

SURVEYOR'S OFFICE  
**Hamilton County**

*Kenton C. Ward, CFM*  
*Surveyor of Hamilton County*  
*Phone (317) 776-8495*  
*Fax (317) 776-9628*

*Suite 188*  
*One Hamilton County Square*  
*Noblesville, Indiana 46060-2230*

August 5, 2013

TO: Hamilton County Drainage Board

RE: Crooked Creek Drain, Extension of North Augusta Arm #1  
(Walnut Creek Drive Extension)

Attached is a petition filed by G. William Armstrong of Guarantee Properties Limited Partnership, along with plans, calculations, and quantity summary for an arm extension to the Crooked Creek Drain. This proposed drain is located in Clay Township. I have reviewed the submittals and petition and have found each to be in proper form.

I have made a personal inspection of the land described below. Upon doing so, I believe that the drain is practicable, will improve the public health, benefit a highway and be of public utility and that the costs, damages and expenses of the proposed drain will probably be less than the benefits accruing to the owners of land likely to be benefited. The drain will consist of the following:

12" RCP – 33 feet  
15" RCP – 54 feet

18" RCP – 16 feet  
24" RCP – 359 feet

The total length of the drain will be 462 feet.

The extension of this arm shall begin at Str. 611 in the plans for Walnut Creek Drive Extension by Civil Site Group, Inc., having project number ADI.002, and last revision date of August 8, 2012. This structure is the terminus of the North Augusta Arm #1, per my report dated December 14, 2009, which was approved by the Board at hearing on February 22, 2010 (See Hamilton County Drainage Board Minutes Book 12, pages 420 to 421).

The cost of the arm is to be paid by the petitioner, Guarantee Properties Limited Partnership.

The petitioner has submitted surety for the proposed drain at this time. The sureties which are in the form of a Performance Bond are as follows:

Agent: Bond Safeguard Insurance Company  
Date: July 1, 2013  
Number: 5040921  
For: Storm Sewers  
Amount: \$88,644.00

This bond covers the original North Augusta Arm #1 of the Crooked Creek Drain and this extension as outlined in this report.

I believe this proposed drain meets the requirements for Urban Drain Classification as set out in IC 36-9-27-67 to 69. Therefore, this drain shall be designated as an Urban Drain.

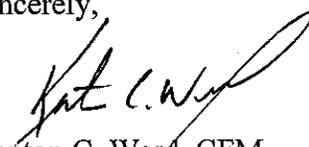
The parcels involved with this new arm extension are:

Parcel	Owner
17-13-07-04-01-005.000	Armtrust III, LLC
17-13-07-04-01-004.000	Armstrong Family Charitable Trust
17-13-07-04-01-003.000	Armstrong Family Charitable Trust
17-13-07-04-01-002.000	Armstrong Family Charitable Trust
98 <sup>th</sup> Street ROW	City of Carmel

The easement for the drain should be the existing drainage easement as described in the drainage easement granted by Armstrong Family Charitable Trust and Armtrust III, LLC, which are recorded in the Office of the Hamilton County Recorder as instrument numbers 2013024116 and 2013024115, respectively. These are the additional easements described in my report for North Augusta Arm #1.

I recommend that the Board set a hearing for this arm on September 23, 2013.

Sincerely,



Kenton C. Ward, CFM  
Hamilton County Surveyor

KCW/pll

**Crooked Creek Drain #250**

North Augusta Arm, Walnut Creek Drive Extension

Hearing: 09/23/13

\*Cost of extension to be paid by petitioner, Guarantee Properties LP

Easement granted by Armstrong Family Charitable Trust & Armtrust III LLC

Adding 462' of drain to total length.

\*No change in current assessment.

Parcel	Owner	Description	Benefit	MntAsmt	Reconst	Percent
17-13-07-04-01-005.000	Armtrust III LLC	S7T17R3 North Augusta 2nd Lot 63	*	*	*	20.00%
17-13-07-04-01-002.000	Armstrong, G Wm. Trustee of	S7T17R3 North Augusta Lot Pt 2	*	*	*	20.00%
17-13-07-04-01-003.000	Armstrong, G Wm. Trustee of	S7T17R3 North Augusta Lot Pt 2	*	*	*	20.00%
17-13-07-04-01-004.000	Armstrong, G Wm. Trustee of	S7T17R3 North Augusta Lot 3	*	*	*	20.00%
99-99-99-99-999.005	City Of Carmel, Dept. of Administration	S7T17R3 98th St.	*	*	*	20.00%

To: Hamilton County Drainage Board

Date: October 19, 2009

Re: Crooked Creek Drain

Guarantee Properties Limited Partnership (Here-in-after "Petitioner"), hereby petitions the Hamilton County Drainage Board under IC 36-9-27-66 for an arm to be installed to the Crooked Creek Drain, to be known as North Augusta Arm 1, in order to serve the property of the petitioner. The petitioner, in support of said petition, advises the Board that:

1. The Crooked Creek Drain is presently on a maintenance program and that land of the petitioner is assessed as benefited by the maintenance of the regulated drain
2. There is no known adequate open or tiled drain connecting the land of the petitioner with the regulated drain.
3. The waters from the petitioners land flow over or through land owned by others but is subject to a regulated drain easement to reach the regulated drain.
4. The general route of the proposed new regulated drain and method of construction is shown on Exhibit "A" which is attached.
5. Petitioner agrees to pay all legal and construction costs involved with the construction of the proposed new arm of the regulated drain and the design cost of Arm 2.

Signed

Printed

G. William Armstrong

G. WILLIAM ARMSTRONG, GENERAL PARTNER  
GUARANTEE PROPERTIES, LIMITED PARTNERSHIP

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\_\_\_\_\_

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\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

M/C  
4

DRAINAGE EASEMENT

2013024115 EASEMENTS \$0.00  
04/18/2013 03:44:20P 4 PGS  
Mary L. Clark  
HAMILTON County Recorder IN  
Recorded as Presented  


THIS INDENTURE WITNESSETH: That ARMTRUST III, LLC

(referred to herein as the "Grantor") for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, does hereby convey to the Board of Commissioners of Hamilton County, ("Grantee") a non-exclusive perpetual easement through, upon, over, along and across the following described real property located in Hamilton County, Indiana, ("the Easement") to-wit;

See Exhibit A.

This Easement is granted for the purpose of providing overland or subsurface paths and courses for the construction, maintenance, preservation of storm drainage. The Grantor reserves for themselves and their successors and assigns the right to use the Easement for any uses which are not inconsistent with the purposes herein. However, in the event the Grantor, or their successors, elect or desire to do any construction or alterations to the Real Estate within the Easement, they shall do so only upon approval of the Grantee. The Grantor further agrees that they shall not grant any easements to any other utilities, or other persons, through the real estate described herein, without the consent of the Grantees, and if said grants are given, those easements shall be subject to the Grantee's rights to regulate and permit construction or alteration with the Easement.

