BAUGHMAN COMPANY, P.A.
ENGINEERING, SURVEYING & PLANNING
316/262-7271 FAX 316/262-0149 WICHITA, KANSAS 67211

LETTER OF TRANSMITTAL

DATE: 4/4/96
JOB NO.
ATTENTION:
RE: Drainage Plan

TO: Ms. Vicky Huang
Engineering Office - 7th Floor
455 N. Main
Wichita, KS 67202

WE ARE SENDING YOU ☐ *Attached* ☐ *Under separate cover via the following items:*

☐ *Plans* ☐ *Prints* ☐ *Shop drawings* ☐ *Samples* ☐ *Copy of letter*

☐ *Specifications* ☐ *Change order* ☐ *Computer disk* ☒ *Other Report*

COPIES	DATE	DESCRIPTION
1	4/3/96	Lark 3rd Addition Drainage Plan

THESE ARE TRANSMITTED as checked below:

☒ *For approval* ☐ *Approved as submitted* ☒ *For review and comment*

☐ *For your use & information* ☐ *Approved as noted* ☐ *FOR BIDS DUE*

☒ *As requested* ☐ *Return for corrections* ☐

REMARKS:

COPY TO: *Phil Meyer, Baughman Co., P.A.*
file

SIGNED: John D. Schmit

John D. Schmit, E.I.

DRAINAGE PLAN FOR

LARK 3RD ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS

Baughman Company, P.A.

DRAINAGE PLAN FOR

LARK 3RD ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS

Prepared By

Baughman Company, P.A.

April 3, 1996

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INTRODUCTION

This report provides information and supporting documentation to support the "Drainage Plan" for the property located in the Northeast and Northwest Quarters of Section 31, T27-S, R1-W in Sedgwick County, Kansas.

The "Drainage Plan" being submitted herein is intended to serve as a guide for the design of streets and storm water sewer improvements. Modifications to structures, pipes, etc. may be made as necessary during the final design in order to obtain the most economical design and construction possible.

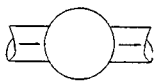
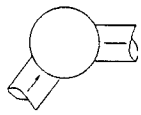
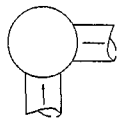
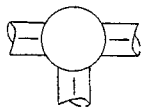
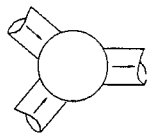
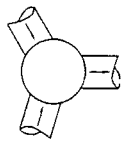
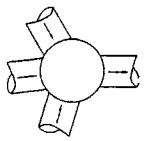
Table of Rational Coefficients

Following are ranges of rational coefficients. These ranges cover return periods of 2 to 10 years and are based on Intensity-Duration-Frequency (IDF) methodology. See References (HEC No. 19, 1984)

Area	"C" Values
Business	
Downtown	0.70-0.95
Neighborhood	0.50-0.70
Residential	
Single Family	0.30-0.50
Multiunit detached	0.40-0.60
Multiunit attached	0.60-0.75
Suburban resident	0.25-0.40
Apartment	0.50-0.70
Residential (1.2 acre lots or more)	0.30-0.45
Industrial	
Light	0.50-0.80
Heavy	0.60-0.90
Parks and Cemeteries	0.10-0.25
Playgrounds	0.20-0.40
Unimproved	0.10-0.30
Pavement	
Asphalt/Concrete	0.70-0.95
Brick	0.70-0.85
Drives and Walks	0.75-0.85
Lawns, Sandy soils	
Flat, 2%	0.05-0.10
Average, 2-7%	0.10-0.15
Steep, > 7%	0.15-0.20
Lawns, Heavy Soils	
Flat 2%	0.13-0.17
Average, 2-7%	0.18-0.22
Steep >7%	0.25-0.35
Railroad Yard	0.20-0.40
Roofs	0.70-0.95

Headloss Coefficients for Manholes and Junctions

These are typical headloss coefficients used in the standard method for estimating headloss through manholes and junctions.

Type of Manhole	Diagram	Headloss Coefficient
Trunkline only with no bend at the junction		0.5
Trunkline only with 45 degree bend at junction		0.6
Trunkline only with 90 degree bend at junction		0.8
Trunkline with one lateral		Small 0.6 Large 0.7
Two roughly equivalent entrance lines with angle of < 90 degrees between lines		0.8
Two roughly equivalent entrance lines with angle of > 90 degrees between lines		0.9
Three or more entrance lines		1.0

