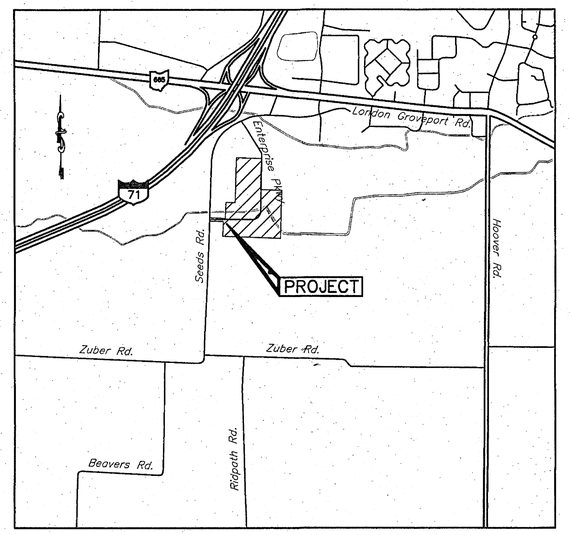
TIGERPOLY MANUFACTURING, INC.
DEVELOPMENT PLAN

6231 ENTERPRISE PKWY

GROVE CITY, FRANKLIN COUNTY, OHIO

2015



VICINITY MAP
Not to Scale

SITE DATA:

Parcel ID: 040-010335-00
Certified Street Address: 6231 Enterprise Pkwy.
Existing Zoning District: IND-1

Total Lot Area: 26.32 Acres
Total Building Area: 6.04 Acres = 23% Lot Coverage

Total Affected Disturbed Area: 4.65 Ac.

Height of Proposed Building Addition: 36 Ft.-0 In.
Area of Proposed Building Addition: 73,931 S.F.
Use of Proposed Building Addition: Manufacturing

CERTIFICATION:

I hereby certify that this drawing was prepared from an actual field survey of the premises, and that said drawing exhibits the topographic features within the limits specified by the owner and/or his agent.
The location of underground utilities shown hereon have been obtained by field location and/or available records. It is believed that they are essentially correct, but the engineer does not guarantee their accuracy or completeness.

This Certification was made by me on this 26 day of May, 20 15.

Robert A. Beiter, Ohio Professional Engineer No. 71768

STATE OF OHIO
ROBERT ALAN BEITER
E-71768
REGISTERED PROFESSIONAL ENGINEER

Flood Note:

The subject building addition lies within the limits of Flood Zone "X" as shown on the Flood Insurance Rate Map for Franklin County, Ohio.
Map Numbers:
39049C0404K, June 17, 2008

CITY ADMINISTRATOR — DATE

SERVICE DIRECTOR — DATE

REVIEW FOR THE CITY OF GROVE CITY — DATE

JACKSON TOWNSHIP FIRE DEPARTMENT — DATE

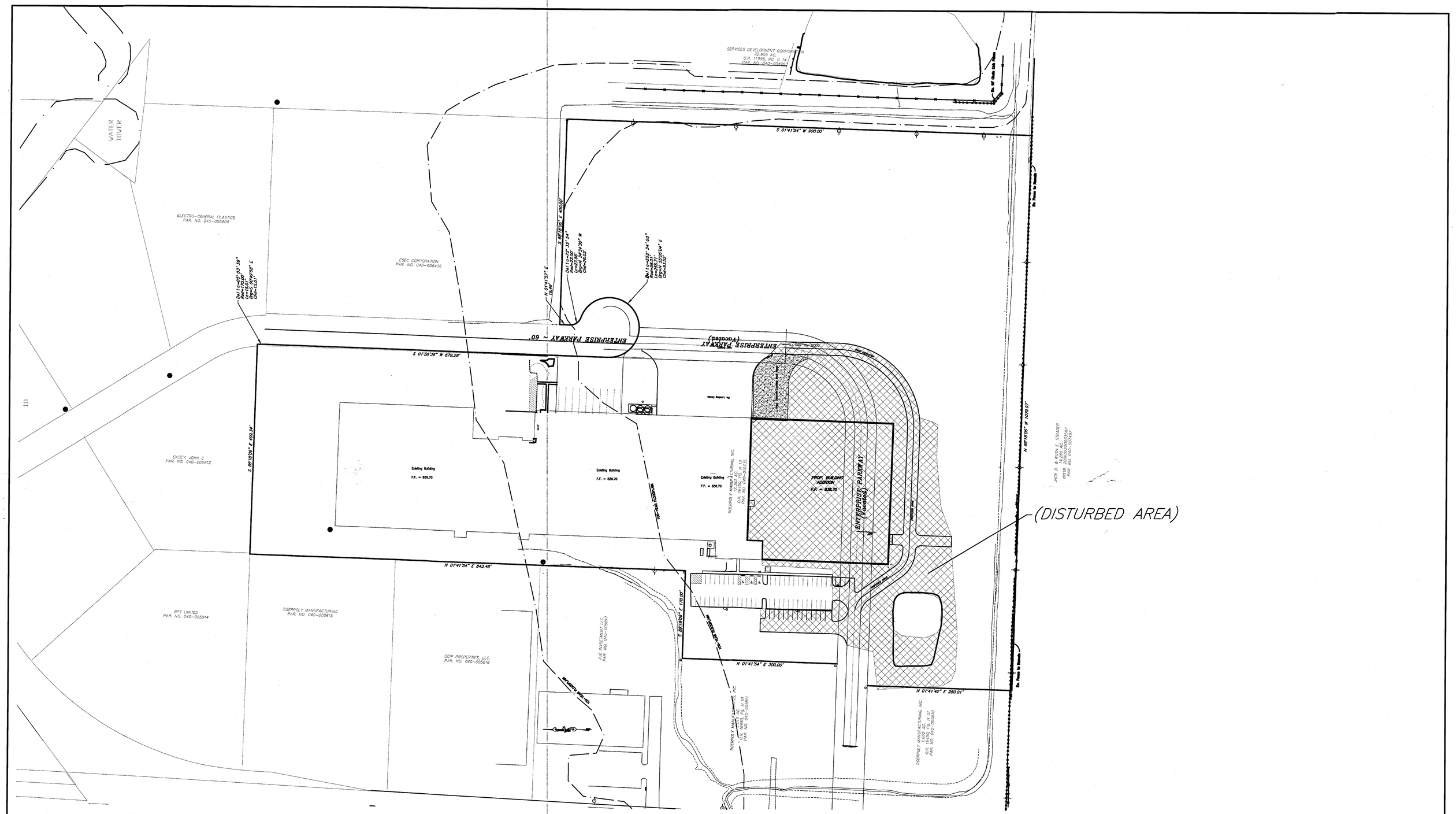
RECEIVED
MAY 28 2015
GC PLANNING COMMISSION

BEFORE YOU DIG
OHIO UTILITIES PROTECTION SERVICE
Call 800-362-2764 TOLL FREE www.oups.org

OWNER/DEVELOPER
TIGERPOLY MANUFACTURING, INC.
6231 ENTERPRISE PWWY
GROVE CITY, FRANKLIN COUNTY, OHIO
PHONE: (614) 991-6246
EMAIL: TROGERS@TIGERPOLY.COM

PLAN PREPARED BY:
CROSSING WATERS ENGINEERING, INC.
P.O. Box 27
260 S. Main St., Suite A
Sugar Grove, Ohio 43155
(740) 746-0250
www.crossingwaterseng.com

NO.	REVISION	BY	DATE	RECORD DRAWING
				BY:
				DATE:
				CONTRACTOR:
				CONSTRUCTED:
				NOTES:



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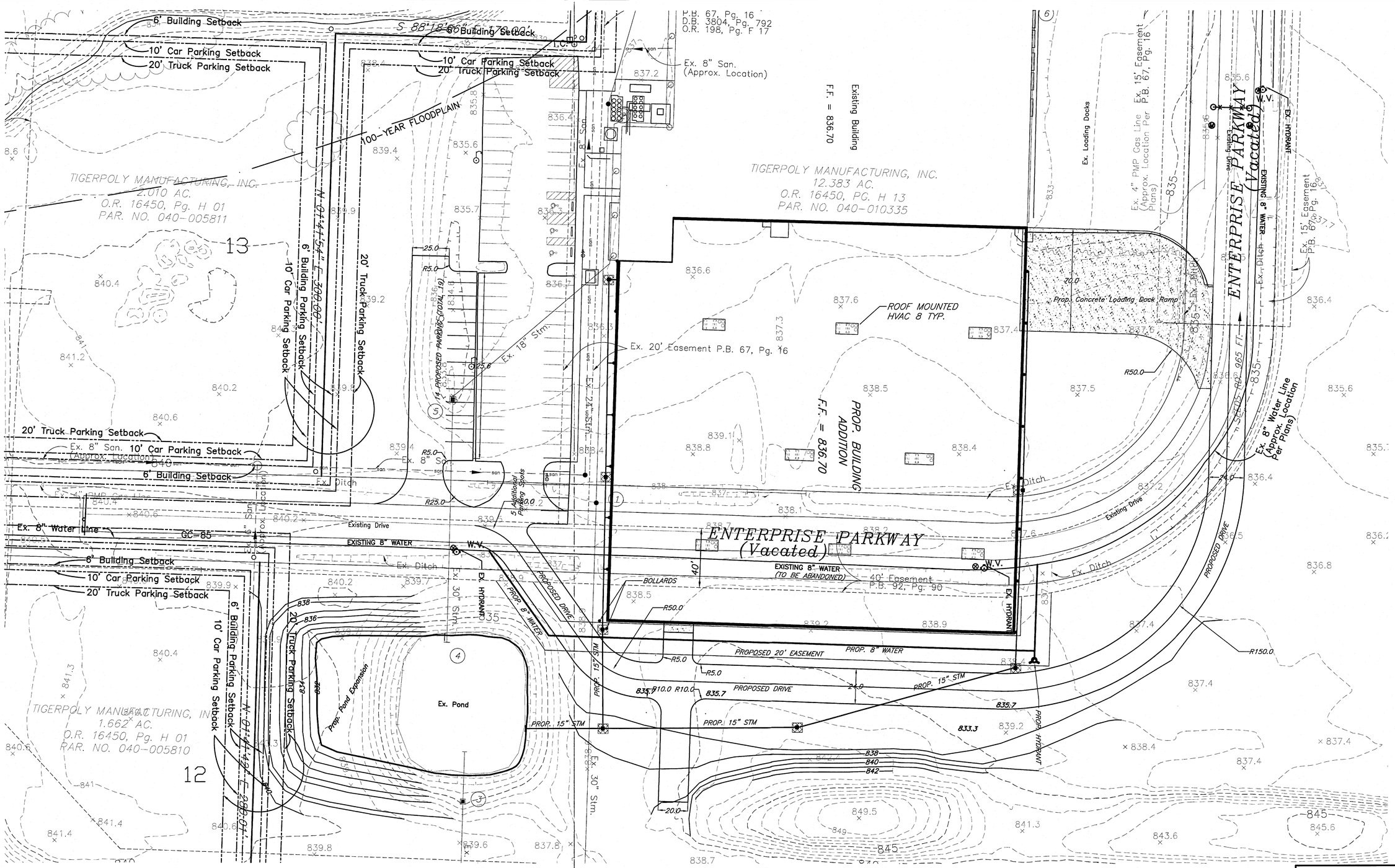
TIGERPOLY MANUFACTURING, INC.
6231 ENTERPRISE PKWY
GROVE CITY, FRANKLIN COUNTY, OHIO

OVERALL SITE LAYOUT PLAN

CONTRACT		JOB NO.:	CW-15004
DRAWN BY:	RAB	SCALE:	1" = 80'
CHECKED BY:	JAS	DATE:	05/20/2015
APPROVED BY:	RAB	SHEET:	2 OF 4



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				NOTES:

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TIGERPOLY MANUFACTURING, INC.
6231 ENTERPRISE PKWY
GROVE CITY, FRANKLIN COUNTY, OHIO

UTILITY/GRADING PLAN

CONTRACT		JOB NO.:	CW-15004
DRAWN BY:	RAB	SCALE:	1" = 30'
CHECKED BY:	JAS	DATE:	05/20/2015
APPROVED BY:	RAB	SHEET:	3 OF 4

GENERAL PLANTING NOTES:

1. ALL PLANTS SHALL MEET OR EXCEED STANDARDS SET IN THE USA STANDARD FPR NURSERY STOCK.
2. ALL PLANTING OPERATIONS SHALL ADHERE TO THE AMERICAN ASSOCIATION OF NURSERYMEN STANDARDS.
3. PLANT LOCATIONS AND BEDS SHALL BE LOCATED BY CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. CONTRACTOR SHALL SEED OR SOD ALL AREAS DISTURBED DURING CONSTRUCTION.
4. PLANTING BEDS AND SHRUB MASSES SHALL HAVE A MINIMUM 3" DEEP SHREDDED HARDWOOD BARK MULCH. MULCH HEDGES IN A CONTINUOUS BED.
5. ALL PLANTING BEDS TO BE TILLED TO A MINIMUM DEPTH OF 12".
6. ALL PLANTING BEDS TO BE FERTILIZED WITH 10-10-10 OR APPROVED EQUAL.
7. ALL DIMENSIONS ARE TAKEN TO FACE OF CURB OR BUILDING WHERE APPLICABLE UNLESS OTHERWISE NOTED.
8. CONTRACTOR SHALL REFER QUESTIONS ON MATERIALS, FINISHES, LABOR, AND/OR PERFORMANCE STANDARDS NOT SPECIFIED HEREIN TO THE ENGINEER.
9. THE LOCATION OF THE EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITES.
10. CONTRACTOR SHALL PROVIDE TEMPORARY BARRIERS AT LIMITS OF CONSTRUCTION TO ASSURE PUBLIC SAFETY DURING CONSTRUCTION.
11. ALL AREAS DISTURBED BY CONSTRUCTION ARE TO BE RESTORED, FINE GRADED AND SEEDED/SODDED.
12. ALL EXISTING PLANT MATERIAL SHOWN ON THIS PLAN IS TO BE PRESERVED UNLESS SPECIFICALLY NOTED OTHERWISE.

