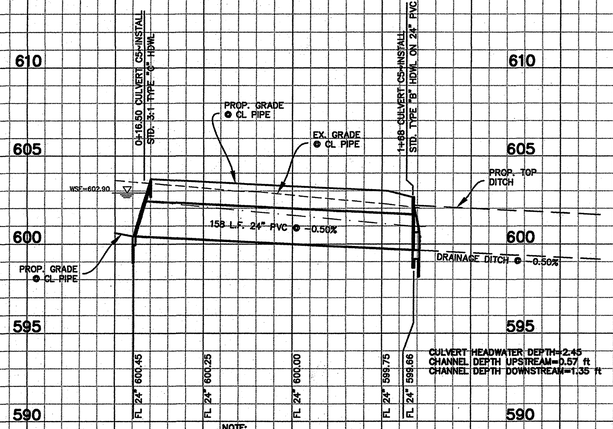
CROSSING SADDLEBROOK DR. @ F.M. 2170
INSTALL: 2–4'x2' BOX CULVERT & HEADWALL (see details)



CULVERT HEADWATER DEPTH=2.38
CHANNEL DEPTH UPSTREAM=1.88 ft
CHANNEL DEPTH DOWNSTREAM=1.88 ft

CULVERT C5

BETWEEN LOTS 2 & 3, BLOCK A
INSTALL: 2–24" PVC CULVERT & HEADWALL (see details)

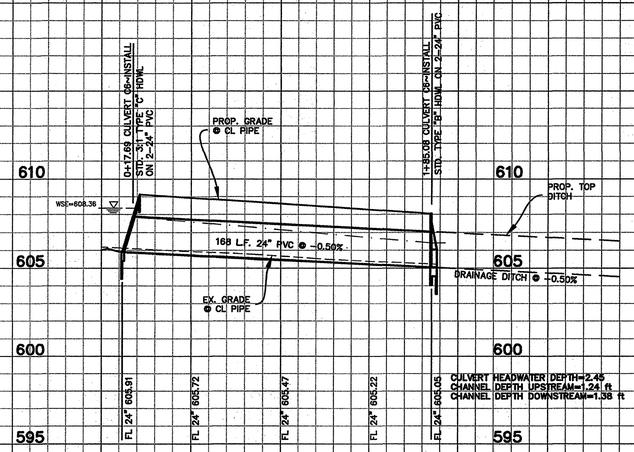


CULVERT HEADWATER DEPTH=2.45
CHANNEL DEPTH UPSTREAM=0.57 ft
CHANNEL DEPTH DOWNSTREAM=1.35 ft

NOTE:
CULVERTS C1 AND C5 ARE IN SERIES, THEREFORE CULVERT C5 HEADWATER ELEVATIONS AND CULVERT C1 TAILWATER ELEVATIONS ARE EQUIVALENT

CULVERT C6

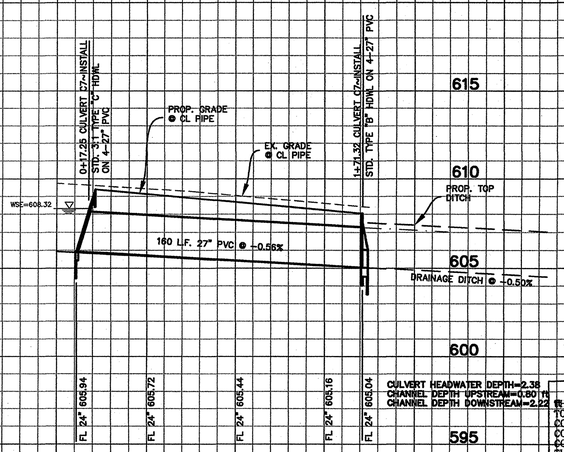
BETWEEN LOTS 9 & 10, BLOCK A
INSTALL: 2–24" PVC CULVERT & HEADWALLS (see details)



CULVERT HEADWATER DEPTH=2.45
CHANNEL DEPTH UPSTREAM=1.24 ft
CHANNEL DEPTH DOWNSTREAM=1.68 ft

CULVERT C7

BETWEEN LOTS 16 & 17, BLOCK A
INSTALL: 4–27" PVC CULVERT & HEADWALLS (see details)



CULVERT HEADWATER DEPTH=2.38
CHANNEL DEPTH UPSTREAM=0.80 ft
CHANNEL DEPTH DOWNSTREAM=2.22 ft

RECORD DRAWING
THIS DRAWING HAS BEEN REVISED TO REFLECT THE ACTUAL CONSTRUCTION DETAILS AS CONTAINED IN THE RECORDS OF THE CONTRACTOR. ELEVATIONS SHOWN ON THIS PLAN WERE NOT FIELD VERIFIED.
JONES & BOYD, INC.
BY: _____
DATE: 3/6/01

BENCHMARKS:

1. "D" 1/2" IR, W of Ingram Rd. +– 1025' N of N edge of Lucas Rd. +– 6' E of fence. Elev. 637.08
2. "D" 1/2" IR, E of Ingram Rd. +– 2650' N of N edge of Lucas Rd. +– 28' E & 37' N of fence corner. Elev. 639.20

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
2	REVISE CULVERTS @ F.M. 2170 & SADDLEBROOK	SC	12/19/00
1	REVISED PER CITY COMMENTS	SC	12/08/00

The seal appearing on this document was authorized by Thomas K. Juhn, P.E. 81799 on Dec. 19, 2000. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

STATE OF TEXAS · THOMAS K. JUHN · 81799 · LICENSED · PROFESSIONAL ENGINEER

Jones & Boyd, Inc.
16800 Dallas Parkway, Suite 240
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Tel: 972-248-7676
Fax: 972-248-1414

- Engineering
- Planning
- Landscape Architecture
- Surveying

ROADWAY CULVERT PROFILES

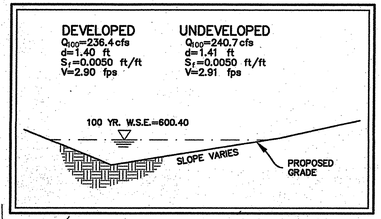
SADDLEBROOK

City of Lucas, Collin County, Texas

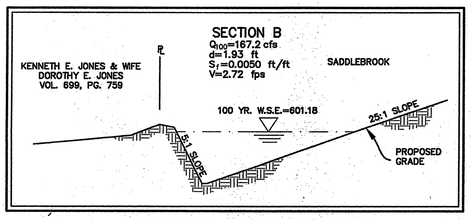
PROJECT NO. SK403
SHEET NO. 19

Plot Info: Drawing: H:\JBIMENU\blocks\tags.dwg Plotted by: jw Plot date: 8/9/00 Plot time: 2:27 pm
Drawing Info: JMW H:\projects\SK403\dwg\SK403STA.dwg 12/6/00 2:39 pm