Drainage Basin Areas - Line 1

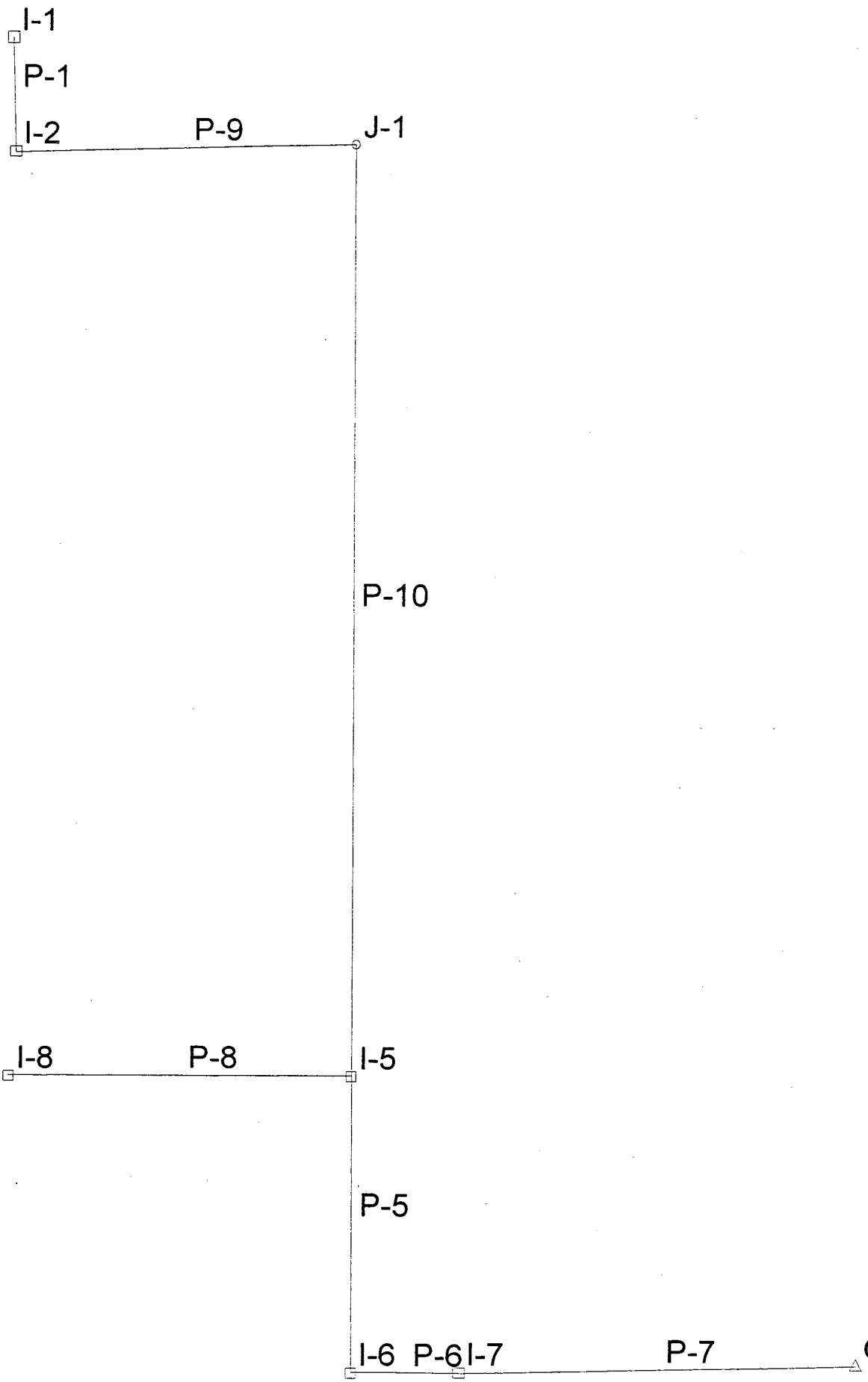
Inlet	Area	Type of Inlet	"C"
1	5.74 Ac.	Double Curb (11'4" x 4'4")	0.48
2	1.26 Ac.	" (11'4" x 5'4")	"
9	0	MH (5' Dia.)	—
5	0.76 Ac.	Single Curb (6'4" x 5'4")	0.48
6	0.69 Ac.	Double Curb. (11'4" x 5'4")	"
7	2.87 Ac.	" (11'4" x 4'4")	"
8	1.29 Ac.	Drop Inlet (2' x 4')	0.30

Drainage Basin Areas - Line 2A

Inlet	Area	Type of Inlet	"C"
11	3.44 Ac.	Double Curb (11'4" x 4'4")	0.48
1	2.06 Ac.	Double Curb (11'4" x 5'4")	0.48
		MH (5' Dia)	—
3	0.96 Ac.	Double Curb (11'4" x 5'4")	0.48
4	1.38 Ac.	Drop Inlet (2' x 4')	0.30
5	1.03 Ac.	Double Curb (11'4" x 5'4")	0.48
6	1.03 Ac.	Double Curb (11'4" x 5'4")	0.48
7	1.21 Ac.	Drop Inlet (2' x 4')	0.30
8	0.96 Ac.	Double Curb (11'4" x 5'4")	0.48
9	1.61 Ac.	Double Curb (11'4" x 4'4")	0.48
10	1.39 Ac.		