LANDSCAPE REQUIREMENTS:

BUILDING:

REQUIRED:
1 TREE PER 60 L.F. OF BUILDING
800 L.F. / 60 L.F. = 14 TREES REQUIRED

PROVIDED:
14 ~ 2" CALIPER TREES

PARKING LOT:

REQUIRED:
ISLAND TREES EVERY 15 SPACES (1 PER ISLAND)

PROVIDED:
5 ISLAND ~ 2" CALIPER TREES

EQUIPMENT SCREENING:

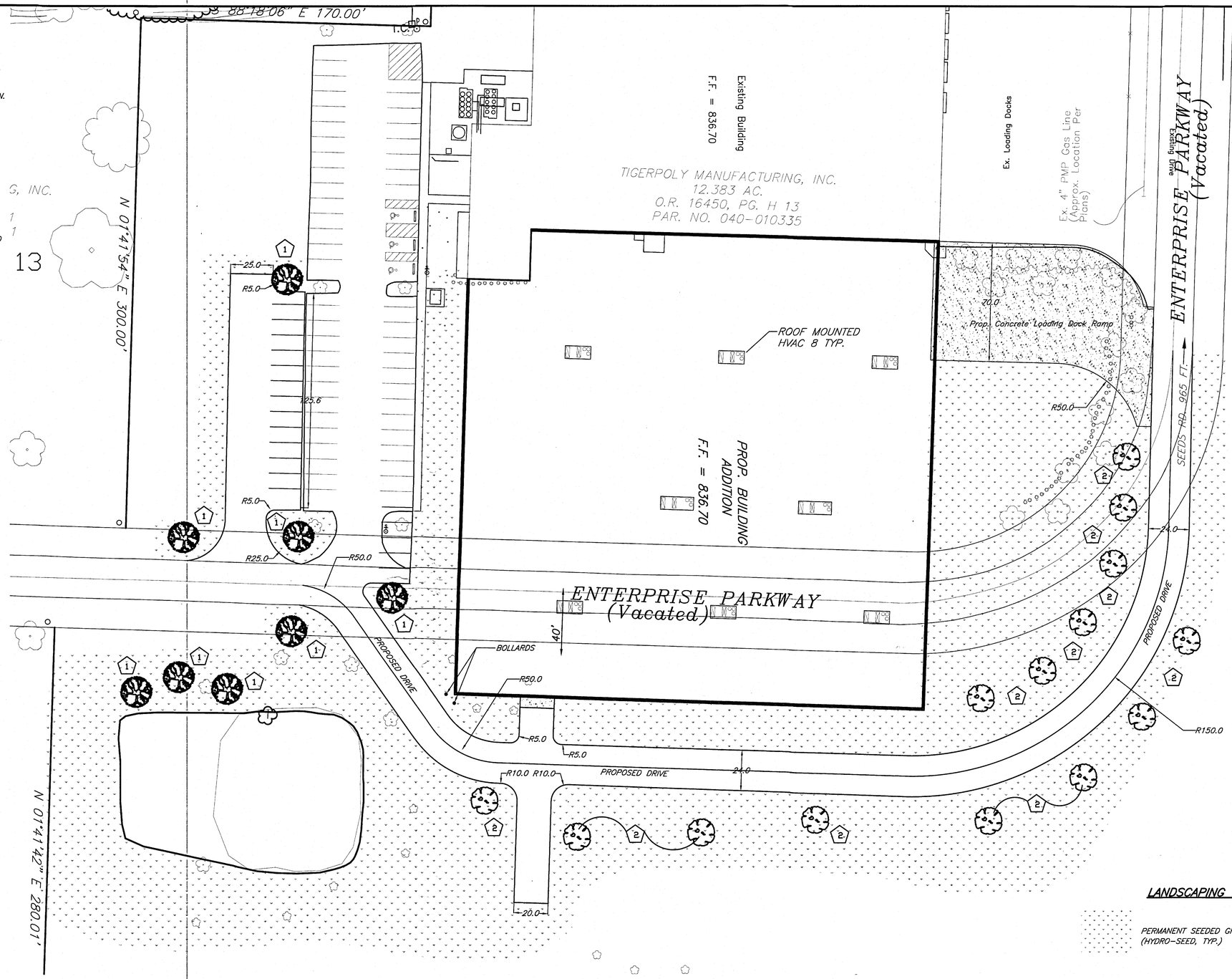
REQUIRED:
8' HIGH 100% OPAQUE FENCE AND PLANTINGS 36" HIGH AT 5'-0" O.C.

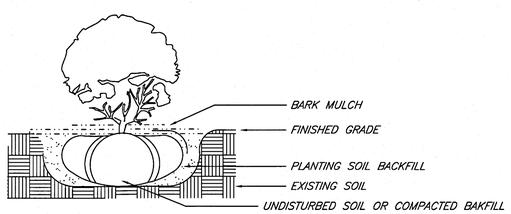
PROVIDED:
N/A

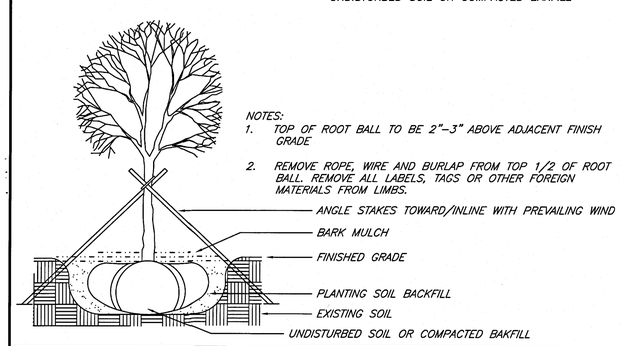
RETENTION POND:

REQUIRED:
1 SHADE TREE PER 100 L.F. OF POND
210 L.F./100 = 3 TREES REQUIRED

PROVIDED:
3 - 2" CAL TREES PROVIDED







NOTES:
1. TOP OF ROOT BALL TO BE 2"-3" ABOVE ADJACENT FINISH GRADE
2. REMOVE ROPE, WIRE AND BURLAP FROM TOP 1/2 OF ROOT BALL. REMOVE ALL LABELS, TAGS OR OTHER FOREIGN MATERIALS FROM LIMBS.

LANDSCAPING LEGEND

PERMANENT SEEDED GREENSPACE AREAS (HYDRO-SEED, TYP.)

PLANT LISTING

KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	COND.	REMARKS
1	8	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LITTLELEAF LIDEN	2" CAL.	B & B	NONE
2	14	BETULA NIGRA	RIVER BIRCH	10-12" HGT.	B & B	MULTI STEM

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LANDSCAPING PLAN

CONTRACT		JOB NO.:	CW-15004
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CHECKED BY:	JAS	DATE:	05/20/2015
APPROVED BY:	RAB	SHEET:	4 OF 4

RECEIVED
MAY 28 2015
GC PLANNING COMMISSION

Project: Tigerpoly Manufacturing
Location: 6231 Enterprise Pkwy.

IMPERVIOUS AREA CALCULATOR

PROJECT NUMBER: CW-15004
DATE: 05/20/2015

CALCULATED BY: RAB

Tabulation of Impervious Areas

All square footages are based on actual identification of entities within the plan, digitally provided from Autodesk - AutoCAD Civil 3D (Version 2010)

Item	Area (sq-ft)	Area (Ac.)
Prop. Building	73931.00	1.697
Parking/Sidewalk/Driveway	23653.08	0.543
	97584.08	2.240 Acres

Crossing Waters Engineering, Inc.
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Printed: 5/26/2015

Project: Tigerpoly Manufacturing
Location: 6231 Enterprise Pkwy.
Grove City, Ohio

CRITICAL STORM CALCULATIONS

PROJECT NUMBER: CW-15004
DATE: 05/20/2015

CALCULATED BY: RAB

PEAK VOLUME - UNDEVELOPED 1 YEAR STORM

	AREA(ACRES)		RUNOFF COEFF.							
GRASSY FIELD	4.09	x	0.37	=	1.5133	CA	x	I	=	Q
IMPERVIOUS AREA	0.56	x	0.94	=	0.5264					
						2.0397	x	2.2	=	4.48734
	4.65	x	C	=	2.0397					
			C	=	0.438645					

PEAK VOLUME - DEVELOPED 1 YEAR STORM

	AREA(ACRES)		RUNOFF COEFF.							
GRASSY FIELD	2.41	x	0.37	=	0.8917	CA	x	i	=	Q
IMPERVIOUS AREA	2.24	x	0.94	=	2.1056					
						2.9973	x	2.2	=	6.59406
	4.65	x	C	=	2.9973					
			C	=	0.644581					

