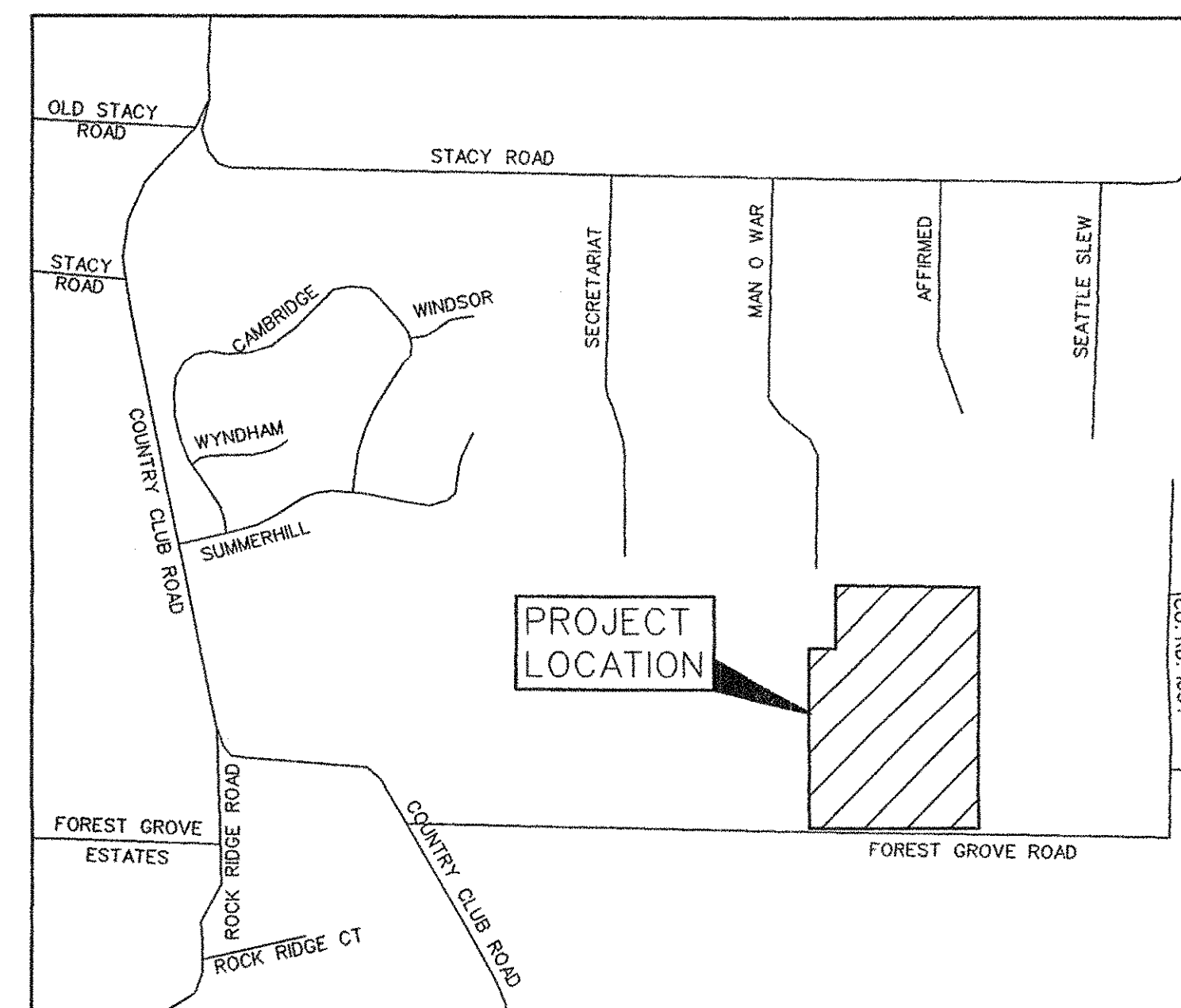


CONSTRUCTION PLANS
FOR
AMHERST ESTATES
CITY OF LUCAS, TEXAS



VICINITY MAP
SCALE: 1"=1000'

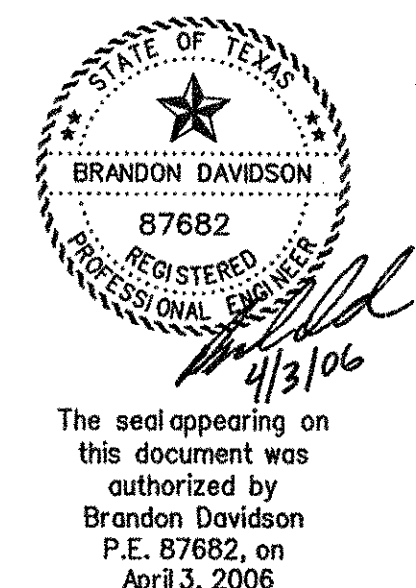
PREPARED FOR
LUCAS FORREST GROVE, LTD.
3838 OAK LAWN, AVE., SUITE 1212 DALLAS, TEXAS 75219

INDEX

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 - 20 STREET SIGN PLAN
- CONSTRUCTION DETAILS

CORWIN ENGINEERING, INC. — CONSULTING ENGINEERS
200 W. BELMONT, SUITE E ALLEN, TEXAS 75013

AS-BUILT APRIL 2006
INFORMATION PROVIDED BY CONTRACTORS
(NOT FIELD VERIFIED)

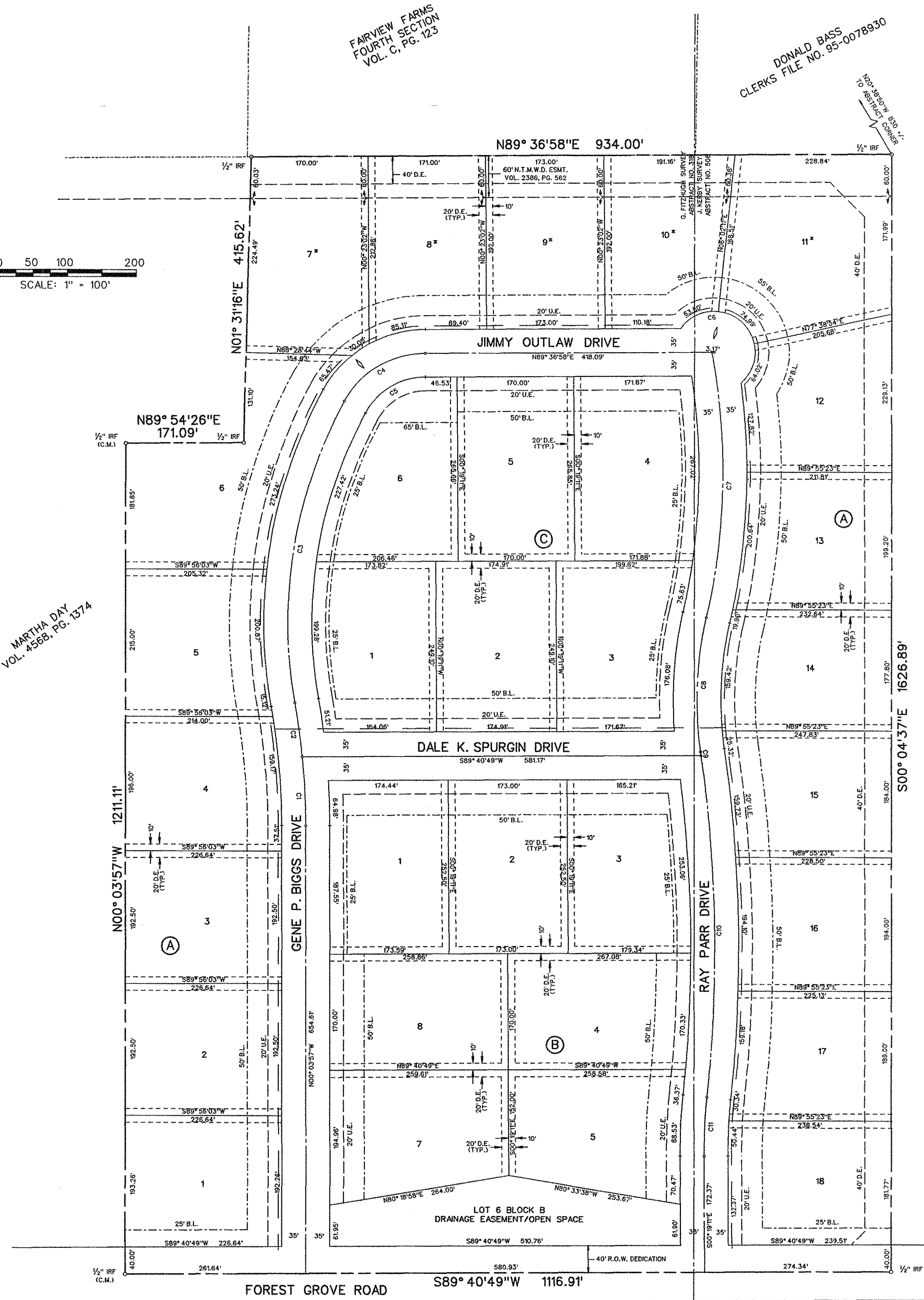


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P.E. 87682, on
April 3, 2006



0 50 100 200
SCALE: 1" = 100'

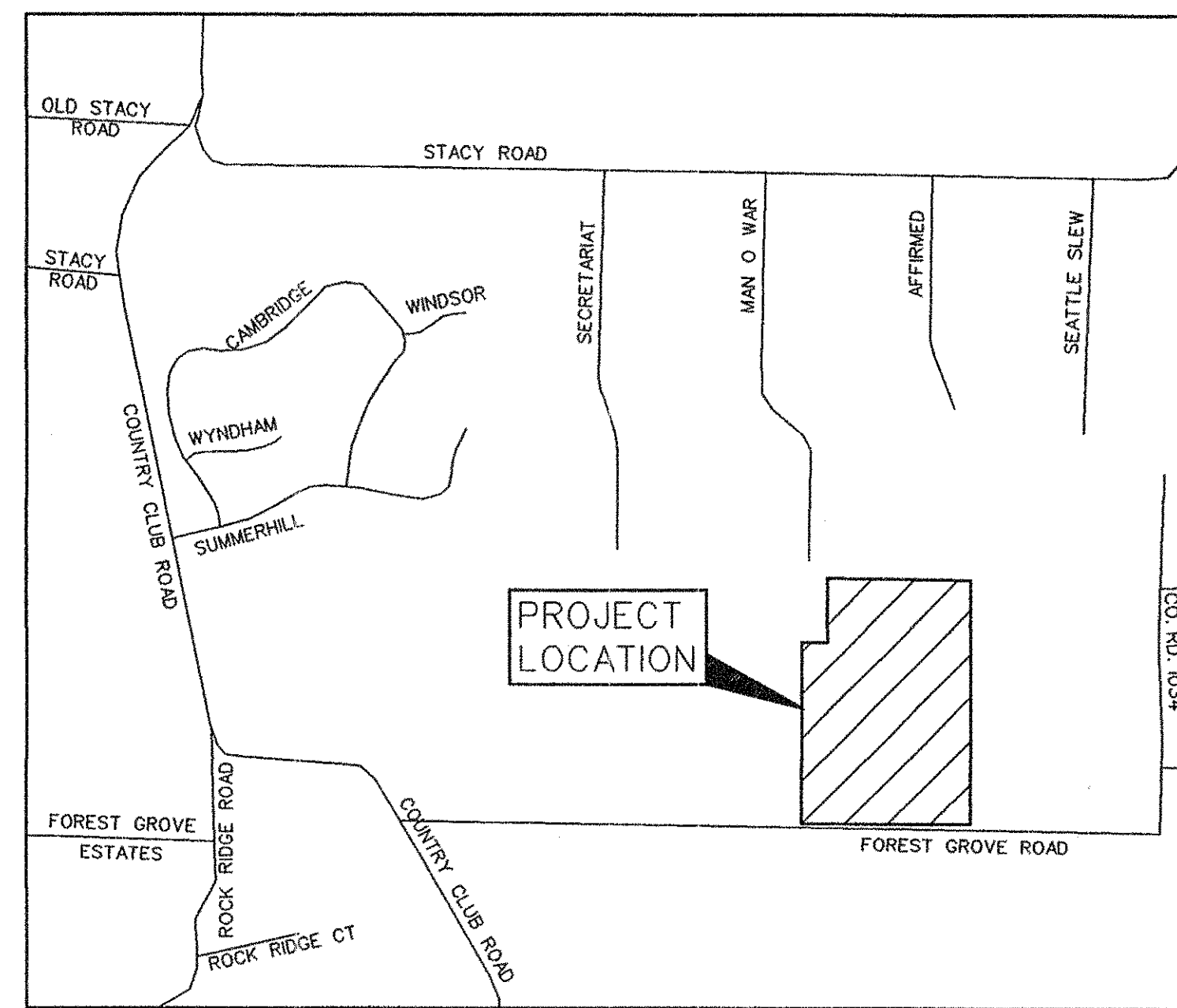
MARTHA DAY
VOL. 4568, PG. 1374



* - Lots 7 thru 11, Block A are affected by the following note:

The NTMWD easement restricts construction of permanent structures such as foundations, walls, pools and permanent storage buildings. Fences and landscaping are permitted within or crossing the easement. Items such as driveways and sprinkler systems 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.

DONALD BASS
CLERKS FILE NO. 95-0078930



LOCATION MAP
SCALE: 1"=1000'

CURVE TABLE

CURVE NO.	DELTA	RADIUS	LENGTH	TANGENT	CHORD	BEARING
1.	05°31'55"	1035.00'	99.93'	50.00'	99.89'	N02°49'55"W
2.	04°27'14"	1035.00'	80.46'	40.25'	80.44'	N07°49'29"W
3.	38°48'23"	665.00'	450.41'	234.23'	441.85'	N09°21'06"E
4.	60°51'41"	135.00'	143.40'	79.30'	136.75'	N59°11'08"E
5.	60°51'41"	100.00'	106.22'	58.74'	101.30'	N59°11'08"E
6.	166°36'43"	60.00'	202.52'		119.18'	S47°54'30"E
7.	23°40'08"	935.00'	386.25'	195.92'	383.51'	S01°09'25"W
8.	21°10'14"	535.00'	197.68'	99.98'	196.56'	S02°24'22"W
9.	00°09'19"	2035.00'	5.51'	2.76'	5.51'	S08°06'05"E
10.	14°02'41"	2035.00'	498.83'	250.67'	497.58'	S01°00'06"E
11.	06°20'25"	765.00'	84.66'	42.37'	84.61'	S02°51'02"W

LOT AREA SUMMARY TABLE			
BLOCK A		BLOCK B	
LOT #	AREA (S.F.)	LOT #	AREA (S.F.)
1	43687	1	43733
2	43628	2	43682
3	43628	3	44175
4	43755	4	44886
5	43911	5	43765
6	55043	7	4502
7	49991	8	44070
8	43644		
9	43596		
10	43618		
11	60711	1	43793
12	43597	2	43568
13	43574	3	44745
14	43618	4	47465
15	43633	5	45178
16	43708	6	43570
17	43615		
18	43697		

LOT AREAS ROUNDED TO THE NEAREST SQUARE FOOT

NOTES

- Bearing are referenced to a 40.00 acre tract, as recorded in Volume 4568, Page 1374, in the Deed Records of Collin County, Texas.
- All lot lines are radial or perpendicular to the street unless otherwise noted by bearing.
- 1/2" iron rods with "CORWIN ENGR. INC." caps set at all boundary corners, block corners, points of curvature, points of tangency, and angle points in public right-of-way unless otherwise noted.
- No floodplain exist on site.
- "Notice: Selling a portion of this addition by metes and bounds is a violation of city ordinance and state law and is subject to fines and withholding of utilities and building permits."
- B.L. - Building Line
U.E. - Utility Easement
D.E. - Drainage Easement
- Street Name Change

FINAL PLAT
OF
AMHERST ESTATES

OUT OF THE
G. FITZHUGH SURVEY, ABSTRACT NO. 318
J. KERBY SURVEY, ABSTRACT NO. 506
IN THE

CITY OF LUCAS
COLLIN COUNTY, TEXAS
OWNER
LUCAS FORREST GROVE, LTD.
3838 OAK LAWN, AVE., SUITE 1212
DALLAS, TEXAS 75219

PREPARED BY
CORWIN ENGINEERING, INC.
200 W. BELMONT, SUITE E
ALLEN, TEXAS 75013
(972)-396-1200

TOTAL ACRES 40.000
TOTAL LOTS 31

JULY 2005 SCALE: 1"=100'
REVISED 8-3-05

LEGAL DESCRIPTION

WHERE AS, SKORBURG COMPANY, is the owner of a tract of land situated in the G. Fitzhugh Survey, Abstract No. 318 and the J. Kerby Survey, Abstract No. 506, in the City of Lucas, Collin County, Texas, being part of a 40.00 acre tract of land, as described in Clerks File No. 99-0153084, in the Deed Records of Collin County, Texas, being more particularly described as follows:

COMMENCING, at a 1/2 inch iron rod found at the most northerly northwest corner of a 59.541 acre tract, as described in Volume 1128, Page 397, in said Deed Records, also being the northeast corner of a 8.264 acre tract, as described in Volume 1128, Page 395, in said Deed Records:

THENCE, North 89° 36' 58" East, with the most easterly north line of the 59.541 acre tract for a distance of 264.12 feet to a 1/2 inch iron rod set at the POINT OF BEGINNING;

THENCE, North 89° 36' 58" East, continuing with said north line for a distance 934.00 feet to a 1/2 inch iron rod set in the most southerly west line of a 12.968 acre tract, as described in Clerks File No. 95-0078930, in said Deed Records;

THENCE, South 00° 04' 37" East, with said west line for a distance of 1626.89 feet to a P.K. nailset in the approximate centerline of Forest Grove Road;

THENCE, South 89° 40' 49" West, along said centerline for a distance of 1116.91 feet to a P.K. nailset at the southeast corner of a 27.169 acre tract, as described in Clerks File No. 99-0132406, in said Deed Records;

THENCE, North 00° 03' 57" West, with said east line for a distance of 1211.11 feet to a 1/2 inch iron rod set;

THENCE, North 89° 54' 26" East, continuing with said east line for a distance of 171.09 feet to a 5 inch wood corner post;

THENCE, North 01° 31' 16" East, continuing with said east line for a distance of 415.62 feet to the POINT OF BEGINNING and containing 1,742,737 square feet or 40.008 acres of land.

SURVEYOR'S CERTIFICATE

KNOW ALL MEN BY THESE PRESENTS that I, WARREN L. CORWIN, do hereby certify that I prepared this Plat and the field notes from an actual and accurate survey of the land, 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.

WARREN L. CORWIN
R.P.L.S. No. 4621

THE STATE OF TEXAS §
COUNTY OF COLLIN §

Before me, the undersigned, a Notary Public in and for the State of Texas, on this day personally appeared WARREN L. CORWIN, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed same for the purpose and consideration therein expressed.

Given under my hand and seal of office, this _____ day of _____, 2005.

NOTARY PUBLIC, STATE OF TEXAS

NOTES FOR CONSTRUCTION WITH THE NORTH TEXAS MUNICIPAL WATER DISTRICT EASEMENT

A. North Texas Municipal Water District (NTMWD's) 60-inch sanitary sewer pipeline is located within the limits of construction.

B. 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 crossing shall be designated and verified to provide a minimum of five-feet of cover.

C. 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's Engineering Department at (972) 442-5405 so your plans for use of NTMWD's easement can be reviewed.

D. A minimum of three feet separation between the bottom of the pavement and top of NTMWD pipeline is required. In addition, if separation between the bottom of the pavement and the top of the pipeline is less than 3.5 feet, a thickened pavement section is required.

E. 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.

F. Outdoor lighting, landscaping, screening walls or other facilities shall not be installed in NTMWD easements without written approval of the NTMWD.

G. Unless otherwise shown or required a minimum of one-foot clearance shall be provided for all utilities crossing the NTMWD pipelines.

H. 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.

DEDICATION

NOW THEREFORE, KNOW ALL MEN BY THESE PRESENTS:

THAT, SKORBURG COMPANY, is the owner of the above-described project and does hereby adopt this plat designating the herein described property as AMHERST ESTATES, an addition to the City of Lucas, Texas, and does hereby dedicate to the public use forever the right-of-way, streets, easements, and alleys platted hereon.

This plat approved subject to all platting ordinances, rules, regulations, and resolutions of the City of Lucas, Texas.

EXECUTED this the _____ day of _____, 2005.

THE STATE OF TEXAS
COUNTY OF COLLIN

BEFORE ME, the undersigned, a Notary Public for the State of Texas, on this day personally appeared _____, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that the same is his act and deed in the capacity therein stated and for the purposes and considerations therein expressed.

WITNESS MY HAND AND SEAL OF OFFICE, this the _____ day of _____, 2005.

NOTARY PUBLIC, STATE OF TEXAS

"Recommended For Approval

Chairman
Planning and Zoning Commission
City of Lucas, Texas

Date"

"Approved For Construction:

Mayor
City of Lucas, Texas

Date"

"The undersigned, the City Secretary of the City of Lucas, Texas hereby certifies that the foregoing Final Plat of AMHERST ESTATES an addition to the City of Lucas was submitted to the City Council, by formal action, on the _____ day of _____, 2005; and that Council, by formal action, then and there accepted the dedication of right-of-ways, streets, easements, alleys, public places, and water and sewer lines, as shown and set forth in and upon said plat, and said Council further authorized the Mayor to note the acceptance thereof for construction by signing his/her name as hereinabove subscribed.

