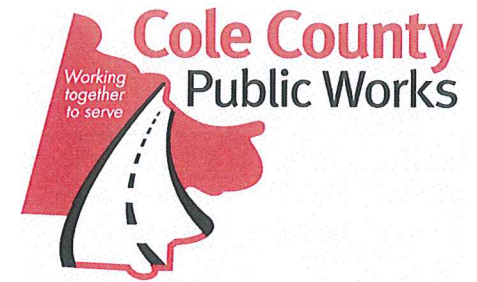


THE CROSSROADS DRAINAGE IMPROVEMENTS

COLE COUNTY, MISSOURI
PROJECT NO.

2015-201-1



Engineering Surveys and Services
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Missouri Engineering Corporation # 200400018

LEGEND

—E—	PROPERTY LINE
—T—	ELECTRIC LINE
—UE—	TELECOMMUNICATIONS LINE
—UT—	UNDERGROUND ELECTRIC LINE
—UTV—	UNDERGROUND TELECOMMUNICATIONS LINE
—S—	UNDERGROUND TELEVISION LINE
—SS—	SANITARY SEWER LINE
—W—	STORM SEWER LINE
—X—	WATER LINE
—F—	FENCE
—T&B—	TREE & BRUSH LINE
—D—	DRAINAGE SWALE
—C—	EXISTING CONTOUR
—A—	ANCHOR
—I—	IRON
—R/W—	R/W MARKER
—CP#—	CONTROL POINT
—A/C—	AIR CONDITIONER
—CMP—	CORRUGATED METAL PIPE
—CO—	CLEANOUT
—EM—	ELECTRIC METER
—EP—	ELECTRIC PEDESTAL
—FH—	FIRE HYDRANT
—FL—	FLOW LINE
—HDPE—	HIGH DENSITY POLYETHYLENE PIPE
—PVC—	POLYVINYL CHLORIDE PIPE
—RD—	ROOF DRAIN
—TP—	TELECOMMUNICATIONS PEDESTAL
—TRANS—	ELECTRIC TRANSFORMER
—TVP—	TELEVISION PEDESTAL
—TW—	TOP OF WALL
—UP—	UTILITY POLE
—URD—	UNDERGROUND ROOF DRAIN
—VCP—	VITRIFIED CLAY PIPE
—WM—	WATER METER
—WV—	WATER VALVE
—S—	SILT FENCE
—F—	FINISH CONTOUR
—750—	TOP OF CURB ELEVATION
—60.0—	TOP OF PAVEMENT ELEVATION
—49.5—	FINISH GRADE ELEVATION
—SS—	PROPOSED STORM SEWER
—F—	PROPOSED FENCE
—P—	STANDARD DUTY PAVEMENT
—R—	PAVEMENT REMOVAL

UTILITY NOTES

THE LOCATIONS, SIZES, AND MATERIAL TYPES OF UNDERGROUND UTILITIES INDICATED ON THE PLAN, NOT VISIBLE OR APPARENT FROM THE SURFACE, ARE SHOWN IN THEIR APPROXIMATE LOCATIONS FROM A MISSOURI ONE CALL SYSTEM LOCATE, OR UTILITY COMPANY RECORDS AND WERE NOT VERIFIED IN THE FIELD. UNDERGROUND UTILITY SERVICES TO BUILDINGS WERE NOT LOCATED.

WATER
PUBLIC WATER SUPPLY DISTRICT 2
1944 VETH DRIVE
JEFFERSON CITY, MISSOURI 65109
CONTACT: 573-635-7011
AS SHOWN

ELECTRIC
THREE RIVERS ELECTRIC COOPERATIVE
4800 STATE ROUTE E
JEFFERSON CITY, MISSOURI 65101
CONTACT: FRED LUEBBERING 573-644-9000
AS SHOWN

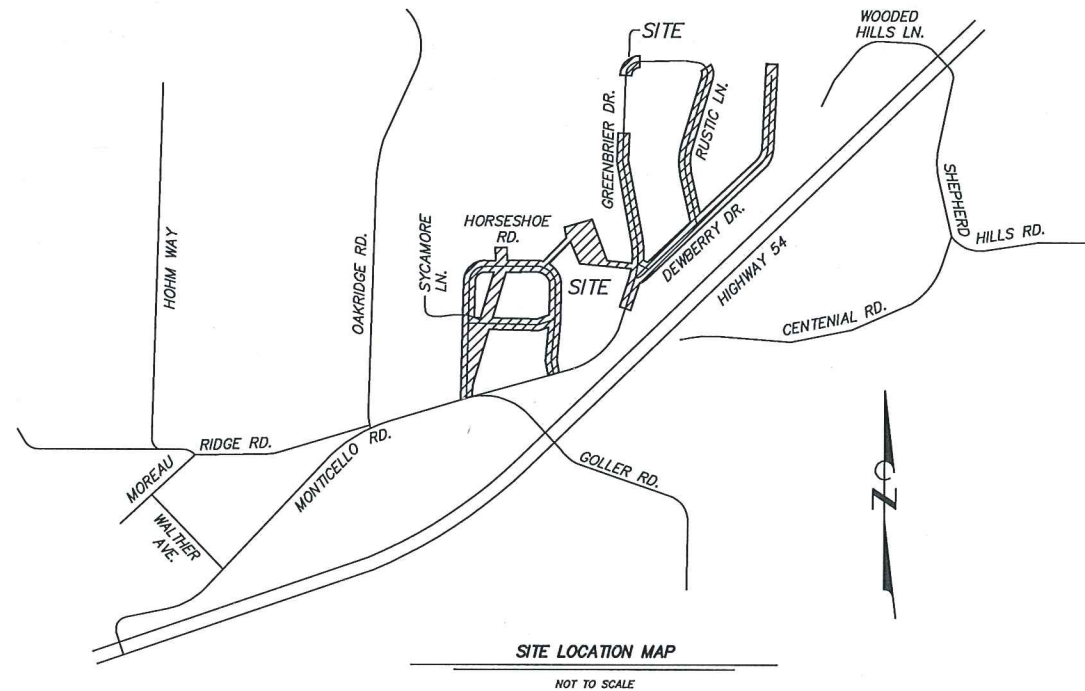
GAS
AMEREN MISSOURI
1310 INDUSTRIAL DRIVE
JEFFERSON CITY, MISSOURI 65101
CONTACT: MARK BRANDT 573-681-7550
NON LOCATED IN SURVEYED AREA

TELECOMMUNICATIONS
CENTURYLINK
3546 N. TEN MILE DRIVE
JEFFERSON CITY, MISSOURI 65101
CONTACT: ALAN GRONER 573-681-2503

SUDDENLINK
1424 W. ASHLEY ROAD SUITE A
BOONVILLE, MO 65233
866-822-5151

SANITARY SEWER
MISSOURI AMERICAN WATER
906 WEST HIGH STREET
JEFFERSON CITY, MISSOURI 65109
CONTACT: KEVIN EVELER 573-634-3801
AS SHOWN

STORM SEWER
COLE COUNTY PUBLIC WORKS
5055 MONTICELLO ROAD
JEFFERSON CITY, MISSOURI 65109
CONTACT: ERIC LANDWEHR 573-636-3614
AS SHOWN



BENCH MARK

- BM - MISSOURI DEPARTMENT OF NATURAL RESOURCES GEOGRAPHIC REFERENCE SYSTEM MONUMENT "JC-46" LOCATED 53.8' WEST OF A DROP INLET AND 40.5' EAST OF THE CROSSOVER AT THE INTERSECTION OF HIGHWAY 54 AND MONTICELLO ROAD AND COLLIER ROAD. ELEVATION = 671.91
- TBM 1 - CHISELED "+" ON EAST BOLT OF FIRE HYDRANT LOCATED 42.4' EAST OF NORTHEAST BUILDING CORNER OF 3456 HORSESHOE ROAD. ELEVATION = 653.96
- TBM 2 - CHISELED "+" ON EAST BOLT OF FIRE HYDRANT LOCATED 76.3' NORTHEAST OF NORTHWESTERLY BUILDING CORNER OF 3437 HORSESHOE ROAD. ELEVATION = 685.53
- TBM 3 - CHISELED "+" ON EAST BOLT OF FIRE HYDRANT LOCATED IN THE NORTHWEST CORNER OF THE INTERSECTION OF HORSESHOE ROAD AND SYCAMORE LANE. ELEVATION = 680.26
- TBM 4 - CHISELED SQUARE ON THE NORTHEAST CORNER OF CURB INLET LOCATED ON THE WEST SIDE OF GREENBRIER DRIVE AT THE INTERSECTION OF GREENBRIER DRIVE AND DEWBERRY DRIVE. ELEVATION = 702.96
- TBM 5 - CHISELED SQUARE ON THE NORTHEAST CORNER OF JUNCTION BOX LOCATED IN THE SOUTHWEST CORNER OF THE INTERSECTION OF DEWBERRY DRIVE AND RUSTIC LANE. ELEVATION = 686.05
- TBM 6 - CHISEL MARKS ON THE SOUTH RIM OF MANHOLE LOCATED IN THE DRIVEWAY TO 3934 RUSTIC LANE. ELEVATION = 665.28
- TBM 7 - CHISELED "+" ON EAST BOLT OF FIRE HYDRANT LOCATED BETWEEN 3936 AND 3932 DEWBERRY DRIVE. ELEVATION = 680.89
- TBM 8 - CHISELED "+" ON EAST BOLT OF FIRE HYDRANT LOCATED ON THE WEST SIDE OF DEWBERRY DRIVE 140' SOUTH OF THE END OF DEWBERRY DRIVE. ELEVATION = 651.72

SURVEY CONTROL POINTS

POINT #	NORTH	EAST	ELEVATION	DESCRIPTION
CP1	975734.15	1713111.13	654.56	IRON
CP2	975248.84	1713057.19	648.87	IRON
CP3	976089.78	1713200.46	667.34	IRON
CP4	976022.69	1713643.01	672.52	IRON
CP5	975353.35	1713631.71	682.80	IRON
CP7	975493.41	1713965.12	700.94	IRON
CP8	975807.14	1714120.86	715.58	IRON
CP9	976345.23	1714164.42	704.30	IRON
CP10	976753.48	1714035.01	723.28	IRON
CP11	976578.64	1714458.01	666.60	IRON
CP12	976367.97	1714634.83	696.32	IRON
CP13	976108.51	1714263.06	710.92	IRON
CP15	976864.12	1714976.41	683.06	IRON
CP19	975682.23	1713608.85	679.05	IRON
CP22	975863.51	1713324.51	655.49	IRON
CP24	977341.54	1714062.26	673.55	IRON

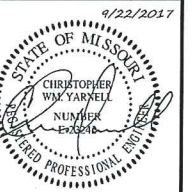
SHEET INDEX

CO.01	COVER
CO.02	TYPICAL SECTIONS
CO.03	GENERAL NOTES AND QUANTITIES
C1.01	PAVEMENT PROFILE CHANGE OVERVIEW
C2.01-C2.15	SITE PLAN
C3.01-C3.05	STORM SEWER PROFILES
C4.01-C4.03	DETAILS
C5.01-C5.02	EROSION CONTROL PLAN

FLOOD PLAIN NOTE

THIS PROPERTY IS LOCATED IN ZONE "X" AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, AS SHOWN BY FLOOD INSURANCE RATE MAP NUMBER 29031C38E, DATED NOVEMBER 2 2012.

THE CROSSROADS
DRAINAGE IMPROVEMENTS
COLE COUNTY, MISSOURI



CHRISTOPHER WM. YARNELL
REGISTERED PROFESSIONAL
ENGINEER E-23242

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COVER

Sheet

CO.01

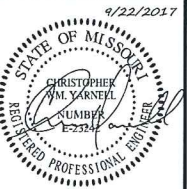
THE CROSSROADS DRAINAGE IMPROVEMENTS

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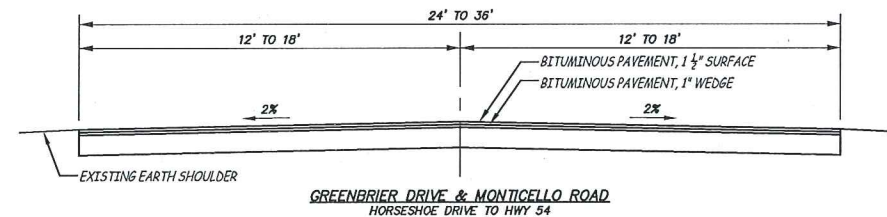
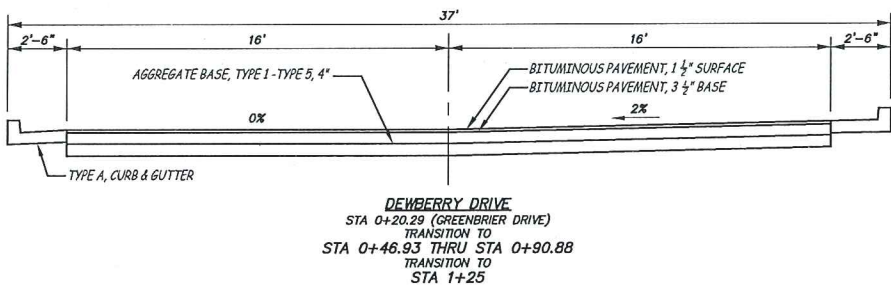
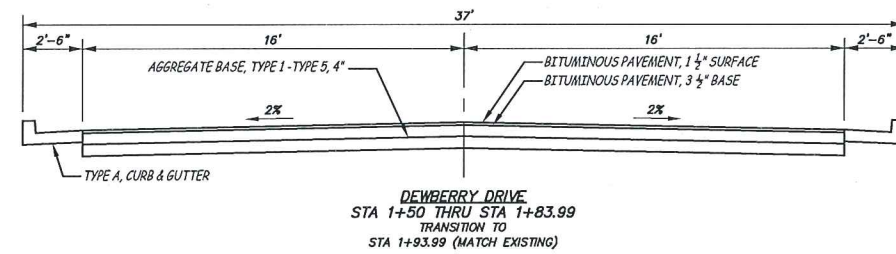
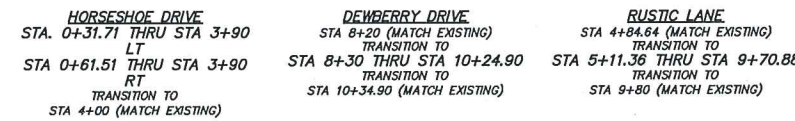
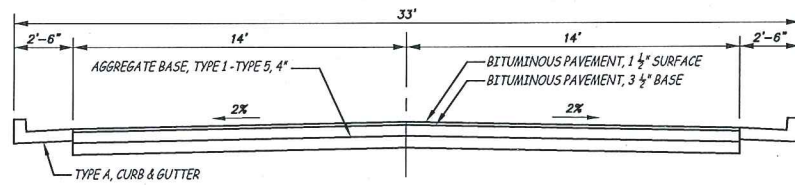
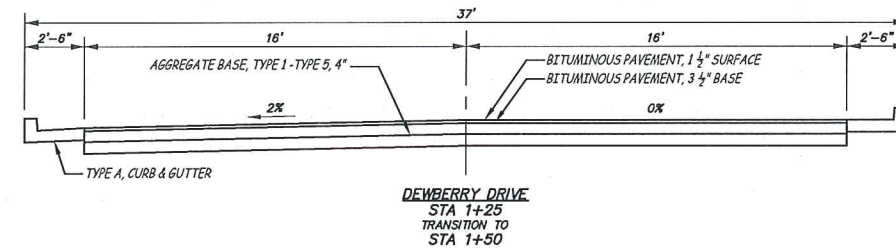
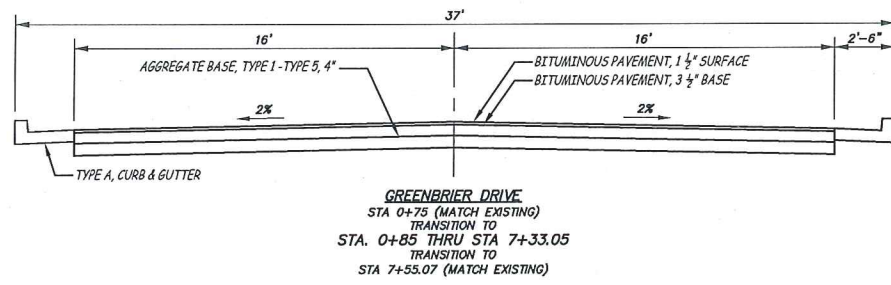
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TYPICAL SECTIONS

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TYPICAL PAVEMENT CROSS SECTIONS
 NOT TO SCALE



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GENERAL NOTES &
 QUANTITIES

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ES&S PROJECT NO. 5673

PIPE NOTES

PIPE TYPE ABBREVIATIONS:

RCP = CLASS III REINFORCED CONCRETE PIPE
 CMP = ALUMINIZED CORRUGATED METAL PIPE
 SRP = ALUMINIZED SPIRAL WEB METAL PIPE

PIPE TYPE SUBSTITUTIONS PERMITTED:

- PIPES SPECIFIED AS RCP MAY BE SUBSTITUTED WITH HIGH PERFORMANCE CORRUGATED POLYPROPYLENE PIPE (SMOOTH INTERIOR WALL) OR POLYMER COATED CORRUGATED METAL PIPE; WITH THE EXCEPTION OF PIPES UNDER STREETS WHERE NO SUBSTITUTION WILL BE PERMITTED.
- PIPES SPECIFIED AS SRP OR CMP MAY BE SUBSTITUTED WITH REINFORCED CONCRETE PIPE, HIGH PERFORMANCE CORRUGATED PIPE (SMOOTH INTERIOR WALL), OR POLYMER COATED METAL PIPE.
- NO PLASTIC PIPES WILL BE PERMITTED TO BE DISCHARGED INTO OPEN CHANNELS. IF THE CONTRACTOR WISHES TO USE PLASTIC PIPE IN A PIPE RUN THAT DISCHARGED INTO AN OPEN CHANNEL, A 10' LONG SECTION OF THE SPECIFIC PIPE AND SPECIFIED FLARED END SECTION WILL BE REQUIRED AT THE DOWNSTREAM END OF THE RUN.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR RE-DESIGN OF PIPE RUNS FOR ANY PIPE SUBSTITUTIONS THAT INCREASE THE n VALUE FROM THE VALUES USED IN THE DESIGN.

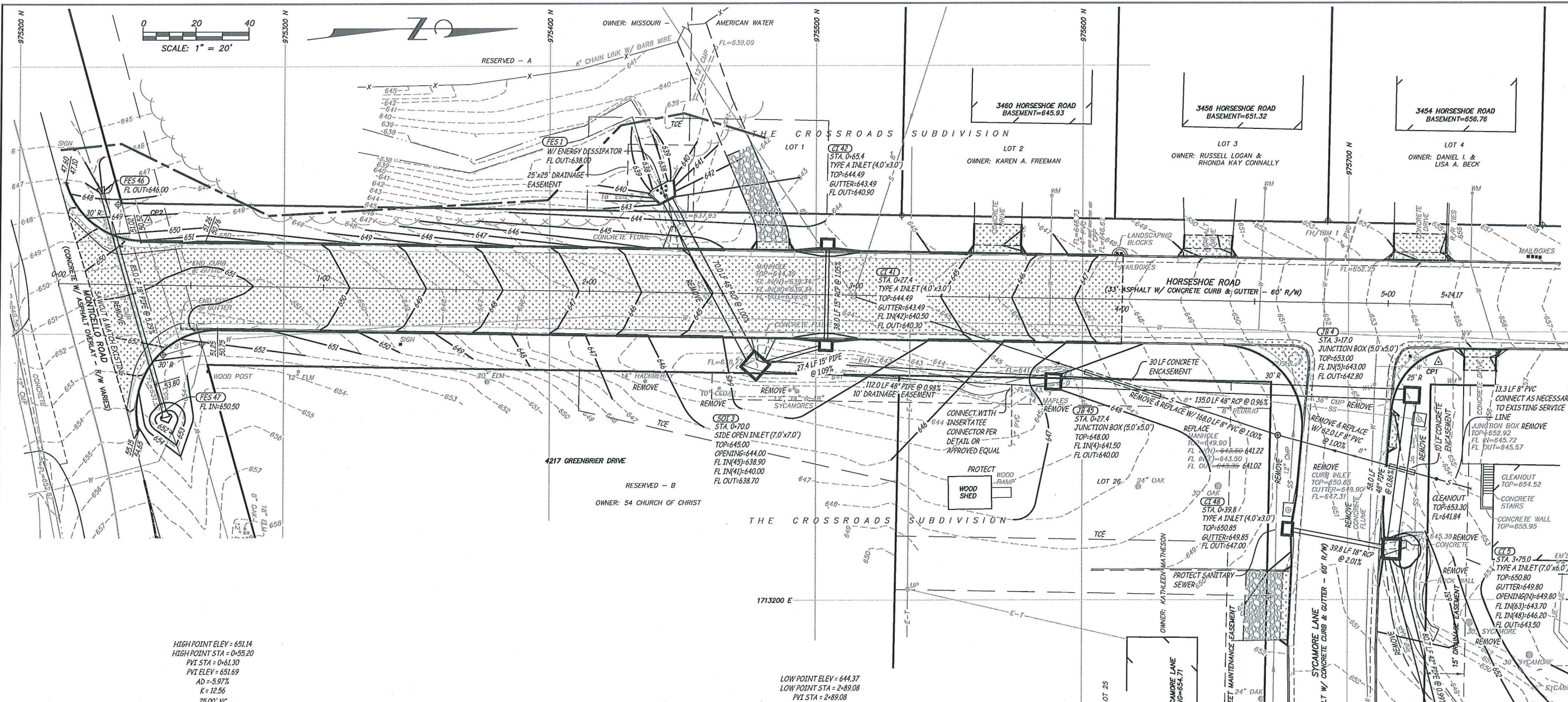
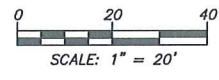
HORSESHOE DRIVE ENTRANCES					
ADDRESS	DRIVE WIDTH	DRIVE LENGTH	DRIVE MATERIAL TYPE	APPROACH QUANTITY (SQ YD)	DRIVE QUANTITY (SQ YD)
3400	22.4'	5.6'	GRAVEL	8.1	13.5
3402	18.2'	3.3'	GRAVEL	6.7	8.7
3406	33.0'	5.0'	CONCRETE	11.7	21.9
3407	15.4'	14.4'	GRAVEL	5.8	21.8
3408	16.8'	2.9'	CONCRETE	6.3	5.6
3414	25.8'	8.2'	CONCRETE	9.3	23.7
3418	24.3'	5.1'	CONCRETE	8.8	13.8
3420	41.0'	5.0'	CONCRETE	14.3	25.8
3421 N	21.4'	5.0'	GRAVEL	7.8	12.6
3421 E	15.0'	9.8'	GRAVEL	5.8	16.4
3424	18.8'	5.0'	CONCRETE	6.9	10.8
3425/3429	38.2'	8.4'	GRAVEL	13.4	35.1
3426	21.6'	10.0'	CONCRETE	7.8	23.9
3430	11.9'	5.0'	CONCRETE	4.6	6.6
3432	16.7'	5.0'	GRAVEL	6.3	9.3
3436	19.8'	8.0'	GRAVEL	7.2	17.6
3437	21.9'	15.1'	GRAVEL	7.8	37.6
3438	17.5'	5.4'	CONCRETE	6.6	10.4
3444	10.2'	7.0'	GRAVEL	4.1	8.2
3448	18.6'	8.9'	GRAVEL	6.8	20.8
3449	21.2'	8.6'	CONCRETE	7.8	19.9
3450	20.0'	7.0'	GRAVEL	7.3	15.4
3453 N	12.0'	9.5'	CONCRETE	4.6	12.5
3453 S	11.9'	5.0'	CONCRETE	4.6	6.6
3454	19.7'	6.9'	CONCRETE	7.2	15.3
3456	18.1'	5.0'	CONCRETE	6.7	10.1
3460	17.7'	7.9'	CONCRETE	6.6	15.6
LAGOON	12.1'	36.7'	GRAVEL	4.7	43.7