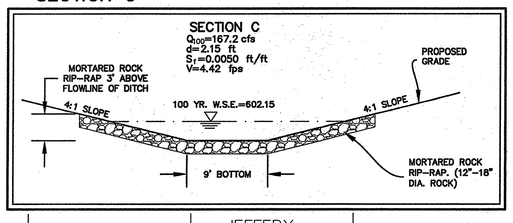
SECTION A

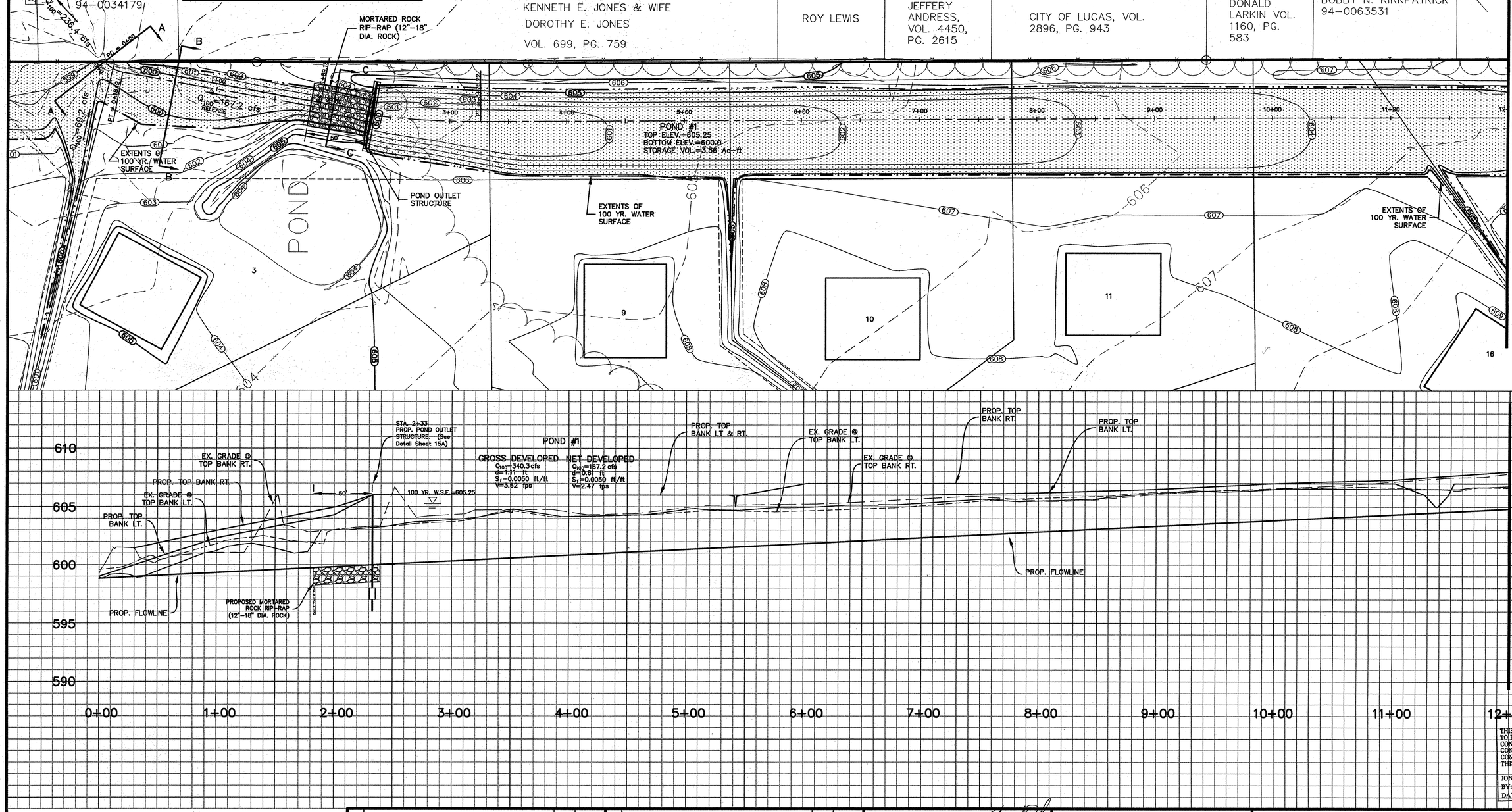


SECTION B



SECTION C





RECORD DRAWING
THIS DRAWING HAS BEEN REVISED TO REFLECT THE ACTUAL CONSTRUCTION DETAILS AS CONTAINED IN THE RECORDS OF THE CONTRACTOR. ELEVATIONS SHOWN ON THIS PLAN WERE NOT FIELD VERIFIED.
JONES & BOYD, INC.
BY:
DATE: 8/21/01

BENCHMARKS:

1. "I" 1/2" IR, W of Ingram Rd. +- 1025' N of N edge of Lucas Rd. +- 6' E of fence. Elev. 637.08
2. "I" 1/2" IR, E of Ingram Rd. +- 2650' N of N edge of Lucas Rd. +- 28' E & 37' N of fence corner. Elev. 639.20

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
3	ADDED SECTION B	SC	12/22/00
2	REVISED PER CITY COMMENTS	SC	12/19/00
1	REVISED PER CITY COMMENTS	SC	12/08/00

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STATE OF TEXAS
THOMAS K. JUHN
81799
LICENSED
PROFESSIONAL ENGINEER
12/07

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- Engineering
- Planning
- Landscape Architecture
- Surveying

POND & DITCH PROFILE

STA. 0+00 to 12+00

SADDLEBROOK

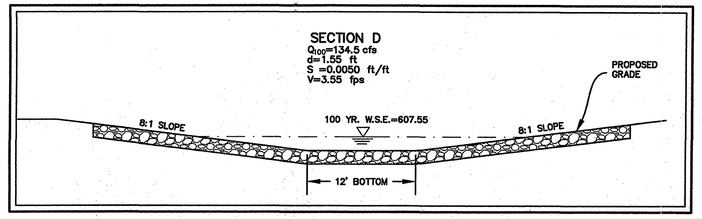
City of Lucas, Collin County, Texas

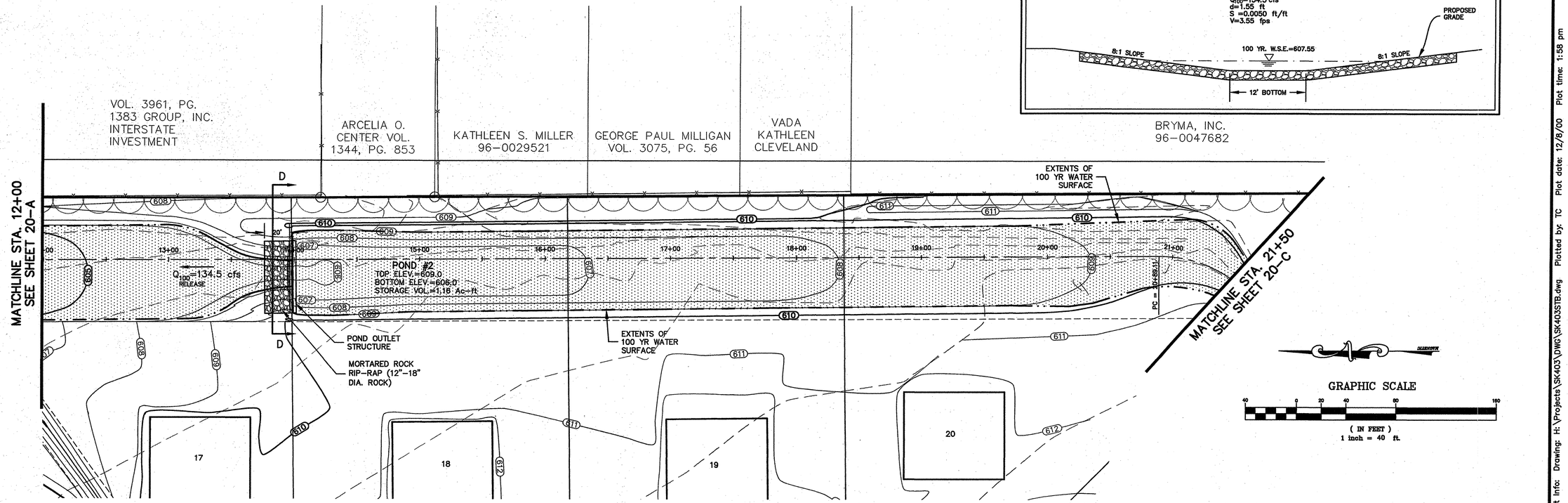
PROJECT NO. SK403

SHEET NO. 20A

Plot Info: Drawing: H:\Projects\SK403\DWG\SK403STB.dwg Plotted by: TC Plot date: 12/8/00 Plot time: 1:58 pm

SECTION D

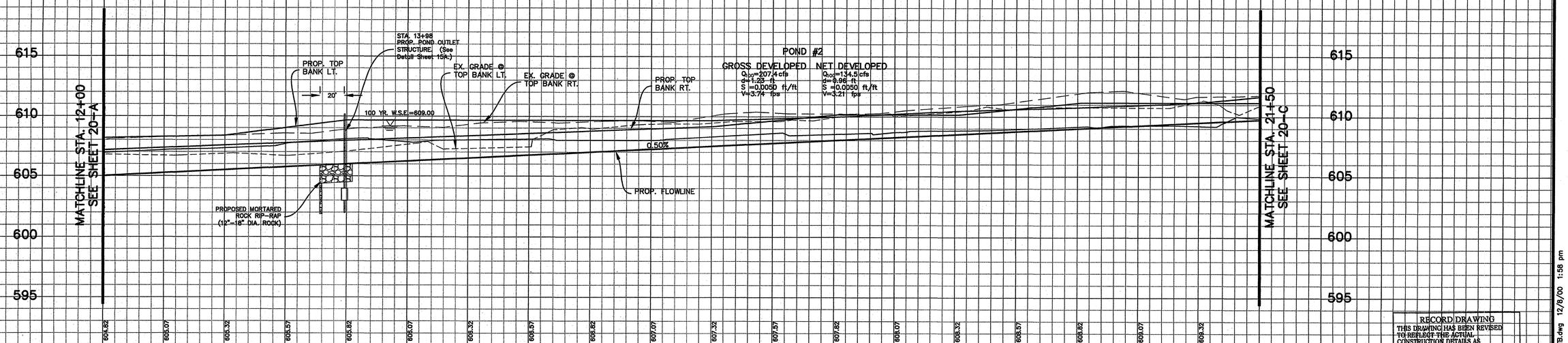




GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.



RECORD DRAWING
THIS DRAWING HAS BEEN REVISED TO REFLECT THE ACTUAL CONSTRUCTION DETAILS AS CONTAINED IN THE RECORDS OF THE CONTRACTOR. ELEVATIONS SHOWN ON THIS PLAN WERE NOT FIELD VERIFIED.
JONES & BOYD, INC.
BY:
DATE: 8-2-04

BENCHMARKS:

1. "I" 1/2" IR, W of Ingram Rd. +- 1025' N of N edge of Lucas Rd. +- 6' E of fence. Elev. 637.08
2. "I" 1/2" IR, E of Ingram Rd. +- 2650' N of N edge of Lucas Rd. +- 28' E & 37' N of fence corner. Elev. 639.20

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
2	REVISED PER CITY COMMENTS	SC	12/19/00
1	REVISED PER CITY COMMENTS	SC	12/08/00

The seal appearing on this document was authorized by Thomas K. Juhn, P.E. 81799 on Dec. 22, 2000. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

STATE OF TEXAS
THOMAS K. JUHN
81799
LICENSED
PROFESSIONAL ENGINEER
12/8/00

Jones & Boyd, Inc.
16800 Dallas Parkway, Suite 240
Dallas, Texas 75248
Tel: 972-248-7676
Fax: 972-248-1414