In the event the Grantee, its employees, or contractors are required to come upon the real estate contained in the Easement to replace, restore, or clear any drainage structures, ditches, drains, or swales contained therein, the Grantee shall only be liable to restore the Grantor's real estate to its previous grade, and to re-seed and undertake erosion control measures as are required by 327 IAC15-5 as amended. The Grantee, its employees, or contractors shall not be liable to Grantor, or his successor in title, for any improvements to the real estate, landscaping, sod, or any other improvements within the Easement which are damaged in the course of the repair of the drainage structure, ditches, drains, or swales contained in the Easement area.





# EXHIBIT "A"

PART OF LOT 63 IN NORTH AUGUSTA 2ND SECTION  
CLAY TOWNSHIP, HAMILTON COUNTY, INDIANA

## LAND DESCRIPTION

PART OF LOT 63 IN NORTH AUGUSTA 2ND SECTION IN CLAY TOWNSHIP,  
HAMILTON COUNTY, INDIANA, DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF LOT 63 IN NORTH AUGUSTA, 2ND SECTION RECORDED IN DEED BOOK 134 PAGE 411-412 IN THE RECORDER'S OFFICE OF HAMILTON COUNTY INDIANA; THENCE ON THE WEST LINE OF LOT 63 NORTH 20 DEGREES 20 MINUTES 50 SECONDS WEST (ASSUMED BEARING) 193.52 FEET; THENCE NORTH 00 DEGREES 32 MINUTES 10 SECONDS WEST 53.58 FEET TO THE NORTH LINE OF SAID LOT 63; THENCE ON SAID NORTH LINE NORTH 89 DEGREES 32 MINUTES 58 SECONDS EAST 170.35 FEET TO THE NORTHEAST CORNER OF SAID LOT 63; THENCE ON THE EAST LINE OF SAID LOT 63 SOUTH 00 DEGREES 32 MINUTES 10 SECONDS EAST 30.00 FEET; THENCE SOUTH 89 DEGREES 32 MINUTES 58 SECONDS WEST 135.35 FEET; THENCE SOUTH 00 DEGREES 32 MINUTES 10 SECONDS EAST 38.07 FEET; THENCE SOUTH 20 DEGREES 20 MINUTES 50 SECONDS EAST 142.85 FEET; THENCE SOUTH 52 DEGREES 26 MINUTES 02 SECONDS EAST 32.72 FEET TO NON-TANGENT CURVE ON THE SOUTH LINE OF LOT 63 WITH A RADIUS OF 444.83 FEET AND THE CENTRAL ANGLE OF 5 DEGREES 51 MINUTES 27 SECONDS; THENCE ON THE ARC OF SAID CURVE 45.48 FEET WITH A CHORD BEARING SOUTH 72 DEGREES 55 MINUTES 46 SECONDS WEST 45.46 FEET TO THE POINT OF BEGINNING, CONTAINING 0.264 ACRES MORE OR LESS.



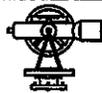
"THE WITHIN LAND DESCRIPTION AND/OR EXHIBIT DRAWING WAS PREPARED BASED UPON RECORD INFORMATION AND/OR PRIOR SURVEYS OF THE PARENT TRACT. NO FIELD SURVEY WAS PERFORMED AND NO MONUMENTS WERE SET WITH THIS WORK. THIS LAND DESCRIPTION IS SUBJECT TO CHANGE BASED UPON A REVIEW OF A CURRENT BOUNDARY SURVEY OF THE PREMISES.

*K. Nathan Althous*

04/19/2012

R.L.S. LS20400007

DATE:



### MILLER SURVEYING INC.

948 CONNER STREET  
NOBLESVILLE INDIANA 46060  
PH. # (317) 773-2644 FAX 773-2694



LOCATION: PART OF LOT 63 IN NORTH AUGUSTA 2ND SECTION CLAY TOWNSHIP, HAMILTON COUNTY, INDIANA	DRAWN BY: MJJ	CHK'D BY: KNA
FIELD WORK COMPLETED: N/A	SCALE: 1" = 50'	FIELD BOOK: N/A
CLIENT: (BRIAN CROSS)	DATE: 04/25/2012	PAGE: N/A
DESCRIPTION: SEWER EASEMENT	JOB NUMBER B33977	SURVEY 4 FILE: 77 UNITED

THIS SURVEY IS NOT COMPLETE AND/OR  
VALID WITHOUT BOTH

PAGE 2 OF 2

pk  
1/19

2013024116 EASEMENTS \$0.00  
04/18/2013 03:44:20P 4 PGS  
Mary L. Clark  
HAMILTON County Recorder IN  
Recorded as Presented

DRAINAGE EASEMENT

THIS INDENTURE WITNESSETH: That ARMSTRONG FAMILY CHARITABLE TRUST

(referred to herein as the "Grantor") for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, does hereby convey to the Board of Commissioners of Hamilton County, ("Grantee") a non-exclusive perpetual easement through, upon, over, along and across the following described real property located in Hamilton County, Indiana, ("the Easement") to-wit;

See Exhibit A.

