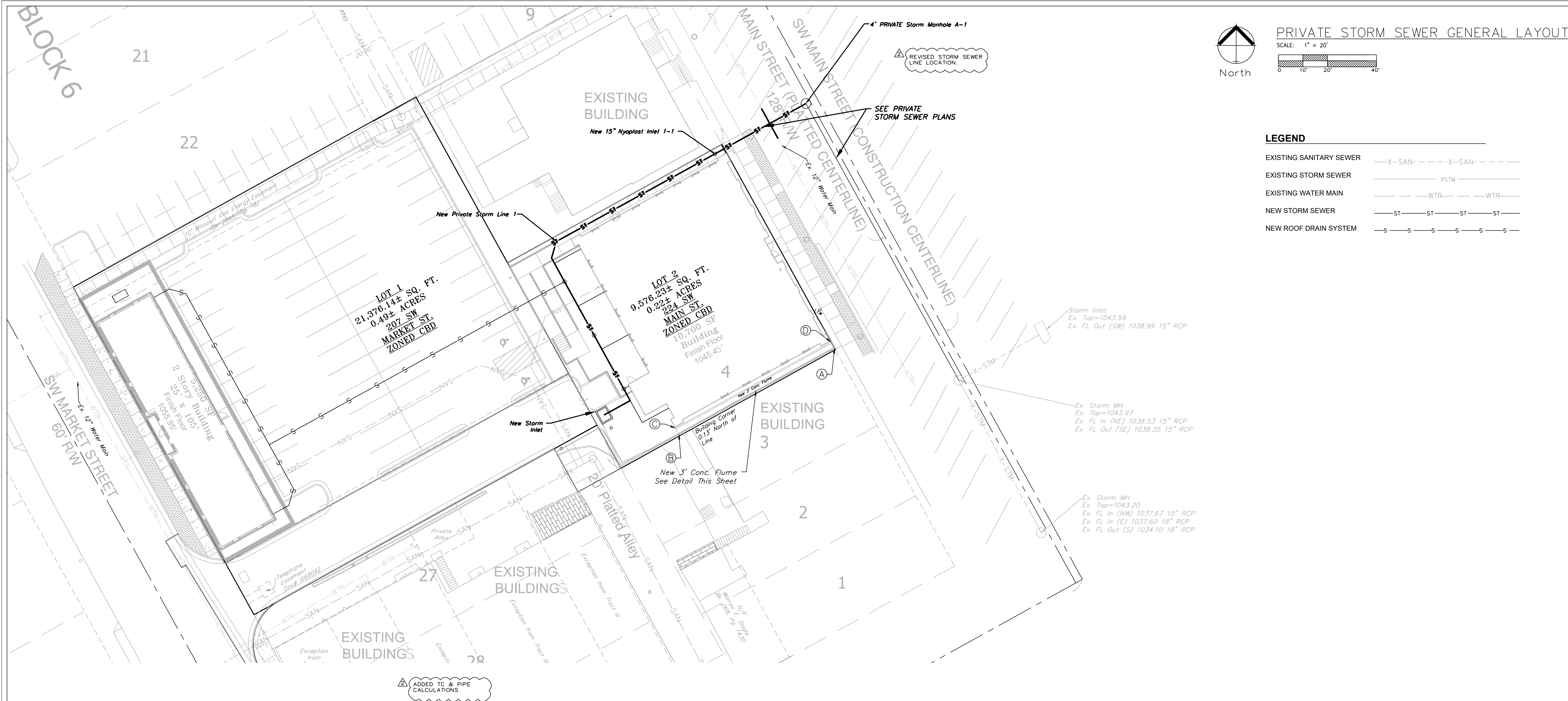
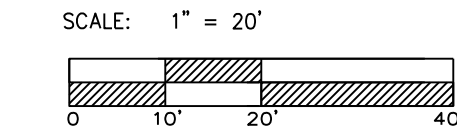




PRIVATE STORM SEWER GENERAL LAYOUT



LEGEND

EXISTING SANITARY SEWER	X-SAN- - - - X-SAN- - - -
EXISTING STORM SEWER	XSTM
EXISTING WATER MAIN	WTR- - - - WTR- - - -
NEW STORM SEWER	ST- - - - ST- - - - ST- - - - ST- - - -
NEW ROOF DRAIN SYSTEM	S- - - - S- - - - S- - - - S- - - -

APWA STORM DRAINAGE "TC" COMPUTATIONS FOR : REECE NICHOLS																									
yellow areas are self computing overwrite if necessary					Surface types: Asph/ConcBus/Com A B D G L M S U Z															TC COMPUTATION					
					SURFACE CODES "C" Values																				
					0.90 0.87 0.60 0.30 0.90 0.66 0.51 0.3																				
					"C" Values																				
TOTAL WATERSHED					Overwrite Length - DnElev or Slope if necessary															SURFACE CODE P=Paved U=Unpaved Overwrite Slope or Elevations if necessary					
					SURFACE CODE P=Paved U=Unpaved Overwrite Slope or Elevations if necessary																				
					SURFACE CODE P=Paved U=Unpaved Overwrite Slope or Elevations if necessary																				
					SURFACE CODE P=Paved U=Unpaved Overwrite Slope or Elevations if necessary																				
TOTAL WATERSHED					OVERLAND FLOW - 100' MAX															CHANNEL FLOW - FIRST REACH					
					OVERLAND FLOW - 100' MAX																				
					OVERLAND FLOW - 100' MAX																				
					OVERLAND FLOW - 100' MAX																				
AREA ID					TOTAL WTRSHD UP DN					SURFACE "C" OVRLND UP DN SLOPE					CHANNEL UP DN SLOPE VELOCITY					Cal Overland Used Min 5 Cal Channel Cal Channel Total					AREA ID
ID					ACRES LENGTH ELEV ELEV					CODE VALUE LENGTH ELEV ELEV					UP LENGTH ELEV ELEV % F/S					Flow Max 15 T(I) T(I) T(T) T(T) T(I) T(I)					ID
2					0.55 244.0 1055.0 1048.0					B 0.87 100.0 1055.0 1050.7 4.3					P 144.0 1050.7 1048.0 1.88 2.8					2.5 5.0 0.9 0.0 5.9					2