- Engineering
- Planning
- Landscape Architecture
- Surveying

POND & DITCH PROFILE

STA. 12+00 to 21+50

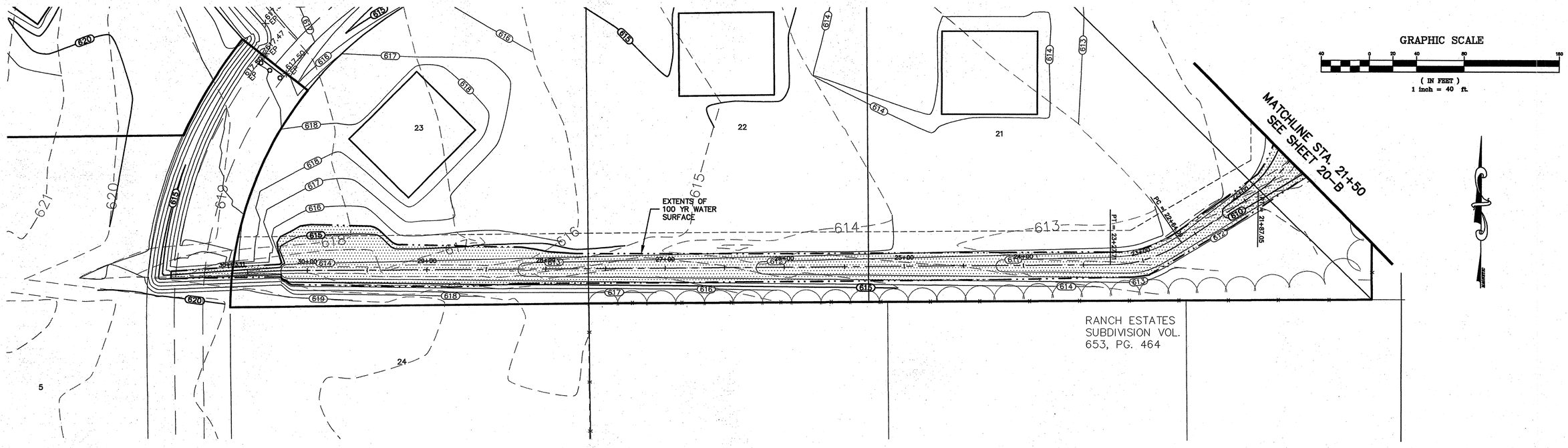
SADDLEBROOK

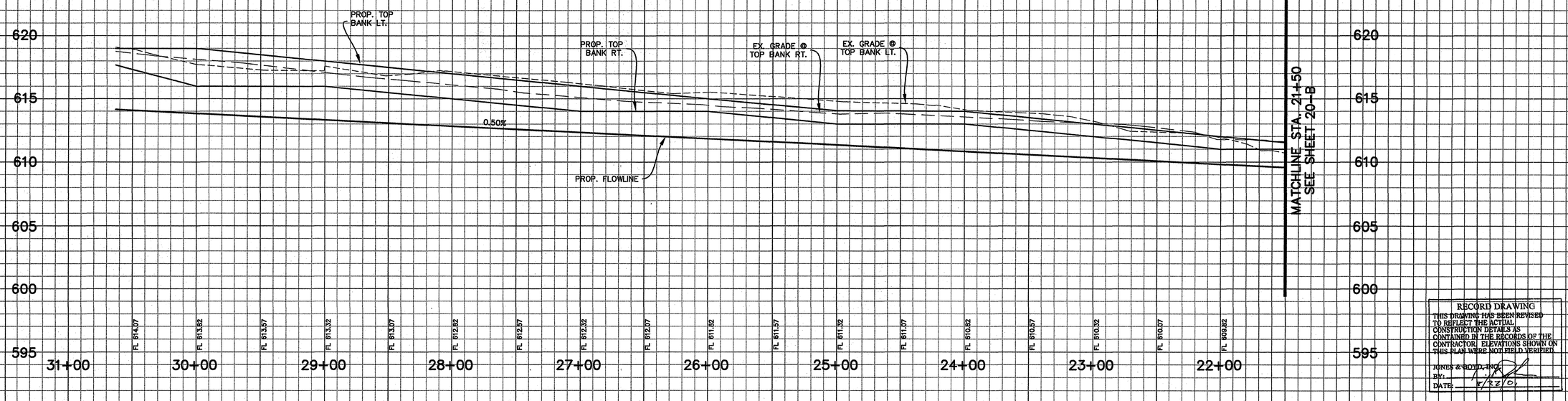
City of Lucas, Collin County, Texas

PROJECT NO. SK403

SHEET NO. 20B

Plot Info: Drawing: H:\Projects\SK403\DWG\SK403STB.dwg Plotted by: TC Plot date: 12/8/00 Plot time: 1:58 pm
Drawing Info: TC H:\Projects\SK403\DWG\SK403STB.dwg 12/8/00 1:58 pm





RECORD DRAWING
THIS DRAWING HAS BEEN REVISED TO REFLECT THE ACTUAL CONSTRUCTION DETAILS AS CONTAINED IN THE RECORDS OF THE CONTRACTOR. ELEVATIONS SHOWN ON THIS PLAN WERE NOT FIELD VERIFIED.
JONES & BOYD, INC.
BY:
DATE: 5/22/01

BENCHMARKS:

1. "D" 1/2" IR, W of Ingram Rd. +– 1025' N of N edge of Lucas Rd. +– 6' E of fence. Elev. 637.08
2. "D" 1/2" IR, E of Ingram Rd. +– 2650' N of N edge of Lucas Rd. +– 28' E & 37' N of fence corner. Elev. 639.20

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
2	REVISED PER CITY COMMENTS	SC	12/19/00
1	REVISED PER CITY COMMENTS	SC	12/08/00

The seal appearing on this document was authorized by Thomas K. Juhn, P.E. 81799 on Dec. 19, 2000. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

STATE OF TEXAS · THOMAS K. JUHN · 81799 · LICENSED PROFESSIONAL ENGINEER · 12/19/00

Jones & Boyd, Inc.
16800 Dallas Parkway, Suite 240
Dallas, Texas 75248
Tel: 972-248-7676
Fax: 972-248-1414
- Engineering
- Planning
- Landscape Architecture
- Surveying

POND & DITCH PROFILE

STA. 21+50 to End

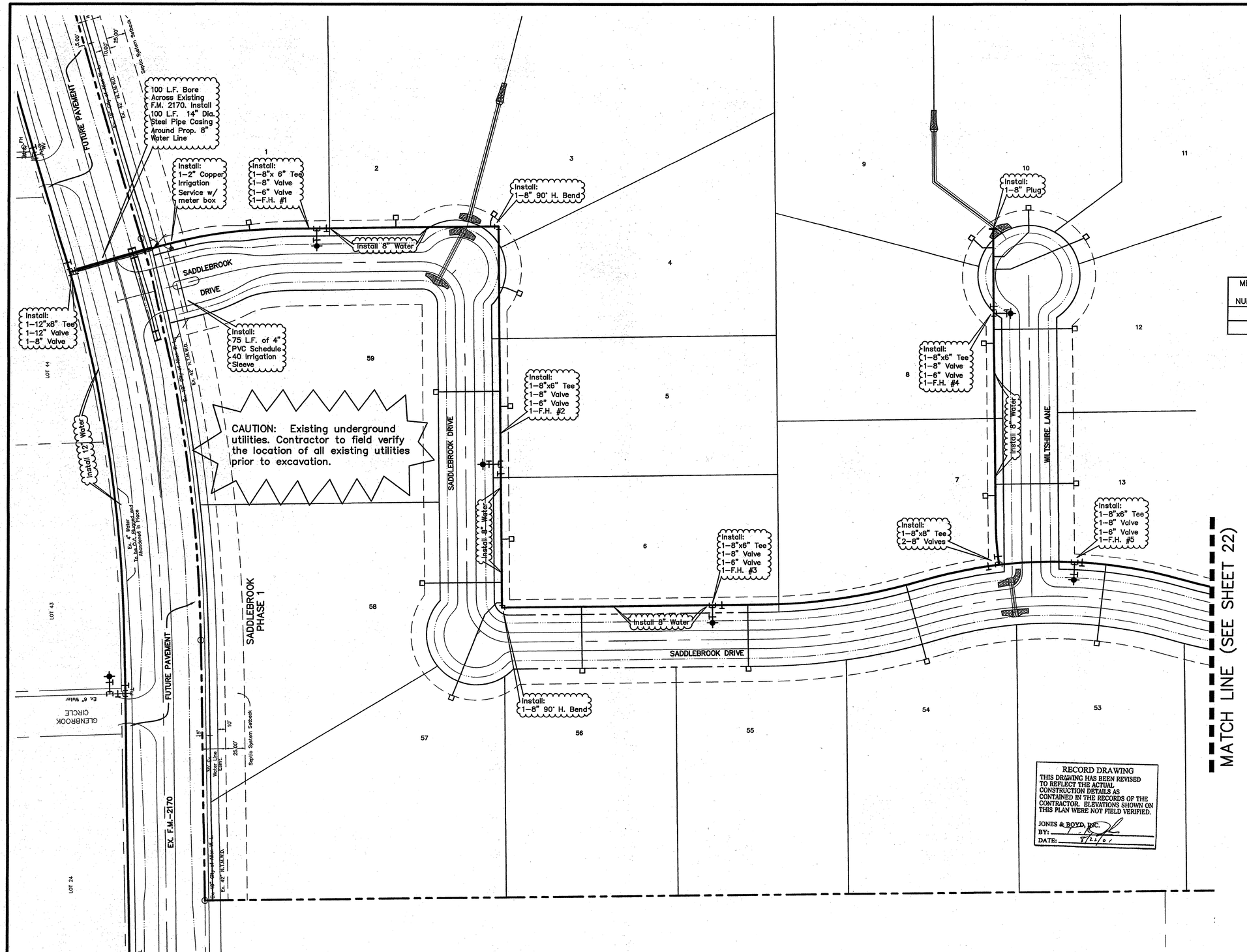
SADDLEBROOK

City of Lucas, Collin County, Texas

PROJECT NO. SK403

SHEET NO. 20C

Plot Info: Drawing: H:\Projects\SK403\DWG\SK403STB.dwg Plotted by: TC Plot date: 12/8/00 Plot time: 1:58 pm
Drawing Info: TC H:\Projects\SK403\DWG\SK403STB.dwg 12/8/00 1:58 pm



GRAPHIC SCALE

60 0 30 60 120 240

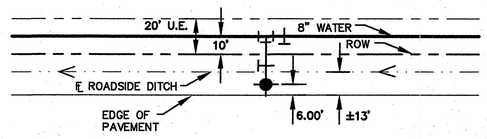
(IN FEET)
1 inch = 60 ft.