Drainage Basin Data - Line 2B

Inlet	Area	Type of Inlet	"C"
13	0.57 Ac.	Drop Inlet (2'x4')	0.30
14	1.38 Ac.	"	0.30
15	1.03 Ac.	"	0.30
16	0.69 Ac.	"	0.30


I-1
P-1
I-2
P-9
J-1
P-10
I-8
P-8
I-5
P-5
I-6
P-6
I-7
P-7
Outlet

Combined Pipe/Node Report

Pipe	Up Node	Dn Node	Length (ft)	Inlet A (acres)	C	Inlet CA (acres)	Tot CA (acres)	Inlet Q (cfs)	Size	Cap (cfs)	V avg (ft/s)	Up Invert (ft)	Dn Invert (ft)	S (ft/ft)	Description
P-1	I-1	I-2	43.00	5.74	0.48	2.76	2.76	17.89	30 inch	16.55	3.70	138.76	138.69	0.001628	
P-9	I-2	J-1	131.00	1.26	0.48	0.60	3.36	2.33	30 inch	16.03	2.66	138.59	138.39	0.001527	
P-10	J-1	I-5	355.00	N/A	N/A	N/A	3.36	N/A	30 inch	16.00	2.60	138.30	137.76	0.001521	
P-8	I-8	I-5	132.00	1.29	0.30	0.39	0.39	1.49	18 inch	5.78	0.88	139.16	138.76	0.003030	
P-5	I-5	I-6	112.00	0.76	0.48	0.36	4.11	1.41	30 inch	15.98	3.03	137.66	137.49	0.001518	
P-6	I-6	I-7	41.00	0.69	0.48	0.33	4.44	1.28	30 inch	16.95	3.23	137.40	137.33	0.001707	
P-7	I-7	Outlet	152.00	2.87	0.48	1.38	5.82	5.32	30 inch	15.89	4.22	137.23	137.00	0.001500	

