Baughman

TRANSMITTAL

TO:	FROM:
Scott Lindebak	Trevor Kurth
COMPANY:	DATE:
City of Wichita	9-20-06
ADDRESS:	PROJECT:
7th Floor City Hall	Golden Corral Addition
CITY/ STATE:	PROJECT NUMBER:
Wichita	

RE:
Golden Corral Addition Drainage Plan

VIA: DELIVERY

We are sending you ☒ ATTACHED ☐ UNDER SEPARATE COVER

☒ PLANS ☐ PRINTS ☐ SHOP DRAWINGS ☐ SAMPLES ☐ SPECS
☐ COPY OF LETTER ☐ CHANGE ORDER ☐ DISK ☐ OTHER

COPIES	DATE	DESCRIPTION
2	9-20-06	Golden Corral Addition Drain Plan

☐ URGENT ☒ FOR APPROVAL ☐ FOR YOUR INFO ☒ FOR REVIEW & COMMENT
☐ APPROVED AS NOTED ☐ REVISE AS NOTED ☐ REVISE AND RETURN
☐ AS REQUESTED ☐ PLEASE REPLY ☐ FOR BIDS DUE ☐

NOTES/ COMMENTS:

SIGNED:_____
Trevor R. Kurth, I.E.

Copy: file

ENGINEERING
SURVEYING
PLANNING
LANDSCAPE ARCHITECTURE

Baughman Company, P.A.
315 Ellis Street
Wichita, Kansas 67203
P 316.262.7271
F 316.262.0149

Baughman

DRAINAGE PLAN
GOLDEN CORRAL ADDITION
Wichita, Sedgwick County, Kansas

September 18, 2006

EXISTING CONDITIONS

Golden Corral Addition is located just west of the intersection of Kellogg Avenue and Greenwich Road. The site is approximately 4.8 acres and contains an existing pond and drainage ditch which runs along/near the east property line. The pond currently discharges into a 3 barrel 6'x3' RCBC under Kellogg Avenue.

The site drains a 54" RCP from the east as well as properties from the north and west. A site visit was performed to delineate all offsite flow to the site. A basin was delineated and consisted of approximately 51 acres draining from the east into the existing 54" RCP. In addition, there is currently 4.7 acres from the north (movie theatre and parking lot), 18 acres from the west (open space with heavy brush), and a 24" CMP outfall from a north pond. The flow from the north pond was calculated with the outfall pipe having 5' head.

DEVELOPED CONDITIONS

The site will consist of a commercial development with a structure and associated parking. The existing pond will be reconfigured to better serve the offsite drainage as well as the proposed site. A portion of the pond will be filled in and will be replaced with at least equal storage capacity. Internal storm sewer will be utilized to drain the developed site into the detention pond. The existing box culvert will be utilized under Kellogg Avenue.

DETENTION

The pond was modeled as existing condition and proposed conditions. In both cases, the above mentioned offsite flow remained the same. Under developed conditions, the peak flow from the site was limited to equal the existing conditions for the 100-yr storm event. The developed 2-yr and 5-yr storm events yielded a lower pond outflow than existing conditions. The water surface elevations for the 2, 5, and 100-yr events remained the same for existing to developed conditions.

