Drainage Report

for:

Burkhardt Square Industrial Park

Developer:

Wedeking Investments, L.P.
2300 N. Burkhardt Road
Evansville, IN 47715

Engineer:

Morley and Associates, Inc.
605 S.E. Martin Luther King, Jr. Blvd.
Evansville, IN 47713-1797
(812) 464-9585

Daryl James Helfert

November 1996

BURKHARDT SQUARE INDUSTRIAL PARK

The site is located on the east side of Evansville, on the south side of Wedeking Avenue, west of Burkhardt Road, in Knight Township, Vanderburgh County.

A proposed masterplan has been created for the 11.04 acre site. This masterplan calls for office buildings and warehouses to be developed. Currently the developer wants to develop only one of the proposed building sites. This site is 1.55 acres. The overall site is on relatively flat ground with a predominantly pasture cover with a few dirt stockpiles. The ground drains in a southwesterly direction toward a swale leading to the Crawford Brandeis Ditch. The site has no offsite runoff entering onto it.

The storm sewer system (pipes and basin) is sized for complete development conditions as shown on the masterplan. There is currently a lake on site that was built as a borrow pit. The water level on this lake is going to be lowered from the existing 379.00 to a level of 376.00 to allow adequate storage for completed development. Part of the storm sewer pipes are sized to act as a trunk line after future development takes place.

Storage

The required 25-year storm storage requirement for this building site is 0.17 acre-ft., and 0.24 acre-ft. for the 100-year storm. These volumes are derived from using the following information: Area = 1.27 acres, Tc = 36 min., Cu = 0.18, Cd = 0.85. The existing peak runoff rate for this site equals 0.67 cfs; however, 0.17 cfs will leave the site directly. Therefore, the allowable discharge from the retention basin is lowered to 0.50 cfs. We recommend that an orifice sized for these conditions not be installed because the small opening that would be required would also be prone to clogging.

The required 25-year storm storage requirement for the completed development is 1.65 acre-ft., and 2.29 acre-ft. for the 100-year storm. These volumes are derived from using the following information: Area = 11.04 acres, Tc = 60.8 min., Cu = 0.18, Cd = 0.85. The existing runoff for this site equals 3.60 cfs; however, 0.17 cfs will leave the site directly. Therefore, the allowable discharge from the retention basin is lowered to 3.43 cfs. An $8^3/_4$" diameter orifice on a 12" pipe would limit the discharge to 3.44 cfs under the design headwater conditions.

The existing top of bank of the lake ranges from 379.66 to 382.02, with a pool elevation of 379.00. We propose to lower the pool elevation and place the outlet pipe at 376.00, and place the emergency spillway at 378.50. The primary spillway will be a 12" RCP with an $8^3/_4$" orifice. The minimum top of dam elevation shall be 379.50.

Water Elevation	Storage Capacity
376.00	0.00 acre-ft
376.17	Elevation required for 25-year storm event storage for this building site
376.36	Elevation required for 100-year storm event storage for this building site
377.00	0.67 acre-ft.

378.00	1.39 acre-ft.
378.34	Elevation required for 25-year storm event storage for overall site
378.50	1.77 acre-ft.
379.00	2.16 acre-ft.
379.13	Elevation required for 100-year storm event storage for overall site
379.50	2.66 acre-ft.

All drainage structures (swales, storm sewer pipes, inlets, basin, etc.) shall be located within the dedicated easements which conform to the requirements of the Vanderburgh County Drainage Ordinance, adopted November 28, 1994.

Pipe

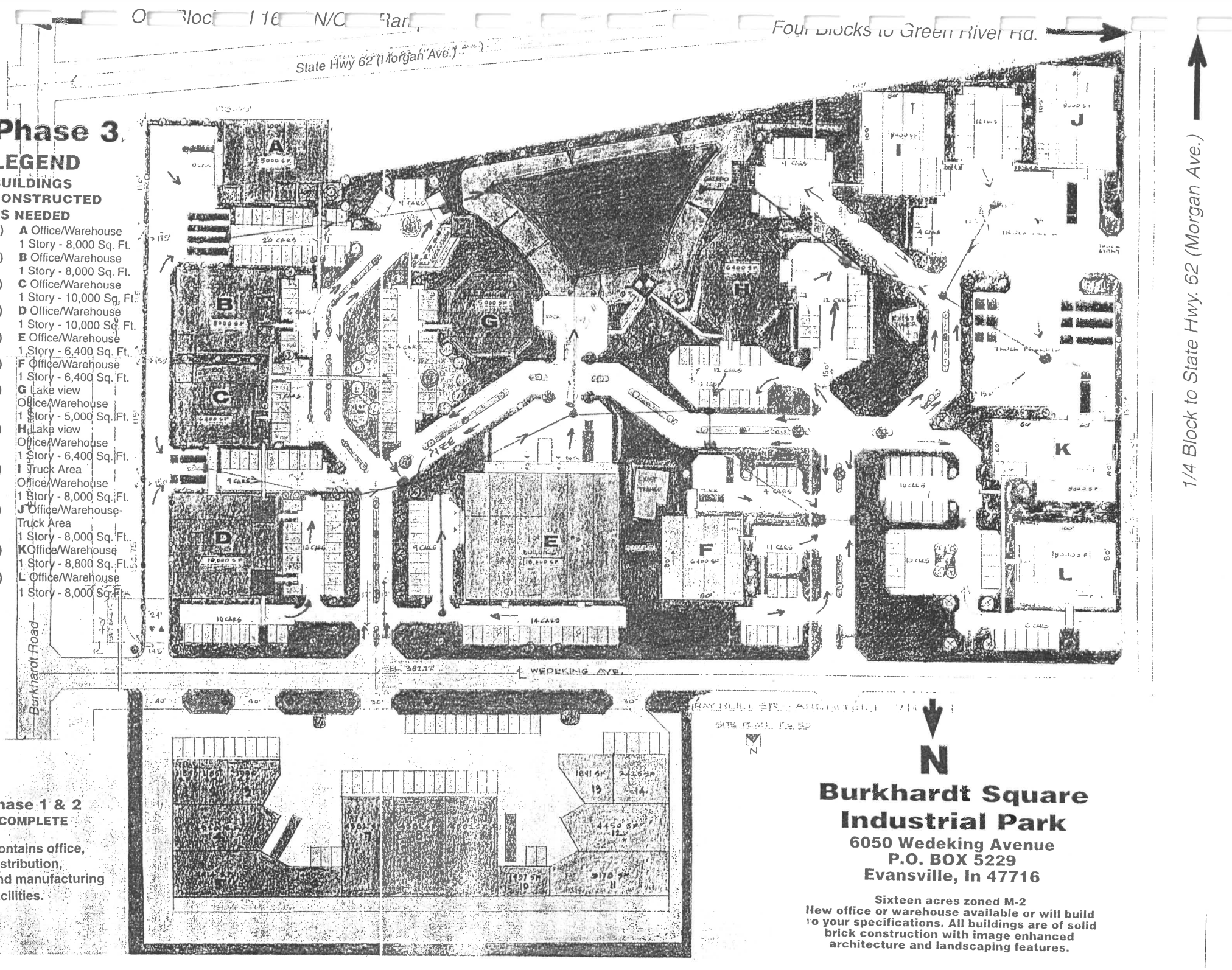
It is assumed that later development will add 2.00 acres of developed area into MH#1002 and 2.75 acres into MH#1006. Therefore, structures 1004, 1005, and 1009 have been oversized to act as a trunk line for future development. The outlet pipe shall be a 12" RCP running from the retention basin to the Crawford Brandeis Ditch directly.