Witness my hand this _____ day of _____ A.D., 2005

City Secretary
City of Lucas, Texas

FINAL PLAT
OF
AMHERST ESTATES
OUT OF THE
G. FITZHUGH SURVEY, ABSTRACT NO. 318
J. KERBY SURVEY, ABSTRACT NO. 506
IN THE
CITY OF LUCAS
COLLIN COUNTY, TEXAS
OWNER
SKORBURG COMPANY
3838 OAK LAWN, AVE., SUITE 1212
DALLAS, TEXAS 75219
PREPARED BY
CORWIN ENGINEERING, INC.
200 W. BELMONT, SUITE E
ALLEN, TEXAS 75013
(972)-396-1200
JULY 2005
REVISED 8-3-05

DRIVEWAY CULVERT CHART

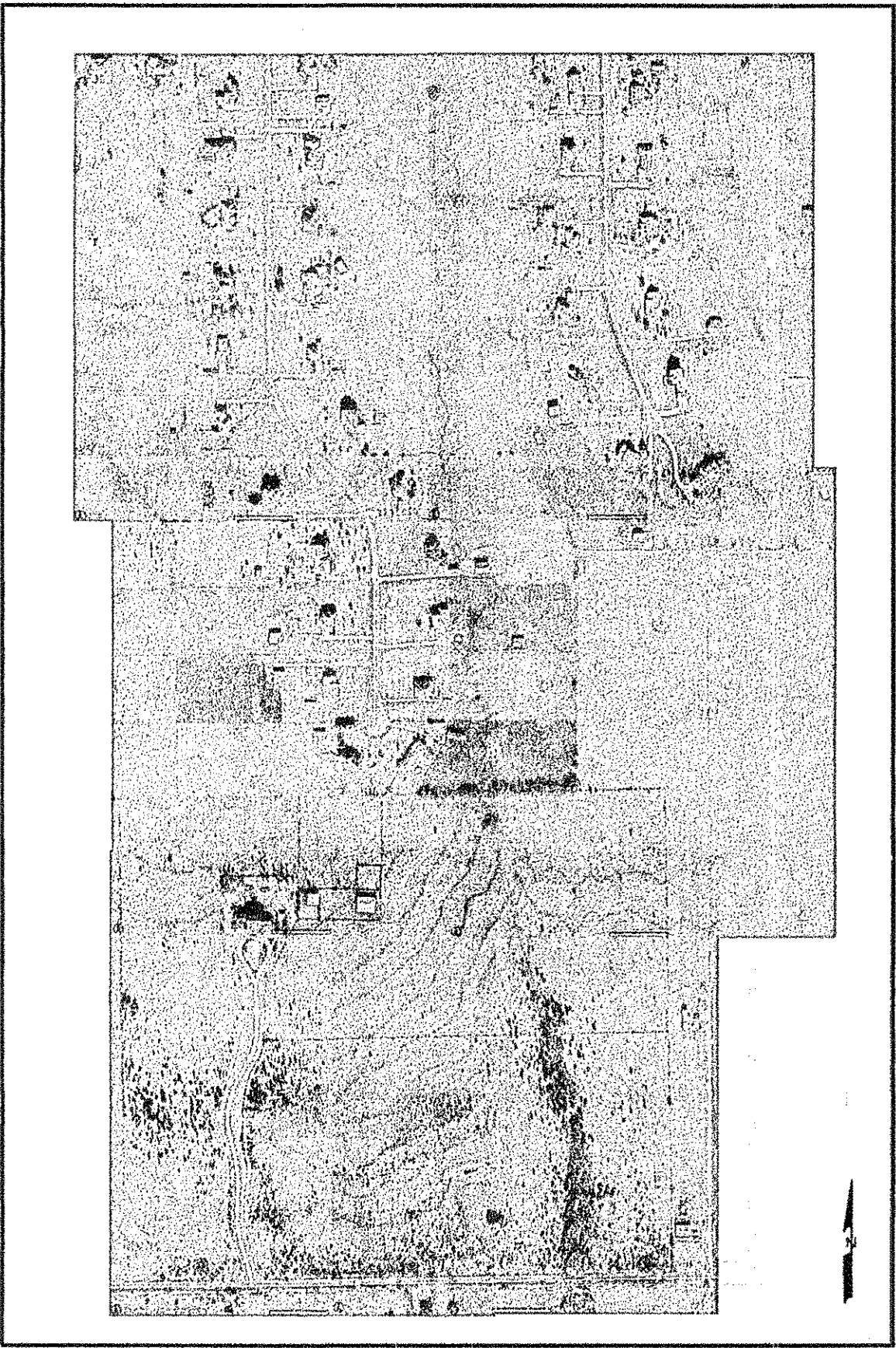
Block	Lot	Area (AC)	Q (cfs)	Lots Draining to Culvert	Flow In	
					Pipe (in.)	Pipe Dia. (in.)
A	1	1.16	3.91	1-6	32.8	2-24"
	2	1.16	3.90	2-6	28.9	2-21"
	3	1.16	3.90	3-6	25.0	2-21"
	4	1.16	3.92	4-6	21.1	2-21"
	5	1.18	3.99	5-6	17.1	21"
	6	1.52	5.14	6	13.1	21"
	7	1.00	3.39	-	0.0	HP
	8	0.99	3.33	7-8	6.7	18"
	9	0.98	3.31	7-9	10.0	18"
	10	0.98	3.31	10	3.3	18"
	11	1.02	3.46	11	3.5	18"
	12	0.96	3.24	11-12	6.7	18"
	13	0.98	3.30	11-13	10.0	18"
	14	0.98	3.31	11-14	13.3	18"
	15	0.98	3.31	11-15	16.6	21"
	16	0.98	3.31	11-16	19.9	21"
	17	0.98	3.31	11-17	23.2	2-21"
B	18	0.98	3.30	11-18	26.6	2-21"
	1	0.16	0.53	1	0.5	18"
	2	0.14	0.46	1-2	1.0	18"
	3	0.14	0.46	1-3	1.5	18"
	4	1.17	3.94	"B 1-4 & C"	19.9	2-18"
C	5	1.16	3.92	"B 1-5 & C"	23.8	2-21"
	6	Detention Pond				
	7	0.16	0.52	7-8	1.7	18"
	8	0.36	1.22	8	1.2	18"
	1	1.37	4.61	1	4.6	18"
	2	1.14	3.85	1-2	8.5	18"
	3	1.40	4.72	1-3	13.2	21"
	4	0.35	0.51	4	0.5	18"

RUNOFF COMPUTATIONS

NO.	AC.	RUNOFF COEFF. (C)	Tc min.	1(100)	
				in/hr	Q (100) cfs
1	3.95	0.45	15	7.5	13.4
2	7.58	0.45	15	7.5	25.6
3	7.87	0.45	15	7.5	27.3
4	7.87	0.45	15	7.5	50.8
5	8.56	0.45	15	7.5	29.0
6	1.61	0.45	15	7.5	4.8
7	30.0	0.45	20	6.8	92.0
8	8.72	0.45	20	6.8	26.7
9	3.03	0.45	20	6.8	8.0



0 50 100 200
SCALE: 1" = 100'



OVERALL DRAINAGE AREA MAP
SCALE 1" = 500'



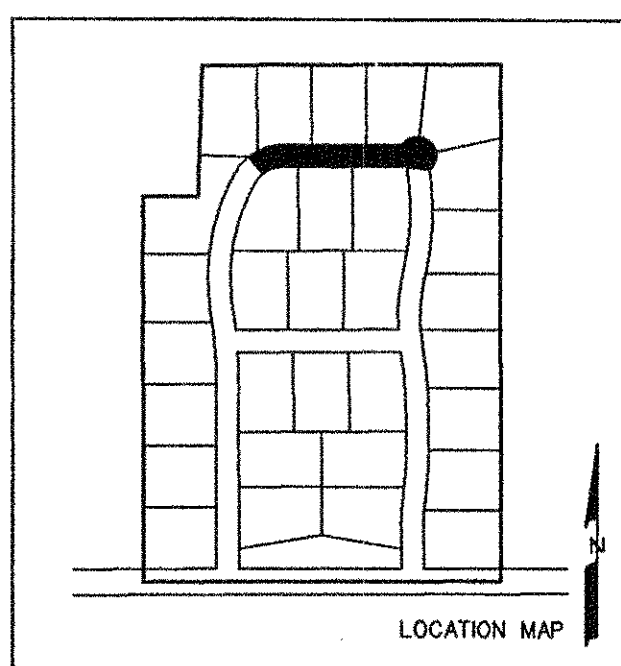
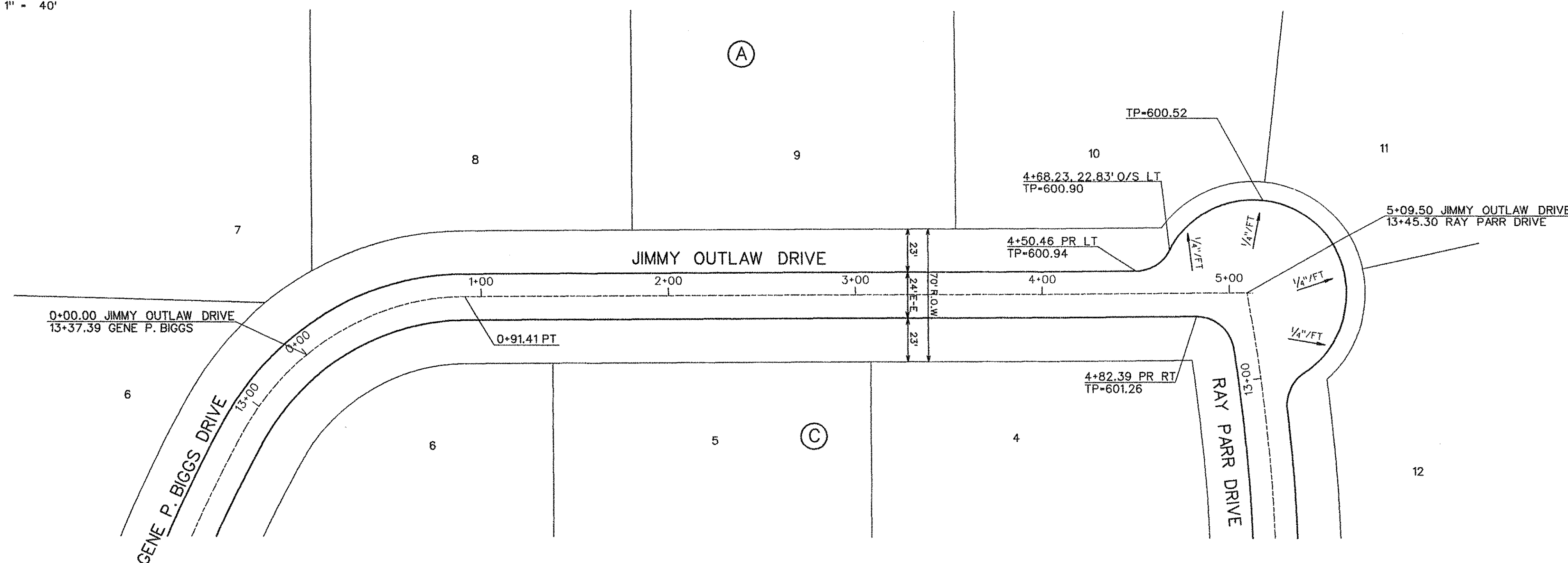
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October 5, 2005

AS-BUILT APRIL 2006
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(NOT FIELD VERIFIED)

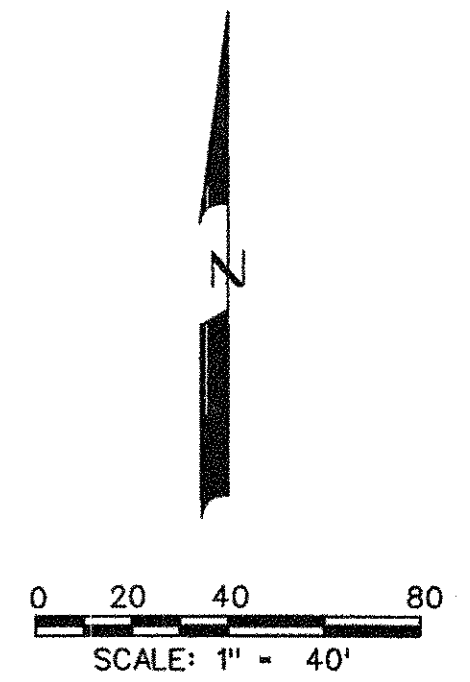
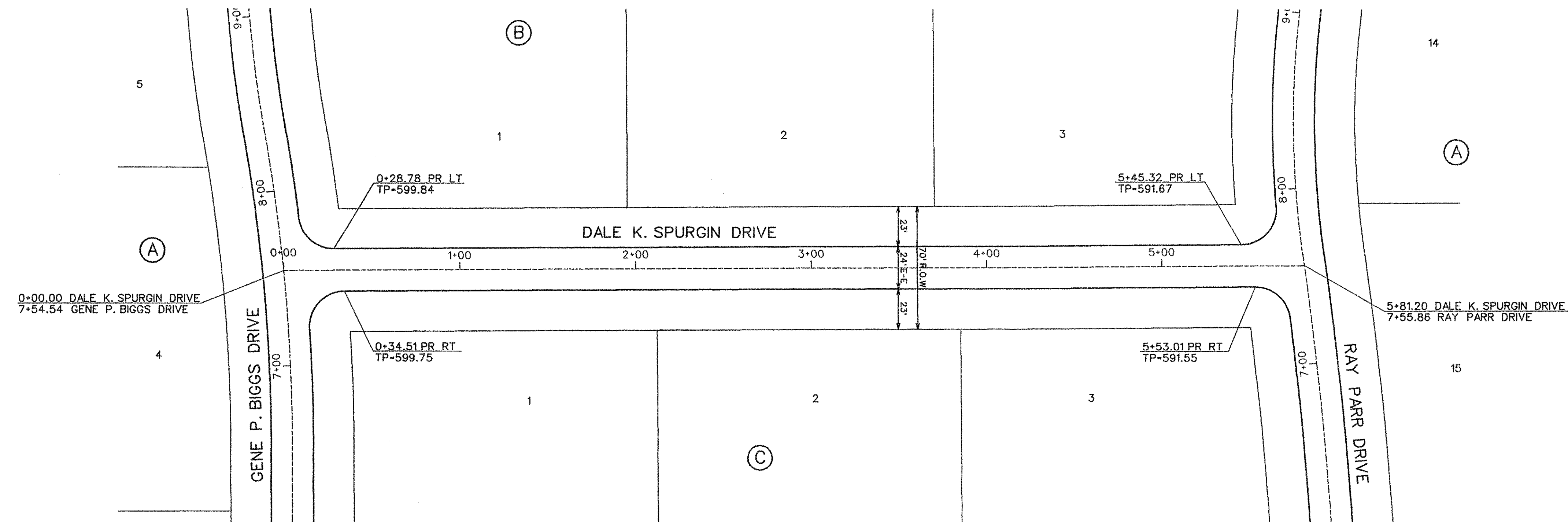
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NO.	REVISIONS	BY	DATE
 CORWIN ENGINEERING, INC. 200 W. BELMONT, SUITE E ALLEN, TEXAS 75013 (972) 396-1200			
CONSTRUCTION PLANS FOR AMHERST ESTATES LUCAS, TEXAS			
DRAINAGE AREA MAP			
DRAWN BY BDD	DESIGNED BY BDD	CHECKED BY BDD	SHEET NO.
JOB NUMBER 0549	DATE JULY 2005	SCALE: 1"=100'	4 of 20

THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON
THIS PLAN ARE TAKEN FROM PUBLIC RECORDS. THE
ENGINEER MAKES NO GUARANTEE THAT THE EXISTING
UTILITIES SHOWN HEREON ARE COMPLETE OR IN
THE CORRECT LOCATION. IT SHALL BE THE RESPONSIBILITY
OF THE CONTRACTOR TO LOCATE ALL EXISTING
UTILITIES PRIOR TO CONSTRUCTION.

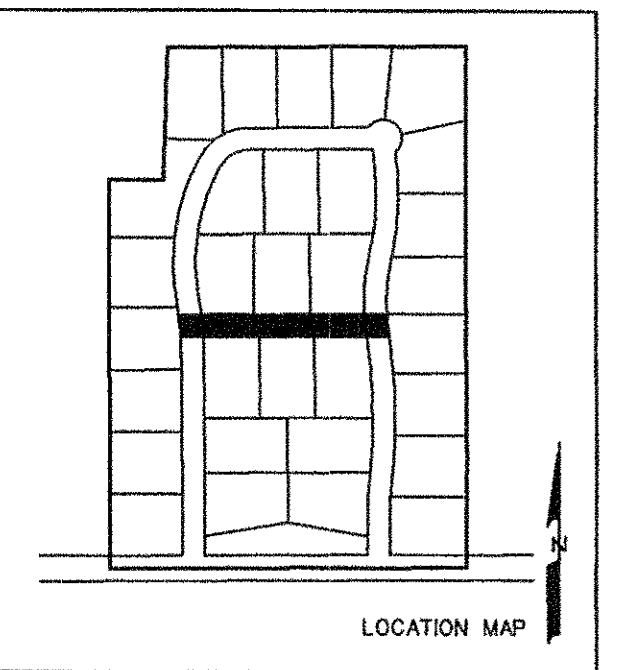
BENCHMARK:
SQUARE CUT "□" TOP OF CURB CENTERLINE
OF INLET 100' WEST OF FM 1378 ON SOUTH
SIDE OF COUNTRY BROOK LANE.
ELEV. = 619.06



...\\0549 Amherst\\0549hopkins.dcn 4/5/2006 9:21:30 AM



BENCHMARK:
SQUARE CUT "□" TOP OF CURB CENTERLINE
OF INLET 100' WEST OF FM 1378 ON SOUTH
SIDE OF COUNTRY BROOK LANE.
ELEV. = 619.06



PROPOSED TP LT

605

600

595

PROPOSED TP RT

NATUARL GROUND
R.O.W. LT.

NATUARL GROUND
R.O.W. RT.

S=-1.58%

DALE K. SPURGIN DRIVE

600

595

590

585

0+10.89 PR LT
TP-599.34
0+28.78 PR LT
TP-599.84
0+13.08 PR RT
TP-599.11
0+34.51 PR RT
TP-599.75

5+45.32 PR LT
TP-591.67
5+53.01 PR RT
TP-591.55
5+67.47 PR LT
TP-591.17
5+70.66 PR RT
TP-590.73

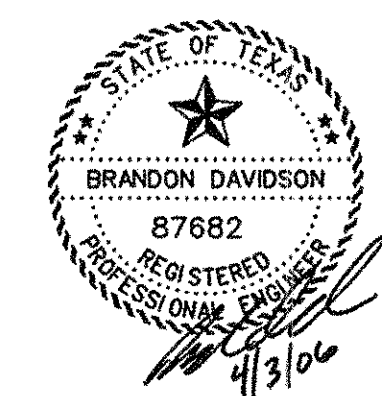
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TP-597.13

TP-595.55

TP-593.97

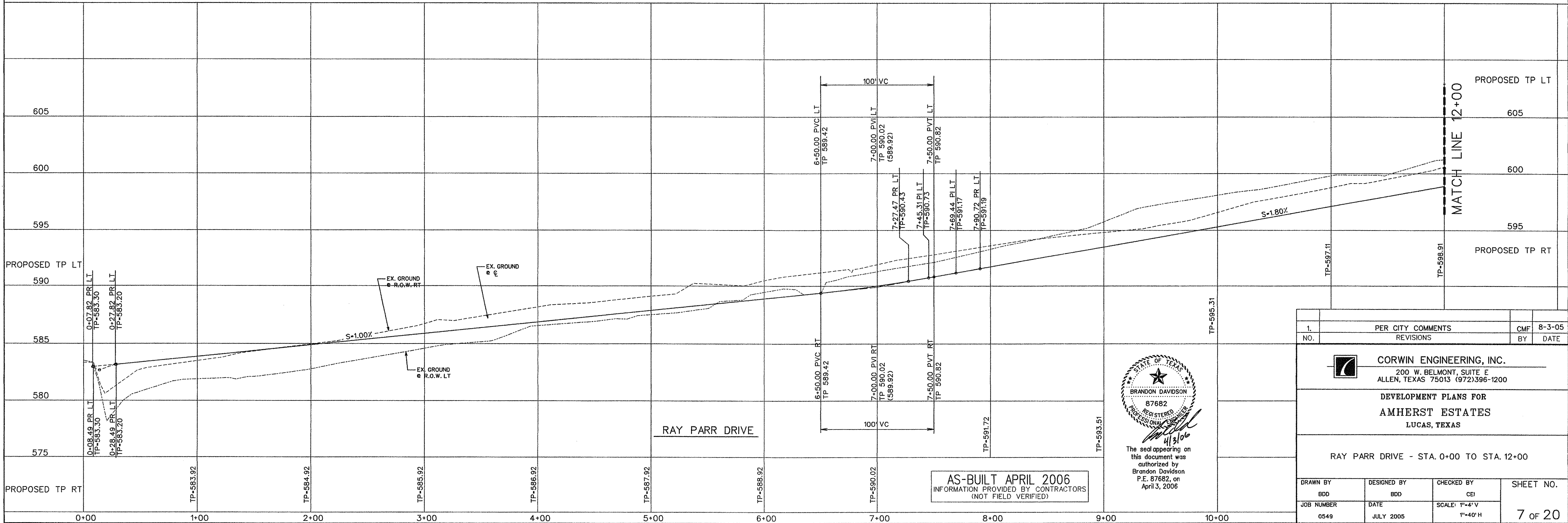
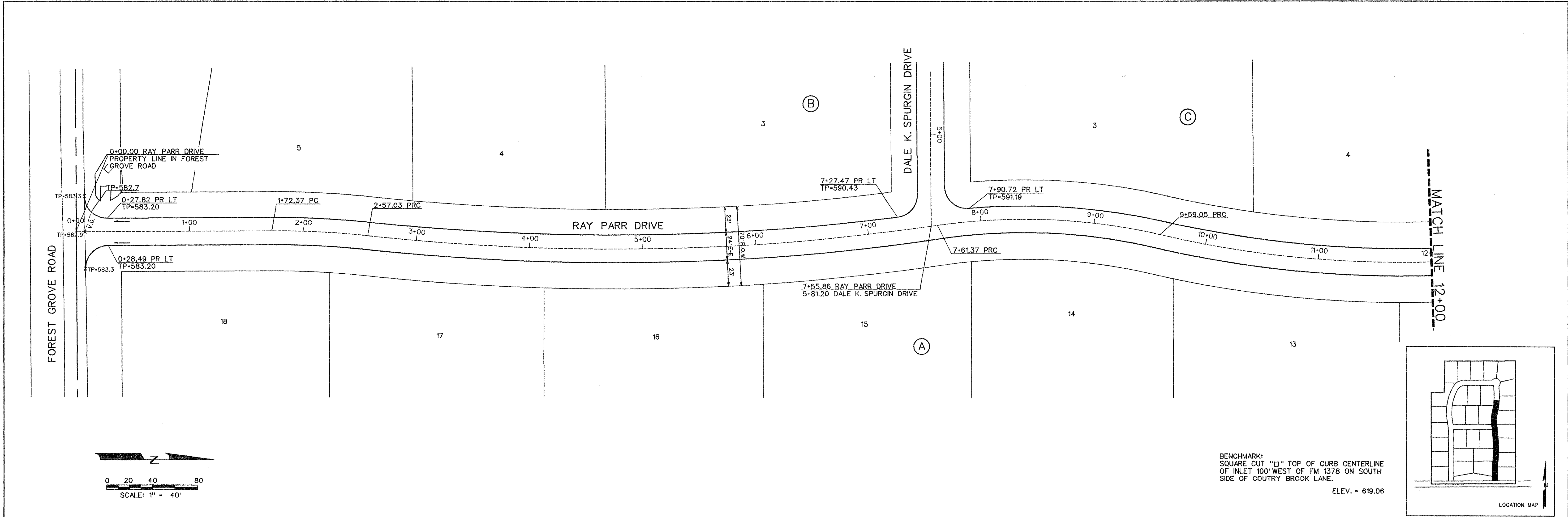
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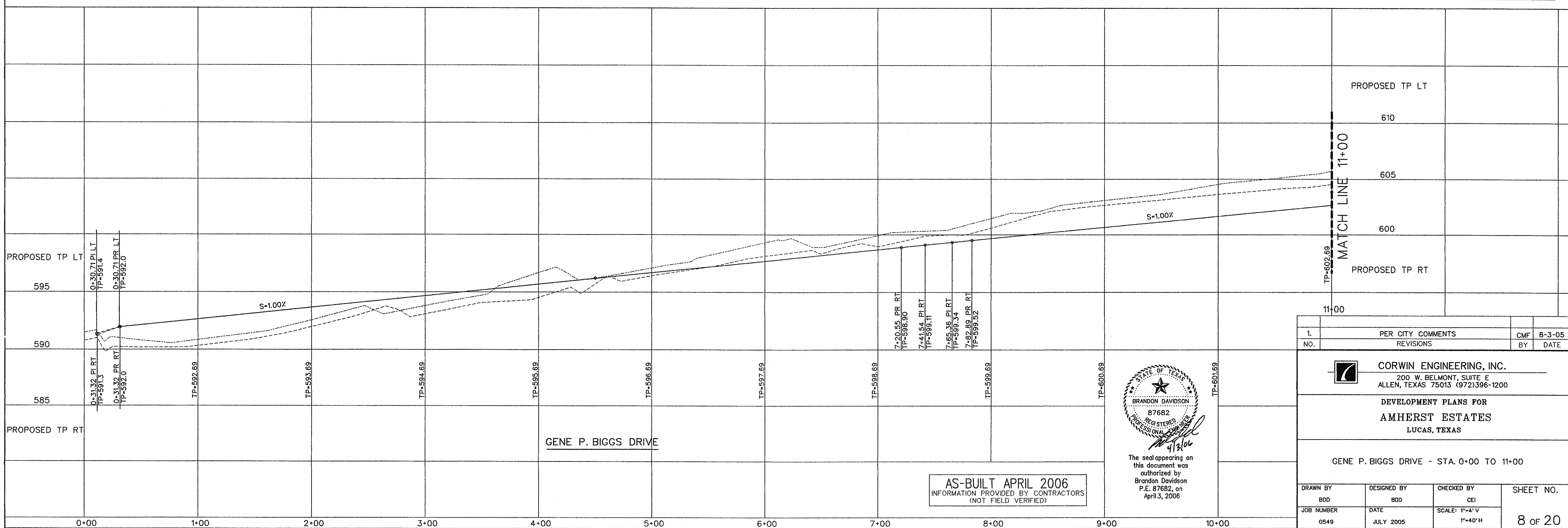
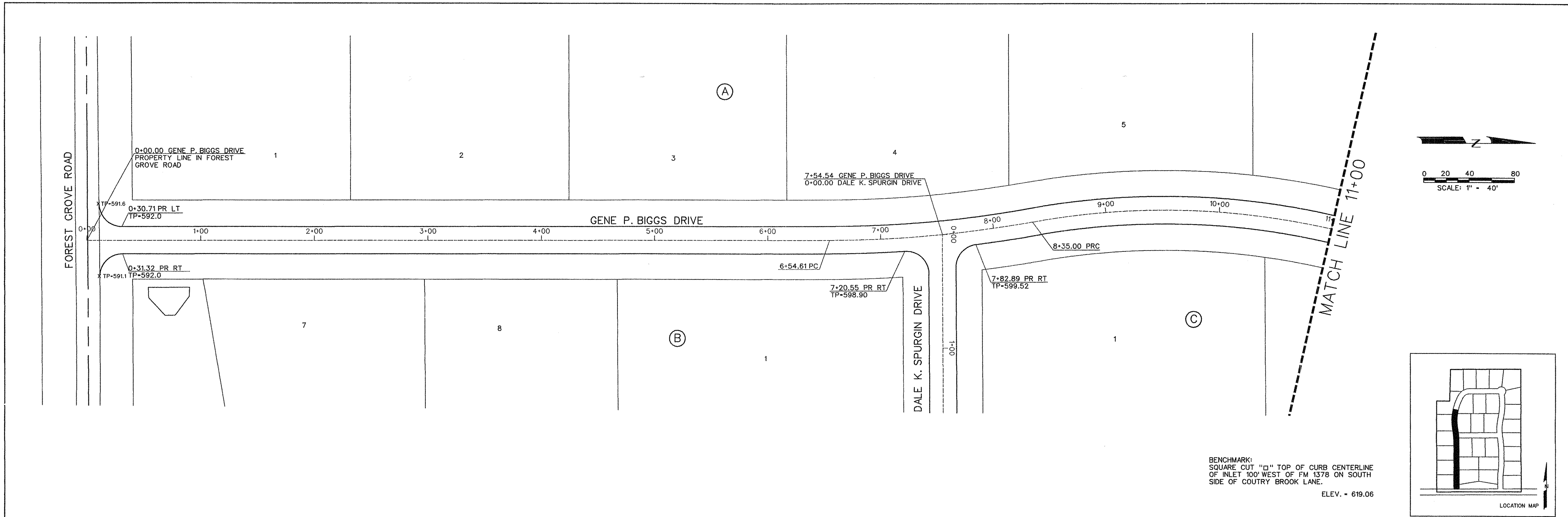
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P.E. 87682, on
April 3, 2006