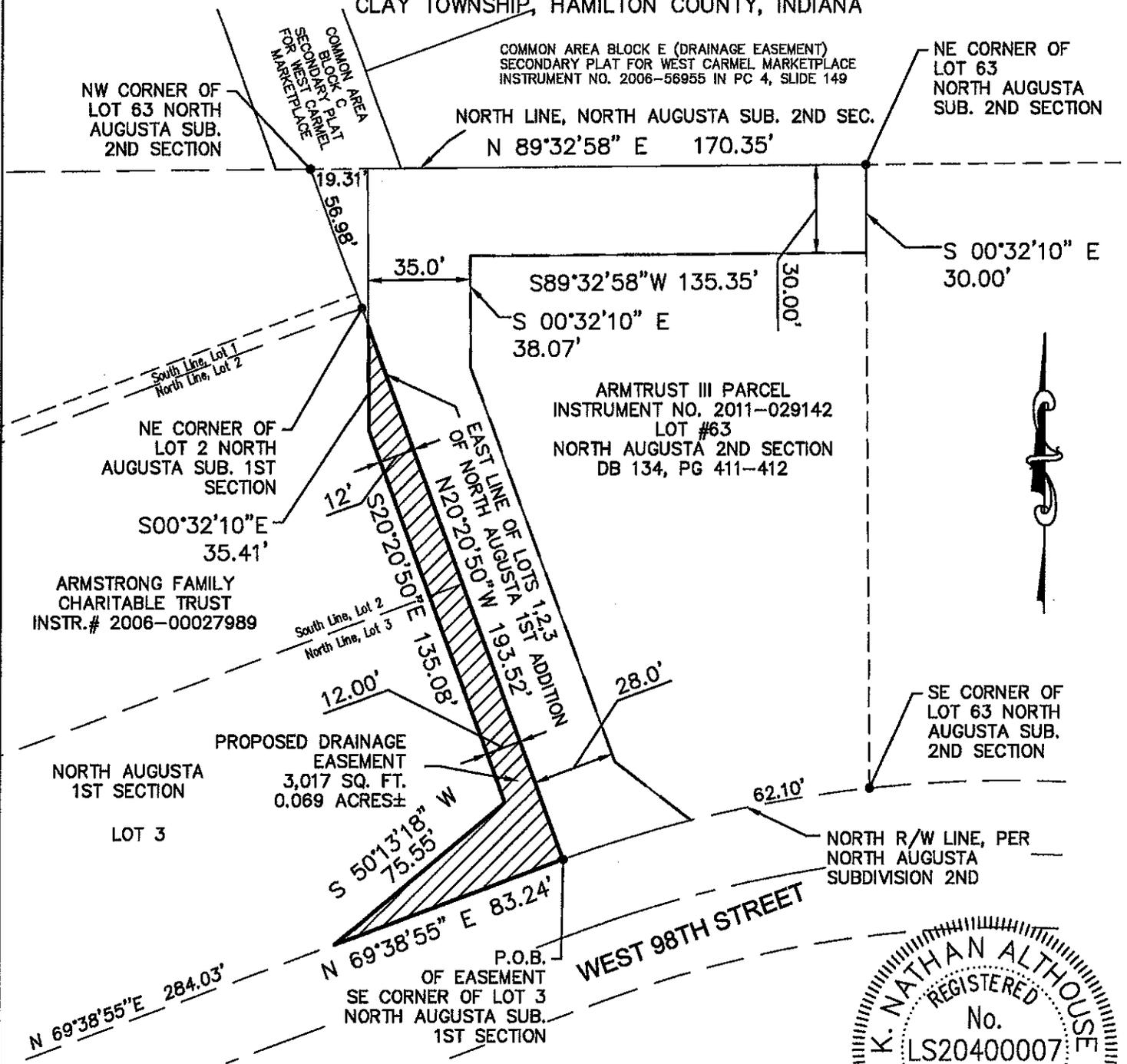
This Easement is granted for the purpose of providing overland or subsurface paths and courses for the construction, maintenance, preservation of storm drainage. The Grantor reserves for themselves and their successors and assigns the right to use the Easement for any uses which are not inconsistent with the purposes herein. However, in the event the Grantor, or their successors, elect or desire to do any construction or alterations to the Real Estate within the Easement, they shall do so only upon approval of the Grantee. The Grantor further agrees that they shall not grant any easements to any other utilities, or other persons, through the real estate described herein, without the consent of the Grantees, and if said grants are given, those easements shall be subject to the Grantee's rights to regulate and permit construction or alteration with the Easement.

In the event the Grantee, its employees, or contractors are required to come upon the real estate contained in the Easement to replace, restore, or clear any drainage structures, ditches, drains, or swales contained therein, the Grantee shall only be liable to restore the Grantor's real estate to its previous grade, and to re-seed and undertake erosion control measures as are required by 327 IAC15-5 as amended. The Grantee, its employees, or contractors shall not be liable to Grantor, or his successor in title, for any improvements to the real estate, landscaping, sod, or any other improvements within the Easement which are damaged in the course of the repair of the drainage structure, ditches, drains, or swales contained in the Easement area.



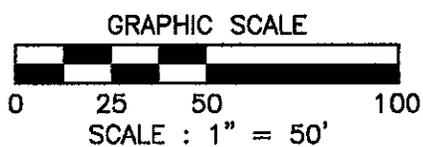
# EXHIBIT "A"

PART OF LOT 3 AND 2 IN NORTH AUGUSTA 1ST SECTION  
CLAY TOWNSHIP, HAMILTON COUNTY, INDIANA



*K. Nathan Althous*  
R.L.S. LS20400007

04/19/2012  
DATE:



THIS SURVEY IS NOT COMPLETE AND/OR  
VALID WITHOUT BOTH

**PAGE 1 OF 2**

 <b>MILLER SURVEYING INC.</b> 948 CONNER STREET NOBLESVILLE, INDIANA 46060 PH. # (317) 773-2644 FAX 773-2694			
FIELD WORK COMPLETED: N/A		SCALE: 1" = 50'	FIELD BOOK: N/A
CLIENT: (BRIAN CROSS)		DATE: 04/25/2012	PAGE: N/A
DESCRIPTION: SEWER EASEMENT		JOB NUMBER: B33977B	SURVEY 4 FILE: 77 UNITED

# EXHIBIT "A"

PART OF LOT 3 AND 2 IN NORTH AUGUSTA 1ST SECTION  
CLAY TOWNSHIP, HAMILTON COUNTY, INDIANA

## LAND DESCRIPTION

A PART OF LOTS 2 AND 3 IN NORTH AUGUSTA 1ST ADDITION IN CLAY TOWNSHIP, HAMILTON COUNTY, INDIANA, DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF LOT 3 IN NORTH AUGUSTA 1ST SECTION RECORDED IN RECORD 132 PAGE 446 IN THE OFFICE OF THE RECORDER OF HAMILTON COUNTY, INDIANA; THENCE ON THE EAST LINE OF LOTS 3 AND 2 OF SAID NORTH AUGUSTA 1ST SECTION NORTH 20 DEGREES 20 MINUTES 50 SECONDS WEST (ASSUMED BEARING) 193.52 FEET; THENCE SOUTH 00 DEGREES 32 MINUTES 10 SECONDS 35.41 FEET; THENCE SOUTH 20 DEGREES 20 MINUTES 50 SECONDS EAST 135.08 FEET; THENCE SOUTH 50 DEGREES 13 MINUTES 18 SECONDS WEST 75.55 FEET TO THE SOUTH LINE OF SAID LOT 3; THENCE ON SAID SOUTH LINE NORTH 69 DEGREES 38 MINUTES 55 SECONDS EAST 83.24 FEET TO THE POINT OF BEGINNING, CONTAINING 0.069 ACRES MORE OR LESS.



"THE WITHIN LAND DESCRIPTION AND/OR EXHIBIT DRAWING WAS PREPARED BASED UPON RECORD INFORMATION AND/OR PRIOR SURVEYS OF THE PARENT TRACT. NO FIELD SURVEY WAS PERFORMED AND NO MONUMENTS WERE SET WITH THIS WORK. THIS LAND DESCRIPTION IS SUBJECT TO CHANGE BASED UPON A REVIEW OF A CURRENT BOUNDARY SURVEY OF THE PREMISES.