Pipe Report

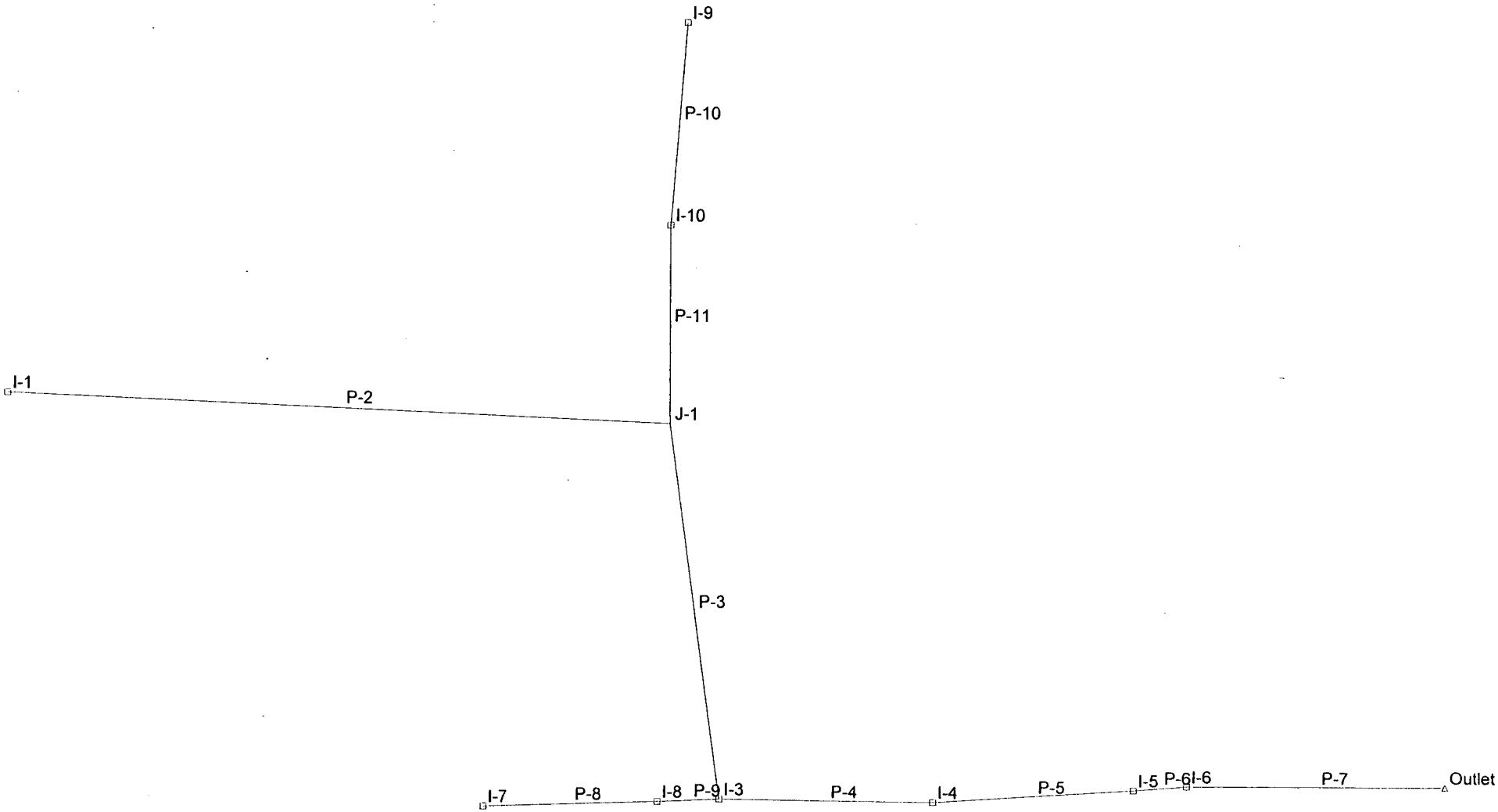
Pipe	Upstream Node	Downstream Node	Inlet Area (acres)	Weighted Roughness Coefficient	Inlet CA (acres)	Total CA (acres)	System Intensity (in/hr)	Discharge (cfs)	Length (ft)	Constructed Slope (ft/ft)	Section Size	Roughness
P-1	I-1	I-2	5.74	0.48	2.76	2.76	6.44	17.89	43.00	0.001628	30 inch	0.013
P-9	I-2	J-1	1.26	0.48	0.60	3.36	3.83	12.97	131.00	0.001527	30 inch	0.013
P-10	J-1	I-5	N/A	N/A	N/A	3.36	3.77	12.76	355.00	0.001521	30 inch	0.013
P-8	I-8	I-5	1.29	0.30	0.39	0.39	3.83	1.49	132.00	0.003030	18 inch	0.013
P-5	I-5	I-6	0.76	0.48	0.36	4.11	3.59	14.88	112.00	0.001518	30 inch	0.013
P-6	I-6	I-7	0.69	0.48	0.33	4.44	3.54	15.87	41.00	0.001707	30 inch	0.013
P-7	I-7	Outlet	2.87	0.48	1.38	5.82	3.53	20.69	152.00	0.001500	30 inch	0.013

Node Report

Node	Inlet Area (acres)	Weighted Roughness Coefficient	Inlet CA (acres)	External CA (acres)	Total CA (acres)	Inlet TC (min)	External TC (min)	Upstream Flow Time (min)	System Flow Time (min)	System Intensity (in/hr)	Total Watershed (CIA) (cfs)	Additional Flow (cfs)	Carryover (cfs)
I-1	5.74	0.48	2.76	0.00	2.76	0.00	0.00	0.00	0.00	6.44	17.89	0.00	0.00
I-2	1.26	0.48	0.60	0.00	3.36	15.00	0.00	0.19	15.00	3.83	12.97	0.00	0.00
J-1	N/A	N/A	N/A	N/A	3.36	N/A	0.00	15.82	15.82	3.77	12.76	N/A	N/A
I-8	1.29	0.30	0.39	0.00	0.39	15.00	0.00	0.00	15.00	3.83	1.49	0.00	0.00
I-5	0.76	0.48	0.36	0.00	4.11	15.00	0.00	18.10	18.10	3.59	14.88	0.00	0.00
I-6	0.69	0.48	0.33	0.00	4.44	15.00	0.00	18.71	18.71	3.54	15.87	0.00	0.00
I-7	2.87	0.48	1.38	0.00	5.82	15.00	0.00	18.92	18.92	3.53	20.69	0.00	0.00
Outlet	N/A	N/A	N/A	N/A	5.82	N/A	0.00	19.52	19.52	3.48	20.42	N/A	N/A