AS-BUILT APRIL 2006
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(NOT FIELD VERIFIED)

1. PER CITY COMMENTS		CMF	8-3-05
NO.	REVISIONS	BY	DATE
 CORWIN ENGINEERING, INC. 200 W. BELMONT, SUITE E ALLEN, TEXAS 75013 (972)396-1200			
DEVELOPMENT PLANS FOR AMHERST ESTATES LUCAS, TEXAS			
DALE K. SPURGIN DRIVE			
DRAWN BY BDD	DESIGNED BY BDD	CHECKED BY CEI	SHEET NO.
JOB NUMBER 0549	DATE JULY 2005	SCALE: 1"=4' V 1"=40' H	6 OF 20



1.	PER CITY COMMENTS	CMF	8-3-05
NO.	REVISIONS	BY	DATE
 CORWIN ENGINEERING, INC. 200 W. BELMONT, SUITE E ALLEN, TEXAS 75013 (972)396-1200 DEVELOPMENT PLANS FOR AMHERST ESTATES LUCAS, TEXAS RAY PARR DRIVE - STA. 0+00 TO STA. 12+00			
DRAWN BY	DESIGNED BY	CHECKED BY	SHEET NO.
BDD	BDD	CEI	7 OF 20
JOB NUMBER	DATE	SCALE: 1"=4' V 1"=40' H	
0549	JULY 2005		

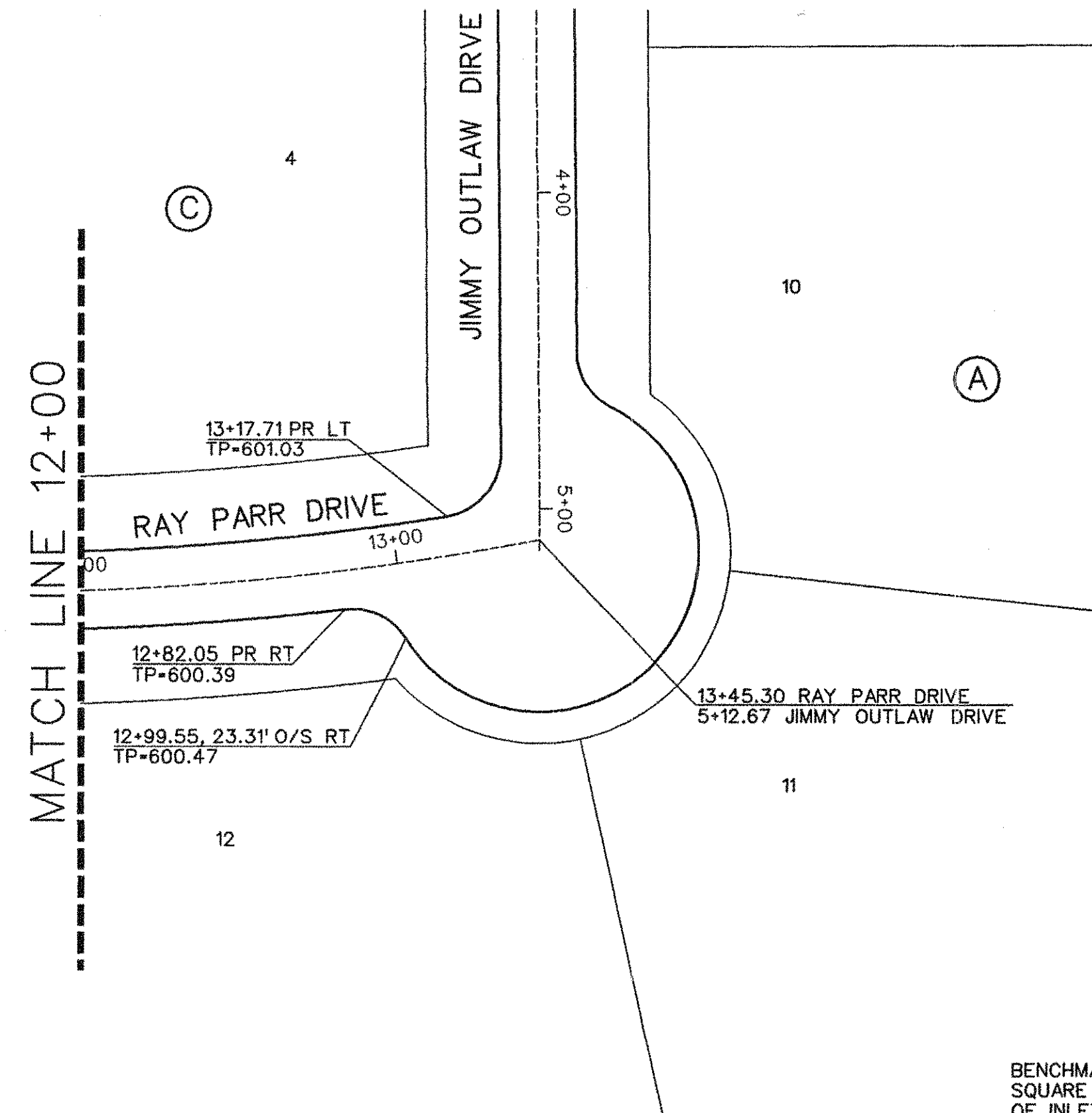
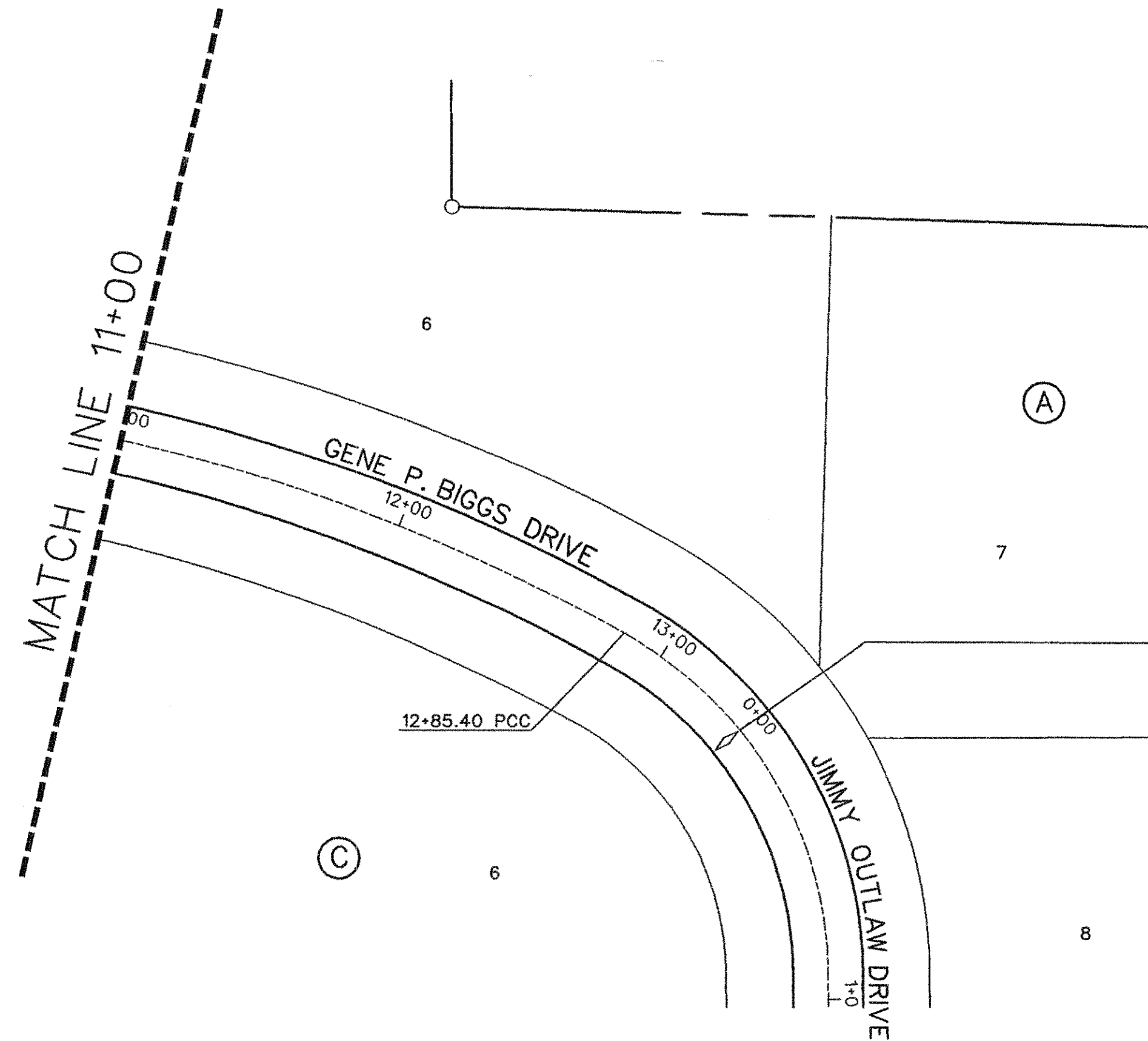


AS-BUILT APRIL 2006
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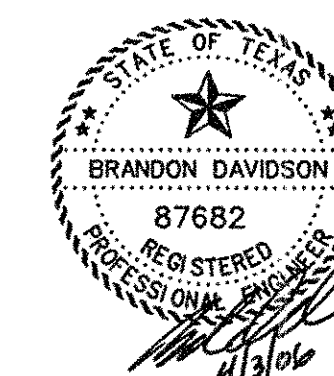
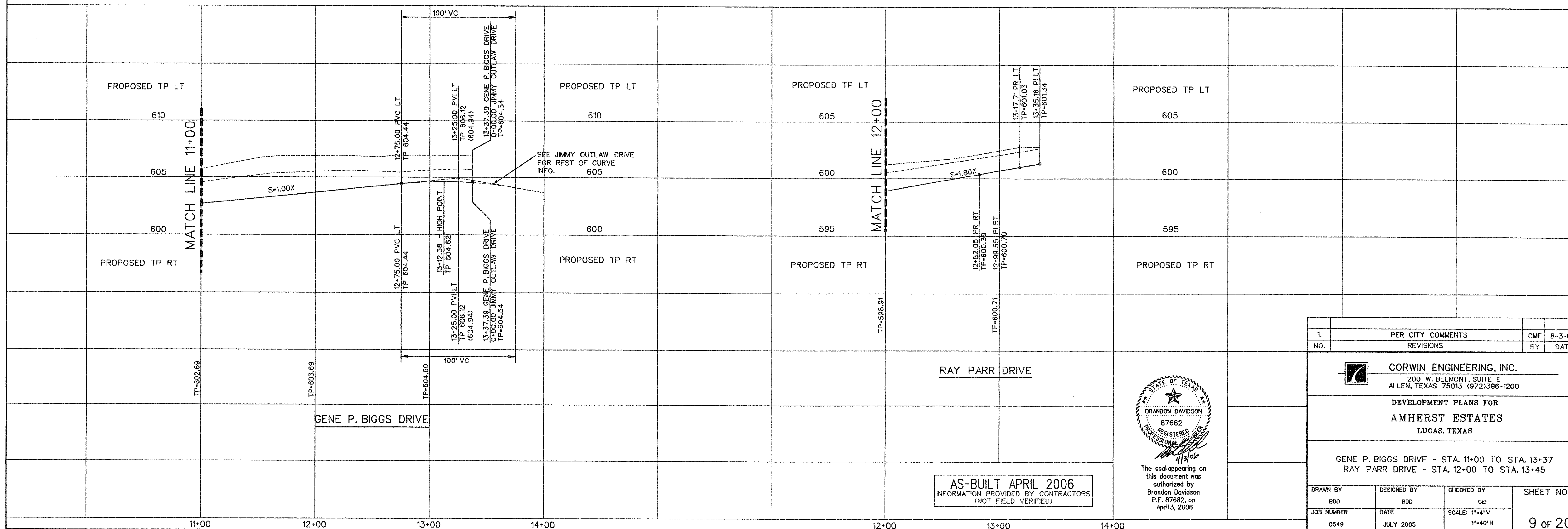
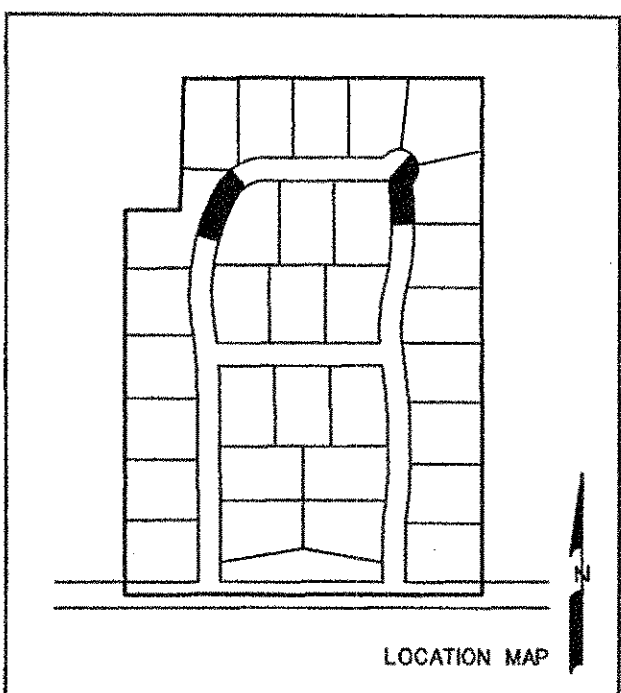


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P.E. 87682, on
April 3, 2006

1.	PER CITY COMMENTS	CMF	8-3-05
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 CORWIN ENGINEERING, INC. 200 W. BELMONT, SUITE E ALLEN, TEXAS 75013 (972)396-1200			
DEVELOPMENT PLANS FOR AMHERST ESTATES LUCAS, TEXAS			
GENE P. BIGGS DRIVE - STA. 0+00 TO 11+00			
DRAWN BY	DESIGNED BY	CHECKED BY	SHEET NO.
BDD	BDD	CEI	
JOB NUMBER	DATE	SCALE: 1"=4' V 1"=40' H	
0549	JULY 2005		8 OF 20



BENCHMARK:
 SQUARE CUT "□" TOP OF CURB CENTERLINE
 OF INLET 100' WEST OF FM 1378 ON SOUTH
 SIDE OF COUNTRY BROOK LANE.
 ELEV. - 619.06



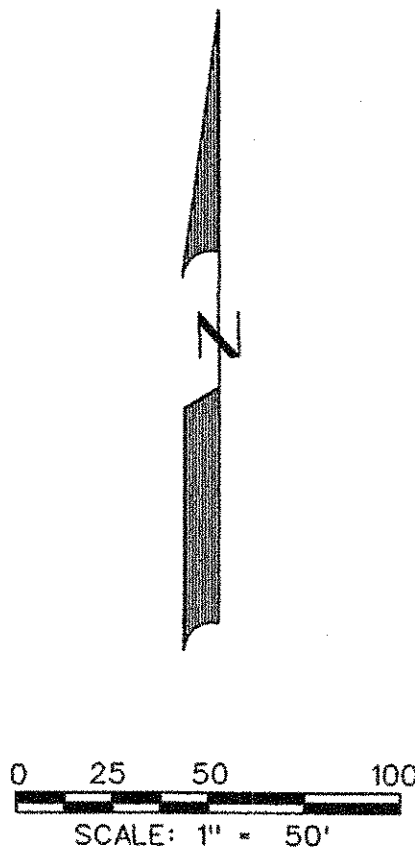
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 April 3, 2006

AS-BUILT APRIL 2006
 INFORMATION PROVIDED BY CONTRACTORS
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DEVELOPMENT PLANS FOR AMHERST ESTATES LUCAS, TEXAS			
GENE P. BIGGS DRIVE - STA. 11+00 TO STA. 13+37 RAY PARR DRIVE - STA. 12+00 TO STA. 13+45			
DRAWN BY	DESIGNED BY	CHECKED BY	SHEET NO.
BDD	BDD	CEI	9 OF 20
JOB NUMBER	DATE	SCALE: 1"=4'-V 1"=40'-H	
0549	JULY 2005		

MARTHA DAY
VOL. 4566 PG. 1374

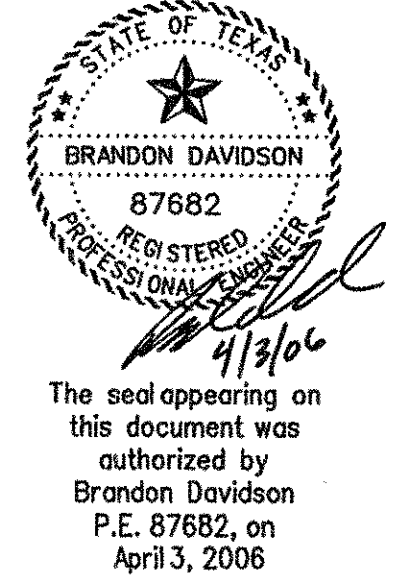
CLERKS DONALD BASS
FILE NO. 95-0078930



LEGEND

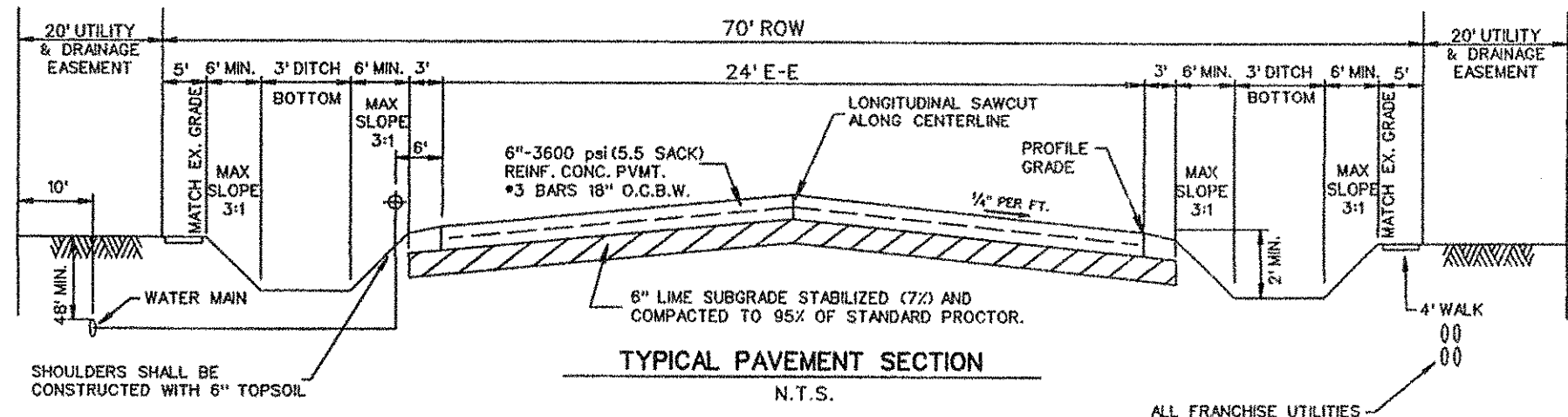
	PROP. WATER LINE
	PROP. FIRE HYDRANT AND VALVE
	PROP. GATE VALVE
	EXIST. WATER LINE
	EXIST. FIRE HYDRANT AND VALVE
	PROP. STORM SEWER
	PROP. CURB INLETS
	PROP. CONC. HEADWALL

SERVICE SCHEDULE		
TYPE	SIZE	NO.
WATER	1"	31
IRRIGATION	2"	1



AS-BUILT APRIL 2006
INFORMATION PROVIDED BY CONTRACTORS
(NOT FIELD VERIFIED)

THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON THIS PLAN ARE TAKEN FROM PUBLIC RECORDS. THE ENGINEER MAKES NO GUARANTEE THAT THE EXISTING UTILITIES SHOWN HEREON ARE COMPLETE OR IN THE CORRECT LOCATION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.



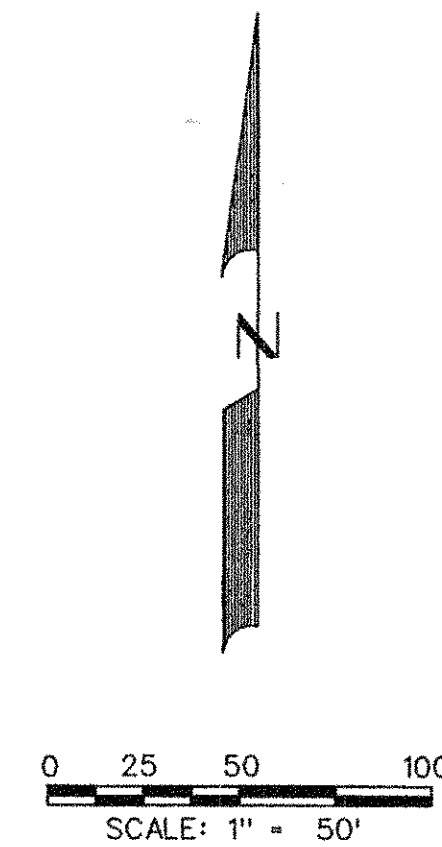
BENCHMARK:
SQUARE CUT "D" TOP OF CURB CENTERLINE
OF INLET 100' WEST OF FM 1378 ON SOUTH
SIDE OF COUNTRY BROOK LANE.
ELEV. = 619.06

1.	PRE CITY COMMENTS	CMF	8-3-05
NO.	REVISIONS	BY	DATE
CORWIN ENGINEERING, INC. 200 W. BELMONT, SUITE E ALLEN, TEXAS 75013 (972) 396-1200			
CONSTRUCTION PLANS FOR AMHERST ESTATES LUCAS, TEXAS			
WATER PLAN			
DRAWN BY BDD	DESIGNED BY BDD	CHECKED BY BDD	SHEET NO.
JOB NUMBER 0549	DATE JULY 2005	SCALE: 1"=50'	10 OF 20

MARTHA RAY
VOL. 4368, PG. 374

FAIRVIEW FARMS
FOURTH SECTION
VOL. C, PG. 123

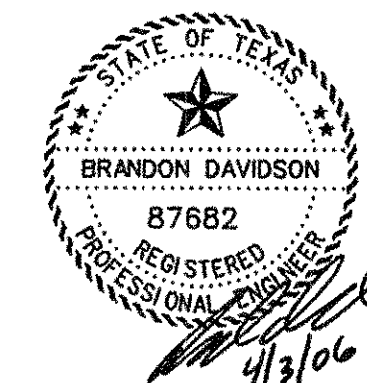
DONALD BASS
CLERKS FILE NO. 95-0078930



LEGEND

	PROP. WATER LINE
	PROP. FIRE HYDRANT AND VALVE
	PROP. GATE VALVE
	EXIST. WATER LINE
	EXIST. FIRE HYDRANT AND VALVE
	PROP. STORM SEWER
	PROP. CURB INLETS
	PROP. CONC. HEADWALL

SERVICE SCHEDULE		
TYPE	SIZE	NO.
WATER	1"	31
IRRIGATION	2"	1

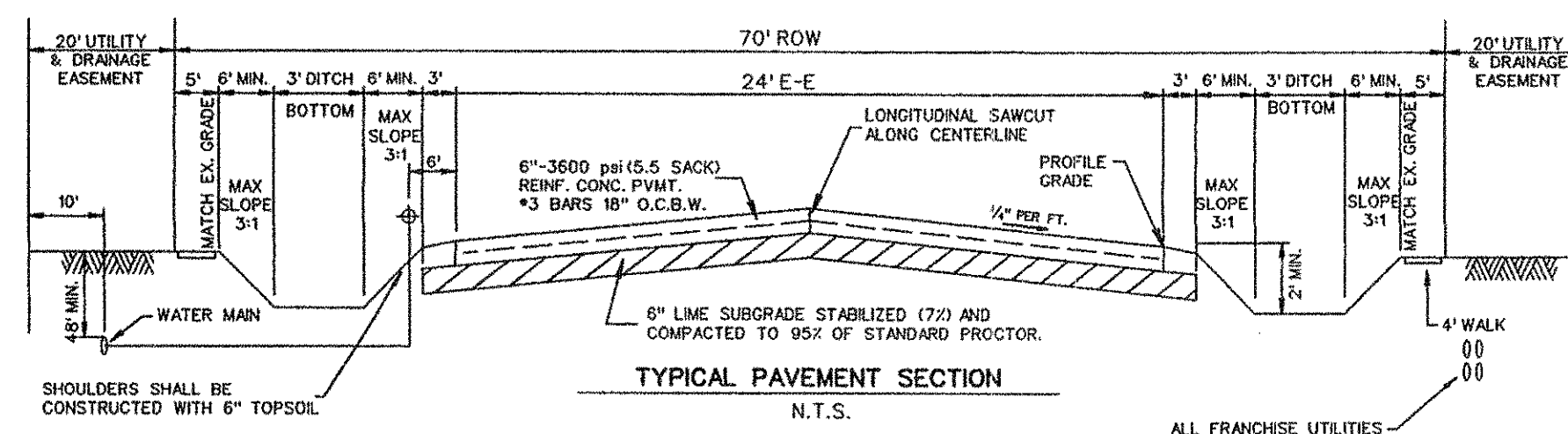


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Brandon Davidson
P.E. 87682, on
April 3, 2006