*K. Nathan Althouse*

04/27/2012

R.L.S.

LS20400007

DATE:



### MILLER SURVEYING INC.

948 CONNER STREET  
NOBLESVILLE INDIANA 46060  
PH. # (317) 773-2644 FAX 773-2694



LOCATION: PART OF LOT 3 AND 2 IN NORTH AUGUSTA 1ST SECTION CLAY TOWNSHIP, HAMILTON COUNTY, INDIANA	DRAWN BY: MJJ	CHK'D BY: KNA
FIELD WORK COMPLETED: N/A	SCALE: 1" = 60'	FIELD BOOK: N/A
CLIENT: (BRIAN CROSS)	DATE: 04/27/2012	PAGE: N/A
DESCRIPTION: SEWER EASEMENT	JOB NUMBER	SURVEY 4 FILE:
	B33977B	77 UNITED

THIS SURVEY IS NOT COMPLETE AND/OR VALID WITHOUT BOTH

**PAGE 2 OF 2**

# Drainage Calculations

## Walnut Creek Drive Extension & Utility Infrastructure

9805, 9807 N Michigan Rd.; 3746 West 98<sup>th</sup> Street  
Carmel, Indiana

Job #: ADI.002

Date: 08-20-2010  
REVISED: 03-22-2011

Prepared by: Brian Cross, P.E.  
Reviewed by: Eric A. Gleissner, P.E.



*Brian S. Cross*



643 Massachusetts Avenue  
Suite 200  
Indianapolis, IN 46204  
Phone: 317-423-3305 Fax: 317-423-3306

FILED

MAR 28 2011

OFFICE OF HAMILTON COUNTY CLERK

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- A. Project Title
- B. Project Drainage Summary
- C. Design Method and Criteria
- D. References

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- A. Site Information
- B. Proposed Conditions (exhibits, calculations, etc.)
- C. Hamilton County Surveyor's Office Approval – June, 2007

# **SECTION I: REPORT**

**A. Project Title**

***Walnut Creek Drive Extension & Utility Infrastructure*** (9805, 9807 N Michigan Rd., 3746 West 98<sup>th</sup> Street)

**B. Project Drainage Summary**

The project proposes to connect the Walnut Creek Drive (private) access road from the West Carmel Marketplace development south to West 98th Street. The construction of this drive connection requires existing utilities to be relocated along with the extension of the North Augusta Arm #1-Crooked Creek Regulated Drain designed to accommodate the future commercial development along Michigan Road and W. 98th Street. Approved design plans (11/2009) for the North Augusta Arm #1-Crooked Creek Regulated Drain are on file with the Hamilton County Surveyor's Office.

This project is located at the northeast corner of the intersection of Michigan Road and 98th Street in Hamilton County, Indiana. The proposed construction activity will be disturbing approximately 0.88 acres. The construction area will be disturbing existing open green space and landscape buffer area within Common Area Block E Drainage Easement of West Carmel Marketplace. The proposed improvements will consist of installing drainage infrastructure to extend the North Augusta Arm #1-Crooked Creek Regulated Drain (ALL storm structures EXCEPT FOR STR.#701, #704, & #EX1 will be part of this Regulated Drain extension), provide road drainage for Walnut Creek Drive, and establish drainage infrastructure sized to accommodate the future commercial development along Michigan Road and W. 98th Street. These plans and calculations will provide the area of North Augusta the opportunity to be positioned for future redevelopment by providing a viable stormwater drainage connection point.

The previously approved North Augusta Arm #1- Crooked Creek Regulated Drain terminates at Str. #611 on Lot #63 North Augusta and is designed to accommodate Basin 611 post-developed conditions (3.59 Ac; CN=91.2; Tc=8). The 10-yr full flow design capacity of the 24-inch diameter pipe is 16.43cfs. The stormwater detention pond system of West Carmel Marketplace includes Basin 611 post-developed conditions in an updated analysis performed by Woolpert, LLP in June, 2007 and reviewed / approved by the Hamilton County Surveyor's Office (Letter on File). Separate stormwater detention is NOT required for the 3.59 Ac post-developed area of Basin 611.

The existing land uses adjacent to the subject site are as follows:

North:	Commercial
West:	Commercial / Residential
South:	Residential
East:	Residential

**C. Design Method and Criteria**

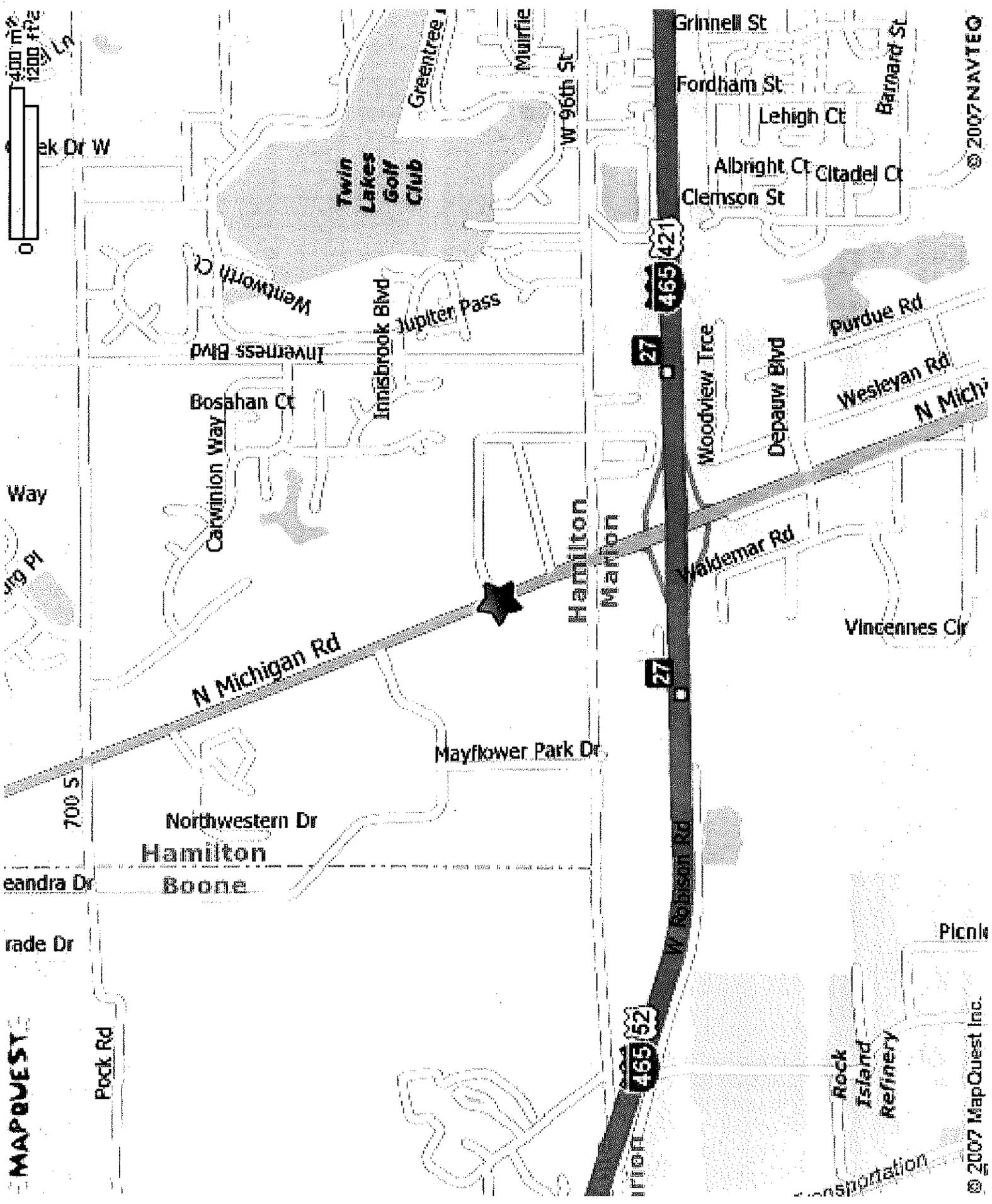
1. Soil Type: Soil maps from the United States Department of Agriculture, Soil Conservation Service, identify Brookston Silty Clay Loam – (Br) and Crosby Silt Loam (CrA).
2. Design Storm: The 10-year storm event utilizing a 2-yr/24-hr rainfall depth of 2.66-inches for Time of Concentration calculations has been analyzed for the proposed storm sewer pipe sizing calculations. The NRCS type II rainfall distribution was used in the hydrology calculations.
3. Overall Watershed: Crooked Creek Regulated Drain.