Soils

Based on the most recent soil survey of Vanderburgh County, the site contains the following soil types: Evansville silt loam (Ev); Henshaw silt loam (He); McGary silt loam (Mr) and Zipp silty clay (Zp).

Flood Zone

According to FIRM community - panel number 180256 0050 B, dated March 19, 1982, a portion of the site is located within the designated 100 year flood zone. The 100 year flood elevation is 384 feet, M.S.L. The Flood Protection Grade (F.P.G,) has been determined by the Vanderburgh County Building Commissioner to be 386 feet, M.S.L.



Phase 3

LEGEND

BUILDINGS CONSTRUCTED AS NEEDED

(2) **A** Office/Warehouse
1 Story - 8,000 Sq. Ft.

(1) **B** Office/Warehouse
1 Story - 8,000 Sq. Ft.

(1) **C** Office/Warehouse
1 Story - 10,000 Sq. Ft.

(1) **D** Office/Warehouse
1 Story - 10,000 Sq. Ft.

(1) **E** Office/Warehouse
1 Story - 6,400 Sq. Ft.

(1) **F** Office/Warehouse
1 Story - 6,400 Sq. Ft.

(1) **G** Lake view
Office/Warehouse
1 Story - 5,000 Sq. Ft.

(1) **H** Lake view
Office/Warehouse
1 Story - 6,400 Sq. Ft.

(1) **I** Truck Area
Office/Warehouse
1 Story - 8,000 Sq. Ft.

(1) **J** Office/Warehouse-
Truck Area
1 Story - 8,000 Sq. Ft.

(1) **K** Office/Warehouse
1 Story - 8,800 Sq. Ft.

(1) **L** Office/Warehouse
1 Story - 8,000 Sq. Ft.

Phase 1 & 2
COMPLETE

Contains office, distribution, and manufacturing facilities.

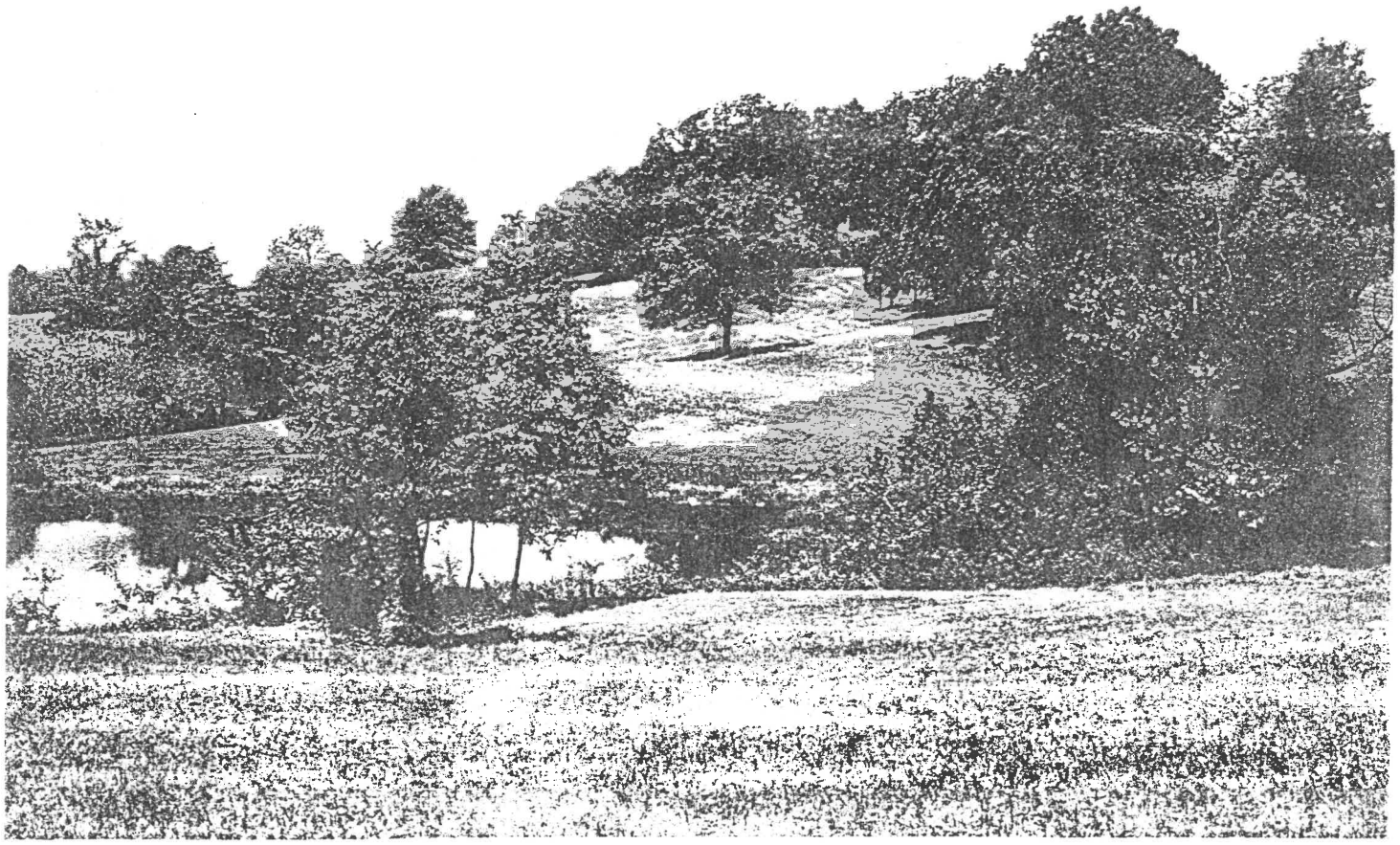
Burkhardt Square Industrial Park

6050 Wedeking Avenue
P.O. BOX 5229
Evansville, In 47716

Sixteen acres zoned M-2
New office or warehouse available or will build to your specifications. All buildings are of solid brick construction with image enhanced architecture and landscaping features.