LEGEND

- Prop. Water Line and Valve
- Prop. Fire Hydrant
- Prop. Water Service
- Exist. Fire Hydrant
- Exist. Water Line and Valve
- 1" Service & 3/4" Meter

WATER METER SCHEDULE

METER NUMBER	WATER SERVICE SIZE	WATER METER SIZE	METER	
			DOM.	IRR.
1	1"	3/4"	X	
39	2"	2"		X



FIRE HYDRANT LOCATION DETAIL
1" = 40'

RECORD DRAWING
THIS DRAWING HAS BEEN REVISED TO REFLECT THE ACTUAL CONSTRUCTION DETAILS AS CONTAINED IN THE RECORDS OF THE CONTRACTOR. ELEVATIONS SHOWN ON THIS PLAN WERE NOT FIELD VERIFIED.
JONES & BOYD, INC.
BY:
DATE: 8/21/01

NTMWD NOTES

1. North Texas Municipal Water District (NTMWD) 42-inch and 20-inch water transmission pipelines are located within the limits of the construction.
2. Operation of heavy earthmoving equipment, compaction equipment or heavy construction equipment, such as concrete trucks, shall be restricted to specific crossing points across NTMWD easements, as approved by the NTMWD. The crossings shall be designated and verified to provide a minimum of five feet of cover.
3. To assure that placing of significant loads over the NTMWD pipeline does not damage the existing pipeline, no materials shall be stockpiled on the NTMWD easement, without authorization from the NTMWD. If the contractor desires to use NTMWD's easement for stockpile of materials, contact NTMWD Engineering at (972) 442-5405 so your plans for use of NTMWD's easement can be reviewed.
4. In areas where the cover between the top of the NTMWD pipeline and the bottom of the sub-grade is three (3) feet or less, it is requested that the sub-grade preparation be deleted and thickened pavement section be used to limit construction activities over the pipeline.
5. Crossing of the NTMWD easement with other utilities, such as TV cable, phone, gas and electric, shall be coordinated with the NTMWD to avoid damage to the NTMWD facilities.
6. Outdoor lighting, landscaping, screening walls or other facilities shall not be installed in NTMWD easements without written approval of the NTMWD.
7. Unless otherwise shown or required a minimum of one-foot clearance shall be provided for all utilities crossing the NTMWD pipelines.
8. The contractor shall contact NTMWD Engineering at (972) 442-5405 at least 48 hours prior to performing any work in the vicinity of the NTMWD facilities.
9. Water and Sewer lines crossing the NTMWD easements shall be installed in compliance with the Rules and Regulations for Public Water Systems, Paragraphs 290.44 (e), Location of Water Lines.
10. Septic systems are not permitted within NTMWD easements.
11. Excavation adjacent to NTMWD pipelines, manholes and other appurtenances to install proposed improvements shall be performed so that the manholes, pipelines or appurtenances are not displaced or damaged. Any damage to the manholes, pipelines or appurtenances shall be repaired to the satisfaction of the NTMWD. Further, any cost for repair of damage to the manholes, pipelines or appurtenances resulting from construction by the developer or contractor will be the responsibilty for the developer.

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
3	ADDED NOTES TO NTMWD NOTES	CMG	01/05/01
2	EXTEND BORE ACCROSS R.O.W. PER TxDOT COMMENTS	TC	12/19/00
1	REVISED PER CITY COMMENTS	TC	12/08/00

The seal appearing on this document was authorized by Thomas K. Juhn, P.E. 81799 on Jan. 05, 2001. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

STATE OF TEXAS · THOMAS K. JUHN · 81799 · LICENSED · PROFESSIONAL ENGINEER

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Dallas, Texas 75248
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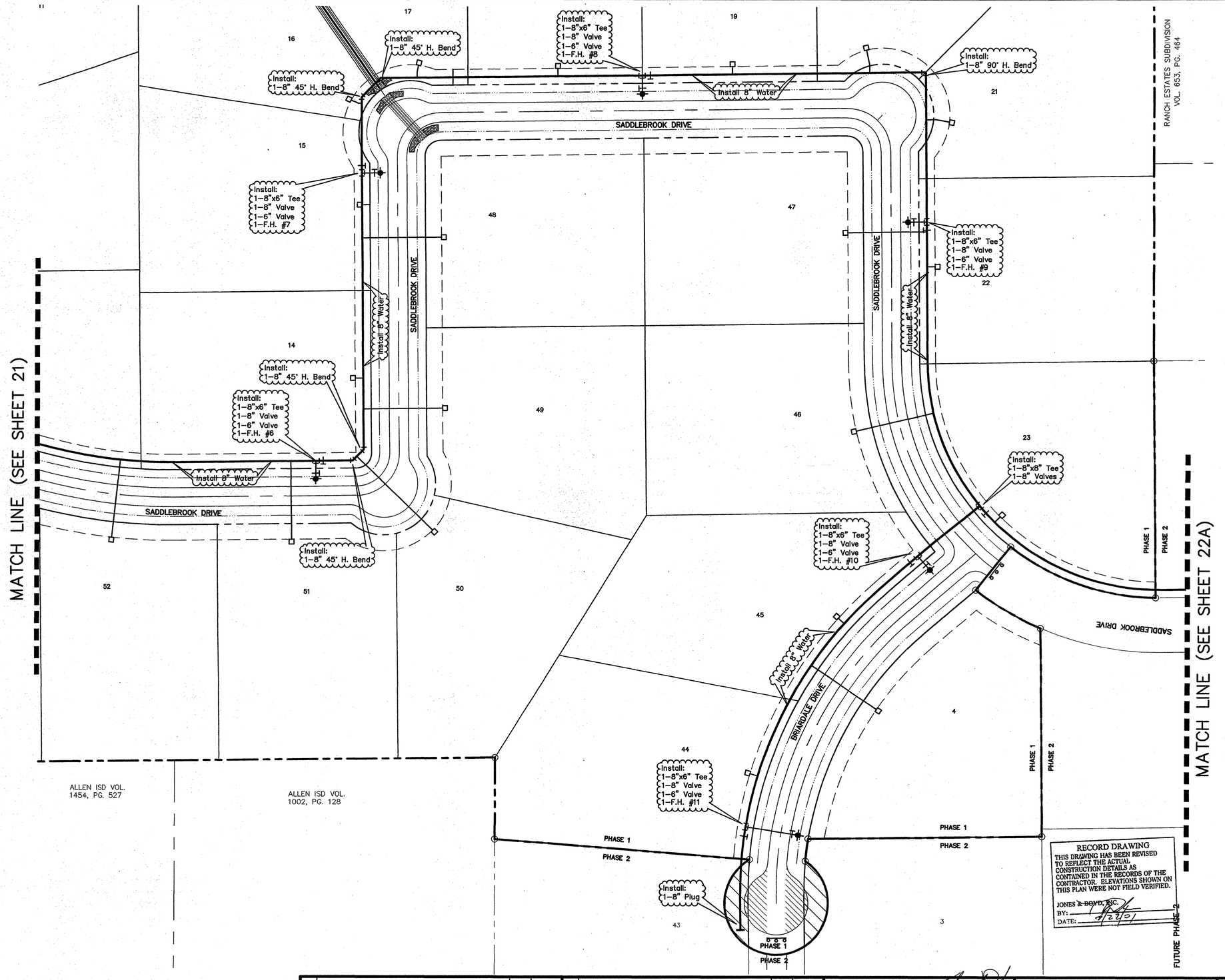
Fax: 972-248-1414

- Engineering
- Planning
- Landscape Architecture
- Surveying

WATER PLAN
Details
SADDLEBROOK
City of Lucas, Collin County, Texas

PROJECT NO. SK403
SHEET NO. 21

Plot Info: Drawing: H:\Projects\SK403\dwg\SK403WS.dwg Plotted by: CMG Plot date: 1/5/01 Plot time: 4:28 pm
Drawing Info: JMW H:\projects\SK403\dwg\SK403WS.dwg 1/2/01 5:36 pm



GRAPHIC SCALE

60 0 30 60 120 240

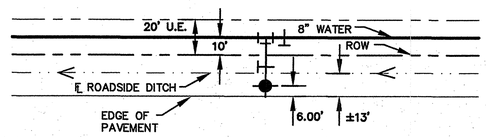
(IN FEET)
1 inch = 60 ft.