DEWBERRY DRIVE ENTRANCES					
ADDRESS	DRIVE WIDTH	DRIVE LENGTH	DRIVE MATERIAL TYPE	APPROACH QUANTITY (SQ YD)	DRIVE QUANTITY (SQ YD)
3901	17.6'	8.4'	CONCRETE	6.6	13.4
3906 N	26.9'	14.0'	CONCRETE	9.6	32.1
3906 S	22.5'	9.6'	CONCRETE	8.1	26.3
3907 N	19.3'	9.9'	CONCRETE	7.2	20.3
3907 S	17.0'	12.4'	CONCRETE	6.3	21.2
3911	15.5'	9.1'	CONCRETE	5.8	14.7
3915	18.3'	9.4'	GRAVEL	6.7	18.5
3920	16.0'	11.1'	CONCRETE	6.3	22.3
3921	30.3'	8.9'	CONCRETE	10.7	27.9
3926	8.8'	6.5'	CONCRETE	3.6	28.4
3928	41.0'	14.9'	CONCRETE	14.3	70.5
3929 N	19.2'	8.7'	CONCRETE	7.2	17.2
3929 S	19.7'	7.8'	CONCRETE	7.2	16.1
3932	16.4'	14.2'	CONCRETE	6.3	216.7
3933	17.8'	6.2'	CONCRETE	6.6	11.8
3936	15.4'	3.9'	GRAVEL	5.8	6.5
3941	19.7'	17.1'	CONCRETE	7.2	25.7
4001	16.1'	3.0'	CONCRETE	6.3	5.4
4004 N	12.8'	8.6'	CONCRETE	5.2	11.1
4004 S	12.2'	5.0'	GRAVEL	4.7	6.9
4005	11.4'	5.0'	GRAVEL	4.6	6.4
4009	14.7'	7.1'	GRAVEL	5.8	11.9
4013	22.5'	7.2'	CONCRETE	8.1	16.6

SYCAMORE LANE ENTRANCES					
ADDRESS	DRIVE WIDTH	DRIVE LENGTH	DRIVE MATERIAL TYPE	APPROACH QUANTITY (SQ YD)	DRIVE QUANTITY (SQ YD)
3404	20.9'	15.6'	GRAVEL	7.4	42.3
3407	14.8'	12.1'	CONCRETE	5.6	27.9
3408	20.5'	10.0'	CONCRETE	7.4	16.3
3411	25.5'	9.0'	CONCRETE	9.3	6.6
3412	14.5'	15.8'	GRAVEL	5.6	44.4
3413	20.3'	11.5'	GRAVEL	7.4	16.7
3407 HORSESHOE DR	20.8'	13.7'	GRAVEL	7.4	39.4
3453 HORSESHOE DR	12.0'	3.0'	CONCRETE	4.7	4.7

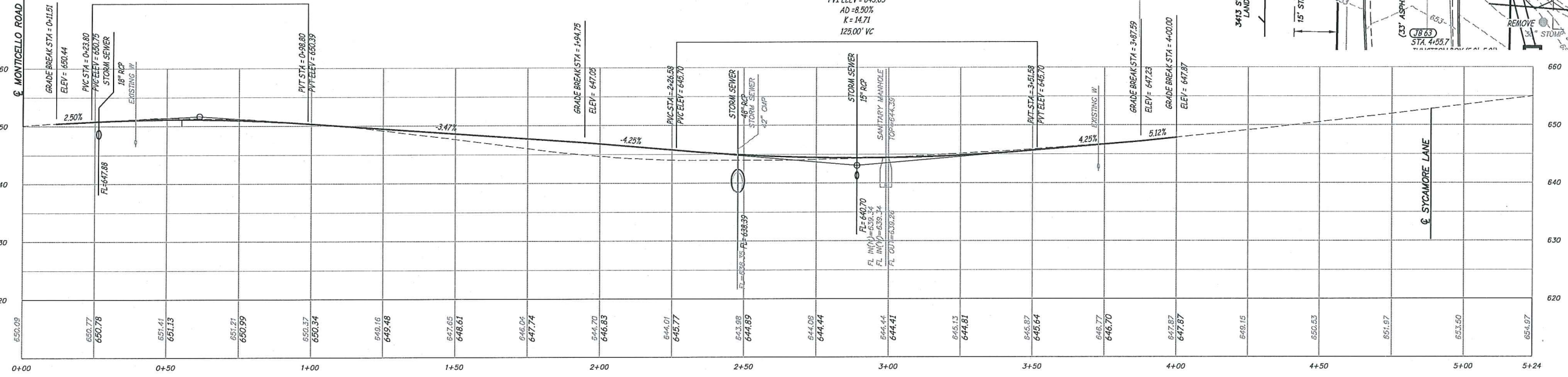
GREENBRIER DRIVE ENTRANCES					
ADDRESS	DRIVE WIDTH	DRIVE LENGTH	DRIVE MATERIAL TYPE	APPROACH QUANTITY (SQ YD)	DRIVE QUANTITY (SQ YD)
3921	22.1'	11.5'	CONCRETE	8.1	28.1
3922	11.6'	7.5'	CONCRETE	4.6	9.8
3923	12.1'	6.7'	CONCRETE	4.7	9.2
3926	11.9'	4.7'	CONCRETE	4.6	6.1
3927	12.0'	11.6'	GRAVEL	4.6	14.2
3930	13.6'	2.9'	CONCRETE	5.2	4.6
3931	12.0'	11.1'	GRAVEL	4.6	15.4
3934	19.4'	3.0'	CONCRETE	7.2	6.1
3935	30.8'	8.2'	CONCRETE	10.9	15.9
4000	20.0'	11.8'	CONCRETE	7.3	26.2
4001	30.6'	6.1'	CONCRETE	10.9	11.4
4004	11.0'	12.2'	CONCRETE	4.3	15.2
4005	11.0'	3.0'	CONCRETE	4.3	3.7
4008/4012	26.8'	11.1'	CONCRETE	9.6	33.2
4016	20.8'	30.4'	CONCRETE	7.4	36.0
4100	15.1'	17.4'	CONCRETE	5.8	28.6
4101 N	15.0'	26.9'	CONCRETE	5.8	44.9
4101 S	13.4'	5.5'	CONCRETE	5.2	8.2
4104	13.9'	10.3'	CONCRETE	5.2	16.4
4108	20.0'	5.0'	CONCRETE	7.3	11.1
4112 N	16.7'	8.3'	CONCRETE	6.3	15.4
4112 S	18.1'	18.0'	CONCRETE	6.7	26.7
4216	12.0'	24.7'	GRAVEL	4.7	28.6

RUSTIC LANE ENTRANCES					
ADDRESS	DRIVE WIDTH	DRIVE LENGTH	DRIVE MATERIAL TYPE	APPROACH QUANTITY (SQ YD)	DRIVE QUANTITY (SQ YD)
3911	17.9'	10.9'	CONCRETE	6.6	21.7
3913	22.7'	5.0'	CONCRETE	8.1	12.5
3916	17.6'	4.0'	CONCRETE	6.6	7.8
3920	16.5'	2.0'	CONCRETE	6.3	3.7
3921 N	15.4'	75.5'	CONCRETE	5.8	98.3
3921 S	18.2'	27.6'	CONCRETE	6.7	39.5
3924	19.0'	4.0'	CONCRETE	7.0	8.2
3925	10.4'	13.3'	CONCRETE	4.1	15.3
3928	12.4'	9.7'	CONCRETE	4.7	12.9
3930	19.8'	5.5'	CONCRETE	7.2	12.0
E OF 3930	12.0'	NA	CONCRETE	4.6	NA
3933	20.1'	8.0'	CONCRETE	7.3	17.8
3934	23.0'	6.1'	CONCRETE	8.3	15.5
3938	15.1'	3.7'	CONCRETE	5.8	6.2
3942	15.7'	8.5'	CONCRETE	5.8	16.5
3938 DEWBERRY DR.	17.8'	11.4'	CONCRETE	6.6	22.3



HIGH POINT ELEV = 651.14
 HIGH POINT STA = 0+55.20
 PVI STA = 0+61.30
 PVI ELEV = 651.69
 AD = -3.97%
 R = 12.56
 75.00' VC

LOW POINT ELEV = 644.37
 LOW POINT STA = 2+89.08
 PVI STA = 2+89.08
 PVI ELEV = 643.05
 AD = 8.50%
 K = 14.71
 125.00' VC

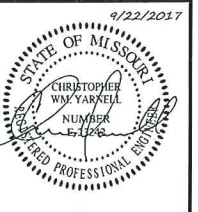


HORSESHOE ROAD WEST
 SCALE - HORIZ. 1" = 20'
 VERT. 1" = 10'



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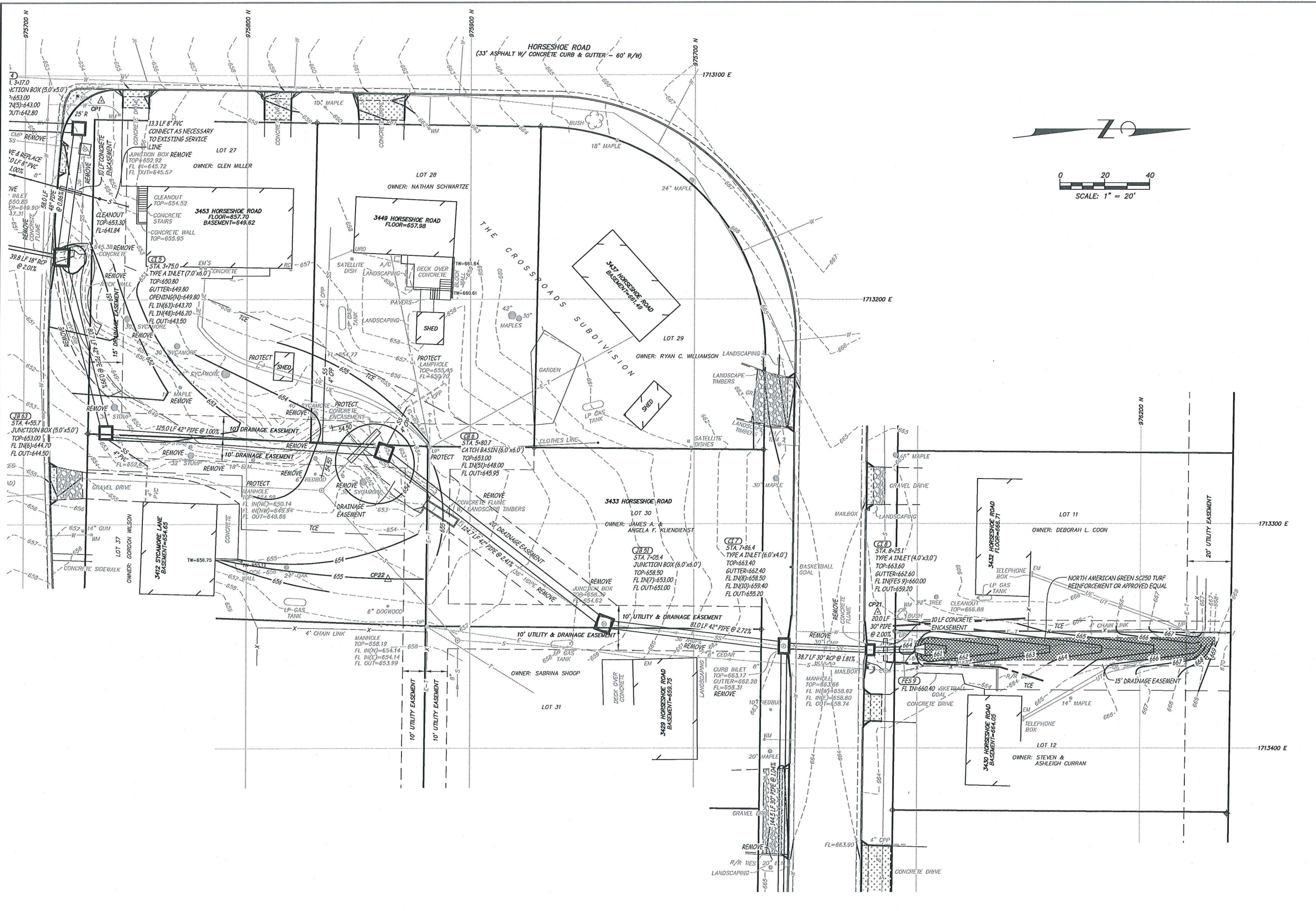
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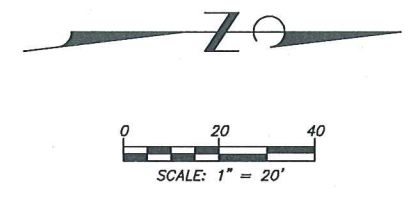
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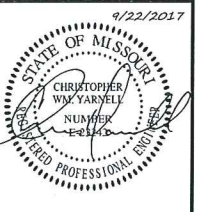
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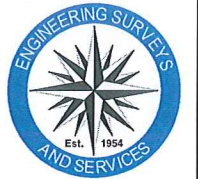
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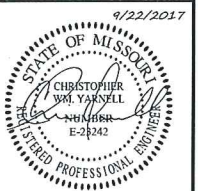
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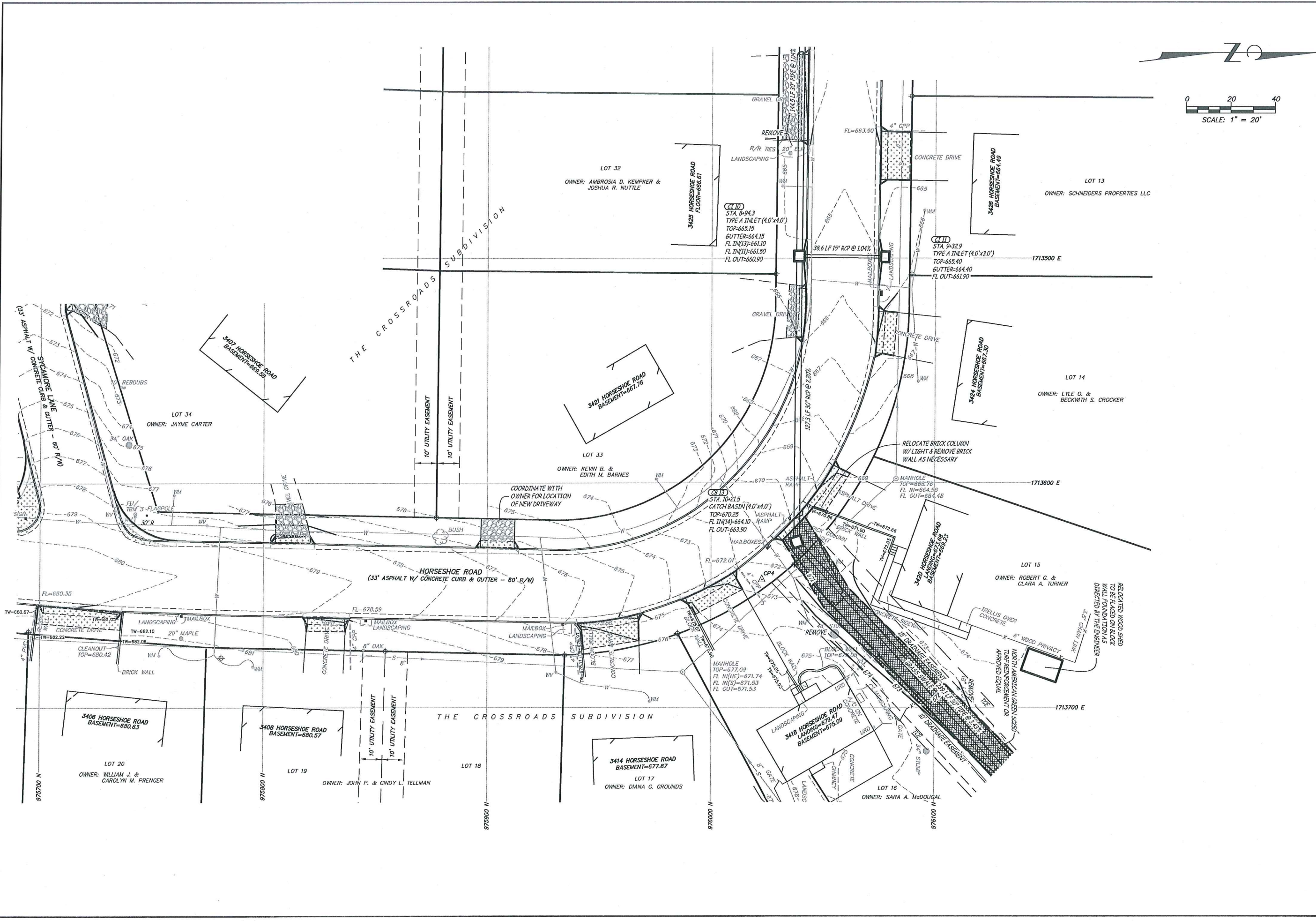
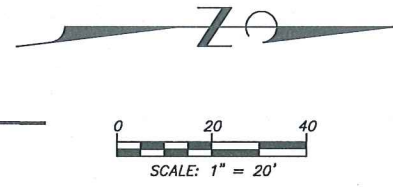
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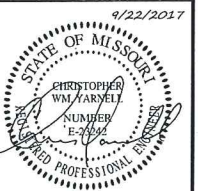