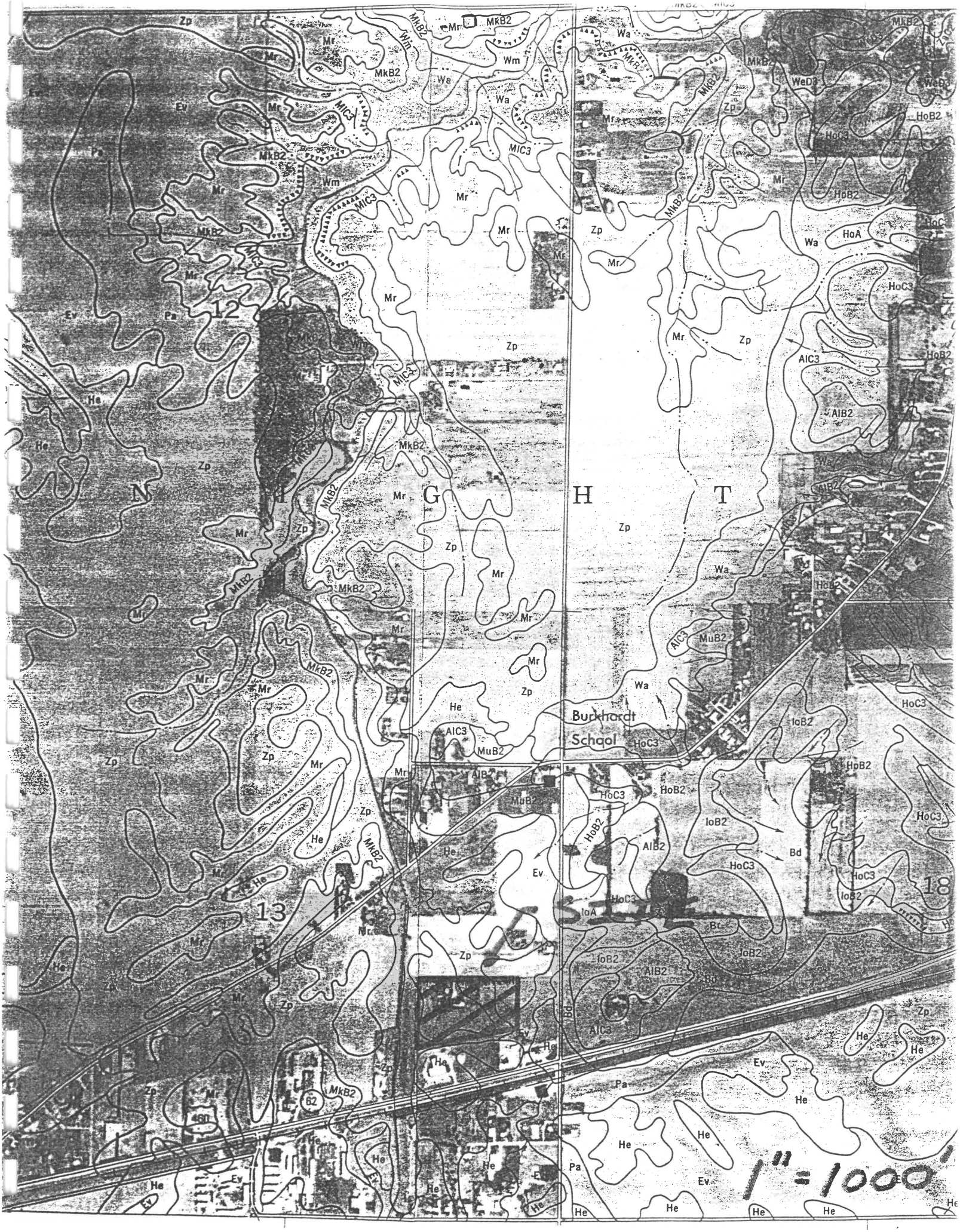
SOIL SURVEY OF

Vanderburgh County, Indiana



United States Department of Agriculture
Soil Conservation Service
In cooperation with

Purdue University Agricultural
Experiment Station


Burkhardt
School
1" = 1000'

GUIDE TO MAPPING UNITS

For a full description of a mapping unit, read both the description of the mapping unit and that of the soil series to which the mapping unit belongs. Other information is given in tables as follows:

Map symbol	Mapping unit	Described on page	Capability unit		Tree and shrub group
			Symbol	Page	Number
AlB2	Alford silt loam, 2 to 6 percent slopes, eroded	11	IIe-3	41	III
AlC2	Alford silt loam, 6 to 12 percent slopes, eroded	11	IIIe-3	43	III
AlC3	Alford silt loam, 6 to 12 percent slopes, severely eroded	12	IVe-3	45	III
AlD3	Alford silt loam, 12 to 18 percent slopes, severely eroded	12	VIe-1	46	III
Ba	Bartle silt loam	15	IIw-3	42	II
Bd	Birds silt loam	16	IIIw-10	44	I
Bo	Bonnie silt loam	16	IIIw-10	44	I
Br	Borrow pits	16	VIIe-3	46	IV
Ev	Evansville silt loam	17	IIw-1	41	I
Gn	Ginat silt loam	17	IIIw-12	45	I
Gu	Gullied land	17	VIIe-4	47	IV
He	Henshaw silt loam	19	IIw-2	42	II
HoA	Hosmer silt loam, 0 to 2 percent slopes	20	IIw-5	43	II
HoB2	Hosmer silt loam, 2 to 6 percent slopes, eroded	20	IIe-7	41	II
HoB3	Hosmer silt loam, 2 to 6 percent slopes, severely eroded	20	IIIe-7	43	II
HoC2	Hosmer silt loam, 6 to 12 percent slopes, eroded	20	IIIe-7	43	II
HoC3	Hosmer silt loam, 6 to 12 percent slopes, severely eroded	21	IVe-7	45	II
HoD3	Hosmer silt loam, 12 to 18 percent slopes, severely eroded	21	VIe-1	46	II
Ht	Huntington silty clay loam	22	I-2	41	III
Hu	Huntington fine sandy loam, sandy variant	22	I-2	41	III
IoA	Iona silt loam, 0 to 2 percent slopes	23	I-1	41	III
IoB2	Iona silt loam, 2 to 6 percent slopes, eroded	23	IIe-3	41	III
Iv	Iva silt loam	23	IIw-2	42	II
Ln	Lindside silty clay loam	24	I-2	41	III
Ma	Made land	24	VIIe-3	46	IV
MkB2	Markland silt loam, 2 to 6 percent slopes, eroded	24	IIIe-11	43	II
MkC2	Markland silt loam, 6 to 18 percent slopes, eroded	24	IVe-11	45	II
MlC3	Markland silty clay loam, 6 to 18 percent slopes, severely eroded	25	VIe-1	46	II
Mr	McGary silt loam	26	IIIw-6	44	II
MuA	Muren silt loam, 0 to 2 percent slopes	27	I-1	41	III
MuB2	Muren silt loam, 2 to 6 percent slopes, eroded	27	IIe-3	41	III
Nw	Newark silty clay loam	28	IIw-7	43	I
Pa	Patton silty clay loam	28	IIw-1	41	I
PrB	Princeton fine sandy loam, 2 to 6 percent slopes	28	IIe-11	41	III
Ra	Ragsdale silt loam	29	IIw-1	41	I
Rh	Rahm silty clay loam	29	IIw-7	43	I
Rs	Reesville silt loam	30	IIw-2	42	II
ScA	Sciotoville silt loam, 0 to 2 percent slopes	30	IIw-5	43	II
ScB2	Sciotoville silt loam, 2 to 6 percent slopes, eroded	31	IIe-7	41	II
St	Stendal silt loam	31	IIw-7	43	I
UnB2	Uniontown silt loam, 2 to 6 percent slopes, eroded	32	IIe-3	41	III
Wa	Wakeland silt loam	32	IIw-7	43	I
Wb	Weinbach silt loam	33	IIw-3	42	II
WeD2	Wellston silt loam, 12 to 18 percent slopes, eroded	34	IVe-5	45	III
WeD3	Wellston silt loam, 12 to 18 percent slopes, severely eroded	34	VIe-1	46	III
WeE2	Wellston silt loam, 18 to 25 percent slopes, eroded	34	VIe-1	46	III

Map symbol	Mapping unit	Described on page	Capability unit		Tree and shrub group
			Symbol	Page	Number
WeF	Wellston silt loam, 25 to 50 percent slopes	34	VIIe-1	46	III
WhA	Wheeling loam, 0 to 2 percent slopes	35	I-1	41	III
WhB2	Wheeling loam, 2 to 6 percent slopes, eroded	35	IIe-3	41	III
Wm	Wilbur silt loam	36	I-2	41	III
Wo	Woodmere silty clay loam	36	I-2	41	III
ZaC2	Zanesville silt loam, 6 to 12 percent slopes, eroded	37	IIIe-7	43	II
ZaC3	Zanesville silt loam, 6 to 12 percent slopes, severely eroded	37	IVe-7	45	II
ZaD2	Zanesville silt loam, 12 to 18 percent slopes, eroded	38	IVe-7	45	II
ZaD3	Zanesville silt loam, 12 to 18 percent slopes, severely eroded	38	VIe-1	46	II
Zp	Zipp silty clay	38	IIIw-2	44	I

TABLE 807

RAINFALL INTENSITY-DURATION-FREQUENCY TABLE FOR EVANSVILLE

INTENSITY IN INCHES PER HOUR

STORM DURATION	STORM RETURN PERIOD IN YEARS				
	5	10	25	50	100
5 MIN	6.063	6.625	7.208	7.936	8.469
10 MIN	4.863	5.380	5.925	6.616	7.126
15 MIN	4.029	4.515	5.033	5.697	6.194
30 MIN	2.837	3.226	3.646	4.194	4.608
60 MIN	1.549	1.819	2.078	2.412	2.663
2.0 HRS	1.053	1.230	1.400	1.620	1.785
3.0 HRS	0.774	0.899	1.019	1.175	1.291
4.0 HRS	0.632	0.736	0.836	0.965	1.062
5.0 HRS	0.524	0.606	0.684	0.785	0.861
6.0 HRS	0.453	0.522	0.589	0.676	0.741
7.0 HRS	0.399	0.459	0.516	0.591	0.647
8.0 HRS	0.358	0.412	0.463	0.530	0.581
9.0 HRS	0.323	0.370	0.415	0.472	0.516
10 HRS	0.297	0.339	0.379	0.431	0.470
11 HRS	0.276	0.314	0.351	0.399	0.435
12 HRS	0.259	0.296	0.331	0.376	0.410
13 HRS	0.245	0.280	0.314	0.357	0.390
14 HRS	0.233	0.267	0.299	0.341	0.372
15 HRS	0.220	0.252	0.281	0.320	0.349
16 HRS	0.209	0.238	0.266	0.302	0.329
17 HRS	0.198	0.225	0.251	0.284	0.310

TABLE 803

UNDEVELOPED RUNOFF COEFFICIENTS (C_u)

SURFACE TYPE:

WOODLAND, TURFED MEADOWS
ROUGH PASTURE, FALLOW BRUSH:

SLOPE:	
Less than 2%	C = 0.12
2% to 5%	C = 0.24
5+% to 10%	C = 0.36
Over 10%	C = 0.48

CULTIVATED FIELDS:

Less than 2%	C = 0.20
2% to 5%	C = 0.35
5+% to 10%	C = 0.50
Over 10%	C = 0.65

TABLE 804

DEVELOPED RUNOFF COEFFICIENTS (C_d)

SURFACE TYPE:

PAVEMENT, ROOFTOP
OTHER IMPERVIOUS SURFACES:

Less than 2%	C = 0.92
2% to 5%	C = 0.94
5+% to 10%	C = 0.96
Over 10%	C = 0.98

LAWNS WITH TURF:

Less than 2%	C = 0.15
2% to 5%	C = 0.25
5+% to 10%	C = 0.40
Over 10%	C = 0.55

ALL WATER SURFACES
BASINS, PONDS & LAKES:

C = 1.00

96-286-4 JEM

Total Acreage = 3.08 Ac. + 0.37 Ac. + 2.00 Ac. + 4.26 Ac. + 1.33 Ac.