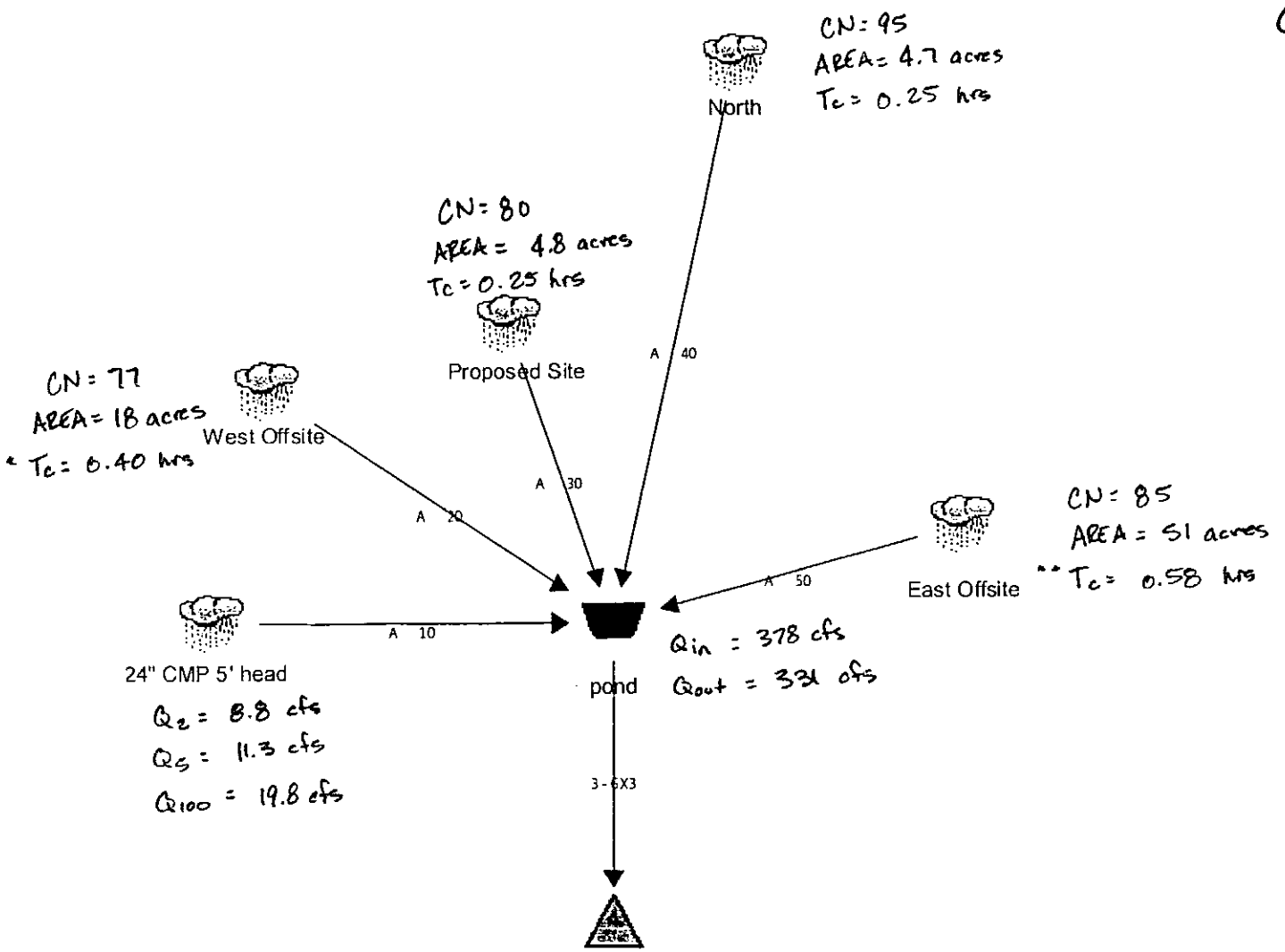
NOTES

There is no FEMA mapped floodplain or floodway on this property as of September 18, 2006. The 'Spring Branch Master Drainage Plan', prepared for the City of Wichita by PEC, December 2004, portrays a fully developed flow of 530 cfs through a cross section just south of Kellogg Avenue and the above referenced box culvert. This flow, as well as a flow of 1859 cfs added downstream, yielded a base flood elevation of a 1347.4. This elevation is also the elevation our models yielded for a 100-yr water surface elevation for the existing/proposed pond. In our pond modeling, a free outfall was assumed. It is our assumption that this basin will drain well before the larger basin to the west meets its peak flow.

ENGINEERING
SURVEYING
PLANNING
LANDSCAPE ARCHITECTURE

Baughman Company, P.A.
315 Ellis
Wichita, Kansas 67211
P 316-262-7271 F 316-262-0149

