

DOLLAR TREE DEVELOPMENT  
LOT 1, ADVANCE AUTO PARTS RESUBDIVISION  
GRAYSLAKE, ILLINOIS

STORMWATER MANAGEMENT REPORT

November 8, 2017



Expires: 11/30/19

Prepared by:

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2 Aikens Road  
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TAB A

PROJECT NARRATIVE AND  
EXISTING/PROPOSED CONDITIONS

## PROJECT NARRATIVE:

The proposed Dollar Tree development is located on Lot 1 of the Advance Auto Resubdivision, located at Belvidere Road and S. Atkinson Road in the Village of Grayslake, Illinois. The parcel is 83,344 square feet (1.913 acres) in size. The site is just east of the Advance Auto Parts store that was constructed in 2012-2013. The site presently has utilities stubbed into it and has paving and curb and gutter for a proposed ring drive from an earlier development plan. The area is served by an existing stormwater management system that was constructed under the original 5.25 acre Atkinson Plaza development and modified when the Advance Auto Parts development was constructed. The Atkinson Plaza development was designed by Marchris Engineering, Ltd. and the Advance Auto Parts development was designed by Shive Hattery. The present stormwater management system consists of 48" and 24" underground piping, detention basins, parking lot storage and detention control structures discharging to Belvidere Road and the existing wetland area to the south. No major changes are proposed to the existing detention system, except for modifications to the detention basins at the southeast portion of the project.

## EXISTING CONDITIONS

This report considers the proposed conditions from the Shive Hattery "Stormwater Management Analysis for Advance Auto Parts" (AAP CALCS), revised March 21, 2012, to be the existing conditions for this proposed development. The detention volumes from the AAP CALCS will be revised in accordance with as-built detention volume calculations prepared by this office and accepted in a letter from John Tierney, PE, dated August 27, 2013.

The existing conditions used for this report are:

Area #1 - Total Area	0.765 AC
Impervious Area	0.459 AC
Impervious Coverage	60%
WDO App K Det. Req'd.	0.34 AC-FT/AC
Total Detention Required	0.260 AC-FT
Total Detention Provided	0.391 AC-FT

Area #2 - Total Area	2.202 AC
Impervious Area	1.700 AC
Impervious Coverage	77.2%
WDO App K Det. Req'd.	0.42 AC-FT/AC
Total Detention Required	0.920 AC-FT
Total Detention Provided	1.107 AC-FT

## PROPOSED CONDITIONS

### Area #1

The proposed development makes no changes to the Area #1 tributary area from the AAP CALCS. The existing southeast detention basins providing a portion of the Area #1 detention volume will be modified to permit the proposed development.

The revised southeast basin detention storage volumes were calculated using the new basin contour areas and the average end area method. These calculations are shown on the next page and a tabulation of the total Area #1 detention volumes (revised from the 2013 as-built calculations are as follows:

<b>DETENTION VOLUME SOURCE</b>	<b>2013 AS-BUILT (AC-FT)</b>	<b>PROPOSED (AC-FT)</b>
Marchris As-Built Volume Below 795.85	0.450	0.450
Lost South Pond Volume Below 794.8	(0.116)	(0.116)
Lost South Pond Volume Between 794.8 & 796	(0.136)	(0.136)
Southeast Pond Volume Below 794.8	0.131	0.115
Southeast Pond Volume Between 794.8 & 795.85	0.112	0.075
<b>Total Volume Provided</b>	<b>0.391</b>	<b>0.388</b>

The proposed detention volume of 0.388 AC-FT exceeds the required detention volume of 0.260 AC-FT. Therefore, the provided detention volume, with the modified southeast detention basins, provides adequate storage volume.

### Area #2

For this report, we are making the assumption that the AAP CALCS Area #2 tributary area eastern limits are the edge of the existing curb and gutter along the eastern side of the site. It would appear that Area #2 included some pervious area slightly beyond the curb line, but we will disregard this pervious area and calculate the additional Area #2 tributary area from the curb line.

The proposed building and rear parking/dumpster enclosure will add to the Area #2 tributary area. Approximately 0.078 acres will be added, bringing the tributary area total to  $0.078 + 2.202 = 2.280$  AC.

The AAP CALCS impervious area total was 1.70 AC. The proposed development will remove 0.088 AC of existing impervious area and will add 0.351 AC of new impervious area. The total impervious area will be  $1.70 - 0.088 + 0.351 = 1.963$  AC.

Proposed Impervious Areas –	Building	10,032 SF
	Dumpster Enclosure	200 SF
	Paving/Curbing	2,968 SF
	Sidewalk	<u>2,088 SF</u>
	Total	15,288 SF

The proposed impervious coverage is  $1.963 / 2.280 = 86\%$ . The WDO Appendix K detention volume required for 86% impervious is 0.45 AC-FT/AC. Total detention required for 2.280 AC is 1.026 AC-FT.

The total Area #2 detention, per the 2013 as-built calculations, was 1.107 AC-FT, which exceeds the 1.026 AC-FT required. Therefore, the existing Area #2 detention is adequate for the proposed development.

TAB B

PROPOSED SOUTHEAST BASINS DETENTION VOLUMES

PROJECT: DOLLAR TREE, GRAYSLAKE  
 SUBJECT: SE DETENTION BASIN VOLUME CALCULATION  
 ENGINEER: CLS  
 DATE: 11/7/17

**VOLUME IN NORTH SE DETENTION BASIN BELOW ELEV. 794.8**

CONTOUR	AREA (SF)	VOLUME (CF)	CUMULATIVE VOLUME (CF)	CUMULATIVE VOLUME (CY)
793	1242.00		0.00	0.00
		1839.50		
794	2437.00		1839.50	68.13
		2303.60		
794.8	3322.00		4143.10	153.45

**VOLUME IN NORTH SE DETENTION BASIN BETWEEN ELEV. 794.8 AND 795.5**

CONTOUR	AREA (SF)	VOLUME (CF)	CUMULATIVE VOLUME (CF)	CUMULATIVE VOLUME (CY)
794.8	3322.00		0.00	0.00
		689.40		
795	3572.00		689.40	25.53
		1938.25		
795.5	4181.00		2627.65	97.32

**VOLUME IN SOUTH SE DETENTION BASIN BELOW ELEV. 794.8**

CONTOUR	AREA (SF)	VOLUME (CF)	CUMULATIVE VOLUME (CF)	CUMULATIVE VOLUME (CY)
793	228.00		0.00	0.00
		359.00		
794	490.00		359.00	13.30
		492.40		
794.8	741.00		851.40	31.53

**VOLUME IN SOUTH SE DETENTION BASIN BETWEEN ELEV. 794.8 AND 795.5**

CONTOUR	AREA (SF)	VOLUME (CF)	CUMULATIVE VOLUME (CF)	CUMULATIVE VOLUME (CY)
794.8	741.00		0.00	0.00
		158.10		
795	840.00		158.10	5.86
		474.25		
795.5	1057.00		632.35	23.42