= 11.04 Acres Water = 0.73 acres

Runoff coefficient

Developed (assume: 90% coverage)

Impervious < 2% ⇒ C = 0.92

Lawns < 2% ⇒ C = 0.15

Water C = 1.00

Un-developed

Rough Pasture < 2% ⇒ C = 0.12

Water C = 1.00

Weighted C

- Un-developed = $(10.31 \text{ acres}(0.12) + 0.73 \text{ acres}(1.00)) / 11.04 \text{ acres} = 0.18$

- Developed = $(9.28 \text{ acres}(0.92) + 1.03 \text{ acres}(0.15) + 0.73 \text{ acres}(1.00)) / 11.04 \text{ acres} = 0.85$

Time of Concentration

$t_c = K(LN S^{-0.5})^{0.467}$ Kerby Equation

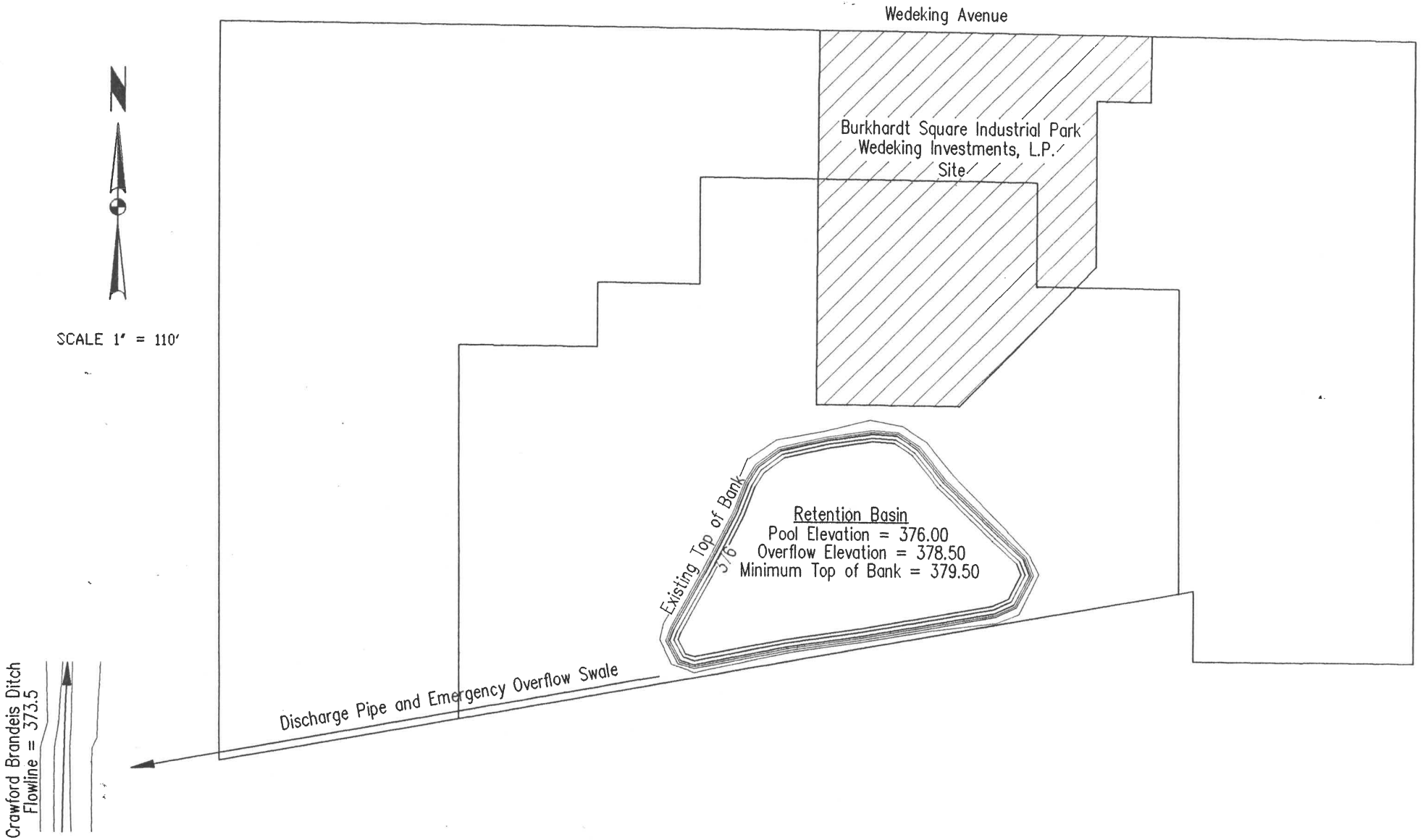
K = 0.83 N = 0.40 L = 1118' Fall = 2.3' slope = 0.0021

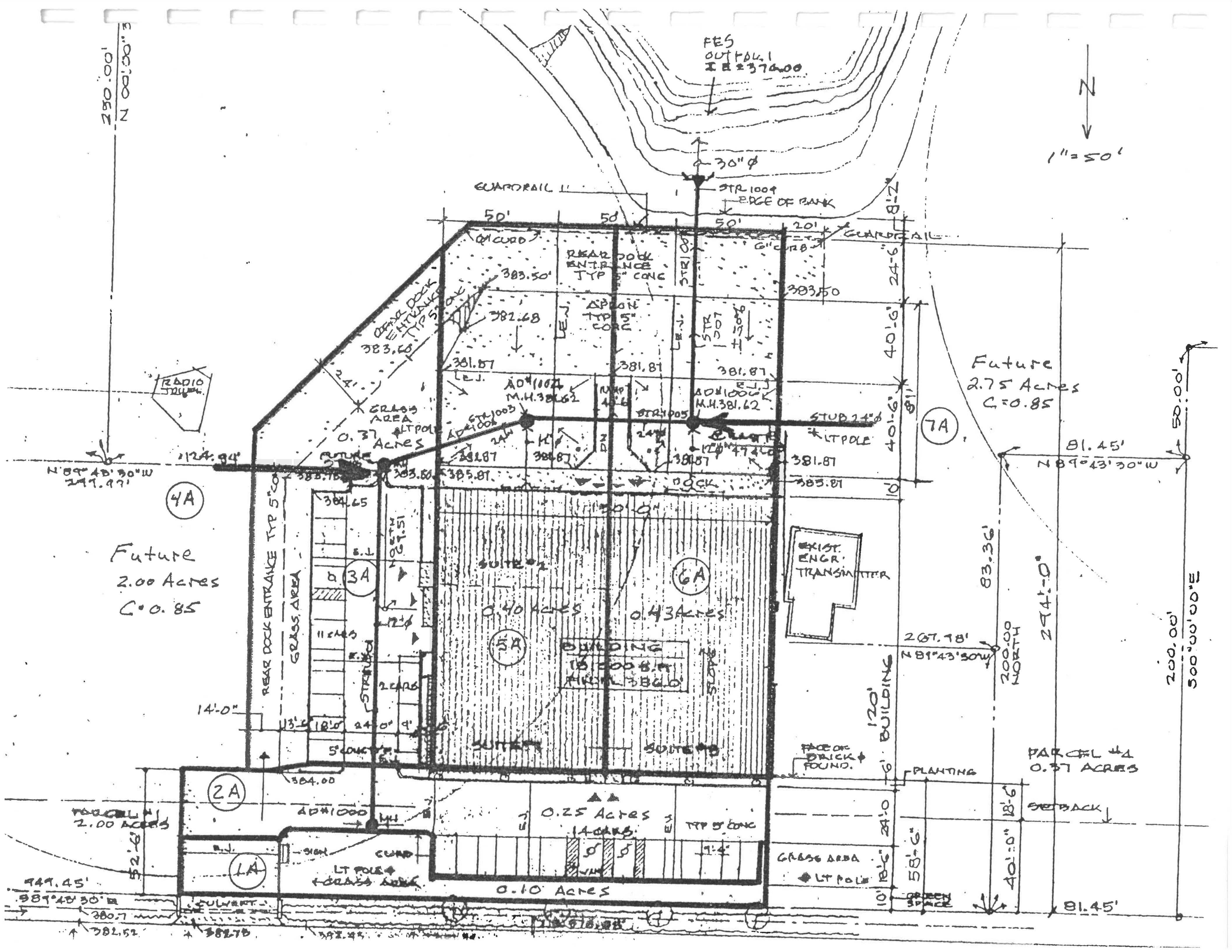
$t_c = 0.83(1118'(0.40)(0.0021)^{-.5})^{.467} = 60.8$ min.