EXISTING CONDITIONS



Q_2 = 8.8 cfs
Q_5 = 11.3 cfs
Q_{100} = 19.8 cfs

Q_{100} = 331 cfs

Capacity at 5 ft/sec = 270 cfs
6 ft/sec = 324 cfs
7 ft/sec = 378 cfs

*Tc = 0.40 hrs
Hyd L = 2300'
Slope = 0.01 ft/ft

Unpaved
Vel = 1.61 ft/sec

**Tc = 0.58 hrs
Hyd L = 3000'
Slope = 0.005 ft/ft

Paved
Vel = 1.44 ft/sec

Table of Contents

MASTER DESIGN STORM SUMMARY

Default Network Design Storm File, ID SEDGWICK.RNQ Sedgwick24

Return Event	Total Depth in	Rainfall Type	RNF File	RNF ID
2y24h	3.5000	Synthetic Curve	SCSTYPES	TypeII 24hr
5y24h	4.5000	Synthetic Curve	SCSTYPES	TypeII 24hr
100y24	7.9000	Synthetic Curve	SCSTYPES	TypeII 24hr

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
24" CMP 5' HEAD	AREA	2	.705		12.0500	8.75		
24" CMP 5' HEAD	AREA	5	.913		12.0500	11.26		
24" CMP 5' HEAD	AREA	100	1.621		12.0500	19.80		
*BOX	JCT	2	13.225		12.3000	107.40		
*BOX	JCT	5	19.114		12.2500	158.74		
*BOX	JCT	100	40.463		12.2500	330.61		
EAST OFFSITE	AREA	2	8.568		12.2000	78.62		
EAST OFFSITE	AREA	5	12.362		12.2000	113.61		
EAST OFFSITE	AREA	100	25.993		12.2000	234.87		
NORTH	AREA	2	1.151		12.0500	15.54		
NORTH	AREA	5	1.537		12.0500	20.40		
NORTH	AREA	100	2.860		12.0500	36.71		
POND IN	POND	2	13.225		12.1500	123.59		
POND IN	POND	5	19.114		12.1500	179.87		
POND IN	POND	100	40.463		12.1500	377.90		
POND OUT	POND	2	13.225		12.3000	107.40	1345.40	1.536
POND OUT	POND	5	19.114		12.2500	158.74	1345.94	2.089
POND OUT	POND	100	40.463		12.2500	330.61	1347.43	4.045

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
PROPOSED SITE	AREA	2	.655		12.0500	9.50		
PROPOSED SITE	AREA	5	.985		12.0500	14.31		
PROPOSED SITE	AREA	100	2.213		12.0500	31.42		
WEST OFFSITE	AREA	2	2.147		12.1500	24.36		
WEST OFFSITE	AREA	5	3.317		12.1500	38.13		
WEST OFFSITE	AREA	100	7.777		12.1000	89.55		

Type.... Design Storms
Name.... Sedgwick24

File.... C:\HAESTAD\PPKW\RAINFALL\SEDGWICK.RNQ
Title...

JOB TITLE NOT SPECIFIED
Click Project Summary on the File Menu to enter title

DESIGN STORMS SUMMARY

Design Storm File,ID = SEDGWICK.RNQ Sedgwick24

Storm Tag Name = 2y24h

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 2 yr
Total Rainfall Depth= 3.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 5y24h
Description: Sedgwick County 5-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 5 yr
Total Rainfall Depth= 4.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 100y24
Description: Sedgwick County 100-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 7.9000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Type.... Design Storms
Name.... Sedgwick24
File.... C:\HAESTAD\PPKW\RAINFALL\SEDGWICK.RNQ
Storm... TypeII 24hr Tag: 2y24h

DESIGN STORMS SUMMARY

Design Storm File,ID = SEDGWICK.RNQ Sedgwick24

Storm Tag Name = 2y24h

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 2 yr
Total Rainfall Depth= 3.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 5y24h
Description: Sedgwick County 5-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 5 yr
Total Rainfall Depth= 4.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 100y24
Description: Sedgwick County 100-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 7.9000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Type.... Tc Calcs
Name.... EAST OFFSITE

File.... F:\HYDRO\PROJECTS\GOLDEN CORRAL ADDITION\PONDPACK\GOLDEN-CORRAL-EXIST.PPW

::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: TR-55 Shallow

Hydraulic Length 3000.00 ft
Slope .005000 ft/ft
Paved

Avg.Velocity 1.44 ft/sec

Segment #1 Time: .5797 hrs

==========
Total Tc: .5797 hrs
==========

Tc Equations used...