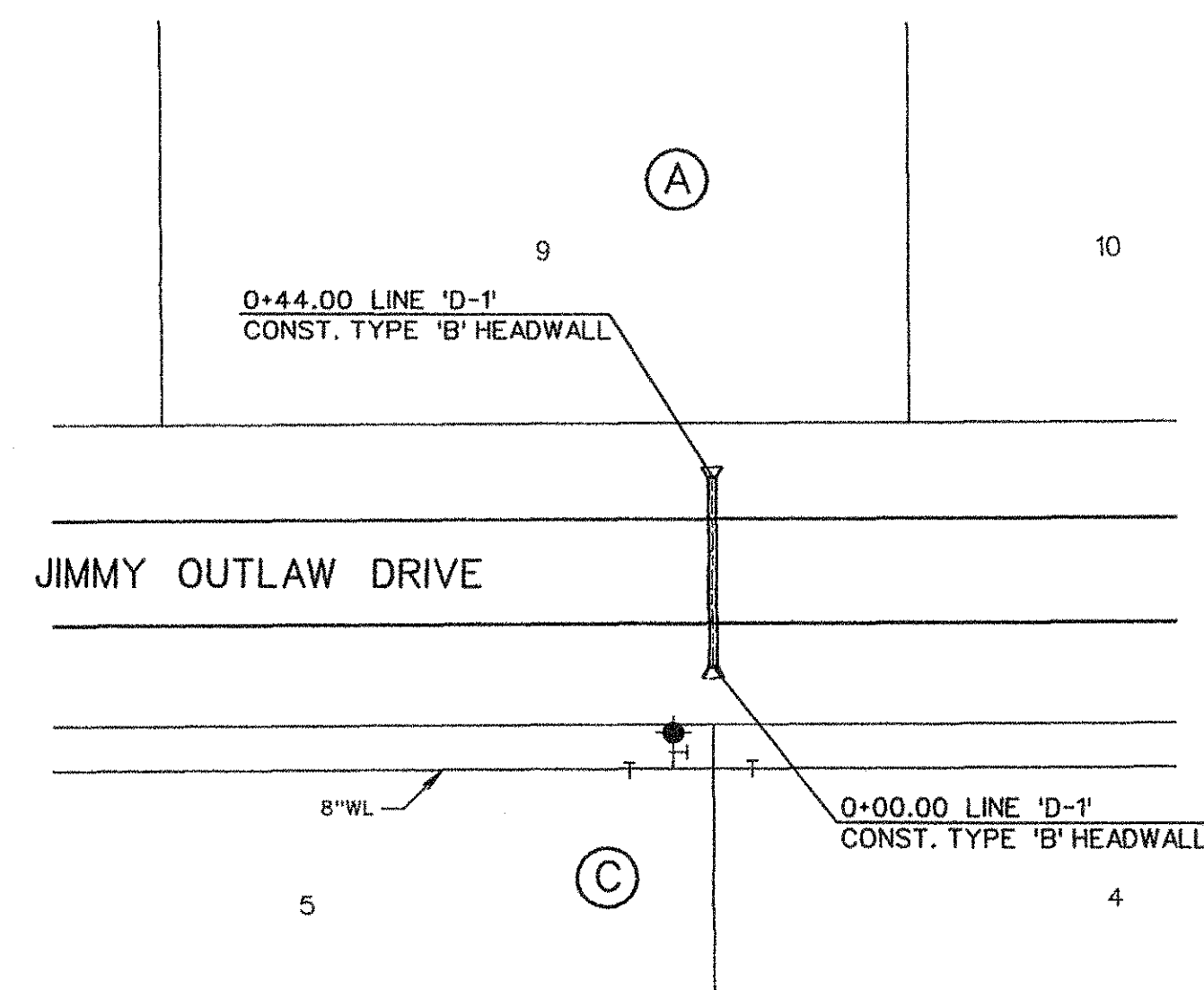
AS-BUILT APRIL 2006
INFORMATION PROVIDED BY CONTRACTORS
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1. PRE CITY COMMENTS		CMF	8-3-05
NO.	REVISIONS	BY	DATE
CORWIN ENGINEERING, INC. 200 W. BELMONT, SUITE E ALLEN, TEXAS 75013 (972) 396-1200			
CONSTRUCTION PLANS FOR AMHERST ESTATES LUCAS, TEXAS			
WATER PLAN			
DRAWN BY BDD	DESIGNED BY BDD	CHECKED BY BDD	SHEET NO.
JOB NUMBER 0549	DATE JULY 2005	SCALE: 1"=50'	11 OF 20

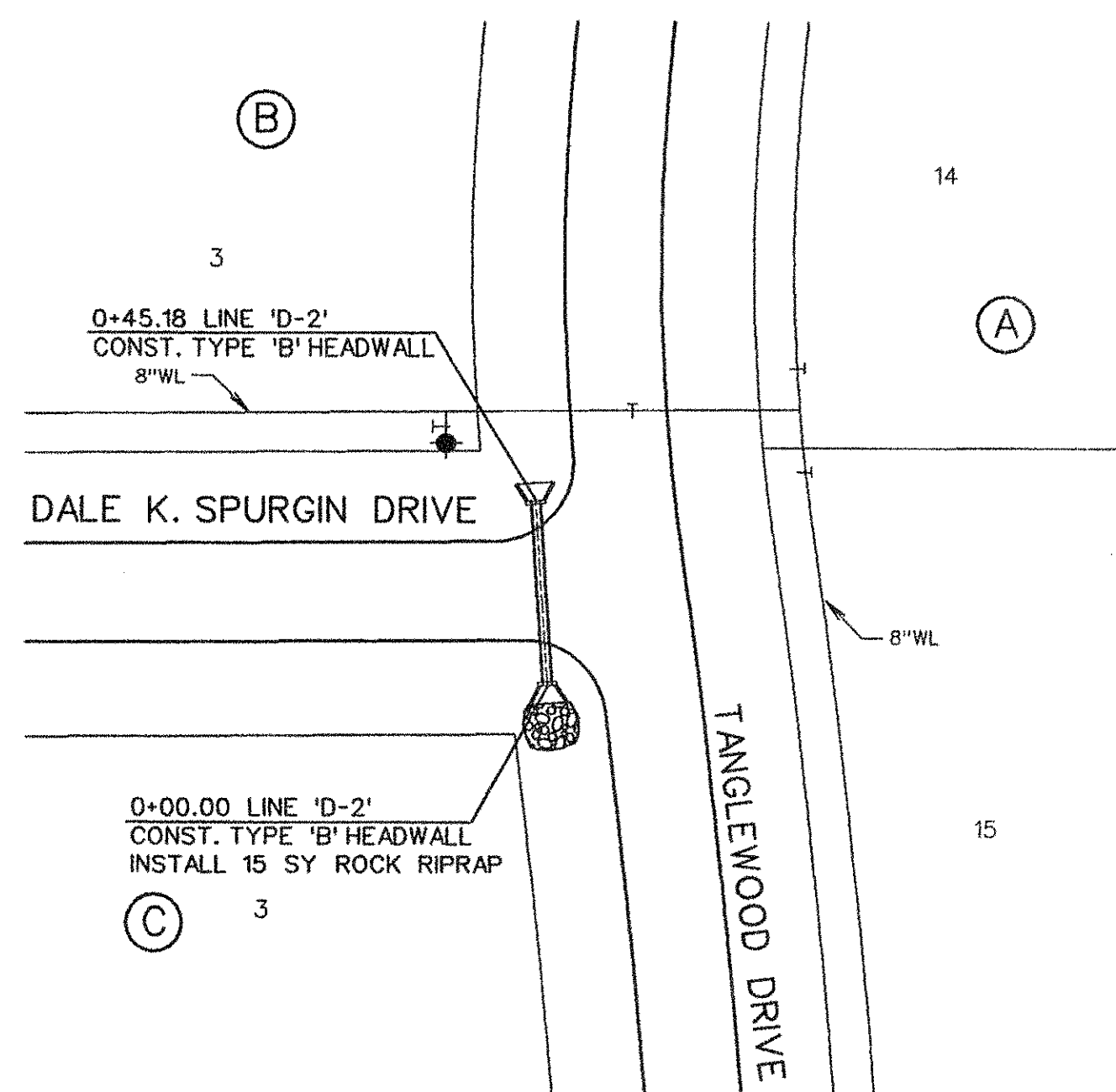
THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON THIS PLAN ARE TAKEN FROM PUBLIC RECORDS. THE ENGINEER MAKES NO GUARANTEE THAT THE EXISTING UTILITIES SHOWN HEREON ARE COMPLETE OR IN THE CORRECT LOCATION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.



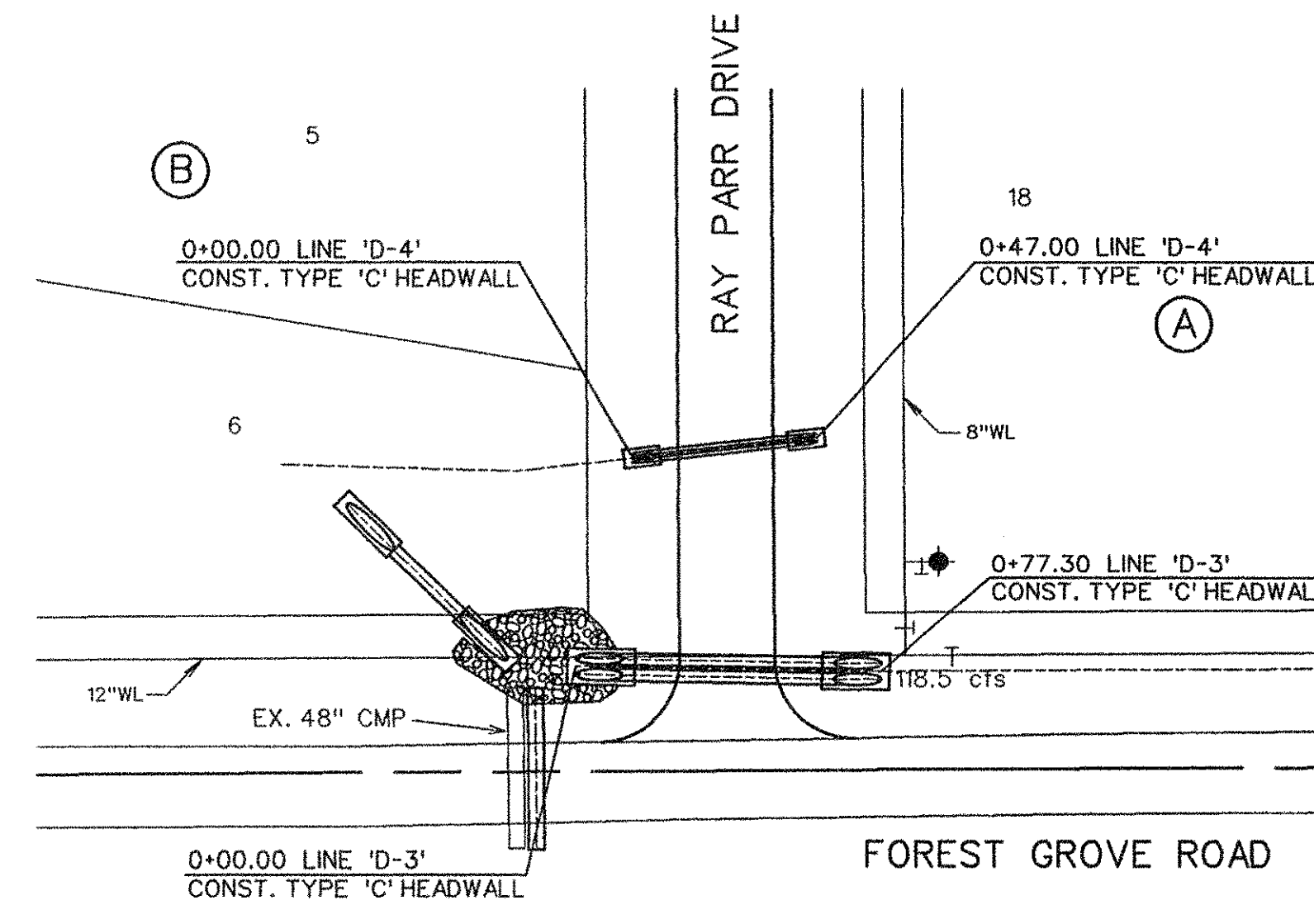
BENCHMARK:
SQUARE CUT "D" TOP OF CURB CENTERLINE
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SIDE OF COUNTRY BROOK LANE.
ELEV. = 619.06



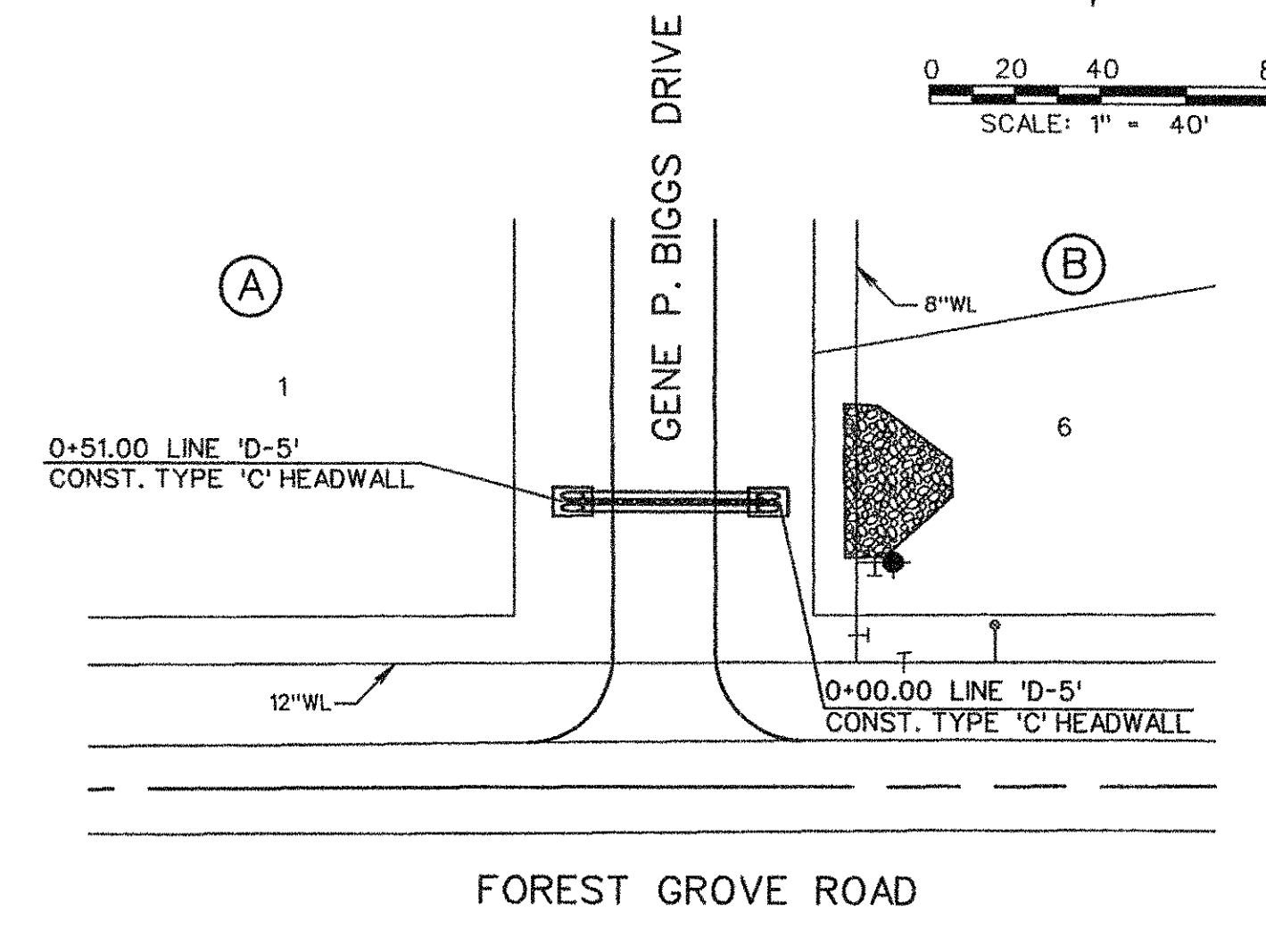
LINE 'D-1'



LINE 'D-2'



LINES 'D-3' & 'D-4'

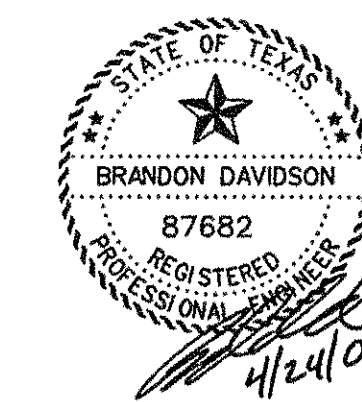
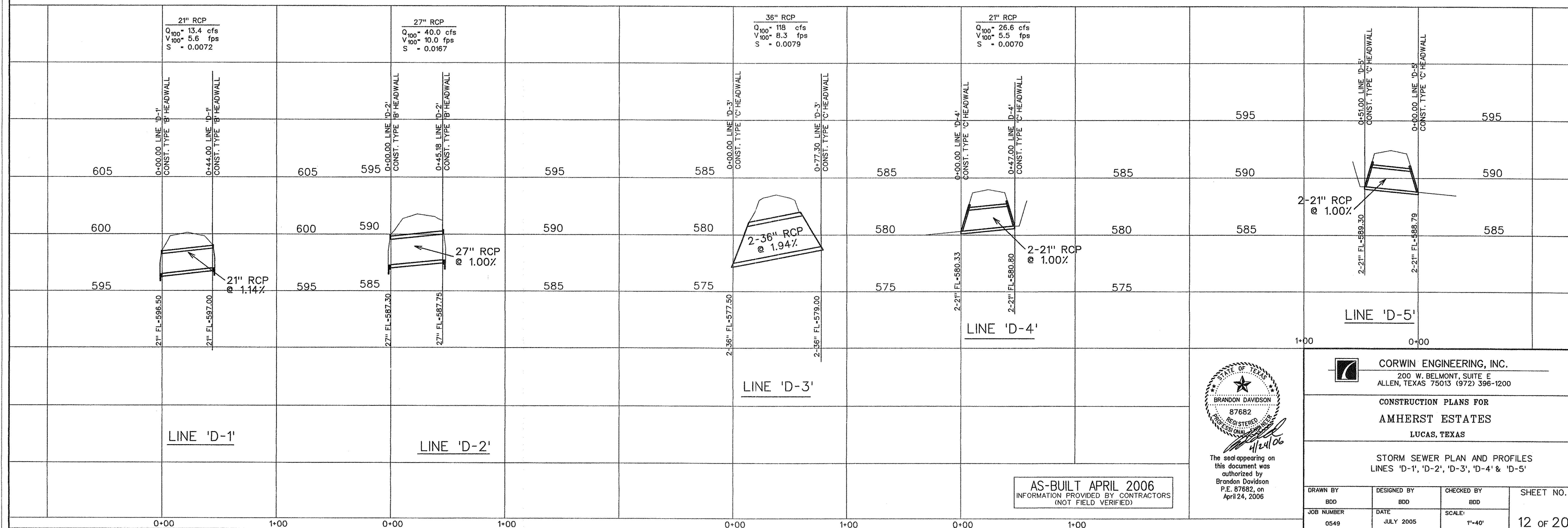


LINE 'D-5'

BENCHMARK:
SQUARE CUT "B" TOP OF CURB CENTERLINE
OF INLET 100' WEST OF FM 1378 ON SOUTH
SIDE OF COUNTRY BROOK LANE.
ELEV. = 619.06

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UTILITIES PRIOR TO CONSTRUCTION.

21" RCP
Q₁₀₀ = 32.8 cfs
V₁₀₀ = 6.8 fps
S = 0.0107



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P.E. 87682, on
April 24, 2006

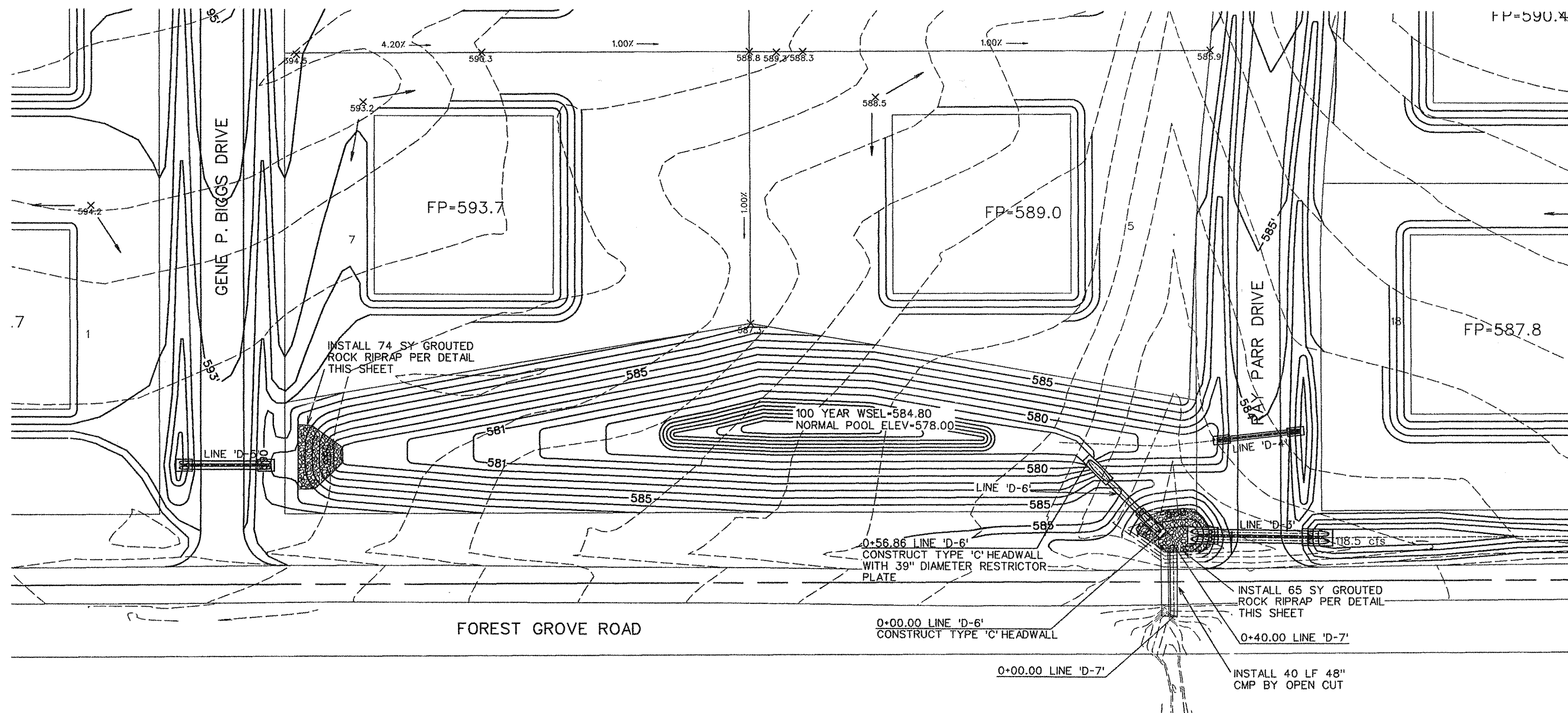
AS-BUILT APRIL 2006
INFORMATION PROVIDED BY CONTRACTORS
(NOT FIELD VERIFIED)

CORWIN ENGINEERING, INC.
200 W. BELMONT, SUITE E
ALLEN, TEXAS 75013 (972) 396-1200

CONSTRUCTION PLANS FOR
AMHERST ESTATES
LUCAS, TEXAS

STORM SEWER PLAN AND PROFILES
LINES 'D-1', 'D-2', 'D-3', 'D-4' & 'D-5'

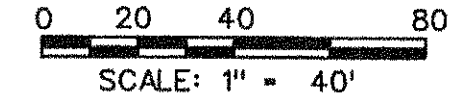
DRAWN BY BDD	DESIGNED BY BDD	CHECKED BY BDD	SHEET NO. 12 OF 20
JOB NUMBER 0549	DATE JULY 2005	SCALE 1"=40'	



STORAGE-ELEVATION TABLE

POND ELEVATION (FEET)	STORAGE PROVIDED (CUBIC FEET)
577.5	0
579	2,836
580	10,653
581	23,540
582	40,366
583	60,961
584	85,437
585	113,915