**TOTAL DETENTION BASIN VOLUME BELOW ELEV. 794.8**

4143.10 + 851.40 = 4994.50 SF = 0.115 AC-FT

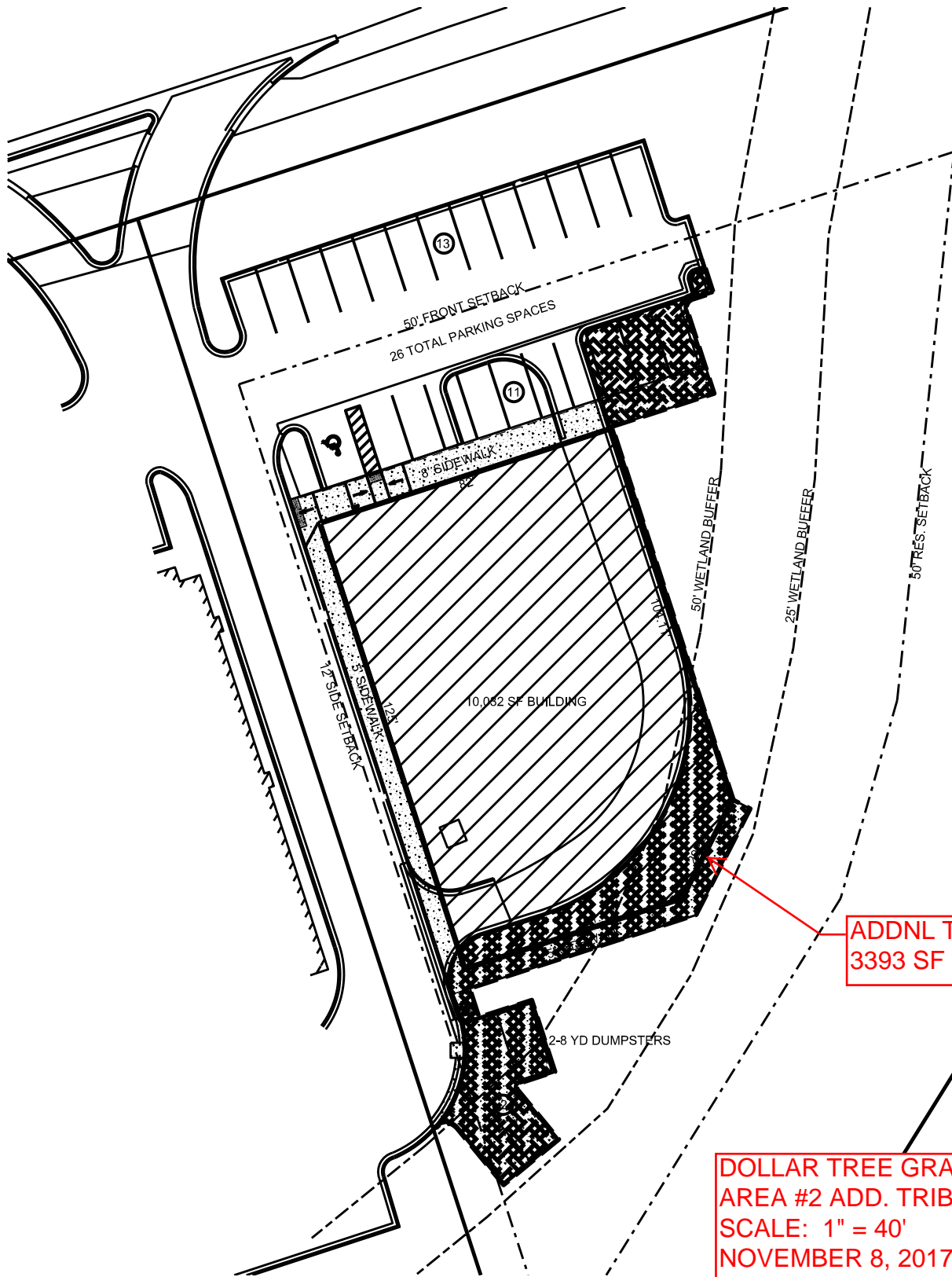
**TOTAL DETENTION BASIN VOLUME BETWEEN ELEV. 794.8 AND 795.5**

2627.65 + 632.35 = 3260.00 SF = 0.075 AC-FT

TAB C

AREA #2 ADDITIONAL TRIBUTARY AREA





ADDNL TRIB AREA =  
3393 SF = 0.078 AC

DOLLAR TREE GRAYSLAKE  
AREA #2 ADD. TRIBUTARY AREA  
SCALE: 1" = 40'  
NOVEMBER 8, 2017

TAB D

SHIVE HATTERY STORMWATER MANAGEMENT ANALYSIS

**STORMWATER MANAGEMENT ANALYSIS**

**FOR**

**ADVANCE AUTO PARTS**

**975 E. BELVIDERE ROAD – STORE NO. 8228 – GROUND UP  
GRAYSLAKE, ILLINOIS 60030**

**PREPARED: JANUARY 16, 2012**

**REVISED: FEBRUARY 22, 2012**

**REVISED: March 21, 2012**

Prepared for:

Grayslake Chase, LLC  
Charles Cui  
5519 N. Cumberland Ave. Suite 1008  
Chicago, Illinois 60656



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## PART I - SUMMARY

### INTRODUCTION

The project is the construction of an approximately 9,350 S.F. Advance Auto Parts Building at the southeast corner of Atkinson Road and Belvidere Road (IL Route 120) in the Village of Grayslake, Illinois. The site was previously approved as Atkinson Plaza, a 5.25 acre bank and retail shops development. The Advance Auto Parts will sit on a new 0.945 acre parcel within the Atkinson Plaza. The site is located in Section 36, Township 45 North, Range 10 East of the Third Principal Meridian, and is bounded by Belvidere Road (IL Route 120) to the north, Atkinson Road to the west, and existing residential subdivisions to the south and east.

### EXISTING CONDITIONS

In 2006, the site was designed and permitted by Marchris Engineering, Ltd. as the 5.25 Acre Atkinson Plaza project consisting of a 4,335 S.F. bank building, a 13,500 S.F. retail building and associated drive aisles and parking. The site was only partially constructed. A Chase Bank building was constructed, as well as all the site infrastructure, main drive aisles, right-in right-out access to IL 120, and most of the parking areas. The retail building was not constructed, and the area where it was to go remains vacant as shown in the site location map. As shown on attached Marchris Engineering, LTD stormwater report excerpts, the site was split into two drainage areas and detention was provided for each area in accordance with the Lake County Watershed Ordinance requirements.

#### Area 1:

This area was designed to have 47.7% or 0.447 acres of impervious surface. The total area is 0.937 AC. The previous design used Figure 3-10 of the Lake County Watershed Development Ordinance to calculate the required storage as 0.28 AF/Acre for the 100 year storm event, or 0.24 Acre-Feet. According to additional design excerpts provided by the Village, the actual provided storage for Area 1 is 0.2667 Acre-Feet.

#### Area 2:

This area was designed to have 77.96% or 1.58 acres of impervious surface. The total area is 2.03 AC. The previous design used Figure 3-10 of the Lake County Watershed Development Ordinance to calculate the required storage as 0.42 AF/Acre for the 100 year storm event, or 0.85 Acre-Feet. According to additional design excerpts provided by the Village, the actual provided storage for Area 2 is 0.903 Acre Feet. This storage is provided via a combination of detention ponds to the north, parking lot storage, and a 48" diameter pipe underground storage system.