DOT Report

Pipe	-Node- Upstream Downstream	Inlet Area (acres)	Inlet CA (acres)	Total CA (acres)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (ft/ft)	-Section- Discharge Capacity (cfs)	-Section- Shape Size	Length (ft)	Average Velocity (ft/s)	Description
P-1	I-1	5.74	2.76	2.76	143.70	141.15	0.001655	17.89	Circular	43.00	3.70	
	I-2				143.70	141.08	0.001628	16.55	30 inch			
P-9	I-2	1.26	0.60	3.36	143.70	140.99	0.000906	12.97	Circular	131.00	2.66	
	J-1				144.50	140.88	0.001527	16.03	30 inch			
P-10	J-1	N/A	N/A	3.36	144.50	140.79	0.000966	12.76	Circular	355.00	2.60	
	I-5				142.80	140.45	0.001521	16.00	30 inch			
P-8	I-8	1.29	0.39	0.39	142.00	140.47	0.000198	1.49	Circular	132.00	0.88	
	I-5				142.80	140.45	0.003030	5.78	18 inch			
P-5	I-5	0.76	0.36	4.11	142.80	140.36	0.001316	14.88	Circular	112.00	3.03	
	I-6				142.30	140.22	0.001518	15.98	30 inch			
P-6	I-6	0.69	0.33	4.44	142.30	140.09	0.001497	15.87	Circular	41.00	3.23	
	I-7				142.30	140.02	0.001707	16.95	30 inch			
P-7	I-7	2.87	1.38	5.82	142.30	139.89	0.002545	20.69	Circular	152.00	4.22	
	Outlet				142.00	139.50	0.001500	15.89	30 inch			



Project Title: Lark 3rd Addition - Line 2
c:\haestad\stmc\lark3_2a.stm
04/03/96 11:02:08 PM

Baughman Company, P.A.
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

Project Engineer: Baughman Company, P.A.
StormCAD v1.0

Combined Pipe/Node Report

Pipe	Up Node	Dn Node	Length (ft)	Inlet A (acres)	C	Inlet CA (acres)	Tot CA (acres)	Inlet Q (cfs)	Size	Cap (cfs)	V avg (ft/s)	Up Invert (ft)	Dn Invert (ft)	S (ft/ft)	Description
P-8	I-7	I-8	116.50	1.21	0.30	0.36	0.36	1.40	15 inch	4.01	1.14	139.45	139.00	0.003863	
P-9	I-8	I-3	41.50	0.96	0.48	0.46	0.82	1.78	15 inch	4.01	2.50	139.80	139.64	0.003855	
P-10	I-9	I-10	136.50	1.61	0.48	0.77	0.77	2.98	15 inch	3.99	2.43	140.81	140.29	0.003810	
P-11	I-10	J-1	132.50	1.38	0.30	0.41	1.19	1.60	24 inch	10.21	1.43	139.54	139.27	0.002038	
P-2	I-1	J-1	438.00	2.06	0.48	0.99	3.74	3.82	30 inch	15.92	2.94	139.53	138.87	0.001507	
P-3	J-1	I-3	251.50	N/A	N/A	N/A	4.93	N/A	30 inch	15.94	3.68	138.77	138.39	0.001511	
P-4	I-3	I-4	141.50	0.96	0.48	0.46	6.21	1.78	36 inch	23.12	3.14	137.89	137.72	0.001201	
P-5	I-4	I-5	132.50	1.38	0.30	0.41	6.62	1.60	36 inch	23.18	3.30	137.62	137.46	0.001208	
P-6	I-5	I-6	35.50	1.03	0.48	0.49	7.12	1.91	36 inch	25.03	3.49	137.36	137.31	0.001408	
P-7	I-6	Outlet	170.50	1.03	0.48	0.49	7.61	1.91	36 inch	23.41	3.72	137.21	137.00	0.001232	