PERCENT CHANGE IN RUNOFF

6.59406 - 4.48734 = 2.10672

$\frac{2.10672}{4.48734}$ = 0.469 = **46.9%**

PERCENT INCREASE IS EQUAL TO OR GREATER THAN:	AND LESS THAN:	CRITICAL STORM FOR RUNOFF LIMITATION WILL BE: (YEARS)
0%	10%	1
10%	20%	2
20%	50%	5
50%	100%	10
100%	250%	25
250%	500%	50
500%	-	100

THEREFORE, BASED ON INFORMATION FOUND IN THE MORPC STORMWATER MANUAL, THE CRITICAL STORM IS A **5** **YEAR STORM**

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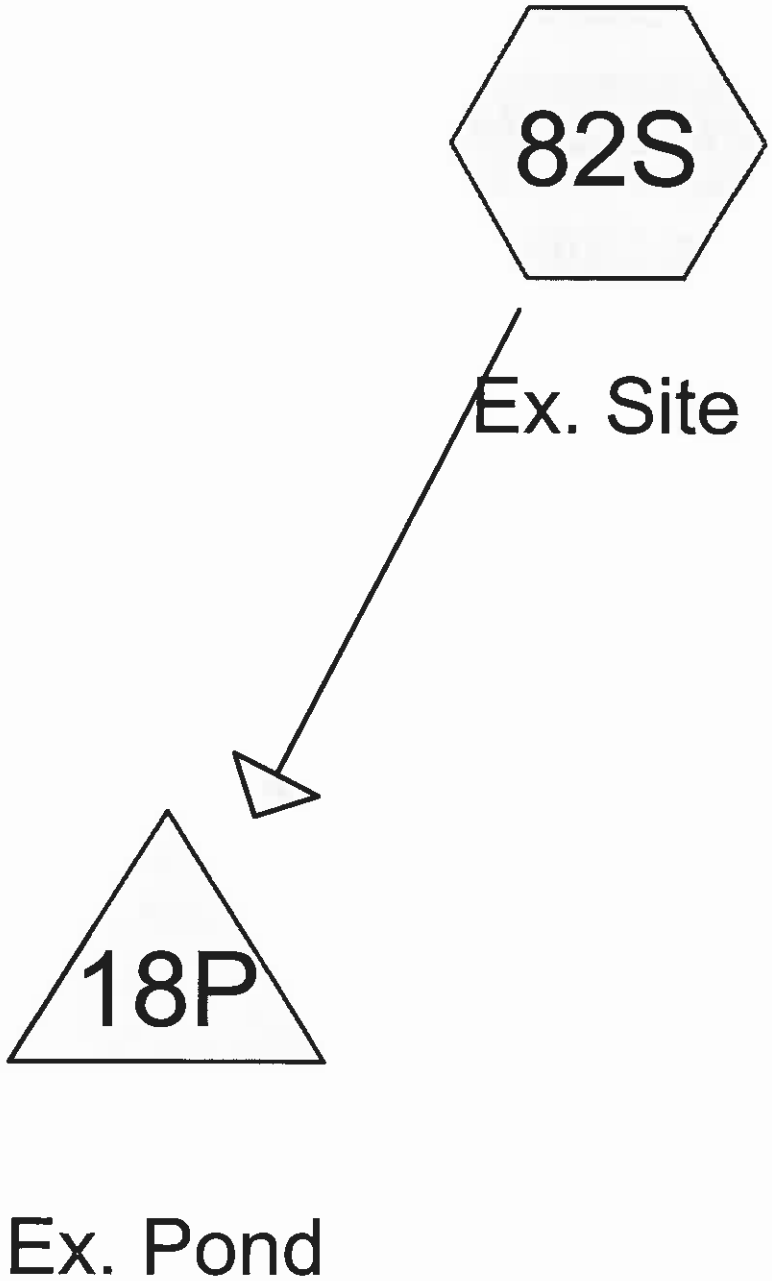


Subcat Reach Pond Link

Routing Diagram for 15004 -Pre Developed
Prepared by Crossing Waters Engineering, Inc., Printed 5/26/2015
HydroCAD® 10.00 s/n 03971 © 2013 HydroCAD Software Solutions LLC

Summary for Pond 18P: Ex. Pond

Inflow Area =	4.650 ac,	12.04% Impervious,	Inflow Depth =	1.24"	for COL-005 event
Inflow =	2.27 cfs @	12.19 hrs, Volume=	0.481 af		
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af,	Atten= 100%,	Lag= 0.0 min
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 1.00 hrs
Peak Elev= 834.22' @ 27.00 hrs Surf.Area= 11,031 sf Storage= 20,938 cf
Flood Elev= 886.00' Surf.Area= 16,151 sf Storage= 58,237 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

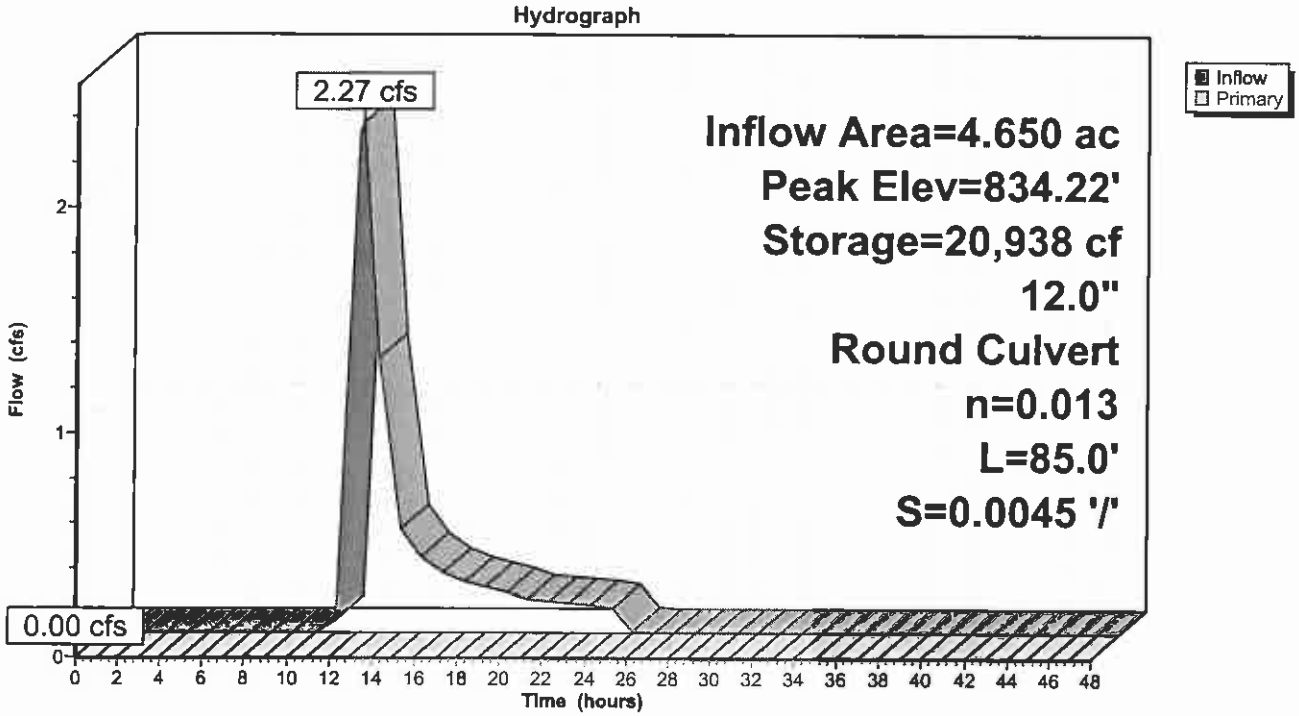
Volume	Invert	Avail.Storage	Storage Description
#1	832.00'	58,237 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
832.00	7,990	0	0
833.00	9,254	8,622	8,622
834.00	10,698	9,976	18,598
835.00	12,242	11,470	30,068
836.00	13,972	13,107	43,175
837.00	16,151	15,062	58,237