### PROPOSED CONDITIONS

In order to construct the Advance Auto Parts Building, changes will need to be made to the existing site. Some pavement will need to be removed, and underground utilities will need to be removed and/or relocated. Detention considerations will also need to be given to the proposed conditions. Under current conditions, as shown in the Marchris Engineering, LTD. excerpts, the site is broken down into two water sheds: Area 1 and Area 2 and detention is fully provided for each. Under proposed conditions, a modification to the watersheds will be required.

#### Area 1:

Due to the depth of the Advance Auto Parts Building in relation to the previously approved retail store on the site, the south parking will need to be moved south and the existing detention basin in Area 1 south of the existing parking will need to be filled in. As shown on the proposed conditions exhibit, this new relocated parking and partial pervious area to the south will no longer be tributary to Area 1, but instead will be tributary to Area 2. As a result, the new total area for Area 1 will be 0.765 Acres (a reduction of 0.172 Acres). There is also a small amount of previously pervious area in Area 1 that is being converted to impervious area. As a result of these changes, Area 1 will now be 60% impervious

(0.459 Acres impervious) according to Appendix K of the Lake County Watershed Development Ordinance, the storage requirement for 60% impervious is 0.34 AF/Acre for the 100 year storm event, or 0.26 AC-FT for the revised Area 1.

As a result of the proposed development, the existing south basin will need to be filled in and a new basin will need to be dug on the east side of the site to compensate for the lost storage volume. As shown on the attached detention basin worksheets, the existing basin being filled in will result in a loss of 0.166 AC-FT above the 794.8 elevation, and a loss of 0.136 AC-FT below the 794.8 elevation. The new proposed basin intended to replace the lost volume will provide 0.201 AC-FT of storage above the 794.8 elevation, and 0.147 AC-FT of storage below the 794.8 elevation. Based on these numbers, it can be concluded that the proposed basin will not only offset the lost volume, but will slightly exceed it.

Under proposed conditions, the total volume provided for Area 1 will be 0.301 AC-FT (0.2667 AC-FT existing volume – 0.166 AC-FT lost volume + 0.201 AC-FT replaced volume) which is greater than the required 0.26 AC-FT for the modified Area 1

#### Area 2:

As shown on the proposed conditions exhibit, the proposed conditions will add 0.172 acres of new impervious area to Area 2. Under proposed conditions, Area 2 will have 77.2% (1.70 acres) of impervious surface area and according to Appendix K of the Lake County Watershed Development Ordinance will require 0.42 AF/Acre of storage for the 100 year storm event, or 0.92 acre-feet.

Due to the depth of the proposed Advance Auto Parts building, a portion of the previously provided parking lot storage will be lost. As shown on the attached Area 2 Parking Detention exhibit from the previous Marchis Engineering design, Area C detention is being lost due to the proposed improvements. The detention being lost through the removal of Area C is approximately 0.0581 AC-FT. This detention is being replaced in the new proposed parking area to the south and access drive on the east. As shown on the attached spreadsheet, the new parking lot detention being provided by the proposed development is 0.076 AC-FT. The other parking detention areas on site will not be impacted by the development and the volumes provided will remain intact.

Because of the additional 0.172 acres of impervious area, the proposed project will need to provide the additional 0.07 acre-feet of storage required. This storage will be provided using upsized storm sewer piping and a dual 48" diameter pipe storage system that will connect to the existing detention system as shown on the engineering plans. As shown on the pipe detention provided calculation sheet, the additional 0.07 acre-feet or 3,049 C.F. of detention is easily obtained and is in fact slightly exceeded by the proposed storm sewer/storage design.

Under proposed conditions, the total volume provided for Area 2 will be **0.942 AC-FT** (0.194 existing volume in north ponds + (0.33 existing pipes under north parking + **0.021 in new pipes under east drive aisle**) + (0.379 parking lot storage – 0.0581 lost volume from Area C removal + 0.076 New Parking lot storage)) which is greater than the required 0.92 AC-FT for the modified Area 2.

## **CONCLUSION**

In conclusion, while the watershed areas will be slightly changed from the previous design, the lost storage can be easily replaced and the additional storage volume required can easily be accommodated for the proposed improvements. The development of the subject site will be done in accordance with the Village of Grayslake, Illinois and Lake County Watershed Development Ordinance and should present no detrimental impacts downstream or to adjacent properties.

## PART II – EXHIBITS

**STORMWATER MANAGEMENT ANALYSIS**

**FOR**

**ADVANCE AUTO PARTS**

**975 E. BELVIDERE ROAD – STORE NO. 8228 – GROUND UP  
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**PREPARED: JANUARY 16, 2012**

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Prepared for:

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Charles Cui  
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Chicago, Illinois 60656

Project # 8111901





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#### Area 2:

This area was designed to have 77.96% or 1.58 acres of impervious surface. The total area is 2.03 AC. The previous design used Figure 3-10 of the Lake County Watershed Development Ordinance to calculate the required storage as 0.42 AF/Acre for the 100 year storm event, or 0.85 Acre-Feet. According to additional design excerpts provided by the Village, the actual provided storage for Area 2 is 0.903 Acre Feet. This storage is provided via a combination of detention ponds to the north, parking lot storage, and a 48" diameter pipe underground storage system.

### PROPOSED CONDITIONS

In order to construct the Advance Auto Parts Building, changes will need to be made to the existing site. Some pavement will need to be removed, and underground utilities will need to be removed and/or relocated. Detention considerations will also need to be given to the proposed conditions. Under current conditions, as shown in the Marchris Engineering, LTD. excerpts, the site is broken down into two water sheds: Area 1 and Area 2 and detention is fully provided for each. Under proposed conditions, a modification to the watersheds will be required.

#### Area 1:

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(0.459 Acres impervious) according to Appendix K of the Lake County Watershed Development Ordinance, the storage requirement for 60% impervious is 0.34 AF/Acre for the 100 year storm event, or 0.26 AC-FT for the revised Area 1.

As a result of the proposed development, the existing south basin will need to be filled in and a new basin will need to be dug on the east side of the site to compensate for the lost storage volume. As shown on the attached detention basin worksheets, the existing basin being filled in will result in a loss of 0.166 AC-FT above the 794.8 elevation, and a loss of 0.136 AC-FT below the 794.8 elevation. The new proposed basin intended to replace the lost volume will provide 0.201 AC-FT of storage above the 794.8 elevation, and 0.147 AC-FT of storage below the 794.8 elevation. Based on these numbers, it can be concluded that the proposed basin will not only offset the lost volume, but will slightly exceed it.

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#### Area 2:

As shown on the proposed conditions exhibit, the proposed conditions will add 0.172 acres of new impervious area to Area 2. Under proposed conditions, Area 2 will have 77.2% (1.70 acres) of impervious surface area and according to Appendix K of the Lake County Watershed Development Ordinance will require 0.42 AF/Acre of storage for the 100 year storm event, or 0.92 acre-feet.