Pipe Report

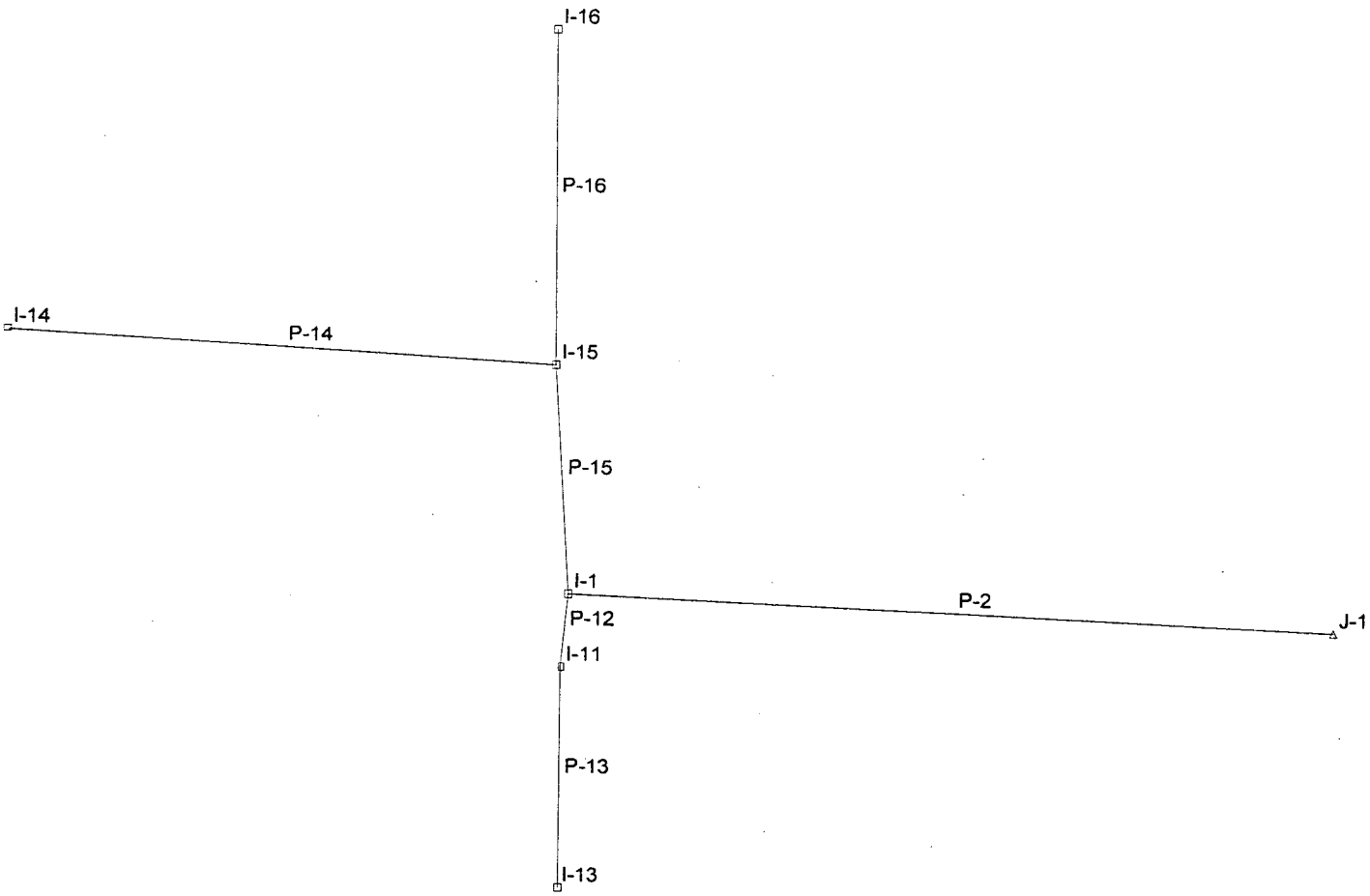
Pipe	Upstream Node	Downstream Node	Inlet Area (acres)	Weighted Roughness Coefficient	Inlet CA (acres)	Total CA (acres)	System Intensity (in/hr)	Discharge (cfs)	Length (ft)	Constructed Slope (ft/ft)	Section Size	Roughness
P-8	I-7	I-8	1.21	0.30	0.36	0.36	3.83	1.40	116.50	0.003863	15 inch	0.013
P-9	I-8	I-3	0.96	0.48	0.46	0.82	3.70	3.07	41.50	0.003855	15 inch	0.013
P-10	I-9	I-10	1.61	0.48	0.77	0.77	3.83	2.98	136.50	0.003810	15 inch	0.013
P-11	I-10	J-1	1.38	0.30	0.41	1.19	3.76	4.50	132.50	0.002038	24 inch	0.013
P-2	I-1	J-1	2.06	0.48	0.99	3.74	3.83	14.43	438.00	0.001507	30 inch	0.013
P-3	J-1	I-3	N/A	N/A	N/A	4.93	3.64	18.06	251.50	0.001511	30 inch	0.013
P-4	I-3	I-4	0.96	0.48	0.46	6.21	3.55	22.22	141.50	0.001201	36 inch	0.013
P-5	I-4	I-5	1.38	0.30	0.41	6.62	3.49	23.32	132.50	0.001208	36 inch	0.013
P-6	I-5	I-6	1.03	0.48	0.49	7.12	3.44	24.68	35.50	0.001408	36 inch	0.013
P-7	I-6	Outlet	1.03	0.48	0.49	7.61	3.43	26.30	170.50	0.001232	36 inch	0.013