Device	Routing	Invert	Outlet Devices
#1	Primary	880.02'	**12.0" Round Culvert** L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 880.02' / 879.64' S= 0.0045 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=832.00' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 18P: Ex. Pond



Hydrograph for Pond 18P: Ex. Pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	832.00	**0.00**
1.00	0.00	0	832.00	0.00
2.00	0.00	0	832.00	0.00
3.00	0.00	0	832.00	0.00
4.00	0.00	0	832.00	0.00
5.00	0.00	0	832.00	0.00
6.00	0.00	0	832.00	0.00
7.00	0.00	0	832.00	0.00
8.00	0.00	0	832.00	0.00
9.00	0.00	0	832.00	0.00
10.00	0.00	1	832.00	0.00
11.00	0.05	94	832.01	0.00
12.00	**2.22**	4,178	832.50	0.00
13.00	1.22	10,372	833.19	0.00
14.00	0.46	13,405	833.50	0.00
15.00	0.33	14,836	833.64	0.00
16.00	0.27	15,916	833.74	0.00
17.00	0.22	16,799	833.83	0.00
18.00	0.20	17,562	833.90	0.00
19.00	0.18	18,238	833.97	0.00
20.00	0.15	18,825	834.02	0.00
21.00	0.14	19,341	834.07	0.00
22.00	0.13	19,824	834.11	0.00
23.00	0.13	20,290	834.16	0.00
24.00	0.11	20,714	834.20	0.00
25.00	0.01	20,924	834.21	0.00
26.00	0.00	20,938	834.22	0.00
27.00	0.00	**20,938**	**834.22**	0.00
28.00	0.00	20,938	834.22	0.00
29.00	0.00	20,938	834.22	0.00
30.00	0.00	20,938	834.22	0.00
31.00	0.00	20,938	834.22	0.00
32.00	0.00	20,938	834.22	0.00
33.00	0.00	20,938	834.22	0.00
34.00	0.00	20,938	834.22	0.00
35.00	0.00	20,938	834.22	0.00
36.00	0.00	20,938	834.22	0.00
37.00	0.00	20,938	834.22	0.00
38.00	0.00	20,938	834.22	0.00
39.00	0.00	20,938	834.22	0.00
40.00	0.00	20,938	834.22	0.00
41.00	0.00	20,938	834.22	0.00
42.00	0.00	20,938	834.22	0.00
43.00	0.00	20,938	834.22	0.00
44.00	0.00	20,938	834.22	0.00
45.00	0.00	20,938	834.22	0.00
46.00	0.00	20,938	834.22	0.00
47.00	0.00	20,938	834.22	0.00
48.00	0.00	20,938	834.22	0.00

Summary for Pond 18P: Ex. Pond

Inflow Area = 4.650 ac, 12.04% Impervious, Inflow Depth = 3.16" for COL-100 event
Inflow = 6.29 cfs @ 12.13 hrs, Volume= 1.224 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 1.00 hrs
Peak Elev= 836.69' @ 27.00 hrs Surf.Area= 15,472 sf Storage= 53,308 cf
Flood Elev= 886.00' Surf.Area= 16,151 sf Storage= 58,237 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

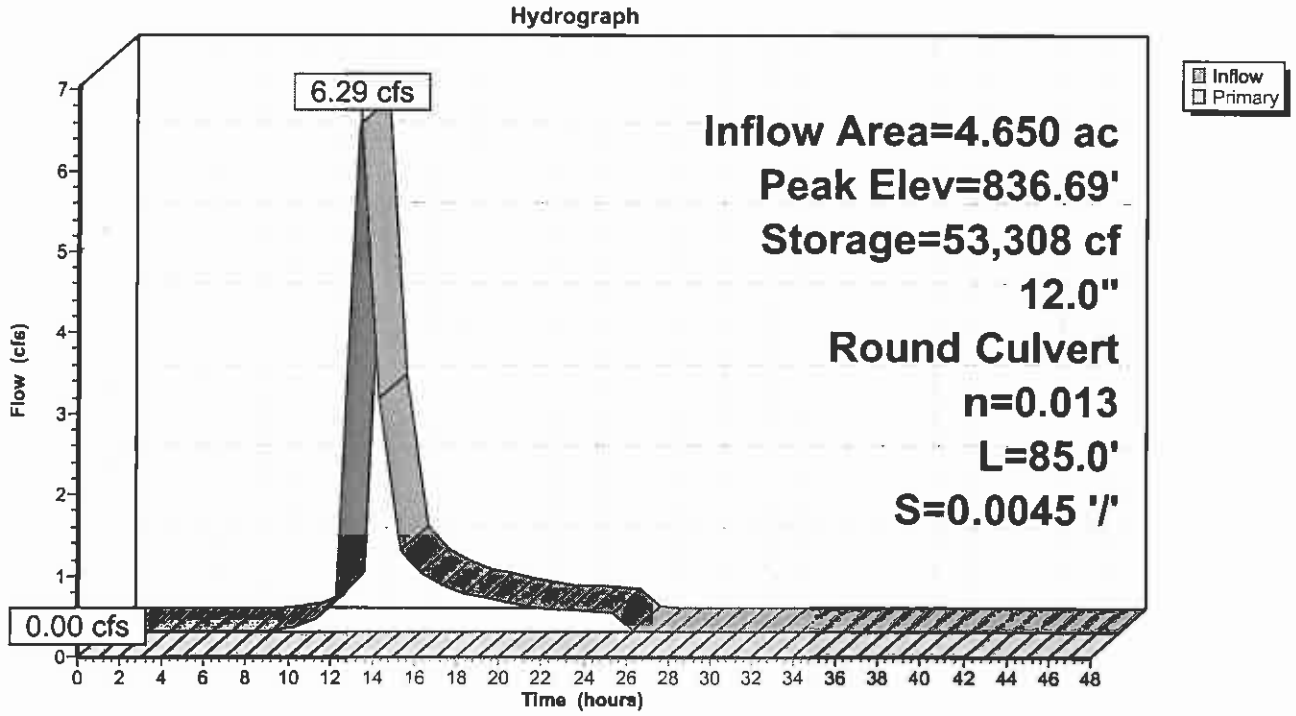
Volume	Invert	Avail.Storage	Storage Description
#1	832.00'	58,237 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
832.00	7,990	0	0
833.00	9,254	8,622	8,622
834.00	10,698	9,976	18,598
835.00	12,242	11,470	30,068
836.00	13,972	13,107	43,175
837.00	16,151	15,062	58,237

Device	Routing	Invert	Outlet Devices
#1	Primary	880.02'	**12.0" Round Culvert** L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 880.02' / 879.64' S= 0.0045 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