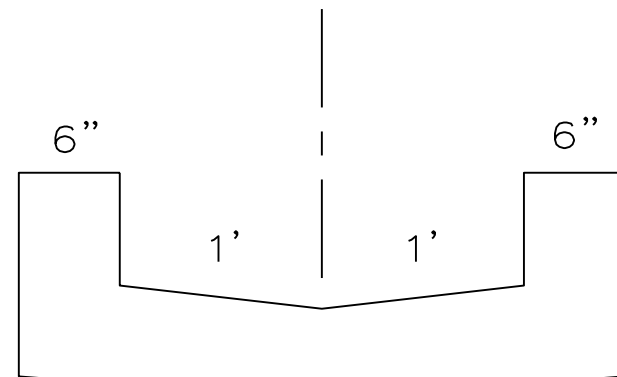
TC FOR ALL OTHER AREAS EQUAL 5 MINUTES.

10-YR PIPE																	
D.S. Str.	U.S. Str.	LineLength (ft)	Incr.Area (ac)	TotalArea (ac)	RunoffCoeff. (C)	IncrC x A	TotalC x A	InletTime (min)	TimeConc (min)	RnfallInt (in/hr)	TotalRunoff (cfs)	TotalFlow (cfs)	CapacFull (cfs)	Veloc (ft/s)	PipeSize (in)	PipeSlope (%)	Inv ElevDn (ft)
A-1	1-1	42.45	0.04	0.83	0.87	0.03	0.72	5	6.4	4.97	4.97	4.96	4.6	15	0.59	1039.85	1040.1
1-1	1-2	91.98	0.14	0.79	0.87	0.12	0.69	5	6.1	7	4.79	4.79	6.19	5.15	15	0.54	1040.35
1-2	1-3	25	0.1	0.65	0.87	0.09	0.57	5	6	7	3.95	3.95	6.5	5.15	15	0.6	1041.1
1-3	1-4	25	0	0.55	0	0	0.48	0	6	7	3.35	3.35	6.5	4.89	15	0.6	1041.5
1-4	1-5	17.63	0.55	0.55	0.87	0.48	0.48	5.9	5.9	7	3.36	3.36	6.32	4.84	15	0.57	1041.9

100-YR PIPE																	
D.S. Str.	U.S. Str.	LineLength (ft)	Incr.Area (ac)	TotalArea (ac)	RunoffCoeff. (C)	IncrC x A	TotalC x A	InletTime (min)	TimeConc (min)	RnfallInt (in/hr)	TotalRunoff (cfs)	TotalFlow (cfs)	CapacFull (cfs)	Veloc (ft/s)	PipeSize (in)	PipeSlope (%)	Inv ElevDn (ft)
A-1	1-1	42.45	0.04	0.83	0.87	0.03	0.72	5	6.4	10.4	7.52	7.52	4.96	6.13	15	0.59	1039.85
1-1	1-2	91.98	0.14	0.79	0.87	0.12	0.69	5	6.2	10.5	7.23	7.23	6.19	5.89	15	0.54	1040.35
1-2	1-3	25	0.1	0.65	0.87	0.09	0.57	5	6.1	10.6	5.97	5.97	6.5	4.86	15	0.6	1041.1
1-3	1-4	25	0	0.55	0	0	0.48	0	6	10.6	5.07	5.07	6.5	4.13	15	0.6	1041.5
1-4	1-5	17.63	0.55	0.55	0.87	0.48	0.48	5.9	5.9	10.6	5.08	5.08	6.32	4.14	15	0.57	1041.9

100 YEAR AND 10 YEAR OVERFLOW FLUME SECTIONS												
Section	Drainage Area	100 Yr. Runoff (c.f.s.)	10 Yr. Runoff (c.f.s.)	Bed Slope (%)	Base Width (ft)	Side Slope (1:V)	Normal Depth (ft)	Sectional Area	Velocity 100Yr. (f.p.s.)	Velocity 10Yr. (f.p.s.)	Hydraulic Radius (ft)	Shear Stress (p.s.f.)
1	0.58	6.29	3.58	3.59	2	0	0.36	0.72	8.34	7.16	0.26	0.58

NOTE: Flume contains uniform cross section and constant longitudinal (Bed) slope.



CONCRETE FLUME DETAIL
N.T.S.
Q100 = 6.29 CFS
ASSUMING INLET 5-1
100% PLUGGED
100 YR WSE = 1048.36
AT POINT B
SLOPE = 3.59%

Finish Grade Elevations of Channel	
Pt.	Elevation (ft)
A	1045.79
B	1048.50
C	1048.50
D	1045.79

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082
P: (816) 623-9888 F: (816) 623-9849

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Engineering E-1696
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

Construction Plans for:
Reece Nichols
Lee's Summit, Jackson County, Missouri

Project AND
NICHOLS, LSNMO
Issue Date:
January 29, 2019

Private Storm Sewer General Layout
Construction Plans for:
Reece Nichols
Lee's Summit, Jackson County, Missouri

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
REVISIONS
Revised 4/2/19
Revised 5/8/19

C. 300