Node Report

Node	Inlet Area (acres)	Weighted Roughness Coefficient	Inlet CA (acres)	External CA (acres)	Total CA (acres)	Inlet TC (min)	External TC (min)	Upstream Flow Time (min)	System Flow Time (min)	System Intensity (in/hr)	Total Watershed (CIA) (cfs)	Additional Flow (cfs)	Carryover (cfs)
I-7	1.21	0.30	0.36	0.00	0.36	15.00	0.00	0.00	15.00	3.83	1.40	0.00	0.00
I-8	0.96	0.48	0.46	0.00	0.82	15.00	0.00	16.70	16.70	3.70	3.07	0.00	0.00
I-9	1.61	0.48	0.77	0.00	0.77	15.00	0.00	0.00	15.00	3.83	2.98	0.00	0.00
I-10	1.38	0.30	0.41	0.00	1.19	15.00	0.00	15.94	15.94	3.76	4.50	0.00	0.00
I-1	2.06	0.48	0.99	2.75	3.74	15.00	15.00	0.00	15.00	3.83	14.43	0.00	0.00
J-1	N/A	N/A	N/A	N/A	4.93	N/A	0.00	17.48	17.48	3.64	18.06	N/A	N/A
I-3	0.96	0.48	0.46	0.00	6.21	15.00	0.00	18.62	18.62	3.55	22.22	0.00	0.00
I-4	1.38	0.30	0.41	0.00	6.62	15.00	0.00	19.37	19.37	3.49	23.32	0.00	0.00
I-5	1.03	0.48	0.49	0.00	7.12	15.00	0.00	20.04	20.04	3.44	24.68	0.00	0.00
I-6	1.03	0.48	0.49	0.00	7.61	15.00	0.00	20.21	20.21	3.43	26.30	0.00	0.00
Outlet	N/A	N/A	N/A	N/A	7.61	N/A	0.00	20.97	20.97	3.37	25.85	N/A	N/A

DOT Report

Pipe	-Node- Upstream Downstream	Inlet Area (acres)	Inlet CA (acres)	Total CA (acres)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (ft/ft)	-Section- Discharge Capacity (cfs)	-Section- Shape Size	Length (ft)	Average Velocity (ft/s)	Description
P-8	I-7	1.21	0.36	0.36	143.00	141.26	0.000471	1.40	Circular	116.50	1.14	
	I-8				143.20	141.20	0.003863	4.01	15 inch			
P-9	I-8	0.96	0.46	0.82	143.20	141.15	0.002261	3.07	Circular	41.50	2.50	
	I-3				143.20	141.06	0.003855	4.01	15 inch			
P-10	I-9	1.61	0.77	0.77	143.30	142.05	0.002131	2.98	Circular	136.50	2.43	
	I-10				143.00	141.76	0.003810	3.99	15 inch			
P-11	I-10	1.38	0.41	1.19	143.00	141.75	0.000395	4.50	Circular	132.50	1.43	
	J-1				144.60	141.69	0.002038	10.21	24 inch			
P-2	I-1	2.06	0.99	3.74	144.00	142.24	0.001239	14.43	Circular	438.00	2.94	
	J-1				144.60	141.69	0.001507	15.92	30 inch			
P-3	J-1	N/A	N/A	4.93	144.60	141.55	0.001939	18.06	Circular	251.50	3.68	
	I-3				143.20	141.06	0.001511	15.94	30 inch			
P-4	I-3	0.96	0.46	6.21	143.20	140.92	0.001110	22.22	Circular	141.50	3.14	
	I-4				143.50	140.76	0.001201	23.12	36 inch			
P-5	I-4	1.38	0.41	6.62	143.50	140.68	0.001222	23.32	Circular	132.50	3.30	
	I-5				142.50	140.52	0.001208	23.18	36 inch			
P-6	I-5	1.03	0.49	7.12	142.50	140.42	0.001370	24.68	Circular	35.50	3.49	
	I-6				142.50	140.37	0.001408	25.03	36 inch			
P-7	I-6	1.03	0.49	7.61	142.50	140.27	0.001555	26.30	Circular	170.50	3.72	
	Outlet				142.00	140.00	0.001232	23.41	36 inch			