Due to the depth of the proposed Advance Auto Parts building, a portion of the previously provided parking lot storage will be lost. As shown on the attached Area 2 Parking Detention exhibit from the previous Marchris Engineering design, Area C detention is being lost due to the proposed improvements. The detention being lost through the removal of Area C is approximately 0.0581 AC-FT. This detention is being replaced in the new proposed parking area to the south and access drive on the east. As shown on the attached spreadsheet, the new parking lot detention being provided by the proposed development is 0.076 AC-FT. The other parking detention areas on site will not be impacted by the development and the volumes provided will remain intact.

Because of the additional 0.172 acres of impervious area, the proposed project will need to provide the additional 0.07 acre-feet of storage required. This storage will be provided using upsized storm sewer piping and a dual 48" diameter pipe storage system that will connect to the existing detention system as shown on the engineering plans. As shown on the pipe detention provided calculation sheet, the additional 0.07 acre-feet or 3,049 C.F. of detention is easily obtained and is in fact slightly exceeded by the proposed storm sewer/storage design.

Under proposed conditions, the total volume provided for Area 2 will be 0.995 AC-FT (0.194 existing volume in north ponds + (0.33 existing pipes under north parking + 0.074 in new pipes under east drive aisle) + (0.379 parking lot storage – 0.0581 lost volume from Area C removal + 0.076 New Parking lot storage)) which is greater than the required 0.92 AC-FT for the modified Area 2.

## **CONCLUSION**

In conclusion, while the watershed areas will be slightly changed from the previous design, the lost storage can be easily replaced and the additional storage volume required can easily be accommodated for the proposed improvements. The development of the subject site will be done in accordance with the Village of Grayslake, Illinois and Lake County Watershed Development Ordinance and should present no detrimental impacts downstream or to adjacent properties.

## PART II – EXHIBITS

**PROPOSED ADVANCE AUTO PARTS  
975 E. BELVIDERE ROAD  
VILLAGE OF GRAYSLAKE, IL  
PIPE DETENTION PROVIDED CALCULATION**

Pipe Length	Pipe Size	Vol/Ft	Volume cubic feet
42	24	3.14	131.88
78	24	3.14	244.92
67	24	3.14	210.38
48	24	3.14	150.72
57	24	3.14	178.98
		Total	916.88

# marchris engineering limited

060510.1

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847-885-8357  
FAX: 847-885-2252  
mel@marchris.net

## STORM WATER MEMORANDUM

Site Improvements for Atkinson Plaza  
Grayslake, IL

MEL No. 2005-106

May 8, 2006

**Revised July 13, 2006**

## **Floodplains and Wetlands**

There are no regulatory floodplains on or in close proximity to the site area. Floodplain map number 17097C0134F dated February 3, 1997 is behind **Tab 5**.

The Village of Grayslake has requested a Base Flood Elevation (BFE) analysis of the area to the south of the project site. The BFE TR-20 analysis shows that the maximum high water level of the wetland/depression area occurred during the 100 year, 12 hour storm event, and was 795.0 feet. No development below this elevation is planned.

The wetland area of the site was delineated by Hey & Associates of Brookfield, WI and surveyed by R. E. Decker, P.C. of Libertyville, IL in February 2006. Lake County has issued Watershed Development Permit #W05-11-143 with regard to the wetland area. A copy of the permit is behind **Tab 3**.

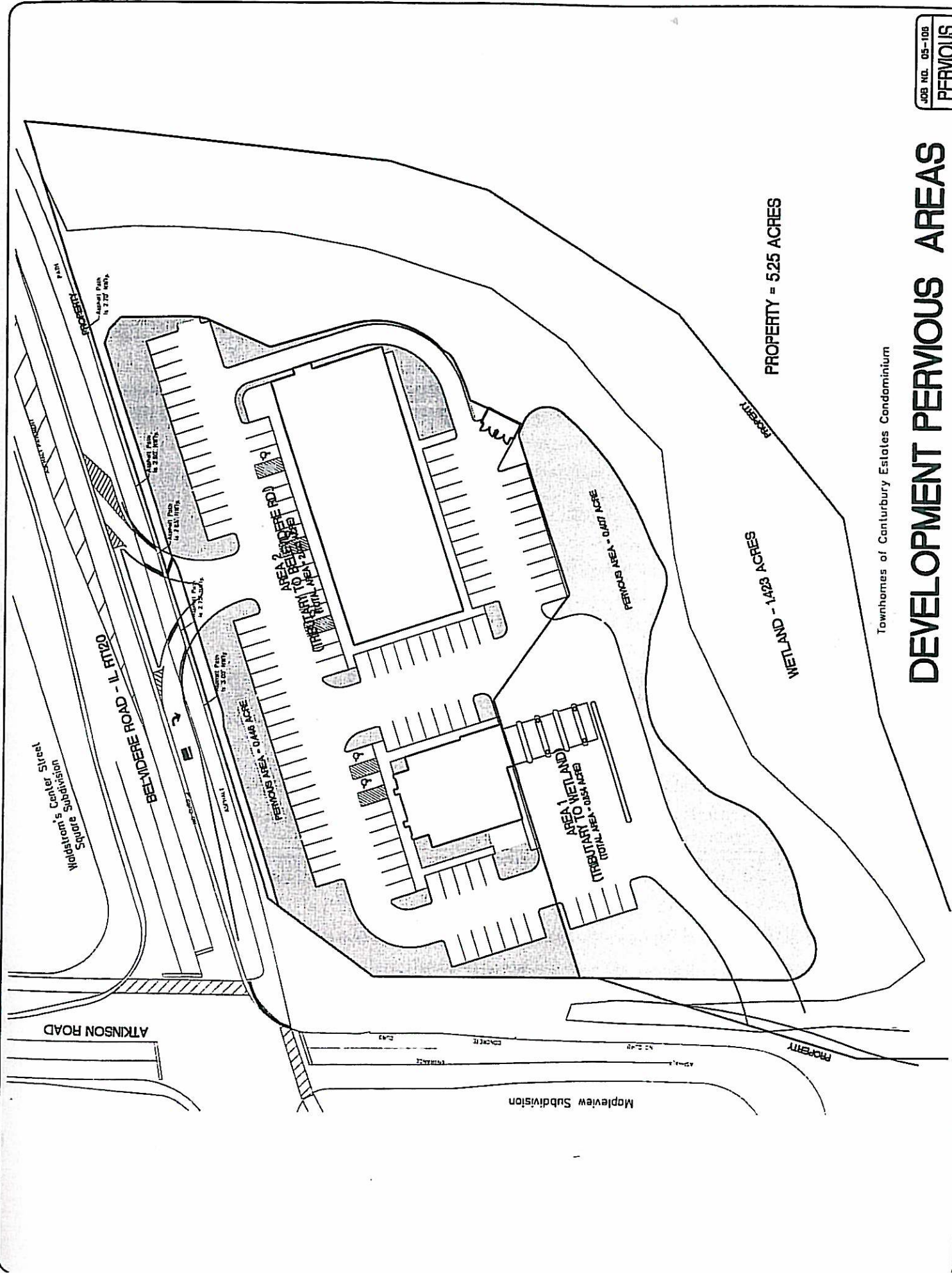
## **Summary of Stormwater Calculations**

The stormwater storage facilities sizing is based on the post development impervious area and Figure 3-10 of the Lake County Watershed Development Ordinance as Figure 3-10 (Figure 3-10 is behind **Tab 6**). Detention volumes for the two drainage areas at the proposed development were determined. The two Drainage Areas are shown in the Development Pervious Areas Map at **Tab 4**.