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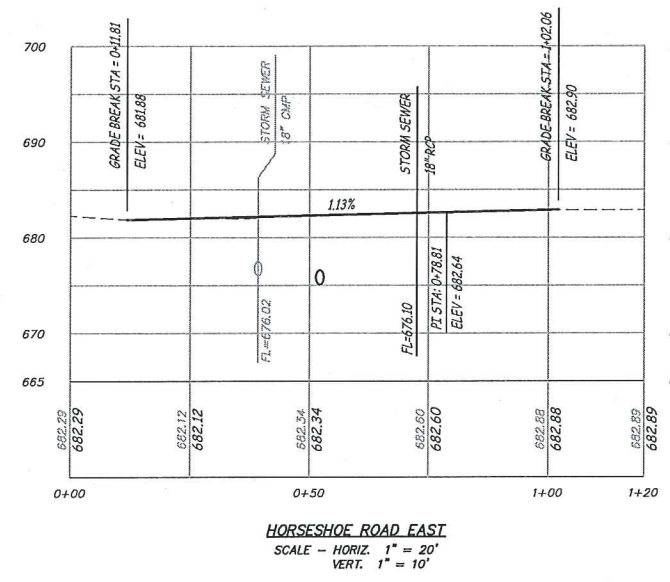
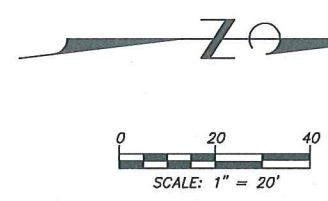
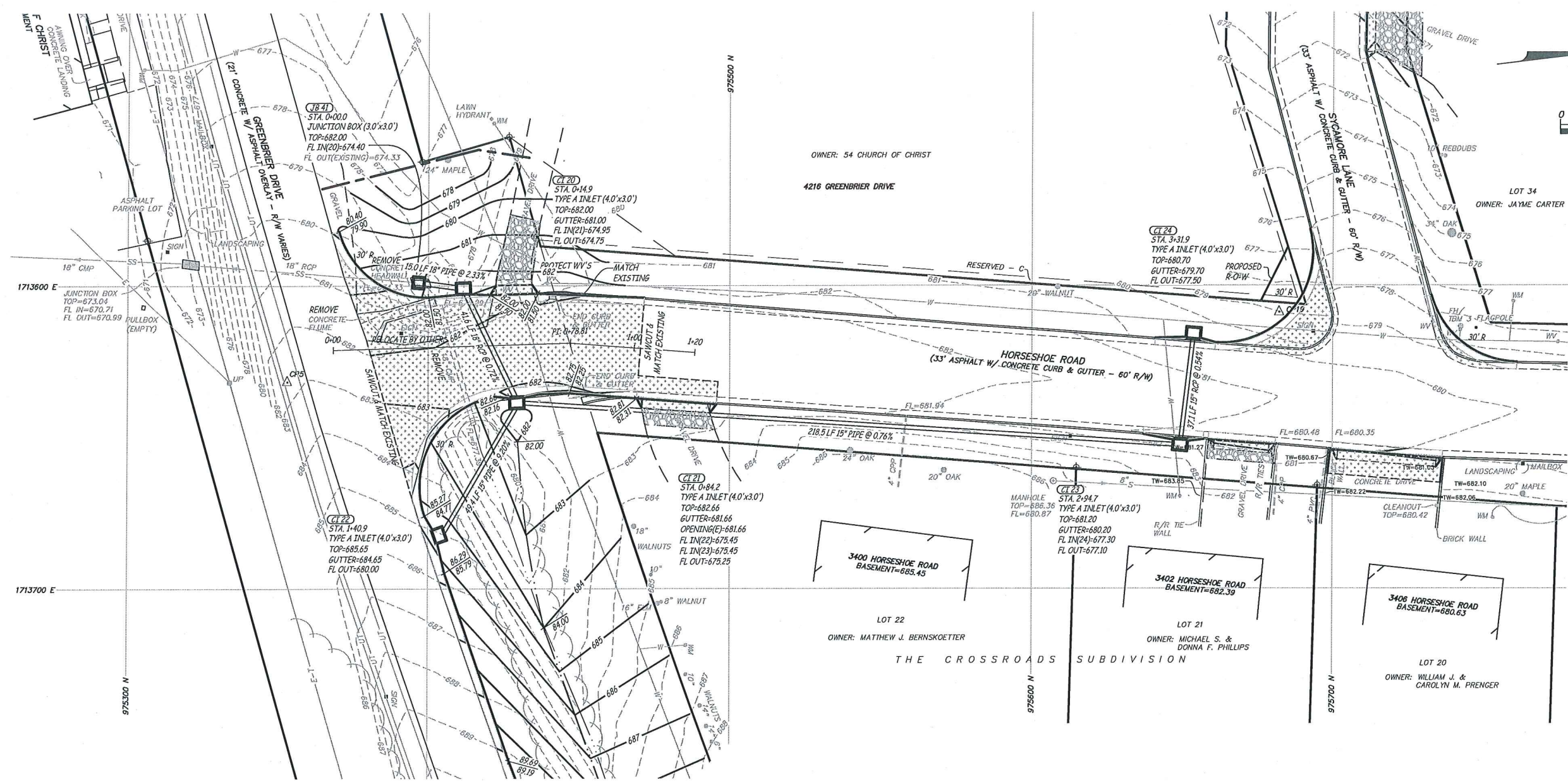
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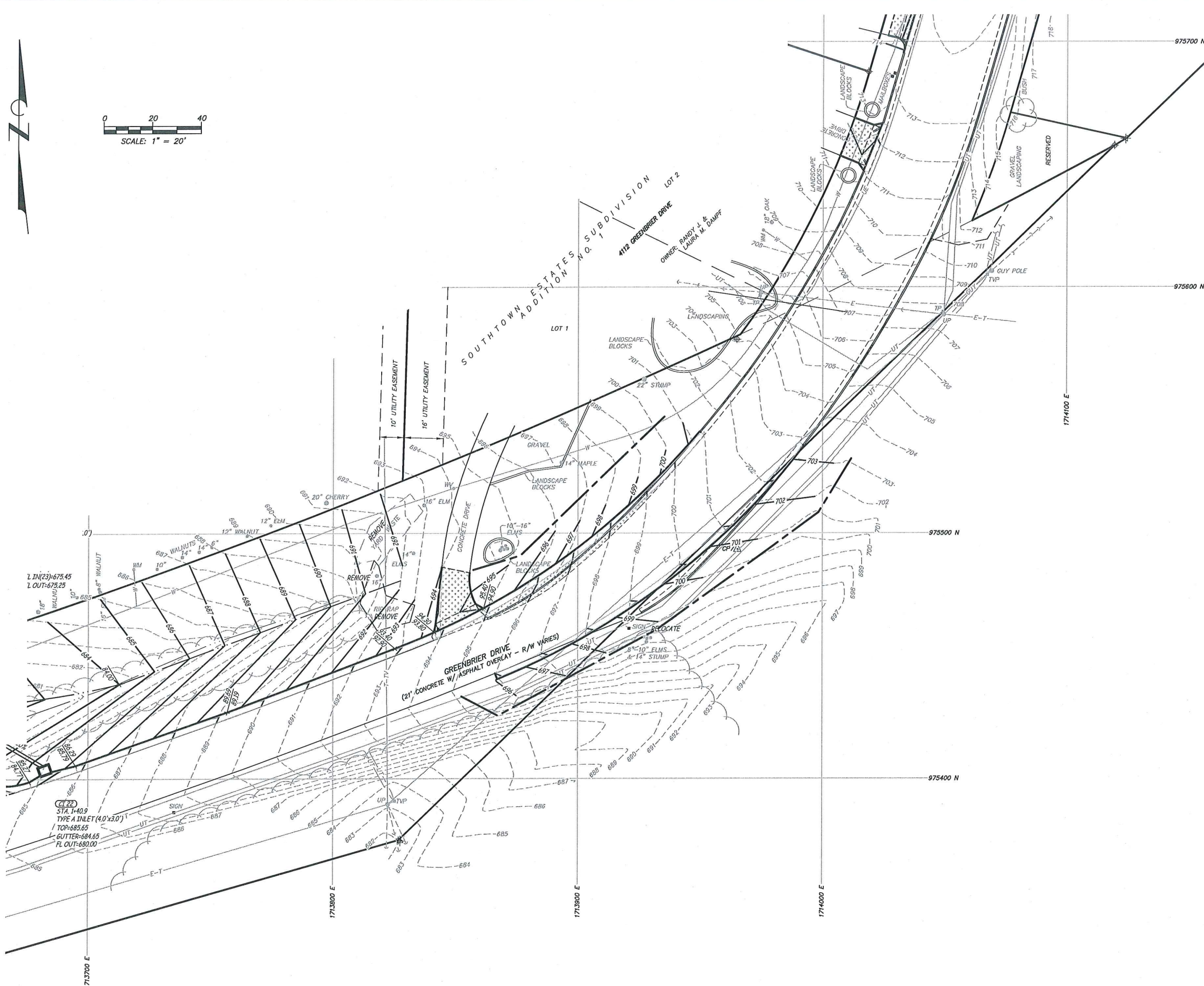
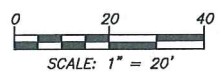
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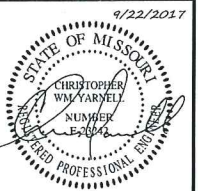
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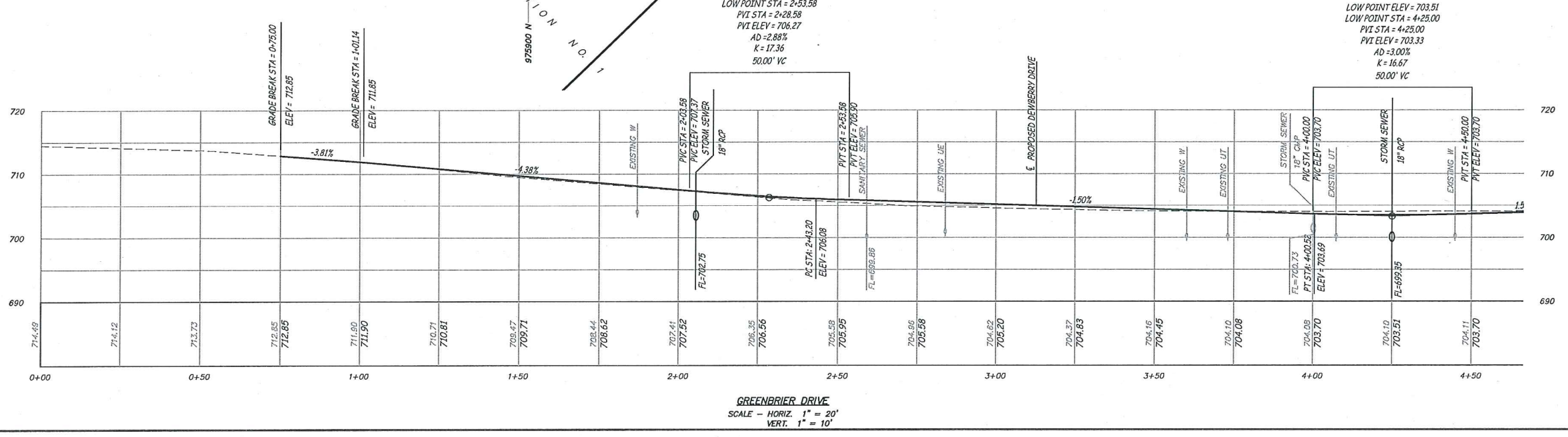
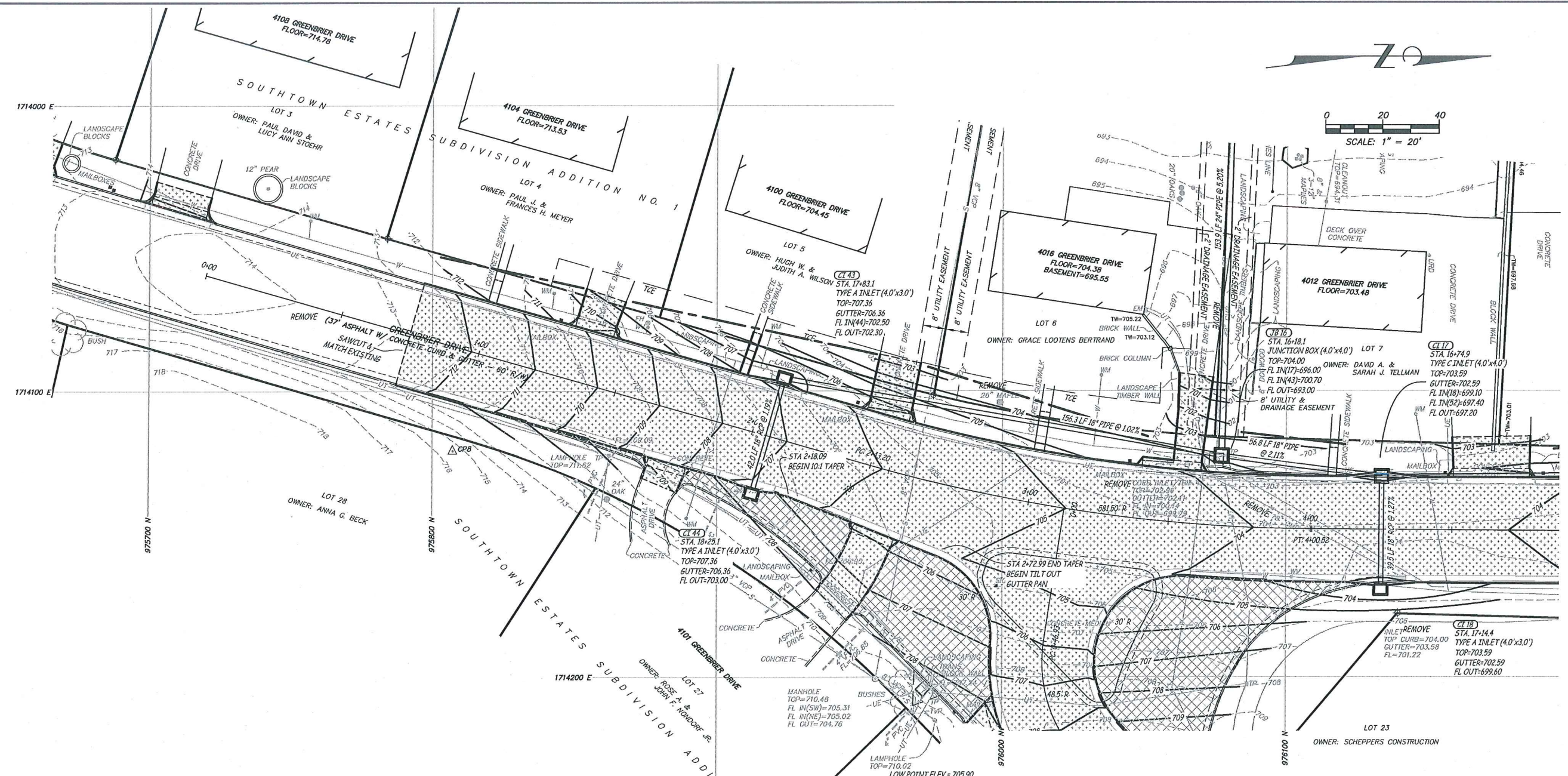
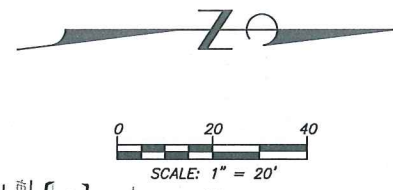
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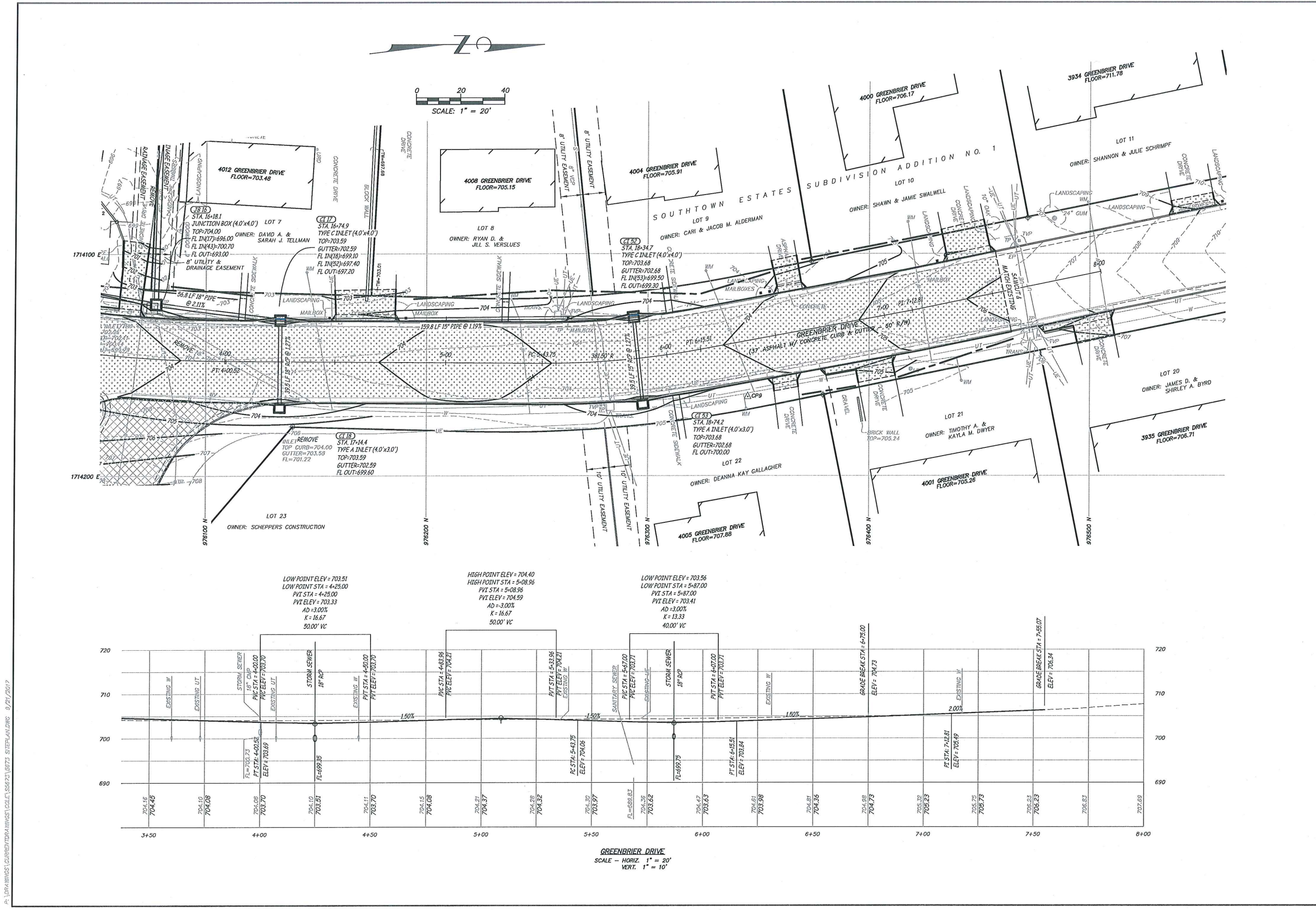
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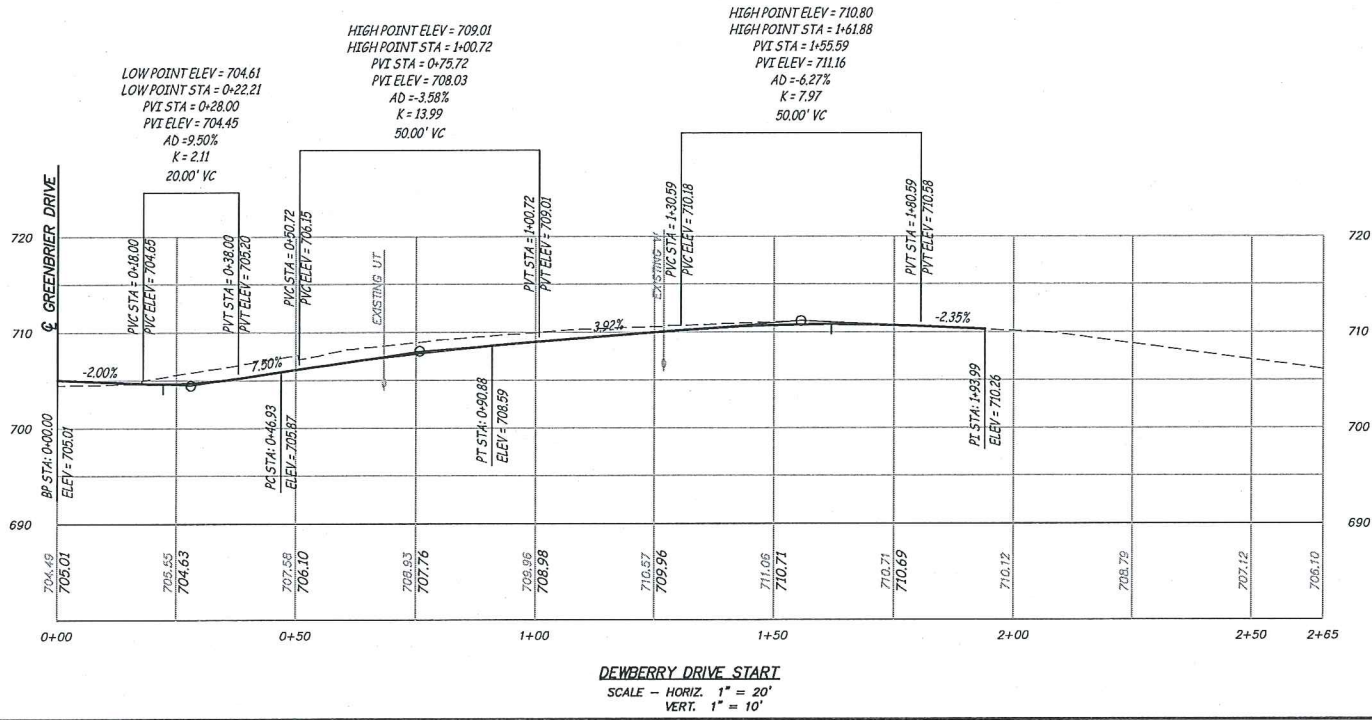
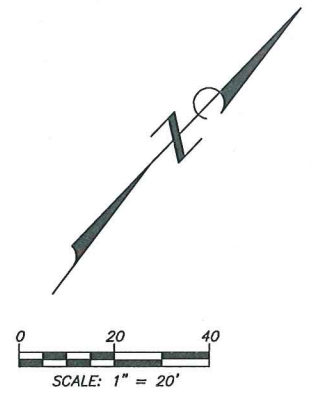
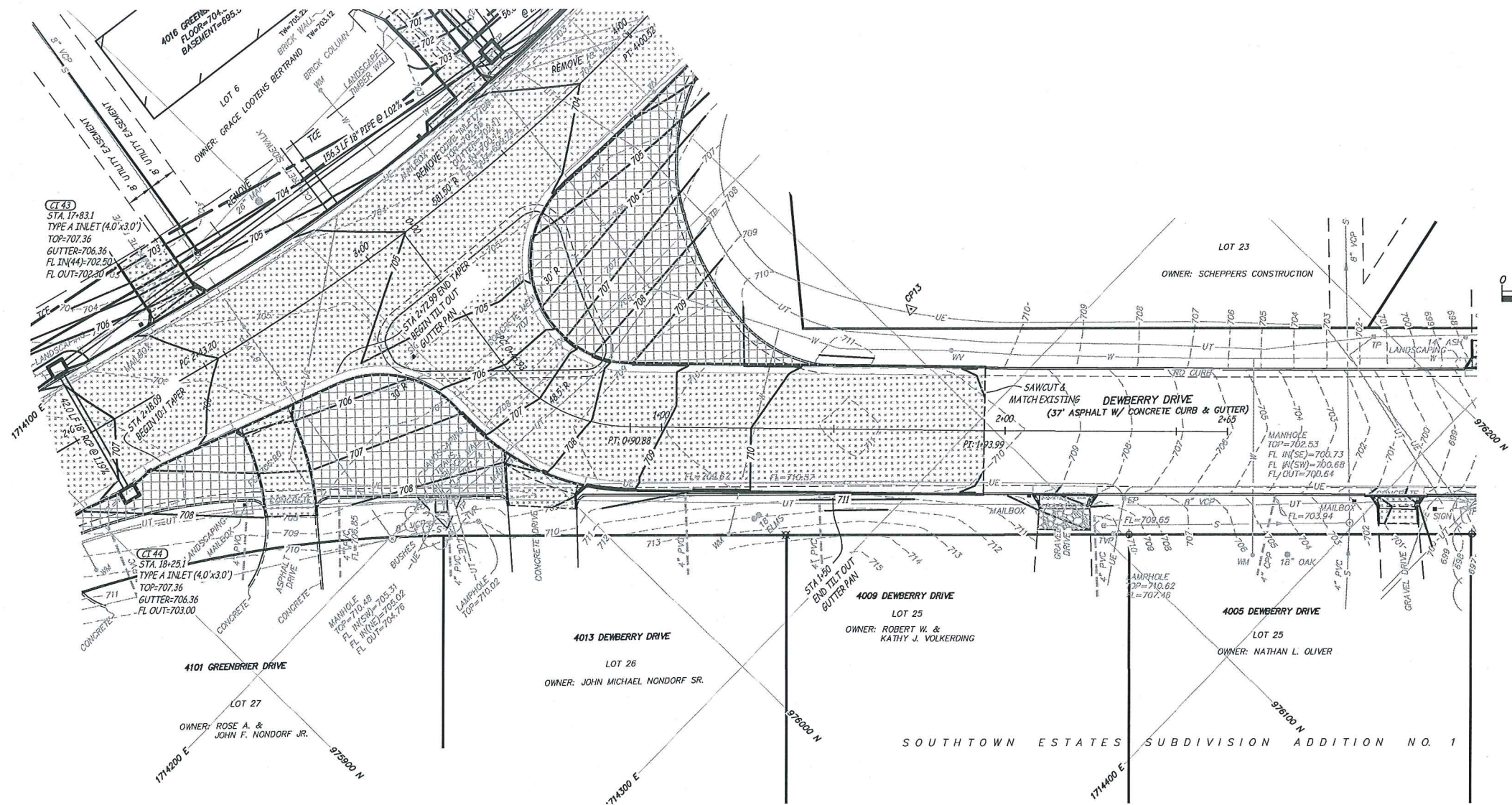
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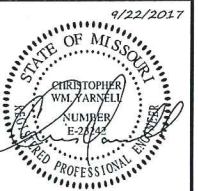