**D. References**

1. TR55 Stormwater Design Manual.
2. Hamilton County Soil Survey.
3. Hamilton County Stormwater Technical Standards
4. Highway Extension and Research Project for Indiana Counties (HERPIC).

## **SECTION II: APPENDIX**

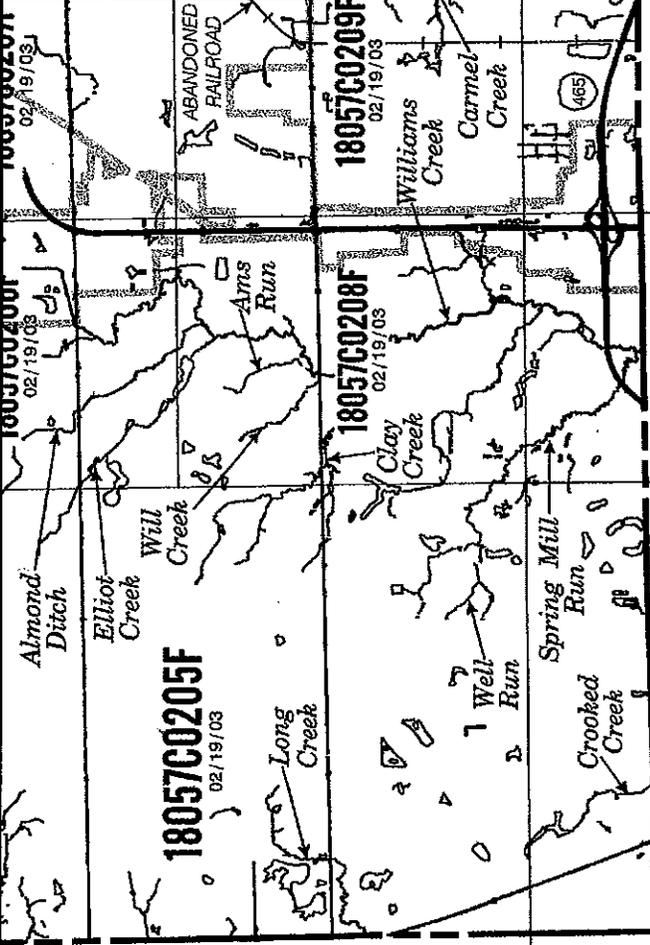
**A. Site Information**



MAPQUEST

© 2007 NAVTEQ

© 2007 MapQuest Inc.



**NATIONAL FLOOD INSURANCE PROGRAM**

**FIRM**  
**FLOOD INSURANCE RATE MAP**  
 HAMILTON COUNTY,  
 INDIANA  
 AND INCORPORATED AREAS  
 (SEE LISTING OF COMMUNITIES TABLE)

**MAP INDEX**

**PANELS PRINTED:** 25, 45, 50, 55, 60,  
 65, 70, 80, 90, 106, 110, 115, 119, 120, 130,  
 135, 138, 140, 145, 155, 160, 165, 170, 200,  
 205, 206, 207, 208, 209, 216, 226, 227,  
 228, 229, 236, 236, 237, 245, 255, 260,  
 265, 270, 280, 290