100-YEAR WSEL BASED ON VOLUME REQUIRED=583.2
100-YEAR WSEL BASED ON OUTFALL HEAD REQUIRED=584.8



DETENTION POND CALCULATIONS

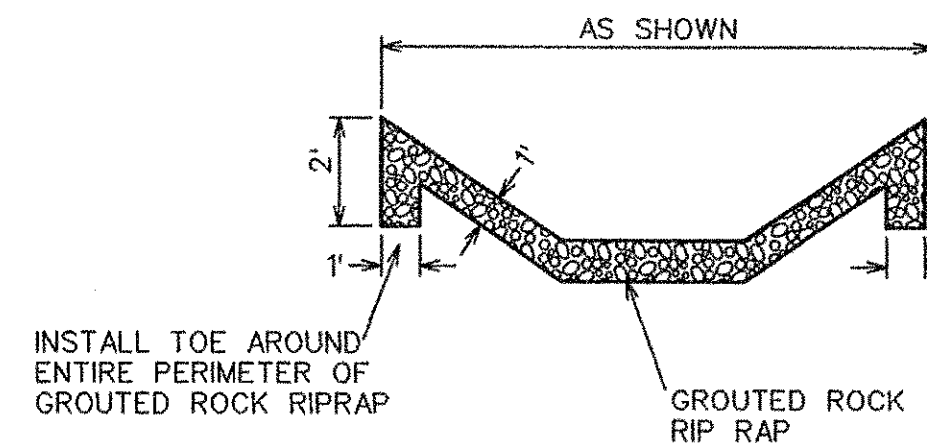
100 Year												
Difference between undeveloped and developed runoff onsite												
0.35 undeveloped runoff coefficient												
Existing Flow = (38.9 acres * 0.35 * 6.8 in/hr) = 92.6 cfs												
One Pond												
Storm Duration	Inflow Duration	Area (AC.)	Future CA ¹⁰⁰	Future CA ¹⁰⁰	Future CA ¹⁰⁰	Rainfall intensity	Inflow (cfs)	Volume (cubic ft.)	Volume (cubic ft.)	Volume (cubic ft.)	Volume (acre-ft.)	Outflow (cfs)
10	20	38.90	0.45	1.00	17.51	8.88	155.4	83267	55560	37707	0.87	92.6
20	30	38.90	0.45	1.00	17.51	6.80	119.0	142841	83340	59501	1.37	92.6
30	40	38.90	0.45	1.00	17.51	5.60	98.0	176450	111120	65330	1.50	92.6
40	50	38.90	0.45	1.00	17.51	4.85	84.9	203758	138900	84898	1.49	92.6
50	60	38.90	0.45	1.00	17.51	4.30	75.3	225815	166880	59135	1.36	92.6
60	70	38.90	0.45	1.00	17.51	3.85	67.4	242619	194460	48159	1.11	92.6
70	80	38.90	0.45	1.00	17.51	3.50	61.3	257324	222240	35084	0.81	92.6
80	90	38.90	0.45	1.00	17.51	3.15	55.6	281480	250020	31460	0.72	92.6
90	100	38.90	0.45	1.00	17.51	3.15	55.1	297760	277800	19960	0.46	92.6
100	110	38.90	0.45	1.00	17.51	2.95	51.6	309819	305580	4259	0.10	92.6
110	120	38.90	0.45	1.00	17.51	2.80	49.0	323492	333360	-9868	-0.23	92.6
120	130	38.90	0.45	1.00	17.51	2.50	43.8	335090	361140	-46050	-1.06	92.6

U/S WSEL CALCULATION FOR INLET TO LINE 'D-7'

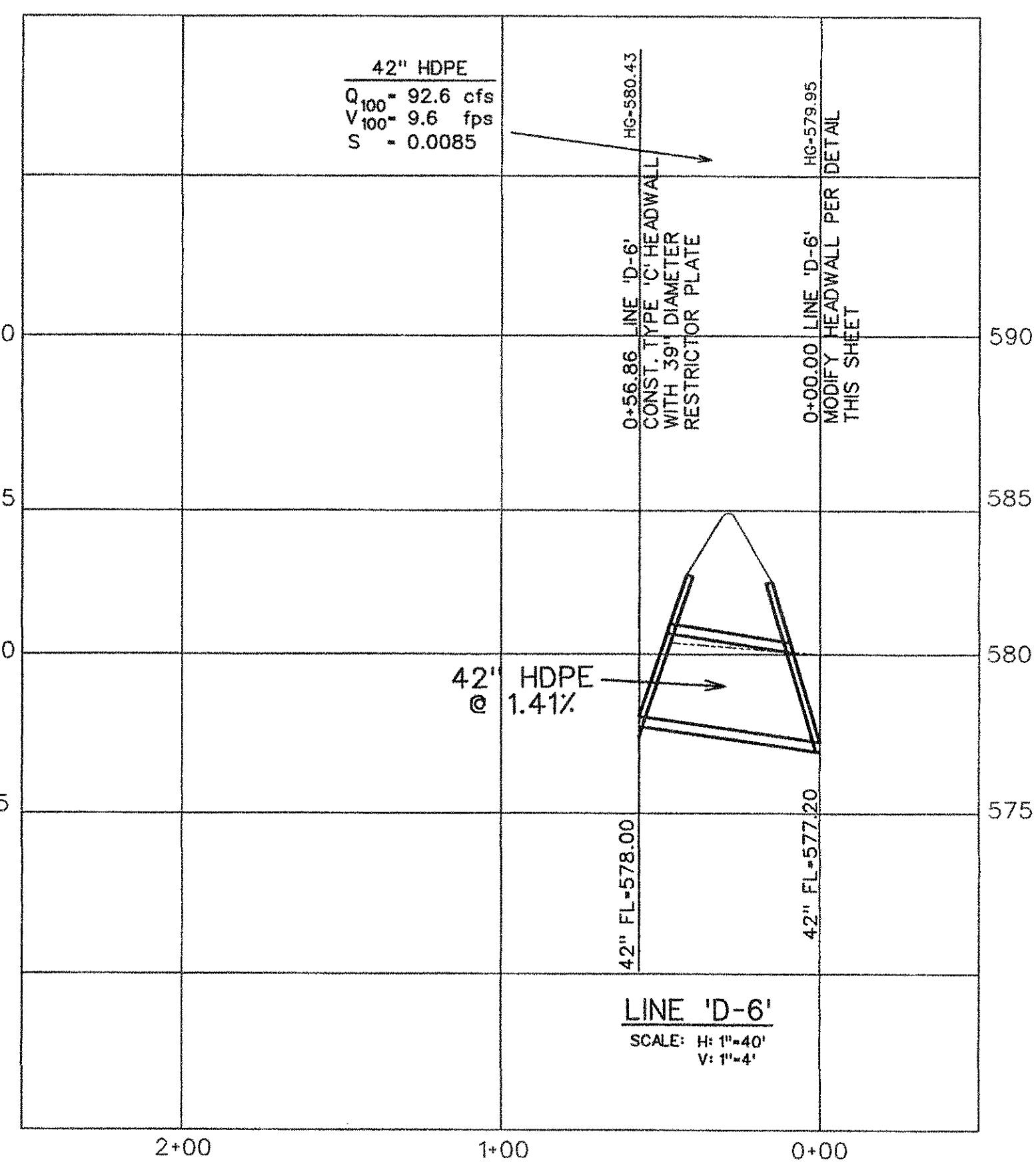
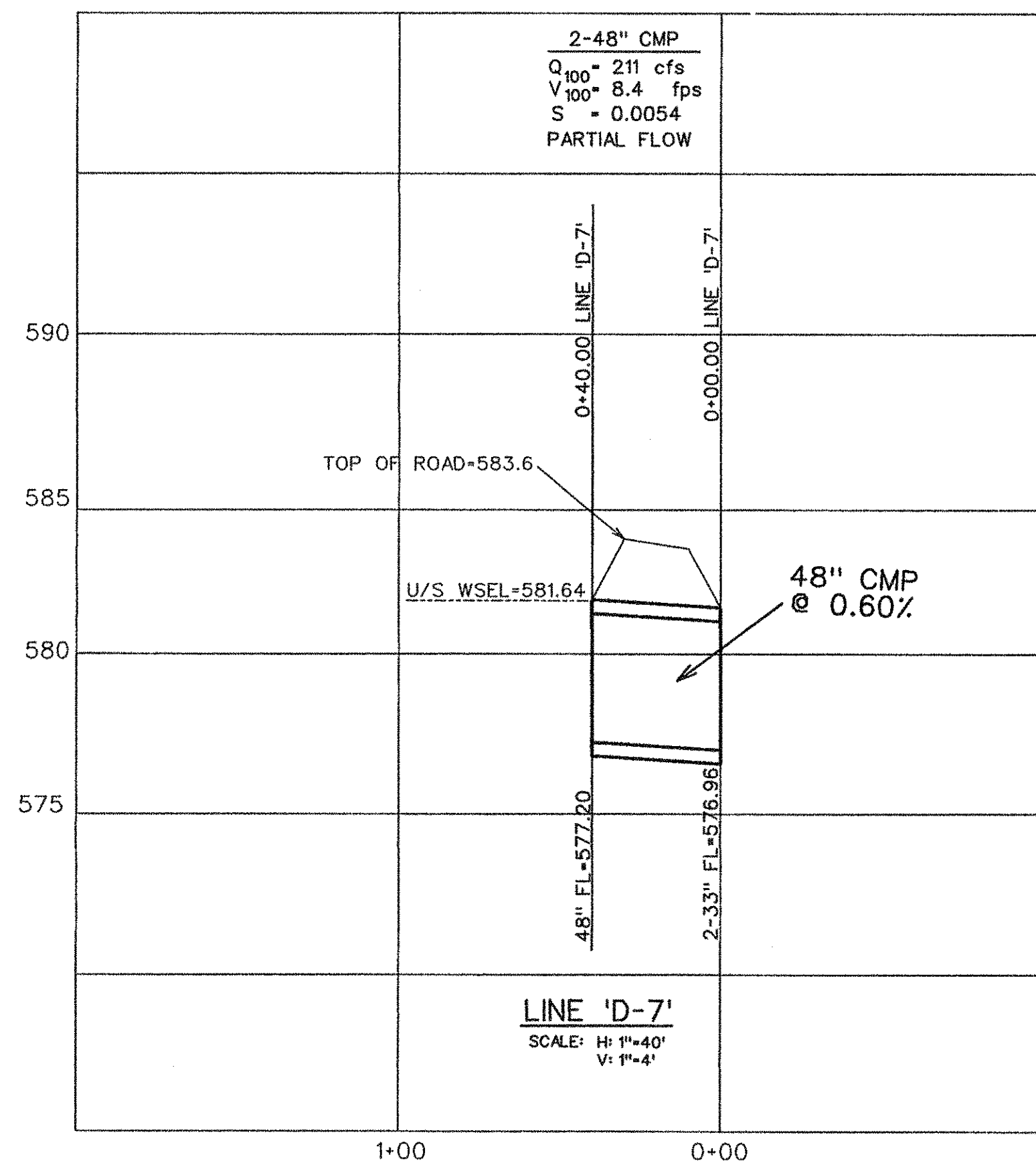
ORIFICE EQUATION: $Q = C \cdot A \cdot (2gh)^{1/2}$
C=0.67
g=32.16
AREA 2'-48" PIPE=25.1328
 $211 = 0.67 \cdot 11 \cdot (64.4 \cdot h)^{1/2}$
h=2.44'
Upstream Elev.=Centerline of Pipe + h
Upstream Elev.=579.20+2.44=581.64'

OUTFLOW CALCULATIONS - 100-YEAR: FOR DETENTION POND OUTLET INLET CONTROL CALCULATIONS

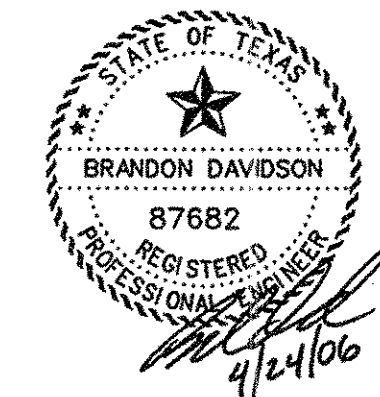
ORIFICE EQUATION: $Q = C \cdot A \cdot (2gh)^{1/2}$
C=0.67
g=32.16
A=9.6212 SF
h=100 YR POND ELEV - U/S HG OF OUTLET PIPE
h=584.80 - 580.43 = 4.37'
 $Q = 0.67 \cdot 8.2958 \cdot (281.4)^{1/2}$
Q=93.2 CFS



GROUTED ROCK RIPRAP DETAIL



BENCHMARK: SQUARE CUT "D" TOP OF CURB CENTERLINE OF INLET 100' WEST OF FM 1378 ON SOUTH SIDE OF COUNTRY BROOK LANE.
ELEV. = 619.06

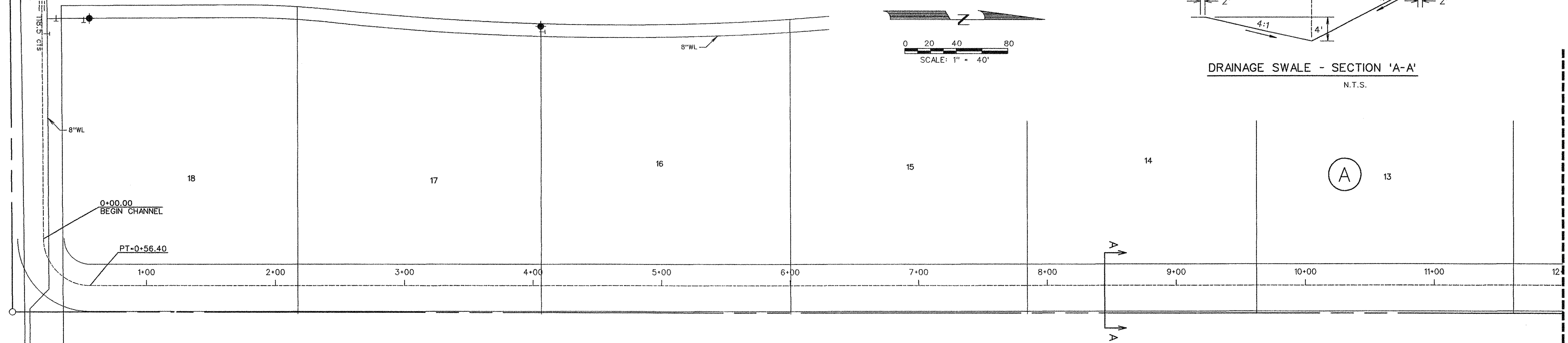
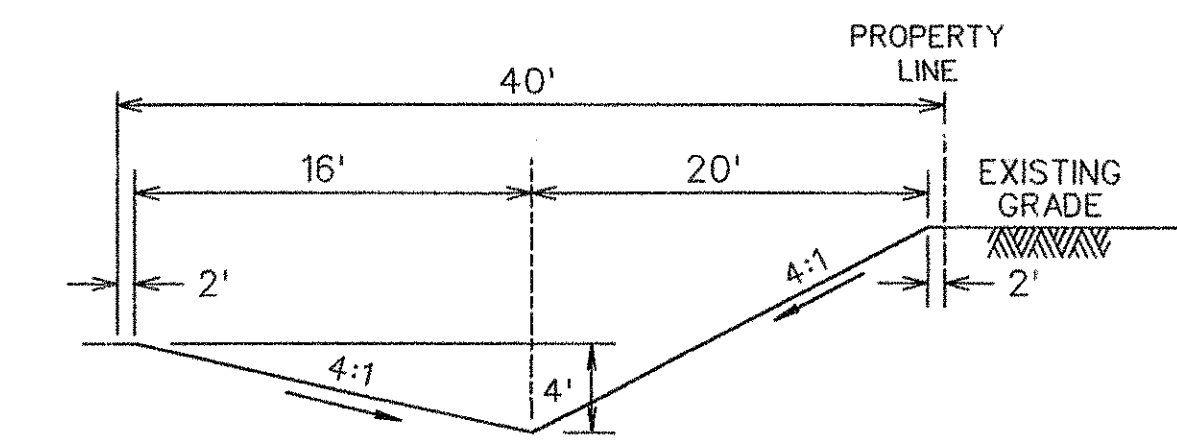
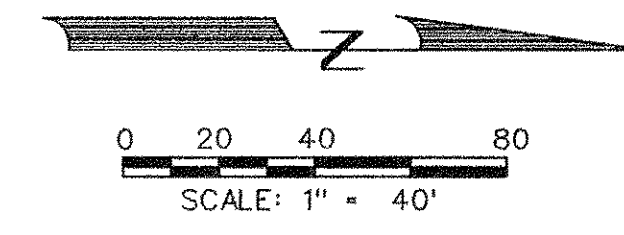


AS-BUILT APRIL 2006
INFORMATION PROVIDED BY CONTRACTORS (NOT FIELD VERIFIED)

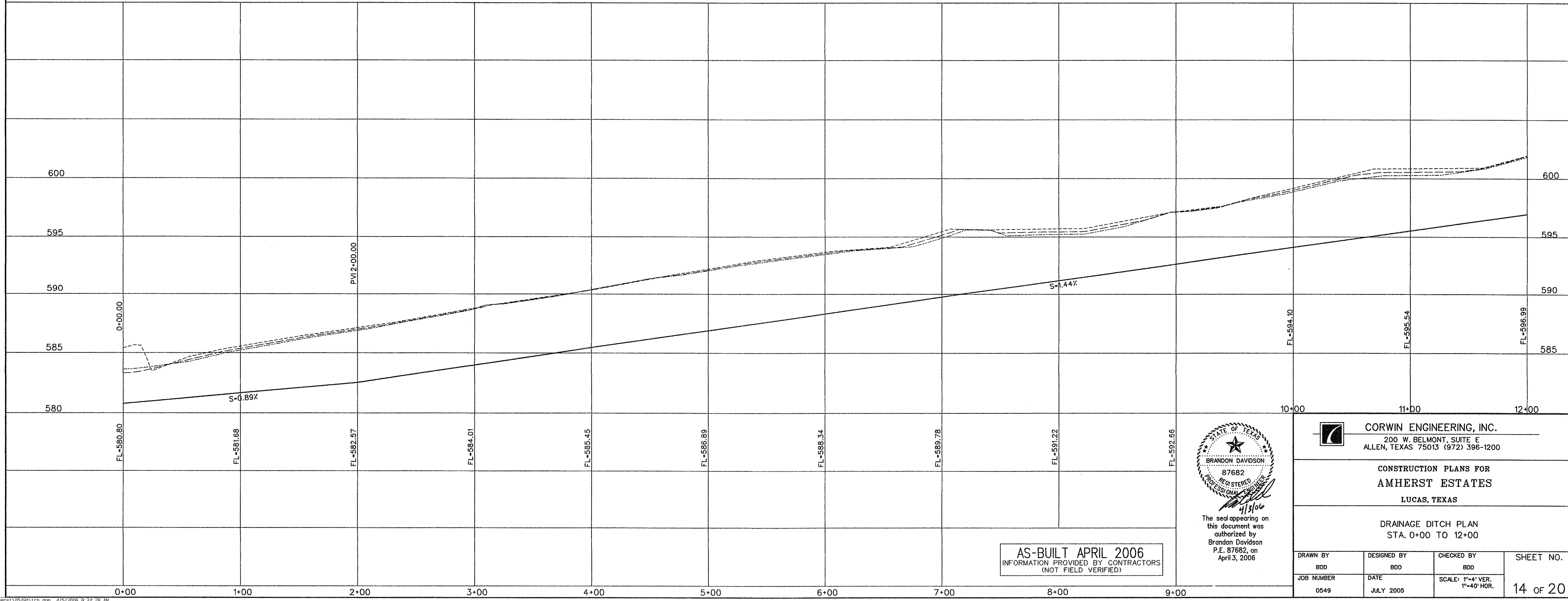
1.	PER CITY COMMENTS	CMF	8-3-05
NO.	REVISIONS	BY	DATE
CORWIN ENGINEERING, INC. 200 W. BELMONT, SUITE E ALLEN, TEXAS 75013 (972)396-1200			
DEVELOPMENT PLANS FOR AMHERST ESTATES LUCAS, TEXAS			
DETENTION POND PLAN			
DRAWN BY BDD	DESIGNED BY BDD	CHECKED BY CEI	SHEET NO.
JOB NUMBER 0549	DATE JULY 2005	SCALE 1"=40' H	13 OF 20

FOREST GROVE ROAD

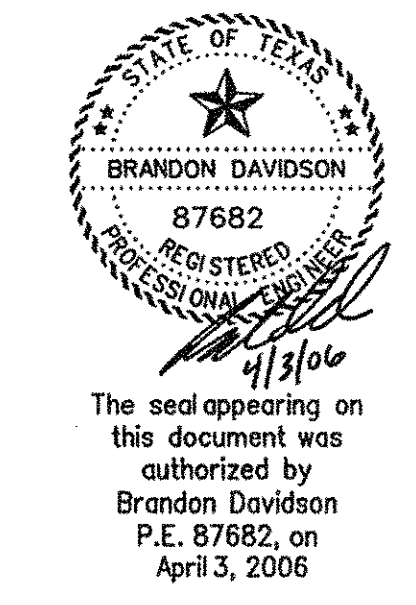
RAY PARR DRIVE

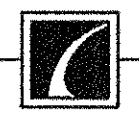


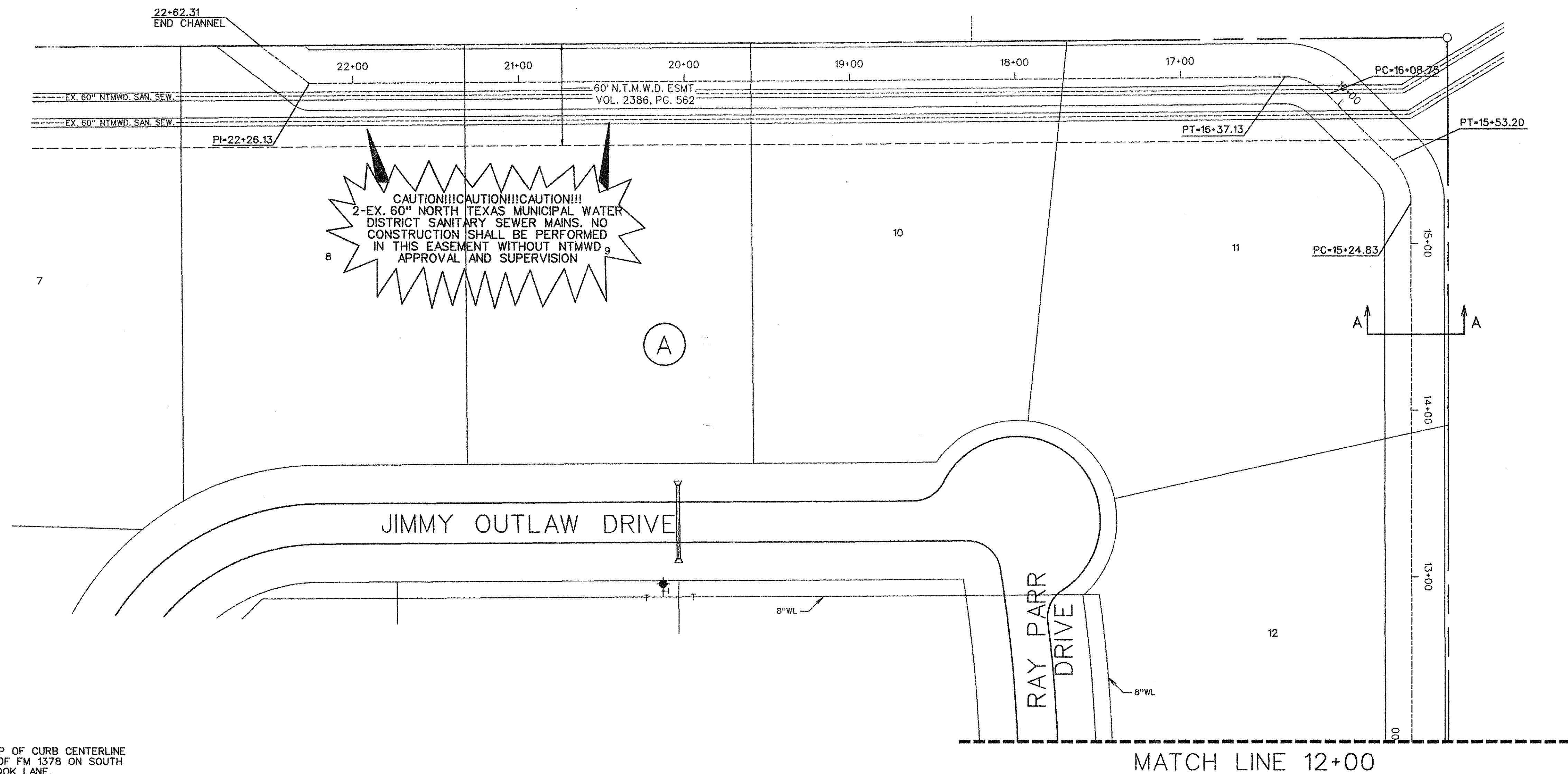
BENCHMARK:
SQUARE CUT "C" TOP OF CURB CENTERLINE
OF INLET 100' WEST OF FM 1378 ON SOUTH
SIDE OF COUNTRY BROOK LANE.
ELEV. = 619.06