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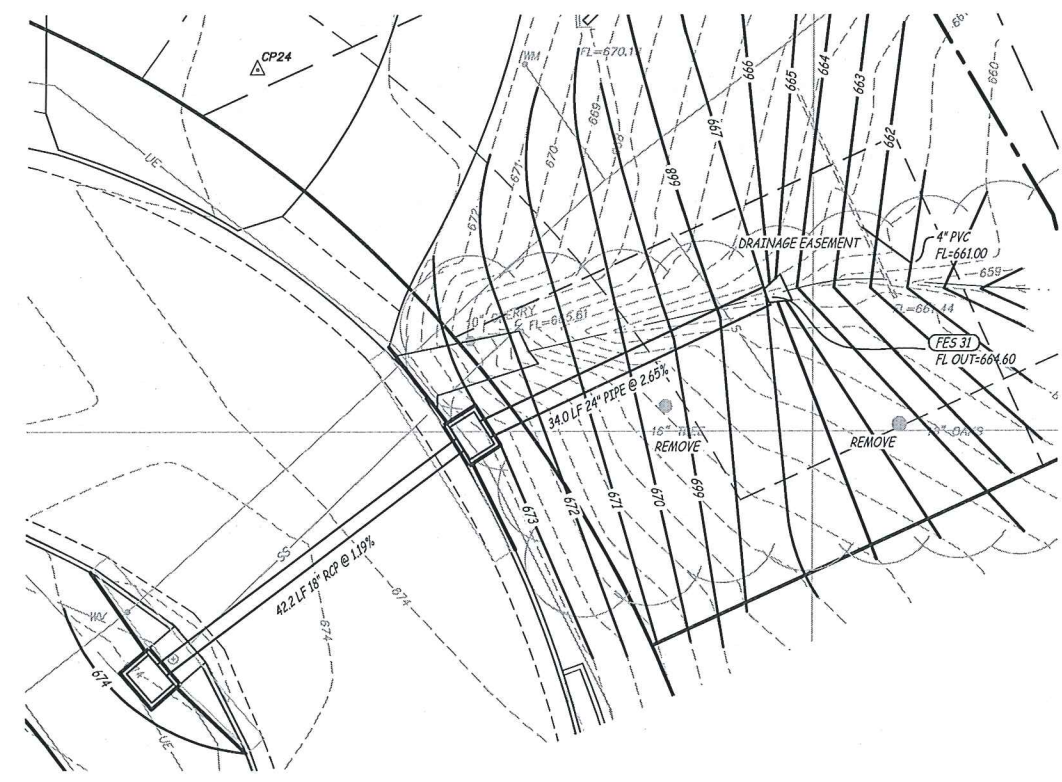
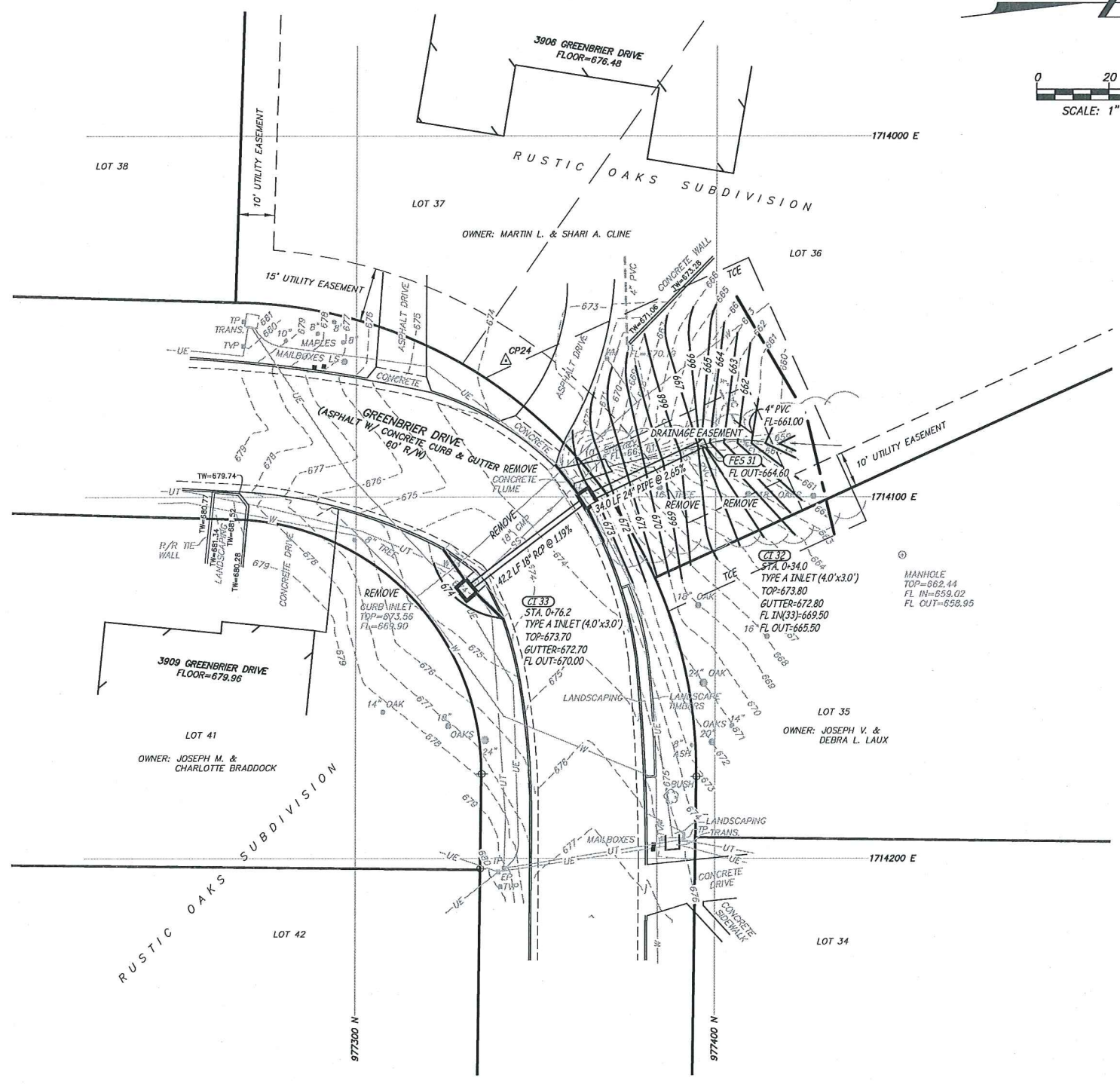
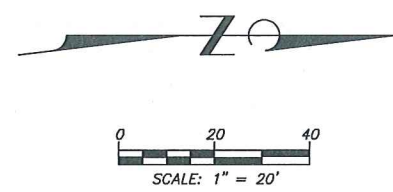
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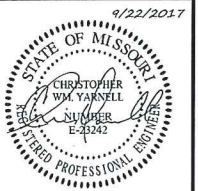
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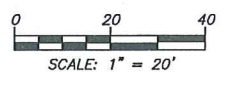
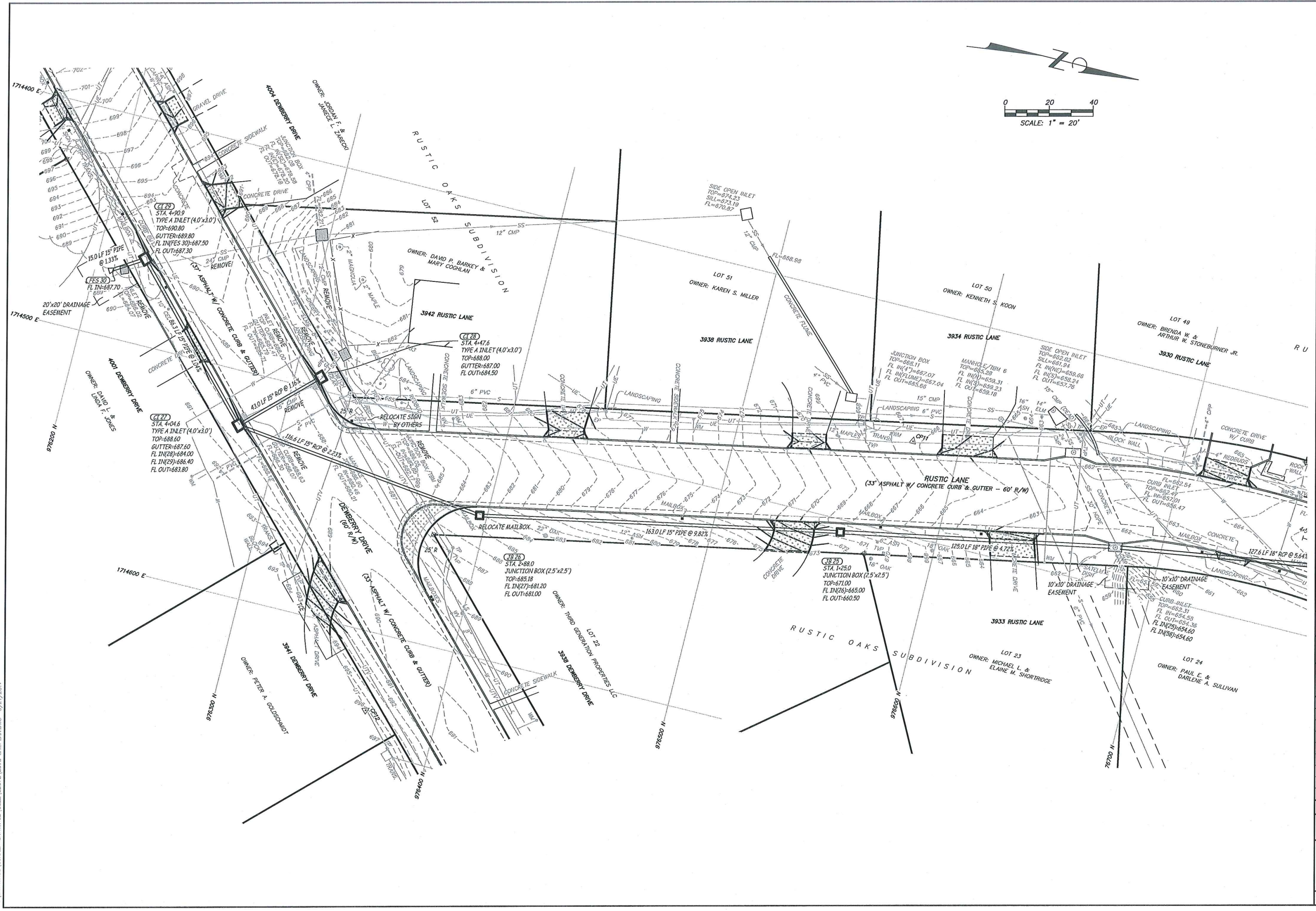
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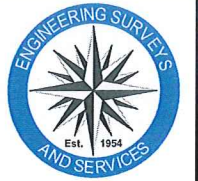
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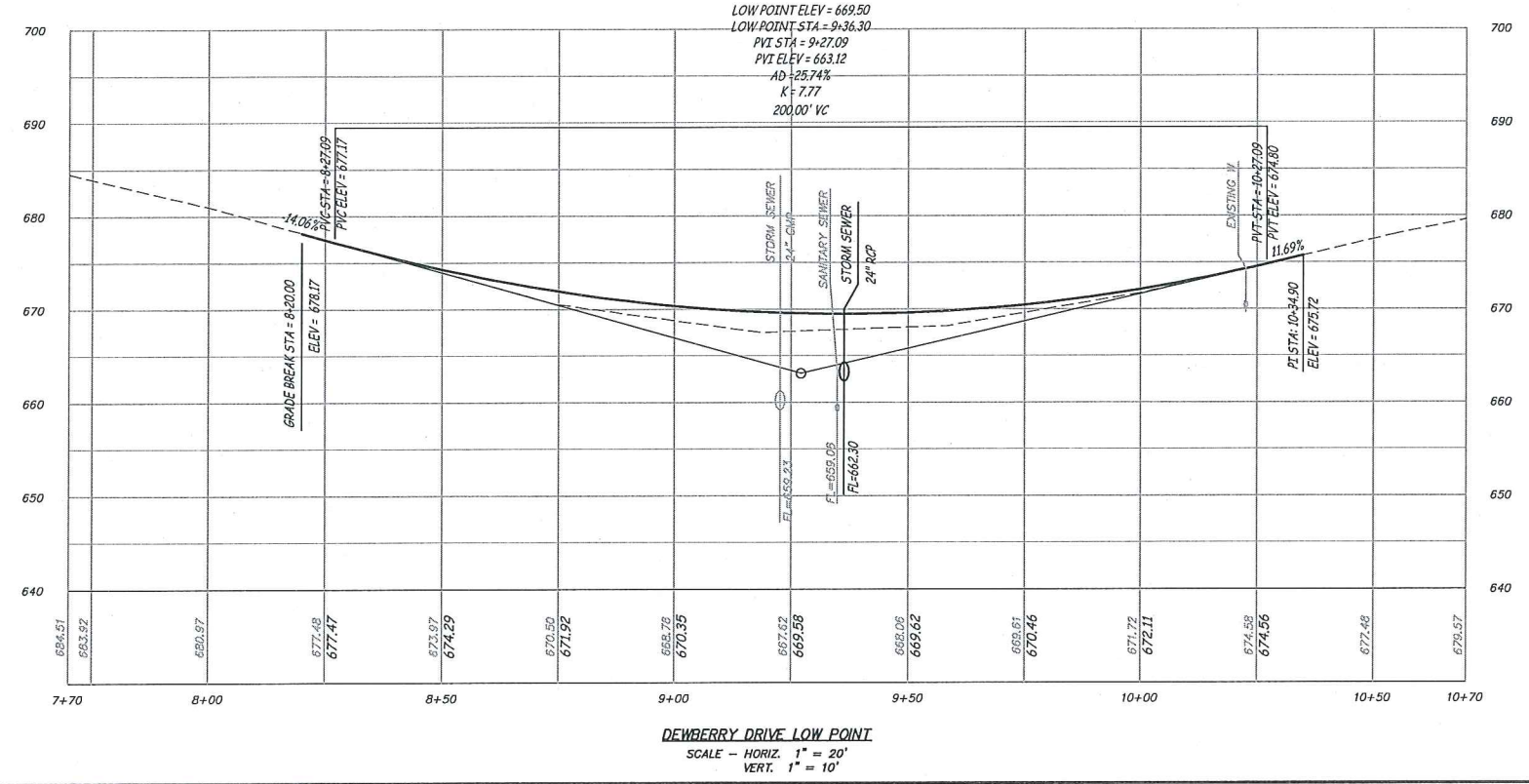
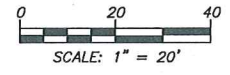
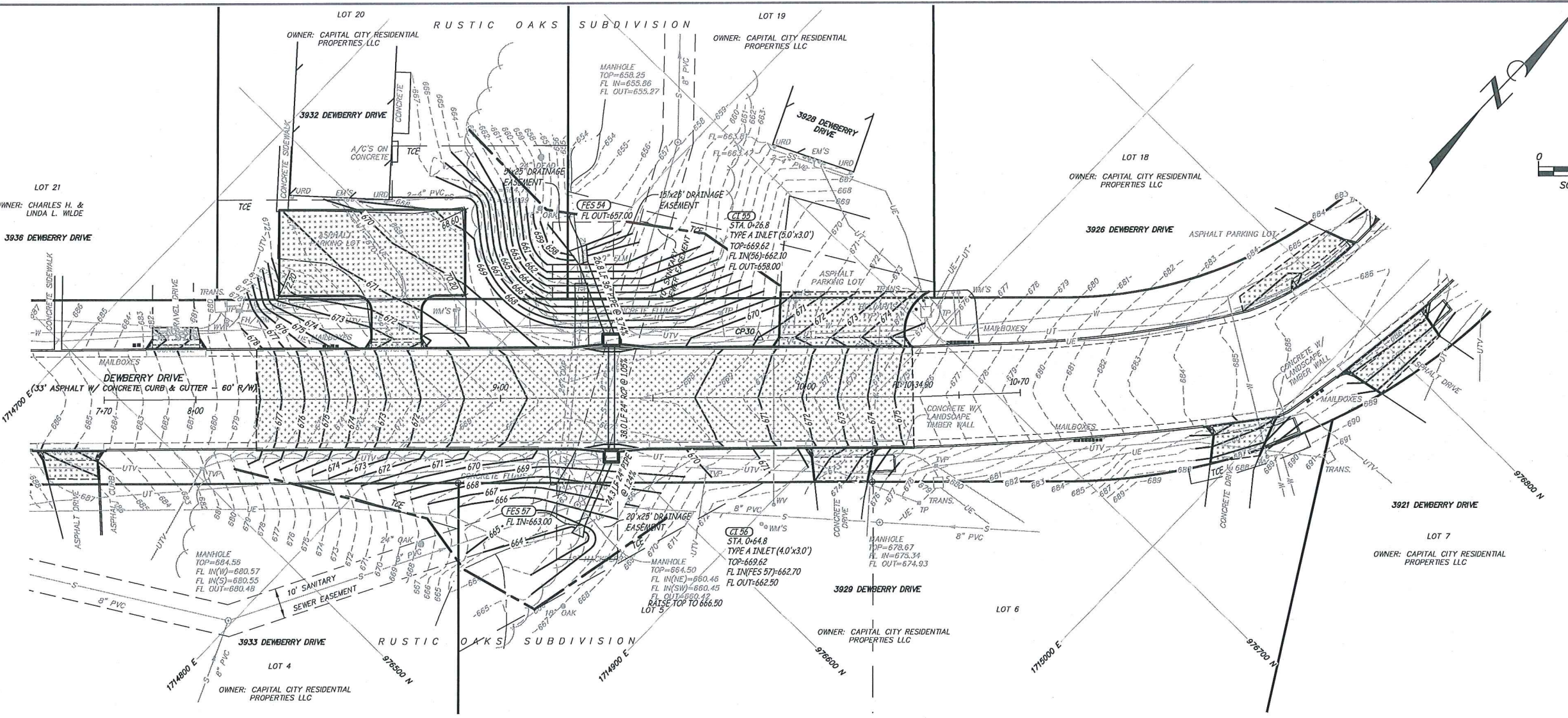
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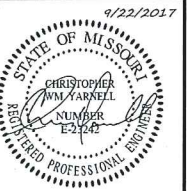
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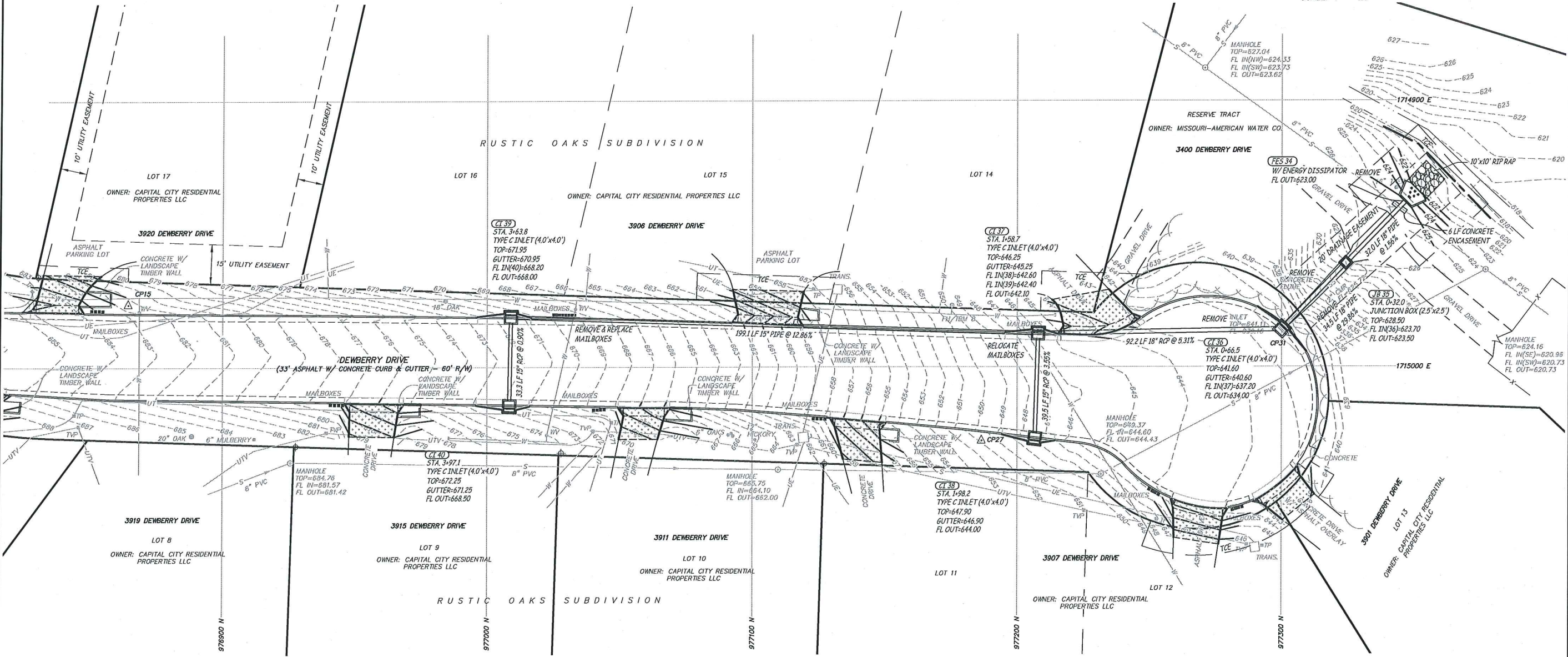
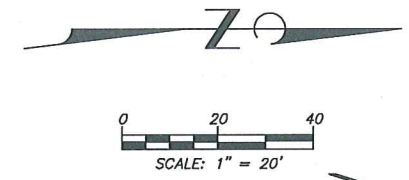
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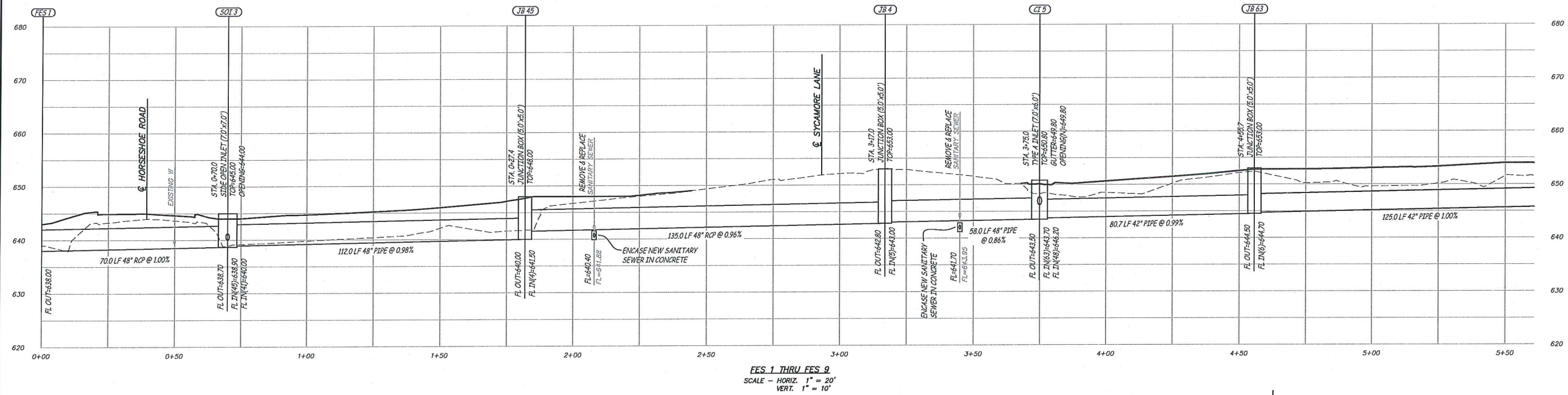