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Combined Pipe/Node Report

Pipe	Up Node	Dn Node	Length (ft)	Inlet A (acres)	C	Inlet CA (acres)	Tot CA (acres)	Inlet Q (cfs)	Size	Cap (cfs)	V avg (ft/s)	Up Invert (ft)	Dn Invert (ft)	S (ft/ft)	Description
P-16	I-16	I-15	190.50	0.69	0.30	0.21	0.21	0.80	15 inch	4.00	1.46	141.71	140.98	0.003832	
P-14	I-14	I-15	315.50	1.38	0.30	0.41	0.41	1.60	15 inch	3.98	2.24	142.18	140.98	0.003803	
P-15	I-15	I-1	131.00	1.03	0.30	0.31	0.93	1.19	18 inch	4.10	2.07	140.73	140.53	0.001527	
P-13	I-13	I-11	127.00	0.57	0.30	0.17	0.17	0.66	15 inch	4.01	0.68	141.40	140.91	0.003858	
P-12	I-11	I-1	41.50	3.44	0.48	1.65	1.82	6.37	18 inch	5.88	3.88	140.66	140.53	0.003133	
P-2	I-1	J-1	438.00	2.06	0.48	0.99	3.74	3.82	30 inch	15.92	2.81	139.53	138.87	0.001507	

Pipe Report

Pipe	Upstream Node	Downstream Node	Inlet Area (acres)	Weighted Roughness Coefficient	Inlet CA (acres)	Total CA (acres)	System Intensity (in/hr)	Discharge (cfs)	Length (ft)	Constructed Slope (ft/ft)	Section Size	Roughness
P-16	I-16	I-15	0.69	0.30	0.21	0.21	3.83	0.80	190.50	0.003832	15 inch	0.013
P-14	I-14	I-15	1.38	0.30	0.41	0.41	3.83	1.60	315.50	0.003803	15 inch	0.013
P-15	I-15	I-1	1.03	0.30	0.31	0.93	3.65	3.42	131.00	0.001527	18 inch	0.013
P-13	I-13	I-11	0.57	0.30	0.17	0.17	3.83	0.66	127.00	0.003858	15 inch	0.013
P-12	I-11	I-1	3.44	0.48	1.65	1.82	3.59	6.60	41.50	0.003133	18 inch	0.013
P-2	I-1	J-1	2.06	0.48	0.99	3.74	3.57	13.45	438.00	0.001507	30 inch	0.013

Node Report

Node	Inlet Area (acres)	Weighted Roughness Coefficient	Inlet CA (acres)	External CA (acres)	Total CA (acres)	Inlet TC (min)	External TC (min)	Upstream Flow Time (min)	System Flow Time (min)	System Intensity (in/hr)	Total Watershed (CIA) (cfs)	Additional Flow (cfs)	Carryover (cfs)
I-16	0.69	0.30	0.21	0.00	0.21	15.00	0.00	0.00	15.00	3.83	0.80	0.00	0.00
I-14	1.38	0.30	0.41	0.00	0.41	15.00	0.00	0.00	15.00	3.83	1.60	0.00	0.00
I-15	1.03	0.30	0.31	0.00	0.93	15.00	0.00	17.35	17.35	3.65	3.42	0.00	0.00
I-13	0.57	0.30	0.17	0.00	0.17	15.00	0.00	0.00	15.00	3.83	0.66	0.00	0.00
I-11	3.44	0.48	1.65	0.00	1.82	15.00	0.00	18.10	18.09	3.59	6.60	0.00	0.00
I-1	2.06	0.48	0.99	0.00	3.74	15.00	0.00	18.41	18.41	3.57	13.45	0.00	0.00
J-1	N/A	N/A	N/A	N/A	3.74	N/A	0.00	21.00	21.00	3.37	12.69	N/A	N/A

DOT Report

Pipe	-Node- Upstream Downstream	Inlet Area (acres)	Inlet CA (acres)	Total CA (acres)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (ft/ft)	-Section- Discharge Capacity (cfs)	-Section- Shape Size	Length (ft)	Average Velocity (ft/s)	Description
P-16	I-16	0.69	0.21	0.21	144.00	142.13	0.000678	0.80	Circular	190.50	1.46	
	I-15				143.50	142.07	0.003832	4.00	15 inch			
P-14	I-14	1.38	0.41	0.41	144.50	142.73	0.002465	1.60	Circular	315.50	2.24	
	I-15				143.50	142.07	0.003803	3.98	15 inch			
P-15	I-15	1.03	0.31	0.93	143.50	142.02	0.000949	3.42	Circular	131.00	2.07	
	I-1				144.00	141.90	0.001527	4.10	18 inch			
P-13	I-13	0.57	0.17	0.17	143.65	142.17	0.000128	0.66	Circular	127.00	0.68	
	I-11				144.00	142.16	0.003858	4.01	15 inch			
P-12	I-11	3.44	1.65	1.82	144.00	142.05	0.003424	6.60	Circular	41.50	3.88	
	I-1				144.00	141.90	0.003133	5.88	18 inch			
P-2	I-1	2.06	0.99	3.74	144.00	141.79	0.000979	13.45	Circular	438.00	2.81	
	J-1				144.60	141.37	0.001507	15.92	30 inch			