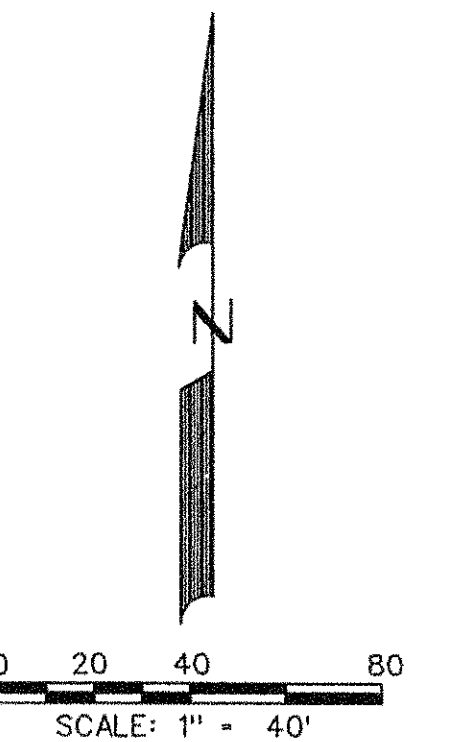
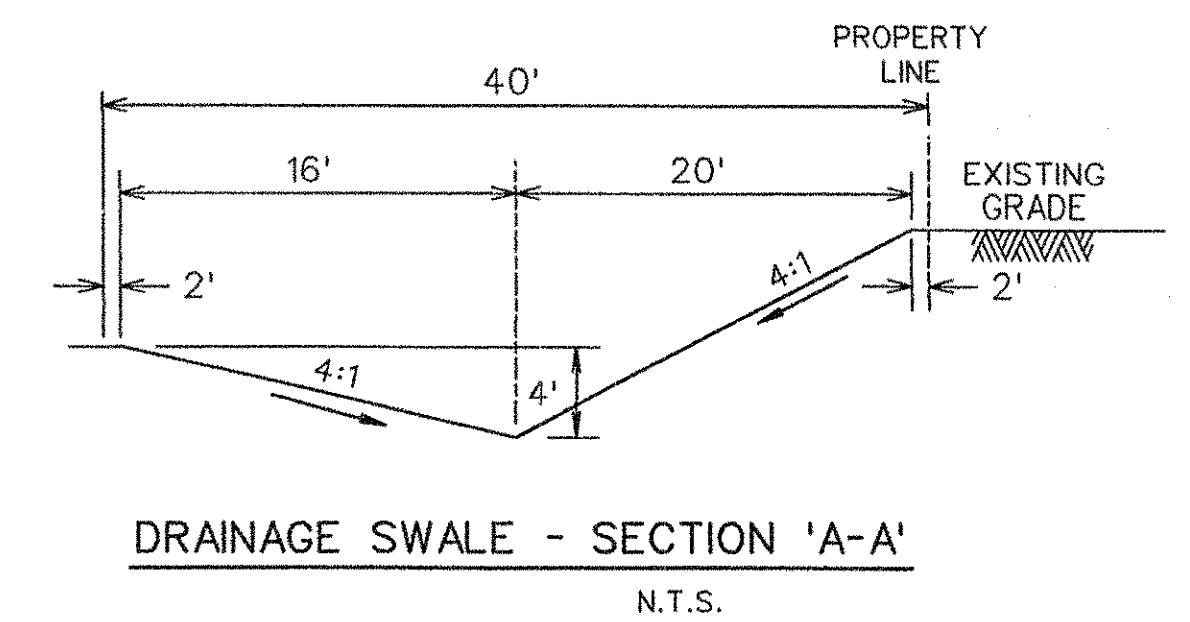
AS-BUILT APRIL 2006
INFORMATION PROVIDED BY CONTRACTORS
(NOT FIELD VERIFIED)



 CORWIN ENGINEERING, INC. 200 W. BELMONT, SUITE E ALLEN, TEXAS 75013 (972) 396-1200			
CONSTRUCTION PLANS FOR AMHERST ESTATES LUCAS, TEXAS			
DRAINAGE DITCH PLAN STA. 0+00 TO 12+00			
DRAWN BY BDD	DESIGNED BY BDD	CHECKED BY BDD	SHEET NO. 14 OF 20
JOB NUMBER 0549	DATE JULY 2005	SCALE: 1"=4' VER. 1"=40' HOR.	

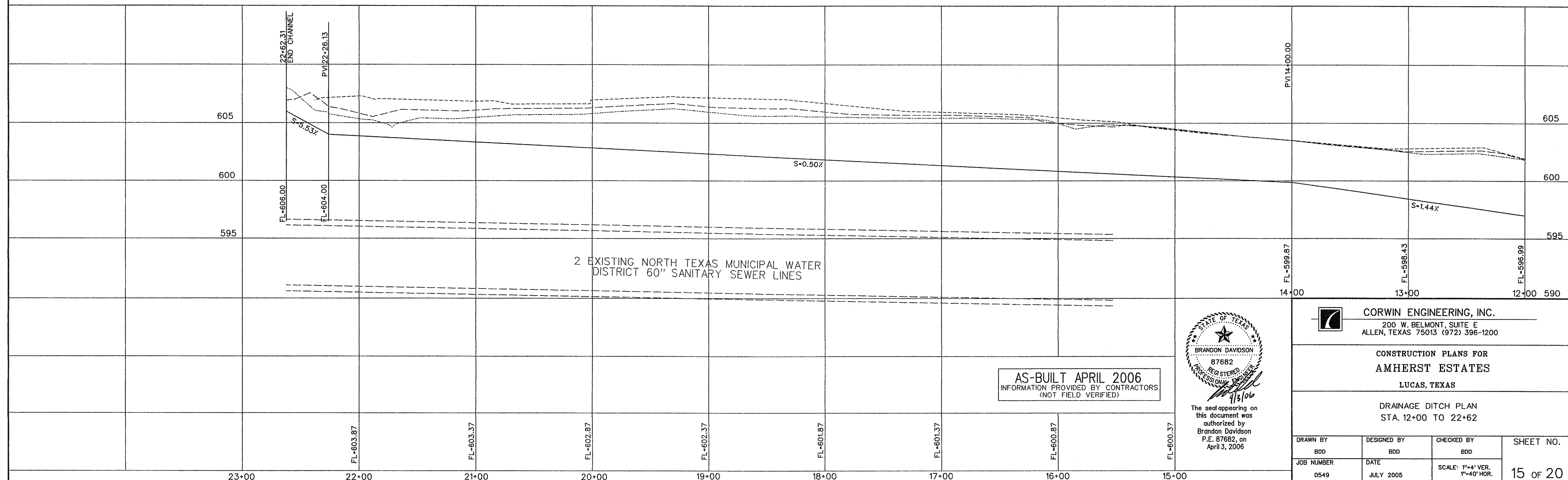


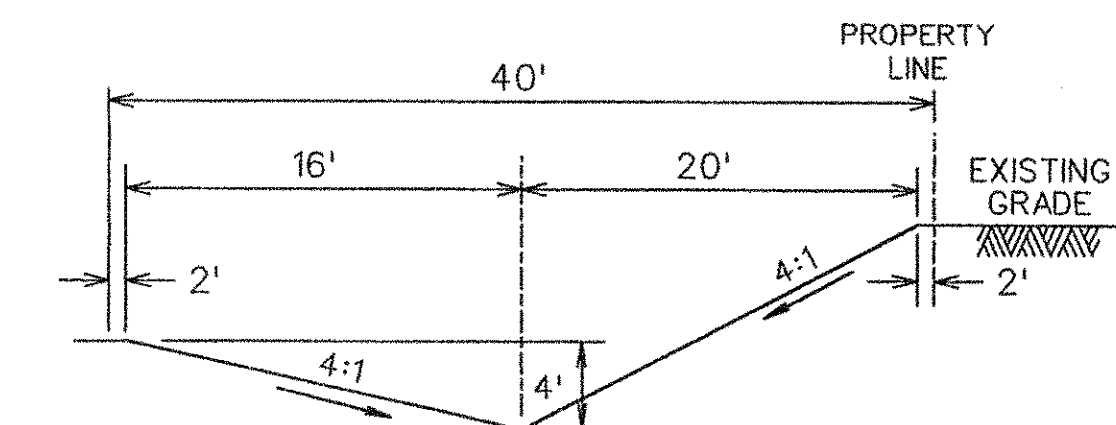
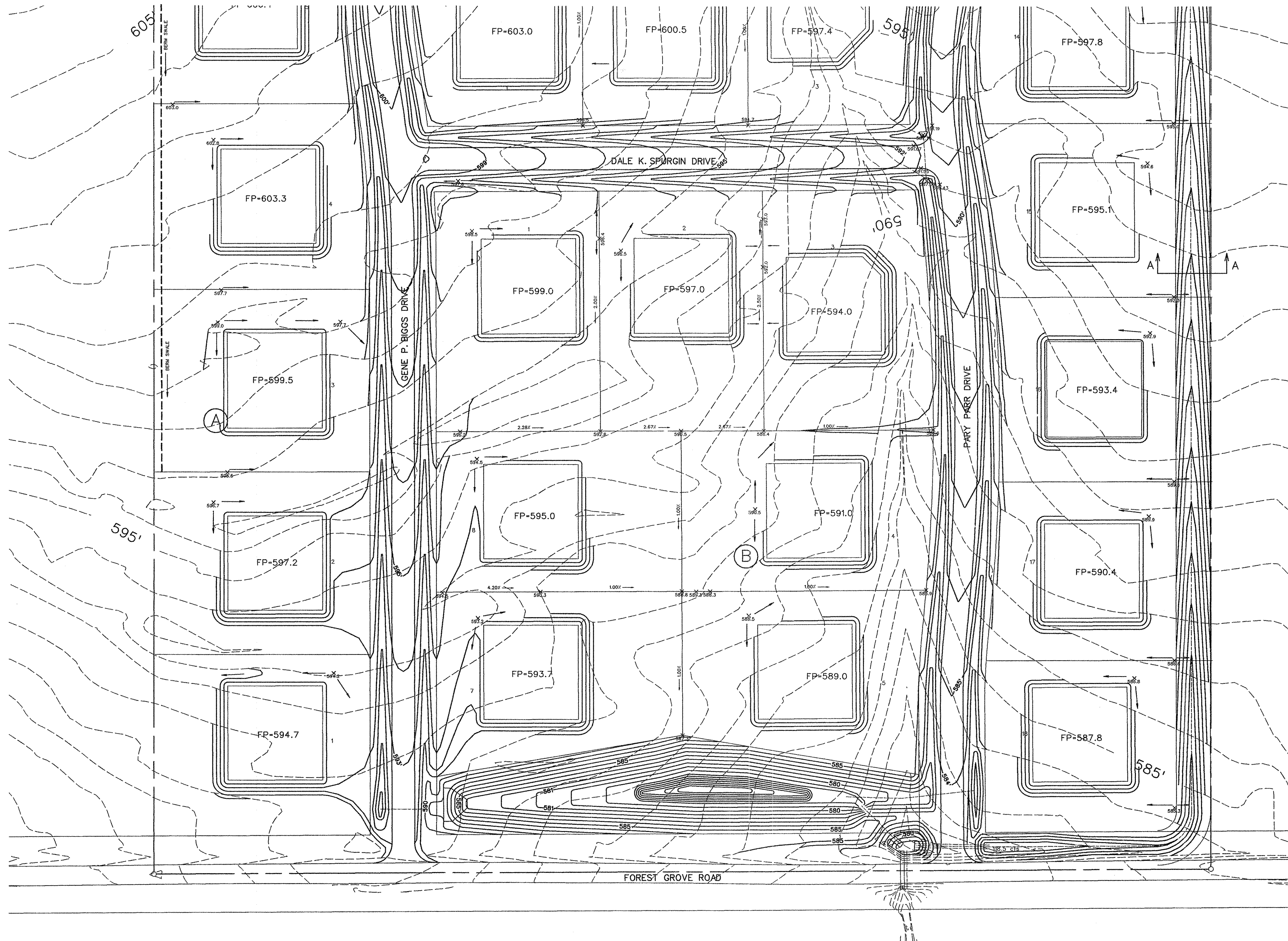
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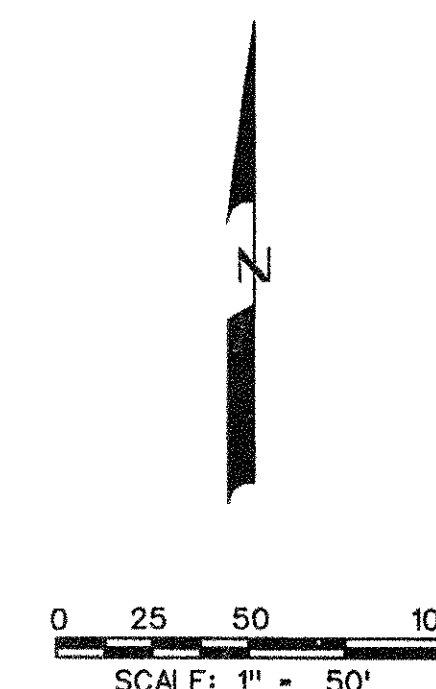
LEGEND

- (B) - BLOCK LABEL
- (16) - INLET NUMBER
- (1) - CURVE NUMBER
- - SANITARY SEWER
- ⊕ - WATER
- ▬ - PROPOSED STORM SEWER

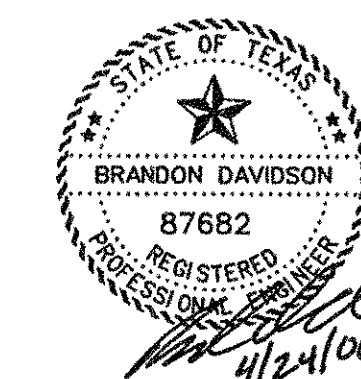




DRAINAGE SWALE - SECTION 'A-A'
 N.T.S.



- NOTES:
1. Finish Floor Elevation to be 0.70 Feet above Finished Pad.(FP)
 2. Additional Erosion Control to be installed in Parkways as determined by the City Inspector.
 3. Finished Pad Elevations are within ± 0.3 Feet.



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 this document was
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 Brandon Davidson
 P.E. 87682, on
 April 24, 2006

BENCHMARK:
 SQUARE CUT "D" TOP OF CURB CENTERLINE
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AS-BUILT APRIL 2006
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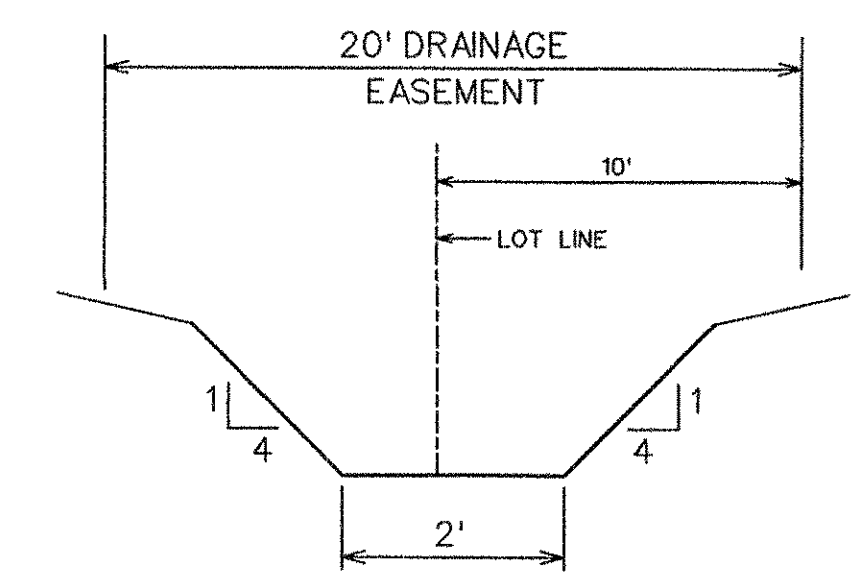
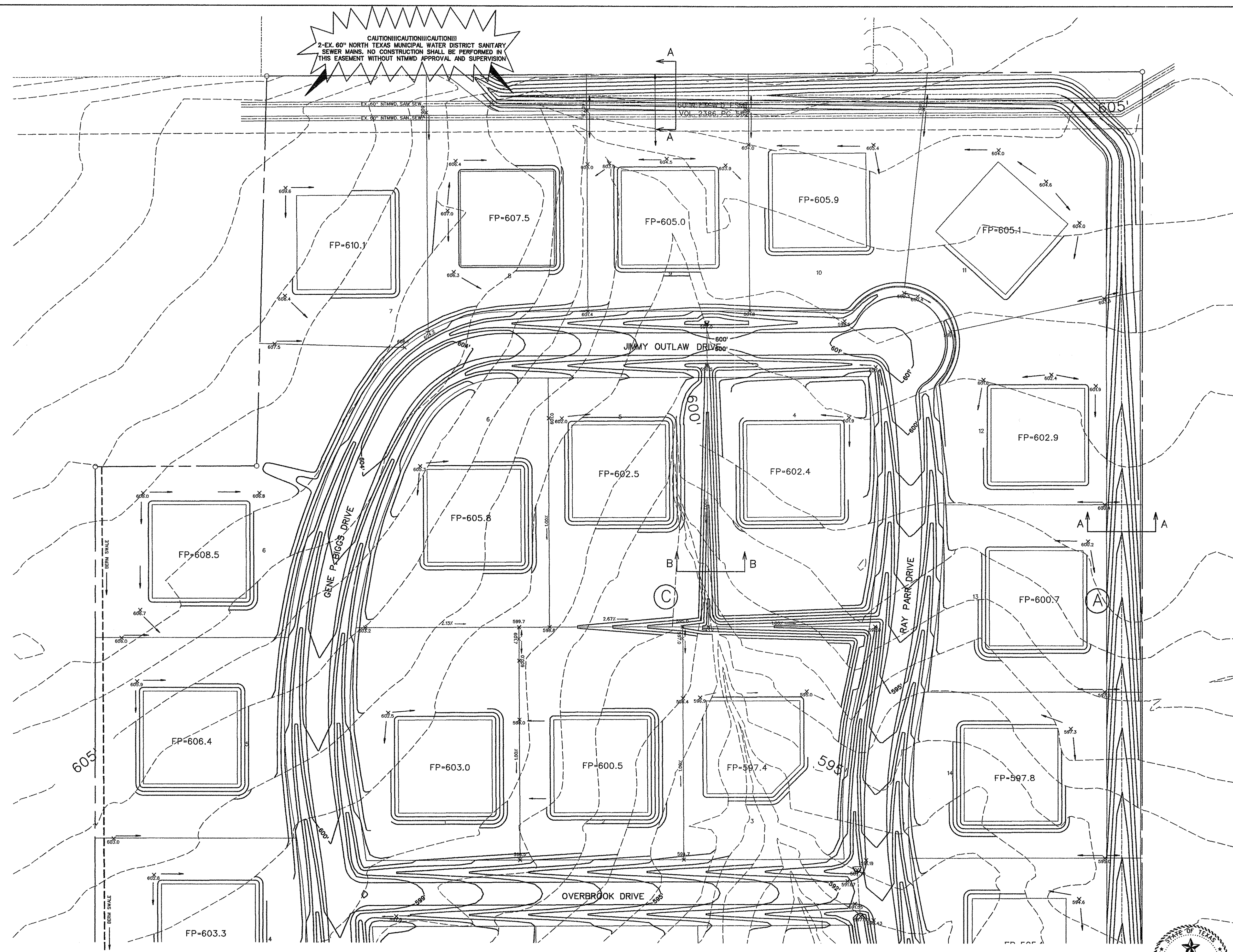
CORWIN ENGINEERING, INC.
 200 W. BELMONT, SUITE E
 ALLEN, TEXAS 75013 (972) 396-1200

CONSTRUCTION PLANS FOR
AMHERST ESTATES
 LUCAS, TEXAS

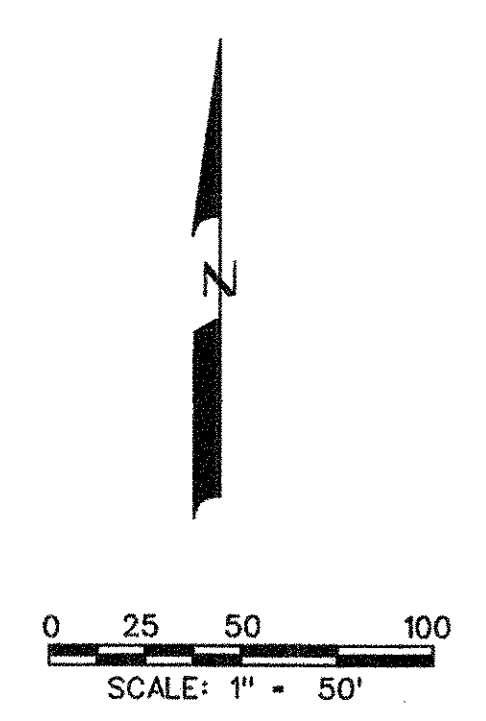
GRADING PLAN

DRAWN BY BDD	DESIGNED BY BDD	CHECKED BY BDD	SHEET NO.
JOB NUMBER 0549	DATE JULY 2005	SCALE: 1"=50'	16 OF 20

CAUTION!!!CAUTION!!!CAUTION!!!
2-EX. 60" NORTH TEXAS MUNICIPAL WATER DISTRICT SANITARY
SEWER MAINS. NO CONSTRUCTION SHALL BE PERFORMED IN
THIS EASEMENT WITHOUT NTHWD APPROVAL AND SUPERVISION