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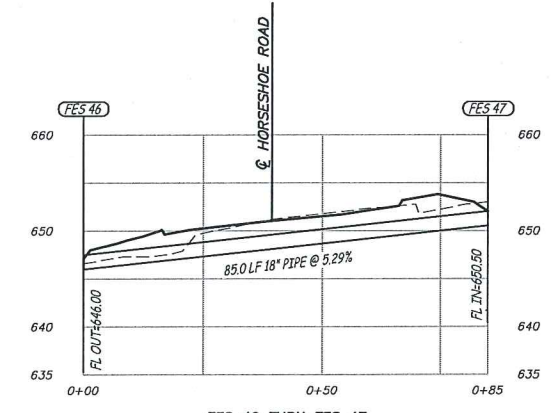


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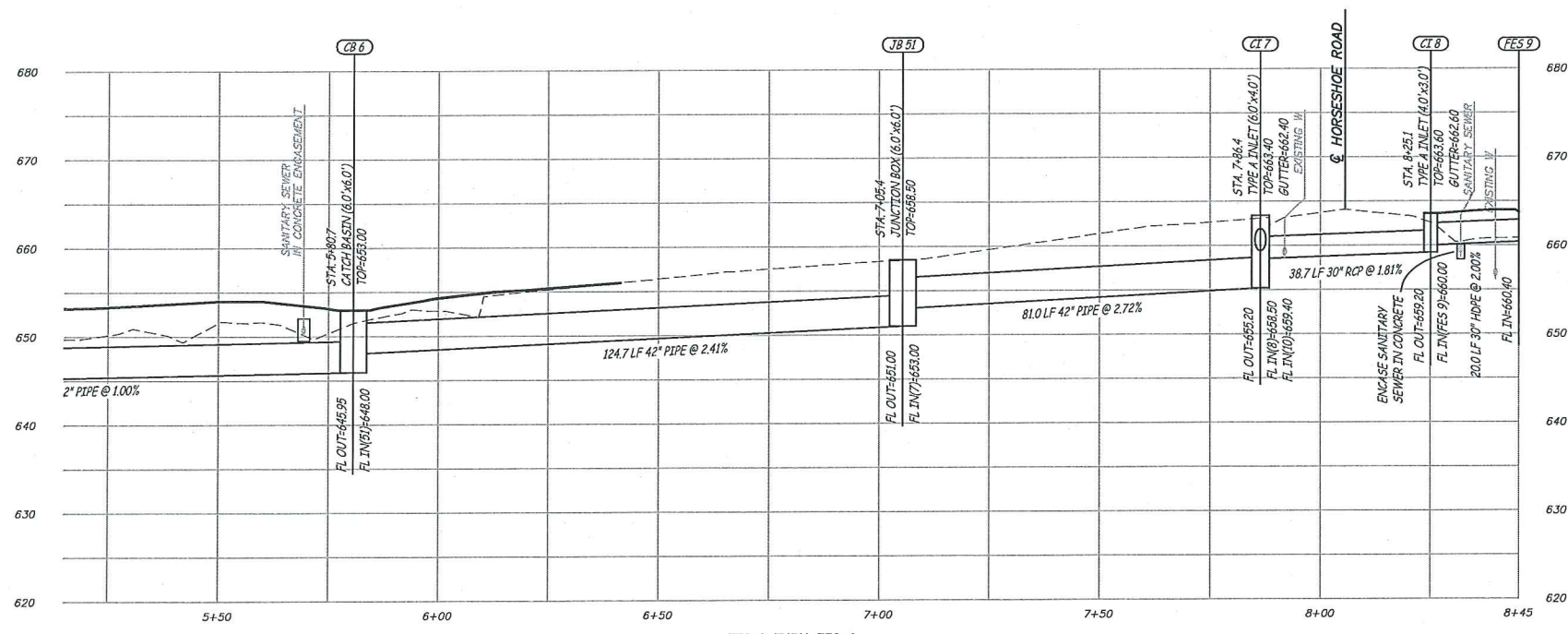
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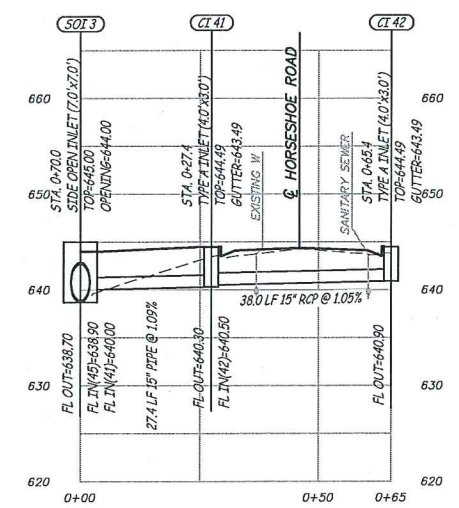
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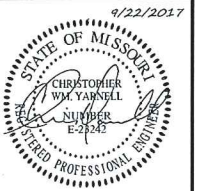
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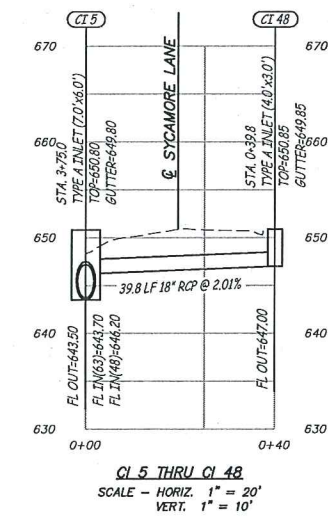
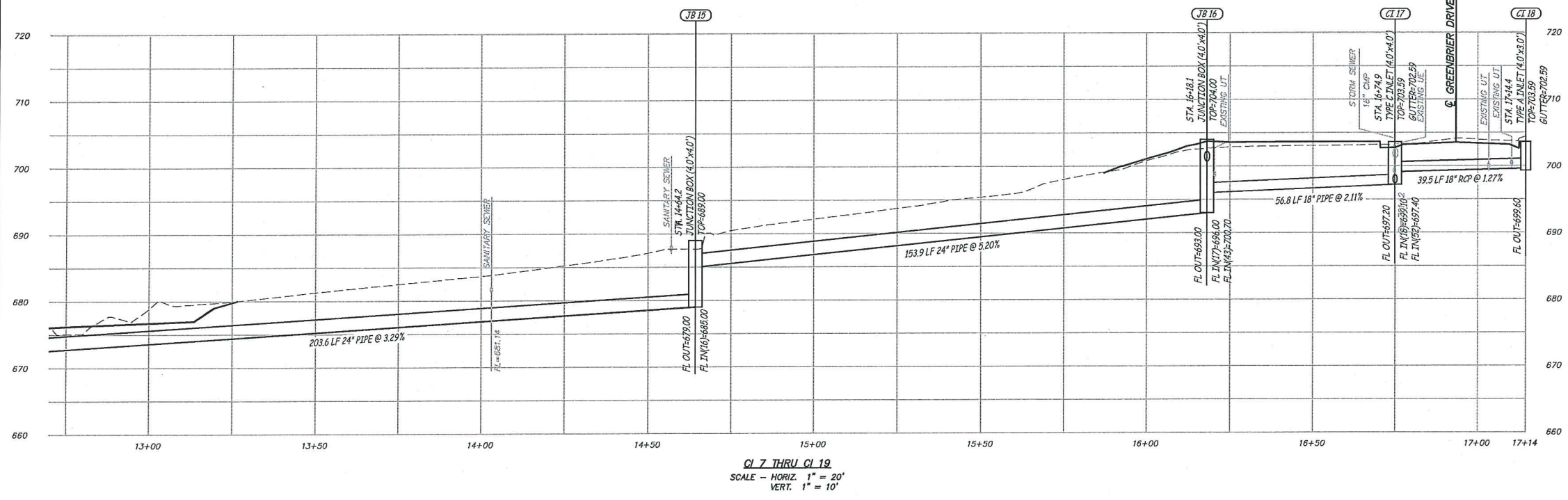
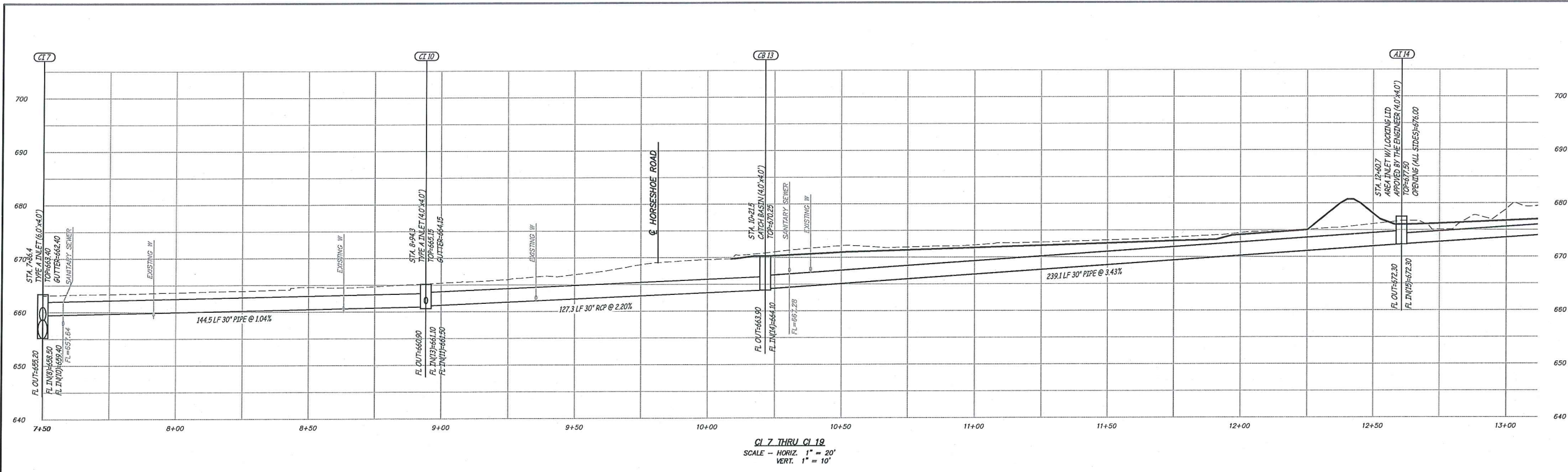
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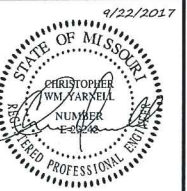


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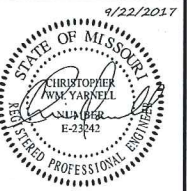
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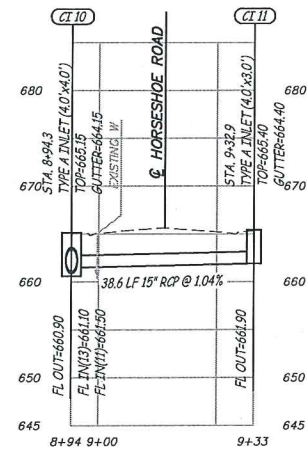
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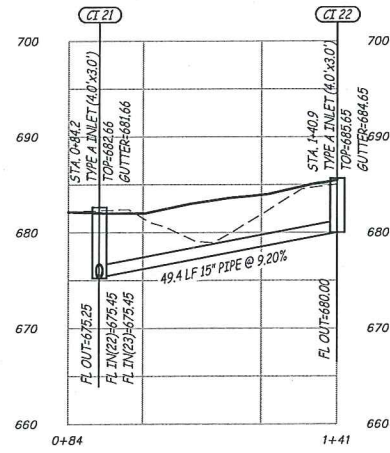
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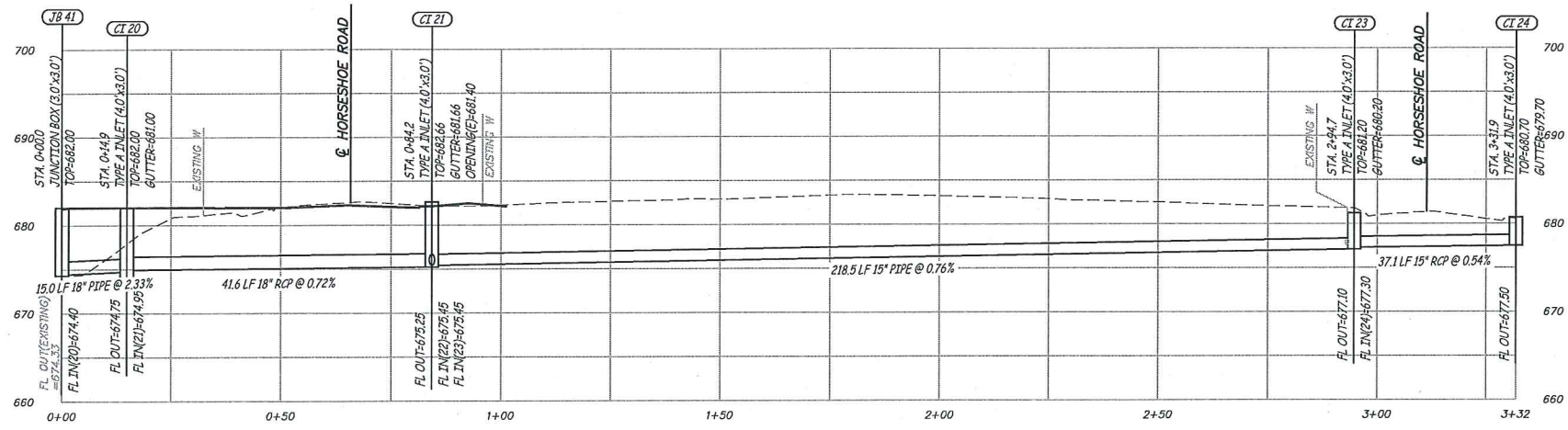
ES&S PROJECT NO. 5673



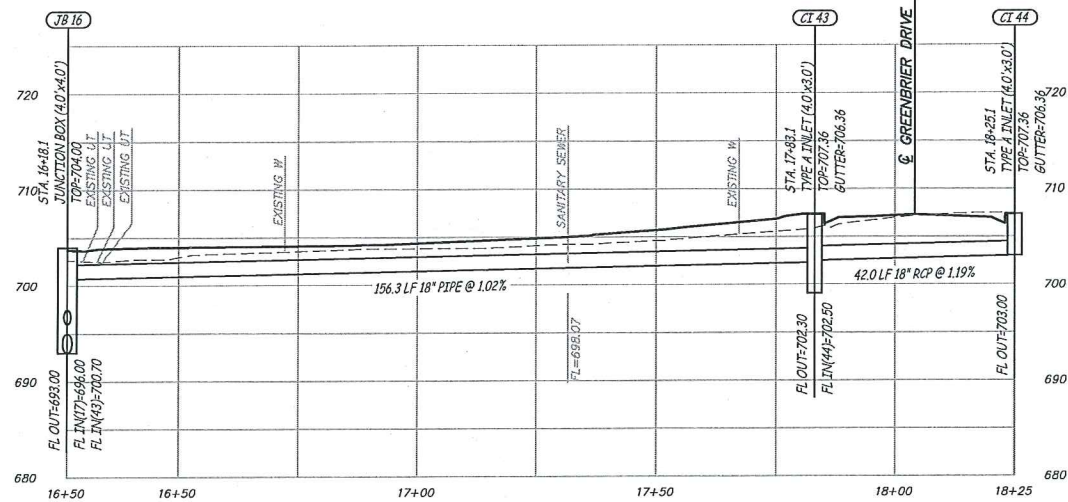
CI 10 THRU CI 11
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 VERT. 1" = 10'



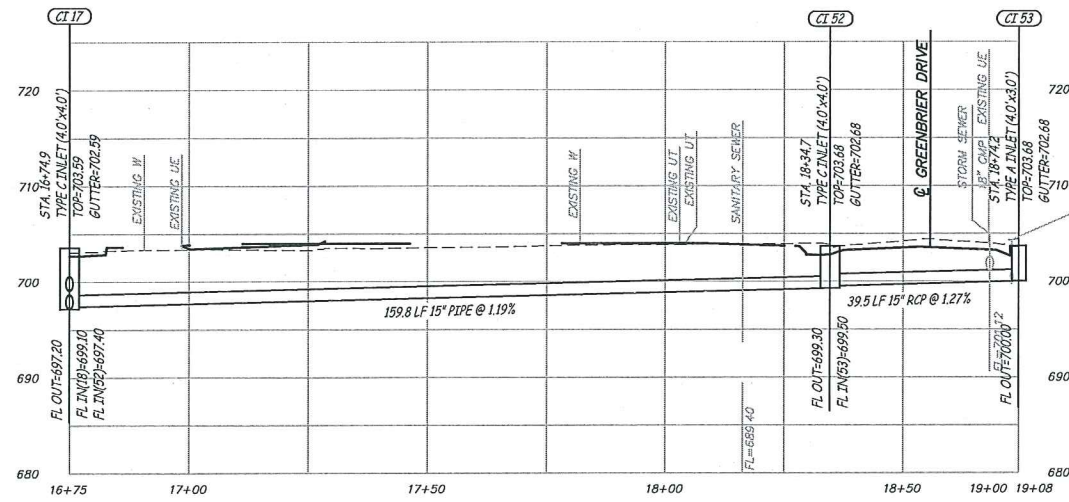
CI 21 THRU CI 22
 SCALE - HORIZ. 1" = 20'
 VERT. 1" = 10'



JB 41 THRU CI 24
 SCALE - HORIZ. 1" = 20'
 VERT. 1" = 10'



JB 16 THRU CI 44
 SCALE - HORIZ. 1" = 20'
 VERT. 1" = 10'