$i_{10} = 1.81$ in

Flowrate

Undeveloped ⇒ $Q_{10} = CiA = 0.18(1.81 \text{ in/hr})(11.04 \text{ acres}) = 3.60$ cfs


Wedeking Avenue
N
SCALE 1" = 110'
Burkhardt Square Industrial Park
Wedeking Investments, L.P.
Site
Existing Top of Bank
3/6
Retention Basin
Pool Elevation = 376.00
Overflow Elevation = 378.50
Minimum Top of Bank = 379.50
Discharge Pipe and Emergency Overflow Swale
Crawford Brandeis Ditch
Flowline = 373.5



FES
OUTFALL 1
N
1"=50'
30"ø
STR 1004
EDGE OF BANK
GUARDRAIL
50'
20'
REAR DOCK ENTRANCE TYP 5" CONC
APRON TYP 5" CONC
383.50
382.68
381.87
381.81
AD#1007 M.H.381.62
AD#1006 M.H.381.62
STR 1005
STUB 24"ø
LT POLE
GRASS AREA
0.37 Acres
Future
2.75 Acres
C=0.85
7A
81.45'
N 89°43'30"W
DOCK
385.81
RADIO TOWER
4A
Future
2.00 Acres
C=0.85
3A
SUITE #1
5A
0.40 Acres
6A
0.43 Acres
BUILDING
EXIST. ENGR. TRANSMITTER
267.98'
N 89°43'30"W
200.00 NORTH
83.36'
294'-0"
200.00'
S00°00'00"E
120' BUILDING
REAR DOCK ENTRANCE TYP 5" CONC
GRASS AREA
14'-0"
2 CARS
11 CARS
FACE OF BRICK & FOUND.
PLANTING
PARCEL #4
0.37 ACRES
SETBACK
2A
384.00
AD#1000
PARCEL #1
2.00 ACRES
0.25 Acres
14 CARS
TYP 5" CONC
GRASS AREA
LT POLE
1A
LT POLE & GRASS AREA
CURB
0.10 Acres
GREEN SPACE
CULVERT
81.45'
949.45'
S89°43'30"E
382.52