LEGEND

- Prop. Water Line and Valve
- Prop. Fire Hydrant
- Prop. Water Service
- Exist. Fire Hydrant
- Exist. Water Line and Valve
- 1" Service & 3/4" Meter

WATER METER SCHEDULE

METER ID NUMBER	WATER SERVICE SIZE	WATER METER SIZE	METER	
			DOM.	IRR.
39	1"	3/4"	X	
1	2"	2"		X



FIRE HYDRANT LOCATION DETAIL
1" = 40'

NTMWD NOTES

1. North Texas Municipal Water District (NTMWD) 42-inch and 20-inch water transmission pipelines are located within the limits of the construction.
2. Operation of heavy earthmoving equipment, compaction equipment or heavy construction equipment, such as concrete trucks, shall be restricted to specific crossing points across NTMWD easements, as approved by the NTMWD. The crossings shall be designated and verified to provide a minimum of five feet of cover.
3. To assure that placing of significant loads over the NTMWD pipeline does not damage the existing pipeline, no materials shall be stockpiled on the NTMWD easement, without authorization from the NTMWD. If the contractor desires to use NTMWD's easement for stockpile of materials, contact NTMWD Engineering at (972) 442-5405 so your plans for use of NTMWD's easement can be reviewed.
4. In areas where the cover between the top of the NTMWD pipeline and the bottom of the sub-grade is three (3) feet or less, it is requested that the sub-grade preparation be deleted and thickened pavement section be used to limit construction activities over the pipeline.
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6. Outdoor lighting, landscaping, screening walls or other facilities shall not be installed in NTMWD easements without written approval of the NTMWD.
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BENCHMARKS:

1. "D" 1/2" IR, W of Ingram Rd. +– 1025' N of N edge of Lucas Rd. +– 6' E of fence. Elev. 637.08
2. "D" 1/2" IR, E of Ingram Rd. +– 2650' N of N edge of Lucas Rd. +– 28' E & 37' N of fence corner. Elev. 639.20

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
3	ADDED NOTES TO NTMWD NOTES	CMG	01/05/01
2	EXTEND 8" WATER TO LOOP SYSTEM	TC	12/18/00
1	REVISED PER CITY COMMENTS	TC	12/08/00

The seal appearing on this document was authorized by Thomas K. Juhn, P.E. 81799 on Jan. 05, 2001. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

STATE OF TEXAS · THOMAS K. JUHN · 81799 · LICENSED PROFESSIONAL ENGINEER

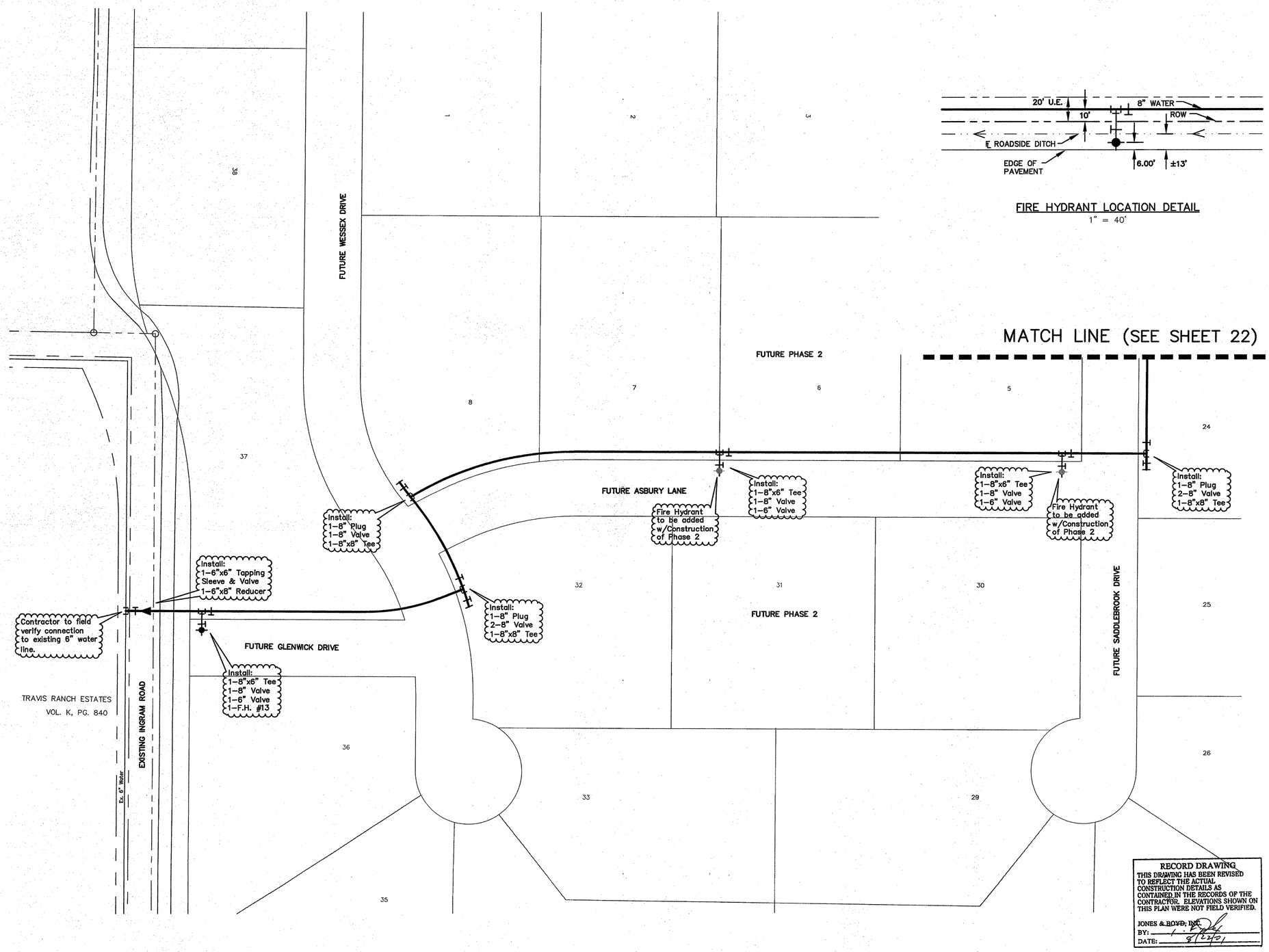
Jones & Boyd, Inc.
16800 Dallas Parkway, Suite 240
Dallas, Texas 75248
Tel: 972-248-7676
Fax: 972-248-1414
▪ Engineering ▪ Planning ▪ Landscape Architecture ▪ Surveying

WATER PLAN
Details
SADDLEBROOK
City of Lucas, Collin County, Texas

PROJECT NO. SK403

SHEET NO. 22

Plot Info: Drawing: H:\projects\SK403\dwg\SK403WS.dwg 1/2/01 5:36 pm Plotted by: CMG Plot date: 1/5/01 Plot time: 4:28 pm



FIRE HYDRANT LOCATION DETAIL
1" = 40'

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

LEGEND

- Prop. Water Line and Valve
- Prop. Fire Hydrant
- Prop. Water Service
- Exist. Fire Hydrant
- Exist. Water Line and Valve
- 1" Service & 3/4" Meter

WATER METER SCHEDULE

METER ID NUMBER	WATER SERVICE SIZE	WATER METER SIZE	METER	
			DOM.	IRR.
39	1"	3/4"	X	
1	2"	2"		X

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RECORD DRAWING
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JONES & BOYD, INC.
BY: _____
DATE: 8/22/01

BENCHMARKS:

1. "□" 1/2" IR, W of Ingram Rd. +– 1025' N of N edge of Lucas Rd. +– 6' E of fence. Elev. 637.08
2. "□" 1/2" IR, E of Ingram Rd. +– 2650' N of N edge of Lucas Rd. +– 28' E & 37' N of fence corner. Elev. 639.20

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
3	ADDED NOTES TO NTMWD NOTES	CMG	01/05/01
2	ADD F.H. @ INGRAM/SHOW F.H. AS FUTURE	TC	12/19/00
1	8" WATER LOOP TO INGRAM ROAD	TC	12/18/00

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STATE OF TEXAS · THOMAS K. JUHN · 81799 · LICENSED · PROFESSIONAL ENGINEER
1/8/01

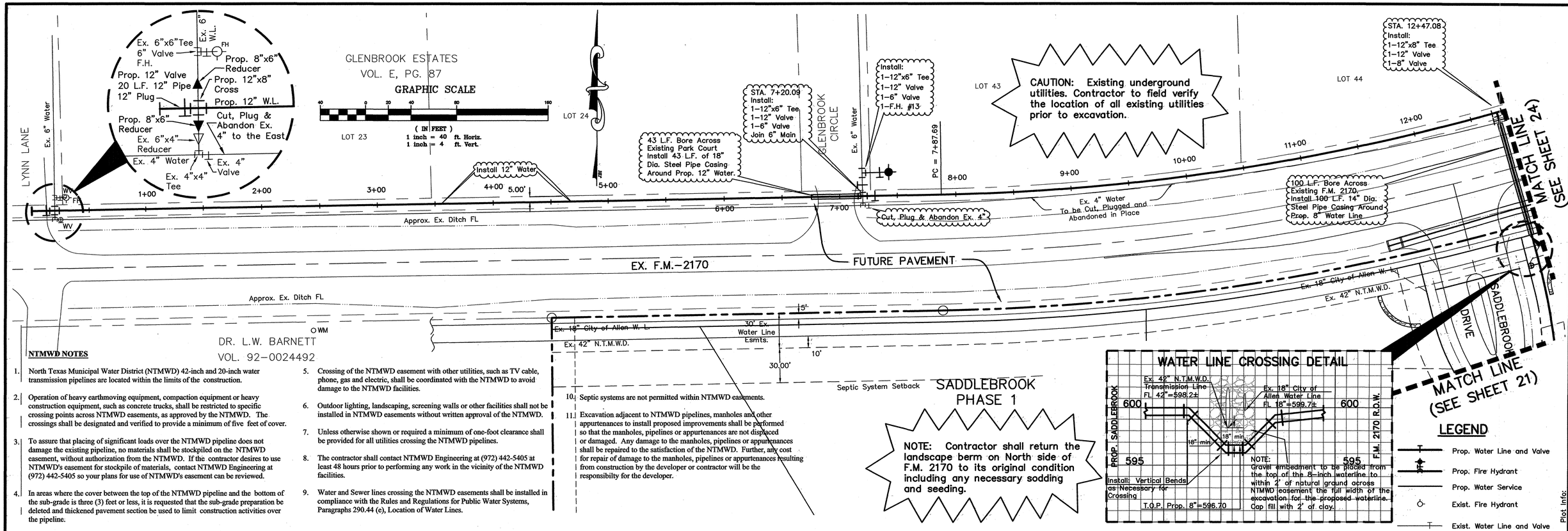
Jones & Boyd, Inc.
16800 Dallas Parkway, Suite 240
Dallas, Texas 75248
Tel: 972-248-7676
Fax: 972-248-1414