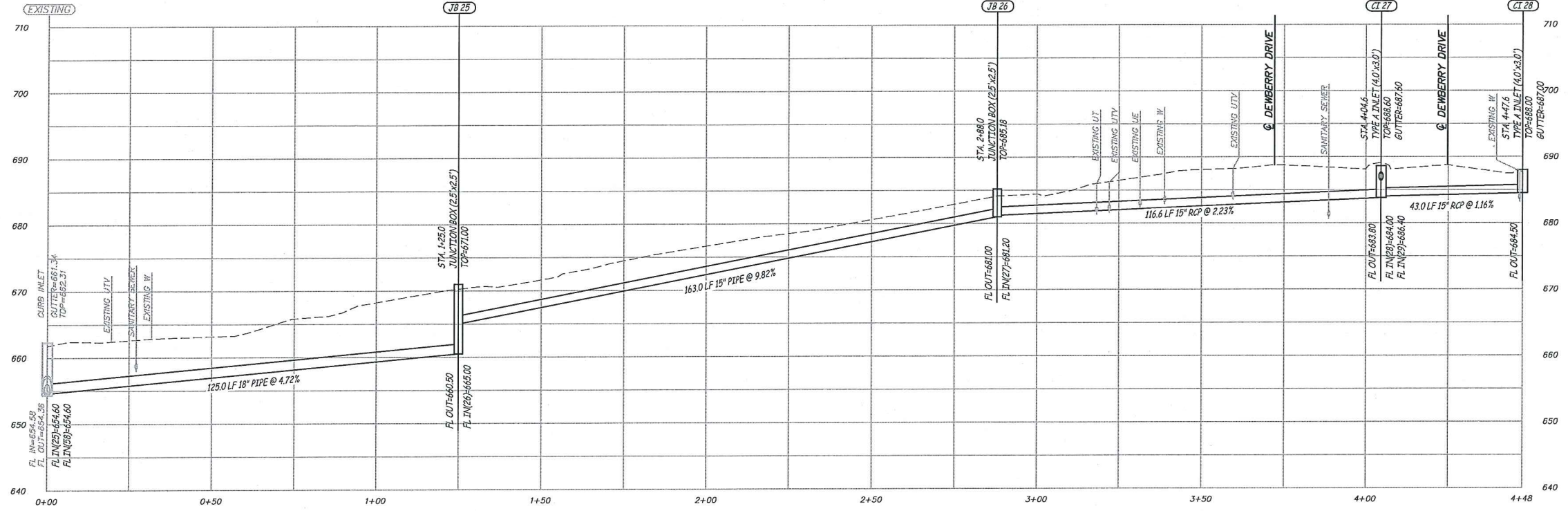


CI 17 THRU CI 53
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 VERT. 1" = 10'

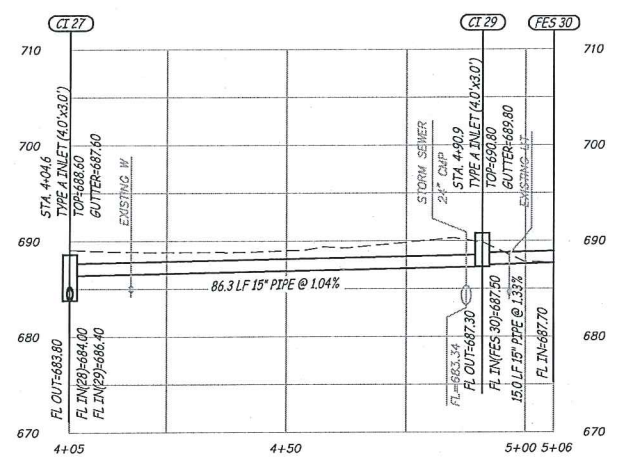


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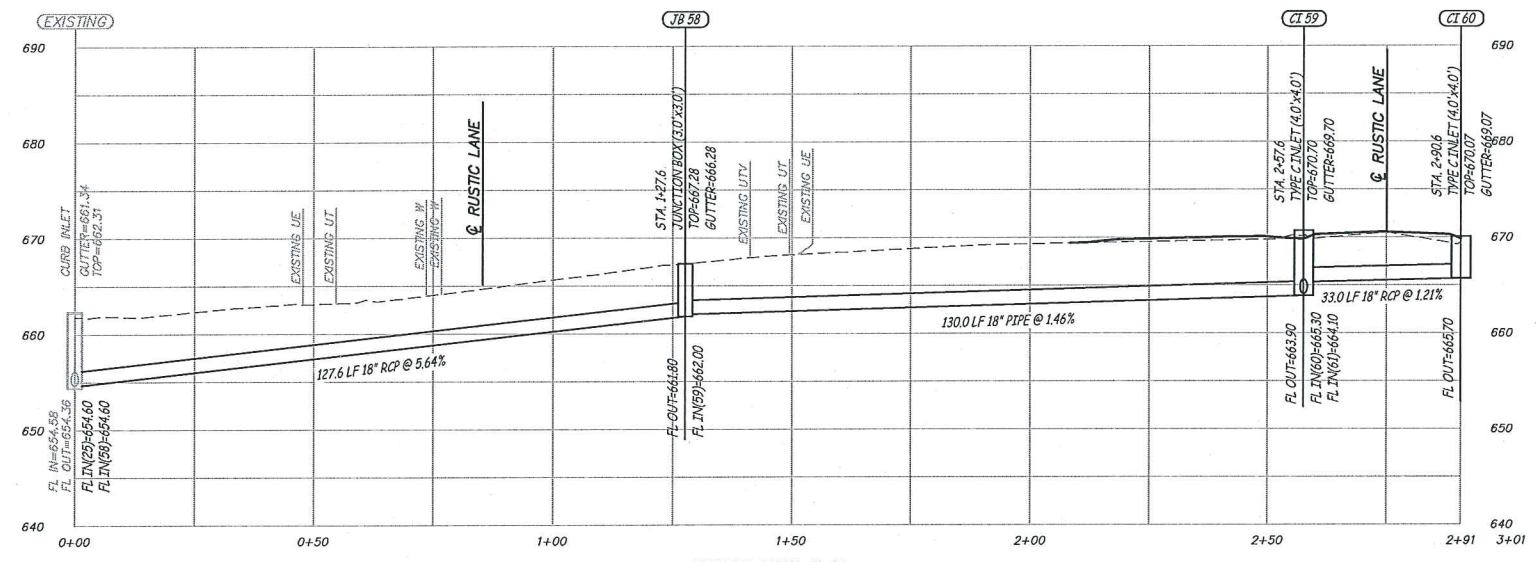
**THE CROSSROADS
 DRAINAGE IMPROVEMENTS**
 COLE COUNTY, MISSOURI



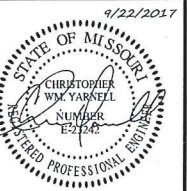
EXISTING THRU CI 28
 SCALE - HORIZ. 1" = 20'
 VERT. 1" = 10'



CI 27 THRU FES 30
 SCALE - HORIZ. 1" = 20'
 VERT. 1" = 10'



EXISTING THRU CI 60
 SCALE - HORIZ. 1" = 20'
 VERT. 1" = 10'



CHRISTOPHER WM. YARNELL
 REGISTERED PROFESSIONAL
 ENGINEER E-23242

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STORM SEWER PROFILES

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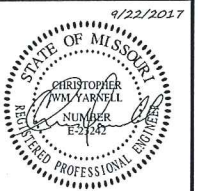
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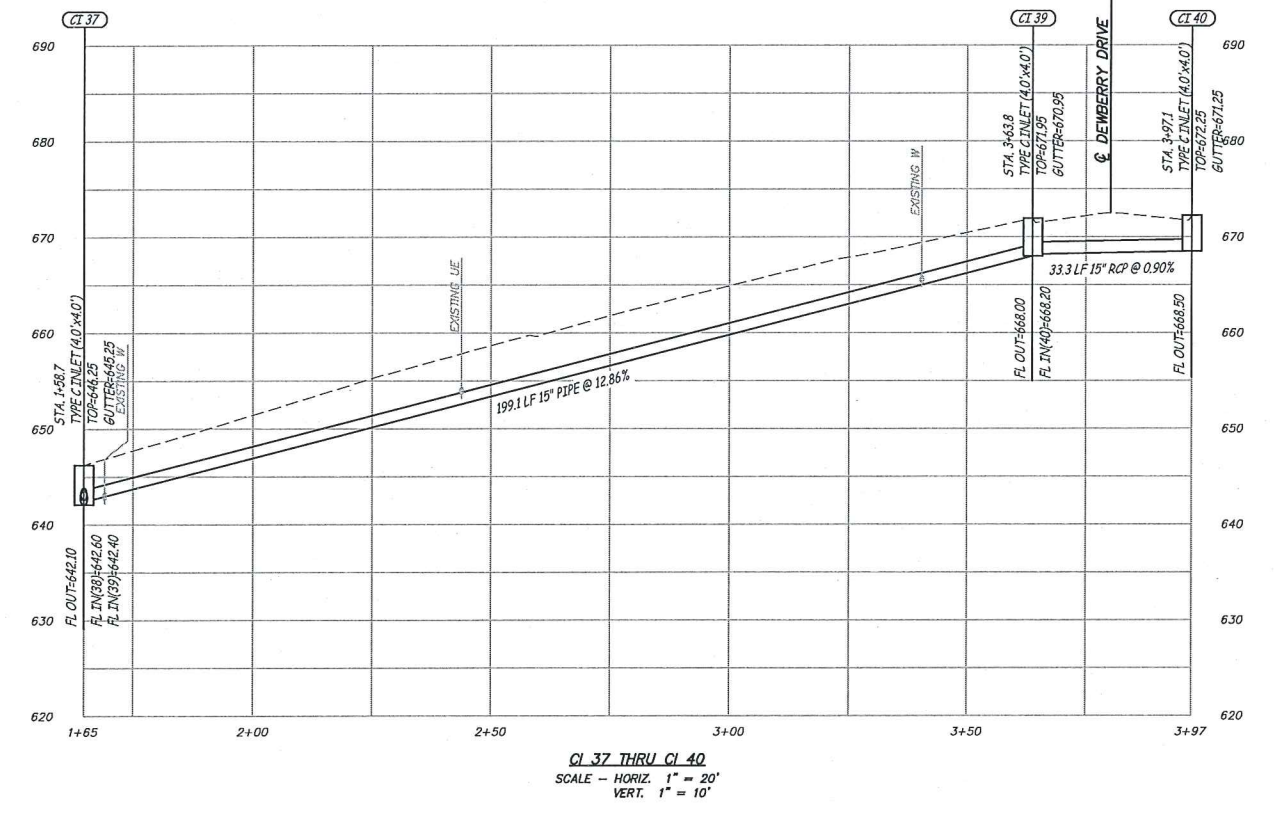
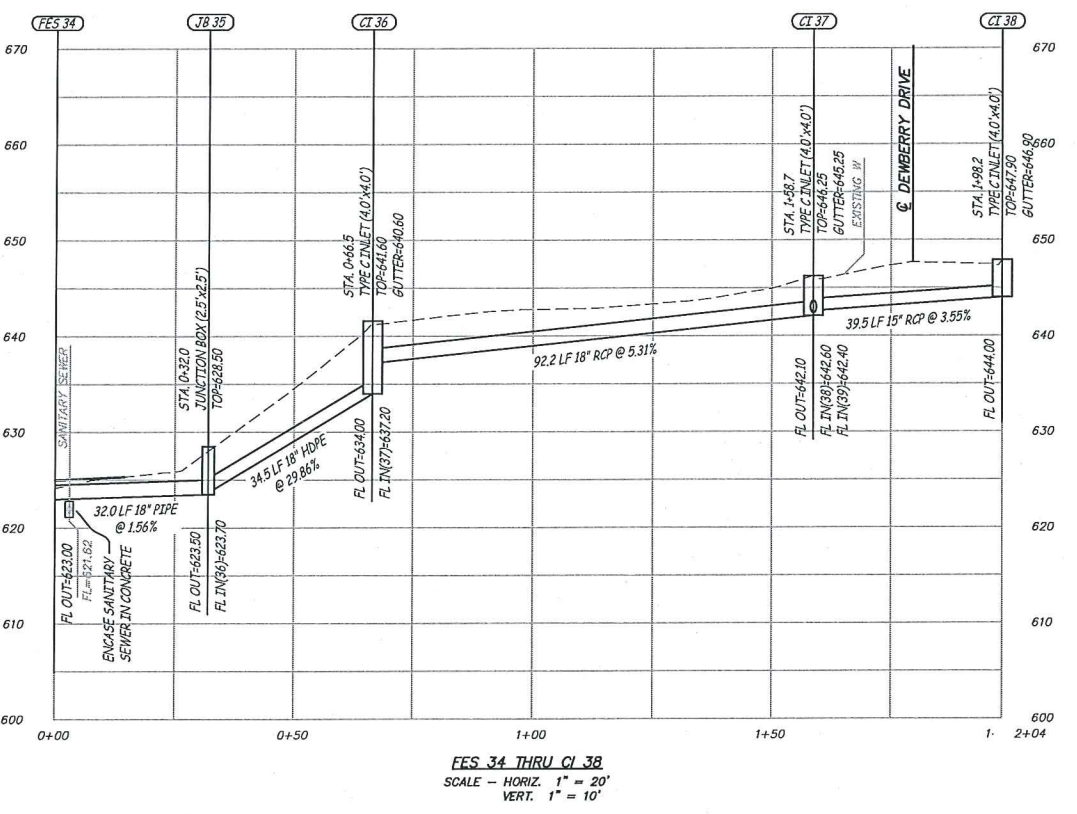
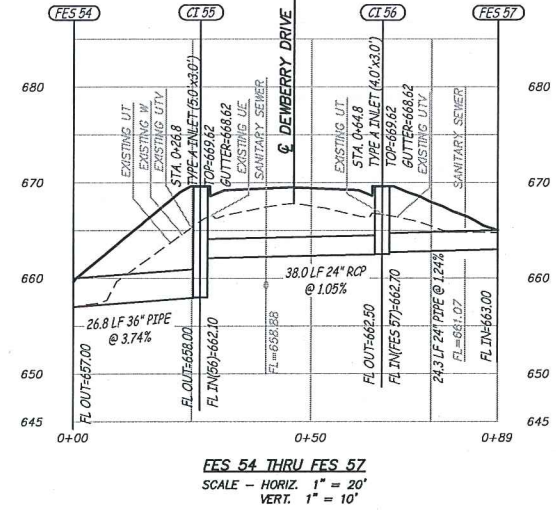
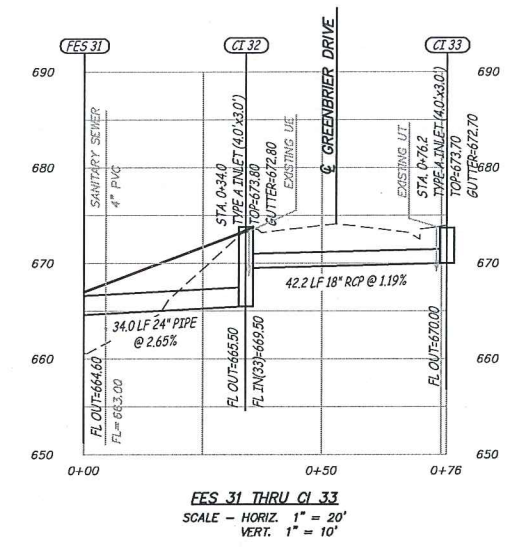
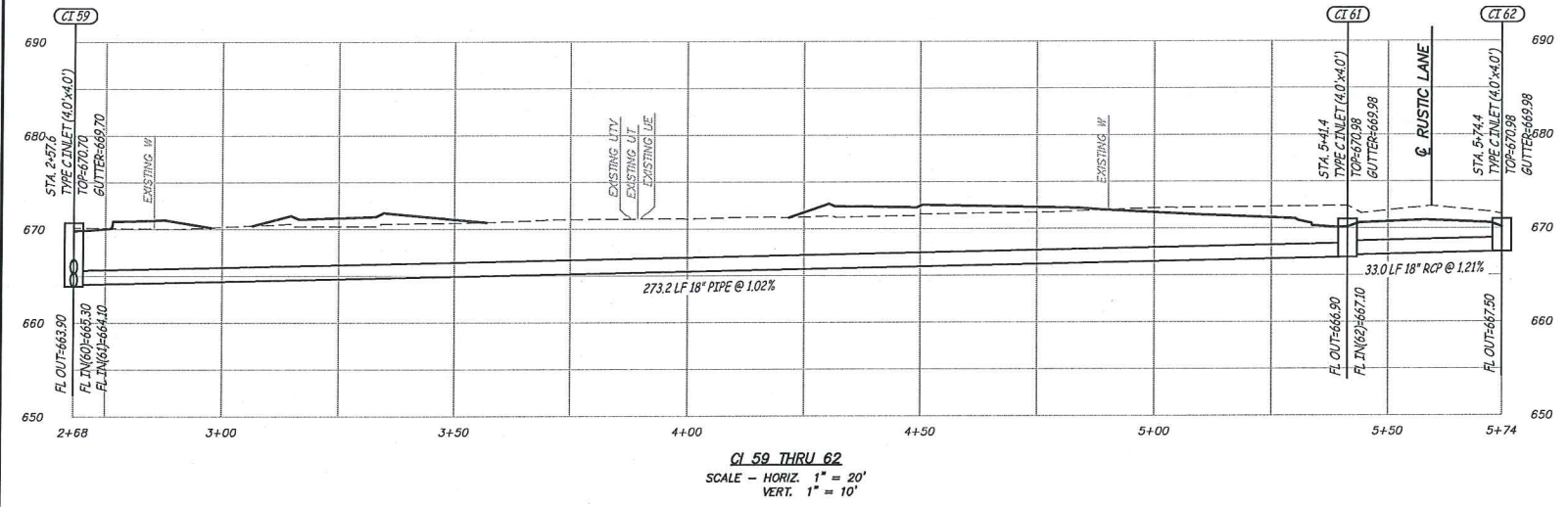
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SEPTEMBER 22, 2017

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STORM SEWER PROFILES

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Storm Sewer Structures

Design Storm Is 25 Yrs

Form C		Area No.	Inlet No.	Top of Inlet Elev.	Inlet Type	CI/IB Depth	Area (Ac)	Inlet Q (cfs)	Width of Gutter	Inlet Length	Inlet Capacity	Inlet Bypass Flow
-	FES	1	-	-	-	-	-	-	-	-	-	-
2	SOI	3	645	7.0x7.0	6.3'	3.29	9.56	-	7	0.35	-	-
5	JB	4	653	5.0x5.0	10.2'	-	-	-	5	-	-	-
5	CI	5	650.8	7.0x6.0	7.3'	3.93	11.42	-	7	0.35	-	-
5	CB	6	653	6.0x6.0	7.05'	3.93	11.42	-	6	0.35	-	-
5	CI	7	663.4	6.0x4.0	8.2'	3.93	11.42	-	6	0.35	-	-
13	CI	8	663.6	4.0x3.0	4.4'	1.31	3.81	-	4	0.35	-	-
13	FES	9	-	-	-	-	-	-	-	-	-	-
12	CI	10	665.15	4.0x4.0	4.25'	0.2	0.58	-	4	0.35	-	-
13	CI	11	665.4	4.0x3.0	3.5'	1.31	3.81	-	4	0.35	-	-
10	CB	13	670.25	4.0x4.0	6.35'	2.38	6.91	-	4	0.35	-	-
14	AI	14	677.5	4.0x4.0	5.2'	0.92	2.67	-	4	0.35	-	-
45	JB	15	689	4.0x4.0	10'	-	-	-	4	0.35	-	-
17	JB	16	704	4.0x4.0	11.0'	-	-	-	4	0.35	-	-
17	CI	17	703.59	4.0x4.0	6.39'	0.8	2.32	-	4	0.35	-	-
18	CI	18	703.59	4.0x3.0	3.99'	0.64	1.86	-	4	0.35	-	-
6	CI	20	682.71	4.0x3.0	7.96'	0.15	0.44	-	4	0.35	-	-
9	CI	21	682.66	4.0x3.0	7.41'	1.3	3.78	-	4	0.35	-	-
7	CI	22	685.65	4.0x3.0	5.65'	0.21	0.61	-	4	0.35	-	-
9	CI	23	681.2	4.0x3.0	4.1'	1.3	3.78	-	4	0.35	-	-
6	CI	24	680.7	4.0x3.0	3.2'	0.15	0.44	-	4	0.35	-	-
25	JB	25	671	2.5x2.5	10.5'	-	-	-	2.5	-	-	-
25	JB	26	685.18	2.5x2.5	4.18'	-	-	-	2.5	-	-	-
20	CI	27	688.6	4.0x3.0	4.8'	0.42	1.22	-	4	0.35	-	-
23	CI	28	688	4.0x3.0	3.5'	0.74	2.15	-	4	0.35	-	-
19	CI	29	690.8	4.0x3.0	3.5'	0.92	2.67	-	4	0.35	-	-
19	FES	30	-	-	-	-	-	-	-	-	-	-
-	FES	31	-	-	-	-	-	-	-	-	-	-
36	CI	32	673.8	4.0x3.0	8.3'	0.64	1.86	-	4	0.35	-	-
35	CI	33	673.7	4.0x3.0	3.7'	2.22	6.45	-	4	0.35	-	-
-	FES	34	-	-	-	-	-	-	-	-	-	-
-	JB	35	628.5	2.5x2.5	5.0'	-	-	-	2.5	0.35	-	-
43	CI	36	641.6	4.0x4.0	7.6'	0.19	0.55	-	4	0.35	-	-
42	CI	37	646.25	4.0x4.0	4.15'	0.2	0.58	-	4	0.35	-	-
41	CI	38	647.9	4.0x4.0	3.9'	0.56	1.63	-	4	0.35	-	-
42	CI	39	671.95	4.0x4.0	3.95'	0.2	0.58	-	4	0.35	-	-
41	CI	40	672.25	4.0x4.0	3.75'	0.56	1.63	-	4	0.35	-	-
2	CI	41	644.49	C 4.0x3.0	4.19'	3.29	9.56	-	4	0.35	-	-
1	JB	41	682	3.0x3.0	7.6'	-	-	-	3	-	-	-
3	CI	42	644.49	C 4.0x3.0	3.59'	1.29	3.75	-	4	0.35	-	-
15	CI	43	707.36	4.0x3.0	5.06'	0.35	1.02	-	4	0.35	-	-
16	CI	44	707.36	4.0x3.0	4.36'	1	2.91	-	4	0.35	-	-
2	JB	45	648	5.0x5.0	8.0'	-	-	-	5	-	-	-
-	FES	46	-	-	-	-	-	-	-	-	-	-
1	FES	47	-	-	-	-	-	-	-	-	-	-
4	CI	48	650.85	4.0x3.0	3.85'	0.34	0.99	-	4	0.35	-	-
5	JB	51	658.5	6.0x6.0	7.5'	-	-	-	6	-	-	-
27	CI	52	703.68	4.0x4.0	4.38'	1.16	3.37	-	4	0.35	-	-
26	CI	53	703.68	4.0x3.0	3.68'	0.86	2.50	-	4	0.35	-	-
-	FES	54	-	-	-	-	-	-	-	-	-	-
30	CI	55	669.62	5.0x3.0	11.68'	0.42	1.22	-	5	0.35	-	-
30	CI	56	669.62	4.0x3.0	7.12'	0.42	1.22	-	4	0.35	-	-
28	FES	57	-	-	-	-	-	-	-	-	-	-
33	JB	58	667.28	3.0x3.0	5.48'	-	-	-	3	-	-	-
34	CI	59	670.7	4.0x4.0	6.8'	1.8	5.23	-	4	0.35	-	-
39	CI	60	670.07	4.0x4.0	4.37'	0.2	0.58	-	4	0.35	-	-
38	CI	61	670.98	4.0x4.0	4.08'	0.5	1.45	-	4	0.35	-	-
40	CI	62	670.98	4.0x4.0	3.48'	0.1	0.29	-	4	0.35	-	-
5	JB	63	653	5.0x5.0	8.5'	-	-	-	5	-	-	-