==== SCS TR-55 Shallow Concentrated Flow ==========

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved surface:
V = 20.3282 * (Sf**0.5)

Tc = (Lf / V) / (3600sec/hr)

Where: V = Velocity, ft/sec
Sf = Slope, ft/ft
Tc = Time of concentration, hrs
Lf = Flow length, ft

Type.... Tc Calcs
Name.... WEST OFFSITE

File.... F:\HYDRO\PROJECTS\GOLDEN CORRAL ADDITION\PONDPACK\GOLDEN-CORRAL-EXIST.PPW

::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: TR-55 Shallow

Hydraulic Length 2300.00 ft
Slope .010000 ft/ft
Unpaved

Avg.Velocity 1.61 ft/sec

Segment #1 Time: .3960 hrs

==========
Total Tc: .3960 hrs
==========

File.... F:\HYDRO\PROJECTS\GOLDEN CORRAL ADDITION\PONDPACK\GOLDEN-CORRAL-EXIST.PPW

Tc Equations used...

==== SCS TR-55 Shallow Concentrated Flow ================================

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved surface:
V = 20.3282 * (Sf**0.5)

Tc = (Lf / V) / (3600sec/hr)

Where: V = Velocity, ft/sec
Sf = Slope, ft/ft
Tc = Time of concentration, hrs
Lf = Flow length, ft

Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
1343.60	-----	.7400	.0000	.000	.000
1344.00	-----	.7700	2.2649	.302	.302
1345.00	-----	.9300	2.5462	.849	1.151
1346.00	-----	1.0700	2.9975	.999	2.150
1347.00	-----	1.3900	3.6795	1.227	3.376
1348.00	-----	2.3000	5.4780	1.826	5.202

POND VOLUME EQUATIONS

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

File.... F:\HYDRO\PROJECTS\GOLDEN CORRAL ADDITION\PONDPACK\GOLDEN-CORRAL-EXIST.PPW

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 1343.60 ft
Increment = .50 ft
Max. Elev.= 1348.00 ft

****
OUTLET CONNECTIVITY
****

---> Forward Flow Only (UpStream to DnStream)
<--- Reverse Flow Only (DnStream to UpStream)
<---> Forward and Reverse Both Allowed

Structure	No.		Outfall	E1, ft	E2, ft
Culvert-Box	BX	--->	TW	1343.600	1348.000
TW SETUP, DS Channel					

File.... F:\HYDRO\PROJECTS\GOLDEN CORRAL ADDITION\PONDPACK\GOLDEN-CORRAL-EXIST.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID	=	BX	
Structure Type	=	Culvert-Box	
No. Barrels	=	3	
Barrel Height	=	3.00	ft
Barrel Width	=	6.00	ft
Upstream Invert	=	1343.60	ft
Dnstream Invert	=	1340.00	ft
Horiz. Length	=	160.00	ft
Barrel Length	=	160.04	ft
Barrel Slope	=	.02250	ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0130	
Ke	=	.5000	(forward entrance loss)
Kb	=	.004925	(per ft of full flow)
Kr	=	.5000	(reverse entrance loss)
HW Convergence	=	.001	+/- ft

INLET CONTROL DATA...

Equation form	=	1	
Inlet Control K	=	.0260	
Inlet Control M	=	1.0000	
Inlet Control c	=	.03850	
Inlet Control Y	=	.8100	
T1 ratio (HW/D)	=	1.167	
T2 ratio (HW/D)	=	1.415	
Slope Factor	=	-.500	

Use unsubmerged inlet control Form 1 equ. below T1 elev.
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control, interpolate between flows at T1 & T2...
At T1 Elev = 1347.10 ft ---> Flow = 109.12 cfs
At T2 Elev = 1347.84 ft ---> Flow = 124.71 cfs

