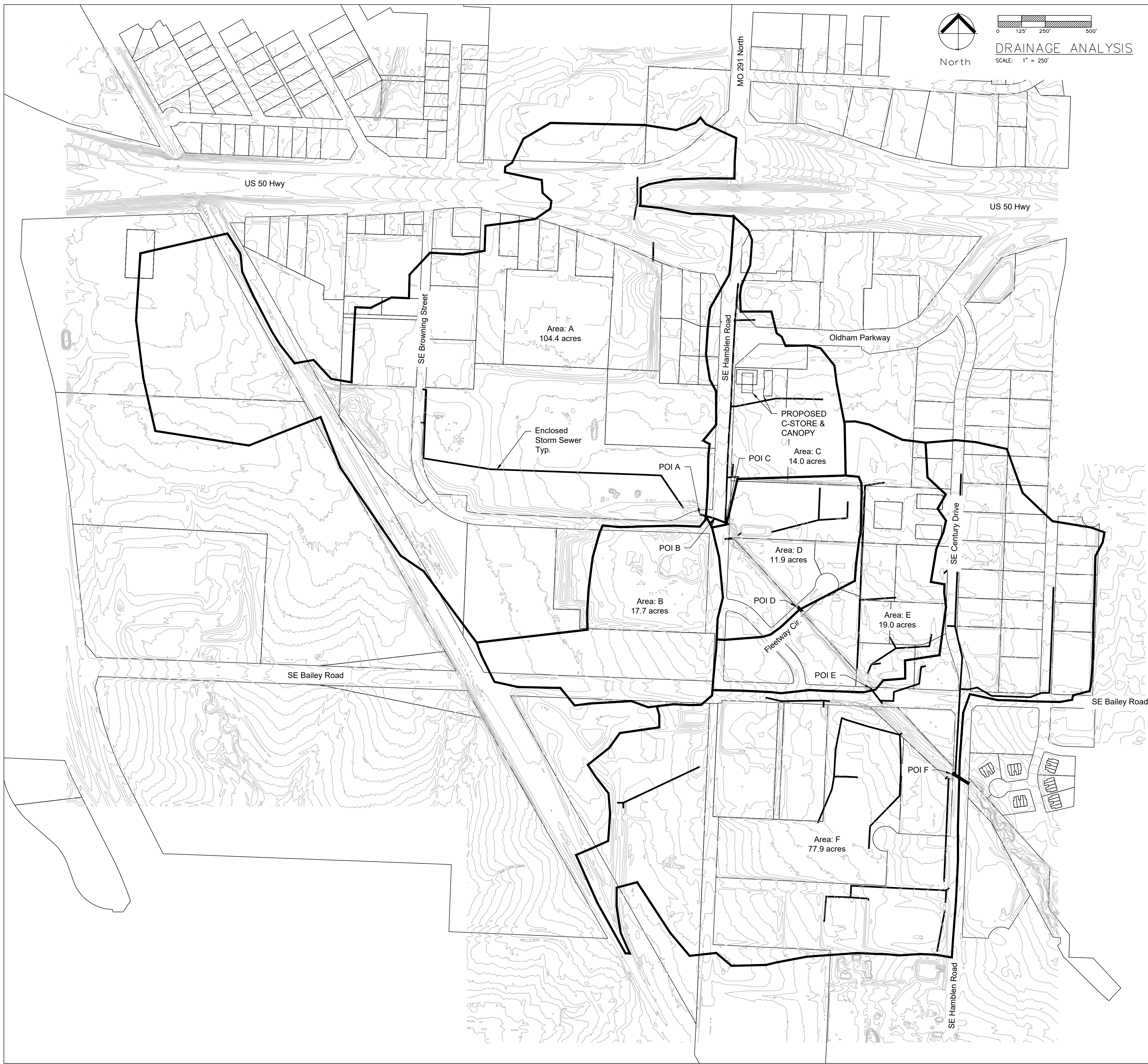




Peak Discharge Rates at POIs: (C = 0.78 = 20% Pervious)