**Area 1** will have 47.7% (0.447 acres) of impervious surface. Using Figure 3-10 of the Lake County Watershed Development Ordinance, the storage requirement for Area 1 is 0.28 AF/Acre for the 100 year storm event, or 0.24 acre-feet.

**Area 2** will have 77.96% (1.58 acres) of impervious surface. Using Figure 3-10 of the Lake County Watershed Development Ordinance, the storage requirement for Area 2 is 0.42 AF/Acre for the 100 year storm event, or 0.85 acre-feet. A portion of this storage will be on the parking area. The parking area volume calculation and map showing these detention areas is behind **Tab 7**.

The calculated restrictor sizes for the structures which will release floodwater from Area 1 and Area 2 are based on the 0.04 cfs/Acre for 2 year storm and 0.15 cfs/Acre for 100-year release rate. The minimum allowable restrictor diameter is 3" specified by the Village of Grayslake. Therefore a 3" restrictor will be installed in both restrictor structures. The restrictor size calculation is behind **Tab 8**.



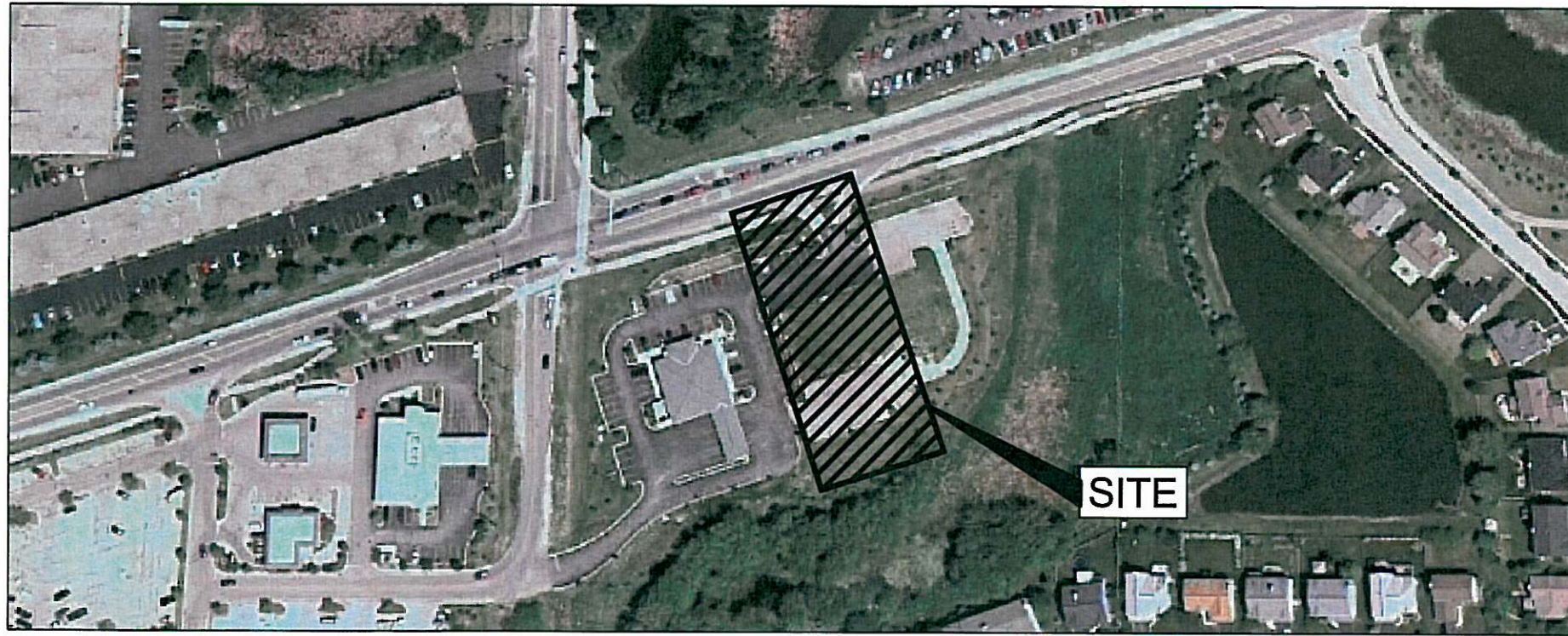
PROPERTY - 5.25 ACRES

WETLAND - 1.428 ACRES

Townhomes of Canterbury Estates Condominium

# DEVELOPMENT PERVIOUS AREAS





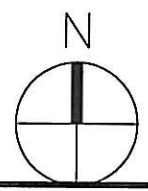
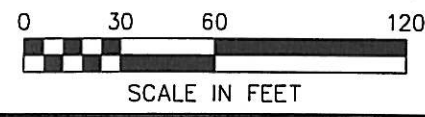
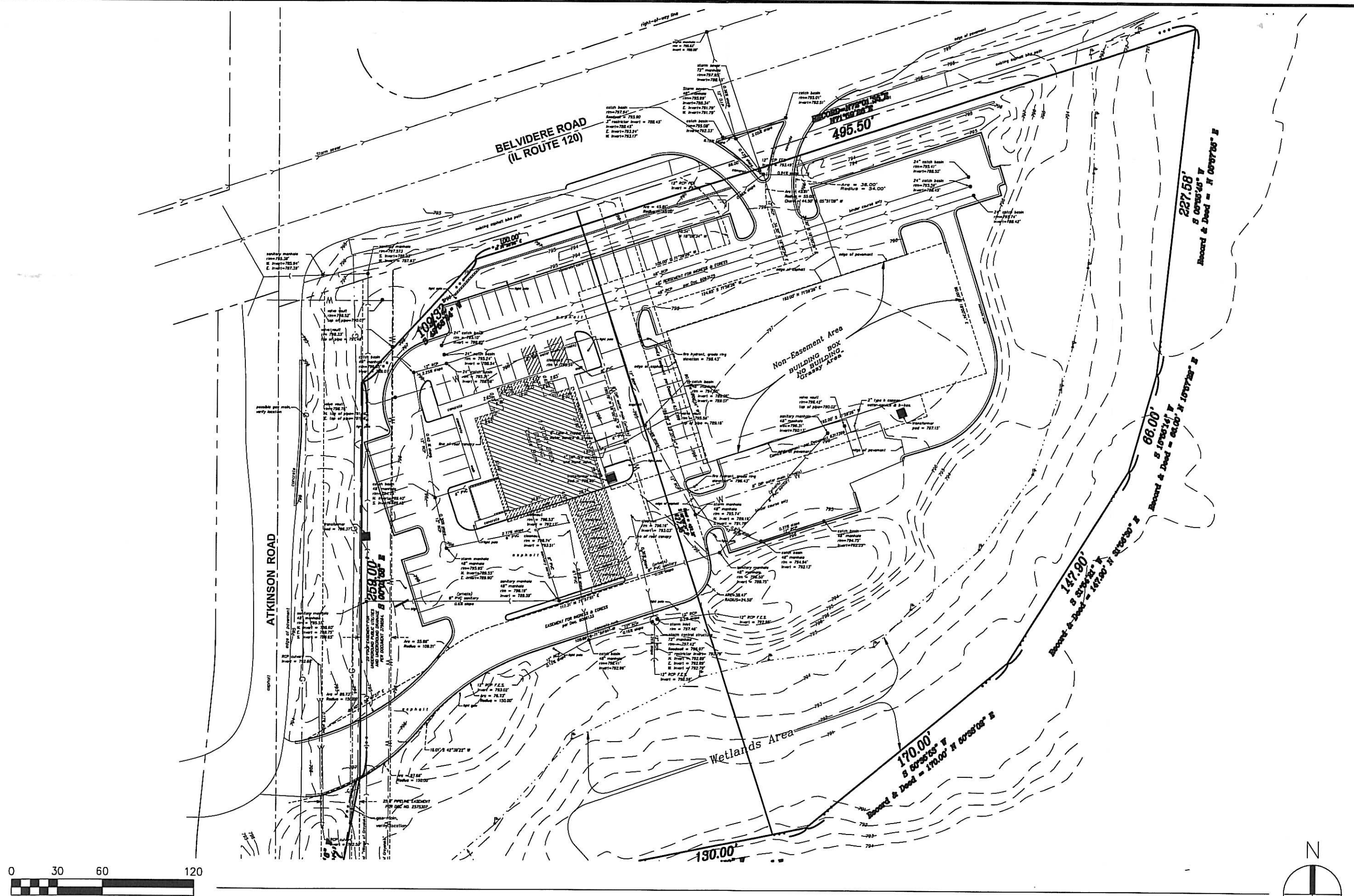
Aerial Map