OUTLET STRUCTURE INPUT DATA

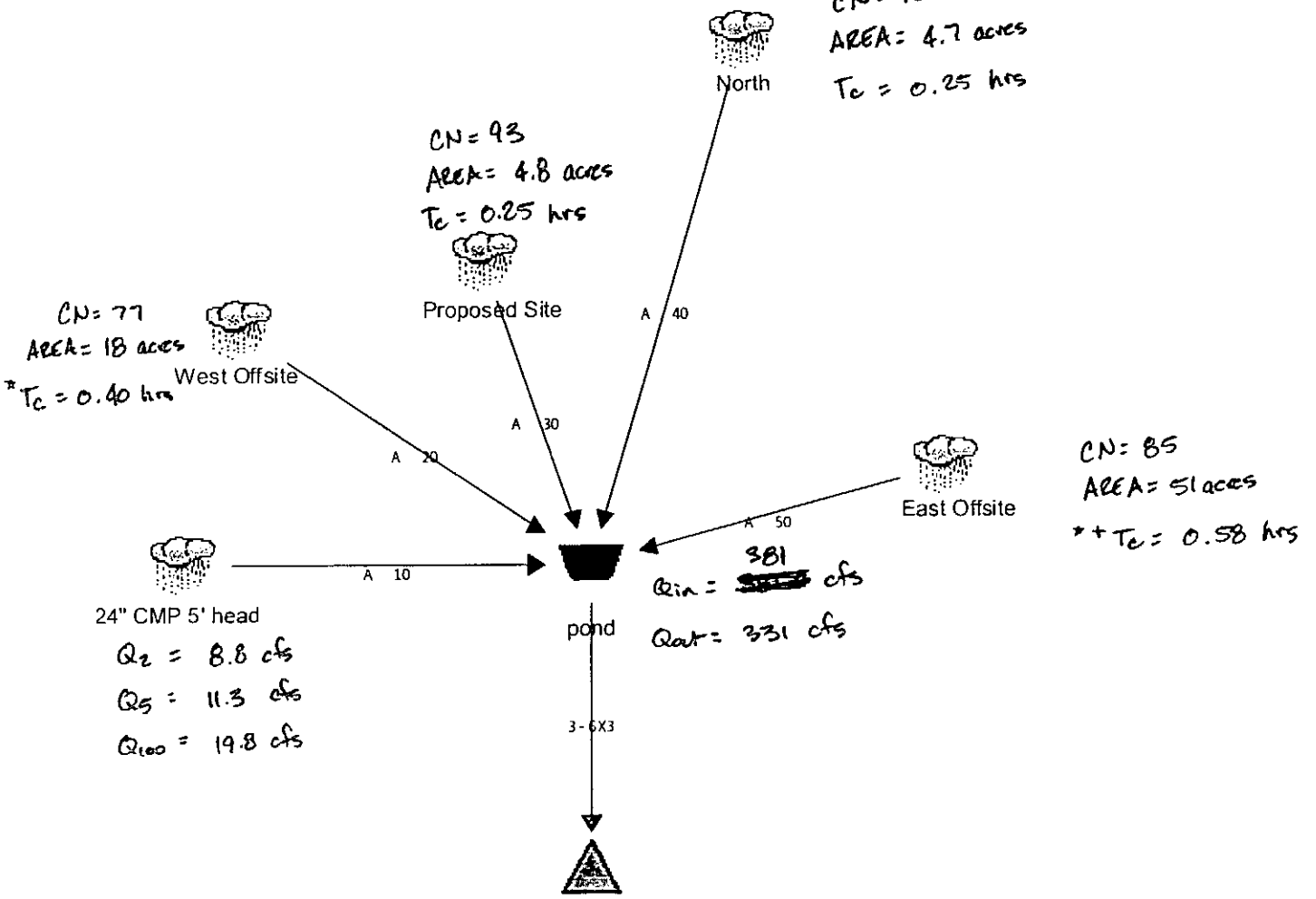
Structure ID = TW
Structure Type = TW SETUP, DS Channel

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...
Maximum Iterations= 30
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .10 cfs
Max. Q tolerance = .10 cfs

Index of Starting Page Numbers for ID Names

DEVELOPED CONDITIONS



* Tc = 0.40 hrs
Hyd L = 2300'
Slope = 0.01 ft/ft
Unpaved
Vel = 1.61 ft/sec

** Tc = 0.58 hrs
Hyd L = 3000'
Slope = 0.005 ft/sec
Paved
Vel = 1.44 ft/sec

Table of Contents

MASTER DESIGN STORM SUMMARY

Default Network Design Storm File, ID SEDGWICK.RNQ Sedgwick24

Return Event	Total Depth in	Rainfall Type	RNF File	RNF ID
2y24h	3.5000	Synthetic Curve	SCSTYPES	TypeII 24hr
5y24h	4.5000	Synthetic Curve	SCSTYPES	TypeII 24hr
100y24	7.9000	Synthetic Curve	SCSTYPES	TypeII 24hr