SECTION 'B-B'
TYPICAL AT EACH LOT LINE



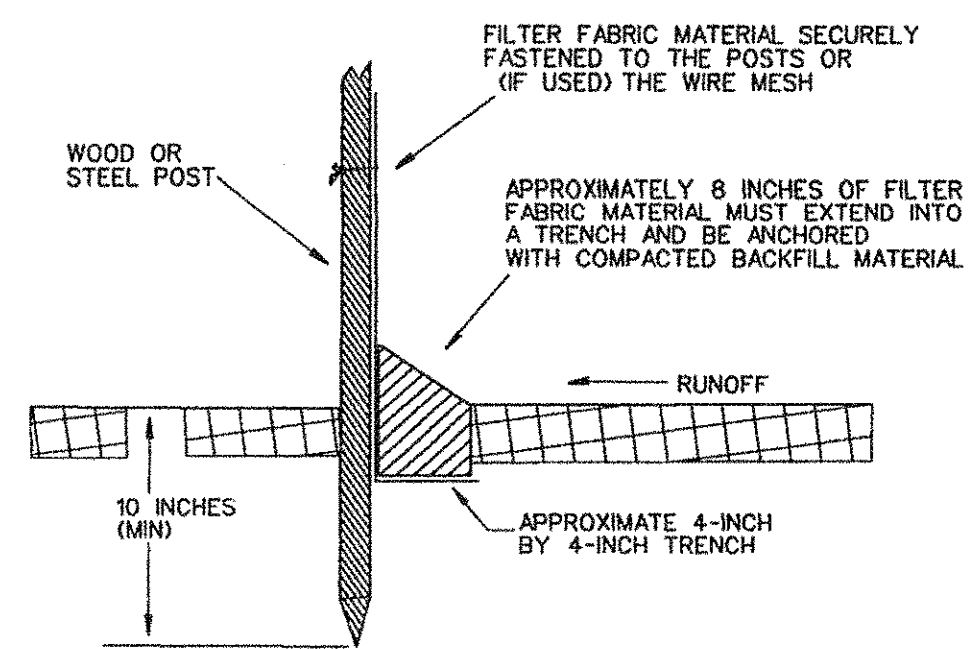
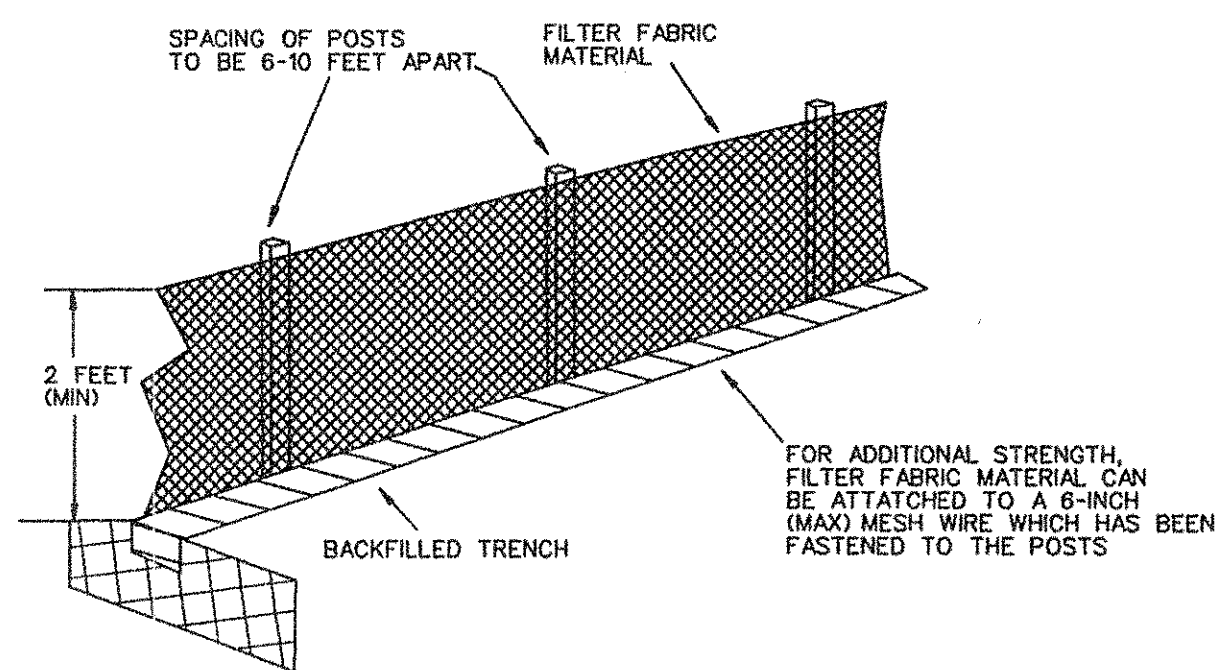
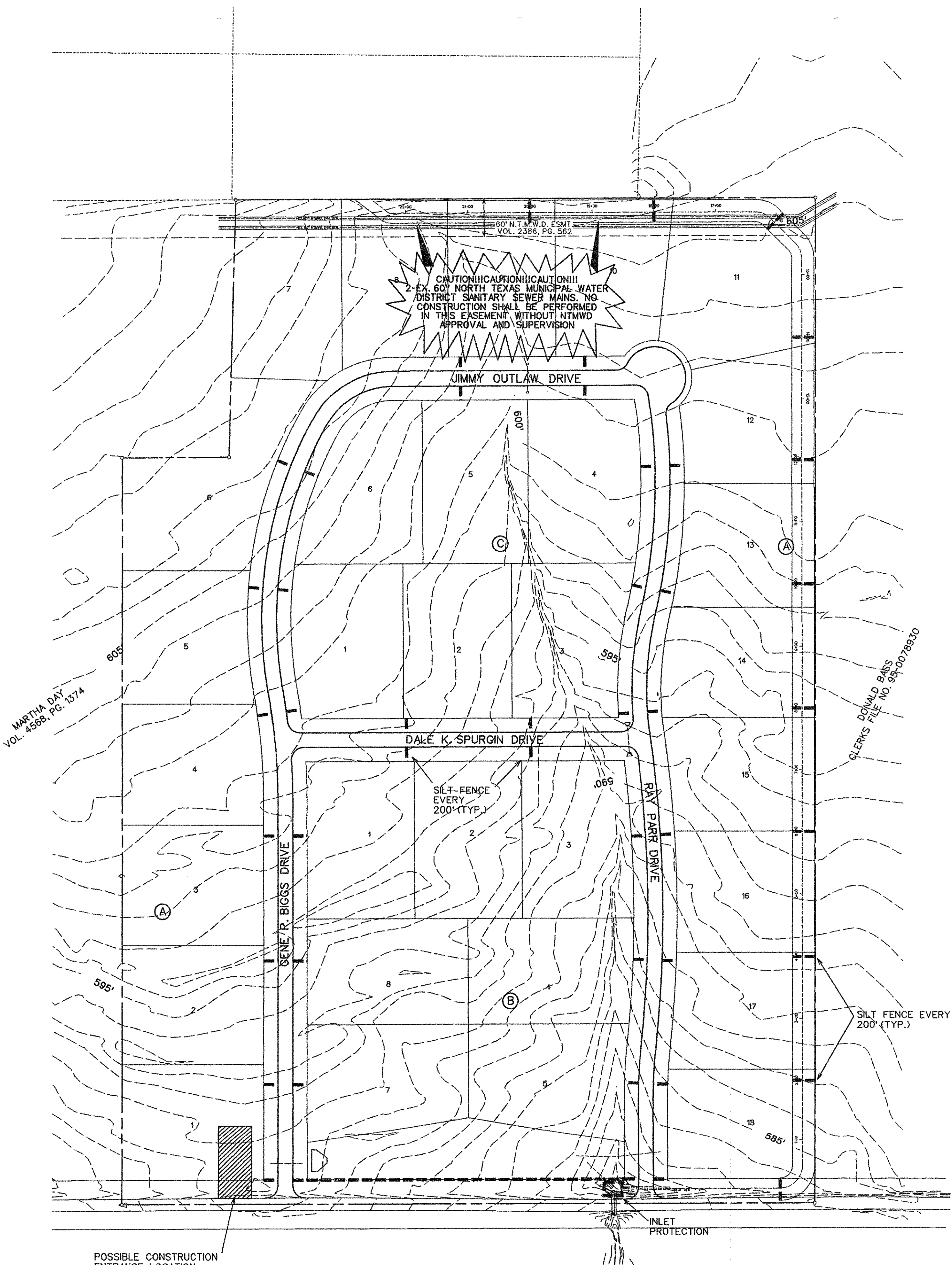
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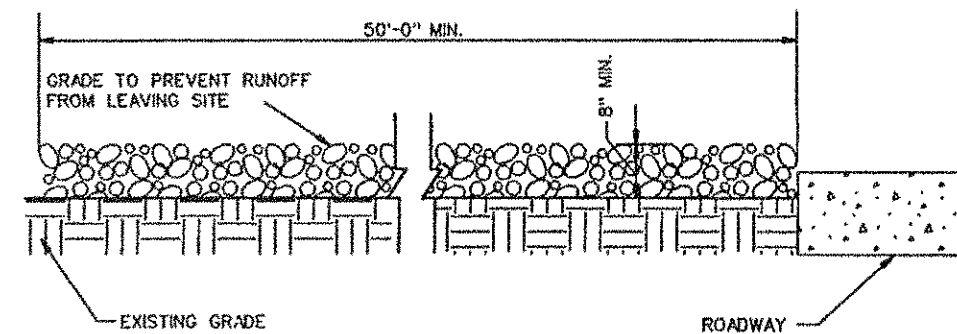
AS-BUILT APRIL 2006
INFORMATION PROVIDED BY CONTRACTORS
(NOT FIELD VERIFIED)

STATE OF TEXAS
BRANDON DAVIDSON
87682
REGISTERED
PROFESSIONAL ENGINEER
4/3/06
The seal appearing on
this document was
authorized by
Brandon Davidson
P.E. 87682, on
April 3, 2006

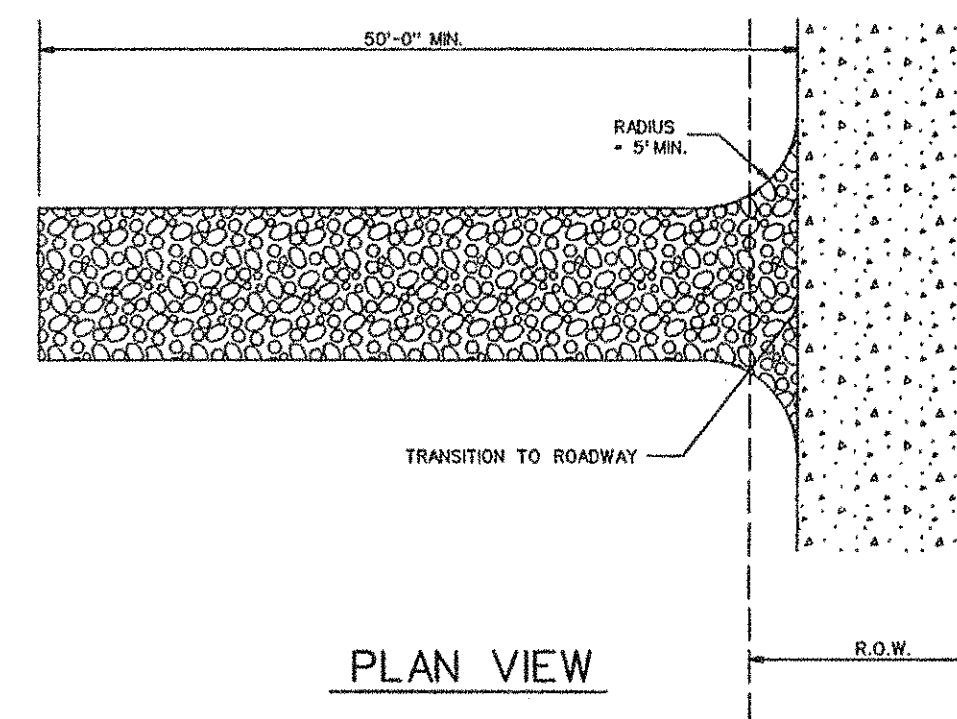
 CORWIN ENGINEERING, INC. 200 W. BELMONT, SUITE E ALLEN, TEXAS 75013 (972) 396-1200			
CONSTRUCTION PLANS FOR AMHERST ESTATES LUCAS, TEXAS			
GRADING PLAN			
DRAWN BY BDD	DESIGNED BY BDD	CHECKED BY BDD	SHEET NO.
JOB NUMBER 0549	DATE JULY 2005	SCALE: 1"=50'	17 OF 20



FILTER FABRIC FENCE DETAIL



PROFILE



PLAN VIEW

STABILIZED ENTRANCE DETAIL

CONSTRUCTION SEQUENCE

1. A STORMWATER POLLUTION PREVENTION PLAN (S.W.P.P.P.) INCLUDING NOTICE OF INTENT (N.O.I.) SHALL BE PREPARED AND AVAILABLE FOR VIEWING ONSITE PRIOR TO ANY CONSTRUCTION ACTIVITIES TAKING PLACE. A COPY OF THE SWPPP WILL BE PROVIDED TO THE CITY PRIOR TO THE START OF CONSTRUCTION.
2. GRADING CONTRACTOR TO INSTALL TEMPORARY STABILIZED ENTRANCE.
3. INSTALL SILT FENCE AS SHOWN, (TS-600 POLY FELT) PER C.O.G. SPECIFICATIONS.
4. PERFORM GRADING AND UTILITY CONSTRUCTION.
5. THE ENTIRE DISTURBED AREA SHALL BE RE-VEGETATED UPON COMPLETION OF PAVING AND FINAL GRADING OPERATIONS.
6. SILT FENCE SHALL REMAIN IN PLACE UNTIL RE-VEGETATION HAS BEEN COMPLETED.
7. PAVING CONTRACTOR SHALL REMOVE TEMPORARY STABILIZED ENTRANCE.
8. PRIOR TO CITY ACCEPTANCE THE PAVING CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ANY MUD OR SILT WHICH COLLECTS ON THE EXISTING AND NEW PAVEMENT.
9. THE PLAN SHOWN HEREIN IS TO BE CONSIDERED AS A MINIMUM. IF AT ANY TIME FEDERAL, STATE, COUNTY OR LOCAL OFFICIALS DETERMINE THAT THE INSTALLED MEASURES ARE INADEQUATE TO CONTROL CONSTRUCTION SITE RUNOFF THE CONTRACTOR SHALL TAKE IMMEDIATE MEASURES TO TAKE WHATEVER ACTIONS ARE APPROPRIATE.

0 25 50 100
SCALE: 1" = 50'



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AS-BUILT APRIL 2006
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NO.	REVISIONS	BY	DATE
CORWIN ENGINEERING, INC. 200 W. BELMONT, SUITE E ALLEN, TEXAS 75013 (972) 396-1200			
CONSTRUCTION PLANS FOR AMHERST ESTATES LUCAS, TEXAS			
EROSION CONTROL PLAN			
DRAWN BY BDD	DESIGNED BY BDD	CHECKED BY BDD	SHEET NO. 18 OF 20
JOB NUMBER 0549	DATE JULY 2005	SCALE: 1"=50'	

WATER SYSTEM
General Notes

All work and materials shall be in accordance with City's standard specifications and general design standards.

1. All tapping sleeves and valves shall be full body ductile iron.
2. Valves to be Mueller, Watrous, or Clow -150 psi test.
3. Fittings shall of the mechanical joint type, flanged where applicable, and be manufactured by US Pipe, American, or other as approved by the City - Class 250. All fittings shall be restrained by the use of Mega-Lugs or approved equal and concrete thrust blocking.

4. Fire hydrants to be American Darling, and Watrous three-way standard thread with valve in lead or approved equal. All mains steamer nozzles shall have a nominal inside diameter of 4-inches.

5. Water lines in the area of storm drain inlets shall be constructed behind the inlet by pulling the pipe using longitudinal bending in accordance with the manufacturer's requirements. Fittings may be used if bending is impractical; consult the project City Construction Inspector.

6. Water lines crossing under storm drains and sanitary sewer lines shall have a minimum of 18" clearance below storm drains and two (2) feet clearance below sanitary sewer lines or otherwise as governed by TNRCC Chapter 290 requirements. Parallel water lines shall be at least nine (9) feet clear horizontally to sanitary sewer lines and manholes. Where minimum clearance cannot be achieved, water lines shall be encased six (6) inches around in concrete to ten (10) feet either side of utility crossing. Where water lines cross creeks or ditches the water line shall be protected by concrete encasement at least ten (10) feet past the embankment slope on each side.

7. Water mains: All water lines shall have a minimum of 48" cover over the top of the pipe. All new water mains shall be PVC pipe in accordance with the following: C900 DR 14 for 4"-8", C900 DR 18 for 12", and C905 DR 18 for over 12". All "blue in color as per City specifications: the pipe shall be laid on a minimum of class "B" embedment (see Detail Drawing No. 14-A). Water mains up to 12" shall be installed 2' back of curb; mains larger than 12" shall be installed at least 3' from the back of curb depending upon conditions. Detectable metallic tape ("Blue-Cauton Buried Water Below" or approved equal) shall be installed to a maximum depth of 12" below finished grade (after compaction) above all PVC mains.

8. The Contractor shall install fire hydrants as the locations shown. A M.J. and flanged tee with a flanged end to M.J. gate valve is required so that the gate valve is anchored to the main.

9. Fire Hydrants shall be painted as follows:

- A. Tnemec Series 43-38H Diffused Aluminum, Silver for 6 inch mains
- B. Tnemec Series 2H Hi-Build Tnemec-Gloss, True Blue Safety for 8 inch mains.
- C. Tnemec Series 2H Hi-Build Tnemec-Gloss, Yellow Safety for 12 inch or larger water mains.

All hydrants shall be painted with two coats of Tnemec Series 43-38H Diffused Aluminum, Silver paint. When a color code other than Tnemec Series 43-38H Diffused Aluminum Silver is required the top bonnet, including the lip and all nozzle caps shall be painted the appropriate color.

10. All bolts and nuts used with mechanical joint fitting shall be "Cor-Ten" steel or approved equal.

11. The installation of a blue stone/iron (or equal) model 88-SSA fire hydrant marker will be installed opposite fire hydrants just off center to the side of the street adjacent to the hydrant.

12. Polyethylene encasement - the Contractor shall furnish and install polyethylene wrap around the ductile iron pipe, related fittings and valves. This wrap shall be on 8 mil. thickness polytube. Seams and overlaps shall be wrapped and held in place by two (2) inch wide plastic backed adhesive tape, Polyken 900 or Scotchrap no. 50, or an approved equal, with approximate two (2) foot laps on the polytube. The wrap on the barrel of the pipe shall be loose enough to allow the film to shift with the soil. The wrap shall be installed without breaks, tears, or holes in the film. The cost of the polyethylene tube wrap and complete installation shall be included in the unit price bid for the furnishing and the installation of ductile iron pipe and related fittings and valves.

13. Valve boxes shall be furnished at the required length in order to be set to final grade on each gate valve. After the final clean up and alignment has been completed, the Contractor shall pour a reinforced concrete block 24"x 24" x 8' around all valve boxes so the finished grade is level with the finished parkway. All valve stack components shall be cast iron. Valve boxes over four (4) feet deep will require extensions. All valves shall be marked with a saw on the curb or pavement with "V". The "V" shall point to the location of the valve as follows: If the valve is in the paving, the "V" shall be marked upright; if the valve is outside the paving, the "V" shall be marked upside down.

14. The Contractor shall coordinate operation of all existing valves with the City. Contact the City Construction Inspector at the Construction Inspection Department at 972-335-5580.

15. All water lines shall be pressure tested to 200 psi for a three-hour continuous period. Leakage rate shall not exceed 25 gallons per inch of nominal diameter per mile of pipe over a 24-hour period. Contractor shall flush and sterilize lines and prove lines to be free of fecal coliform organisms by obtaining samples for laboratory tests for contamination. The Contractor shall refush and resterilize until all samples prove free from contamination.

16. All residential water services shall be as follows:

- A. Water services shall be normally located in the center of the lot. A water meter box, as approved by the City, with lock lid shall be installed two (2) feet back of curb line.
- B. The water service shall be a minimum of 1" diameter continuous type "K" soft copper pipe. Sand embedment shall be used around the pipe and corporation stop. Service saddles shall be brass body with double bronze flattened stems (no banded) - Ford, Mueller, or City approved equal.
- C. Contractor shall tie a 1" wide piece of blue plastic flagging to the water service meter setter and shall leave a minimum of 36" of flagging exposed after backfill after curb and paving is completed.
- D. The utility contractor shall install the water services to a point two (2) feet back of the curb line at a depth of 12 inches. The meter box shall be furnished and installed by the Contractor after the paving Contractor has completed the final grading in the back of the curb. Meter boxes/vaults shall be located outside of paving. Each service location will be marked on the curb with a single vertical saw mark by the utility Contractor and tied to property corners on the "As-Recorded" plans.

17. For non-residential water services, the meter box shall be furnished and installed by the Contractor after the paving Contractor has completed the final grading in the back of the curb. Meter boxes/vaults shall be located outside of paving. Each service location will be marked on the curb or pavement with a single vertical saw mark by the utility Contractor and tied to property corners on the "as Recorded" plans.

18. Density testing requirements: Frequency of tests shall not be less than one every 300 linear feet of main pipe per 2.0' of lift until final grade, starting at 2.0' above top of pipe. Water services are to be tested at a rate of 1 for every 6 services that cross the proposed right-of-way or every 300 if of water service installed. Every other main, stubout, and fire hydrant lead that cross the existing or proposed street, alley, or fire lane subgrade shall also receive at least one set of density tests. All ditches shall be mechanically tamped and compacted to 95% standard proctor density at 0-4" above optimum moisture. Water jetting is not permitted.

19. The Contractor shall be responsible for providing "As-Recorded" plans to the engineer of record showing the location of water services and valves by distance to lot lines. This information shall be placed and marked "As-Recorded" by the engineer of record. Copies of these "As-Recorded" plans shall be furnished to the City as required.

20. The Contractor shall furnish maintenance bond of 10% (ten percent) of the total contract price to the City to run two years from the date of acceptance of the system by the City

PAVING SYSTEM
General Notes

1. Absolutely not earthwork, lime application, or other preparation of the subgrade for paving of streets, alleys, or fire lanes shall be initiated without authorization from the City Construction Engineer. Once all testing of underground facilities has been completed and verified to meet the City's specifications, the City Construction Engineer will issue a letter to the project owner or superintendent that will authorize the initiation of all subgrade work in preparation for paving.

2. All street, alley, and fire land right-of-way or easement width shall be excavated full width in accordance with the street and sidewalk section to be constructed.

3. The subgrade for all streets, alleys, and fire lanes shall be stabilized with hydrated lime material to a distance 12 inches beyond the back of curb or edge of paving as applicable. The amount of lime material shall be that amount which will reduce the plasticity index (PI) below fifteen (15) as verified by testing by an approved laboratory; the City will add one (1) percent to the laboratory results for field variation. Laboratory testing (lime series) shall generally be conducted when all utilities are complete and the roadway subgrade is complete. Lime shall be applied by percentage dry unit weight of soil treated to a minimum in place compacted thickness of six (6) inches. At the discretion of the City, additional testing for the presence of sulfates in the pavement subgrade may be required at the Contractor's expense. If the sulfates are present at an unacceptable concentration, the City may require a recommendation for further treatment of the soil from the approved laboratory.

4. Subgrade testing requirements: All fill and shall be compacted to no less than 95% of standard proctor density at 0 - 4" above optimum moisture content. Frequency of tests shall not exceed every 300 linear feet of fill. Frequency of testing shall not exceed every 300 linear feet per 2.0' of lift until final grade starting at 2.0' above natural/sound grade to top of subgrade. All street alley, and fire land subgrade shall be compacted to no less than 95% of standard proctor density at 0 - 4" above optimum moisture content. Frequency of tests shall not exceed every 300 linear feet of subgrade, alternating from left quarter point to center line to right quarter point. Verification of lime depth, testing for subgrade gradations/pulverizations, and plasticity indices of the soil shall also be conducted; the frequency of this testing shall be as previously mentioned. All testing of materials required for the construction of any street, alley or fire lane shall be performed by an approved agency for testing materials. The nomination of the testing laboratory and the payment of such testing services shall be made by the Contractor. The engineer shall approve the laboratory nominated to do the testing of materials. It shall be the Contractor's responsibility to show by standard testing procedures that the work constructed does meet the requirements of the City's specifications.

5. Minimum design requirements: All street, alley and fire lane paving shall be designed to have a minimum compressive strength of 3500 psi at twenty-eight (28) days with a minimum of five (5) sacks of cement as verified by testing in an approved laboratory. Two batch designs shall be submitted to the City Construction Engineer for approval: one for machine work and one for hand work. All batch designs must be signed by the testing laboratory and include all documentation such as results of field trial testing. A fly ash batch design may be submitted for approval on a specific job basis: fly ash up to twenty (20%) by weight of cement replacement may be used in machine pours. If applicable, all batch designs shall specify an appropriate sulfate resistant cement or equivalent. Slump shall be 1 - 3 inches for all machine work and 1 - 4 inches for all hand work. Streets (depending on classification) and fire lanes shall have a minimum thickness of six (6) inches; alleys shall have a minimum thickness of 8" -5'-8". Upon completion of construction, all streets and fire lanes shall be cored for depth (2" cores) at a spacing of 300 ft maximum alternating from left quarter point to center line to right quarter point. Alleys shall be cored for depth (2" cores) at a spacing of 300 ft maximum, along the center line. Pavement of a thickness less than the thickness shown on the plans by more than one-quarter (1/4) inch but less than three-quarter (3/4) inch will be considered deficient. The Contractor shall pay to the City two (2) times the unit bid price per square yard for the area determined to be deficient in thickness as defined above. Pavement deficient in strength by more than three-quarter (3/4) inch shall be removed and replaced completely. The deficient area shall be cored immediately on ten (10) foot centers or one (1) per panel to be proved out. All streets, alleys, and fire lanes will require cylinders to be made for strength tests by the approved laboratory. Samples for strength tests of each class of concrete placed each day shall be taken by an approved laboratory not less than once a day, nor less than once for each 100-150 cu yd of concrete. Four (4) cylinders shall be made: one shall be broken at 7 day, two (2) shall be broken at twenty-eight (28) days, and one shall be held in case of damage of any of the other three (3). The average strength of two (2) cylinders from the same sample, tested at twenty-eight (28) days is required for each strength test; any strength test beyond twenty-eight (28) is unacceptable. If the twenty-eight (28) day design strength is not reached upon strength testing the cylinders, the deficient area shall be cored immediately on ten foot centers or one per panel to be proved out. For any areas deficient in strength by not more than 500 psi, the Contractor shall pay to the City one (1) time the unit bid price per square yard for the area determined to be deficient in strength. For any areas deficient in strength by more than 500 psi but more than 1000 psi, the Contractor shall pay to the City two (2) times the unit bid price per square yard for the area determined to be deficient in strength. Pavement deficient in strength by more than 1000 psi shall be removed and replaced completely. No more than three (3) - four (4) inch cores shall be extracted per panel without prior City approval. A rebar detector shall be used to ensure that the cored areas are clean of any rebar. All coring and additional laboratory testing shall be at the expense of the Contractor. The width to be considered for any deficiencies shall be the full width of the pavement.

6. Any section of all existing public or private streets, alleys or fire lanes shall be replaced within 72 hours of removal.

7. The Contractor shall furnish a maintenance bond of 10% (ten percent) of the total contract price to the City to run two (2) years from the date of final acceptance of the system by the City.

UTILITY CROSSINGS
General Notes

1. Tunneling and boring under City streets shall be accomplished by means of jacking, boring, or tunneling equipment which is subject to the City approval prior to start of construction.

2. The voids outside of the carrier pipe or casing pipe shall be backfilled by hydraulically placed materials so that there are no open voids over the roof of the tunnel bore. This shall be done without damage to the roadway structure.

3. All bore pits, trenches, and inspection holes shall be backfilled within 48 hours of the installation of utility lines. The method of compaction shall be such that a soil density equal to that existing prior to the start of construction will be required as verified by any approved testing laboratory. Any excess or surplus material resulting due to displacement of utility lines and conduits shall be disposed of in an acceptable manner to the City.

4. The street sections that are shown as typical sections shall apply to any alleys, driveways, roadways, etc. that will be within a City right-of-way of easement.

5. The Contractor shall be required to install an necessary warning and safety devices that would protect the safety and health of the public until the work has been finished and accepted by the City.

6. The use of a casing pipe will be based upon specific project location and soil conditions. In general, the minimum casing thickness is 0.25 inch and the material shall be steel. Where more than one section is required, the casing ends shall be welded together. Raci spacers, or City approved equal shall be used to support the carrier pipe. The use of wood skids is no long permitted.

STORM SEWER SYSTEM
General Notes

1. All storm sewer pipe or box culvert in right-of-way or fire lanes shall be reinforced concrete pipe as per City Specifications and shall be laid on a minimum of a compacted crushed stone or pea gravel cushion, four inches thick below the bottom of the pipe shall unless otherwise approved by the City. The initial backfill of select material or fine granular shall be required to a minimum of the spring line of the pipe unless otherwise approved by the City.