- Engineering
- Planning
- Landscape Architecture
- Surveying

WATER PLAN
Details
SADDLEBROOK
City of Lucas, Collin County, Texas

PROJECT NO. SK403
SHEET NO. 22A

Plot Info: Drawing: H:\Projects\SK403\dwg\SK403WS.dwg Plotted by: CMG Plot date: 1/5/01 Plot time: 4:28 pm
Drawing Info: JMW H:\projects\SK403\dwg\SK403WS.dwg 1/2/01 5:36 pm



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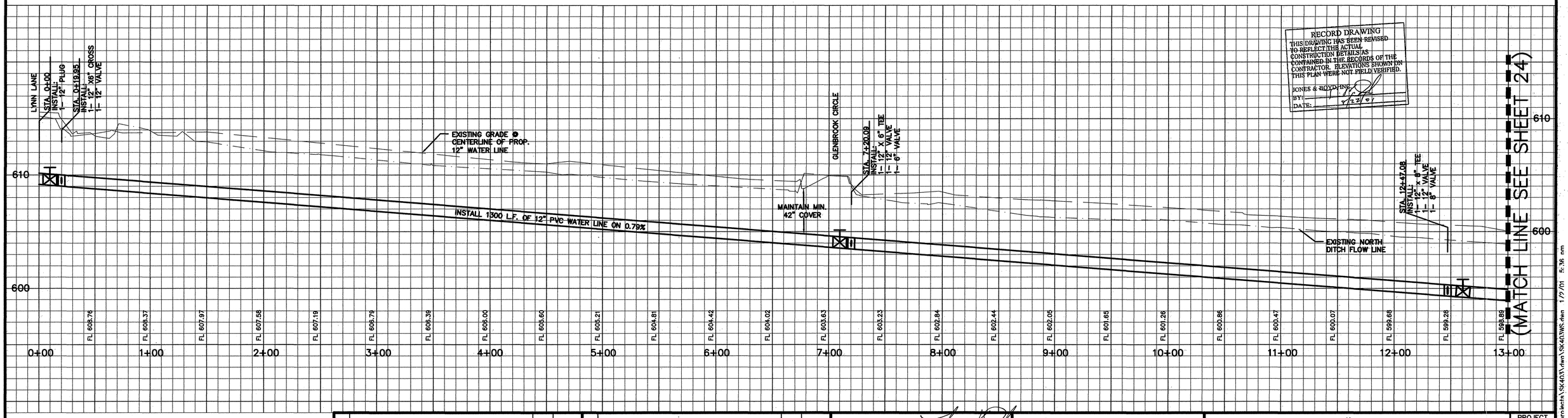

BENCHMARKS:

1. "D" 1/2" IR, W of Ingram Rd. +- 1025' N of N edge of Lucas Rd. +- 6' E of fence. Elev. 637.08
2. "D" 1/2" IR, E of Ingram Rd. +- 2650' N of N edge of Lucas Rd. +- 28' E & 37' N of fence corner. Elev. 639.20

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE
1	ADDED BORE & ENCASE per TxDOT COMMENTS.	JMW	02/16/01

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
3	ADDED NOTE TO DETAIL & SHOWN GRAVEL EMBEDMENT.	CMG	01/05/01
2	EXTEND BORE ACCROSS R.O.W. PER TxDOT COMMENTS	TC	12/19/00
1	REVISED PER CITY COMMENTS	TC	12/08/00

The seal appearing on this document was authorized by Thomas K. Juhn, P.E. 81799 on Feb. 16, 2001. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

STATE OF TEXAS — THOMAS K. JUHN — 81799 — LICENSED PROFESSIONAL ENGINEER — 2/16/01

Jones & Boyd, Inc.
16800 Dallas Parkway, Suite 240
Dallas, Texas 75248
Tel: 972-248-7676
Fax: 972-248-1414

- Engineering
- Planning
- Landscape Architecture
- Surveying

OFFSITE 12" WATER LINE
North Side of F.M. 2170
SADDLEBROOK
City of Lucas, Collin County, Texas

PROJECT NO. SK403

SHEET NO. 23

Plot Info: Drawing: H:\projects\SK403\dwn\SK403WS.dwn Plotted by: JMW Plot date: 1/9/01 Plot time: 5:36 pm

NOTE: Contractor shall return the landscape berm on North side of F.M. 2170 to its original condition including any necessary sodding and seeding.

CAUTION: Existing underground utilities. Contractor to field verify the location of all existing utilities prior to excavation.

STA. 22+08.80
Install:
1-12"x6" Tee
1-12" Valve
1-6" Valve
1-F.H. #12

STA. 24+18
Remove 12" Plug and connect to ex. 12" stub out. Contractor to field verify connection point prior to setting final alignment.

STA. 24+15
Install:
1-12" 11.25° Bend

100 L.F. Bore Across Existing F.M. 1378 Country Club Road. Install 100 L.F. 18" Dia. Steel Pipe Casing Around Prop. 12" Water Line

STA.14+32
Install:
1-12"x6" Tee
1-12" Valve

45 L.F. Bore Across Existing Park Court Install 45 L.F. of 18" Dia. Steel Pipe Casing Around Prop. 12" Water.

Cut, Plug & Abandon Ex. 4" East & West

Remove Ex. FH

Cut, Plug & Abandon Ex. 4"

Install 12" Water

PARK CT.

LOT 50

FM 2170

FUTURE PAVEMENT

Approx. Ex. Ditch FL.

Ex. 18" City of Allen W. L.

Ex. 42" N.T.M.W.D.

Ex. 6" Water

Ex. 4" Water

Ex. 12" Water

Ex. 20" N.T.M.W.D. Water

Ex. 6" N.T.M.W.D. 42" Water

FLUME

Ex. Pump Station

COSERVE VAULT

F.M.-1378 COUNTRY CLUB ROAD

CITY OF ALLEN
VOL. 819, PG. 4

CITY OF ALLEN
VOL. 819, PG. 4

MATCH LINE (SEE SHEET 23)

5.00'

10.00'

30.00'

30' Ex. Water Line Esmts.

Septic System Setback

GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft. Horiz.
1 inch = 4 ft. Vert.

LEGEND

- Prop. Water Line and Valve
- Prop. Fire Hydrant
- Prop. Water Service
- Exist. Fire Hydrant
- Exist. Water Line and Valve

NTMWD NOTES

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JONES & BOYD, INC.
BY:
DATE: 8/22/01

STA. 14+31.90
INSTALL: 1-6" TEE
1-12" VALVE

EXISTING GRADE @ CENTERLINE OF PROP. 12" WATER LINE

EXISTING NORTH DITCH FLOW LINE

MAINTAIN MIN. 42" COVER

INSTALL 942.5 L.F. OF 12" PVC WATER LINE ON 0.79%

STA. 22+08.80
INSTALL:
1-12" x 6" TEE
1-12" VALVE
1-6" VALVE
1-FH

STA. 22+32.43
INSTALL: 1-45° V. BEND

STA. 22+87.92
EX 20" WATER LINE

STA. 23+33.02
INSTALL: 1-45° V. BEND

STA. 24+18
REMOVE PLUG & CONNECT TO EX. 12" STUB OUT. VERIFY CONTRACTOR TO FIELD CONNECTION POINT PRIOR TO SETTING FINAL ALIGNMENT.

F.M.-1378 COUNTRY CLUB ROAD

EX. 12" WATER LINE

18" min

INSTALL 85 L.F. OF 12" PVC WATER LINE ON 0.79%

FL EX. 20"=598.7±
T.O.P. PR. 12"=597.2

FL 598.49 | FL 598.10 | FL 597.70 | FL 597.31 | FL 596.91 | FL 596.52 | FL 596.12 | FL 595.73 | FL 595.33 | FL 594.94 | FL 594.54 | FL 594.15 | FL 593.75 | FL 593.36 | FL 592.96 | FL 592.57 | FL 592.17 | FL 591.78 | FL 591.38 | FL 590.36 | FL 589.96

600

590

13+00 | 14+00 | 15+00 | 16+00 | 17+00 | 18+00 | 19+00 | 20+00 | 21+00 | 22+00 | 23+00 | 24+00

NOTE:
Gravel embedment to be placed from the top of the 12-inch waterline to within 2' of natural ground five feet either side of NTMWD's 20-inch waterline the full width of the excavation for the proposed waterline. Cap fill with 2' of clay.