Vicinity Map



SITE LOCATION MAP		SCALE	N.T.S.
ADVANCE AUTO PARTS		FIELD BOOK	
975 E. BELVIDERE ROAD, GRAYSLAKE, IL		REVISION	
DATE	01-16-2012	OP	OP
DRAWN			
APPROVED			
PROJECT NO. 8111901			
SHEET NO. <b>SL1.0</b>			



**SHIVE-HATTERY**  
ARCHITECTURE + ENGINEERING  
Iowa | Illinois | Missouri  
http://www.shive-hattery.com  
ILLINOIS FIRM NUMBER: 184-000214

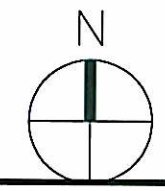
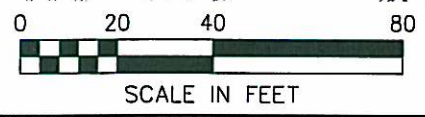
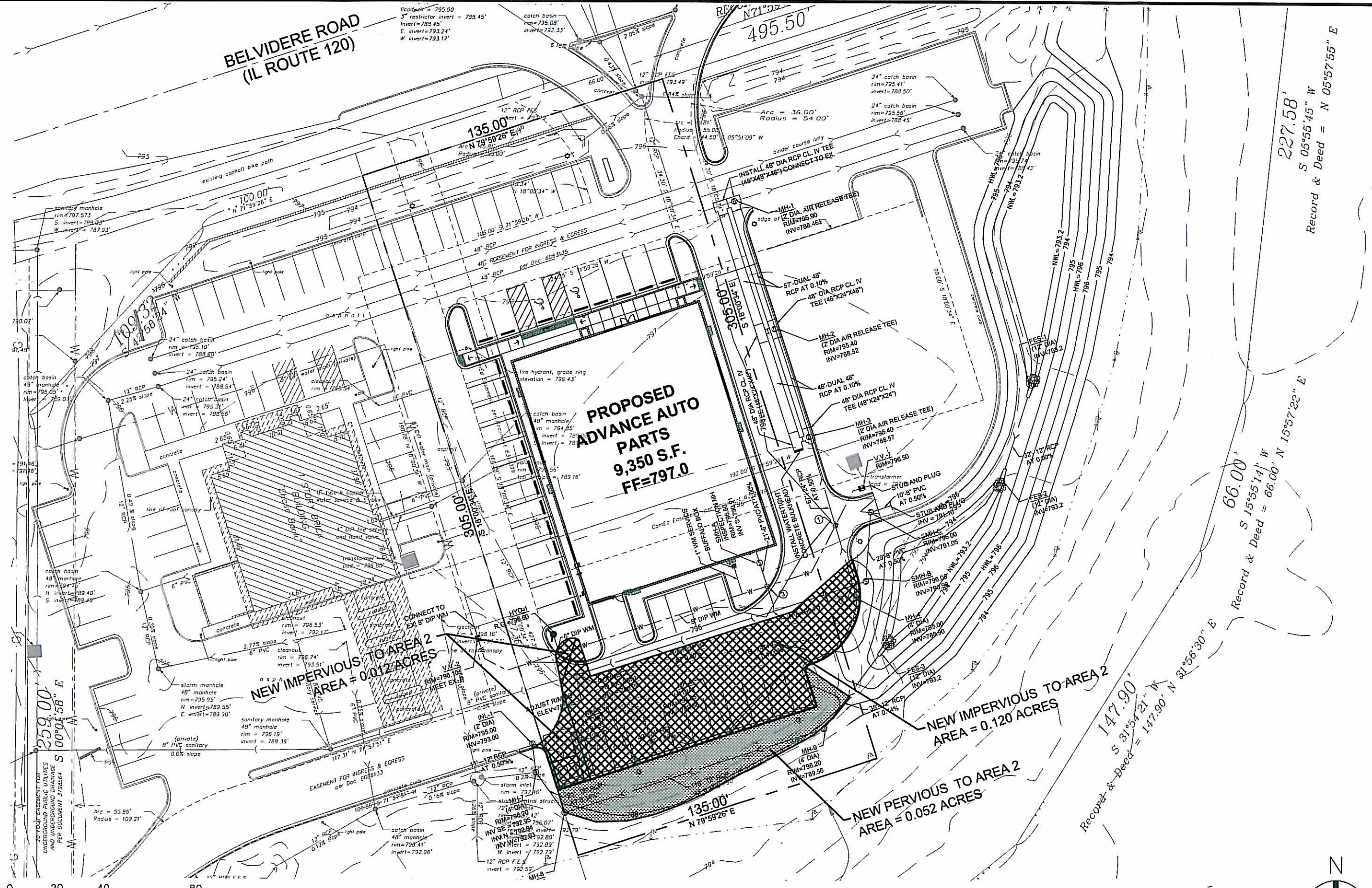
EXISTING CONDITIONS  
ADVANCE AUTO PARTS  
975 E. BELVIDERE ROAD, GRAYSLAKE, IL