**MAP NUMBER**  
 18057CIND00A

**EFFECTIVE DATE:**  
 FEBRUARY 19, 2003

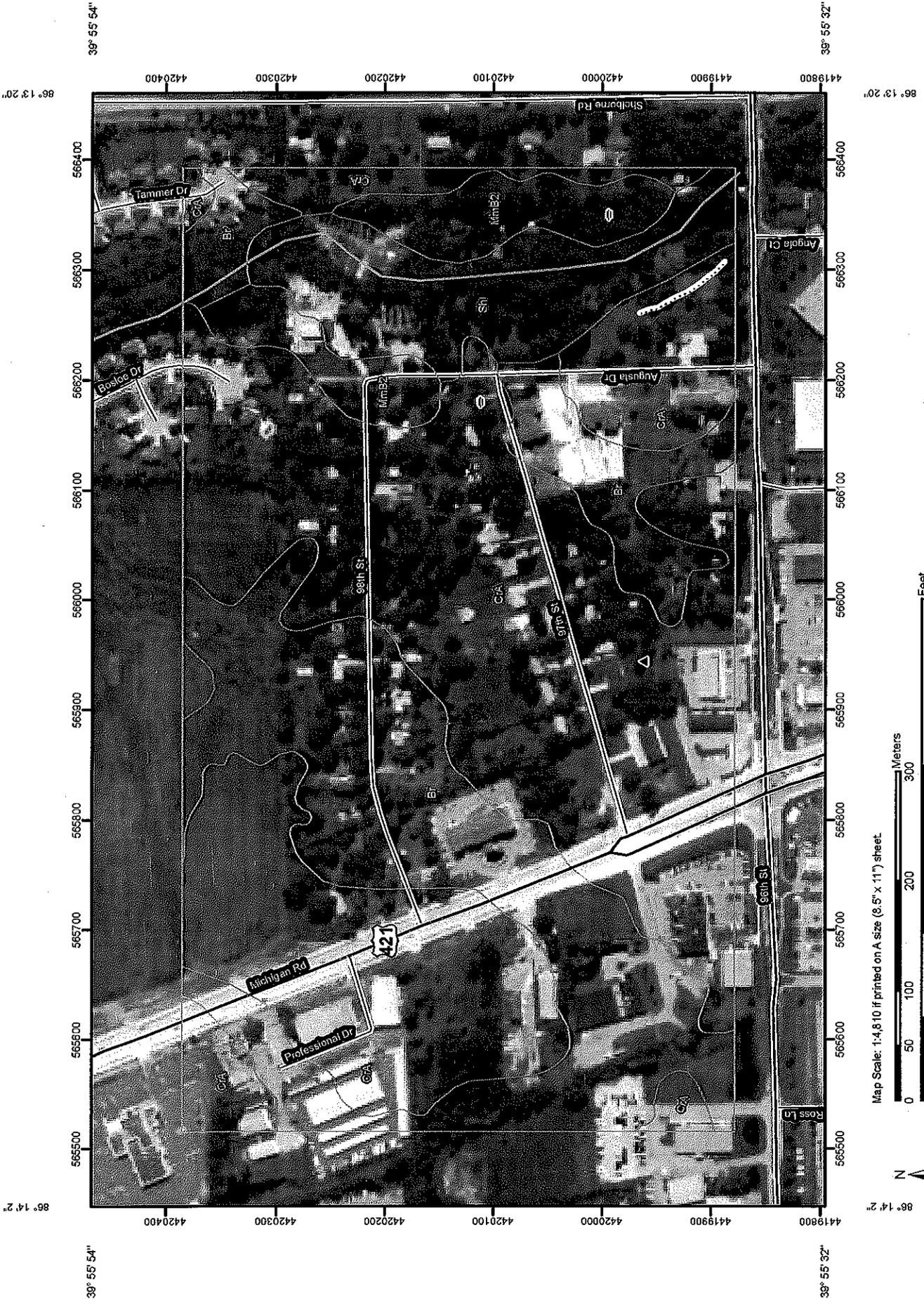


Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT Ch-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.nsc.fema.gov](http://www.nsc.fema.gov)

\*PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS

Soil Map—Hamilton County, Indiana



Map Scale: 1:4,810 if printed on A size (8.5" x 11") sheet.



## MAP INFORMATION

Map Scale: 1:4,810 if printed on A size (8.5" x 11") sheet.  
 The soil surveys that comprise your AOI were mapped at 1:15,840. Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>  
 Coordinate System: UTM Zone 16N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hamilton County, Indiana  
 Survey Area Data: Version 8, Dec 11, 2008