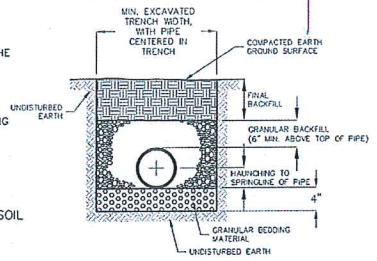
Storm Sewer Pipes

Design Storm Is 25 Yrs

Form D		US Structure	DS Structure	Pipe Q (cfs)	Storm Drain Length	FL Upstream	FL Downstream	Storm Drain Slope	Storm Drain Dia (in)	Pipe N	Capacity (cfs)	Velocity (ft/s)
FES 47	FES 46	1.84	85.00	650.50	646.00	5.29%	18"	0.012	13.11	3.47		
SOI 3	FES 1	7.21	70.00	638.70	638.00	1.00%	48"	0.012	6.61	9		
CI 41	SOI 3	-	27.40	640.30	640.00	1.09%	15"	0.012	2.25	2.69		
CI 42	CI 41	3.3	38.00	640.90	640.50	1.05%	15"	0.012	2.17	2.69		
JB 45	SOI 3	-	112.00	640.00	638.90	0.98%	48"	0.012	6.48	8.54		
JB 4	JB 45	-	135.00	642.80	641.50	0.96%	48"	0.012	6.34	10.26		
CI 5	JB 4	10.04	58.00	643.50	643.00	0.86%	48"	0.012	5.68	8.93		
CI 48	CI 5	0.87	39.80	647.00	646.20	2.01%	18"	0.012	4.98	1.66		
JB 63	CI 5	-	80.70	644.50	643.70	0.99%	42"	0.012	5.72	8.73		
CB 6	JB 63	-	125.00	645.95	644.70	1.00%	42"	0.012	5.78	8.99		
JB 51	CB 6	-	124.70	651.00	648.00	2.41%	42"	0.012	13.93	9.86		
CI 7	JB 51	0.51	81.00	655.20	653.00	2.72%	42"	0.012	15.73	8.99		
CI 8	CI 7	-	38.70	659.20	658.50	1.81%	30"	0.012	7.48	9.76		
FES 9	CI 8	-	20.00	660.40	660.00	2.00%	30"	0.012	8.26	10.87		
CI 10	CI 7	-	144.50	660.90	659.40	1.04%	30"	0.012	4.30	9.02		
CI 11	CI 10	3.35	38.60	661.90	661.50	1.04%	15"	0.012	2.15	1.9		
CB 13	CI 10	6.74	127.30	663.90	661.10	2.20%	30"	0.012	9.09	7.81		
AI 14	CB 13	10.09	239.10	672.30	664.10	3.43%	30"	0.012	14.17	8.1		
JB 15	AI 14	-	203.60	679.00	672.30	3.29%	24"	0.012	10.87	5.21		
JB 16	JB 15	-	153.90	693.00	685.00	5.20%	24"	0.012	17.18	10.17		
CI 17	JB 16	2.04	56.80	697.20	696.00	2.11%	18"	0.012	5.23	7.8		
CI 18	CI 17	1.64	39.50	699.60	699.10	1.27%	18"	0.012	3.15	4.11		
CI 52	CI 17	2.96	159.80	699.30	697.40	1.19%	15"	0.012	2.46	5.24		
CI 53	CI 52	2.2	39.50	700.00	699.50	1.27%	15"	0.012	2.62	3.43		
CI 43	JB 16	1.25	156.30	702.30	700.70	1.02%	18"	0.012	2.53	5.09		
CI 44	CI 43	2.56	42.00	703.00	702.30	1.19%	18"	0.012	2.95	4.12		
CI 22	CI 21	0.54	56.70	680.00	675.45	8.02%	15"	0.012	16.56	1.63		
CI 24	CI 23	0.38	37.10	677.50	677.30	0.54%	15"	0.012	1.12	1.5		
CI 23	CI 21	3.32	210.50	677.50	675.45	0.78%	15"	0.012	1.61	4.74		
CI 21	CI 20	1.74	38.20	675.25	674.95	0.78%	18"	0.012	1.93	5.52		
CI 20	JB 41	-	68.20	674.75	674.40	0.76%	18"	0.012	1.88	51.2		
CI 33	CI 32	5.67	42.20	670.00	669.50	1.19%	18"	0.012	2.95	5.93		
CI 32	FES 31	1.64	34.00	665.50	664.60	2.65%	24"	0.012	8.76	4.9		
CI 62	CI 61	0.72	33.00	667.50	667.10	1.21%	18"	0.012	3.00	2.13		
CI 61	CI 59	2.25	273.20	666.90	664.10	1.02%	18"	0.012	2.53	3.25		
CI 60	CI 59	1.45	33.00	665.70	665.30	1.21%	18"	0.012	3.00	3.98		
CI 59	JB 58	4.6	130.00	663.90	662.00	1.46%	18"	0.012	3.62	6.07		
CI 58	EX 70	6.39	127.60	661.80	654.60	5.64%	18"	0.012	13.98	8.93		
FES 30	CI 29	2.35	15.00	687.70	687.50	1.33%	15"	0.012	2.75	4.84		
CI 29	CI 27	-	86.30	687.30	686.40	1.04%	15"	0.012	2.15	4.57		
CI 28	CI 27	1.07	43.00	684.50	684.00	1.16%	15"	0.012	2.40	5.29		
CI 27	JB 26	0.95	116.60	683.80	681.20	2.23%	15"	0.012	4.60	2.24		
JB 26	JB 25	1.2	163.00	681.00	665.00	9.82%	15"	0.012	20.28	10.22		
JB 25	EX 70	7.02	125.00	660.50	654.60	4.72%	18"	0.012	11.70	10.7		
FES 57	CI 56	5.14	24.31	663.00	662.70	1.24%	24"	0.012	4.10	4.73		
CI 56	CI 55	1.59	38.00	662.50	662.10	1.05%	24"	0.012	3.47	5.78		
CI 55	FES 54	3.04	26.80	658.00	657.00	3.74%	36"	0.012	18.53	4.81		
CI 40	CI 39	2.04	33.30	668.50	668.20	0.90%	15"	0.012	1.86	4.26		
CI 39	CI 37	0.46	199.10	668.00	642.40	12.86%	15"	0.012	26.55	4.68		
CI 38	CI 37	1.43	39.50	644.00	642.60	3.55%	15"	0.012	7.33	4.73		
CI 37	CI 36	0.51	92.20	642.10	637.20	5.31%	18"	0.012	13.16	7.81		
CI 36	JB 35	0.49	34.50	634.00	623.70	29.86%	18"	0.012	73.99	5.71		
JB 35	FES 34	-	32.00	623.50	623.00	1.56%	18"	0.012	3.87	4.76		



- CONSTRUCTION SEQUENCE**
1. PLACE BEDDING MATERIAL TO GRADE.
 2. COMPACT BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
 3. INSTALL PIPE TO GRADE.
 4. PLACE AND COMPACT THE HAUNCH AREA UP TO THE SPRINGLINE.
 5. COMPLETE BACKFILL ACCORDING TO SPECIFICATIONS.



LEGEND

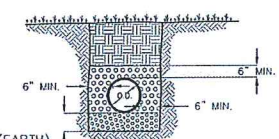
UNDISTURBED SOIL

TYPICAL TRENCH DETAIL FOR H.D.P.E. PIPE INSTALLATION
ALL H.D.P.E. PIPE SHALL HAVE WATER TIGHT GASKET CONNECTIONS

TABLE 1
HIGH DENSITY POLYETHYLENE PIPE

SPECIFIED DIA. OF PIPE (IN.)	MIN. OVERFILL HEIGHT (FT)	MAX. OVERFILL HEIGHT* (FT)	MIN. TRENCH WIDTH (IN.)
12	1	35	34
18	1	40	44
24	1	45	54
30	1	50	64
36	1	55	74
42	2	60	84
48	2	65	94

* MAXIMUM OVERFILL MEASURED FROM THE TOP OF PIPE TO SURFACE.



TYPICAL PIPE EMBEDMENT
R.C.P., C.M.P., V.C.P., P.V.C.

GRADATION FOR GRANULAR BEDDING MATERIAL, ASTM STANDARD C33

SIEVE SIZE	% PASSING
3/4"	90 - 100%
1/2"	---
3/8"	20 - 55%
NO. 4	0 - 10%
NO. 8	0 - 10%

- NOTES:**
1. ALL TRENCHES UNDER PAVED SURFACES SHALL BE BROUGHT TO THE LEVEL OF THE SUBGRADE WITH GRANULAR MATERIAL UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
 2. GRANULAR MATERIAL MAY CONSIST OF 1" CLEAN ROCK, OR GRADATION FOR GRANULAR BEDDING MATERIAL, ASTM STANDARD C33.

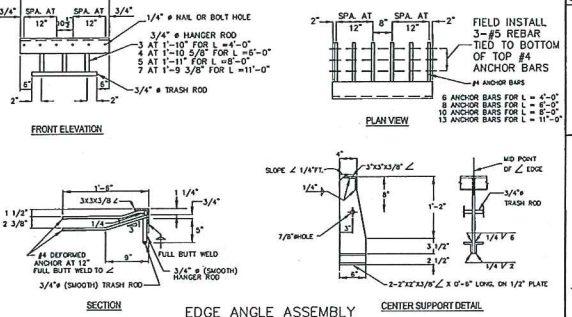
NO. DATE: 1 8/2007
REVISION AND DESCRIPTION: REVISED TYPICAL PIPE EMBEDMENT FOR RCP, CMP, VCP, AND PVC

CITY OF JEFFERSON
DEPARTMENT OF PUBLIC WORKS

SHEET NUMBER: 1 OF 1 SECTION: 30.01

STORMWATER NOTES:

1. Dimensions "L" and "W" given on plans as "L" x "W" (typ).
2. Dimensions of upstream and downstream gutter transitions shall be as detailed unless otherwise specified on the plans.
3. Gutter transitions on inlets in a sump shall be 10' on both sides of inlet unless otherwise specified on the plans.
4. Gutter transitions shall be transition uniformly between standard curb and gutter and the inlet wall.
5. Expansion joints and dowel placement between curb and gutter and inlet transition shall be the same as that shown on Type "A" Curb and Gutter detail.
6. Curb deflectors (see detail) are required when street slope is 5% or greater.
7. After initial set, remove deflector channel forms and finish surface of concrete.
8. Ring and cover casting (NEENAH R-5900-F typ. see detail) should be located on the downstream side of curb inlet lid.
9. Use 3/4" chamfer strip on all exposed concrete corners.
10. Curb inlets shall include an edge angle assembly with trash rod (see detail).
11. Inlets shall have a 4" weep hole in every side which also contains a stormwater pipe. The weep holes shall be covered with a 12" x 12" filter fabric reinforced by a similarly sized piece of geogrid or wire fabric. The fabric and grid should be firmly attached to the outside of the inlet wall with mastic or by other approved means.
12. All inlet shall have inverts installed to provide for the smooth transition of water to the outlet pipe (see MoDOT typical invert details).
13. All reinforcement steel shall be 1 1/2" clear of concrete surface, unless otherwise shown.
14. Reinforcing steel shall be bent around pipe opening when possible. If steel is cut, a diagonal bar shall be used to tie all cut ends together.
15. Where the concrete lid is integral to the sidewalk (i.e. part of the sidewalk), #4 bars shall be installed on 12" centers to be into the sidewalk and lid. In the case that the concrete lid is within 18" of the edge of the sidewalk, the lid shall be extended to the edge of the sidewalk.
16. Precast lids shall not be used.
17. Inlet lid shall be sloped to match the longitudinal slope of the street.
18. Plan shall be paid as Type "A" Curb and Gutter for City of Jefferson Projects

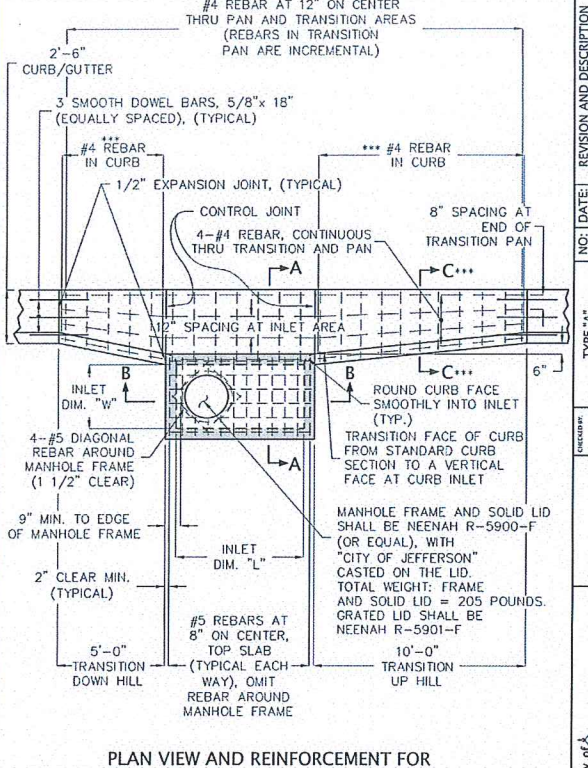


- EDGE ANGLE ASSEMBLY NOTES:**
1. Edge angle assembly shall be structural steel. Exposed steel surfaces shall be finished smooth and hot dip galvanized after fabrication.
 2. Nuts or bolts used to anchor angle to form shall be removed or cut off flush with surface of angle.
 3. Where center support is required (L = 8'-0" and 11'-0") within center support plate as needed and spade concrete solid under base angles.

NO. DATE: 1 8/2007
REVISION AND DESCRIPTION: INLETS NOTES TYPE "A" & "C" ANGLE EDGE ASSEMBLY STANDARD DETAILS

CITY OF JEFFERSON
DEPARTMENT OF PUBLIC WORKS

SHEET NUMBER: 1 OF 2 SECTION: 41.01

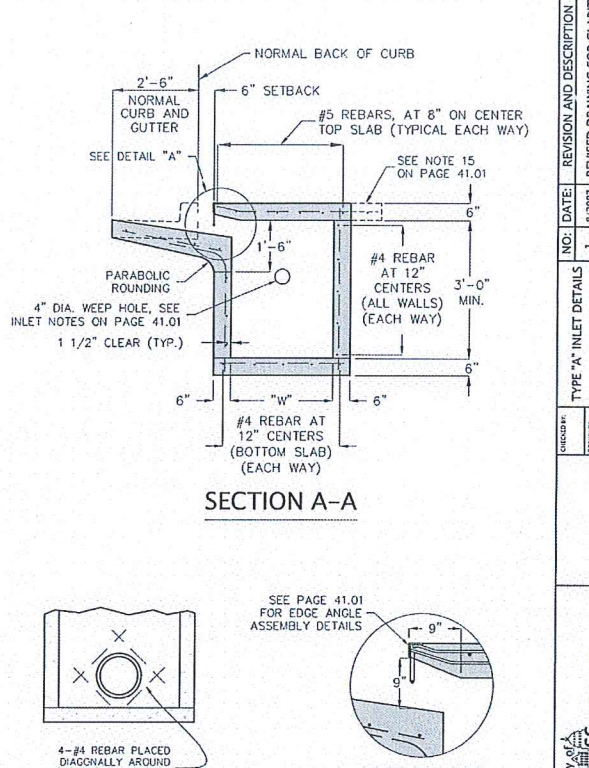


PLAN VIEW AND REINFORCEMENT FOR TYPE "A" INLET, AND TRANSITION PANS

NO. DATE: 1 8/2007
REVISION AND DESCRIPTION: TYPE "A" INLET DETAILS STANDARD DETAILS

CITY OF JEFFERSON
DEPARTMENT OF PUBLIC WORKS

SHEET NUMBER: 1 OF 3 SECTION: 42.01



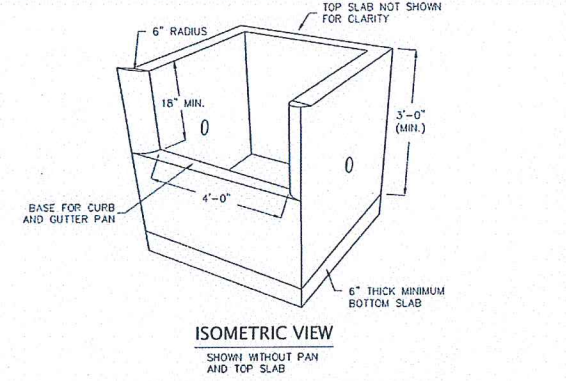
SECTION A-A

DETAIL "A"

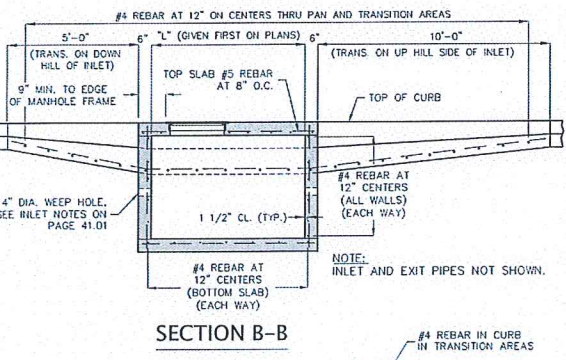
NO. DATE: 1 8/2007
REVISION AND DESCRIPTION: TYPE "A" INLET DETAILS STANDARD DETAILS

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DEPARTMENT OF PUBLIC WORKS

SHEET NUMBER: 2 OF 3 SECTION: 42.02



ISOMETRIC VIEW
SHOWN WITHOUT PAN AND TOP SLAB



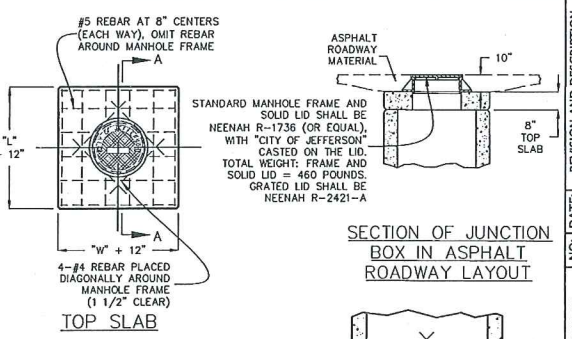
SECTION B-B

SECTION C-C

NO. DATE: 1 8/2007
REVISION AND DESCRIPTION: TYPE "A" INLET SECTION B-B REVISION DRAWINGS FOR CLARITY STANDARD DETAILS

CITY OF JEFFERSON
DEPARTMENT OF PUBLIC WORKS

SHEET NUMBER: 3 OF 3 SECTION: 42.03

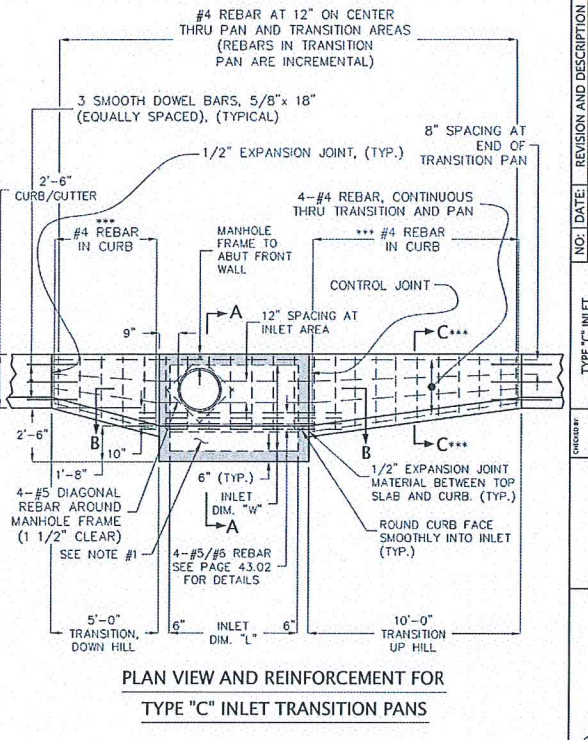


SECTION OF JUNCTION BOX IN ASPHALT ROADWAY LAYOUT

NO. DATE: 1 1/2010
REVISION AND DESCRIPTION: #5 ADDED TOP SLAB THICKNESS REQUIREMENT STANDARD DETAILS

CITY OF JEFFERSON
DEPARTMENT OF PUBLIC WORKS

SHEET NUMBER: 1 OF 3 SECTION: 44.01

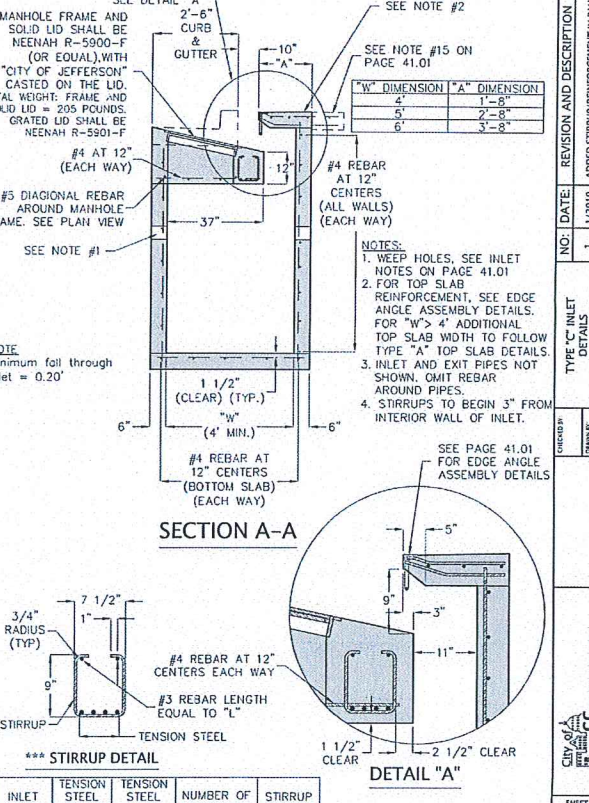


PLAN VIEW AND REINFORCEMENT FOR TYPE "C" INLET TRANSITION PANS

NO. DATE: 1 8/2007
REVISION AND DESCRIPTION: TYPE "C" INLET DETAILS STANDARD DETAILS

CITY OF JEFFERSON
DEPARTMENT OF PUBLIC WORKS

SHEET NUMBER: 1 OF 4 SECTION: 43.01



SECTION A-A

DETAIL "A"