DATE	01-16-2012	SCALE	1"=60'
DRAWN	OP	FIELD BOOK	REVISION
APPROVED	OP		

PROJECT NO.  
8111901

SHEET NO.  
**EX1.0**

**BELVIDERE ROAD  
(IL ROUTE 120)**



**NEW IMPERVIOUS TO AREA 2  
AREA = 0.012 ACRES**

**NEW PERVIOUS TO AREA 2  
AREA = 0.052 ACRES**

**NEW IMPERVIOUS TO AREA 2  
AREA = 0.120 ACRES**

147.90'  
S 31°54'21" W  
Record & Deed = 147.90' N 31°56'30" E

66.00'  
S 15°55'14" W  
Record & Deed = 66.00' N 15°57'22" E

227.58'  
S 05°55'45" W  
Record & Deed = N 05°57'55" E

**PROPOSED CONDITIONS  
ADVANCE AUTO PARTS  
975 E. BELVIDERE ROAD, GRAYSLAKE, IL**

DATE	DRAWN	APPROVED	SCALE	FIELD BOOK	REVISION
01-16-2012	OP	OP	1"=60'		

PROJECT NO.  
8111901

SHEET NO.  
**PR1.0**

**SHIVEHATTERY**  
ARCHITECTURE + ENGINEERING  
Iowa | Illinois | Missouri  
http://www.shive-hattery.com  
ILLINOIS FIRM NUMBER: 184-000214

PROJECT # 8111901  
DATE: 2/22/2012

**ADVANCE AUTO PARTS  
VILLAGE OF GRAYSLAKE, IL  
EXISTING SOUTH DETENTION BASIN BEING FILLED IN**

ELEVATION	S.F.	S.F.	FT.	C.F.	AC-FT	AC-FT
792.98	0					
		507	0.0	10	0.000	0.000
793	1,013					
		2,414	1.0	2,414	0.055	0.056
794	3,814					
		4,426	0.8	3,541	0.081	0.137
794.8	5,038					
		5,191	0.2	1,038	0.024	0.161
795	5,344					
		6,173	1.0	6,173	0.142	0.302
796	7,002					

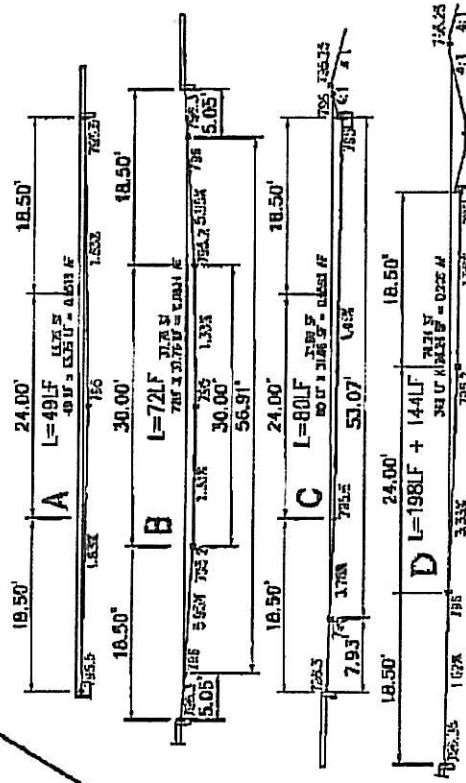
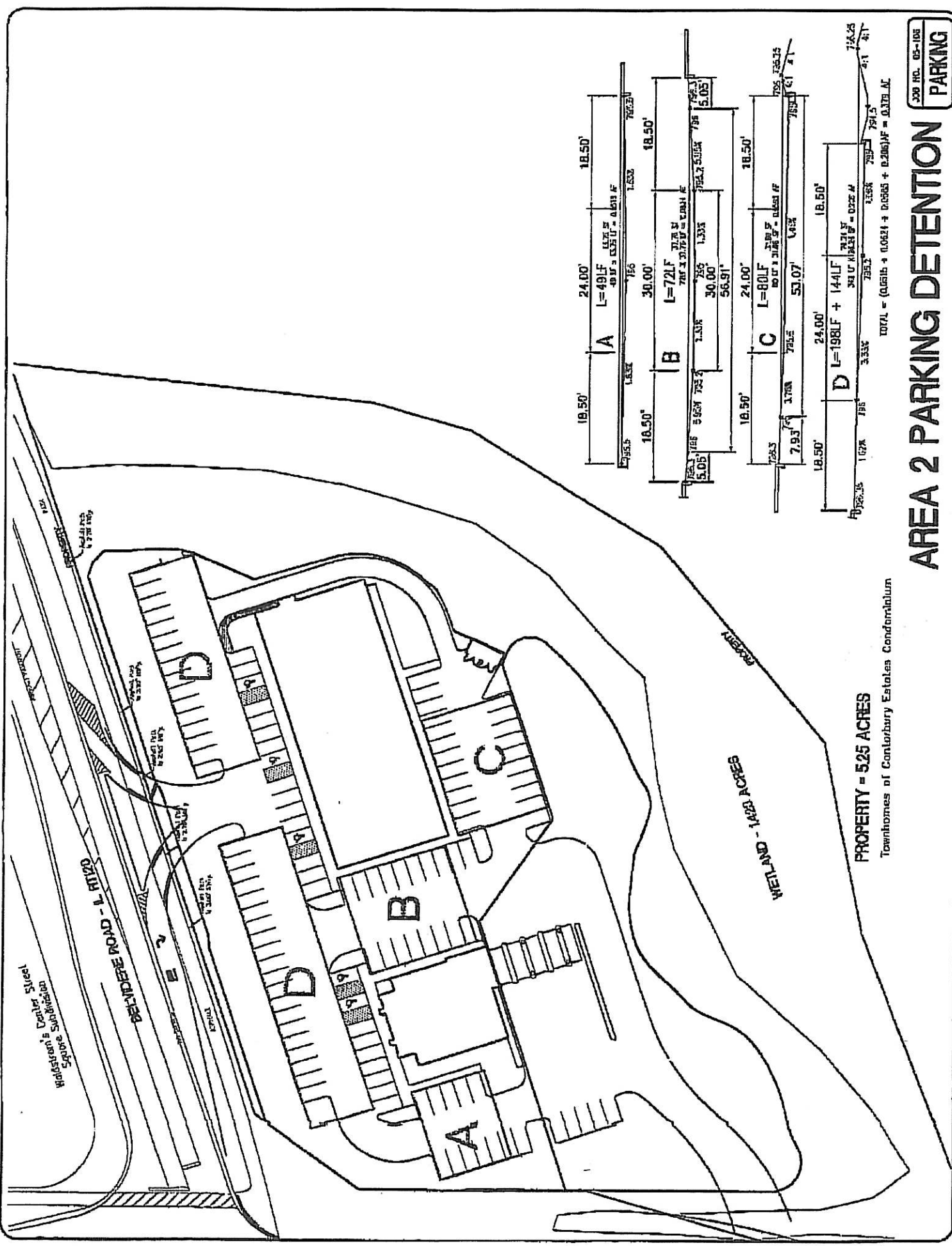
**STORAGE PROVIDED (AC-FT): 0.302**