POI	Tc (min)	A (ac)	Q10 (cfs)	Q25 (cfs)	Q50 (cfs)	Q100 (cfs)
A	37.3	104.4	272.41	355.21	432.56	500.86
B	38.0	122.1	315.24	411.19	500.78	579.89
C	38.0	136.1	351.35	458.29	558.15	646.33
D	43.5	148.0	351.94	460.21	560.99	649.90
E	47.6	167.0	375.02	491.17	599.09	694.24
F	52.1	244.9	519.08	680.90	830.98	963.23

C Upstream - 42" RCP 36.11 47.10 57.37 66.44

Sub-basin C = 14.0 Acres
Proposed C-Store Lot = 2.0 Acres or 14.29% of Sub-basin C

Existing Discharge Attributed	5.16	6.73	8.20	9.49
Proposed Allowable Discharge	4.00	4.73*	5.40*	6.00

Proposed Peak Discharge Rates (C-Store Detained)

C	350.19	456.29	555.35	642.84
D	350.78	458.21	558.19	646.41
E	373.86	489.17	596.29	690.75
F	517.92	678.90	828.18	959.74

Level of Service for Street Crossings:

Street	Street Classification	Min. Design Storm Cap.
Hamblen Road	Minor Arterial	2%
Fleetway Circle	Local w/ Open Channel Downstream	4%
SE Bailey Road	Minor Arterial	2%

Pipe Capacity: (42" RCP east of Hamblen)

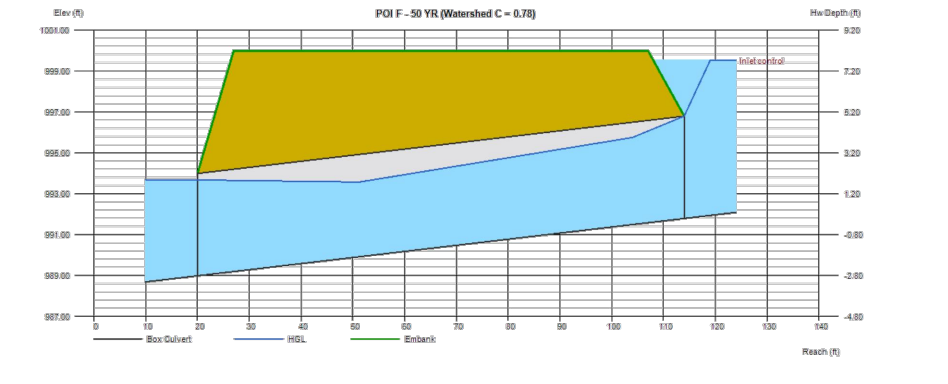
FL In (N) = 1011.69
FL Out (S) = 1010.08
Length = 237.21'
Slope = 0.68%
Capacity, Q = 82.89 cfs > 66.44 cfs (100-yr)

Culvert Report

Hydroflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Oct 7 2022

POI F - 50 YR (Watershed C = 0.78)

Invert Elev Dn (ft)	= 989.00	Calculations	
Pipe Length (ft)	= 94.00	Qmin (cfs)	= 830.98
Slope (%)	= 2.98	Qmax (cfs)	= 930.98
Invert Elev Up (ft)	= 991.80	Tailwater Elev (ft)	= (dc+D)/2
Rise (in)	= 60.0		
Shape	= Box	Highlighted	
Span (in)	= 96.0	Qtotal (cfs)	= 830.98
No. Barrels	= 2	Qpipe (cfs)	= 830.98
n-Value	= 0.013	Qovertop (cfs)	= 0.00
Culvert Type	= Flared Wingwalls	Veloc Dn (ft/s)	= 11.08
Culvert Entrance	= 30D to 75D wingwall flares	Veloc Up (ft/s)	= 11.88
Coeff. K,M,c,Y,K	= 0.026, 1, 0.0347, 0.81, 0.4	HGL Dn (ft)	= 993.69
		HGL Up (ft)	= 996.17
		Hw Elev (ft)	= 999.52
Embankment		Hw/D (ft)	= 1.54
Top Elevation (ft)	= 1000.00	Flow Regime	= Inlet Control
Top Width (ft)	= 80.00		
Crest Width (ft)	= 311.00		