NO. DATE: 1 1/2010
REVISION AND DESCRIPTION: TYPE "C" INLET DETAILS ADDED STIRRUP/REINFORCEMENT IN PAN STANDARD DETAILS

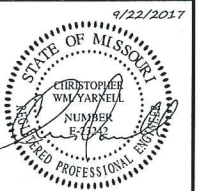
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SHEET NUMBER: 2 OF 4 SECTION: 43.02



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COLE COUNTY, MISSOURI



CHRISTOPHER WM YARNELL
REGISTERED PROFESSIONAL ENGINEER E-23242

SEPTEMBER 22, 2017

Revised

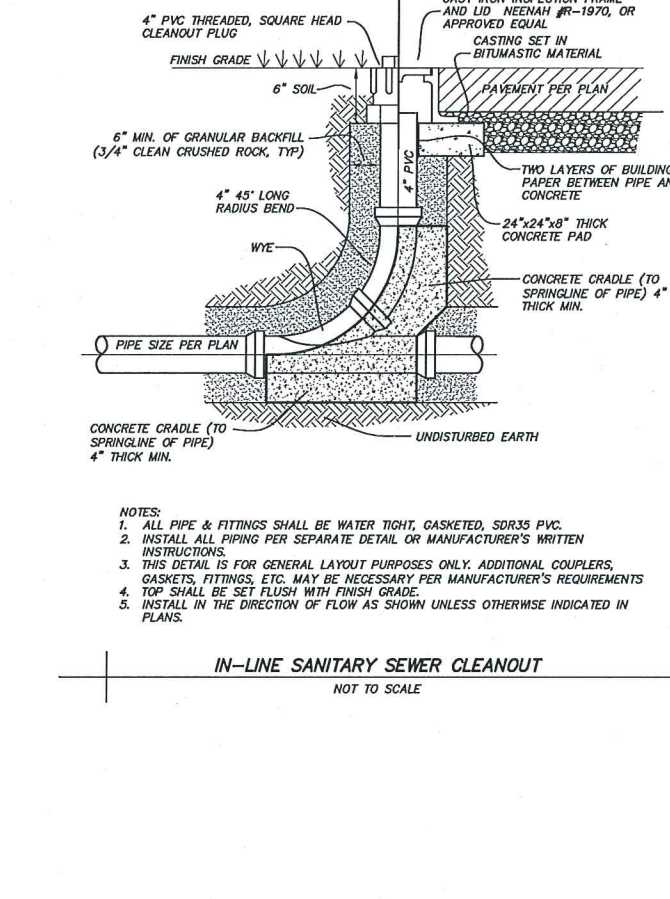
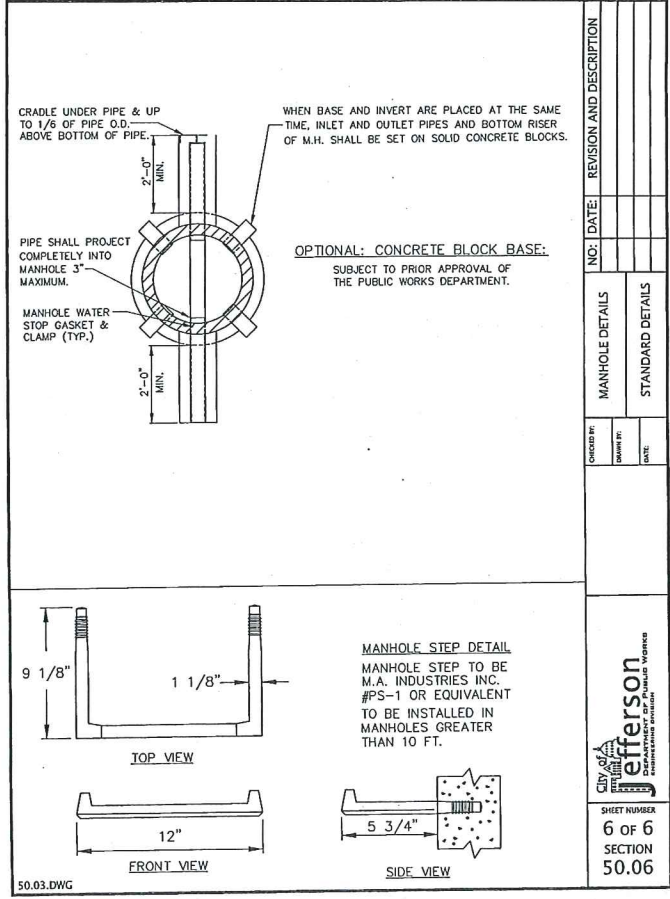
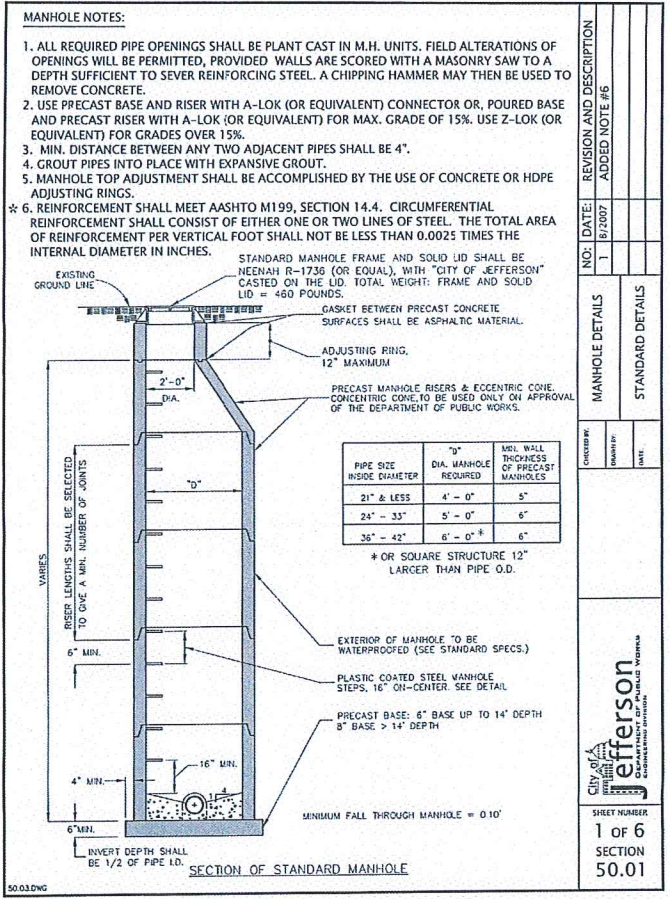
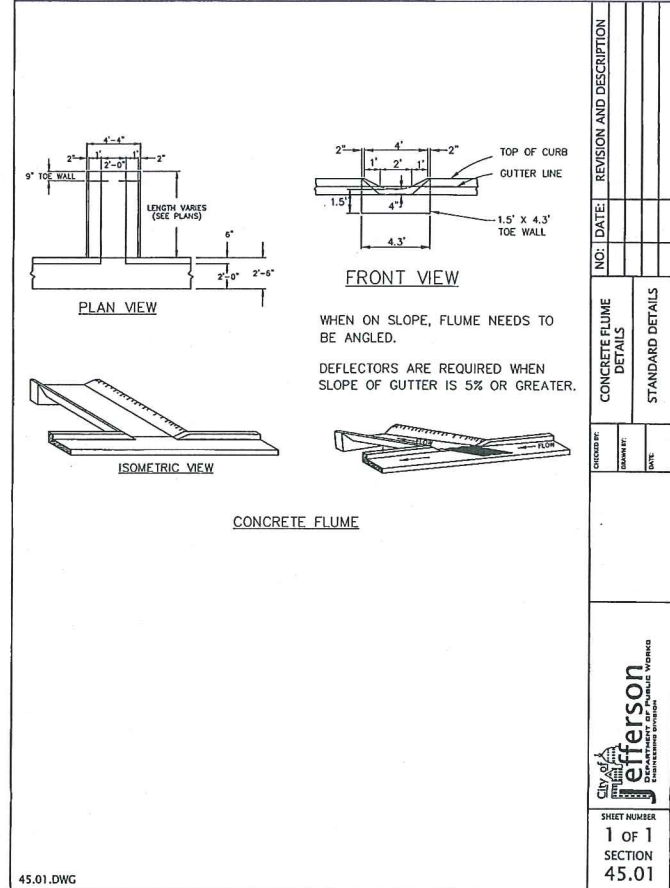
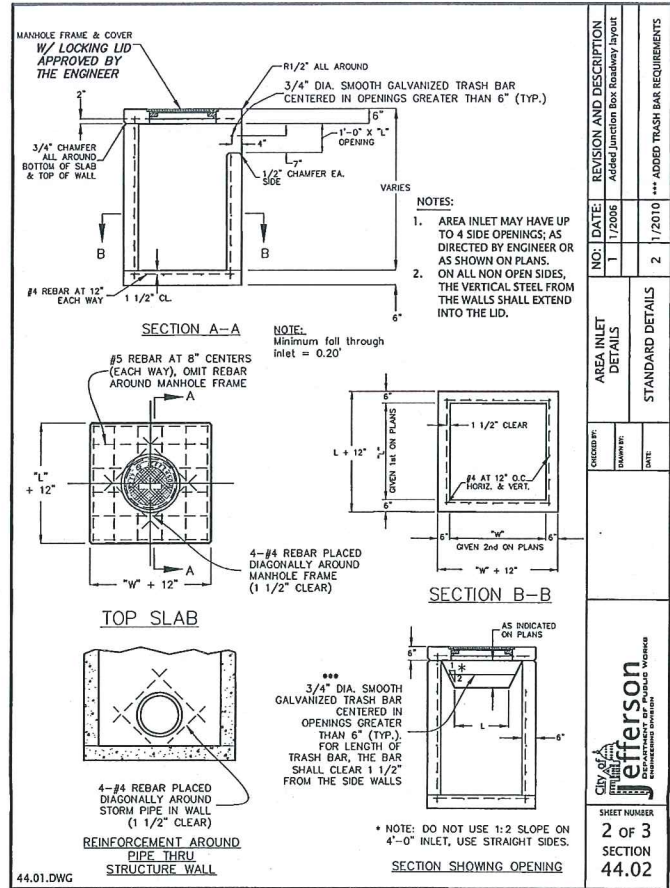
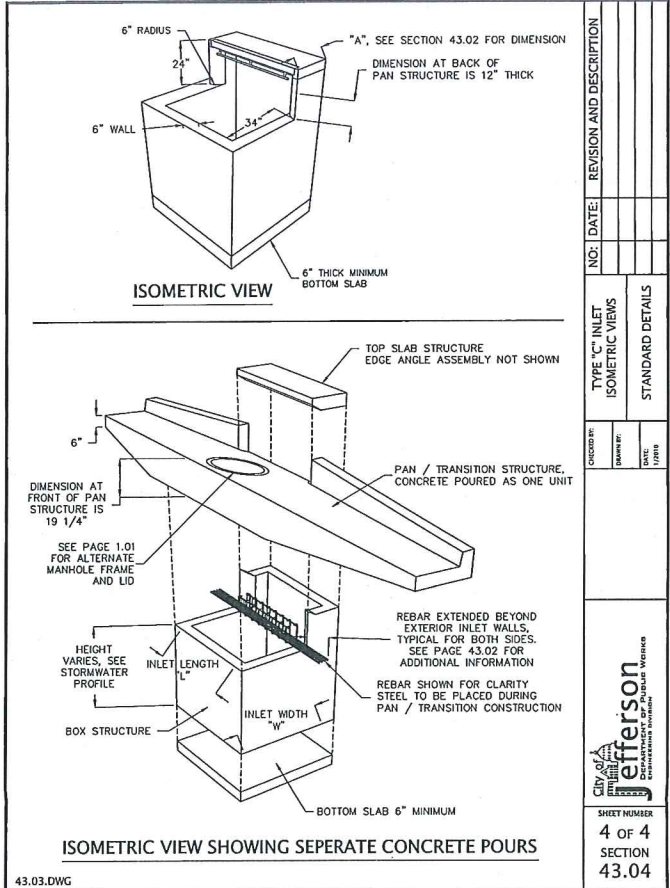
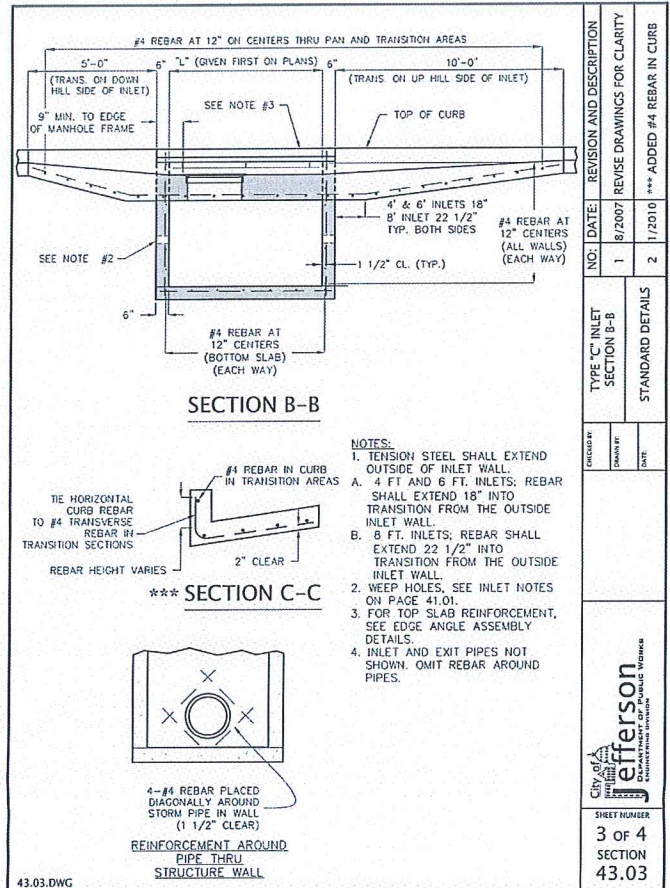
Design: CY Drawn: CGH

DETAILS

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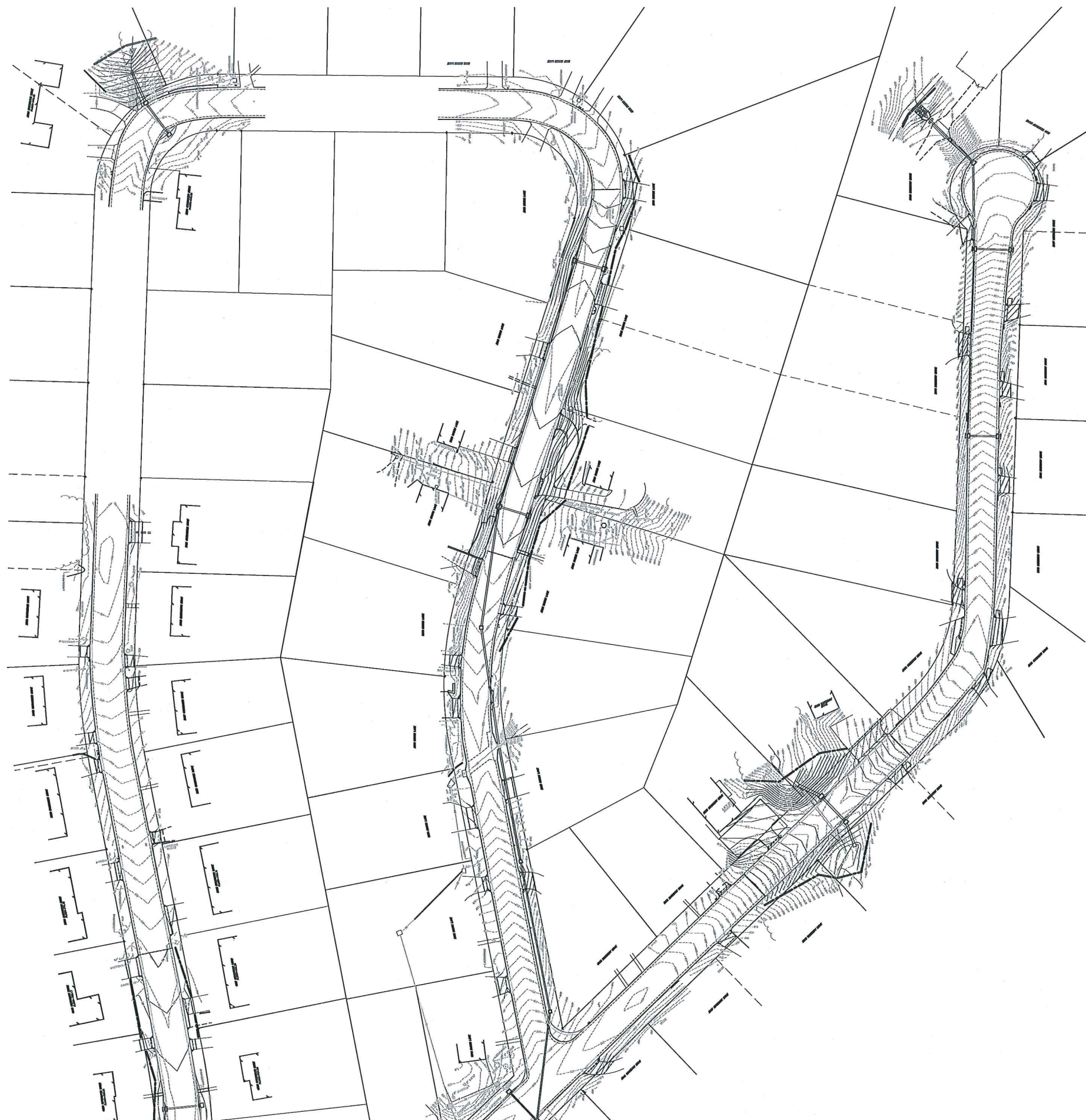
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DETAILS

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C4.03

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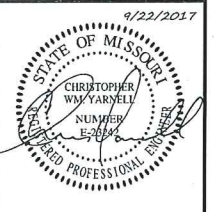
LEGEND

---	PROPERTY LINE
---	ELECTRIC LINE
---	TELECOMMUNICATIONS LINE
---	FIBER OPTIC LINE
---	UNDERGROUND ELECTRIC LINE
---	HIGH VOLTAGE ELECTRIC LINE
---	UNDERGROUND TELECOMMUNICATIONS LINE
---	UNDERGROUND FIBER OPTIC LINE
---	SANITARY SEWER LINE
---	STORM SEWER LINE
---	STEAM LINE
---	GAS LINE
---	WATER LINE
---	CHILLED WATER LINE
---	FENCE
---	TREE & BRUSH LINE
---	DRAINAGE SWALE
---	EXISTING CONTOUR
---	ANCHOR
---	TEST BORING
---	TEST PIT
---	IRON
---	R/W MARKER
---	DRILL HOLE
---	CONTROL POINT
---	AIR CONDITIONER
---	ASBESTOS CEMENT PIPE
---	CAST IRON PIPE
---	CORRUGATED METAL PIPE
---	CLEANOUT
---	DUCTILE IRON PIPE
---	ELECTRIC METER
---	FLARED END SECTION
---	FIRE HYDRANT
---	FLOW LINE
---	GAS METER
---	GAS VALVE
---	HIGH DENSITY POLYETHYLENE PIPE
---	LIGHT STANDARD
---	POST INDICATOR VALVE
---	PARKING METER
---	POLYVINYL CHLORIDE PIPE
---	REINFORCED CONCRETE PIPE
---	ROOF DRAIN
---	TELECOMMUNICATIONS
---	TELECOMMUNICATIONS PEDESTAL
---	TOP OF WALL
---	UTILITY POLE
---	UNDERGROUND ROOF DRAIN
---	WTRIFIED CLAY PIPE
---	WATER METER
---	WATER VALVE
---	SILT FENCE
---	TEMPORARY DIVERSION DIKE
---	TREE PRESERVATION BARRIER
---	FINISH CONTOUR
---	PROPOSED SANITARY SEWER LINE
---	PROPOSED WATER LINE
---	PROPOSED GAS LINE
---	PROPOSED UNDERGROUND ELECTRIC
---	PROPOSED UNDERGROUND TELECOMMUNICATIONS
---	PROPOSED STORM SEWER
---	NORTH AMERICAN GREEN
---	SC250 TURF REINFORCEMENT
---	OR APPROVED EQUAL
---	6' CHAINLINK FENCE



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