PROJECT # 8111901  
DATE: 2/22/2012

**ADVANCE AUTO PARTS  
VILLAGE OF GRAYSLAKE  
PROPOSED DETENTION BASIN TO BE CONSTRUCTED ON EAST SIDE**

ELEVATION	S.F.	S.F.	FT.	C.F.	AC-FT	AC-FT
793.2	2,464					
		3,180	0.8	2,544	0.058	0.058
794	3,895					
		4,834	0.8	3,867	0.089	0.147
794.8	5,773					
		6,008	0.2	1,202	0.028	0.175
795	6,243					
		7,552	1.0	7,552	0.173	0.348
796	8,861					

**STORAGE PROVIDED (AC-FT): 0.348**



PROPERTY = 5.25 ACRES

Townhomes of Conlbury Estates Condominium

**AREA 2 PARKING DETENTION**

JOB NO. 05-108

PARKING

**ADVANCE AUTO PARTS  
VILLAGE OF GRAYSLAKE, ILLINOIS  
PROPOSED PARKING LOT DETENTION ON  
SOUTH PARKING AREA AND EAST DRIVE AISLE**

ELEVATION	S.F.	S.F.	FT.	C.F.	AC-FT	AC-FT
795.375	0					
		5,278	0.6	3,299	0.076	0.076
796	10,556					

**STORAGE PROVIDED (AC-FT): 0.076**

**PROPOSED ADVANCE AUTO PARTS  
975 E. BELVIDERE ROAD  
VILLAGE OF GRAYSLAKE, IL  
PIPE DETENTION PROVIDED CALCULATION**

Pipe Length	Pipe Size	Vol/Ft	Volume cubic feet
42	24	3.14	131.88
78	24	3.14	244.92
67	24	3.14	210.38
48	48	12.56	602.88
57	48	12.56	715.92
48	48	12.56	602.88
57	48	12.56	715.92
		Total	3224.78



TAB E

BAXTER & WOODMAN LETTER, AUGUST 27, 2013



COPY

August 27, 2013

Mr. Kirk Smith  
Zoning Officer  
Village of Grayslake  
10 South Seymour Avenue  
Grayslake, Illinois 60030

**Subject: Village of Grayslake – Advance Auto Parts  
Record Drawing Review – Detention Basin Volume**

Dear Mr. Smith:

In accordance with your instructions, we have reviewed the enclosed as-built detention basin volume calculations and sketch. The calculations were prepared by Curtis Lynn Smithson, P.E. of Smithson Associates, Inc., based on surveys prepared by R.E. Decker, PC. Our review was conducted to determine compliance with Village codes and standards and the previously issued Watershed Development Permit (WDP) for the project.

Smithson Associates has satisfactorily addressed our previous concerns regarding the as-built grading survey, and we have no further objections. The as-constructed detention system meets the requirement of the WDP #12-11-01.

The constructed detention basins and underground detention piping system volume exceeds the required volume without needing to include parking lot detention. This will allow some flexibility of development for the remnant parcel in this subdivision.

Please note that our review did not include field verification of existing conditions, elevations, grades and/or topography as shown on the plans. Should you have any questions please do not hesitate to call.

Very truly yours,

BAXTER & WOODMAN, INC.  
CONSULTING ENGINEERS

John J. Tierney, P.E.

enclosure

256 South Pine Street  
Burlington, WI 53105  
262.763.7834

C w/enc: Mr. Kevin McCrory, Building Commissioner  
Mr. William Heinz, Director of Public Works  
Mr. Curtis Smithson, P.E., Smithson Associates, Inc. ✓

Fax 262.763.2509

I:\Grayslake\GRAYLA\110228- Escrow Projects\12- Advance Auto fka AutoZone\Work\2013-08-27 Record Drawing Pond Calc Rvw.doc

info@baxterwoodman.com

**VILLAGE OF GRAYSLAKE  
 ATKINSON PLAZA STORMWATER MANAGEMENT  
 POST-CONSTRUCTION RECORD DETENTION VOLUME (2013)**

8-13-13

<u>Area 1</u>	<u>Acre-Feet</u>
Marchris As-built Vol. Below 795.85*	0.450
Lost South Pond Volume Below 794.8	(0.166)
Lost South Pond Volume Between 794.8 and 796	(0.136)
New Southeast Pond Volume Below 794.8	0.201
New Southeast Pond Volume Beteew 794.8 & 795.85	0.147
Design Volume	0.496
<i>Req'd Volume (based on Imp. Area)</i>	0.260

**As-Built SE Pond**

0.131	
0.112	ELEV 794.0 TO 795.5
0.391	Total Volume

<u>Area 2</u>	<u>Acre-Feet</u>
Marchris As-Built Volume (Pond)*	0.194
Marchris As-Built Volume (Pipe)*	0.320
Marchris As-Built Volume (Parking Below 796.15)*	0.630
Lost Parking Lot Vol. Area C	(0.058)
New Parking Lot Volume	0.076
New Pipe Volume	0.021
Design Volume	1.183
<i>Req'd Volume (based on Imp. Area)</i>	0.920

**As-built New  
 Parking & Pipes**

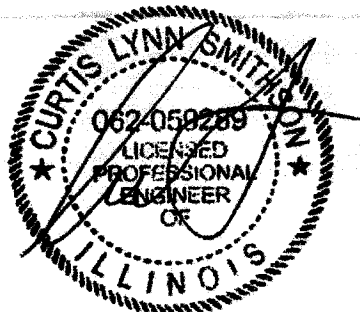
—	NOT DETERMINED
0.021	
1.107	Total Volume

Total Design Volume	1.679
Ordinance Required Volume	1.180
Additional Comp Storage (Wetlands)	0.133
<i>Ordinance Required Volume w/Comp Storage</i>	1.313

**Total As-Built Volume**

1.498
-------

\*Marchris 10-9-2007 Record Information Letter to Kirk Smith



EXPIRES 11/30/13

PROJECT: ADVANCE AUTO, GRAYSLAKE  
 SUBJECT: DETENTION BASIN VOLUME CALCULATION  
 ENGINEER: CLS  
 DATE: 8/13/2013 rev

**VOLUME IN EAST DETENTION BASIN BELOW ELEV. 794.8**

CONTOUR	AREA (SF)	VOLUME (CF)	CUMULATIVE VOLUME (CF)	CUMULATIVE VOLUME (CY)	
793.2	0.00		0.00	0.00	
		1645.60			
794	4114.00		1645.60	60.95	
		4047.60			
794.8	6005.00		5693.20	210.86	0.131 AC-FT

**VOLUME IN EAST DETENTION BASIN BETWEEN ELEV. 794.8 AND 795.5**

CONTOUR	AREA (SF)	VOLUME (CF)	CUMULATIVE VOLUME (CF)	CUMULATIVE VOLUME (CY)	
794.8	6005.00		0.00	0.00	
		1262.40			
795	6619.00		1262.40	46.76	
		3623.25			
795.5	7874.00		4885.65	180.95	0.112 AC-FT

**VOLUME IN AREA 2 PIPING**

PIPE LENGTH (LF)	PIPE SIZE (IN)	VOL/LF (CF)	VOLUME (CF)
37	24	3.14	116.18
83	24	3.14	260.62
70	24	3.14	219.80
50	24	3.14	157.00
49	24	3.14	153.86
7	24	3.14	21.98
TOTAL			929.44

0.021 AC-FT