2. Density testing requirements: Frequency of tests shall not be less than one every 300 linear feet of pipe per 2.0' of lift until final grade, starting at 2.0' above top of pipe. Every other lateral stubout that crosses the existing or proposed street, alley, or fire lane subgrade; inlet; and junction box will receive a density test every lift. All ditches shall be mechanically tamped and compacted to 95% of standard proctor density at 0 - 4" above optimum moisture. Water jetting is not permitted.

3. The joints shall be constructed and jointed together in such a manner that no spill through of backfill will occur. This includes the lift holes used in certain pipe or box sizes. Approved joint materials are concrete mortar; cold applied, plastic asphalt joint compound; rubber gaskets; and cold applied, preformed plastic gaskets.

4. Storm drainage inlets shall be as indicated on the approved construction plans. For secondary and major street intersections, a recessed type inlet will be required. For industrial and residential streets, a curb line inlet will be required unless otherwise approved. A round manhole cover with locking device shall be placed on all inlet tops. The top shall be placed near the outlet pipe. All inlets shall have a shall have a compressive strength of 4000 psi at 28 days.

5. All precast box culverts or other special structures in any right-of-way or fire lane easement will require a certification from the manufacturer that the product meets the design dimensions and twenty-eight (28) day compressive strength. All cast-in-place box culverts or other special structures in and right-of-way and fire lane or utility easements will require cylinders to be made for strength tests by the approved laboratory. Samples for strength tests of each class of concrete placed each day shall be taken not less than once a day, nor less than once for each 100-150 cu yd of concrete, nor less than once for each 5000 sq ft of surface area for slabs or walls. Four (4) cylinders shall be made: one shall be broken at 7 day, two (2) shall be broken at twenty-eight (28) days, and one shall be held in case of damage of any of the other three (3). The average strength of two (2) cylinders from the same sample, tested at twenty-eight (28) days, is required for each strength test; any strength test beyond twenty-eight (28) days is unacceptable. If the twenty-eight day (28) day design strength is not reached upon strength testing the cylinders, the deficient area shall be cored immediately to be proved out. For any areas deficient in strength by not more than 500 psi, the Contractor shall pay to the City one (1) time the unit bid price per square yard for the area determined to be deficient in strength. For any areas deficient by more than 500 psi but not more than 1000 psi, the Contractor shall pay to the City two (2) times the unit bid price per square yard for the area determined to be deficient in strength. For any areas deficient in strength by more than 1000 psi, the structure shall be removed and reconstructed at the full expense of the Contractor. Prior to City acceptance of any penalty payments for any traffic bearing structure that does not meet 28 day design strength, the Design Engineer shall provide a sealed structural evaluation that assesses the performance adequacy of the deficient structure as constructed under the design service loads. All coring and additional laboratory testing shall be at the expense of the Contractor.

6. The Contractor shall furnish a maintenance bond of 10% (ten percent) of the total contract price to the City to run two (2) years from the date of final acceptance of the system by the City.

NOTES FOR CONSTRUCTION WITH THE NORTH TEXAS MUNICIPAL
WATER DISTRICT EASEMENT

A. North Texas Municipal Water District (NTMWD's) 60-inch sanitary sewer pipeline is located within the limits of construction.

B. 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 crossing shall be designated and verified to provide a minimum of five-feet of cover.

C. 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's Engineering Department at (972) 442-5405 so your plans for use of NTMWD's easement can be reviewed.

D. A minimum of three feet separation between the bottom of the pavement and top of NTMWD pipeline is required. In addition, if separation between the bottom of the pavement and the top of the pipeline is less than 3.5 feet, a thickened pavement section is required.

E. 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.

F. Outdoor lighting, landscaping, screening walls or other facilities shall not be installed in NTMWD easements without written approval of the NTMWD.

G. Unless otherwise shown or required a minimum of one-foot clearance shall be provided for all utilities crossing the NTMWD pipelines.

H. 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.



The seal appearing on this document was authorized by Brandon Davidson P.E. 87682, on April 3, 2006

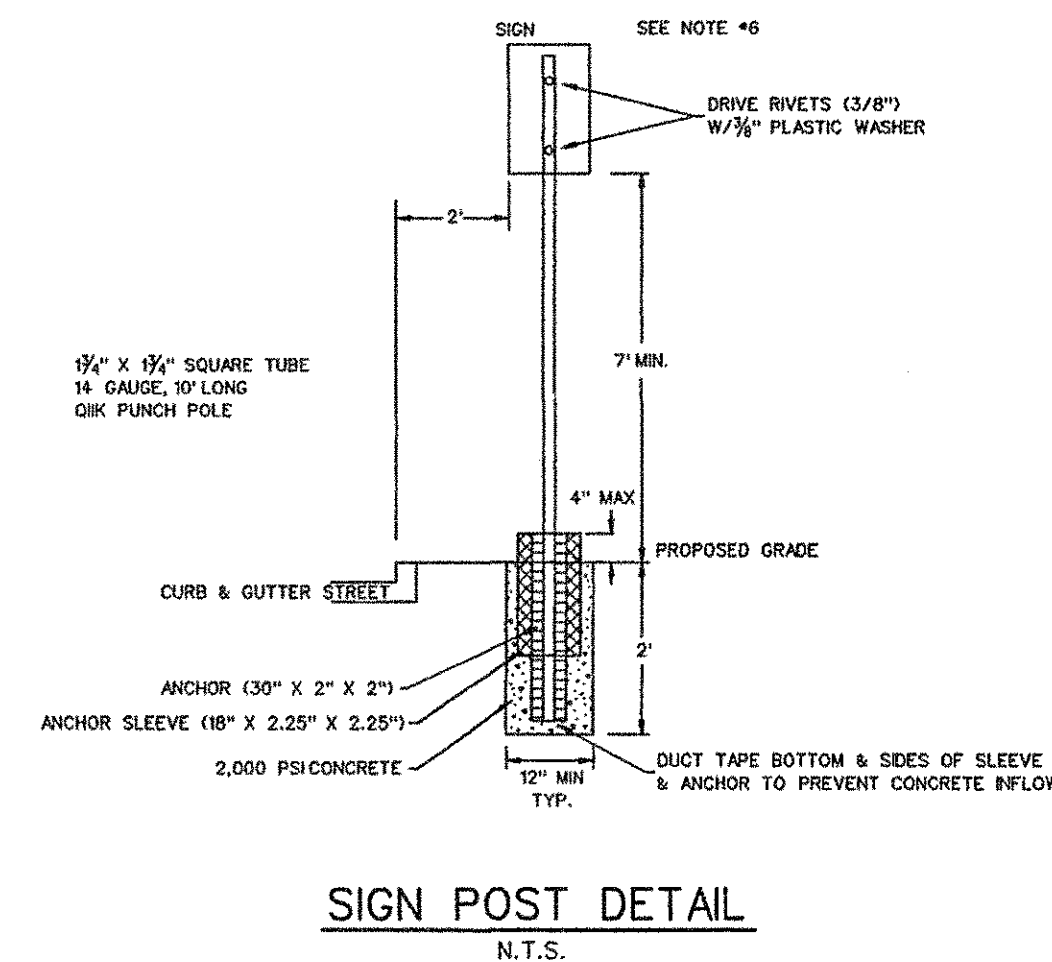
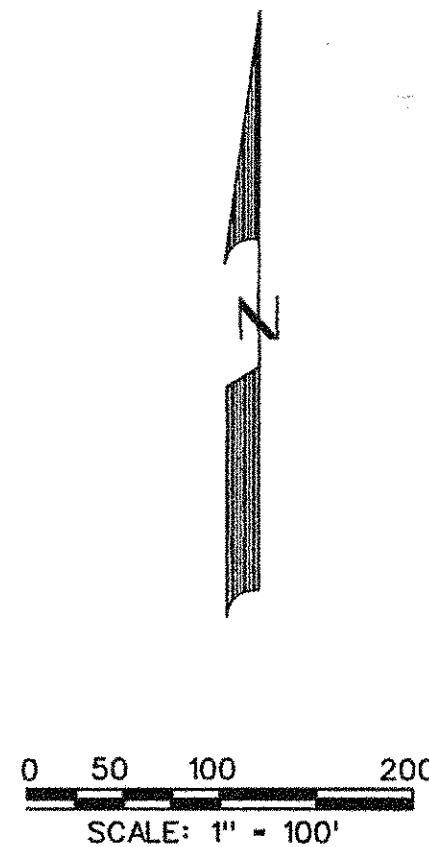
AS-BUILT APRIL 2006
INFORMATION PROVIDED BY CONTRACTORS
(NOT FIELD VERIFIED)

 CORWIN ENGINEERING, INC.
200 W. BELMONT, SUITE E
ALLEN, TEXAS 75013 (972) 396-1200

CONSTRUCTION PLANS FOR
AMHERST ESTATES
LUCAS, TEXAS

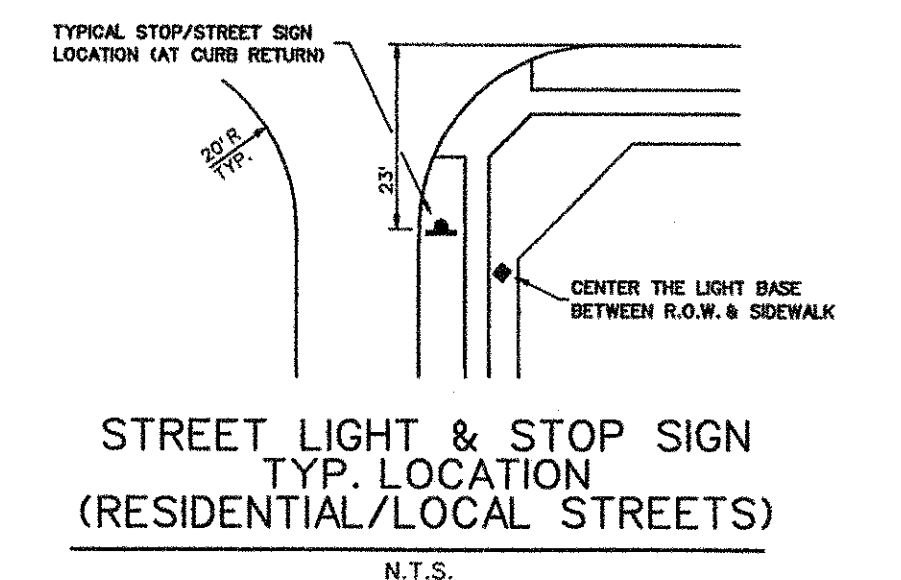
GENERAL NOTES

DRAWN BY	DESIGNED BY	CHECKED BY	SHEET NO.
BDD	BDD	BDD	
JOB NUMBER	DATE	SCALE: NTS	19 OF 20
0549	JULY 2005		



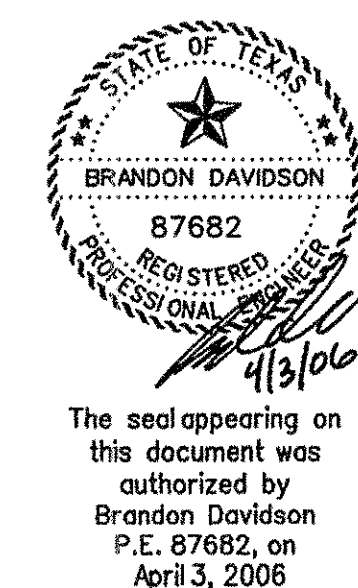
- TRAFFIC CONTROL NOTES:
1. ALL SIGNAGE, BARRICADES, AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST REVISION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND THE STANDARD HIGHWAY SIGN DESIGN FOR TEXAS (1980).
 2. LOCATIONS SHOWN FOR SIGNAGE AND PAVEMENT MARKINGS ARE APPROXIMATE; FINAL LOCATIONS MAY CHANGE DUE TO POST CONSTRUCTION CONDITIONS AND PRESENCE OF OTHER PHYSICAL FEATURES. FINAL LOCATION OF ALL TRAFFIC CONTROL DEVICES SHALL BE FIELD VERIFIED WITH CITY PRIOR TO INSTALLATION.
 3. ALL PAVEMENT MARKINGS OTHER THAN BUTTONS SHALL BE THERMOPLASTIC UNLESS OTHERWISE NOTED.
 4. ALL SIGNS SHALL BE HIGH INTENSITY AND THE SIZES SHALL BE STANDARD UNLESS OTHERWISE NOTED.
 5. ALL TRAFFIC SIGNS, POSTS, AND MATERIALS SHALL BE INSTALLED PER DETAIL THIS SHEET.
 6. FOR STOP SIGNS THAT WILL ACCEPT FUTURE STREET SIGNS, EXTEND POST ABOVE STOP SIGN SO THAT 2 HOLES ARE AVAILABLE FOR MOUNTING. (FOR ALL OTHERS, POST SHALL NOT EXTEND ABOVE SIGN.)
 7. CHANGES TO TYPICAL SIGN POST LOCATION MADE AT ENGINEER'S DISCRETION.
 8. ALL STREETS SIGNS SHALL CONFORM TO THE REQUIREMENTS OF THE CITY OF LUCAS.

- LEGEND
- - 24" STOP SIGN
 - - STREET LIGHT
 - - STREET SIGN



AS-BUILT APRIL 2006
INFORMATION PROVIDED BY CONTRACTORS
(NOT FIELD VERIFIED)

BENCHMARK:
SQUARE CUT "C" TOP OF CURB CENTERLINE
OF INLET 100' WEST OF FM 1378 ON SOUTH
SIDE OF COUNTRY BROOK LANE.
ELEV. = 619.06

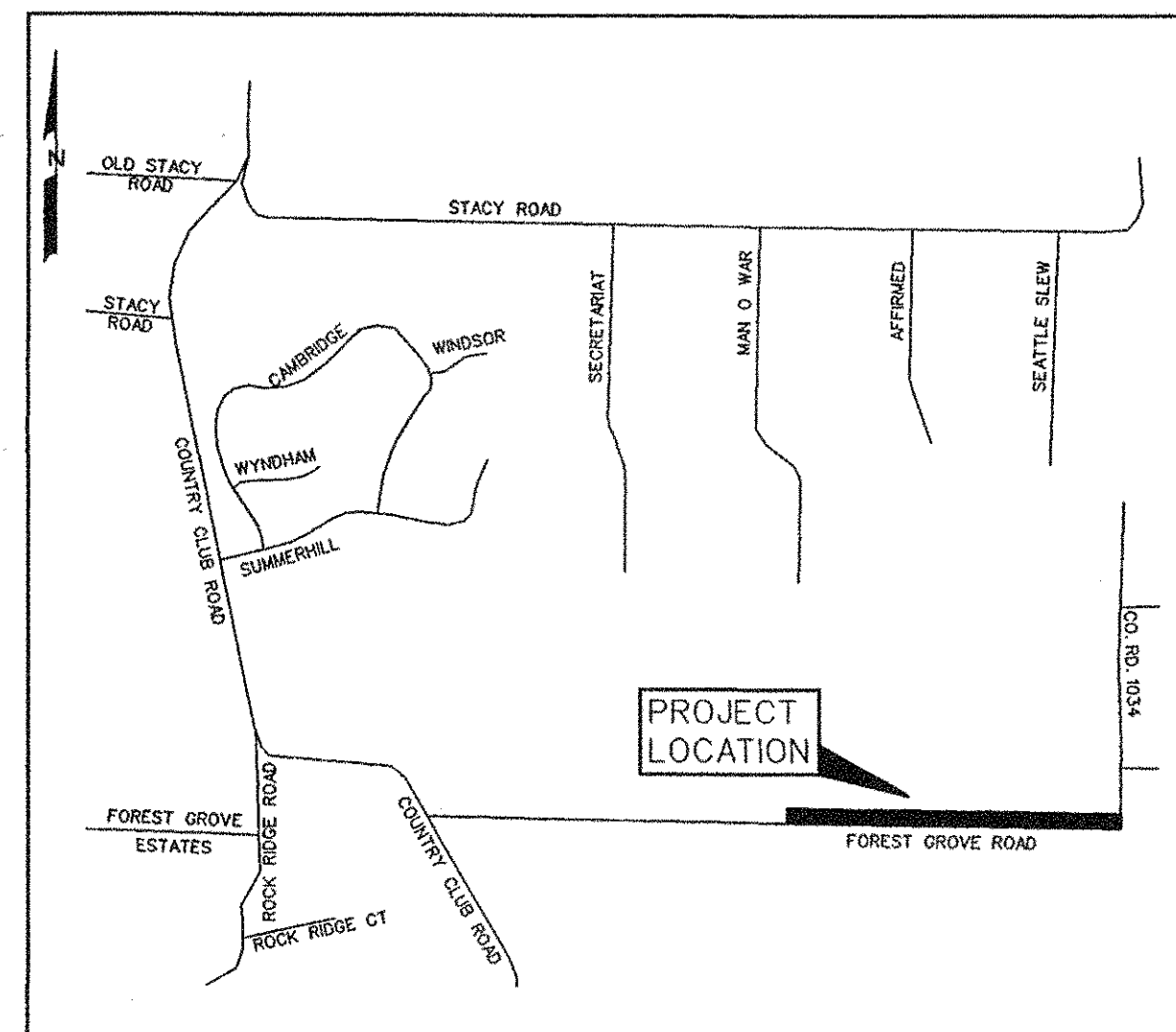


 CORWIN ENGINEERING, INC. 200 W. BELMONT, SUITE E ALLEN, TEXAS 75013 (972) 396-1200			
CONSTRUCTION PLANS FOR AMHERST ESTATES LUCAS, TEXAS			
STREET SIGN PLAN			
DRAWN BY BDD	DESIGNED BY BDD	CHECKED BY BDD	SHEET NO. 20 OF 20
JOB NUMBER 0549	DATE JULY 2005	SCALE: 1"=100'	

DEVELOPMENT PLANS
FOR
AMHERST ESTATES
OFFSITE WATER LINE
CITY OF LUCAS, TEXAS

AMHERST ESTATES
OFFSITE WATER LINE

0545



VICINITY MAP
NOT TO SCALE

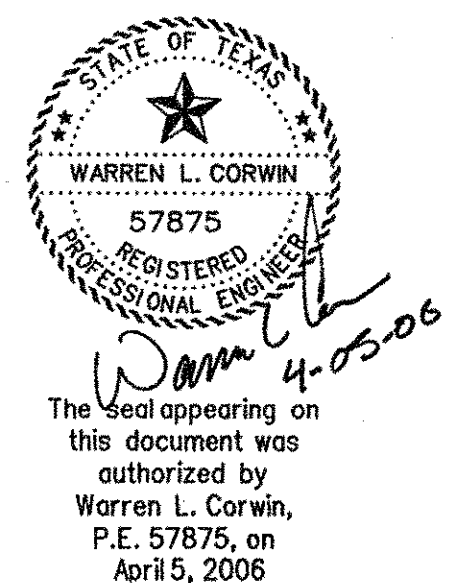
INDEX

- 1 TITLE
- 2 WATERLINE PLAN AND PROFILE LINE 'W-1'
- 3 WATERLINE PLAN AND PROFILE LINE 'W-1'

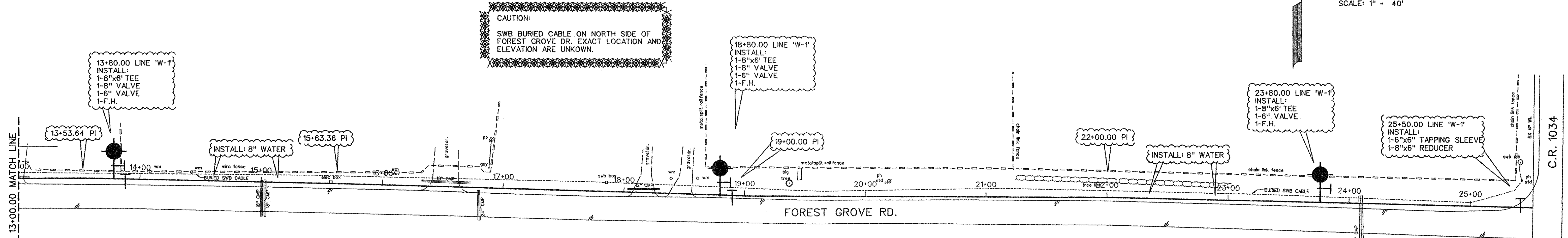
PREPARED FOR
SKORBURG COMPANY
3838 OAK LAWN AVE., SUITE 1212, DALLAS, TEXAS 75219

CORWIN ENGINEERING, INC. — CONSULTING ENGINEERS
200 W. BELMONT, SUITE E ALLEN, TEXAS 75013

AS-BUILT APRIL 2006
INFORMATION PROVIDED BY CONTRACTORS
(NOT FIELD VERIFIED)

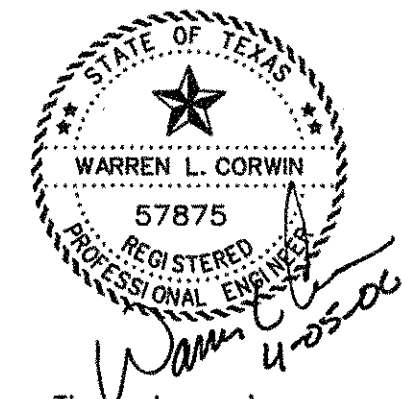
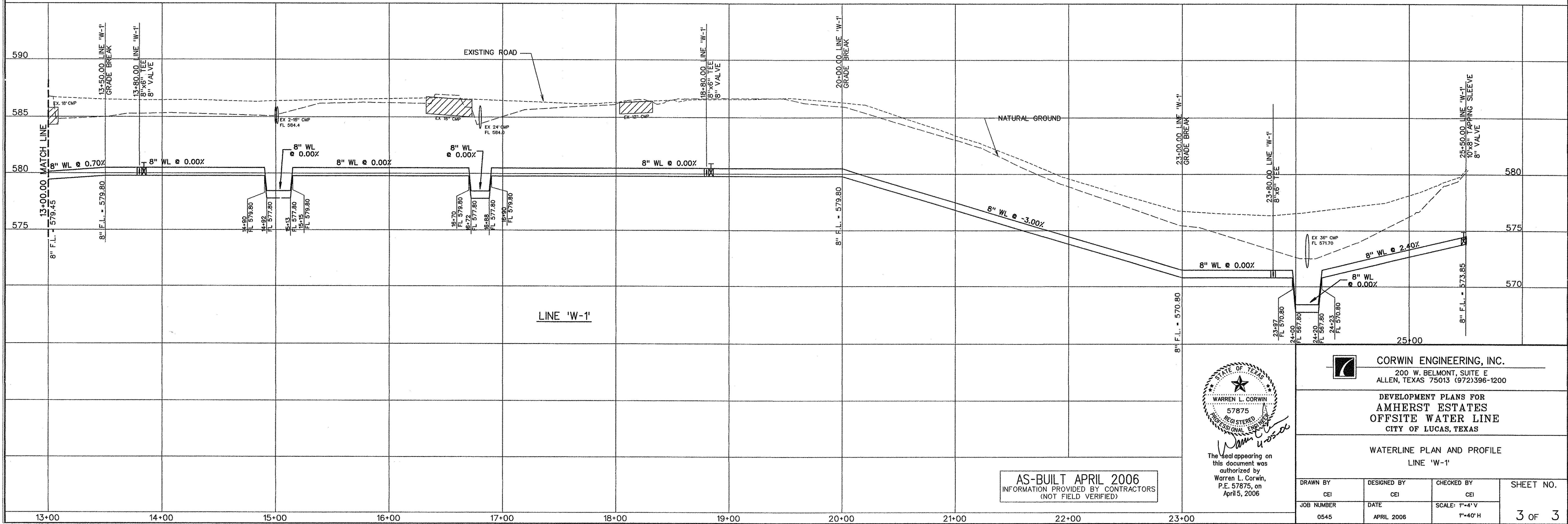


The seal appearing on
this document was
authorized by
Warren L. Corwin,
P.E. 57875, on
April 5, 2006



NOTE:
ANY ASPHALT PAVT., GRAVEL DRIVE OR CMP CULVERTS
THAT ARE REMOVED FOR CONSTRUCTION MUST BE
REPLACED. DRIVES SHALL REMAIN OPERABLE EACH
NIGHT.

NOTE:
EXACT LOCATION OF EXISTING 10" WATERLINE
IS UNKNOWN.



The seal appearing on
this document was
authorized by
Warren L. Corwin,
P.E. 57875, on
April 5, 2006

AS-BUILT APRIL 2006
INFORMATION PROVIDED BY CONTRACTORS
(NOT FIELD VERIFIED)

CORWIN ENGINEERING, INC. 200 W. BELMONT, SUITE E ALLEN, TEXAS 75013 (972)396-1200			
DEVELOPMENT PLANS FOR AMHERST ESTATES OFFSITE WATER LINE CITY OF LUCAS, TEXAS			
WATERLINE PLAN AND PROFILE LINE 'W-1'			
DRAWN BY CEI	DESIGNED BY CEI	CHECKED BY CEI	SHEET NO. 3 OF 3
JOB NUMBER 0545	DATE APRIL 2008	SCALE: 1"=4' V 1"=40' H	