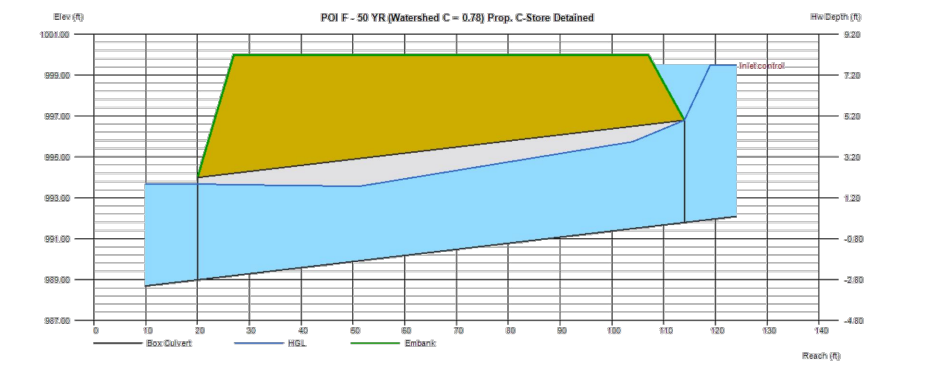


Culvert Report

Hydroflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Oct 7 2022

POI F - 50 YR (Watershed C = 0.78) Prop. C-Store Detained

Invert Elev Dn (ft)	= 989.00	Calculations	
Pipe Length (ft)	= 94.00	Qmin (cfs)	= 828.18
Slope (%)	= 2.98	Qmax (cfs)	= 928.18
Invert Elev Up (ft)	= 991.80	Tailwater Elev (ft)	= (dc+D)/2
Rise (in)	= 60.0		
Shape	= Box	Highlighted	
Span (in)	= 96.0	Qtotal (cfs)	= 828.18
No. Barrels	= 2	Qpipe (cfs)	= 828.18
n-Value	= 0.013	Qovertop (cfs)	= 0.00
Culvert Type	= Flared Wingwalls	Veloc Dn (ft/s)	= 11.06
Culvert Entrance	= 30D to 75D wingwall flares	Veloc Up (ft/s)	= 11.87
Coeff. K,M,c,Y,K	= 0.026, 1, 0.0347, 0.81, 0.4	HGL Dn (ft)	= 993.68
		HGL Up (ft)	= 996.16
		Hw Elev (ft)	= 999.49
Embankment		Hw/D (ft)	= 1.54
Top Elevation (ft)	= 1000.00	Flow Regime	= Inlet Control
Top Width (ft)	= 80.00		
Crest Width (ft)	= 311.00		



Detention Benefits at the Proposed C-Store would be Negligible. The 50-year design storm would continue to pass under SE Hamblen Road with a proposed Hw/D condition equal to Existing providing No Net Impact.

ENGINEERING SOLUTIONS

ENGINEERING & SURVEYING

50 SE 30TH STREET
LEES SUMMIT, MO 64082
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Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

Part Lots 2 and 3, Hamblen Plaza, Lots 1 thru 3 and
Part of the Northeast 1/4 of the Southeast 1/4 of
Section 8, Township 47 North, Range 31 West
Jackson County, Missouri

Project:
HOME DEPOT
C-STORE LSMO
Issue Date:
September 23, 2022

Downstream Drainage Analysis
Construction Plans for:
HOME DEPOT C-STORE
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 255226

REVISIONS

EXHIBIT