BENCHMARKS:

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   Elev. 637.08
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1	REVISED PER CITY COMMENTS	TC	12/08/00

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STATE OF TEXAS
THOMAS K. JUHN
81799
LICENSED
PROFESSIONAL ENGINEER
2/16/01

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- Engineering
- Planning
- Landscape Architecture
- Surveying

OFFSITE 12" WATER LINE

North Side of F.M 2170

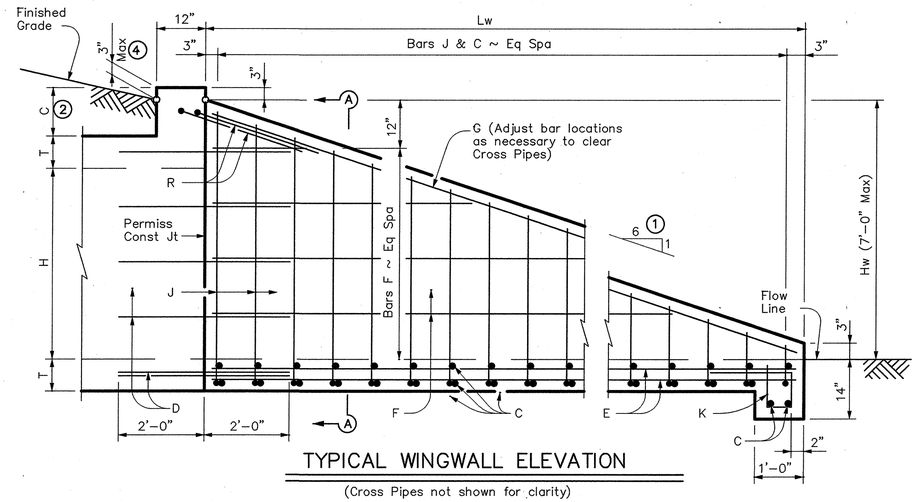
SADDLEBROOK

City of Lucas, Collin County, Texas

PROJECT NO. SK403

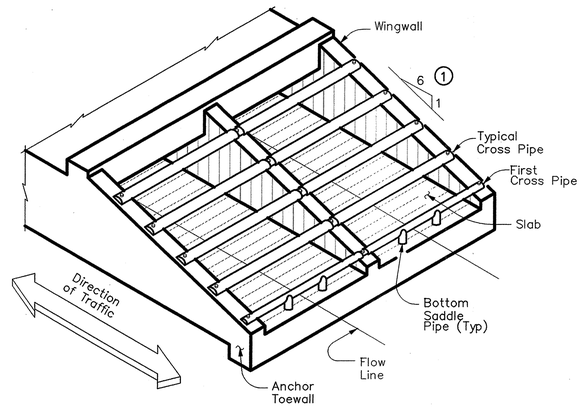
SHEET NO. 24

Plot Info: Drawing: H:\projects\SK403\dwg\SK403WS.dwg Plotted by: JMW Plot date: 1/2/01 Plot time: 5:35 pm
Plot Info: JMW H:\projects\SK403\dwg\SK403WS.dwg 1/2/01 5:36 pm



TYPICAL WINGWALL ELEVATION

(Cross Pipes not shown for clarity)



ISOMETRIC VIEW OF TYPICAL INSTALLATION

(Showing Bolted Anchor Option)

Formulas: (All values are in Feet)

$Hw = H + T + C - 0.250'$

$Lw = (Hw - 0.250') * (SL)$

For Cast-in-place culverts:

$Atw = (N) * (S) + (N+1) * (U)$

For Precast culverts:

$Atw = (N) * (2U+S) + (N-1) * (0.500')$

Total Wingwall Area (S.F.)

$= (0.5) * (Hw + 0.250') * (Lw) * (N+1)$

Total Concrete Volume (C.Y.)

$= [(\text{Wingwall Area}) * (U) + (Lw) * (Atw) * (T) + (Atw) * (1.000') * (1.167' - T)] \div (27)$

Total Reinforcing (Lbs)

$= (1.55) * (Lw) * (Atw) + (4.43) * (Atw) + (K2) * (Hw) * (N+1) * (\sqrt{Lw})$

C = Height of Curb above top of Top Slab
Hw = Height of Wingwall
K = Constant Value for use in formulas

Slope SL:1	K
3:1	~ 7.50
4:1	~ 8.61
6:1	~ 10.41

Atw = Anchor Toewall Length
Lw = Length of Wingwall
N = Number of Culvert Barrels
S = Clear Span of each Barrel
SL:1 = Side Slope Ratio (Horizontal : 1 Vertical)

See applicable box culvert standard for H, S, T, and U values.

GENERAL NOTES:

Designed according to current AASHTO Standard and Interim Specifications.

The Safety End Treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the Cross Pipes.

Cross Pipes are designed for a traversing load of 10,000 pounds at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

All concrete, except Riprap, shall be Class "C" and shall have a minimum 28 day compressive strength of 3600 psi.

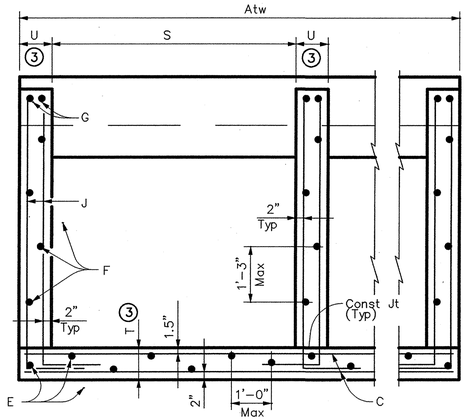
All reinforcing steel shall be Grade 60. All reinforcing shall be adjusted as necessary to provide a minimum clear cover of 1.25".

The quantities for concrete, reinforcing steel, and Cross Pipes resulting from the formulas given herein are for Contractor's information only.

Cross Pipes, Sleeve Pipes, and Saddle Pipes shall conform to the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

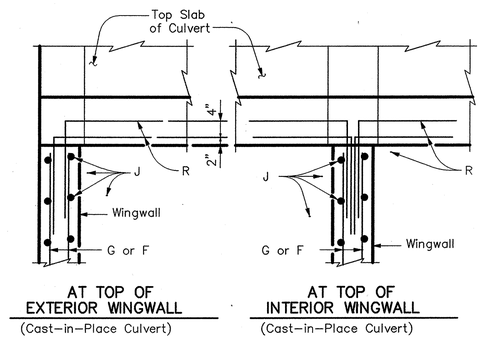
Bolts and nuts shall conform to ASTM A307.

All steel components, except the concrete reinforcing, shall be galvanized after fabrication. Galvanizing damaged during transport or construction shall be repaired in accordance with the specifications.



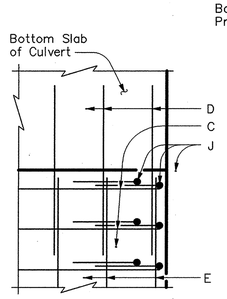
SECTION A-A

(Showing typical Wingwall and Wing Slab reinforcing)
(Cross Pipes not shown for clarity)

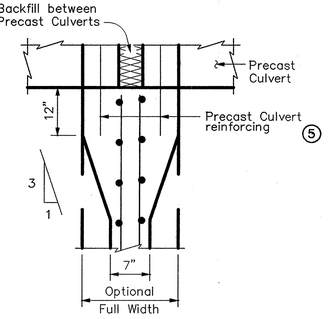


AT TOP OF EXTERIOR WINGWALL
(Cast-in-Place Culvert)

AT TOP OF INTERIOR WINGWALL
(Cast-in-Place Culvert)

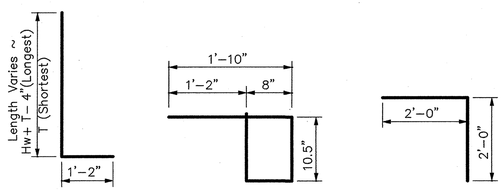


AT OUTSIDE OF BOTTOM SLAB
(Cast-in-Place Culvert)



AT INTERIOR WINGWALL
(Precast Culvert)

PLAN VIEWS OF CORNER DETAILS



BARS J

BARS K
(Length = 4'-3")

BARS R

TABLE OF REINFORCING BAR SIZES & SPACING		
Bar	Size	Spacing
C	#4	10" Max
D	#4	match F & E
E	#4	1'- 0" Max
F	#4	1'- 3" Max
G	#4	Shown
J	#4	10" Max
K	#4	1'- 0" Max
R	#4	Shown

1. Match Cross Slope as shown elsewhere in the plans. Cross Slope of 6:1 or flatter is required for vehicle safety.
2. 0" min to 5'-0" max. For curbs greater than 1'-0" high, see ECD standard for additional details. Estimated curb heights are shown elsewhere in the plans.
3. Wingwall and slab thicknesses may be the same as the adjacent culvert wall and slab thicknesses (7" Minimum)
4. For vehicle safety, curb heights and wall heights shall be reduced, if necessary, to provide a maximum 3" projection above Finished Grade. No changes will be made in the quantities and no additional compensation will be allowed for this work.
5. For Culverts with C = 0", the precast culvert reinforcing may extend 1'-0" minimum into Wingwall. Wingwall Bars D and R may be omitted. Otherwise, refer to the "Wingwall Connection Detail" on the SCP-MD standard.