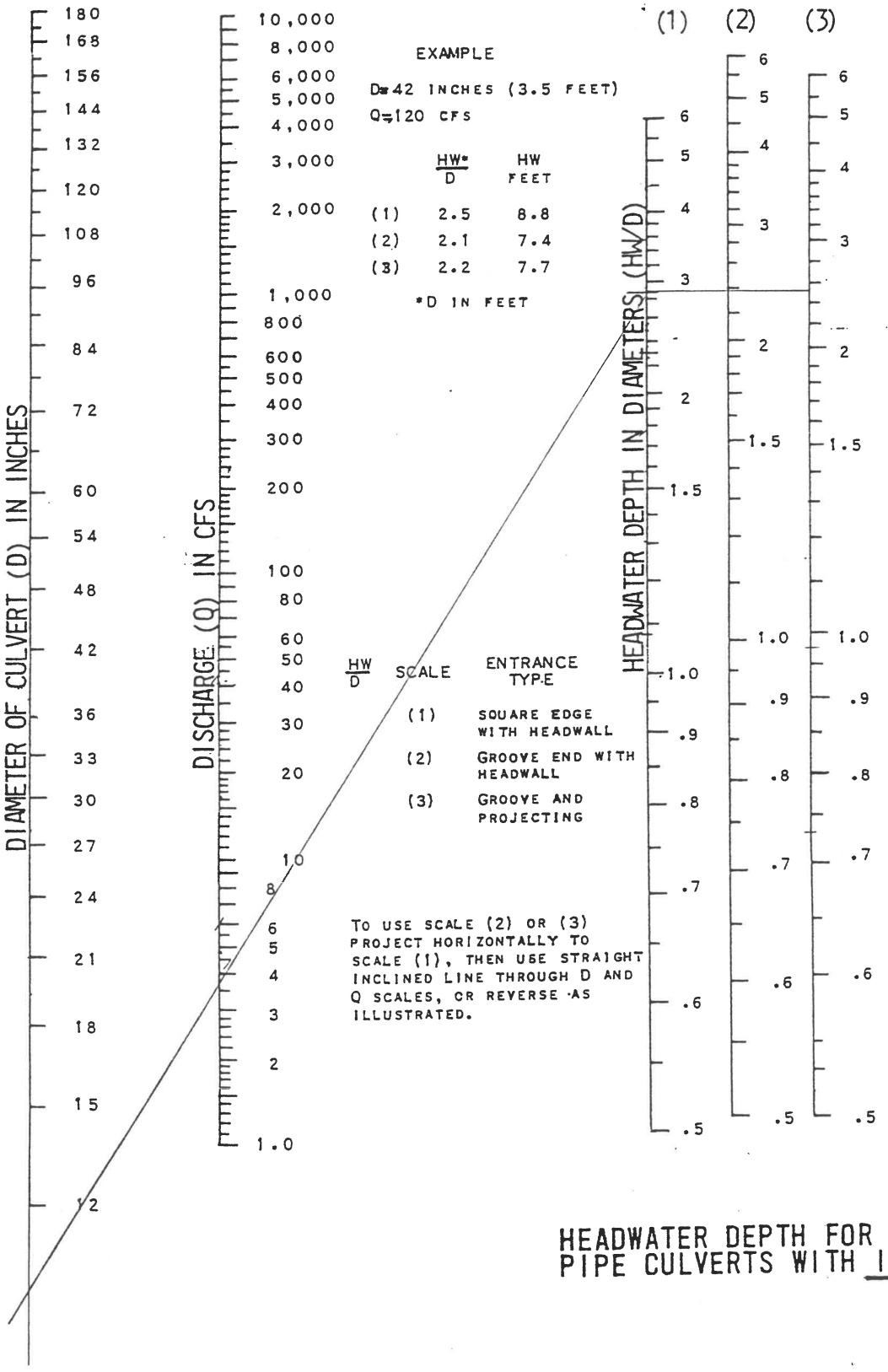
MORLEY AND ASSOCIATES INC.
STORM SEWER DESIGN SHEET - RATIONAL METHOD

PROJECT: Burkardt Square Industrial Park
OUR PROJECT # 96-286-4 DATE: 11/7/96
MANNINGS n 0.011 DESIGN PERIOD: 25 YEARS

Sub-Basin	UPSTREAM MANHOLE	STR. #	DOWNSTREAM MANHOLE	LENGTH (ft)	Cj	Aj (ac.)	CjAj	SUM CjAj	Tj (min)	Tcum (min)	I (in/hr)	Q (cfs)	PIPE DIA. (in)	PIPE SLOPE (ft/ft)	PIPE CAP. (cfs)	VELOCITY (ft/sec)	TRAVEL TIME (min)
2A	1000	1001	1002	151	0.92	0.25	0.23	0.23	5.00	5.00	7.208	1.66	12	0.0050	2.98	3.79	0.66
3A,4A	1002	1003	1004	70	0.85	2.37	2.01	2.24	5.00	5.66	7.038	15.80	24	0.0050	18.90	6.02	0.19
5A	1004	1005	1006	74	0.92	0.40	0.37	2.61	5.00	5.00	7.208	18.83	24	0.0050	18.90	6.02	0.20
7A	Future	Stub	1006	40	0.85	2.75	2.34	2.34	5.00	5.86	6.988	16.33	24	0.0050	18.90	6.02	0.11
6A	1006	1007	Outfall 1	108	0.92	0.43	0.40	5.35	5.00	5.97	6.960	37.20	30	0.0070	40.54	8.26	0.22

96-286-4

7-430.01K
JAN. 1971



HEADWATER DEPTH FOR CONCRETE PIPE CULVERTS WITH INLET CONTROL

FIG. 7-430.01F

Orifice Design Calculation

Q = Flowrate (cfs)
Cd = Discharge coefficient
g = Gravity (ft/sec^2)
h = Height of water above the centerline of the orifice (ft)
d = Diameter of orifice (ft)
A = Area of orifice (ft^2)

$$Q = Cd*A*(2*g*h)^{.5}$$

Q =	3.44
Cd =	0.80
g =	32.20
h =	2.00
d =	0.73
A =	0.42

VANDERBURGH COUNTY DRAINAGE BOARD
FORM 800

PROJECT: **Burkhardt Square Industrial Park - Phase 1** DETENTION FACILITY DESIGN RETURN PERIOD: 25 YRS
DESIGNER: MORLEY & ASSOC. 286-4 RELEASE RATE RETURN PERIOD: 10 YRS

WATERSHED AREA:	1.27	ACRES
TIME OF CONCENTRATION (UNDEVELOPED WATERSHED):	36	MINUTES
RAINFALL INTENSITY (Iu):	2.94	INCHES/HR
UNDEVELOPED RUNOFF COEFFICIENT (Cu):	0.18	
UNDEVELOPED RUNOFF RATE (O = Cu*Iu*A):	0.67	CFS
DEVELOPED RUNOFF COEFFICIENT (Cd):	0.85	

STORM DURATION Td (HRS)	RAINFALL INTENSITY Id (INCH/HR)	INFLOW RATE I(Td) (Cd*Id*A) (CFS)	OUTFLOW RATE O (Cu*Iu*A) (CFS)	STORAGE RATE I(Td)-O (CFS)	REQUIRED STORAGE Td)-O)*Td/12 (ACRE-FT)
0.08	7.208	7.78	0.50	7.28	0.051
0.17	5.925	6.40	0.50	5.90	0.082
0.25	5.033	5.43	0.50	4.93	0.103
0.33	4.571	4.93	0.50	4.43	0.123
0.42	4.108	4.43	0.50	3.93	0.137
0.50	3.646	3.94	0.50	3.44	0.143
0.58	3.385	3.65	0.50	3.15	0.153
0.67	3.123	3.37	0.50	2.87	0.160
0.75	2.862	3.09	0.50	2.59	0.162
0.83	2.601	2.81	0.50	2.31	0.160
0.92	2.339	2.53	0.50	2.03	0.155
1.00	2.078	2.24	0.50	1.74	0.145
1.25	1.909	2.06	0.50	1.56	0.163
1.50	1.739	1.88	0.50	1.38	0.172
1.75	1.570	1.69	0.50	1.19	0.174
2.00	1.400	1.51	0.50	1.01	0.169
2.50	1.210	1.31	0.50	0.81	0.168
3.00	1.019	1.10	0.50	0.60	0.150
4.00	0.836	0.90	0.50	0.40	0.134

PEAK STORAGE (ACRE/FT):	0.17
PEAK STORAGE (CUBIC FT):	7,587

VANDERBURGH COUNTY DRAINAGE BOARD
FORM 800

PROJECT: Burkhardt Square Industrial Park - Phase 1 DETENTION FACILITY DESIGN RETURN PERIOD: 100 YRS
DESIGNER: MORLEY & ASSOC. 286-4 RELEASE RATE RETURN PERIOD: 10 YRS

WATERSHED AREA:	1.27	ACRES
TIME OF CONCENTRATION (UNDEVELOPED WATERSHED):	36	MINUTES
RAINFALL INTENSITY (Iu):	2.94	INCHES/HR
UNDEVELOPED RUNOFF COEFFICIENT (Cu):	0.18	
UNDEVELOPED RUNOFF RATE (O = Cu*Iu*A):	0.67	CFS
DEVELOPED RUNOFF COEFFICIENT (Cd):	0.85	