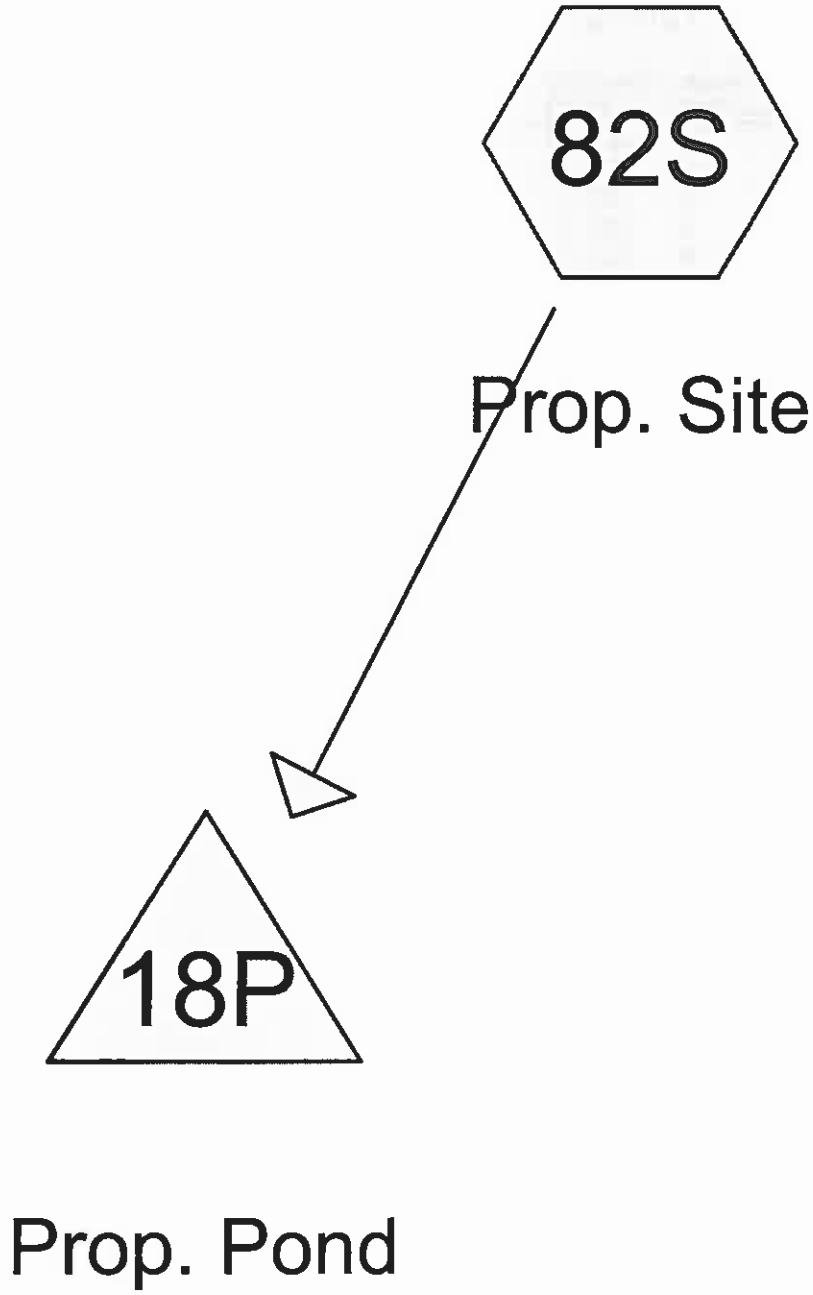
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=832.00' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)

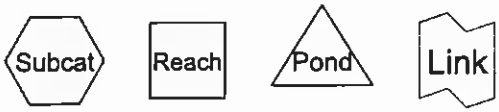
Pond 18P: Ex. Pond



Hydrograph for Pond 18P: Ex. Pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	832.00	**0.00**
1.00	0.00	0	832.00	0.00
2.00	0.00	0	832.00	0.00
3.00	0.00	0	832.00	0.00
4.00	0.00	0	832.00	0.00
5.00	0.00	0	832.00	0.00
6.00	0.00	0	832.00	0.00
7.00	0.00	0	832.00	0.00
8.00	0.01	22	832.00	0.00
9.00	0.07	175	832.02	0.00
10.00	0.18	624	832.08	0.00
11.00	0.46	1,766	832.22	0.00
12.00	**6.21**	13,764	833.53	0.00
13.00	2.89	30,148	835.01	0.00
14.00	1.02	37,193	835.56	0.00
15.00	0.72	40,333	835.79	0.00
16.00	0.58	42,673	835.96	0.00
17.00	0.48	44,572	836.10	0.00
18.00	0.43	46,200	836.21	0.00
19.00	0.37	47,635	836.31	0.00
20.00	0.32	48,876	836.40	0.00
21.00	0.29	49,965	836.47	0.00
22.00	0.28	50,978	836.54	0.00
23.00	0.27	51,953	836.60	0.00
24.00	0.23	52,840	836.66	0.00
25.00	0.02	53,279	836.69	0.00
26.00	0.00	53,308	836.69	0.00
27.00	0.00	**53,308**	**836.69**	0.00
28.00	0.00	53,308	836.69	0.00
29.00	0.00	53,308	836.69	0.00
30.00	0.00	53,308	836.69	0.00
31.00	0.00	53,308	836.69	0.00
32.00	0.00	53,308	836.69	0.00
33.00	0.00	53,308	836.69	0.00
34.00	0.00	53,308	836.69	0.00
35.00	0.00	53,308	836.69	0.00
36.00	0.00	53,308	836.69	0.00
37.00	0.00	53,308	836.69	0.00
38.00	0.00	53,308	836.69	0.00
39.00	0.00	53,308	836.69	0.00
40.00	0.00	53,308	836.69	0.00
41.00	0.00	53,308	836.69	0.00
42.00	0.00	53,308	836.69	0.00
43.00	0.00	53,308	836.69	0.00
44.00	0.00	53,308	836.69	0.00
45.00	0.00	53,308	836.69	0.00
46.00	0.00	53,308	836.69	0.00
47.00	0.00	53,308	836.69	0.00
48.00	0.00	53,308	836.69	0.00





Routing Diagram for 15004 -Post Developed
Prepared by Crossing Waters Engineering, Inc., Printed 5/26/2015
HydroCAD® 10.00 s/n 03971 © 2013 HydroCAD Software Solutions LLC

Summary for Pond 18P: Prop. Pond

Inflow Area =	4.650 ac,	48.17% Impervious,	Inflow Depth =	1.87"	for COL-005 event
Inflow =	3.11 cfs @	12.32 hrs,	Volume=	0.725 af	
Outflow =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af,	Atten= 100%, Lag= 0.0 min
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 1.00 hrs
Peak Elev= 834.15' @ 27.00 hrs Surf.Area= 16,782 sf Storage= 31,564 cf
Flood Elev= 886.00' Surf.Area= 23,878 sf Storage= 89,128 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