RECORD DRAWING
THIS DRAWING HAS BEEN REVISED TO REFLECT THE ACTUAL CONSTRUCTION DETAILS AS CONTAINED IN THE RECORDS OF THE CONTRACTOR. ELEVATIONS SHOWN ON THIS PLAN WERE NOT FIELD VERIFIED.
JONES & BOYD, INC.
BY:
DATE: 1/22/01

SHEET 1 OF 2

Texas Department of Transportation
Bridge Division

SAFETY END TREATMENT
FOR BOX CULVERTS (MAXIMUM Hw = 7'-0")
TYPE I ~ PARALLEL DRAINAGE

SETB-PD

FILE: setbpdse.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
© TxDOT September 2000	DISTRICT	FEDERAL AID PROJECT		SHEET
REVISIONS				
	COUNTY	CONTROL	SECT	JOB	HIGHWAY

LEVELS DISPLAYED

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64

COMMENTS:

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
1	Add details to plan set per TxDOT comment.	JMW	2/14/01

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STATE OF TEXAS · THOMAS K. JUHN · 81799 · LICENSED PROFESSIONAL ENGINEER

2/14/01

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16800 Dallas Parkway, Suite 240
Dallas, Texas 75248
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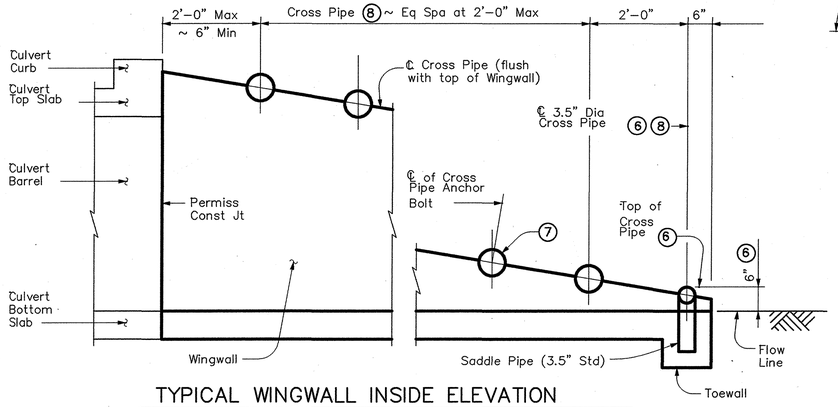
Fax: 972-248-1414

- Engineering
- Planning
- Landscape Architecture
- Surveying

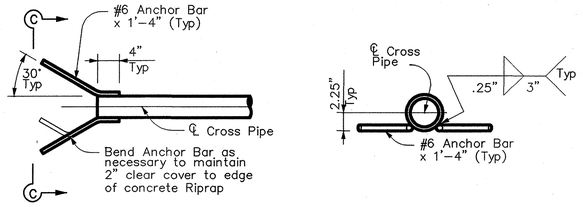
TxDOT STANDARD DETAILS	PROJECT NO.
	SK403
SADDLEBROOK	SHEET NO.
City of Lucas, Collin County, Texas	25

Drawing Info: TC H:\Projects\SK403\DWG\SK403TX-DOTDET.dwg 12/8/00 9:05 am Plot Info: Drawing: H:\Projects\SK403\DWG\SK403TX-DOTDET.dwg Plotted by: TC Plot date: 12/8/00 Plot time: 8:48 am



TYPICAL WINGWALL INSIDE ELEVATION

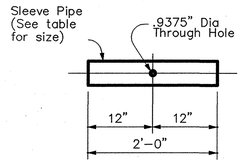
(Showing installation of Cross Pipes)



PART PLAN

SECTION C-C

OPTIONAL ANCHOR BAR DETAILS



(9) SLEEVE PIPE DETAILS

(8) REQUIRED PIPE SIZES		
Culvert Span Sizes	Cross Pipe Size	Sleeve Pipe Size (9)
First Pipe	3.5" STD	2.5" STD
30" to 42"	4" STD	3" STD
48" to 72"	5" STD	4" STD
78" to 120"	6" STD	5" STD

STANDARD PIPE SIZES		
Pipe Size	Pipe O.D.	Pipe I.D.
2.5" STD	2.875"	2.469"
3" STD	3.500"	3.068"
3.5" STD	4.000"	3.548"
4" STD	4.500"	4.026"
5" STD	5.563"	5.047"
6" STD	6.625"	6.065"

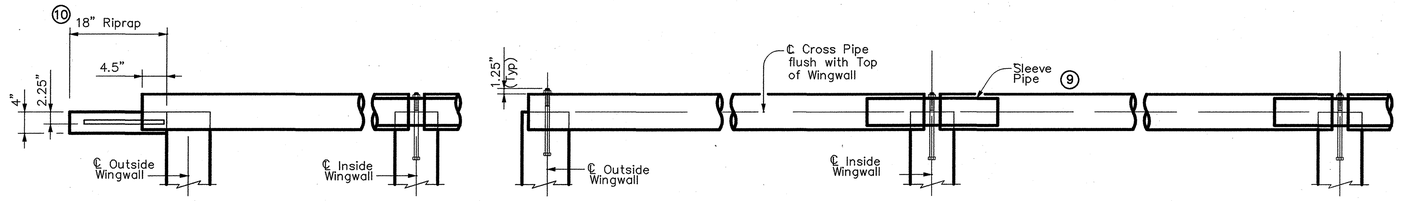
(6) The proper installation of the first Cross Pipe is critical for vehicle safety. The top of the first Cross Pipe must be placed at no more than 6" above the flow line.

(7) The third Cross Pipe from the bottom of the Culvert shall always be installed using a bolted connection. Care shall be taken to ensure that concrete does not flow into this Cross Pipe so as to permit disassembly of the bolted connection to allow cleanout access.

(8) Cross Pipes and Sleeve Pipes (if required) shall be as shown in the REQUIRED PIPE SIZES table. Saddle Pipes for the 3.5" first Cross Pipe shall also be 3.5".

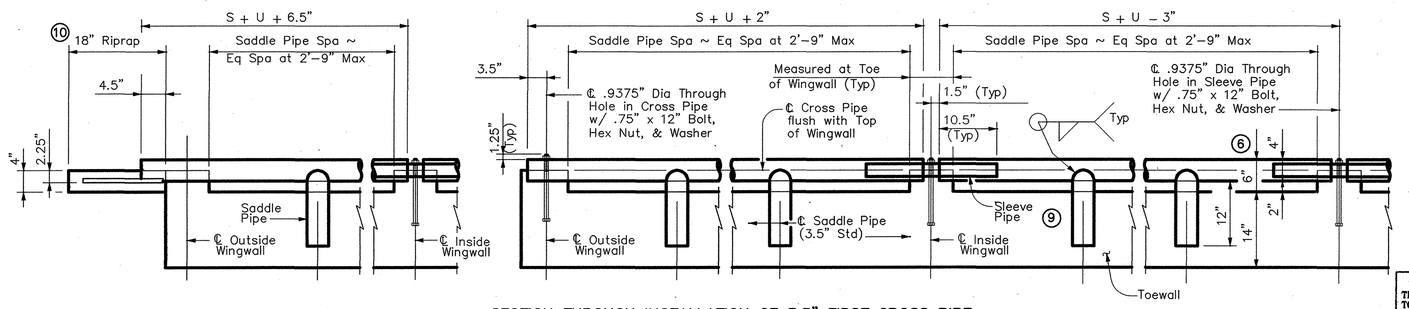
(9) At Contractor's option, the Cross Pipe may be continuous across the Inside Wingwalls. If such option is selected, the Sleeve Pipe shall be omitted and a .9375" diameter through hole made in the Cross Pipe to accept the anchor bolt at the centerline of each Interior Wingwall.

(10) Riprap will be required when using the optional Anchor Bar details and shall be included in the Price Bid for Safety End Treatment. Such Riprap shall be concrete Riprap in accordance with Item 432, "Riprap".



SECTION THROUGH INSTALLATION OF TYPICAL FULL CROSS PIPE

(Anchor details and dimensions are similar to those shown below in SECTION THROUGH INSTALLATION OF 3.5" FIRST CROSS PIPE detail.)



SECTION THROUGH INSTALLATION OF 3.5" FIRST CROSS PIPE

OUTSIDE CULVERT BARREL WITH OPTIONAL ANCHOR BARS & RIPRAP

OUTSIDE CULVERT BARREL WITH BOLTED ANCHOR

INSIDE CULVERT BARREL

CROSS PIPE INSTALLATION DETAILS

RECORD DRAWING
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JONES & BOYD, INC.
BY:
DATE: 5/22/01

SHEET 2 OF 2

Texas Department of Transportation
Bridge Division

SAFETY END TREATMENT

FOR BOX CULVERTS
(MAXIMUM Hw = 7'-0")
TYPE I ~ PARALLEL DRAINAGE

SETB-PD

FILE: setbpdse.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
© TxDOT September 2000	DISTRICT	FEDERAL AID PROJECT		SHEET
REVISIONS				
	COUNTY	CONTROL	SECT	JOB	HIGHWAY

LEVELS DISPLAYED
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64
COMMENTS:

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE

NO.	REVISIONS DURING PLAN REVIEW	BY	DATE
1	Add details to plan set per TxDOT comment.	JMW	2/14/01

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• Engineering • Planning • Landscape Architecture • Surveying

TxDOT STANDARD DETAILS

SADDLEBROOK

City of Lucas, Collin County, Texas

PROJECT NO. SK403

SHEET NO. 26

Plot info: Drawing: H:\Projects\SK403\DWG\SK403TX-DOTDET.dwg Plotted by: TC Plot date: 12/8/00 Plot time: 8:48 am
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