STORM DURATION Td (HRS)	RAINFALL INTENSITY Id (INCH/HR)	INFLOW RATE I(Td) (Cd*Id*A) (CFS)	OUTFLOW RATE O (Cu*Iu*A) (CFS)	STORAGE RATE I(Td)-O (CFS)	REQUIRED STORAGE Td)-O)*Td/12 (ACRE-FT)
0.08	8.469	9.14	0.50	8.64	0.060
0.17	7.126	7.69	0.50	7.19	0.100
0.25	6.194	6.69	0.50	6.19	0.129
0.33	5.665	6.12	0.50	5.62	0.156
0.42	5.137	5.55	0.50	5.05	0.175
0.50	4.608	4.97	0.50	4.47	0.186
0.58	4.284	4.62	0.50	4.12	0.200
0.67	3.960	4.27	0.50	3.77	0.210
0.75	3.636	3.92	0.50	3.42	0.214
0.83	3.311	3.57	0.50	3.07	0.214
0.92	2.987	3.22	0.50	2.72	0.208
1.00	2.663	2.87	0.50	2.37	0.198
1.25	2.444	2.64	0.50	2.14	0.223
1.50	2.224	2.40	0.50	1.90	0.238
1.75	2.005	2.16	0.50	1.66	0.243
2.00	1.785	1.93	0.50	1.43	0.238
2.50	1.538	1.66	0.50	1.16	0.242
3.00	1.291	1.39	0.50	0.89	0.223
4.00	1.062	1.15	0.50	0.65	0.215

PEAK STORAGE (ACRE/FT):	0.24
PEAK STORAGE (CUBIC FT):	10,570

VANDERBURGH COUNTY DRAINAGE BOARD
FORM 800

PROJECT: **Burkhardt Square Industrial Park – Overall** DETENTION FACILITY DESIGN RETURN PERIOD: 25 YRS
DESIGNER: MORLEY & ASSOC. 286-4 RELEASE RATE RETURN PERIOD: 10 YRS

WATERSHED AREA:	11.04	ACRES
TIME OF CONCENTRATION (UNDEVELOPED WATERSHED):	60.8	MINUTES
RAINFALL INTENSITY (Iu):	1.811	INCHES/HR
UNDEVELOPED RUNOFF COEFFICIENT (Cu):	0.18	
UNDEVELOPED RUNOFF RATE (O = Cu*Iu*A):	3.60	CFS
DEVELOPED RUNOFF COEFFICIENT (Cd):	0.85	

STORM DURATION Td (HRS)	RAINFALL INTENSITY Id (INCH/HR)	INFLOW RATE I(Td) (Cd*Id*A) (CFS)	OUTFLOW RATE O (Cu*Iu*A) (CFS)	STORAGE RATE I(Td)-O (CFS)	REQUIRED STORAGE Td)-O)*Td/12 (ACRE-FT)
0.08	7.208	67.64	3.43	64.21	0.446
0.17	5.925	55.60	3.43	52.17	0.725
0.25	5.033	47.23	3.43	43.80	0.912
0.33	4.571	42.89	3.43	39.46	1.096
0.42	4.108	38.55	3.43	35.12	1.220
0.50	3.646	34.21	3.43	30.78	1.283
0.58	3.385	31.76	3.43	28.33	1.377
0.67	3.123	29.31	3.43	25.88	1.438
0.75	2.862	26.86	3.43	23.43	1.464
0.83	2.601	24.40	3.43	20.97	1.457
0.92	2.339	21.95	3.43	18.52	1.415
1.00	2.078	19.50	3.43	16.07	1.339
1.25	1.909	17.91	3.43	14.48	1.508
1.50	1.739	16.32	3.43	12.89	1.611
1.75	1.570	14.73	3.43	11.30	1.648
2.00	1.400	13.14	3.43	9.71	1.618
2.50	1.210	11.35	3.43	7.92	1.650
3.00	1.019	9.56	3.43	6.13	1.533
4.00	0.836	7.85	3.43	4.42	1.472

PEAK STORAGE (ACRE/FT):	1.65
PEAK STORAGE (CUBIC FT):	71,874

VANDERBURGH COUNTY DRAINAGE BOARD
FORM 800

PROJECT: Burkhardt Square Industrial Park - Overall DETENTION FACILITY DESIGN RETURN PERIOD: 100 YRS
DESIGNER: MORLEY & ASSOC. 286-4 RELEASE RATE RETURN PERIOD: 10 YRS

WATERSHED AREA:	11.04	ACRES
TIME OF CONCENTRATION (UNDEVELOPED WATERSHED):	60.8	MINUTES
RAINFALL INTENSITY (Iu):	1.811	INCHES/HR
UNDEVELOPED RUNOFF COEFFICIENT (Cu):	0.18	
UNDEVELOPED RUNOFF RATE (O = Cu*Iu*A):	3.60	CFS
DEVELOPED RUNOFF COEFFICIENT (Cd):	0.85	

STORM DURATION Td (HRS)	RAINFALL INTENSITY Id (INCH/HR)	INFLOW RATE I(Td) (Cd*Id*A) (CFS)	OUTFLOW RATE O (Cu*Iu*A) (CFS)	STORAGE RATE I(Td)-O (CFS)	REQUIRED STORAGE Td)-O)*Td/12 (ACRE-FT)
0.08	8.469	79.47	3.43	76.04	0.528
0.17	7.126	66.87	3.43	63.44	0.881
0.25	6.194	58.12	3.43	54.69	1.139
0.33	5.665	53.16	3.43	49.73	1.381
0.42	5.137	48.20	3.43	44.77	1.555
0.50	4.608	43.24	3.43	39.81	1.659
0.58	4.284	40.20	3.43	36.77	1.787
0.67	3.960	37.16	3.43	33.73	1.874
0.75	3.636	34.12	3.43	30.69	1.918
0.83	3.311	31.07	3.43	27.64	1.920
0.92	2.987	28.03	3.43	24.60	1.879
1.00	2.663	24.99	3.43	21.56	1.797
1.25	2.444	22.93	3.43	19.50	2.031
1.50	2.224	20.87	3.43	17.44	2.180
1.75	2.005	18.81	3.43	15.38	2.243
2.00	1.785	16.75	3.43	13.32	2.220
2.50	1.538	14.43	3.43	11.00	2.292
3.00	1.291	12.11	3.43	8.68	2.171
4.00	1.062	9.97	3.43	6.54	2.179

PEAK STORAGE (ACRE/FT):	2.29
PEAK STORAGE (CUBIC FT):	99,849