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
24" CMP 5' HEAD	AREA	2	.705		12.0500	8.75		
24" CMP 5' HEAD	AREA	5	.913		12.0500	11.26		
24" CMP 5' HEAD	AREA	100	1.621		12.0500	19.80		
*BOX	JCT	2	13.665		12.3000	106.07		
*BOX	JCT	5	19.612		12.3000	155.71		
*BOX	JCT	100	41.076		12.2500	331.22		
EAST OFFSITE	AREA	2	8.568		12.2000	78.62		
EAST OFFSITE	AREA	5	12.362		12.2000	113.61		
EAST OFFSITE	AREA	100	25.993		12.2000	234.87		
NORTH	AREA	2	1.151		12.0500	15.54		
NORTH	AREA	5	1.537		12.0500	20.40		
NORTH	AREA	100	2.860		12.0500	36.71		
POND IN	POND	2	13.665		12.1500	127.28		
POND IN	POND	5	19.613		12.1500	183.64		
POND IN	POND	100	41.076		12.1500	381.38		
POND OUT	POND	2	13.665		12.3000	106.07	1345.39	1.895
POND OUT	POND	5	19.612		12.3000	155.71	1345.91	2.550
POND OUT	POND	100	41.076		12.2500	331.22	1347.43	4.715

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
PROPOSED SITE	AREA	2	1.094		12.0500	15.15		
PROPOSED SITE	AREA	5	1.483		12.0500	20.17		
PROPOSED SITE	AREA	100	2.825		12.0500	37.00		
WEST OFFSITE	AREA	2	2.147		12.1500	24.36		
WEST OFFSITE	AREA	5	3.317		12.1500	38.13		
WEST OFFSITE	AREA	100	7.777		12.1000	89.55		

JOB TITLE NOT SPECIFIED
Click Project Summary on the File Menu to enter title

DESIGN STORMS SUMMARY

Design Storm File,ID = SEDGWICK.RNQ Sedgwick24

Storm Tag Name = 2y24h

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 2 yr
Total Rainfall Depth= 3.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 5y24h
Description: Sedgwick County 5-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 5 yr
Total Rainfall Depth= 4.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 100y24
Description: Sedgwick County 100-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 7.9000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

DESIGN STORMS SUMMARY

Design Storm File,ID = SEDGWICK.RNQ Sedgwick24

Storm Tag Name = 2y24h

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 2 yr
Total Rainfall Depth= 3.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 5y24h
Description: Sedgwick County 5-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 5 yr
Total Rainfall Depth= 4.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 100y24
Description: Sedgwick County 100-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 7.9000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

File.... F:\HYDRO\PROJECTS\GOLDEN CORRAL ADDITION\PONDPACK\GOLDEN-CORRAL.PPW

::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: TR-55 Shallow

Hydraulic Length 3000.00 ft
Slope .005000 ft/ft
Paved

Avg.Velocity 1.44 ft/sec

Segment #1 Time: .5797 hrs

==========
Total Tc: .5797 hrs
==========

File.... F:\HYDRO\PROJECTS\GOLDEN CORRAL ADDITION\PONDPACK\GOLDEN-CORRAL.PPW

Tc Equations used...

==== SCS TR-55 Shallow Concentrated Flow ==========

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved surface:
V = 20.3282 * (Sf**0.5)

Tc = (Lf / V) / (3600sec/hr)

Where: V = Velocity, ft/sec
Sf = Slope, ft/ft
Tc = Time of concentration, hrs
Lf = Flow length, ft

File.... F:\HYDRO\PROJECTS\GOLDEN CORRAL ADDITION\PONDPACK\GOLDEN-CORRAL.PPW

::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: TR-55 Shallow

Hydraulic Length 2300.00 ft
Slope .010000 ft/ft
Unpaved

Avg.Velocity 1.61 ft/sec

Segment #1 Time: .3960 hrs

==========
Total Tc: .3960 hrs
==========

File.... F:\HYDRO\PROJECTS\GOLDEN CORRAL ADDITION\PONDPACK\GOLDEN-CORRAL.PPW

Tc Equations used...