Date(s) aerial images were photographed: 7/19/2003

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

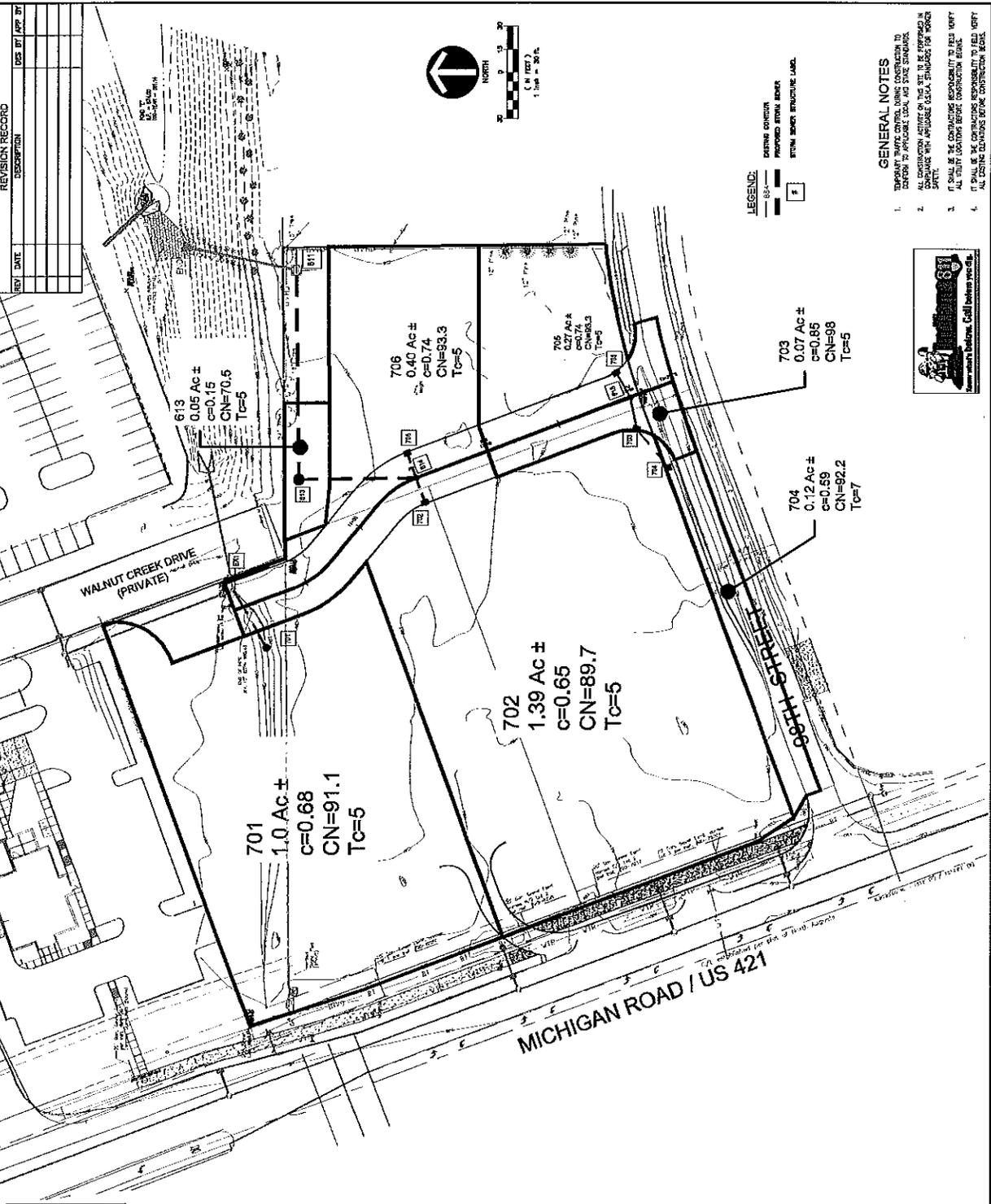
## MAP LEGEND

- |                               |                        |                           |                     |
|-------------------------------|------------------------|---------------------------|---------------------|
|                               | Area of Interest (AOI) |                           | Very Stony Spot     |
|                               | Soils                  |                           | Wet Spot            |
|                               | Soil Map Units         |                           | Other               |
| <b>Special Point Features</b> |                        |                           |                     |
|                               | Blowout                |                           | Gully               |
|                               | Borrow Pit             |                           | Short Steep Slope   |
|                               | Clay Spot              |                           | Other               |
|                               | Closed Depression      | <b>Political Features</b> |                     |
|                               | Gravel Pit             |                           | Cities              |
|                               | Gravelly Spot          | <b>Water Features</b>     |                     |
|                               | Landfill               |                           | Oceans              |
|                               | Lava Flow              |                           | Streams and Canals  |
|                               | Marsh or swamp         | <b>Transportation</b>     |                     |
|                               | Mine or Quarry         |                           | Rails               |
|                               | Miscellaneous Water    |                           | Interstate Highways |
|                               | Perennial Water        |                           | US Routes           |
|                               | Rock Outcrop           |                           | Major Roads         |
|                               | Saline Spot            |                           | Local Roads         |
|                               | Sandy Spot             |                           |                     |
|                               | Severely Eroded Spot   |                           |                     |
|                               | Sinkhole               |                           |                     |
|                               | Slide or Slip          |                           |                     |
|                               | Sodic Spot             |                           |                     |
|                               | Spill Area             |                           |                     |
|                               | Stony Spot             |                           |                     |

## Map Unit Legend

Hamilton County, Indiana (IN057)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Br	Brookston silty clay loam	30.5	27.8%
CrA	Crosby silt loam, 0 to 3 percent slopes	62.8	57.3%
MmB2	Miami silt loam, 2 to 6 percent slopes, eroded	6.6	6.0%
Sh	Shoals silt loam	9.8	8.9%
<b>Totals for Area of Interest</b>		<b>109.7</b>	<b>100.0%</b>

**B. Proposed Conditions**



**BENCHMARK**

CHISEL SQUARE ON NORTH  
 REBAR W/ WOODCRAFT CUP FOUND  
 ELEV=882.8

TRIMBOX  
 W/ WOODCRAFT CUP FOUND  
 ELEV=883.1

TRIMBOX  
 W/ WOODCRAFT CUP FOUND  
 ELEV=882.7

**CONTRACTOR NOTE**

TO EACH SET-POINT ACTIVITY, ANY COMMENCE  
 WITHOUT AN APPROVED STORM WATER MANAGEMENT PERMIT.

ALL CONCRETE PIPE JOINTS SHALL  
 BE CONTINUOUS CHINA RUBBER  
 GASKET CONFORMING TO ASTM C 440  
 18" OF VERTICAL SEPARATION MUST  
 BE MAINTAINED FOR ALL UTILITY  
 CROSSINGS.

**STORM SEWER INLET NOTE**

ALL STORMWATER DRAINAGE CASTINGS SHALL  
 BE LABELLED WITH ENVIRONMENTAL  
 MESSAGING "DUMP NO WASTE"

IT SHALL BE NECESSARY TO RELOCATE EXISTING  
 UTILITIES. THE EXPENSE OF SUCH RELOCATION SHALL  
 BE THE RESPONSIBILITY OF THE DEVELOPER. ALL  
 UTILITIES SHALL BE LOCATED WITHIN ONE-FOOT  
 OF THE PROPOSED RIGHT-OF-WAY.

# CIVIL SITE GROUP, INC

03/23/11

STORM DRAIN FLOW TABULATION FORM - RATIONAL METHOD

PROJECT NAME	ARMSTRONG ARM EXTENSION	COMPUTED BY:	BSC
PROJECT No.	ADI.002	CHECKED BY:	BSC
STORM FREQUENCY DESIGN YEAR	10		

## ARMSTRONG ARM EXTENSION

LOCATION		INLET		ACRES		COEF. "C"		SUM CA		TIME CONC. (min)			INT.			CALCULATED			DESIGN			MANHOLE	
from	to	AREA	sub	sub	total	CA	CA	CA	CA	inlet	drain	total	"T"	PIPE (full) n =	PIPE size	PIPE slope	PIPE length	PIPE slope	Max Q full	Max V full	INV out	INV in	
615	614	615	0.00	0.46	0.68	0.00	0.33	0.00	0.00	5	8.29	4.40	12.69	5	6.40	0.01	150	0.12	8.49	2.70	882.50	882.50	
614	613	614	0.00	2.25	0.15	0.00	1.53	0.00	0.00	5	12.69	0.58	13.28	24	6.40	0.08	77	0.12	8.49	2.70	875.82	875.82	
613	611	613	0.05	2.30	0.15	0.01	1.54	0.01	0.05	5	13.28	1.02	14.29	24	6.40	0.08	132	0.45	16.43	5.23	875.72	883.00	

705	615	705	0.27	0.27	0.74	0.20	0.20	0.20	1.28	5	5.00	0.29	5.29	15	0.03	18	0.25	3.50	2.85		878.00	877.96
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704	703	704	0.12	0.12	0.59	0.07	0.07	0.07	0.41	7	1.04	7.73	7	5.85	0.01	33	0.30	2.11	2.69		881.50	878.40
703	615	703	0.07	0.19	0.85	0.06	0.13	0.06	0.38	5	7.73	0.57	8.29	15	0.01	20	0.25	3.50	2.85		882.00	878.25

706	614	706	0.40	0.40	0.74	0.30	0.30	0.30	1.89	5	5.00	0.17	5.17	15	0.07	16	0.20	3.13	2.55		878.00	877.97
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702	614	702	1.39	1.39	0.65	0.90	0.90	0.90	5.78	5	5.00	0.08	5.08	18	0.26	16	0.30	6.23	3.53		882.50	876.95
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701	EX1	701	1.00	1.00	0.68	0.68	0.68	0.68	4.35	5	5.00	0.29	5.29	18	0.15	43	0.23	5.46	3.09		881.00	878.00
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# STORM SEWER PIPE BASINS

	Runoff Coefficient	Weighted Curve Number CN	
Impervious Area =	0.90	98	Rooftop
Greenspace =	0.15	70.5	**Open Space Lawn (Good Condition)
Gravel/Stone =	0.85	89.0	
Impervious Area =	0.85	98.0	Asphalt

Brookston Silty Clay Loam (Br - 35% Site) Type "B" Soil - CN 61  
 Crosby Silt Loam (CrA - 65% Site) Type "C" Soil - CN 74