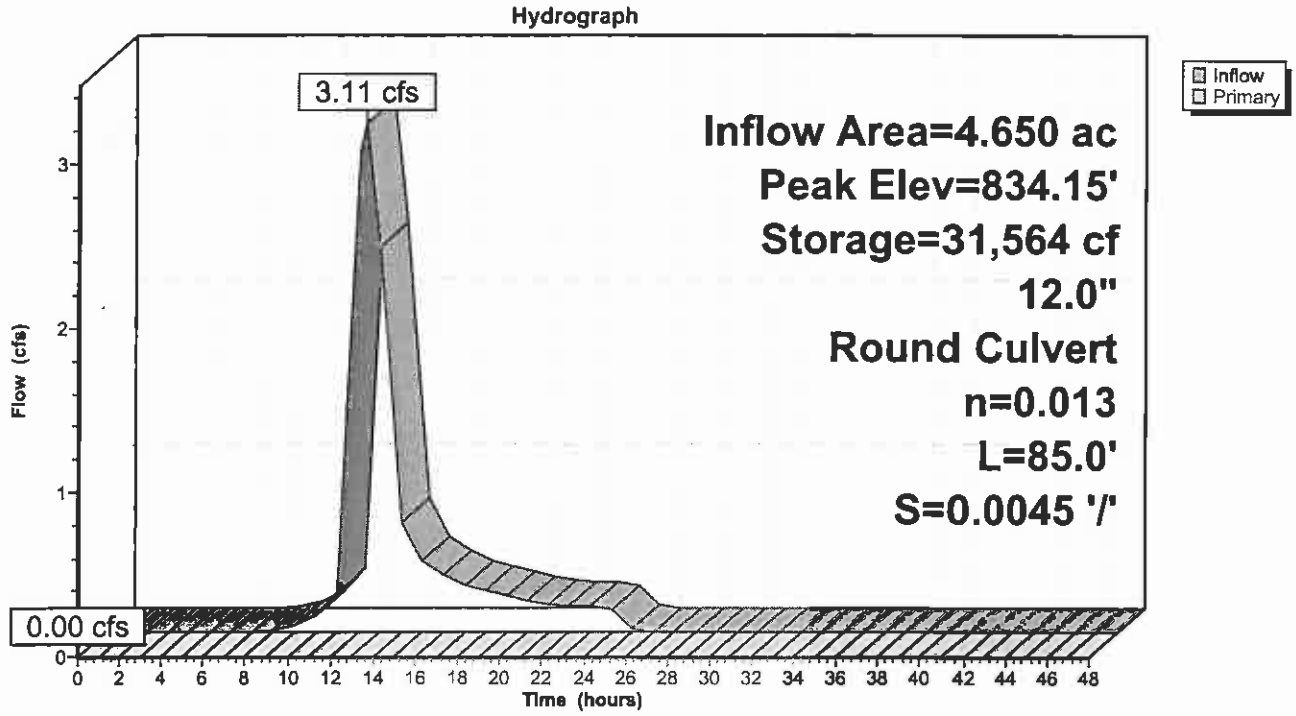
Volume	Invert	Avail.Storage	Storage Description
#1	832.00'	89,128 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
832.00	12,911	0	0
833.00	14,419	13,665	13,665
834.00	16,452	15,436	29,101
835.00	18,678	17,565	46,666
836.00	21,184	19,931	66,597
837.00	23,878	22,531	89,128

Device	Routing	Invert	Outlet Devices
#1	Primary	880.02'	**12.0" Round Culvert** L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 880.02' / 879.64' S= 0.0045 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=832.00' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 18P: Prop. Pond



Hydrograph for Pond 18P: Prop. Pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	832.00	**0.00**
1.00	0.00	0	832.00	0.00
2.00	0.00	0	832.00	0.00
3.00	0.00	0	832.00	0.00
4.00	0.00	0	832.00	0.00
5.00	0.00	0	832.00	0.00
6.00	0.00	0	832.00	0.00
7.00	0.00	0	832.00	0.00
8.00	0.01	18	832.00	0.00
9.00	0.04	117	832.01	0.00
10.00	0.10	385	832.03	0.00
11.00	0.25	1,021	832.08	0.00
12.00	**2.94**	6,764	832.51	0.00
13.00	2.36	16,300	833.18	0.00
14.00	0.67	21,755	833.54	0.00
15.00	0.44	23,759	833.67	0.00
16.00	0.35	25,178	833.76	0.00
17.00	0.29	26,319	833.83	0.00
18.00	0.25	27,288	833.89	0.00
19.00	0.22	28,142	833.94	0.00
20.00	0.19	28,881	833.99	0.00
21.00	0.17	29,527	834.03	0.00
22.00	0.16	30,122	834.06	0.00
23.00	0.16	30,693	834.10	0.00
24.00	0.14	31,227	834.13	0.00
25.00	0.02	31,521	834.15	0.00
26.00	0.00	31,563	834.15	0.00
27.00	0.00	**31,564**	**834.15**	0.00
28.00	0.00	31,564	834.15	0.00
29.00	0.00	31,564	834.15	0.00
30.00	0.00	31,564	834.15	0.00
31.00	0.00	31,564	834.15	0.00
32.00	0.00	31,564	834.15	0.00
33.00	0.00	31,564	834.15	0.00
34.00	0.00	31,564	834.15	0.00
35.00	0.00	31,564	834.15	0.00
36.00	0.00	31,564	834.15	0.00
37.00	0.00	31,564	834.15	0.00
38.00	0.00	31,564	834.15	0.00
39.00	0.00	31,564	834.15	0.00
40.00	0.00	31,564	834.15	0.00
41.00	0.00	31,564	834.15	0.00
42.00	0.00	31,564	834.15	0.00
43.00	0.00	31,564	834.15	0.00
44.00	0.00	31,564	834.15	0.00
45.00	0.00	31,564	834.15	0.00
46.00	0.00	31,564	834.15	0.00
47.00	0.00	31,564	834.15	0.00
48.00	0.00	31,564	834.15	0.00

Summary for Pond 18P: Prop. Pond

Inflow Area =	4.650 ac,	48.17% Impervious,	Inflow Depth =	4.06"	for COL-100 event
Inflow =	6.88 cfs @	12.27 hrs,	Volume=	1.573 af	
Outflow =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af,	Atten= 100%, Lag= 0.0 min
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 1.00 hrs
Peak Elev= 836.09' @ 27.00 hrs Surf.Area= 21,426 sf Storage= 68,510 cf
Flood Elev= 886.00' Surf.Area= 23,878 sf Storage= 89,128 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

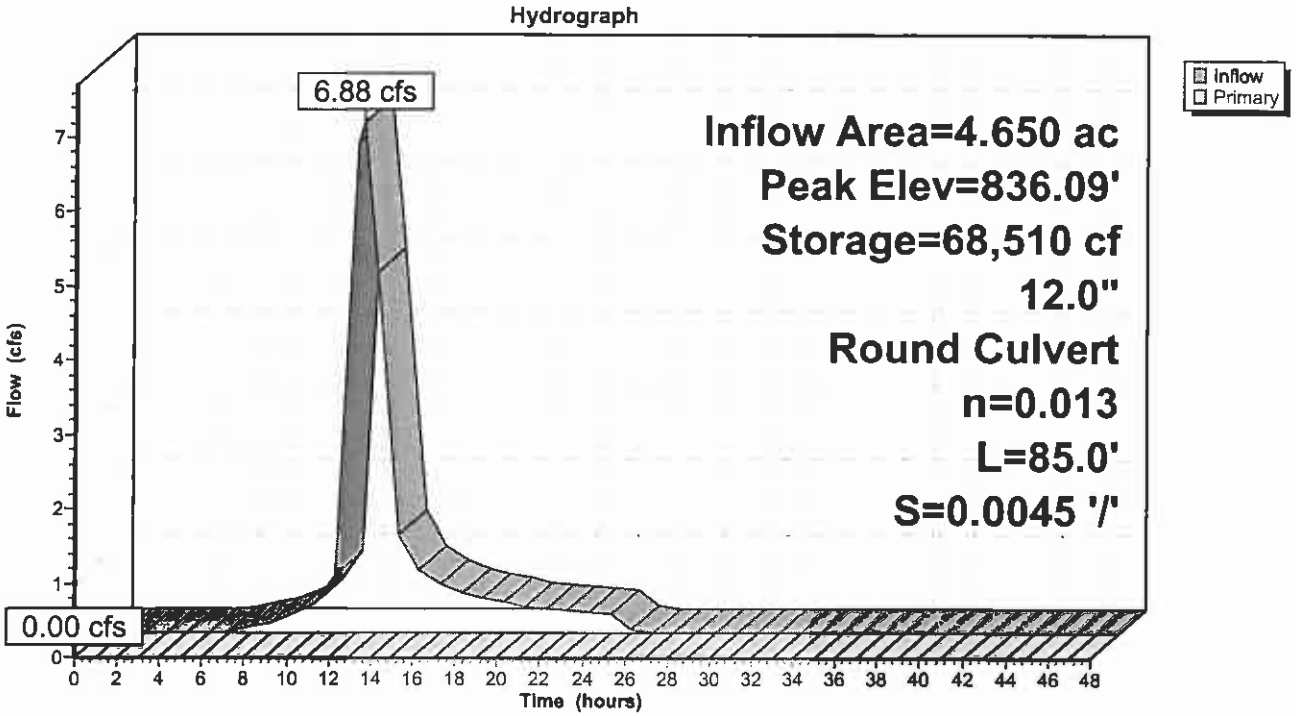
Volume	Invert	Avail.Storage	Storage Description
#1	832.00'	89,128 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
832.00	12,911	0	0
833.00	14,419	13,665	13,665
834.00	16,452	15,436	29,101
835.00	18,678	17,565	46,666
836.00	21,184	19,931	66,597
837.00	23,878	22,531	89,128