==== SCS TR-55 Shallow Concentrated Flow ==========

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved surface:
V = 20.3282 * (Sf**0.5)

Tc = (Lf / V) / (3600sec/hr)

Where: V = Velocity, ft/sec
Sf = Slope, ft/ft
Tc = Time of concentration, hrs
Lf = Flow length, ft

File.... F:\HYDRO\PROJECTS\GOLDEN CORRAL ADDITION\PONDPACK\GOLDEN-CORRAL.PPW

Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
1343.60	-----	.9700	.0000	.000	.000
1344.00	-----	.9900	2.9399	.392	.392
1345.00	-----	1.1200	3.1630	1.054	1.446
1346.00	-----	1.3200	3.6559	1.219	2.665
1347.00	-----	1.4800	4.1977	1.399	4.064
1348.00	-----	1.6100	4.6336	1.545	5.609

POND VOLUME EQUATIONS

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 1343.60 ft
Increment = .50 ft
Max. Elev.= 1348.00 ft

****
OUTLET CONNECTIVITY
****

---> Forward Flow Only (UpStream to DnStream)
<--- Reverse Flow Only (DnStream to UpStream)
<---> Forward and Reverse Both Allowed

Structure	No.		Outfall	E1, ft	E2, ft
Culvert-Box	BX	--->	TW	1343.600	1348.000
TW SETUP, DS Channel					

OUTLET STRUCTURE INPUT DATA

Structure ID	=	BX	
Structure Type	=	Culvert-Box	
No. Barrels	=	3	
Barrel Height	=	3.00	ft
Barrel Width	=	6.00	ft
Upstream Invert	=	1343.60	ft
Dnstream Invert	=	1340.00	ft
Horiz. Length	=	160.00	ft
Barrel Length	=	160.04	ft
Barrel Slope	=	.02250	ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0130	
Ke	=	.5000	(forward entrance loss)
Kb	=	.004925	(per ft of full flow)
Kr	=	.5000	(reverse entrance loss)
HW Convergence	=	.001	+/- ft

INLET CONTROL DATA...

Equation form	=	1	
Inlet Control K	=	.0260	
Inlet Control M	=	1.0000	
Inlet Control c	=	.03850	
Inlet Control Y	=	.8100	
T1 ratio (HW/D)	=	1.167	
T2 ratio (HW/D)	=	1.415	
Slope Factor	=	-.500	

Use unsubmerged inlet control Form 1 equ. below T1 elev.
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control, interpolate between flows at T1 & T2...
At T1 Elev = 1347.10 ft ---> Flow = 109.12 cfs
At T2 Elev = 1347.84 ft ---> Flow = 124.71 cfs