## BASIN (706) - Commercial Land Use assumed

Impervious Area (ft <sup>2</sup> ) - Asphalt	Impervious Area (ft <sup>2</sup> ) - Rooftop	Greenspace (ft <sup>2</sup> )	Stone (ft <sup>2</sup> )	Total (ft <sup>2</sup> )	Total (Acres)	Composite "C"	Composite "CN"
10477	4000	2984	0	17461	0.40	0.74	93.3

## BASIN (705) - Commercial Land Use assumed

Impervious Area (ft <sup>2</sup> ) - Asphalt	Impervious Area (ft <sup>2</sup> ) - Rooftop	Greenspace (ft <sup>2</sup> )	Stone (ft <sup>2</sup> )	Total (ft <sup>2</sup> )	Total (Acres)	Composite "C"	Composite "CN"
8894	1000	1965	0	11858	0.27	0.74	93.4

## BASIN (704) - W 98TH ST HALF R/W

Impervious Area (ft <sup>2</sup> ) - Asphalt	Impervious Area (ft <sup>2</sup> ) - Rooftop	Greenspace (ft <sup>2</sup> )	Stone (ft <sup>2</sup> )	Total (ft <sup>2</sup> )	Total (Acres)	Composite "C"	Composite "CN"
2880	0	2539	432	5419	0.12	0.59	92.2

## BASIN (703) - W 98TH ST & WALNUT CREEK DRIVE PVMT

Impervious Area (ft <sup>2</sup> ) - Asphalt	Impervious Area (ft <sup>2</sup> ) - Rooftop	Greenspace (ft <sup>2</sup> )	Stone (ft <sup>2</sup> )	Total (ft <sup>2</sup> )	Total (Acres)	Composite "C"	Composite "CN"
3006	0	0	0	3006	0.07	0.85	98.0

## BASIN (702) - Commercial Land Use assumed

Impervious Area (ft <sup>2</sup> ) - Asphalt	Impervious Area (ft <sup>2</sup> ) - Rooftop	Greenspace (ft <sup>2</sup> )	Stone (ft <sup>2</sup> )	Total (ft <sup>2</sup> )	Total (Acres)	Composite "C"	Composite "CN"
30317	12000	18317	0	60633	1.39	0.65	89.7

## BASIN (701) - Commercial Land Use assumed

Impervious Area (ft <sup>2</sup> ) - Asphalt	Impervious Area (ft <sup>2</sup> ) - Rooftop	Greenspace (ft <sup>2</sup> )	Stone (ft <sup>2</sup> )	Total (ft <sup>2</sup> )	Total (Acres)	Composite "C"	Composite "CN"
26126	6500	10918	0	43544	1.00	0.68	91.1

## TOTAL BASINS

Impervious Area (ft <sup>2</sup> ) - Asphalt	Impervious Area (ft <sup>2</sup> ) - Rooftop	Greenspace (ft <sup>2</sup> )	Stone (ft <sup>2</sup> )	Total (ft <sup>2</sup> )	Total (Acres)	Composite "C"	Composite "CN"
81699	23500	36722	432	141921	3.26	0.68	91.2

**Time of Concentration Worksheet**  
Based on TR-55

PROJECT: **ARMSTRONG ARM EXTENSION**  
JOB #: **ADL002**

Typical values for Manning's n	
Overland Flow	
short grass	0.150
dense grass	0.240
pavement	0.011

2 year, 24 hour rainfall = 2.66 inches

Typical values for Manning's n	
Channel Flow	
grass	0.030
concrete	0.015
rip-rap	0.035

Basin name	Overland flow			seg. 2			Shallow Concentrated Flow			Channel Flow			T <sub>c</sub> (min)
	Length (ft)	S %	n	Length (ft)	S %	n	Length (ft)	S %	n	Length (ft)	S %	n	
615													5
614													5
613													5
705													5
704	12	2.08	0.011	0	30	1.00	0.150	5	100	1.00	U	1.61	1
703													5
706													5
702													5
701													5

**C. Hamilton County Surveyor's Office  
Approval – June, 2007**

# HAMILTON COUNTY SURVEYOR'S OFFICE

## FACSIMILE TRANSMITTAL SHEET

TO: Chris Laystrom

FROM: Greg Hoyes

COMPANY: Woolpert LLP

DATE: JULY 19, 2007

FAX NUMBER: 291-5805

NO. OF PAGES INCLUDING COVER: 3

PHONE NUMBER: 299-7500

REFERENCE NUMBER:

RE: West Carmel Marketplace

YOUR PROJECT NUMBER:

URGENT  FOR REVIEW  PLEASE COMMENT  PLEASE REPLY  PLEASE RECYCLE

**CONFIDENTIAL**

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ONE HAMILTON COUNTY SQUARE, SUITE 188  
NOBLESVILLE, IN 46060-2230  
PHONE: (317)776-8495 FAX: (317)776-9628



*Kenton C. Ward, CFM*  
*Surveyor of Hamilton County*  
*Phone (317) 776-8295*  
*Fax (317) 776-9628*

*Suite 188*  
*One Hamilton County Square*  
*Noblesville, Indiana 46060-2230*

July 19, 2007

Woolpert LLP  
ATTN: Chris Laystrom  
7140 Waldemar Drive  
Indianapolis, IN 46268  
VIA FACSIMILE: 291-5805

**RE: West Carmel Marketplace – Armstrong Property**

Dear Mr. Laystrom:

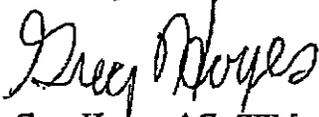
We have reviewed the drainage calculations submitted to the Hamilton County Surveyor's Office on June 29, 2007 for this project and have the following comments:

1. The project is located in the unincorporated area and MS4 jurisdiction of Hamilton County.
2. The project falls in the Crook Creek Regulated Drain Watershed. This drain has an allowable release rate of 0.1 cfs per acre for the 1 to 10 year 24 hour storm event and 0.27 cfs per acre for the 11 to 100 year 24 hour storm event.
3. The proposed site DOES NOT fall in a Carmel Wellhead Protection Area.
4. HCSO does agree with the revised drainage report for West Carmel Marketplace and adequate detention volume does exist in West Carmel Marketplace for the storm water runoff from the additional area (Armstrong property). The development of the Armstrong property (2.90 acres) will now be considered part of the master drainage plan for West Carmel Marketplace.
5. This approval is for detention volume only and does not grant approval for any construction plans, storm sewers, drainage patterns, or BMP's for the Armstrong project. Those plans will be reviewed for approval when they are submitted and the necessary permits will be required at that time.

6. Please note the additional comments may be warranted at a later date.

Should you have any questions, I can be reached at 317-776-8495.

Sincerely,



Greg Hoyes, AC, CFM  
Plan Reviewer

CC: Christine Barton-Holmes – Carmel DOCD  
Brian Cross – Civil Site Group