Device	Routing	Invert	Outlet Devices
#1	Primary	880.02'	**12.0" Round Culvert** L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 880.02' / 879.64' S= 0.0045 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=832.00' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 18P: Prop. Pond



Hydrograph for Pond 18P: Prop. Pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	832.00	**0.00**
1.00	0.00	0	832.00	0.00
2.00	0.00	0	832.00	0.00
3.00	0.00	0	832.00	0.00
4.00	0.00	0	832.00	0.00
5.00	0.00	5	832.00	0.00
6.00	0.04	72	832.01	0.00
7.00	0.09	295	832.02	0.00
8.00	0.15	723	832.06	0.00
9.00	0.25	1,446	832.11	0.00
10.00	0.40	2,628	832.20	0.00
11.00	0.77	4,746	832.36	0.00
12.00	**6.61**	18,029	833.30	0.00
13.00	4.85	38,654	834.56	0.00
14.00	1.31	49,750	835.16	0.00
15.00	0.85	53,642	835.36	0.00
16.00	0.67	56,375	835.50	0.00
17.00	0.55	58,561	835.61	0.00
18.00	0.48	60,411	835.70	0.00
19.00	0.42	62,035	835.78	0.00
20.00	0.36	63,440	835.85	0.00
21.00	0.32	64,663	835.91	0.00
22.00	0.31	65,789	835.96	0.00
23.00	0.29	66,869	836.01	0.00
24.00	0.27	67,876	836.06	0.00
25.00	0.04	68,431	836.09	0.00
26.00	0.00	68,509	836.09	0.00
27.00	0.00	**68,510**	**836.09**	0.00
28.00	0.00	68,510	836.09	0.00
29.00	0.00	68,510	836.09	0.00
30.00	0.00	68,510	836.09	0.00
31.00	0.00	68,510	836.09	0.00
32.00	0.00	68,510	836.09	0.00
33.00	0.00	68,510	836.09	0.00
34.00	0.00	68,510	836.09	0.00
35.00	0.00	68,510	836.09	0.00
36.00	0.00	68,510	836.09	0.00
37.00	0.00	68,510	836.09	0.00
38.00	0.00	68,510	836.09	0.00
39.00	0.00	68,510	836.09	0.00
40.00	0.00	68,510	836.09	0.00
41.00	0.00	68,510	836.09	0.00
42.00	0.00	68,510	836.09	0.00
43.00	0.00	68,510	836.09	0.00
44.00	0.00	68,510	836.09	0.00
45.00	0.00	68,510	836.09	0.00
46.00	0.00	68,510	836.09	0.00
47.00	0.00	68,510	836.09	0.00
48.00	0.00	68,510	836.09	0.00

Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2010 by Autodesk, Inc. v9.24 Tuesday, May 26, 2015

Pond No. 1 - Tigerpoly-Existing

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 832.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	832.00	7,990	0	0
1.00	833.00	9,254	8,613	8,613
2.00	834.00	10,698	9,966	18,580
3.00	835.00	12,242	11,460	30,040

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .000	.000	.000	n/a
Orifice Coeff.	= 0.00	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 0	0.00	0.00	0.00
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	832.00	---	---	---	---	---	---	---	---	---	---	0.000
1.00	8,613	833.00	---	---	---	---	---	---	---	---	---	---	0.000
2.00	18,580	834.00	---	---	---	---	---	---	---	---	---	---	0.000
3.00	30,040	835.00	---	---	---	---	---	---	---	---	---	---	0.000

Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2010 by Autodesk, Inc. v9.24 Tuesday, May 26, 2015

Pond No. 2 - Tigerpoly-Proposed

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 832.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	832.00	12,911	0	0
1.00	833.00	14,419	13,657	13,657
2.00	834.00	16,452	15,423	29,079
3.00	835.00	18,678	17,551	46,631

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .000	.000	.000	n/a
Orifice Coeff.	= 0.00	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 0	0.00	0.00	0.00
Weir Type	= —	—	—	—
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	832.00	—	—	—	—	—	—	—	—	—	—	0.000
1.00	13,657	833.00	—	—	—	—	—	—	—	—	—	—	0.000
2.00	29,079	834.00	—	—	—	—	—	—	—	—	—	—	0.000
3.00	46,631	835.00	—	—	—	—	—	—	—	—	—	—	0.000

Project: Tigerpoly Manufacturing
Location: 6231 Enterprise Pkwy
Grove City, Ohio

STORM DRAINAGE
REQUIRED STORAGE VOLUME

PROJECT NUMBER: CW-15004
DATE 05/20/2015

CALCULATED BY RAB

PEAK DISCHARGE - UNDEVELOPED 1 YEAR STORM

	AREA(ACRES)		RUNOFF COEFF.		
GRASSY FIELD	4.09	x	0.37	=	1.5133
IMPERVIOUS AREA	0.56	x	0.94	=	0.5264
	4.65	x	C	=	2.0397
			C	=	0.438645

CA	x	I	=	Q
2.0397	x	2.2	=	4.48734

PEAK DISCHARGE - DEVELOPED 5 YEAR STORM

	AREA(ACRES)		RUNOFF COEFF.		
GRASSY FIELD	2.41	x	0.37	=	0.8917
IMPERVIOUS AREA	2.24	x	0.94	=	2.1056
	4.65	x	C	=	2.9973
			C	=	0.644581

CA	x	I	=	Q
2.9973	x	3.24	=	9.711252

REQUIRED STORAGE VOLUME CALCULATIONS

(Based on HydroCAD 10.00 Report)

Difference in Increased Runoff Volume

Outlet	100 YEAR (AF)	100 YEAR (CU-FT)	-	5 YEAR (AF)	5 YEAR (CU-FT)	=	STORAGE VOLUME
Pond	0.349	15202.44		0.244	10628.84		4573.80

Existing Retention Basin

Elev.	S.F.	Volume / Ft.			
832.00	7990	0	(Normal Pool Elevation)	=	0.00
833.00	9254	8613		=	8613.00
834.00	10698	9966		=	9966.00
835.00	12242	11460		=	11460.00
			Total	=	30039.00

Proposed Retention Basin

Elev.	S.F.	Volume / Ft.			
832.00	12911	0	(Normal Pool Elevation)	=	0.00
833.00	14419	13657		=	13657.00
834.00	16452	15423		=	15423.00
835.00	18768	17551		=	17551.00
			Total	=	46631.00

STORAGE VOLUME REQUIRED = 4573.80 CU. FT.

TOTAL STORAGE VOLUME REQUIRED = 4573.80 CU. FT.

= 34212.0 GALLONS

STORAGE VOLUME AVAILABLE = 16592.00 CU. FT.

Crossing Waters Engineering, Inc.
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Printed 5/26/2015