File.... F:\HYDRO\PROJECTS\GOLDEN CORRAL ADDITION\PONDPACK\GOLDEN-CORRAL.PPW

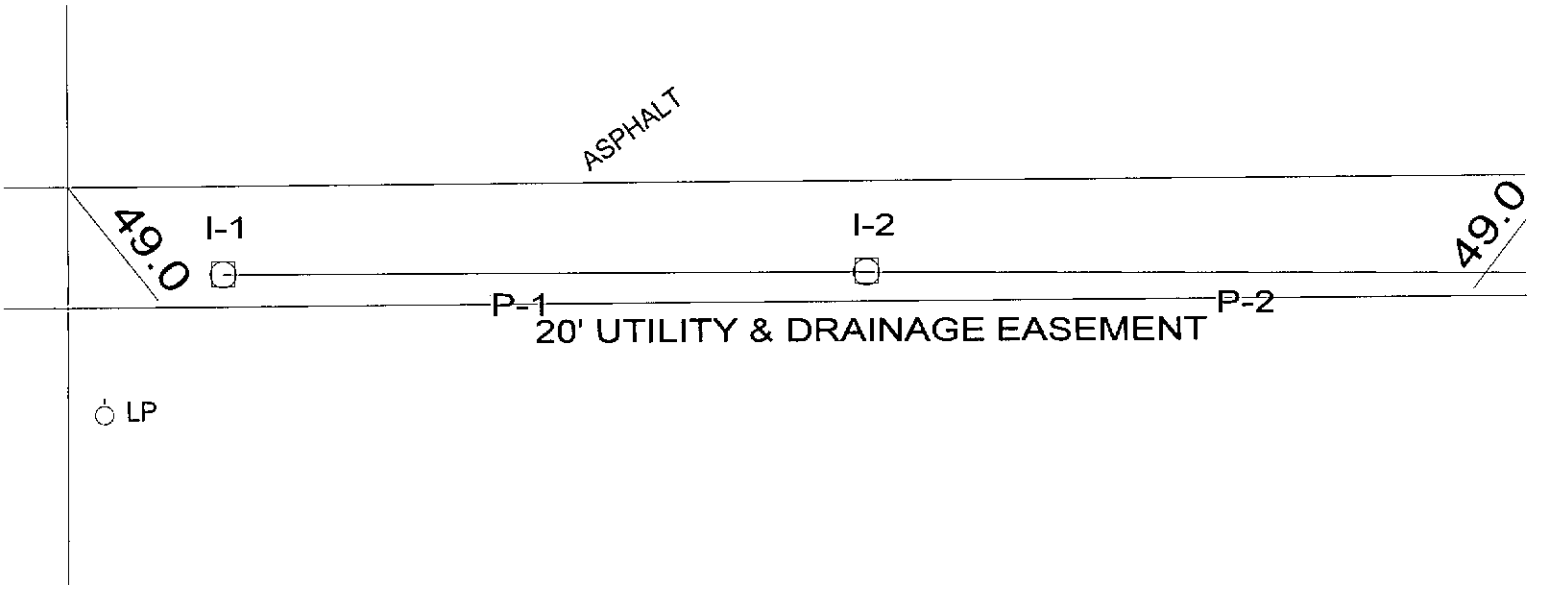
OUTLET STRUCTURE INPUT DATA

Structure ID = TW
Structure Type = TW SETUP, DS Channel

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...
Maximum Iterations= 30
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .10 cfs
Max. Q tolerance = .10 cfs

Index of Starting Page Numbers for ID Names



Project Title: Golden Corral Addition
f:\...\golden corral addition\stormcad\sws2.stm
09/19/06 01:47:52 PM

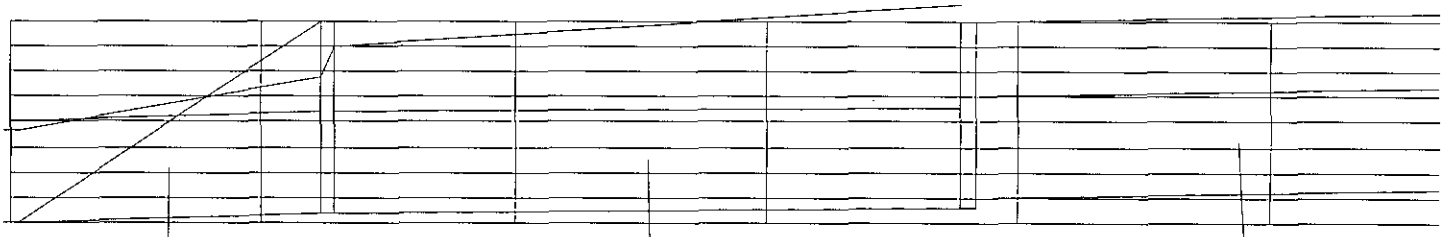
Baughman Company, P.A.
 37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

Outlet: Outlet
Rim: 45.00 ft
Sump: 45.00 ft

Inlet: I-3
Rim: 49.00 ft
Sump: 45.20 ft

Inlet: I-2
Rim: 49.00 ft
Sump: 45.30 ft

Ir
R
S



0+00 0+50 1+00 1+50 2+00 2+50

Station ft

Pipe: P-3
Up Invert: 45.20 ft
Dn Invert: 45.00 ft
Length: 63.00 ft
Size: 24 inch

Pipe: P-2
Up Invert: 45.30 ft
Dn Invert: 45.20 ft
Length: 127.00 ft
Size: 24 inch

Pipe: P-1
Up Invert: 45.
Dn Invert: 45.
Length: 107.0
Size: 24 inch